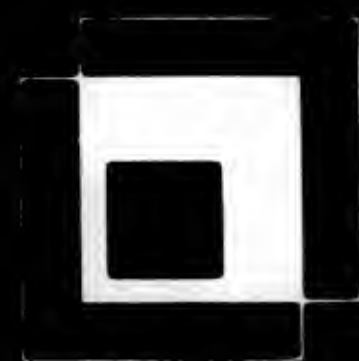


U. S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. 929
DECEMBER
1974

MICRO PHOTO DIVISION

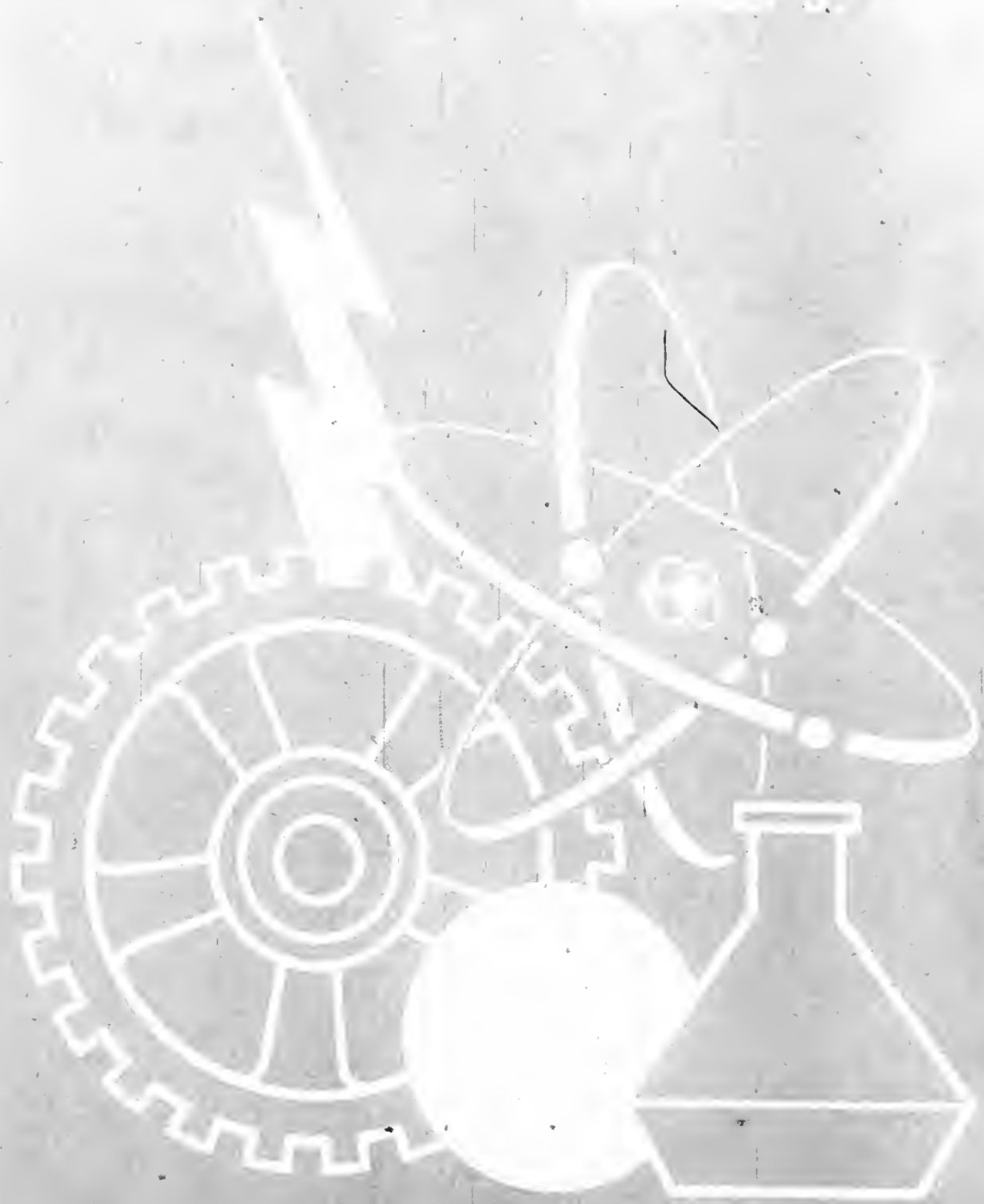


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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 3, 1974

Volume 929

Number 1

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PATENT NOTICES

Board of Appeals Decisions Rendered in the Month of October 1974

Examiner affirmed	218
Examiner affirmed in part	33
Examiner reversed	78
Total	329

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent Office as patent attorneys or agents will be held on Tuesday, March 4, 1975.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent Office together with a \$35 fee not later than January 31, 1975.

Application blanks may be obtained from the clerk of the Patent Office Committee on Enrollment, Bldg. 3, 11th floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents, Washington, D.C. 20231, and directed to the attention of the clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,047,196, Levine and Phillips, GARMENT HANGER, filed July 8, 1974, D.C. Mass. (Boston), Doc. No. 74-2567-F, Warner Packaging Industries, Inc. v. Jen-Tee Plastic Inc.; filed Sept. 12, 1974, D.C.N.J. (Trenton), Doc. No. Civil 74-1414, Warner Packaging Industries, Inc. v. The Harwood Company, Inc.

3,053,700, E. F. Kulp, METHOD FOR CLEANING FLOORS IN TEXTILE MILLS, filed Sept. 16, 1974, D.C., W.D.N.C. (Charlotte), Doc. No. C-C-74-200, Parks-Cramer Company v. American Chain & Cable Co., Inc., John J. Mikell, doing business as Mikell Equipment Company and Robert L. Black, Jr.

3,055,988, B. B. Bauer, MAGNETIC PHONOGRAPH PICKUP; 3,077,521, Ahrens, Kuhn and Richter, STEREO-PHONIC MOVING MAGNET PHONOGRAPH PICKUP; 3,077,522, Gunter and Anderson, STEREO-PHONIC PICKUP CARTRIDGE, filed Aug. 29, 1974, D.C., S.D. Fla. (Miami), Doc. 74-1092-C-JE, Shure Brothers, Incorporated v. Walder Electronic Distributors Co.

3,077,521. (See 3,055,988.)

3,077,522. (See 3,055,988.)

3,088,015, Cone and Horwitt, ELECTRIC CIGAR LIGHTER; 3,433,928, L. G. Horwitt, CIGAR LIGHTER, filed Oct. 30, 1972, D.C., N.D. Ill. (Chicago), Doc. 72-C-2733, Casco Prod. Corp. v. Nissan Motor Co. et al. Cause dismissed without prejudice, entered July 16, 1974.

3,115,207, A. M. Wiggins, UNIDIRECTIONAL MICROPHONE, filed Sept. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72-2185, Electro-Voice Inc. v. Shure Brothers Inc., Order cause dismissed without prejudice pursuant to stipulation Sept. 5, 1974.

3,142,349, S. B. Blodgett, DYNAMICALLY COMPENSATED WEIGHING SCALES; 3,342,225, same, AUTOMATIC FEED

CONTROL SYSTEM; 3,643,752, same, METHOD AND APPARATUS FOR CONTROLLING PRODUCT CHARGE WEIGHTS, filed Sept. 10, 1974, D.C., S.D. Tex. (Houston), Doc. CA 74-H-1243, International Business Machines Corp. v. Mira-Pak, Inc.

3,250,189, H. Peletz, CATCH BASIN, filed Aug. 29, 1974, D.C., C.D. Cal. (Los Angeles), Doc. CV-74-2523, Santa Rosa Cast Products Company v. Associated Concrete Products, Inc. 3,269,565, Krakauer and Verbeke, ARTICLE VENDING MACHINE; 3,344,953, same, ARTICLE VENDING MACHINE HAVING HELICAL FEEDER COIL, filed Aug. 19, 1974, D.C. Md. (Baltimore), Doc. B-74-905, Merrill Krakauer v. UMC Industries, Inc.

3,306,465, F. P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS, filed Sept. 23, 1974, D.C., E.D. Pa. (Philadelphia), Doc. CA 74-2459, Francis P. Brennan v. Hardware and Industrial Company, Inc.

3,310,435, Robinson, Jr., Steelman, Jr., and Perkins, Jr., PROCESS FOR CONTINUOUS PICKLING OF STEEL STRIP AND REGENERATION OF THE CONTACT ACID; 3,445,284, Same, PROCESS FOR PICKLING OF STEEL STRIP AND REGENERATION OF THE CONTACT ACID; 3,669,623, Allison, Hatfield and Frummerman, METHOD FOR THE REGENERATION OF HYDROCHLORIC ACID FROM SPENT PICKLE LIQUOR AND LIKE SOLUTIONS, filed Sept. 4, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. CA 74-840, Dravo Corporation v. Pennsylvania Engineering Corporation.

3,342,225. (See 3,142,349.)

3,344,953. (See 3,269,565.)

3,395,273, H. S. Orton, ELECTRIC RESISTANCE FURNACE, filed Dec. 6, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71-1148-C.A., Harold S. Orton v. Robicon Corporation and Jeannette Corporation. Ordered that judgment is granted for defendants upon the complaint of plaintiff and the plaintiff's complaint is hereby dismissed and the judgment is granted defendants on its counterclaim of invalidity, July 12, 1974.

3,433,928. (See 3,088,015.)

3,445,284. (See 3,310,435.)

3,544,267, G. R. Dychdala, CALCIUM HYPOCHLORITE PRODUCT; 3,645,005, Dychdala and Cox, CALCIUM HYPOCHLORITE MANUFACTURE, filed Sept. 13, 1974, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 74-2379, Olin Corporation v. Pennsalt Corporation.

3,544,267, G. R. Dychdala, CALCIUM HYPOCHLORITE PRODUCT, filed Aug. 2, 1974, D.C., E.D. Tenn. (Knoxville), Doc. C-74-229, Pennsalt Corporation v. Olin Corporation.

3,546,581, F. L. Winterburn, IGNITION SYSTEM, filed Sept. 9, 1974, D.C. Colo. (Denver), Doc. 74-A-819, Frederick L. Winterburn v. Tri Star Corporation, also known as Tri-Star Corporation.

3,574,070, C. Sahely, METAL PLATING OVER PLASTIC; 3,615,732, Shipley, Jr., Shipley, Gulla and Dutkewych, ELECTROLESS COPPER PLATING; 3,728,137, same, filed Sept. 12, 1974, D.C. Conn. (Hartford), Doc. H-74-282, Shipley Co. Inc. v. MacDermid Corporation.

3,615,732. (See 3,574,070.)

3,643,752. (See 3,142,349.)

3,645,005. (See 3,544,267.)

3,669,623. (See 3,310,435.)

3,681,067, H. A. Girard, CORE TRANSFER PROCESS, filed Aug. 28, 1974, D.C., W.D.N.C. (Charlotte), Doc. C-C-74-185, Gaston County Dyeing Machine Co. v. Technical Equipment Company of Gastonia, Inc. and Herbert A. Girard.

3,728,137. (See 3,574,070.)

3,814,388, P. Jakob, DYEING PROCESS FOR SYNTHETIC MATERIALS, filed June 28, 1974, D.C.N.J. (Newark), Doc. 74-980, Colortronic Reinhard & Co. KG v. Foremost Machine Builders, Inc.

D. 227,503, G. E. Raymond, MOBILE PHOTOCOPY CAMERA UNIT, filed Sept. 17, 1974, D.C.N.J. (Newark), Doc. C-74-1442, Gary E. Raymond v. M.P. Goodkin Co.

DECEMBER 3, 1974

U. S. PATENT OFFICE

3

Certificates of Correction for the Week of Dec. 3, 1974

Re. 27,935	3,742,092	3,786,285	3,806,701	3,819,684	3,826,931	3,831,872	3,836,187
Re. 28,020	3,742,248	3,786,445	3,807,045	3,819,687	3,826,937	3,831,890	3,836,228
Re. 28,056	3,742,557	3,786,686	3,807,548	3,819,915	3,826,970	3,831,940	3,836,257
Re. 28,084	3,743,010	3,787,215	3,807,750	3,820,105	3,827,036	3,832,007	3,836,330
Re. 28,086	3,745,264	3,787,239	3,807,815	3,820,234	3,827,242	3,832,050	3,836,369
Re. 28,090	3,746,696	3,787,612	3,807,868	3,820,700	3,827,260	3,832,099	3,836,470
Re. 28,095	3,746,982	3,787,787	3,808,455	3,820,729	3,827,302	3,832,125	3,836,525
Re. 28,167	3,750,300	3,788,477	3,808,633	3,820,742	3,827,373	3,832,148	3,836,590
D. 231,513	3,750,356	3,788,782	3,808,969	3,820,824	3,827,456	3,832,206	3,836,804
D. 231,518	3,753,854	3,788,882	3,809,294	3,820,901	3,827,500	3,832,255	3,836,845
D. 232,076	3,754,701	3,789,353	3,809,513	3,821,004	3,827,529	3,832,255	3,836,859
D. 232,541	3,755,212	3,790,028	3,809,610	3,821,010	3,827,617	3,832,448	3,836,917
D. 232,717	3,756,243	3,790,078	3,809,786	3,821,311	3,827,678	3,832,537	3,837,012
3,481,806	3,757,943	3,790,443	3,809,835	3,821,363	3,827,826	3,832,690	3,837,128
3,522,950	3,758,542	3,790,910	3,810,082	3,821,429	3,827,854	3,832,748	3,837,233
3,541,265	3,760,032	3,791,475	3,810,182	3,821,696	3,828,064	3,832,822	3,837,241
3,546,295	3,761,571	3,791,625	3,810,503	3,821,856	3,828,090	3,832,984	3,837,415
3,554,360	3,764,338	3,791,737	3,810,509	3,822,157	3,828,198	3,833,018	3,837,426
3,573,807	3,764,489	3,792,173	3,810,715	3,822,338	3,828,253	3,833,058	3,837,476
3,583,340	3,765,886	3,792,766	3,810,732	3,822,406	3,828,299	3,833,090	3,837,508
3,587,128	3,765,964	3,792,796	3,810,747	3,822,511	3,828,316	3,833,151	3,837,636
3,595,897	3,766,003	3,792,979	3,810,781	3,822,617	3,828,348	3,833,201	3,837,691
3,603,988	3,766,555	3,793,345	3,810,804	3,822,659	3,828,764	3,833,277	3,837,804
3,615,519	3,766,581	3,793,388	3,810,952	3,822,994	3,828,800	3,833,324	3,838,002
3,634,508	3,767,221	3,793,410	3,811,487	3,823,005	3,828,905	3,833,388	3,838,021
3,656,932	3,767,412	3,793,758	3,811,873	3,823,096	3,829,128	3,833,435	3,838,222
3,663,560	3,767,653	3,794,696	3,811,954	3,823,133	3,829,211	3,833,524	3,838,234
3,664,261	3,767,660	3,794,831	3,812,032	3,823,170	3,829,240	3,833,565	3,838,291
3,665,638	3,768,276	3,795,939	3,812,060	3,823,365	3,829,257	3,833,601	3,838,303
3,666,778	3,769,289	3,796,814	3,812,385	3,823,370	3,829,271	3,833,624	3,838,363
3,673,182	3,769,390	3,797,311	3,812,531	3,823,375	3,829,356	3,833,651	3,838,427
3,674,558	3,769,438	3,797,562	3,812,659	3,823,386	3,829,376	3,833,651	3,838,499
3,678,106	3,769,857	3,797,735	3,812,897	3,823,730	3,829,417	3,833,769	3,838,597
3,678,942	3,769,945	3,798,164	3,813,042	3,823,751	3,829,425	3,833,772	3,838,779
3,682,642	3,770,421	3,798,175	3,813,060	3,823,975	3,829,634	3,833,856	3,838,865
3,682,949	3,770,516	3,798,509	3,814,307	3,824,097	3,829,817	3,834,093	3,838,921
3,685,993	3,772,345	3,799,831	3,814,556	3,824,186	3,829,850	3,834,162	3,838,931
3,691,112	3,772,947	3,799,860	3,814,652	3,824,413	3,830,104	3,834,303	3,839,019
3,692,206	3,773,632	3,799,916	3,814,953	3,824,509	3,830,155	3,834,467	3,839,171
3,694,141	3,773,732	3,800,192	3,815,129	3,824,610	3,830,216	3,834,541	3,839,171
3,694,265	3,773,800	3,800,869	3,815,820	3,824,666	3,830,261	3,834,789	3,839,288
3,701,203	3,774,807	3,800,965	3,816,061	3,824,831	3,830,266	3,834,812	3,839,297
3,711,574	3,775,303	3,801,684	3,816,143	3,824,840	3,830,447	3,834,948	3,839,381
3,715,508	3,775,535	3,801,926	3,816,482	3,824,862	3,830,465	3,834,983	3,839,401
3,717,616	3,775,964	3,802,332	3,816,574	3,824,884	3,830,523	3,835,029	3,839,509
3,718,642	3,776,867	3,802,474	3,816,639	3,824,987	3,830,647	3,835,037	3,839,525
3,719,292	3,777,585	3,802,811	3,816,670	3,824,989	3,830,706	3,835,153	3,839,542
3,720,240	3,778,294	3,802,859	3,816,816	3,825,161	3,830,795	3,835,174	3,839,548
3,720,312	3,778,968	3,803,020	3,817,240	3,825,198	3,830,818	3,835,179	3,839,551
3,723,439	3,779,133	3,803,088	3,817,427	3,825,208	3,830,826	3,835,217	3,839,634
3,724,106	3,779,167	3,803,185	3,817,698	3,825,297	3,830,874	3,835,240	3,839,646
3,724,168	3,781,323	3,803,605	3,817,732	3,825,348	3,830,881	3,835,259	3,839,660
3,725,301	3,781,504	3,803,628	3,817,772	3,825,358	3,830,905	3,835,312	3,839,676
3,725,918	3,781,585	3,803,700	3,817,811	3,825,526	3,831,000	3,835,321	3,839,731
3,727,433	3,782,159	3,803,703	3,817,916	3,825,557	3,831,053	3,835,327	3,839,956
3,727,942	3,782,917	3,803,988	3,818,295	3,825,576	3,831,073	3,835,402	3,840,169
3,730,441	3,783,346	3,804,274	3,818,308	3,825,636	3,831,177	3,835,524	3,840,205
3,734,702	3,783,390	3,804,963	3,818,446	3,825,683	3,831,434	3,835,543	3,840,218
3,734,717	3,783,391	3,805,043	3,818,453	3,825,690	3,831,483	3,835,641	3,840,249
3,738,097	3,783,706	3,805,135	3,818,465	3,825,733	3,831,492	3,835,799	3,840,421
3,738,365	3,784,471	3,805,849	3,818,495	3,826,008	3,831,552	3,835,822	3,840,936
3,739,384	3,784,545	3,806,416	3,818,580	3,826,186	3,831,681	3,835,962	3,841,467
3,739,652	3,784,881	3,806,500	3,818,676	3,826,233	3,831,686	3,835,991	3,841,649
3,740,186	3,785,390	3,806,559	3,819,520	3,826,334	3,831,773	3,836,124	3,841,978
3,741,216	3,785,430	3,806,582	3,819,523	3,826,648	3,831,823	3,836,183	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Informa-
tion Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 438,083. Temperature Sensor. Filed Jan. 30, 1974. PC \$4/MF \$1.45.
Patent application 443,078. Improved Collection Ring for Use in Multiple-Sample Blood Fractionation Centrifugal Rotors. Filed Feb. 15, 1974. PC \$4/MF \$1.45.
Patent 3,780,290. Radiation Camera Motion Correction System. Filed Mar. 28, 1973. Patented Dec. 18, 1973. Not available NTIS.

DEPARTMENT OF THE AIR FORCE AF/JACP
Washington, D.C. 20314

Patent application 344,789. Process and Apparatus for Large Scale Extrusions. Filed Mar. 26, 1973. PC \$4.25/MF \$1.45.
Patent application 409,972. Encapsulated Pellet Igniter Charge. Filed Nov. 5, 1973. PC \$4/MF \$1.45.
Patent application 433,175. Multi-Channel Sun Photometer. Filed Jan. 14, 1974. PC \$4/MF \$1.45.
Patent application 439,666. Short Depth Hardened Wave Guide Element. Filed Feb. 4, 1974. PC \$4/MF \$1.45.
Patent application 439,672. Strip Exposure Apparatus for Nucleation Medium. Filed Feb. 4, 1974. PC \$4/MF \$1.45.
Patent application 442,296. Integral Aircraft Barrier Net. Filed Feb. 13, 1974. PC \$4/MF \$1.45.
Patent application 445,004. Laser Site Marking System. Filed Feb. 22, 1974. PC \$4/MF \$1.45.
Patent application 445,046. Method of Fabricating Silicon Carbide Articles. Filed Feb. 22, 1974. PC \$4/MF \$1.45.
Patent application 445,047. Improved Outer Seal for First Stage Turbine. Filed Feb. 22, 1974. PC \$4/MF \$1.45.
Patent application 445,048. Method and Apparatus for Providing Higher Order Mode Compensation in Horn Antennas. Filed Feb. 22, 1974. PC \$4/MF \$1.45.
Patent application 445,049. Method and Apparatus for Providing Higher Order Mode Compensation in Horn Antennas. Filed Feb. 22, 1974. PC \$4/MF \$1.45.
Patent application 447,423. Wrapped Laminated Felted Monolithic Combustible Cartridge Case. Filed Mar. 1, 1974. PC \$4/MF \$1.45.
Patent application 447,424. Synthesis of High Purity Alpha Phase Silicon Nitride Powder. Filed Mar. 1, 1974. PC \$4/MF \$1.45.
Patent application 447,425. Positive, Reuseable Bolt Lock Assembly. Filed Mar. 1, 1974. PC \$4/MF \$1.45.
Patent application 452,038. Method for Fabricating Silicon Nitride Bodies. Filed Mar. 18, 1974. PC \$4/MF \$1.45.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt. Branch,
Hyattsville, Md. 20782

Patent application 404,977. Method for use of a Discrete Carrier in Delivery of Precursors for Fixation Processes. Filed Oct. 10, 1973. PC \$4/MF \$1.45.
Patent application 404,978. Cellulose Terpolymer Textiles. Filed Oct. 10, 1973. PC \$4/MF \$1.45.
Patent application 432,801. Flame Retardation of Textiles by Crosslinking Halo Phosphorus Compounds With Polyethyleneimine. Filed Jan. 11, 1974. PC \$4/MF \$1.45.
Patent 3,153,597. Polymeric Dialdehyde-Protein Adhesives and Wood Laminates Therewith. Filed Nov. 16, 1961. Patented Oct. 20, 1964. Not available NTIS.
Patent 3,400,107. Carbohydrate Derived Polymers. Filed June 16, 1965. Patented Sept. 3, 1968. Not available NTIS.
Patent 3,794,466. Single Bath Chromic Chloride Mineral Dyeing Process for Cellulosics. Filed Apr. 27, 1972. Patented Feb. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, Washington, D.C. 20240

Patent application 383,431. Injector Apparatus and Plug for Retention of Liquids Under Pressure. Filed July 27, 1973. PC \$4/MF \$1.45.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

Patent application 426,405. Vapor Phase Growth of Groups III-V Compounds by Hydrogen Chloride Transport of the Elements. Filed Dec. 19, 1973. PC \$4/MF \$1.45.
Patent application 436,316. Rocket Chamber and Method of Making. Filed Jan. 24, 1974. PC \$4/MF \$1.45.
Patent application 474,745. Quick Disconnect Filter Coupling. Filed May 30, 1974. PC \$4/MF \$1.45.
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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th & C Streets, NW.,
Washington, D.C. 20240

Patent application 420,509. Angular Deviation Measuring Device and Its Method of Use. Filed Nov. 30, 1973. PC \$4/MF \$1.45.

Patent 3,821,100. Copper Ion Selective Sensor. Filed Feb. 23, 1973. Patented June 28, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 9, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-11-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING AND MEASURING, GROUP 240—N. ANSHER, Director..... Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-21-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-27-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during October 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,666 to 1,660, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 3, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T929,001 STABILIZED ALPHA-ALUMINA MONOHYDRATE EXTRUDATES

William C. Ziegenhain, and Galen K. Madderra, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 31, 1973, Ser. No. 364,773

Int. Cl. C01f 7/02

U.S. Cl. 423—625

No Drawing. 10 Pages Specification

In a method for producing alpha-alumina monohydrate extrudates by admixing acid, water, and alumina to form an extrudable composition, extruding the composition and drying to produce alumina extrudates, the improvement comprising gradually moistening the extrudates, thereby imparting water stability to the extrudates.

T929,002 PROCESS FOR PREPARING EXTRUDED CELLULOSIC FILM AND SHEETING HAVING EXCELLENT OPTICAL PROPERTIES

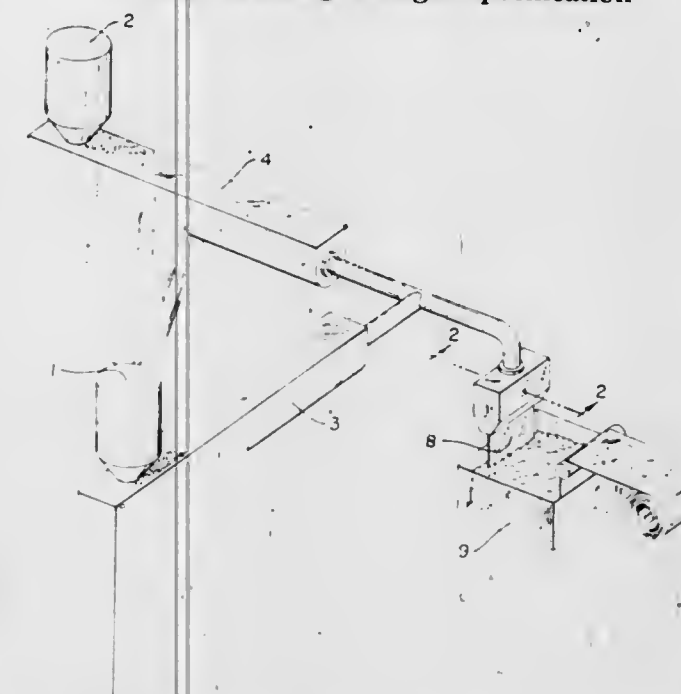
Max L. Carroll, Jr., 720 Teasel Drive, Apt. 14, Kingsport, Tenn. 37660

Filed July 16, 1973, Ser. No. 379,682

Int. Cl. B29f 3/10

U.S. Cl. 260—224

1 Sheet Drawing. 5 Pages Specification



A process is disclosed for preparing extruded cellulosic film and sheeting having excellent clarity and other optical properties which are substantially free of die lines and similar die imperfections. The extruded-cellulosic films and sheeting are extruded as a trilaminate with the center layer of the trilaminate being the cellulosic layer. The outer lamina which covers both sides of the cellulosic layer is of a dissimilar and incompatible thermoplastic material such as polyethylene. As the trilaminate flows through the die the outer thermoplastic layers prevent the inner cellulosic layer from contact with the lips of the die. After extrusion, the outer lamina can be stripped

from the cellulosic center or inner lamina thereby providing an extruded cellulosic sheet or film free of die marks and which has excellent clarity.

T929,003 POWDER COATING COMPRISING A CELLULOSE ESTER AND A BLOCKED ISOCYANATE

Roy C. Foulk, 3630 Woodlark Lane 37660, and Richard L. Smith, 112 Meadow Lane 37663, both of Kingsport, Tenn.

Continuation of abandoned application Ser. No. 290,662, Sept. 20, 1972. This application Sept. 4, 1973, Ser. No. 394,240

Int. Cl. C08b 21/06, 27/34, 27/52

U.S. Cl. 106—169

No Drawing. 7 Pages Specification

Disclosed is a powder coating comprising an admixture of a blocked isocyanate and a cellulose ester which can be either cellulose acetate butyrate or cellulose acetate propionate. Plasticizers, stabilizers and pigments can optionally be added to the admixture. The powder coating can be applied to a heatable substrate and caused to fuse by application of heat to produce a smooth, strongly adherent, uncratered, thermally set coating.

T929,004 REEL ADAPTER FOR A CARTRIDGE

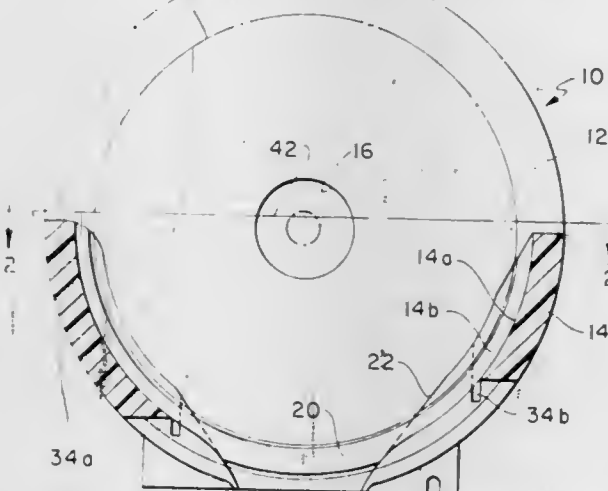
Clemens Hopfner, 3 Richard-Wagner-Str., 7304 Ruit, Germany, and Wolfgang Ort, 6 Daiberweg, 7 Stuttgart-Bad Cannstatt, Germany

Filed Oct. 10, 1973, Ser. No. 405,716

Int. Cl. G03b 1/04

U.S. Cl. 242—71.1

1 Sheet Drawing. 6 Pages Specification



An adapter is provided for supporting a film reel in a film chamber of a cartridge. A preferred embodiment of the adapter includes a first portion adapted to be supported by the walls in the cartridge which define the film chamber and a second portion for cooperating with the circumferential edges of the reel flanges to maintain the film reel in the center of the film chamber and freely rotatably such that a film strip may be wound onto or may

be removed from the reel. If desired, the adapter can be made in different sizes so as to permit film reels of different capacities to be supported in a cartridge having a film chamber of a larger capacity. For example, the adapter could appropriately be used to support film reels which are designed to contain film lengths in a range between 200 and 400 feet in film cartridges which are dimensioned to support film reels containing film lengths of approximately 440 feet.

In the preferred embodiment disclosed, the adapter is of a generally arcuate shape and includes an opening between the first and second portions, the opening permitting a film strip to pass therethrough when the film strip is wound onto or removed from the film reel. If desired, the second portion of the adapter can be shaped so as to be partially received between the flanges of the film reel, thereby serving to restrain the film strip from being radially displaced from the reel when the reel is rotatably driven.

T929,005**POLYETHYLENE TEREPHTHALATE FILM MASKING MATERIAL**

Conrad Erve Miller, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Continuation of abandoned application Ser. No. 333,523, Feb. 20, 1973. This application Nov. 19, 1973, Ser. No. 417,298

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

No Drawing. 13 Pages Specification

Biaxially oriented, heat-set, polyethylene terephthalate film from about 2.5 to 4.0 mils thick and containing from about 1.5 to 4 percent titanium dioxide, from about 1 to 2 percent silica and colored pigments selected from orange to red, such film having desired optical and surface properties rendering it suitable for use as a masking material.

T929,006**BAKING METHOD**

Louis J. Lee, Rt. 13, 304 Montezuma Road., Kingsport, Tenn. 37664

Filed Feb. 19, 1974, Ser. No. 443,668

Int. Cl. A21d 2/16

U.S. Cl. 426—24

No Drawing. 8 Pages Specification

A method for producing bread and other fermented dough products without the use of appreciable quantities of fats is disclosed. Succinylated monoglycerides, polysorbate 60, ethoxylated monoglycerides, sodium stearyl lactylate or calcium stearyl lactylate, alone or in combination, are incorporated into the baking mix prior to baking in amounts up to about 0.5 percent by weight of

the flour. The process may be used in the continuous, brew-dough, sponge dough, or straight dough process and produces results similar to shortening and emulsifier in terms of volume, softness and texture.

T929,007**STRAIGHT DOUGH BAKING PROCESS**

Ronald F. Czarnecki, 408 Oakmont Drive, Kingsport, Tenn. 37663

Filed Feb. 28, 1974, Ser. No. 446,871

Int. Cl. A21d 2/16

U.S. Cl. 426—24

No Drawing. 8 Pages Specification

An improved straight dough process is disclosed for preparing yeast-leavened baked goods. Succinylated monoglycerides are used as an additive in the bake mix to improve such properties as machinability, loaf volume and grain score. Succinylated monoglycerides are added to the bake mix in amounts of from about 0.1% to about 0.5% by weight of the flour prior to baking.

T929,008**FAST-DRAINING NEOPRENE-ASBESTOS FIBER SLURRIES**

Albertus van Cleeff, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1974, Ser. No. 449,722

Int. Cl. D21f 11/00

U.S. Cl. 162—155

No Drawing. 7 Pages Specification

In the process of forming asbestos fiber sheets by depositing neoprene latex on chrysotile asbestos fibers in aqueous slurry, and draining water from the slurry through a screen, the rate of water drainage is increased by using a neoprene latex in which substantially all cations are potassium ions. The neoprene latex is prepared in the presence of potassium salts of anionic emulsifying agents and potassium salts such as potassium persulfate is preferred to sodium salts as components of the catalyst. Neoprene may be either a homopolymer of chloroprene or a copolymer of chloroprene with other copolymerizable monomers, the proportion of such other monomers not exceeding about 60 weight percent of the polymer.

Small amounts of sodium salts, up to about 0.05 part per 100 parts by weight of monomers can be tolerated by the system and do not have deleterious effects on the water drainage rate in the sheet-forming stage. Copolymerization monomers which may be incorporated in the chloroprene polymer have one or more double bonds, of which only one is terminal. They include, for example, styrene, vinyltoluenes, vinylnaphthalenes, methyl acrylate and methacrylate, acrylonitrile, 1,3-butadiene, isoprene, and 2,3-dichloro-1,3-butadiene.

REISSUE PATENTS

GRANTED DECEMBER 3, 1974

ERRATA

For	See
CLASS	PATENT NO.
043-043.....	28,262
074-010.....	28,261
267-057.....	28,259
096-010.....	28,360
424-263.....	28,258
324-001.....	28,264

REISSUES

DECEMBER 3, 1974

Matter enclosed in heavy brackets **[]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,258 DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING HALOGENATED DERIVATIVES OF CYANINE DYES

Paul B. Gilman, Rochester, N.Y., Roberta A. Litzerman, Brighton, Mass. and Bernard D. Illingsworth, deceased, late of Rochester, N.Y., by Mary D. Clark, executrix, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,501,309, dated Mar. 17, 1970, Ser. No. 609,734, Jan. 17, 1967, which is a continuation-in-part of abandoned application Ser. No. 533,458, Mar. 11, 1966. Application for reissue Mar. 16, 1972, Ser. No. 235,394

Int. Cl. G03c 1/36

U.S. Cl. 96—101

21. A fogged direct positive silver halide emulsion containing, as electron acceptor, a cyanine dye derivative in which at least one terminal methine group of the parent cyanine dye is halogenated with chlorine, bromine or iodine.

24 Claims

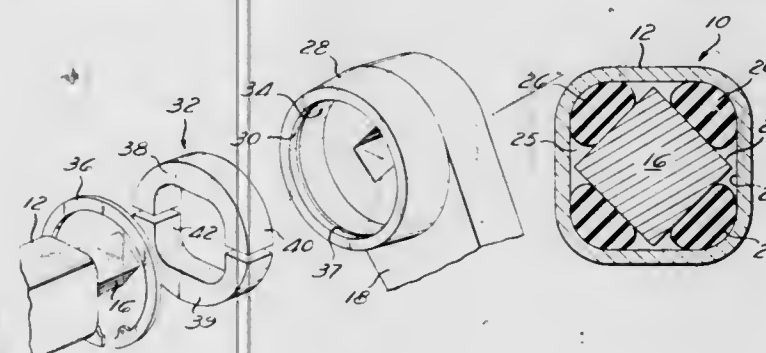
28,259 BEARING ASSEMBLY FOR ELASTIC JOINTS Curtiss W. Henschen, % Henschen Industrial Corporation, Jackson Center, Ohio 44534

Original No. 3,436,069, dated Apr. 1, 1969, Ser. No. 622,666, Mar. 13, 1967. Application for reissue Sept. 13, 1973, Ser. No. 396,881

Int. Cl. B60g 11/18

U.S. Cl. 267—57.1

10 Claims



1. In combination with an elastic joint comprising an outer tubular member, an inner member disposed generally concentrically within and spaced from the outer member for rotation relative thereto about a common axis, and means disposed within the outer member and interacting between it and the inner member to effect a yieldable restraint against relative rotation of the outer and inner members about said common axis; a bearing arrangement for positively maintaining the inner and outer members concentric with respect to said common axis of relative rotation and including housing means rigidly secured to said inner member for rotation therewith relative to said outer member and, together with said outer member, defining a bearing race about said outer member, and a bearing element disposed within said bearing race to maintain the inner and outer members concentric with respect to said axis.

28,260 ELECTROPHORETIC IMAGING PROCESS INCLUDING APPLICATION OF DYNAMIC STRESS ON THE PARTICLE SUSPENSION

Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original No. 3,616,391, dated Oct. 26, 1971, Ser. No. 764,720, Oct. 3, 1968. Application for reissue Sept. 27, 1973, Ser. No. 401,331

Int. Cl. B01k 51/00; G03g 13/22

U.S. Cl. 96—1.3

3 Claims

1. In a method for imaging electrophoretic particle suspensions having a first electrode adapted to support the suspension, a second electrode capable of being brought into rolling contact with the suspension such that the suspension is maintained between said electrodes, including applying an electric field across the suspension between the electrodes, and exposing the suspension to an image with activating electromagnetic radiation, the improvement including bringing the second electrode into contact with the suspension and moving one of said electrodes relative to the other at a predetermined traversing velocity, superimposing overriding forces on one of said electrodes to impart a surface speed thereon slightly different from its predetermined traversing velocity thereby imparting forces on the particles within the suspension that are less than those necessary to destroy the image formed on the first electrode and sufficient to dislodge a portion of the nonimage forming particles in the suspension, such forces being unrelated to the electrical forces between the electrodes.

28,261 INDEXED TV-TUNER

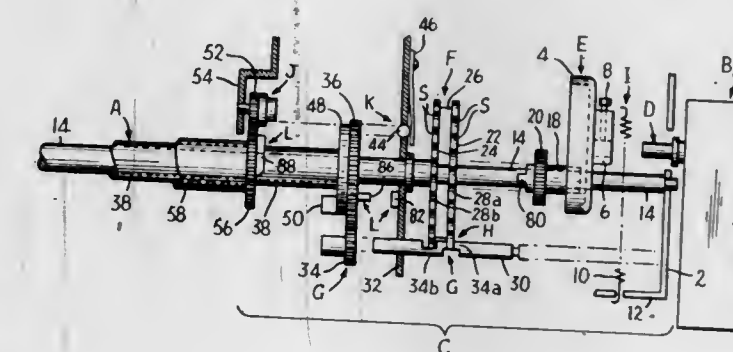
Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Original No. 3,788,152, dated Jan. 29, 1974, Ser. No. 272,369, July 17, 1972. Application for reissue May 6, 1974, Ser. No. 467,118

Int. Cl. F16h 27/04, 35/18

U.S. Cl. 74—10.5

46 Claims



1. A tuning assembly comprising an input member, an output member, a tuning element operatively connected to said output member to be positioned thereby, and transmission means operatively connected between said members and comprising index means operatively connected to said output member for movement therewith, a plurality of stop surfaces respectively corresponding to operative and positions for said tuning element, actuator means operatively connected to said input member and movable thereby to positions engaged by succes-

sive stop surfaces, biasing means operatively connected to said index means for urging said index means in a direction to cause said top surfaces to engage said actuator means, and driving means operatively connected between said input member and said index means for moving the latter to bring successive stop surfaces into engagement with said actuator means.

28,262

DEPTH CONTROL DEVICE

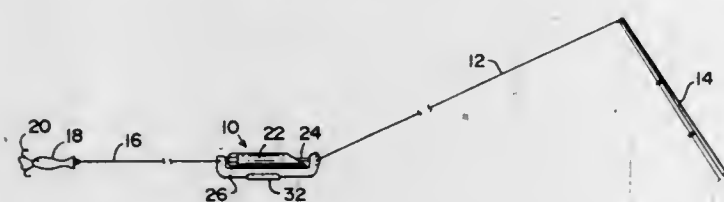
Norman H. Nye, Cuyahoga Falls, Ohio
(1056 Home Ave., Akron, Ohio 44310)

Original No. 3,727,341, dated Apr. 17, 1973, Ser. No. 218,713, Jan. 18, 1972. Application for reissue June 21, 1973, Ser. No. 372,334

Int. Cl. A01k 85/00

U.S. Cl. 43—43.13

17 Claims



1. A device adapted to be connected to a fishing line for positioning a lure at a preselected temperature zone in a body of water, comprising:

an elongated member, [One end of which is slanted relative to the longitudinal axis of the member;]

a keel plate having a center portion extending parallel to the longitudinal axis of the member and closely adjacent the outer surface of the member and end portions projecting upwardly from opposite ends of the center portion, the fishing line being connected to [the] one end portion [adjacent to the slanted end] of the [cylindrical member] keel plate and the lure being connected to the other end portion;

means connecting the member to the end portions of the keel plate, the means permitting rotation of the member about its longitudinal axis;

[at least one fin projecting outwardly from and angled relative to the longitudinal axis of the member;] means operatively carried by said member and including a portion slanted with relation to the longitudinal axis of said member and a device to urge rotation of said member with relation to said keel plate; and

temperature responsive latching means operative to prevent rotation of the member relative to the keel plate.

28,263

DISINFECTING COMPOSITIONS

Claude Gauvreau, Ottawa, Ontario, Canada, assignor to Holliston Labs., Inc., Boston, Mass.

No Drawing. Original No. 3,595,975, dated July 27, 1971, Ser. No. 854,009, July 29, 1969, which is a continuation of application Ser. No. 500,225, Oct. 21, 1965, which is a continuation of application Ser. No. 179,778, Mar. 14, 1962, both now abandoned. Application for reissue July 27, 1973, Ser. No. 383,187

Int. Cl. A61k 27/00

U.S. Cl. 424—263

23 Claims

1. A composition of matter possessing synergised growth-inhibiting properties against bacteria and fungi consisting essentially of as active ingredients a halide salt

of cetyl pyridinium and a monoterpene selected from the group consisting of citronellal, citronellol, eucalyptol, fenchone, geraniol, linalool, menthol, nerol, p-cymene, pinene, pulegone, terpineol, thymol and citral, the weights of said active ingredients having a ratio of between about 1:50 and 50:1.

28,264

APPARATUS FOR WELL LOGGING BY MEASURING AND COMPARING POTENTIALS CAUSED BY SONIC EXCITATION

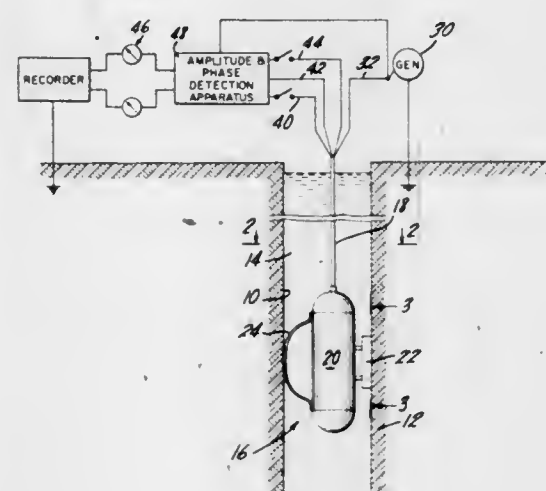
Adelbert Semmelink, St. James, Cape, South Africa, assignor to Schlumberger Technology Corporation, Houston, Tex.

Original No. 3,599,085, dated Aug. 10, 1971, Ser. No. 832,679, June 12, 1969. Application for reissue Aug. 7, 1973, Ser. No. 386,449

Int. Cl. G01v 3/18

U.S. Cl. 324—1

11 Claims



1. A method for investigating the permeability of earth formations traversed by a bore hole and containing a fluid in the pores thereof comprising:

positioning a source of periodic mechanical excitation in contact with the surface of the bore hole within a formation to be investigated,

actuating the source to periodically excite the formation at the area of contact between the formation and the excitation source so as to cause periodic electrokinetic potentials of relatively large magnitude to be produced at the contact area and [separate, periodic electrokinetic potentials] of proportionally smaller magnitude to be produced at locations spaced from the contact area,

simultaneously with excitation of the formation measuring the magnitude of the relatively large electrokinetic potentials [at] near the contact area and the magnitude of the proportionally smaller electrokinetic potentials at at least one other location spaced from the contact by a distance large relative to the electrokinetic skin depth of the formation, and

determining the ratio of the magnitude of the electrokinetic potentials at each other location to the magnitude of the electrokinetic potentials [at] near the contact area, said ratio being an indication of the permeability of the formation.

PATENTS

GRANTED DECEMBER 3, 1974

ERRATA

For	See
CLASS	PATENT NO.
057-075	3,851,448
057-091	3,851,698
242-055	3,851,760
226-091	3,851,816
238-230	3,851,821
292-111	3,851,922
209-166	3,852,167
209-469	3,852,168
208-058	3,852,207
261-069	3,852,391
260-873	3,852,393
260-873	3,852,394
260-953	3,852,395
260-957	3,852,396
260-968	3,852,397
424-001	3,852,413
424-001	3,852,414
424-001	3,852,415
424-014	3,852,416
424-047	3,852,417
424-075	3,852,418
424-084	3,852,419
424-092	3,852,420
424-094	3,852,421
424-100	3,852,422
424-115	3,852,423
424-118	3,852,424
424-120	3,852,425
358-009	3,852,520
250-385	3,852,610
250-445	3,852,611
250-492	3,852,612

PATENTS

GRANTED DECEMBER 3, 1974

GENERAL AND MECHANICAL

3,851,336

BIB

Jonna Hjerl, Dyndsager 8 A, DK-2750 Ballerup, Denmark

Filed May 22, 1973, Ser. No. 362,725

Claims priority, application Denmark, May 26, 1972, 2630/72

Int. Cl. A41b 13/10

U.S. Cl. 2-49 R

2 Claims



1. A bib with a pocket comprising a rectangular blank of soft weldable sheet material having a neckline cutout at one end and reinforcing ribs fixed to and extending along the longitudinal edges of the rectangle, the two halves of the edge opposite the cutout being joined to each other.

3,851,337

UNIVERSALLY MOVABLE ANKLE JOINT FOR TUBE SKELETON ARTIFICIAL LIMBS

Klaus Prah, Luneburg, Germany, assignor to IPOS Gesellschaft für integrierte Prothesen-Entwicklung und orthopädiotechnischen Service m.b.H & Co., KG, Luneburg, Germany

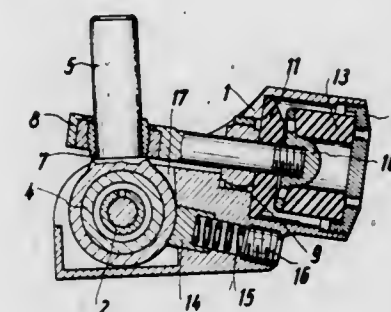
Filed July 20, 1973, Ser. No. 381,226

Claims priority, application Germany, Aug. 1, 1972, 2237758

Int. Cl. 3 28; A61f 1/04, 1/08

U.S. Cl. 3-32

3 Claims



1. Universally movable ankle joint for tube skeleton artificial limbs comprising a support element, an axle screwed into engagement with said support element, said axle having a first axis, a first joint bearing fixed on said axle within said support element and extending around the first axis thereof, a first eye bolt press fitted about the outer periphery of said joint bearing and said first eye bolt extending outwardly from said axle with the axis of the outwardly extending portion thereof extending transversely of the first axis of said axle, a second joint bearing press fitted onto said eye bolt at a position spaced outwardly from said axle and extending around the axis of the outwardly extending portion of said first eye bolt, a second eye bolt

pressed onto the outer periphery of said second joint bearing and said second eye bolt having a shank extending from said second joint bearing with the axis of said shank extending transversely of the axis of said first eye bolt, a third bearing extending around the shank of said second eye bolt at a position spaced along said shank outwardly from said first eye bolt, said third bearing supported in said support element, a closure plate fitted on the end of said shank spaced more remotely from said first eye bolt and located within said support element, a first resilient buffer element positioned in said support element encircling said shank and positioned between and in contact with said third bearing and said closure plate, and a second resilient buffer element mounted in said support element and disposed in contact with the opposite surface of said closure plate from said first buffer element, and said closure plate controlling movement limitation.

3,851,338

FLUSHING DEVICE

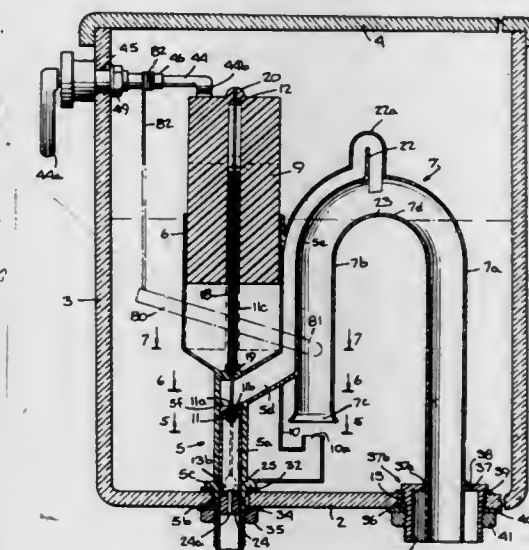
Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn. 06107

Continuation of Ser. No. 200,343, Nov. 19, 1971, which is a division of Ser. No. 53,170, July 18, 1970. This application June 20, 1973, Ser. No. 371,896

Int. Cl. E03d 1/36

U.S. Cl. 4-41

6 Claims



1. In a flushing device for toilets, in combination, an inlet conduit for filling a reservoir with water, a valve for controlling the flow of water through the inlet, a float connected to the inlet valve for operating the inlet valve, means for actuating said float, a siphon adapted to be connected to the outlet of the reservoir for flushing a toilet, a conduit having one end connected to the siphon and its other end operatively connected to a conduit-adjusting means to admit air to the siphon to stop the flushing when said other end of said conduit is above a predetermined water level and means for operating said conduit-adjusting means to raise and lower the said other end of the conduit to change the water level at which the flushing stops.

3,851,339

PORTABLE, SELF-CONTAINED TOILET

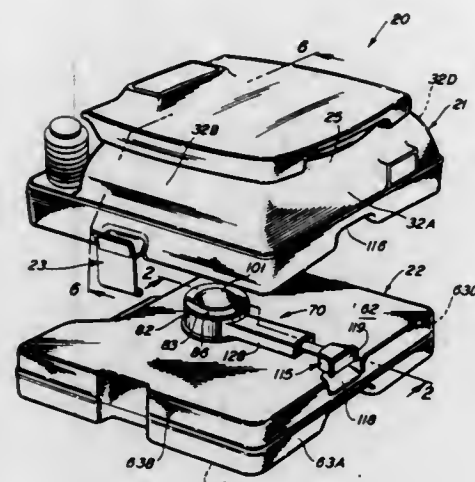
Vaughn D. Flinner, Prairie; Richard W. Sprang, Lakeville; Dana D. Zody, and Howard A. Fulton, both of Perrysville, all of Ohio, assignors to Mansfield Sanitary Inc., Perrysville, Ohio

Filed Oct. 23, 1973, Ser. No. 408,664

Int. Cl. A47k 11/02; E03d 5/016; A61l 11/00

U.S. Cl. 4-115

13 Claims



1. A portable toilet comprising: a seat section and a holding tank section, said holding tank section having an inlet port, a flush valve housing, means to fasten said flush valve housing to said inlet port, a thimble formed on said valve housing and extending oppositely of said holding tank section, a passageway extending through said valve housing and thimble, a valve element comprising a portion of a sphere mounted for rotation within said thimble, means to rotate said valve element selectively to open and close said passageway, said seat section having a bowl portion that converges downwardly to a drain, a socket circumscribing said drain, the thimble presented from said valve housing being insertably receivable within said socket and means to effect a seal between said thimble and said socket.

3,851,340

PLASTIC CONTAINER FOR FOOTBATH

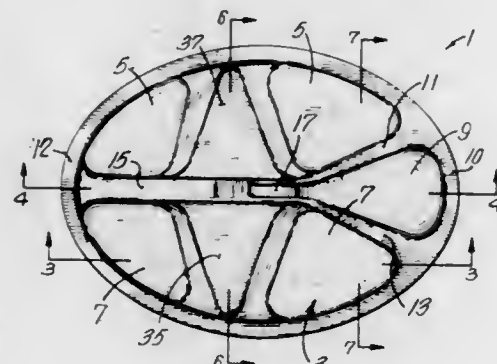
Andreas Keusch, 440 Place Vimy, Brossard, Quebec, Canada

Filed Sept. 28, 1973, Ser. No. 401,866

Int. Cl. A47k 3/022

U.S. Cl. 4-182

1 Claim



1. A molded plastic footbath container comprising: a molded body portion; an interior cavity formed in said molded body portion and surrounded by an external wall; a first wall means in said cavity enclosing a first portion of said cavity, said first portion comprising a fluid mixing chamber; second wall means in said cavity extending from said first wall means to said external wall separating a second portion of said cavity from a third portion of said cavity,

said second and third portions being separated from said first portion by said first wall means, said second and third portions comprising feet receptacles; a groove extending from the mixing chamber along a portion of said second wall means; the floor of said groove diverging upwardly in a direction away from said mixing chamber and merging with the top surface of said second wall at the end of the groove remote from said mixing chamber; the portion of the top surface of said second wall means between said first wall means and said external wall being above the top surfaces of said second and third cavity portions; the top surface of said second wall being below the top surface of said external wall; said groove forming channel means in said second wall means, said channel means being in fluid communication, at one end thereof, with said first portion and, at another end thereof, with said second and third portions; whereby fluid will communicate between said first portion and said second and third portions when said container is tilted about the end of the container opposite said mixing chamber.

3,851,341

SANITARY TOILET SEAT COVER

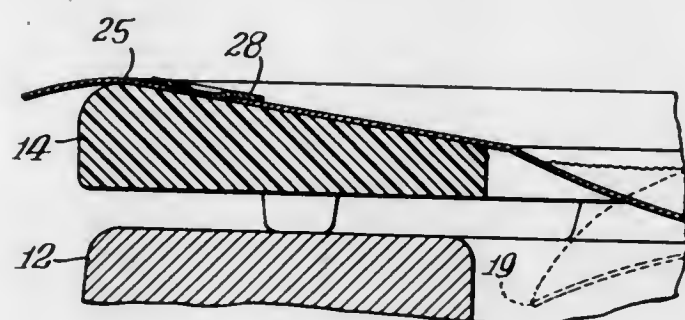
Haruko Aoyama, 539 Stratford Pl., Apt. 201, Chicago, Ill. 60657

Filed Nov. 19, 1973, Ser. No. 416,995

Int. Cl. A47k 13/14, 13/16

U.S. Cl. 4-243

2 Claims



1. A sanitary toilet seat cover comprising, a single sheet of paper or the like cut to form an outer annular portion of a size and shape to overlie a toilet seat, said sheet having an inner central portion detachably secured at one end to an inner edge of the annulus, said sheet being folded to provide at least a center fold extending from the front portion of the annulus to the rear portion thereof, an opening in said front portion or annulus bisected by said center fold, said opening having a diameter of from one-eighth to one-fourth inch, and an adhesive-bearing patch adhesively secured to the upper surface of said front portion and covering the opening whereby pressure on said patch will cause the adhesive exposed through said opening to adhere to the front portion of the toilet to secure the seat cover in place.

3,851,342

HYDRAULIC PULSE, SCALE-BLOCKED-PIPE CLEANER

Charles A. Moore, 112 W. 193rd St., Mokena, Ill. 60448

Filed May 18, 1973, Ser. No. 361,574

Int. Cl. E03d 11/00; B08b 9/02

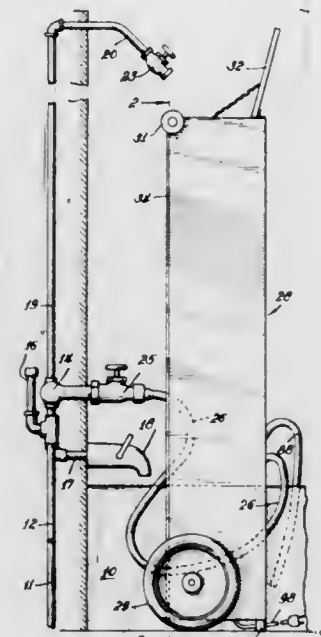
U.S. Cl. 4-256

19 Claims

1. In an apparatus for cleaning scale from the inside of a water pipe having water therein, said apparatus comprising an impulse generator for producing periodic positive and negative water pulses, means for connecting the impulse generator to the pipe for free communication between the impulse generator and the water in said pipe so that the water in the pipe is pulsed positively and negatively whereby the pipe is cleaned

by said pulses in conjunction with the abrasive action of the loosened scale in said pipe, the improvement wherein said generator comprises:

a closed vessel defining a chamber in communication with said pipe; expansile means within said chamber for changing the volume of water within the chamber as said means expands and contracts, said expansile means defining an enclosed



interior space having fluid therein, the exterior of the expansile means being in contact with the water in said chamber, means communicating with the interior space of the expansile means and the exterior of said chamber for permitting the fluid to flow in and out of said expansile means as the expansile means expands and contracts; and power means connected to said expansile means to periodically expand and contract said expansile means.

3,851,343

INFANT SEAT ROCKER

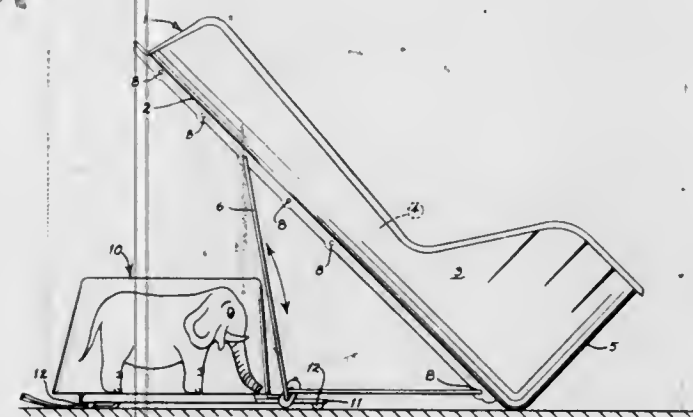
William G. Kinslow, Jr., 2 N.W. 69th, Kansas City, Mo. 64118

Filed Aug. 9, 1973, Ser. No. 387,080

Int. Cl. A47d 9/04

U.S. Cl. 5-109

2 Claims



1. A rocker for a separate conventional infant seat, said infant seat having an elongated floor with side walls and an end wall upstanding from the floor to support the infant and having a framework beneath the floor operable to support the infant seat with the seat floor inclined upwardly away from a horizontal plane;

said rocker comprising an elongated main platform; a motor mounted on the main platform having a shaft extending transversely of and above the platform; a hollow cover over the motor having a top wall, side walls and end walls forming together an enclosure over the platform and surrounding the motor;

pivot means within the enclosure adjacent to one end wall pivotally mounting the cover on the platform; lifting means beneath the cover operable to lift the cover up and down about said pivot means; and means operably connecting the lifting means to the motor shaft; and an infant seat supported on the end of the cover most remote from the pivot means operable to receive and support the framework to transmit the pivotal up and down movement of the cover to the infant seat to rock an infant residing in the infant seat, said infant seat support comprises an upwardly opening transverse hook for openly receiving and supporting the infant seat framework therein.

3,851,344

FOLDING BED ASSEMBLY

Erna Zeithammer, Neustiftgasse 106, Vienna, Austria

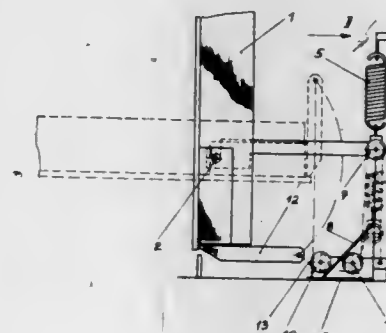
Filed Mar. 16, 1973, Ser. No. 342,057

Claims priority, application Austria, Mar. 24, 1972, 2549/72

Int. Cl. A47b 83/00

U.S. Cl. 5-164 D

3 Claims



1. A folding bed assembly, which comprises a boxlike covering which has a bottom and a vertical rear wall and is open in front opposite to said rear wall, a bed having two ends, means defining a horizontal pivot adjacent to one of said ends, said bed being movable about said pivot from a horizontal position to a position in said covering, and torque-balancing means arranged to facilitate the movement of said bed about said pivot and comprising a deflecting pulley disposed adjacent to said bottom and in front of said rear wall and spaced from the latter, a tension rope connected to said bed and trained around said pulley, and a spring loading said tension rope.

3,851,345

SAFETY SIDE MECHANISM

Roland A. Benoit, and Edmond P. Guillot, both of Danielson, Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,167

Int. Cl. A47c 21/00

U.S. Cl. 5-331

6 Claims



1. For hospital beds, a safety side mechanism comprising: a base member; at least one telescoping side rail member substantially parallel to said base member;

a pair of side members pivotally attached to said base and said rail member; said base, said side rail and said side members forming a trapezoid;
said side members being biased toward an extended position with respect to said base member;
a pair of push arm members connected between respective side members and said base member and biasing means connected between the lower ends of said push arm members for urging said trapezoid into said extended position; said base member including slots in which said lower ends of said push arm members reciprocally move as said safety side mechanism is moved from the extended to the collapsed positions;
said biasing means comprising a pair of parallel spaced apart overlapping push-pull bars, a connecting means connecting adjacent ends of said push-pull bars for permitting equal and opposite movement between said push-pull bars and a spring means connecting the intermediate portions of said push-pull bars for permitting equal and opposite movement between said push-pull bars and a spring means connecting the intermediate portions of said push-pull bars tending to urge said push-pull bars toward each other so that said safety side mechanism is urged toward the extended position; and
pivotal attachment means for pivotally attaching said mechanism to a frame member of said hospital bed adapted to be pivoted alongside said frame member when said trapezoid is in a collapsed position defined by said side, rail and base members being substantially parallel so that said mechanism in said collapsed position does not substantially extend beyond the normal width of said bed.

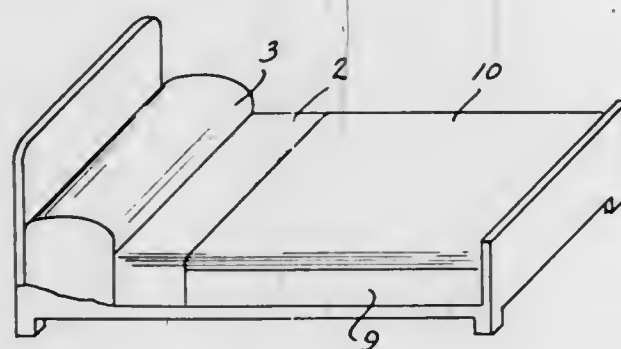
3,851,346

PROTECTIVE BED SHEET

A. Ray Fillmore, 64 Robie St., Truro, Nova Scotia, Canada
Filed Feb. 12, 1973, Ser. No. 331,351
Int. Cl. A47g 9/00

U.S. Cl. 5-334 R

4 Claims



1. A bed sheet comprising a main portion, and a first foldable flap and a second foldable flap at one edge of said main portion, said first and second flaps being coextensive with the dimension of the edge of said main portion, said first flap being capable of being folded back over and being fastened to said main portion to provide a pocket, said second flap being capable of forming an extension to said main portion of a length to form a cover for a pillow and also being capable of being folded back over said first flap, said first flap and said main portion being provided with means for removably fastening said first flap to said main portion at lateral edge portions of said first flap and said main portion.

3,851,347

HEART BEAT NOISE ELIMINATING PILLOW

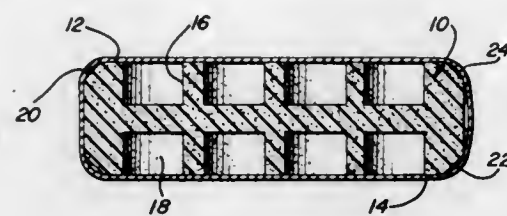
Burnis C. Ashley, P.O. Box 188, Eddy, Tex. 76524
Filed Nov. 12, 1973, Ser. No. 414,761
Int. Cl. A47g 9/00; A47c 27/00

U.S. Cl. 5-338

1 Claim

1. A noise absorbing pillow construction comprising a thick panel-like body having upper and lower surfaces, said body

being constructed of soft, shape-retentive and resilient cellular material, the upper and lower surfaces of said body including longitudinally and transversely spaced outwardly opening blind recesses formed therein of substantially the same width, said recesses each having a minimum width of more than one inch and a maximum width of less than three inches, said recesses being substantially two inches in width and disposed



on centers spaced apart both transversely and longitudinally of said body substantially three inches, said recesses extending approximately one third through the thickness of the body and the recesses opening outwardly of the upper surface of the body being vertically registered with the recesses opening outwardly of the lower surface of the body, and a cloth cover loosely enclosing said body.

3,851,348

ANGULAR RISE FLOTATION GEAR

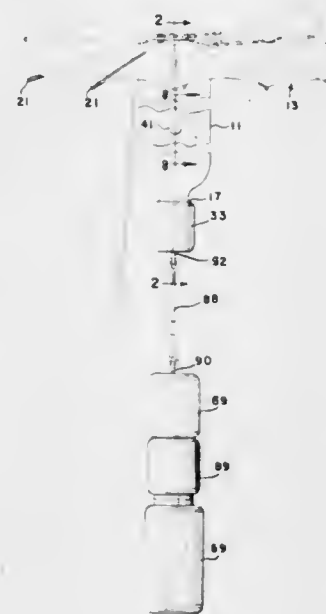
William A. Gilbert, 6511 Knollbrook Dr., Hyattsville, Md. 20783, and Leon E. Wedding, 4690 Leslie Ave., Washington, D.C.

Filed Jan. 12, 1953, Ser. No. 330,929

Int. Cl. B63b 21/52

U.S. Cl. 9-8 R

8 Claims



1. A parachute for use with a submerged buoyant system comprising a center plate adapted to be secured to the submerged buoyant system, a first and a second foldable semi-circular piece each having a plurality of radial rods pivotally connected to said center plate, lock means on said center plate engageable with the rods on said first piece to lock said first piece in a horizontal position after an initial increase in depth of the submerged buoyant system from a predetermined depth opens it, and said second piece having means enabling it to open to a horizontal folded position or to a downwardly folded position whenever the submerged buoyant system deviates from said predetermined depth.

3,851,349

FLOOR SCRUBBER FLOW DIVIDER

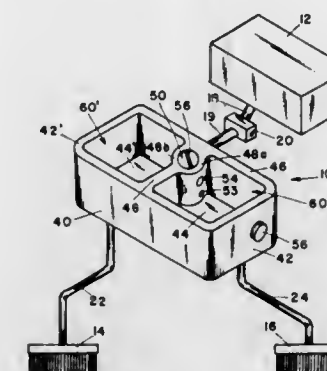
Dale E. Lowder, Muskegon, Mich., assignor to Clarke-Gravelly Corporation, Muskegon, Mich.

Filed Sept. 26, 1973, Ser. No. 400,955

Int. Cl. A47I 11/03

U.S. Cl. 15-50 R

10 Claims



1. In a surface treating device having at least a pair of surface treating elements, and a supply source of liquid for distribution to said surface treating elements, apparatus for distributing liquid from the supply source into at least said pair of associated surface treating elements, said distribution apparatus comprising:

- a housing having an inlet chamber adapted for connection to said source to receive fluid therefrom;
- a pair of fluid outlet chambers in said housing, each of said outlet chambers adapted to receive a portion of the liquid from said inlet chamber and direct the same to one of said surface treating elements; and
- flow control means between said inlet chamber and each of said outlet chambers, said flow control means including a set of a plurality of outlet passageways formed between said inlet chamber and each of said outlet chambers, said passageways being of graduated proportion to permit an increase of fluid flow from said inlet chamber to each of said outlet chambers as the fluid flow in said inlet chamber increases.

3,851,350

INTERLOCKING ROTARY BRUSH CONSTRUCTION

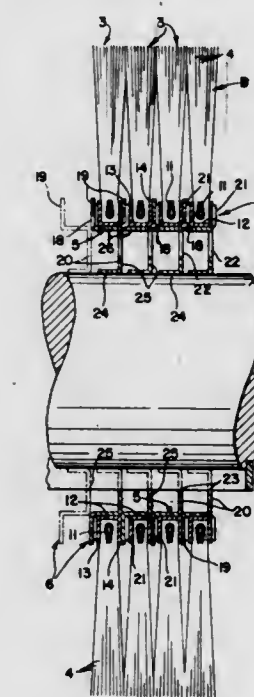
Arthur T. Schofield, Brecksville, Ohio, assignor to The Manufacturers Brush Company, Cleveland, Ohio

Filed Aug. 6, 1973, Ser. No. 385,985

Int. Cl. A46b 13/00

U.S. Cl. 15-181

16 Claims



1. In a rotary brush assembly, an annular sheet metal hub member (6) comprising an annular channel (20) and an inte-

gral radial flange (19) with a large number of circumferentially spaced tab-receiving slots (18) therein located adjacent the outer tubular portion (26) of said channel, said channel having an inner shaft-engaging sleeve portion (24) and a radial wall portion (25) cut to provide a large number of vertically elongated slots (22) and integral elongated tabs (21) bent outwardly from said slots at the outer edges of said slots, each tab (21) being generally in axial alignment with one of said tab-receiving slots (18) and having a width less than the length of that slot, whereby the tabs of said hub member (6) will fit the tab-receiving slots of an identical hub member to provide means for interlocking said members.

3,851,351

WINDSHIELD WIPER DRIVE

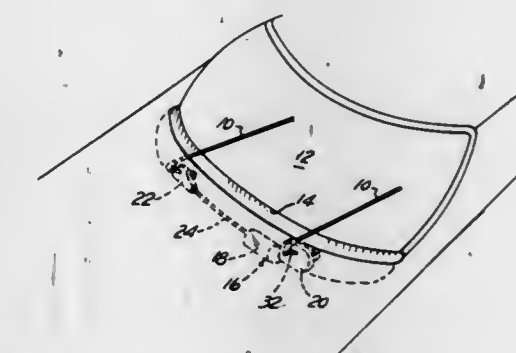
Joseph Pickles, Birmingham, and Albert Duckworth, Dearborn Heights, both of Mich., assignors to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Feb. 5, 1973, Ser. No. 329,678

Int. Cl. B60s 1/20

U.S. Cl. 15-250.25

5 Claims



1. A windshield wiper system for an automobile having a transversely curved windshield, comprising an elongated upwardly open well forward of the windshield and curved laterally in conformity with the transverse curvature of the windshield, a motor and master drive unit assembly mounted in said well toward one end from the center thereof and accessible for repair or removal through the open top of said well, the master drive unit of said assembly having a wiper arm drive shaft extending generally perpendicular to the portion of the curved windshield, thereabove, a slave drive unit mounted in said well toward the other end from the center thereof and accessible for repair or removal through the open top of said well, said slave drive unit having a wiper arm drive shaft extending generally perpendicular to the portion of said curved windshield thereabove and extending at an oblique angle to the drive shaft of said master drive unit, motion transmission means interconnecting said drive shafts, said motion transmission means comprising a push-pull flexible device curved longitudinally to conform to the lateral curvature of said well, and to accommodate the oblique angularity between said drive shafts.

3,851,352

CYLINDER CONTAINING MANUALLY OPERABLE PISTON FOR CLEANING SPRAY NOZZLE PASSAGES WITH AIR BLAST

Barry Reginald Hibberd, 8 Eden Chase, Common Rd., Langley Slough, and David Talbot Standing, 30 Carlton Rd., Walton-on-Thames both of England

Filed June 4, 1973, Ser. No. 366,355

Claims priority, application Great Britain, Feb. 8, 1973, 6233/73

Int. Cl. B08b 5/02, 9/00

U.S. Cl. 15-341

5 Claims

1. A device for clearance of a nozzle used for spraying and like purposes, comprising means forming a tubular passage

with manually operable piston means for forcing a blast of air therethrough, said passage having means at its air-outlet end to form a seating for freely and removably accommodating the



nozzle being cleared, and detachable retainer means for clamping the nozzle to the outlet end of the tubular passage while the air blast escaping from the passages passes through the nozzle to clear it.

3,851,353

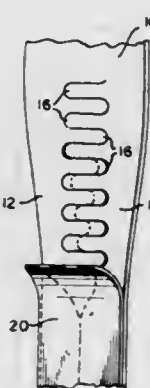
PLIABLE TAPE STRUCTURES

Alfred W. Wakeman, Madison Rd., Durham, Conn. 06422
Division of Ser. No. 159,796, July 6, 1971, Pat. No. 3,751,760,
which is a continuation-in-part of Ser. No. 859,619, Sept. 22,
1969, abandoned. This application July 16, 1973, Ser. No.
379,265

Int. Cl. E05d 7/00

U.S. Cl. 16-150

7 Claims



1. A flexible tape for joining mating edges of adjacent members, said tape having an X-like configuration in cross-section and providing a longitudinally continuous structure adapted to extend along and be secured to the edges of members to be joined so that the axis of said X-like configuration coincides generally with the juncture formed by the members to be joined, said tape comprising confronting strips of sheet material having longitudinally continuous, freely separable marginal portions, at least two of said marginal portions having integrally formed bridging tabs spaced longitudinally along and extending transversely of said marginal portions in opposing relation, the tabs of each of said portions being intermeshed and secured to an opposite strip in alternating relation along the longitudinal axis of the resulting structure.

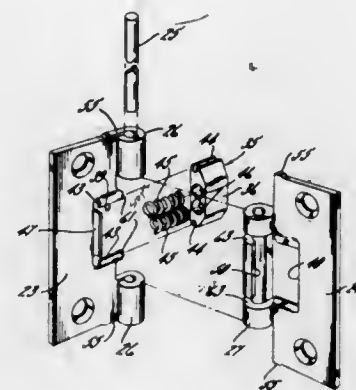
3,851,354
SELF-CLOSING BUTT HINGE
Lloyd L. Anderson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Oct. 11, 1972, Ser. No. 296,661

Int. Cl. E05d 11/10

U.S. Cl. 16-180

3 Claims



1. A butt hinge comprising a hinge pin, first and second substantially flat mounting wings each having an ear received on said pin, said first wing being swingable about the axis of said pin and relative to said second wing from a predetermined position in which said wings are disposed in face-to-face relationship to another position in which the wings are disposed out of face-to-face relationship, a pressure member mounted on one of said wings and located in the gap between the opposing faces of said wings when said first wing is in said predetermined position, a spring mounted on said one wing and urging said pressure member edgewise of said one wing and toward said pin to bias said first wing to said predetermined position, and an opening formed in the other one of said wings and located to receive at least part of said pressure member when said first wing is in said predetermined position whereby said wings are positioned closely together when disposed in face-to-face relationship.

3,851,355
CONTINUOUS MEAT FORMING APPARATUS
Alvin W. Hughes, Bensenville, Ill., assignor to A. W. Hughes Company, Inc., Addison, Ill.

Filed Feb. 28, 1973, Ser. No. 336,637

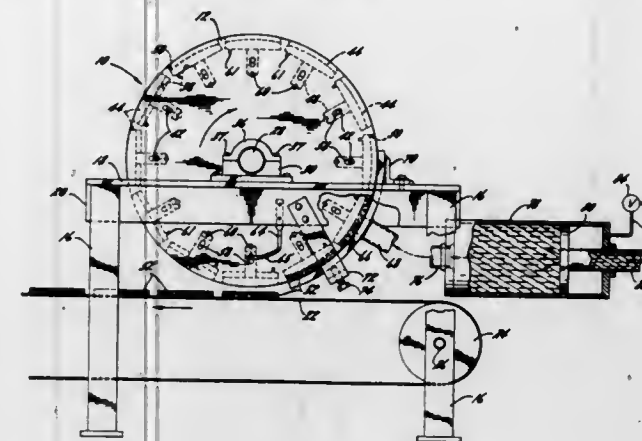
Int. Cl. A22c 7/00

U.S. Cl. 17-32

4 Claims

1. In a meat forming apparatus having a rotatable wheel carried by a central shaft and mounted on an upright framework, said wheel having a plurality of cavities disposed radially about its peripheral surface, piston means disposed in each of said cavities, an arcuate guide having an inlet conduit therein positioned adjacent the peripheral surface of said wheel, a continuous source of meat product connected to said guide inlet for supplying the meat product thereto and means for rotating the wheel, the improvement comprising, the wheel cavities each being generally T-shaped in cross section including an enlarged pocket portion adjacent the peripheral surface of the wheel and a radially extending bore, means defining at least one transverse elongated opening passing through the wheel and intercepting each said bore, said pistons each being correspondingly, generally T-shaped in cross section including an enlarged head and a tubular shank, said shank having a threaded opening therein positioned adjacent to said transverse elongated opening, an arm member having a threaded end disposed in said elongated opening and threadably attached to the piston shank, said arm projecting axially, outwardly from said wheel, means including a trip arm carried by the framework adjacent one side of the wheel and having a

cam surface thereon adapted to be engaged by said outwardly projecting arms when the wheel rotates thereby urging the



pistons connected to said arms radially outward to eject a molded meat product from said mold cavities.

3,851,356

METHOD OF FORMING FIBROUS PADS

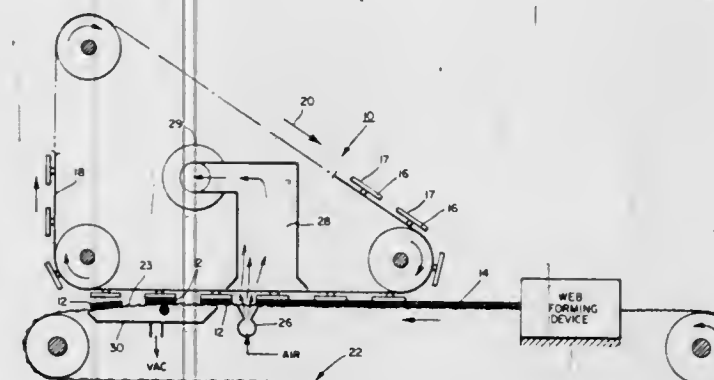
Peter P. Savich, Longmeadow, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Filed Mar. 5, 1973, Ser. No. 337,932

Int. Cl. A611 15/00

U.S. Cl. 19-144.5

4 Claims



1. A method for forming at least one discrete fibrous pad having a predetermined shape from an air-laid fibrous web, said method comprising the steps of:

- confining said fibrous web between a support member and at least one discrete surface to leave sections of said web unconfined, each discrete surface having a shape of a discrete fibrous pad to be formed; and
- subjecting the unconfined sections of said web to a stream of gas for removing said unconfined sections from said web to form discrete fibrous pads having substantially the same shape as each discrete surface.

3,851,357

FASTENER

William A. Ribich, Lexington, and David B. Russell, Ashland, both of Mass., assignors to American Velcro Inc., New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,353

Int. Cl. A44b 17/00

U.S. Cl. 24-73 P

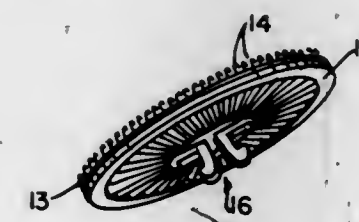
24 Claims

1. A fastening device adapted to be securely attached to a mounting plate, said fastening device comprising:
a. a fastening member including:
1. a flexible base element; and
2. a multiplicity of flexible resilient hooking elements projecting from one surface of the base element and adapted to be secured to a surface having complementary hooking elements by pressing opposed hooking

elements and complementary hooking elements together in face-to-face relation; and

b. at least one snap fastening member securely affixed to said fastening member and including:

- a flexible base member joined integrally to the other surface of said base element; and
- holding means including (i) at least two spaced retaining members; and (ii) support means for supporting said retaining members on said base member for resilient relative movement toward and away from each other upon flexing of at least a portion of said flexible base member out of its normal plane, said retaining members being adapted for snapping into locking en-



agement in an opening in the mounting plate to secure the snap fastener member in contiguous relation with the mounting plate, said holding means characterized by the property that applying peeling forces to separate the hooking elements from the complementary hooking elements will flex at least a portion of the base member and increase the separation between the retaining members to thereby increase the gripping action of the holding means in said opening and further resist separation of the fastening member from the mounting plate to retain said base member in contiguous relation with the mounting plate.

3,851,358

NON-MARRING HORIZONTAL CLAMP

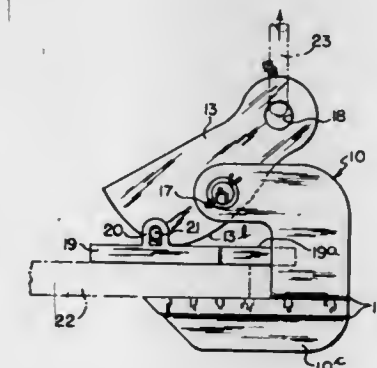
Michael J. Janosko, 2421 Bridge Ave., Cleveland, Ohio 44113

Filed Oct. 1, 1973, Ser. No. 402,406

Int. Cl. B66c 1/48; A44b 21/00

U.S. Cl. 24-248 C

12 Claims



1. A non-marring clamp for lifting flat workpieces such as steel plates in a horizontal position, comprising a base including an upwardly facing flat clamping surface, means fixed to one side of said surface and extending upwardly and there providing an inwardly extending projection over said surface for supporting an oscillatable clamping lever, a clamping lever having a pivot connection intermediate its ends to the forward end of said projection, said clamping lever having a clamping cam below the level of said pivot connection eccentric relative to said pivot connection and of which the eccentricity increases in a forward direction, a clamping plate having a pin and slot connection with the lower portion of said clamping lever near said eccentric clamping cam holding said clamping plate loosely and generally parallel to said flat clamping surface, said clamping plate and said clamping surface having smooth flat faces presented toward a workpiece to

be lifted, and means for attaching a lifting device to the upper portion of said clamping lever.

3,851,359

DISPOSABLE SAFETY PIN

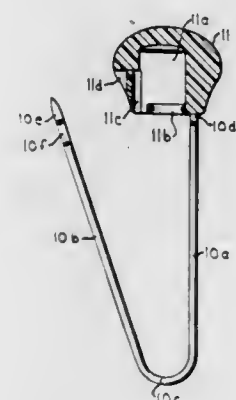
Leroy Wilson, P.O. Box 203, Manhattan, Kans. 66502

Filed May 2, 1973, Ser. No. 356,371

Int. Cl. A44b 9/18

U.S. Cl. 24-156 R

1 Claim



1. A disposable safety pin which, having once been fastened, cannot be reopened, said safety pin comprising: an arcuately bowed shank having first and second leg portions integrally connected at the lower ends thereof by a resiliently flexible portion; a first frangible portion integrally joined to the upper end of said first leg portion and having a larger dimension lying in the plane of said shank and having a reduced dimension substantially normal to the plane of said shank to provide a first weakened line of severance within the plane of said shank; a second frangible portion integrally joined to the upper end of said second leg portion and having a larger dimension lying in the plane of said shank and having a reduced dimension substantially normal to the plane of said shank to provide a second weakened line of severance within the plane of said shank; a fabric piercing point portion integrally joined to said second frangible portion and having a greater dimension from which said portion tapers to a sharp point; a safety pin head element integrally connected to said first frangible portion; and capture means associated with said head for permanently retaining the point of said shank when the safety pin has been fastened, said capture means including: an interior chamber within said head and of sufficient dimensions to receive said point portion; an elongate opening disposed in the bottom of said head and adjoining said interior chamber, said opening being slightly greater in width than said reduced dimension of said second frangible portion and being smaller in width than said greater dimension of said point portion and thereby adapted to receive said second frangible portion for reciprocal movement therein; and a resiliently flexible closure member associated with said head and communicating with said interior chamber to admit said point portion to said chamber and said second frangible portion to said opening, but to prevent removal of said point portion from said chamber; whereby, once the safety pin is fastened with the point portion captured within said interior chamber, removal of the safety pin may be accomplished by fracture of the first and second frangible portions in order to separate said head element from said shank.

3,851,360

BUCKLE FOR SAFETY BELTS

Horst Minolla, Heidestieg, Germany, assignor to Klippan GmbH, Kohfurth, Germany

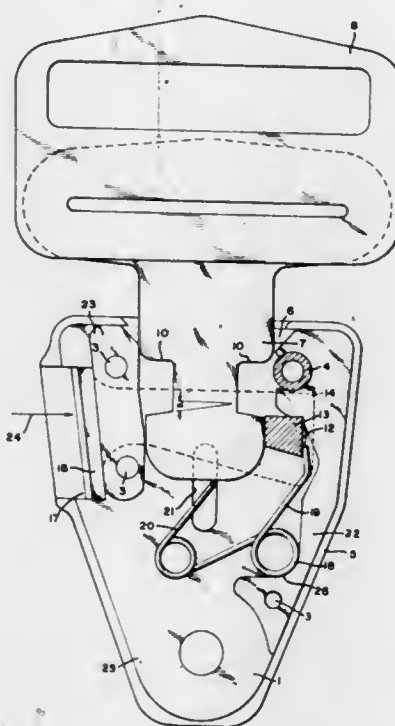
Filed Feb. 2, 1972, Ser. No. 222,858

Claims priority, application Germany, Feb. 27, 1971, 2109460

Int. Cl. A44b 11/26

U.S. Cl. 24-230 AL

2 Claims



1. A buckle for a safety belt, the buckle comprising a housing enclosing a locking mechanism, a push button mounted in said housing and disengaging said locking mechanism, said housing receiving a flat tongue engaged by said locking mechanism and connected to the safety belt when directed into the buckle, said tongue provided with at least one indentation therein, said locking mechanism comprising a pair of lock plates, each provided with a guide groove extending perpendicularly to the direction of entry of the tongue in the buckle, said tongue moving in said buckle between said lock plates, and further comprising a latch member for reception in said indentation for engaging said tongue in said buckle slidably received in said grooves, the latch member biased in the locking position by a spring mounted in the buckle and coupled directly to the push button for movement on depression of said button perpendicularly to the movement of said tongue in said buckle, said buckle further comprising a pair of webs rigidly connecting said latch member to said push button, each web of said pair of webs being arranged parallel to said lock plates and on the outside of one of said pair of lock plates.

3,851,361

METHOD OF FORMING SECTIONAL CRANKSHAFT

Willard L. Bowen, III, Village Ln., Harwinton, Conn. 06790

Continuation of Ser. No. 207,742, Dec. 14, 1971, abandoned.

This application July 13, 1973, Ser. No. 378,823

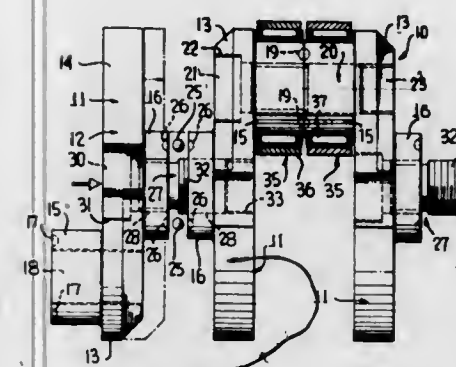
Int. Cl. B21k 1/08

U.S. Cl. 29-6

4 Claims

1. A method of forming a sectional crankshaft having rod and main journals connected together by counter-weights comprising the steps of forming elements of a conventional type crankshaft as individual components including counter-weight portions and journal portions having aligned axial bores, providing screw threaded fasteners of a size to fit said bores for passage through aligned bores of respective counter-weight and journal portions to clamp the same together, and forming torsion transmitting connections between clamped together counterweight and journal portions in circumferentially spaced relation; said method particularly including the steps of forming each of said torsion transmitting connections

which includes forming axially aligned recesses in opposing surfaces of the crankshaft portions to be joined, at least one of said axially aligned recesses being formed of a shape other than cylindrical or part hemispherical, positioning a hardened ball between the crankshaft portions being joined in between and partially disposed in said axially aligned recesses, and then



utilizing the associated screw threaded fastener to draw the respective crankshaft portions together and thereby forceably seating said ball in said axially aligned recesses with at least said one recess being distorted by the pressing of the ball thereinto to effect an automatic firm seating of the ball therein.

3,851,362

EXPANDED MESH

Harold Rex Jury, Norwood, and Ronald McKenzie Howells, Yennora, New South Wales, both of Australia, assignors to Comalco (J. & S.) Pty. Limited, New South Wales, Australia

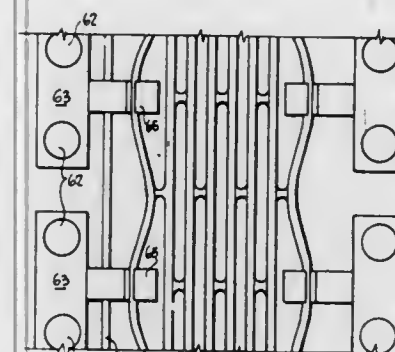
Filed Aug. 20, 1973, Ser. No. 389,954

Claims priority, application Australia, Aug. 23, 1972, 0185/72

Int. Cl. B21d 31/04

U.S. Cl. 29-6.1

6 Claims



1. A method of forming expanded mesh, comprising:
a. extruding extrusile material to form an extrusion having a constant cross-sectional shape which includes ribs separated by webs,
b. forming a row of slots in each web so that the slots of each row are staggered with respect to and overlap the slots of at least one adjacent row;
c. increasing the width of each slot in each of the two outermost rows of slots by bending at least one of the ribs flanking the respective slot,
d. engaging the hooks of two rows of hooks of an expanding machine in respective widened slots of respective said outermost rows of slots,
e. separating the rows of hooks from one another so as to bend the ribs and expand the slotted extrusion, and at the same time move the hooks in each row towards one another, and
f. removing the expanded mesh from the hooks.

3,851,363

METHOD OF MAKING A CAPACITOR UTILIZING

BONDED DISCRETE POLYMERIC FILM DIELECTRICS

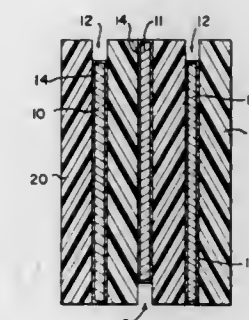
James M. Booe, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 212,806, Dec. 27, 1971, abandoned, which is a division of Ser. No. 54,187, July 13, 1970, Pat. No. 3,649,892. This application Sept. 14, 1973, Ser. No. 397,240

Int. Cl. H01g 13/00

U.S. Cl. 29-25.42

7 Claims



1. A method of making a capacitor including the steps of providing polymeric dielectric means having opposite sides, each of the opposite sides having a layer of adhesive binder thereon, contacting the adhesive binder layer on one side of the polymeric dielectric means with first electrode means and contacting the adhesive binder layer on another side of the polymeric dielectric means with second electrode means to offset edges of the first electrode means from adjacent edges of the second electrode means and to separate each of the electrode means in spaced relationship, moving the first and second electrode means and the polymeric dielectric means into intimate engagement to adhere each of the electrode means to the polymeric dielectric means and to move adhesive binder from between the polymeric dielectric means and the electrode means into the area of the adjacent offset edges to cover edges of the first and second electrode means, removing adhesive binder from the offset edges of the first electrode means to expose such edges and removing adhesive binder from the offset edges of the second electrode means to expose such edges at an end of the capacitor opposite the end with exposed edges of the first electrode means, the polymeric dielectric means and the adhesive binder cooperating to provide means separating the first and second electrode means capable of withstanding about 3,000 volts or more per mil between the first and second electrode means, and attaching terminal means to exposed edges of the first and second electrode means.

3,851,364

AUTOMATIC TOOL CHANGING ARRANGEMENT

Fritz Noa, Rheydt, and Manfred Mohren, Monchen-Gladbach, both of Germany, assignors to Schiess Aktiengesellschaft, Dusseldorf, Germany

Filed June 13, 1973, Ser. No. 369,752

Claims priority, application Germany, June 21, 1972, 2230143

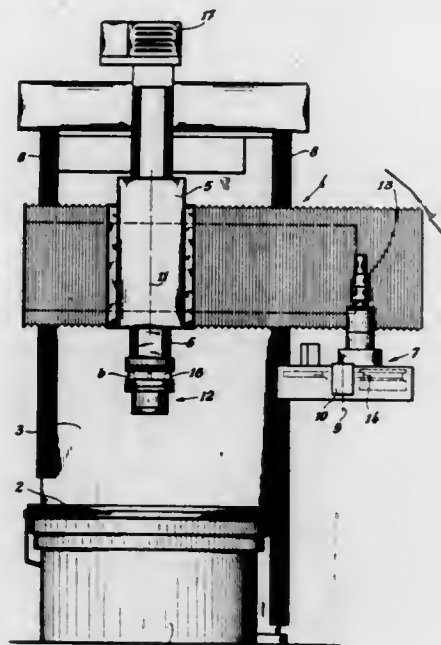
Int. Cl. B23q 3/157

U.S. Cl. 29-26 A

9 Claims

1. In an automatic tool changing arrangement for a machine tool having a frame with a tool support therein adapted to operatively support a tool head for performing machining operations and a tool storage magazine, said magazine having at least one tool head engaging means adapted nonrotatively to engage a tool head and to support the tool head in a predetermined position, said tool support being moveable in said frame into registration with said tool head engaging means to receive a tool head therefrom or to deliver a tool head thereto, said tool support having a nonrotatable housing, a sleeve coaxially disposed in the housing, a nut rotatable but nonaxially moveable on one end of the housing threadedly engaging said sleeve, a tool head at the other end of said housing, coop-

erating elements of a bayonet latch on the tool head and sleeve engageable and disengageable in response to relative rotary movement of said tool head and sleeve, cooperating elements of clutch means on said tool head and the other end of said housing engageable and disengageable in response to relative axial movement of said tool head and housing, first means for rotating said nut to move said sleeve axially in said



housing to engage or disengage said elements of clutch means associated with said nut, second means for rotating said sleeve in said housing while said tool head is nonrotatively engaged by said tool head engaging means on said magazine to engage or disengage said elements of a bayonet latch, and means operable while said elements of clutch means and bayonet latch are disengaged for moving said housing axially relative to said tool head engaging means.

3,851,365

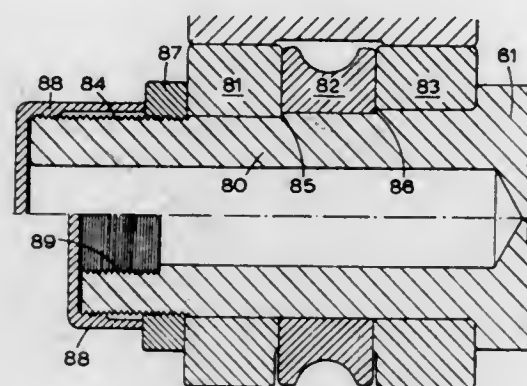
ROLLING MILL WORK ROLL ASSEMBLIES

Roy Ronald Oxlade, London, England, assignor to The British Iron & Steel Research Association, London, England
Continuation of Ser. No. 881,801, Dec. 3, 1969, Pat. No. 3,803,683. This application Jan. 22, 1974, Ser. No. 435,625
Claims priority, application Great Britain, Dec. 10, 1968, 58650/68 The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.

Int. Cl. B21b 31/08

U.S. Cl. 29-125

10 Claims



1. A rolling mill work roll assembly comprising a hollow shaft member which is co-axially secured to or formed integrally with a work roll drive shaft and which extends co-axially in a bore of a work roll, said work roll including an annular member formed to define a rolling groove or surface of the work roll, said shaft member having a first end face and an axial hollow in said shaft member open at one end onto said first end face and closed at the other end, said closed end of

said hollow presenting a first reaction surface, means integral with the shaft members adjacent said open end of said hollow to provide a second reaction surface facing in the opposite direction to said first reaction surface, whereby said hollow shaft member is adapted to be axially stretched by load-applying means acting on and between said first and second reaction surfaces to cause sufficient diametrical reduction of said hollow shaft member to permit insertion and removal thereof into and from its assembled position in said work roll bore, said shaft member when not so stretched having a diameter too large to permit such insertion and removal, said shaft member thereby exerting radial loading outwardly on said work roll when the stretching force is removed, thereby determining radial location of said work roll with respect to said hollow shaft member.

3,851,366

METHOD OF PULLEY MANUFACTURE

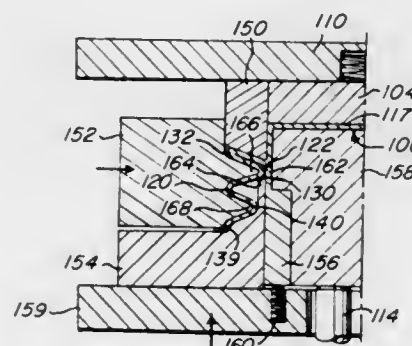
Orville W. Jacobs, Ludlow Falls, Ohio, assignor to The East Dayton Tool & Die Company, Dayton, Ohio

Filed Apr. 9, 1973, Ser. No. 348,953

Int. Cl. B21k 1/42

U.S. Cl. 29-159 R

14 Claims



1. The method of forming a V-belt pulley from a single sheet of metal, comprising:
drawing the sheet to form a cup-shape blank having a base and a peripheral portion at spaced-apart positions, with a wall extending between the base and the peripheral portion and with a plurality of well-defined break rings separating angular portions in the wall, there being a cylindrical part and a frusto-conical part in the wall, separated by a break ring; followed by collapsing and folding, one against the other, said frusto-conical part of the wall and a cylindrical part of the wall to form an entire one side of a groove; another portion of the sheet forming the other side of the groove.

3,851,367

MACHINE FOR INSTALLING PROBE ELEMENTS INTO LAMINATED FLOOR STRUCTURE

Walter L. Reid, Jr., Mattapoisett; C. Condit Peirce, Rochester, and Raymond G. Pelletier, New Bedford, all of Mass., assignors to Dole Electro-Systems, Incorporated, Palo Alto, Calif.
Filed June 15, 1973, Ser. No. 370,407

Int. Cl. H05k 13/04

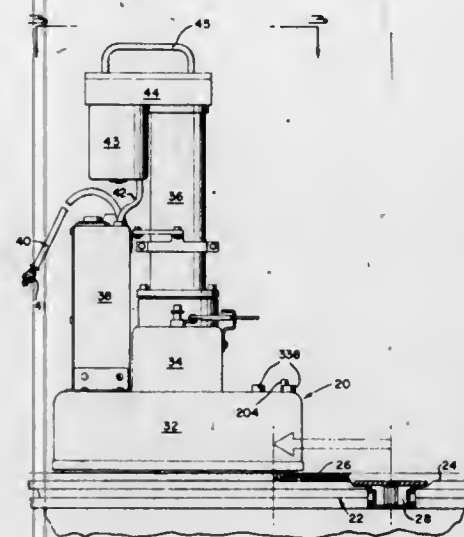
U.S. Cl. 29-203 R

28 Claims

1. A machine for installing a receptacle unit or a similar connecting device with probe elements into a laminated floor structure comprising:

means for holding said unit so that its probe elements are positioned for being driven into the floor structure;
drive means for applying a downward force to the probe

elements of the unit;
and control means for discontinuing said downward force



when the probe elements have penetrated into the laminated structure a predetermined depth.

3,851,368

ELECTRICAL CONNECTING TERMINAL

Siegfried Kuiff, Merkstein; Heinz Karla, Herzogenrath, and Gerd Frings, Merkstein, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

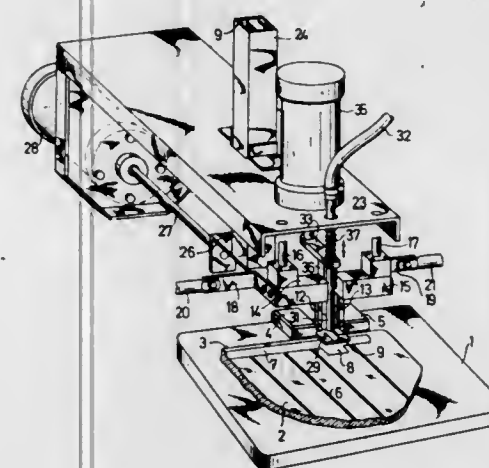
Filed Sept. 24, 1973, Ser. No. 400,062

Claims priority, application France, Oct. 9, 1972, 72.35648

Int. Cl. H01r 43/00; H05k 13/04

U.S. Cl. 29-203 R

23 Claims



1. A method for welding a metal connecting terminal to an electrical insulator including welding by induction and the Joule effect comprising:

- supporting said insulator in a predetermined plane;
- maintaining at least one terminal in a magazine;
- removing said terminal from said magazine;
- transferring said terminal from said magazine to a first position in a plane above said predetermined plane;
- moving said terminal to a second position onto said insulator; and
- welding said terminal onto said insulator at said second position.

3,851,369

APPARATUS FOR APPLICATION OF RESILIENT SEALS

Harald Eschholz, Islington, Ontario, Canada, assignor to Dick Gordon Rockwell, Ontario, Canada

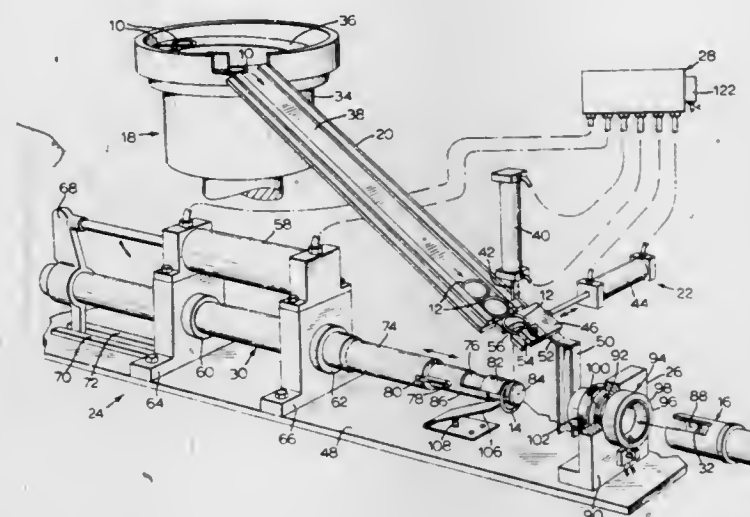
Filed May 18, 1973, Ser. No. 361,509

Claims priority, application Canada, Apr. 27, 1973, 170739

Int. Cl. B23q 7/10; B23p 19/02

U.S. Cl. 29-211 D

10 Claims



1. Apparatus for placing a distensible annular component in a seat formed in a workpiece, the apparatus comprising:
feed means adapted to align the component with other similar components;
an escapement positioned to receive the component from the feed means;
a transport mechanism including a plunger having an end portion below the escapement for receiving the component from the escapement with the plunger in a rest position, and an actuator coupled to the plunger to move the plunger axially to carry the component towards the seat in the workpiece, the plunger continuing to move until it reaches an extended position where the component is located adjacent the seat, whereupon further movement of the actuator causes the plunger to take up a strip position thereby causing the component to move into the seat;

the escapement comprising: a movable element adapted to receive the component off the feed means and to support the component above said plunger-end portion; a further actuator coupled to the movable element to move said element between a guide position in which the element supports the component and a withdrawn position which permits the component to fall; a rod arranged for movement between a withdrawn position in which a lower end of the rod is above the movable element, and an extended position in which the rod projects through the component as the component rests on the movable element and in which said end of the rod is immediately adjacent the plunger end portion with the plunger in the withdrawn position; another actuator coupled to the rod to move the rod between said withdrawn and extended positions; and a sequential control system coupled to the respective actuators to move the actuators sequentially, whereby with the plunger in the withdrawn position, the movable element in the guide position, and the rod in the extended position, the component may be moved onto the plunger end portion by causing said further actuator to move the movable element into the withdrawn position whereupon the component falls onto the plunger end portion guided by the rod.

3,851,370

LINEAR INSERTING APPARATUS FOR MASONRY BUILDING BLOCKS

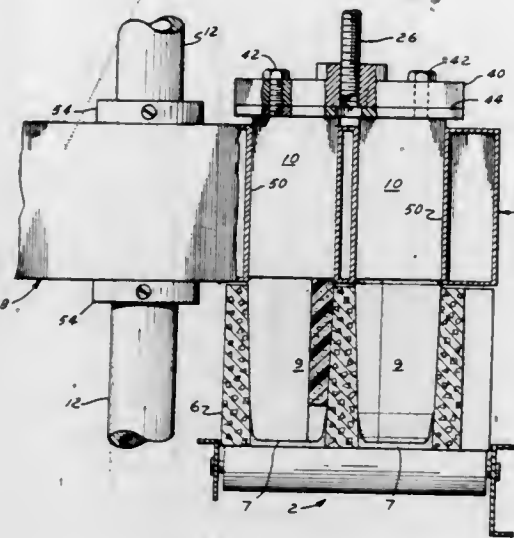
Eugene T. Laturneau, 5 Beekman Dr., Agawam, Mass. 01001

Filed Jan. 21, 1974, Ser. No. 434,795

Int. Cl. B23q 7/10; B23p 19/04

U.S. Cl. 29-211 R

5 Claims



1. Apparatus for press-fitting plastic insulating liner insert forms into the hollow cells of masonry building blocks and the like comprising,

a framework having a top central section with vertical support means at each end thereof for mounting said top section in vertically elevated section over a block loading station platform surface above which said top section may be positioned, the support at one end thereof including a vertical pivot post,

said pivot post and vertical support at the opposite end having adjustable means for limited tilting and elevational variation in the positioning of said top frame section, a motor operated power screw mechanism mounted on said horizontal top frame section having a pressure head below said section provided with a set of plunger members depending therefrom and vertically reciprocable below said frame section, and

a liner insert form carrier rotatably mounted on the pivot post and having, radially of said post in angularly spaced relation on the carrier, at least two sets of vertically disposed through passages to receive liner insert forms, said sets of passages being sequentially indexible into underlying vertical alignment with said plunger members above the cells of masonry blocks at a loading station, said through passages holding the insert forms aligned for guided movement during downward travel of the plunger members for the seating of said forms in the cells.

3,851,371

PNEUMATICALLY OPERATED TOOL

Larry D. Plunkett, Crystal Lake, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Dec. 27, 1972, Ser. No. 318,822

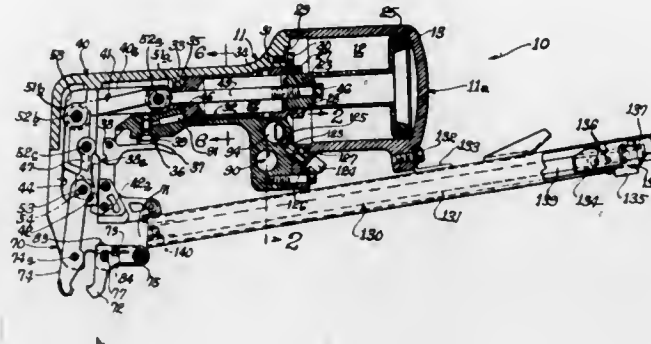
Int. Cl. B23p 11/00; B21f 15/06

U.S. Cl. 29-243.56

11 Claims

1. A pneumatically operated clip tool comprising: a casing defining a first driving cylinder and a second retracting cylinder; a driving piston reciprocally mounted in said driving cylinder; a retracting piston reciprocally mounted in said retracting cylinder; means for providing driving fluid to said driving cylinder above said driving piston and for normally providing retracting fluid to said retracting cylinder below said retracting piston; a clip driver means operatively connected to said driving piston for driving a clip, means operatively connecting said driving and retracting pistons for conjoint movement in a first driving direction and in a second retracting direction; a clinching anvil disposed beneath said driver

means, said clinching anvil comprising a fixedly positioned clinching jaw member mounted on said casing, and release means for readily releasing said clinching jaw member from its fixed position, thereby to provide free and full access from below said driver means; and manually operable valve means



mounted on said casing for selectively introducing retracting fluid to said driving cylinder below said driving piston to assist in retracting said driver means and said retracting piston when said retracting fluid, piston and cylinder are ineffective to retract said driver means.

3,851,372

METHOD FOR MAKING FRAMING CONSTRUCTION WITH PRE-MORTISED PLATES

Charles E. Wirth, 1366 E. Palm, Altadena, Calif. 91004

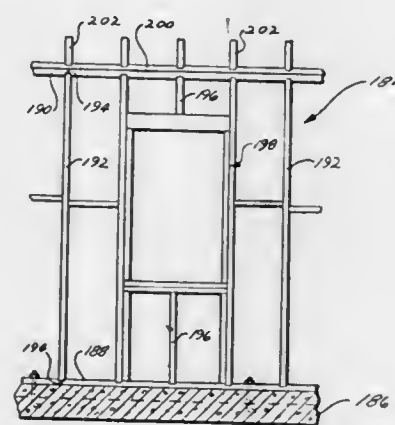
Division of Ser. No. 199,959, Nov. 18, 1971, Pat. No.

3,744,540. This application July 5, 1973, Ser. No. 376,819

Int. Cl. B23p 19/00

U.S. Cl. 29-428

12 Claims



1. A method of constructing the framing of a building comprising pre-mortising a group of elongated beams by forming notches across the width of each of the beams at longitudinally spaced apart locations along the length of each beam,

forming a framed wall panel by arranging the pre-mortised beams to provide a bottom plate of the wall panel and an upper plate of a panel spaced from and extending generally parallel to the bottom plate with the notches of the upper plate being aligned longitudinally with the notches of the bottom plate, and placing the ends of a series of spaced apart and parallel elongated studs in the aligned notches, and

fastening the ends of the studs to the notched portions of the plates to form a rigid framed wall panel in which the studs extend vertically between the bottom plate and upper plate when the wall panel is mounted in an upright position for providing the wall framing for the building.

3,851,373

METHOD AND APPARATUS FOR ATTACHMENT OF A NUT IN THE INSIDE WALL OF A PIPE

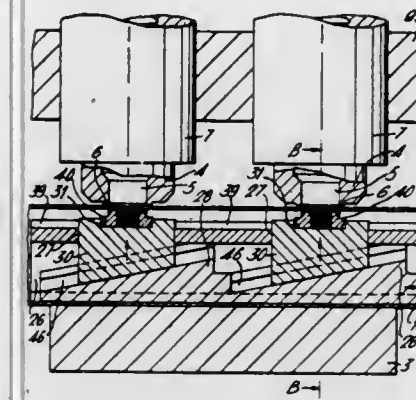
Katsumi Shinjo, 8-6-chome, Asahiminamidoori, Nishinari-ku, Osaka, Japan

Filed Sept. 6, 1973, Ser. No. 394,663

Int. Cl. B23p 19/00, 11/00

U.S. Cl. 29-432.2

31 Claims



1. Apparatus for attaching a nut to a wall of a pipe; said apparatus comprising:

a die having swaging blade means, die moving means for moving said die to and from a die operating position immediately adjacent and in facing relationship to an outside surface portion of a wall of a pipe,

nut holder means for holding a nut, nut holder moving means for moving said nut holder means to and from a nut holder operating position inside of said pipe in facing relationship to an inside surface portion of said wall of said pipe which is directly opposite said die operating position,

and pressing means for pressing said nut holder means in an outward direction transverse to the surface of said wall with sufficient pressure that a nut in said nut holder means punches its own installation aperture in the wall with said die providing a backing force for said nut and with said swaging blade means effecting a swaging of material of said wall around said aperture into grooves provided on said nut for anchoring said nut in said wall.

3,851,374

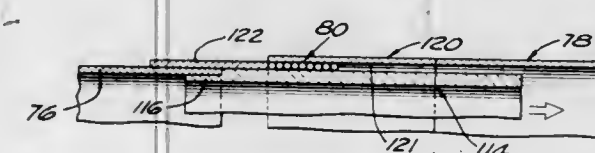
METHOD OF ASSEMBLING ENERGY ABSORBERS
Bernard Mazelsky, West Covina, Calif., assignor to ARA Products, Inc., West Covina, Calif.

Filed Dec. 1, 1972, Ser. No. 311,299

Int. Cl. B21d 39/00; B23p 19/04

U.S. Cl. 29-455

8 Claims



1. A method of assembling energy absorbers of the type comprising cylindrical telescoping members having circular energy absorbing means in the annular space between the members, comprising the steps of: positioning the circular elements adjacent to each other about an axis by winding a continuous element into convolutions about a cylindrical dummy member having an axis coinciding with said axis; aligning the inner and outer telescoping members with said axis; positioning said dummy member between said telescoping members; and moving the inner and outer telescoping members axially relatively to push the circular elements axially off said dummy member and onto said telescoping member in a position between said telescoping members thereby to

cause the circular elements to be positioned in the annular space between the telescoping members.

3,851,375

METHOD OF BONDING TOGETHER MOULDINGS OF SINTERED OXIDIC FERROMAGNETIC MATERIAL

Jacob Koorneef, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

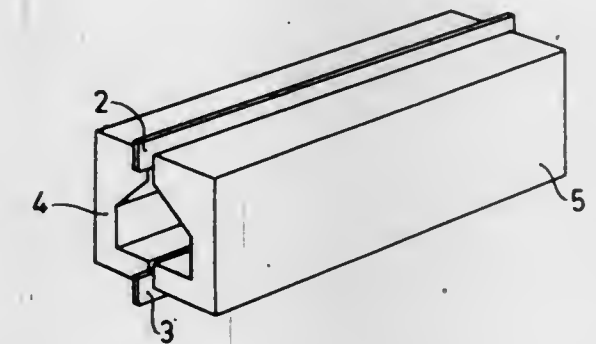
Continuation of Ser. No. 250,878, May 8, 1972, abandoned.

This application Feb. 11, 1974, Ser. No. 441,575

Int. Cl. B23k 31/02

U.S. Cl. 29-471.9

3 Claims



1. A method of bonding together a plurality of mouldings of a sintered oxidic ferromagnetic material comprising the steps of:

- placing a metallic spacing member composed of a lead-tin alloy between said mouldings;
- heating the resulting assembly of (A) to a temperature between approximately 145°C and 165°C for a period between approximately 1 and 10 minutes;
- subjecting said assembly to a mechanical pressure between approximately 50 and 150 kg/sq.cm., until said spacing member and said mouldings are bonded together; and
- cooling said assembly and removing said pressure.

3,851,376

METHOD FOR PRODUCING HELICAL SEAM WELDED STEEL PIPE

Heinz Gross, Reichsmarkstrasse 142, 4600 Dortmund-Syburg, Germany; Harry C. Wade, 1205 Fennel St. E. No. 104, Hamilton, Ontario, and John W. Witts, 20 Damode Dr., Fonthill, Ontario, both of Canada

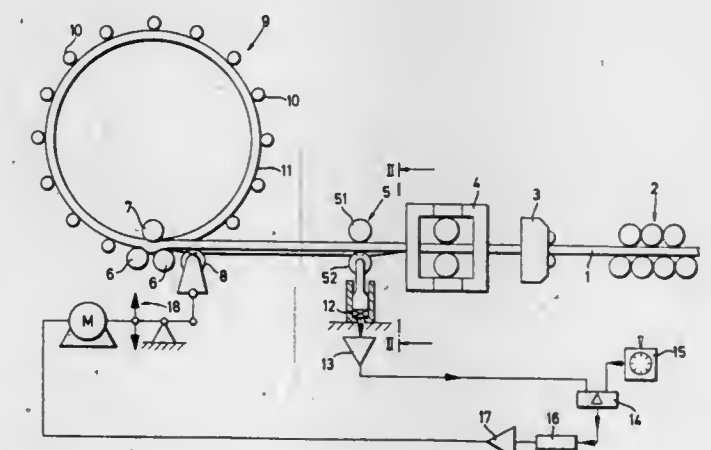
Filed Apr. 30, 1973, Ser. No. 355,663

Claims priority, application Germany, May 4, 1972, 2221776

Int. Cl. B23k 31/02

U.S. Cl. 29-477.3

2 Claims



1. Method of producing helical seam welded pipe from strip material comprising the steps of bending the strip material into a helical form by plastic deformation and welding the

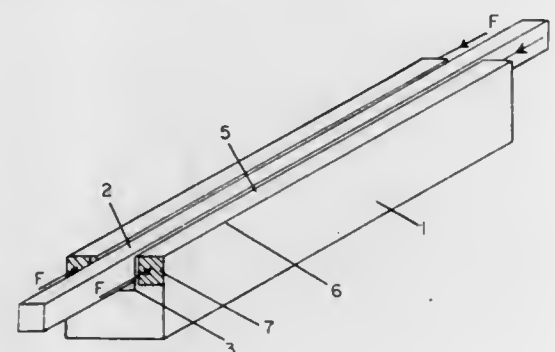
oppositely disposed juxtaposed edges of the strip material together, wherein the improvement comprises, prior to bending the strip into helical form, continuously measuring the deformation resistance of the strip, and adjusting the bending operation in accordance with the measured deformation resistance so that the spring back of the strip material remains within permissible limits regardless of the variations in the strip material properties along its length.

3,851,377

SEALING OF METAL BARS IN CARBONIZED BLOCKS
Daniel Dumas, 6 route d'Heyrieux, Saint Priest; Georges Hoyant, 145 Chemin de Choulans, and Jean Vallon, 33 rue Saint-Jean, both of Lyon, all of France
Filed Mar. 27, 1973, Ser. No. 345,311
Int. Cl. B23k 1/20

U.S. Cl. 29—493

8 Claims

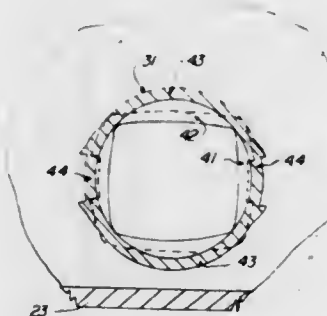


1. A method for producing a carbonized block having a metal bar sealed therein for establishing good electrical contact therebetween including the steps of providing the block with a longitudinal groove in one surface thereof, arranging the bar in said groove, preheating the block and bar to elevated temperature, and pouring liquid metal into the groove around the bar, applying a longitudinal compressive stress of an intensity at least equal to the resistance at break under traction of the block material to at least portions of the block adjacent the groove, said compressive stress being applied prior to metal pouring and maintained during at least an initial portion of the cooling time.

3,851,378

METHOD OF CONSTRUCTING CABLE TRAY
Jean Marcel Dessert, Calgary, Alberta, Canada, assignor to Renn-Cupit Industries Ltd., Alberta, Canada
Filed Nov. 2, 1972, Ser. No. 303,038
Claims priority, application Canada, Aug. 29, 1972, 150503
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—523

6 Claims



1. A method of making a cable tray by assembling a plurality of cross members, having non-circular cross-section and being of hollow construction at their end portions, transversely between spaced longitudinally extending side rails provided with a plurality of aligned longitudinally spaced openings, said method including passing said cross members through opposed aligned openings in said side rails, inserting

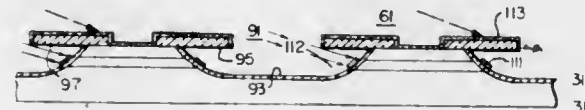
a cold forming tool into each of said hollow end portions of each of said cross members and rotating said tool whereby two spaced, peripheral flanges are simultaneously formed at each end portion in clamping arrangement with and on opposed faces of said side rails.

3,851,379

SOLID STATE COMPONENTS
Peter Gutknecht, Santa Ana, Calif.; Terrence M. S. Heng, and Harvey C. Nathanson, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 16, 1973, Ser. No. 360,996
Int. Cl. B01j 17/00

U.S. Cl. 29—571

9 Claims



1. The method of producing from a blank a field-effect transistor (FET), capable of operating at microwave frequencies and of handling substantial power at said frequencies, the said blank having a substrate doped with carriers of a first polarity and having a first layer thereon doped with carriers of opposite polarity, said first layer having a second layer thereon doped with carriers of said first polarity, the said method comprising preparing on said second layer a pair of spaced regions, at least one of said regions having a surface for deposit thereon of a drain electrode, forming a groove in said blank between said prepared regions, each of said regions overhanging said groove a predetermined distance, said groove penetrating to said substrate, depositing a coating of an electrically insulating material on the surface of said groove, depositing a gate electrode on said coating by projecting, on the part of said coating under said one region, a linear beam of a metal vapor at an angle to said surface from that direction of the region of the pair other than said one region and permitting said vapor to solidify, adjacent to and under the overhang of said one region, said beam being shadowed by said overhangs of said regions so that said gate electrode is deposited substantially only opposite the edge of said first layer extending along said groove; and depositing said drain electrode on said surface.

3,851,380

MACHINE TOOL WITH TOOL MODULE STORAGE AND CHANGING MEANS

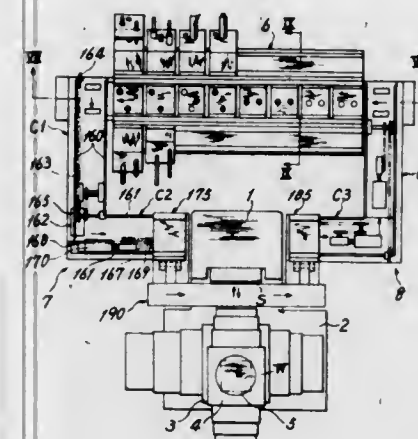
Mikishi Kurimoto, 114-10, Arimatsuura, Narumi-cho, Midori-ku, Nagoya-shi, Aichi-ken; Yoshiki Ochiai, 29, Kitatouraku, Fukuoka-cho, Okazaki; Kenji Nomura, 42-1, Kitashinden, Ogawa, Higashiura-cho, Aichi-ken, and Toshio Inagaki, 30, Yamanaka, Ogawa-cho, Anjo, all of Japan
Filed Apr. 13, 1973, Ser. No. 350,717
Claims priority, application Japan, Apr. 13, 1972, 47-37269
Int. Cl. B23q 3/157

U.S. Cl. 29—568

5 Claims

1. A machine tool, comprising:
a column;
a housing slidably mounted on said column, said housing having a rotatable spindle;
a frame providing a horizontal pivot;
a polygonal storage magazine mounted rotatably about said horizontal pivot and having a plurality of axial guide ways on the periphery thereof, each of said guide ways slidably carrying in a queue line a plurality of tool modules to perform a number of different machining operations on a workpiece;
a first transfer means located between one side of said polygonal storage magazine and said column for conveying a new tool module from said storage magazine for use

at said rotatable spindle;
a second transfer means located between another side of said storage magazine and said column for conveying a tool module which has just been used at said rotatable spindle back to said storage magazine;
an index means for rotatably indexing said polygonal storage magazine so as to connect a selected guide way to said first and said second transfer means at both ends thereof;



a feed means mounted on said frame for feeding said new tool module from the front of said queue line on said selected guide way to said first transfer means and immediately to feed said used tool module from said second transfer means to the end of said queue line; and
a changing means mounted on said column to remove said used tool module from said rotatable spindle and immediately to move said new tool module to said rotatable spindle.

3,851,381

METHOD FOR MANUFACTURING THERMOELECTRIC MODULES

Michel Alais, and Andre Stahl, both of Orsay, France, assignors to Compagnie Industrielle des Telecommunications CIT-ALCATEL, Paris, France

Filed Nov. 9, 1973, Ser. No. 414,304

Claims priority, application France, Nov. 9, 1972, 72.39753

Int. Cl. B01j 17/00

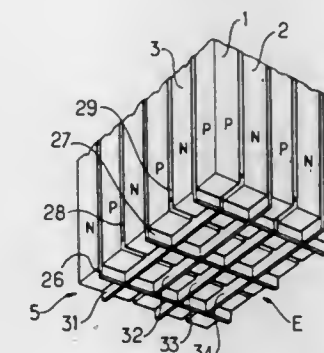
U.S. Cl. 29—573

6 Claims

1. Method for manufacturing thermoelectric modules by collective welding of the thermocouples from blocks of P type and N type material having a parallelepipedic shape and having the same dimensions and a predetermined granulometry comprising:

cutting respective masses of semiconductor material parallelepipedic blocks parallel to one of their faces in strips of P type material and strips of N type material;
assembling alternately the same number of strips of P type and of N type material;
inserting between the adjacent faces of said strips insulating sheets which are very thin and have the same width as said strips to form a parallelepipedical P and N stack;
cutting the P and N stack into thin slices in a direction perpendicular to the faces of the P and N strips to form a series of rods;
forming a parallelepipedic stack by assembling in parallel a certain number of these slices after having inserted between the adjacent faces, very thin insulating sheets so as to place successively a slice beginning with a P rod and a slice beginning by an N rod;
establishing conductive connections between the P and N rods;
characterized in that the insulating sheets inserted between the P strips and N strips during the first inserting step have a height slightly greater than that of the strips and are arranged alternately so as to be substantially flush with one face of the P stack and N stack and overlapping

slightly on the other face, and in that the insulating sheets inserted between each slice during the second inserting step overlap slightly on the two opposite faces of the stack and have, at their lower corner, a rectangular cutaway



part arranged alternately on the right hand and on the left of the stack, said step of establishing connections being effected by dipping of the said two opposite faces of the stack in brazing material.

3,851,382

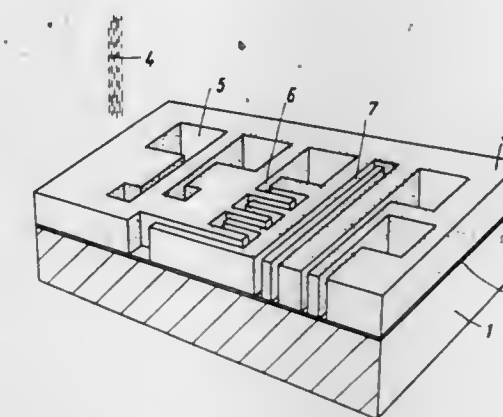
METHOD OF PRODUCING A SEMICONDUCTOR OR THICK FILM DEVICE

Fritz Stork, Grossgartach, Germany, assignor to Telefunken Patentverwertungsgesellschaft GmbH, Danube, Germany
Division of Ser. No. 881,150, Dec. 1, 1969, Pat. No. 3,705,060.
This application July 24, 1972, Ser. No. 274,241
Claims priority, application Germany, Dec. 2, 1968, 1812130

Int. Cl. B01j 17/00

U.S. Cl. 29—578

12 Claims



1. A method of producing a semiconductor or thick film device, comprising the steps of providing a thin metal layer on one surface of an at least partially insulating body, forming a layer of plastics material which is resistant to etching, temperature resistant, and insensitive to light on said thin metal layer, guiding an electron beam over said plastics layer, controlling said beam so as to remove predetermined areas of said plastics layer for forming apertures in said plastics layer, depositing further metal, either by electro-deposition or without current, on the areas of said thin metal layer thus exposed until said apertures have been at least partially filled with said further metal, removing said plastics layer with a solvent, and removing the areas of said thin metal layer which have not had said further metal deposited thereon in an etching solution.

3,851,383

METHOD OF CONTACTING A SEMICONDUCTOR BODY HAVING A PLURALITY OF ELECTRODES UTILIZING SHEET METAL ELECTRIC LEADS

Hanns-Heinz Peltz, Worthstr. 23, 8 Munich 80, Germany
Division of Ser. No. 164,999, July 22, 1971, Pat. No. 3,795,044. This application Dec. 10, 1973, Ser. No. 423,466
Int. Cl. B01j 17/00

U.S. Cl. 29—591



1. A method of contacting a semiconductor body which is provided with several electrodes, utilizing a system of electric leads made of a metal sheet, the leads extending tongue-like from a holder frame into the interior of the frame and having the tongue ends for conductive connection with individual electrodes, comprising the steps of applying a complete mask of photo-varnish to one side of a metal sheet to be converted to the system of leads which mask covers only the sheet portions which are subsequently to form the holder frame and all of the tongue-like leads; applying an incomplete photo-varnish mask to the other side of the sheet which mask covers only those portions of the sheet metal corresponding to the holder frame and the parts of the tongue-like leads adjacent the holder frame; etching depressions into the metal sheet using the photo-varnish masks as etching masks; supplementing the incomplete photo-varnish mask so that it also corresponds to the free ends of the tongue-like leads of the complete mask and so that the two masks coincide with each other; continuing the etching process with the assistance of the two then complete masks until the sheet portions corresponding to the tongue-like leads are clearly separated from each other along their entire lengths; placing the semiconductor body and its electrodes into contact with the ends of the tongue-like leads having dimensions corresponding to the corresponding dimensions of the electrodes; and permanently joining the ends of the tongue-like leads and the electrodes.

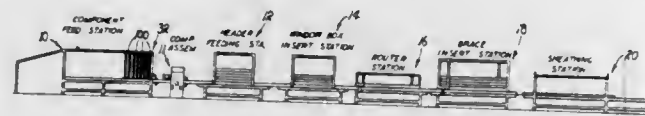
3,851,384

PROCESS FOR FABRICATING WALLS

Raymond M. Kellner, 4505 N. Brawley, Fresno, Calif. 93705, and Minor E. Gee, 1231 Hawley, Sanger, Calif. 93657
Division of Ser. No. 865,742, Oct. 13, 1969, Pat. No. 3,688,965. This application Mar. 1, 1972, Ser. No. 231,055
Int. Cl. E04b 2/70; B23p 21/00

U.S. Cl. 29—430

10 Claims



1. In a process for fabricating a wall of a type including a pair of wall plates arranged in substantial parallelism and a plurality of vertical support components extended between the plates, the steps comprising:

A. intermittently advancing a pair of wall plates along a pair of substantially parallel paths through an assembly station;

B. serially delivering a plurality of vertical support components along a common linear path into simultaneous engagement with said plates at said assembly station, said common linear path being extended from a source of vertical support components to said assembly station between said plates in substantial coplanar relation and in parallelism with said pair of parallel paths; and

C. affixing each of said components to each of said plates at said assembly station while said plates are at rest.

3,851,385

METHOD OF ADJUSTING THE FREQUENCY OF TRANSVERSE VIBRATORS HAVING A PLURALITY OF LEGS

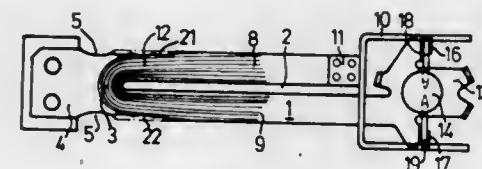
Alfred Meisner, Nurnberg, and Walter Spitzl, Heroldsberg, both of Germany, assignors to Diehl, Nurnberg, Germany
Filed Dec. 26, 1972, Ser. No. 318,570

Claims priority, application Germany, Dec. 24, 1971, 2164643

Int. Cl. H02k 15/00

U.S. Cl. 29—596

6 Claims



1. A method of adjusting and balancing the frequency and frequency symmetry, respectively, of a transverse flat fork vibrator which comprises a normally flat element in substantially one plane having a connecting flap at one end, a foot portion integral with said flap and a pair of legs extending from said foot portion and terminating in free ends and which vibrate perpendicularly to the plane of said vibrator, said legs being spaced by a slot extending from said foot portion to said free ends of said legs, said method comprising selectively removing material from the outer edges of said legs at their junction with said foot portion and opposite the end of said slot adjacent said foot portion, to reduce the frequency of vibration of said legs to a predetermined frequency and to equalize the vibration frequencies of the pair of legs.

3,851,386

METHOD OF TENSIONING BOLTS

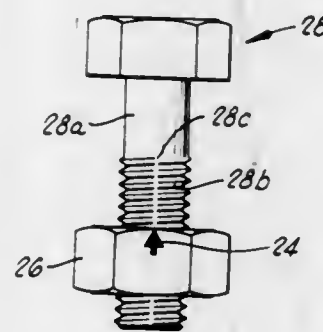
Lucian L. Ellzey, Jr., 6909 N. Grove, Oklahoma City, Okla. 73127

Filed Aug. 31, 1973, Ser. No. 393,412

Int. Cl. B23q 17/00

U.S. Cl. 29—407

8 Claims



1. The method of tensioning a nut-bolt combination comprising the steps of:

placing a first indexing mark in a visible location on a portion of the nut-bolt combination;

placing a second indexing mark at a predetermined location on a non-moving member which is juxtapositioned with respect to the portion of said nut-bolt combination carrying said first mark as the bolt of the combination is tensioned for joining two members together, said second indexing mark being positioned on said non-moving member at a location such that said first and second indexing marks are aligned when the bolt has been properly tensioned;

3,851,388

DETACHABLE BLADE ASSEMBLY FOR GRASS SHEAR

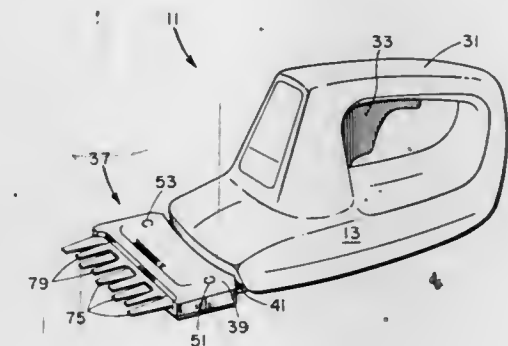
Edwin Joseph Weber, 2304 Ellen Ave., Baltimore, Md. 21234, and Ralph James Secoura, 5201 Disney Ave., Baltimore, Md. 21225

Filed June 19, 1973, Ser. No. 371,404

Int. Cl. B26b 19/06

U.S. Cl. 30—223

1 Claim



1. A cartridge blade assembly for a power operated, shear device, said blade assembly including a blade housing having a stationary blade secured thereto, said stationary blade having laterally spaced, shearing teeth extending forwardly of said housing, a movable blade slidably guided on said stationary blade, said movable blade having laterally spaced, shearing teeth substantially overlaying the shearing teeth on said stationary blade, said blades being relatively inflexible and inclined toward one another so that said shearing teeth intersect one another, means normally biasing said blades toward said inclined, shearing relation, said means including an elongated leaf-type spring carried by and extending transversely of said housing, a plurality of balls between said spring and said movable blade, said spring and said movable blade being provided with transverse recesses receiving and retaining each of said balls in lateral rolling relation, said spring acting through said balls to bias said movable blade toward said stationary blade, whereby to maintain said cutting teeth in shearing relation and minimize friction between the parts.

3,851,389

MULTIPLE ADJUSTMENT SHEAR

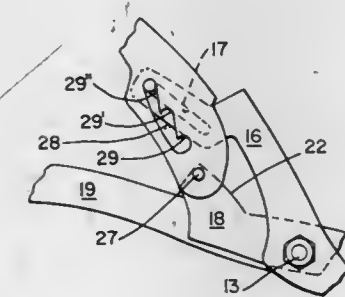
Leopold G. Swanson, 2125 James St., Martinez, Calif. 94553

Filed Aug. 29, 1973, Ser. No. 392,768

Int. Cl. B26b 13/26

U.S. Cl. 30—250

10 Claims



1. A hand operated shear including first and second opposed blades pivotally joined together at a first pivot, each of said blades having first and second blade stems, respectively, a moveable handle pivotally secured to said first stem at a second pivot, said moveable handle including a first slot having a plurality of detents therein, and said second blade stem including a second slot therein, and a pin releasably extending through both of said slots and retained in one of said detents.

3,851,387

SHIELDED CONDUIT CUTTING DEVICE

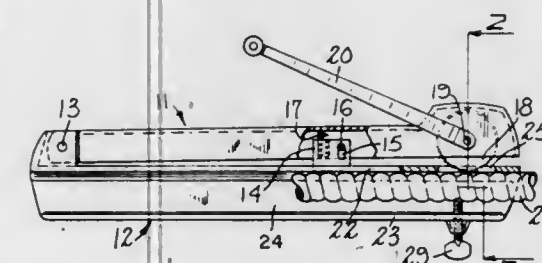
Lucien C. Ducret, 61 Marlin Dr., Norwalk, Conn. 06854

Continuation-in-part of Ser. No. 216,941, Jan. 11, 1972, abandoned. This application May 25, 1973, Ser. No. 364,113

Int. Cl. B21f 13/00

U.S. Cl. 30—90.3

3 Claims



1. A hand-held device for cutting the shielding of a shielded conduit, comprising:

a first elongated handle member;

a radial cutter head carried by said first member and arranged to cut parallel to the longitudinal axis of said member;

a second elongated handle member hingeably connected to said first member, whereby said members are positionable longitudinally adjacent one another, said second member having a shielded conduit-receiving cavity therein, the wall of said cavity adjacent said first member having a slit therethrough for passage of said cutter head into cutting contact with the shield of a shielded conduit in said cavity;

a stop member to limit the extent of passage of said cutter head through said slit;

means for rotating said cutter head; and

clamping means comprising a screw in said wall of said cavity, said screw being adapted for advancement on a line generally parallel to the cutting plane of said cutter head and for contact with said conduit at a point offset from both said cutting plane and the center of said conduit, said wall having a first wall portion and a second wall portion, said first wall portion sloping on a plane inwardly of said cavity to define an apex at the junction of said first and second wall portions, said apex being positioned in proximity to said cutting plane on the opposite side thereof from said point of contact of said conduit with said screw such that the center of any conduit wedged in said cavity is generally on a line bisecting said apex, whereby said conduit can be tightly wedged into said cavity in proximity to said cutting plane and said shielded conduit is maintained in cutting contact with said cutter head upon closing together of said handle members.

3,851,390

TRIMMING ATTACHMENT

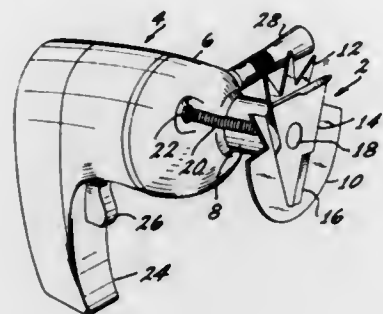
Albert D. Neal, 17272 Blue Fox Cir., Huntington Beach, Calif. 92647

Filed Jan. 21, 1974, Ser. No. 435,325

Int. Cl. B26b 25/00; A01d 55/18

U.S. Cl. 30—276

12 Claims



1. A trimming attachment for use with a power operated drill, said trimming attachment comprising:
 a restrained blade having a plurality of teeth;
 an outer support surface on said restrained blade;
 means for fixing the rotational position of said restrained blade with respect to a power operated drill;
 a rotatable blade having an inner surface which is complementary to the outer support surface of said restrained blade;
 said rotatable blade positioned with said inner surface in sliding engagement with said outer support surface;
 drive means which are connectable with the output shaft of a power operated drill, and
 said drive means connected to said rotatable blade through connecting means which transmit rotational movement from said drive means to said rotatable blade while holding the rotatable blade against the restrained blade and permitting rocking movement of the rotatable blade such that the inner surface of the rotatable blade is slidably engaged with said outer support surface and supported by said outer support surface,
 whereby material to be cut extends through the teeth on the restrained blade and is held by the teeth while being contacted and severed by coercion between the rotatable blade and the teeth on the restrained blade.

3,851,391

DEBINDING TOOL

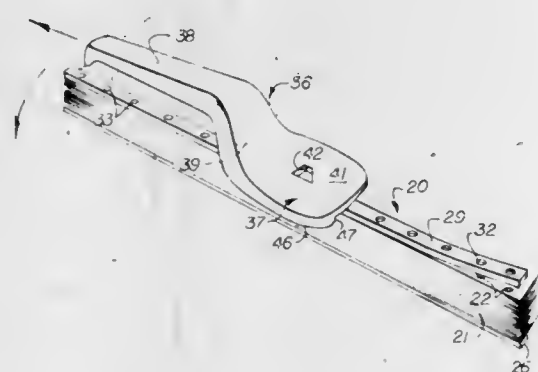
Theodore A. D'Addario, Pleasanton, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1973, Ser. No. 351,771

Int. Cl. B26b 3/00

U.S. Cl. 30—280

5 Claims



1. A tool for debinding a bound document of the type comprising a plurality of sheets formed with apertures spaced a short distance inward of one margin thereof, a first narrow strip overlying said apertures and having studs projecting through said apertures, a second narrow strip overlying said apertures on the side of said document opposite said first strip

and means securing said studs to said second strip, said tool comprising a distal portion and a handle, said distal portion having a bottom, a guide rib projecting substantially perpendicularly below said bottom shaped to fit alongside the edge of one of said strips, a blade having a cutting edge and blade attachment means securing each end of said blade to said distal portion vicinal said guide rib with said blade and said cutting edge disposed parallel to said bottom and extending obliquely to said guide rib, said blade spaced from said bottom a distance at least as great as the thickness of one of said strips.

3,851,392

SHAVING UNIT FOR SAFETY RAZOR

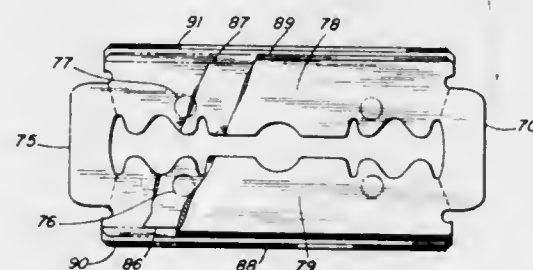
William M. Donovan, Orange, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 13, 1973, Ser. No. 424,511

Int. Cl. B26b 21/54, 21/22

U.S. Cl. 30—346.58

14 Claims



1. A shaving unit for a double edge safety razor, said shaving unit comprising:
 a. a first flexible member including a pair of transversely extending opposite sides, each one of the first member opposite sides having a cutting edge, and a pair of spaced end tabs, each one of said tabs extending outwardly from an opposite end of said first member;
 b. a second flexible member including a pair of transversely extending opposite sides, each one of the second member opposite sides having a cutting edge, and a pair of spaced end tabs, each one of said tabs extending outwardly from an opposite end of said second member, said second member being positioned above said first member with the cutting edges of said second member being positioned upwardly and outwardly of the cutting edges of said first member;
 c. a transversely elongated aperture between said tabs of said first member and said second member and vertically extending through said shaving unit for locating said shaving unit in said safety razor; and
 d. means solely between said aperture and the cutting edges to each side of said aperture for permanently connecting said first member and said second member together;
 e. whereby said first member and said second member are connected together at substantially flat surfaces, and said tabs are curved when said unit is seated in said safety razor.

2. The shaving unit of claim 1 further comprising means between said first member and said second member for vertically spacing said second member from said first member.

3,851,393

ORAL IMPLANT

Charles M. Weiss, and Isiah Lew, both of New York, N.Y., assignors to Oratraonics Incorporated, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,629

Int. Cl. A61c 13/00

U.S. Cl. 32—10 A

20 Claims

1. In an oral implant for permanently implanting an artificial tooth supporting structure in the frontal jawbone segment of a patient's mouth comprising

3,851,395

APPARATUS FOR MEASURING MOVEMENT OF A FERROMAGNETIC MEMBER

Maurice Noel Lapper, Carmarthen, Wales, assignor to British Steel Corporation, London, England

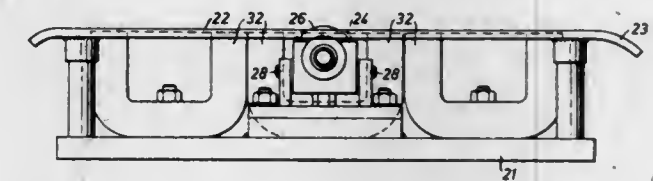
Filed Nov. 29, 1972, Ser. No. 310,443

Claims priority, application Great Britain, Dec. 3, 1971, 56286/71

Int. Cl. G01b 19/06

U.S. Cl. 33—141 B

6 Claims



1. Apparatus responsive to movement of a ferromagnetic member with which in operation it is in contact, comprising:
 a rotor; magnet means for magnetically attracting the ferromagnetic member into contact with the rotor; a surface over which in operation the ferromagnetic member passes, the surface having a gap through which part of the circumference of the rotor projects, the surface being of non-magnetic material, the magnet means being disposed beneath the surface both in front of and behind the rotor viewed in the direction of movement of the ferromagnetic member; and means for generating a pulse train in dependence upon rotation of the rotor in response to movement of the ferromagnetic member.

3,851,396

MEASURING GAGE FOR TURNING MACHINES AND THE LIKE

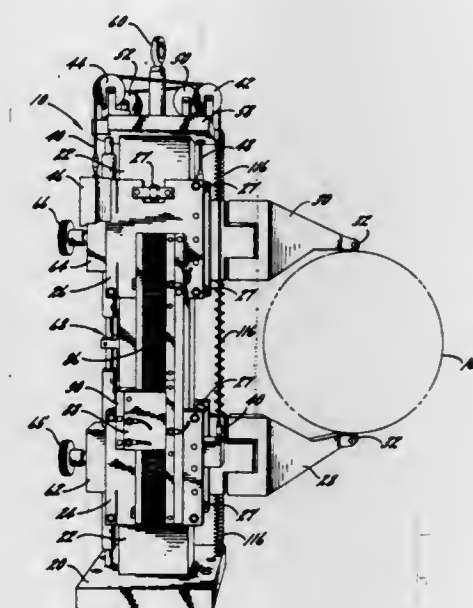
Steven Eldor Klabunde, Fond Du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed June 1, 1973, Ser. No. 365,961

Int. Cl. G01b 5/08, 5/10

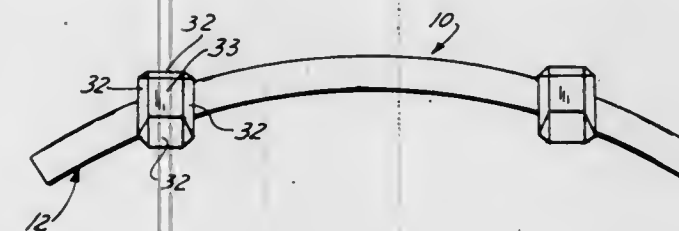
U.S. Cl. 33—143 L

6 Claims



1. An in-process measuring gage for use with a turning machine or the like, comprising in combination, a base, a column extending outwardly from said base, a pair of arms slidably carried by said column, said arms having ends projecting outwardly substantially perpendicular to the column, contact means at the outer ends of each of said arms for engaging a rotating workpiece between said arms, means for normally biasing said arm means toward one another for maintaining continuous engagement with a workpiece disposed between said arms by said contact means, signal generating means connected to said arms for producing an output indicative of the relative spaced apart position of said arms

A. a relatively thin blade portion having a relatively narrow edge adapted to be seated directly into the frontal jawbone segment to a suitable depth, and
 B. a comparatively massive support portion substantially wider than said blade portion operatively connected thereto and adapted to extend therefrom outwardly of the frontal jawbone segment for mounting an artificial tooth structure, the underside of said support portion nearest said blade portion having a shoulder surface adapted to seat on a corresponding surface of the frontal jawbone segment, whereby engagement of said shoulder surface



with the bone surface provides an automatic limitation on insertion depth and increased lateral stability;
 the improvement wherein said blade portion has a horizontal convex curvature equivalent to the average curvature of the frontal jawbone segment and a horizontal length equivalent to at least two adjacent dental roots in the frontal jawbone segment, and wherein the axes of said blade portion and said support portion form an included angle deviating from 180° to permit said support portion to be substantially vertical when said blade portion is driven into the frontal jawbone segment at an angle to the vertical.

3,851,394

PERSPECTIVE POLE

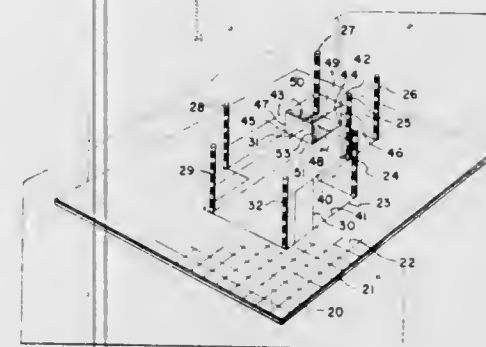
James E. Ihms, 1569 W. Hazelwood, Phoenix, Ariz. 85015

Filed Mar. 14, 1973, Ser. No. 340,960

Int. Cl. B43l 13/14

U.S. Cl. 33—1 K

2 Claims



1. A method for drafting perspective views of three dimensional objects depicted in drawings, said method comprising the steps of:

- laying the drawing upon a base plate;
- positioning a grid system adjacent said drawing;
- mounting a plurality of graduated poles at selected points on said grid;
- displaying an image of the structure produced in accordance with steps A-C, the angle and depth of said image corresponding to the perspective view to be drawn;
- tracing the X and Y axis dimensions of the object depicted by said drawing; and
- drawing a plurality of lines keyed to the vertical gradations of said poles, said plurality of lines determining the Z axis dimensions of the object depicted by said drawing; whereby, the combination of traced and drawn lines depict the object in perspective.

and any changes in relative spaced apart position of said arms, each of said arms including a clamp member and means fixed with respect to said column for engagement by said clamp members so that said arms may be set in predetermined positions spaced apart from one another, and said fixed means includes means for imparting a limited amount of float so that when said arms are clamped to said fixing means the arms are free to move by said limited amount of float.

3,851,397

MICROMETER WITH DIGITAL READING

Jean-Pierre Jeannet, Lausanne, and Jean-Pierre Leuba, Renens, both of Switzerland, assignors to Tesa S. A., Renens, Switzerland

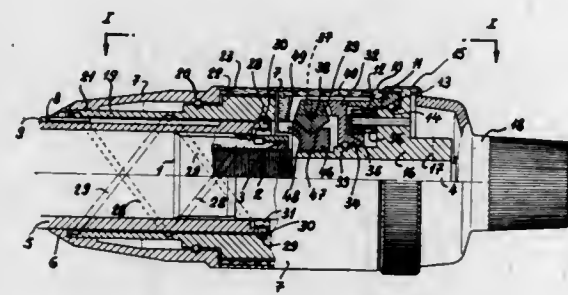
Filed Aug. 6, 1973, Ser. No. 386,177

Claims priority, application Switzerland, Sept. 24, 1972, 13916/72; June 25, 1973, 9234/73

Int. Cl. G01b 3/18

U.S. Cl. 33—166

9 Claims



1. A micrometer with digital reading comprising:
 - a. a movable micrometer screw threadedly engaged in a fixed support;
 - b. a sleeve movably disposed on said fixed support, said sleeve axially fixed to said micrometer screw and angularly coupled to said fixed support;
 - c. a tubular element rotatably positioned within said sleeve, said tubular element axially coupled to said sleeve for simultaneous longitudinal movement therewith, said tubular element also coupled to said fixed support by at least a helical groove and a stud slidably introduced in said helical groove whereby any axial displacement of the sleeve upon actuation of the micrometer screw causes the rotation of the tubular element in said sleeve;
 - d. at least a series of digits arranged on the periphery of said tubular element; and
 - e. a window disposed in said sleeve for viewing said digits.

3,851,398

GEAR TEST APPARATUS

Walter Hilburger, Nürtingen, Germany, assignor to Metabowerke KG Closs, Rauch & Schnitzler, Buringen/Württemberg, Germany

Filed Mar. 5, 1973, Ser. No. 338,015

Claims priority, application Germany, Mar. 7, 1972, 2210881

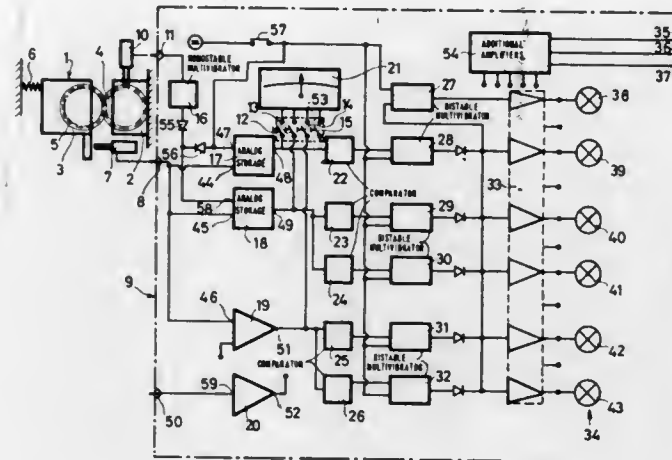
Int. Cl. G01b 5/20, 7/26

U.S. Cl. 33—179.5 B

13 Claims

1. In gear testing apparatus having a sliding carriage whose movement in a predetermined direction is a function of gear errors in the gear under test in combination, first sensing means for sensing said movement of said carriage and furnishing corresponding first signals; second sensing means for furnishing a second signal in response to passage of each gear tooth of said gear passed a predetermined location; first and second analog storage means each having an input connected to said first sensing means for storing said carriage movement signal, said first analog storage means further having a reset input connected to said second sensing means; first amplifier means connected to the output of said first sensing means; a plurality of comparator means for comparing the outputs of said first and second analog storage means and said first ampli-

fier means to corresponding limiting values and furnishing a comparator output signal when any of said outputs passes the corresponding limiting value; and a plurality of indicator



means each connected to a corresponding one of said comparator means for furnishing indications of said comparator output signals.

3,851,399

ALIGNING EQUIPMENT IN SHIPS AND OTHER STRUCTURES

Christopher S. Edwards, Hitchin, England, assignor to British Aircraft Corporation Limited, London, England

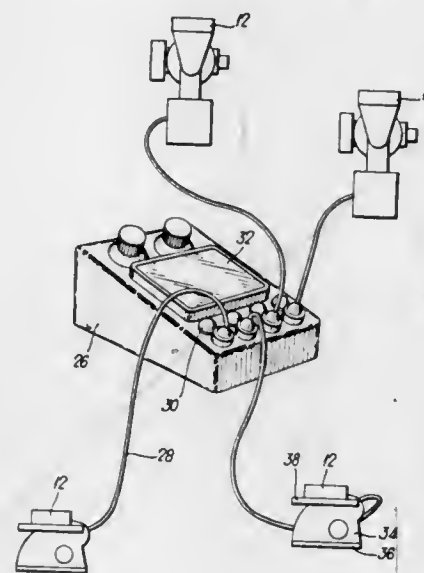
Division of Ser. No. 254,115, May 17, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,422

Claims priority, application Great Britain, May 18, 1971, 15591/71

Int. Cl. G01c 9/06, 9/26

U.S. Cl. 33—228

1 Claim



1. A method of obtaining information for use in establishing the alignment of equipment on a structure, using instruments each of which has a sensitive axis and gives an electrical signal which, for a range of attitudes, is a function of the magnitude of the angle between that axis and the direction of the earth's gravitational field at any moment, the method comprising:

- a. installing a first such instrument on the structure, either on a first mounting or on a piece of equipment, with provision for rotation of the instrument relatively to the structure about a rotation axis which is approximately vertical, the sensitive axis being perpendicular to this rotation axis;
- b. likewise installing a second such instrument on said structure on a second mounting or piece of equipment;
- c. bringing the two instruments to rotational positions about their rotation axes each with its sensitive axis approximately aligned with a common direction in the structure,

and taking the instantaneous difference of the signals of the two instruments,

thereby obtaining an output the magnitude and polarity of which varies in accordance with the magnitude and polarity of the angle between the rotation axes when projected onto the vertical plane containing the common direction,

d. thereafter rotating each instrument about its respective rotation axis in the same polarity through the same angle, and again taking the instantaneous difference of the signals of the two instruments,

e. adjusting at least one mounting or piece of equipment, having regard to the differences taken under steps (c) and (d), so as to bring the rotation axes into exact parallelism, f. tilting the structure about a horizontal axis into an inclined attitude such that the rotation axes are substantially out of the vertical,

g. taking the instantaneous difference of the signals of the two instruments while the structure is in this inclined attitude, and

h. rotating one of the instruments about its rotation axis until the difference is zero.

3,851,400

SIGHTING DEVICE FOR ARTILLERY GUNS

Wilhelm Michalak, Niederbiehl, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

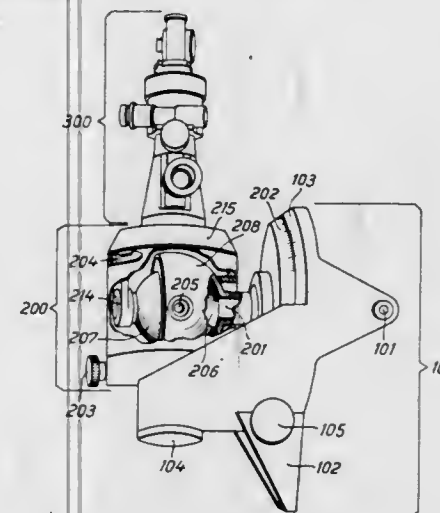
Filed Nov. 3, 1972, Ser. No. 303,514

Claims priority, application Germany, Nov. 25, 1971, 2158428

Int. Cl. F41g 1/44

U.S. Cl. 33—240

9 Claims



1. A sighting device for an artillery weapon which is adjustable about an elevation axis with respect to a support base, comprising:

- a. a support means attachable to said support base for rotatably mounting a shaft (201) in parallel alignment with said elevation axis and means rotatably coupling said shaft to said weapon in such a manner that said shaft rotates in concert with rotations of said weapon about said elevation axis;
- b. a universal joint having a first part (206) rigidly carried by the shaft;
- c. a housing (200) for receiving the universal joint, the housing comprising a body portion and a head which is rotatable relative to the body portion and which is connected to the universal joint, the housing being provided with leveling means to permit the housing so to be leveled with respect to said shaft such that the axis of said rotation extends in a vertical direction;
- d. a second part (207) of the universal joint being mounted on the first part to be rotatable relative thereto about a first joint axis perpendicular to the longitudinal axis of the shaft, said second part defining a second joint axis perpendicular to said first joint axis, and being mounted on a mounting portion (214) of said head to be rotatable about said second joint axis; and

e. an angle measuring device comprising a first element (217) carried by the second part to be situated within the universal joint and to extend transversely of said second joint axis of the second part, and a second element (218) which is rotatable relative to the first element and which is rigidly connected to the mounting portion (214), the first and second elements being provided with an arcuate indicating means having its center of curvature on the second joint axis of the second part, the two elements and said indicating means indicating the angle of elevation of means on the head for mounting a telescope, and a further angle indicating means to indicate the azimuth angle of the telescope.

3,851,401

FLANGED PIPE ALIGNING TOOL

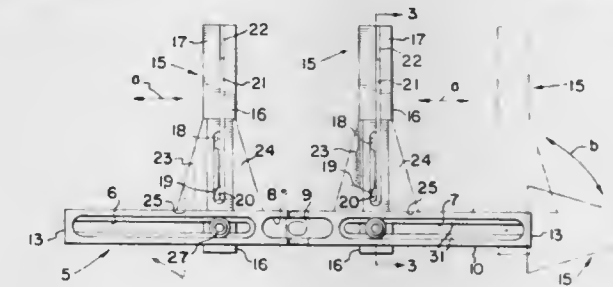
Timothy C. Dearman, 4191 E. Stanley Rd., Mt. Morris, Mich. 48458

Filed Aug. 25, 1971, Ser. No. 174,857

Int. Cl. G01c 9/24

U.S. Cl. 33—371

11 Claims



1. A tool for use in aligning a flanged pipe or the like having at least a pair of openings in its flange, said tool comprising an elongate body having opposite terminal ends; a pair of probes each of which terminates at one end in a finger of such size as to be accommodated in an opening of such flange; means mounting each of said probes on said body for rotary movements relative thereto and for sliding movements toward and away from a terminal end of said body; and guide means on each of said probes engaging said body except when said probes are at the terminal ends of said body for maintaining said probes selectively in a first position in which said probes extend substantially parallel to said body or in a second position in which said probes substantially parallel each other and extend substantially normal to said body, the engagement of said guide means with said body preventing rotary movement of said probes from either of said positions to the other except when said probes are at the terminal ends of said body.

3,851,402

VAPOR CHAMBER FOR DRYING

James O'Hara Turnbull; William Lipscomb Merritt, both of Cowansville, Quebec, and Ivan Patrick McLaughlin, Sutton, Quebec, all of Canada, assignors to J. J. Barker Company Limited, Quebec, Canada

Filed Oct. 15, 1973, Ser. No. 406,626

Claims priority, application Canada, Nov. 29, 1972, 157802

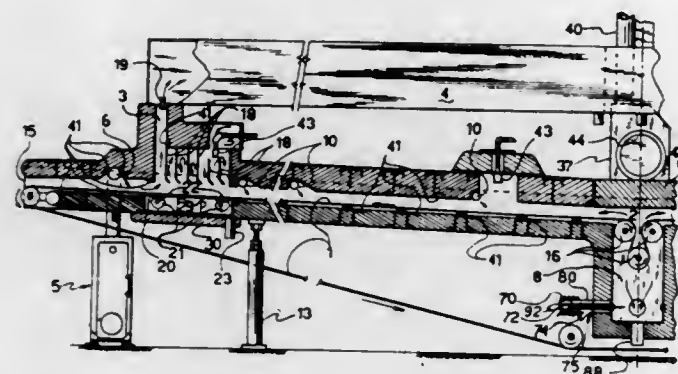
Int. Cl. F26b 19/00

U.S. Cl. 34—47

5 Claims

1. An apparatus for fast curing wet resin coated articles, comprising a mechanical conveyor for continuously conveying the wet coated articles through a curing chamber, means for producing and passing a vaporous accelerator through the curing chamber in contact with the wet coating of the article during the period of its passage through the curing chamber, means for avoiding the escape of the vaporous accelerator to the atmosphere, means for controlling the temperature and density of the vaporous accelerator within the curing chamber, said means for producing the vaporous catalyst comprising an automatic vapor generator connected to a source of inert carrier gas under low pressure and installed between a supply of liquid catalyst and a mixing chamber incorporated

with the curing chamber, the means for conveying or directing the vaporous catalyst-carrier mix to the curing chamber comprising fans located in supply chambers at each end of the mixing chamber, drawing from the mixing chamber and exhausting into supply chambers which are connected to manifolds located in the side walls of curing chamber which are connected to each end of transverse perforated diffuser tubes located above the conveyor which spray the catalyst carrier gas mix throughout the curing chamber and thus into contact with all exposed surfaces of the wet coated material, the means for providing and maintaining the required density of the vaporous catalyst carrier gas mix comprising a control for



the heat supply to the vapor generator heating liquid associated with the liquid catalyst feed or supply control, the means for producing and maintaining the required temperature of the catalyst vapor carrier mix in the curing chamber comprising thermostatically controlled heat tapes located in the roof, floor and walls of the curing chamber as well as in the entrance and exit to such chamber, the means for minimizing the loss of catalyst comprising air curtains located between the ends of the curing chamber and the entrance and exit portals for the carrier, and the means for avoiding atmospheric pollution comprising means to release a suitable neutralizing agent into the exhaust plenum.

3,851,403

APPARATUS FOR CONDITIONING SHEETS OF PHOTOSENSITIVE MATERIALS

Guenther Maurischat, and Juergen Mueller, both of Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

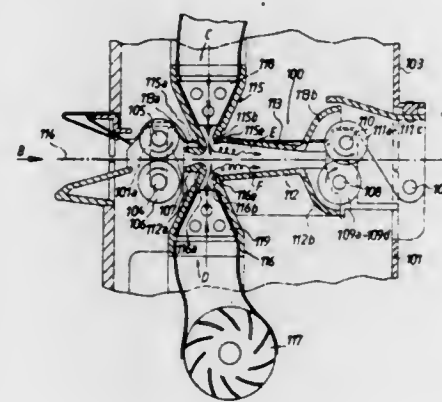
Filed Apr. 13, 1973, Ser. No. 350,829

Claims priority, application Germany, Apr. 19, 1972, 2219109

Int. Cl. F26b 13/02

U.S. Cl. 34-48

8 Claims



1. In an apparatus for conditioning sheet-like commodities, particularly for drying sheets or webs of photosensitive material, a combination comprising a conditioning chamber having an inlet end and a discharge end; conveyor means for transporting sheet-like commodities along an elongated path extending through said chamber so that successive commodities respectively enter and leave said chamber by way of said inlet

end and said discharge end; at least one source of conditioning fluid; at least one nozzle connected with said source and having an elongated orifice extending substantially transversely of said path and arranged to discharge conditioning fluid against one side of a commodity in said path, said nozzle having an elongated passage for the flow of fluid from said source toward said path, said passage having portions of different width and said orifice constituting the narrowest portion of said passage; and control means for regulating the temperature of conditioning fluid, comprising a temperature measuring device arranged to produce signals indicating the temperature of conditioning fluid in said orifice and including elongated temperature monitoring means installed in and extending lengthwise of said orifice, across the full width of a commodity in said path, and across the stream of conditioning fluid passing through said orifice so that said monitoring means is influenced by and indicates the average temperature of the entire stream of conditioning fluid, the transverse dimensions of said elongated monitoring means constituting a small fraction of the width of said orifice, adjustable heating means for conditioning the fluid, and means for adjusting said heating means in response to said signals so that the conditioning action of said heating means upon the fluid is a function of the average temperature of fluid in said orifice as detected by said monitoring means.

3,851,404

APPARATUS FOR DRYING PARTICULATE MATTER WITH GASEOUS MEDIA

Amber Fracke; Heinrich Klein; Rudolf Pieper, all of Erlangen; Eduard Weber, Nurnberg, and Hans Wachtler, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

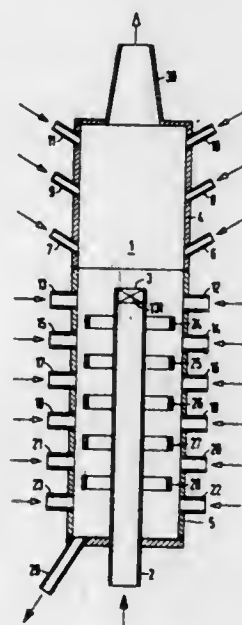
Continuation of Ser. No. 817,628, April 18, 1969, abandoned, which is a continuation of Ser. No. 621,333, March 7, 1967, abandoned. This application Mar. 22, 1971, Ser. No. 126,870

Claims priority, application Germany, Mar. 10, 1966, 102434; Mar. 12, 1966, 102490; Jan. 20, 1967, 107918

Int. Cl. F26b 13/20

U.S. Cl. 34-56

2 Claims



1. Apparatus for drying particulate matter with gaseous media, comprising a vessel having a rotationally symmetrical vortex chamber with a substantially vertical axis wherein a combined gas flow composed of a potential flow and a rotational flow is to be produced, said chamber including a central gas inlet duct protruding coaxially into said chamber and forming therewith a lower annular chamber portion and an upper chamber portion communicating with said lower chamber portion, said duct having an opening facing toward said upper chamber portion for introducing a particle laden gas stream into said upper chamber portion, said upper chamber

portion having a centrally located gas outlet, lateral gas injection inlets communicating with said upper chamber portion and axially spaced from the opening of said duct, said inlets having a direction tangential to said chamber and inclined toward said duct opening, and a plurality of further inlet means tangentially communicating with said annular interspace of said lower chamber portion, said plurality of further inlet means being peripherally distributed and arranged in pairs respectively in several spaced tiers axially spaced along said duct for supplying gaseous medium at the respective tiers to cause accumulation of said particle material in the form of freely floating rings coaxially around said duct and respectively between adjacent spaced tiers, said plurality of further inlet means respectively defining a flow path disposed in a plane extending at a right angle to the axis of said duct and vessel.

3,851,405
FLUIDIZING DEVICE

Kenji Furukawa, Tokyo; Hirofumi Uyama, Yokohama; Takashi Tsuchiya, Shin-Nanyo; Chikashi Kido, Iwakuni, and Keiichi Torii, Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

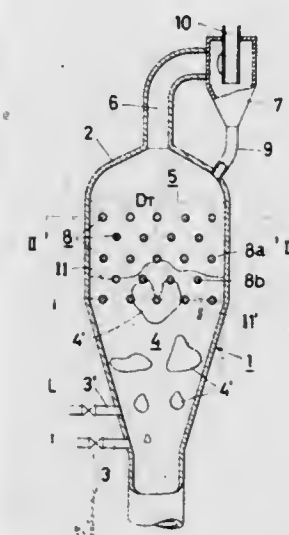
Filed Mar. 30, 1973, Ser. No. 346,323

Claims priority, application Japan, May 11, 1972, 47-45882

Int. Cl. F26b 17/10

U.S. Cl. 34-57 A

5 Claims



1. In a fluidizing device incorporating a free board section of a fluidized bed, an improvement which comprises in combination a plurality of internal members each having a horizontal width of between 0.1 and 0.01 times the height of the fluidized bed and disposed in the free board section formed above the fluidized bed so that the interval between each internal member and the nearest neighboring internal member falls in the range of 0.05 to 0.3 times the height of the said fluidized bed and the projected area ratio of all the internal members to the area of the cross section of the free board section is not smaller than 0.5.

3,851,406

FLUIDIZED-BED APPARATUS

Ion D. Dumitru; Victor A. Grigoras; Mircea Ioan T. Turtureanu; Doina Ecaterina G. Stanciu, and Vasile V. Anescu, all of Bucharest, Romania, assignors to Ipran-Institutul de Proiectari Pentru Industria Chimica Anorganica Si A In-grasamintelor, Bucharest, Romania

Filed Apr. 23, 1973, Ser. No. 353,772

Claims priority, application Romania, Apr. 24, 1972, 70664

Int. Cl. F26b 17/10

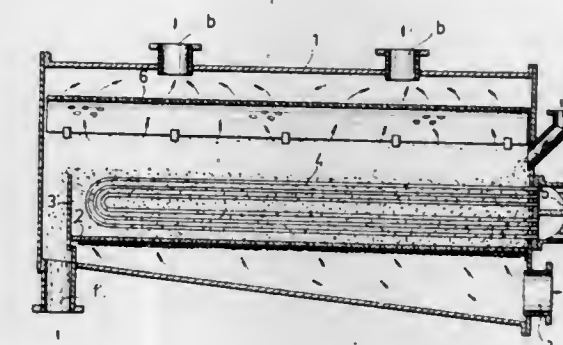
U.S. Cl. 34-57 B

3 Claims

1. An apparatus for the treatment of a powder comprising: housing means defining a fluidized bed chamber elongated horizontally and formed at one end with an inlet for the material to be processed and at the opposite end with an outlet for

powder whereby said material traverses said chamber generally horizontally;

means forming a fluidizing-gas space below said chamber; a perforated sheet communication in between said space and the bottom of said chamber for admitting fluidizing gas to said chamber to fluidize a bed of said material therein, said chamber having a free space above said bed; at least one filter sheet of fibrous material clinging to said perforated sheet and controlling the flow of fluidizing gas through said perforated sheet into said chamber, said chamber having a pair of lateral walls extending in the longitudinal direction.



a downwardly concave vaulted perforated plate in said open space above said bed, said perforated plate permitting the discharge of gas from said chamber and having longitudinal edges spaced from said lateral walls whereby particles deposited upon the upper surface of said perforated plate fall between said edges and said lateral walls into said fluidized bed;

a plurality of tubular heat-transfer elements having mutually parallel spaced apart stretches extending longitudinally into said chamber from at least one end thereof within said bed, said elements being spaced across the entire cross section of said bed in a plurality of horizontal rows offset from one row to another; and means for feeding a heat transfer fluid to and removing heat transfer fluid from said elements.

3,851,407

DRYING APPARATUS FOR A WRINKLED PAPER WEB

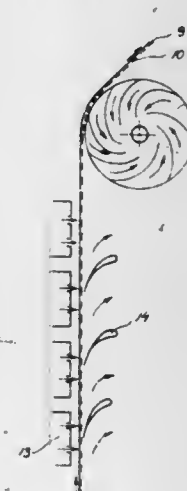
Pekka Paivio Rantala, Briarcliff Manor, N.Y., assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Oct. 20, 1970, Ser. No. 82,329

Int. Cl. F26b 13/00

U.S. Cl. 34-155

1 Claim



1. In a paper machine, a drying apparatus for a paper web which has been wrinkled in a damp condition, comprising: a base; a frame on the base; rollers rotatably mounted on the frame;

at least one moving endless wire guided by the rollers for supporting the wrinkled paper web; and means attached to the frame for blowing a hot gaseous medium on the wrinkled paper web on the wire in order to dry and press the web against the wire so that the wrinkles of the paper web are retained during the drying operation, at least one of the wire guiding rollers having perforations and an outlet connected to its inside to remove humid air from the inside of the wire loop.

3,851,408

DEVICE FOR THE CONTINUOUS DRYING AND FINISHING OF WEB MATERIALS, PARTICULARLY TEXTILES

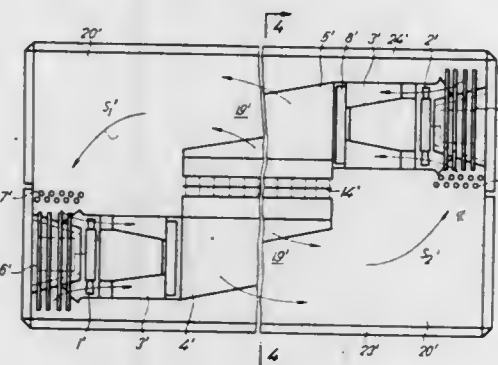
Rudolf Lojek, and Josef Ryska, both of Frydlant v. Cechach, Czechoslovakia, assignors to Zavody Elitex Textilniko Strojrenstvi generalni reditestvi, Liberec, Czechoslovakia

Filed Dec. 21, 1971, Ser. No. 210,320

Claims priority, application Czechoslovakia, Dec. 21, 1970, 8637-70

Int. Cl. F26b 13/06

U.S. Cl. 34-155



1. A device for drying webs of textile materials, comprising a housing forming a closed chamber, means in the chamber for supporting a web to be dried as the web travels horizontally within the chamber, nozzle cases inside the chamber mounted along its whole width both above and below the horizontal path of the web to be dried, said nozzle cases blowing a drying medium at the web, and axial flow fans with heaters, said fans being arranged with their axes horizontal, in pairs directed oppositely to each other, and on opposite sides and spaced from the vertical central plane of the horizontal web path, one of said two fans being mounted below the horizontal web path, the other said fans being mounted above said horizontal web path, the nozzle cases having delivery nozzles, the fans having feeding apertures, and the delivery nozzles of each of said nozzle cases being connected to the feeding aperture of the fan of the other nozzle case, each pair of fans and nozzle cases forming parts of a closed drying medium circuit in which the two fans are connected in series, whereby the drying medium flow consists entirely of recirculated drying medium.

3,851,409

MATHEMATICAL EDUCATIONAL DEVICE

Teresa C. Teahan, 304 N.W. 26th St., Gainesville, Fla. 32607

Substitute for Ser. No. 271,142, July 12, 1972, abandoned.

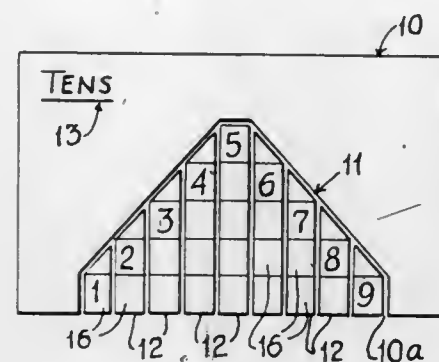
This application Mar. 20, 1974, Ser. No. 452,686

Int. Cl. G09b 19/02

U.S. Cl. 35-31 F

1. A mathematical educational device comprising at least two playing boards, each of said boards having an isosceles triangular cut-out therein with the apex of said triangular cut-out lying within the body of said board and the base thereof open and co-extensive with one edge of said board; nine removable pegs for each of said boards, the mid peg thereof being square edged at both ends and each of said remaining pegs being bias cut at one end and square edged at

the other end such that when said pegs are assembled in a side-by-side relationship, they collectively fit within and form the same shape as said triangular cut-outs, said pegs being successively numbered from 1 to 9, inclusive, with those pegs bearing numbers 1 to 4 being respectively mirror images of



5 Claims

those pegs bearing numbers 6 to 9, inclusive; and, means for assigning a numerical value to the pegs in each of said boards, said value being based on multiples of ten, including unity, and the value assigned to successive playing boards being no greater than one multiple of ten.

3,851,410

KICKING TOE

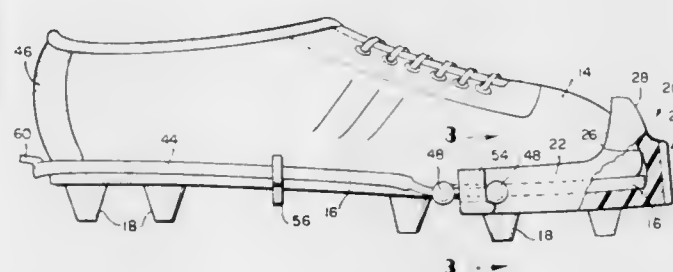
Garland D. Frazier, R. R. No. 2, Poland, Ind. 47868

Filed Mar. 21, 1974, Ser. No. 453,214

Int. Cl. A43b

U.S. Cl. 36-2.5 AG

8 Claims



1. A football kicking toe for mounting on and removal from a shoe, comprising a front portion having a ball-engaging face, a pair of arms extending rearwardly from said front portion along the shoe sides and having grooves for receiving the edge of the shoe-sole, said front portion and arms forming a flange underlying the shoe-sole for a substantial distance inwardly from the edge thereof, an elastic strap connected to said arms and extending along the shoe sides and behind the heel above the shoe-sole, and an elastic yoke slidably connected to said strap intermediate the shoe length to urge said strap inwardly against the shoe sides for substantially the entire shoe length.

3,851,411

FOOTWEAR EMBODYING FABRICLESS THERMOPLASTIC COUNTER

Richard B. Crosbie, Woodbury, and Thomas A. Byra, Waterbury, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,320

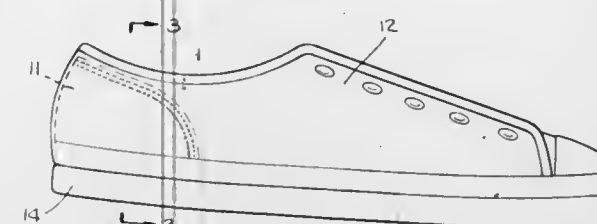
Int. Cl. A43b 13/42

U.S. Cl. 36-68

5 Claims

1. Footwear having a counter embodied in the heel portion of the upper, the said counter being a homogeneous thermoplastic fabricless counter made of a blend of (a) a monoolefin

copolymer rubber and (b) a polyolefin plastic, in weight ratio of from 10/90 to 90/10, said counter providing stiffness at the



heel and supplying frictional engagement with the heel of the wearer to help maintain the shoe in place on the foot.

3,851,412

HEEL PROTECTOR COVER

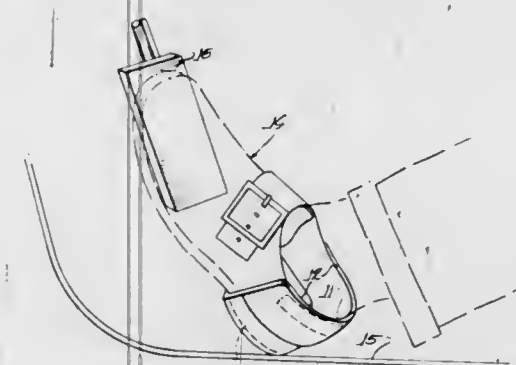
George A. Voegele, and Cecelia B. Voegele, both of Rt. 3, Box 305, Faribault, Minn. 55021

Filed Jan. 14, 1974, Ser. No. 432,821

Int. Cl. A43b 13/22

U.S. Cl. 36-72 B

4 Claims



1. A protector cover device adapted for use with an individual's shoe to protect the back and sides of the shoe heel portion thereof against marring and scuffing when the shoe must rest on such back portion when being used to operate an accelerator pedal of a vehicle, the protector comprising a flexible shell having a substantially U-shaped cross-section with vertical front edges and a curved back bight forward surface and which is shaped to conform to the shape of the heel and shoe back portion of an individual's shoe and adapted to pass around the back and side portions thereof to provide a protective cover thereover, a recess compartment defined in a bottom surface thereof having surrounding rigid vertical wall surfaces to receive the heel of the shoe completely therein so as to completely enclose the bottom and sides and back surface of the shoe heel, the bight portion of the protector adapted to engage the back portion of the shoe, the leg portions of the protector adapted to pass about the back side surfaces of the shoe, and a spring steel band of a generally U-shaped configuration affixed to the interior surface of said shell adjacent the top edge thereof and affixed to said bight and said leg portions thereof parallel to the shell bottom surface, said band resiliently urging the front edges of said side portions slightly inwardly toward each other whereby insertion of the back portion of an individual's shoe therebetween with the shoe heel inserted into the recess compartment will effect the spreading of said side portions to frictionally engage said side portions with said shoe and thus temporarily attach said protector to said shoe.

3,851,413

QUICK CHANGE CUTTING EDGE

Paul James Lukavich, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

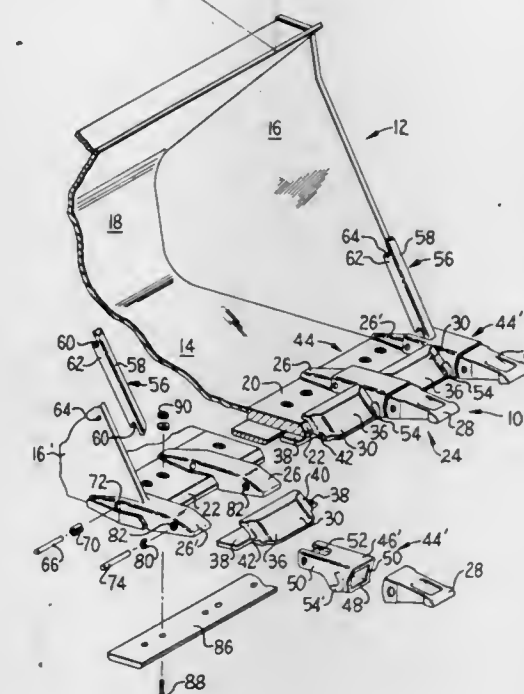
Continuation of Ser. No. 174,004, Aug. 23, 1971, abandoned.

This application Sept. 14, 1973, Ser. No. 397,102

Int. Cl. E02f 9/28

U.S. Cl. 37-141 T

17 Claims



1. In a material carrying receptacle of the kind which is driven into material to be loaded and which has a forward facing opening requiring a cutting edge, a replaceable cutting element construction comprising:

a cutting edge support integral with the material carrying receptacle,

a plurality of teeth secured to the cutting edge support in laterally spaced relationship,

a plurality of cutting edge sections mounted on said cutting edge support between the teeth,

wearable protector means having a lower surface positioned on said support behind said teeth removably secured on each of the teeth with the protector means engaging with and retaining the cutting edge section on said support, and

a lower wear surface comprising an extension of said cutting edge section and extending behind the lower surface of said protector means and forming a substantially planar wear surface with the lower surface of said protector means, the lower wear surface of said cutting edge sections extending substantially across said receptacle.

3,851,414

CONTINUOUS IRONING AND PRESSING MACHINE FOR FLAT MATERIALS

Zdenek Miculka, Otrokovice; Vladislav Janirek, Gottwaldov; Vladimir Rektarik, Otrokovice, and Josef Hanacek, Hylín, all of Czechoslovakia, assignors to Strojovnit, narodni podnik, Krnov, Czechoslovakia

Filed Nov. 2, 1973, Ser. No. 412,462

Claims priority, application Czechoslovakia, Nov. 3, 1972, 7410-72

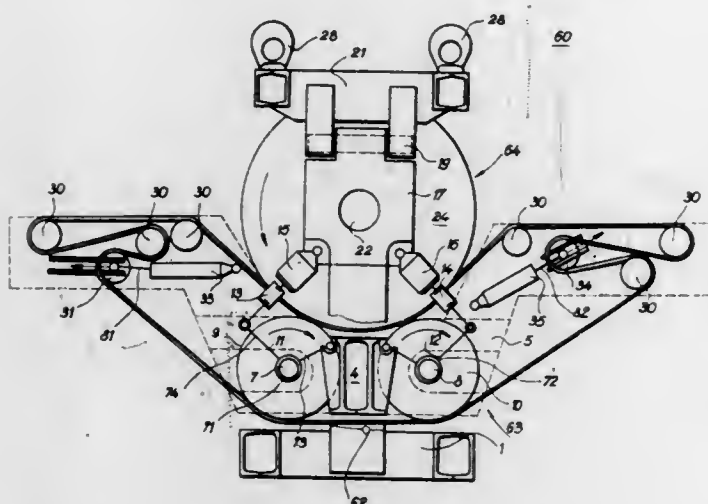
Int. Cl. D06f 61/08

U.S. Cl. 38-49

7 Claims

1. In a machine for the continuous ironing and pressing of flat material including an ironing cylinder cooperable with a pressing cylinder to apply pressure to an endless, material-conveying belt advanced between the ironing and pressing cylinders, an improved construction for the machine which comprises:

a top frame; a bottom frame including a pair of axially spaced blocks that define a channel therebetween for receiving the endless belt; first and second hangers removably suspended from axially spaced regions of the top frame for rotatably supporting opposite ends of the ironing cylinder; an elongated carrier member affixed to the bottom frame in engagement with the blocks, the carrier member and the bottom frame defining a bottom frame assembly; a bearing for rotatably receiving an end of the pressing cylinder;



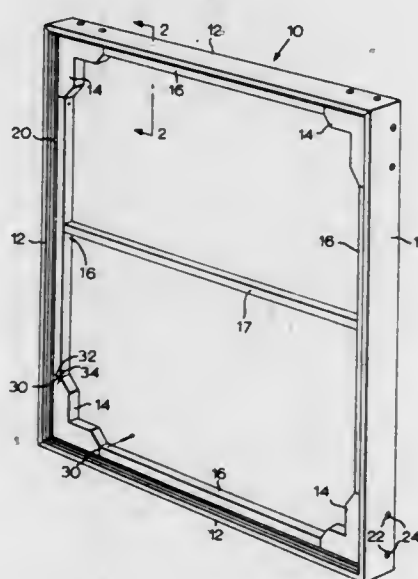
ing for rotatably receiving an end of the pressing cylinder; a two-armed lever connected to the bearing, one of the arms of the lever being movable; first means for coupling the movable arm of the lever to the first hanger; second means for coupling the other arm of the lever to the carrier member; and means for removably securing the first hanger to the bottom frame assembly.

3,851,415 PICTURE FRAME

Johannes Vihma, Toronto, Ontario, Canada, assignor to Artistic Woodwork Co. Ltd., Ontario, Canada
Filed Aug. 1, 1973, Ser. No. 384,457
Int. Cl. G09f 1/12

U.S. Cl. 40—152

10 Claims



1. A picture frame comprising,
 - a. a plurality of plastic frame molding members disposed in an end to end abutting relationship to define the sides of said frame, said plastic frame molding members having a thickness in the range of 0.125 inches to 0.50 inches,
 - b. lip means projecting inwardly from said inwardly directed surface of each molding member for supporting a picture thereon,

- c. corner blocking means at each corner of said frame spaced rearwardly from said lip means to secure a picture therebetween, said corner blocking means having a pair of outer support surfaces disposed at right angles to one another,
- d. locking pin means extending through said molding members and releasably engaging said corner block means to releasably secure said molding members with respect to said block means and with respect to one another with the ends of the molding members in said abutting relationship,
- e. said blocking means being rigid and preventing angular deflection of abutting plastic frame molding members.

3,851,416

DEVICE FOR CARTRIDGE CHAMBER IN CARTRIDGE TOOL

Per Ingemar Engstrom, Vastervis, and Erhard Rudolf Boye, Gunnebo Bruk, both of Sweden, assignors to Gunnebo Bruks Aktiebolag, Gunnebo Bruk, Sweden

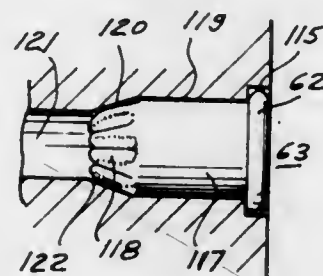
Filed Feb. 2, 1973, Ser. No. 328,922

Claims priority, application Sweden, Jan. 3, 1973, 515/73

Int. Cl. F41c 3/00; B25c 1/14

U.S. Cl. 42—1 R

2 Claims



1. In a cartridge tool including a barrel having a bore and a cartridge chamber for receiving crimped cartridges and communicating with the bore which axially guides a striker piston, the improvement comprising the cartridge chamber having three sections, a first cylindrical section for accommodating a cartridge, a second cylindrical section communicating with the bore, said second cylindrical section having a smaller diameter than said first cylindrical section and being displaced therefrom, and a third section connecting said first and second sections, said third section having a diameter which gradually decreases and having a length which is shorter than the length of the crimped portion of the crimped cartridge so that such crimped portion extends into said second section when the crimped cartridge is completely inserted in the chamber and the border of said second and third sections providing a breaking edge when the cartridge is fired whereby the part of the crimped portion forward of the breaking edge presses against said second cylindrical section and the remainder pivots away from the wall of said third section.

3,851,417

COCKROACH TRAP

Anton E. Wunsche, 656 W. 162nd St., New York, N.Y. 10032
Continuation-in-part of Ser. No. 330,671, Feb. 8, 1973, and a continuation-in-part of Ser. No. 153,709, June 16, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 422,105

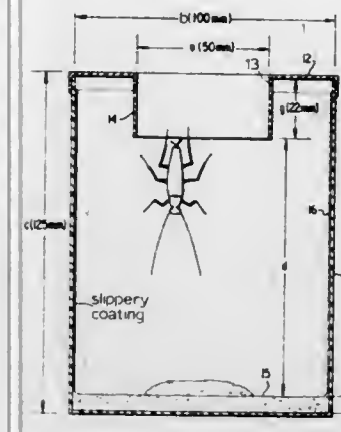
Int. Cl. A01m 1/00

U.S. Cl. 43—121

10 Claims

1. A trap for crawling insects, comprising an upright container with a closed bottom adapted to hold a supply of bait and with a top having an aperture spaced from the rim thereof, said top being provided with a downward extension adjoining said aperture and forming a guidepath leading toward said supply of bait but terminating sufficiently short of said bottom to prevent an insect attracted by the bait from regaining said

extension after landing on said bottom, and a slippery coating on the inner peripheral wall of said container for frustrating



attempts of the insect to climb said wall, said coating comprising a mixture of lanolin and linseed oil.

3,851,418

ANIMATED DOLL

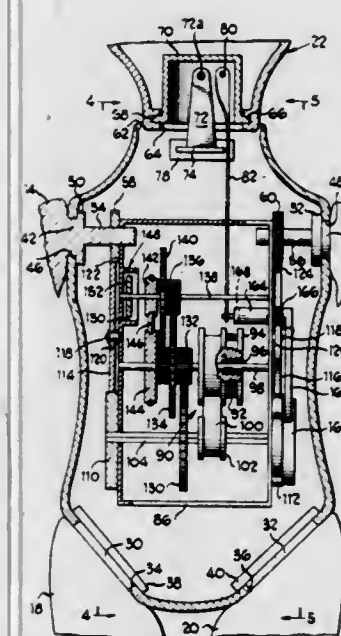
Gordon A. Barlow, Skokie, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 7, 1973, Ser. No. 330,313

Int. Cl. A63h 11/00

U.S. Cl. 46—120

6 Claims



1. An animated doll, comprising:
 - a torso having a shoulder joint at each side;
 - a head mounted on top of said torso;
 - a first arm and a second arm rotatably mounted on said torso at said shoulder joints for pivoting relative to said torso at said shoulder joints about a transverse, side-to-side axis between lowered positions and raised positions;
 - a blanket attached between outer ends of said arms for movement therewith to simulate the movements of a child playing peek-a-boo; and
 - motive means within said torso, including programming means, operatively connected to said arms to move said arms and said blanket therewith in a given sequence between a first position whereat both arms are in their lowered positions, a second position whereat both arms are in their raised positions, and a third position whereat the first arm is in a raised position and the second arm is in a lowered position.

3,851,419

REVERSIBLE DOLL

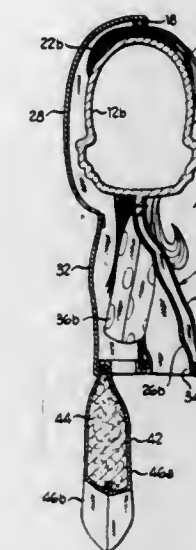
Bette M. Kaelin, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 6, 1973, Ser. No. 386,157

Int. Cl. A63h 3/12

U.S. Cl. 46—153

9 Claims



1. A reversible doll comprising:
 - a head having two back-to-back faces with different features formed thereon; and
 - clothes means formed of material having two sides with a different design on each side, said clothes means including a top hood portion having an opening secured to said head so as to divide the head generally along a vertical plane when the head is erect and separating the two faces so that one of the faces is in the interior of the hood portion while the other face is exposed through said hood opening, whereby the doll can be transformed by turning the clothes means inside out with respect to said head so that the previously exposed face will be covered by the hood portion.

3,851,420

DOOR AND THRESHOLD WEATHERSEAL SYSTEM

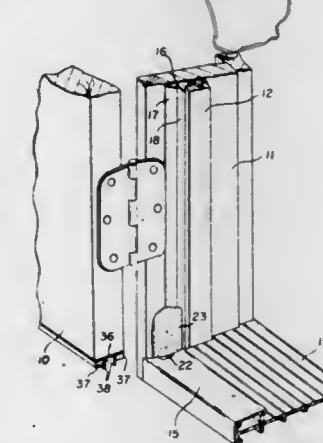
Philip E. Tibbetts, Rochester, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,977

Int. Cl. E06b 1/70, 7/16

U.S. Cl. 49—471

16 Claims



1. A door and threshold weatherseal system having weatherseal means along a vertical edge of said door for conducting water downward along said edge of said door and comprising:
 - a. said threshold being formed as a single piece extrusion having a sill sloping downward and outward from said door, the inner edge of said threshold extending above said sill to form a generally closed chamber formed above said sill and arranged under said door with the bottom of said chamber communicating with the top of said sill;

- b. means above said sill for closing the ends of said chamber adjacent the frame of said door;
 c. said chamber having a top opening on the opposite side of said end closing means from said frame;
 d. means for guiding water from the bottom of said edge weatherseal means into said top opening of said chamber;
 e. said chamber having a drain opening leading from the bottom of said chamber to empty onto said sill; and
 f. said top of said chamber being about 1/2 inch or more above the top of said drain opening so wind pressure against said drain opening opposes a head of water within said chamber beneath said door.

3,851,421

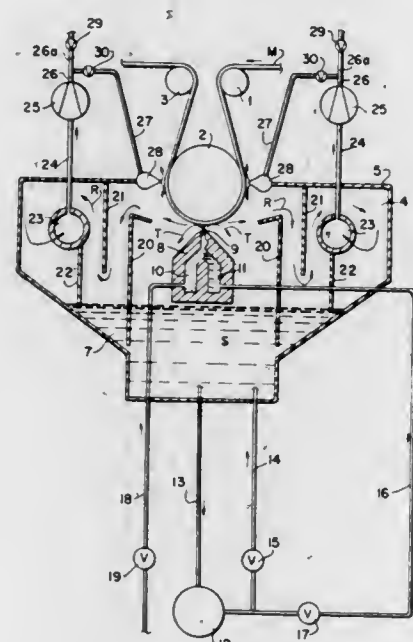
APPARATUS FOR GRAINING SURFACES OF PLANOGRAPHIC PRINTING PLATES

Joachim Stroszynski, Neurod, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany
 Division of Ser. No. 97,945, Dec. 14, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,596
 Claims priority, application Germany, Dec. 15, 1969, 1962729

Int. Cl. B24c 3/12

U.S. Cl. 51-11

2 Claims



1. An apparatus for graining the surface of a strip of sheet material useful for making planographic printing plates comprising die means having a slot like opening therein and gas and liquid chambers converging at one of their longitudinal sides to form a mixing channel ending at said slot-like opening, whirling niche means extending along one of the sidewalls of said mixing channel, the distance between said slot-like opening and said whirling niche being at least as long as said slot-like opening is wide,
 means for conveying the strip of sheet material across said slot-like opening,
 means for feeding a gas into said gas chamber,
 and means for feeding a liquid suspension of solid graining means into said liquid chamber.

3,851,422

HONING MACHINE FOR FINISHING TROCHOIDAL BORE OF ROTOR HOUSING OF ROTARY ENGINE

Satoshi Dojyo, and Tsutomu Yoshino, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Dec. 27, 1972, Ser. No. 319,000

Int. Cl. E24b 19/08

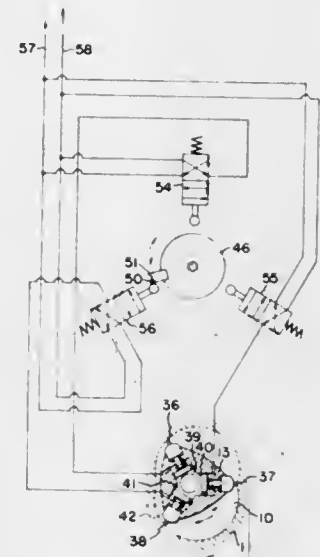
U.S. Cl. 51-34 J

6 Claims

1. A honing machine for finishing a trochoidal bore of a

workpiece by honing the inner wall surface thereof, comprising:

- a relatively stationary main body;
- a drive shaft rotatably born on said main body and provided with two integral gears;
- a honing head provided on its periphery with a plurality of stone slips which are biased outwardly into sliding contact with the inner wall surface of the workpiece for honing the same when rotatably received within the trochoidal bore;
- a cylindrical shaft having its axis arranged in parallel with the axis of said drive shaft and provided with an integral gear;
- a honing-head shaft coaxially secured to said honing head and coaxially received in said cylindrical shaft, said honing-head shaft being axially movable within said cylindrical shaft for bringing said honing head into and out of the trochoidal bore but being forced to rotate integrally with said cylindrical shaft;



- a first intermediate idle gear meshing with one of the gears of said drive shaft and with the gear of said cylindrical shaft for transmitting rotational motion from said drive shaft to said honing head by way of said cylindrical shaft and honing-head shaft;
- a machine table for holding the workpiece in position;
- a table shaft coaxially secured to said machine table and provided with an integral gear, said table shaft having its axis arranged eccentrically of the axis of said honing-head shaft but in parallel with the axis of said drive shaft;
- a second intermediate idle gear meshing with the other gear of said drive shaft and with the gear of said table shaft for transmitting rotational motion from said drive shaft to said machine table by way of said table shaft, the direction of rotation of said honing head being the same as that of said machine table, and the ratio of speed of rotation of the former to that of the latter being predetermined, so that the former moves relative to the latter in a manner to draw a preset trochoidal curve; and
- eccentricity control means for finely controlling eccentricity between the axes of said honing head shaft and table shaft.

3,851,423

SKIN DRESSING MACHINE

Silvio Repetto, Modena, Italy, assignor to S. p. A. Luigi Rizzi & C., Modena, Italy

Filed May 11, 1973, Ser. No. 359,276

Claims priority, application Italy, May 27, 1972, 24968/72

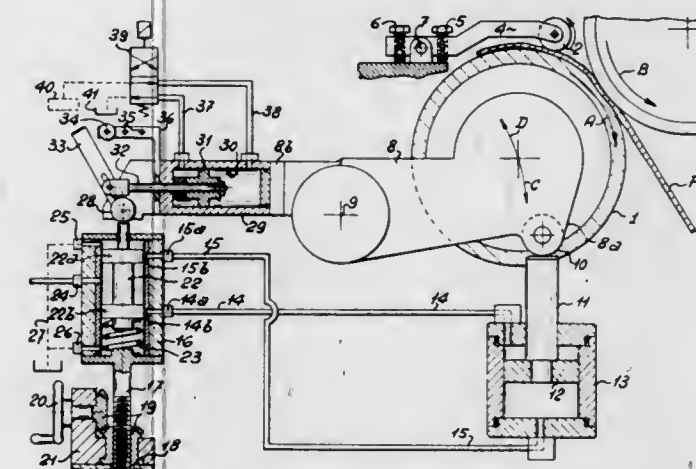
Int. Cl. B24b 7/00, 49/08

U.S. Cl. 51-78

5 Claims

1. A machine for buffing skins, which comprises, in combination:

- 1. a driven skin conveying roller,
- 2. a retaining roller defining a nip with the conveying roller, the skin being conveyed through the nip,
- 3. a skin buffing roller defining an adjustable nip with the conveying roller, the skin being buffed in the adjustable nip by the buffing roller,
- 4. a rocker lever having two arms and mounted for pivotal movement,
 - a. one of the rocker lever arms supporting the conveying roller for adjusting the nip between the conveying roller and the buffing roller upon pivotal movement of the lever,
- 5. a hydraulically operated thrust means arranged in contact with the one rocker lever arm for effectuating the pivotal movement thereof to provide a basic nip adjustment,



- 6. a source of hydraulic pressure fluid and a hydraulic supply conduit means connected to the thrust means for operating the thrust means and providing the basic nip adjustment, and
- 7. a first valve in the hydraulic supply conduit means for controlling the supply of hydraulic pressure fluid to the thrust means, the first valve including
 - a. a sliding member operatively associated with the other rocker lever arm and axially moved thereby upon pivotal movement of the lever in correspondence to the corresponding nip adjustment, the axial movement of the sliding valve member controlling the hydraulic pressure fluid supply to the thrust means to restore the skin conveying roller to the basic nip adjustment.

3,851,424

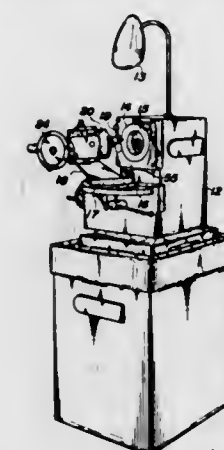
APPARATUS FOR RE-SHARPENING THE CUTTING EDGES OF A DRILL

Hiroshi Kawaragi, 10-9 Oomorinishi 1-chome, Tokyo, Japan
 Filed Oct. 6, 1972, Ser. No. 295,472

Int. Cl. B24b 3/26

U.S. Cl. 51-133

3 Claims



1. An apparatus for re-sharpening the cutting edges of a drill, including:

- a housing having a cup-shaped grinding wheel mounted thereon so as to be either moved forwardly by a driving mechanism in said housing or rotated in a predetermined direction by said driving mechanism;
- a drill holding and actuating body having a drill supporting sleeve extending axially therethrough, said sleeve being designed to support a drill in such a manner that the axis of said drill is so inclined with respect to the grinding surface of said grinding wheel that the surfaces of the cutting edges of said drill are in grinding contact with said grinding surface;
- an actuation wheel the rotation of which is transmitted through an intermediate gear wheel to a spur gear on the rear portion of said drill holding and actuating body, said intermediate gear being in meshing engagement with said spur gear;
- a gear train comprising an internal gear on a covering sleeve mounted on the forward portion of said drill holding and actuating body, a two-diameter gear wheel in meshing engagement with said internal gear, and a planetary gear in meshing engagement with said two-diameter gear and with an external gear on the outer peripheral surface of the forward portion of said body;
- a guide ring mounted on said body substantially at an axially central portion thereof, said guide ring being pivotally connected by pins on the inner peripheral surface of an outer sleeve and having a cam surface formed on a side face of said ring at a circumferential portion thereof;
- a knob having a shaft extending radially inwardly therefrom, said shaft having an eccentric shaft mounted on the inner end of said shaft and being in sliding engagement with the top portion of said guide ring so that the rotation of said knob causes a pivotal motion of said guide ring; and
- means for axially moving said drill holding and actuating body, said means comprising an actuation ring on the peripheral outer surface of said body having a roll in rolling contact with a side face of said guide ring and a ball mounted on the outer periphery of said body and urged by a spring against the other side face of said guide ring.

3,851,425

JIG APPARATUS FOR USE IN STRIPPING INSULATION FROM FLAT MULTI-CONDUCTOR CABLE

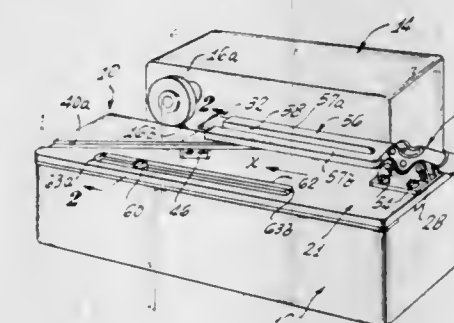
Roger J. Lang, Garden Grove, Calif., assignor to Spectra-Strip Corporation, Garden Grove, Calif.

Filed Jan. 24, 1973, Ser. No. 326,285

Int. Cl. H02g 1/12

U.S. Cl. 51-217

10 Claims



1. In a jig apparatus, adapted for stripping insulation from insulated multi-conductor cable by means of rotatable, spaced-apart vertically-in-line stripping wheels, the improvement which comprises:
- a jig plate longitudinally movable, in a given direction, with respect to said stripping wheels;
 - an elongated slot provided in said jig plate within which said stripping wheels can rotate, as said jig plate is moved;
 - channel means formed on either side of said slot, said channel means aligning said cable whose insulation is to be stripped with respect to a given reference line; and

means for releasably clamping said cable in said channel means so that said cable is held flat in said slot as said stripping wheels are passed through said slot and strip insulation from said cable, and which clamping means are releasable after said stripping of insulation has been completed.

3,851,426

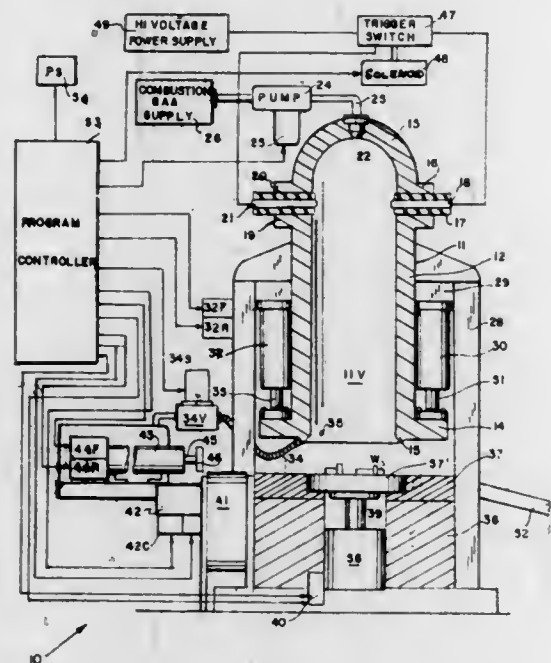
METHOD FOR FINISHING ARTICLES

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 93,779, Nov. 30, 1970,
Continuation-in-part of Ser. No. 668,567, June 27, 1957,
abandoned. This application Mar. 27, 1972, Ser. No. 238,362

Int. Cl. B24c 1/00

U.S. Cl. 51-319

13 Claims



1. A method for operating on and physically changing work-in-process comprising:
disposing an article to be physically worked in a confined reaction chamber,
generating a shock wave within said chamber of such an intensity to heat and apply sufficient force to the article to physically change the shape of the article located within said chamber, and
directing said shock wave against said article in a manner to cause said shock wave to react on the surface of said article so as to change the shape of said article and to alter the surface configuration thereof without destroying the integrity of the article whereby the article is surface finished.

3,851,427

STRUCTURAL SYSTEM EMPLOYING EIGHT-SIDED POLYGONAL UNITS CONSTRUCTED OF PREFABRICATED ELEMENTS

Emile Joseph Lacoste, III, Lacoste Ln., Oxford, Miss. 38655
Filed June 12, 1973, Ser. No. 369,239

Int. Cl. E04b 1/348

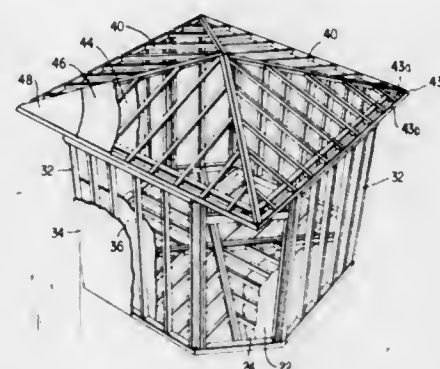
U.S. Cl. 52-79

18 Claims

1. A structural system having at least one story comprising two or more modular-type units arranged adjacent each other, each of said units having:

- a floor member consisting of four pentagonal-shaped floor panels arranged in the shape of an eight-sided polygon,
- a wall member consisting of a first and second set of four rectangular-shaped, interconnected, wall panels each, said four panels of said first set being equal in size to each other and smaller than said four panels of said second set, at least one of said wall panels of said second set being a common interior wall panel between adjacent units, said

wall panels of said second set being vertically positioned and secured to the periphery of said floor member so as to provide an area beneath said wall panels of said second set for receiving a portion of a pentagonal shaped floor panel of said adjacent unit in load bearing relationship to said wall panels of said second set, and



c. a roof member consisting of a plurality of triangular-shaped roof panels, said roof panels being positioned and secured to said wall member such that a portion of each of said roof panels overhangs said wall panels of said first set when any of the panels of said first set are exterior wall panels.

3,851,428

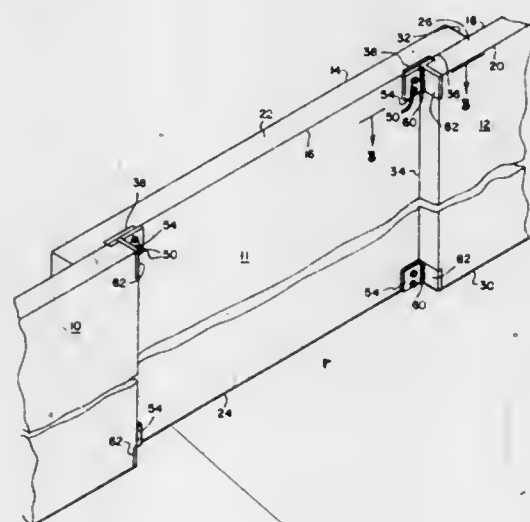
BUILDING PANEL CONNECTION MEANS AND METHOD

Barry L. Stuart, 3739-W. Ocotillo Rd., Phoenix, Ariz. 85019
Filed Jan. 19, 1973, Ser. No. 325,188

Int. Cl. E04b 2/88

U.S. Cl. 52-285

5 Claims



1. In a building panel connection means, the combination of: first and second substantially vertical wall panels each having inner and outer sides, vertical edges and lower portions, and also holding adjacent substantially vertical edges overlapped relative to each other such that an inner side of said first wall panel is substantially contiguous with the outer side of said second wall panel between said overlapped edges; a first connector plate disposed at said inner side of said first wall panel in a location to coincide with said vertical edge of said second wall panel; said first connector plate having first anchor means cast in said first wall panel; a second connector plate disposed at said vertical edge and outer side of said second wall panel; said second connector plate having second anchor means in said second wall panel; said first and second connector plates disposed to coincide with each other when lower portions of said first and second wall panels are supported on a foundation; bolts secured to (in) said first connector plate and projecting in a direction away from said inner side of said first wall panel; a coupling plate having openings therein larger than the diameter of said bolts and generally coinciding therewith; large washers overlying said openings in

said coupling plate; nuts on said bolts bearing against said washers; and weld structure fixing said coupling plate to said second connector plate whereby said openings in said coupling plate being larger than the diameter of said bolts provide for relative movement of said first and second panels relative to each other due to contraction or expansion in response to varying environmental conditions; said first wall panel having first anchor means spaced from its vertical edge; said first connector plate and said coupling plate extending beyond said vertical edge of said second wall panel, at the inner side of said first wall panel, whereby said openings of said coupling plate may be placed over said bolts before said coupling plate is welded to said second connector plate.

3,851,429

DEVICE FOR ATTACHING A LATERAL CLADDING MOLDING ON THE EDGE OF A ROOF

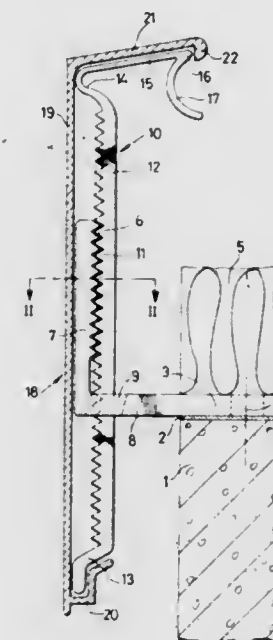
Horst Franz Zimmer, Johannesstrasse 19, D-5500 Trier, Germany

Filed Jan. 15, 1973, Ser. No. 323,367

Int. Cl. E04f 19/02

U.S. Cl. 52-94

9 Claims



1. An assembly for adjustably securing a molding on the edge of a roof, comprising in combination:

- a bracket having a first limb including means adapted to mount the first limb substantially horizontal at a roof edge, said bracket including a second limb integral with and disposed substantially normal to the first limb, said second limb including first teeth on one face thereof;
- a molding-mount extending in adjustable juxtaposed relationship along the face of said second limb closest to said first limb of the bracket for clamped engagement on said second limb face, said molding-mount including connecting-portions adjacent opposed portions thereof for removably-receiving a molding clamped onto said molding-mount with the second bracket limb sandwiched therebetween; and a molding having mounting-means adjacent opposed portions for engaging the respective connecting portions on said molding mount, said molding being substantially juxtaposed at the face of said second limb opposite that face engaged by the molding-mount and comprising the means for integrating the bracket, molding-mount and molding in an assembled relation, at least one of the molding mount and the molding having second teeth intermeshingly engaged with the first teeth on the second limb for preventing displacement between the assembled components of the assembly, whereby the second bracket limb is clamped in a substantially fixed manner between the confronting faces of the molding-mount and the molding so that the intermeshed first and

second teeth are immediately separable after the molding is removed from the molding-mount.

3,851,430

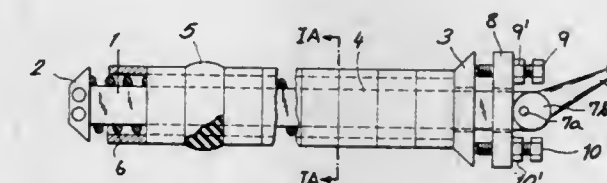
RESILIENT SUPPORTING MEMBER

Wilhelm Schuster, Neubauzeile 57, Linz/Donau, Austria
Filed Mar. 7, 1973, Ser. No. 338,817

Int. Cl. E04h 12/18, 1/343; A47b 83/04

U.S. Cl. 52-108

10 Claims



1. In a stress-absorbing structure, in combination, supporting means and an elongate member carried by said supporting means with freedom of deflection in a predetermined direction under transverse stress, said member comprising a throughgoing leaf spring with broad surfaces perpendicular to the direction of stress and reinforcing means adjacent at least one of said surfaces, going into compression upon deflection, for stiffening the deflected leaf spring by resisting further compression of said one of said surfaces beyond a predetermined limit, said reinforcing means comprising a row of abutments axially spaced apart in a normal position of said leaf spring, said abutments including rigid formations rising from said one of said surfaces at axially spaced locations in positive contact with said leaf spring.

3,851,431

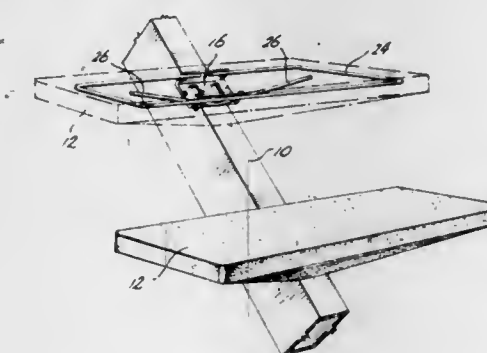
CANTILEVER STAIRSTEP CONSTRUCTION

Harold I. Klein, 2215 Killarney Way, Bellevue, Wash. 98004
Filed Apr. 16, 1973, Ser. No. 351,190

Int. Cl. E04f 11/14, 11/16

U.S. Cl. 52-189

2 Claims



1. In a precast concrete stairstep which includes an imbedded metal mounting member which is weldable to an upper portion of a metal stringer, for connecting the stairstep to the stringer, and from which the stairstep projects in cantilever fashion, the improvement comprising:

said metal mounting member being a length of channel stock having a web and two flanges which project from the web forwardly into the concrete, said mounting member also including two rearwardly projecting elements of plate metal which are tabs bent out from said web, leaving an opening in the web inwardly of each tab and channel stock end portions outwardly of said tabs, and resulting in said tabs having inner side surfaces which are perpendicular

lar to the web, said side surfaces being spaced apart a distance substantially equal to the width of the stringer, to define a space therebetween in which the stringer is received, each said tab presenting edge portions which are weldable to side portions of the stringer, and said web including a plate portion between the openings which rests on the top of the stringer, and said stairstep also includes reinforcement steel which is welded to said channels and projects therefrom into the concrete, said reinforcement steel consisting of a single loop of reinforcement steel which is welded along one side only to the mounting member flange that occupies an upper position on the metal stringer, and which extends over the other flange in a plane that is generally parallel to the upper surface of the stairstep, and a length of reinforcement steel which is bent into the form of a shallow V, and is welded near its middle to such other flange, and which extends upwardly from said other flange in parallelism therewith.

3,851,432

MOTOR VEHICLE WINDOW MOLDING

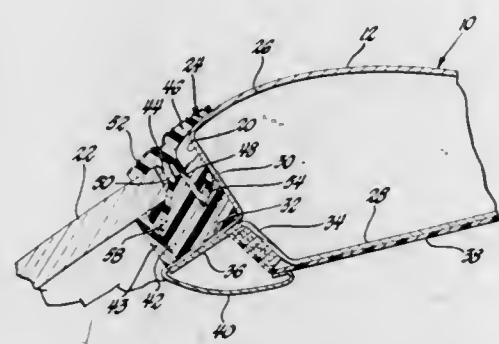
Henry W. Griffin, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 359,131

Int. Cl. E06b 3/30, 3/62

U.S. Cl. 52—400

1 Claim



1. In a motor vehicle body having a window opening defined by flanged body panels, a window glass for closing the window opening and when mounted therein having a space between the edge of the window glass and a flange of the body panel, and a bead of curable adhesive mounting the window glass to the flanged body panels, a molding for concealing the space between the edge of the window glass and said flange of the body panel and comprising: a decorative trim portion bridging the space between the window glass and the body panel and extending a distance thereon, first and second legs extending continuously along the length of the molding and extending generally perpendicularly from the decorative trim portion respectively adjacent said flange of the body panel and the edge of the window glass, said first leg having a flange portion extending laterally thereof and biased to a reversely bent position engaging said flange of the body panel during insertion of the first leg into the bead of curable adhesive, the engagement of the reversely bent flange portion of the first leg with said flange of the body panel resiliently biasing the molding toward the edge of the window glass, a plurality of openings at spaced intervals in the first leg to allow flow of the curable adhesive behind the reversely bent flange portion of the first leg to provide complete embedment of the first leg in the bead of curable adhesive, said second leg having a forwardly bent flange portion for insertion into the bead of curable adhesive, the resilient biasing action of the first leg causing the edge of the window glass to be wedgedly engaged between the decorative trim portion and the forwardly bent flange portion whereby the window glass is positioned by the molding centrally of the window opening and the decorative trim portion is engaged against the window glass.

3,851,433 WINDSHIELD AND OR REAR WINDOW POSITIONING MEMBER AND ATTENDANT PERIPHERAL GLASS RIM IN MOTOR CAR BODIES

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Continuation of Ser. No. 200,949, Nov. 22, 1971, abandoned.

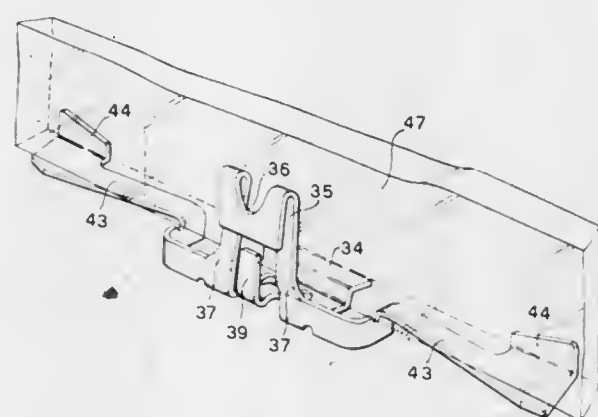
This application Oct. 23, 1973, Ser. No. 408,428

Claims priority, application Italy, Nov. 24, 1970, 32141/70; Sept. 23, 1971, 29006/71

Int. Cl. E04f 19/02

U.S. Cl. 52—401

2 Claims



1. A member for positioning a window in a seat of a motor vehicle body and also adapted to have a perimetral embellishing rim of the window applied thereto and in which the embellishing rim is provided with two curved edges, comprising a metal piece having a central portion, a first tongue integral with the central portion and extending in a plane essentially perpendicular to that of the central portion, at least a second hook-shaped tongue integral with the central portion, said first tongue having a free end bent to provide a rounded corner for receiving by a snap fitting, one curved edge of the embellishing ring, the second curved edge of the embellishing ring being fitted on said second tongue, two L-shaped side arms integral with and extending outwardly from said first tongue, each side arm having a first portion substantially co-planar with the first tongue and a second portion substantially perpendicular to said first tongue, and a resiliently yieldable wing at the free end of each second portion lying in a plane essentially perpendicular to that of said first tongue, said wings being obliquely inclined with respect to the plane of the central portion and to the plane of said first tongue so that the wings before assembling of the window are spaced from said first tongue by a distance lesser than the thickness of the window, with the window upon assemblage being forcibly inserted between said first tongue and the wings and with the perimetral contour of the window abutted against said wings.

3,851,434

BATTEN ROOF AND SHEET METAL BATTEN

Thomas J. Boyd, Box 500 Rt. 1, Wellsburg, W. Va. 26070

Filed Nov. 5, 1973, Ser. No. 412,720

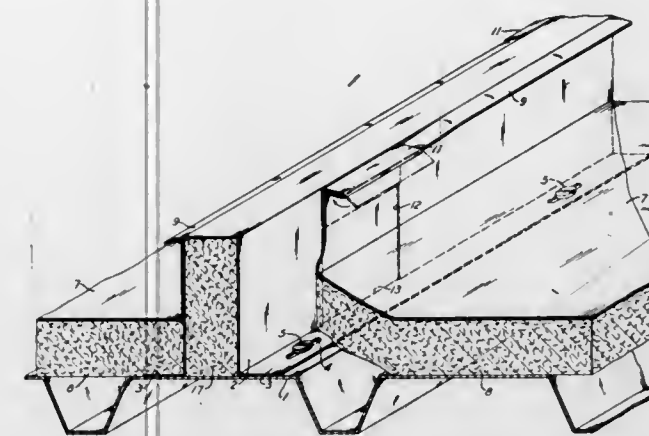
Int. Cl. E04d 1/36

U.S. Cl. 52—465

7 Claims

1. A batten roof comprising laterally spaced parallel sheet metal roofing pans each having upwardly extending sides with turned flanges along their upper edges, and a batten between each pair of pans, each batten being in the form of an inverted sheet metal channel having spaced sides with outwardly extending supporting flanges along their lower edges projecting beneath the adjoining pans, the upper edges of the channel sides being integrally connected by a web, the pan sides substantially engaging the channel sides between each pair of pans, each of said channel sides being cut to provide it with a plurality of tongues spaced lengthwise thereof and integrally connected at one end to that side adjacent the

channel web, and the tongues being bent upwardly between the channel sides and adjoining pan sides and then hooked



3,851,435

FASTENING MEANS FOR JOINING MEMBERS

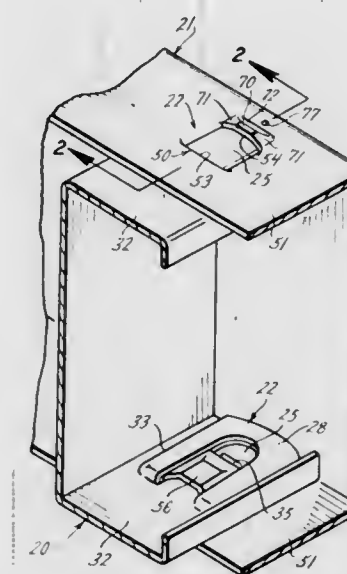
H. Evan Roberts, St. Louis, and Alan E. Gickler, Warrenton, Mo., assignors to The Binkley Company, Warrenton, Mo.

Filed Jan. 8, 1973, Ser. No. 322,016

Int. Cl. F16b 5/06

U.S. Cl. 52—754

9 Claims



1. A fastener for joining members together, said fastener comprising a tongue means formed in a first member to be joined, said tongue means having a first protrusion extending from one of its sides, a groove means formed in a second member to be joined, said groove means having a spanning member which extends at least part way over the side of the tongue means from which the protrusion extends with the tongue means inserted into the groove means, and a second protrusion operatively positioned relative to said tongue and groove means so as to urge the tongue means against the spanning means with the tongue means fully inserted into said groove means.

3,851,436

STERILIZING AND PACKAGING PROCESS UTILIZING GAS PLASMA

Sheila J. Fraser, Seattle; Roger B. Gillette, Auburn, and Richard L. Olson, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 13, 1971, Ser. No. 207,487

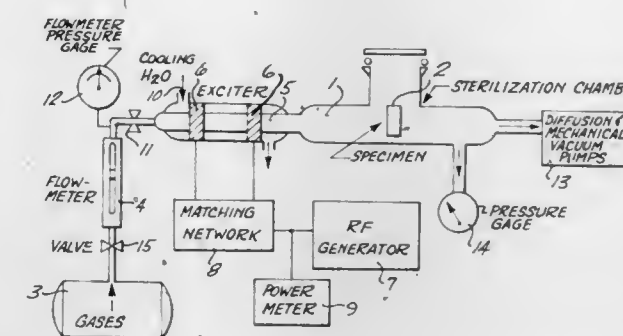
Int. Cl. B65b 31/02, 55/12

U.S. Cl. 53—21 FC

6 Claims

1. The process of sterilizing an article which comprises enclosing the article in a container, enclosing the container in

a sealable chamber, maintaining subatmosphere pressure in the chamber and in the container, and, while maintaining such subatmosphere pressure in the chamber and in the container, flowing nonoxidizing gas plasma into the container, over a



surface of the article to be sterilized and then out of the container into the portion of the chamber exteriorly of the container, terminating such flow of gas plasma through the container, and sealing the container to form a sterilized package for the article.

3,851,437

RECEPTACLE EVACUATION APPARATUS AND METHOD

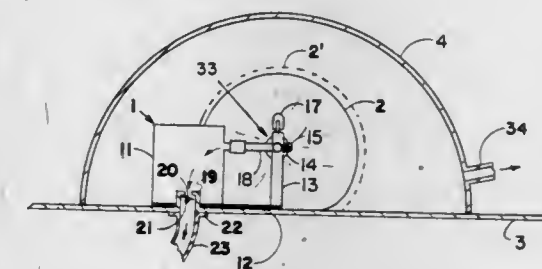
Thomas E. Waldrop, and Stanley D. Hall, both of Greer, S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 10, 1973, Ser. No. 423,345

Int. Cl. B65b 31/02, 31/04

U.S. Cl. 53—22 B

14 Claims



1. In the method of evacuating receptacles within a vacuum chamber, the improvement which comprises:

- providing a portable vacuum reservoir;
- placing said receptacle and said reservoir within a vacuum chamber, said reservoir being in communication with the interior of said receptacle;
- evacuating said reservoir and said receptacle;
- sealing the evacuated reservoir while leaving it in communication with the receptacle; and
- removing the receptacle and reservoir from said chamber and thereafter closing said receptacle.

3,851,438

METHOD OF PRODUCING A UNIT PACKAGE CONTAINING BITUMINOUS MATERIAL

Sven Brynolf Brisman, Gothenburg, Sweden, assignor to AB Nynas-Petroleum, Stockholm, Sweden

Continuation of Ser. No. 80,024, Oct. 12, 1970, abandoned.

This application Mar. 24, 1973, Ser. No. 343,091

Claims priority, application Switzerland, Oct. 22, 1969, 1445/69

Int. Cl. B65b 63/08

U.S. Cl. 53—23

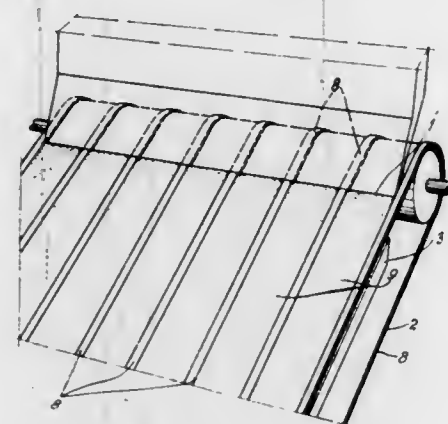
6 Claims

1. A method for packaging a material consisting of oxidized asphalt which comprises:

- introducing into a cooling zone a material consisting of oxidized asphalt,
- spreading said molten oxidized asphalt upon a chilled support surface as it enters the cooling zone, into a plurality of essentially parallel and laterally confined thin strips that have widths much greater than their thickness,
- the thickness of each of said chilled confined thin strips being between about 25 and 30 mm,

d. cooling both the lower and upper surfaces of said plurality of confined thin strips for a sufficient time and at a fast enough rate so as to produce cooled thin strips consisting of oxidized asphalt that each:

1. have a 4-5 mm thick crust on the upper surface,
2. have a 4-5 mm thick crust on the lower surface, and
3. have an interior portion between said crusts that is



hot and unsolidified, said crusts having a thickness sufficient to resist the remelting effect caused by heat radiating from the inner hot portions of the layer,

e. cutting the strips formed from step (d) into slabs of the desired size, and

f. wrapping the thus formed slabs with at least one layer of packaging material, and assembling the wrapped slabs into unitary packages.

3,851,439

METHOD AND MACHINE FOR CONSTRUCTING A RECTANGULAR SIDED PACKING AROUND AN OBJECT OF ANY SHAPE

Marcel Octave Pillon, Gergy, France, assignor to Pont-A-Mousson S.A., Societe Des Embalia-Ges Moules, Sem, Montrouge, both of, France

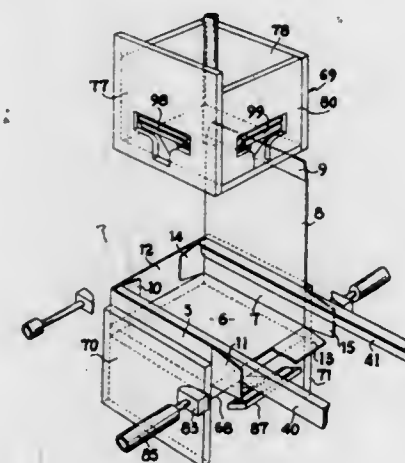
Filed Jan. 30, 1973, Ser. No. 327,909

Claims priority, application France, Feb. 22, 1972, 72.04809

Int. Cl. B65b 5/02

U.S. Cl. 53-29

20 Claims



1. In a method for making a packing having folded rectangular side wall portions around an object which may be incapable of affording a support when folding said wall portions, and comprising starting with a pre-cut and pre-scored blank of sheet material, folding up from a first portion of said blank at least a second blank portion and a third blank portion which adjoin said first blank portion so as to constitute two parallel wall portions of the packing interconnected by an intermediate wall portion of the packing, introducing the object to be packed in the thus partly formed packing and folding remaining portions of the blank to form the finished packing; the feature that, before folding said remaining portions of the

blank, rigid support means defining two parallel edges are introduced into said partly-formed packing and positioned parallel to said two parallel wall portions so that said edges are placed in adjoining relation to said two parallel wall portions to support said two parallel wall portions along fold lines about which edges and fold lines two portions of the blank among said remaining portions are folded, said support means being withdrawn from the partly-formed packing before folding the remaining portions of the blank.

3,851,440

PACKAGING METHOD

Eugene G. Horsky, Claymont, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 13, 1972, Ser. No. 306,364

Int. Cl. B65b 11/54

U.S. Cl. 53-34

7 Claims



1. An article packaging method including the steps of containing an article which is to be packaged within a flexible bag, twisting the bag on itself at a location between its open end and the contained article to provide an envelope encasing the article, stretching at least an annular section of the portion of the bag extending between the twisted section and the open end thereof, urging such portion of the bag onto the encased article as an overlying envelope, and at least partially relaxing the stretched section of the overlying envelope to cause the same to engage snugly with the article encasing envelope.

3,851,441

MACHINE FOR PRODUCING FILLED TWO-LIDDED PLASTIC CONTAINERS WITH A DRINKING STRAW AND A PUNCTURABLE DEPRESSION IN EACH LOWER LID

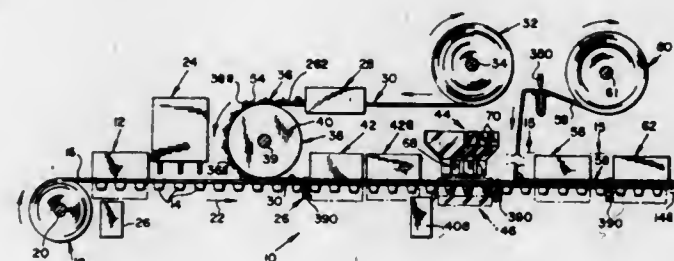
Jacques J. Marchand, Montclair, N.J., assignor to First Dynamics, Inc., New York, N.Y.

Filed Sept. 25, 1973, Ser. No. 400,635

Int. Cl. B65b 3/02, 43/08, 63/04

U.S. Cl. 53-116

15 Claims



1. In combination, a machine including an elongated frame having the top thereof lying in a substantially horizontal plane and having upstream and downstream ends, means mounting a first roll of a first plastic web, means mounting a second roll of a second plastic web, and means mounting a third roll of a third plastic web, said first roll being mounted adjacent the upstream end of said frame, said second roll being mounted above said plane, means for moving said first web step-by-step along the top of said frame toward the downstream end thereof, a first thermal forming means for forming said first web into successive clusters of downwardly extending containers open at the top and rectangular in outline during the intervals between the step-by-step movements of said first web, liquid filling means mounted above said frame downstream of said first forming means for successively filling the

formed clusters of containers during said intervals, a roller mounted above said plane to downstream of said filling means between said filling means and said second roll and having its peripheral edge close to said plane, said second web passing around said roller and extending from the bottom of said roller downstream substantially in contact with said formed first web, means for moving said second web downstream from said roller in harmony with said step-by-step movements of said first web, a second thermal forming means mounted between said second roll and said roller for forming said second web into like clusters of first container lids including a straw-receiving recess in each of said lids, a first sealing means mounted downstream of said roller for sealing said first lids to said filled containers, straw-supplying means mounted downstream of said first sealing means for depositing a straw into each of said recesses of the clusters of first lids during said intervals, said third roll being mounted downstream of said straw-supplying means, means for moving said third web downstream in harmony with said step-by-step movements, a second sealing means mounted on said frame downstream of said straw-supplying means and having said third web extending downstream thereunder for sealing the same on said first lids thereby providing second lids, and trimming means mounted downstream of said second sealing means for simultaneously separating the clusters of two-lidded containers from said three webs and from each other during said intervals, said separated clusters then being discharged into a suitable receptacle.

3,851,442

APPARATUS FOR FORMING, INTERLEAVING AND DISPENSING FOOD PATTIES

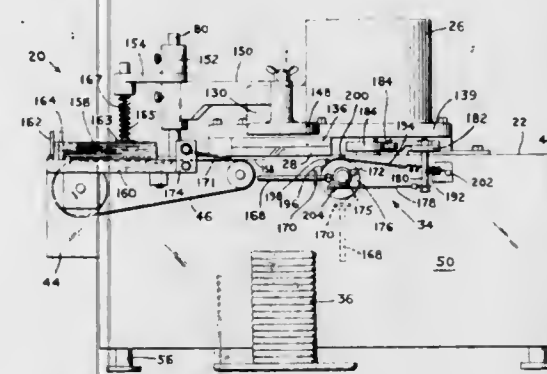
Bernard Miles, 285 Vermont Ave., Irvington, N.J. 07111

Filed Dec. 21, 1972, Ser. No. 317,439

Int. Cl. B65b 25/08, 35/50, 41/02

U.S. Cl. 53-122

20 Claims



1. Means for interleaving and stacking formed food patties, comprising:

- a support means;
- means to periodically dispense individual interleaving sheets onto said support means, comprising:
 - a continuously moving conveyor belt;
 - means to hold a stack of individual interleaving sheets in contact with said continuously moving conveyor belt; and
 - means to press a stack of sheets against said conveyor belt to cause a single interleaving sheet in contact with said conveyor belt to separate from said stack of interleaving sheets and be drawn along said conveyor belt to said support means;
- means to periodically dispense formed food patties onto said interleaving sheets on said support means;
- means to sequentially synchronize the dispensing of said interleaving sheets and said formed patties onto said support means; and
- means to remove said support means from beneath said interleaving sheets and formed patties on said support means faster than the rate of free fall of said interleaving sheets and formed patties, so that said interleaving sheets

and formed patties will be free to fall without contacting said support means.

3,851,443

CAN SEAL APPLIERS

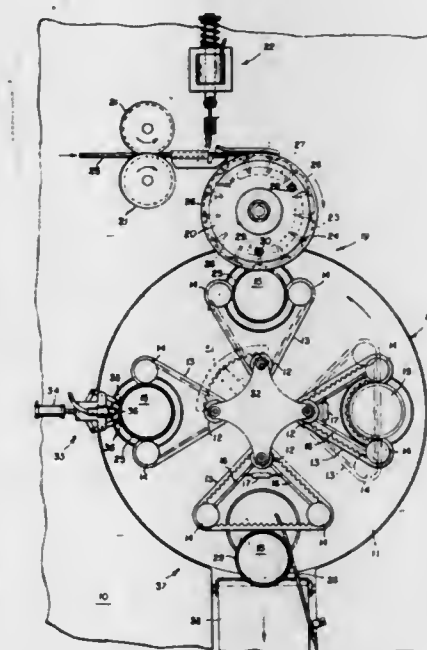
Harry Harold Fine, Kew Garden Hills, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

Filed May 7, 1973, Ser. No. 357,824

Int. Cl. B65b 13/16

U.S. Cl. 53-139.3

7 Claims



1. A can seal applicator comprising:

- a. an indexing mechanism;
- b. a plurality of endless belt and pulley sets arranged at four stations on said indexing mechanism;
- c. each of said pulley sets including a drive pulley and a pair of movable idler pulleys;
- d. means for closing said movable pulleys against opposite sides of said can at a first station to wrap said endless belt around half of the cylindrical circumference of said can and hold said can on said indexing mechanism;
- e. means for feeding a continuous seal strip to a second station;
- f. means for cutting off a length of said seal strip;
- g. a rotatable vacuum gripper wheel for holding said cut off length of said seal strip;
- h. means for rotating said drive pulley at said second station to rotate said can with said belt;
- i. said vacuum gripper wheel engaging and rotating with said can at said second station to wrap said seal around said can;
- j. said vacuum gripper wheel having rims straddling said seal and a channel between said rims for pressing said seal onto said can to be supported on said can;
- k. means at a third station for gripping and joining the free ends of said wrapped seal; and
- l. means for opening said movable pulleys away from said can at a fourth station to release said can and move said can off said indexing mechanism.

3,851,444

APPARATUS FOR OPENING AND PROTECTING FROM CONTAMINATION HEAT-SEALABLE BAGS

Jean-Pierre Merat, 4, rue Robert Giraudineau, Vincennes, France

Continuation-in-part of Ser. No. 799,720, Feb. 17, 1969, abandoned. This application May 4, 1973, Ser. No. 357,110

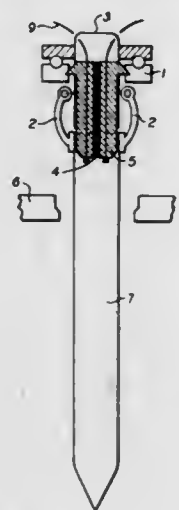
Int. Cl. B65b 43/26

U.S. Cl. 53-167

2 Claims

1. An apparatus for filling and sealing a bag having an upwardly turned mouth, comprising:

a filling station provided with an outlet;
 a pair of horizontally extending support rails running from the region of said outlet;
 a carriage mounted on said support rails and horizontally displaceable thereon from said region to another region;
 a bag-sealing station at said other region for sealing the mouth of a bag;
 a pair of leaf springs having opposite extremities lying substantially against one another and mounted on said carriage;
 means on said carriage for relatively displacing the opposite extremities of said leaf springs toward and away from one another to alternately spread said leaf springs apart be-

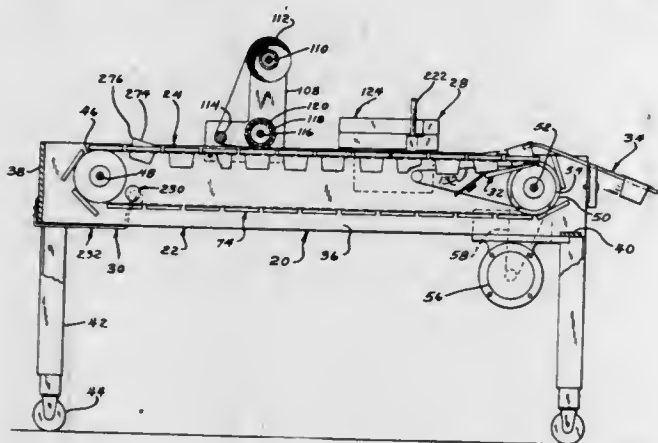


tween their extremities to spread the mouth of a bag fitted over said leaf springs;
 resilient layers disposed along at least opposite lateral faces of said leaf springs for contacting internal surfaces of said bag along said mouth for preventing contamination thereof;
 means displaceable from one of said regions toward the other region for entraining said carriage therebetween along said rails; and
 horizontally movable abutments at least at the first mentioned region for laterally engaging external surfaces of a bag spread by said springs.

3,851,445
PACKAGING MACHINE
 Frank R. Schuh, 445 Chatham Cir., Buffalo Grove, Ill. 60090
 Filed Aug. 28, 1972, Ser. No. 284,451
 Int. Cl. B65b 7/16

U.S. Cl. 53—329

13 Claims



1. A packaging machine including a base, a continuous conveyor mounted on the base, said conveyor including a drive chain, a plurality of platens releasably locked to the drive chain, each of said platens adapted for carrying a container having an open side, means for driving the drive chain to move the conveyor, a sealing assembly mounted on the base and being cooperative with the conveyor, said sealing assem-

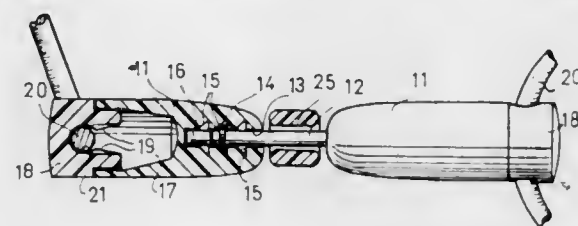
bly including means for applying a continuous film of material to the open side of each of the containers carried by the platens, the conveyor includes a second drive chain spaced apart from the first-mentioned drive chain and is driven simultaneously therewith, each of the platens of the conveyor having a pair of clips on opposite sides thereof engageable with a portion of one of the drive chains to hold the platen onto the clip, and a platen release mounted on the base and being selectively engageable with the clips for releasing selectively the platens from the chains to remove the platens.

3,851,446
SNAFFLE BIT
 Lorenz Bischelsrieder, Furstenfeldbruck, Germany, assignor to Stuben GmbH, Stans, Switzerland
 Filed May 19, 1972, Ser. No. 255,218
 Claims priority, application Germany, May 21, 1971, 2125333

Int. Cl. B68b 1/06

U.S. Cl. 54—8

14 Claims



1. A snaffle bit comprising a pair of bit portions, each of said bit portions having an axial bore which includes annular grooves; an elastic hinge rod portion extending between and connecting said bit portions, said hinge rod portion having its ends stationarily fixed to said bit portions and each end of said hinge rod portion including a rib which engages in one of said annular grooves; and a ring connected to the outer end of each of said bit portions for receiving a snaffle rein.

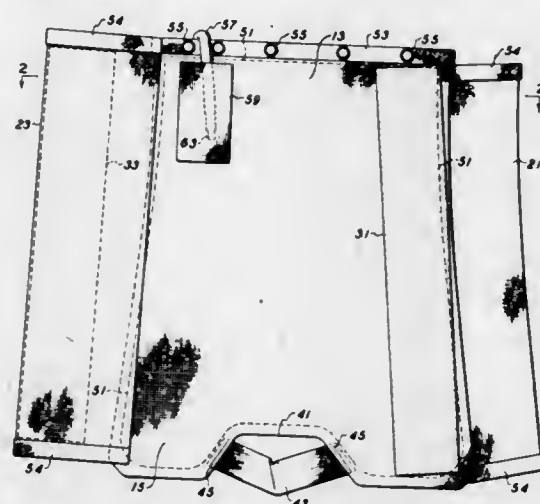
3,851,447
PNEUMATIC LEGGING FOR HORSES
 Armand Pontarella, 36 Lansing Cir. North, Rochester, N.Y. 14624

Filed Sept. 19, 1973, Ser. No. 398,797

Int. Cl. B68c 5/00

U.S. Cl. 54—80

6 Claims



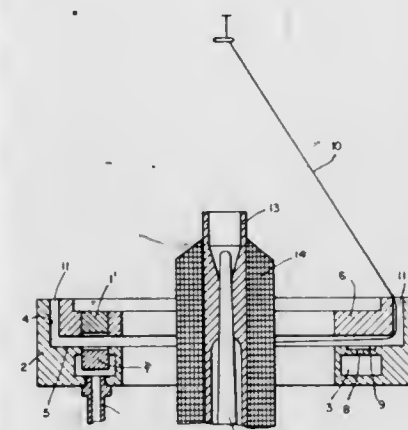
1. A pneumatic legging for treating the leg of a horse, comprising two thicknesses of fabric forming a pocket between them, fastener means for holding said fabric detachably in a position wrapped around the leg of a horse at an elevation at least mainly above the fetlock of such leg, an air-retaining bladder within said pocket, said pocket being substantially permanently closed at three edges and being open at a fourth edge for easy removal and insertion of said air retaining bladder, other fastener means for keeping said fourth edge sub-

stantially closed except when it is to be opened for insertion or removal of said bladder, and a valved air tube extending from said bladder to an accessible location externally of said pocket, for introducing air into and releasing air from said bladder, to adjust the pressure of the legging against the leg of the horse without having to remove the legging from the leg.

3,851,448
YARN TWISTING APPARATUS
 Takao Sano; Katsuhiko Fukuda, both of Otsu; Akio Ando, Okazaki, and Louzou Tameno, Shiga-ken, all of Japan, assignors to Tory Industries, Inc., Tokyo, Japan
 Filed July 18, 1973, Ser. No. 380,211
 Claims priority, application Japan, Aug. 19, 1972, 47-83095
 Int. Cl. D01h 7/58

U.S. Cl. 57—75

31 Claims



1. A yarn twisting apparatus comprising, in combination:
 a. a spindle arranged to carry a bobbin for winding yarn,
 b. a ring arranged for guiding said yarn to said bobbin, said ring substantially surrounding said spindle,
 c. a ring holder also substantially surrounding said spindle and moving back and forth generally axially of said spindle, the ring holder including a fluid chamber, an annular surface for mounting said ring loosely, means for projecting compressed fluid through said annular surface from said fluid chamber, and
 d. means for applying magnetic force by which said ring is attracted substantially toward said annular surface through which said compressed fluid is projected, so that said ring is supported in space in a stable condition balanced by the magnetic force and by the forces attributable to said compressed fluid.

3,851,449
SUGAR CANE HARVESTER
 Ramon Reyes Medina, 1113 Center Rd., Wilmington, Del. 19805

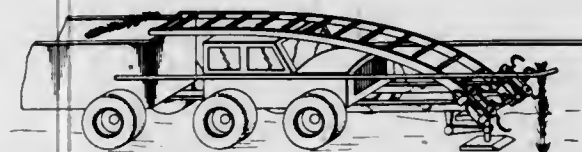
Filed June 6, 1973, Ser. No. 367,479

Claims priority, application Spain, June 8, 1972, 403,670

Int. Cl. A01d 45/10

U.S. Cl. 56—14.3

3 Claims



1. A harvester for a crop such as sugar cane and the like, comprising a chassis mounted for movement over the ground, a horizontal cutter carried by the chassis, means to reciprocate the cutter forwardly and rearwardly relative to the chassis to cut the crop, endless gathering conveyors on either side of the chassis for gathering the cut crop, an endless conveyor for receiving the cut crop from said gathering conveyors and for

conveying the cut crop to the rear, power means common to said cutter and gathering conveyors and endless conveyor simultaneously to reciprocate said cutter and to circulate said gathering conveyors and said endless conveyor, said gathering conveyors comprising endless conveyor chains having gathering arms outstanding therefrom, and guide rails carried by said chassis and disposed above and contacting said gathering arms a distance from the junction of said gathering arms and the chains associated therewith.

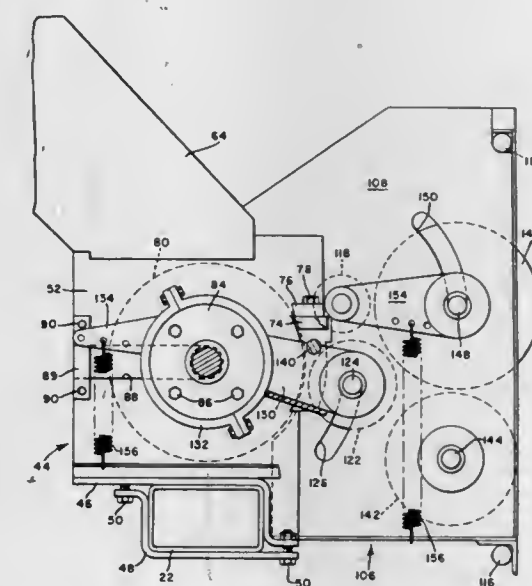
3,851,450
FORAGE HARVESTER
 Leon Franklin Nelson, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed June 1, 1973, Ser. No. 365,989

Int. Cl. A01d 87/00

U.S. Cl. 56—14.4

21 Claims



1. A forage harvester comprising: a mobile main frame mounted for advance over a field, a cutterhead housing mounted on the frame and having a crop inlet and a crop outlet spanning the width of the housing and a discharge spout extending upwardly from the outlet; a crop-feeding means mounted on the frame for moving crop material through the inlet; a forward harvesting means mounted on the frame for removing the crop from the field as the harvester advances and delivering it to the crop-feeding means; a shear bar disposed along the upper edge of the crop inlet; a cylinder-type cutterhead mounted in the cutterhead housing and having a plurality of knives with cutting edges on the cutterhead periphery tracing a cylinder in registry with the shear bar as the cutterhead rotates and having an axial length less than 12 inches; means for driving the cutterhead at a speed above 1,600 RPM so that the knives move upwardly past the inlet at a high velocity to reduce the crop moving through the inlet under the shear bar and impel the reduced crop tangentially upwardly through the outlet and the discharge spout.

3,851,451
AUTOMATIC HEIGHT CONTROL SYSTEM FOR A CROP HARVESTER

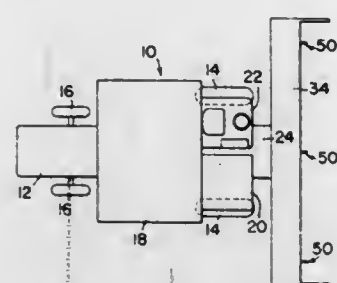
Jay Byron Agness, East Moline; Duane Herbert Ziegler, Moline, and Garn Farley Penfold, East Moline, all of Ill., assignors to Deere & Company, Moline, Ill.
 Continuation-in-part of Ser. No. 237,334, March 23, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,304
 Int. Cl. A01d 75/18

U.S. Cl. 56—10.2

13 Claims

1. In a crop harvester having vertically adjustable crop-gathering means and hydraulic power means for raising and lowering the crop-gathering means when fluid is supplied thereto and exhausted therefrom respectively, an automatic height control comprising: a plurality of individually movable ground followers mounted on the crop-gathering means in

transversely spaced relationship and for pivotal movement in a generally vertical path; electrical switch means associated with each follower and each switch means including an actuation member, movable with its respective ground follower between raise, hold and lower positions; a solenoid valve movable between raise, hold and lower modes controlling the flow of fluid to and from the hydraulic power means; electrical circuit means including a source of electrical energy connected to and for controlling the movement of the solenoid



valve between its modes; the circuit means including logic means connected to all the switch means and responsive to the conditions of the switch means to move the valve to its lower mode when all the actuation members of the switch means are in their lower positions, to move the valve to its hold mode when at least one actuation member is in the hold position and the remainder are in the lower position, and to move the valve to its raise mode when any one of the actuation members is in its raise position.

3,851,452

GUARDED ROTARY MOWERS

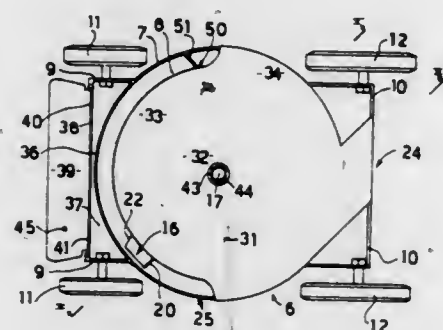
Alexander N. Brocas, 26 Stanton Ter., Auckland, New Zealand
Filed Jan. 19, 1971, Ser. No. 107,713

Claims priority, application New Zealand, Jan. 23, 1970, 159036; Apr. 8, 1970, 159781

Int. Cl. A01d 35/12

U.S. Cl. 56—17.4

18 Claims



1. A safety guard for a rotary mower of the type including a housing which is open at its bottom and a cranked blade having a central portion and one or more cutting tips which are lower than the central portion, the blade being rotatable in a substantially horizontal plane, within the housing, said safety guard comprising an inverted dish-shaped body; having a central portion and peripheral portions lower than the central portion, the guard being adapted to be fastened under the blade to the housing with the central portion of the guard being adjacent the central portion of the blade and the peripheral portions adjacent the one or more cutting tips, so that the path swept by the blade during a revolution is suitably inaccessible from below but the portion of the periphery of the guard at the front being formed to uncover only the effective cutting portions of the cutting tips of the blade around a part annular portion to allow a substantially unrestricted width of swath to be cut as the mower is propelled therealong, the front peripheral portion of the guard being inclined upwardly to provide a ski effect in use guiding the guard over obstructions and minimizing the tendency for the guard to dig in when the mower is being propelled.

3,851,453

APPARATUS FOR AND METHOD OF PACKAGING LINEAR MATERIAL

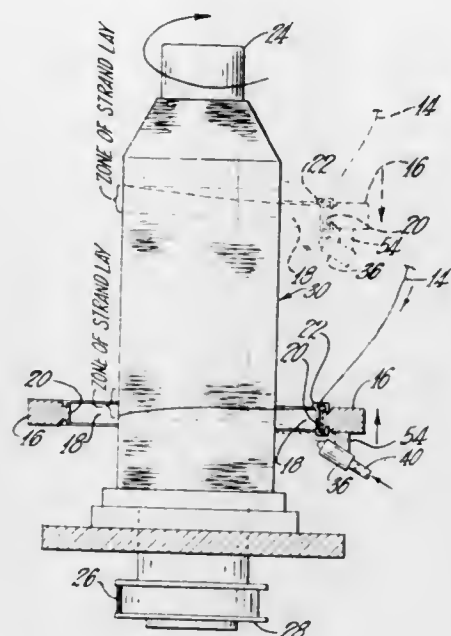
Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fibreglas Corporation, Toledo, Ohio

Filed May 2, 1973, Ser. No. 356,537

Int. Cl. D01h 13/26; C03b 37/02; F26b 7/00

U.S. Cl. 57—34 R

3 Claims



1. Twist frame apparatus, for packaging linear material comprising:

means for supplying wet linear material along a given path; a rotatable collector upon which the linear material is wound into successive layers as a package;

means for rotating the collector;

a ring rail having a circular opening for extension of the rotatable collector therethrough;

a traveler through which the linear material is advanced along its path to the collector during package formation, the traveler being mounted for circular movement on the ring rail at the circumference of the circular opening;

means for reciprocating the ring rail axially of the collector; and

means effective to increase the rate of evaporation of liquid from successive outer layers of the wet linear material as the layers are being formed including a nozzle on the ring rail immediately adjacent the package for directing a stream of drying gas onto a portion of the outer circumferential surface of the package and means for supplying the gas under pressure to the interior of the nozzle, the nozzle being moved back and forth axially of the package with the ring rail as the ring rail is reciprocated to progressively subject the exterior of the package to the drying influence of the stream during package formation.

3,851,454

METHOD OF AND DEVICE FOR THE MANUFACTURING OF ELECTRICAL CONDUCTORS

Jeno Beyer, Delft, and Leonardus Eduard Govaert, Venlo, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,018

Claims priority, application Netherlands, Sept. 30, 1972, 7213274

Int. Cl. D01h 7/84, 9/06

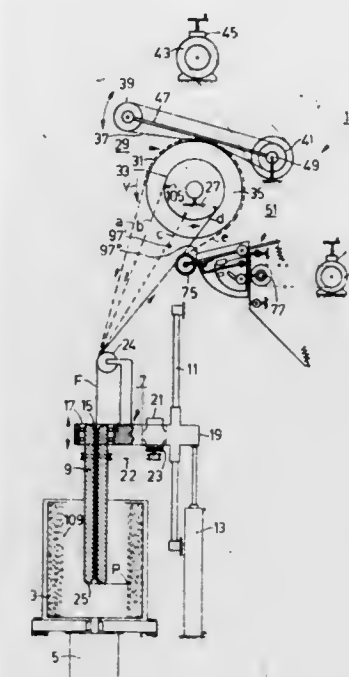
U.S. Cl. 57—34 CP

6 Claims

1. A method of manufacturing electrical conductors, in which a number of individual metal wires are unwound from spools, are assembled to form a strand which is fed to a twisting device, said strand being twisted while passing through the twisting device, and the electrical conductor thus obtained is wound onto a spool, comprising the steps of:

a. bundling a number of individual metal wires on a doubling machine to form a strand in a first process phase;

winding said strand onto a spool; placing said spool in a twisting device; unwinding said strand from said spool, feeding said strand through a guide into a rotating container and depositing said strand regularly along the inner wall of the container so as to subject the strand to a first twist; and



then driving said spool so as to reverse the direction of movement of said wire strand, thereby withdrawing the strand from the container and rewinding said strand onto the same spool, while maintaining the direction of rotation of the container, so as to subject said strand to a second twist.

3,851,455

METHOD FOR MANUFACTURING YARN FROM NATURAL AND CHEMICAL FIBERS AND A DEVICE FOR CARRYING OUT THE METHOD

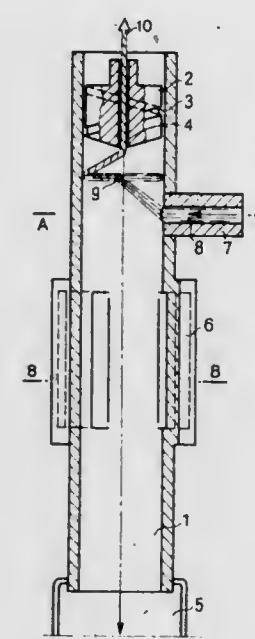
Ryszard Jozwicki; Henryk Kubica; Wacław Ankudowicz; Tadeusz Jedryka; Stanisław Kurzyniec; Roman Swietoslawski; Franciszek Olczyk, all of Lodz, Poland; Irena Teresa Roszewska-Hunsza, deceased, late of Lodz, Poland (Zdzisław Henryk Hunsza, heir), and Agata Beata Hunsza, Lodz, Poland (heir-in-law), assignors to Instytut Włókiennictwa, Lodz, Poland

Filed Sept. 13, 1971, Ser. No. 179,898

Int. Cl. D01h 1/12

U.S. Cl. 57—58.95

14 Claims



1. A method of producing yarn comprising the steps of: a. creating a planar air vortex with no axial component in

a cylindrical chamber between a closure member and a plurality of tangential air inlets by admitting air into said inlets and past said member while withdrawing air under suction at a location remote from said chamber to the side of said inlets opposite that at which said chamber is formed;

b. introducing fibers into said vortex at a location between said inlets and said member whereby said fibers whirl about centrifugally in a ring in the plane of said vortex; and

c. withdrawing a yarn from said vortex whereby fibers from said ring intertwine with one another to elongate said yarn as the same is withdrawn.

3,851,456

ANTISTATIC YARN CONSISTING OF A MIXTURE OF METALLIC AND NONMETALLIC FIBERS

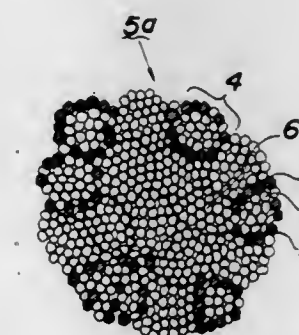
Koichi Hamada, and Tatsuya Kunieda, both of Osaka, Japan, assignors to Nippon Seisen Co., Ltd., Osaka, Japan

Filed July 24, 1973, Ser. No. 382,191

Int. Cl. D02g 3/12

U.S. Cl. 57—140 BY

4 Claims



1. An antistatic yarn comprising, in combination:

a first plurality of metallic fibers;

a second plurality of nonmetallic fibers;

each of said metallic fibers having a polygonal cross section to have at least one substantially sharp-edged corner disposed along substantially the entire length of said metallic fiber, said corner serving to collect static charges formed in said yarn and to dissipate said static charges across the entire length of said yarn, said polygonal cross section serving to enhance binding between said metallic fibers and said nonmetallic fibers; and

said first plurality of metallic fibers and said second plurality of nonmetallic fibers being combined so that a substantial number of said metallic fibers are arranged adjacent the outer periphery of said antistatic yarn.

3,851,457

CORE YARNS AND METHODS FOR THEIR MANUFACTURE

Graham Thomas Waters, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 260,934, June 8, 1972; Pat. No. 3,780,515, which is a division of Ser. No. 125,683, March 18, 1971, Pat. No. 3,691,750, which is a continuation-in-part of Ser. No. 805,598, March 10, 1969, Pat. No. 3,557,873. This application Apr. 9, 1973, Ser. No. 349,164

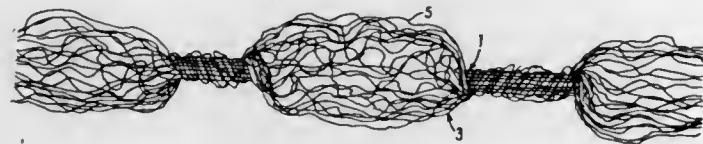
Int. Cl. D02g 3/38; D02j 1/12

U.S. Cl. 57—144

9 Claims

1. A well integrated core yarn comprising a core component of set false twisted synthetic continuous filaments and at least one wrapping component of synthetic continuous filaments which are formed in helices, the directions of which helices reverse at intervals along the yarn, said core yarn having a

decitex as defined hereinbefore within the range 120 to 400 inclusive and said core component having a decitex as defined

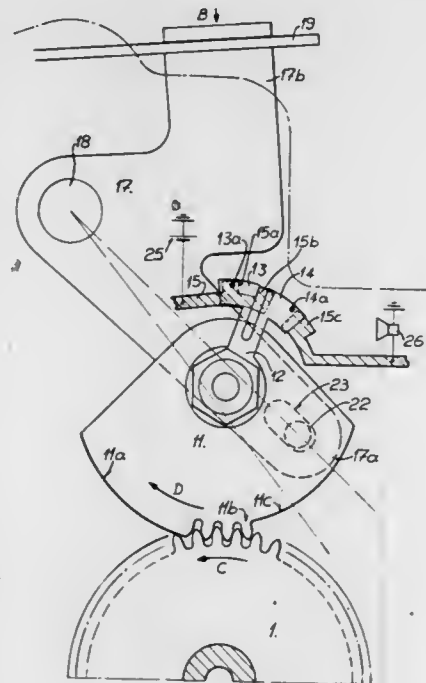


hereinbefore between 25 and 40 percent of the decitex of said core yarn.

3,851,458
ELECTRICAL ALARM DEVICE FOR AN ALARM CLOCK
Samuel Schwab, Delemont, Switzerland, assignor to Louis Schwab, S.A., Delemont, Switzerland
Filed Oct. 2, 1973, Ser. No. 402,789
Claims priority, application Switzerland, Oct. 2, 1972, 14381/72

U.S. Cl. 58—20 Int. Cl. G04c 21/16

5 Claims



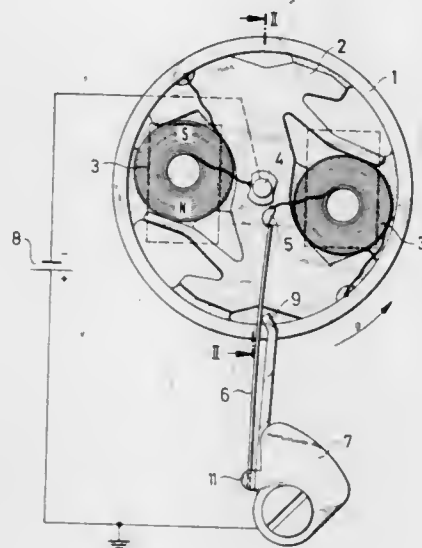
1. In an alarm clock, an electrical circuit having an electrically energized alarm, a driven spindle, an alarm first gear rotatable on said spindle and movable axially thereon, an alarm time-setting gear for presetting the time said alarm is to be energized and having a coupling recess on a side surface thereof, a driven gear rotatable on said spindle and having a coupling projection on a side surface thereof for engaging in said coupling recess of said alarm time-setting gear and coupling it to said driven gear when said coupling projection and coupling recess are in registry, resilient biasing means resiliently biasing the driven gear toward said alarm time-setting gear for coupling thereof when said preset time obtains and uncoupling thereof after the alarm has been energized, a one-way clutch having a clutch element fixed to said spindle and a second clutch element thereof on said first gear for driving said first gear when said biasing means couples said driven gear and said alarm time-setting gear, said biasing means having means for effecting clutching of said clutch and declutching thereof when said alarm time-setting gear and driven gear are coupled and uncoupled respectively, program means driven by said first gear when driven by said spindle controlling energizing of said circuit for sequential spaced intervals to energize said alarm during said intervals.

3,851,459
ELECTRIC WATCH
Heinz Meitinger, Mutlangen, Germany, assignor to Bifora-Uhren J. Bidlingmaier GmbH, Schwabisch Gmund, Germany

Filed Jan. 15, 1974, Ser. No. 433,526
Claims priority, application Germany, Jan. 20, 1973, 2302884

Int. Cl. G04c 3/04
U.S. Cl. 58—28 B

4 Claims

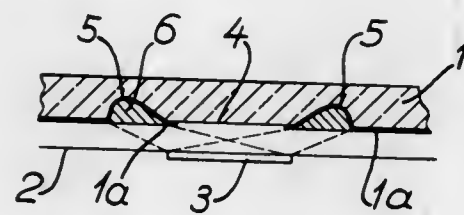


1. An electric watch comprising an oscillating balance, coils mounted on said balance, stationary magnets to generate a magnetic field intersecting said coils during oscillation of said balance, a source of DC voltage, and contact means to feed said coils with current from said source in dependence of the angular position of said balance, said contact means comprising a terminal member mounted on said balance and connected to said coils, the improvement comprising that said contact means comprises a rigid stationary stop member and a contact spring electrically insulated with respect to said stop member, said spring being urged in engagement with said stop member by said terminal member, said stop member being electrically connected to said source of DC voltage.

3,851,460
WATCH TIME DISPLAY ILLUMINATION
Pierre Michel Piquerez, Bassecourt, Switzerland, assignor to Ervin Piquerez S.A., Bassecourt, Switzerland
Filed Aug. 9, 1973, Ser. No. 387,021

Claims priority, application Switzerland, Aug. 14, 1972, 12006/72; June 7, 1973, 8246/73
Int. Cl. G04b 19/30, 39/00, 19/06
U.S. Cl. 58—50 A

5 Claims

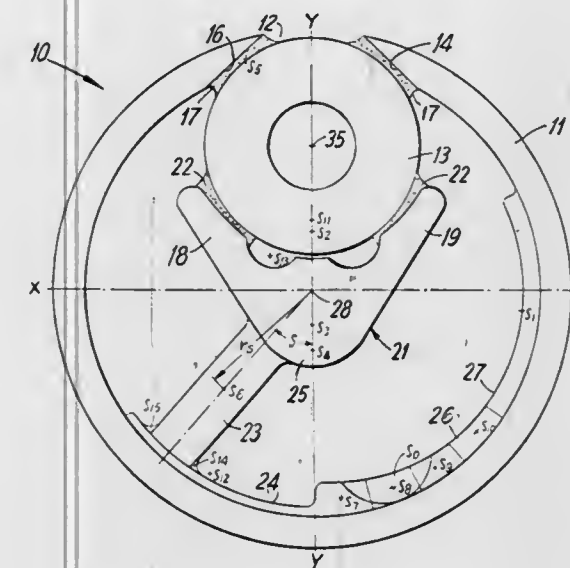


1. A watch comprising a time display zone, a transparency forming a watch glass, dial or case bottom, a luminescent material supported by the transparency, and a metallized layer applied on said transparency to reflect light emitted by said luminescent material towards said zone.

3,851,461
BALANCE WHEEL
Wilhelm Tilse, Pforzheim-Birkenfeld, Germany, assignor to Timex Corporation, Waterbury, Conn.
Continuation of Ser. No. 114,277, Feb. 10, 1971, abandoned.

This application Dec. 22, 1972, Ser. No. 317,850
Int. Cl. G04c 3/04; G04b 17/00; H02k 33/00
U.S. Cl. 58—107

5 Claims

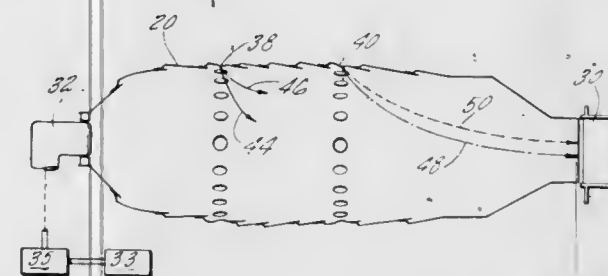


1. A balance wheel comprising:
a balance body having an axis, a counterweight portion and at least one element subject to weight variations mounted on the other side of said axis from said counterweight portion to cause rotation of the body through an angle when the axis is horizontal and the wheel is not properly poised,
said counterweight portion being tapered in a peripheral direction so that said angle is determined by the amount of dispoise, and also varying in distance from said axis in a predetermined manner to facilitate removal of greater predetermined sections of said counterweight portion for correction of correspondingly lesser amounts of dispoise.

3,851,462
METHOD FOR REDUCING TURBINE INLET GUIDE VANE TEMPERATURES
Alexander Vranos, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 29, 1973, Ser. No. 375,248

Int. Cl. F02c 7/12, 7/22
U.S. Cl. 60—39.06

4 Claims



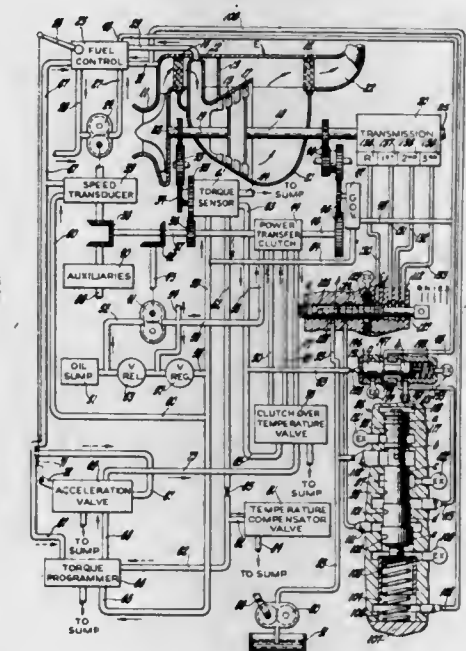
1. In a gas turbine engine including a combustion chamber and a plurality of circumferentially spaced turbine inlet guide vanes positioned at the downstream end of the combustion chamber, said combustion chamber including at least one burner can having at least one row of circumferentially spaced combustion air holes through one wall thereof, the method of reducing the maximum temperature reached by said vanes including the steps of:
spraying fuel into the burner can; and
oscillating the fuel delivery into the burner can with a period of oscillation shorter than the turbine inlet guide vane thermal response time and at a selected frequency

which is the frequency of one of the harmonics or subharmonics of the natural acoustic pressure oscillations of the combustion chamber.

3,851,463
GAS TURBINE ENGINE POWER SHIFT TRANSMISSION POWER TRAIN
Donovan L. Robinson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 21, 1972, Ser. No. 273,728
Int. Cl. F02c 3/10

U.S. Cl. 60—39.16

15 Claims



1. A power train comprising: in combination; a gas turbine power plant having a gas generator including a compressor providing a gas discharge pressure and combustion apparatus, turbine means gas-coupled to the gas generator, control means controlling the gas generator to provide a programmed output torque, varying with compressor speed and turbine means speed; and a power shift transmission having an input operatively connected to said turbine means, a load output and a plurality of fluid-operated drive establishing devices for establishing a plurality of ratio drives between said input and output, governor means operatively connected to said turbine means providing a governor signal proportional to the speed of said turbine means, a source of fluid under pressure, regulator valve means operatively connected to said source, compressor and governor means regulating the pressure substantially proportional to the programmed engine output torque in response to gas discharge pressure and engine turbine means speed and shift control means operatively connected to said regulator valve means, and fluid operated drive establishing devices and operative under the control of said pressure regulated by said regulator valve means and selectively operating said devices for selectively engaging said drives.

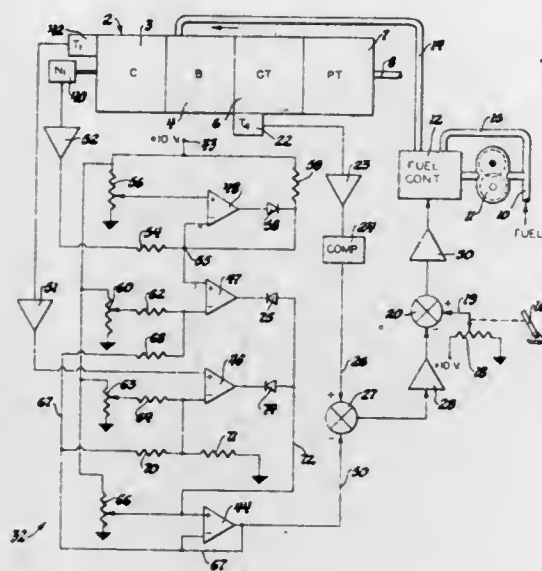
3,851,464
GAS TURBINE FUEL CONTROL
James L. Davis, Edward L. Lopke, both of Kokomo, and Leslie Joseph Pechous, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 28, 1973, Ser. No. 392,738

Int. Cl. F02c 9/10
U.S. Cl. 60—39.28 T

5 Claims

1. A system for establishing a schedule of turbine temperature for a gas turbine engine as a function of ambient temperature and turbine speed comprising, in combination, a first operational amplifier effective to provide a temperature limit signal; a second operational amplifier responsive to ambient temperature having its output connected to an input of the first operational amplifier so as to lower the limit signal progressively with decrease in ambient temperature; a third oper-

ational amplifier responsive to turbine speed having its output connected to the said input of the first operational amplifier so as to lower the limit signal progressively with decrease in turbine speed; the second and third operational amplifiers



being connected to the first operational amplifier so that the output calling for the lower limit signal prevails; and means connected to the third operational amplifier effective to provide a lower speed limit to the turbine speed responsive input of the third operational amplifier.

3,851,465

ANNULAR DILUTION ZONE COMBUSTOR

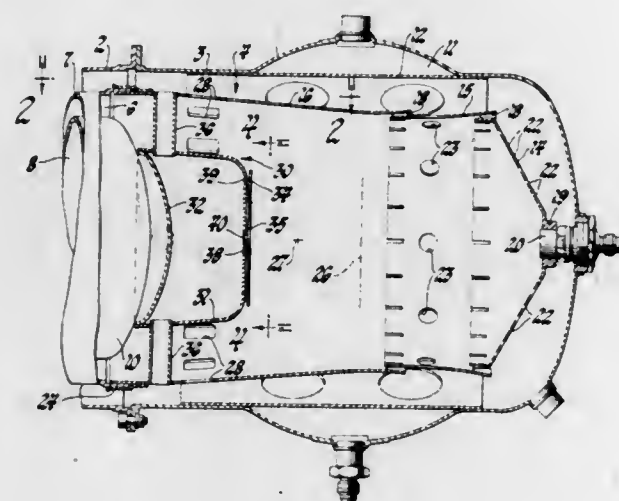
Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 6, 1973, Ser. No. 348,682

Int. Cl. F02c 3/04, 7/18

U.S. Cl. 60—39.36

5 Claims



1. A combustion liner for a gas turbine combustion apparatus, the liner including an outer wall of generally circular cross-section having an upstream end and a downstream end, a dome closing the upstream end, and a substantially closed centerbody mounted in the downstream end, the centerbody and outer wall defining between them an annular outlet passage of substantially constant width from the liner; the dome providing for entrance of fuel; approximately the upstream third of the liner including the dome providing distributed entrances for combustion air and cooling air; at least approximately the central third of the liner wall being imperforate to avoid quenching of the combustion; and the outer wall having a ring of dilution air holes abreast of the centerbody to admit dilution air directly into the outlet passage for mixing with and cooling of the combustion products flowing through the outlet passage.

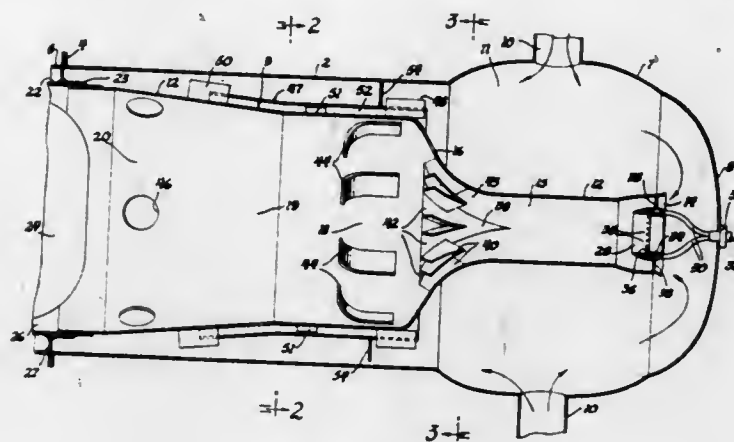
3,851,466
COMBUSTION APPARATUS
Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 12, 1973, Ser. No. 350,383

Int. Cl. F02c 3/06, 7/22

U.S. Cl. 60—39.36

5 Claims



1. A combustion apparatus for a regenerative gas turbine engine or the like comprising, in combination, a casing having an upstream portion and a downstream portion and having an entrance for hot compressed air in the upstream portion; a combustion liner disposed within the casing having an upstream end in the upstream portion of the casing and a downstream end in the downstream portion of the casing; the casing and liner defining between them a space for the compressed air discharging into the liner, and the liner defining an outlet for combustion products at its downstream end; the liner including wall means defining, in flow sequence from its upstream end, a premix-prevaporization zone, a combustion zone, and a dilution zone; the premix-prevaporization zone having an open upstream end defining a primary air inlet adapted to admit air flowing axially of the zone without significant circumferential velocity; means in the air inlet for carbureting the air; the wall means defining a flare from the premix-prevaporization zone into the combustion zone; a centerbody disposed centrally of the flare effective to guide the flow along the inner surface of the wall means at the flare, the centerbody serving to heat additionally the carburetted air; the combustion zone being located immediately downstream of the flare and having substantially greater cross-sectional area than the premix-prevaporization zone, and including means effective to promote circulation and mixing in the combustion zone; shroud means spaced outwardly from the wall means extending downstream from the flare over the combustion zone effective to define a shallow flow path for convection cooling air over the exterior of the wall means; and blocking means between the shroud means and casing disposed between the upstream and downstream portions of the casing effective to direct a major portion of dilution air through the said flow path; the dilution zone of the liner having dilution air entrance holes through the wall means adjacent to the downstream end of the liner to admit dilution air from the downstream portion of the casing; and the liner wall means between the premix-prevaporization and dilution zones being substantially imperforate.

3,851,467

RECIRCULATING COMBUSTION APPARATUS JET PUMP

Warren S. Sherman, and Albert J. Verdouw, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,538

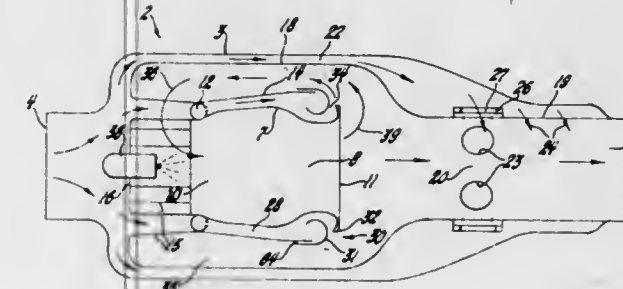
Int. Cl. F02c 3/00

U.S. Cl. 60—39.65

4 Claims

1. A combustion apparatus comprising, in combination, an innermost wall defining a combustion zone having upstream

and downstream ends, an inner wall defining an annular air passage with the innermost wall, an outer wall defining with the inner wall an annular recirculation passage from the downstream to the upstream end of the combustion zone and defining a discharge passage from the combustion zone, and an outermost wall defining a dilution air passage with the outer wall to conduct air into the discharge passage; the downstream end of the inner wall being curved inwardly to form a forward boundary for a Coanda nozzle, and the downstream end of the innermost wall being curved outwardly to define a rear boundary for the Coanda nozzle, the Coanda nozzle encircling the downstream end of the combustion zone between the said curved ends adapted to discharge into the recirculation pas-



sage and entrain combustion products discharged from the combustion zone into the recirculation passage; comprising a structure in which the forward boundary of the nozzle is substantially radial, the rear boundary of the nozzle converges toward the forward boundary to define a converging air entrance to the nozzle such that a surface equidistant from the said boundaries is directed at an acute angle less than 30° to the forward boundary at the nozzle outlet, and the rear boundary terminates in a guiding surface directed at a small acute angle to a perpendicular to the adjacent forward boundary of the nozzle outlet, the guiding surface having a width greater than the width of the nozzle outlet; and a supplementary outlet means from the said air passage into the recirculation passage by-passing the Coanda nozzle.

3,851,468

APPARATUS FOR VARYING SEALING PRESSURES ON ABUTTING WALL PARTS, PARTICULARLY OF LIQUID FUEL ROCKET ENGINES FROM THE EXTERIOR OF SUCH ENGINES

Helmut Frankle, Heilbronn-Neckargartach, and Fritz Schmalzriedt, Weinsberg, both of Germany, assignors to Messerschmitt-Bolkow-Blohn Gesellschaft mit beschränkter Haftung, Munich, Germany

Filed Sept. 12, 1973, Ser. No. 396,358

Claims priority, application Germany, Sept. 23, 1972, 2246810

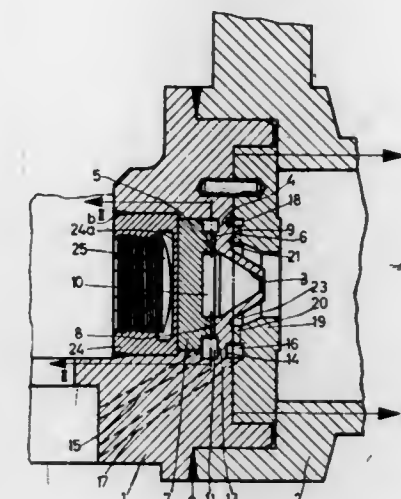
Int. Cl. F02k 9/02; B05b 7/10

U.S. Cl. 60—258

5 Claims

1. A device for sealing the surfaces of an assembled device, particularly by pressing together the sealing surfaces forming a head of a combustion chamber in a liquid fuel rocket engine, comprising a first wall having one face with a first sealing surface, a second wall member connected to said first wall, and having one face with a second sealing surface in abutting engagement with said first sealing surface and having an opposite face at its opposite end with a third sealing surface directed in the same direction as said first sealing surface, a thrust piece having a fourth sealing surface in abutting engagement with said third sealing surface, a pressure member connected to said second wall member, and having an elastic partition wall bearing against said thrust piece in a direction to urge it toward said first wall and said wall, and means

engageable with said elastic partition to bend said partition toward said thrust piece to cause tighter sealing engagement



of said second and first sealing surfaces and said third and fourth sealing surfaces.

3,851,469

TEMPERATURE SUPERVISORY SYSTEM FOR EXHAUST GAS REACTORS FOR INTERNAL COMBUSTION ENGINES

Dieter Eichler, Hochberg, and Walter Remmele, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhoehe, Germany

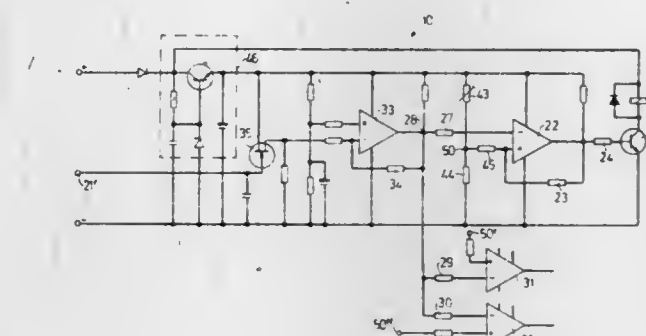
Filed Aug. 23, 1972, Ser. No. 283,177

Claims priority, application Germany, Jan. 29, 1972, 2204286

Int. Cl. F02b 75/10

U.S. Cl. 60—277

14 Claims



1. Temperature monitoring and protective supervisory system for the exhaust system of internal combustion engine systems including at least one reactor (19) in the exhaust system thereof to prevent damage to the reactor due to excessive temperatures comprising

a temperature sensing means (21) located in thermal sensing relationship to an element of the engine system and providing an electrical signal representative of temperature in the exhaust system of the engine and thus a measure of the operating condition of the reactor (19); a threshold switch means (10) having a plurality of switching positions, each having a corresponding output, and each corresponding to a discrete temperature level as sensed by the temperature sensing means (21), to provide a plurality of threshold signals, each corresponding to a discrete temperature threshold level in excess of a predetermined temperature arising within the exhaust system of the engine;

and control means (11, 12, 13, 16) including an indicator means, and means connected to the engine system commanding operation of the engine system tending to reduce the operating temperatures arising within the exhaust system thereof, said control means being energized

by said threshold switch means (10) when one of the threshold levels thereof is exceeded, the switch output of the respective threshold levels being connected to selectively activate said indicating means and said engine operating command means to permit corrective action to be taken before the reactor is being damaged.

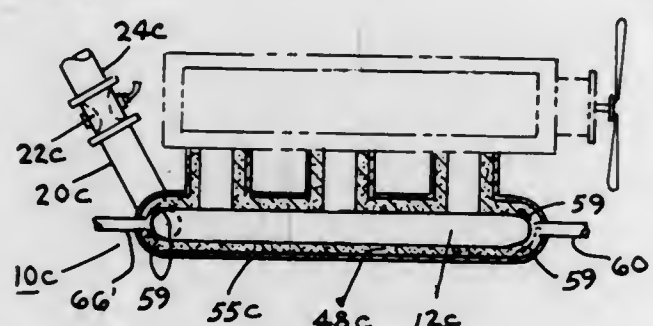
3,851,470

ANTI-POLLUTION EXHAUST CONVERSION SYSTEMS
John Kaufmann, Jr., 3716 Woodrow Ave., Pittsburgh, Pa. 15227

Filed Feb. 11, 1972, Ser. No. 225,644
Int. Cl. F02b 75/10

U.S. Cl. 60-298

3 Claims



1. An anti-pollution exhaust conversion system for an exhaust duct through which partially reacted exhaust gases are circulated, said system comprising induction and mixing means mounted in said exhaust duct for inducing and mixing a reactant fluid with said exhaust gases, a collector coupled to said exhaust duct and to a source of said gases, a variable insulator substantially surrounding said collector, said variable insulator having passage means extending therethrough for passage of a tempering fluid for varying the insulating characteristic of said variable insulator, means for supplying a reactant fluid to said induction and mixing means for induction thereby into said exhaust duct, means for varying the rate of flow of said tempering fluid through said variable insulator passage means, said tempering fluid varying means including means for coupling said insulator passage means to said induction and mixing means so that the flow of tempering fluid through said passage means is varied directly with the rate of flow of said exhaust gases through said exhaust duct, said source being an internal combustion engine having at least two banks of cylinders and an exhaust collector for each bank of said cylinders, each of said collectors being so provided with similar variable insulators each having tempering passage means, said induction and mixing means including a venturi member mounted adjacent the outlet of each of said collectors for inducing said reactant fluid into said exhaust system, exhaust conduit means coupling the outlets of each of said venturi members to said exhaust duct, said induction and mixing means further including an additional venturi member mounted in said exhaust duct downstream of the connection thereof to said exhaust conduit means, and suction conduit means coupling said additional venturi member to the tempering passage means of said variable insulators.

3,851,471

HOT-GAS ENGINE AND METHOD OF MANUFACTURING SAME

George Albert Apolonia Asselman, and Adrianus Petrus Johannes Castelijns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 21, 1973, Ser. No. 372,282

Claims priority, application Netherlands, July 1, 1972, 7209298

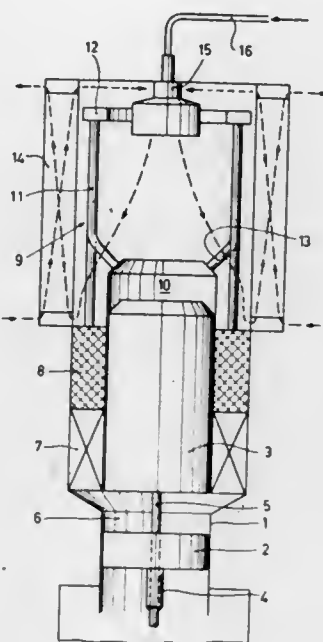
Int. Cl. F02g 1/04

U.S. Cl. 60-517

14 Claims

1. A hot-gas engine comprising one or more spaces of varying volume and higher mean temperature and one or more

spaces of varying volume and lower mean temperature which are connected thereto, each of the connections between said spaces incorporating a regenerator, the said spaces and the connections therebetween being filled with a working medium which consists mainly of hydrogen and which flows to and fro through the regenerator, characterized in that the walls of the said spaces which are at a high temperature during operation and the walls of the connections are covered with a layer of



silicon nitride, the relevant wall portions having a concave shape and being made of a material having a thermal expansion coefficient which is of the same order or larger than that of the deposited silicon nitride, the silicon nitride layer being deposited by bringing the relevant wall portions in contact at higher temperatures with a flowing gas mixture which contains silicon in a volatile compound and which furthermore contains hydrogen.

3,851,472

HOT-GAS ENGINE

Gregorius Theodorus Maria Neelen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 273,342, July 19, 1972, abandoned.

This application Sept. 4, 1973, Ser. No. 393,987

Claims priority, application Denmark, Aug. 28, 1971, 11887/71

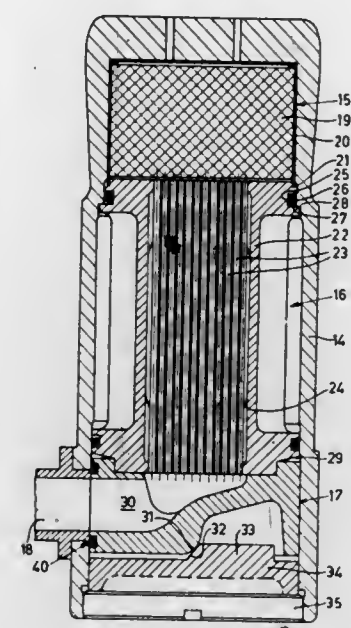
Int. Cl. F25b 9/00

U.S. Cl. 60-517

4 Claims

1. A hot-gas engine comprising a variable space of higher average temperature which communicates with a variable space of lower average temperature, the communication between said spaces comprising a heater and a number of cooler-regenerator units each comprising a housing in which a regenerator, a cooler and a flow guide are present, the housing communicating, on the regenerator side, with the heater and, on the flow guide side, with the space of lower average temperature, characterized in that the regenerator, the cooler and the flow guide are connected together by soldered joints, an O-ring seal being present between the cooler and the housing and being incorporated in a groove in the cooler housing, said groove being bounded, on its side facing the flow guide, by a surface of the cooler which engages a surface present on the housing, an O-ring seal being also present at the area of the communication of the flow guide with the side wall of the housing, the flow guide comprising, on its side facing the

cooler, an edge which co-operates with an oblique surface of a cam which forms part of a sliding member which is axially



3,851,473

BRAKE APPLICATION CONTROL DEVICES

Wilfred Nicholas Bainbridge; David Parsons, and Harold Hodgkinson, all of Leamington Spa, England, assignors to Automotive Products Company Limited, Leamington Spa, England

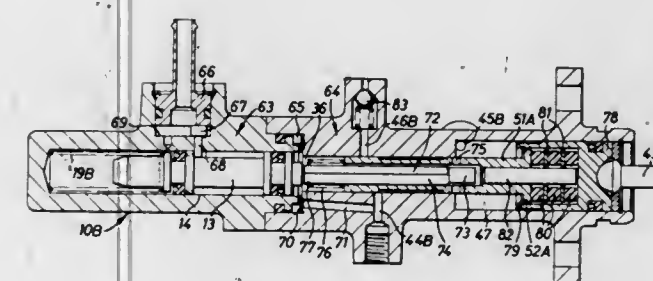
Filed June 7, 1973, Ser. No. 367,781

Claims priority, application Great Britain, June 9, 1972, 27036/72

Int. Cl. F15b 7/00

U.S. Cl. 60-552

8 Claims



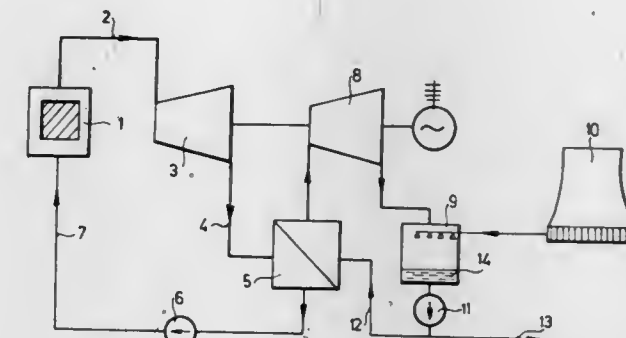
1. A master cylinder device comprising a body, a bore in the body, a freely floating master cylinder piston in the bore, and control valve means arranged to apply fluid under pressure from a remote fluid pressure supply source to the master cylinder piston to move the master cylinder piston within the bore, wherein the control valve means include a valve spool slidable in the bore, first second and third ports in the wall of the bore, and a space in the bore between the valve spool and the piston, the valve spool being arranged to place the first port in communication with a selected one of the second and third ports dependent upon the position of the valve spool within the bore, the first port also being in communication with said space, said valve spool being tubular with a through bore, with a rod in said through bore, first resilient means urging the tubular valve spool away from the master cylinder piston and second resilient means arranged so that brake applying movement is imparted to the rod and is imparted to said valve spool via said second resilient means and, if fluid pressure is not available in said space to move said master cylinder piston, said rod imparts brake applying movement to the piston.

3,851,474
STEAM TURBINE POWER PLANT, MORE PARTICULARLY ATOMIC POWER STATION
Laszlo Heller; Laszlo Forgo, and Arpad Bakay, all of Budapest, Hungary, assignors to TRANSELEKTRO Magyar Villamos-sagi Kulkereskedelmi Vallalat, Budapest, Hungary
Filed Oct. 27, 1972, Ser. No. 301,684
Claims priority, application Hungary, Oct. 27, 1971, EE 1966

Int. Cl. F01k 17/06, 23/02

U.S. Cl. 60-644

2 Claims



1. A steam turbine power plant, wherein water is converted to steam at high pressure by nuclear energy comprising steam-generating means for utilizing said nuclear energy for said conversion, a high-pressure stage turbine, the outlet of said steam generating means being connected to the inlet of said high pressure stage turbine, a steam transformer having a primary side and a secondary side, the inlet of said primary side being connected to the outlet of said high pressure stage turbine, first pump means connected for transferring condensate from said primary side to the inlet of said steam-generating means, a low-pressure stage turbine connected at its inlet to the outlet of said secondary side, a mixing condenser connected at an inlet to the outlet of said low-pressure stage turbine, a dry cooling tower connected to said mixing condenser for providing cooled water thereto, and second pump means connected to the outlet of said mixing condenser for recycling condensate from said mixing condenser to the inlet of the secondary side of said steam transformer and for recycling of warmed cooling water to said cooling tower, whereby the passing of radioactive water through said cooling tower may be avoided.

3,851,475

COMBINED TURBINE AND RECIPROCATING PISTON ENGINE

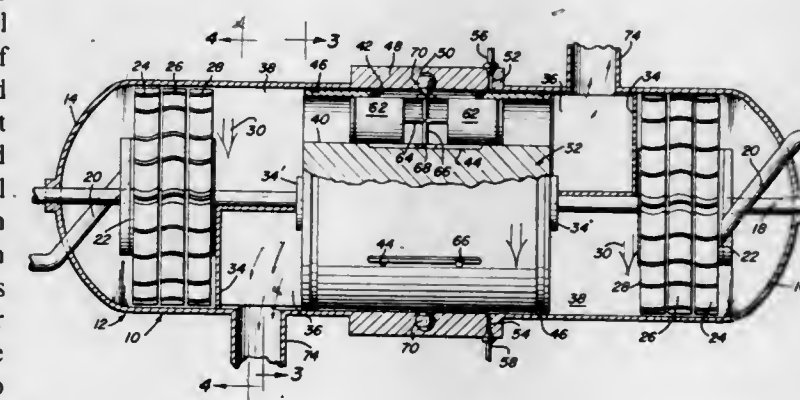
Douglas E. Ericson, 1192 Mojave, and Clyde A. Hawley, Rt. 4, Box 214, both of Idaho Falls, Idaho 83401

Filed Oct. 10, 1973, Ser. No. 405,006

Int. Cl. F01b 21/04

U.S. Cl. 60-715

10 Claims



1. In combination, an elongated housing, a power shaft journaled longitudinally in said housing, turbine wheel means mounted on the opposite end portions of said shaft within said

housing, a cylinder drum mounted on said shaft between and spaced from said turbine wheel means, a plurality of piston bore formed through said drum spaced outwardly from and about said shaft and paralleling the latter, a double-ended piston assembly reciprocal in each of said bores and drivingly connected to said housing for rotating said drum in response to reciprocation relative to the latter, the spacing between the opposite ends of said drum and said turbine wheel means including stationary opposite end exhaust gas plenum means opening outwardly to the exterior of said housing and with which the remote ends of the bores disposed on opposite sides of a diametric plane of said drum are registered, at least a portion of said spacing not occupied by said plenum means defining gas transfer chamber means for the transfer of gases being discharged from said turbine wheel means to those piston bores not registered with said exhaust gas plenum means.

3,851,476

METHOD AND APPARATUS FOR BREAKING WAVES
Morgan Llewellyn Edwards, 5933 Corsica Dr., Dayton, Ohio 45424

Filed Nov. 29, 1972, Ser. No. 310,422

Int. Cl. E02b 3/04

U.S. Cl. 61-1 R

5 Claims



1. In a method of controlling waves by causing breaking thereof utilizing apparatus having a base, a platform mounted on said base, and means for moving said platform toward and away from said base, the steps comprising:

- disposing said apparatus in a body of water at a location therein where breaking of waves is desired,
- maintaining said base and an edge of said platform located nearest to approaching waves at a depth beneath the surface of the water greater than 1.3 times the height of approaching waves to place said base and said edge of said platform in a position relative to incoming waves such that said base and said platform are subjected to relatively small wave forces,
- positioning an edge of said platform opposite said edge thereof located nearest to approaching waves at a depth beneath the surface of the water approximately equal to 1.3 times the height of waves passing thereover to cause breaking of the waves by inducing them to use up their energy acting against themselves in chaotic turbulence,
- monitoring breaking of said waves at said desired location, and
- maintaining said opposite edge of said platform beneath the surface of the water at a depth approximately equal to 1.3 times the height of waves passing thereover to cause continual breaking of the waves at said desired location.

3,851,477

DEVICE FOR PROTECTING WORKS AGAINST LIQUID MASSES

Jean Claude Romain, Paris, France, assignor to Michel Lecourt; Bernard Grenot, both of Paris, France and Projetud, Paris, France

Filed Jan. 31, 1973, Ser. No. 328,283

Claims priority, application France, Mar. 9, 1972, 72.08174

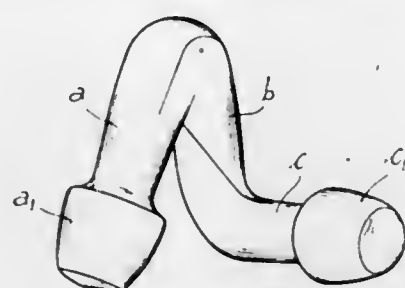
Int. Cl. E02b 3/12

U.S. Cl. 61-4

4 Claims

1. A block for protecting floating or fixed works such as piers, seawalls, jetties and the like against action of moving

liquid masses, which comprises a pair of convergent elongated elements which are connected together only at their ends in an inverted V-formation, the second end of one of said elements being free, a complementary elongated member connected at one end only to the second end of the other of said



convergent elements and extending laterally therefrom in one direction only in position to act in cooperation with said free end of said one element to seat the composite block on an underlying supporting surface, said pair of elements providing an open area sufficient to receive the complementary member of an identical block in interengaging adjacent relationship.

3,851,478

METHODS OF CONTROLLING THE FLOW OF GASES UNDERGROUND

Douglas J. Ayres, London, England, assignor to British Railways Board, London, England

Filed June 5, 1972, Ser. No. 259,975

Claims priority, application Great Britain, June 9, 1971, 1972/71

Int. Cl. A62c 3/02, 1/08; E02d 27/00

U.S. Cl. 61-35

14 Claims

1. A method for controlling the flow of gases underground which comprises excavating at least one trench, applying a clay slurry to the area excavated in order to form a boundary wall surrounding an underground fire or surrounding an underground storage tank; said slurry being a mixture of clay and water in which the water predominates, permitting said slurry to impregnate large voids in the adjacent ground to render the adjacent ground substantially impermeable to air and thereby retarding the flow of air through the ground; placing a sheet of flame or corrosion resistant material selected from the group consisting of synthetic plastic material, metal, and fabricated board against at least one face of said at least one trench; and displacing clay slurry by depositing aggregate without cementing material into said at least one trench through the clay slurry and thereby forming a wall of aggregate.

3,851,479

SEALED POROUS EARTH FORMATIONS AND PROCESS FOR THEIR MANUFACTURE

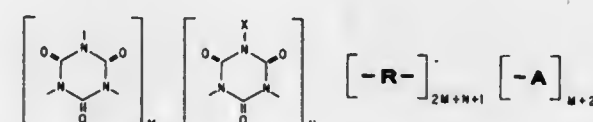
Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1972, Ser. No. 317,884

Int. Cl. E02d 3/12

U.S. Cl. 61-36 R

5 Claims



1. In a process for the sealing of porous earth formations to reduce their permeability to fluids, the improvement comprising:

- preparing an aqueous solution containing a water soluble salt of a polyisocyanuric acid and a water soluble polymer,

- adjusting the pH of said aqueous solution as desired for a given application always having a pH in excess of 7,
- applying said aqueous solution to said earth surfaces and maintaining contact between said earth surfaces and said aqueous solution for a time sufficient to permit gelation within the void space of said permeable earth surfaces.

3,851,480

MINE ROOF SUPPORT ASSEMBLIES

Franz Beulker, Werne a. d. Lippe; Kunibert Becker, Werl; Harry Rosenberg, Ludinghausen; Hans-Dieter Wieblitz, Dulmen, all of Germany, and Joseph Kuti, Charleston, W. Va., assignors to Gewerkschaft Eisenhütte Westfalen, Wethmar near Lunen, Westfalen, Germany

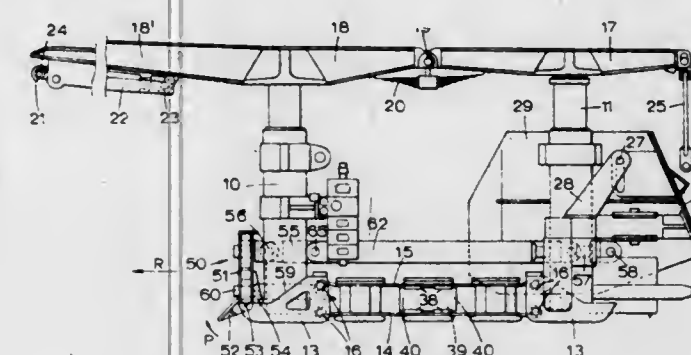
Filed May 9, 1973, Ser. No. 358,558

Claims priority, application Germany, May 10, 1972, 2222801

Int. Cl. E21d 15/44

U.S. Cl. 61-45 D

16 Claims



1. In a mine roof support assembly composed of relatively displaceable frames, each frame having telescopic props supporting a roof cap and resilient means interconnecting the bases of the props, and guiding and shifting means operably disposed between adjacent pairs of frames for effecting relative displacement of the frames and the improvement comprising a plurality of connection units provided on the resilient means of each frame and spaced apart longitudinally thereof and in the direction of said relative displacement, each connection unit enabling connection to be made between the resilient means and the associated guiding and shifting means with each guiding and shifting means being connected to selected ones of the connection units of the adjacent pair of frames.

3,851,481

MULTI-PURPOSE VEHICLE FOR USE UNDERGROUND
Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.

Division of Ser. No. 299,354, Oct. 20, 1972, Pat. No. 3,811,290, which is a continuation-in-part of Ser. No. 241,975, April 7, 1972, Pat. No. 3,793,966. This application Oct. 16, 1973, Ser. No. 406,971

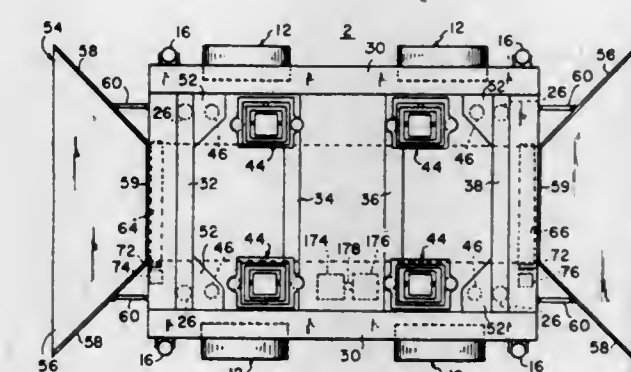
Int. Cl. E21d 15/44

U.S. Cl. 61-45 D

1 Claim

1. A self-propelled vehicle for use in underground excavations having a floor and a ceiling, said vehicle comprising:
a frame;
wheel assemblies supporting said frame; said wheel assemblies being independently suspended and steerable;
a body supported on said frame;
first lifting means supported by said frame for raising said body above said frame;
a plurality of rotatable chuck assemblies disposed within said body and adapted to engage a workpiece for insertion into said ceiling;
second lifting means supported by said body and engaging said chuck assemblies for raising said chuck assemblies above said body;

a pair of movable scoop containers mounted on said frame at opposite ends thereof;
a reversible conveyor supported by said frame and positioned to transport material from one of said containers



3,851,482

SECTIONALIZED LEG FOR DRILLING PLATFORM AND METHOD OF ASSEMBLING SAME

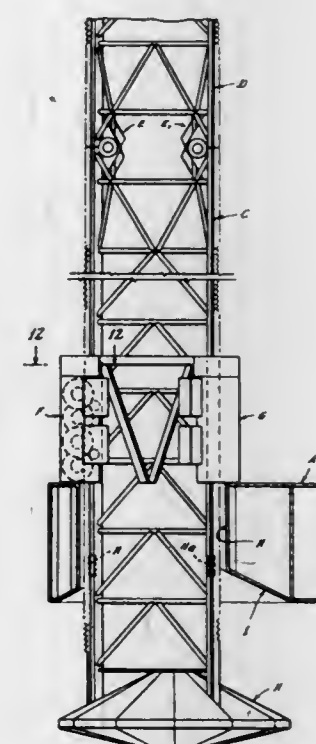
Richard L. LeTourneau, and Chester G. Hall, both of Longview, Tex., assignors to IHC Holland-Le Tourneau Marine Corporation, Kilgore, Tex.

Filed May 25, 1973, Ser. No. 363,987

Int. Cl. E02b 17/00

U.S. Cl. 61-46.5

11 Claims



1. A leg structure for a jack-up-type drilling platform comprising a plurality of aligned, longitudinally and laterally separable sections, lifting and lowering means on abutting leg sections, and separable joint means on said abutting sections capable of securing said abutting sections in alignment with said lifting and lowering means in accurately timed relationship.

3,851,483

SLEEVED-PILE STRUCTURE

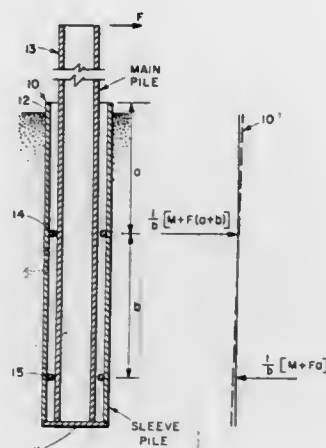
Myle J. Holley, Jr., 1364 Massachusetts Ave., Lexington, Mass. 02173

Filed Dec. 12, 1972, Ser. No. 314,481

Int. Cl. E02d 5/22; E02b 17/00

U.S. Cl. 61—53

22 Claims



1. A structural assembly comprising in combination a pile;
- a sleeve surrounding a longitudinal portion of said pile;
- force transfer means interconnecting said sleeve internally to said pile at one or more selected locations along their common length; and
- means for preventing soil from entering the interior space between said pile and sleeve above said force transfer means and occupying this space when said pile and sleeve are embedded in a soil region.

3,851,484

APPARATUS FOR INSTALLING CONCRETE PILES

Jerry A. Steding, 4605 Meadow Valley Dr. N.E., Atlanta, Ga. 30342

Filed Apr. 14, 1972, Ser. No. 244,118

Int. Cl. E02d 5/34

U.S. Cl. 61—53.52

1 Claim



1. Apparatus for use in forming a column of material such as a support pile, sand drain or well point means, in situ, comprising:

- a. container means having funnel-shaped sides converging to define a ground-engaging opening adjacent the container bottom, being operable for supporting a quantity of column forming material with said funnel-shaped sides detailed for directing said column forming material by gravity outwardly through said container bottom opening;

b. a column forming plow point means adapted initially to be located in said container adjacent said bottom opening, said column plow point means having a lower end of a given cross sectional area and an upstanding socket portion of exterior cross section less than that of said lower end and presenting a vertical bore of substantial length adapted to fit closely around the lower end of a pusher member to aid in guiding said lead member in a plumb direction, said lower end of the plow point means being slightly less in cross-section than the cross-sectional area of said container bottom opening;

- c. an elongated pusher means having its lower end closely fitted with said socket portion of said plow point means so that an impact force applied to said pusher means will be transferred to said plow point means for effecting penetration of the soil supporting surface to cause a vertically continuous column bore to be formed in said soil, said pusher means being of cross sectional area substantially less than that of said lower end of the plow point means; and
- d. said container including scale means for progressively indicating the amount of column-forming material transferred into a column being formed and said pusher means including a graduated scale to indicate depth of plow point penetration and in conjunction with the scale means on the container to indicate the amount of material transferred into said column bore in response to predetermined increments of movement of said plow point means, whereby it may be determined whether a uniform amount of material necessary to fill the theoretical bore size is being induced into the bore.

3,851,485

METHOD AND APPARATUS FOR INSTALLING CONCRETE PILES

Jerry A. Steding, 4605 Meadow Valley Dr. N.E., Atlanta, Ga. 30342

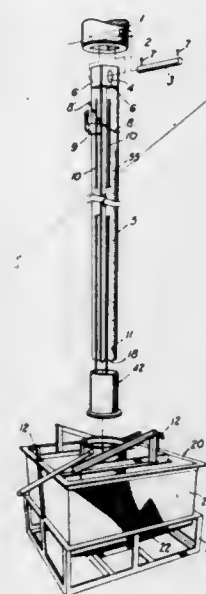
Continuation-in-part of Ser. No. 244,118, April 14, 1972.

This application Nov. 29, 1972, Ser. No. 310,465

Int. Cl. E02d 5/34, 13/04

U.S. Cl. 61—53.52

32 Claims



15. A method of forming in the earth's surface a support column, such as a pile, of a fill material that may be introduced into the column cavity in a fluid condition and which becomes solid after curing including the steps of:

- a. forming a cavity of selected size and depth in the earth's surface;
- b. selectively introducing a predetermined volume of fill material into said cavity by gravity; and
- c. forming a fracture plane at a selected elevation in the upper extremity of the column by the introduction of a break-off plate at the selected elevation.

3,851,486

GATE SETTING DEVICE

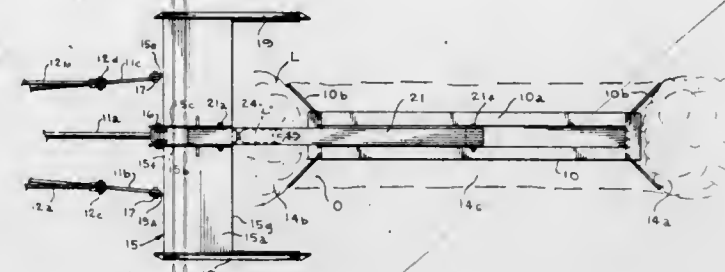
John Everett Anderson, P.O. Box 812, Eagle Lake, Tex. 77434

Filed July 30, 1973, Ser. No. 383,916

Int. Cl. E02b 7/20; E02f 5/16

U.S. Cl. 61—63

7 Claims



1. Apparatus for use in conjunction with a tractor including a tractor mounted lift means, for placing a gate frame in a levee, comprising:

- a main frame section;
- connect means connecting said main frame section for pivotal movement with said tractor lift means;
- said main frame section including earth moving means cooperating with said tractor lift means for forming an opening in a levee by movement of said tractor along said levee; and
- gate setting means mounted with said main frame section for setting a gate frame into the ground of said opening in said levee, including:
- a power arm mounting with said main frame section for pivotal movement with respect thereto,
- shoe means pivotally attached to said power arm for engaging said gate frame; and
- power means connected to said power arm and to said frame section for moving said shoe means downwardly into engagement with said gate frame and for pressing said gate frame into the ground of said opening; and
- mount means mounting said shoe means for pivotal movement substantially parallel to said levee only.

3,851,487

BUOYANT UNDERWATER STRUCTURES

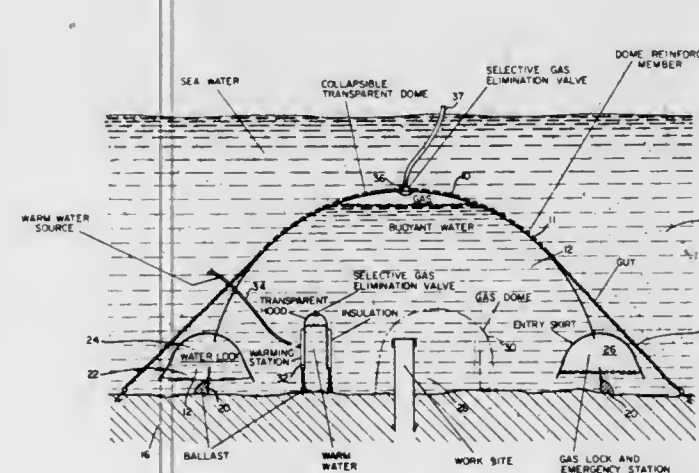
Christian J. Lambertsen, 217 Glen Rd., Ardmore, Pa. 19003

Filed Oct. 6, 1970, Ser. No. 78,493

Int. Cl. B63c 11/00

U.S. Cl. 61—69 R

16 Claims



1. Buoyant structure, totally submerged in an underwater environment, comprised of a shell substantially impermeable to water, said shell having access openings therein, the volume within such shell being occupied by water having a lower specific gravity than that of the underwater environment, said shell being closed at the top and sides thereof.

3,851,488

DIVERS WEIGHT

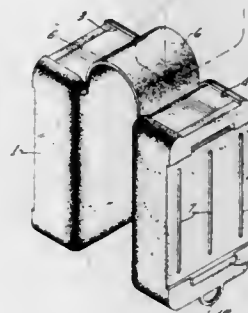
Manfred Schuler, 4100 Patrice Rd., Newport Beach, Calif. 92660

Filed Feb. 22, 1973, Ser. No. 334,696

Int. Cl. B63c 11/30

U.S. Cl. 61—70

4 Claims



1. A diving weight apparatus comprising:
- a first case having an opening adapted to receive a first weight;
- means for securing said first case to a diving belt;
- a second case having an opening adapted to receive a second weight;
- means for securing said first and second cases together;
- means for securing the first weight within said first case and the second weight within said second case, and wherein said means for securing the first and second weights within said first and second cases and said means for securing said cases together comprise:
- a flexible hinge connecting said first and second cases together at a point adjacent to the weight receiving openings, said hinge to have a strap length commensurate with the total width of both cases.

3,851,489

LINE LAYING APPARATUS

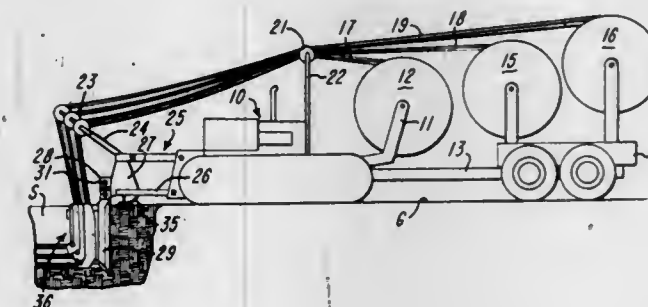
Kenneth Richardson, 111 W. First St., Bldg. Suite 512, Vandalia, Ohio 45402

Filed June 28, 1973, Ser. No. 374,340

Int. Cl. F16l 1/00

U.S. Cl. 61—72.6

12 Claims



1. A line guide for use in a line layer providing a blade adapted to mount a line guide in a connected following relation to said blade, comprising means defining a plurality of separate line guide passages, said means including a base guide and plural guide elements in an aligned conforming relation, said elements being separably related with one contained relative the other on a superposed positioning thereof and including means providing for relative displacement of said plural guide elements whereby to provide for a modification of said passages and access to said passages as and when needs require.

3,851,490

CONSTRUCTION PILE HAVING FLUID INJECTION MEANS

Kunijiro Matsushita, Toyokawa, Japan, assignor to Kumagai Gumi Company Limited, Fukui-shi, Japan

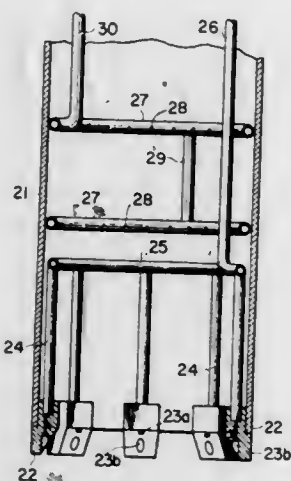
Filed Apr. 4, 1973, Ser. No. 347,977

Claims priority, application Japan, July 28, 1972, 47-76256

Int. Cl. E02d 7/24; E21b 7/18

U.S. Cl. 61-53.74

2 Claims



1. A construction pile comprising a hollow cylindrical body; first water spray nozzle means provided at the bottom end of said body and including a plurality of nozzle fittings disposed along the whole periphery of said bottom end, each of said nozzle fittings having a radially inwardly directed nozzle opening and an axially downwardly directed nozzle opening; a water supply means for supplying pressurized water to said first nozzle means including a common manifold ring disposed within said body at the upper side of said nozzle fittings, a plurality of water pipes for connecting said manifold ring with said nozzle fittings respectively, and a water conduit for connecting said manifold ring with a suitable source of pressurized water on the ground; an air nozzle means provided within said body and including at least one tubular ring disposed adjacent the cylindrical inner surface thereof and connected together with the adjacent one by a conduit, each of said rings having a plurality of radially inwardly directed nozzle openings disposed along the whole range of said ring and at angularly spaced relationships; and an air supply conduit passing through said body and connecting the uppermost positioned tubular ring to a source of pressurized air for introducing said pressurized air to said nozzle openings of said upper and lower tubular rings.

3,851,491

METHOD AND APPARATUS FOR UNDERWATER OPERATIONS

Burton H. Mason, Covington, La., assignor to Atmospheric Diving Systems, Inc.

Filed June 22, 1972, Ser. No. 265,295

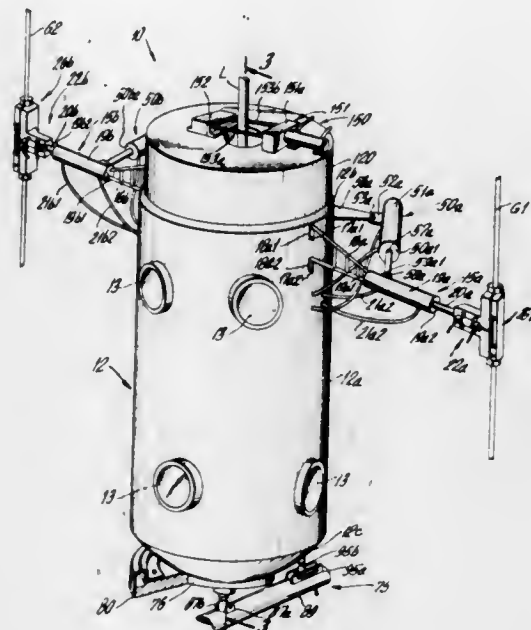
Int. Cl. B63c 11/40

U.S. Cl. 61-69 R

52 Claims

1. An apparatus for carrying out an operation at an underwater area, said apparatus comprising a submergible chamber, arm means interconnected thereto and extending outwardly therefrom, gripping means attachably mounted to said arm means at the outward end thereof, said gripping means being adaptably formed to grip vertically disposed guides, means to

actuate said gripping means, whereby said chamber is submergible to a depth whereat said gripping means is actuated



to grip said guides so as to hold said chamber at said depth adjacent said area.

3,851,492

APPARATUS AND METHOD FOR OFFSHORE OPERATIONS

Glyn E. Cannon; James R. Kruger; Theodore A. Short, and Benjamin L. Jobe, all of Houston, Tex., assignors to Seascope Services, Inc., Houston, Tex.

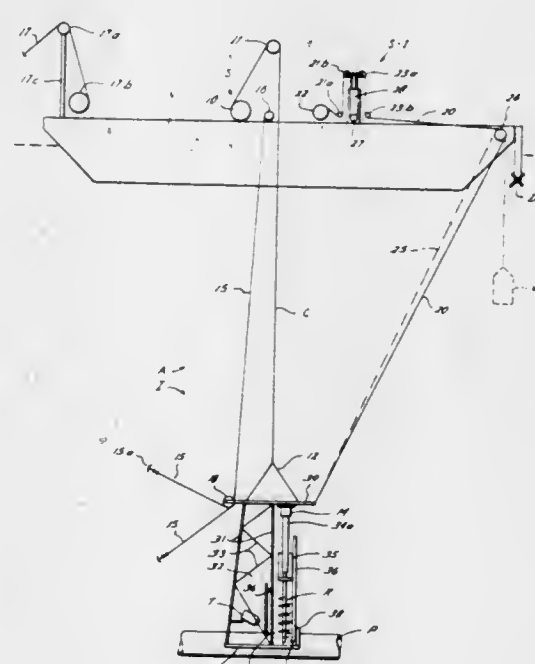
Continuation of Ser. No. 184,723, Sept. 29, 1971, abandoned.

This application May 18, 1973, Ser. No. 361,810

Int. Cl. F16I 1/00

U.S. Cl. 61-69 R

20 Claims



1. A method of anchoring a submarine pipeline beneath a body of water, comprising the steps of:
lowering a work platform from a transporting marine vessel to a submerged position adjacent the pipeline;

3,851,494

MOTOR VEHICLE COOLING SYSTEM WITH BYPASS REGULATED HEAT EXCHANGER

Jurgen Hess, Markgroningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed July 9, 1973, Ser. No. 377,765

Claims priority, application Germany, Aug. 10, 1972, 2239297

Int. Cl. F25b 41/00

U.S. Cl. 62-196

5 Claims

anchoring the pipeline with the earthen floor beneath the body of water;
automatically controlling relative movement between the work platform and the pipeline during anchoring; and said step of controlling relative movement including:
a. sensing the position of the work platform relative to the pipeline; and
b. limiting movement of the work platform with respect to the pipeline in accordance with the results of said step of sensing, whereby a stable anchoring operation independent of transporting vessel movement may be performed.

3,851,493

GAS SEPARATION AND PURIFICATION UTILIZING TIME SEQUENCED FLOW THROUGH A PAIR OF REGENERATORS

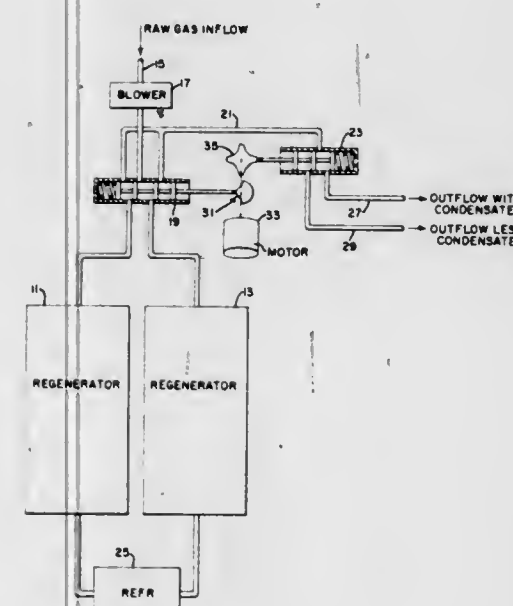
William E. Gifford, Syracuse, and Enrico D. Veltri, East Syracuse, N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,166

Int. Cl. F25j 5/00

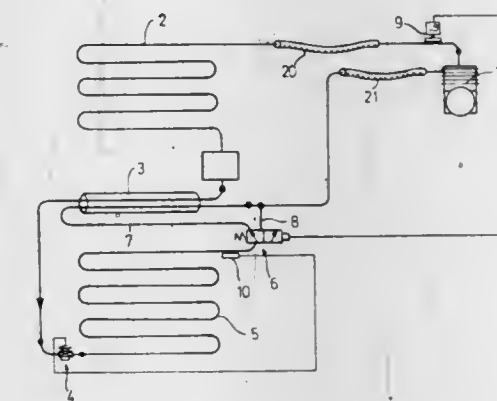
U.S. Cl. 62-13

9 Claims



1. The process of separating from a starting gas mixture a constituent gas characterized by a saturation temperature relatively higher than other constituent gases of the mixture, comprising the steps of:

- passing said gas mixture through a thermal regenerator from the warm end toward the cold end thereof at pressure and temperature levels such that the gas mixture is cooled below the dew point of said high saturation temperature gas thereby causing at least a substantial part thereof to condense out and deposit in said regenerator;
- reducing the temperature level of the gas as passed through said regenerator;
- passing said gas at reduced temperature level through a thermal regenerator from the cold end toward the warm end thereof to thereby vaporize previously deposited condensate into the gas stream initially at concentrations substantially higher than in the starting gas mixture and as the condensate deposits are removed then in concentrations substantially lower than in said starting gas mixture; and
- dividing the regenerator outflow into separate time sequential portions of which the first includes said high saturation temperature gas in relatively high concentration and the second includes said high saturation temperature gas in substantially lower concentration, and passing said first and second time sequential portions of the regenerator outflow to separate points of use or discard.



1. A cooling system particularly suitable for a motor vehicle, comprising a compressor, a condenser, a heat exchanger for further cooling of the liquidified refrigerant, an expansion valve and an evaporator arranged for continuously cycling the refrigerant, wherein:

said heat exchanger is arranged to cool said liquid refrigerant by warming cooled vapor from said evaporator before it is supplied to said compressor, and

automatically regulated bypass means are provided for reducing the temperature of the vapor provided to said compressor in response to thermostatic means responsive to the temperature of the refrigerant output of said compressor, and thereby to prevent the output of said compressor from reaching a temperature damaging to organic compounds exposed to the refrigerant of the system.

3,851,495

METHOD AND APPARATUS FOR PREVENTING THERMAL POLLUTION

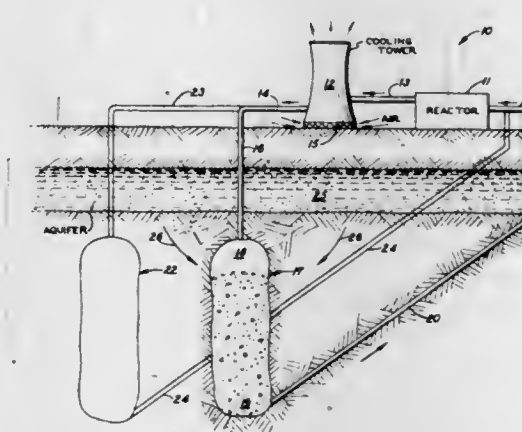
Joseph A. Lahoud, and Dennis L. Orphal, both of Las Vegas, Nev., assignors to Computer Sciences Corporation, Los Angeles, Calif.

Filed Oct. 5, 1971, Ser. No. 186,708

Int. Cl. F25d 23/12

U.S. Cl. 62-260

9 Claims



1. In a method of preventing thermal pollution of water resources from industrial facilities which require substantial cooling and wherein cooling water is circulated from said industrial facility to a cooling unit for removing substantial heat energy therefrom and back to said industrial facility for reuse, the improvement comprising,

- forming a large underground water reservoir by a nuclear

- explosion such that said reservoir has a greater vertical dimension than horizontal dimension,
- connecting the upper level of said underground reservoir to said cooling unit to receive water therefrom,
 - connecting the lower end of said reservoir to said industrial facility to deliver cooled water therefrom,
 - whereby excess heat energy remaining in the water issuing from said cooling unit is dissipated in the earth.

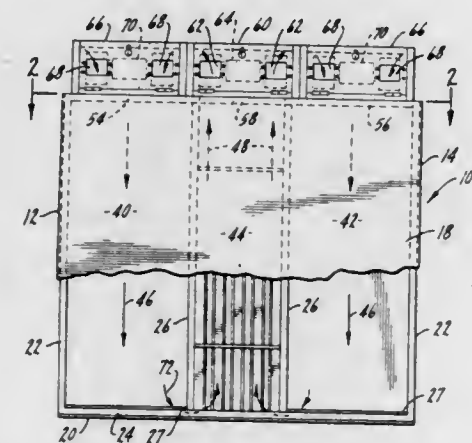
3,851,496

AC-DC PLATE REFRIGERATION AIR SYSTEM
Donald N. Rupert, Jr., Pittsburgh, Pa., assignor to Dole Refrigerating Company, Chicago, Ill.

Filed Jan. 22, 1974, Ser. No. 435,427
Int. Cl. F25d 17/04

U.S. Cl. 62-406

6 Claims



1. In a vehicle eutectic plate refrigeration system, a cover, at least one eutectic plate positioned within said cover, said cover being closed on the bottom, sides, front and rear, a plurality of air openings at the top of said cover, air passage means within said cover and associated with said plate defining air passages which extend from one of said openings, down along a portion of the plate to the bottom of the plate, and then upwardly along a different portion of the plate to another one of said openings, DC air moving means positioned at one of said air openings, which opening functions as an air discharge when said DC means is operated to move air through said air passages, and AC air moving means associated with another one of said air openings, which opening functions as an air discharge when said AC means is operated to move air through said air passages, the opening associated with said DC air moving means functioning as an air inlet when said AC means is operated and the opening associated with said AC means functioning as an air inlet when said DC means is operated.

3,851,497

TILTABLE AIR-COOLED ABSORPTION REFRIGERATION APPARATUS OF THE INERT GAS TYPE

Peter Erik Blomberg, Stockholm, and Karl Gunnar Boren, Skarholmen, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation of Ser. No. 335,534, Feb. 26, 1973, abandoned, which is a division of Ser. No. 235,367, March 16, 1972, Pat. No. 3,802,219. This application Nov. 29, 1973, Ser. No. 419,920

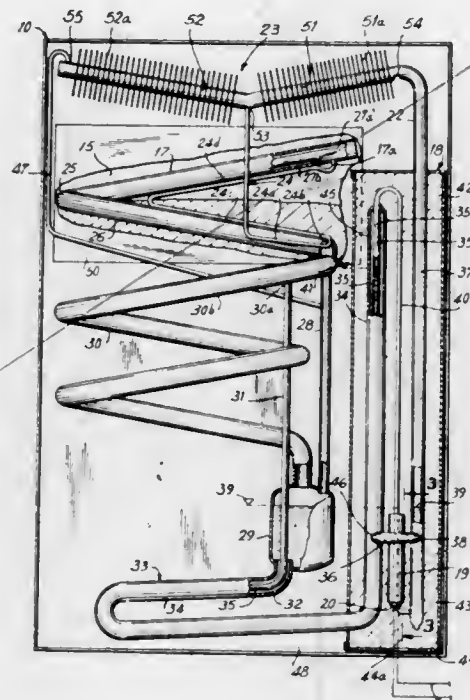
Int. Cl. F25b 15/10

U.S. Cl. 62-452

16 Claims

- A refrigerator comprising
 - structure providing a cabinet having a thermally insulated storage compartment,
 - absorption refrigeration apparatus of the inert gas type including a condenser positioned in a space at the rear of said cabinet which is external to said compartment,
 - said condenser comprising at least one pair of hollow

- members which slope upward and are united at their lower ends and form an angle therebetween,
- said hollow members having an inlet for refrigerant at one level and an outlet for refrigerant at a lower level at the



3,851,498

FLEXIBLE COUPLING

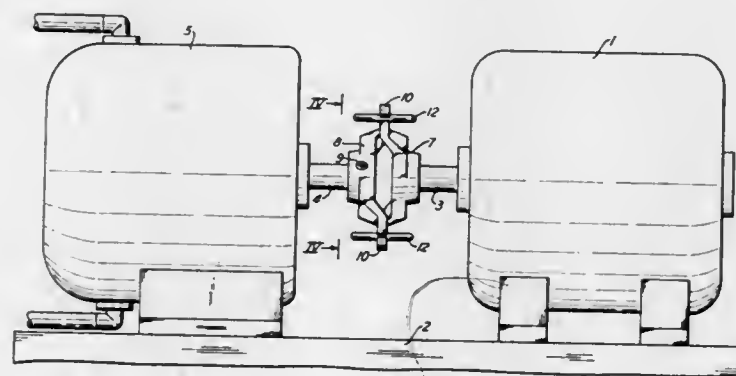
Sherman L. Rice, 511 Azalea Ave., East Liverpool, Ohio 43920

Filed May 22, 1973, Ser. No. 362,809

Int. Cl. F16d 3/62

U.S. Cl. 64-12

8 Claims



- A flexible coupling for a pair of aligned rotatable shafts, comprising a pair of separate arms crossing each other and provided centrally with means for rigidly mounting them on the adjacent ends of the shafts, and a pair of resilient O-rings connecting the ends of one arm to the ends of the other arm, the arms being shaped to hold said rings in place in substantially parallel planes substantially parallel to the axis of rotation of the arms, whereby when one of the arms is rotated by a shaft to put the rings under tension the rings will cause the other arm to rotate in the same direction.

3,851,499

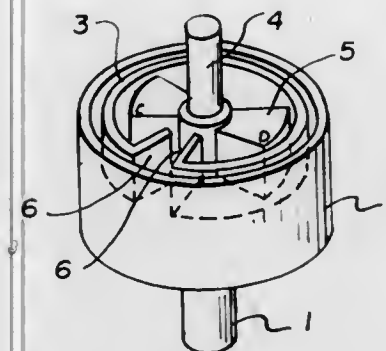
DRIVING MECHANISM FOR A LOAD WITH INERTIA
Masaru Noguchi, Tokyo, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,353

Int. Cl. F16d 3/14

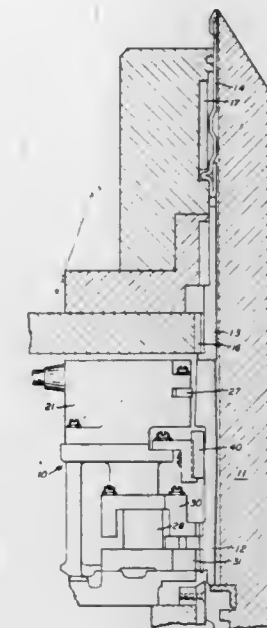
U.S. Cl. 64-27 S

4 Claims



- Apparatus for applying rotational driving torque to a load including in combination:
 - a rotational load having predetermined inertia and presenting a first greater driving torque as said load is brought to an opening speed, and requiring a second lesser driving torque to maintain rotation of said load at the operating speed;
 - a synchronous motor having an output shaft and capable of producing said second driving torque at its synchronous operating speed, said motor being incapable of producing said first greater driving torque at a speed below its synchronous speed and failing to rotate when a load requiring such greater torque is applied; and
 - a slip torque clutch having a hollow cylindrical clutch drum and a clutch spring in engagement with the inner surface of said clutch drum, said spring resiliently urged outwardly into frictional contact with the inner surface of said drum for rotation therewith and including at least one projection thereon, a clutch shaft aligned with the axis of said clutch drum and carrying therewith a lever for engagement with said projection, said clutch drum connected for rotation with one of the output shafts of said motor and said rotational load and said clutch shaft connected with the other of the output shaft of said motor and said rotational load, and wherein the torque at which said clutch slips is selected to be less than the first greater driving torque which would prevent said synchronous motor from rotating upon initial energization.

other end of each selected jack with sequentially applied magnetic fields overcoming said magnetic means of said static



3,851,501

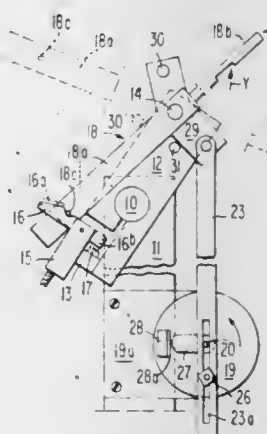
STOP MOTION APPARATUS FOR KNITTING MACHINES
Nathan Levin, 416 Highgate Dr., Trenton, N.J. 08618, and Thomas Anderson Oliver, Jr., 319 Summit Ave., Jenkintown, Pa.

Filed Oct. 2, 1973, Ser. No. 402,734

Int. Cl. D04b 35/12

U.S. Cl. 66-163

10 Claims



CIRCULAR KNITTING MACHINE NEEDLE SELECTING APPARATUS

Ronald G. Wolfshagen, Fullerton, Calif., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1971, Ser. No. 135,319

Int. Cl. D04b 15/78

U.S. Cl. 66-50 R

12 Claims

- Actuator apparatus for selectively effecting positioning of needle jacks mounted within the tricks of the needle cylinder of a circular knitting machine to place the jacks in either a selected or a non-selected position, as desired, said apparatus comprising a magnetic static force assembly including cam means adapted for physical engagement with one end of each of the jacks to place the jack in the selected position in which the each associated needle carried in the needle cylinder will be caused not to knit, magnetic means for holding said one end of each jack in contact with said cam means, and magnetic force translation assembly means including a plurality of electromagnets physically arranged in a predetermined manner to enable them selectively to magnetically engage the

1. Electrically operated circuit to control the operations of apparatus of the type used with a knitting machine to automatically stop and to automatically re-start the operation of the same, said machine having at least one yarn fed thereto when it is in operation and said apparatus having an arm to so feed said yarn, said machine having an electrically operated stop motion system and stop motion devices by means of which the operation of said machine is stopped when said system is actuated by said devices, said machine also having an electrically operated starting circuit by means of which the machine is placed in operation when said starting circuit is energized, said control circuit being connected to said stop motion system to also actuate the latter to stop the operation of said machine, said control circuit also being connected to said starting circuit to energize the latter to place said machine in operation, said arm being movable back and forth between first and second positions thereof and being operable in its said second position to cause said control circuit to actuate said stop motion system to stop the operation of said machine,

said apparatus having means to apply force to said arm to move the same from its said second position thereby to re-set the same in its said first position, said arm in its said first position feeding said yarn to said machine when the latter is in operation and being movable therefrom by said yarn to its said second position when said yarn is excessively tensioned, said arm thereby causing said control circuit to actuate said stop motion system to stop the operation of said machine and the feeding of said yarn thereto, said control circuit then causing said apparatus to automatically re-set said arm and then to energize said starting circuit to automatically re-start the operation of said machine.

3,851,502

YARN DETECTOR SWITCH-UPPER

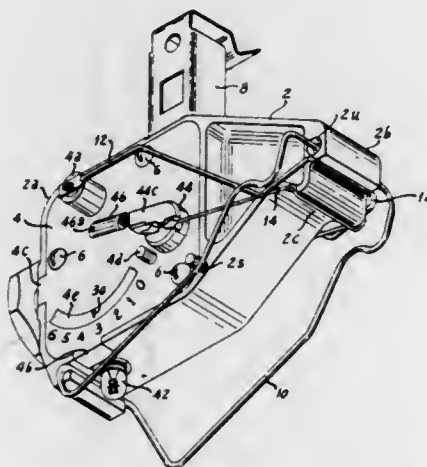
Alton W. Hopkins, Newtown Square, Pa., assignor to Control Switch, Inc., Folcroft, Pa.

Filed Mar. 5, 1973, Ser. No. 337,924

Int. Cl. D04b 35/14

U.S. Cl. 66—163

12 Claims



1. A yarn detector device comprising:
an insulating housing;
a pair of electrical terminals on said housing;
a toggle spring mechanism comprising an overcenter spring biased crank shaft in said housing with the opposite ends of said crank shaft extending out through opposite walls of said housing;
means providing an eye for passage of yarn comprising:
an external guide member supported on said housing and providing one side of said eye;
and an external trip member supported on said crank shaft and biased toward said guide member by said toggle spring mechanism to provide the other side of said eye through which the yarn passes, and being responsive to undue tension in the yarn or a snag to trip across the line of action of said toggle spring mechanism thereby to open said eye and release the yarn therefrom;
a switch within said housing;
switch operating means accessible externally of said housing;
an external feeler member supported on said switch operating means and normally engaging the yarn adjacent said eye and being movable upon release of the yarn or in case of undue slack, break or end of yarn to operate said switch to close an electrical circuit between said terminals for stop motion purposes;
and quick disconnect joints between said external guide member and said housing and between the aforementioned external trip and feeler members and their respective supporting crank shaft and switch operating means enabling ready replacement of the wear parts.

3,851,503
SECURITY SYSTEM FOR SECURING AN ARTICLE
AGAINST UNAUTHORIZED REMOVAL

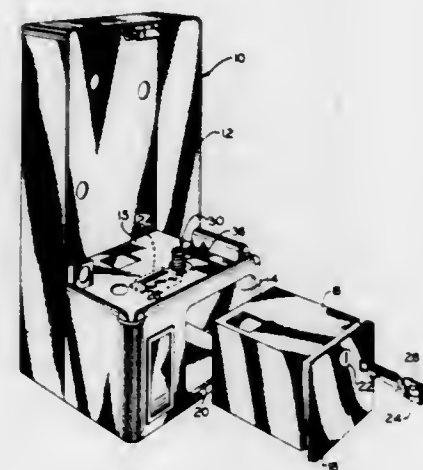
Paul A. Trimmer, 25 Hamilton Ave., Berkeley Heights, N.J. 07922, and Fred M. Cirule, 29 Summit Rd., Parsippany, N.J. 07054

Filed June 20, 1973, Ser. No. 371,616

Int. Cl. E05b 73/00

U.S. Cl. 70—58

21 Claims



1. A security system for use in connection with a coin-operated apparatus in which a coin compartment in the apparatus housing is locked with a key and the housing is provided with a screw-threaded stud, said system securing the key to the housing against unauthorized removal, said security comprising:

- a fastener member having a body with an axially extending screw-threaded aperture engageable with said stud and an axially extending portion with a radial surface and an outer peripheral surface portion including a radial shoulder;
- a collar having a bore generally complementary to the outer peripheral surface portion of the axially extending portion of the fastener member body for receiving said axially extending portion in free-spinning relationship therewith and enveloping said outer peripheral surface portion while leaving said radial surface exposed, said bore including a radial ledge complementary to the radial shoulder of the fastener member body, and said collar having an outer peripheral surface including a circumferential recess therein;
- means for capturing the key upon the housing when the fastener member is affixed to the housing by engagement of the screw-threaded aperture with the screw-threaded stud, with the collar enveloping the outer peripheral surface portion of the fastener member body;
- a driving mechanism for selectively affixing and releasing the fastener member from the housing, said driving mechanism including
- a gripping member having a jaw for engaging the recess of said collar; and
- an actuator mounted upon the gripping member for axial movement relative thereto, said actuator having abutment means for engaging the radial surface of the fastener member such that upon engagement of the abutment means with the radial surface and engagement of the jaw of the gripping member with the recess of the collar, subsequent relative axial movement of the actuator and the gripping member will urge the jaw against the recess to frictionally couple the collar with the driving mechanism and will urge the radial ledge against the radial shoulder to frictionally couple the collar with the fastener member thereby permitting rotation of the fastener member in response to rotation of the driving mechanism.

3,851,504

COMBINATION LOCK FOR ENGINE STARTERS

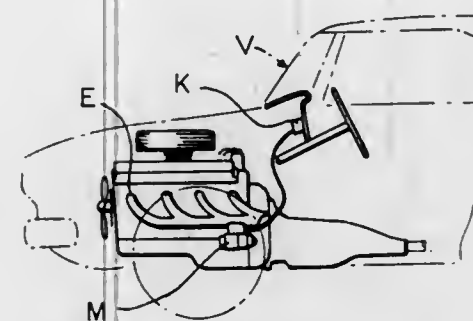
Eugene J. Theobald, 51 Forest Ave., Fort Thomas, Ky. 41075

Filed July 17, 1973, Ser. No. 380,121

Int. Cl. B60r 25/04; E05b 65/12

U.S. Cl. 70—255

7 Claims



1. A combination lock for a vehicle engine having a starter mechanism including a starter solenoid having a reciprocable plunger adapted to be drawn from an initial rest position to an engine-starting position when the solenoid winding is energized, the lock comprising:

- a. a locking member supported by the starter solenoid and including a pawl, the member being moveable through multiple possible positions wherein the pawl interferes with reciprocation of the plunger into starting position and said multiple positions including one intermediate position in which the pawl frees the plunger to move into starting position;
- b. spring means operative to bias the locking member and pawl away from said one position;
- c. motor means operative to move through steps and coupled to move the locking member pawl through said multiple positions including said intermediate position, the motor means including an actuator coil for each step capable when energized of moving the motor means into the corresponding position, and the motor means having its position determined by said spring means when none of its coils is energized; and
- d. keyboard means having multiple push buttons at least some of which are connected to energize the various motor coils, and the vehicle including means to energize the starter solenoid.

3,851,505

CARD HOLDER FOR VEHICLES

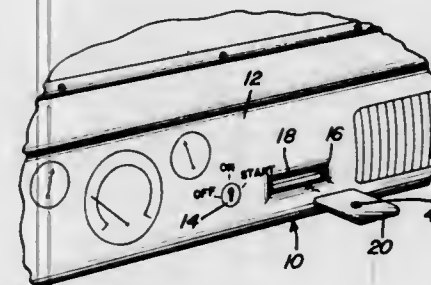
Lawrence H. Wilkinson, 718 Encino Pl., N.E., Albuquerque, N. Mex. 87106

Filed May 1, 1973, Ser. No. 356,079

Int. Cl. E05b 65/12

U.S. Cl. 70—255

4 Claims



1. In combination, a mounting panel having a slot formed therein, a flat elongated hollow housing having at least one open end and a pair of opposing large plan area longitudinal side walls interconnected along corresponding longitudinal edges by a pair of opposing small plan area longitudinal side walls extending and secured therebetween, means supporting

said housing from one side of said mounting panel with said one open end registered with said slot, whereby a card may be inserted into said slot from the other side of said mounting panel for at least substantial displacement of the first inserted end of said card into said housing, one of said large plan area side walls having an opening formed therethrough, an elongated locking pin plunger disposed generally normal to said one side wall, means supporting said pin plunger from said one side wall for lengthwise reciprocation of said pin through said opening between an extended position with said pin plunger projecting into the interior of said housing and a retracted position with said pin plunger retracted from the interior of said housing, means connected between said pin plunger and said one side wall yieldingly biasing said pin plunger toward its retracted position, a lever pivotally supported from the exterior of said one side wall for oscillation about an axis extending transversely of said lever intermediate its opposite ends and generally paralleling said one side wall, one end of said lever being disposed outwardly of and comprising an abutment defining the outer limit of movement of the outer end of said pin plunger, solenoid means carried by said one side wall and including a reciprocal actuator shiftable between extended and retracted positions and normally biased toward the extended position, said actuator including an operative connection with the other end of said lever to allow oscillation of the latter to a position permitting retraction of said pin plunger and to shift said lever to a position moving said pin plunger to the extended position thereof upon deactivation of said solenoid means, said pin plunger, when in the extended position, being adapted to be received through a bore formed through a card positioned in said housing with the bore registered with said opening to lock said card in said housing against retraction therefrom.

3,851,506

CIGARETTE BOX

Heinz Simon, Huttenstrasse 32-34, 8950 Kaufbeuren-Neugablonz, Germany

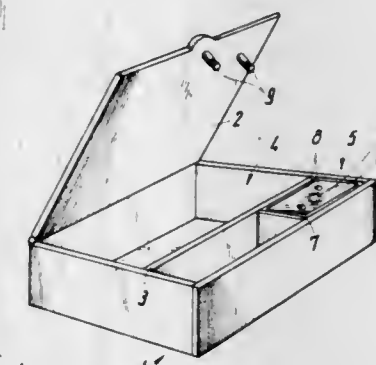
Filed Dec. 29, 1972, Ser. No. 319,731

Claims priority, application Germany, Dec. 29, 1971, 2165380

Int. Cl. E05b 43/00

U.S. Cl. 70—271

1 Claim



1. A cigarette box having a body portion defining a storage space for smoker's articles and housing a timing device with a pin lock, and having a lid hinged to the body portion with at least one locking pin for engaging the timing device wherein the improvement comprises:

- a presettable battery operated electronic control block having a time relay for causing said lid to be locked in its closed position for a predetermined interval of time;
- at least one locking pin on said lid for engaging said battery operated electronic control block and actuating a time relay, said at least one locking pin defining a switching contact for initiating the actuation period of the time relay.

3,851,507

COMBINATION LOCK

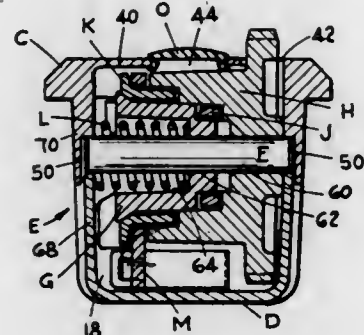
Charles S. Gehrie, Montclair, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Clifton, N.J.

Filed May 14, 1973, Ser. No. 360,029

Int. Cl. E05b 65/52

U.S. Cl. 70-316

16 Claims



1. A combination lock comprising a plurality of longitudinally spaced assemblies, each assembly comprising a shaft, a non-rotatable ratchet member, a rotatable dial member having two series of teeth, a rotatable ratchet having two series of teeth, one series of teeth of the rotatable ratchet being cooperable with the non-rotatable ratchet member and the other series being cooperable with a series of teeth of the dial member, a sleeve having a series of teeth cooperable with the second series of teeth of the dial member, the sleeve having a radial slot, and a spring resiliently maintaining the non-rotatable ratchet member, dial member, ratchet and sleeve in assembled relationship, and a manually operable latching slide member mounted for movement perpendicularly to the longitudinal axis of each of said assembly shafts, the latching slide member having longitudinally spaced fingers adapted to be received in the radial slot of each sleeve when the fingers and slots are in alignment, a sleeve blocking movement of the slide member when a finger and a slot are out of alignment.

3,851,508

SINGLE AND DOUBLE CYLINDER DEADLOCKS

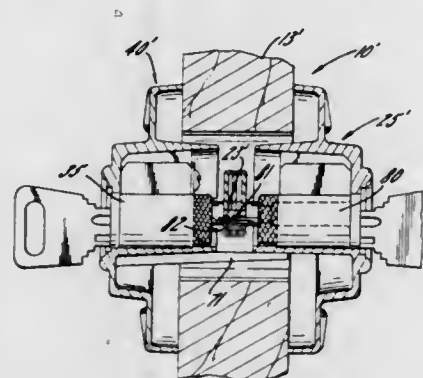
Donald L. McCurdy, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Jan. 22, 1973, Ser. No. 325,555

Int. Cl. E05b 9/08

U.S. Cl. 70-370

10 Claims



1. A deadlock having a latching bolt and a lock cylinder, key-operated mechanism connected between said cylinder and said bolt and operable when turned to move said bolt between latched and unlatched positions, the improvement in said deadlock comprising, a metal escutcheon having an inner side adapted to lie adjacent one face of a door and having a decorative outer side, a metal barrel projecting inwardly from the inner side of said escutcheon and adapted to telescope into an opening extending through the door, a hole extending through said barrel and sized to receive said cylinder, and a fastener for securing said cylinder to said barrel to anchor the

cylinder within said hole, said fastener extending between said cylinder and said barrel and securing said cylinder to said barrel independently of the door, the inner end portion of said barrel being formed with first and second axially facing walls spaced angularly and axially from one another, apertures opening out of each of said walls, said fastener being threaded into the aperture in one of said walls and having a portion bearing against such wall and said cylinder to anchor the latter within said hole, said fastener being selectively threadable into the other aperture to anchor a cylinder of different length within said hole.

3,851,509

ROLLING MILL GAUGE CONTROL METHOD AND APPARATUS INCLUDING SPEED CORRECTION

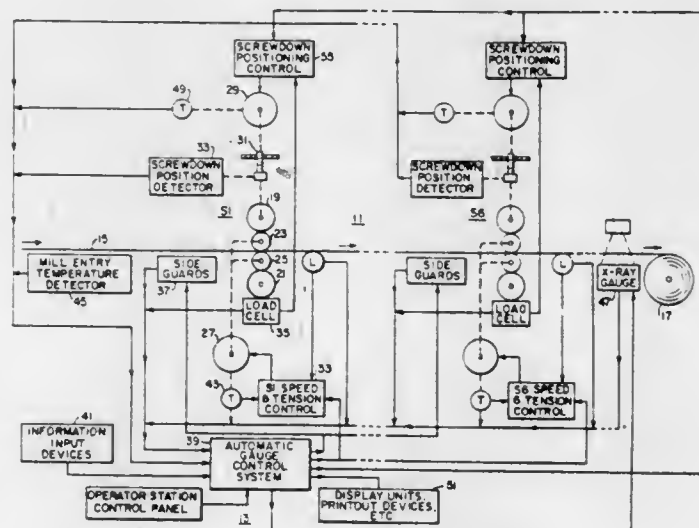
Richard Q. Fox, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1972, Ser. No. 303,725

Int. Cl. B21b 37/00

U.S. Cl. 72-8

9 Claims



1. A gauge control system for a rolling mill having at least one roll stand operative to reduce the gauge of a workpiece passed through said roll stand, said system comprising: means for determining the delivery gauge error of said workpiece leaving said one roll stand of said rolling mill in accordance with the measured roll force of said one roll stand and a predetermined correction to said measured roll force, said predetermined correction being established in magnitude as a function of a change in speed of said one roll stand, means operative in relation to said delivery gauge error for determining a required adjustment in the operation of said one roll stand to remove said gauge error, and means for adjusting said one roll stand in accordance with said required adjustment.

3,851,510

METHOD AND APPARATUS FOR FINISHING A ROLLING BAR USING A DISPLACEABLE INTERMEDIATE STAND BETWEEN TWO END ROLL STANDS

Erich Reth, Duisburg-Buchholz, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Continuation-in-part of Ser. No. 209,217, Dec. 7, 1971,

abandoned, which is a continuation-in-part of Ser. No. 887,525, Dec. 23, 1969, abandoned. This application June 18, 1973, Ser. No. 370,625

Claims priority, application Germany, Feb. 18, 1969, 1908004

Int. Cl. B21b 31/02, 1/18

U.S. Cl. 72-12

13 Claims

1. A method of tension-free finish rolling a long metal workpiece, such as a continuous bar, using spaced-apart finish roll

3,851,512

METHOD OF AND DEVICE FOR GEAR TEETH HARDENING

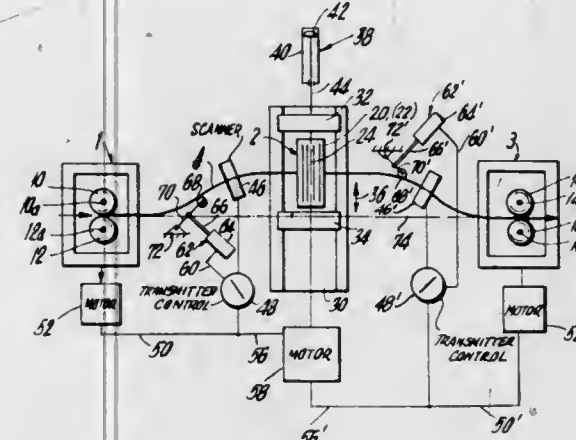
German Alexandrovich Zhuravlev, ulitsa Verkhne-Nolnaya, 10, kv.9; Efim Grigorievich Roslivker, prospekt Budennovskiy, 72, kv.51; Eduard Mikhailovich Chilevich, pereulok Solynoi Spusk, 6, kv.37, and Vladimir Samuilovich Gurevich, prospekt Oktyabrya, 18, kv.20, all of Rostov-na-Donu, U.S.S.R.

Filed Mar. 8, 1973, Ser. No. 339,349

Int. Cl. B21k 1/30

U.S. Cl. 72-69

9 Claims



the three roll stands are in alignment and feeding the workpieces between the nips of the three roll stands, and thereafter shifting the intermediate roll stand so that the nip of the rollers of the end roll stands in order to deflect the workpiece, between the end roll stands, to form a bulge of the workpiece between the two end roll stands while the rolling operation is continued.

3,851,511

METHOD FOR HYDROSTATIC EXTRUSION

Bertil Aberg, Helsingborg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

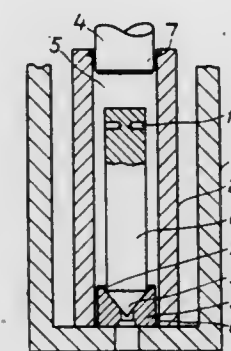
Filed Sept. 14, 1973, Ser. No. 397,303

Claims priority, application Sweden, Sept. 14, 1972, 11872/72

Int. Cl. B21c 31/00

U.S. Cl. 72-60

11 Claims



1. Method for hydrostatic extrusion, which comprises enclosing a solid billet in a pressure chamber in an extrusion press, surrounding the billet by a pressure medium, raising the pressure in the pressure medium to such a level that the material in the billet, under the influence of the pressure medium, is pressed out through an opening in a die which gives a product of the desired cross-section, in which the billet at its rear part is provided with cavity means opening in the side wall of the billet which communicates directly with the pressure medium during the greater part of the extrusion and which is filled during the extrusion with a material having less resistance to deformation than the material of the billet.

3,851,513

FEED MECHANISM FOR A THREAD ROLLER

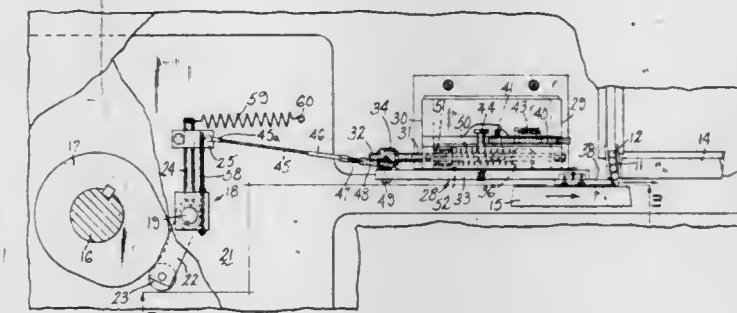
Jiri V. Pazdirek, Waterbury, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Jan. 22, 1973, Ser. No. 325,230

Int. Cl. B21d 17/04; B21h 3/06

U.S. Cl. 72-90

5 Claims



1. A feed mechanism for a thread roller which includes first and second rolling dies, one of said dies being movable relative to the other, and a chute for delivering workpieces to a position for rolling between the dies, comprising a slide having a portion thereon adapted to alternately block said chute and to permit a workpiece to move therefrom to a feeding position, and then feed the workpiece between the dies, spring means urging said slide toward a feeding position, a rotatable cam and a lever actuated by said cam, a flexible connection between said lever and said slide, whereby upon rotation of

said cam said cam and lever first permit said slide to advance in a feeding stroke under the bias of said spring means and then retract said slide through said flexible connection to store energy in said spring means, said flexible connection being ineffective to transmit a driving force on said slide during a work feeding stroke of said slide.

3,851,514

SWING-OPEN CRIMPER

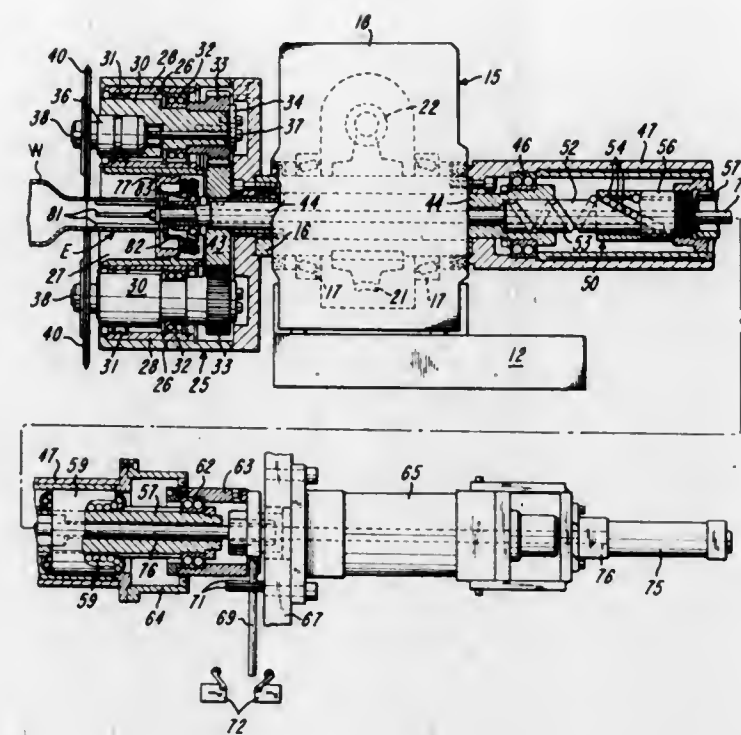
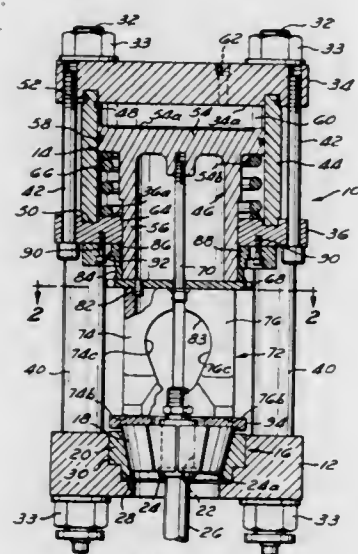
Karl K. Chen, Cleveland Heights, and Hiralal V. Patel, Euclid, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed July 18, 1973, Ser. No. 380,133

Int. Cl. B21d 41/00

U.S. Cl. 72-402

22 Claims



by said motor for producing simultaneous rotation of said quills within said rotor while said rotor is rotating to effect engagement of the tool elements with the workpiece.

3,851,516

METAL WORKING APPARATUS

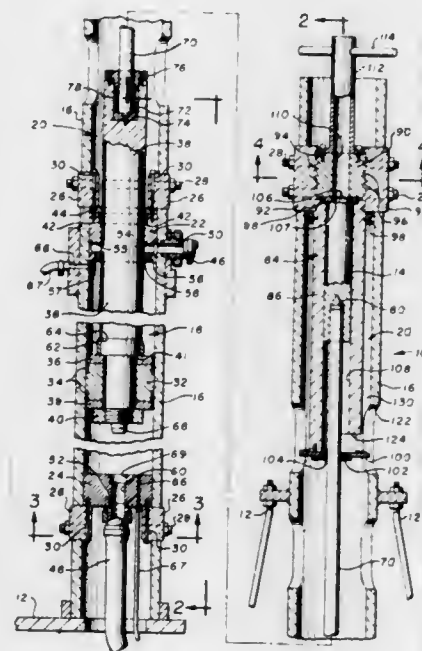
Kenneth Bishop Garner, Tulsa, Okla., and Lewis Shepherd Roberson, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 23, 1973, Ser. No. 381,833

Int. Cl. B21c 23/00

U.S. Cl. 72-256

8 Claims



1. Apparatus for metal working of a billet comprising: a longitudinally extending hollow tubular member; a pair of axially spaced end members transversely supported in said tubular member to divide the interior of said tubular member into a cylinder portion located between said two end members and a working portion; a plurality of openings in the side wall of said tubular member adjacent each of the longitudinal positions of said end members; end member support bodies retained in said openings in said tubular member, said support bodies having portions

3,851,515

APPARATUS FOR CUTTING OR DEFORMING A WORKPIECE

Charles F. Hautau, 146 Hilltop Rd., Oxford, Ohio 45056

Filed Sept. 4, 1973, Ser. No. 393,925

Int. Cl. B21d 41/04

U.S. Cl. 72-121

15 Claims

1. Apparatus adapted for cutting an elongated nonrotating workpiece, comprising an annular rotor adapted to surround the workpiece, means supporting said rotor for rotation on a first axis aligned generally with the axis of the workpiece, a plurality of quills each supported eccentrically within said rotor for rotation on a corresponding second axis extending parallel to said first axis, a spindle supported within each of said quills for rotation on a corresponding third axis eccentric to said second axis of said quill and adapted to receive a rotary tool element, drive means connected to rotate said rotor for

thereof extending into the interior of said tubular member which overlie and are connected to a portion of said end members for transferring the load imposed on said end members to said tubular member; a piston in said cylinder portion of said tubular member, said piston being longitudinally movable between said two end members; a longitudinally extending working mandrel having its longitudinal axis aligned with the longitudinal axis of said tubular member, said mandrel being connected to said piston for longitudinal movement therewith, and having at least a portion of its longitudinal length disposed in said working portion of said tubular member; a die means having a longitudinally extending billet chamber, said die means having a longitudinal passage there-through to permit said working mandrel to enter into and pass through said billet chamber to perform the metal working of the billet; means for supporting said die means in the working portion of said tubular member so that the axis of said billet chamber and said passage are aligned with the axis of said tubular member; and supply means for supplying fluid to said cylinder portion for moving said piston longitudinally within said cylinder portion of said tubular member.

3,851,517

PROCESS FOR MANUFACTURING CURVED CHanneled MEMBERS

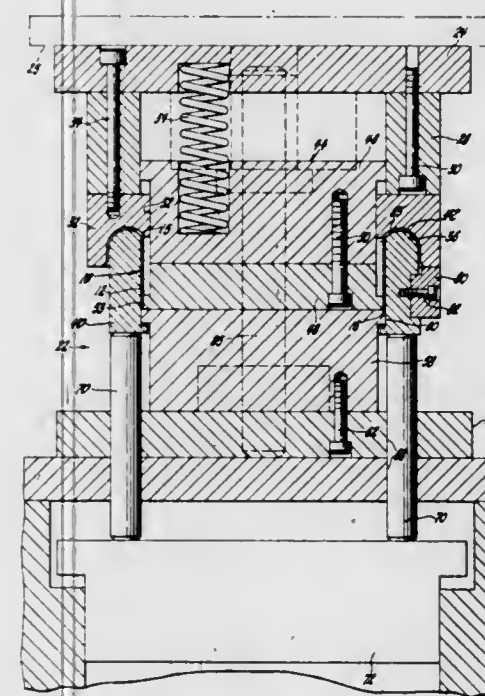
Jack T. Greenleaf, Tipton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 193,496, Oct. 28, 1971, Pat. No. 3,787,960. This application Nov. 26, 1973, Ser. No. 419,071

Int. Cl. B21d 19/16

U.S. Cl. 72-352

2 Claims



1. A process of making a thin wall channel member U-shaped in cross section and curved about a vertical center axis from a flat sheet of metal having straight top and bottom edges and having free end portions comprising the steps of providing a die set having an annular curling ring with a concave inner surface and a forming post with an annular convex outer surface which matches said inner surface, spacing said curling ring and said forming post a fixed and predetermined distance from each other so that said outer and inner surfaces form a curved path of a fixed width therebetween with an entrance thereto, providing a stationary base, longitudinally bending said sheet to provide a curved work piece, disposing said work piece on said base and against one side of said forming post, aligning one edge of said work piece with said entrance to said curved path, linearly moving said forming post and curling

ring as a unit toward said work piece to progressively feed said work piece into said path to thereby outwardly curl said work piece starting from said one edge about a curved axis radially disposed with respect to vertical center axis until said one edge extends into the plane of the other of said edges so that said channel member is thereby formed, linearly moving said curling ring away from said forming post, and removing said channel member from said forming post.

3,851,518

BENDING APPARATUS FOR BENDING STRIP STEEL KNIVES

Ernst M. Spengler, Heusenstamm, Germany, assignor to SKO-MAB International Maschinen und Stahl Handelsgesellschaft M.b.H., Vienna, Austria

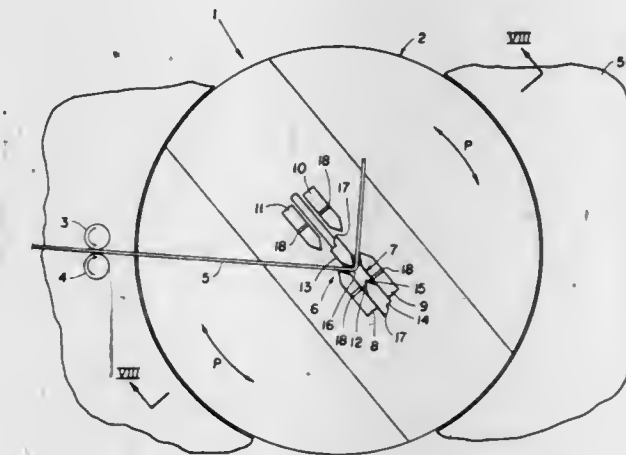
Filed Jan. 2, 1973, Ser. No. 320,154

Claims priority, application Germany, Jan. 4, 1972, 7200095; Nov. 16, 1972, 2256113

Int. Cl. B21d 17/02

U.S. Cl. 72-384

32 Claims



1. A bending apparatus for bending strip material into shapes, comprising hammer means including a hammer head, drive means operatively connected to said hammer means for reciprocating said hammer means with a given stroke, a turntable having a rotational axis, means for freely rotatably supporting said turntable, counterholding jaw means on said turntable, said hammer head being arranged for cooperation with said counterholding jaw means, and means for positioning said strip material at a point outside said turntable.

3,851,519

INTERNAL PIPE SUPPORTING MANDREL

Edward A. Calvin; Lionel H. Wheeler, both of Houston, Tex.; Robert E. Brooks, Jr., and Wallace C. Campbell, Jr., both of Tulsa, Okla., assignors to CRC-Croose International, Inc., Houston, Tex.

Division of Ser. No. 260,275, June 6, 1972, Pat. No. 3,834,210.

This application Jan. 31, 1974, Ser. No. 438,343

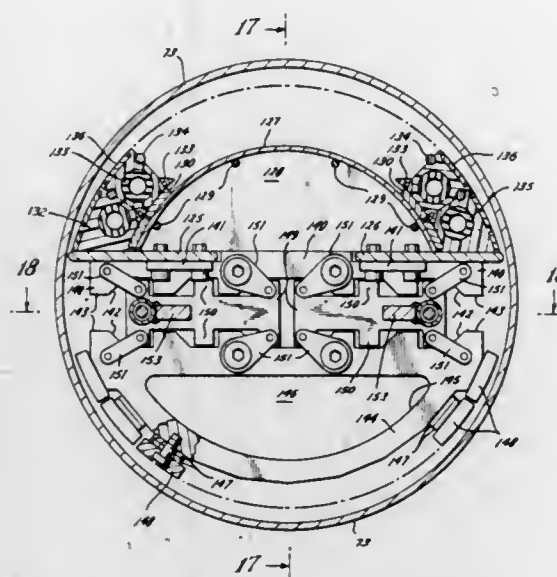
Int. Cl. B21d 9/00

U.S. Cl. 72-466

15 Claims

1. An improved internal pipe supporting mandrel for use in a machine having a bending die and a stiffback, comprising: an elongated upper pipe-engaging assembly including at least one elongated inflatable bag mounted longitudinally along the upper assembly for providing internal support to the area of the pipe which is in contact with the bending die during the bending process; an elongated lower pipe-engaging assembly for engaging at least a part of the internal surface of the pipe in the area

of the pipe which is in contact with the stiffback; and means for moving the upper and lower assemblies away



from each other and thereby forcing the upper and lower assemblies into engagement with the pipe.

3,851,520

GAS MONITORING SYSTEM

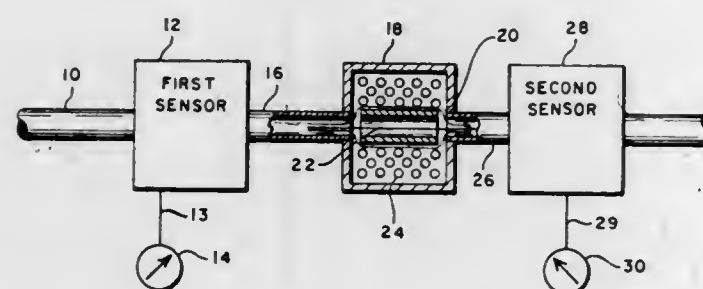
Bernard C. Schluter, Forest Lake, and Erik T. Tromborg, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 22, 1973, Ser. No. 362,651

Int. Cl. G01n 31/00

U.S. Cl. 73-23

2 Claims



1. A method of monitoring a gas which contains a pollutant, comprising:
 - passing the gas through a first sensor to obtain a first signal indicative of the amount of pollutant therein;
 - passing the gas next through a dilution means, said dilution means being adapted to remove a known quantity of said pollutant from said gas;
 - passing said gas next through a second sensor to obtain a second signal indicative of the amount of pollutant remaining therein; and
 - wherein said dilution means passes a known percentage of said gas through an absorbing means for absorbing said pollutant and the remaining percentage of said gas is passed directly to said second sensor.

3,851,521

SYSTEM AND METHOD FOR LOCATING BREAKS IN LIQUID PIPELINES

Sidney Allan Ottenstein, Spring, Tex., assignor to M & J Valve Company, Houston, Tex.

Filed Jan. 19, 1973, Ser. No. 325,046

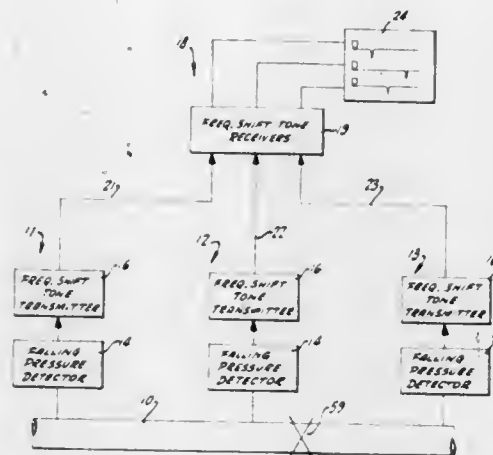
Int. Cl. G01m 3/16; F17d 3/04

U.S. Cl. 73-40.5 R

13 Claims

1. In a method of detecting and locating a spontaneous leak or break between two detecting stations in a pipeline carrying liquid under pressure, the leak or break being characterized

by a rapid decrease in pressure which is propagated away from the leak or break by the liquid in the line at a velocity corresponding to the velocity of sound in the liquid, the steps of generating an electrical signal at each of the detecting stations corresponding to the pressure of the liquid in the pipeline at that station, providing a reference signal at each detecting station corresponding to the normal pressure of the liquid in the pipeline at that station, comparing the electrical signal and the reference signal at each detecting station, detecting a



spontaneous leak or break in the line by a change in the electrical signal relative to the reference signal at each detecting station as the decrease in pressure associated with the leak or break reaches that station, and shifting the frequency of a carrier to transmit signals from the detecting stations to a receiving station when the leak or break is detected at the respective detecting stations, the signals received at the receiving station being displaced in time by an amount corresponding to the location of the leak or break relative to the detecting stations.

3,851,522

DECELERATION MEASURING APPARATUS

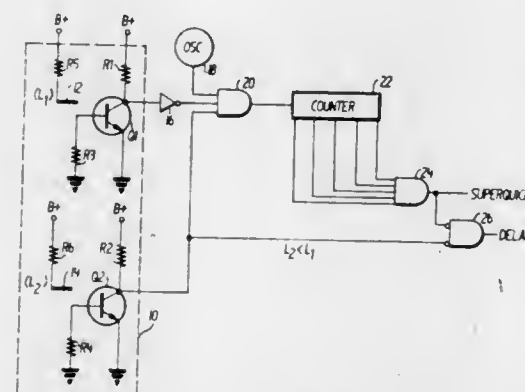
Clyde O. Peterson, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1973, Ser. No. 328,196

Int. Cl. G01n 3/20

U.S. Cl. 73-84

8 Claims



1. Apparatus to be carried by a moving vehicle for providing an indication of the density of a target impacted by the vehicle by measuring the change of the deceleration forces applied to said apparatus upon impact of the vehicle with the target, said apparatus comprising:
 - a. first and second means for generating first and second outputs upon the occurrences of deceleration forces of first and second levels, respectively, said first level being less than said second level; and
 - b. means responsive to said first and second output signals for measuring the time interval therebetween whereby the rate of change of the deceleration forces imposed on the vehicle is determined to provide an indication of the density of the impacted target.

3,851,523

APPARATUS FOR TESTING CARBURETORS

Vernon G. Converse, III, Franklin, and Angelo A. Lizzio, Dearborn, both of Mich., assignors to Scans Associates, Inc., Livonia, Mich.

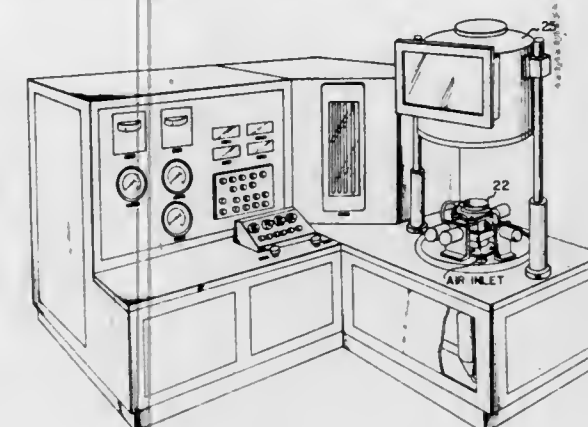
Continuation of Ser. No. 81,203, Oct. 16, 1970, abandoned.

This application July 13, 1972, Ser. No. 268,534

Int. Cl. G01m 19/00

U.S. Cl. 73-118

4 Claims



1. An apparatus for testing carburetors at a plurality of points of operation range thereof, said apparatus including a sealed chamber adapted to sealingly receive a test carburetor and hold it in place during the test, a venturi meter having a throat adapted to be operated critically at all points of its operating range outside said chamber and sealingly connected to said chamber on the upstream side of the carburetor throttle, means to create vacuum on the downstream side of the carburetor throttle, measuring means entirely on the upstream side of said venturi meter adapted to measure the actual rate of air flow to produce a continuous sensible signal related to said rate, means adapted to measure the actual rate of the resulting fuel flow through the carburetor to produce a second continuous sensible signal related to said rate of fuel flow, a device adapted to receive and to divide the value of one signal by the value of the other signal and thus to produce a third continuous signal related to the ratio of said two signals, an indicating device responsive to said third signal and adapted to give a continuous indication related to the mixture ratio produced by the test carburetor, and an air pressure and temperature device entirely upstream of said venturi meter adapted to provide a source of conditioned air to be drawn through the test carburetor.

3,851,524

DYNAMOMETER TESTING USING PLURAL POWER ABSORPTION MEANS

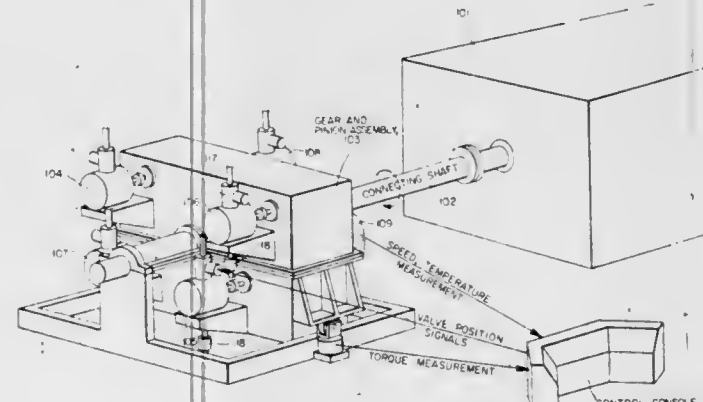
John K. Liu, Valley Forge, Pa., assignor to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed July 30, 1973, Ser. No. 383,710

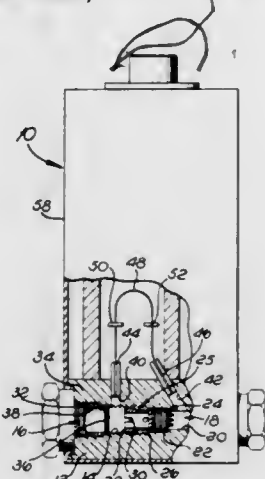
Int. Cl. G01l 3/20

U.S. Cl. 73-134

10 Claims



one disk having a front surface and a rear surface connected by a perimeter surface, an opening through said front and rear surfaces and at least one conduit through said perimeter surface to said opening, said conduit being of a length to diameter ratio to provide laminar flow; means for supporting said restrictor in said first fluid path whereby the flow therethrough is directed radially in either direction between the perimeter and the opening of said at least one disk;



an elongate conduit defining a laminar flow second fluid path;
means for measuring the rate of flow of fluid through said elongate conduit; and
means for connecting said second fluid path in parallel with said first fluid path on opposite flow sides of said flow element.

3,851,527

MAXIMUM TEMPERATURE MONITOR

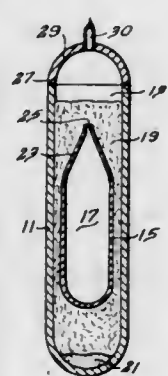
Gerard L. Hofman, Downers Grove, Ill., and Gary D. Hudman, Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,386

Int. Cl. G01k 11/00

U.S. Cl. 73-368

12 Claims



1. A device for determining maximum temperature occurrence comprising a sealed vessel including first and second chambers, said second chamber having a restricted opening communicating with said first chamber; a source substance disposed within said first chamber, said source substance capable of exerting substantial vapor pressure at said maximum temperature; heat transfer means for conducting heat to said first chamber to increase the vapor pressure of said source substance and for subsequently conducting heat from said second chamber to condense a portion of said substance

within said second chamber; and access means for segregating said portion of substance within said second chamber from said substance within said first chamber in order to quantitate said condensed portion within said second chamber and thereby determine maximum temperature occurrence.

3,851,528

ELECTRONIC THERMOMETER

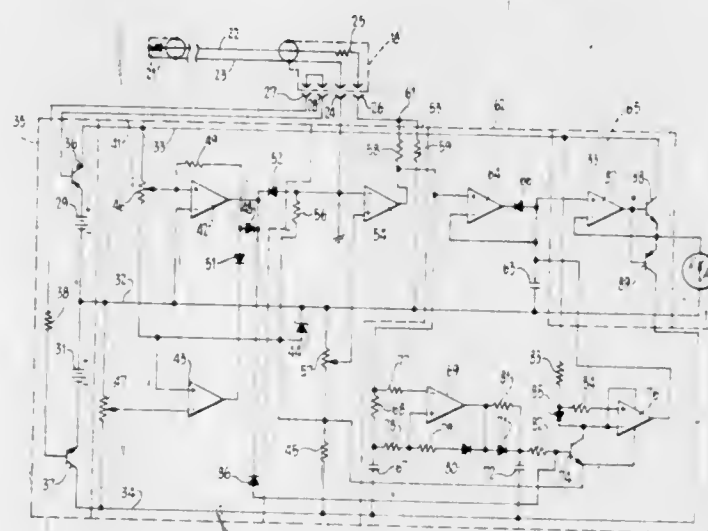
Herbert F. Nichols, San Jose, and Joel Bauman, San Francisco, both of Calif., assignors to Joel Bauman, San Francisco, Calif.

Filed Oct. 6, 1972, Ser. No. 295,448

Int. Cl. G01k 7/24

U.S. Cl. 73-362 AR

4 Claims



1. An electronic thermometer especially useful for measuring man and animal body temperatures comprising a temperature probe of a material in which a voltage develops when a constant current flows therethrough, which voltage changes generally proportionately to changes in the temperature of said material; circuit means for translating variations in the voltage in said material indicative of temperature changes into temperature readings, said circuit means including a feedback operational amplifier having its feedback connection from its output terminal to a first inverting one of its primary input terminals for maintaining the potential at said first primary input terminal at essentially the same potential as the second non-inverting primary input terminal of said amplifier, said feedback connection passing through said material to provide current flow therethrough, means for applying an essentially constant potential to said second primary input terminal of said amplifier, resistance means connected between a generally constant potential source and said first primary input terminal to thereby provide a source of constant current flow through said temperature probe material and said feedback connection, said material being connected to said output terminal of said amplifier in said feedback connection through a first one of a pair of resistances, the second one of which is connected between the amplifier output terminal side of said material and a generally constant potential source to cause current variations in said first resistance which are proportional to potential variations at the amplifier output terminal side of said material and any voltage changes at the output terminal of said amplifier are proportional to but greater than voltage changes at the output terminal side of said material both constant current flow through said material and voltage amplification is obtained with a single operational amplifier; indicating means connected with said circuit means for displaying said temperature readings; and a probe cord electrically connected between said probe and said circuit means for conveying variations in said voltage across said material to said circuit means.

3,851,529

DIAL THERMOMETER

Richard A. Andrews, Taylor, and Ralph B. Remick, Jr., Farmington, both of Mich., assignors to H. O. Trerice Co., Oak Park, Mich.

Filed Dec. 13, 1972, Ser. No. 314,543

Int. Cl. G01k 1/16

U.S. Cl. 73-362.8

4 Claims

3,851,530

VOLUMETRIC MEASURING SYSTEM

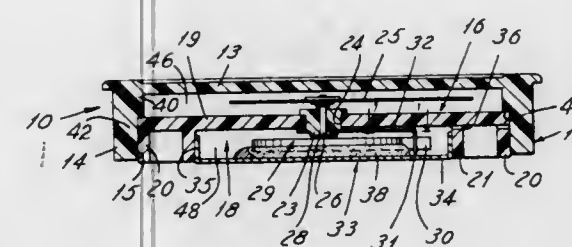
James Arthur Symonds, Penfield, and Howard Randall Jaquith, Rushville, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,269

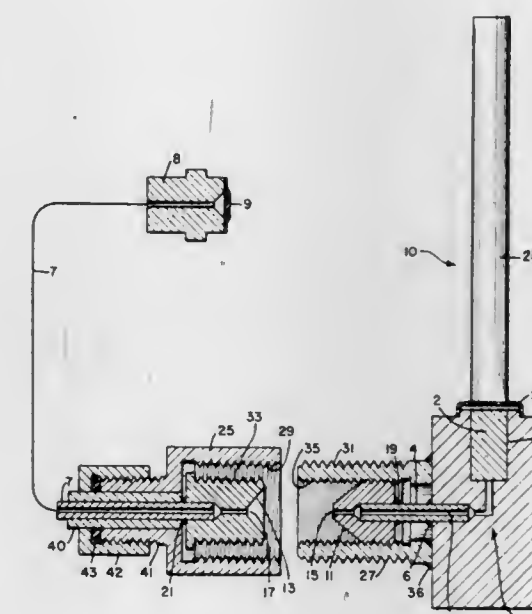
Int. Cl. G01l 7/00

U.S. Cl. 73-395

7 Claims



1. A thermometer of the surface contact type comprising a circular outer casing having an axis, said casing including a generally flat transparent face and an axially and rearwardly extending integral and annular flange including inner and outer flange portions, the inner surface of the outer flange portion being formed on a larger diameter than the inner surface of the inner flange portion, the inner surfaces of said inner and outer flange portions being connected by an annular locating shoulder which lies in a plane which is parallel to said transparent face, a circular inner mounting body including a generally flat, circular readoff dial face calibrated in temperature values and a pair of concentric outer and inner axially and rearwardly extending integral and annular ribs, said ribs being spaced apart and connected only on the forward ends thereof by said dial face, the space between said ribs being open to the atmosphere, said inner mounting body being received in said outer casing, with the outer periphery of said circular face abutting the annular locating shoulder of said circular outer casing and with said outer rib in surface to surface contact with the inner surface of the outer flange portion rearwardly of said locating shoulder, said circular dial face being spaced from said flat transparent face to define with said inner portion of said flange a first compartment which is closed to atmosphere, a relatively flat thermally sensitive conductive plate of a thin gauge metal material, said plate including a circular sensor panel part and an axially and forwardly extending integral annular rim which is received in and has a force-fit with said inner rib of said inner mounting body, said sensor panel part being adapted to be exposed in flat-wise conducting contact with a body which is to be heat-monitored, said plate member being spaced from said dial face to define a second compartment, a substantially flat coiled bimetallic sensing member in said second compartment having an outer end fixedly mounted on the side of said sensor panel part opposite said contact surface of the latter, and an inner end substantially coplanar with said outer end and responding flexibly and rotatively to variations in temperature of the body which is to be heat-monitored as conductively transmitted by said sensor panel part, an indicator in said first compartment overlying said dial face, a shaft located on said axis and extending through said dial face in sealed relation therewith into said first and second compartments and connecting said indicator in said first compartment to said inner end of the center-most convolution of said sensing member in said second compartment, said indicator being movable rotatively with said inner end of said sensing member and concurrently with coiling flexure of said sensing member so as to move across said dial face, a mass of highly heat-conductive fluid material in said second compartment contacting said sensor panel part of said plate member, in which mass said coiled sensing member is substantially immersed sufficiently to enhance heat transmission between said sensor panel part and said sensing member and to dampen vibration of said indicator and of said sensing member in its flexure.



1. In a volumetric measuring system having a sealed envelope solidly filled with substantially incompressible liquid, wherein said envelope includes a sensing portion responsive to a condition for causing the internal pressure of said liquid to correspond to said condition, wherein said envelope includes a signal portion responsive to said internal pressure for producing a signal corresponding to said internal pressure, wherein said envelope includes a capillary portion for transmitting internal pressure changes between said sensing and signal portions; wherein said capillary portion has a thimble and a socket each forming a part of said capillary portion, and there being a base, said thimble having means connecting it to said base;

the improvement wherein there is a rigid member rigidly fixed to said thimble and, independently of said means, also to said base, and said socket and said thimble being forcibly interengaged for urging said thimble and socket into contact with each other with such force as to strain the material thereof continuously throughout a given area of mutual contact, said thimble and socket each having a capillary passage having openings within said area and registering with one another for defining the thimble and socket parts of said capillary portion.

3,851,531

ELECTRONIC FUZE SYSTEM

Marvin H. White, Laurel; David D. O'Sullivan, Bethesda, both of Md., and Richard G. Hamel, Margate, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 121,040, March 4, 1971, Pat. No.

3,750,583. This application Apr. 17, 1973, Ser. No. 353,252

Int. Cl. G01p 15/08

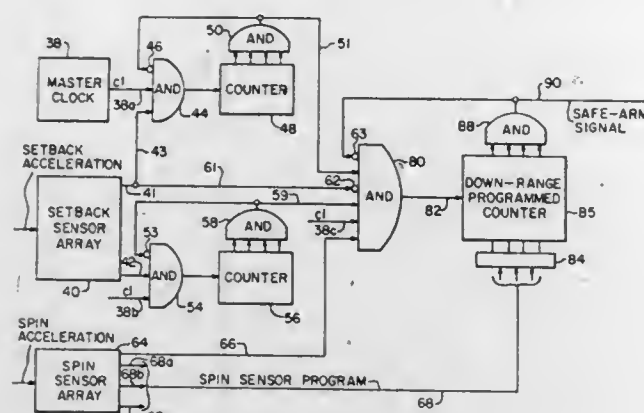
U.S. Cl. 73-510

11 Claims

1. A circuit for providing acceleration information about an object comprising, in combination;

an accelerometer means for signaling when said object attains at least a predetermined minimum acceleration level, said signal being present only when said object continues to move at least at said predetermined minimum acceleration level;

means responsive to said accelerometer signal for providing



a second signal indicate the sustained presence of said accelerometer signal for a predetermined time; and means for transmitting said accelerometer signal to said means responsive to said accelerometer signal and for terminating said transmission in response to said second signal.

3,851,532

STARTER FOR INTERNAL COMBUSTION ENGINES
Gerhard Pflüger, Markgroningen, and Ludwig Bolz, Waiblingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

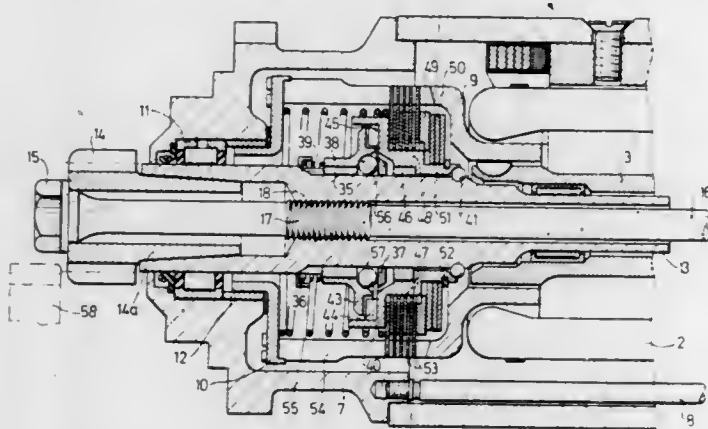
Filed June 19, 1973, Ser. No. 371,564

Claims priority, application Germany, July 10, 1972, 2233838

Int. Cl. F16d 7/02, 47/04; F02m 11/00

U.S. Cl. 74-7 A

20 Claims



1. In a starter for an internal combustion of the type having a torque receiving gear, a combination comprising an electric motor having a rotary armature shaft; a second shaft coaxial with and movable axially of said armature shaft; a pinion secured to said second shaft; shifter means actuatable to move said second shaft axially and to thereby place said pinion into mesh with said gear; and a torque transmitting unit interposed between said shafts and including a friction clutch and an overrunning clutch, said friction clutch being driven by said armature shaft and said overrunning clutch being driven by said friction clutch and arranged to rotate said second shaft, said overrunning clutch comprising a first clutch element movable lengthwise of and arranged to rotate with said second shaft and a second clutch element rotatable on said second shaft and receiving torque from said friction clutch, said clutch elements having mating claws which transmit torque from said second clutch element to said first clutch element when said second clutch element receives torque from said friction clutch and said pinion drives said gear.

3,851,533 ELECTRICALLY OPERATED WINDOW LIFTING MECHANISM

Bernhard Dehler, Coburg, Germany, assignor to Metallwerk Max Brose & Co., Coburg, Germany

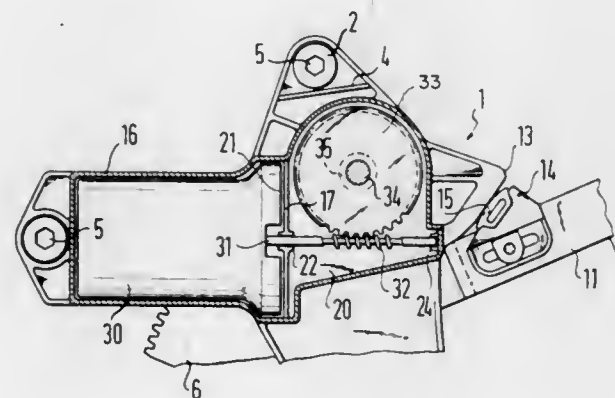
Continuation-in-part of Ser. No. 260,628, June 7, 1972, Pat. No. 3,783,702. This application June 14, 1973, Ser. No. 370,045

Claims priority, application Germany, June 28, 1971, 2132067

Int. Cl. F16h 27/02

U.S. Cl. 74-89

4 Claims



1. A window lifting mechanism for an automotive vehicle comprising:

- a base plate extending in a principal plane;
- fastening means for fastening said base plate to a window support of said vehicle;
- a housing offset from said plane in one transverse direction,

- said base plate and said housing jointly constituting a unitary piece of substantially rigid material,
- said housing bounding a cavity therein and including a first portion of a partition wall separating said cavity into a motor compartment and a transmission compartment;

- an electric motor mounted in said motor compartment and having a drive shaft;
- a speed-reducing transmission in said transmission compartment,

- said housing being formed with an opening dimensioned for passage of said motor and of said transmission into and out of said compartments respectively;
- a cover member releasably closing said opening and including a second portion of said partition wall,

- said portions abuttingly engaging each other and jointly constituting the shell of a first bearing interposed between said portions,
- said housing carrying a second bearing in said transmission compartment, said drive shaft being journaled in said first and second bearings and constituting the input shaft of said transmission,

- said housing and said cover further carrying two coaxial main bearings respectively,
- said transmission including an output shaft journaled in said main bearings;

- a window lifting arm pivotally mounted on said base plate and offset from said principal plane in the other transverse direction; and
- motion transmitting means connecting said arm to said transmission and including a segment gear fixedly fastened to said arm and a pinion attached to said output shaft and meshingly engaging said segment gear, said transmission further including

- a worm fixed on said input shaft intermediate said first and second bearings, and
- a worm wheel mounted on said output shaft and meshing with said worm.

3,851,534

VARIABLE RATIO FRICTION TRANSMISSION

Paul Stober, Pforzheim, Germany, assignor to Gebr. Stober, Pforzheim, Germany

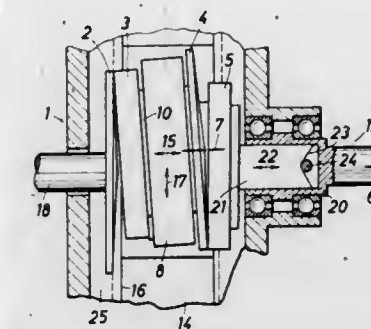
Filed May 29, 1973, Ser. No. 364,332

Claims priority, application Germany, May 31, 1972, 2226447

Int. Cl. F16h 15/16, 15/08

U.S. Cl. 74-193

16 Claims



1. A variable friction drive transmission comprising: a frame, parallel input and output shafts rotatable in said frame in axially spaced relation, a first friction cone and a first friction ring each mounted on a respective one of the adjacent ends of said input and output shafts, a second friction ring engaging said first friction cone and a second friction cone engaging said first friction ring, an intermediate shaft, said second cone and second ring being fixed to opposite ends of said intermediate shaft and engaging the respective first ring and cone in radially spaced relation to the axis of said intermediate shaft on opposite sides thereof, a support supporting said intermediate shaft and moveable at an angle to the axes of said input and output shafts to vary the drive ratio of said transmission, means for maintaining said friction cones and friction rings in frictional engagement in adjusted positions of said intermediate shaft, said frame having a wall parallel to said input and output shafts and a first guide groove therein extending at right angles to said input and output shafts, and a carriage slidable in said first guide groove and having a second guide groove therein at right angles to the first guide groove, said support having a portion slidably engaging said second guide groove.

3,851,535

SPECIAL BELT AND PULLEY RIM TRANSMISSION DEVICE

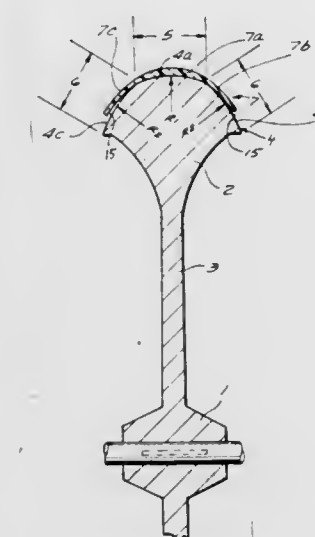
Shelley M. Presentey, 1268 Henry Farm Dr., Ottawa, K2C2E2, Canada

Filed Apr. 6, 1973, Ser. No. 348,740

Int. Cl. F16h 7/00

U.S. Cl. 74-229

11 Claims



1. In a belt transmission, a combination comprising a rotary crowned pulley having a rim provided with a multiconvex

peripheral surface including a central section and additional sections flanking said central section; and an endless belt trained over said peripheral surface so as to overlie said central section and at least a portion of each of said additional sections, said belt having an internal surface having said pulley rim which is convex when said belt is unstressed and which is in more pronounced frictional engagement with said central section and in less pronounced frictional engagement with said additional sections when said belt is trained over said peripheral surface, as a result of the original convexity of said internal surface of said belt and the multiconvexity of said peripheral surface.

3,851,536

POWER TRANSMISSION BELT

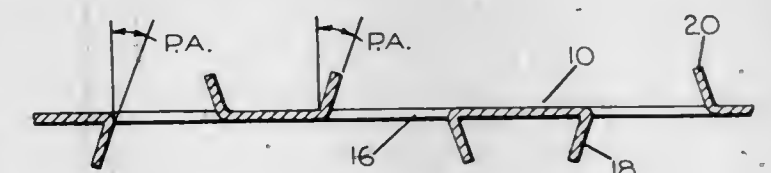
Maurice I. Zeldman, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1973, Ser. No. 333,212

Int. Cl. F16g 1/00

U.S. Cl. 74-231 M

6 Claims



1. A power transmission belt for transmitting power from a gear to at least one other gear comprising a continuous flexible belt being formed with a plurality of longitudinal cut-out sections, a pair of teeth provided on said belt at opposite ends of said cut-out sections, the teeth in each pair having free ends one of which extends upwardly and one of which extends downwardly, said adjacent upwardly and downwardly extending teeth of each pair, being configured in such a manner so as to engage a gear tooth in such a way that the belt is adapted to ride at the pitch diameter of said gear.

3,851,537

GEAR DRIVE REVERSING MECHANISM

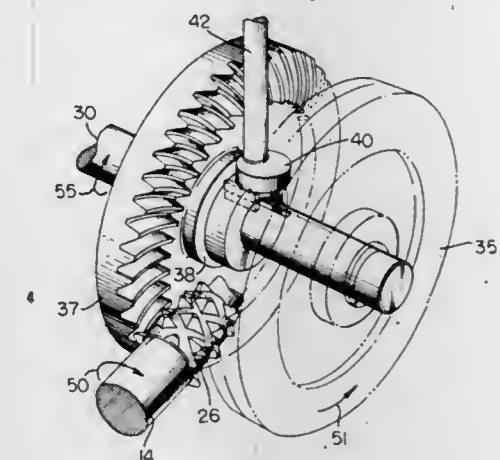
Gerhard A. Nickstadt, Oakland, N.J., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 284,946, Aug. 30, 1972, Pat. No. 3,812,736. This application Feb. 19, 1974, Ser. No. 443,439

Int. Cl. F16h 57/10, 55/04

U.S. Cl. 74-404

4 Claims



1. A gear drive reversing mechanism comprising a first shaft mounted for rotation about a first shaft axis; a first face gear mounted to said first shaft and having right-hand spiral angle face gear teeth; a second shaft mounted for rotation about a second shaft axis; a second face gear mounted to said second shaft and having left-hand spiral angle face gear teeth; and a rotatably mounted pinion having right-hand spiral angle pinion gear teeth in mesh with said right-hand spiral angle face

gear teeth and having left-hand spiral angle pinion gear teeth in mesh with said left-hand spiral angle face gear teeth; whereby rotation of said pinion in a constant rotary direction drives said first and second shafts in mutually opposite rotary directions.

3,851,538

TORQUE SWITCH MECHANISM

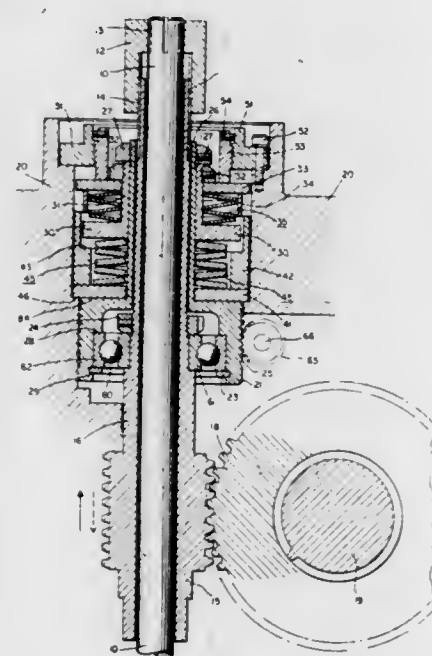
Walter J. Denkowski, and John Zouzoulas, both of King of Prussia, Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed May 21, 1973, Ser. No. 362,424

Int. Cl. F16h 1/16

U.S. Cl. 74-425

8 Claims



1. In a worm and worm gear mechanism in which the worm is subjected to axial thrust forces in either of two linear directions according to torque forces developed on said worm gear in corresponding rotational directions, said mechanism characterized by the provision of:

- a. first pre-loaded compression spring restraining means for allowing axial displacement of said worm in one or the other of said linear directions when the thrust forces on said worm, resulting from torque forces on said worm gear in a corresponding rotational direction, exceed a first pre-selected relatively low value;
- b. second pre-loaded compression spring restraining means for allowing further axial displacement of said worm in the same linear direction when the thrust forces on said worm resulting from torque forces on said worm gear in said same corresponding rotational direction, exceed a second pre-selected relative higher value.

3,851,539

WORM REDUCTION GEARING DRIVE

Francois Durand, 108, Boulevard Carnot, 78 Le Vesinet (Yvelines), France

Filed Aug. 28, 1973, Ser. No. 392,185

Claims priority, application France, Sept. 7, 1972, 72.31831

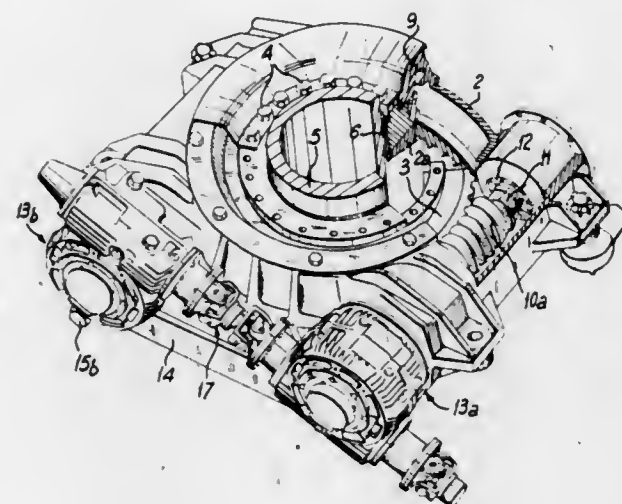
Int. Cl. F16h 1/16

U.S. Cl. 74-425

4 Claims

1. A reduction gearing device for rotatably driving a shaft from a rotary motor shaft, which comprises in combination:
- a. a main worm gearing comprising:
 - a case,
 - a toothed crown wheel rotatably mounted in said case and adapted to be drivingly connected to the shaft to be driven,
 - a pair of worms rotatably mounted in the same case and in constant meshing engagement with said toothed crown wheel, said worms being disposed at diametrically opposed locations in relation to said crown wheel,

- b. a pair of primary worm gearings each adapted to drive one of said main reduction gearing worms, and comprising each:
 - a driven toothed wheel rotatably rigid with the corresponding worm,
 - a driving worm meshing with said toothed wheel, and a freely mounted case without any means for anchoring same to a fixed point,



- c. a tie-bar having its ends pivoted to the cases of said pair of primary worm gearings, and
- d. means for coupling the worm shafts of said pair of primary worm gearings to each other, said coupling means being adapted to accommodate a certain angular misalignment between said worm shafts.

3,851,540

PERPENDICULARLY MESHING SPUR GEARING

Hidetaka Tutiya, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

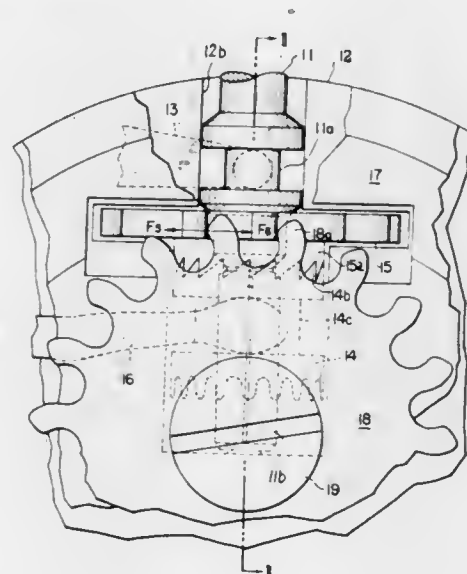
Filed June 22, 1973, Ser. No. 372,572

Claims priority, application Japan, June 24, 1972, 47-75019

Int. Cl. F16h 55/04, 55/06

U.S. Cl. 74-437

3 Claims



1. A transmission gearing comprising two mutually perpendicularly engaging spur gears, each tooth of at least one gear of said gearing having a rounded and locally projecting motion-transmitting projection positioned in its pseudoadendum range within the tooth width of the mating gear during meshing and directed towards its mating gear, each of said projections being kept in contact with the related tooth of the mating gear substantially during the whole engaging period of the related gear teeth.

3,851,541

DIFFERENTIAL BALL NUT ASSEMBLY

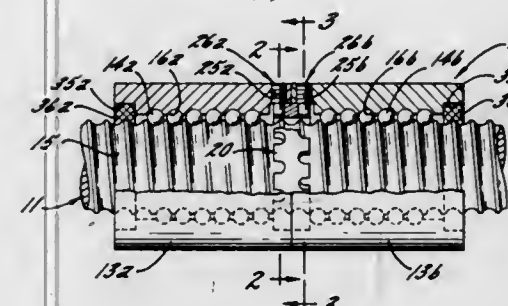
Helmut Ploss, Wolfschlugen, and Hans-Joachim Hildebrandt, Nürtingen-Oberensingen, both of Germany, assignors to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Nov. 15, 1973, Ser. No. 415,950

Int. Cl. F16h 55/22

U.S. Cl. 74-459

9 Claims



1. A ball nut assembly comprising first and second axially aligned nuts, a connector ring telescoped into said nuts and spanning the joint between the nuts, first and second axially spaced rows of circumferentially spaced recesses formed in said ring and located on opposite sides of said joint, there being a different number of recesses in said first row than in said second row, first and second tapped holes formed through said first and second nuts, respectively, and registerable with the recesses in the respective rows, and first and second screws threaded releasably into said first and second tapped holes, respectively, and tightly received in one of the recesses in the respective rows to prevent relative rotation between said nuts and said ring.

3,851,542

COLLAPSIBLE STEERING COLUMNS

Frederick John Adams, Campton, and Howard Kenneth Alderton, Luton, both of England, assignors to Cam Gears Limited, Hitchin, Hertfordshire, England

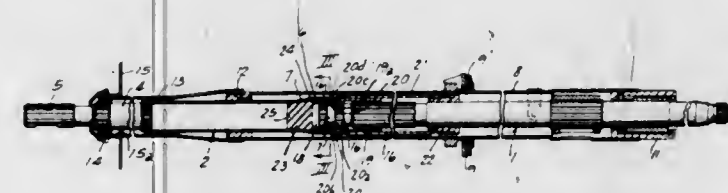
Filed May 1, 1973, Ser. No. 356,084

Claims priority, application Great Britain, May 2, 1972, 20281/72

Int. Cl. B62d 1/18

U.S. Cl. 74-492

12 Claims



1. A collapsible steering column assembly comprising: first and second coaxially and telescopically related torque transmitting members for connection between a steering wheel and a steering gear of a vehicle; coupling means connecting said first and second members for mutual rotation; at least one shearable member connecting said first and second members to normally prevent relative telescopic movement therebetween and shearable to permit relative telescopic movement upon the application of an abnormal axial load on said assembly; and a third member, separate from said first and second members, disposed between said first and second members, said third member forced axially through the outer one of said coaxial members by the inner one of said coaxial members upon application of an abnormal axial load and including at least a portion having a lateral dimension greater than that of the outer member which causes pro-

gressive deformation of said members and consequent energy absorption, said first member including a shaft, said second member including a tube mounted coaxially about said shaft, said shaft including a section having a polygonal cross section, and comprising a sleeve mounted within said tube and having a complementary polygonal bore receiving said polygonal cross section of said shaft, said section of said shaft including means defining a peripheral groove therein, said shearable member including a shear pin extending through said tube and said sleeve and into said groove.

3,851,543

ADJUSTABLE STEERING COLUMN

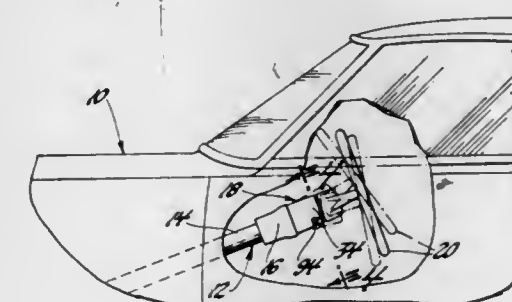
Lynn C. Krom, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 359,002

Int. Cl. B62d 1/18; G05g 5/06

U.S. Cl. 74-493

3 Claims



1. In a steering column assembly including a lower section and an upper section movably mounted on said lower section for tiltable adjustment relative thereto generally in a plane, latch means for securing said sections in any selected one of a plurality of adjusted positional relationships comprising a rod pivotally secured at one end thereof to one of said sections and the other end thereof having a tooth conformation, a tubular collet secured to the other of said sections and coaxially receiving said other end of said rod, said collet having a plurality of longitudinal slots defining fingers radially contractible and expandable with respect to said rod, tooth means on said fingers engageable with said other end of said rod and a taper surface on each finger adjacent said collet and slidable over said taper surfaces in a direction to forcibly contract said fingers, means biasing said cone in said direction, and means manually operable to slide said cone in an opposite direction to permit expansion of said tooth means out of engagement with said other end of said rod, said manually operable means including a pivotable lever extending in a plane oriented transversely of the plane of tilting of said sections and means responsive to pivoting of said lever to overcome said biasing means and effect said sliding of said cone, whereby when said tooth means is disengaged from said other end of said rod said upper column section is freely adjustable relative to said lower section to a selected positional relation therewith and contraction of said tooth means into engagement with said other end of said rod holds said sections in said selected relation.

3,851,544

TRANSMISSION WITH TORQUE CONVERTER AND HYDROSTATIC DRIVES

Stanley W. Herman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1972, Ser. No. 305,300

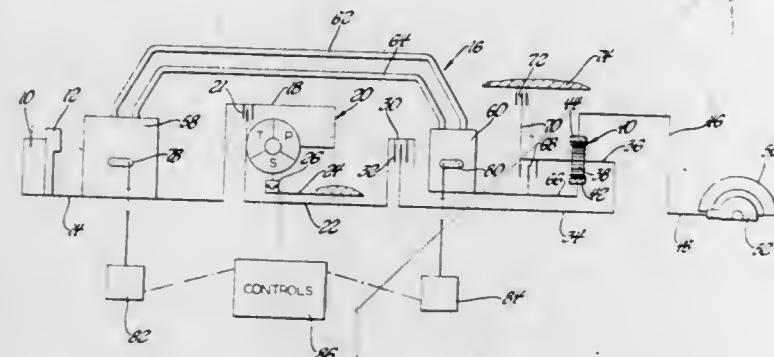
Int. Cl. F16h 47/04, 47/08, 47/00

U.S. Cl. 74-677

4 Claims

1. A transmission for a reciprocating piston engine comprising transmission input and output means, a hydrodynamic torque converter having pump means operatively connected to said input means and having turbine means driven by fluid

pumped thereto from said pump means, a simple planetary gear unit having a sun gear, a ring gear and planet gears drivingly connecting said sun and ring gears and further having a carrier for said planet gears, means directly connecting said ring gear with said transmission output means, first selectively engageable clutch means for drivingly connecting said turbine means with said planetary carrier of said gear unit, second selectively engageable clutch means operatively connected to said carrier and said sun gear for locking the members of said planetary gear unit together so that said transmission can drive said output means, a hydrostatic pump unit connected in series with said input means and said torque converter, means directly drivingly connecting said hydrostatic pump



unit to said transmission input means, a hydrostatic motor unit hydraulically connected to said hydrostatic pump unit, torque transmitting shaft means directly connecting said hydrostatic motor means to said sun gear of said planetary unit, and displacement control means operatively connected to at least one of said hydrostatic units to provide for the hydrostatic drive of said sun gear when set at a predetermined stroke and said second clutch means is released so that said transmission output means is forwardly driven by said torque converter and said hydrostatic units and to further provide for the overdrive of said output means as the speed of said sun gear is subsequently reduced to zero by reducing the displacement of one of said hydrostatic units to zero.

3,851,545

CONTINUOUSLY VARIABLE TRANSMISSION

Geert Gumlich, Sommerfeldring No. 19, 1 Berlin 39, Germany

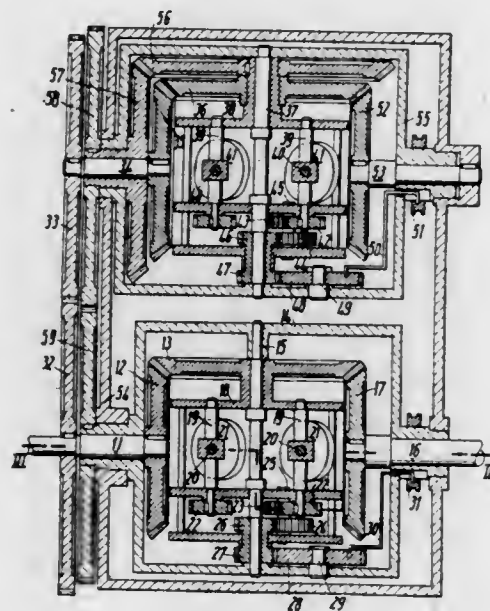
Filed Aug. 24, 1972, Ser. No. 283,534

Claims priority, application Germany, Aug. 31, 1971, 2144213

Int. Cl. F16h 3/74

U.S. Cl. 74—751

3 Claims



1. A continuously variable transmission including a main housing, a rotatable frame in said housing carried by coaxial

driving and driven shafts extending into said housing, gyro cage shaft means extending substantially perpendicular to the axis of said coaxial driving and driven shafts, gyro cage means rotatably mounted on said gyro cage shaft means, bevel gears mounted on said driving and driven shafts and a bevel gear therebetween and meshing therewith mounted on said gyro cage shaft means, a pair of gyro support shafts mounted on said gyro cage means, gyros having spin axles mounted on each of said gyro support shafts, said spin axles being substantially perpendicular to said gyro support shafts, and means connecting said gyro support shafts together and relative to said gyro cage shaft means to maintain said spin axles in parallel relation.

3,851,546
TRANSMISSION

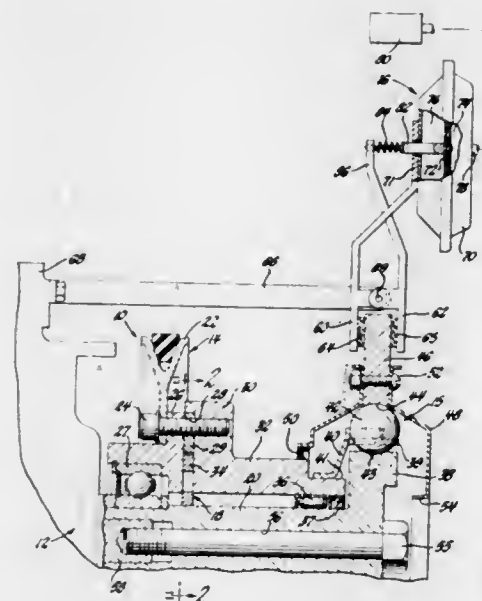
Richard K. Kepple, Huron, and Claude A. Smith, Sandusky, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1973, Ser. No. 360,365

Int. Cl. F16h 57/10, 3/44; F16d 19/00; B61k 13/00

U.S. Cl. 74—785

3 Claims



1. For use with a vehicular engine, an accessory drive transmission comprising a belt-driven input pulley and an output shaft; a planetary drive unit including an output ring member, an input sun member, a plurality of planets operatively connected between said inner sun and outer ring members, and a carrier member for driving said planets; connector means surrounding said output shaft for connecting said carrier member to said input pulley for rotation therewith; a source of vacuum reflective of engine speed; a housing; a diaphragm serving as a movable wall to form first and second chambers in said housing; a line for communicating a vacuum signal from said source to said first chamber; a stem mounted on said diaphragm and extending axially through said second chamber and the wall of said housing; a reaction friction member secured adjacent one face of said outer ring member; a second friction member movably mounted adjacent the other face of said outer ring member; a lever member pivotally mounted adjacent said second friction member; a spring interconnecting said lever member and said stem for permitting said diaphragm to move through said first chamber to the wall of said housing while said second friction member moves only a short distance to frictionally engage said outer ring member; said second friction member being urged into contact with said other face of said outer ring member, thereby frictionally confining said outer ring member between said second friction member and said reaction friction member in response to pivotal movement by said lever member caused by axial movement of said diaphragm responsive to a vacuum signal indicative of engine speed below a predetermined value; and a one-way clutch mounted intermediate said carrier member

and said output shaft for driving said output shaft directly upon disengagement of said second friction member from said other face of said outer ring member in response to vacuum signals indicative of engine speeds above said predetermined value.

3,851,547

HYDRAULIC CIRCUITS FOR CONTROLLING AUTOMATIC GEAR BOXES

Jean Piret, Bougival, and Philippe Quemerais, Villepreux, both of France, assignors to Regie Nationale des Usines Renault, Billancourt and Ste Automobiles Peugeot, Paris, both of, France

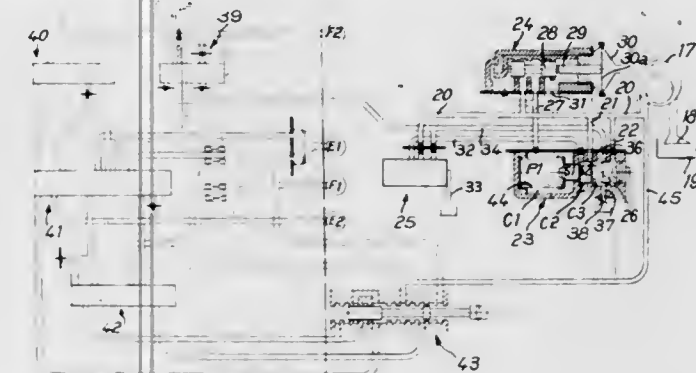
Filed Apr. 13, 1973, Ser. No. 350,730

Claims priority, application France, July 19, 1972, 72.26043

Int. Cl. B60k 21/00

U.S. Cl. 74—869

4 Claims



1. In a hydraulic circuit for controlling an automatic gear box in which selection of the drive ratio is effected by selective actuation of clutch means and brake means, hydraulic control means associated with the clutch means and the brake means, an output regulation valve, said valve being connected to the control means, a hydraulic distributor, a pressure regulation valve, the hydraulic distributor and the pressure regulation valve being operative to control the output regulation valve, a pilot valve responsive to the value of the vacuum in the inlet manifold of an engine driving the gear box, and operative to control the pressure regulation valve, a reservoir for hydraulic fluid, pump means operative to feed fluid from the reservoir, said pump means having an outlet, the pressure regulation valve defining an outlet path from the pump outlet to the reservoir, duct means connecting the output path to the hydraulic distributor and to the output regulating valve, and a calibrated orifice located at the outlet of the regulation valve to create a pressure drop in the said outlet path such that the hydraulic distributor and the output regulating valve are controlled in response to the speed of the engine.

3,851,548

TOOL FOR REMOVING THREADED CLOSURES

Walter Rutz, Oberer Graben 44, Saint Gallen, Switzerland

Continuation-in-part of Ser. No. 210,013, Dec. 20, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 430,873

Claims priority, application Switzerland, Dec. 22, 1970, 508550/70

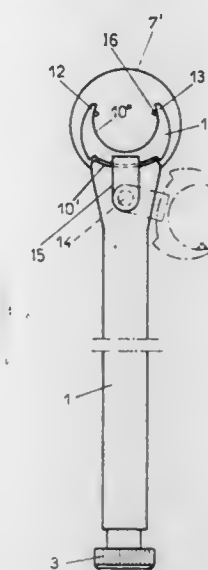
Int. Cl. B67b 7/00; B25b 13/52

U.S. Cl. 81—3.43

19 Claims

1. A tool for manipulating objects, particularly closures, comprising a handle; a flexible elongated object engaging element having a loop portion adapted to surround and engage an object, said object engaging element also having a pair of end portions; a first abutment member movable between an operative position in which it is adapted to cooperate with said

loop portion for engaging objects having a first range of sizes and an inoperative position; a second abutment member provided on said handle and adapted to cooperate with said loop portion for engaging objects having a second range of sizes



3,851,549

SELF-ADJUSTING, SELF-TIGHTENING MULTIPURPOSE WRENCH

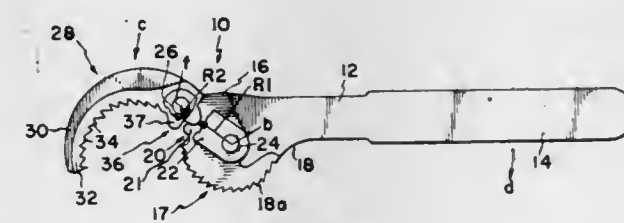
Charles D. Schlitt, 305 Donahue Beach, Bay City, Mich. 48706, and Douglas M. Federspiel, 323 S. Linwood Beach, Linwood, Mich. 48634

Filed Nov. 3, 1972, Ser. No. 303,592

Int. Cl. B25b 13/28

U.S. Cl. 81—106

7 Claims



1. A self-adjusting, self-tightening, wrench for gripping and turning an object, such as a pipe, comprising: an elongate handle having a jaw fixed at one end; link means mounted on said jaw for swinging movement about a first axis; a movable jaw mounted on said link means for movement therewith about said first axis and for swinging movement relative thereto about a second axis toward and away from said fixed jaw; and drive means coupling said jaws for bodily swinging said movable jaw orbitally about said first axis and concurrently positively swinging said movable jaw on said link means about said second axis.

3,851,550

ADAPTIVE CONTROL SYSTEM FOR PROGRAM-OPERATED MACHINE TOOLS

Erhard Schalles, Ubbedissen near Bielefeld, Germany, assignor to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktien-gesellschaft, Bielefeld, Germany

Filed Sept. 7, 1972, Ser. No. 287,087

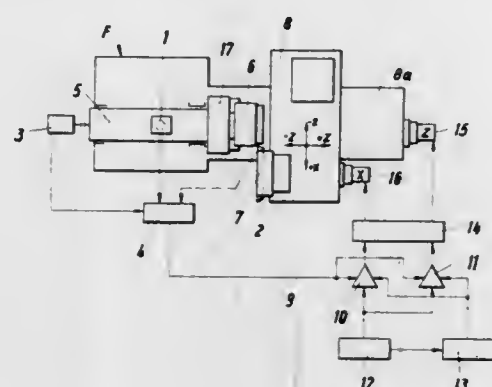
Int. Cl. B23b 21/00

U.S. Cl. 82—2 B

9 Claims

1. In a machine tool for turning a rotating workpiece by a material removing tool which is movable in first and second

directions at rates determined by first and second variable-speed motors, an adaptive control system comprising first and second adjustable regulating devices each operatively connected with a different one of said motors, said devices having characteristic curves one of which is phase-shifted relative to and trails the other curve by 90°; first and second measuring means for furnishing to said regulating devices a first signal indicative of the torque applied to and the RPM of the work-piece and thus representing the actual output of the machine



3,851,551 TOOL ASSEMBLY, PARTICULARLY FOR LATHE CHIP SEPARATING TOOLS

Peter Christoph Bergstrom, Kofallsvagen 44, S-710 40 Frovi;
Dick Carl Birger Birgersson, Ringvagen 7, and Jan Gustav
Harald Birgersson, Ekliden 6, both of S-573 00 Tranås, all
of Sweden

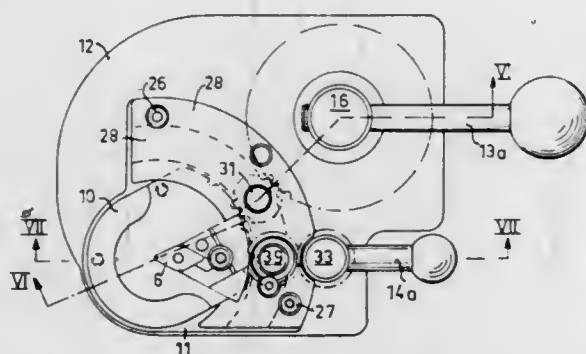
Filed Jan. 26, 1973, Ser. No. 327,119

Claims priority, application Germany, Feb. 9, 1972, 7204774;
Sweden, Oct. 18, 1972, 13443/72

Int. Cl. B23b 29/00; B26d 1/00

U.S. Cl. 82-37

5 Claims



1. A tool assembly comprising a lathe chip separating tool and a holder for the lathe tool, means mounting said holder for rotation about an axis that passes through the point of the tool or, in the case of a round-nosed tool, through the center of the nose radius, a swiveling device for rotating the holder about said axis, and gearing interposed between the swiveling device and the tool holder, said gearing including a rotatable gear disposed between and in mesh with said swiveling device and said tool holder thereby to turn said tool holder in the same direction as said swiveling device upon swiveling of said swiveling device, said tool holder and said swiveling device having gearing thereon of the same radius whereby said tool holder rotates by the same angular amount as said swiveling device.

3,851,552 SLITTING MACHINE

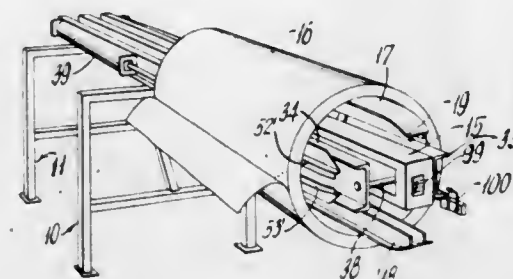
Richard B. English, Coplay, and Rudolph T. Benson, Jr., Walnut Port, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 267,464, June 29, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,091

Int. Cl. B26d 3/08

U.S. Cl. 83-9

22 Claims



1. A slitting machine, comprising frame means including bore-contacting means extending along and within the bore of an elongated tubular work piece for removably supporting the work piece with its axis fixedly oriented, said frame including an elongated guide within the bore of the supported work piece, a shuttle including means coaxing with said guide within the bore of the work piece, reciprocable actuating means coaxing between said frame means and said shuttle for imparting to said shuttle a two-stroke cycle of guided longitudinal traverse in the bore of the work piece, radially retractable and extensible cutting means carried by said shuttle, and means synchronizing the radial position of said cutting means with said cycle such that in one of said strokes said cutting means is in retracted position and in the other of said strokes said cutting means is in work-piece cutting position.

3,851,553 PUNCHING MACHINE

Wilfred Ernest Gale, 5 Stream Park, East Grinstead, Sussex, England

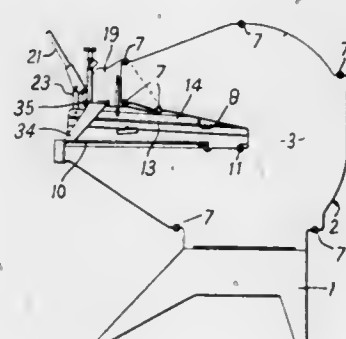
Filed Sept. 11, 1973, Ser. No. 396,188

Claims priority, application Great Britain, Sept. 18, 1972, 43120/72

Int. Cl. B26d 1/26, 7/26

U.S. Cl. 83-529

8 Claims



1. A machine, for punching sheet material, of the kind comprising a body defining a throat, a die carried by the body adjacent to an open end of the throat, a punch carried by a member pivoted to the body, and means acting between the body and the pivoted member for shifting the punch in relation to the die, characterized in that the body includes a pair of substantially plane sheet metal plates disposed side by side and converging towards the open end of the throat, and a plurality of tie means extending between and secured to the two plates.

3,851,554 PASTRY SHELL FILLING APPARATUS

Imre F. Papai, 2818 E. 119 St., Cleveland, Ohio 44120

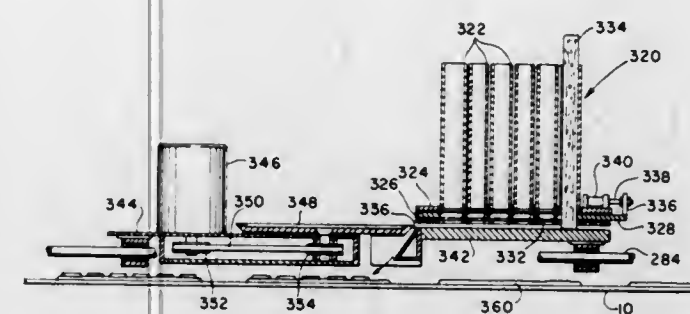
Division of Ser. No. 250,933, May 8, 1972, Pat. No. 3,780,643.

This application Oct. 1, 1973, Ser. No. 402,474

Int. Cl. B26d 7/06, 7/16

U.S. Cl. 83-165

12 Claims



1. Sliced sausage dispensing means comprising in combination:

- means for supporting an array of sausages in vertical position against
- a supporting translatable deck whereby the lower ends of the sausages slide in supported relation over the deck when it is translated;
- a knife wheel associated with said deck and translatable therewith;
- means for rotating said knife wheel;
- an opening in said deck extending under a portion of the periphery of the knife wheel at its leading edge, the leading edge of said knife wheel being located slightly above the deck by a distance corresponding to the desired thickness of sausage slices whereby severed slices drop through said opening; and
- chute means carried beneath said deck adjacent said opening for delivering said slices to said pastry shell.

3,851,555 TOOL FOR DESTROYING HYPODERMIC SYRINGES

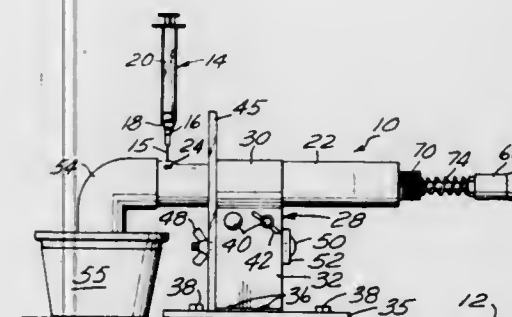
Harry N. Eldridge, 8110 Mission, Glen Avon, Calif. 92509, and Robert K. Eldridge, 3661 Pacific Ave., Rubidoux, Calif. 92509

Filed Nov. 23, 1973, Ser. No. 418,382

Int. Cl. B26d 3/16

U.S. Cl. 83-165

8 Claims



1. In a tool for irreversibly disabling both the needle portions and the barrel portions of disposable hypodermic syringes, the combination of:

- a tube having a forward end and a rearward end;
- a receptacle to receive severed parts of the hypodermic syringes;
- passage means placing the forward end of the tube in communication with the receptacle;
- said tube, passage means and receptacle forming a closed space to confine the severed parts of the hypodermic syringes;
- the forward end of the tube having at least one aperture to receive needle portions of the hypodermic syringes and having at least one larger aperture to receive the leading

ends of the barrel portions of hypodermic syringes after the needle portions are severed;
a plunger slidably mounted in the tube to cooperate with the edges of said apertures to shear the needle portions of the hypodermic syringes and to shear the leading ends of the barrel portions of the hypodermic syringes;
said plunger being manually retractable through the rear end of the tube;
spring means to oppose retraction of the plunger and to store energy to drive the plunger through a shearing stroke; and
support means to releasably engage and immobilize the tube.

3,851,556 SHEARING APPARATUS

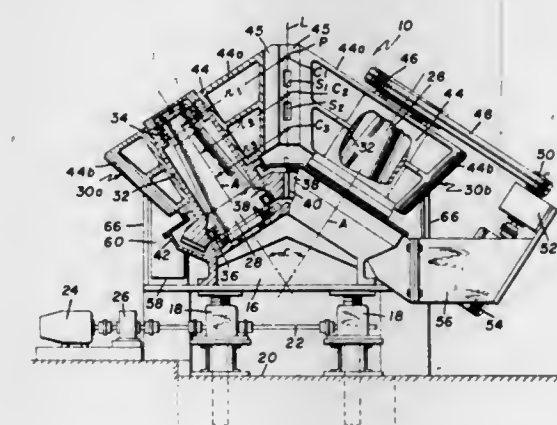
Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Mar. 19, 1974, Ser. No. 452,664

Int. Cl. B23d 19/04; B26d 7/06

U.S. Cl. 83-311

8 Claims



1. An apparatus for subdividing an axially moving elongated product into a plurality of equal length sections, comprising: a pair of cutting blades mounted on opposite sides of the path travelled by the product, said cutting blades being rotatable about non-parallel axes and being arranged to effect a cutting action on the product passing therebetween, the said cutting action occurring along a reference line which intersects said path and which bisects the angle included between said axes; and drive means for rotating said cutting blades about said axes, said drive means being adjustable to equate the peripheral speed of the blade portions cutting the product with the linear speed of the product, whereupon the length of the resulting subdivided sections will vary depending upon where said path intersects the said reference line.

3,851,557 CUTTING APPARATUS WITH WORK CLAMP

Jean Vierstraete, 83, rue Victor Hugo, 62 Oignies, France

Filed Nov. 1, 1973, Ser. No. 412,045

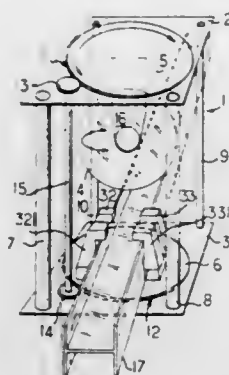
Int. Cl. B23d 47/04

U.S. Cl. 83-453

7 Claims

1. Cutting apparatus capable of producing an oblique transverse cut in an elongate workpiece, comprising a frame supporting a circular saw rotatable about a horizontal axis, and an angularly movable device for locating and clamping the workpiece in horizontal and vertical directions, the saw being movable about its diametral vertical axis which is perpendicular to and intersects with the longitudinal axis of the workpiece in the cutting position, the clamping device comprising at least one set of jaws with fixed clamping surfaces, means being provided for coordinating angular movement of the clamping device and the saw so that, even with large cutting angles, the saw is always located as near as possible to the set

of jaws, said jaws being movable independently to clamp the workpiece, after the saw and jaws have been adjusted into the



3,851,558

MECHANICAL CHORD FRETTER FOR FRETTED INSTRUMENTS

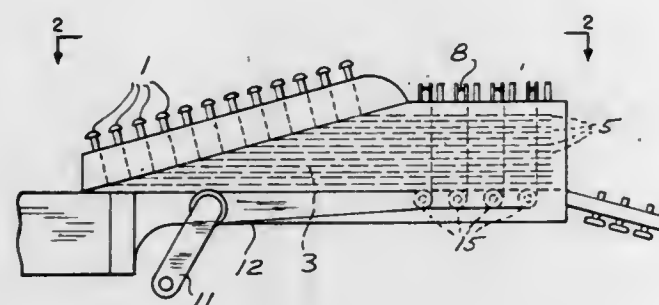
Nigel J. Hopkins, Ottawa, Ontario, Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 389,022

Int. Cl. G10d 3/00

U.S. Cl. 84-317

4 Claims



1. A mechanical chord fretter for use with a string carrying fretted finger board of a musical instrument such as guitar, said fretter comprising:

- a housing detachably engagable with the board;
- a plurality of plunger assemblies in the housing, each assembly when actuated being pressed down upon a selected string at a selected fret to fret a note, a chord being fretted when the particular assemblies associated with the particular notes in the chord are pressed down simultaneously;
- a plurality of slidable cards in the housing, each card being associated with a separate chord, each card being individually slidable between a normal first position remote from the assemblies and a second position at which it engages the assemblies, each card when in the second position selecting for actuation the assemblies defining the notes in the chord associated with the said each card;
- a plurality of normally raised push buttons in the housing, each push button being associated with a different card and the card associated therewith, each push button, when depressed, causing its associated card to be slid from its first to its second position; and
- manuable operable lever means in the housing having a first position at which the assemblies selected for actuation are actuated and the appropriate chord fretted, said lever means having a second position at which the card then in its second position is returned to its first position.

3,851,559 EXPANSIBLE ELEMENT FOR AN ASSEMBLING DEVICE AND DEVICES INCLUDING SAID ELEMENT

Lucien Louis Baude, Le Vesinet, France, assignor to Etablissements Joints, Vaduz, Liechtenstein

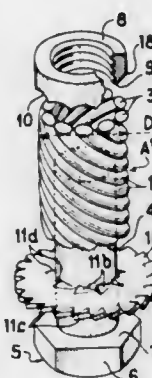
Continuation-in-part of Ser. No. 91,428, Nov. 20, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,325

Claims priority, application France, Nov. 26, 1969, 69.40780; Great Britain, Nov. 17, 1970, 54704/70

Int. Cl. F16b 13/06

U.S. Cl. 85-64

10 Claims



1. Assembling device comprising, in combination, a tubular expansible cluster of a plurality of juxtaposed identical filaments having a circular cross-section, said cluster having an axis and two opposed ends and being defined by two coaxial and concentric geometrical envelope-surfaces, one of which surfaces is an outer surface and the other an inner surface, the filaments being of a resiliently flexible crush-resistant material, each filament having the shape of a helix whose axis coincides with the axis of said cluster and extending through at least two thirds of a complete turn of its helix, all the contact lines between adjacent filaments being contained in a single geometrical surface coaxial with said cluster and located between said envelope-surfaces, whereby the filaments are temporarily held together owing to their very helical shape, and means for exerting an axial force of compression on said element, said force exerting means comprising two members having transverse bearing faces perpendicular to said axis of the cluster and capable of bearing against ends of the filaments at said opposed ends of the cluster.

3,851,560

SELF-DRILLING EXPANSION ROOF BOLT

Jeffrey R. Yago, Huntington, W. Va., assignor to Clifford T. Deane, Charlston, W. Va., a part interest

Filed Oct. 2, 1972, Ser. No. 294,267

Int. Cl. F16b 13/06

U.S. Cl. 85-68

9 Claims

1. A self-drilling expansion roof bolt, comprising, in combination:

- a. a member;
- b. means mounted on the member for making a hole; and
- c. means for anchoring the member in a hole, the hole making means making a hole when the member is rotated about an axis of rotation in a one direction, and the anchoring means anchoring the member in a hole when the member is rotated about the axis of rotation in a reverse direction to the one direction, the anchoring means including an expansion shell, a wedge portion arranged for selective engagement with the expansion shell, and means for engaging the wedge portion with the expansion shell and expanding the latter by a rotation of the member in the reverse direction, the engaging means including external screw threads, and a drive nut having internal screw

threads threadingly engaged with the external screw threads and jaw elements provided on an outer periphery

rocket launcher such that said securing means engages said rocket launcher for detachable affixation of said fairing to said launcher.



of the nut for engaging only in the reverse direction of rotation of the member with walls defining the hole.

3,851,561

FAIRING, ROCKET LAUNCHER

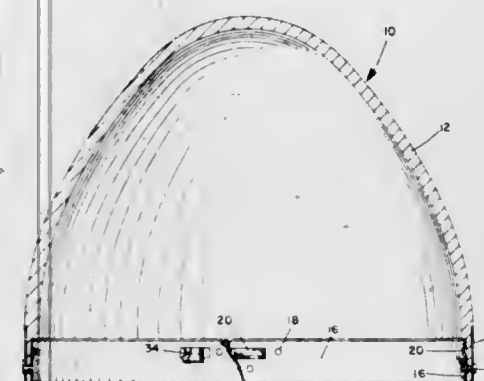
Pasquale Rudolph Zagala, Ridgecrest; Bill Moore, Inyokern, both of Calif., and Vincent J. Taylor, deceased, late of China Lake, Calif. (by Wayne George Zellmer, executor), assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 22,464, March 25, 1970, abandoned. This application May 4, 1973, Ser. No. 357,403

Int. Cl. F41f 3/04

U.S. Cl. 89-1.8

14 Claims



1. A rocket launcher fairing for use with an elongated rocket launcher, said fairing comprising a hollow shell having a rounded streamlined surface, said shell being open at one end and formed of a low-density frangible material, an annular rim conforming substantially to said shell opening, said rim being secured to the inner hollow surface of said shell, and securing means mounted on said rim, said securing means including a latching aperture in said annular rim and a resilient latching means secured to said rim and extending into said aperture for engagement with complementary securing means on said rocket launcher, the securing means also including tabs adapted to engage the complementary securing means on said rocket launcher, and wherein said fairing shell includes cutout portions over said annular rim, said latching means protruding radially outwardly from said rim into said cutout portion, the outermost protrusion of said latching means being recessed from the outer streamlined surface of said shell, said open end of said shell formed to accommodate the end of said

3,851,562

TOOL MOUNTING DEVICE FOR A MACHINE TOOL

Tamaki Tomita, and Yoshiki Ochiai, both of Okazaki, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

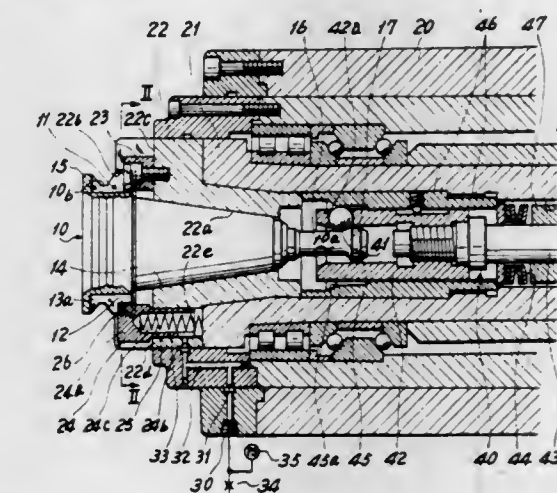
Filed Mar. 1, 1973, Ser. No. 337,178

Claims priority, application Japan, Mar. 6, 1972, 47-23022

Int. Cl. B23b 31/10

U.S. Cl. 20-11 A

6 Claims



1. A device for mounting a working tool on a machine having a spindle head, a tool magazine for removably storing diverse tools, and tool transfer means for transferring the respective diverse tools between said spindle head and said tool magazine, comprising:

- a spindle rotatably mounted within said spindle head, said spindle being provided with a fixed driving key means at one end thereof;
- tool holding means for holding each of said diverse tools;
- engaging means provided on said tool holding means and including an arcuate recess on the peripheral portion of said tool holding means;
- locking means for clamping said tool holding means in said spindle in axial alignment therewith;
- positioning means reciprocally mounted in said one end of said spindle and engageable with one of said engaging means for orienting another of said engaging means to said fixed driving key means in course of the relative rotation between said spindle and said tool holding means before said another of said engaging means is engaged with said fixed driving key means; and
- pushing means arranged in said spindle for urging said positioning means into such a position that said positioning means protrudes a predetermined amount further than said fixed driving key means from said one end of said spindle and for entering said positioning means into said arcuate recess before said another of said engaging means is oriented to said fixed driving key means.

3,851,563

MACHINE TOOL

Robert Habib, 3 Rue de Beaumont, Geneve, Switzerland (1200)

Filed June 29, 1972, Ser. No. 267,616

Claims priority, application Switzerland, June 30, 1971, 9576/71; June 15, 1972, 8921/72

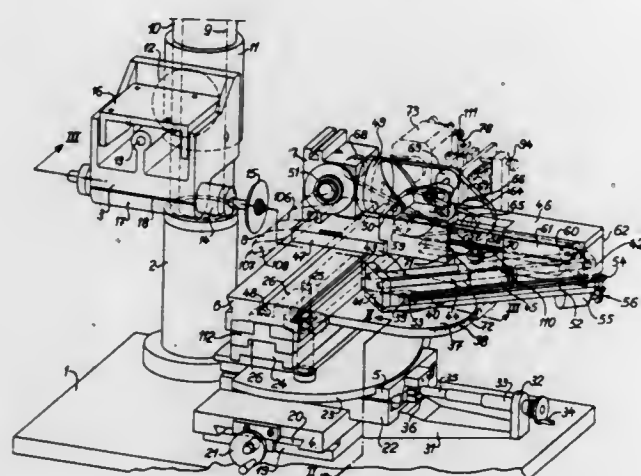
Int. Cl. B23c 3/32

U.S. Cl. 90-11.5

3 Claims

1. A machine for machining workpieces, including spiral cylindrical cutters with hemispherical heads, comprising: a machine tool carrier, a machine tool rotatable about an axis, means for mounting said machine tool on said machine tool carrier and for horizontally orienting and inclining said axis; a generally horizontal carriage; means for setting the position

of the carriage relative to the machine tool carrier in a generally horizontal plane, a support mounted on the carriage for rotation and inclination respectively about a vertical axis and a horizontal axis, a headstock including a rotatable spindle to support a workpiece to be machined, the headstock being slidably mounted on the support along a direction parallel to



the axis of the spindle, the axis of the spindle being disposed to intersect said vertical axis with said intersecting axes defining a plane perpendicular to the horizontal axis, and a device mounted on the support for helicoidally driving the headstock spindle in response to the sliding movement of the headstock along the support.

3,851,564

PORTABLE SCREW CUTTING MACHINE

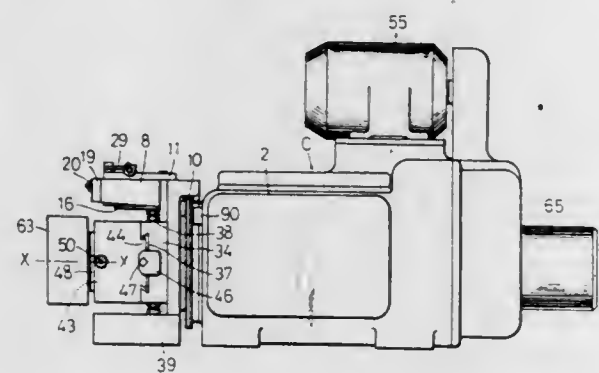
Yoshizo Kitano, 78, 2-Chome Daimon Chikusa Ku, Nagoya, Japan

Continuation-in-part of Ser. No. 217,894, Jan. 14, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,209

Int. Cl. B23g 1/02, 1/24

U.S. Cl. 90—11.52

15 Claims



1. A portable screw cutting machine comprising in combination a box frame, a hollow shaft having an axial centerline, means supporting said hollow shaft on said box frame, means for axially moving said hollow shaft with respect to said box frame in one direction to and away from a stationarily positioned workpiece, said workpiece having a centerline in axial alignment with said axial centerline of said hollow shaft, means for rotating said hollow shaft at a relatively low speed about its longitudinal axis, a cutting tool holder, said cutting tool holder having an axial centerline, a recessed portion formed in said cutting tool holder, at least one radially disposed cutting edge supported within said recessed portion adjacent an outer end of said cutting tool holder, means connecting said cutting tool holder adjacent one end of said hollow shaft for axial and rotatable movement therewith, said connecting means comprising adjustable

means to adjustably position said cutting holder with respect to said hollow shaft so that the axial centerline of said cutting tool holder angularly deviates from the axial centerline of said hollow shaft in a radial pattern from a point spaced inward from said hollow shaft toward the end of said hollow shaft in juxtaposition to said workpiece to thereby adjust the angular disposition of said cutting tool with respect to said workpiece,

means connected with said adjustable means for rotating said cutting tool holder at a speed relatively higher than the speed of rotation of said hollow shaft to orbitally revolve said cutting tool edge around said workpiece,

means supported on said box frame and operably associated with said shaft rotating means for axially moving said hollow shaft toward said workpiece with said workpiece received in said cutting tool holder recess to thereby move said cutting tool along the portion of the length of said workpiece while said cutting tool revolves around said workpiece,

means adjustably supported on said box frame for setting the distance of axial movement of said hollow shaft in said one direction, said last stated means comprising means to stop said hollow shaft in its axial movement when said hollow shaft has traveled said distance in said one direction,

means supported on said cutting tool holder means for moving said cutting tool out of contact with said workpiece when the axial movement of said hollow shaft in said one direction has been stopped,

means supported on said box frame and engaged with said hollow shaft for axially moving and resetting said hollow shaft in a second direction back to its initial position after said cutting tool has been moved out of contact with said workpiece.

3,851,565

SERVO-BOOSTERS FOR VEHICLE BRAKE SYSTEMS

John James Camm, East Malvern, Australia, assignor to Girling Limited, Birmingham, England

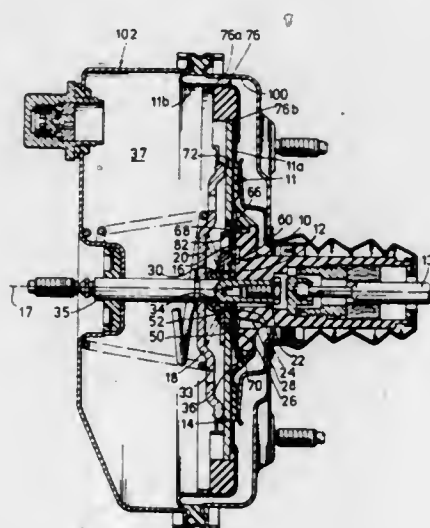
Filed Aug. 14, 1972, Ser. No. 280,167

Claims priority, application Great Britain, Aug. 13, 1971, 38063/71

Int. Cl. F15b 9/10

U.S. Cl. 91—369 B

2 Claims



1. A differential-pressure operated servo booster of the type having a load actuating member which is displaceable by the application of differential fluid pressure across an annular elastic diaphragm, comprising a housing, a diaphragm dividing the housing into two chambers, valve means located coaxially of the booster axis for controlling the relative pressure in said two chambers, a plurality of rigid, individual, radially extend-

ing fingers which define a radially slotted annular deflecting plate, an annular skirt member located coaxially within the housing and having an axially extending portion and a radially inwardly projecting portion, the diaphragm having a first portion which extends generally radially outwardly of the booster axis and a second, axially extending portion which is located radially outwardly of the deflecting plate and which is supported by said axially extending portion of the annular skirt member and the radially inwardly extending portion of the annular skirt member including a first radially inwardly extending limb which is engaged by that side of each of the fingers which faces towards said valve and at least one second radially inwardly extending limb which engages the other side of at least some of the fingers and wherein said second limb is axially spaced from said first limb and extends radially inwardly from the axially extending portion of said skirt.

which fluid communication between said ports of said control valve in said control valve is established; and pressure-regulating means connected between said fourth port of said preselector valve and said tank and operative for regulating the fluid pressure in said second work conduit.

3,851,567
BRAKE MECHANISM

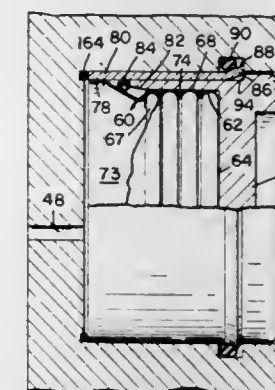
Tom H. Thompson, 29210 Point O'Woods Pl., Southfield, Mich. 48075

Continuation-in-part of Ser. No. 7,381, Feb. 3, 1970, abandoned, which is a continuation of Ser. No. 692,218, Dec. 20, 1967, abandoned. This application Mar. 30, 1970, Ser. No. 23,699

Int. Cl. F16j 3/00

U.S. Cl. 92—42

16 Claims

3,851,566
APPARATUS FOR CONTROLLING A HYDRAULIC-LIFT TAIL GATE ARRANGEMENT OF A CARGO-CARRYING VEHICLE

Walter Herrmann, Vaihingen/Enz, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

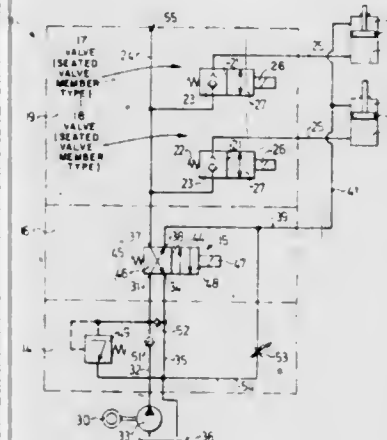
Filed Dec. 12, 1973, Ser. No. 422,595

Claims priority, application Germany, Jan. 13, 1973, 2301648

Int. Cl. F15b 11/16

U.S. Cl. 91—411 R

18 Claims



1. A hydraulic control apparatus comprising, in combination, a double-acting consumer having a first work conduit for receipt of pressure fluid to cause said consumer to effect movement of a load in a first direction and having a second work conduit for receipt of pressure fluid to cause said consumer to effect movement of such load in opposite second direction; a tank; a supply conduit and a pump for pumping fluid from said tank into said supply conduit; a preselector valve having a first port connected to said supply conduit, a second port connected to said tank, a third port and a fourth port connected to said second work conduit of said double-acting consumer, said preselector valve having a first position in which fluid communication is established in said preselector valve between said first and fourth ports and also between said second and third ports and having a second position in which fluid communication is established in said preselector valve between said first and third ports and also between said second and fourth ports; a control valve having a first port connected to said first work conduit of said double-acting consumer and having a second port connected to said third port of said selector valve and having a first position in which fluid communication between said ports of said control valve in said control valve is blocked and having a second position in

1. Hydraulic brake apparatus comprising: a housing having a cavity formed therein with a closed end and an open end; a port in said closed end for connection with a source of fluid pressure; a fluid pressure transmitting member mounted in said cavity and forming with said cavity a fluid pressure chamber, said fluid pressure transmitting member comprising a metallic cup-like actuator having an open end portion and a closed end portion spaced from and movable with respect to each other; said actuator having mounting flange means secured to the open end portion thereof; means defining a mounting groove in said housing receiving said mounting flange means; static, resilient sealing means between the surfaces of said mounting groove and said mounting flange; said flange means compressing said sealing means between the surfaces of said mounting flange means and mounting groove to form a static, fluidtight seal between the actuator and the closed end of the cavity such that the open end portion of the metallic actuator is secured to the cavity in fixed, fluid tight relationship with respect to the closed end of the cavity and the closed end portion of the metallic actuator defines a fluid pressure responsive movable wall for said chamber and is operable to apply braking pressure when fluid pressure is applied to said chamber from said source; said open and closed end portions of said metallic actuator being spaced from each other by an endless side wall extending therebetween; said side wall being formed with a deformable corrugated metallic segment for changing the length of the side wall and hence the spacing between said open and closed end portions, said corrugated segment being plastically deformable in response to the application of fluid pressure to said chamber to prevent the side wall from returning to its original length when the fluid pressure is subsequently relaxed so that the relaxed length of the metallic actuator changes progressively with the successive application and relaxation of fluid pressure to said chamber; said metallic actuator being statically sealed only to said housing and being free of any sliding sealing relationship therewith.

3,851,568

FOLDABLE TUBULAR PACKAGE APPARATUS

George Henry Holoubek; David Edward Ales; Harland Elmer Harms; Warren E. Erickson; Maurice A. Ditmars, and J. Keith Brookhart, all of Muscatine, Iowa, assignors to Dart Industries Inc., Los Angeles, Calif.

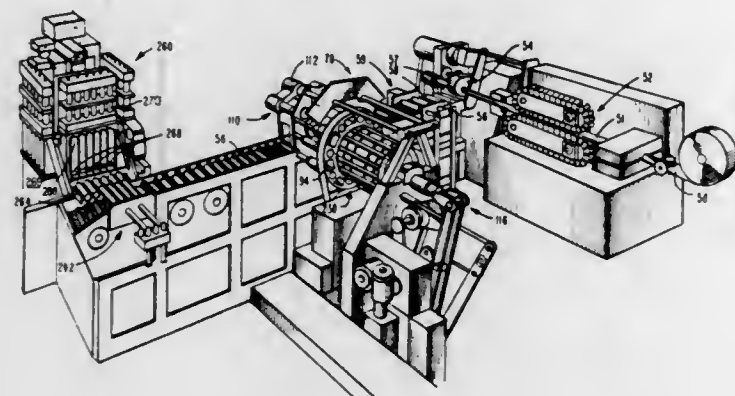
Continuation-in-part of Ser. No. 376,725, July 5, 1973, which is a continuation of Ser. No. 214,654, Jan. 3, 1972, abandoned.

This application Sept. 14, 1973, Ser. No. 397,460

Int. Cl. B31b 1/32

U.S. Cl. 93—36.8

13 Claims



1. In an apparatus for producing a foldably settable tubular container comprising:

- a first shaft;
- a carriage means mounted on said first shaft having arranged thereon a plurality of mandrels adapted to receive tubular blanks;
- a second shaft adjacent said first shaft;
- a forming assembly positioned on said second shaft adjacent said carriage means for cooperating with said mandrels to shape an end of said tubular blanks, said forming assembly including a first means for crimping the ends of said blanks, a second means for twisting the crimped ends of said blanks, and a third means for pressing the twisted crimped ends of said blanks into an inverted frusto-conical shape including a die member having an end portion that has an inverted annular frusto-conical configuration with a central recess and a matching mandrel die head having a central pin with an annular recess about the base of said pin in substantially matching conformity with the end portion of said die member.

3,851,569

APPARATUS FOR MAKING SOPAIPILLAS AND THE LIKE

Raymond Madrid, 922 Coal Ave., Albuquerque, N. Mex. 87102

Filed Aug. 19, 1971, Ser. No. 173,061

Int. Cl. A47j 37/12

U.S. Cl. 99—407

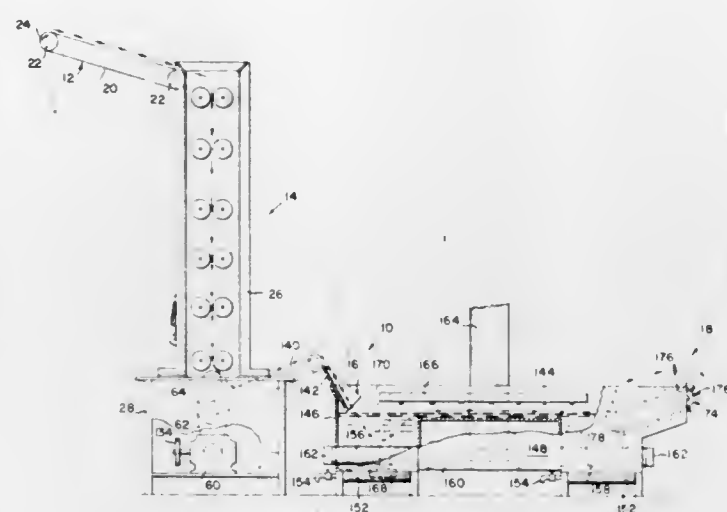
17 Claims

1. An apparatus for making sopaipillas and the like including:

- a. a plurality of linearly spaced pairs of opposed roll members, the periphery of each set of roll members in a given pair being spaced from each other so as to engage and pass a strip of dough therebetween,
- b. the surfaces of successive pairs of roll members moving at greater peripheral velocities to contract, squeeze and stretch the dough strip moving therebetween under tension and at a progressively greater speed,
- c. air supply means adjacent each of the roll members for supplying a continuous stream of air along the periphery of each roll member for maintaining the entire periphery thereof in a dry condition and thereby preventing particles of the strip of dough from sticking to the roll members,
- d. means for cutting dough sections from the lengthened strip of dough after the dough strip has passed through

the plurality of linearly spaced pairs of opposed roll members,

- e. an elongated bath of heated cooking oil contained in an elongated receptacle into which the cut dough sections are dropped at one end of the receptacle,



3,851,570

APPARATUS FOR MAKING A MARBLED MEAT PET FOOD

Wayne M. Charter, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

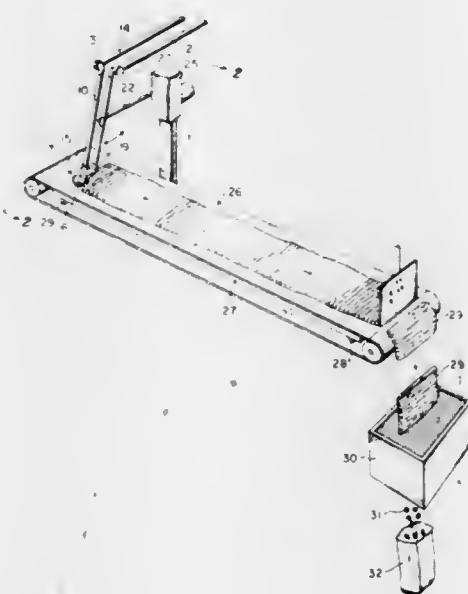
Division of Ser. No. 57,092, July 22, 1970, Pat. No. 3,765,902.

This application Mar. 1, 1972, Ser. No. 231,054

Int. Cl. A21c 3/06

U.S. Cl. 99—450.2

1 Claim



- 1. An apparatus for producing a substantially solid semi-moist animal food resembling marbled meat, said apparatus comprising a first pipe, said first pipe having an entrance end and an outlet end, said outlet end of said first pipe being substantially closed and said first pipe having a plurality of openings adjacent to the substantially closed outlet end, the area of opening of each of the plurality of openings being smaller than the cross-sectional area of the interior of the first pipe, a second pipe, said second pipe having a discharge port,

entrance end and inner cavity, said inner cavity of said second pipe completely enclosing said outlet end of said first pipe with said outlet end of said first pipe being substantially within said inner cavity, said entrance end of said second pipe being sealed to said entrance end of said first pipe to form a continuous sealed cavity from said entrance of said second pipe to said inner cavity; means for supplying the first pipe and the second pipe with different colored semi-moist animal food, said means being respectively connected to the entrance end of each pipe; an endless conveyor for receiving and cooling a product, said endless conveyor being located underneath said discharge port of said second pipe; and means for moving said first pipe and said second pipe back and forth across the endless conveyor.

3,851,571

APPARATUS AND METHOD FOR ENCAPSULATING EGGS

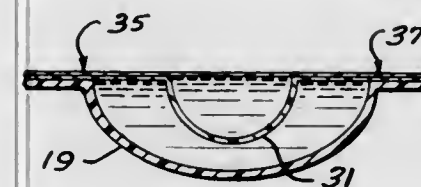
John Francis Nichols, Evergreen Park, Ill., assignor to Nichols Products, Inc., Chicago, Ill.

Filed Aug. 28, 1972, Ser. No. 284,123

Int. Cl. A21c 9/06

U.S. Cl. 99—450.6

3 Claims



- 1. An egg encapsulating apparatus separating egg white and egg yolk for freezing to maintain the appearance of a fresh egg upon subsequent cooking comprising container means formed in the shape of a portion of an egg shell for containing a first liquid therein, separating means enclosing said container means to form an enclosure of a first liquid contained therein, said separating means having formed therein a protrusion in the shape of a portion of an egg yolk for containing a second liquid, said protrusion extending into the enclosure formed with said container means, and means for enclosing the protrusion formed in said separating means.

3,851,572

DRY PEELING APPARATUS

Louis P. Lazzarini, San Jose, Calif., assignor to Genevieve I. Hanscom, Santa Cruz, Calif.; Genevieve I. Hanscom; Robert Magnuson and Lois J. Thomson, Trustees of the Estate of Roy M. Magnuson; a part interest to each

Division of Ser. No. 299,760, Oct. 24, 1972, which is a continuation-in-part of Ser. Nos. 826,377, May 21, 1969, abandoned, and Ser. No. 42,925, June 3, 1970, abandoned,

Continuation of Ser. No. 148,410, June 1, 1971. This

application Aug. 6, 1973, Ser. No. 385,845

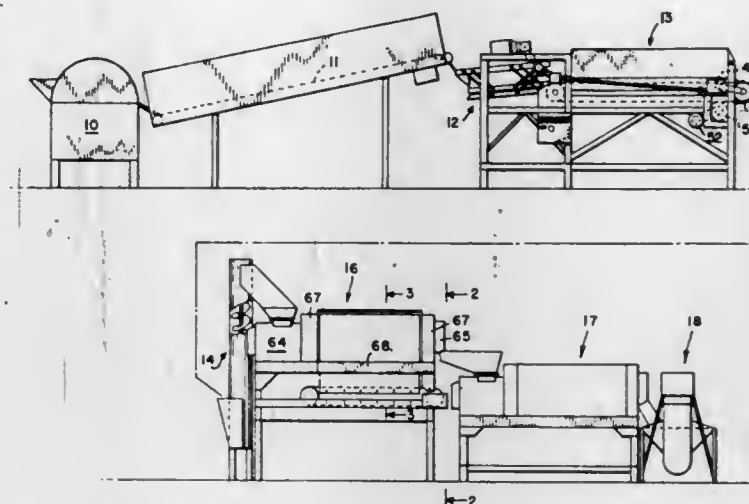
Int. Cl. A23m 7/02

U.S. Cl. 99—451

4 Claims

- 1. In an apparatus for peeling fruit and vegetables having means for applying lye to the articles as a preliminary treatment; means for treating the articles as a preliminary treatment; means for treating the articles with infra-red rays comprising a feed mechanism for arranging articles treated with lye in rows, a roller conveyor for receiving rows of articles from the feed mechanism and for turning the articles as they are progressed thereby, and a source of infra-red rays disposed in overhead relation to said roller conveyor; and a peeler for receiving articles from said infra-red ray treating means com-

prising a cylindrical array of peeling rolls, each roll including resilient fingers projecting radially outwardly from the roll, a rotatable housing having said array of rolls disposed therein



and being substantially coextensive in length with said rolls to receive pieces of peel and debris removed by said fingers and flung onto said housing, and means for removing peel and debris from said housing.

3,851,573

CHERRY STEMMING MACHINE

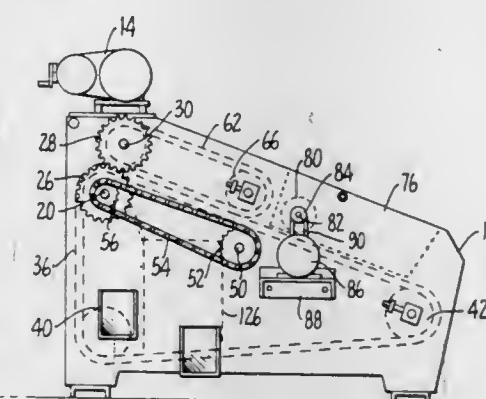
Earl J. Hesse, Oakland; Frederick J. Cimperman, San Lorenzo, and Howard B. Severson, San Leandro, all of Calif., assignors to Vistan Corporation, San Leandro, Calif.

Filed Sept. 13, 1972, Ser. No. 288,505

Int. Cl. A23n 15/02

U.S. Cl. 99—640

7 Claims



- 1. A machine for stemming fruit comprising: a frame, a loading hopper mounted on the frame for receiving fruit for processing, a plurality of feed bars having pockets provided therein for receiving individual fruit from the hopper, endless chain means attached to said feed bars for driving the feed bars, a feed brush for sweeping fruit from the tops of the feed bars as they leave the loading hopper and for brushing fruit stems extending from the pockets down against the tops of the feed bars, holding means for holding the fruit stems down against the top of the feed bars, stem gripping means for gripping fruit stems against the tops of the feed bars and suspending the fruit below the feed bars, retaining means for retaining fruit in the pockets until engaged by the stem gripping means, means for preventing fruit suspended below the feed bars from re-entering the pockets, and stemming means for removing fruit suspended below the feed bars from their stems.

3,851,574

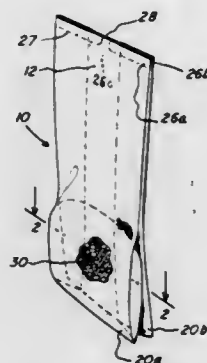
HEAT AND MOISTURE ACTIVATED SAVORY COATING SYSTEM FOR POPCORN

Morris H. Katz, and Lawrence C. Brandberg, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 26, 1972, Ser. No. 318,349
Int. Cl. B65b 25/16

U.S. Cl. 426-107

6 Claims



1. A package of popcorn ready for popping in a microwave oven comprising an expandable package formed from a flexible sheet material transparent to microwave energy, said package having at least one steam exhaust opening therein of sufficient size to allow the exhaust of gas and steam without bursting the package, a charge of unpopped corn in the package and from about one to eight parts of a dispersion of an edible fat and an edible hydrophillic and thermoplastic film former by weight for each eight parts by weight of corn, said dispersion comprising sufficient edible fat whereby when the package is placed in said oven, the corn will be popped and simultaneously coated with the dispersion.

3,851,575

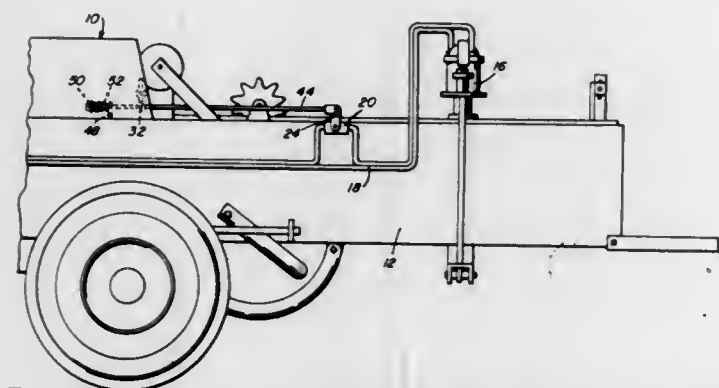
BALER WIRE TENSION CONTROL ASSEMBLY

Joe Cardoza, Dos Palos, Calif., assignor to John R. Cardoza, Dos Palos, Calif.

Filed Aug. 23, 1973, Ser. No. 390,860
Int. Cl. B65b 13/18; B30b 15/26

U.S. Cl. 100-4

6 Claims



1. A tension control assembly for balers wherein bales are progressively tied with the baling wire passing between a finished bale and the next bale being formed, said baler including a bale chamber, hydraulic pressure means selectively varying the size of the bale chamber, a valve control for said pressure means, a knoter, and a wire path extending from a roll supply about the leading end of a new bale between the new bale and the last finished bale and to the knoter, said control assembly being operatively connected to said valve control for a selected actuation thereof, said control assembly being interposed along the wire path between the leading end of the new bale and the knoter for engagement by the baling wire and a sensing of the tension therein to effect a corresponding selective actuation of the pressure means valve control.

3,851,576

APPARATUS FOR HOLDING TIP OF BAND IN STRAPPING MACHINE

Yukio Takahashi, Tokyo, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

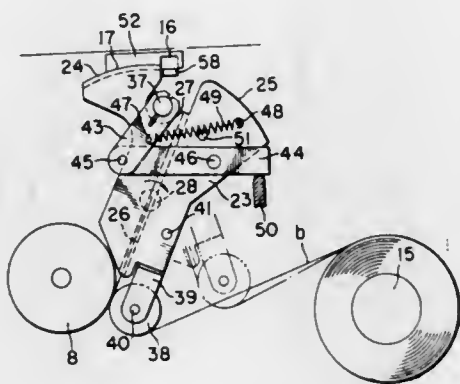
Filed Feb. 22, 1973, Ser. No. 334,855

Claims priority, application Japan, Feb. 25, 1972, 47-23202[U]

U.S. Cl. 100-33 PB

Int. Cl. B65b 13/32

4 Claims



1. In a strapping machine for securing a flexible band in surrounding relationship to an object, such as a package, said machine including a frame having a table slidably supported thereon for movement between first and second positions, the table being adapted to have a package disposed on the upper surface thereof, clip means mounted on said frame for movement between open and closed positions, said clip means including a movable clip portion disposed for coaction with the undersurface of said table for holding the leading end of a band therebetween when said clip means is in said closed position, means associated with said table and disposed at least partially thereunder for feeding said band upwardly to make a loop surrounding the table and a package thereon, drive means for controlling the slidable movement of said table between said first and second positions, said drive means including a rotatable shaft and linkage means coacting between said shaft and said table, means coacting with the band for melting the opposing surfaces thereof and for causing the opposing melted surfaces to be overlapped and pressed together to create a bond therebetween, and control means coacting with said clip means for controlling the opening and closing thereof, comprising the improvement wherein said control means includes link means coacting directly between said shaft and said clip means for controlling the opening and closing thereof.

3,851,577

VERTICAL BALER

William F. Newcom, Warminster, and Robert A. Munro, Southampton, both of Pa., assignors to Munro-Newcom, Inc., Southampton, Pa.

Filed Nov. 6, 1972, Ser. No. 304,162

Int. Cl. B30b 15/32

U.S. Cl. 100-218

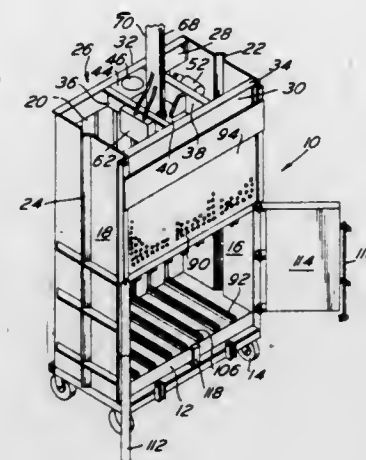
7 Claims

1. A baler comprising a housing having a base at the bottom thereof and defining the bottom of a baling chamber in the housing, a platen supported by the housing for movement in a vertical direction toward and away from the base, said base and platen on their juxtaposed faces having channels through which a flexible member may extend during application to confine a bale in said chamber, means at the upper end of said housing supporting a cylinder having its piston rod connected to said platen for causing movement of said platen, door means on said housing for providing access to said baling chamber, said housing having a rear wall provided with slots, each rear wall slot being aligned with a channel on said base, a plurality of flexible members each having one end secured to said base, each flexible member extending in one of the channels on the base and through the aligned slot in the rear

wall, means defining an inoperative position on the rear wall of said housing for the ends of flexible members remote from the base, and means on the last mentioned ends of said flexible

mounted within a bore of a continuously rotating carrier arm, the improvement of a trip mechanism to effect displacement of the can support from a print blanket comprising:

an eccentric sleeve between said shaft of said can support and said bore, said sleeve being rotatable within said bore and about said shaft, said sleeve having a normal print rotational position to hold said shaft of said can support in a position to effect contact between said can support and said print blanket, detector means to provide a trip signal in response to the absence of a can on said can support, a trip cam and trip cam follower pair, one of said trip pair being connected to said eccentric sleeve, said trip cam having a normal print position and a trip position, said trip cam being thrown into said trip position in response to said trip signal, said trip pair being positioned to engage one another when said cam is in said trip position, engagement of said trip



members for removably attaching the same to said platen whereby the flexible members may selectively effect ejection when the door means are open and the platen is moved to an uppermost position away from the base.

3,851,578

COMPACTOR WITH YIELDABLE RECEPTACLE

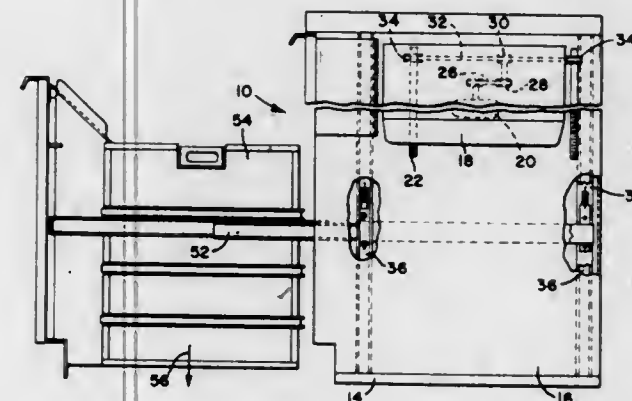
Einar O. Engebretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Apr. 17, 1972, Ser. No. 244,454

Int. Cl. B30b 15/00, 1/18

U.S. Cl. 100-229 A

10 Claims



1. A compactor comprising:

- a compactor housing,
- a ram mounted in said housing for vertically reciprocal movement therein,
- a slidably mounted refuse receiving drawer,
- means supporting said drawer for translational movement between a compacting position beneath said ram and a noncompacting position displaced outwardly of said compacting position, and
- means in engagement with said drawer supporting means for permitting limited yielding movement of said drawer under compacting movement of said ram sufficient to relieve compacting forces from said drawer supporting means.

pair causing rotation of said eccentric sleeve by an amount and in a first rotational direction that displaces said shaft and said can support away from the print blanket to a trip position,

a spring coupled to said eccentric sleeve, said spring tending to rotate said sleeve in said first rotational direction when said sleeve is in said trip position to hold said sleeve in said trip position and, said spring tending to rotate said sleeve in a second rotational direction, opposite from said first rotational direction, when said sleeve is in said normal print position to hold said sleeve in said normal position, first stop means to hold said sleeve at said trip position against further movement in said first rotational direction, second stop means to hold said sleeve at said normal position against further movement in said second rotational direction.

3,851,580

CREDIT CARD VOUCHER IMPRINTER

Quentin E. Correll, Mountain View; Allan L. Swain; Tommy A. Oudijk, both of Palo Alto; Leland D. Chamness, Mountain View, and Melvin Rudin, Los Altos, all of Calif., assignors to Albert J. Day, San Mateo, Calif.

Filed Feb. 28, 1973, Ser. No. 336,806

Int. Cl. B41l 47/46

U.S. Cl. 101-45

12 Claims

1. In a credit card sales voucher imprinting device comprising: a frame; a housing mounted on the frame; means attached to the frame providing a voucher imprinting area for holding

3,851,579

CAN CARRIER TRIP MECHANISM IN CONTINUOUS CAN PRINTER

Albert T. Zurick, Glen Rock, N.J., assignor to Van Vlaanderen Container Machinery, Inc., Paterson, N.J.

Filed May 16, 1973, Ser. No. 360,831

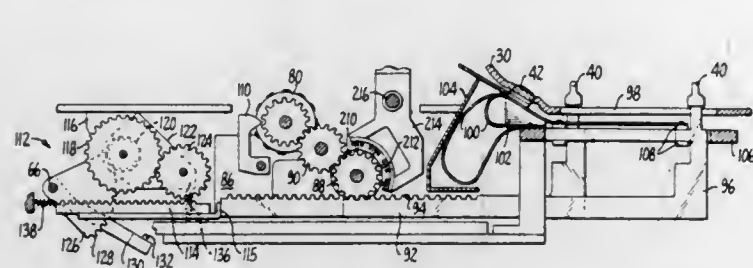
Int. Cl. B41f 17/22

U.S. Cl. 101-39

4 Claims

1. In a continuously rotating can printing or coating machine having a can support, the shaft of said can support being

a sales voucher for imprinting; a plurality of imprinting wheels arranged adjacent to the imprinting area; means for selectively indexing the imprinting wheels with respect to the imprinting area, the improvement comprising: a code wheel associated with each imprinting wheel, said code wheels comprising a series of wheels mounted on a common axis for rotation independent of one another; means coupling the code wheels to the imprinting wheels to rotate the code wheels about said axis so as to index each code wheel in coordination with the im-



printing wheel associated therewith; encoding means mounted on each of said code wheels to indicate the indexed position of the code wheel and, thus, the indexed position of the imprinting wheel associated therewith said means extending from the circumference of the code wheels; and, a pick-off sensor mounted relative to the frame to move in a path parallel to the common axis of rotation of the code wheels to move past the respective code wheels and sense the position of the encoding means thereon.

3,851,581

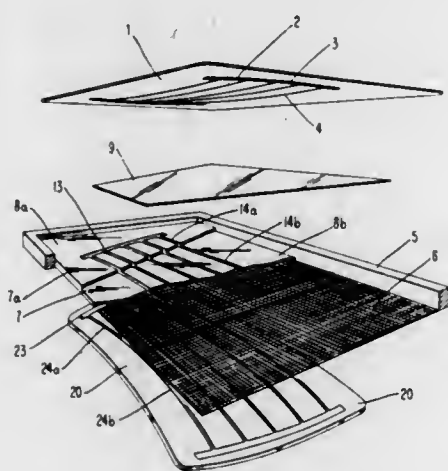
MANUFACTURE OF ELECTRICALLY HEATED WINDOWS

Hans Baum, Porz-Urbach; Ralf Reinicke, Porz-Zundorf, and Dieter John, Porz-Eil, all of Germany, assignors to Saint-Gobain Industries, Neuilly S/Seine, France
Division of Ser. No. 17,182, March 6, 1970, abandoned. This application Mar. 8, 1973, Ser. No. 339,313
Claims priority, application Germany, Mar. 7, 1969, 1911555; Mar. 8, 1969, 1911561

Int. Cl. B41m 1/12

U.S. Cl. 101-129

18 Claims



1. A method of making a silk screen comprising a tissue and a stencil which comprises applying the emulsion to the tissue in differential thickness according to a preconceived design, and exposing the emulsion to radiation of short wave length through a transparency having opaque lines, dissolving away the areas beneath the lines and thereby making a stencil of which the slits are of differential depth conforming to the design.

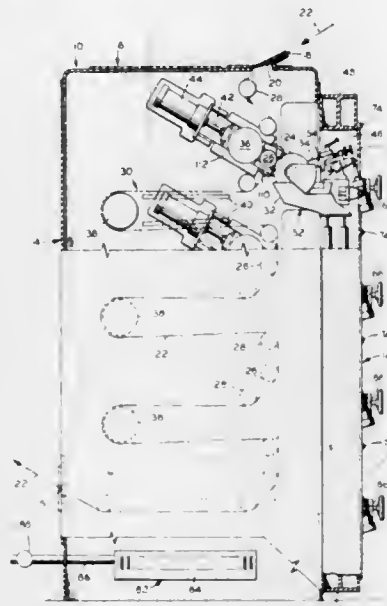
3,851,582
PRINT MACHINE FOR USE WITH HIGH SOLVENT INKS
Johann Heinrich Saueressig; Josef Konen, both of Ahaus, and Paul Metges, Krefeld, all of Germany, assignors to Saueressig GmbH, Ahaus/Wueller, Germany
Filed Oct. 31, 1973, Ser. No. 411,393

Claims priority, application Germany, Dec. 21, 1972, 2262550

Int. Cl. B41f 5/16

U.S. Cl. 101-181

12 Claims



1. A print machine for the continuous printing of a continuous web traveling therethrough comprising:
 - a. a machine frame;
 - b. a vertical gate member pivotally mounted on one face of said frame and movable between an open position exposing said one face and a closed position substantially closing said one face;
 - c. a multiplicity of pairs of cooperating print and press rolls rotatably supported on said frame in vertically spaced alignment, the print roll of each pair being disposed outwardly adjacent said gate member;
 - d. a multiplicity of inking units supported on said gate member in vertically spaced alignment and each cooperating with one of said print rolls for applying a coating of ink to the circumferential surface of an associated print roll as it rotates during operation of the machine, each inking unit including an ink trough and means for moving said ink trough on said gate;
 - e. closure means about other surfaces of said machine frame substantially closing said space defined by said frame;
 - f. closure members on said gate member, at least one of which is disposed between adjacent inking units and is movable between a first position substantially closing at least a portion of the vertical space therebetween and a second position exposing the vertical space therebetween, said gate with its closure members cooperating in the closed position thereof with said machine frame and closure means to provide a substantially closed housing for said print and press rolls and said ink troughs; and
 - g. gas vent means on said machine communicating with the interior thereof for withdrawing vapors from the interior thereof.

3,851,583

PLATE CLAMP REGISTERING MECHANISM

Robert K. Norton, Twinsburg, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 24, 1972, Ser. No. 299,662

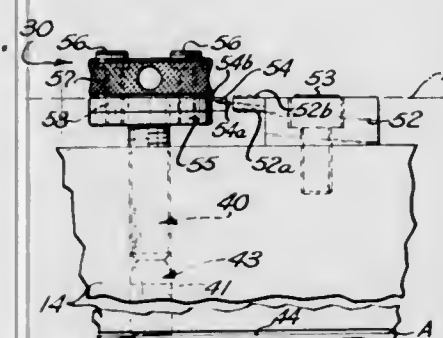
Int. Cl. B41f 1/34

U.S. Cl. 101-415.1

1 Claim

1. In a rotatable plate-carrying cylinder having a body member and a longitudinal gap in the periphery thereof which gap

is defined in part by a side surface of said body member, a plate clamp member mounted in the gap and extending longitudinally along said side surface of the gap and laterally adjustable transversely of the gap in opposite directions from a predetermined plate-receiving position spaced from said side surface of the gap toward and away from said side surface, first means for positively adjusting said clamp member away from said side surface including at least one rotatable screw threadably engageable with said clamp member and having means associated therewith contacting said side surface so that upon rotation thereof said clamp member moves away from said side surface, second means for continuously urging said clamp member toward said side surface in opposition to said screw, plate-registering elements mounted on said clamp member for approximately registering a flexible plate having cooperating plate-registering elements to the clamp member when it is located in said predetermined plate-receiving position, and means for accurately locating said clamp member in said predetermined position comprising an indicator means carried by said screw and rotatable therewith and located in a predetermined angular position of said screw when said clamp member is in its predetermined plate-receiving position, said screw being rotatable in a first direction from said predetermined position to move the clamp away from the side surface and rotatable from said predetermined position in the opposite direction to permit the second means to move the clamp toward the side surface, said first and opposite directions thus providing movement of said plate and clamp mem-



ber from approximate registering position as provided by said plate-registering elements transversely of the gap to a final position accurately registering said plate to said cylinder, and said indicator means, upon subsequent removal of said plate and rotation of the screw back to said predetermined position, providing by means of its angular position a visual indication that said clamp member has been accurately restored transversely of the gap to its said original predetermined plate-receiving position, adjusting means releasably securing said indicator means to said screw so that when released said indicator means may be angularly moved with respect to said screw and when secured to said screw rotates therewith, said at least one screw member having a threaded stem portion threadably engaged with said clamp member and a head thereon located within said gap, and said adjusting means including means for releasably clamping said indicator means to said head to locate said indicator means within said gap, said indicator means comprising an indicator-member having an opening therethrough, the stem of said screw member extending through said opening, and said means for releasably clamping said indicator member to said head comprising a clamp ring located on the side of said indicator member opposite the side adjacent said head and fastener means extending through said opening in said indicator member for securing said clamp ring, said indicator member and said head together and when released enabling said indicator member to be angularly moved relative to said screw member, clamp ring and head.

3,851,584

CHEMICAL REPRODUCTION SYSTEMS

Frank M. Palermi, Pittsford, and Eugene P. Goldberg, Rochester, both of N.Y., Carl W. Melton, Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.

Filed July 10, 1970, Ser. No. 54,076

Int. Cl. B41m 5/00

U.S. Cl. 101-470

2 Claims

1. A method for chemical reproduction of images by a chromogenic reaction of an iodate, an iodide, an acid, and starch comprising the steps of:
distributing finely divided iodate crystals in conformance with an image on a master sheet;
at least partially transferring the iodate crystals in image configuration to the surface of a copy sheet, said copy sheet containing starch, an alkali metal iodide, and an acid therein, to form a latent image on said sheet; and, contacting said sheet with steam to thereby develop color on said copy sheet in conformance with the latent image.

3,851,585

BOOSTER DEVICE

Arthur Huggins, Essendon, and Darrell Andrew Williams, West Heidelberg, Victoria, both of Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia
Filed Feb. 26, 1973, Ser. No. 336,076

Claims priority, application Australia, Mar. 8, 1972, 8205/72

Int. Cl. C06c 11/00

U.S. Cl. 102-24 R

6 Claims

1. In a known device comprising a sensitive secondary high explosive composition of matter capable of reinforcing a detonation wave from a primary explosive or detonating means and commonly referred to as a booster, and wherein said composition of matter is shaped so that there is provided within said composition of matter one or more apertures, the combination thereof with one or more flexible resilient restraining members which restrict the movement of detonating fuse material or blasting cap material disposed within said aperture, at least a part of said restraining member or members being embedded in the body of said composition of matter, the remainder of said member or members being disposed within said aperture in a flexible resilient condition.

3,851,586

TEMPERATURE COMPENSATED PYROTECHNIC DELAYS

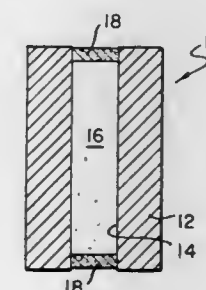
Warren C. Eller, and Frank J. Valenta, both of La Plata, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1973, Ser. No. 360,487

Int. Cl. F42b 3/10

U.S. Cl. 102-27 R

8 Claims



1. A temperature-compensated pyrotechnic delay system comprising:
a containment member;
first pyrotechnic means within said member;

an easily ignited, faster-burning, exothermic second pyrotechnic means within said member; and ignition means to initiate a reaction in said first and said second pyrotechnic means whereby said second pyrotechnic means produces an elevated temperature condition in said delay system.

3,851,587

EXPLOSIVE ENERGY TRANSFER SYSTEM

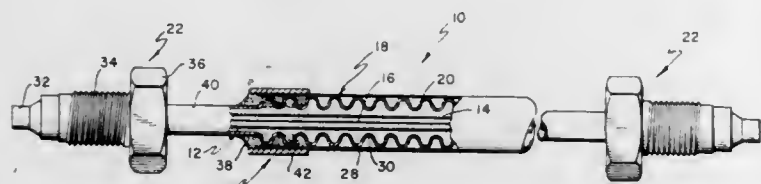
Terence R. Alcorn, Santa Cruz; Werner A. Gans, Sunnyvale, and William D. Mellana, Santa Cruz, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1973, Ser. No. 424,522

Int. Cl. C06c 5/04

U.S. Cl. 102-27 R

12 Claims



1. An explosive-energy transfer system adapted to trigger an explosive device, comprising:
a mild detonating fuse;
a gas-impervious bellows surrounding said fuse in a longitudinal direction for an appreciable portion of the length thereof, said bellows being flexible in all directions;
a flexible sheath encasing said bellows and positioned longitudinally about said bellows in close proximity thereto;
end fittings for said bellows and sheath; and
means for hermetically sealing said bellows to said end fittings,
the flexibility of said bellows and sheath enabling the explosive energy to be routed over a tortuous path.

3,851,588

PYROTECHNIC DEVICES

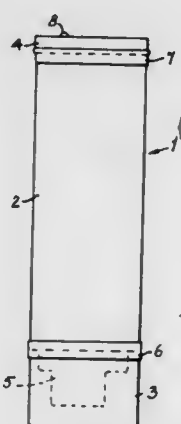
Leonard Taylor, Dorking, England, assignor to Schermuly Limited, Newdigate, Dorking, Surrey, England

Filed Sept. 7, 1972, Ser. No. 287,089

Int. Cl. C06d 1/10

U.S. Cl. 102-37.8

10 Claims



1. A pyrotechnic article, comprising a substantially gas-tight casing provided with an opening; a pyrotechnic device interiorly of said casing; and a valve member cooperating with said casing so as to define a unidirectional flow path for a gas in a direction from the interior of said casing to the exterior thereof, said valve member comprising a body of resilient, substantially gas-impermeable material having a first portion extending through said opening with clearance, a second portion exteriorly of said casing completely overlying said opening and normally sealingly engaging said casing circumferentially of said opening, and a third portion interiorly of

said casing engaging the same so as to prevent withdrawal of said body from said opening and only in part overlying the latter, said opening, said first portion and said third portion cooperating to define a passage extending from the interior of said casing to said second portion so that when the gas pressure interiorly of said casing exceeds the pressure exteriorly thereof the seal between said second portion and said casing is temporarily broken to thereby permit gas to flow through said passage from the interior of said casing to the exterior thereof until the pressure interiorly of said casing substantially equals the pressure exteriorly thereof.

3,851,589

ELECTRONIC DELAY BLASTER

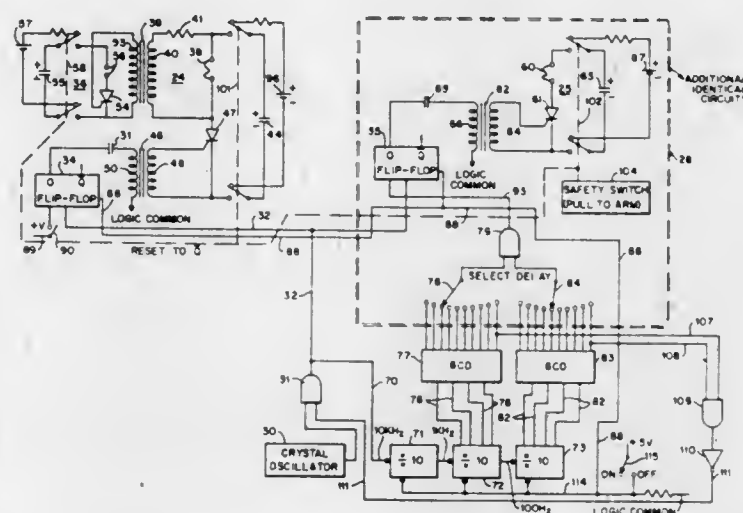
Herbert J. Meyer, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,615

Int. Cl. F42c 13/00; F42d 3/06

U.S. Cl. 102-70.2 R

5 Claims



1. Electronic delay blaster for detonating blasting caps for seismic energy shaping, comprising in combination a plurality of blasting-cap circuits each having a silicon-controlled-rectifier for passing current to detonate the cap and a control circuit for initiating said current flow, a crystal oscillator for generating a continuous series of clock pulses, an electronic flip-flop unit connected to each of said control circuits for actuating said silicon-controlled-rectifiers, first circuit means for connecting said clock pulses to an input of each of said flip-flop units for flipping same upon receipt of the first clock pulse after each unit has been enabled, an enabling input circuit for each of said flip-flop units, second circuit means for applying an enabling signal to a first one of said flip-flop units for initiating a shaped seismic charge, means for dividing said clock pulses into predetermined longer time periods between pulses, electronic circuit means for providing a selectable series of said divided pulses for selecting a predetermined delay from the beginning to the end of said series, and third circuit means associated with each of the remaining ones of said flip-flop units after said first for applying enabling signals in accordance with a preselected time delay for each.

3,851,590

MULTIPLE HARDNESS POINTED FINNED PROJECTILE

Nicholas Joseph LaCosta, Phoenix, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Dec. 30, 1966, Ser. No. 606,454

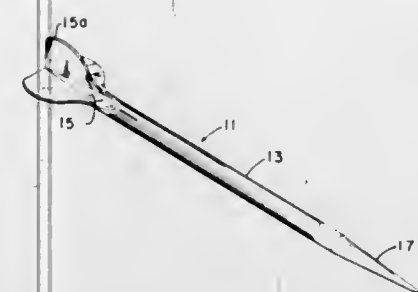
Int. Cl. F42b 13/00

U.S. Cl. 102-92.1

10 Claims

1. A one-piece projectile adapted to curl and tumble on impact with a target, comprising:

a long slim shank section,
a rear stabilizing fin section integral with said shank section, and
a tapered front section integral with said shank section,



said shank, fin section, and front section being integral and of the same material,
the material of said projectile being substantially softer at its forward end zone than along a zone thereof rearward of its forward end.

3,851,591

VEHICLE TRANSFER MEANS

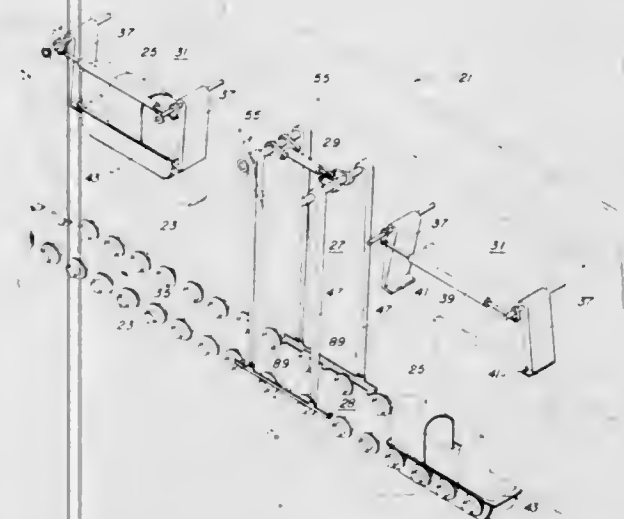
Jack Hickman, 5766 Fair Oaks Blvd., Carmichael, Calif. 95608

Filed Oct. 8, 1971, Ser. No. 187,796

Int. Cl. B61b 13/10, 13/12

U.S. Cl. 104-18

14 Claims



1. A vehicle transfer means for use with a continuously moving transportation system comprising
a station mounted over a portion of the drive means of said transportation system,
a vehicle transfer means disposed within said station for transferring vehicles between said transportation system and said station without interrupting the flow of traffic in said transportation system, said transfer means including a plurality of arms rotatably supported at one end in said station and connected to engagement means mounted at the other ends of said arms for engaging a vehicle, said arms being rotatable into a first position proximate said transportation system in an arc tangential to said transportation system to permit said engagement means of said arms to release a vehicle into said transportation system or to engage a vehicle moving in said transportation system, said arms being rotatable out of said first position to a second position to transfer said vehicle engaged by said engagement means to said station or to engage a vehicle for transfer from said station to said system, said arms utilizing the force of gravity to decelerate said vehicles when transferring them to said station or to accelerate said vehicles when inserting them into the flow of traffic in said transportation system, and

a roller network disposed in said station to permit movement of said vehicles in predetermined paths in and about said station.

3,851,592

APPARATUS FOR INFLUENCING THE SPEED OF TRACK-BOUND VEHICLES

Jakob Huber, Kehrsatz, and Adolf Egloff, Ittigen, both of Switzerland, assignors to Adolf Egloff, Ittigen (Canton of Berne), Switzerland

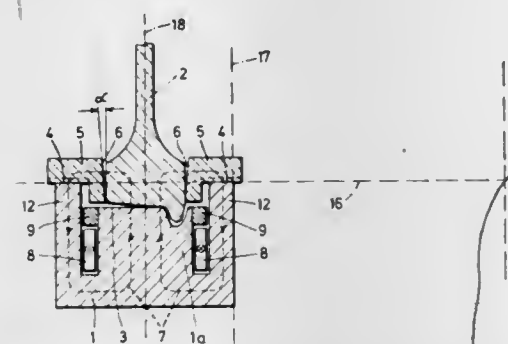
Filed Jan. 26, 1973, Ser. No. 327,122

Claims priority, application Switzerland, Feb. 3, 1972, 1631/72

Int. Cl. B61b 1/00

U.S. Cl. 104-26 A

15 Claims



1. An apparatus for influencing the speed, especially for braking, track-bound vehicles by means of magnetic fluxes which are conducted into the vehicle wheels and which are determined by electrical excitation currents, the improvement comprising a track rail having a flux cross-over surface which is at least half as wide as the travelling surface of the wheels so that it is effective as a pole for guiding the magnetic flux from and to the relevant wheel, and conductors for the excitation of the magnetic flux arranged parallel to a plane common to both rails of the track, said conductors being connected together into coils in such a manner that the axes thereof are located in the space beneath the plane defined by the upper edge of the track rails or externally of both vertical planes which extend through the edges of both track rails situated closest to the track axis.

3,851,593

CONCRETE BLOCK PLANT

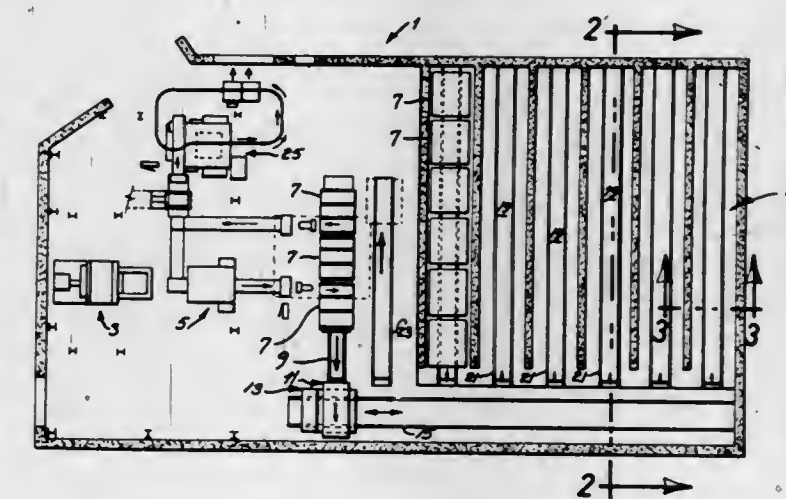
Pierre Gagnon, 5637 Wilderton Ave., and Pierre LaForest, 1945 Bruxelles St., both of Montreal, Quebec, Canada

Filed Aug. 27, 1973, Ser. No. 390,608

Int. Cl. B65g 35/00

U.S. Cl. 104-88

7 Claims



1. A transportation system having a first carrier for carrying a load; a second carrier for carrying the first carrier; means for moving the second carrier between two or more positions,

means for moving the first carrier on or off the second carrier at each position; cable means for supplying power from the second carrier to the first carrier when on or off the second carrier; first track means at each position for receiving the first carrier; second track means between the positions receiving the second carrier; third track means on the second carrier for receiving the first carrier; means on the second carrier for locking it at each position with the third track means on it aligned with the first track means; and wherein that portion of the first track means at each position, adjacent each position, is loose so it can be adjusted vertically and gauge-wise relative to the second track means to facilitate alignment.

3,851,594

ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM FOR SUSPENDED VEHICLES ADAPTED TO SWITCH TRACKS

Peter Schwarzler, Fürstentfeldbruck, and Christian Walkner, Dachau, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

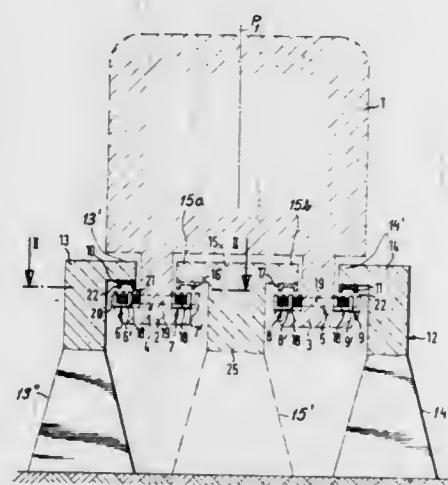
Continuation-in-part of Ser. No. 324,135, Jan. 16, 1973. This application May 21, 1973, Ser. No. 362,012

Claims priority, application Germany, July 8, 1972, 2233631

Int. Cl. B61b 13/08

U.S. Cl. 104-148 MS

8 Claims



1. In a suspended-vehicle system comprising a track and a vehicle adapted to travel along said track and provided with force-transmitting electromagnetic means between said vehicle and said track, the improvement wherein said electromagnetic means comprises at least two electromagnet arrangements extending along and fixed to said vehicle, each of said electromagnet arrangements including two subrows of electromagnets extending in the direction of vehicle travel along said track; and armature rails mounted on said track and cooperating with each of said electromagnet arrangements respectively, the armature rail associated with each electromagnet arrangement selectively entering the field of the electromagnets of each subrow on different sides of a respectively vertical plane through the electromagnet arrangement, each of the electromagnets of each of said electromagnet arrangements being paired with an electromagnet thereof in the other subrow, said electromagnet arrangements being formed with energizing coils common to the electromagnets of each pair.

3,851,595

DAMPENED RAILWAY TRUCK BOLSTER WEAR PLATE

Claus J. Werner Clasen, Chicago, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Continuation-in-part of Ser. No. 264,318, June 19, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 344,508

Int. Cl. B61f 5/12, 5/10; F16d 69/04

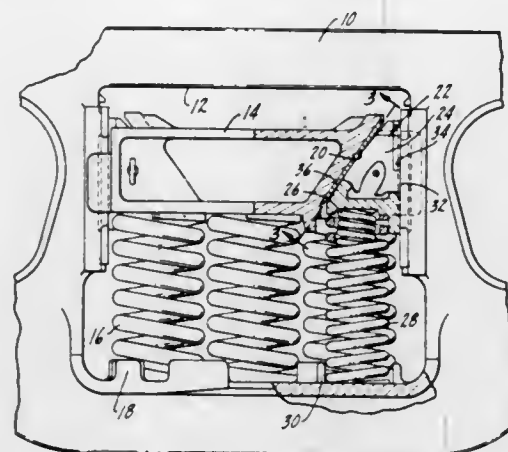
U.S. Cl. 105-197 DB

7 Claims

1. In a railroad car truck, a windowed side frame, a bolster extending through the window, a wedge pocket in said bolster

having an upwardly and outwardly inclined floor, a stabilizing wedge in the pocket, spring means biasing the wedge upwardly into the pocket,

said wedge pocket having spaced stops along the bottom of the pocket floor, said wedge pocket having a pair of spaced angularly disposed stops adjacent the top corners of said pocket floor,



a wear plate positioned in said pocket against the pocket floor, said wear plate having converging sides forming a tapered upper edge, a centrally positioned weld between the bottom edge of said wear plate and said pocket floor bottom intermediate said pocket floor bottom stops, and a weld between each angularly disposed stop adjacent the top of said pocket floor and a top converging side of said wear plate.

3,851,596

VEHICLE TRANSPORTING APPARATUS

Irving D. Ross, Jr., 736 Oak Rd., Barrington, Ill. 60007, and Thorvald Madland, 212 N. Patton Ave., Arlington Heights, Ill. 60005

Division of Ser. No. 26,560, April 8, 1970. This application May 8, 1972, Ser. No. 251,224

Int. Cl. B60p 7/08, 3/06; B61d 45/00

U.S. Cl. 105-368 R

2 Claims



1. A vehicle transporting apparatus including at least one door assembly mounted for pivoting movement about a generally horizontal axis between a generally vertical transporting position and a generally lateral loading position, said door having an inner face, an outer face, and a peripheral edge;

at least one vehicle engaging and supporting member extending from said inner face and including movable means for positively locking the vehicles to said door assembly;

at least one latch bolt member carried by said door assembly for locking said door assembly in its transporting position;

and actuating means for substantially simultaneously operating said movable means and said latch bolt member.

3,851,597

AIR BULKHEAD ASSEMBLY

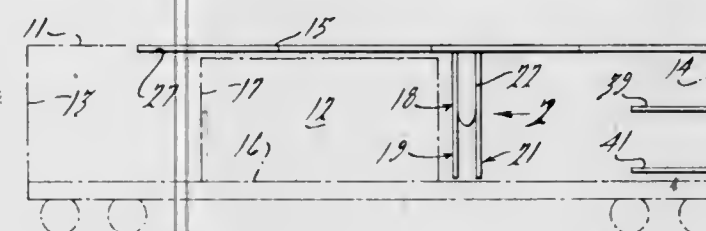
Thomas G. Stone, Farmington, Mich., assignor to Evans Products Company, Plymouth, Mich.

Filed Apr. 20, 1973, Ser. No. 352,945

Int. Cl. B60p 7/14

U.S. Cl. 105-492

5 Claims



1. A bracing system for a freight transporting vehicle having a cargo receiving area, said bracing system comprising a bulkhead assembly, said bulkhead assembly comprising first and second panels and inflatable air bag means interposed between said panels for varying the space therebetween, means for supporting said bulkhead assembly for movement along the cargo area to selective freight bracing positions, said bulkhead assembly being normally adapted to be positioned between respective freight load units with the panels each engaged with a respective freight load unit for retaining the load units against substantial movement, said air bag means being inflated during such use for urging the panels resiliently into engagement with the respective load units, locking means confined to a portion of said vehicle cargo area for locking said bulkhead assembly against substantial movement within said cargo area when said bulkhead assembly is not being used to brace freight.

3,851,598

FREIGHT CAR SIDE WALL CONSTRUCTION

Henry Hubsch, Huettental-Weidenau, and Felix Schneider, Netphen-Eckmannshausen, both of Germany, assignors to Waggon Union GmbH, Siegen, Germany

Filed Mar. 18, 1974, Ser. No. 452,406

Claims priority, application Germany, Apr. 13, 1973, 2318683

Int. Cl. B61f 1/10

U.S. Cl. 105-409

4 Claims



1. A side wall assembly particularly for freight cars having an undercarriage and a top roof, comprising upper and lower

vertically spaced substantially parallel longitudinal members, at least one corner post connected between said upper and lower longitudinal members adjacent at least one end thereof, pivot means defining pivots on each of said upper and lower longitudinal members having axes substantially perpendicular to the longitudinal axis of the car and located intermediate the length of the respective upper and lower longitudinal members, and a middle post connected between said upper and lower longitudinal members on said pivot means for pivotal motion about the horizontal axes of said pivots perpendicular to the longitudinal axis of the car.

3,851,599

TABLE FOR USE WITH DISPOSABLE MEAL SERVICE ELEMENTS

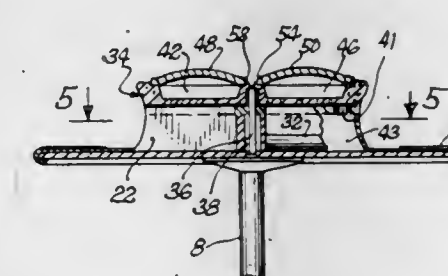
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 331,023

Int. Cl. A47b 85/00

U.S. Cl. 108-25

8 Claims



1. A table comprising a flat top having an upper surface and a lower surface, table supporting means extending from said table top, said upper surface having a plurality of recesses spaced one from the other around its periphery for receiving food holding plates therein, a storage section extending upwardly from said upper surface, a food holder mounted above said storage section and rotatable thereon having at least one compartment formed therein, said one compartment being of a depth sufficient to receive a food holding bowl and having portions providing thermal insulations around the sides and bottom thereof.

3,851,600

SHELF CORNER CLAMP

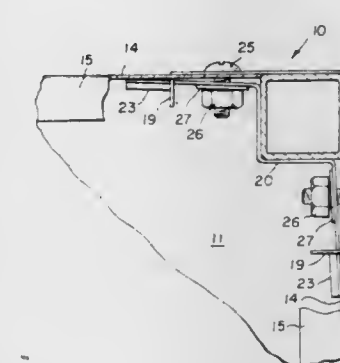
Carl O. Kohl, Hammondspoint, N.Y., assignor to Mercury Aircraft, Inc., Hammondspoint, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,099

Int. Cl. A47b 9/00

U.S. Cl. 108-144

10 Claims



1. A shelf corner clamp for securing a shelf adjustably to an upright support leg, said shelf having a downward extending flange and said leg being fitted into a notch in said corner of said shelf and said flange and extending above and below said shelf, said shelf corner clamp comprising:

a. said flange having a bolt hole and a tab receiving slot on each side of said corner notch, said tab receiving slots being further from said corner notch than said bolt holes;

b. an outer bracket shaped to wrap around the outside of

3,851,602

SAFETY BOX OR THE LIKE

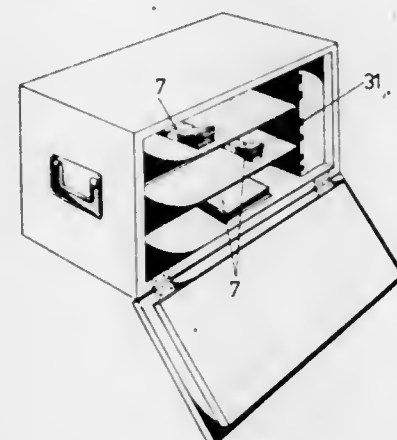
Wolfram Lamping, Munich/Waakirchen, Germany, assignor to G.A.O. Gesellschaft für Automation und Organisation mbH, Munich, Germany

Filed Feb. 24, 1972, Ser. No. 228,867

Claims priority, application Austria, Feb. 23, 1971, 1522/71
Int. Cl. E05g 3/00

U.S. Cl. 109—23

13 Claims



1. In a portable safety box for transporting valuables, of the type including intrusion-resistant closure walls having incorporated therewith externally invisible electric conductor supervisory loops, connected in a closed circuit with a source of potential and an intrusion responsive device, operable, when a conductor is interrupted, to activate the intrusion responsive device, the improvement comprising, in combination, plural irregularly and randomly arranged conductor loops incorporated with each wall of said box and arranged closely adjacent each other, and each forming a closed circuit with a source of potential and said device; whereby said device is activated responsive to interruption of any one of said loops; and means operatively associated with said device and operable, responsive to activation of said device, to at least substantially modify the contents of said safety box in a lasting manner.

3,851,603

INDUSTRIAL TECHNIQUE

Russell A. Stanley, Uniontown, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

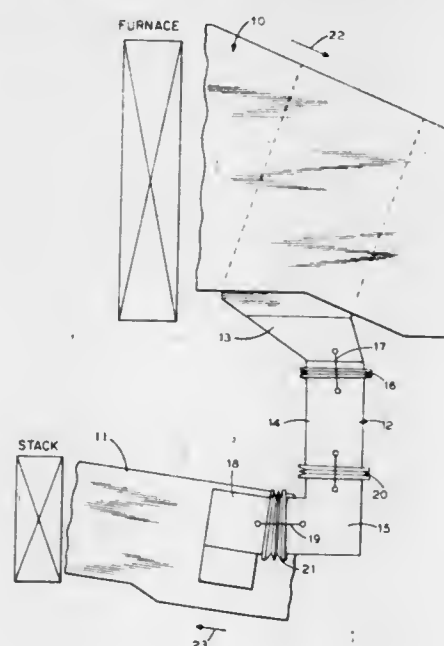
Continuation of Ser. No. 212,393, Dec. 27, 1971, abandoned.

This application May 29, 1973, Ser. No. 364,448

Int. Cl. F231 9/00; F161 51/02

U.S. Cl. 110—56

1 Claim



1. A duct structure for a boiler having an exhaust stack consisting essentially of a furnace for said boiler, a flue for

said leg when said leg is in said corner notch and to extend over the outside of said flange beyond said flange bolt holes and to said tab receiving slots;

- c. said outer bracket having bolt holes registered with said flange bolt holes;
- d. said outer bracket having tabs extending inward through said tab receiving slots in said flange;
- e. an inner bracket shaped to fit over a portion of the inside of said leg when said leg is in said corner notch and to extend along the inside of said flange beyond said flange bolt holes and beyond said tab receiving slots;
- f. said inner bracket having bolt holes registered with said flange bolt holes and said outer bracket bolt holes;
- g. said inner bracket having tab receiving slots registered with said tab receiving slots in said flange;
- h. said tabs of said outer bracket extending through said tab receiving slots of said inner bracket;
- i. a pair of bolts extending through said bolt holes in said outer bracket, said flange, and said inner bracket for drawing said outer bracket and said inner bracket toward respective outer and inner sides of said flange; and
- j. said inner bracket being shaped to have a clearance from said inside of said flange in the region of each of said bolts so that tightening said bolts draws said inner and outer brackets, and said leg and said shelf securely together.

3,851,601

DISPLAY CASE STAND

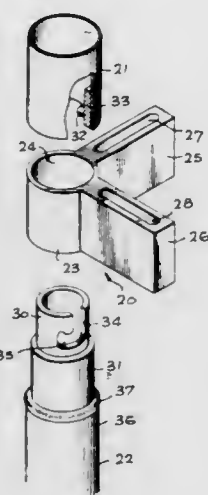
Jack E. Davis, 8125 Hollywood Way, Sun Valley, Calif. 91352

Filed Feb. 9, 1973, Ser. No. 331,321

Int. Cl. A47b 3/06

U.S. Cl. 108—153

6 Claims



1. In a modular display stand having a plurality of individual, readily assembled components, the combination comprising:

- a shelf panel for supporting a variety of items intended to be displayed;
- a plurality of posts disposed along the perimeter of said panel in fixed spaced apart relationship;
- each of said posts having at least two extensions arranged in end-to-end relationship;
- snap-lock fastening means releasably joining the opposing ends of said extensions so as to rigidize and stabilize said post;
- said snap-lock fastening means including a corner joint captured between said extensions and having a pair of laterally outward projecting members disposed at a 90° angle to each other;
- side rails detachably connected at their opposite ends to respective ones of said laterally projecting members and extending between said posts; and
- means carried on each of said side rails for supporting an adjacent edge marginal region of said panel.

establishing communication with the exhaust in the stack, another flue relatively movable with respect to said exhaust flue for carrying air into the boiler furnace, said two flues movable relative to each other, said flues each having a respective aperture in the surface thereof for fluid communication therebetween to carry said exhaust gas into said furnace through said air flue, said exhaust being at a higher temperature than said air, a first duct segment in lateral communication with said air flue by way of said air flue aperture, an intermediate duct segment in communication with said first duct segment, an expansion joint interposed between said first and said intermediate duct segments to establish fluid communication therebetween, pin means coupling said segments together to prevent said joint from expanding in an axial direction, another duct segment in fluid communication with said intermediate duct segment, an intermediate expansion joint interposed between said intermediate and said another duct segment to establish fluid communication therebetween, pin means coupling said intermediate and said another duct segment together to prevent said intermediate joint from expanding in an axial direction, a terminal expansion joint laterally coupling said another duct segment to said stack exhaust flue by way of said flue aperture to establish lateral exhaust gas flow into the boiler furnace air flue, and pin means coupling said stack exhaust flue to said another duct segment to prevent said joint from expanding in an axial direction.

3,851,604

DEVICE FOR METERING GRANULAR MATERIAL

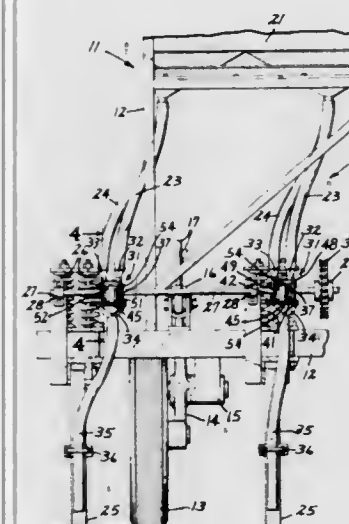
Edwin A. Seifert, Jr., Rt. 1, Belgrade, Mont. 59714

Filed May 18, 1971, Ser. No. 144,436

Int. Cl. A01c 5/00

U.S. Cl. 111—77

20 Claims



1. Apparatus for delivering a metered mixture of two types of granular material, comprising:

- a. a rotatable shaft;
- b. a generally cylindrical delivery member of predetermined length mounted for rotation on the shaft, the surface of the cylindrical member having formed therein a plurality of pockets for receiving and carrying granular material;
- c. a stationary cylindrical sleeve member encircling the delivery member and sized to define an annular gap therebetween, the sleeve member having first and second inlets of predetermined size and shape and first and second outlets;
- d. the inlet and outlet openings being circumferentially aligned in pairs to determine a path of predetermined axial width for each type of granular material;
- e. a band member for each inlet-outlet pair, the band member being disposed in said annular gap and axially slidable

on the delivery member to vary the associated axial path width and thereby vary the quantity of granular material delivered from the inlet to the outlet;

- e. a plate member sealably engaging each end of the sleeve member;
- f. and an inlet conduit secured to each plate member in communication with the associated inlet and terminating in a mouth conforming to said associated inlet to permit the delivery of granular material therethrough.

3,851,605

SEWING MACHINE CUTTING MECHANISM

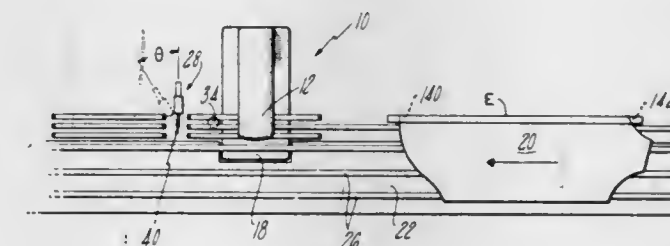
John L. Rockerath, Utica, N.Y., assignor to Jetsew, Inc., Barneveld, N.Y.

Division of Ser. No. 260,163, June 6, 1972, Pat. No. 3,760,748, which is a continuation-in-part of Ser. No. 153,664, June 16, 1971, Pat. No. 3,763,800. This application July 30, 1973, Ser. No. 383,991

Int. Cl. D05b 37/04

U.S. Cl. 112—130

7 Claims



1. In a sewing machine having a cutting station in a feed path of material to be sewed, a cutting mechanism comprising a frame including a knife carrier mounted thereon for reciprocating movement laterally toward and away from the feed path respectively between a normal extended position and a retracted inoperative position, a knife support having a vertical pivot shaft rotatably supported on the carrier, a scissors-type knife including a movable blade operatively mounted on the knife support for movement about a generally horizontal pivot axis and a fixed blade secured to the knife support, the fixed and movable blades being supported for swinging movement with the knife support about its vertical pivot shaft for varying the angle of the knife relative to the material for a cutting operation, and knife positioning means for angularly rotating the knife support about its vertical pivot shaft and positioning it in a selected angular position to the feed path of the material for a cutting operation, the fixed blade of the knife being of sufficient length that the fixed blade remains in lapping relation to the feed path of the material throughout the operating cycle of the knife carrier during its reciprocating movement between said normal extended and retracted inoperative positions.

3,851,606

SEWING PRESSER FOOT

Wesley P. Farney, R.D.1, Soule Rd., Holland Patent, N.Y. 13354

Filed Feb. 27, 1974, Ser. No. 446,233

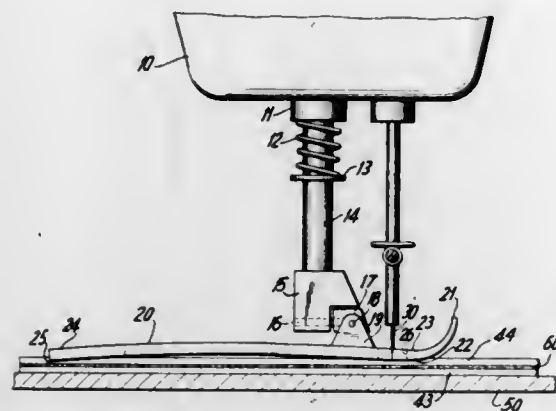
Int. Cl. D05b 29/00

U.S. Cl. 112—235

7 Claims

1. A presser foot for a sewing machine which has toe and heel portions, which is at least slightly concave along its length, has a contact area on its bottom across its width at the beginning of the toe portion and a contact area on its bottom

across its width at the end of the heel portion, has means on its bottom to guide one or more belts used to convey fabric to



regenerator so as to extend into the U-shaped channel of its respective support platform and sized so that said footing parallel surfaces are in close sliding relationship to said platform rail surfaces; each said footing plate formed with a plurality of apertures extending therethrough, a bushing for each said aperture, each said bushing having a stem portion and a flange portion at one end of said stem portion, the stem portion of each bushing extending through said footing plate and secured to said support plate, said stem and flange portions sized so that the flange extends beyond said aperture in close spaced relationship to the upper surface of said slidable plate, each said aperture being elongated along the axis of its respective parallel rail surfaces so as to permit relative movement along such axis between each support platform and its respective footing.

3,851,607 REGENERATOR SUPPORT SYSTEM FOR MARINE GAS TURBINE

Leathem S. Stearn, 301 Riverdale Dr., Apt. 2, Rocky River, Ohio 44116

Filed Aug. 21, 1972, Ser. No. 282,414
Int. Cl. B63h 9/04

U.S. Cl. 114—105

1 Claim

be sewn and has a cut-out portion in the toe portion to allow passage of a sewing needle through the foot.

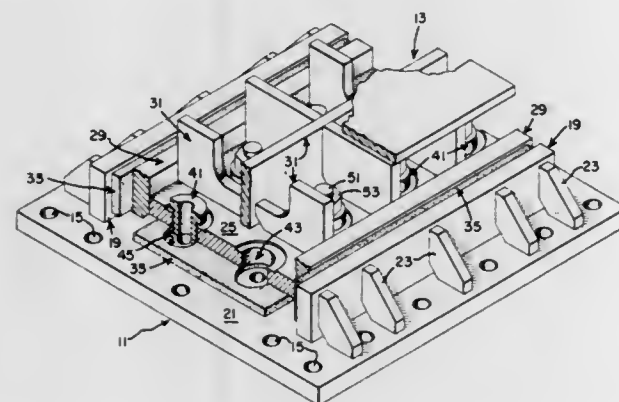
John L. August, Jr., and Richard T. Cuscino, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,846

Int. Cl. B63b 35/00

U.S. Cl. 114—5 R

1 Claim



1. A system for attaching a marine turbine powerplant regenerator having longitudinal and transverse axes to a ship's hull, said system comprising:

at least three support platforms, each support platform including a fixed plate having a substantially flat upper surface and a pair of spaced rails extending from said upper surface, said rails having elongated inner parallel surfaces which extend at right angles from said plate upper surface so as to form an elongated, generally U-shaped channel, at least two of said platforms being fixedly secured to the hull of said ship with said platform inner rail surfaces extending along one of said regenerator axes and at least one of said platforms being fixedly secured to the hull of said ship with said platform inner rail surfaces extending along the other of said regenerator axes;

a regenerator footing for each support platform, each regenerator footing including a slidable plate having a substantially flat bottom surface and a pair of spaced rails secured to opposed sides of said slidable plate, said footing rails having outwardly facing elongated parallel surfaces extending at right angles to said footing plate bottom surface, each said footing fixedly secured to said

1. A torsion-resistant forestay for a jib sail, for receiving and retaining the bead on the luff of a sail to support the sail in a set position comprising a member of substantially uniform cross-section substantially throughout the length of the member, the outer surface of said member being of cylindrical configuration, said member having sail retaining means therein comprising a groove extending substantially the length thereof for receiving the bead on the luff of a sail to support the sail in set position, said groove being of cylindrical configuration and having an axis offset from the centerline of the stay and intersecting the outer surface of the member to define a slot through which the bead of the sail passes, the curvature of said outer surface and of said groove being such that the wall thickness of said member progressively increases from said slot proceeding around said groove to provide a wall thickness behind said slot which is at least twice the wall thickness adjacent said slot to provide torsional rigidity in the forestay, said member as defined being an aluminum extrusion.

3,851,609 TWO GROOVE HEADSTAY

Leathem Smith Stearn, 1106 Pennsylvania Ave., Sturgeon Bay, Wis. 54235

Continuation-in-part of Ser. No. 282,414, Aug. 21, 1972. This application Aug. 3, 1973, Ser. No. 385,443

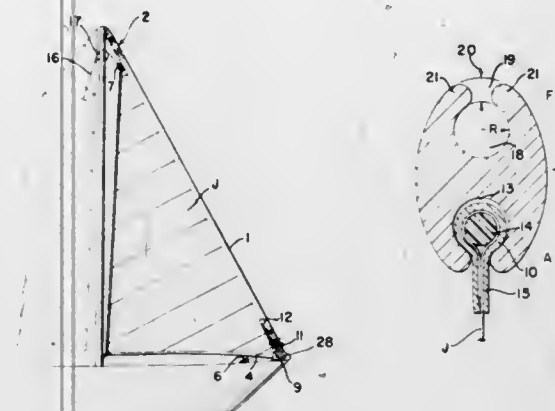
Int. Cl. B63h 9/04

U.S. Cl. 114—105

19 Claims

1. A jibstay assembly for a sailboat comprising a longitudinal member extending and supported between the bow portion of the boat and the upper portion of the boat mast, said

member being generally rounded in cross-sectional shape and having two grooves inset therein, each of which is adapted to



slidably receive and release and to hold a bead at the luff of a jib sail.

3,851,610 DEVICE FOR SELECTIVELY PREVENTING ROTATION OF THE UPPER END OF A REEFED SAIL AND PARTICULARLY A HEAD SAIL SUCH AS A JIB

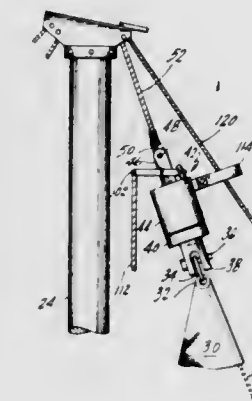
Leonard N. Greene, Chappaqua, N.Y., assignor to Safe Flight Instrument Corp., White Plains, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,071

Int. Cl. B63h 9/10

U.S. Cl. 114—106

14 Claims



1. In combination in a sailboat having a mast and a hull
 - a. a headsail;
 - b. a luff wire running from the mast forwardly and downwardly to the hull and secured to the forward edge of the headsail;
 - c. means rotatably connecting the lower end of the luff wire to the hull;
 - d. means for rotating the lower end of the luff wire so as to furl, unfurl or reef the headsail;
 - e. a halyard running forwardly and downwardly from the mast; and
 - f. a clutch-and-swivel, said clutch having
 - i. a proximal element connected to the upper end of the luff wire,
 - ii. a distal element connected to the lower end of the halyard,
 - iii. means attaching the elements to each other for rotation about an axis substantially coincident with the luff wire and the halyard,
 - iv. means releasably locking the elements to each other,
 - v. means biasing the locking means into a locked mode
 - vi. selectively operable means for nullifying the biasing means so as to permit relative rotation of said elements in an unlocked mode, and
 - vii. caging means for fixing said elements to a nearby stationary reference point when the elements are in a locked mode.

3,851,611 TANK OF A LOW TEMPERATURE LIQUEFIED GAS TANKER SHIP

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

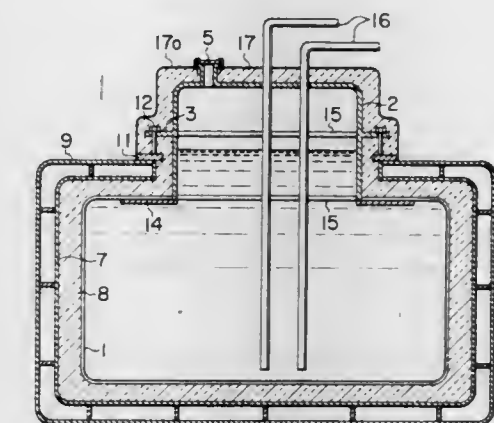
Filed Apr. 18, 1973, Ser. No. 352,312

Claims priority, application Japan, Apr. 21, 1972, 47-40093

Int. Cl. B63b 25/16

U.S. Cl. 114—74 A

10 Claims



1. A low temperature liquefied gas tank for use in conjunction with a tanker ship which comprises a lower tank portion formed of a membranous member and provided at the inside of a rigid hull with the interposition of a compression resistant heat-insulating layer disposed therebetween and an upper tank portion formed of a rigid structure and connected in a fluid tight manner to the upper central portion of said lower tank portion, said upper tank portion extending through and protruding above an opening provided in a deck, said upper tank portion having an internal space large enough to provide a safe buffer space even when the liquefied gases have been loaded to a level extending substantially into said upper tank portion, and means for enabling said upper tank portion to be flexibly carried by the deck so as to be expandable in the horizontal direction.

3,851,612 SPINNAKER CONSTRUCTION

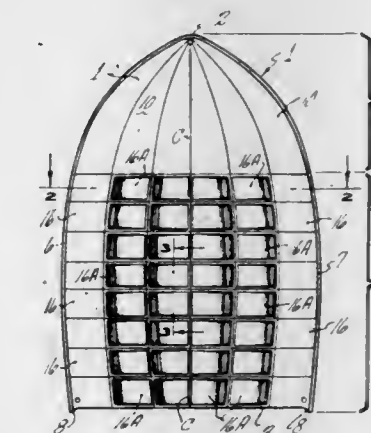
Domina C. Jalbert, 170 N.W. 20th St., Boca Raton, Fla. 33432

Filed Oct. 20, 1972, Ser. No. 299,425

Int. Cl. B63h 9/06

U.S. Cl. 114—103

8 Claims



1. An improved spinnaker comprising two main portions, an upper portion and a lower portion, said upper portion being formed of compound curvature with a lower edge, said lower portion extending from the lower edge of the upper portion to a foot, said lower portion having a center line, said lower portion being formed of a plurality of rectangular panels on each side of said center line, at least some of said panels on each side comprising aerodynamic cells, each aerodynamic cell being formed as a closed built-in pocket, each built-in

pocket having a maximum depth nearer one end of the pocket, said maximum depth extending for a substantial distance across the pocket, the maximum depth of each pocket being positioned away from the center line.

3,851,613

TIE LINE CLAMP ASSEMBLY

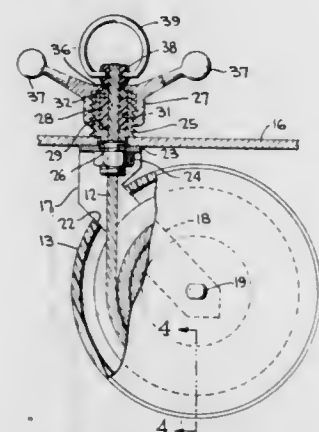
Philip D. Armour, Tupelo, Miss., assignor to Ingenious Devices, Inc., Tupelo, Miss.

Filed May 29, 1973, Ser. No. 364,482

Int. Cl. B63b 21/08

U.S. Cl. 114-230

3 Claims



1. Clamp assembly for a boat tie line comprising: a rotatable reel mounted to a support surface of the boat; an elongated tie line wound about said reel; means for clamping said tie line comprising a hollow bolt secured to said support surface, a hollow nut in threaded engagement with said bolt, said bolt having an opening through which said tie line extends, said bolt opening including an enlarged coaxial recess having bottom and side walls, a resilient, elastomeric annular gasket disposed within said recess in contact with said walls and surrounding said tie line, an inwardly directed flange on said nut overlying said gasket and defining a coaxial opening through which said tie line extends, a bushing partially disposed within said recess and being in engagement with said flange, said bushing having a planar surface perpendicular to the axis of said tie line as it extends therethrough, said surface being in contact with the upper end of said gasket; and a bead element mounted on the free end of said tie line for maintaining said free end outwardly of said nut as said bead element rests against said flange, said gasket being compressed and its annular opening being constricted against the surrounded tie line to clamp it in place as said bushing is pressed against said gasket for compressing same upon a tightening of said nut.

3,851,614

BALANCED STEERABLE POWER TRANSMISSION

Donald F. Nelson, 7560 Kentwood Ct., Gilroy, Calif. 95020

Continuation-in-part of Ser. No. 241,361, April 5, 1972, Pat.

No. 3,750,616. This application Oct. 5, 1972, Ser. No.

295,279. The portion of the term of this patent subsequent to

Aug. 7, 1990, has been disclaimed.

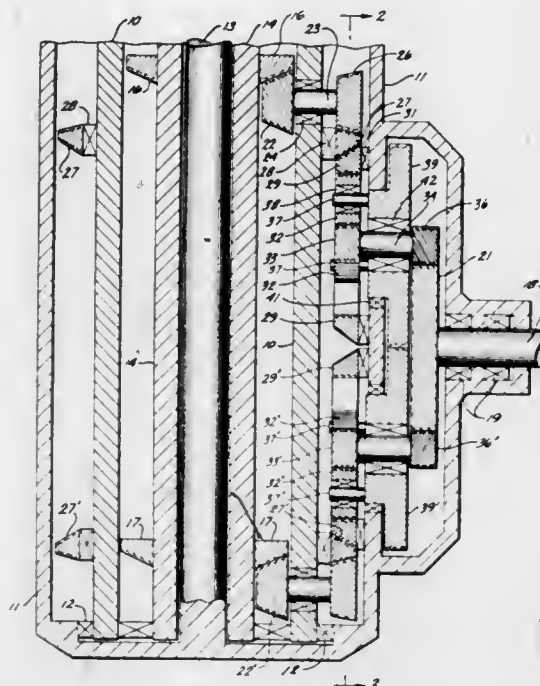
Int. Cl. B63h 25/42

U.S. Cl. 115-35

15 Claims

1. A balanced steerable power transmission comprising: a fixed housing; a rotatable drive member within the fixed housing; a steerable housing around a portion of the fixed housing and mounted for pivoting about an axis extending along the fixed housing; an output shaft fixed in location on the steerable housing and rotatable relative thereto; a pair of similar drive trains between the drive member and the output shaft, each drive train having: an input portion coupled to the drive member and fixed in location by the fixed housing,

an output portion in equal driving engagement with the output shaft irrespective of the pivotal location of the output shaft around the pivot axis of the steerable housing, including a ring gear between the fixed housing and the steerable housing, and means for mounting each respective ring gear for rotation about the pivot



axis of the steerable housing, said ring gears of the respective drive trains being coupled to the drive member for rotation in mutually opposite sense, and coupling means between the drive member and the output shaft for advancement of rotation of the output portion of the drive train relative to rotation of the respective input portion.

3,851,615

ROAD MARKER

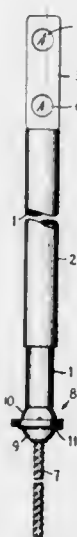
C. Grundvig, and B. Thorvaldsen, both of Fredrikstad, Norway, assignors to Moller Coates A/S and Presisjon Mek. Verksted A/S, both of Oslo, Norway

Filed July 13, 1973, Ser. No. 379,086

Int. Cl. E01f 9/10

U.S. Cl. 116-63 R

12 Claims



1. A road marker comprising:

- an upper portion comprising at least two member sections which are telescopically movable with respect to each other;
- means for fixedly positioning each telescopic section with respect to each adjacent telescopic section;
- a lower portion comprising an elongated member of sufficient strength to be driven into the ground;

- a ball joint joining said upper and lower portions, said ball joint comprising two spherically shaped members, one of which is spherically shaped on its interior and the other of which is spherically shaped on its exterior, said members being separable but being adapted to be coupled together in cooperative relationship for axial movement of said upper and lower portions, one of said spherical ball joint members being rigidly affixed to the upper portion of the road marker and the other of said spherical ball joint members being rigidly affixed to the lower portion of said road marker;
- means for fixedly positioning the ball joint members with respect to each other; and
- a member affixed to the other end of said upper portion from the ball joint end, said member being the marker.

3,851,616

PORTABLE TRAFFIC MARKER

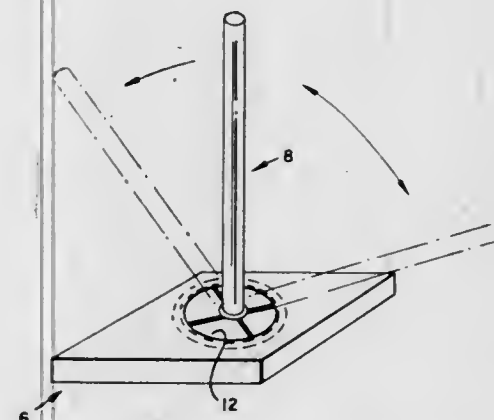
Woodrow I. Brown, 4140 Thompson Dr., Concord, Calif. 94518

Filed Sept. 4, 1973, Ser. No. 394,402

Int. Cl. E01f 9/10

U.S. Cl. 116-63 R

5 Claims



1. A portable traffic marker including a relatively flat ground-engaging base member having a central opening extending vertically therein, a separate vertical standard disposed centrally of said central opening and extending upwardly therefrom, a plate-like member secured to said standard adjacent the lower end thereof, a plurality of resiliently extensible means connected to and extending under tension from the periphery of the central opening of said base member to the lower end of said standard to support said standard above the ground, whereby said standard may be deflected by a moving object from said vertical position to an inclined position relative to said base member and restored to said vertical position.

3,851,617

PIPE CLEANING AND PRIMING APPARATUS

Martin A. Usab, Santa Ana, Calif., assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Sept. 10, 1973, Ser. No. 396,084

Int. Cl. B05c 11/00

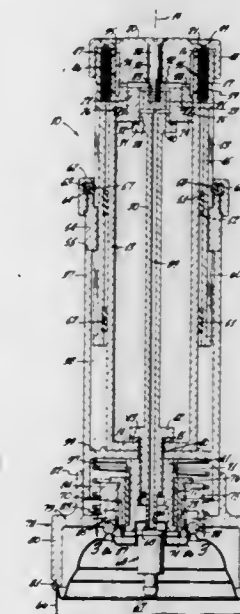
U.S. Cl. 118-3

18 Claims

1. Apparatus for cleaning and/or priming the outside and inside surfaces of a pipe and fitting or other hollow cylindrical object comprising:

- a first elongate, cylindrical body section being insertable into the open end of said fitting;
- first annular pad means surrounding said first body section, at the one end thereof insertable into said fitting, said first pad means extending outwardly from said first body section so as to contact the inside surface of said fitting;
- a second elongate, hollow, cylindrical body section positioned coaxially with and surrounding said first body section and connected thereto for slidable movement in a direction parallel to the axes thereof, said second body

section defining an open-ended chamber at one end thereof for receipt of the end of said pipe; and second annular pad means positioned within said chamber in said second body section and connected thereto adjacent said one end thereof, said second pad means extending inwardly from said second body section so as to contact the outside surface of said pipe, said second body section being positionable, relative to said first body section,



in a first position with said first and second pad means in contact, in a second position with said second pad means surrounding said first body section, out of contact with said first pad means, permitting insertion of said first body section into said open end of said fitting, and in a third position with said first pad means within said chamber, out of contact with said second pad means, permitting insertion of said pipe into said chamber.

3,851,618

ELECTROSTATIC COATING APPARATUS

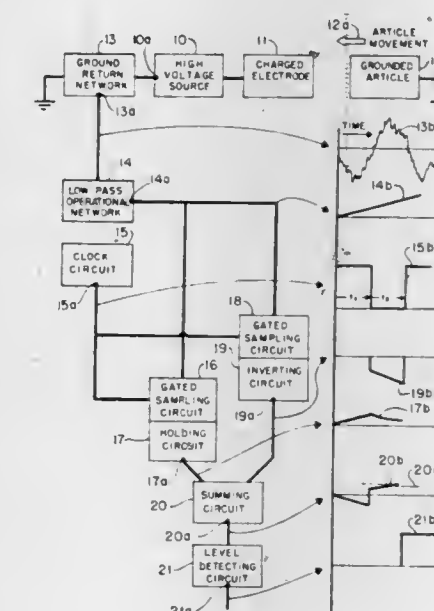
Stanley L. Bentley, assignor to Ransburg Corporation, Indianapolis, Ind.

Filed Jan. 14, 1974, Ser. No. 433,265

Int. Cl. B05b 5/02

U.S. Cl. 118-7

4 Claims



1. In an electrostatic coating system including a high voltage supply having two terminals; a conveyor for transporting articles to be coated; an electrostatic coating device connected with the one

terminal of the high voltage supply to create electrostatic deposition of atomized coating material; and means connected between the other terminal of the high voltage supply and ground to sense the electric current between the high voltage supply and ground, and to disconnect the high voltage supply from its energizing source, the improvement in which the means connected between the above terminal and ground includes a low pass type operational network to provide a signal with attenuation of all electrical current components significantly above direct current, while amplifying direct currents; a clock to generate a sampling gate for the signal; two gated sampling circuits to detect the direct current level of the signal when gated by the clock, one of the gated sampling circuits being connected to a holding circuit for the detected signal for one cycle of the gating signal, and the other gated sampling circuit being connected to an inverting circuit to invert the signal from the other gated sampling circuit; a summer to determine the difference of the signal from the holding circuit and the inverted signal from the other gated sampling circuit; and a level detector to generate an operative signal in the event the level exceeds a predetermined level which represents incipient grounding of the high voltage electrode.

3,851,619

FINGERPRINT APPARATUS

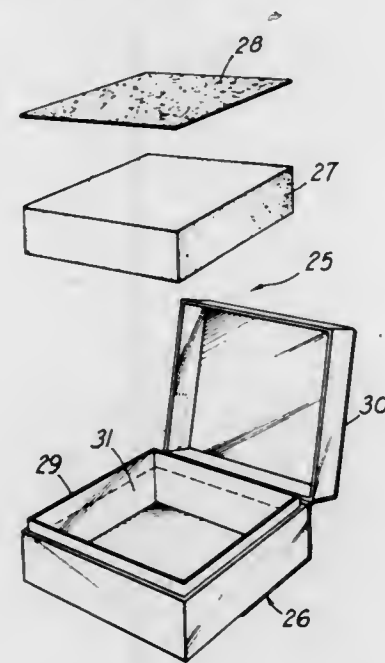
Eugene P. Cofield, Jr., Atlanta, Ga., and Richard G. Rowe, Woodstock, N.Y., assignors to Scripto, Inc., Atlanta, Ga.

Filed June 14, 1972, Ser. No. 262,773

Int. Cl. A61b 5/10

U.S. Cl. 118—31.5

6 Claims



1. An apparatus for coating a predetermined amount of developer upon a surface portion of the human body upon contact therewith, for producing an inkless print when said coated body portion is applied to a reagent coated surface, comprising a developer storing means which includes an element formed of a rigid material and having a substantially smooth face, and a membrane permeable to said developer, mounted adjacent to and overlying said face, said membrane and face being spaced a short distance apart to provide a uniform interfacial void which is sufficiently restricted to cause the developer to be attracted into said void, said developer being withdrawn through said membrane when said body portion is pressed upon said membrane, and transferred to the surface of said body portion, said withdrawn developer being replaced by developer attracted into said void from said storage means; and said membrane being of sufficient thinness to prevent it from acting as a storage reservoir.

3,851,620
TUBE END COATER

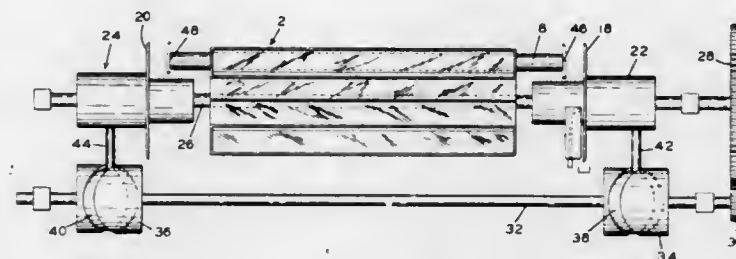
William A. Greiner, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 22, 1972, Ser. No. 317,665

Int. Cl. B05c 1/02

U.S. Cl. 118—50

2 Claims



1. An adhesive-coating apparatus composed of a turret structure having a tube receiving means and a vacuum retaining means which will fixedly hold a tube in position within the turret structure, said turret structure being rotated through approximately a 90° arc path of movement, at which time adhesive will coat the ends of the tube, adhesive disks being positioned adjacent each end of the tube within the turret, said adhesive disks having planar surfaces with adhesive thereon, each said planar surface moving from a plane containing one end of the tube to a plane parallel to the plane containing one end of the tube, normally the adhesive disk being spaced from the end of the tube, appropriate drive means being connected to the adhesive disks to cause the adhesive disks to sequentially move into the planes containing the ends of the tube whereby the adhesive disks will apply adhesive first to one end of the tube and then to the other end of the tube when the plane of each adhesive disk is in a plane of the end of the tube.

3,851,621

APPARATUS FOR ETCH RESIST COATING OF PLATED HOLES IN PRINTED CIRCUIT BOARDS

David Shepard, 2525 Washington Blvd., Los Angeles, Calif. 90018

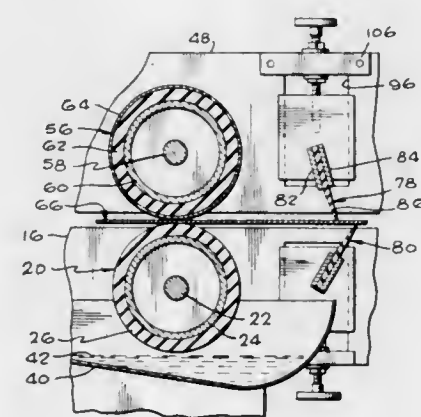
Division of Ser. No. 224,805, Feb. 9, 1972, Pat. No. 3,776,771.

This application Nov. 23, 1973, Ser. No. 418,593

Int. Cl. B05c 11/04

U.S. Cl. 118—102

6 Claims



1. An apparatus for coating the interior of holes in printed circuit boards comprising:
means for applying a liquid coating solution to a printed circuit board having a top and bottom and a hole therebetween;
means for engaging the coated printed circuit board on both the top and bottom thereof for propelling the printed circuit board along a generally horizontal reference plane and for squeezing the liquid coating solution into the hole in the printed circuit board;
means for squeegeeing the top of the printed circuit board as it is propelled by said means for engaging and propelling.

ling said printed circuit board and means for squeegeeing the bottom of the printed circuit board as it is propelled along the reference plane, said means for squeegeeing the bottom being positioned after said means for squeegeeing the top in the direction of movement of the printed circuit board along said reference plane; and each said means for squeegeeing comprising a resilient squeegee blade mounted on a pivot shaft disposed normal to the path of board movement whereby to angularly adjust blade to board relationship, and said shaft being mounted in vertically slidable bearing blade means whereby the blade is adjustable in direction toward and away from the board.

3,851,622

MACHINE FOR APPLYING CEMENT TO SHOE COMPONENTS OR THE LIKE

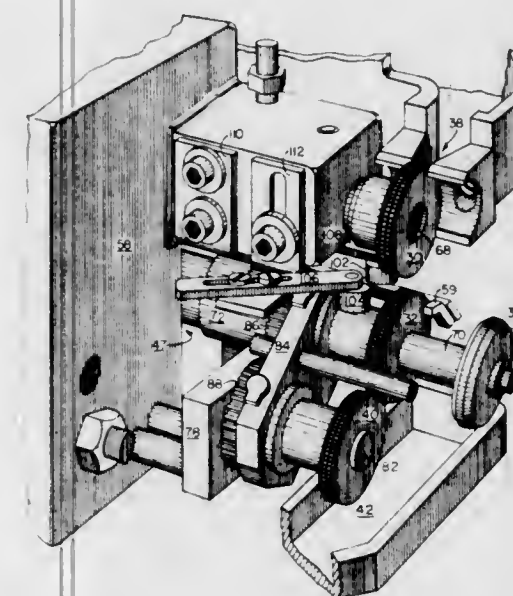
Sumner Boynton, Beverly, Mass., assignor to Boston Machine Works Co., Lynn, Mass.

Filed May 24, 1973, Ser. No. 363,516

Int. Cl. B05c 1/00

U.S. Cl. 118—228

10 Claims



1. An apparatus for applying cement to margins at opposite faces of a shoe component of differing thickness, said apparatus comprises a base, an electric motor fixed with respect to said base, a first journal fixed with respect to said base, a first shaft in said first journal and driven by said electric motor, a second journal constrained for motion with respect to said base in a first direction, a second shaft mounted for rotation in said second journal, a universal coupling connecting said electric motor and said second shaft, a first cement wheel keyed to said first shaft, a second cement wheel keyed to said second shaft, a third journal constrained for motion with respect to said base in a second direction, a third shaft in said third journal, a third cement wheel keyed to said third shaft, a link fixedly connecting said second journal and said third journal, resilient means connected between said base and said link in order to urge said second cement wheel toward said first cement wheel, a first cement supply communicating with said first cement wheel, a second cement supply communicating with said third cement wheel, said second cement wheel and said third cement wheel being geared together and in contact so that cement is transferred from said third cement wheel to said second cement wheel, whereby as said second wheel moves toward and away from said first cement wheel, the exposure of said third cement wheel to said second cement supply is maintained constant.

3,851,623

METHOD OF AND DEVICE FOR COATING LENGTHS OF LINEAR ELEMENTS

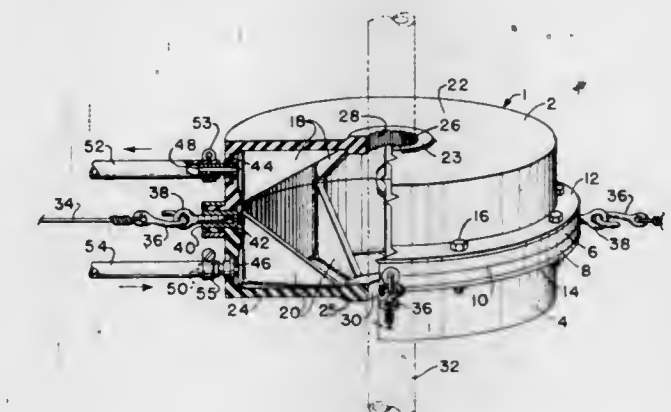
Floyd J. Landry, Jr., 1207 W. Ohio St., Midland, Tex. 79701

Division of Ser. No. 212,989, Dec. 28, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,054

Int. Cl. B05c 3/02

U.S. Cl. 118—405

14 Claims



1. A device for coating a linear element, which device comprises;
a. a housing forming a chamber,
b. an elastomer member fitted in each end of said housing,
1. each said elastomer end member having an aperture formed therein, which apertures are in axial alignment,
2. a conduit connected in fluid communication with said housing near each end thereof,
c. pump means connected in fluid communication with said conduits to circulate a coating of liquid into and out of said housing, and
d. the linear element adapted to be passed through said apertures in said elastomer end members to receive a coating of liquid thereon.

3,851,624

PORTABLE ANIMAL FEED BUNK AND METHOD OF FEEDING STACKED OR BALED HAY

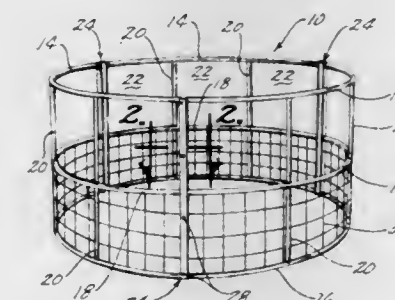
Leonard R. Peak, Lacona, Iowa 50139

Filed Oct. 9, 1973, Ser. No. 404,673

Int. Cl. A01k 05/00

U.S. Cl. 119—60

5 Claims



1. A portable animal feed bunk comprising, a plurality of arcuate frame sections having interconnected overlapping end portions forming a cylindrical feed bunk of substantially large diameter, open at opposite ends and along its length for free formed substantially large baled hay, said frame sections having a grid formed by vertical and horizontal members in spaced apart relationship with the substantial top half of said grid having large animal feeding grid openings and the substantial bottom half of said grid having hay retaining relatively smaller grid openings, and said feed bunk being light weight for rolling between use locations and tipping onto said large bales of hay.

3,851,625

LIQUID HEATER

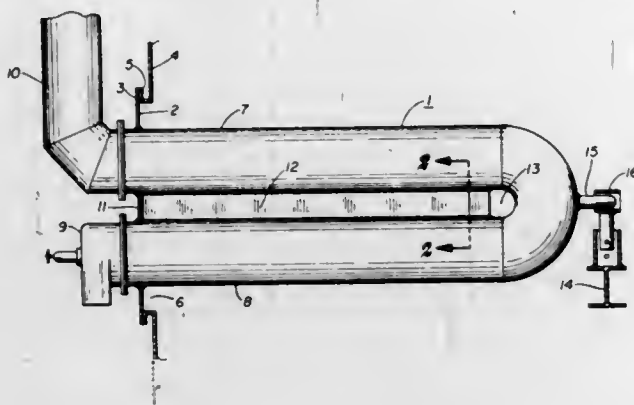
Fletcher O. Holt, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,355

Int. Cl. F22b 7/00

U.S. Cl. 122-136 R

3 Claims



1. A fire tube of U-shape extended horizontally, including, a tube sheet through which the ends of the legs of the U-shaped tube are mounted and to which the legs are welded, and

a flat plate extended between the parallel legs of the tube for a substantial length of the space between the legs and attached to the walls of the legs by welding along the length of the plate.

3,851,626

SUPPORT FOR A STEAM GENERATOR

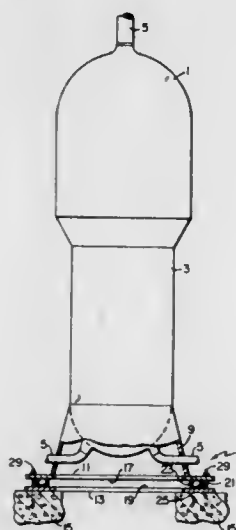
John Boyd, and Allan K. Hennel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 5, 1972, Ser. No. 295,336

Int. Cl. F22b 37/24

U.S. Cl. 122-510

7 Claims



1. A support for a heat exchanger having fluid conduits connected thereto, said support comprising a first generally horizontal planar surface, a second generally planar surface disposed generally parallel to and adjacent said first planar surface, said first planar surface being fastened to said heat exchanger, a base upon which said second planar surface rests, fastening means connecting said first planar surface to said base so as to allow parallel relative movement between said base and said first planar surface, a first ring, a second ring generally smaller than said first ring, said rings being disposed between said planar surfaces and being free to move with respect to at least one of said planar surfaces, and a plurality of spherical shaped members disposed between said rings and said planar surfaces, whereby any point on said heat exchanger is free to move in any direction in a plane parallel to said planar surfaces as said conduit expands and contracts

due to thermal variations, thus minimizing the stresses on the heat exchanger associated with such thermal variation.

3,851,627

ROTOR HOUSING STRUCTURE FOR ROTARY PISTON ENGINE

Yasuto Terazawa, Hiroshima-ken, Japan, assignor to Toyo Kogyo Co. Ltd., Hiroshima-ken, Japan

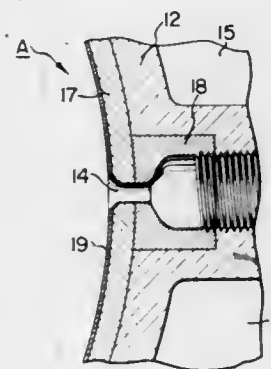
Filed May 15, 1973, Ser. No. 360,531

Claims priority, application Japan, May 16, 1972, 47-57045

Int. Cl. F02b 53/00

U.S. Cl. 123-8.09

5 Claims



1. A rotor housing structure for an internal combustion engine of rotary piston type comprising: an iron sheet of trochoidal shape and having an inwardly diverging hole; an adapter formed with an inwardly reduced shooting hole and welded to the outside of said iron sheet with the outermost end of said diverging hole registering with the innermost end of said shooting hole; a rotor housing substrate cast around said iron sheet and said adapter; and an electroplated layer covering the inside wall of said iron sheet.

3,851,628

FUEL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Eric Harold Ford, London, England, assignor to Lumenition Limited, London, England

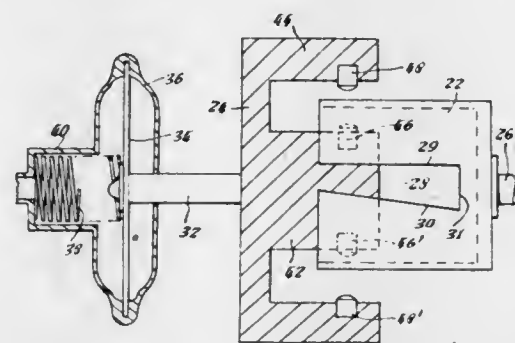
Filed Nov. 6, 1969, Ser. No. 874,470

Claims priority, application Great Britain, Nov. 12, 1968, 53580/68

Int. Cl. F02m 51/00

U.S. Cl. 123-32 EA

8 Claims



1. A device for fast switching the solenoid of a fuel injector system of an internal combustion engine, including a photo-transistor sensitive to infra-red radiation which will switch on or conduct when exposed to the radiation and switch off when the radiation is cut off; a gallium arsenide lamp emitting infra-red radiation; an element which is opaque to infra-red radiation positioned between the gallium arsenide lamp and the photo-transistor, said opaque element having at least one aperture therein; means for moving the opaque element in

timed relation to the engine revolutions; an amplifier having first and second transistors connected in cascade to the output of the photo-transistor and arranged to switch in inverse relation to one another so that at any one time a transistor is always conducting; and a power transistor connected to the output of the amplifier to be switched in inverse relation to the second transistor and connected in circuit relationship with the solenoid such that every time a beam of radiation falls onto and is cut off from the photo-transistor, said transistorized amplifier circuit and power transistor cause the fast switching of the solenoid to inject the desired quantity of fuel into a cylinder of the internal combustion engine in accordance with the period during which the photo-transistor is exposed to infra-red radiation.

3,851,629

COOLING INSTALLATION FOR PISTON INTERNAL COMBUSTION ENGINES

Bertold Mayr, Beutelsbach; Richard Henning, Munich, and Erwin Schweiger, Dachau, all of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

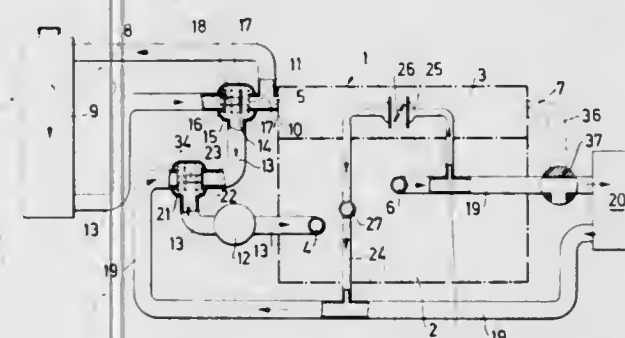
Filed Feb. 9, 1973, Ser. No. 331,036

Claims priority, application Germany, Feb. 10, 1972, 2206266

Int. Cl. F01p 7/14

U.S. Cl. 123-41.08

41 Claims



1. A circulatory cooling installation for piston internal combustion engines having combustion zones, the installation comprising a cooling jacket means and a control means which is operable to interrupt the cooling medium circulation through the cooling jacket means at least within the area of the combustion zones up to a predetermined first limit value, which above the first predetermined limit value is operable to limit the circulation at first to a closed circulation in bypassing relationship to a radiator and under avoidance of a fresh water exchange, and which above a further predetermined limit value is operable to include into the cooling medium circulation at least one of radiator, fresh water exchange and a heater heat-exchanger means, characterized in that the control means includes in effect a cooling medium valve means and a three-way thermostat means each having a separate control element, of which the cooling medium valve means is actuated upon reaching the first limit value and the three-way thermostat means is actuated upon reaching the further limit value.

3,851,630

ROTARY PISTON ENGINE

Merrill J. Foster, Fox River Grove, Ill., assignor to Marine Industries Incorporated, Barrington, Ill.

Filed Oct. 19, 1972, Ser. No. 299,142

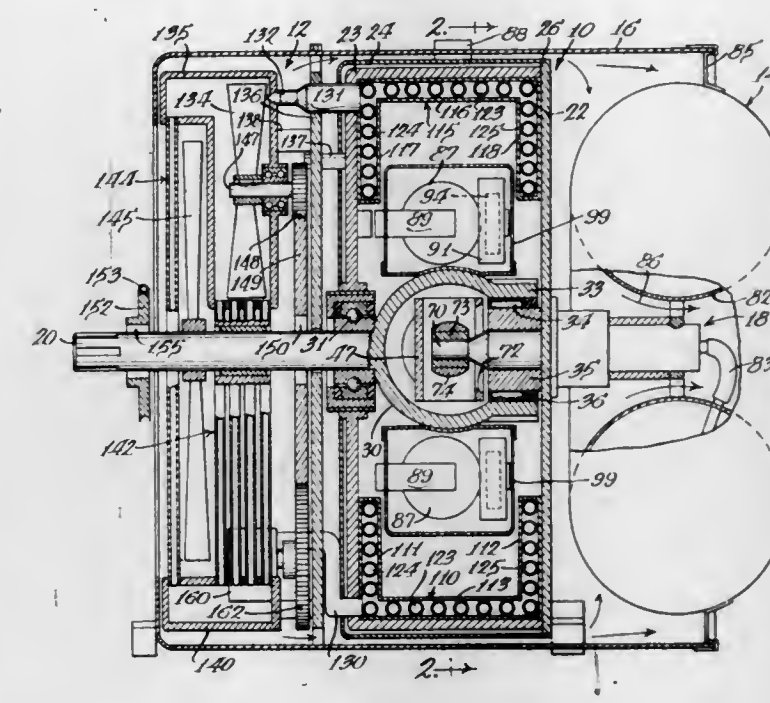
Int. Cl. F22b 9/00

U.S. Cl. 123-44 R

18 Claims

1. A rotary piston engine, comprising:
a. a frame,
b. a crankcase rotatable on the frame,
c. a pair of combustion cylinders extending in opposite directions from the crankcase transverse to the axis of rotation,

d. a piston displaceable in each cylinder including a piston rod rigidly secured to the associated piston and to the other rod,



e. an eccentric pin on the frame parallel to the axis of rotation, and

f. bearing means slidably connecting the pin to the piston rods so that action of the pistons causes rotation of the crankcase.

3,851,631

DIE CAST V-TYPE TWO-CYCLE ENGINE

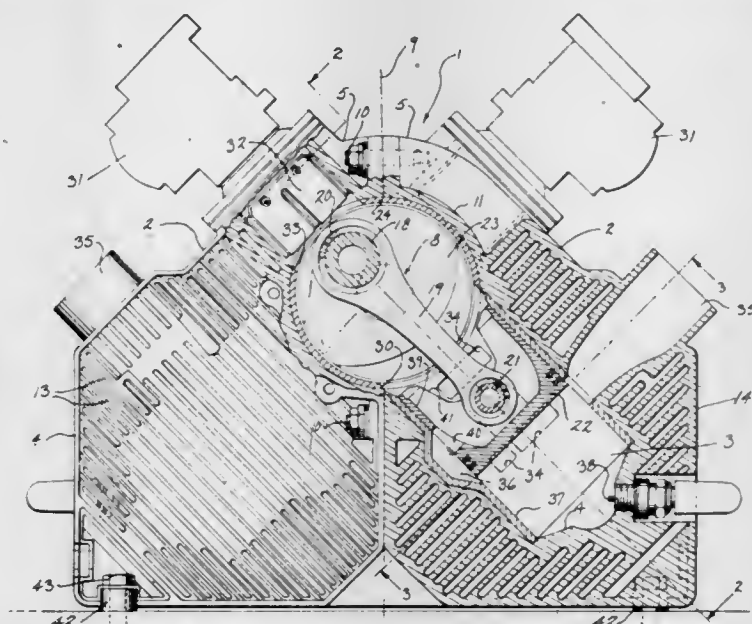
Elmer Carl Kiekhaefer, Winter Haven, Fla., assignor to Kiekhaefer Aeromarine Motors, Inc., Fond du Lac, Wis.

Filed Mar. 16, 1973, Ser. No. 341,923

Int. Cl. F02b 25/28; F02f 3/00

U.S. Cl. 123-55 R

14 Claims



1. A V-type two-cycle engine comprising a pair of symmetrically disposed separate engine block units, each unit providing an integral cylinder, cylinder head and a crank case half; a pair of like end closure members for the crank case, each carrying a bearing for supporting a crank shaft main journal; a crank shaft having a single crank pin carrying the connecting rods for the pistons operative in said cylinders; sleeve means lining said crank case between said end closures; rotating partition means on said crank pin and radially sealed at its periphery to said sleeve means to divide said crank case into separate compression chambers for feeding fuel-air charge to said cylinders; and means joining said engine block units on a

parting plane containing the axis of said crank shaft and bisecting a V angle of approximately 90° between the cylinders of said two units.

3,851,632

METHOD FOR CONTROLLING NOXIOUS COMPONENTS OF EXHAUST GAS FROM DIESEL ENGINE

Naohisa Teshirogi, and Hiroo Nakahara, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

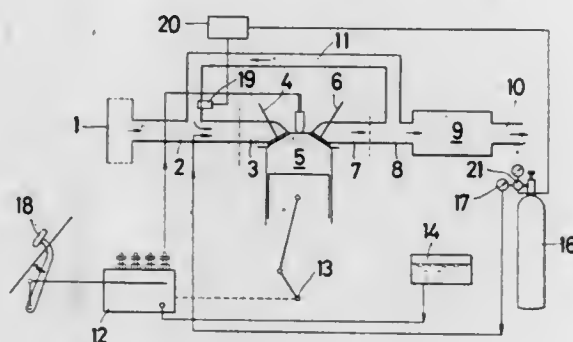
Filed Sept. 11, 1973, Ser. No. 396,325

Claims priority, application Japan, Sept. 11, 1972, 47-91575

Int. Cl. F02m 25/06

U.S. Cl. 123-119 A

1 Claim



1. A method for the control of noxious components of the exhaust gas from a normally aspirated type diesel engine adapted to permit recirculation of the exhaust gas, improvement comprising having the exhaust gas constantly checked for oxygen concentration and, each time the oxygen concentration falls below a preset level, allowing additional oxygen to be supplied to said engine.

3,851,633

FUEL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

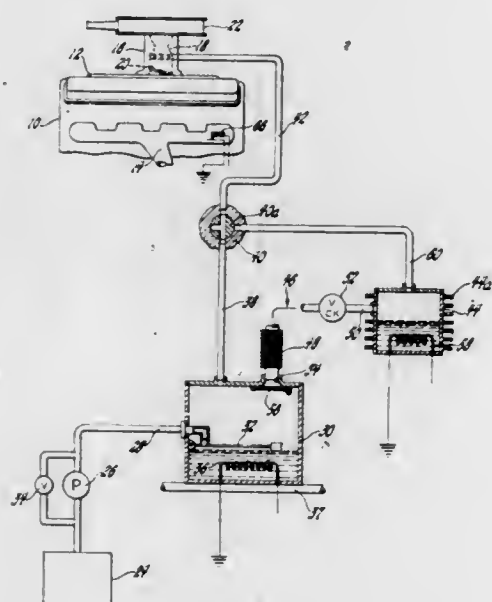
Kelvin Shih, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1972, Ser. No. 301,652

Int. Cl. F02d 19/06; F02b 43/04

U.S. Cl. 123-127

6 Claims



1. A fuel supply system for an internal combustion engine having an air induction passage provided with a venturi, a fuel

reservoir for liquid fuel, a first fuel vaporizing chamber having a first heat source associated therewith, pump means connected to said fuel reservoir and to said first fuel vaporizing chamber for supplying fuel from said fuel reservoir to said first fuel vaporizing chamber, a second fuel vaporizing and storage chamber for light end fuel having a second heat source associated therewith, a vapor separator and valve controlled conduit means connecting said second fuel vaporizing chamber to said first fuel vaporizing chamber whereby only the light end fuel portion of the fuel vapor generated in said first fuel vaporizing chamber flows to said second fuel vaporizing and storage chamber and, valve controlled conduit means selectively connecting said first fuel vaporizing chamber and said second fuel vaporizing chamber to said venturi.

3,851,634

FUEL INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

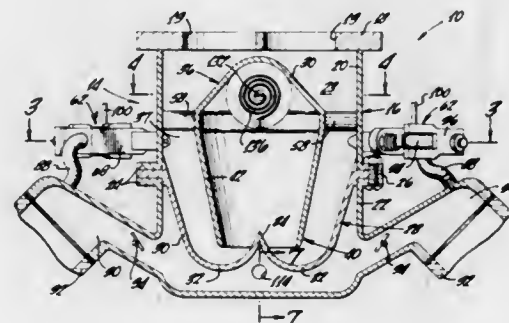
Vernon M. Everett, 13128 Vallecito Ave., Beaumont, Calif. 92223

Filed June 20, 1973, Ser. No. 371,732

Int. Cl. F02m 17/18

U.S. Cl. 123-133

10 Claims



1. A fuel induction system for an internal combustion engine, including an intake manifold, a carburetor attached to said manifold, and a fuel-vaporizing device interposed between said carburetor and said manifold, said device comprising:

- a housing forming an enclosed chamber that is connected at the top to said carburetor to receive the fuel-air mixture therefrom;
- a diffuser mounted within said chamber and cooperating with the latter to define a passageway between the diffuser and said housing, said diffuser including an inverted horn that is open at the bottom;
- means for imparting a high-velocity spin to said fuel-air mixture as the latter moves downwardly through said passageway;
- a heat-exchange bowl mounted within said housing, surrounding the lower portion of said diffuser and extending under said horn at a distance therefrom, said heat-exchange bowl having a rounded bottom that directs the spinning fuel-air mixture in toward the center and up into the bottom end of said inverted horn;
- means for heating said heat-exchange bowl to a temperature well above the vaporization point of the fuel;
- the minute droplets of liquid fuel suspended in the fuel-air mixture received from said carburetor being thrown outwardly by centrifugal force against the inner surface of said heat-exchange bowl due to the high velocity spin of the mixture, and said liquid droplets being vaporized by contact with the hot wall of the heat-exchange bowl, the vaporized fuel and air being intimately mixed by the turbulent swirling motion of the mixture as it reaches the bottom of the bowl and is turned inwardly and up into the open end of said horn; and
- means for distributing the dry, gaseous fuel vapor and air mixture from said diffuser to said intake manifold.

3,851,635

ELECTRONICALLY CONTROLLED FUEL-SUPPLY SYSTEM FOR COMPRESSION-IGNITION ENGINE

Fernand R. C. Murtin; Loic Mercier, and Jean Barat, all of Paris, France

Division of Ser. No. 36,814, May 13, 1970, Pat. No. 3,742,918.

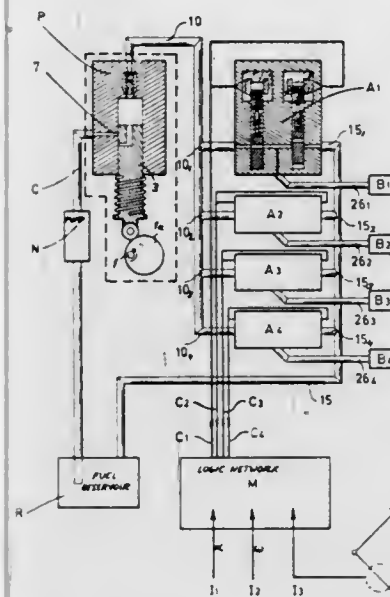
This application Sept. 5, 1972, Ser. No. 285,736

Claims priority, application France, May 14, 1969, 69.15592

Int. Cl. F02m 51/00; F02d 5/04

U.S. Cl. 123-139 E

3 Claims



1. A system for controlling the fuel supply to a compression-ignition engine having a plurality of piston cylinders each provided with a fuel injector, comprising:

- a source of fuel for said engine;
- a distributing channel having a plurality of branches extending to a drain for excess fuel;
- engine-controlled pump means for delivering fuel at high pressure to said channel in a succession of compression strokes;
- a pair of electrically controlled valves disposed in tandem in each of said branches, said pair including a normally open first valve and a normally closed second valve;
- an extension conduit leading from each branch to a respective fuel injector, said conduit communicating with the corresponding branch at a location downstream of said first valve and upstream of said second valve; and
- electronic gating means for periodically opening said first valve and concurrently closing said second valve of each branch in cyclic succession during successive injection intervals for admitting fuel from said channel to the respective injectors.

3,851,636

SOLID STATE IGNITION CIRCUITRY

Franklin H. Just, 1788 Charlene St.; Brent L. Powell, General Delivery, and John A. Waters, 1845 Sequoia, all of Idaho Falls, Idaho 83401

Filed Oct. 1, 1973, Ser. No. 402,010

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

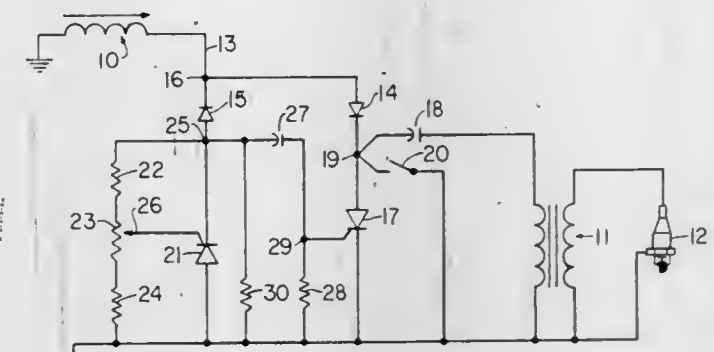
9 Claims

1. Circuitry for controlling the transmission of impulse voltages produced by a magneto on an internal combustion engine to a transformer which, in turn, generates a high voltage impulse to produce sparks in the spark plugs of the engine, said circuitry comprising,

- an input conductor adapted to receive impulse voltages from a magneto;
- a first circuit connected to said input conductor comprising a first diode rectifier, a first capacitor and an output conductor, the latter being adapted to be connected to the transformer;

a second circuit connected between said first circuit and ground comprising, a first silicon controlled rectifier having an anode, cathode and a control electrode, with the cathode thereof connected to ground and the anode thereof connected to said first circuit between said first rectifier diode and said first capacitor;

a third circuit comprising, a second diode rectifier and a second silicon controlled rectifier connected in series between said input conductor and ground with the cathode and anode of said second diode rectifier being connected to the input conductor and the cathode of the second silicon controlled rectifier respectively, and the



anode of said second silicon controlled rectifier being connected to ground, said second silicon controlled rectifier having a potentiometer shunting the anode and cathode thereof with the variable contact arm of said potentiometer being connected to the control electrode of said second silicon controlled rectifier, said third circuit also including a second capacitor and a resistor connected in series between the cathode of said second silicon controlled rectifier and ground, with the control electrode of said first silicon controlled rectifier being connected to said third circuit at a point therein intermediate between said second capacitor and said resistor.

3,851,637

SPARK PLUG WITH GLOW PLUG

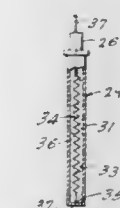
Sam J. Green, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 18, 1973, Ser. No. 352,115

Int. Cl. F02p 1/00; F02b 53/00

U.S. Cl. 123-169 PB

6 Claims



1. An ignition device for an internal combustion engine comprising, in combination, a generally tubular shell having a threaded portion for attachment to the engine, an electrical insulator having a bore extending therethrough for mounting a center electrode assembly, means mounting said insulator in said shell, a ground electrode, means attaching said ground electrode to said shell adjacent said threaded portion with said ground electrode positioned to be within a combustion chamber in the engine when the device is attached to the engine, a center electrode assembly, means mounting said center electrode assembly in said insulator bore, said center electrode assembly including a tip positioned for defining a spark gap, with said ground electrode for spark ignition of fuel in such engine combustion chamber, said tip having an internal chamber, electrical heating means mounted within said tip chamber for preheating such engine combustion chamber prior to starting the engine, and means connected for selectively ap-

plying electrical power to said heating means and to said tip including power control means having a high voltage terminal for connection to an ignition system for the engine, means electrically connecting said high voltage terminal to said tip, a low voltage terminal for connection to a power source, and switch means for selectively connecting said low voltage terminal to said heating means.

3,851,638

FORCE MULTIPLYING TYPE ARCHERY BOW

Alex E. Alexander, Ashland, Oreg., assignor to Kam-Act Enterprises, Inc., Ashland, Oreg.

Filed Feb. 2, 1973, Ser. No. 328,932

Int. Cl. F41b 5/00

U.S. Cl. 124-24 R

13 Claims



1. An archery bow comprising an elongate bow member having a centrally disposed handle section a pair of rigid limbs extending outward from said handle section presenting a first pair of spaced ends, a pair of flexible limbs extending outward from said handle section and presenting a second pair of spaced ends, one flexible limb of said pair of flexible limbs being laterally spaced from and extending along the side of one rigid limb and the other flexible limb of said pair being laterally spaced from and extending along the side of the other of said rigid limbs, leveraging means mounted on said bow member at each of said first pair of ends for reducing the force necessary to draw and to hold a bowstring in a fully drawn position, each of said means including first and second leveraging members, a bowstring disposed between said first pair of ends and interconnecting said first leveraging members, and flexible means disposed between and interconnecting each of said second pair of ends and an associated second leveraging member.

3,851,639

PORTABLE COMBINATION COOKING APPARATUS AND METHOD

Justin M. Beddoe, P.O. Box 744, Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 84,819, Oct. 28, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,803

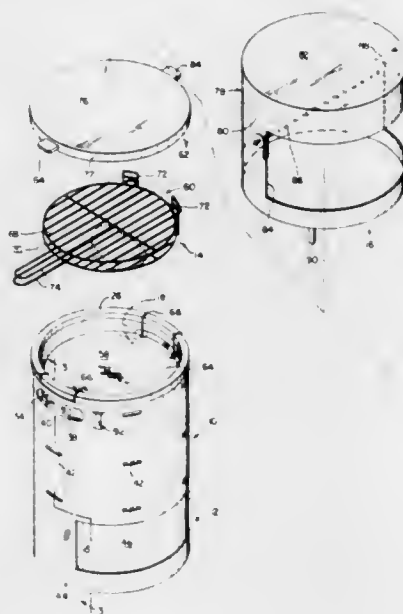
Int. Cl. A47j 37/00; F24b 3/00

U.S. Cl. 126-25 R

17 Claims

1. A portable combination cooking apparatus, comprising: a. a housing having substantially closed bottom and side walls and an upper rim defining a substantially open top, said housing defining a burner chamber adapted to burn crumpled newspaper;

- b. said housing having at least one lateral ventilating opening formed therein at a location in the top portion of the housing moderately below the upper rim of the housing, and sized to provide controlled air flow into the combustion chamber of the housing for controlled burning;
- c. a grill removably mounted to the open top portion of the housing;
- d. a removable perforate charcoal briquette containing basket adapted to be mounted in the housing top opening at a location below the grill;
- e. a removable convertible pan-cover mounted over the top



- f. said housing and adapted to be used either as a closure for the housing top opening and/or as a cooking pan;
- f. a removable hood assembly comprising a hood with an access opening, a door to close the opening and means to mount food within said hood, said hood being mounted above said housing; and
- g. an oven base on which said housing is mounted, said oven base defining an oven chamber and wherein the bottom of said housing defines a heat conductive roof separating said oven chamber from the combustion chamber, whereby said oven is heated by heat from the burning chamber of the housing.

3,851,640

DEEP FAT FRYER WITH CONTROLLABLE HEAT-UP FOR COLD FAT MELT

Richard T. Keating, 144 N. Cuyler Ave., Oak Park, Ill. 60300, and Richard T. Keating, Jr., 234 W. 79th St., Clarendon Hills, Ill. 60514

Continuation-in-part of Ser. No. 225,165, Feb. 10, 1972, abandoned. This application Apr. 27, 1973, Ser. No. 354,946

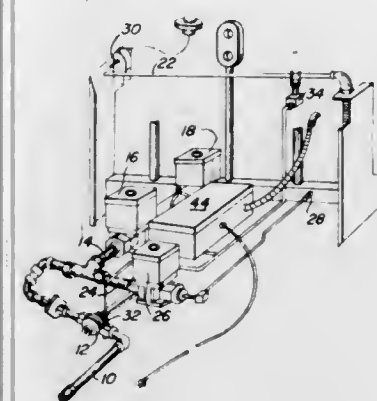
Int. Cl. A47j 27/26

U.S. Cl. 126-391

5 Claims

1. A two-stage gas supply system for deep-fat melter-fryer burners comprising:
 - a. a gas source;
 - b. a single gas line having its inlet end connected in fluid communication with an outlet from the source;
 - c. a flow-control valve having a remote control input and having its inlet connected in fluid communication with the outlet from the gas line and its outlet in fluid communication with the inlet to the melter-fryer burners;
 - d. a fat fryer control means having its input operationally connected to a power supply and its output operationally connected to the remote control input of the flow-control valve for controlling the supply of gas to the burners supplying heat to the melted fat for purposes of frying;
 - e. a fat melter control means having its input operationally connected to the output of the fat fryer control means,

and its output operationally connected to the remote control input of the flow-control valve for controlling the supply of gas to the burners supplying heat to melt the solid fat; and



- f. selection means operationally connected to both the fat fryer control means and the fat melter control means for mutually excluding the operation of each one from the other.

3,851,641

METHOD AND APPARATUS FOR DETERMINING INTERNAL IMPEDANCE OF ANIMAL BODY PART

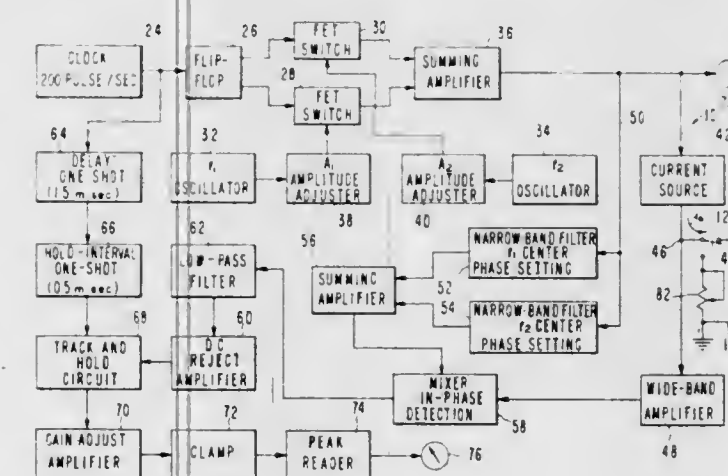
Joseph G. Toole, 1492 Rolshead Dr., San Jose, Calif. 95125, and Wade H. Foy, 214 E. Edith Ave., Los Altos, Calif. 94022

Filed Nov. 29, 1973, Ser. No. 420,186

Int. Cl. A61b 5/05

U.S. Cl. 128-2.1 Z

21 Claims



1. Apparatus for sensing a physiological and pathological change of a body part of an animal comprising: means for generating two electrical currents with each current being at a respective frequency; means coupled with said generating means for connecting the same to an animal body part to permit said currents to be directed therethrough, whereby a voltage corresponding to each current, respectively, will be developed across said body part; a device for detecting the in-phase components of a voltage signal; means coupled with said connecting means for applying each voltage across the body part to said detection device, whereby the output of the detection device is a signal representing the in-phase component of the voltage corresponding to a respective current; means coupled with said detection means for subtracting the magnitude of the in-phase signal corresponding to the current at a first frequency from the in-phase signal corresponding to the current at a second frequency to provide a difference signal; and means coupled with said subtracting means for indicating the difference signal.

3,851,642

MEDICAL EXAMINING INSTRUMENT

Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 192,390, Oct. 26, 1971, Pat.

No. 3,762,400, which is a continuation-in-part of Ser. No.

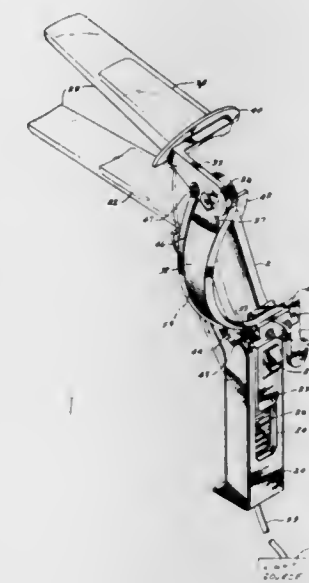
144,468, May 18, 1971, Pat. No. 3,744,481. This application

Aug. 14, 1972, Ser. No. 280,112

Int. Cl. A61b 1/06, 1/32, 1/30

U.S. Cl. 128-18

12 Claims



1. A vaginal speculum comprising: an elongated operating handle having an upper end and a lower end; a lower blade support tang fixed on the handle; a slide mounted for movement along the length of the handle; releasable ratchet means for permitting upward movement of the slide and inhibiting downward movement of the slide; an upper blade support tang, said upper and lower blade support tangs each adapted to receive and temporarily support a hollow transparent blade; means for mounting the upper tang on the slide for pivoting about an axis transverse to the direction of movement of the slide; lever operated means mounted on the slide for pivoting the upper tang towards and away from the lower tang; resilient means for biasing the upper tang towards the lower tang; means for adjusting the biasing force of the resilient means; and means for temporarily latching the upper tang in a open position relative to the lower tang.

3,851,643

ON-OFF ARRANGEMENT FOR A LIQUID JET HAND APPLIANCE

Jean-Pierre Musy, Geneva, Switzerland, assignor to Les Produits Associes, SA, Geneva, Switzerland

Filed Oct. 19, 1973, Ser. No. 407,848

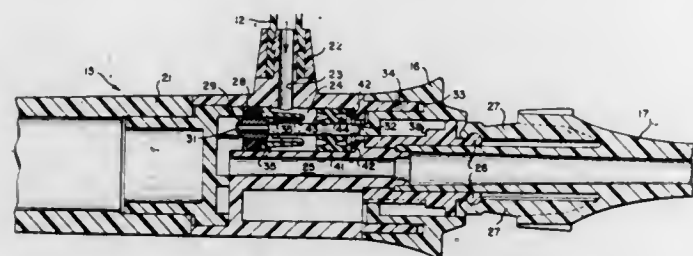
Int. Cl. A61h 9/00

U.S. Cl. 128-66

8 Claims

1. A liquid jet hand appliance for personal hygiene, for receiving liquid pressure pulses from a pump unit through a flexible tube, said hand appliance comprising
 - a. an elongated casing having an inlet passage for receiving said liquid pressure pulses and an outlet passage,
 - b. a chamber having an outlet at one end connected with said outlet passage, an opening to the atmosphere at the other end thereof, and an inlet intermediate said outlet and opening and connected with said inlet passage,
 - c. a bistable valve in said chamber including a sealing ring at the chamber outlet and a valve member affixed at the

- end of a longitudinally movable rod passing into the chamber through said opening,
 d. said valve member being of larger diameter than said rod and adapted for engaging said sealing ring in the closed position of the valve and disengaging from the sealing ring upon movement into said chamber to the open position of the valve,
 e. a manual control member attached to said rod for moving



- said valve member to said closed and open positions thereof,
 f. and a slidable sealing member slidably mounted on said rod between said valve member and said opening and engaging the encircling wall of said chamber,
 g. said slidable sealing member having an annular resilient lip engageable with said other end of the chamber around said opening.

3,851,644

METHOD AND APPARATUS FOR RAPIDLY IMMOBILIZING A PATIENT

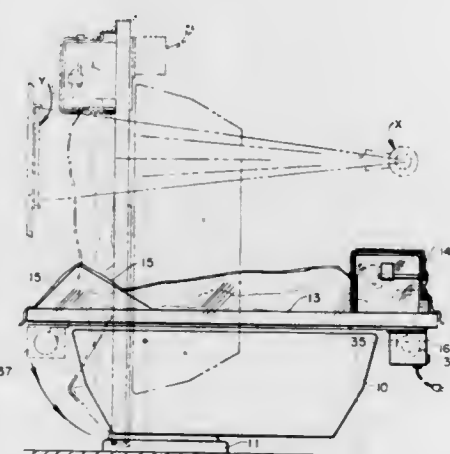
Edward Slagle, Montgomery, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Jan. 12, 1973, Ser. No. 323,207

Int. Cl. A61g 13/00

U.S. Cl. 128-134

22 Claims



1. A patient immobilization apparatus for immobilizing a patient, comprising:

- a. a patient positioner for supporting a patient;
 b. a flexible member composed of an air impervious material extending over and peripherally from at least part of said positioner to cover at least part of a patient's body including the head and defining an evacuable region substantially sealed from atmosphere surrounding the apparatus, said region bounded by at least part of a patient's body, said member and at least part of said positioner and extending about a patient's head;
 c. evacuation means for partially evacuating said region to establish a pressure differential between atmosphere surrounding the apparatus and said region, said pressure differential providing differential pressure forces exerted on at least part of the patient's body via said member for holding a patient against said positioner;
 d. face mask means for maintaining said member spaced from at least part of a patient's face and for enabling a

patient to breath air in said region while being held in place against said positioner.

3,851,645

INHALATION ANESTHESIA DEVICE

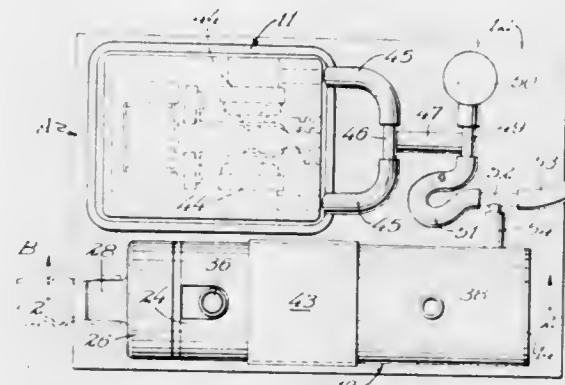
Allan A. Connel, P.O. Box 23, Stillwater, Minn. 55082

Filed Apr. 18, 1973, Ser. No. 352,338

Int. Cl. A61m 17/00

U.S. Cl. 128-188

9 Claims



1. An inhalation anesthesia device including an elongated chamber,
 an end closure at one end of said chamber,
 an end closure at the other end of said chamber,
 a first partition extending across said chamber in spaced relation to said one end closure defining, therebetween, a receiving chamber,
 an inlet to said receiving chamber,
 means supplying pressurized gas to said inlet,
 a second partition in spaced relation to the other end of said chamber defining a delivery chamber therebetween,
 an outlet from said delivery chamber,
 means for connecting said outlet to a patient;
 a by-pass within said elongated chamber extending between said first and second partition connecting said receiving chamber and said outlet chamber,
 a plurality of spaced foraminous absorbent members extending across said elongated chamber between said partitions capable of absorbing anesthetic liquid in said elongated chamber,
 an inlet passage through said first partition,
 an outlet passage through said second partition,
 a flap valve intercepting said by-pass and one of said passages regulating the flow of fluid through said by-pass and through the portion of said elongated chamber between said partitions outwardly of said by-pass and operable to open said by-pass and close said one passage, open said one passage and close said by-pass, or proportion the flow through said by-pass and said one passage.

3,851,646

CONNECTOR FOR OPEN HEART SURGERY

Richard N. Sarns, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Apr. 13, 1973, Ser. No. 351,083

Int. Cl. A61m 5/00, 25/00; F16l 41/02

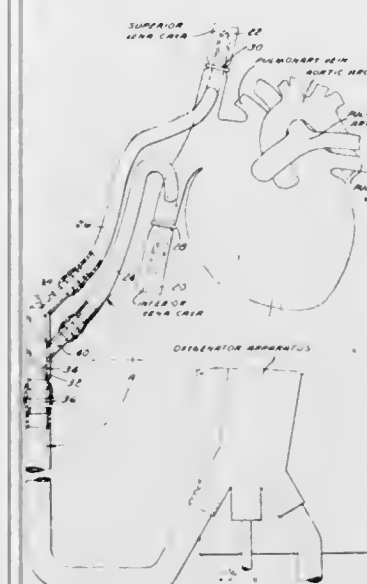
U.S. Cl. 128-214 R

1 Claim

1. In apparatus for open heart surgery wherein cannulae are adapted to lead from the inferior vena cava and the superior vena cava, respectively, for transmitting low pressure venous blood to a tube leading to a pump oxygenator, the improvement which comprises:

- a. a connector including an elongate body having an axial passage blind at one end of the body and open at the other end,
 b. means at said other end for connection to the tube leading to the pump oxygenator.

- c. a pair of spaced branch arms integrally connected with said body lying on one side of said body in a plane common to the axis of said axial passage and extending at an angle to said body and having passages to flow into said axial passage, one at about the blind end of said passage



- and the other spaced approximately an inch from said blind end, said arms having an obtuse angle of about 130° to 140° to the axis of said axial passage, and
 d. means on the ends of said branch arms for connection of the respective cannulae from said inferior and superior venae cavae.

3,851,647

INTRAVENOUS CATHETER INTRODUCTION ASSEMBLY

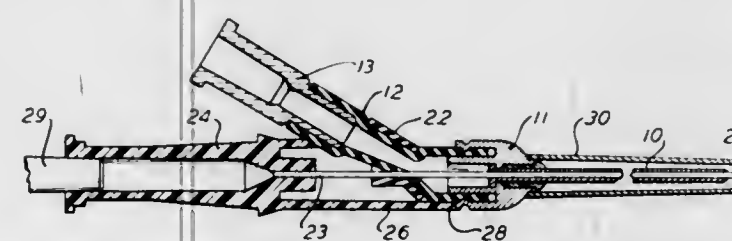
Martin Monestere, Jr., Lebanon, and Vincent L. Vaillancourt, Livingston, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 7, 1973, Ser. No. 338,777

Int. Cl. A61m 05/00

U.S. Cl. 128-214.4

5 Claims



1. An intravenous needle and catheter combination comprising a plastic catheter having a tapered distal end and a hub, a flexible tube of elastic material secured at its distal end to said hub, an adapter-hub engaged with the proximal end of said tube, a needle having a beveled point removably inserted through a wall of said tube at a point of entry intermediate said hub and adapter-hub and extending through the lumen of said catheter, and separate mechanical means on said tube for closing said point of entry after removal of the needle, wherein said mechanical means is a separate element movable between needle-passing position and entry-closing position.

3,851,648

ZERO-ORDER RELEASE DEVICE

Dana Brooke, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Oct. 11, 1973, Ser. No. 405,616

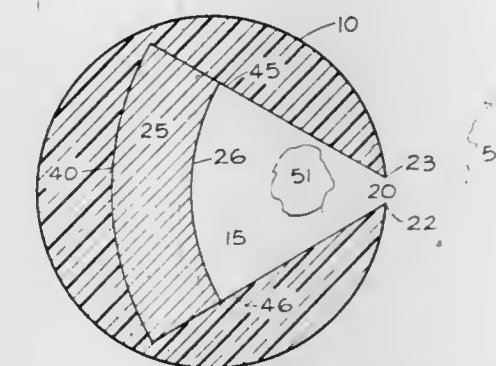
Int. Cl. A61m 31/00, 7/00

U.S. Cl. 128-260

17 Claims

1. A device for the automatic release at a substantially constant predetermined rate of a diffusible solid into a fluid

medium into which said solid has a propensity to diffuse when said device is immersed in said medium which comprises, a container which is insoluble in said medium, impermeable thereto, and impermeable to said solid, said container having a slot in the surface thereof defining an elongated opening of uniform length and width having two ends and two sides with the narrower dimension at the ends and the longer dimension at the sides, said slot communicating in its entirety with an internal cavity within said container said cavity being defined by an accuate wall and



- a pair of parallel congruent planar end walls arranged at right angles to said slot and adjacent the ends thereof, and a pair of inwardly extending congruent planar side walls adjacent the opposite sides of said slot and in substantially divergent radial relation to said slot, and extending to said rear wall.

a means for diffusing said solid from within said cavity into the immersing medium including a diffusible solid housed within said cavity as a homogenous mass in bonded relation to the inner wall surface of the cavity and having a surface thereof facing and opposing said slot opening to expose the diffusible solid surface to said fluid medium when said device is immersed therein.

3,851,649

CATHETERIZATION PACKAGE

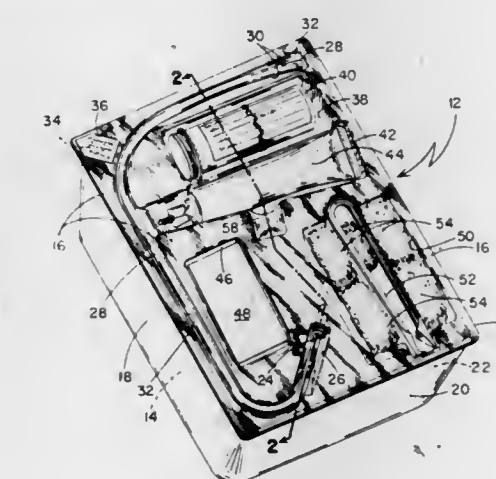
Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Mar. 21, 1973, Ser. No. 343,220

Int. Cl. A61f 5/44

U.S. Cl. 128-275

5 Claims



1. A catheterization package comprising an enclosed rigid container including a rear panel and a rigid front panel spaced from one another with a top wall, side walls and a bottom wall extending therebetween said front panel having a recessed catheter drainage port with a catheter connected thereto adjacent the upper and one side wall of said container, said catheter being positioned within an open sided recess in said front panel with said port at one end thereof

said container being utilized for collection of liquid drained through said catheter.

3,851,650

CLOSED DRAINAGE SYSTEM WITH DOUBLE LUMEN TUBE

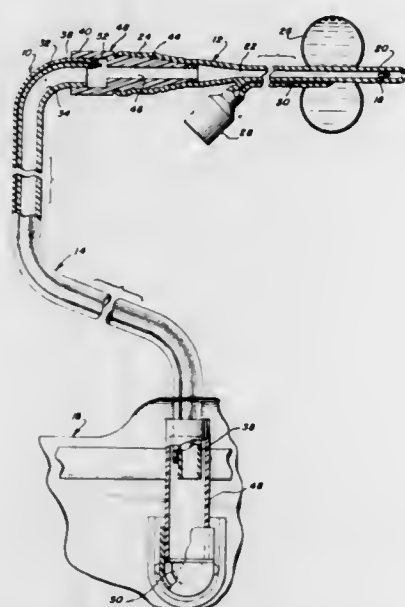
Phillip H. Darling, Elm Grove, Wis., assignor to The Kendall Company, Boston, Mass.

Filed June 6, 1972, Ser. No. 260,085

Int. Cl. A61m 27/00

U.S. Cl. 128—350 R

5 Claims



1. A closed system for drainage of liquid from a cavity comprising a tubular conduit having a single liquid inlet opening insertable into the cavity and a downwardly extending section, a drainage receptacle in a position to receive liquid from said conduit, the downwardly extending section including a drainage tube having two lumens which are in communication at the upstream end of the tube and adjacent the downstream end of the tube, one-way valve means adjacent the upstream end of one of said lumens for permitting the passage of liquid into the one lumen, said valve means comprising a flap valve.

3,851,651

FACIAL STIMULATING APPARATUS HAVING SEQUENTIALLY ENERGIZED ELECTRODES

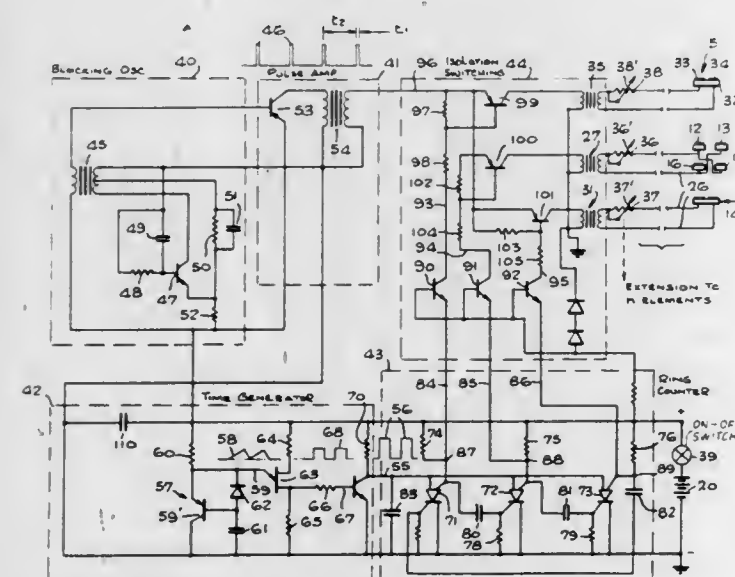
Phineas J. Icenbice, Jr., 19323 Halsted, Northridge, Calif. 91324

Filed Dec. 22, 1972, Ser. No. 317,725

Int. Cl. A61n 1/36

U.S. Cl. 128—422

7 Claims



1. In facial stimulating apparatus including a plurality of electrode means to be positioned near and stimulate different

facial nerves respectively, the combination with said electrode means of:

- a first oscillator producing first pulses at a relatively high frequency to be delivered to and energize said electrode means, said first pulses being of very short duration with intervals between successive pulses much longer than the pulses themselves;
- a second oscillator producing control pulses at a frequency much lower than the frequency of said first pulses;
- a ring counter connected to said second oscillator for actuation thereby and including a series of semi-conductor switches actuatable between conducting and non-conducting states, and circuit means responsive to said control pulses to actuate said switches successively to a predetermined one of said states in a sequence repeating through many cycles;
- a plurality of additional semiconductor switches connected between said first oscillator and said different electrode means respectively and each actuatable between a conducting state for delivering a train of said first pulses from the first oscillator to a corresponding one of said electrode means and a non-conducting state blocking off such pulses; and
- circuit means connecting said additional switches to said switches of the ring counter respectively for control thereby in a relation to simultaneously, in response to the same control pulse from said second oscillator, commence conduction of said first pulses through one of said additional switches to the corresponding electrode means and at the same time terminate conduction through a preceding one of said additional switches to the preceding electrode means,
- said second oscillator having a frequency causing each of said additional switches, on each actuation, to pass to the corresponding electrode means a pulse train consisting of many of said first pulses but continuing for not more than a few seconds.

3,851,652

CIGARETTE MAKING MACHINES

Francis Auguste Maurice Labbe, Neuilly-Sur-Seine, France, assignor to Mollins Limited, London, England

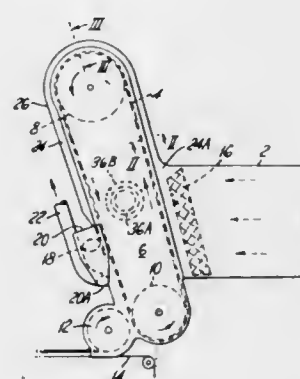
Filed July 27, 1972, Ser. No. 275,633

Claims priority, application Great Britain, July 28, 1971, 35514/71

Int. Cl. A24c 05/18

U.S. Cl. 131—84 C

9 Claims



1. In a cigarette making machine, a filler stream forming arrangement comprising an upper pulley and a lower pulley; an air pervious band arranged to move around the pulleys and having an upwardly moving run moving from the lower pulley to the upper pulley, and a downwardly moving run moving from the upper pulley to the lower pulley; a suction chamber between the two runs of the band for applying suction through the band to hold tobacco on the band; means for feeding tobacco towards the upwardly moving run of the band to build up a cigarette filler stream on the band, means supplying a continuous wrapper web near the bottom of the downwardly

3,851,655

METHOD AND MEANS FOR SELECTING COSMETICS

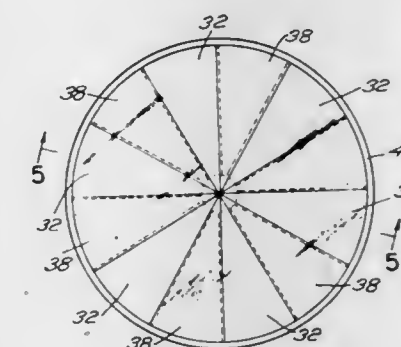
Richard E. Tarro, 425 Broadway, Providence, R.I. 02909

Filed Oct. 15, 1973, Ser. No. 406,658

Int. Cl. A45d 40/00

U.S. Cl. 132—83

14 Claims



1. A cosmetic selecting device comprising a container for a cosmetic, means for sealing the cosmetic in the container, said means having a transparent portion allowing a view of the cosmetic, and means allowing a view of the selector's skin adjacent the visible cosmetic.

3,851,653

METHOD OF PUFFING TOBACCO AND REDUCING NICOTINE CONTENT THEREOF

William E. Rosen, Lafayette Hill, Pa., assignor to Rosen Enterprises, Inc., Lafayette Hill, Pa.

Filed Oct. 11, 1972, Ser. No. 296,739 The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.

Int. Cl. A24b 15/02, 03/18

U.S. Cl. 131—140 P

19 Claims

1. A method of treating tobacco comprising the steps of contacting said tobacco with an aqueous solution containing a given amount of hydrogen peroxide and providing on said tobacco a given amount of catalase, said hydrogen peroxide solution contacting said tobacco no later than said catalase, said given amount of catalase being effective to cause decomposition of said given amount of hydrogen peroxide and said given amount of hydrogen peroxide upon decomposition being effective to increase the volume of said tobacco.

3,851,654

SELF CONTAINED ELECTROCHEMICAL HEAT SOURCE

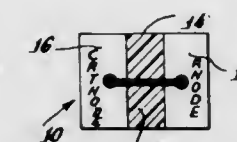
Frederick P. Kober, Bayside, N.Y., assignor to Chem-E-Watt Corporation, Valley Stream, N.Y.

Division of Ser. No. 175,846, Aug. 30, 1971, Pat. No. 3,774,589. This application Aug. 17, 1973, Ser. No. 389,236

Int. Cl. A45d 2/12

U.S. Cl. 132—33

4 Claims



1. In a heating device for hair waving operations the combination comprising a shell formed of a hair heat protective material and having a cell receiving recess, an electrochemical cell shaped to fit within the recess in heat transferring relationship with the shell, said electrochemical cell including an electrochemical cell structure formed of a generally thin electrically conductive first member made of an electrochemically active oxidizable material and a generally thin electrically conductive second member made of an electrochemically active non-metallic reducible material, said first and second members having therebetween, said first and second members being further selected for forming an electric heating current producing electrochemical couple capable upon electrical interconnection of the members of heating the electrochemical cell structure to a temperature which is sufficiently high for forming said self-contained heat source; and a multiple of discrete electronically conductive elements extending between the electrochemically active oxidizable first member and the electrochemically active reducible second member for electrical contact therewith, said electronically conductive elements being spaced and selected to conduct an electric heating current between the first oxidizable member and the second reducible member for a uniform heating of the electrochemical cell structure during activation of the electrochemical cell to dissipate electrical cell energy within the shell to form heat for hair waving.

3,851,656

DEVICE FOR COLLECTING, CONTAINING AND DISPENSING MARKERS FOR GAMES

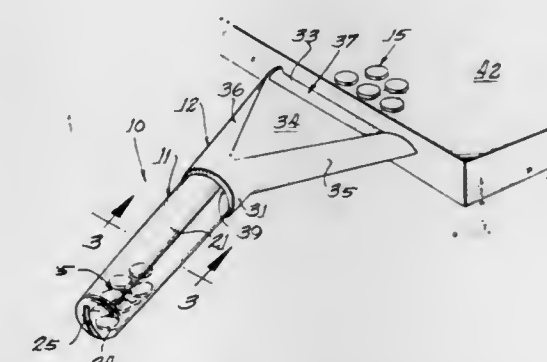
William M. Haas, 505 Ivy St., Pittsburgh, Pa. 15232, and Richard P. Merzlak, 133 Hetherton Dr., Pittsburgh, Pa. 15237

Filed Aug. 21, 1973, Ser. No. 390,199

Int. Cl. A63f 9/00

U.S. Cl. 133—5 A

2 Claims



1. A device for collecting, containing and dispensing disc shaped bingo chip type markers for use in the playing of the game of Bingo, the device comprising the combination of: a longitudinally elongated hollow body member formed of a material having the qualities of elasticity and resiliency, the body having a closed dispensing end and a diametrically opposite open receiving end with a hollow compartment being defined interiorly of the body for receiving therein a plurality of markers in a random manner, said body member having side walls extending between said dispensing end and said receiving end defining an elongated tubular shape for said body member having an oval cross-section viewed through a plane taken normal to the longitudinal axis at the dispensing end of the body member with said cross-sectional area slowly changing in a graduated transition manner progressively along the body member in the direction of the receiving end until a circular cross-sectional area is defined at the open receiving end of said body member, said body member adapted to be held in one hand of an individual in a comfortable and operative manner; a dispensing opening for said markers formed integrally in said closed dispensing end of said body member, said

opening being in the form of a rectangular slot extending radially to the axis of the body member, said slot being longer than the diameter of the individual markers and being of a lesser width than the thickness of the individual markers thus preventing any marker from passing through said slot when the slot is in the normal inoperative position, the side edges defining said slot being distortable upon an individual applying compressive pressure to the body member adjacent the dispensing end thereof by a squeezing type movement of the hand holding the body member thus distorting the dispensing end of the body member against the inherent elasticity and resiliency of the body member, this squeezing type movement exerting opposed forces generally axially of said slot to effect the distortion of said slot in a manner decreasing the overall length thereof while distortingly increasing portions of the width thereof to a width greater than that of a plurality of the markers for dispensing a selective number of markers therethrough, said slot automatically returning to its normal inoperative undistorted position upon release of the squeezing pressure of the user due to the inherent elasticity and resiliency of the body member; a hollow chip loading funnel member having one end detachably connected to the receiving end of said body member in communication with the interior of said body member, the funnel member being connected with the body member such that a cover member is interchangeable with the funnel member, said one end of the funnel member including a hollow cylindrical collar portion having an interior diameter to be snugly received in a telescopic manner over said receiving end of said body member, the opposite end of said funnel member being of an enlarged cross-sectional area relative to said collar portion, said opposite end including a hollow triangular portion connected at its apex to the collar portion and extending outwardly therefrom at an angle thereto relative to the longitudinal axis of the collar portion, said triangular portion including a top surface, a bottom surface, and opposed side surfaces defining a hollow marker receiving chamber therebetween, said bottom surface extending outwardly from a bottom edge of said cylindrical collar portion a distance greater than said top surface with said top surface overlying only a portion of said bottom surface, that portion of said bottom surface not overlapped by said top surface being exposed to define a lip portion having a forwardmost free edge adapted to be placed adjacent the edge of a playing surface with the markers resting on the playing surface readily pushed by the individual user off the playing surface and onto the lip portion from whence they slide through the funnel into the attached body member, said body member and attached collar portion being disposed at a concave angle relative to said triangular portion;

said cover member interchangeable with said funnel member for detachable connection to said receiving end of said body member to close said receiving end for containing the markers in the body during periods of transportation and storage between times of usage, said cover member being of a cylindrical shape having a flat top surface and depending cylindrical side walls defining an interior circular recess of a diameter adapted to be snugly received over the exterior surface of said body member receiving end to close said end; screw threads disposed about the exterior of said body member side walls adjacent said receiving end thereof; screw threads formed interiorly of said funnel member collar portion to engage threadingly with said body member screw threads for detachably connecting the funnel member on said body member; and screw threads formed interiorly of said cover member cylindrical side walls to threadedly engage with said body member screw threads for detachably connecting the cover member on said body member interchangeably with said funnel member.

3,851,657

HANDLE FOR UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada

Continuation of Ser. No. 164,736, July 21, 1973, abandoned.

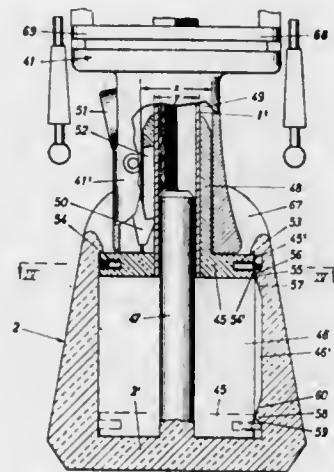
This application Aug. 20, 1973, Ser. No. 389,499

Claims priority, application Germany, July 24, 1970, 2036701

Int. Cl. A45b 9/02

U.S. Cl. 135—46 M

5 Claims



1. In a collapsible umbrella including a handle mounted at one end of a hollow stick comprising a plurality of telescopic sections having cross sections respectively decreasing from the handle, the handle having an axial recess defined by side and bottom walls, a centering stem fixed to the bottom wall and extending axially within the lowermost stick section of the umbrella stick for guiding relative movement therebetween, a sleeve telescopically and fixedly secured about the lowermost stick section and increasing the cross section of the stick section thereat, said sleeve having a slot therealong for removably receiving a lock lever catch therein, said sleeve including an integral flange having a periphery substantially conforming to the axial recess of the handle and reciprocable therein; limiting stop means operatively connected between said handle and said stick and sleeve flange for limiting flange movement of said flange relative to the handle recess during an extended or retracted position corresponding to respective erected or collapsed conditions of the umbrella; and a main runner slidably mounted on said stick and having catch-lever-and-catch means thereon and including a catch displaceably engagable with the slot along said sleeve, said runner having a cross-section receivable in the axial recess of said handle and movable into the axial recess when the umbrella is collapsed.

3,851,658
VALVE

Alan Donald Bunyard, Haywards Heath, England, assignor to Norbro Pneumatics Limited, Sussex, England

Filed Aug. 7, 1970, Ser. No. 61,932

Claims priority, application Great Britain, Aug. 9, 1969, 39966/69

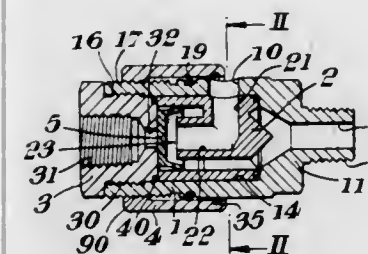
Int. Cl. F16k 11/02

U.S. Cl. 137—102

8 Claims

1. A valve comprising an elongated hollow body having an axial bore extending therethrough, an inlet port at one end, an outlet port near the other end and an exhaust port intermediate the ends of the body, an elongated removable insert in said bore having a first passageway extending axially from end-to-end of the insert and communicating at both ends with said bore and a second passageway extending from one end to the periphery of the insert and communicating with said exhaust port, a cup seal of resilient material having a bottom wall and a peripheral rim disposed within the bore of said hollow body with its bottom wall adjacent said inlet port and transverse to

the axis of the bore and its rim engaging said insert at the entrance to said first passageway, said cup seal being bodily movable between two positions in response to pressure differentials across the valve at said inlet and outlet ports, said cup seal in its first position having its bottom wall against and closing said inlet port and its rim distended to permit communication between said first and second passageways of said insert through the interior of said cup seal so that a fluid flow path is established from the outlet port through the first and



second passageways in sequence to the exhaust port, said cup seal in its second position having its bottom wall against and closing said second passageway and its rim compressed inwardly to open the first passageway so that a fluid flow path is established from the inlet port around the rim of the cup seal through the first passageway to the outlet port, whereby to control fluid flow either through the inlet port to the outlet port or through the outlet port to the exhaust port and the valve is selectively operable either as a fluid flow regulator or as a quick exhaust valve.

3,851,659

MEANS FOR ROTATABLY SUPPORTING AN OVERHEAD IRRIGATION PIPE

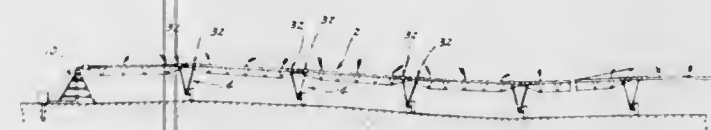
Arthur L. Zimmerer; Bernard J. Zimmerer, and Paul B. Zimmerer, all of Lindsay, Nebr., assignors to Lindsay Manufacturing Co., Lindsay, Nebr.

Filed Dec. 21, 1970, Ser. No. 100,156

Int. Cl. A01g 25/02; B05b 3/12

U.S. Cl. 137—344

2 Claims



1. A self-propelled irrigation system comprising, a water distribution pipe movable along a predetermined path, means for supplying water to said pipe, a plurality of spaced apart, self-propelled towers along the length of said pipe for supporting said pipe above the ground and to propel said pipe along said predetermined path, at least some of said towers having a sleeve means thereon through which said pipe freely rotatably extends to permit said towers to traverse irregular ground without imposing twist stress in said pipe, at least some of said towers being rigidly connected to said pipe so as to prevent rotational movement of those said towers with respect to said pipe.

3,851,660

SELF OPERATING PRESSURE ACTUATED VALVE

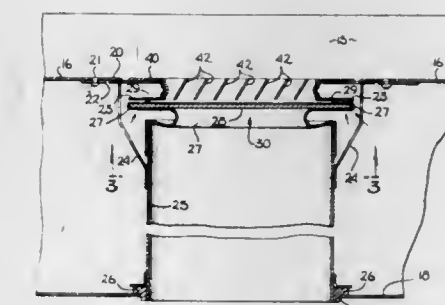
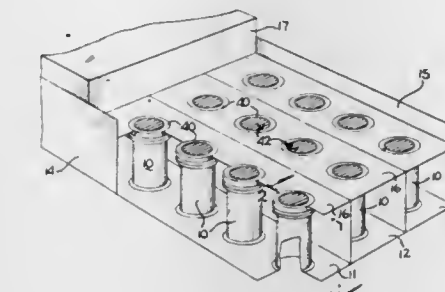
Seymour Lieberman, Los Angeles, and Joseph Michael Rice, Manhattan Beach, both of Calif., assignors to Transtech, Manhattan Beach, Calif.

Filed Sept. 18, 1972, Ser. No. 289,872

Int. Cl. B65g 53/04

U.S. Cl. 137—484.2

15 Claims



1. A self operating pressure actuated valve for controlling the flow of fluid from a first region to a second region which comprises:

- a barrier between said first and second regions, said barrier having an opening therein for the passage of fluid; and
- a poppet closure for said opening, said poppet being moveable to open or close said opening in response to pressure, the opening force for said poppet being the effect of the pressure in said second region acting through said opening upon a first portion of the surface of said poppet said opening force being opposed by a closing force from the effect of a substantially constant pressure upon a second portion of said poppet, said substantially constant pressure being lower than the pressure in said first region.

3,851,661

FLUID FLOW REGULATOR AND PRESSURE INDICATOR

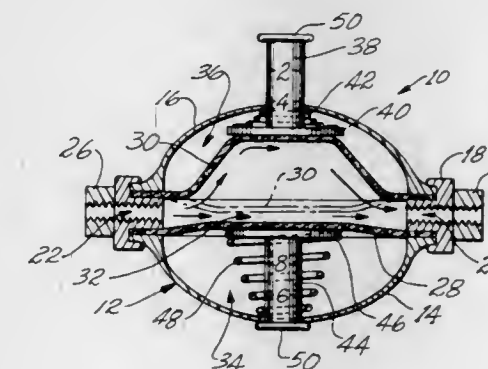
John J. Fernandez, 1620 S. Myrtle Ave., Monrovia, Calif. 91016

Filed Feb. 14, 1973, Ser. No. 332,308

Int. Cl. G11b 7/08

U.S. Cl. 137—558

10 Claims



1. A fluid flow regulating device including a housing having a hollow interior, and an inlet and outlet to the hollow interior,

the inlet being adapted for connection to source of fluid under pressure to be delivered to the interior of the housing, the outlet being adapted to conduct the fluid from the interior of the housing;

a pair of laterally spaced apart flexible diaphragms in the housing providing opposite movable walls of a fluid flow passage for conducting fluid through the housing from the inlet to the outlet;

separate biasing springs extending between the housing and each diaphragm to adjust the position of the respective diaphragms in response to fluid flow through the passage to dampen fluid pulses entering through the inlet and produce a substantially steady fluid flow through the outlet; and

separate indicator arms extending in opposite directions from each diaphragm to the exterior of the housing, the indicator arms being movable away from the exterior of the housing by movement of their associated diaphragms in response to increasing fluid pressure in the passage, the indicator arms being movable away from the housing through a distance of travel proportional to the amount of fluid pressure in the passage to indicate the instantaneous amount of said fluid pressure, one biasing spring having a greater biasing force than the other biasing spring so that the travel of one indicator arm will provide an indication of lower fluid pressure levels than the travel of the other indicator arm.

3,851,662

PHOTOGRAPHIC PROCESSING SOLUTION FILLING AND CIRCULATING APPARATUS

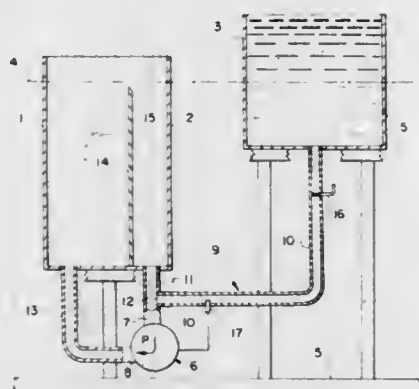
Thomas C. Jessop, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 18, 1973, Ser. No. 380,516

Int. Cl. E03b 7/07

U.S. Cl. 137-563

3 Claims



1. A photographic processing solution filling and circulating apparatus, comprising:

a processing solution supply container;
a processing solution utilization container;
a processing solution circulation container;
means arranging said supply, utilization and circulation containers to provide fluid communication with each other for attaining, respectively therein, a common hydrostatic equilibrium level of the processing solution;
means providing for overflow of processing solution from said utilization container into said circulation container at an overflow level which is below the common equilibrium level;

a pump, disposed below the common equilibrium level, and having an inlet for the intake of processing solution and an outlet for the discharge of processing solution; and
a conduit disposed below the common equilibrium level, connecting said pump inlet with said supply and circulation containers to allow gravity flow of processing solution from said supply and circulation containers into said pump inlet, and connecting said pump outlet with said utilization container for pumping processing solution from said pump outlet into said utilization container.

3,851,663 ROTARY COUPLING FOR ROTATING MILKING PARLORS

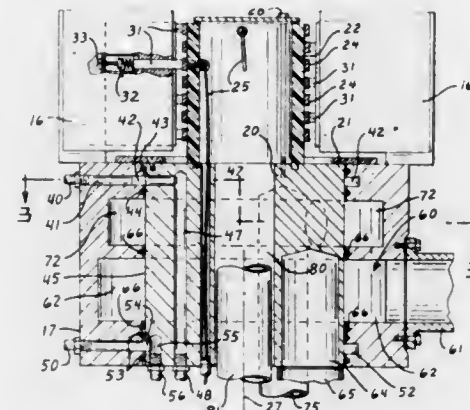
Chester G. Neuko, Jamestown, N. Dak., assignor to Circle Milking, Inc., Jamestown, N. Dak.

Filed July 18, 1973, Ser. No. 380,154

Int. Cl. F16l 27/08; A01j 5/00

U.S. Cl. 137-580

2 Claims



1. A rotary coupling for rotating milking parlors for carrying fluids and electric power from a stationary portion of the parlor to the rotating portion of the parlor, comprising a stationary member, a rotating member rotatably mounted with respect to said stationary member for rotation about a substantially central axis, means to support said rotary coupling with said central axis extending substantially vertically, said stationary and rotating members being concentrically mounted about said central axis, said stationary member comprising a housing defining a central opening and including a first section encompassing said rotating member and having a plurality of axially spaced, annular recesses defined therein, a plurality of conduits connected to said housing on the exterior of said first section, each conduit being open to one of said annular recesses, said conduits including at least one vacuum carrying conduit, and other conduits carrying fluid under pressure, separate passageways in said rotating member each aligning with one of said annular recesses in said first section of said stationary member, and said separate passageways in said rotating member including portions having axes substantially parallel to said central axis, means to couple said passageways in said rotating member to remote lines rotating with said rotating member, said rotating member having a central passageway extending completely through said rotating member, said coupling including a second portion for transmitting electrical power including electric annular slip rings on said rotating member and stationary brush means mounted on said housing, said annular slip rings and said brush means being positioned vertically above said first section of said housing carrying said annular recesses and said conduits, and seal means between each of the individual annular passageways in said stationary member and corresponding portions of said rotating member and passageway means in said rotating member for carrying electrical wires to said slip rings, said central passageway through said rotating member being a nonsealed passageway of size to permit a separate conduit to pass there-through.

3,851,664
VALVES

Hanni Zadow, and Herbert Rudolph Julius Zadow, both of 17 Rosedale Rd., Heaton Chapel, Stockport, Cheshire, England

Filed Nov. 10, 1972, Ser. No. 305,617

Claims priority, application Great Britain, Nov. 13, 1971, 52797/71

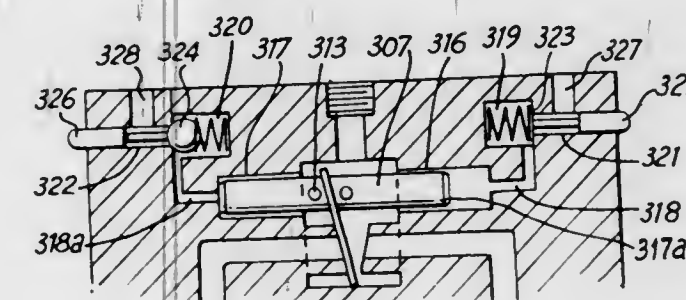
Int. Cl. F16k 31/12

U.S. Cl. 137-596.15

20 Claims

1. A fluid flow control valve assembly comprising a first fluid flow control valve having a housing, a chamber in the

housing, an inlet port in communication with the chamber, at least one outlet port from the chamber, a plate-like valve member movable in the chamber in response to control means selectively to prevent or permit flow through said at least one outlet port, a second fluid flow control valve having a housing, a chamber in the housing, an exhaust port, an entry port in communication with said at least one outlet port, a further port in communication with the second valve chamber, a plate-like valve member movable in the second valve chamber alternatively to prevent communication between the further port and the outlet port while allowing communication between the further port and the entry port or to obstruct communication between the further port and the entry port and



allow communication between the further port and the outlet port, said control means comprising an operating member engageable with the plate-like valve member of the first valve to move the plate positively in two opposed directions, the ends of the operating member being reciprocable in bores leading from opposed walls of said first valve chamber, passages communicating respectively with the bores and containing normally closed valve ports, means for providing communication between the first valve inlet port and said passages, and operating means operatively connected with further valve members associated with the normally closed valve ports for opening same, the operating member blocking communication between the first valve inlet port and the respective passage at the limits of movement of the first valve member.

3,851,665

TESTABLE PLUG SHUT-OFF AND DOUBLE CHECK VALVE

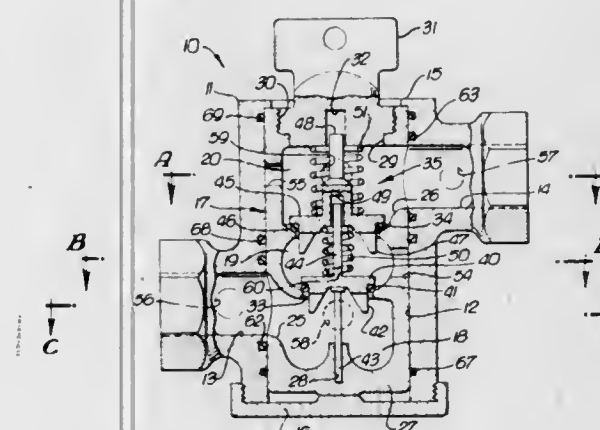
Donald W. Coughlin, P.O. Box 535, Lake Arrowhead, Calif. 92352

Filed Aug. 9, 1973, Ser. No. 386,987

Int. Cl. F16k 43/00

U.S. Cl. 137-614.17

7 Claims



1. A combination plug shut-off and check valve comprising: a valve body having a vertical bore and lengthwise offset inlet and outlet connections opening into upper and lower portions of said bore,

said valve body also having two drain-and-valve-testing port means located respectively at the levels of said connec-

tions and on bore radii disposed approximately 90° from alignment with said connections;

a valve plug rotatably fitting within said bore and having an axial cavity closed at the top and bottom of the plug and having lower and upper chambers, said plug having open and closed positions separated by a quarter turn of said plug in said bore,

the wall of said plug having passage means, which, with said plug in open position, provide communication between said lower chamber and said inlet connection and between said upper chamber and said outlet connection, said passage means, with said plug in closed position providing communication between said lower and upper chambers respectively and said two drain and valve testing port means in said valve body,

said plug having imperforate peripheral areas which shut said inlet and outlet connections when said plug is in closed position; and

check valve means mounted in said cavity and controlling liquid flow between said lower and upper cavity chambers and limiting said liquid flow to an upward direction.

3,851,666

COUPLING ASSEMBLY

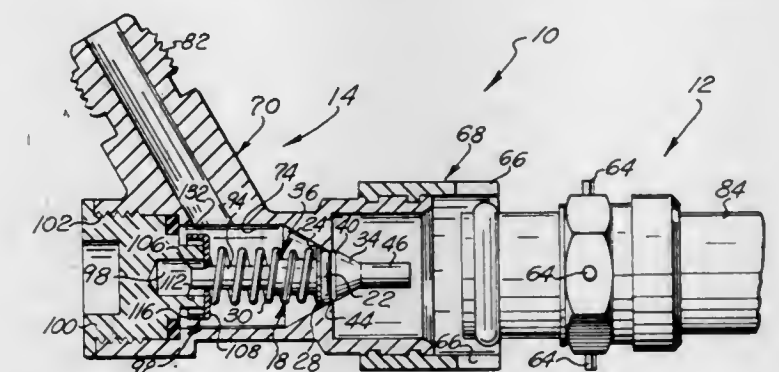
Harry H. Hammond, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Mar. 9, 1973, Ser. No. 339,701

Int. Cl. F16l 37/28

U.S. Cl. 137-614.04

5 Claims



1. A coupling assembly operable between a connected condition interconnecting first and second conduits and a disconnected condition, said coupling assembly comprising plug and socket means for connecting the first and second conduits in fluid communication, said socket means including a socket body defining a first valve chamber having inlet and outlet openings through which fluid enters and leaves said first valve chamber and first valve means for blocking fluid flow through said socket means when said coupling assembly is in the disconnected condition, said first valve means including a first frusto-conical valve seat connected with said socket body and circumscribing one of said openings to said first valve chamber, a first valve member disposed in said first valve chamber and movable relative to said first valve seat between an open position and a closed position, said first valve member including a cylindrical nose portion; a frusto-conical pilot portion disposed inwardly of said nose portion with a minor end of said pilot portion connected to the nose portion and a major end of the pilot portion spaced inwardly of the nose portion, said major end of said pilot portion having a diameter which is less than the diameter of said one of said openings, annular recess means disposed inwardly of said major end of said pilot portion for receiving an annular seal member, an annular seal member disposed in said recess means, said seal member having an outside diameter which is greater than the diameter of the major end of said frusto-conical pilot portion and the diameter of said one of said openings, a circular support portion disposed inwardly of said annular seal member and having a leading end with an exter-

nal diameter which is greater than the external diameter of said annular seal, said leading end of said circular support portion having a circular support surface which forms an inner side of said recess means, and first spring means for urging said first valve member toward the closed position, said major end of said pilot portion being disposed outwardly of said first valve seat when said first valve member is in the closed position to enable said seal member to be pressed against said first valve seat under the influence of said spring means, said leading end of said circular support portion being disposed in abutting pressure engagement with said first valve seat and an inner side of said seal member when said first valve member is in the closed position to press said seal member against said first valve seat and to limit the pressure applied to said seal member to thereby prevent excessive deformation of said seal member, said plug means including a plug body defining a second valve chamber having inlet and outlet openings through which fluid enters and leaves said second valve chamber and second valve means for blocking fluid flow through said plug means when said coupling assembly is in the disconnected condition.

3,851,667

PULSATOR FOR HYDRAULIC SYSTEMS CONTROLLING ACTUATING MECHANISMS

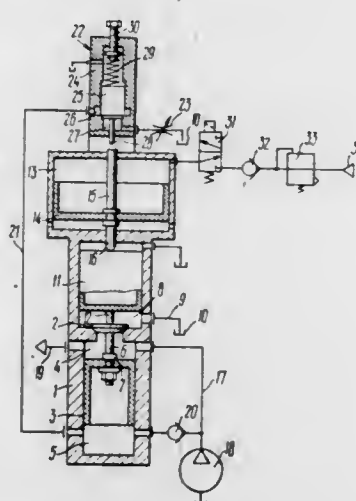
Vladimir Ivanovich Goryainov, 50, kv. 2 p/o Chelobatievo, Mytishnysky raion, Moskovskaya Oblast; Ivan Vasilievich Kononov, 40, kv. 4 ulitsa Torpedo, Vorenezh; Ivan Egorovich Maslennikov, 26, kv. 82 ulitsa Druzhinnikov, Vorenezh; Vladimir Nikiforovich Platonov, ulitsa 9 Yanvarya 49, kv. 45, Vorenezh, and Vyacheslav Evgenievich Popov, ulitsa Peshe Streletskaia 125, kv. 76, Vorenezh, all of U.S.S.R.

Filed Feb. 13, 1973, Ser. No. 332,152

Int. Cl. F01I 9/02

U.S. Cl. 137-624.14

3 Claims



1. A pulsator for hydraulic systems controlling actuating mechanisms comprising: a housing; a delivery valve disposed in said housing; an air cylinder having a movable element and adapted for closing said valve, said air cylinder being disposed in said housing coaxially with said delivery valve at one of its ends; a pusher rigidly connected to said delivery valve disposed in said housing coaxially with said valve at its opposite end and serving for opening said delivery valve; a first cavity between said delivery valve and pusher, permanently communicating with a high-pressure main of the hydraulic system and with an actuating mechanism; a second cavity above the valve, communicating with a liquid drain main of the hydraulic system; a third cavity below said pusher; pipelines for connecting said third cavity to said high-pressure and drain mains, respectively; a non-return valve mounted on said pipeline connecting said third cavity to said high pressure main; a throttle mounted on said pipeline connecting the third cavity to said liquid drain main; a valve unit having a movable ele-

ment mounted on said pipeline ahead of said throttle; the movable element of said valve unit serving to shut off said pipeline as said delivery valve is opened and to be actuated by the movable element of said air cylinder at the end of the delivery valve opening stroke in order to connect said pipeline to said liquid drain main as the delivery valve is closed.

3,851,668

FLOW CONTROL DEVICE

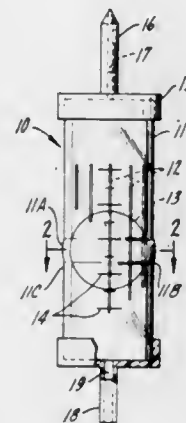
Thomas A. Benjamin, Deerfield, Ill., assignor to Medical Environment Devices Incorporated, Wheeling, Ill.

Filed July 27, 1973, Ser. No. 383,247

Int. Cl. F15d 1/10; F16k 3/22

U.S. Cl. 137-625.3

11 Claims



1. A flow control device comprising:

an elongated flexible tube of a given length with an interior surface of given diameter, generally axially extending channel means formed in the interior surface of said flexible tube, the cross sectional flow area of said channel means varying in an axial direction,

a rigid ball with a diameter greater than said interior surface diameter of said tube wherein said ball is capable of being firmly lodged within said elongated tube to form a seal between said ball and said interior surface of said tube exclusive of said channel means, said ball being capable of being axially moved within said tube by external squeezing force applied to said tube to control fluid flow through said tube.

3,851,669

CONTROL FACE-ARRANGEMENT FOR AN AXIAL PISTON MACHINE

Gustav Zellbeck, Esslingen-Hegensberg; Dieter Bertsch, Stuttgart-Mohringen, and Dieter Hofsass, Fellbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 18, 1973, Ser. No. 324,895

Claims priority, application Germany, Jan. 25, 1972, 2203278

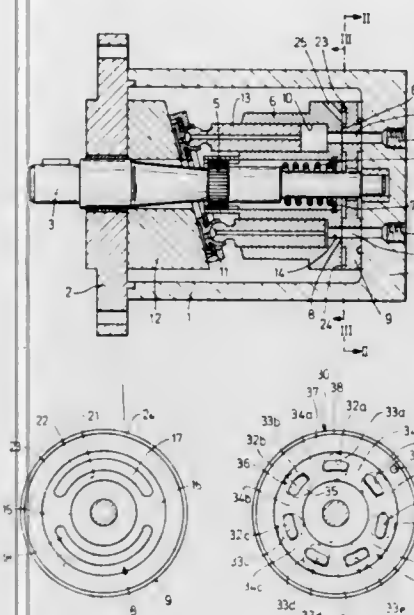
Int. Cl. F01b 1/00, 13/04

U.S. Cl. 137-625.21

10 Claims

1. Control face arrangement for an axial piston machine with suppression of unequal wear of the support rim relative to the sealing face portions, comprising housing means including a first control face; and cylinder body means having a second control face cooperating with said first control face, one of said means being rotary relative to the other means together with the respective control face; said first control face being formed with a pair of part-circular inlet and outlet ports, and having first separating face portions between the ends of said inlet and outlet ports and first outer and inner annular sealing-face portions radially outward and inward of said inlet and outlet ports and subjected to wear by particles flowing with fluid through said inlet and outlet ports; said second control face being formed with a plurality of cylinder ports, and having second separating face portions between the

ends of said cylinder ports and subjected to wear by said particles; at least one of said first and second control faces having circular axially projecting peripheral support rim means abutting the respective other control face and exteriorly bounding an annular groove and being of a narrow radial width between 0.5% and 2.5% of the outer diameter of said support rim means and operative to suppress the formation of



a hydrodynamic pressure field between said support rim means and the corresponding circular peripheral face portion of the respective other control face, whereby due to the suppression of the hydrodynamic pressure field between said support rim means and said corresponding peripheral face portion the rate of wear of said support rim means is substantially equal to the rate of wear of said sealing face portions which is caused by said particles.

3,851,670

FLUIDIC FREQUENCY FILTER

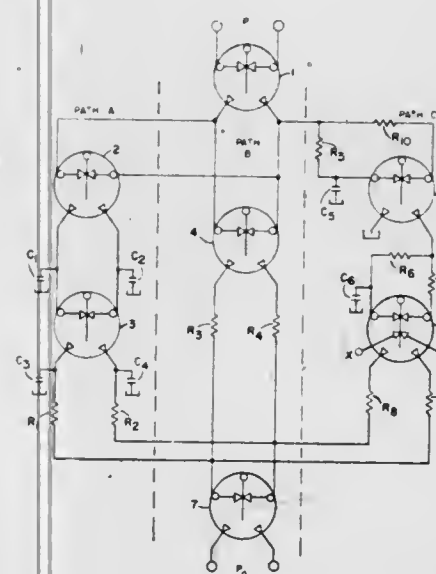
Carl G. Ringwall, Scotia, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 12, 1973, Ser. No. 378,488

Int. Cl. F15c 1/14

U.S. Cl. 137-814

8 Claims



1. A fluidic frequency filter including first, second, and third parallel fluid paths having a common fluidic signal input; a fluidic output summer for said paths; said first fluid path including fluidic frequency sensitive means for introducing a

time lag to signals on said input; said second fluid path including fluidic means for providing a proportional gain to signals on said input; and said third fluid path including fluidic frequency sensitive means for introducing a time lag and fluidic means for providing a gain k to signals on said input whereby k is greater than 1.

3,851,671

SNAP-ON LEAK PROOF CLAMP

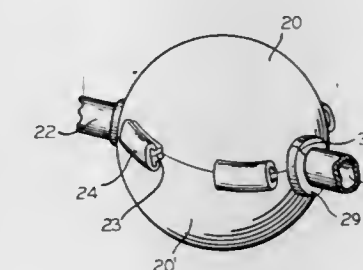
John H. Miller, Rt. 4, Box 300, Manitowoc, Wis. 54220

Filed Jan. 2, 1973, Ser. No. 320,158

Int. Cl. F16I 55/16

U.S. Cl. 138-99

3 Claims



1. A snap-on leak proof clamp assembly for preventing or repairing leakage at the coupling of underground pipelines, said clamping assembly comprising a plastic housing sufficiently large to non-contiguously enclose ball type couplings, said housing comprising first and second semi-spherical sections having flat contact surfaces on the ends thereof, said housing having spherical shape and including openings for the ingress and egress of said pipelines, said openings including gasket means for sealing the openings around the pipelines, the first of said sections including a circumferential groove on the flat contact surfaces end thereof, said second section flat contact end surface including circumferential tongue means for fitting into said groove to seal said spherical housing when said first and second sections are forced together, flange means integrally formed on each end of each of the sections at the junction point of each of said sections, and a plurality of resilient clamps slidable over said flange means for sealing said sections together to seal said spherical housing.

3,851,672

HOSE ASSEMBLY WITH PREPOSITIONED HOSE MOUNTING BRACKET

Patsy De Vincent, Dayton, and John V. Hepke, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1973, Ser. No. 361,781

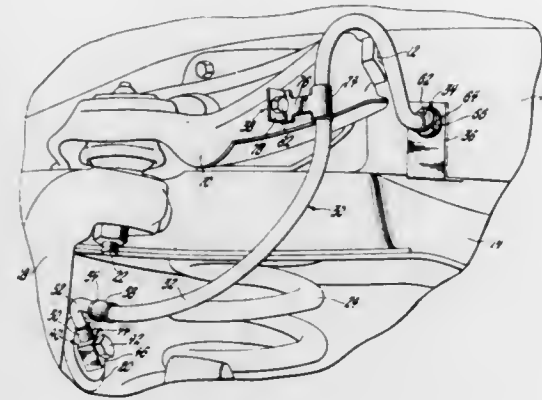
Int. Cl. F16I 3/12

U.S. Cl. 138-106

2 Claims

1. A hose assembly including a flexible hose of a predetermined length, a first hose fitting secured to one end of said hose and having mounting orientation means thereon, a second hose fitting having orientation guide means thereon, said second hose fitting being secured to the opposite end of said hose with said orientation guide means thereon at a predetermined angular relation with respect to said mounting orientation means of said first hose fitting when said hose is in a straight, relaxed, untwisted condition and, a hose support bracket having a hose clamp portion and an apertured mounting flange, said hose clamp portion of said hose support bracket being secured to said hose intermediate the ends thereof at a predetermined distance from said mounting orien-

tation means of said first hose fitting with said apertured mounting flange located at a predetermined angular relation-



ship relative to said orientation guide means of said first hose fitting when said hose is in said straight, relaxed, untwisted condition.

3,851,673

MOUNTING ASSEMBLY FOR EXHAUST PIPE

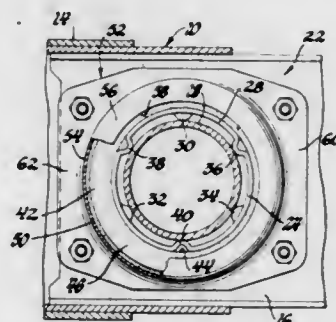
Ralph H. Merkle, Brighton, and Malcolm H. Humbert, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 362,466

Int. Cl. F16I 3/00

U.S. Cl. 138-106

2 Claims



1. A mounting assembly for resiliently supporting an exhaust pipe within an aperture provided in a vehicle frame, said mounting assembly including a tubular collar having an inner diameter larger than the outer diameter of said exhaust pipe and adapted to encircle a portion of the exhaust pipe within said aperture, said collar having a pair of opposed end portions provided with circumferentially spaced and radially inwardly projecting dimples, means securing said dimples at spaced points to the outer surface of the exhaust pipe so as to provide an annular air space between said outer surface and said collar for air to flow therethrough, a ring-shaped grommet of elastomeric material adapted to be frictionally supported by said collar, a retainer bracket having a well formed therein corresponding in configuration to said grommet, a circular opening centrally formed in said well having a diameter greater than the outer diameter of said collar, said retainer bracket adapted to receive the grommet in said well and compressively secure a portion of said grommet to said frame so as to allow said exhaust pipe to be resiliently supported for longitudinal and radial movement relative to said frame.

3,851,674
SUPPLEMENTARY RACEWAY FOR AN UNDERFLOOR ELECTRICAL CABLE TRENCH

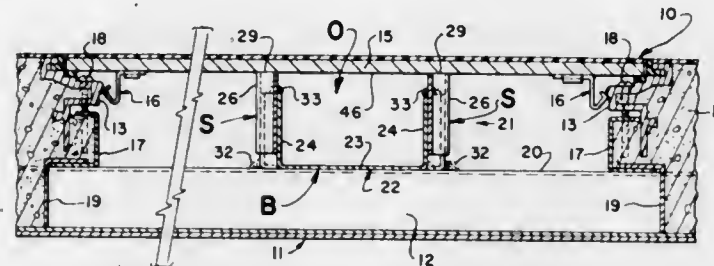
Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Dec. 27, 1971, Ser. No. 212,499

Int. Cl. F16I 9/00

U.S. Cl. 138-173

6 Claims



1. In a supplementary raceway having a generally U-shaped configuration including a bottom wall provided with longitudinally spaced-apart openings and upstanding side walls integrally formed along the opposite longitudinal edges of said bottom wall, the improvement comprising:

said upstanding side walls having vertically presented corrugations which enhance the column strength of the said side walls, said side walls presenting sinuous upper edges; side plates, one adjacent to each of said upstanding side walls and adjustable relative thereto, each of said side plates being provided with vertically presented corrugations mating with the said corrugations of said side walls; and

means for securing each of said side plates to the adjacent upstanding side wall in vertically adjusted relation.

3,851,675

POSITIVE DOBBY

Rudolf Schwarz, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

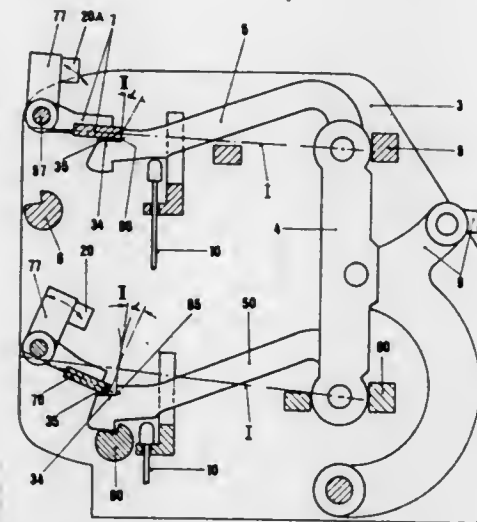
Filed Mar. 22, 1973, Ser. No. 343,888

Claims priority, application Switzerland, Mar. 28, 1972, 4627/72

Int. Cl. D03c 1/06

U.S. Cl. 139-71

17 Claims



1. A positive dobby of the Hattersley type, comprising: a baulk; draw hooks extending from and pivoted on the ends of said baulk for patterned movement, said draw hook having a normal, lifted position and a further, lower position; draw knives mounted for back-and-forth movement beneath corresponding draw hooks and engageable with

corresponding lowered draw hooks; a stationary member engageable by the pivoted end of said draw hooks;

pivotable stop means extending toward and overlying said draw hook and in one position thereof tightly longitudinally pressing against said draw hook in the normal lifted position of the latter for longitudinally urging said draw hook against said stationary member, wherein longitudinally opposed locking surfaces of said stop means and draw hook abut in a tight, play-free manner at a location between the pivot axis joining said draw hook to said baulk and the pivot axis of said stop means, said stop means including a portion thereof positively engageable with the upper side of said draw hook for pushing transversely thereon;

drive means adapted to urge said pivotable stop means out of said one position in a direction toward said draw hook for positively pushing said draw hook toward its further, lower position.

3,851,676

WEFT THREAD INSERTING DEVICE FOR SHUTTLELESS LOOMS

Nikolaus Kokkinis, Eriskirch, Germany, assignor to Lindauer Dornier Gesellschaft mbH., Lindau/Bodensee, Germany

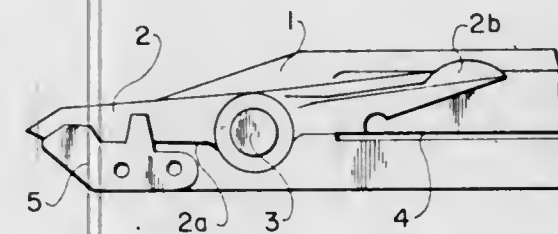
Filed May 15, 1973, Ser. No. 360,430

Claims priority, application Germany, Aug. 14, 1972, 2240009

Int. Cl. D03d 47/20

U.S. Cl. 139-122 N

2 Claims



1. In a weft thread inserting device for shuttleless looms comprising gripper rods which move in a reciprocating fashion and laterally engage into the shed, and wherein gripper heads positioned at the forward end of the gripper rods are equipped with clamping means for the weft thread comprising a movable clamping part and a stationary counter bearing, the improvement comprising a soft elastic base means mounted at the counter bearing, and rigid, wear resistant top means floatingly positioned thereon.

3,851,677
SHUTTLE LOOM

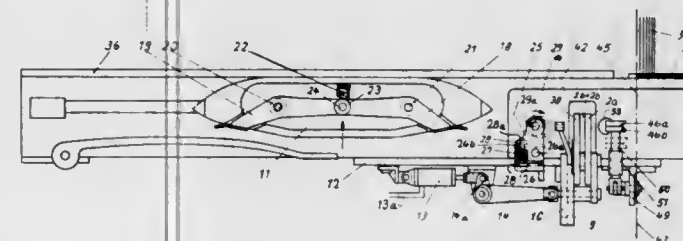
Werner Rosshorg, Hamburg, Germany, assignor to Alfa-Laval Bergedorfer Eisenwerke GmbH, Hamburg, Germany

Filed Aug. 13, 1973, Ser. No. 387,068

Int. Cl. D03d 47/24; D03j 5/06

U.S. Cl. 139-125

21 Claims



1. In a shuttle loom, a combination comprising a sley, a shuttle track on said sley, at least one shuttle having gripper

means for releasably engaging a weft thread to be inserted by said shuttle into a warp shed, guide means for guiding a weft thread drawn from a weft thread supply into the path of said gripper means of said shuttle, cutting means for cutting the inserted weft thread so as to sever an inserted portion thereof from a supply portion, holding means for holding the severed supply portion, releasing means for opening said gripper means so as to release the engaged weft thread, mounting means mounting said guide means, cutting means and holding means on said sley for common movement transverse to said track between a laterally retracted position and an operative position in which the guide means are located above the path of said shuttle on said track, and said cutting means and said holding means are located below said guide means for movement between an open position located in the path of movement of said shuttle, and a closed position located below the path of movement of said shuttle.

3,851,678

FILLING THREAD TRANSFER AND CLAMPING DEVICE
Walther Filter, Langenhagen, Germany, assignor to Vereinigte Österreichische Eisen-Und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfeld & Co., Schaan, Liechtenstein

Filed Aug. 13, 1973, Ser. No. 387,722

Claims priority, application Austria, Aug. 18, 1972, 7141/72

Int. Cl. D03d 47/24

U.S. Cl. 139-126

4 Claims



1. In a loom, the combination comprising
1. a carrying structure defining a shuttle race extending in a longitudinal direction,
2. a shuttle body carried by the structure on the shuttle race and movable therealong in the longitudinal direction,
a. the shuttle body having a fell side,
3. a jaw clamp carried by the shuttle body and protruding laterally from the fell side thereof in a direction transverse to the longitudinal direction of the shuttle race,
a. the jaw clamp being spring-biased to a closed position,
4. an expanding member carried by the shuttle body and operable to cause the jaw clamp to be opened about a parting plane against the spring bias of the jaw clamp,
a. the jaw clamp opening and closing in respect of the parting plane about an axis extending in the longitudinal direction of the shuttle race,
5. stops carried by the structure adjacent the shuttle race and engageable by the expanding member to operate the expanding member so as to cause the jaw clamp to be opened as the shuttle member moves along the shuttle race, and
6. two filling thread feed tubes spaced apart in the longitudinal direction of the shuttle race and laterally adjacent

thereto on the fell side of the shuttle body, each feed tube having

- a. an outlet end with an axis extending in the parting plane of the jaw clamp and extending transversely to the longitudinal direction of the shuttle race, and
- b. a tubular nozzle fitted on the outlet end and adapted to discharge a tubular air stream about the axis of the feed tube outlet end in a direction transverse to, and towards, the shuttle race, the tubular air stream being adapted to hold a filling thread portion protruding from the outlet end in a centered position in alignment with the parting plane of the jaw clamp when the same moves in an open position past the outlet end whereby the protruding filling thread portion is received in the open jaw clamp.

3,851,679

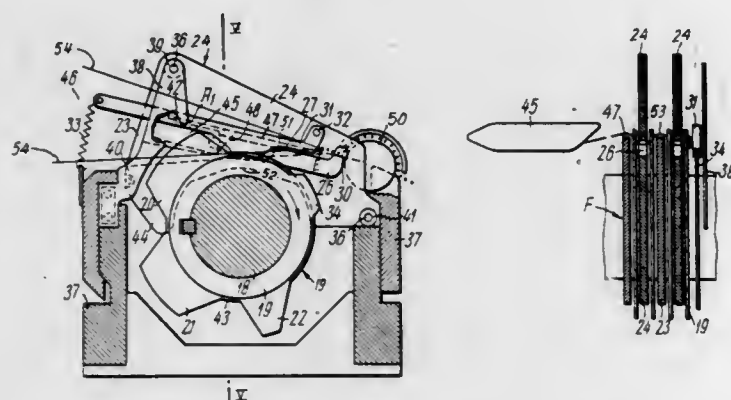
DEVICE FOR RETAINING THE END OF A WEFT THREAD IN LOOMS

Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa, 27, korpus 2, kv. 49; Alexandr Aronovich Rotenburg, ulitsa Krupskoi, 3, kv. 19, and Leonid Mikhailovich Pevzner, 3 linia, 13, kv. 6, all of Moscow, U.S.S.R.

Filed Feb. 28, 1973, Ser. No. 336,714
Int. Cl. D03d 45/50, 47/00

U.S. Cl. 139—194

8 Claims



1. A device for retaining the end of a weft thread in shuttleless looms including a reed with teeth for beating up the weft thread to the fell of the cloth being woven and a weft thread carrier, said device comprising: means for retaining the ends of the weft thread, said retaining means including two groups of contoured plates arranged at both sides of said reed; said plates having elongated portions received intermediate of said teeth of said reed, said plates further having cutouts and lugs; axes supporting said contoured plates in a spaced relationship; said two groups of said contoured plates being arranged so that said cutouts thereof define a channel for the passage of said weft thread carrier and said lugs of said said plates of one of said two groups being received intermediate of said lugs of said plates of the other of said two groups to partly overlap one another so that the respective ends of said weft thread will be bent in succession about said lugs.

3,851,680

MISSING PICK SENSOR

Fletcher A. Murray, West Columbia, S.C., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 21, 1973, Ser. No. 334,499
Int. Cl. D03d 51/18, 51/34

U.S. Cl. 139—348

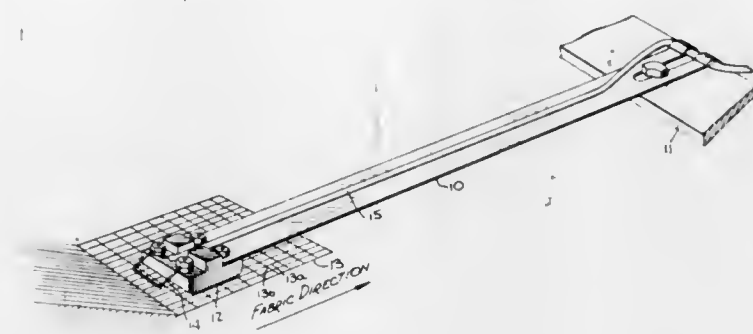
4 Claims

1. In apparatus for stopping a loom for weaving fabric having wire warps when a pick is missing, a missing pick sensor comprising:

- a resilient member attached to the loom;
- a member of insulating material attached to said resilient member and bearing on woven fabric having wire warps

during normal operation of the loom when no picks are missing from the fabric;

- a conductive member supported by said insulating member and extending from said insulating member and positioned over the wire warps near the point of weaving a pick through the wire warps;



and circuit means for conductively coupling said conductive member to a loom stop-motion circuit, said conductive member being so positioned on said insulating member as to be out of contact with the wire warps when no picks are missing and to make contact with the wire warps when a pick is missing, the wire warps forming a portion of the loom stop-motion circuit.

3,851,681

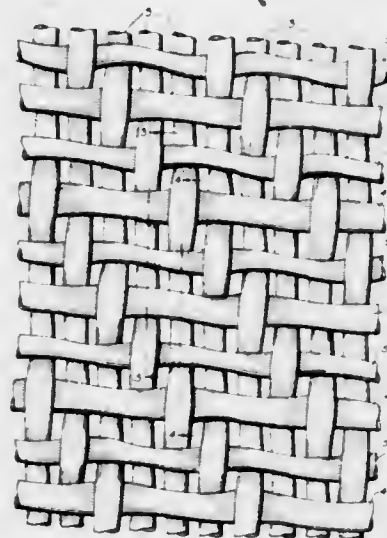
WOVEN PAPERMAKING DRAINAGE FABRIC HAVING FOUR SHED WEAVE PATTERN AND WEFT THREADS OF ALTERNATING DIAMETER

Cleon J. Egan, Kaukauna, Wis., assignor to Albany International Corp., Appleton, Wis.

Filed Apr. 18, 1973, Ser. No. 352,320
Int. Cl. D21f 1/10

U.S. Cl. 139—420 R

7 Claims



1. In a Fourdrinier papermaking drainage fabric of interwoven warp and weft threads, the combination of:
a four shed weave pattern with both the warp threads and the weft threads passing around one of the other threads on one side of the fabric and then around three of the other threads on the opposite side of the fabric;
the warp threads being of substantially uniform diameter;
the weft threads being of an all synthetic material and alternating in diameter with every second thread being of a diameter larger than the alternate threads therebetween, the difference in weft thread diameters being at least 10 percent of the smaller weft thread diameter; and
crests of warp knuckles on the wear side of the fabric being recessed within weft knuckle crests.

3,851,682

DIGITALLY CONTROLLED WINDING APPARATUS AND METHOD

Ralph A. Vogel, Three Rivers, Mich.; Donald L. Anderson, Fort Wayne, Ind.; Robert A. Chattin, Mundelein, and Joel L. Mosak, Glenview, both of Ill., assignors to Essex International Inc., Fort Wayne, Ind.

Filed June 4, 1973, Ser. No. 366,368
Int. Cl. B21f 3/04

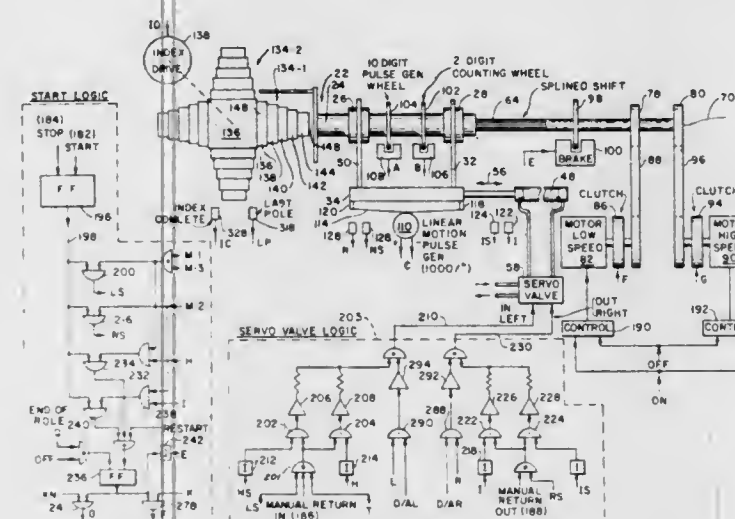
U.S. Cl. 140—92.1

27 Claims

U.S. Cl. 140—93.4

Int. Cl. B21f 9/02

12 Claims



1. In apparatus for winding at least two concentric dynamo-electric machine field coils upon a coil form having at least two steps of progressively smaller size, said apparatus including:

- flyer means mounted on a shaft for winding wire upon said steps to form said coils,
 - means for rotatably supporting said shaft,
 - first drive means for rotating said shaft and flyer means relative to said coil form,
 - and means for mounting said supporting means for linear movement parallel with the axis of said shaft,
- the improvement comprising:
- linear-acting fluid power drive means for moving said supporting means linearly on said mounting means thereby to traverse said flyer means with respect to said coil form,
 - a. first means for generating a first electrical signal having a first characteristic proportional to a predetermined incremental linear movement of said supporting means,
 - b. second means for generating a second electrical signal having a second characteristic proportional to a predetermined incremental angular movement of said shaft,
 - c. means for comparing said first and second characteristics and for generating an electrical error signal in response to a difference therein,
 - d. means for controlling the speed of one of said drive means in response to said error signal thereby to provide a predetermined pitch for said coils,
 - e. manually adjustable means for selectively varying the ratio of one of said first and second characteristics with respect to the respective incremental movement thereby to vary said pitch,
 - f. means for generating a third electrical signal having a third predetermined characteristic in response to completion of winding the first of said coils on the first of said coil form steps,
 - g. and means for applying said third signal to said comparing means for comparison of its characteristics with said first signal characteristic and generation of a second error signal in response to a difference therein, said controlling means (d) also controlling the speed of one of said drive means in response to said second error signal thereby to provide a connection having a predetermined pitch between said first coil and the second coil on the second one of said coil form steps.

3,851,683

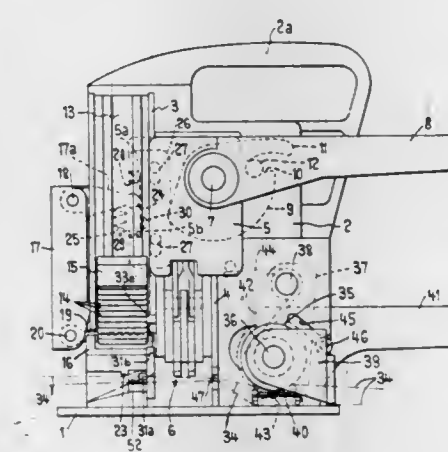
SEALING DEVICE

Heinrich Glaus, Niederwangen, and David Jeanmaire, Hinterkappelen, both of Switzerland, assignors to Strapex AG, Wohlen, Aargau, Switzerland

Filed Jan. 12, 1973, Ser. No. 322,982

Claims priority, application Switzerland, Jan. 22, 1972, 902/72

Int. Cl. B21f 9/02



1. Sealing device for applying seals to overlapping strips, comprising clamping means for securing the seals to the strips, a seal magazine disposed adjacent said clamping means to support a stacked array of seals, stripping means coupled with said seal magazine for inserting a seal from said stacked array into said clamping means, a common actuating lever for said clamping means and said stripping means, an actuating spring coacting with said stripping means to bias the same in a seal inserting direction, lost motion coupling means between said common actuating lever and said stripping means wherein said actuating lever displaces an open seal toward the strips during a first part of actuating motion and causes said clamping means to close the displaced seal about the strips during a second part of such actuating motion and wherein said stripping means is moved to a starting position for stripping off a new seal from said magazine at the end of said second part of said actuating motion when said displaced seal is completely closed, said actuating spring having a force sufficient for displacing a seal released from said magazine but insufficient for releasing a seal from said magazine, return movement of said actuating lever causing said lost motion coupling means to reach the end of its lost-motion stroke for positively actuating said stripping means to release a seal which is thereafter immediately shifted into said clamping means by said actuating spring.

3,851,684

METHOD AND APPARATUS FOR ASSEMBLING FLEXIBLE SHEET MATERIAL INTO FRAMES

Auvis Malvin Wyrick, P.O. Box 853, Magnolia, Ark. 71753

Filed May 9, 1973, Ser. No. 358,474

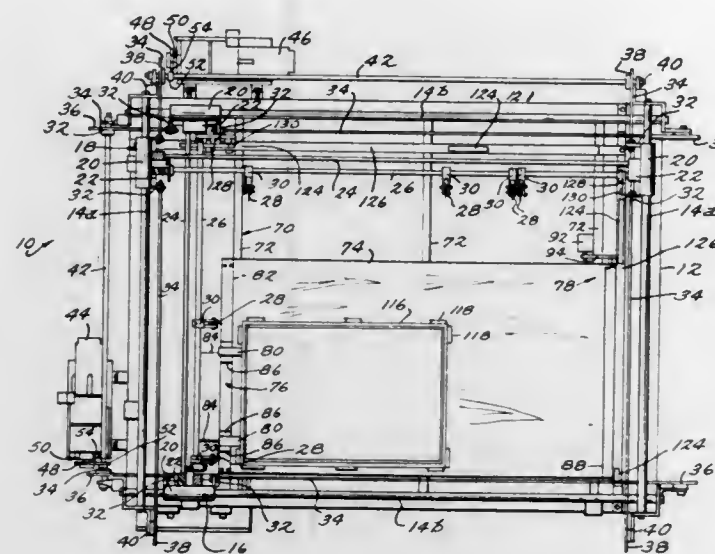
Int. Cl. B21f 33/00

U.S. Cl. 140—109

14 Claims

1. Apparatus for assembling flexible sheet material into a grooved frame comprising:
a support surface;
means to affix the frame to the surface and the sheet material over the frame and the grooves thereof;
a first carriage means having two rollers thereon;
means to move the first carriage means across the frame to roll the sheet material into the grooves on two sides of the frame;

a second carriage means having two rollers thereon; and means to move the second carriage means across the frame



to roll the sheet material into the grooves on the remaining two sides of the frame.

3,851,685

CONTINUOUS PRESS

Karl-Heinz Ahrweiler, Krefeld; Valentin Appenzeller, Kempen/Ndrh; Kurt Quos, Krefeld, and Eduard Kusters, Krefeld-Forstwald, all of Germany, assignors to Eduard Kusters Maschinenfabrik, Krefeld, Germany

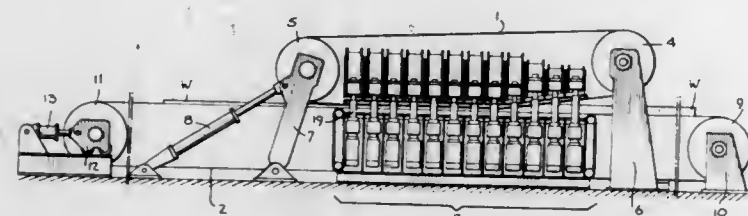
Filed Nov. 21, 1972, Ser. No. 308,556

Claims priority, application Germany, Nov. 22, 1971, 2157746; Oct. 5, 1971, 2248760

Int. Cl. B27d 3/04

U.S. Cl. 144—281 B

10 Claims



1. An improved continuous press including endless loops formed by longitudinally and transversely flexible conveyor belts which form opposed, substantially linear spans defining a pressing zone, means for rotatively driving at least one of said loops to drive said spans in the same direction, press platens applying pressure through said traveling spans to work carried therebetween, and anti-friction means interposed between said platens and said spans; wherein the improvement comprises said anti-friction means being formed by a multiplicity of endless loops of rotatively unpowered roller chains forming a bed interposed between said platens and said belt spans, said roller chain spans being transversely packed together but each chain being individually free to travel independently with respect to the others and said belt spans.

3,851,686
METHOD AND APPARATUS FOR FELLING TREES
Gustaf Matteus Hultdin, and Ove Anders Hultdin, both of Mala, Sweden, assignors to Hultdins Verkstads AB, Mala, Sweden

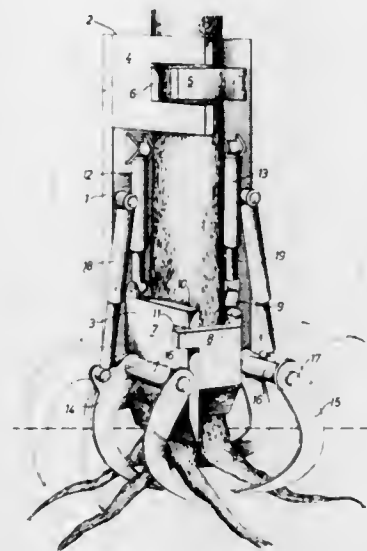
Filed Dec. 14, 1973, Ser. No. 424,824

Claims priority, application Sweden, Jan. 12, 1973, 7300385

Int. Cl. A01q 23/08

U.S. Cl. 144—309 AC

3 Claims



1. A method of felling trees by separating the roots from the trunk of a tree so that said roots remain substantially in their original position under the ground, using an apparatus operated from a vehicle via crane or operating levers and comprising a frame joined to the operating levers, said frame being in the form of a substantially rectangular plate and a machining member having cutting means for cutting off said roots, said machining member being displaceable along the frame by means of force-transmitting means, the method being characterized by pressing a counter-member journaled in the frame down through the ground in the vicinity of the root section of the tree after the frame has been aligned with the trunk of the tree, so that said counter-member will be brought to engage from below in the ground with the root section or parts thereof, and forcing down said cutting means through existing roots to separate these from the trunk of the tree, against the action of said counter-member beneath.

3,851,687

PENCIL SHARPENER

Marcellus Jones, 12989 Desmond St., Pacoima, Calif. 91331

Filed Oct. 15, 1973, Ser. No. 406,200

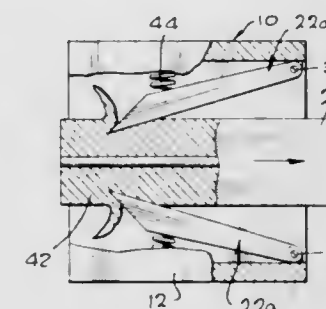
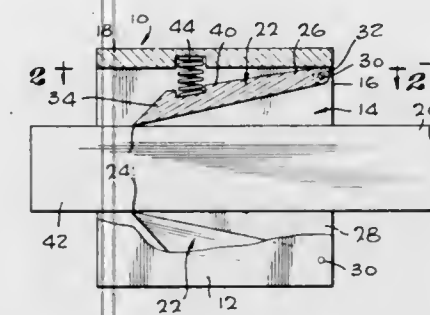
Int. Cl. B43l 23/06

U.S. Cl. 145—3.1

1 Claim

1. An improved pencil sharpener for sharpening pencils or other instruments having various cross-sections, said sharpener comprising, in combination:
a container having a pair of upper and lower opposed, parallel panels and a pair of opposed, parallel side panels, a first pin journaled in said side panels at the front thereof and adjacent to said upper panel,
a second pin journaled in said side panels at the front thereof and adjacent to said lower panels,
a first cutting blade pivotally secured by and rotatable about said first pin,
a second cutting blade pivotally secured by and rotatable about said second pin,
said first and second cutting blades having a cutting surface disposed on the end of each blade which is opposite the ends thereof secured to said pins,
said upper and lower panels having recesses therein on the sides facing the interior of the container,
resilient biasing means disposed in each said recess adapted to contact the blade portion opposite said recess and to prevent rotation of said blades about said pins, a recess formed in the first and second cutting blades, said resilient biasing means consisting of a pair of coil springs, said recesses in the upper and lower panels being round and adapted to receive one end of the coil springs, said recess in the cutting blades being round and adapted to receive the opposite end of the coil springs, whereby said coil springs are locked in place to prevent lateral movement thereof, but to allow freedom of compression and expansion of the coil springs in response to insertion or removal of a pencil from the container.

to contact the blade portion opposite said recess and to prevent rotation of said blades about said pins, a recess formed in the first and second cutting blades, said resilient biasing means consisting of a pair of coil springs, said recesses in the upper and lower panels being round and adapted to receive one end of the coil springs, said recess in the cutting blades being round and adapted to receive the opposite end of the coil springs, whereby said coil springs are locked in place to prevent lateral movement thereof, but to allow freedom of compression and expansion of the coil springs in response to insertion or removal of a pencil from the container.



adapted to receive one end of the coil springs, said recess in the cutting blades being round and adapted to receive the opposite end of the coil springs, whereby said coil springs are locked in place to prevent lateral movement thereof, but to allow freedom of compression and expansion of the coil springs in response to insertion or removal of a pencil from the container.

3,851,688

CONTAINER OF FLEXIBLE MATERIAL

Jan Gerrit de Winter, Enschede, Netherlands, assignor to Nicolon N.V., Enschede, Netherlands

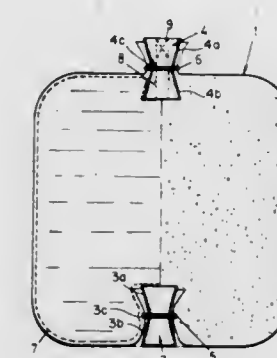
Filed June 27, 1972, Ser. No. 266,680

Claims priority, application Netherlands, June 28, 1971, 7108899

Int. Cl. B65d 33/16

U.S. Cl. 150—8

10 Claims



1. A container or the like, comprising the combination of a tubular member of flexible material; a removable, elongated, rigid closure member for one end of said tubular member around which the flexible material can be gathered; and a retainer means with which said flexible material can be surrounded to secure said one end of said tubular member to said closure member, said retainer means engaging only said tubular member and said enclosure member having two frustoconical segments sloping inwardly to a juncture intermediate the ends of the closure member and being free of attachment to said tubular member whereby, with said one end of said tubular member secured to said closure member at said juncture by said retainer means, the exertion of a relative longitudinal force between said closure member and said tubular member tending to separate said members will displace said retainer means toward a larger diameter part of one of the frustoconical segments of the closure member, thereby increasing the resistance to separation of the closure member from said one end of said tubular member by wedging the flexible material with greater force between the closure member and the retainer means.

3,851,689
FOLDABLE SKI COVER

Richard S. Kohls, 415 1st North, Seattle, Wash. 98109

Filed Sept. 13, 1973, Ser. No. 396,691

Int. Cl. A45c 11/00

U.S. Cl. 150—52 R

12 Claims



1. A bag for carrying and storing a pair of skis therein, said bag being of a flexible, substantially waterproof material, comprising:
a. an elongated, generally tubular front portion having a closed front end for receiving the forward ends of a pair of skis;
b. an elongated, generally tubular rear portion for receiving the rear ends of said pair of skis, said rear portion being of greater cross-sectional area than said front portion, the rear of said rear portion being open for inserting said pair of skis therein;
c. an intermediate portion having a front end integral with said front portion and a rear end integral with said rear portion, the cross-sectional area of said intermediate portion increasing continuously from its front end to its rear end, said intermediate portion communicating with said front and rear portions to form a continuous, elongated bag, said bag being longer than said skis and said open end of said rear portion adapted to be folded on itself to close said bag;
d. a flexible partition in said bag extending longitudinally substantially the entire length of said bag dividing said bag into two compartments, each compartment adapted to receive one of said pair of skis; and
e. a plurality of separable fastening means distributed along the length of said bag for fastening said bag around said skis to hold said skis in position, at least one of said fastening means being adapted to be folded on itself to close said bag.

tening means disposed adjacent said open end of said rear portion.

3,851,690

MECHANISM FOR SECURING A NUT AGAINST LOOSENING

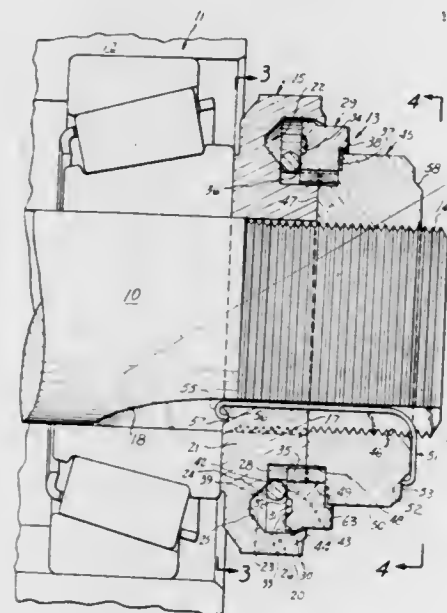
George S. Wing, Palos Verdes Estates, and Harry L. Bochman, Jr., Seal Beach, both of Calif., assignors to Hi-Shear Corporation, Torrance, Calif., by said Bochman, Jr.

Filed Sept. 24, 1973, Ser. No. 400,215

Int. Cl. F16b 39/02

U.S. Cl. 151-8

11 Claims



1. Mechanism for locking a nut on a threaded spindle having a central longitudinal axis, comprising:
 - a washer having a hub portion adapted to fit over said spindle and a peripheral portion providing an annular recess having a base, between the peripheral and hub portions, and having a plurality of first serrations extending radially outward from said hub portion toward said peripheral portion;
 - means for keying said washer to said spindle so that the washer cannot rotate but can slide axially relative to said spindle;
 - an annular ring member at least partially within said annular recess providing an annular region between the annular ring member and the base of the annular recess, said ring member having a plurality of second serrations extending radially inward therefrom and matching and engaging said first serrations;
 - a resiliently strainable ring whose diameter can be enlarged and contracted, within said annular region;
 - a threaded nut adapted to thread on the threaded spindle and to abut the washer, and containing a plurality of third serrations extending radially outward and adapted to engage said second serrations;
 - said annular recess having a side portion which slants in a direction away from the axis toward its base, and said resiliently strainable ring when unstrained being located at a position of said side portion remote from the base so that when pressure is applied to the annular ring member in the direction of the base of the recess, the annular ring member moves axially toward said base to disengage its serrations from the serrations of the nut, and at the same time the strainable ring is moved toward said base along said slanting side portion and its diameter is resiliently altered, whereupon the nut can be turned on the spindle, and when said pressure is released the strainable ring moves out of the base and pushes the annular ring member into a position where its serrations are in engagement with the nut serrations, thereby locking the nut.

3,851,691

PNEUMATIC TIRES

Tom French, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

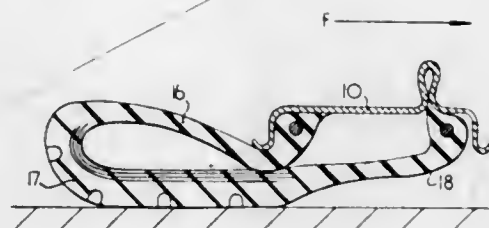
Filed Sept. 21, 1972, Ser. No. 290,814

Claims priority, application Great Britain, Sept. 29, 1971, 45306/71

Int. Cl. B60c 13/00

U.S. Cl. 152-353

12 Claims



1. A pneumatic tire having an aspect ratio of less than 75 percent comprising bead portions, a braced tread portion having a substantially flat ground contacting surface and a pair of flexible sidewalls of mutually equal length extending between the bead portions and the tread portion; the tire, when mounted on a wheel rim and normally inflated having a cross section wherein:
 1. the tread portion has a width greater than the distance between the bead heels in a ratio of at least 1.35 to 1;
 2. the length of the sidewalls is such that the maximum internal section width of the tire occurs, at a distance measured radially, not greater than 40 percent of the total internal section height from the tread portion;

so that when the tire is deflated and subjected to a lateral force a restraint to lateral movement of the tread portion in relation to its wheel is caused by one sidewall being placed in tension between the tread contact patch and its bead and the other sidewall being folded between the edge of the tread portion and its bead, the lateral stiffness of the tread portion tending to resist any greater folding.

3,851,692

PNEUMATIC TIRES

Satoshi Takemura; Katsuyuki Harakon; Mitsuaki Maeda; Noboru Sakai, and Etsuko Hamano, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,169

Claims priority, application Japan, Dec. 29, 1972, 48-3221

Int. Cl. B60c 9/22

U.S. Cl. 152-361 R

3 Claims

1. Pneumatic tires reinforced with a carcass and a breaker and comprising a tread portion, a pair of side portions extending to both the shoulders of the tread portion and a pair of bead portions formed on each inner periphery of the side portions, characterized in that said carcass is composed of polyester fiber or 6,6-nylon fiber cord layer and said breaker is composed of a layer wherein aromatic polyamide fiber cords having a tenacity of more than 10 g/d, an initial modulus of more than 150 g/d, and a twisting coefficient of cable twist of 0.10 - 0.60 and that of ply twist of 100 - 200 percent based on the cable twist, said twisting coefficient being represented by the following formula

$$NT = N \times 0.139 \times D / \rho \times 10^{-3}$$

wherein NT represents the twisting coefficient, N is a twist number per 10 cm, D is one-half of total denier of cord and ρ is specific gravity of fiber, are embedded in parallel in a rubber having 300 percent modulus of 130 - 250 Kg/cm² and arranged in an angle of 5° - 38° against the circumferential direction.

3,851,693

RADIAL TIRE

Satoshi Takemura; Katsuyuki Harakon; Mitsuaki Maeda; Noboru Sakai, and Etsuko Hamano, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 18, 1973, Ser. No. 425,904

Claims priority, application Japan, Dec. 29, 1972, 47-3222

Int. Cl. B60c 9/22

U.S. Cl. 152-361 DM

3 Claims

1. A radial tire, reinforced with a carcass having cords arranged in a direction perpendicular to the circumferential direction of the tire and with a breaker surrounding the carcass, and having a tread portion, a pair of side portions extending to both the shoulders of the tread portion and a pair of bead portions formed on each inner periphery of the side portions, characterized in that said breaker is composed of a composite layer consisting of a metal cord layer, in which steel cords are embedded in parallel in a rubber having a 300 percent modulus of 150 - 250 Kg/cm² at an angle of 5° - 25° against the circumferential direction of the tire, and a fiber cord layer, in which aromatic polyamide fiber cords having a tenacity of more than 10 g/d, an initial modulus of more than 150 g/d and a twisting coefficient of cable twist of 0.10 - 0.60 and that of ply twist of 100 - 200 percent based on the cable twist, said twisting coefficient being represented by the following formula:

$$NT = N \times 0.139 \times D / \rho \times 10^{-3}$$

wherein NT is twisting coefficient, N is number of twists per 10 cm of the cord, D is one-half of total deniers of the cord and ρ is specific gravity of the fiber, are embedded in parallel in a rubber having a 300 percent modulus of 130 - 250 Kg/cm² at an angle of 0° - 45° against the circumferential direction of the tire.

3,851,694

WHEEL RIM PROTECTOR

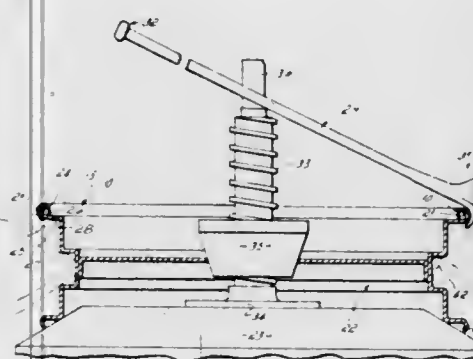
William G. Brosene, Jr., Cincinnati, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio

Filed Sept. 24, 1973, Ser. No. 400,389

Int. Cl. B60c 25/00

U.S. Cl. 157-1

4 Claims



1. A method of protecting a rim of a wheel during the mounting or demounting of a tire, including the steps of slitting a length of generally toroidal shaped tubing longitudinally along its length from one end to the other, said tubing having spring characteristics that cause the opposed sides of said slit to grip said wheel's rim throughout substantially the entire length of said tubing after being seated on said wheel's rim, and thereafter seating said tubing on said wheel's rim so as to protect said rim against scratching and marring from, as well as to provide a bearing surface for, a tire mount/demount tool during rotation of that tool about the rim as the tire is mounted onto or demounted from said wheel.

3,851,695

TUBELESS TIRE BEAD SEATING MACHINE

Bobby G. Kimberly, Albertville, Ala., assignor to Bomar Manufacturing Company, Inc., Boaz, Ala.

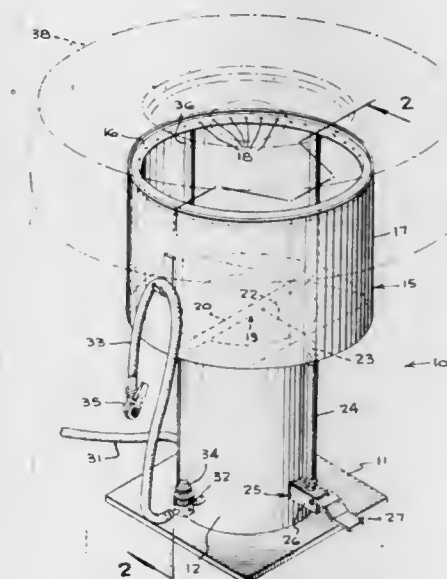
Continuation of Ser. No. 228,708, Feb. 23, 1972, which is a continuation of Ser. No. 89,773, Nov. 13, 1970, abandoned.

This application Feb. 2, 1973, Ser. No. 328,946

Int. Cl. B60c 25/12

U.S. Cl. 157-1.1

10 Claims



1. A machine for pneumatically seating the beads of a tubeless tire on the flanges of a wheel on which the tire had been loosely mounted, comprising a stationary upright supporting stand including a cylindrical upper section defining an upwardly opening cylindrical well and a lower pedestal section for supporting the upper section at a selected elevation above a floor, the upper section being concentric with a vertical axis, said upper section including an air conduit in the form of a stationary ring tube arranged in a horizontal plane at the top of the upper section forming an annular support against which the lower side wall of a tire will rest and providing a circular center opening of sufficient diameter to pass the lower wheel flange of the associated wheel downwardly therethrough, the ring tube having a plurality of circumferentially spaced air outlet openings for directing air toward the region between the lower wheel flange and lower tire bead to be injected into the tire, said stand including means defining a stationary surge tank having means for connection to a source of pressurized air to store a quantity of air at a selected pressure, and a valve regulated surge supply conduit communicating the surge tank with said ring tube to supply a surge of high pressure air to said ring tube for discharge through said air outlet openings toward the space between the lower tire bead and lower wheel flange and into the tire resting on the ring tube to quickly bulge said lower bead into sealing relation with the wheel flange.

3,851,696

TIRE REMOVER

Eino Pihlaja, 101 Machar Ave., Thunder Bay P, Ontario, Canada

Filed June 12, 1973, Ser. No. 369,257

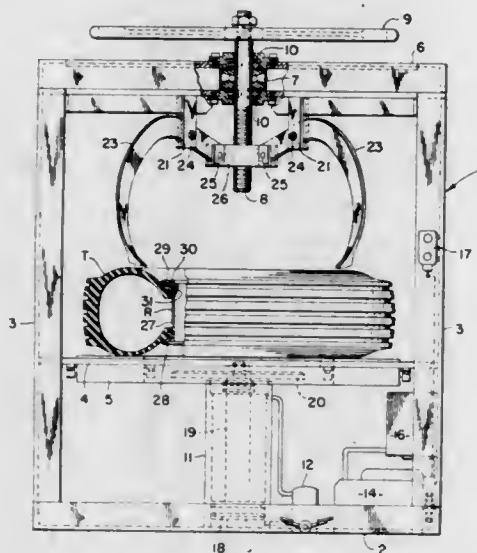
Int. Cl. B60c 25/08

U.S. Cl. 157-1.2

1 Claim

1. Apparatus for removing a truck tire from a rim having a fixed flange at one end adjacent one tire bead and a removable lock ring and flange at the other end adjacent the other tire bead, said apparatus comprising horizontal support means on which a tire and rim assembly is adapted to be supported with said lock ring and flange uppermost; a hydraulically actuated lifting member adapted when actuated upwardly through an opening in said support means to engage the lower end of said rim; an overhead support structure having a series of circumferentially spaced apart downwardly and inwardly curved

arms pivotally connected to said structure for movement of the lower ends thereof radially inwardly and outwardly along inclined paths corresponding generally with the inclination of the bead and adjacent sidewall portions of the tire; means on said structure for pivoting said arms to a position whereat the lower ends thereof overlie said removable flange whereby, upon upward actuation of said lifting member and rim engaged thereby, said lock ring is raised with respect to said removable flange and the top bead engaged with said flange to expose said lock ring for removal from said rim and for removal of said removable flange upon subsequent lowering of said lifting member; said tire and said rim without said locking ring and removable flange being adapted to be inverted on said support means for lifting of the rim and tire to a position whereat the integral flange is in the region of the lower ends of said arms so that said arms may be actuated inwardly to



wedge the lower ends thereof between said integral flange and the adjacent tire bead whereupon continued upward movement of the rim by said lifting member strips the rim from both beads of the tire, the space between successive arms enabling lateral removal of said rim from the apparatus; said lifting member, when subsequently lowered, passing through the beads of the tire supported by said support means and when said arms are swung outwardly to positions above the sidewall of the tire, said tire resting on said support means may be laterally removed from the apparatus; said arms having radially inwardly extending upper ends; and said means for pivoting said arms comprising an axially fixed screw rotatable in said structure, and a nut having screw-threaded engagement with said screw and a loose pivotal connection with said upper ends of said arms about pivots radially inward of the pivotal connections of said arms to said structure.

3,851,697

METHOD AND APPARATUS FOR FINISHING PNEUMATIC TIRES

Seiichiro Nishimura, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 30, 1972, Ser. No. 257,531

Claims priority, application Japan, June 7, 1971, 46-39277

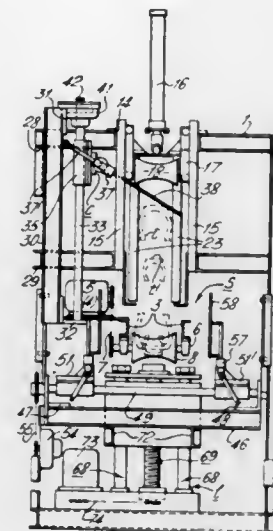
Int. Cl. B29h 21/08; B23b 3/22

U.S. Cl. 157-13

16 Claims

1. An apparatus for finishing molded vulcanized pneumatic tires of the type having means for rotating a molded vulcanized rubber tire and at least three rollers supporting and contacting a tread surface of the tire, comprising a frame, a carriage movably mounted to said frame, a first comblike blade pivotally mounted on said carriage, first moving means to move said carriage mounted to said frame, said first moving means being adapted to vertically move said carriage so that said first comblike blade is in contact with a tread surface of

the tire in a plane including its vertical diameter and rotating axis of the tire, two side carriages movably mounted to said frame, positioned on each side of the tire, a second moving means to move said side carriages mounted to said frame, a



second comblike blade pivotally mounted on each of said side carriages, said second moving means adapted to move said side carriages toward and away from each other and vertically in unison so that said second comblike blades may contact the sides of the tire.

3,851,698

MANUFACTURE OF MULTI-FOLD YARNS

Roger Leach, Shaw; Neil Doggett, Shuttleworth, and James Lappage, Middleton nr. Manchester, all of, Middleton NE. Manchester, all of England, assignors to Platt International Limited, Oldham, Lancashire, England

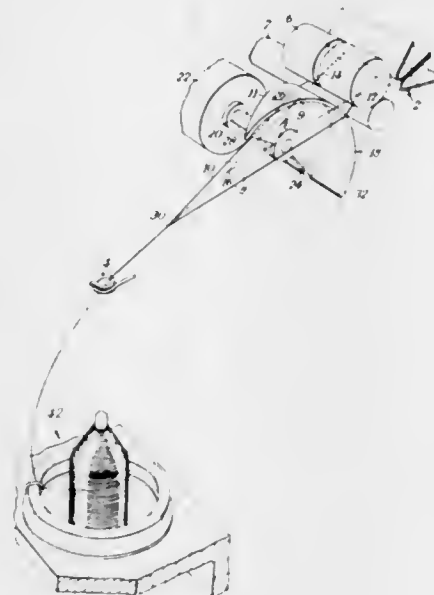
Filed Jan. 11, 1973, Ser. No. 322,870

Claims priority, application Great Britain, Jan. 14, 1972, 1904/72

Int. Cl. D01h 13/02, 1/02

U.S. Cl. 57-91

6 Claims



1. Apparatus for spinning a multi-ply yarn comprising: feed means for feeding two strands from spaced points in converging paths to a combining point, twisting means downstream of the combining point for inserting twist into the combined strands which runs back to the combining point, separating cam means having first and second camming edges and arranged between the feed means and the combining point,

separating cam drive means for rotating said separating cam means whereby one edge of the separating cam means engages one of the converging strands and the other edge of the separating cam means engages the other of the converging strands to increase progressively the separation of the strands to a maximum separation whereupon the strands disengage from said camming edges and decrease in separation.

3,851,699

VERTICAL LOUVER TYPE WINDOW DRAPE

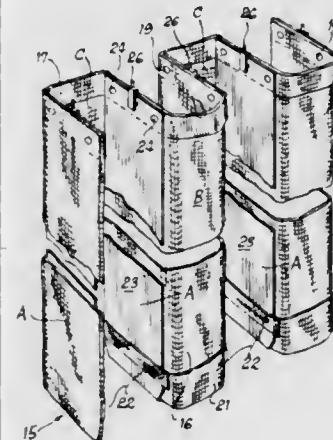
Harry Shapiro, 2534 S. Kedzie Ave., 2534 S. Kedzie Ave., Ill. 60623

Filed Jan. 26, 1973, Ser. No. 326,981

Int. Cl. E06b 9/26

U.S. Cl. 160-166

9 Claims



1. In combination with an apparatus for supporting and controlling the rotary and linear movement of a window covering including an elongated horizontal mounting member having a plurality of carriages movably supported thereon, each of said carriages having a rotatable depending supporting member and a vertical louver depending from each supporting member, first control means for effecting linear movement of said carriages and louvers longitudinally of said mounting member and second control means for effecting simultaneous rotary movement of each of said supporting members and louvers, each about a respective vertical axis, the improvement in said window covering which comprises a unitary flexible drape panel secured to said louvers at spaced intervals at least along the respective top edges thereof to provide alternate generally stiff and generally flexible panel sections with the planar surfaces of said drape panel and louvers being contiguous, said first and second control means being manually operable to selectively move said louvers to open light transmitting position wherein said generally stiff panel sections are arranged in parallel relation normal to the longitudinal axis of the mounting member and spaced from each other longitudinally of the mounting member, with the flexible panel sections between adjacent louvers being disposed alternately on opposite sides of the longitudinal axis of the mounting member in draped configuration, said first and second control means being operable to selectively move said louvers to closed light impeding position wherein said generally stiff panel sections are disposed in overlapping generally co-planar relationship and generally parallel to the longitudinal axis of the mounting member.

3,851,700

METHOD OF INOCULATING NODULAR CAST IRON

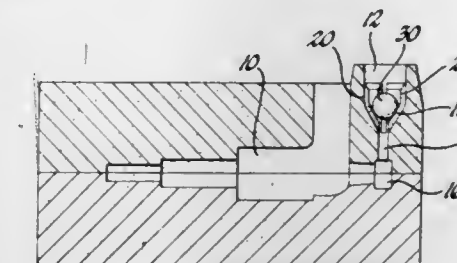
Donald A. McAfee, Defiance, and Thomas P. Newcomb, Wauseon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,482

Int. Cl. B22d 27/20

U.S. Cl. 164-57

7 Claims



1. A mold for inoculating molten nodular cast iron and immediately casting articles therefrom comprising a mold including a mold cavity and a gating system communicating therewith, said gating system including an open bottom pouring basin with the said bottom merging into a downwardly extending sprue passage of smaller cross-sectional dimensions at a throat-like region thereof, a ball shaped inoculant insert having a greater dimension than said passage disposed in said region, said region having a plurality of spaced radially inwardly extending projections supporting said ball insert and forming a plurality of passageways therebetween for conducting the molten metal from said pouring basin about said ball insert, to said passage and thence to said mold cavity.

3,851,701

GAS VENTING IN THE MANUFACTURE OF CHILLED ROLLS

George Souers, Mineral City, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

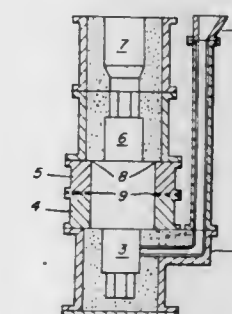
Continuation of Ser. No. 141,863, May 10, 1971, abandoned.

This application Nov. 30, 1972, Ser. No. 310,722

Int. Cl. B22d 15/00

U.S. Cl. 164-127

3 Claims



1. In the casting of iron base rolls wherein the molten metal which forms the roll body is poured through a gate set tangential to the periphery of the neck portion of the roll, said metal being poured rapidly to achieve a vigorous spin and thereby avoid steep thermal gradients in different parts of the roll, wherein said molten metal is contacted with a heavy-walled cast iron chill which serves to quickly cool said molten metal, thereby producing a uniformly hard roll surface containing a minimum of graphite, said chill comprising at least two separate, cylindrical, vertically aligned chiller sections, thereby resulting in the production and entrapment of gases which are deleterious to the production of a smooth roll surface, the

improvement which comprises, interposing discrete, removable spacer elements around the circumference of said roll body, between the horizontal interfaces of said chiller sections to effect a gap therebetween for effectively venting said deleterious gases; said gap being small enough to substantially prevent the ingress of molten metal, said spacer elements being of a dimension thicker than the desired gap opening and composed of a material which is sufficiently yieldable to provide the desired gap opening on being compressed during the set up of the mold.

3,851,702

CONDENSATION APPARATUS FOR STEAM TURBINE PLANTS

Laszlo Heller; Laszlo Forgo; Janos Bodas, all of Budapest, Hungary; I. A. Alekszejev, and G. Sz. Agejev, both of Moscow, U.S.S.R., assignors to Tyeploelektroprojekt, Moscow, U.S.S.R. and Energiagazdalkodasi Intezet, Budapest, Hungary

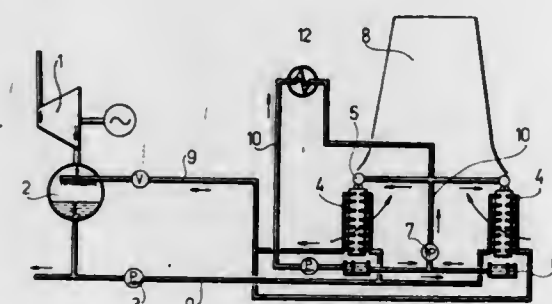
Filed Oct. 24, 1972, Ser. No. 299,976

Claims priority, application U.S.S.R., Oct. 25, 1971, 1710034

Int. Cl. F28b 3/04; F28d 5/02

U.S. Cl. 165-110

4 Claims



1. A condensation apparatus for a steam turbine station comprising, in combination, a mixing condenser, a first pipe conduit, surface heat exchangers connected with said mixing condenser by said first pipe conduit, air supply means for cooling said surface heat exchangers by means of air, a first circulation pump in said first pipe conduit for supplying condensate from said mixing condenser to said surface heat exchangers, vertically disposed ribs on said surface heat exchangers, individual water distributor spray means above said vertically disposed ribs consisting of a water distributor and sprinkler heads, a water collecting basin beneath said surface heat exchangers, a second pipe conduit for returning water from said surface heat exchangers to said mixing condenser, a second circulation pump, a third pipe conduit connecting said water collecting basin with the suction line of said second circulation pump the pressure line of which is connected to said water distributor spray means, cooler means for auxiliary equipment, a fourth pipe conduit having therein a third circulation pump for circulating water from said water-collecting basin to said cooler means, a common distributor conduit for distributing water from said cooler means to said water distributor spray means, individual control means provided at the connections between said individual water distributor spray means and said common distributor conduit for switching on and off a water flow to said water distributor spray means dependent on condensation temperatures and pressures prevailing in said mixing condenser, the ambient temperature and the load on said power station, said pipe conduits, circulating pumps, and water distributor spray means being sized and said control means being set to provide downwardly running water over said vertically disposed ribs in an amount sufficiently exceeding evaporation losses so that formation of scale on said ribs is avoided.

3,851,703 SAND DUMPING TOOL FOR DOWN HOLE DEPOSITION OF SAND IN OIL AND GAS WELLS

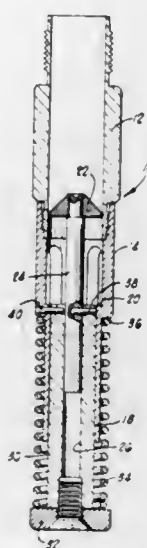
Billie J. Shirley, 12466 Trail Oak Dr., Oklahoma City, Okla. 73120

Filed Sept. 10, 1973, Ser. No. 395,506

Int. Cl. E21b 33/13

U.S. Cl. 166-169

11 Claims



11. A sand dumping tool comprising: tubular means having a bore extending therethrough, and including a tubular member having ports extending through the side thereof into communication with said bore intermediate its length; valve means movably mounted in said bore and movable to a position above said ports for obstructing said bore to prevent the gravitating movement of particulate material through the bore in one direction to the location of the ports; a plunger slidably mounted in the bore through said tubular means on the opposite side of said ports from said valve means; spring means positioned between the tubular member and the plunger for resisting sliding movement of the plunger in the tubular means toward said valve means; and breakable pin means retaining said valve means against movement in said bore and including: frangible means temporarily interlocking said plunger with said tubular member to prevent relative movement therebetween.

3,851,704

METHOD FOR INSULATING A BOREHOLE

Orwin G. Maxson, and Gary D. Achenbach, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed June 28, 1973, Ser. No. 374,439

Int. Cl. E21b 33/13, 43/00

U.S. Cl. 166-292

9 Claims

1. A method for insulating a wellbore penetrating a subterranean region and having positioned therein an inner casing of a smaller diameter than the borehole by placing in the annular space between the wellbore and said inner casing an insulating material consisting essentially of a divided, solid, closed-cell material, having a particular size diameter in the range of 1 micron to 2 cm and at least 20 volume percent void space and at least one gas selected from the group consisting of the vapors of hydrocarbons having a boiling point below about 200°C, water vapor and air.

3,851,705

DUAL HYDRAULICALLY ACTUATED OIL WELL PACKER

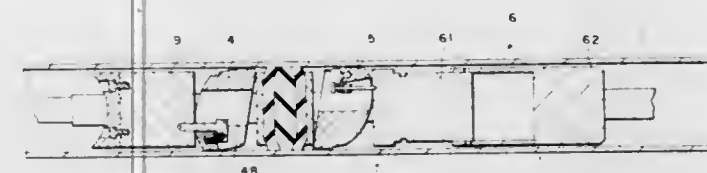
Marion Barney Jett, Seagoville, and Dennis Mitchel Spriggs, Dallas, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1973, Ser. No. 412,386

Int. Cl. E21b 23/06, 33/122, 33/129

U.S. Cl. 166-120

19 Claims



1. A dual string oil well packer comprising: dual elongated tubular mandrels arranged in substantially parallel orientation, each having an integral independent bore passage extending therethrough; upper body means attached to and encircling said mandrels; unitary, tubular, pivotable anchor means located about said dual mandrels in encircling relationship and having a plurality of grooved teeth at opposing sides of said anchor means; said anchor means arranged on said mandrels in limited slidable and pivotable relationship whereby said anchor means can be rotated from casing engaging position to non-engaging position on said mandrels; packer means comprising a plurality of resilient annular packer elements and rigid containing means adjacent said resilient elements, said packer means encircling said mandrels in a partially slidable relationship thereon and arranged to abut said anchor means; hydraulic actuation means located on said mandrels and comprising piston means and cylinder means, said piston means slidably engaging said cylinder means, and said piston means and said cylinder means each containing inner annular differential pressure area surfaces arranged to communicate with port means through the wall of one of said mandrels; said differential pressure surfaces adapted to receive fluid pressure through said port means and force said piston means out of said cylinder means into abutment with said anchor means thereby rotating said anchor means and compressing said resilient packer elements into engagement with the well casing; locking means on said mandrels for engaging said mandrel and maintaining said anchor means in said rotated position and said packer means in said compressed position; shear means preselectively shearable to allow said anchor means and said packer means to be released from said locking piston at a predetermined desired time; and, releasing means in said packer arranged to abut said rotated engaged anchor means and selectively rotate said anchor means out of engagement with said well casing.

3,851,706

WELL PACKER AND RETRIEVER

Gary D. Ellis, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 307,696, Nov. 17, 1972, Pat. No.

3,818,987. This application Oct. 15, 1973, Ser. No. 406,764

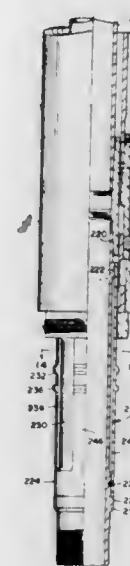
Int. Cl. E21b 23/00

U.S. Cl. 166-178

1 Claim

1. Release means for a well packer set in a casing with a hollow cylindrical mandrel extending through a resilient packer unit which is radially forced into contact with said casing by longitudinal compression between a drive cylinder secured to said mandrel below said packer unit wherein a

hollow cylindrical grip having beveled generally parallel ends with toothed shoulders adjacent to opposite extremities of said beveled ends is tilted into wedging engagement with said casing by a force transmitted from said packer unit by a cylindrical spacer engaging the bottom of said grip which comprises:



a. means to release said drive cylinder from said mandrel, and
b. structure including means on said mandrel to apply an upward force to the bottom of said grip at a location directly beneath the upper of said shoulders upon upward movement of said mandrel relative to said grip to release said grip.

3,851,707

UNI-DIRECTIONAL UNITARY ANCHOR SLIP

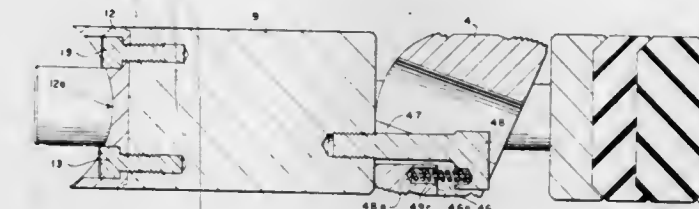
Marion Barney Jett, Seagoville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1973, Ser. No. 412,399

Int. Cl. E21b 23/00

U.S. Cl. 166-212

7 Claims



1. A unitary well tool anchor slip for anchoring a well tool or well packer in the casing of an oil well, said slip comprising: a generally cylindrical tubular member having a dual axis bore passage therethrough; a plurality of gripping teeth having a curved boundary profile, said teeth being located on one side of said member near one end; a second plurality of gripping teeth having a curved boundary profile, said second plurality of teeth located on the opposite side of said member near the opposite end; an abutment shoulder located at one edge of one end of said member, said member end having a canted surface leading away from said abutment shoulder; and, a compound abutment surface on the member end opposite said abutment shoulder, said compound surface having a flat surface extending from the central cylindrical axis to the edge of said member containing said gripping teeth and a radially curved surface extending from said central axis to the opposite edge of said member end.

3,851,708

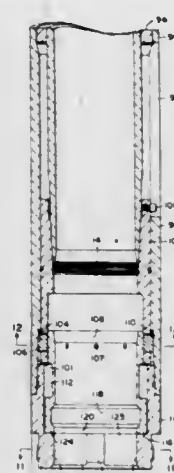
WELL PACKER AND RETRIEVER

Gary D. Ellis, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 307,696, Nov. 17, 1972, Pat. No. 3,818,987. This application Oct. 15, 1973, Ser. No. 406,763 Int. Cl. E21b 23/06

U.S. Cl. 166-237

8 Claims



1. Release structure for a tool set in a well wherein a drive cylinder encircles the bottom of a hollow cylindrical mandrel and is locked to the well casing, which comprises:

- a movable captured shear resistant element in recesses in the bottom of said tool to span a common boundary to said mandrel and said drive cylinder;
- an insert cylinder supported by said mandrel having an outward facing peripheral groove dimensioned to accommodate said element and normally restrained with said groove positioned below said element to maintain capture of said element; and
- structure supporting said insert cylinder from said drive cylinder having vertical internal ribs circumferentially arrayed below said insert cylinder and of internal diameter about the same as the internal diameter of said insert cylinder and separated by vertical recesses,

whereby hook means insertable down through said mandrel may engage the bottom of said insert cylinder only when aligned with said recesses to move said groove into registration with said shear resistant element thereby to release said mandrel from said drive cylinder.

3,851,709

HYDRAULIC FRACTURING METHOD TO CONTROL VERTICAL FRACTURE HEIGHTS

John L. Fitch; Lucien Masse; William L. Medlin, all of Dallas, Tex., and Maurice A. Biot, Brussels, Belgium, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,846

Int. Cl. E21b 43/26

U.S. Cl. 166-308

4 Claims

1. A method of fracturing a subterranean formation that is located adjacent another formation having different mechanical characteristics, comprising the steps of:

- applying an initiation hydraulic pressure via said well to said subterranean formation to initiate in said subterranean formation a vertically disposed fracture;
- reducing said initiation pressure to a propagation pressure that is no greater than a predetermined pressure defined by the relationship

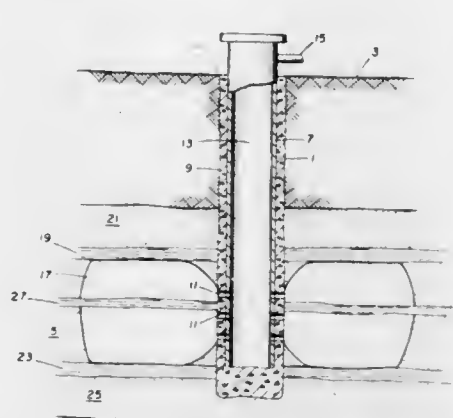
$$p_2 = s_o E / [4a(1-\nu^2)] \quad a_2 G_2 / a_1 G_1$$

where:

p_2 = the predetermined propagation pressure which if not exceeded will limit the vertical extension of the fracture to the subterranean formation;

w_o = the maximum width of the fracture in the subterranean formation;

E = Young's modulus in the subterranean formation;
 ν = Poisson's ratio in the subterranean formation;
 L = the thickness or length in a vertical direction of the subterranean formation;
 a = fracture surface energy; energy required to generate unit area of new surface by fracturing (subscript 1 refers to the subterranean formation, subscript 2 refers to the other formation);



- G = shear modulus (subscript 1 refers to the subterranean formation, subscript 2 refers to the another formation); and
- applying said selected propagation pressure via said well to said subterranean formation to propagate said vertically disposed fracture into said subterranean formation.

3,851,710

HYDRAULIC BEAMING CONTROL SYSTEM FOR PLOW IMPLEMENTS

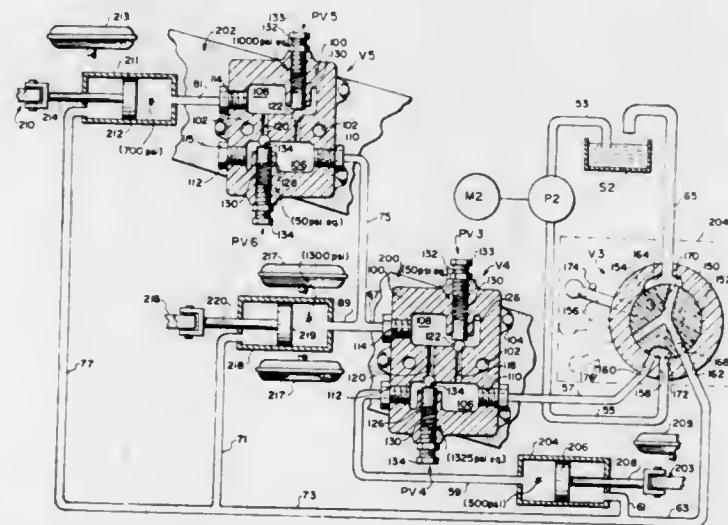
William L. Grimm, Wheaton, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 19, 1973, Ser. No. 398,745

Int. Cl. A01b 3/00, 63/22

U.S. Cl. 172-294

10 Claims



- In a hydraulic control system for tractor-impelled farm equipment, in combination, a tractor, a farm implement operatively connected to the tractor in trailing relationship, said implement embodying vertically shiftable first and second frame portions, ground working tools carried by said frame portions and movable bodily therewith, said frame portions being movable between a normal lowered operative position wherein said tools carried thereby are in effective working engagement with the ground, and a raised inoperative transport position, a first wheel supporting said first frame portion and a second wheel supporting said second frame portion, said wheels assimilating at least a portion of the weight of the frame portions, a first power lift cylinder effective between the first wheel and first frame portion and operable when supplied

with fluid to raise the front end of the frame, a second power lift cylinder effective between the second wheel and second frame portion and operable when supplied with fluid to raise the rear end of the frame, said cylinders having power requirements commensurate with the weight distribution of said frame, a fluid pump, valve means having a fluid inlet connected to the discharge side of said pump, said valve means having a first fluid outlet connected to said first cylinder, and a second fluid outlet connected to said second cylinder, said valve means being automatically effective incident to the development of fluid pressure at said fluid inlet equal to the power requirement of the first cylinder to supply fluid to said first fluid outlet to the exclusion of the second fluid outlet and thus actuate the first cylinder for first frame portion raising purposes, and effective incident to the development of fluid pressure at said fluid inlet which is predeterminedly higher than the pressure requirement of the second cylinder to supply fluid to said second fluid outlet and thus actuate the second cylinder for second frame portion raising purposes, means in said valve means permitting fluid flow from said second outlet to said inlet only upon development of a predetermined pressure differential therebetween.

3,851,711

REPLACEABLE CUTTING EDGE

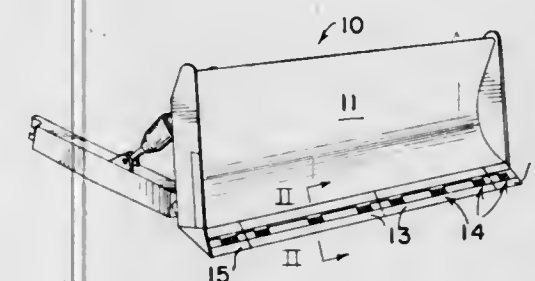
Visvaldis A. Stepe, Willow Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 29, 1973, Ser. No. 364,939

Int. Cl. A01b 39/22

U.S. Cl. 172-681

12 Claims



- An earthworking implement comprising a support having a recess formed thereon, a cutting edge mounted on said support, and combined shear absorbing and attachment means detachably mounting said cutting edge on said support comprising a separable shear absorbing member extending completely through said cutting edge and at least partially disposed in said recess and constructed and arranged for removal therefrom on the cutting edge side of said implement and fastening means releasably attaching said shear absorbing member and said cutting edge to said support and exposed on respective sides of said implement.

3,851,712

COUNTERWEIGHT ASSEMBLY FOR VEHICLE-MOUNTED IMPLEMENT

Robert J. Purcell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 18, 1973, Ser. No. 324,660

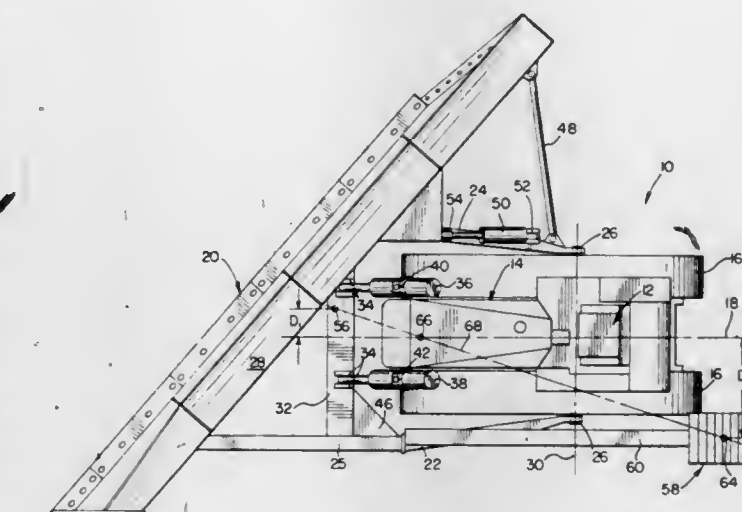
Int. Cl. E02f 3/76

U.S. Cl. 172-801

2 Claims

- In a vehicle having a longitudinal axis and an implement assembly comprising a pair of push arms, means pivotally mounting the same on a transverse axis to the vehicle, said push arms being disposed on either side and extending forwardly of the vehicle, and an implement mounted to the forwardly extending ends of the push arms, said implement assembly having its center of gravity spaced from the longitudinal axis of the vehicle on one side of said longitudinal axis, the

improvement which comprises counter weight means secured to said implement assembly on the other side of said longitudinal axis and rearwardly of said transverse axis of the vehicle,



and defining with the implement assembly an implement-and-counter weight assembly the center of gravity of which is closer to said longitudinal axis of the vehicle than the center of gravity of the implement assembly alone.

3,851,713

SINGLE SHOT RIVETING DEVICE

Igor Grigorievich Fedosenko, 602 mikroraion, 51, kv. 206; Vadim Grigorievich Kononenko, ulitsa Chkalova 15, kv. 12; Vladimir Semenovich Lepetjukha, 607 mikroraion 52, kv. 8, and Lev Petrovich Vasilchenko, ulitsa Volodarskogo, 57a, kv. 20, all of Kharkov, U.S.S.R.

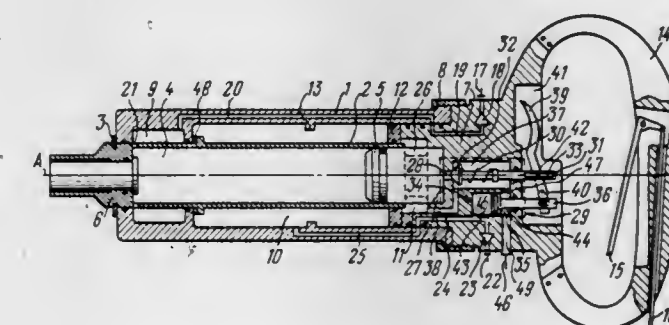
Filed Apr. 20, 1973, Ser. No. 353,016

Claims priority, application U.S.S.R., Mar. 16, 1972, 1759257; June 20, 1972, 1795791

Int. Cl. B21j 15/22

U.S. Cl. 173-121

7 Claims



- A single-shot riveting device comprising: a housing; a hollow cylinder arranged in said housing and having a cavity and two end faces; a striking means travelling in said cavity of said hollow cylinder for effecting clinching; a rivet set means adapted for upsetting rivet heads arranged at one end face of said hollow cylinder; ports made in said hollow cylinder in the vicinity of said rivet set means; a cavity made in said housing and connected with said cylinder cavity via said ports and with a compressed gas source for returning said striking means to its initial position; a hydropneumatic cylinder arranged in said housing and having a high-pressure compressed gas pneumatic portion adapted for storing the compressed gas energy and effecting a working stroke of said striking means, and a hydraulic portion communicating with said hollow cylinder cavity during the travel of said striking means; a floating piston separating said pneumatic and hydraulic portions of said housing hydropneumatic cylinder and moving in said housing hydropneumatic cylinder, whereby the compressed gas pressure in said housing hydropneumatic cylinder pneumatic por-

tion is increased for said storage of the compressed gas energy upon the fluid feed into said housing hydropneumatic cylinder hydraulic portion; a cover arranged at the other end face of said hollow cylinder and fixedly connected with said housing; a socket made in said cover at the side of said hollow cylinder, said socket receiving clearance-free the said striking means when the latter is being returned to its initial position and thereby preventing the fluid from flowing into the space between said striking means and said cover from said hydraulic portion when said fluid is fed thereto; a through hole made in said cover and connecting said socket with said hydraulic cavity during the working stroke of said striking means; a control valve mounted in said cover and shutting off said cover through hole when said fluid is fed into said port housing hydropneumatic cylinder hydraulic portion and opening it during the working stroke and returning said striking means to its initial position; a pressure main line connected with said hydraulic housing hydraulic portion for supplying the fluid thereto.

3,851,714

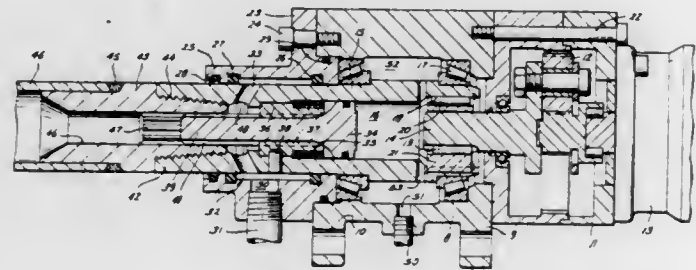
ROTARY DRILLING HEAD AND METHOD OF BREAKING PIPE JOINTS

Ronald C. Visser, and Vernon G. Steward, both of Houston, Tex., assignors to Mission Manufacturing Company, Houston, Tex.

Filed Dec. 26, 1973, Ser. No. 427,488
Int. Cl. E21b 19/16

U.S. Cl. 173-164

10 Claims



1. A rotary driving head for a drill string comprising a casing, a drive spindle projecting therefrom, coupling means rotatable with said spindle for attachment to complementary coupling means on the end of a drill pipe, plunger means movable along said spindle, torque applying means on said plunger means for cooperating with complementary torque receiving means on the drill pipe coupling means, and means for shifting said plunger means between a retracted position clear of said coupling means and an advanced position projecting into said coupling means for locking said coupling means together.

3,851,715

AIR OPERATED TOOL

John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Co., Inc., Sun Valley, Calif.

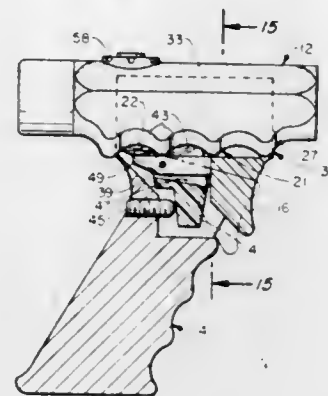
Filed June 8, 1973, Ser. No. 368,213
Int. Cl. B23b 45/04

U.S. Cl. 173-170

6 Claims

1. In combination with an air operated tool wherein said tool includes a motor unit, said motor unit to drive a tool

attachment, said motor unit being mounted within a housing, said housing having a series of convolutions formed thereon, a handle grip assembly adapted to connect with said housing, said handle grip assembly comprising:
a handle grip housing, a securing block pivotally mounted by pivot means to said handle grip housing, securing



means mounted within said handle grip housing adapted to contact said securing block, said securing means being movable to cause pivoting movement of said securing block into tight engagement with one of said convolutions, thereby securing together said handle grip housing and said motor housing.

3,851,716

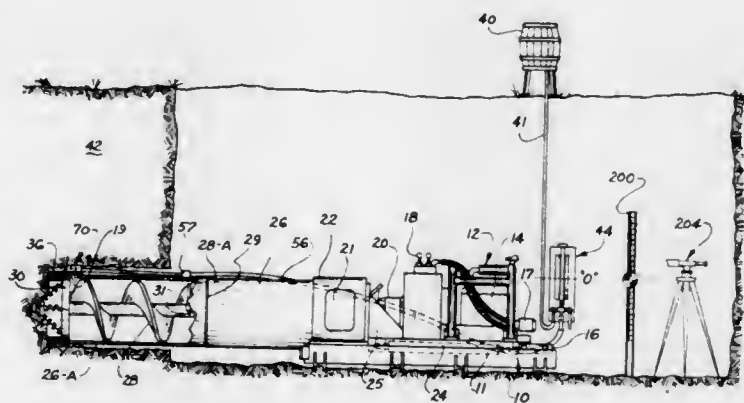
HORIZONTAL EARTH BORING MACHINE

Thomas W. Barnes, Franklin, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Apr. 27, 1973, Ser. No. 354,998
Int. Cl. E21b 47/02

U.S. Cl. 175-45

16 Claims



1. A remote grade indicating apparatus for tunneling, jacking and boring into earth fill in the construction of subterranean passages, said apparatus comprising, in combination, sensing means for progressive extension into the earth fill; gauge means for location adjacent the earth fill and connected to the sensing means, said gauge means including read-out indicia for informing the operator of grade deviations of the sensing means; and means forming a shoulder on the sensing means for temporary support of a sight target for zeroing the

gauge means with the sensing means at the outset of the progression into the earth fill.

3,851,717

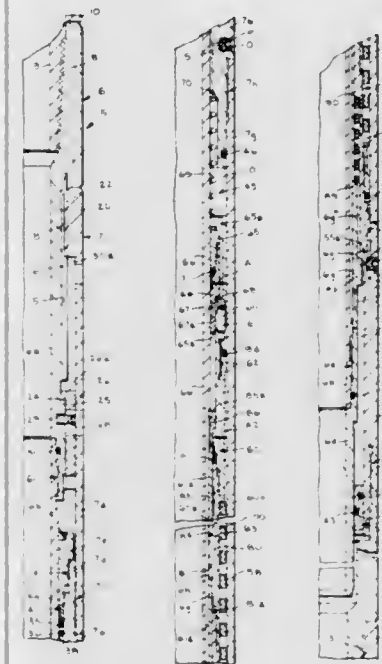
SUBSTANTIALLY CONSTANT TIME DELAY FISHING JAR

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Houston, Tex.

Filed Nov. 15, 1973, Ser. No. 416,197
Int. Cl. E21b 1/10

U.S. Cl. 175-297

46 Claims



1. In a hydraulic fishing jar adapted to be run into a well on a fishing string and connected to a fish in the well bore:
a. inner and outer telescopically interengaged bodies;
b. means defining between said bodies a hydraulic fluid chamber;
c. power piston means in the chamber operable upon tensioning the fishing string for telescopic movement of said bodies to compress and apply a predetermined force to the hydraulic fluid in the chamber;
d. therebeing by-pass flow passage means in one of said bodies;
e. a valve member in the chamber for normally closing off one end of the by-pass flow passage means from the compressed fluid in the chamber and shiftable to open so that compressed hydraulic fluid is released to the by-pass flow passage means;
f. piston means including substantially constant flow by-pass means to transfer the compressed hydraulic fluid in the chamber across said piston means and thereby move it in the fluid chamber at substantially a constant rate to engage and move said valve member to open the by-pass flow passage means at one end to the compressed hydraulic fluid;
g. said piston means including valve means normally closing off the other end of the by-pass flow passage means and shiftable to open so that hydraulic fluid is released from the chamber above said piston means;
h. means on one of said bodies to move said piston valve means and open the other end of the by-pass flow passage means when said valve member is moved to open one end of the by-pass flow passage means to the compressed hydraulic fluid; and
i. hammer and anvil means on said bodies movable into engagement when said valve member and piston valve means open the by-pass passage means to the chamber across said piston means.

3,851,718

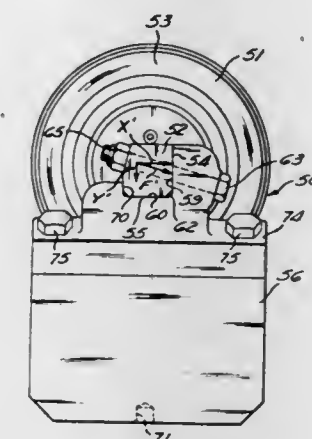
ROLLER CUTTER

Trevor Fink, University Heights, Ohio, assignor to Jarva, Inc., Solon, Ohio

Continuation-in-part of Ser. No. 304,955, Nov. 9, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 390,012
Int. Cl. E21b 9/08; E21c 13/00

U.S. Cl. 175-363

15 Claims



1. A roller cutter assembly comprising a cutter rotatably mounted on a shaft so that end portions of said shaft project from said cutter, said end portions having first and second flat angularly related faces, a generally U-shaped saddle having projecting arm portions mounting said shaft and a mounting face adapted to be secured to a cutter head, each projecting arm portion having first and second flat angularly related faces respectively engaging the first and second faces on each said end portion, means for clamping each arm to each end portion and for providing a clamping force between engaged faces having components normal to each face, said clamping means providing a greater force component parallel to said mounting face.

3,851,719

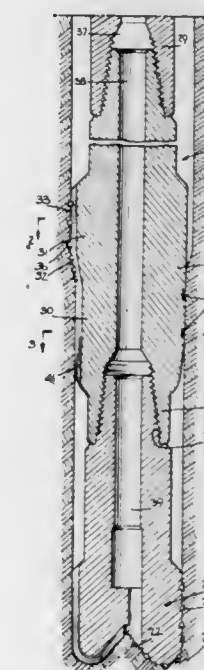
STABILIZED UNDER-DRILLING APPARATUS

Charles T. Thompson, Dallas, and Bobby J. Thompson, Garland, both of Tex., assignors to American Coldset Corporation, Dallas, Tex.

Filed Mar. 22, 1973, Ser. No. 344,051
Int. Cl. E21b 9/22

U.S. Cl. 175-406

11 Claims



1. A rotary under-reaming device for enlarging a pilot hole of predetermined radius drilled in the earth, the device comprising:

3,851,726

NOISE SUPPRESSOR

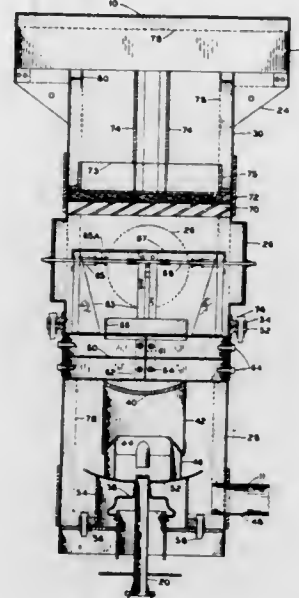
Ronald D. Grose, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.

Filed Apr. 16, 1974, Ser. No. 461,304

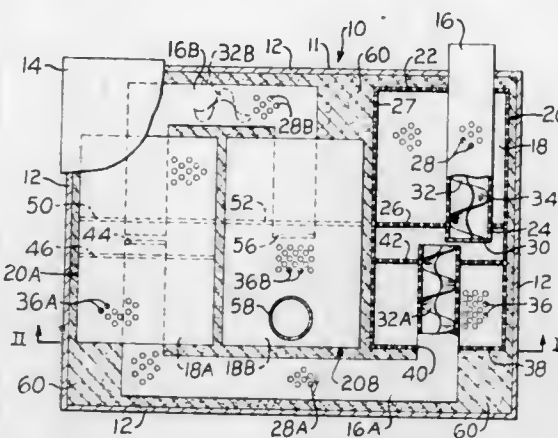
Int. Cl. F01m 1/10

U.S. Cl. 181-50

9 Claims



chamber with said first chamber, baffle means in said another conduit for diverting exhaust gases out through the perforations in said conduit, and insulating material surrounding said chambers and conduits within said housing, whereby said



exhaust gases pass from chamber-to-chamber as the undesirable characteristics are substantially dispersed and dissipated into said insulating material prior to discharge from said muffler.

3,851,728

SCAFFOLD

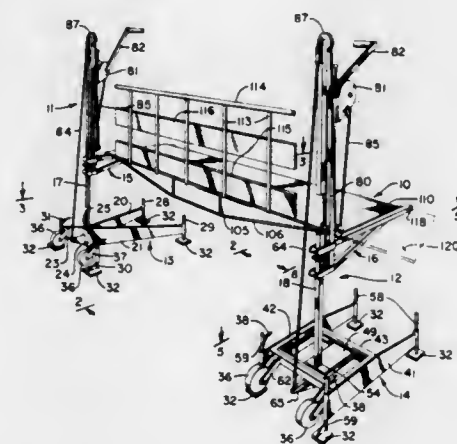
Lowell A. Williams, Wimbledon, N. Dak. 58492

Filed Apr. 11, 1973, Ser. No. 349,975

Int. Cl. E04g 1/18

U.S. Cl. 182-17

7 Claims



1. An apparatus for attenuating noises which result when fluid escapes through an exhaust passage at high velocity, said apparatus comprising:

- a. an elongated cylindrical housing lined along its inside wall with a sound-insulating material and having an outlet at one end and an inlet at the other end, said inlet having a diameter substantially smaller than the inside diameter of said cylindrical housing and adaptable to be connected to a fluid exhaust passage;
- b. an upstream impact baffle located within and attached to said cylindrical housing, and positioned between and spaced from said inlet and said outlet to deflect the flow of fluid entering said inlet, said baffle having a diameter smaller than the inside diameter of said cylindrical housing and greater than the diameter of said inlet;
- c. a plurality of inclined vanes attached to and extending radially inwardly from said inside wall of said cylindrical housing such that fluid flow openings are defined between said vanes, said vanes positioned between and spaced from said upstream baffle and said outlet; and
- d. a fluid-permeable turbulence-dampening grid attached to and positioned across the entire inside cross-section of said cylindrical housing between said vanes and said outlet, said turbulence-dampening grid being located in close proximity to said vanes and spaced from said outlet.

3,851,727

MUFFLER WITH INSULATED INTERNAL SOUND DISPERSING AND ABSORBING CHAMBERS

Marvin G. Getz, Morton; Gerald E. Whitehurst, East Peoria, and Gerald M. Walden, Chillicothe, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1974, Ser. No. 462,450

Int. Cl. F01m 1/10

U.S. Cl. 181-50

12 Claims

1. In a muffler having a housing with an inlet and an outlet, a first chamber in said housing having perforations in the walls thereof, a conduit in said housing connecting said inlet with said chamber and having perforations in the wall thereof, baffle means in said conduit for diverting exhaust gases out through the perforations in said conduit, another chamber in said housing having perforations in the walls thereof and being operatively connected with the outlet in said housing, another conduit in said housing operatively connecting said another

1. A scaffold comprising:
a relatively long and narrow platform and first and second spaced upright supports for supporting opposite ends of said platform,
each of said supports comprising a base structure adapted to rest in stationary position upon a supporting surface, a vertical post supported by said base structure, a platform supporting member slidably supported for vertical movement on said post, and means for moving said platform supporting member vertically with respect to said post to different selected vertical positions,
the base structure of the first of said supports having means for supporting its associated post and platform supporting member against lateral movement with respect thereto, and
the base structure of the second of said supports having means for supporting its associated post and platform supporting member for limited lateral movement with respect thereto parallel to the longitudinal axis of the scaffold to accommodate for changes in the horizontal distance between the lines of contact of said platform with said platform supporting members as the vertical position of one platform supporting member is changed with respect to that of the other.

3,851,729

SCAFFOLD STRUCTURE

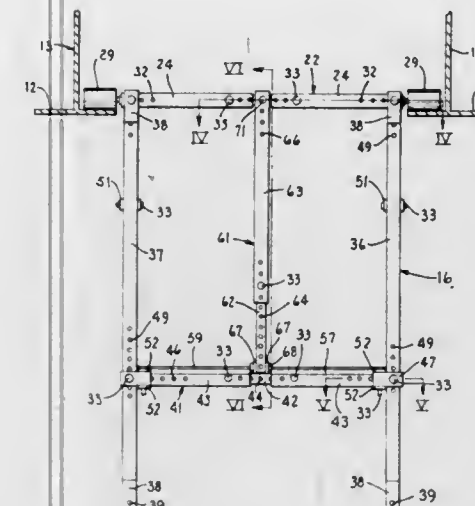
Arnold Gordon, P.O. Box 81, RFD No. 2, Bangor Township, Van Buren County, Mich. 49013

Filed Oct. 4, 1973, Ser. No. 403,560

Int. Cl. E04g 3/10, 3/14

U.S. Cl. 182-36

10 Claims



1. A scaffold structure adapted to be supported on and suspended from a pair of spaced overhead beams, comprising: a pair of substantially parallel, elongated, telescopic axle means each having rollers on the opposite ends thereof adapted for rolling engagement with said overhead beams; platform means supported from and suspended below said axle means, said platform means including a substantially horizontal platform adapted to support a workman or equipment thereon;
said platform means further including a pair of substantially parallel, elongated, telescopic cross-beam means, each of said support beam means being positioned substantially parallel to a respective one of said axle means and spaced downwardly therefrom by a substantial distance; and connecting means for fixedly interconnecting each said cross-beam means to a respective axle means, said connecting means including vertically elongated post means having its upper end connected to said axle means, said post means also being connected to the respective cross-beam means at a location spaced downwardly a substantial distance from the upper end of said post means.

3,851,730

INFLATABLE SAFETY CUSHION SYSTEM FOR CONTROLLED DECELERATION FROM FALLS OF GREAT HEIGHT

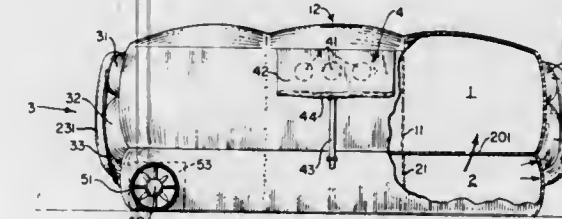
John T. Scurlock, 6209 Schouest, Metairie, La. 70003

Filed Aug. 30, 1973, Ser. No. 393,016

Int. Cl. A62b 37/00

U.S. Cl. 182-137

20 Claims



1. An air inflatable cushion for safety absorbing and decelerating the fall of a body falling from great heights comprising: an inflatable section made of light flexible material defining a generally closed air system; and

air breather system means located in said section for allowing air to be rapidly exhausted from the interior of said section upon impact of a body falling onto said section, said breather system having a total cross-sectional area (A_B) when open and location (L_B) in at least general accordance with the following equations

$$A_B = V_{loss}/0.6T_1 + V_a \text{ and}$$

$$L_B = V_a/2 \times T_1 + 2 \text{ ft.}$$

where

V_{loss} is the volume loss of said inflatable section during impact of the falling body;

V_a is the velocity of air in said inflatable section;

T_1 is the time elapsed from impact to full energy absorption of the falling body by said inflatable section; and

T_2 is the time necessary to build up to the maximum pressure to which one wishes to allow the falling body to be subjected to in being decelerated from the fall; making particular reference to the tables and equations herein; whereby the falling body is safely absorbed by impact upon the cushion; said breather system means properly releasing the built-up air pressure resulting from the impact.

3,851,731

LUBRICATION SYSTEM FOR GEAR DRIVE MECHANISMS

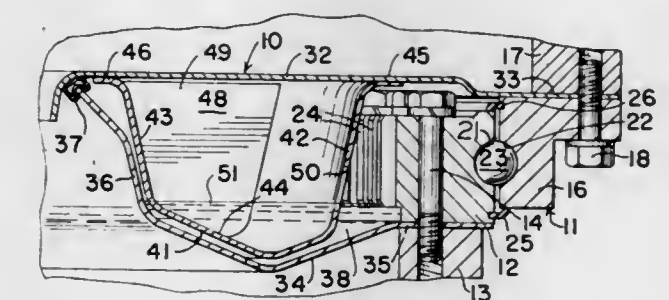
Stanley A. Jorgensen, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 13, 1973, Ser. No. 350,680

Int. Cl. F01m 1/10

U.S. Cl. 184-6.2

8 Claims



1. A horizontally disposed, annular enclosure enclosing a gear drive mechanism in an annular chamber thereof and lubricating means for communicating lubricating fluid to said gear drive mechanism and for maintaining a substantially uniform distribution of lubricating fluid circumferentially around said enclosure when said enclosure is tilted relative to its normal horizontal disposition, said lubricating means including an annular tray disposed in said annular chamber comprising contiguous sidewalls, a downwardly pointing bottom wall of generally V-shaped cross section and a plurality of circumferentially spaced plates disposed in said tray to extend radially inwardly between the sidewalls and said tray to divide the tray into a plurality of individual compartments.

3,851,732

MAST AND CARRIAGE FOR A LIFT TRUCK

Richard A. Wagner, Euclid; Paul A. Reid, Mentor; Edward G. Teutsch, Willoughby, and Milford D. McVeen, Highland, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Feb. 8, 1973, Ser. No. 330,890

Int. Cl. B66b 9/20

U.S. Cl. 187-9

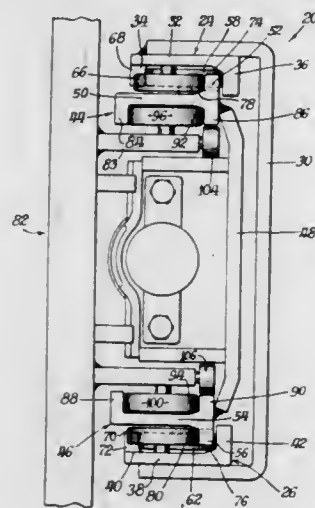
19 Claims

1. A mast assembly for a truck or the like, comprising: first and second upright laterally spaced channel members each defining a base portion and forward and rearward parallel edge flange portion extending from said base portion and generally perpendicular thereto, with the

flange portions of each channel member disposed toward the other channel member;
first and second interconnected elongated members positioned inwardly of the first and second channel members respectively and movable therealong, the first elongated member defining a base portion and an edge flange portion extending from said base portion and generally perpendicular thereto, and disposed toward the first channel member and between the forward and rearward flange portions of the first channel member and adjacent the rearward flange portion thereof, the second elongated member defining a base portion and an edge flange portion disposed toward the second channel member and between the forward and rearward flange portions of the second channel member and adjacent the rearward flange portion thereof;

first and second bottom rollers mounted to the lower ends of the first and second elongated members respectively, the edge flange portions of the first and second elongated members defining cutout portions through which portions of the first and second bottom rollers respectively extend, with the first bottom roller positioned between the forward and rearward flange portions of the first channel member, with the rolling portions of the first bottom roller adjacent the forward and rearward flange portions of the first channel member, and further with the second bottom roller positioned between the forward and rearward flange portions of the second channel member, with the rolling portions of the second bottom roller adjacent the forward and rearward flange portions of the second channel member;

first and second top rollers mounted to the upper ends of the first and second channel members respectively, with the forward flange portions of the first and second channel members defining cutout portions through which



portions of the first and second top rollers respectively extend, with the rolling portion of the first top roller adjacent the edge flange portion of the first elongated member, and with the rolling portion of the second top roller adjacent the edge flange portion of the second elongated member;

a fork carriage comprising a frame and a pair of forwardly extending arms;

first and second rollers mounted to the fork carriage frame and rollingly associated with the first elongated member, with the axis of the second roller being below the axis of the first roller;

third and fourth rollers mounted to the fork carriage frame and rollingly associated with the second elongated member, with the axis of the fourth roller being below the axis of the third roller, allowing movement of the fork carriage along the elongated members upwardly and downwardly, meanwhile providing positive forward-and-rearward location of the fork carriage relative to the first and second elongated members;

a fifth roller mounted to fork carriage frame and positioned with its axis below the axis of the first roller and above the axis of the second roller; and,

a sixth roller mounted to the fork carriage frame and positioned with its axis below the axis of the third roller and above the axis of the fourth roller, the fifth and sixth rollers being in contact with the rear portions of the first and second elongated member respectively inwardly of the first and second elongated members respectively, and a reinforcing member interconnecting the first and second elongated members rearwardly thereof, the fifth and sixth rollers passing closely adjacent thereto to minimize misalignment of said elongated members, to provide positive lateral location of the fork carriage relative to the first and second elongated members.

3,851,733 ELEVATOR SYSTEM

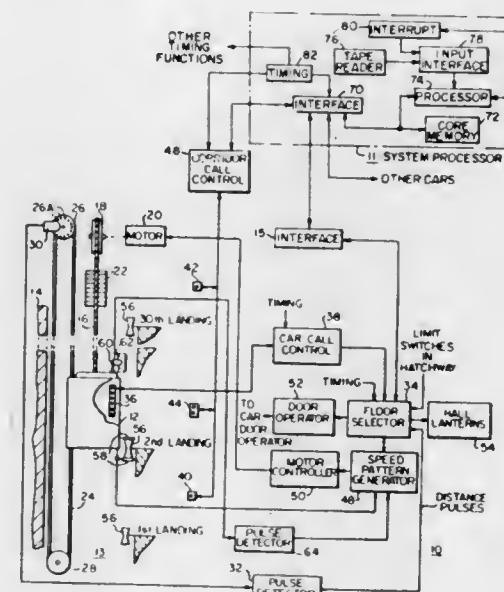
Milton Sackin, Pittsburgh, and David M. Edison, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,617

Int. Cl. B66b 1/18

U.S. Cl. 187-29 R

30 Claims



1. A method of allocating floor calls from a plurality of floors of a structure to a plurality of elevator cars mounted in the structure to serve the floors, comprising the steps of: providing means for registering floor calls from the plurality of floors of the structure, providing assignment means for each of the elevator cars, processing a new floor call by adding the call to the assignment means of at least one of the elevator cars or by creating a demand signal, reprocessing each floor call to locate the closest car in position to serve the call, deleting a floor call added to the assignment means of a car during the processing step when the reprocessing step finds a different car which is closer to the call floor, and adding the floor call to the assignment means of this closer car.

3,851,734 ELEVATOR SYSTEM

Milton Sackin, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,615

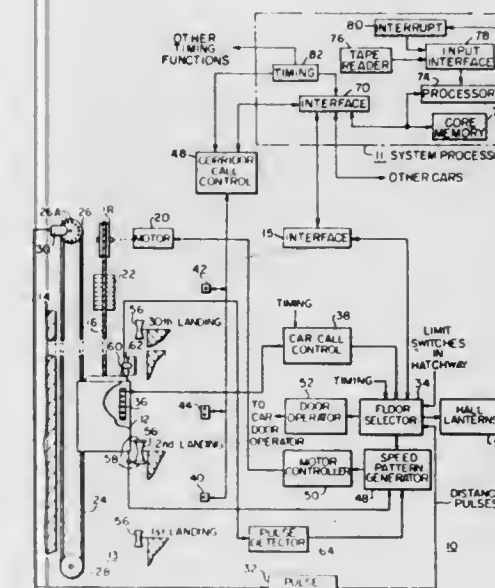
Int. Cl. B66b 1/22

U.S. Cl. 187-29 R

21 Claims

1. A method of allocating floor calls from a plurality of floors of a structure to a plurality of elevator cars mounted in

the structure to serve the floors, comprising the steps of: providing call table means to which new floor calls are added and answered floor calls are deleted, periodically ordering the floor calls in the call table means such that the floor calls appear in the call table means in the order in which their associated floors are located in the structure, adding new floor calls received between ordering steps to an end of the ordered floor calls, providing an assignment register for each of the elevator cars, periodically processing only new floor calls located at the end of the ordered floor calls in the call table means by either allocating each new call to the assignment register of an elevator car which is in the process of serving a call for elevator service, or by creating a demand signal, periodically assigning elevator cars which are not in the process of serving a call for elevator service to floor calls for which a demand signal was created, processing all of the floor calls in the call table means following each ordering step, said processing step including the steps of: determining for each call if it is in the assigned demand



category of (a) having had a demand signal created for it, and (b) in response to the demand signal an elevator car was assigned to the call, verifying for an assigned-demand category call that an elevator car has been assigned to the floor associated with the call, proceeding to the next call when the verification step affirms that a car has been assigned to the floor of the assigned-demand category call, considering the assigned-demand category call unassigned when the verification step fails to affirm that a car has been assigned to the floor associated with the call, processing an assigned-demand category call considered unassigned by either allocating the call to the assignment register of an elevator car which is in the process of serving an allocated call for elevator service, or by creating a demand signal, considering floor calls not in the assigned-demand category as unassigned, and processing each of these floor calls considered unassigned by either allocating the call to the assignment register of an elevator car which is in the process of serving a call for elevator service, or by creating a demand signal.

3,851,735

ELEVATOR SYSTEM

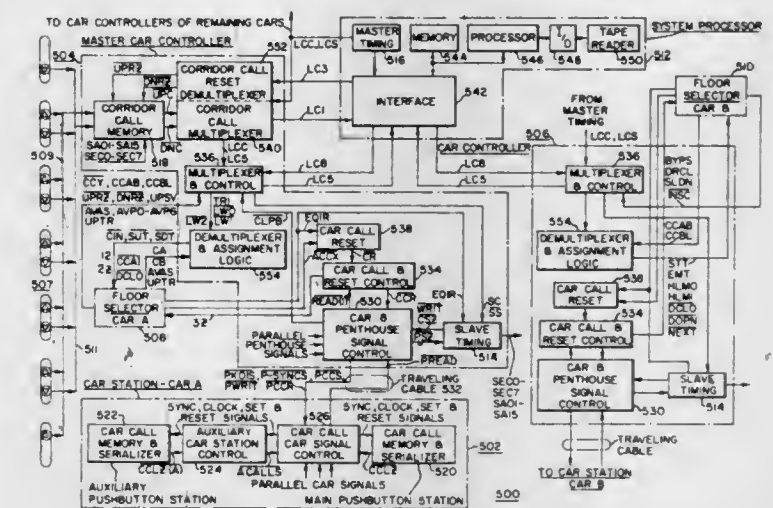
Charles L. Winkler, and Alan F. Mandel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,614

Int. Cl. B66b 3/00

U.S. Cl. 187-29 R

18 Claims



1. An elevator system, comprising: a structure having a plurality of landings, at least one elevator car mounted for movement relative to said structure to serve the landings, said at least one elevator car including first control means disposed in the elevator car, second control means disposed at a point remote from the elevator car, and first data link means interconnecting said first and second control means, said first control means including means providing data for said second control means, means storing said data, and first multiplexing means, said first multiplexing means time multiplexing said stored data to said second control means over said first data link means at a first predetermined rate.

3,851,736

APPARATUS AND METHOD FOR INSTALLING ELEVATOR HOISTWAY EQUIPMENT

William A. Westlake, Allison Park, Pa., and Joseph A. Brizolara, Union, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1973, Ser. No. 343,069

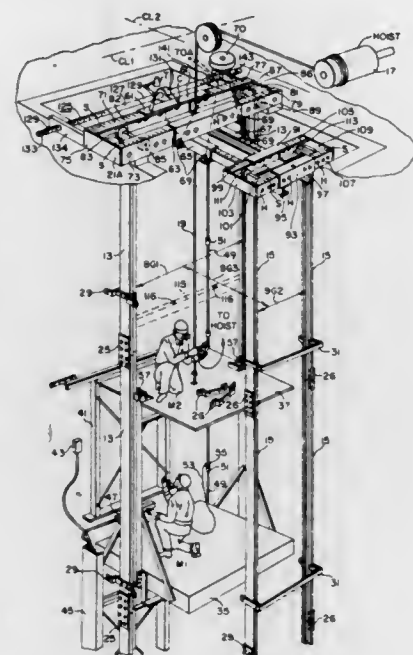
Int. Cl. B66b 7/02

U.S. Cl. 187-95

17 Claims

1. A rig for installing elevator guide rails comprising a first guide rail support for supporting a first guide rail in substantially vertical position, a second guide rail support for supporting a second guide rail in substantially vertical position, and a mounting structure mounting said supports for adjustments substantially parallel to a plane, said mounting structure including hoist connection means for attachment to hoist rope means, said hoist connection means being constructed for maintaining said plane substantially horizontal when the hoist connection is attached to vertical hoist rope means, whereby

said supports may be utilized to support two vertical guide rails in predetermined horizontally spaced positions, and hoist



3,851,737

DISC BRAKE WITH AUTOMATIC ADJUSTING PARKING BRAKE

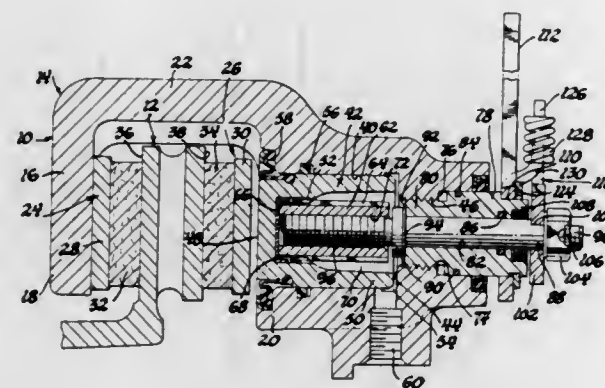
James A. Hewins, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 4, 1974, Ser. No. 447,732

Int. Cl. F16d 65/56

U.S. Cl. 188-71.9

2 Claims



1. A disc brake comprising:
a caliper having a housing, brake shoes mounted therein for braking engagement with a disc, and a piston for hydraulically actuating the brake, said piston being mounted for axial movement in a cylinder formed in said housing;
a mechanically actuated brake apply shaft having a bore extending axially therethrough, said shaft extending into said cylinder coaxially with said piston and threadedly engaging said housing for rotational movement and consequent axial movements in brake apply and release directions;

an adjuster shaft rotatably mounted in said apply shaft bore and having a land engaging one end of said apply shaft so as to be moved axially therewith and thereby in the brake applying direction of movement of said apply shaft, one end of said adjuster shaft being threaded with a lesser thread pitch than and of the same hand as the threads threadably joining said apply shaft and caliper housing; an adjuster nut splined to said piston so as to be limited to

axial movement relative to said piston, said nut also threadedly engaging the threaded end of said adjuster shaft, one end of said nut being axially engageable with said piston in force transmitting relation to limit brake releasing movement of said piston and to apply brake actuating force thereto when said apply shaft is mechanically actuated to move said apply shaft and said adjuster shaft and said adjuster nut axially in the brake apply direction;

an actuating lever on said brake apply shaft for rotating said apply shaft by arcuate movement of said actuating lever within a predetermined arcuate stroke angular range;

a ratchet wheel on said adjuster shaft having a plurality of teeth thereon circumferentially equally spaced apart at angles therebetween substantially equal to and no greater than the angle of said actuating lever arcuate stroke angular range;

a spring loaded pawl pivotally mounted on said actuating lever and riding on said ratchet wheel and, upon arcuate movement of said actuating lever through an angle equal to the angle between adjacent of said ratchet wheel teeth in the brake apply direction, engaging one wheel tooth so as to rotate said ratchet wheel an angular distance substantially equal to said angular range upon return movement of said actuating lever to the brake release position, thereby rotating said adjuster shaft and causing said adjuster nut to move axially in the brake apply direction to adjust the brake;

and a latch pawl mounted on said housing and yieldingly engaging said ratchet wheel to prevent rotation thereof in the other direction of rotation for an angular distance greater than the angular distance between two adjacent ratchet wheel teeth.

3,851,738

BRAKE SHOE FOR RAILWAY VEHICLE DISK BRAKES

Hans Gebhardt; Franz Prah, and Mathias Schorwerth, all of Munich, Germany, assignors to Knorr-Bremse GmbH, Muenchen, Germany

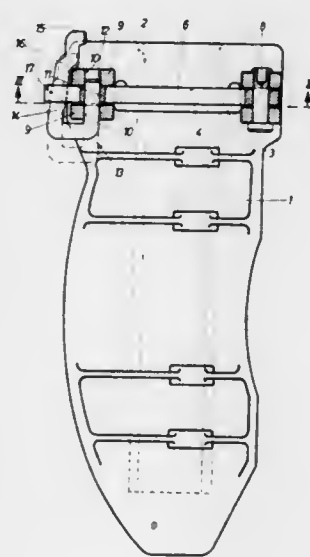
Filed Mar. 19, 1973, Ser. No. 342,476

Claims priority, application Germany, Mar. 17, 1972, 2213049

Int. Cl. F16d 65/04

U.S. Cl. 188-244

10 Claims



1. In a lock for a brake lining that can be inserted into a brake lining support of a disk brake for a railway vehicle, the combination of brake lining support means including longitudinally extending lining guide means on a face thereof, there being an opening in said lining supporting means extending transversely to said lining guide means, a latch having a first and a second end portion, said latch being pivotally mounted at the first end portion thereof on said lining supporting means

and pivotable into a locking latch position and in a plane perpendicular to the plane of the lining support means, a locking projection on said latch comprising an elongated extension of trapezoidal shape insertable into said opening, the entire length of said locking projection contacting a face of said opening away from said lining guide means when the locking projection is positioned in said opening to traverse said lining guide means, and locking lug means receiving the second end portion of the latch in the locking position of the latch.

3,851,739

HOIST REVERSING TRANSMISSION WITH CENTRIFUGAL SPEED CONTROL

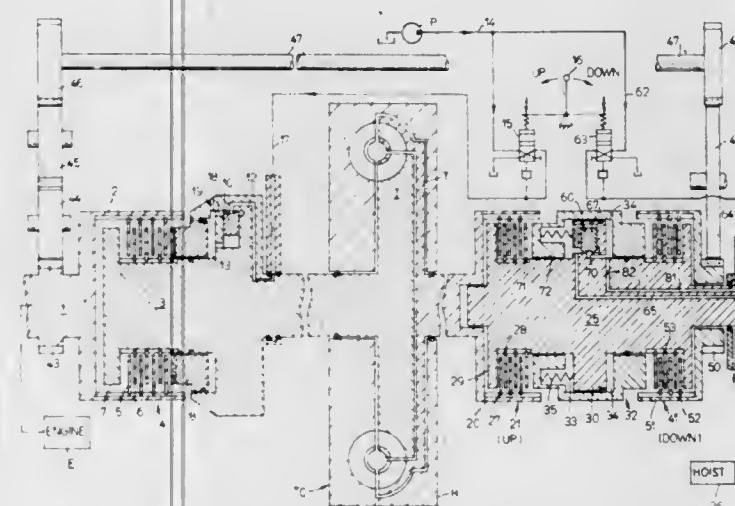
Kurt A. Schneider; Leonard H. Adams, both of Rockford, and Conrad R. Hilpert, Winnebago, all of Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed Sept. 4, 1973, Ser. No. 394,057

Int. Cl. F16h 5/36

U.S. Cl. 192-3.57

2 Claims



1. A power transmission and control system for raising and lowering hoist mechanism comprising, a power source, a torque converter connected to said power source and driven thereby, a modulatable friction type input clutch disengagably connected between said power source and said torque converter, centrifugally actuated hydraulic valve means connected with said modulatable clutch for regulating the output speed of said clutch and the input speed of said torque converter, a modulatable friction type "up" clutch connected to said torque converter for being driven thereby and also being connected to a hoist mechanism driving shaft for driving said hoist mechanism in a load raising position when said "up" clutch is engaged, a modulatable friction type "down" clutch connected to said hoist mechanism driving shaft, power transmitting means connected between said power source and said friction type "down" clutch, and centrifugally actuated hydraulic valve means connected to said "up" and "down" clutches for causing selective engagement of said "up" clutch or said "down" clutch whereby when said "up" clutch is disengaged and said "down" clutch is engaged, said power transmitting means transmits power from said power source through said "down" clutch and to said hoist mechanism to drive the latter positively in a load lowering direction and to automatically release said "down" clutch and engage said "up" clutch during overspeed of said hoist mechanism, and control means for regulating both of said centrifugally actuated hydraulic valve means.

3,851,740

SYNCHRONOUS SELF-SHIFTING TOOTHED CLUTCH

Robert Howard Heybourne, 26 Ennismore Gdns., East Molesey, Surrey, England

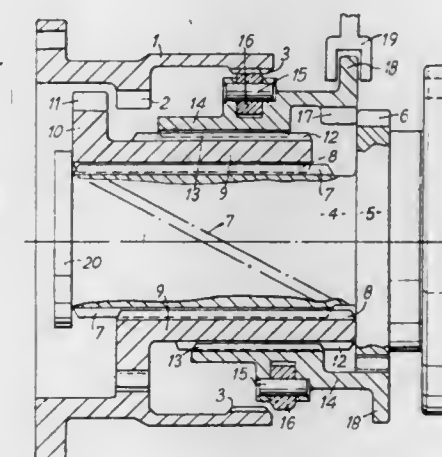
Filed July 9, 1973, Ser. No. 377,755

Claims priority, application Great Britain, July 10, 1972, 32242/72

Int. Cl. F16d 23/10

U.S. Cl. 192-67 A

3 Claims



1. A synchronous self-shifting toothed clutch of the type including first and second rotary clutch members, coacting clutch teeth, and clutch actuating means including an intermediate member constrained for movement relative to said second rotary clutch members to effect at least partial interengagement of said coacting clutch teeth, with pawl and ratchet mechanism for initiating the said movement of the intermediate member upon passage of said first and second rotary clutch members through synchronism in one direction of relative rotation, said pawl and ratchet mechanism including a first element comprising pawls and a second element comprising ratchet teeth, wherein the improvement comprises an auxiliary part, means mounting one of the said elements of the pawl and ratchet mechanism on said auxiliary part, and splines connecting said auxiliary part to one of said intermediate and first rotary clutch members whereby to enable said auxiliary part, with the clutch in a disengaged condition, to be shifted to move said one element of the pawl and ratchet mechanism axially away from the other of said elements to establish a pawl-free condition of the clutch.

3,851,741

FLUID ACTUATED CLUTCH ASSEMBLY

Eisuke Sugahara; Yusaku Yagi, both of Tokyo, and Akihito Owada, Warabi, all of Japan, assignors to Nippon Piston Ring Co. Ltd., Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,440

Claims priority, application Japan, Dec. 28, 1972, 47-2381

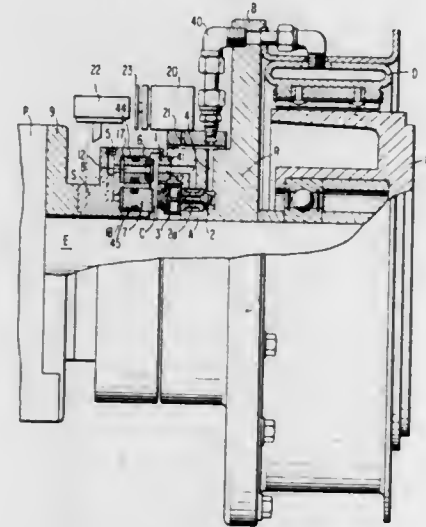
Int. Cl. F16d 25/00, 25/04

U.S. Cl. 192-85 R

5 Claims

1. A fluid actuated clutch assembly comprising:
a. a rotary structure of substantially annular shape rigidly secured to a shaft for rotation therewith, said rotary structure having a radially extending flange part and a boss part, said boss part being provided with radially outer and inner annular recesses formed on one end face thereof,
b. a stationary structure of substantially annular shape supported by a pillow block, axially facing said rotary structure, and located independently of said rotary structure to leave an axial space therebetween for allowing relative rotation of said rotary structure, said stationary structure being provided with radially outer and inner annular grooves formed on an end face thereof, opposite to said one end face of said rotary structure and opening in longitudinal direction thereof,
c. an inflatable friction member fixedly attached said flange

- part of said rotary structure,
- d. a relative annular sealing ring fixedly inserted into said radially outer annular recess of said rotary structure, said sealing ring being provided with a plurality of axial fluid passages,
- e. a plurality of communication passages formed in said rotary structure, each one having one end open into a respective fluid passage of said sealing ring and the other end being fluid connected to said inflatable friction member,
- f. a plurality of one-way valve devices, each provided in a respective communication passage and having a valve member slidably provided therein and biased into its first, closed position for preventing counterflow of a working fluid under pressure in the respective communication passages from said inflatable friction member during the clutch operation of said inflatable friction member, by means of a spring,
- g. a plurality of actuating piston devices, each having a cylinder and a piston and mounted within said radially inner annular recess of said rotary structure, substantially in alignment with the respective one-way valve devices, said piston being slidable within said cylinder in an axial direction and biased away from said one-way valve device by said valve member with its outer end protruding into said space,
- h. a substantially annular sealing piston slidably and hermetically carried within said radially outer annular groove of said stationary structure in a manner to form a substantially annular fluid chamber, which communicates with a fluid source, between the inner end face thereof and the



- inner wall of said groove, said sealing piston having a plurality of axial fluid passages and having an annular sealingly, sliding element mounted within its outer end face thereof, said sliding element being provided with a plurality of axial fluid passages, each being substantially in alignment with the respective fluid passage of said sealing piston, said sliding element being provided with an annular fluid accumulative groove, which communicates circumferentially with all of said holes of said sliding element, at the outer side end face thereof,
- i. a substantially annular discharging piston slidably and hermetically carried by said radially inner annular groove of said stationary structure in a manner to form a substantially annular fluid chamber communicating with the fluid source, between the inner end face thereof and the inner wall of said groove, and
- j. means for selectively supplying the working fluid to said sealing and discharging pistons in accordance with a predetermined sequence; wherein said sealing piston is biased away from the inner side wall of said radially outer groove, upon application of a fluid pressure thereto for bringing said sliding element thereof into sealing contact

with said sealing ring so that the working fluid is supplied to said inflatable friction member, and wherein said discharging piston is biased away from the inner side wall of said radially inner annular groove, upon application of a fluid pressure thereto, for bringing the outer end face thereof into abutting engagement with said protruding end of said actuating piston, consequently moving said piston and said valve member into its second, open position so that said communication passage is opened.

3,851,742

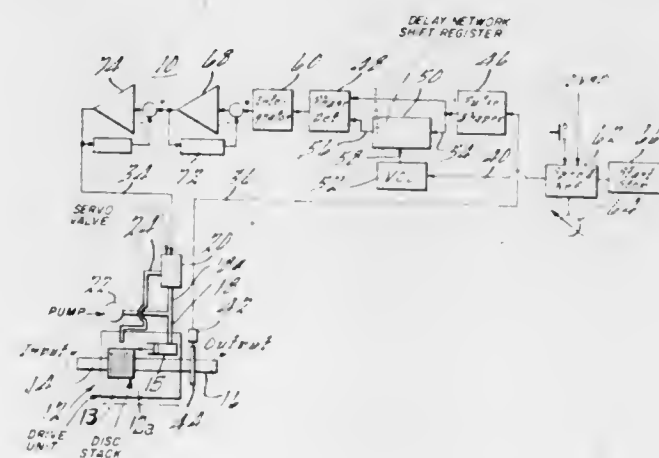
CONTROL SYSTEM FOR VARIABLE SPEED DRIVE
Gordon M. Sommer, Grosse Pointe, Mich.; Alfred C. Williams, Glenview, and Donald C. Carlson, Des Plaines, both of Ill., assignors to G. M. Sommer Co. Inc., Detroit, Mich.

Filed Sept. 22, 1972, Ser. No. 291,218

Int. Cl. F16d 43/284; F16k 31/06; H03k 5/20

U.S. Cl. 192—103 F

28 Claims



1. A system for adjusting the rotational speed of a rotatable member to approach a desired rotational speed comprising: sensing means associated with said member for providing a sensing means train of pulses, each pulse of said sensing means train of pulses being representative of a predetermined increment of rotation of said member; delay means receiving said sensing means train of pulses as an input thereof and providing a delay means train of output pulses as an output thereof; speed reference means for providing a speed reference signal representative of the desired rotational speed of said member and for supplying said speed reference signal to said delay means; said delay means comprising means for causing each pulse of said delay means train of pulses to be delayed relative to a corresponding pulse received from said sensing means for a delay period whose duration is inversely proportional to the desired rotational speed of said member over a range of desired rotational speeds; comparing means receiving said sensing means train of pulses and said delay means train of pulses for providing an output signal representative of the time interval between the receipt of respective pairs of said pulses of said delay means train of pulses and said sensing means train of pulses, each of said respective pair of said pulses of said delay means train of pulses and of said sensing means train of pulses including one pulse of said delay means train of pulses and a pulse of said sensing means train of pulses which is subsequent to that pulse of said sensing means train of pulses to which one pulse of said delay means train of pulses corresponds; and speed control means associated with said rotatable member for receiving said output signal of said comparing means and for controlling the rotational speed of said rotatable member in accordance with said output signal of said comparing means to cause the actual rotational speed of said rotatable member to approach its desired rotational speed.

3,851,743

UNIVERSAL CHARGING DEVICE FOR THE INSERTION OF EYELETS, RIVETS, HOOKS AND SIMILAR BY RIVETTING MACHINES

Bocca Alberto, and Pagani Mario, both of Via Farini, 43 Vigevano, Italy

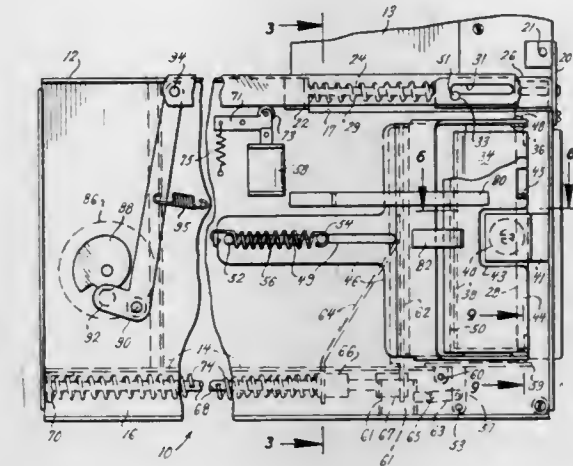
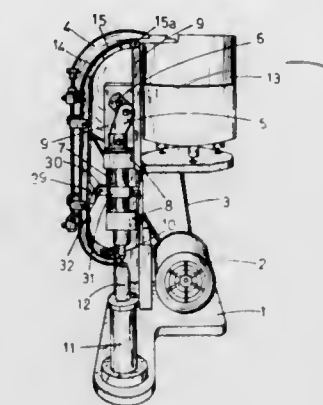
Filed Feb. 29, 1972, Ser. No. 230,392

Claims priority, application Italy, Mar. 4, 1971, 21328/71

Int. Cl. B65g 11/00

U.S. Cl. 193—2 C

7 Claims



1. A device for feeding eyelets and the like of diverse sizes comprising: two elongated guide members each having at least one straight edge wherein the two straight edges are spaced apart to define a longitudinal slot therebetween receptive at one end thereof of eyelets for passage therethrough to the other end thereof; means for adjustably aligning the two straight edges relatively transversely about the median longitudinal axis of said slot to obtain a substantially constant width for said slot along the whole length thereof; and means for simultaneously adjusting the position of said two straight edges symmetrically with respect to said median longitudinal axis to variably adjust the overall constant width of said slot and to simultaneously maintain the position of said median longitudinal axis comprising an elongated rotatable rod having one threaded end portion having a left handed thread and another threaded end portion having a right handed thread, means mounting said rod to said two guide members for rotation about its longitudinal axis and disposing its longitudinal axis parallel to said median longitudinal axis, first means receptive of said one threaded end portion of said rod and coactive with one portion of both of said two guide members for effecting symmetrical movement about said median longitudinal axis of said one portion of both said guide members in response to rotation of said rod, and second means receptive of said another threaded end portion of said rod and coactive with another portion of both of said two guide members and responsive to the rotation of said rod for effecting symmetrical movement about said median longitudinal axis of said another portion of said two guide members simultaneously with and identical to the movement of said one portion of said guide members to impact a constant overall width to said slot.

3,851,744

ESCROW STACKER FOR PAPER CURRENCY

Gustav F. Erickson, Hot Springs, Ark., assignor to UMC Industries, Inc., New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,417

Int. Cl. B69h 29/14

U.S. Cl. 194—4 R

17 Claims

1. A combination escrow-stacker for paper currency which comprises walls defining a space that can receive bills, escrow means in communication with said space to receive and temporarily grip bills which are moved into said space, stacker means in communication with said escrow means to receive bills from said escrow means and to hold said bills under pressure in a stack, bill-moving means to move bills in said space into a position where they are gripped by said escrow

means and to subsequently move bills gripped by said escrow means into a second position where they are held under pressure by said stacker means, said escrow means and said stacker means being so disposed relative to said space that bills which are moved into said space are moved along a predetermined path by said bill-moving means as they are successively moved into positions where they are gripped by

said escrow means and are held under pressure by said stacker means, and bill-returning means which coact with said escrow means to selectively return bills that are gripped by said escrow means, said bill-returning means and said escrow means providing a path of movement, for said bills which are to be returned, that is at least in part separate and distinct from said predetermined path.

3,851,745

ELECTRIC BRAILLE RECORDING AND REPRODUCING SYSTEM

Sirou Okazaki, Okayama, and Kenjiro Ito, Kawasaki, both of Japan, assignors to Nippon Typewriter Co. Ltd., Tokyo, Japan

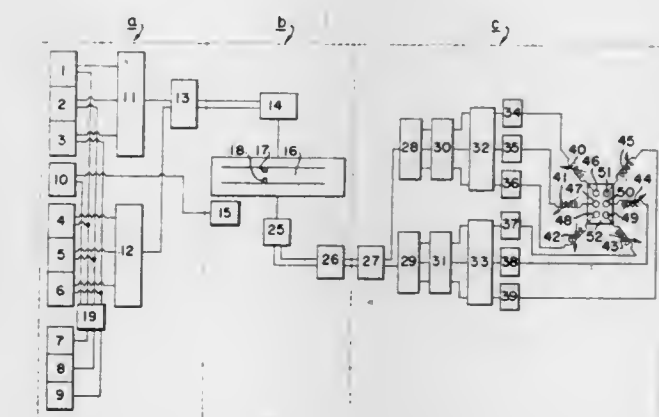
Continuation-in-part of Ser. No. 155,803, June 23, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,908

Claims priority, application Japan, June 29, 1970, 45-56699; June 29, 1970, 45-56700

Int. Cl. B41j 3/32

U.S. Cl. 197—6.1

18 Claims



1. In a braille recording and reproducing system, signal generator means for producing ac signals of different frequencies, at least two mixer circuits connected to said signal generator means for mixing signals selectively supplied thereto from said signal generator means, a braille keyboard including a master key and two sets of point keys corresponding to the six

points in a braille character, each of said sets of point keys consisting of three-point keys, one of said sets of point keys when selectively pushed supplies accordingly different ac signals from said signal generator means to one of said mixer circuits and the other of said sets of point keys supplies different ac signals from said signal generator means to the other of said mixer circuits, dual channel magnetic recording and reproducing means operatively connected to said mixer circuits for recording on a recording medium electric signals each consisting of a combination of different frequencies depending on which of said point keys were operated, and an oscillator control circuit to supply simultaneously said different ac signals preselected by said two sets of point keys to both of said mixer circuits after a given time delay sufficient to allow said recording and reproducing means to start and reach a constant speed, and said master key operatively coupled to said magnetic recording and reproducing means and to said oscillator control circuit to initiate operation thereof responsive to actuation of said master key.

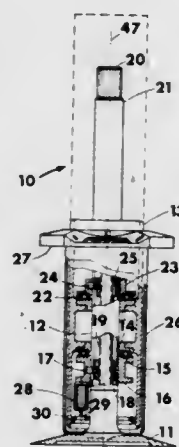
3,851,746

PLATEN FOR MULTIPLEX TYPEWRITER OR SIMILAR DEVICES

Borislav S. Ivanov, and Raina V. Ivanova, both of P.O. Box 145, Stn. D, Toronto, Ontario, M6P 3J5, Canada
Division of Ser. No. 383,633, July 30, 1973, which is a continuation-in-part of Ser. No. 217,442, Jan. 13, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,223
Int. Cl. B41j 11/02

U.S. Cl. 197-144

5 Claims



1. A platen for use in a multiplex typewriter or similar device comprising a cylindrical platen mounted on a tubular vertical stationary column and having first longitudinal and second rotative sliding movements on the column about its own longitudinal axis, a threaded drive shaft within the column, a first step motor and mechanical means connected to the drive shaft for moving the shaft and thereby the platen in the first direction in drive mode and step mode variants, said column having three vertical slots spaced equidistantly at 120° and through which the mechanical means extends the movement of the drive shaft to the platen, a second step motor and mechanical means for moving the platen in the second direction also in drive mode and step mode variants, pulse circuit means feeding pulses to the step motor means and means for adjusting the extent of movements of the platen upon a single operation of each step motor means to change the corresponding letter and line spacing of typing by a selected typing mechanism of an associated typewriter or similar device.

3,851,747 DEVICE FOR TRANSFERRING WORKPIECES FROM A STATIONARY SUPPLY SOURCE TO A MOVING MACHINE

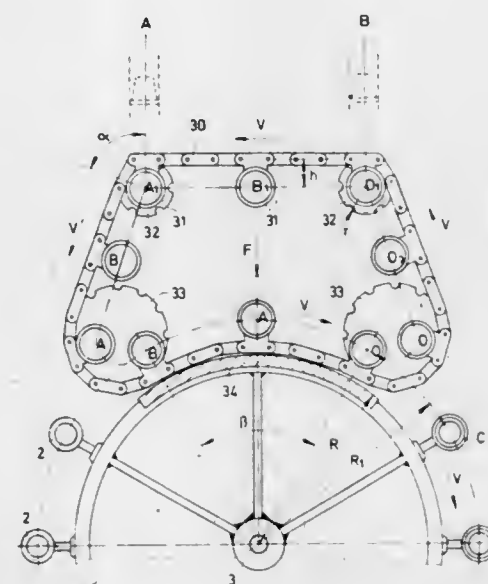
Humphrey Alphons Victor Van Der Roer, Freiburg, Switzerland, assignor to Polytype AG, Friburg, Switzerland
Filed Aug. 31, 1972, Ser. No. 285,303

Claims priority, application Switzerland, Sept. 1, 1971, 12966/71

Int. Cl. B65g 47/00

U.S. Cl. 198-22 R

3 Claims



1. Device for loading workpieces comprising a machine rotating about an axis, said machine having at least one receiving portion thereon spaced radially outwardly from its axis and arranged to receive a workpiece, means spaced from said machine for supporting a stationary supply of workpieces, and means for transporting workpieces from the stationary supply to said machine, said means for transporting workpieces comprises an endless member, at least one carrying element attached to said endless member for holding a workpiece as it is moved from the stationary supply of workpieces to the receiving portion on said machine, said endless member moving said carrying elements at least during a portion of its travel at a speed equal to the speed of travel of the receiving portion on said machine, and a supporting member forming a track defining an arc of a circle for said endless member in a portion of its path of travel, the position of said supporting member being adjacent said means for supporting a stationary supply of workpieces and being spaced from said machine, and said carrying element being attached to said endless member so that in the passage over the track formed by said supporting member of the portion of said endless member to which said carrying member is attached, said carrying element effects a rotary movement about its axis while its axis remains stationary so that a workpiece can be moved from the stationary supply into said carrying element while its axis remains in the stationary position, a plurality of said supporting members are arranged in spaced relationship for the passage of said endless member thereover, said means for transporting workpieces includes a fixed curved guideway forming an arc of a circle with its center of curvature coinciding with the axis of said machine, said guideway defining the path of travel of said endless member with its carrying element in alignment with the receiving portion of said machine for effecting the transfer of a workpiece from the carrying element to the receiving portion, said endless member comprises a chain formed of a plurality of links, a plurality of said carrying elements located at uniformly spaced positions on said chain and each said carrying elements secured to and extending laterally and perpendicularly from one of said links, and said means for transporting workpieces includes a pair of said supporting members, said supporting members being spaced apart at a

multiple of the spacing between said carrying elements, said supporting members comprising first sprocket wheels, each having a radius to the point of engagement with said links of said chain equal to the dimension between the center of said chain and the center of said carrying elements.

3,851,748

APPARATUS FOR DIVIDING A CONTINUOUS STREAM OF ARTICLES INTO BATCHES WHICH MAY BE PLACED IN CONTAINERS

William Robert Garton, London, England, assignor to Molins Limited, London, England

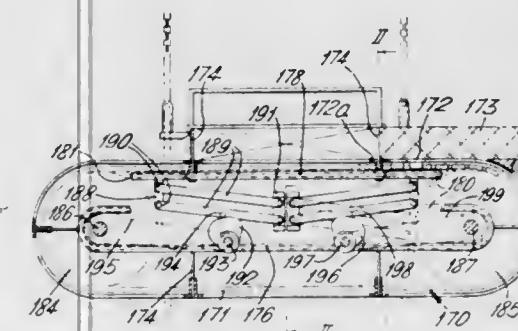
Filed July 18, 1973, Ser. No. 380,243

Claims priority, application Great Britain, July 21, 1972, 34124/72

Int. Cl. B65g 47/26

U.S. Cl. 198-34

20 Claims



1. Apparatus for separating a leading end portion of a stream of articles from said stream comprising means to feed said stream of articles along a defined path, separating means associated with said feed means, a first fixed track in a first plane, a second fixed track in a second plane, a movable track, means for effecting reciprocal movement of said movable track from said first plane to said second plane, and means for moving said separating means along said tracks, said tracks being positioned with said second fixed track closer to said defined path than said first fixed track so that said separating means is clear of said stream while it is moving along said first fixed track and is projected through said stream while it is moving along said movable track during movement of the latter from said first to said second plane, said separating means when moving between said first and second tracks having a first component of movement due to its motion along said movable track and a second component of movement due to movement of said movable track between said first and second planes.

3,851,749

DRAG LINES FOR CONCRETE

Lucien Rene Vidal, Domaine de la Pimpine, 33360 Latresne, France

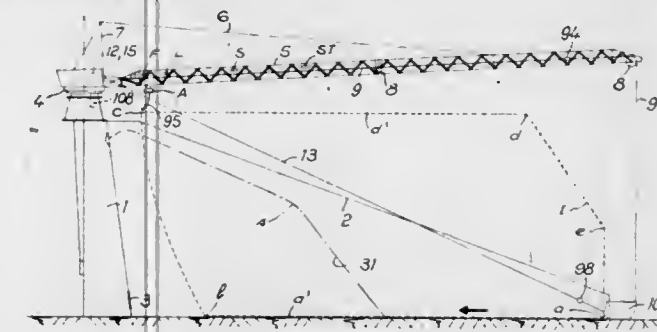
Filed May 22, 1973, Ser. No. 363,170

Claims priority, application France, May 23, 1972, 72.18370

Int. Cl. B65g 65/28

U.S. Cl. 198-36

9 Claims



1. An improved drag line system comprising a tower, radial walls extending from said tower to define separating bunkers,

infed ports provided at the bottom of said tower in each of said bunkers, a rotary platform mounted on an elevated portion of said tower, a cantilever jib mounted on said rotary platform, an idler roller at the outer end of said cantilever jib, a bucket return winch mounted on said rotary platform, a return cable wound on said bucket return winch and extending over said idler roller, a scraper bucket having said return cable fastened to a back portion thereof, a scraping winch on said platform, a scraping cable wound on said scraping winch and having its outer end connected to a front portion of said scraper bucket and control means for controlling said bucket return winch and said scraping winch for sequentially moving the bucket in a closed loop of travel in a vertical plane comprising a lower scraping path inwardly toward said tower, a lifting path upwardly adjacent the tower at the inner termination of the scraping path, a return path from the upper termination of the lifting path outwardly toward the outer end of said jib and a lowering path from the outer termination of the return path to the outer end of the scraping path, said control means including an active sensor means for detecting movement of the bucket to a position closely adjacent the tower by the scraping winch for immediately stopping the winding of the scraping winch and providing a time delayed initiation of operation of the winding of the return winch and unwinding of the scraping winch to initiate movement of said bucket along said return path.

3,851,750

METHOD FOR THE PRODUCTION OF PLASTIC

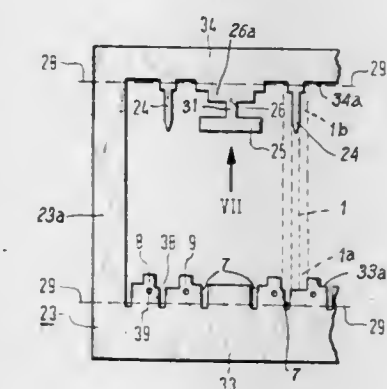
Ferdinand Utner, Roter-Brach-Weg 99, 84 Regensburg, Germany

Division of Ser. No. 200,124, Nov. 18, 1971, This application Jan. 22, 1973, Ser. No. 325,614

Int. Cl. B65g 15/00

U.S. Cl. 198-131

2 Claims



1. A transporting belt means for the continuous production of plastic covered coils, each coil having a tubular core member, said belt comprising two generally parallel first and second portions spaced apart a distance generally equal to the length of the tubular core members, said first portion of said belt having an inner edge with a plurality of spaced mounting supports projecting toward said second portion and said second portion having a plurality of spaced mounting rods generally projecting toward said first portion, said mounting rods and said mounting supports being alternately spaced, said first portion having contact portions on said inner edge facing said mounting rods and arranged alternately of said mounting rods on said second portion, said first and second portions extending inwardly from said inner edge on opposite sides of each contact portion, each mounting rod and each mounting support being arranged to accommodate said first and second portions to be cut along lines inwardly of and roughly parallel to the inner edges thereof whereby said mounting rods and mounting supports will be separated from said transporting belt means.

3,851,751

METHOD AND APPARATUS FOR FORMING, FILLING AND SEALING PACKAGES

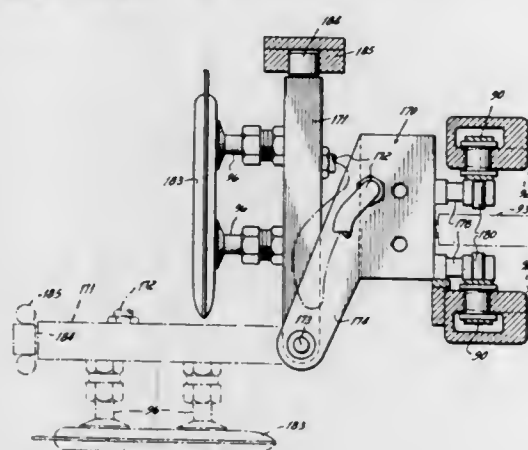
Wickliffe Jones, Cincinnati, Ohio, assignor to R. A. Jones & Company, Incorporated, Covington, Ky.

Filed Apr. 26, 1972, Ser. No. 247,574

Int. Cl. B65g 15/00

U.S. Cl. 198—179

2 Claims



1. Conveyor apparatus comprising, an endless chain, means for driving said chain in an endless path, a plurality of valve bodies mounted on said chain in spaced relation, vacuum operated devices carried by said bodies and operable by said bodies upon evacuation of said bodies to support articles, tubing serially interconnecting said bodies and forming an endless path for evacuating all valve bodies, and means including a vacuum source whose location is fixed relative to the path of said chain for engaging said bodies sequentially to apply vacuum to said bodies over at least a portion of their excursion.

3,851,752

SELF-TROUGHED CONVEYOR BELT REVERSING APPARATUS AND METHOD

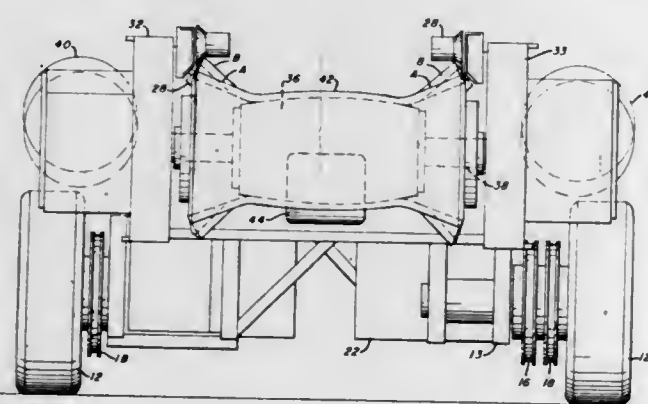
Neal W. Densmore, 452 Wendy Way, Franklin, Pa. 16323

Filed May 3, 1973, Ser. No. 356,843

Int. Cl. B65g 15/08

U.S. Cl. 198—192

10 Claims



1. In a transfer terminal for a mobile belt conveyor having a transversely flexible self-troughed conveyor belt with a horizontal base portion and obliquely raised side portions producing a given side height, the improvement comprising: a belt reversing pulley means having an effective pulley length substantially equal to the width of said belt base portion; said pulley means forming a crowned pulley assembly with a ratio of effective crown radius to pulley major diameter no greater than about four to one; said crowned pulley being cooperable with said belt to substantially reduce the side height from said given height while said belt is in contact with said pulley means.

3,851,753

ROLLER CLEANING MECHANISM

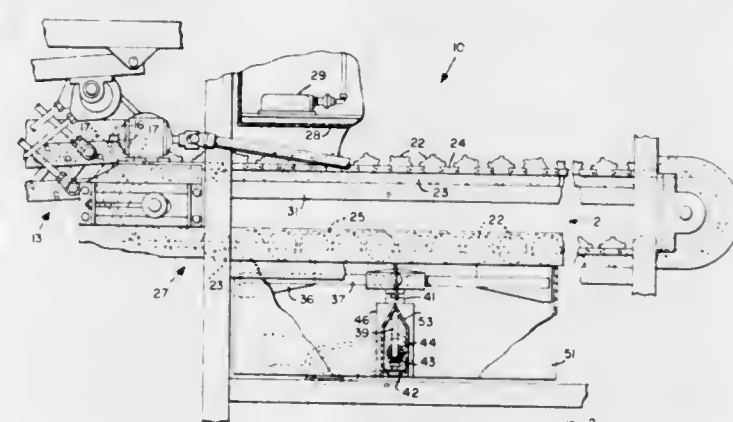
Louis P. Lazzarini, and Traner J. Smith, both of San Jose, Calif., assignors to Genevieve I. Hanscom, Santa Cruz, Calif.; Genevieve I. Hanscom; Robert Magnuson; Robert Thomson and Lois J. Thomson, Trustees of the Estate of Roy M. Magnuson, deceased

Continuation of Ser. No. 46,228, June 15, 1970. This application July 11, 1973, Ser. No. 378,062

Int. Cl. B65g 45/00

U.S. Cl. 198—229

5 Claims



1. In a peeling machine, a roller conveyor for traveling through a treating zone to carry products to be treated therein, said roller conveyor comprising a plurality of rollers and having a return stretch; a track for controlling the travel of the roller conveyor and predetermining the path of the rollers comprising said return stretch during their travel in a path parallel to and closely adjacent one stretch of said roller conveyor, said blades moving in closely spaced relation with respect to said rollers during travel through said cleaning zone for effecting removal of excess material adhering thereto; a sprocket provided at one end of each roller, the sprockets on adjacent rollers alternating from end to end; and, a pair of fixed chains mounted on said machine so as to be engaged by said sprockets during their travel through the cleaning zone.

3,851,754

STACKED TRAYS

Ralph Godfrey Jones, Markfield, England, assignor to Preci-Spark Limited, Syston, England

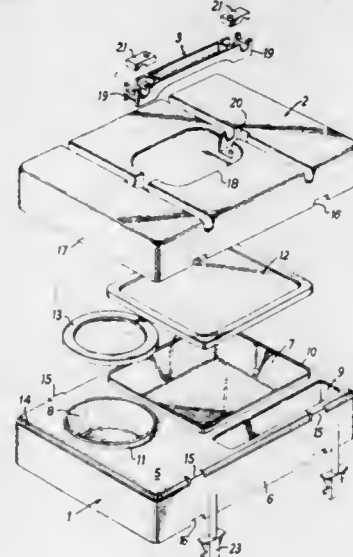
Filed Nov. 3, 1972, Ser. No. 303,345

Claims priority, application Great Britain, Feb. 4, 1972, 5263/72

Int. Cl. A45c 11/20; B65d 21/02

U.S. Cl. 206—549

4 Claims



1. An assembly of stacked interfitting trays, each tray comprising a top with a depending skirt around the perimeter

thereof, a groove formed at the junction between the top and the skirt and extending about the perimeter of the tray, said groove interfitting with the bottom edge of an identically shaped skirt of the tray next above it in the stack, each tray having at least two locating recesses in the bottom edge of the skirt and at least two raised lugs formed by interruptions in said groove and extending upwardly from the plane of the bottom of the groove, the lugs being shaped to mate with and positioned along the groove to fit snugly into said recesses of an identically shaped skirt of the tray next above it in the stack, and recessed compartments formed into said top,

and further including, a cover disposed above the uppermost tray, said cover including a said depending skirt with recesses interfitting with the groove and the lugs of the uppermost tray, respectively, a handle attached to the cover, and a quick release tie means about all of the trays and the cover for holding the assembly together as a unitary pack.

3,851,755

HEAT SHRINKABLE COIN PACKAGE

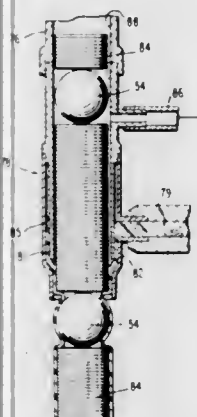
Gerry G. Hull, and Eugene B. Morris, Jr., both of Atlanta, Ga., assignors to AFL Machine Corporation, Atlanta, Ga.

Continuation of Ser. No. 48,077, June 22, 1970. This application June 15, 1972, Ser. No. 263,313

Int. Cl. A45c 11/28

U.S. Cl. 206—82

4 Claims



1. A package of coins or the like comprising a plurality of coins positioned in flat overlying abutting relationship to form a stack of coins, a transparent open ended tube surrounding said stack of coins with the end portions of said tube drawn in at the ends of the stack of coins uniformly about the periphery of the outside surface of each end coin to a diameter less than the diameter of the coins in the stack of coins to confine the end coins about their peripheries in said stack and flared out from the drawn in portions and terminating with a diameter approximately as large as the diameter of the coins in the stack of coins.

3,851,756

COMBINED SAW HORSE AND TOOL BOX

Joseph E. Brown, Stephentown, N.Y., assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed Aug. 14, 1973, Ser. No. 388,127

Int. Cl. B25h 1/12; A47b 85/00; B65d 25/28

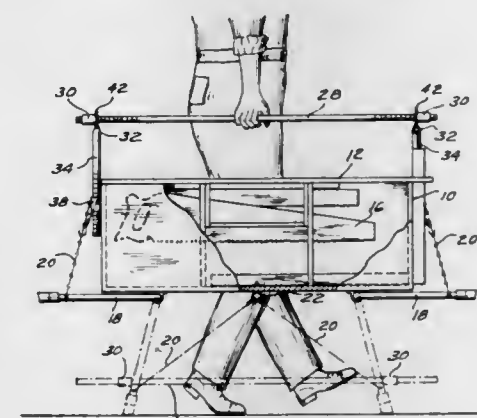
U.S. Cl. 206—216

5 Claims

1. A combined saw horse and tool box comprising: a horizontally elongated hollow rectangular parallelepiped

body; leg means pivotally secured to the bottom of the body, said leg means having a folded position at which it extends along the bottom and an extended position at which it extends inclinedly downwards from the bottom;

first and second L shaped members; means securing each member along the outside of a corresponding one of the ends of the body in a position at which the horizontal legs of the members are parallel,



disposed above the top of the body and extend transversely the horizontal longitudinal center line of the body, the means enabling the vertical separation between horizontal leg and top of the body to be adjusted as desired; bracket means secured to the horizontal legs of each member; and

a horizontally elongated handle parallel to said longitudinal center line and extending between said bracket means, each end of the handle detachably engaging the corresponding bracket means.

3,851,757

DOUGH PACKAGE CONTAINING TRIPLE SEALED ICING CUP AND METHOD OF PRODUCING THE SAME

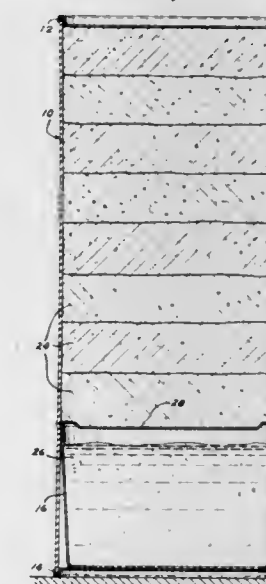
Charles H. Turpin, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Mar. 29, 1973, Ser. No. 345,927

Int. Cl. B65d 17/02

U.S. Cl. 206—223

6 Claims



1. A multi-compartment dough container comprising a fiber can body of cylindrical configuration, end walls sealed to each end of the fiber container to close the ends thereof, a separator plate positioned in the cylindrical fiber container in a plane extending normal to the axis thereof and having a first interference fit therewithin, a cup between the separator plate and one end of the fiber container, the closed end of the cup facing the adjacent end of the container, the cup being formed from a thermoplastic resinous material, the lower edge of the pe-

riphery of the separator plate being in continuous contact with the upper edge of the cup and a second interference fit between the cup and the inner wall of the fiber container at a location adjacent to the said separator plate to thereby define a triple seal comprising a first seal between the separator plate and the adjacent circular section of the inner wall of the fiber container, a second seal between the separator plate and the cup and a third seal between the portion of the cup adjacent the separator plate and the inner wall of the fiber container, said triple seal being effective to reduce the extrusion of dough from the dough compartment above the separator plate into the space between the cup and the fiber container.

3,851,758

SEMICONDUCTOR CHIP FIXTURE

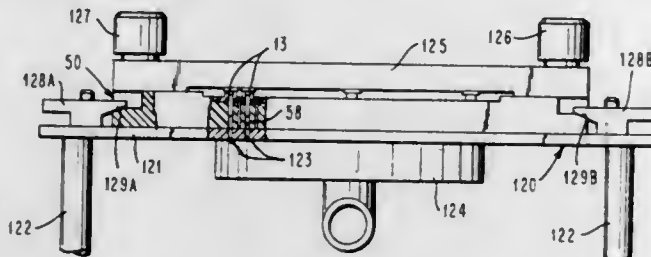
Manik P. Makhijani, and Frank Scacciaferro, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,614

Int. Cl. B01j 17/00; B25b 11/00; B65d 85/42

U.S. Cl. 206—328

3 Claims



1. A fixture for storing a plurality of semiconductor chips in adjacent, side by side relationship, each of said chips including a kerf at least intermediate adjacent chips; said fixture comprising a first cover member, a second cover member, a resilient pad in said second cover member, and a first group of apertures in said pad and second cover and dimensioned for alignment with individual ones of said chips to permit subjecting said chips to a vacuum through said pad and cover, and a second group of apertures dimensioned for alignment with the kerfs of said chips, and means to hold said covers together while compressing said resilient pad against said chips.

3,851,759

NAIL STRIP AND METHOD OF MAKING SAME

Hobart P. Young, Winnetka, and Donald W. Noren, Morton Grove, both of Ill., assignors to Signode Corporation, Glenview, Ill.

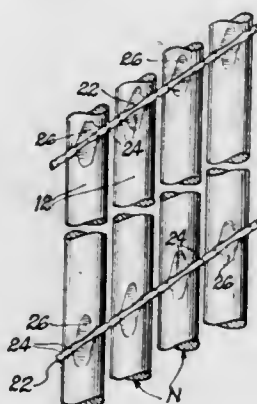
Continuation of Ser. No. 217,868, Jan. 14, 1972, abandoned.

This application Oct. 16, 1973, Ser. No. 406,795

Int. Cl. B65d 79/00; B23p 11/00

U.S. Cl. 206—338

15 Claims



1. A nail strip for use in a nailing machine comprising: a multiplicity of nails, each having a head portion, an elongated shank, and a point, with their points all facing the same direction, a shank of one nail being disposed closely adjacent a

shank of a next adjacent nail, each said shank defining a notch disposed transversely with respect to the shank, the notches being aligned in an outwardly facing surface of the nail strip to provide a row of aligned notches; an elongated metallic filament disposed in said row of notches, said filament defining multiple zones of diminished cross section at predetermined intervals along its length, said zones being adapted to facilitate severance of portions of said filament from said filament at said zones when a nail is driven by a nailing machine from said strip, and shank material adjacent said notches mechanically gripping said filament in said notches.

3,851,760

ROLL OF PLASTIC FILM APRONS

Ruford Bryan Smith, P.O. Box 567, Paxton, Ill. 60957

Continuation of Ser. No. 144,154, May 17, 1971, Pat. No.

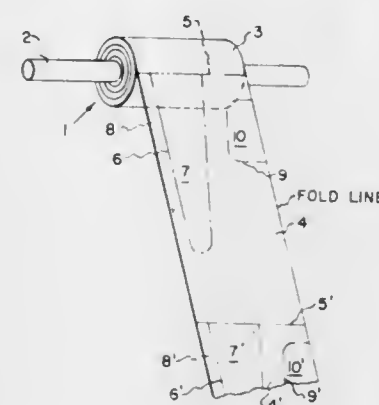
3,735,865. This application Mar. 16, 1973, Ser. No.

342,170 The portion of the term of this patent subsequent to 1991, has been disclaimed.

Int. Cl. B65d 85/66, 85/67

U.S. Cl. 242—55.53

1 Claim



1. A roll of plastic film aprons comprising an elongated strip of plastic film folded in half longitudinally and wound in said longitudinally folded form as a roll on a core or roller, said folded film having a plurality of perforations extending transversely thereto at predetermined longitudinally spaced intervals to facilitate tearing discrete portions of plastic film from the roll, said folded plastic film having a plurality of perforations adjacent to each set of transversely extending perforations extending from the edge fold to define a subsequently removable portion of plastic film which when removed leaves an opening at said edge, said folded plastic film having an arcuate cut-out portion beginning at each set of transversely extending perforations and extending parallel to the edge opposite said fold, curving transversely, and then extending back to said transversely extending perforations, to define tie straps at one side, said plastic film being severable from said roll and the portion defined by said perforations being removable to define an apron having tie straps extending upward from a base portion and having a central neck opening, when the film is unfolded.

3,851,761

PRESSURE-SENSITIVE ADHESIVE TAPES INCLUDING A POLYCARBAMATE RELEASE COATING

Andor Schwarcz, Niskayuna, N.Y., assignor to Nashua Corporation, Nashua, N.H.

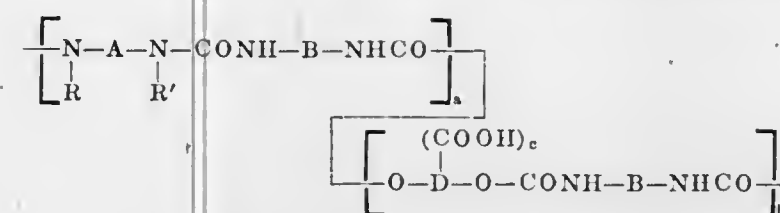
Filed Sept. 28, 1972, Ser. No. 292,905

Int. Cl. C09j 7/02

U.S. Cl. 206—411

10 Claims

1. A pressure-sensitive adhesive tape comprising a backing member, a pressure-sensitive adhesive on the front side thereof, and as a release agent on the backside thereof, a polymeric composition of the general recurring formula:



wherein A is an alkylene radical containing about two to six carbon atoms, B is an arylene radical containing about six to 16 carbon atoms, D is an aliphatic organic radical containing about two to six carbon atoms, R is an alkyl radical containing about 12 to 25 carbon atoms, R' is hydrogen or an alkyl radical containing about one to 25 carbon atoms, a and b represent the number of recurring units and the ratio of b/a varies from 0 to 2, and c is 0, 1 or 2.

3,851,762

PACKAGING ASSEMBLY

Herbert Liblick, Whitestone, N.Y., assignor to Distribu-U-Mat, Inc., New York, N.Y.

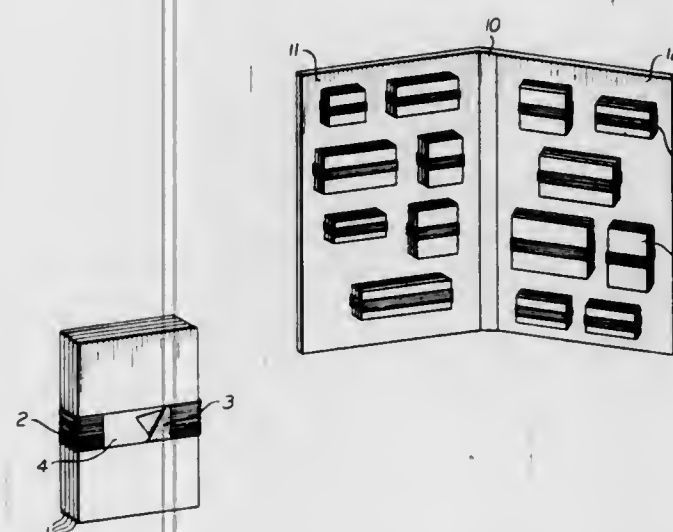
Continuation of Ser. No. 875,810, Nov. 12, 1969, abandoned.

This application Oct. 12, 1971, Ser. No. 188,521

Int. Cl. B65d 73/00, 85/00

U.S. Cl. 206—425

5 Claims



1. A package assembly for displaying and storing a plurality of independent packets of advertising newspaper mats materials comprising at least one generally rectangular panel, a plurality of said packets of advertising mats each comprising single, completely separated sheets of paper products of substantially equal size arranged in superposed relationship, continuous elastic band holder means encircling and securing together said stacked single completely separated sheets of paper products in an oriented position, a pressure-sensitive adhesive carried on the back of said band holder means securing said holder means to said panel, said single sheets of paper products being removably retained within said band holder means.

3,851,763

COMBINATION SPADE OR SHOVEL AND SIFTER

Charles W. Ball, 155 Ocean Ave., Bridgeport, Conn. 06605, and Alexander Brodsky, 153 Birch Rd., Fairfield, Conn. 06430

Filed Mar. 27, 1972, Ser. No. 238,035

Int. Cl. B07b 1/02

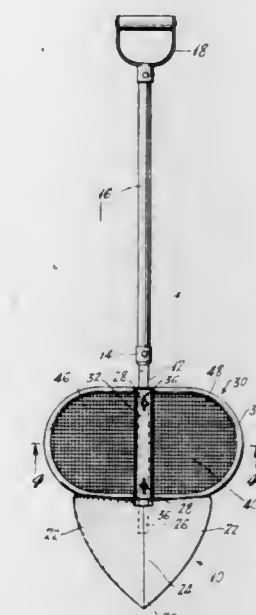
U.S. Cl. 209—419

5 Claims

1. A dual-purpose garden tool comprising, in combination:

- an imperforate shovel blade,
- an elongate handle to one end of which the shovel blade is attached,

- a hand grip secured to the other end of the handle,
- expansive, substantially planar sifter means separate from said blade and attached to the handle adjacent and above said blade, and
- a stirrup carried by the handle adjacent that portion of the sifter means which is remote from the shovel blade, said stirrup projecting from the handle in a direction away



- from the plane defined by the sifter means,
- said sifter means comprising two halves symmetrically disposed on opposite sides of the handle,
- each of said halves having a substantially planar configuration,
- the plane of one of said halves making a slight angle with respect to the plane of the other half.

3,851,764

POWER FILE CONSTRUCTION

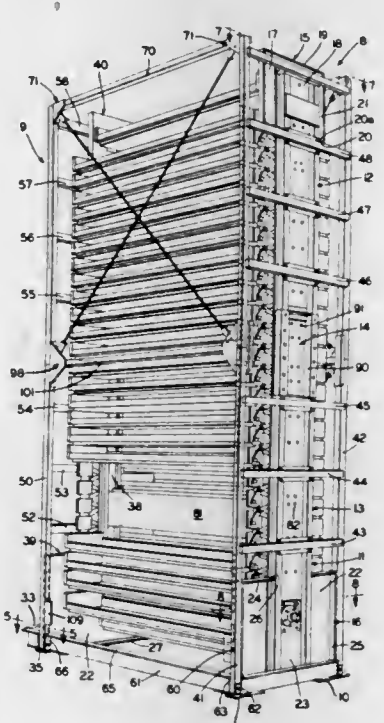
Walter G. Anders, Canton, Ohio, assignor to Diebold Incorporated, Canton, Ohio

Filed Mar. 29, 1973, Ser. No. 345,875

Int. Cl. A47f 3/08, 5/03

U.S. Cl. 211—1.5

10 Claims



1. In a generally upright power file of the type in which a plurality of pans are mounted on an endless conveyor for movement in either direction in a continuous orbit of travel; in which any selected pan is delivered by power means to a work station location; in which the support means includes header and footer members and vertical column means ex-

tending from the bottom to the top of the file, and between and is attached to said header and footer members at each side of said file; and in which the conveyor is supported by the support means; the improvement which includes:

- a. bottom frame means defining a generally rectangularly shaped base area having front and rear corners;
- b. corner posts located adjacent each corner secured at their lower ends to the bottom frame means and extending vertically to the file top, said corner posts being spaced forwardly and rearwardly from the vertical column means;
- c. a plurality of horizontal cross members extending continuously between and rigidly secured to one of the front and one of the rear corner posts at intervals spaced vertically along the length of the corner posts on both sides of the file;
- d. the cross members having planar, uninterrupted top surfaces, being free of protuberances and the like the top surfaces of selected cross members being horizontally aligned with the top surfaces of other selected cross members located on the opposite side of the file;
- e. the cross members being secured intermediate their ends to the outer surface of the vertical column means at spaced intervals throughout the column means length;
- f. the top surfaces of the cross members being generally horizontally flat between the corner posts and the vertical column means and adapted to receive and support construction platforms extending horizontally between selected cross members on opposite sides of the file during file erection;
- g. brace means extending between and secured to at least the rear corner posts; and
- h. the vertical column means, corner posts, cross members, bottom frame means and brace means comprising a file frame to support the entire file load on a supporting surface.

3,851,765

ARTICLE RETAINER FOR A REFRIGERATOR

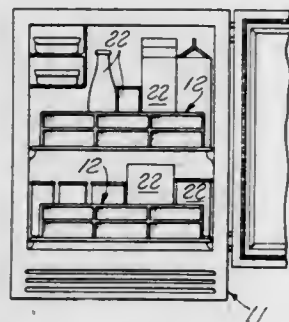
Don O. Cox, 627 E. Magnolia Blvd., Burbank, Calif. 91501

Filed Oct. 6, 1972, Ser. No. 295,677

Int. Cl. A47L 5/00

U.S. Cl. 211-184

4 Claims



1. In combination, retainer means and a shelf, said shelf constructed of a plurality of parallel spaced elongated wirelike means, said retainer means comprising an elongated member constructed of a pliant material, said member including a shoulder along one of the long member edges extending substantially normally from said member, said shoulder having wall portions defining a plurality of slots extending transversely thereof and each said slot terminating in an associated opening in the member;

certain of said slots and associated openings receiving the wirelike means with the elongated member being flexed about at least one transverse axis to conformingly contact the article and secure it against horizontal movement on said shelf, the diameter of said wirelike means being greater than the width of said slots and being substantially equal to the diameter of said openings, whereby said wirelike means are snapped into said openings.

3,851,766
PROGRAMMABLE HYDRAULIC DRIVE SYSTEM FOR TRANSPORTING ARTICLES

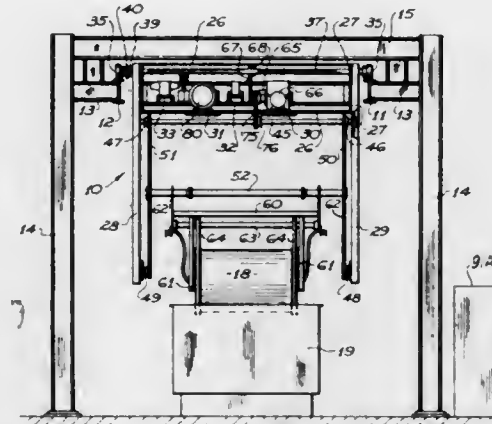
Thomas R. Gill, Cleveland, Ohio, and Daniel Bailly, Ayieau, France, assignors to G S Equipment Company, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 191,253

Int. Cl. B66c 17/00

U.S. Cl. 212-20

12 Claims



1. A programmable material handling apparatus for conveying work loads over a path of travel defined by a longitudinal runway to selected work stations spaced along said path of travel, said apparatus being actuatable through repeated cycles of acceleration, deceleration and stopping during movement over said path of travel, comprising:

- a. hoist support means engaged on said runway for movement over said path of travel to the selected work stations;
- b. load hoist means carried by said support means;
- c. a hydraulic drive system carried on said apparatus for actuating it through said cycles of acceleration, deceleration, and stopping;
- d. said drive system including fluid motor means operatively connected to said movable support, pump means for supplying fluid to said motor means, closed loop hydraulic circuit means connecting said pump means to said motor means so that fluid supplied to said motor means is returned directly to said pump means;
- e. a plurality of position sensing means for developing a pattern of control signals representative of the actual position of said movable support along a workpath;
- f. programmable circuit means for developing a predetermined pattern of program signals representative of the position of a preselected work station, said programmable circuit means including a program board and a control circuit having a plurality of circuit connection means positioned on said board at positions corresponding to the positions of said work stations along said workpath, said control circuit having an output circuit means for developing a pattern of signals corresponding to a preselected program, and actuatable switching means for actuating selected ones of said circuit connection means to program said control circuit, said actuatable switching means being diodes which may be removably inserted into said program board for completing selected ones of a plurality of circuit connections;
- g. comparator circuit means for developing a control signal having a value representative of the difference between the value of said pattern of program signals and the value of said pattern of control signals; and,
- h. said hydraulic circuit means coupled to said comparator means for controlling the fluid supplied to said motor means in response to said control signal developed by said comparator means to thereby energize said fluid motor means for driving said movable support from said actual position to a preselected work station.

3,851,767
TOWER CRANES

Pierre Durand, Lyon, France, assignor to Richier, Paris, France

Continuation of Ser. No. 114,869, Feb. 12, 1971 abandoned.

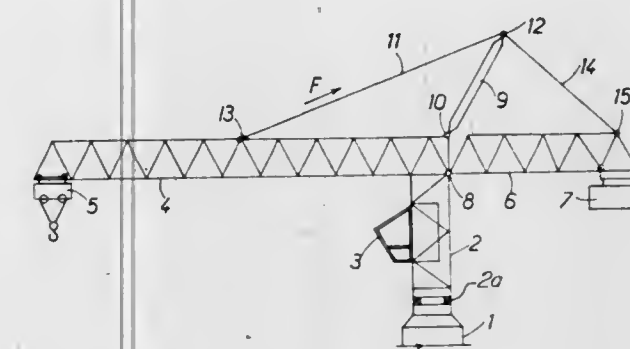
This application May 24, 1973, Ser. No. 364,300

Claims priority, application France, Feb. 13, 1970, 70.05190

Int. Cl. B66c 23/76

U.S. Cl. 212-48

3 Claims



1. A tower crane, comprising:

- a lower tower section and an upper tower section;
- a jib supporting a burden-carrying crab movable along the length thereof, said jib is connected with the top part of said upper tower section so as to form therewith a rigid unit;
- a counterweight-jib;
- means for pivotally connecting said counterweight-jib to said rigid unit on the side thereof remote from said crab-jib;
- a post erected on said rigid unit to project above the same;
- tie members attached to the upper end of said post for connecting said end to said crab-jib and to said counterweight-jib respectively; and
- means for pivotally connecting the lower end of said post to said rigid unit so as to permit said post to swing fully under the action of the forces exerted on it by said tie members.

3,851,768

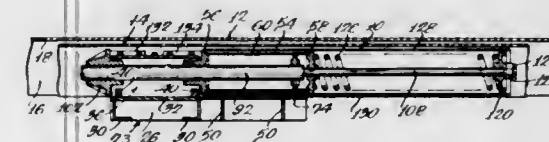
FILLING MEANS FOR AN IMPACT ABSORBING DEVICE
Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Division of Ser. No. 191,634, Oct. 22, 1971, which is a continuation-in-part of Ser. Nos. 1,903, Dec. 17, 1969, abandoned, which is a continuation of Ser. No. 710,196, March, 4, 1968, abandoned. This application Mar. 15, 1973, Ser. No. 341,487

Int. Cl. B61g 9/08

U.S. Cl. 213-43

9 Claims



1. In a hydraulic cushioning unit for coaction between an underframe structure of a railway car and an elongated sliding sill structure longitudinally movable relative to the underframe structure, the improvement comprising:

- a fluid reservoir,
- a cylinder housed within and spaced from said reservoir,
- a piston movable in said cylinder,
- a pair of head members at opposite ends of said reservoir and cylinder,
- one of said head members being provided with a pair of openings disposed at the lower portion of the reservoir when said unit is installed in a car,

removable closures in said openings, and a pair of tubes communicating with said openings and extending upwardly within said reservoir and having open upper ends disposed in the upper portion of said reservoir, whereby said reservoir is adapted to be filled with fluid by introduction of fluid through one of said openings and its associated tube until the fluid flows out through the other of said tubes and the other of said openings.

3,851,769

INDUSTRIAL ROBOT

Kazuo Noguchi, Tokyo; Shigeru Iwai, Chiba; Yukihiro Sato, Tokyo, and Yoshiaki Kitamura, Kamagaya-Machi, all of Japan, assignors to Kabushiki Kaisha Daini Seikoshu, Tokyo, Japan

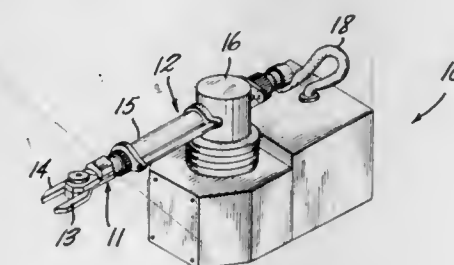
Filed Apr. 10, 1972, Ser. No. 242,565

Claims priority, application Japan, Apr. 9, 1971, 46-22149

Int. Cl. B25j 9/00

U.S. Cl. 214-1 BC

9 Claims



1. A programmable robot comprising: a mechanical unit for effecting diverse movements of an object comprising a movable transfer arm mounted for movement in a plurality of different directions, a manipulator device including actuatable gripping means for releasably gripping an object and connected to said transfer arm at one end thereof for movement therewith and mounted for movement in a plurality of different directions independently of the movement of said transfer arm, and electrically controlled fluid actuating means for independently effecting fluid actuation of both said transfer arm and manipulator device in response to electric command signals applied thereto, said electrically-controlled fluid actuating means comprising a first plurality of fluid motors connected to said transfer arm each operative in response to motive fluid supplied thereto and exhausted therefrom to effect reciprocal movement of said transfer arm along a different axis, said first plurality of fluid motors comprising a first reciprocatory fluid motor connected to said transfer arm to effect horizontal reciprocal movement thereof along a horizontal axis and a second reciprocatory fluid motor connected to said transfer arm to effect vertical reciprocal movement thereof along the vertical axis, a second plurality of fluid-motors connected to said manipulator device each operative in response to motive fluid supplied thereto and exhausted therefrom to effect angular oscillatory movement of said manipulatory device about a different axis, said second plurality of fluid motors comprising a first oscillatory fluid motor mounted at said one end of said transfer arm and connected directly to said manipulator device to effect turning oscillatory movement thereof about a horizontal axis and a second oscillatory fluid motor mounted at said one end of said transfer arm and connected directly to said manipulator device to effect swinging oscillatory movement thereof about a vertical axis, and a fluid circuit connected during use of the robot to a source of pneumatic motive fluid and operable to selectively and independently supply and exhaust motive fluid to each of said fluid motors, said fluid circuit including at least one electrically-operated solenoid valve associated with each fluid motor for controlling the application of motive fluid thereto in response to said electric command signals; and a control unit for applying electric command signals to said mechanical unit in accordance with a predetermined program of instructions comprising signal generating means for generating elec-

tric control signals in accordance with a predetermined program of instructions to be carried out by said mechanical unit, and an electric circuit having means receptive of said control signals for developing therefrom a series of electric command signals in accordance with said predetermined program of instructions and applying said electric command signals to each solenoid valve to accordingly control the movement of said mechanical unit.

3,851,770

PIVOTED WELL DRILLING MAST AND SEPARATE TOWER

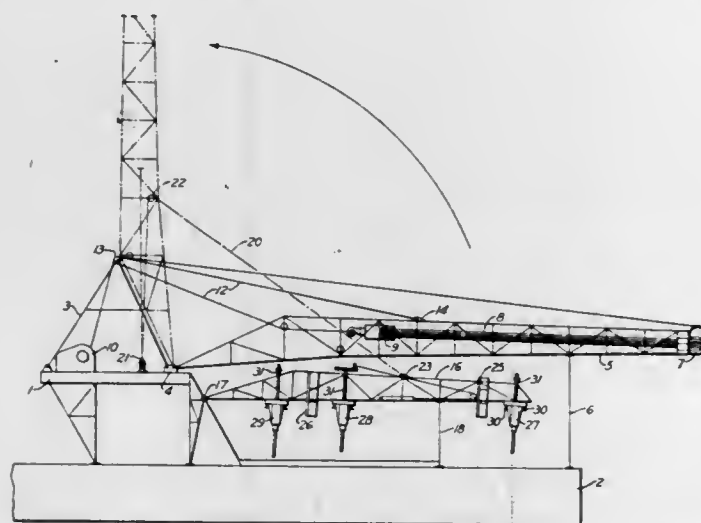
Cecil Jenkins, and Joseph R. Woolslayer, both of Tulsa, Okla., assignors to Lee C. Moore, Tulsa, Okla.

Filed Apr. 30, 1973, Ser. No. 355,723

Int. Cl. E21b 19/00

U.S. Cl. 214—2.5

7 Claims



1. Well drilling apparatus comprising a substructure having a front and a back, a mast with an open front side, means hinging the foot of the mast to the substructure on a horizontal axis, means for swinging the mast from a prone position in front of the substructure up to an upright position above the substructure, a pipe racking tower with an open back side, means hinging the foot of the tower to the substructure on a horizontal axis in front of and below said mast hinging means, a line attached to the upper side of the prone tower, sheave means up in the upright mast, said line passing over said sheave means and downwardly therefrom, means on said substructure for pulling on said line to swing the tower from a prone position in front of the substructure below the level of the prone position of the mast up to an upright position in front of the upright mast, and means for holding the mast and tower in said upright positions.

3,851,771

MATERIAL HANDLING DEVICE

Donald L. Hufford, Charlevoix, Mich., assignor to Hufford Industries, Inc., Charlevoix, Mich.

Filed Dec. 11, 1972, Ser. No. 314,125

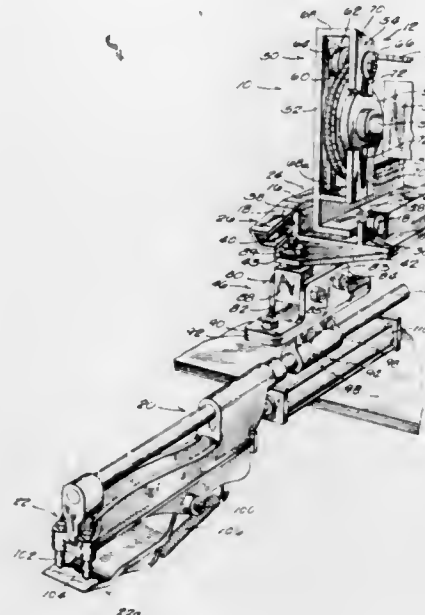
Int. Cl. B66c 1/42

U.S. Cl. 214—1 BB

11 Claims

1. Apparatus for inserting or removing a work piece from a press comprising, in combination: a support; stationary guide means extending from said support toward the press, said guide means being channel shaped and having a horizontal portion and a terminal portion extending downwardly from the outer end of the horizontal portion at an incline thereto; carriage means having first and second longitudinally spaced rollers confined within said channel shaped guide means at all positions and movable along said guide means toward and away from the press; reciprocating drive means for continuously and reciprocally moving said carriage means back and

forth along said guide means; and work handling means carried by said carriage means and having means for automatically gripping and releasing the work piece, said means for gripping and releasing the work piece being cooperatively associated with the position of said carriage means whereby as said carriage means is moved toward said press along said



terminal guide portion, said means for gripping and releasing the work piece moves both vertically and horizontally on an incline into gripping engagement with the work piece, and as said carriage means is moved away from the press, said means for gripping and releasing the work piece grips the work piece to move it up and out of the press for travel along said horizontal portion.

3,851,772

DEVICE FOR TRANSFERRING OBJECTS

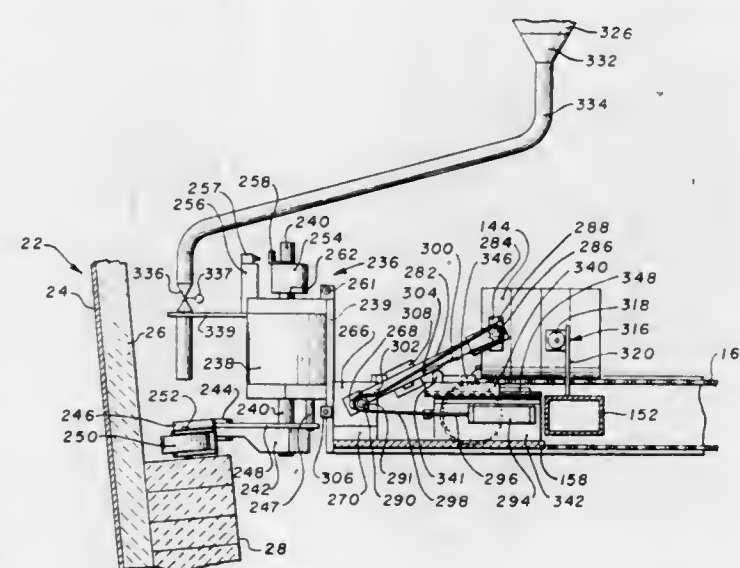
Ronald Eugene Williamson, Hammonsville; Sidney Clark Porter, Jr., East Liverpool, both of Ohio, and Kenneth Frederic Shottling, Coraopolis, Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 253,546, May 15, 1972, Pat. No. 3,757,484. This application June 4, 1973, Ser. No. 367,077

Int. Cl. B65g 7/08

U.S. Cl. 214—1 Q

6 Claims



1. A device for transferring an object at a first location in a first position to a second location in a second position comprising:

- two spaced arms;
- arm rotating means for rotating said two spaced arms about a pivot axis;
- gripping means for each of said arms for picking up said object on a common axis therethrough, at least one of

said gripping means being a rotating gripper rotatably mounted on one of said arms and adapted to impart rotation to said object upon rotation of said rotating gripper; and

object rotating means for controllably rotating said objects relative to said arms including a sprocket mounted to said rotating gripper and rotatable relative to said one arm, a spring means on said one arm, a chain adapted to engage said sprocket and having one end fixed to said spring, and a mounting point to which the other end of said chain is fixed, said mounting point being positioned separate from said arms such that, upon rotation of said arms about said pivot axis, the distance along said chain between said sprocket and said mounting point changes, said spring means thereby changing length and said sprocket thereby rotating said rotating gripper to rotate said object from said first position to said second position as said arm rotating means rotates said arms from said first location to said second location.

3,851,773

STACKING DEVICE, PARTICULARLY FOR NEWSPAPERS

Willi Kluge, and Reinhard Kluge, both of D-63 Giessen, Kugelberg 55, Germany

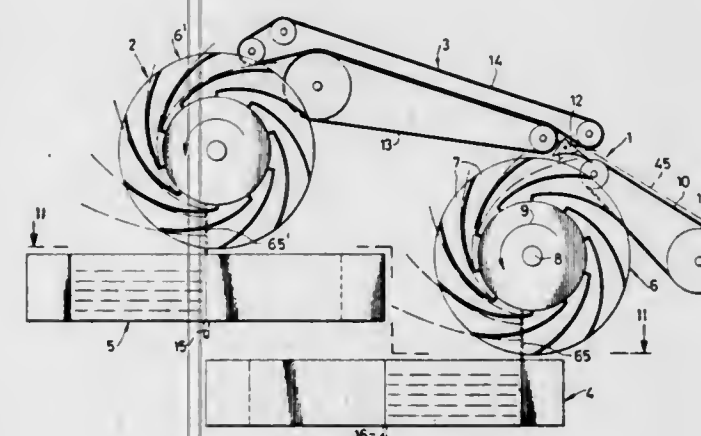
Filed July 9, 1973, Ser. No. 377,716

Claims priority, application Germany, July 8, 1972, 2233750

Int. Cl. B65g 57/08

U.S. Cl. 214—6.5

12 Claims



1. A stacking device for stacking of articles, particularly papers, which are of different thicknesses on opposite sides, comprising a catching mechanism for partial stacks and a rotating mechanism for rotating the partial stacks, said rotating mechanism having two rotary platens which are arranged at different heights and which can be oppositely rotated in a stepwise manner, said rotary platens each having at least two pockets for receiving partial stacks, the axes of rotation of which are both arranged vertically and which viewed in ground view are spaced from one another in such a manner that each one pocket of the upper rotary platen can be caused to coincide with one pocket of the lower rotary platen in a delivery position, stationary feed mechanisms for filling the pockets of the rotary platens, said feed mechanisms being arranged above the rotary platens, a deflector device for the alternate feeding of a continuous stream of articles to one of the feed mechanisms, discharge mechanisms for removing the partial stacks which are provided in the pockets, a lowering mechanism for lowering the upper partial stack onto the lower partial stack and a collecting mechanism for stacking the stack units one on top of the other, said stack units comprising the two aforementioned partial stacks.

3,851,774

BOTTOM SILO UNLOADER

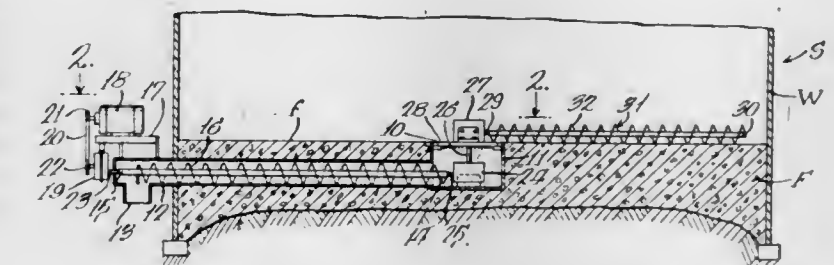
Jonathan J. Laidig, Mishawaka, Ind., and Loren P. Boppert, Harvard, Ill., assignors to Laidig Silo Unloaders, Inc., Mishawaka, Ind.

Filed Dec. 5, 1973, Ser. No. 421,855

Int. Cl. B65g 65/46

U.S. Cl. 214—17 DA

12 Claims



1. In a bottom silo unloader for use in the discharge of moist grain from a sealed cylindrical silo that has a floor with a center discharge hole, in combination:

- a casing in said discharge hole that has an upper edge substantially flush with the floor;
- a discharge tube communicating with said casing beneath the floor, said discharge tube having a discharge opening outside the line of the silo wall and an airtight closure for said opening;
- a discharge auger in said discharge tube;
- drive means mounted outside the silo and drivingly connected to said discharge auger;
- a lower right angle gear box in the casing which has a horizontal input shaft coupled to the discharge auger;
- means at the bottom of the casing restricting movement of said lower gear box;
- an upper right angle gear box having a horizontal output shaft;
- a vertical shaft drivingly connecting said gear boxes;
- a sweep auger above the silo floor and rigidly drivingly connected to the output shaft of the upper gear box for revolving the sweep auger on its axis to feed grain into the casing;
- a ring gear supported in the upper part of the casing for rotation about the axis of the vertical shaft;
- means mounting said upper gear box on said ring gear;
- and means for driving the ring gear from the drive means to rotate the sweep auger about the center of the silo.

3,851,775

MECHANISM FOR HANDLING A BULLET MELTED IN A HERMETICALLY-SEALED FURNACE

Anatoly Vladimirovich Zlotin, bulvar Lesi Ukrainki, 24b, kv. 77; Jury Mikhailovich Krivoslykov, bulvar Lesi Ukrainki, 20, kv. 40, and Alexei Lavrentievich Tikhonovsky, ulitsa Vernadskogo, 73, kv.45, all of Kiev, U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,526

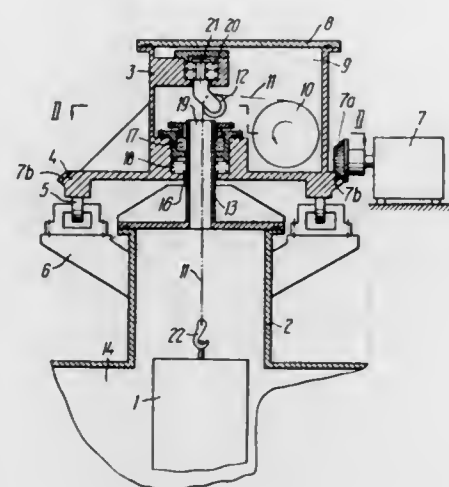
Int. Cl. B66c 17/12

U.S. Cl. 214—18 R

1 Claim

1. In a hermetically-sealed electron-beam furnace having a melting zone and an upper part, a mechanism for handling a billet being melted in the furnace, said handling mechanism including a casing mounted for rotation relative to the furnace, said casing having an inner space, a tubular throat providing communication between the inner space of the casing and the interior of the upper part of the furnace, means between the casing and the tubular throat providing a hermetic seal between the casing and the upper part of the furnace, a rotatable drum means mounted within the inner space of the

casing to one side of the tubular throat, a loading chain wound on the drum means, drive means operably coupled to the drum means for rotating drum means, a roller means secured within the space of the casing between the drum means and the throat for guiding the loading chain vertically along the



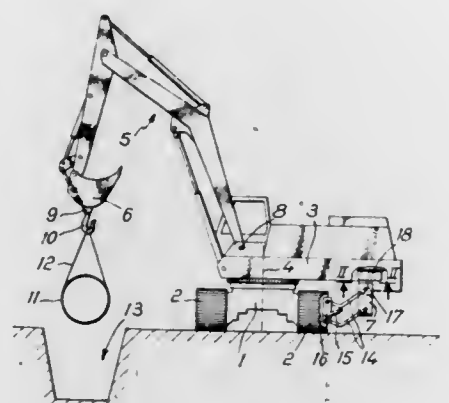
3,851,776

VEHICLE WITH COUNTER WEIGHT TURRENT LOCK
 Pierre J. E. Leyrat, Trilport, France, assignor to Societe Anonyme Poclair Le Plessis Belleville, Oise, France
 Filed Apr. 9, 1973, Ser. No. 349,101
 Claims priority, application France, Apr. 18, 1972, 72.13632

Int. Cl. B66f 9/00

U.S. Cl. 214-142

2 Claims

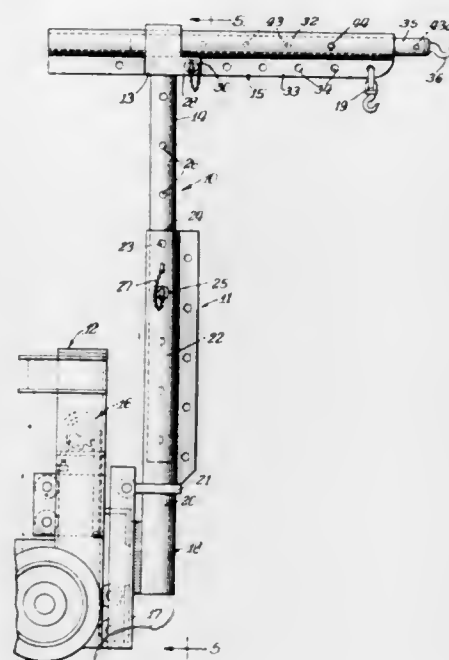


1. A work vehicle having a vehicle frame supported by ground-engaging rolling members, a turret mounted to pivot about a vertical axis on the vehicle frame, work supporting means mounted on said turret and extending outwardly from said turret, a deformable quadrilateral support frame connected on one end to one side of said vehicle frame, a counterweight supported by said quadrilateral support frame, a stirrup carried on the lower portion of said turret comprising two spaced arms, a locking plate integral with said counterweight, said deformable quadrilateral frame being movable between a first or retracted position in which the counterweight is closely adjacent the vehicle frame and an extended position in which said locking plate is engageable with said stirrup between said spaced arms to lock said turret against rotation while simultaneously providing a counterweight function for said vehicle.

3,851,777
ADJUSTABLE BOOM ATTACHMENT
 Mike M. Dilny, 4855 North Western Ave., Chicago, Ill. 60625
 Filed June 13, 1972, Ser. No. 262,358
 Int. Cl. B66f 9/06

U.S. Cl. 214-620

19 Claims



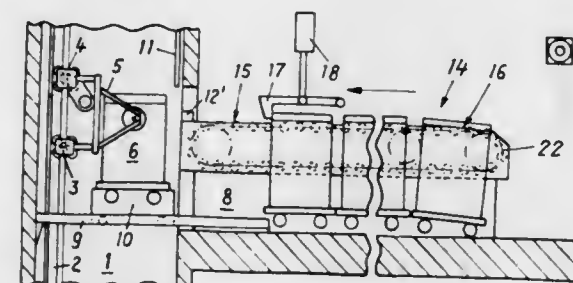
1. For use with a fork lift truck having a vertically movable lift member, an adjustable boom attachment comprising: an upright support; means for securing the support to the lift member for vertical movement therewith; a carrier mounted on said support and defining a through horizontal passage; a boom longitudinally movably fitted in said carrier passage and having a forward end selectively spaced forwardly of said upright support for supporting a load therefrom and disposed adjacent said support in a rearward, retracted position with the majority of the boom extending horizontally rearwardly of the upright support permitting the fork lift truck to be used in a normal manner without removal of the adjustable boom attachment therefrom.

3,851,778
TRANSPORT SYSTEM FOR GOODS CARRIERS
 Eugen Schurch, Gerlafingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland
 Filed Feb. 8, 1973, Ser. No. 330,685
 Claims priority, application Switzerland, Feb. 11, 1972, 2003/72

U.S. Cl. 214-622

Int. Cl. B65g 1/06

10 Claims



1. Transport system for goods carriers, for installation, at least in part, on a support surface and having a plurality of carrier units (6, 7) adapted to hold goods to be transported and equipped with laterally projecting brackets (31) extending from the upper portions of both sides thereof, movable main conveyor means (1, 2, 3, 4, 5) and selectively engageable means on the carrier units and the main conveyor means to lock selected units to the main conveyor, and at least one loading station and at least one receiving sta-

tion, said loading and receiving stations being of similar construction and readily convertible one into the other and, in each case, comprising:

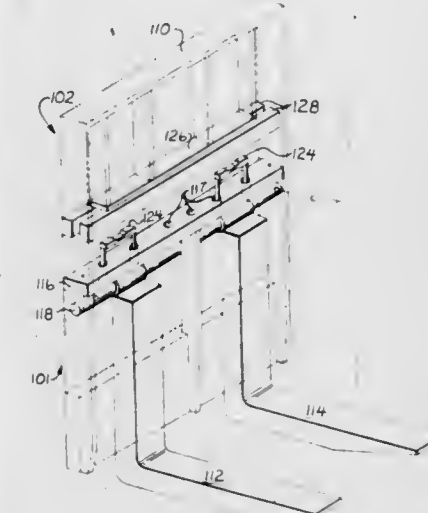
a pair of parallel, spaced, horizontally arranged branch conveyors (15) extending at an angle from the main conveyor means and being located above the support surface, the length and spacing of said pair of branch conveyors defining respectively the length and width of an area available for storing carrier units of said plurality, the spacing between said pair being suitable for engagement of said brackets (31) of said carrier units (6, 7) from beneath by said branch conveyors, both branch conveyors of said pair having at their ends farthest from said main conveyor respective ramp portions having a progressively depressed elevation over the level of said support surface, the ends of said branch conveyors of said pair nearest said main conveyor being located suitably for transfer of said carrier units between said main and branch conveyors;

drive means for continuously operating said branch conveyors in the direction determined by whether they are part of a loading station or of a receiving station, and restraining means (17, 17') for holding at will at least one of said carriers (6, 7) stationary while some part thereof is located between said branch conveyors and for allowing at will the continuously operating pair of branch conveyors to transport said at least one carrier, said branch conveyors being equipped with freely rotatable support roller means (30) for allowing said at least one carrier to be held stationary by said restraining means while supported by said conveyors, without interfering with the operation of said drive means, and means to transport said carrier units between said main conveyor and said branch conveyors.

3,851,779
LIFT TRUCK FORK RETAINING PINS
 John T. Crawford, Lyndhurst, Ohio, assignor to Towmotor Corp., Cleveland, Ohio
 Division of Ser. No. 225,811, Feb. 14, 1972, Pat. No. 3,780,896. This application Aug. 17, 1973, Ser. No. 389,138
 Int. Cl. B66f 9/06

U.S. Cl. 214-731

2 Claims



1. In a lift truck of the type having an extensible mast structure, a carriage mounted for travel along said mast, and load forks mounted on said carriage with means for allowing side-to-side adjustment of said forks, the improvement comprising: fork retainer means coacting with said carriage and said forks to restrain said forks in a predetermined position on said carriage,

means for permitting at least partial removal of said retainer means from said carriage for adjusting said forks to new positions, and positive restraining means coacting with said retainers to prevent loss of said retainers from said carriage, said

positive restraining means comprising in combination, an upper portion of the carriage extending upwardly beyond the mounting position of said forks and said retainers, crossbar members defining a transverse recess and forming part of said carriage upper portion and positioned at a distance above said retainers such that the retainers may be moved upwardly in relation to said carriage and yet are restrained from being removed from said carriage by having the upper portion of said retainers being closely confined by said recess.

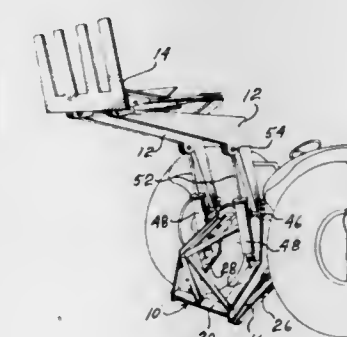
3,851,780
REAR END LOADER
 Claude R. Martin, R.R. 2, Garthby, Co. Frontenac, Quebec, Canada

Filed Dec. 20, 1973, Ser. No. 426,919

Int. Cl. E02f 3/28

U.S. Cl. 214-766

10 Claims



1. A loader adapted for connection to the regular 3-point rear end hitch of a tractor including two lifting bars pivoted underneath the differential housing and an upper link pivoted above the differential housing, said loader comprising:

- a tractor attachment including first two posts adapted to be pivotally connected to the free ends of the lifting bars and extending upwardly and rearwardly from said free ends to a point substantially above and adjacent to the differential housing of the tractor, and a third post extending substantially vertically from a cross bar connected between the lower ends of said first two posts and provided at its upper end with a pivotal connection for the free end of the upper link of the 3-point hitch of the tractor;
- lift arms pivotally connected to the upper ends of said first two posts to swing relative thereto about a first transverse axis;
- hydraulic cylinder means interconnecting said first two posts and said lift arms for swinging said lift arms about said first transverse axis;
- a bucket pivotally connected to the free end of said lift arms to pivot about a second transverse axis; and
- means for pivoting said bucket about said second transverse axis.

3,851,781
NURSER BOTTLE CONSTRUCTION
 Leslie Stephan Marco, 11133 S. 8th Ave., Palos Hills, Ill. 60664

Filed Apr. 19, 1973, Ser. No. 352,851

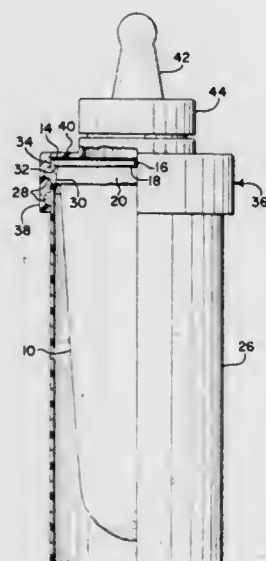
Int. Cl. A61j 9/00

U.S. Cl. 215-11 E

4 Claims

1. In combination with a tube-like holder having external attachment means around the top portion thereof and internal upwardly facing shoulder means below the top peripheral edge thereof, the provision of a plastic bag-like container supported interiorly of the holder and including a flexible and

resilient rim portion with a bottom closed flexible body portion pendant therefrom, said rim portion providing a stacking formation for a nested supply of containers and including upper and lower generally horizontal wall portions with a downwardly and outwardly inclined wall portion joining the inner edge of the upper wall portion and the outer edge of the lower wall portion and with a peripheral wall upstanding from the outer edge of the upper wall portion and engaging the



inner surface of the top peripheral portion of the holder with the under surface of the upper wall portion supported on the shoulder means of the holder after relative telescopic association of the holder and container causing inward resilient deflection of the inclined wall and lower wall portion and resilient restoration thereof into engagement with the adjacent surface of the holder below the shoulder means trapping the container in the holder.

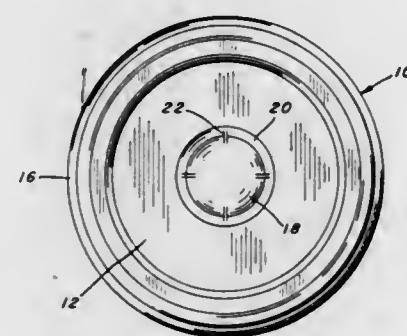
3,851,782

CONTAINER CLOSURE WITH VENT OPENING MEANS
Robert G. Clawson, Pershing, and Wilburn C. Willis, Richmond, both of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 18, 1972, Ser. No. 281,715
Int. Cl. B65d 51/16

U.S. Cl. 215-307

6 Claims

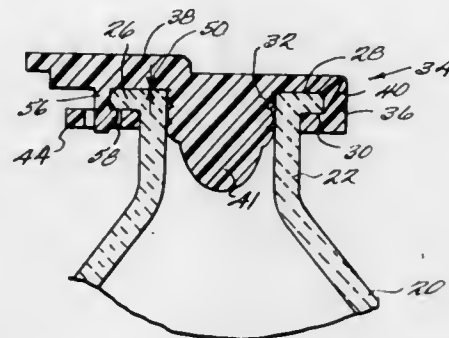


1. A metal container wall which includes a vent opening means comprising a hollow flexible embossment of generally hemispherical shape formed integrally in said container wall, an integral annular wall around said embossment extending at an angle from the outer periphery thereof to said container wall around the embossment to permit radial expansion of the embossment in response to pressure applied thereagainst, and further having at least one radially extending weakening line in the outer periphery of the embossment which is adapted to be ruptured upon radial expansion of the embossment.

3,851,783
BOTTLE CLOSURE
Paul A. Braginetz, 302 Alpine Rd., Staunton, Va. 24401
Filed Feb. 6, 1973, Ser. No. 330,109
Int. Cl. B65d 39/00

U.S. Cl. 215-232

9 Claims



1. A closure for a bottle having a neck portion terminating in an opening and a flange circumferentially extending about the opening comprising a collar with portions for engaging the upper and lower surfaces of said flange about a substantial portion of said flange part of the circumference to permit said collar to be freely rotated about said flange and a stopper pivotally attached to said collar with portions of said stopper engaging said upper surface of said flange and at least in part welded to said upper surface and having a portion for extending into said bottle opening to seal said opening.

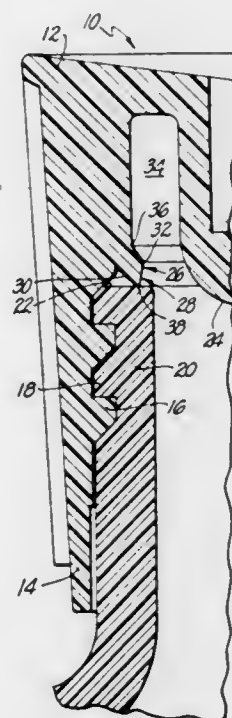
3,851,784
SEAL STRUCTURE

Bronislaus Grynciewicz, c/o Polytop Corporation, Slatersville, R.I. 02876

Filed Apr. 24, 1972, Ser. No. 246,775
Int. Cl. B65d 41/04

U.S. Cl. 215-40

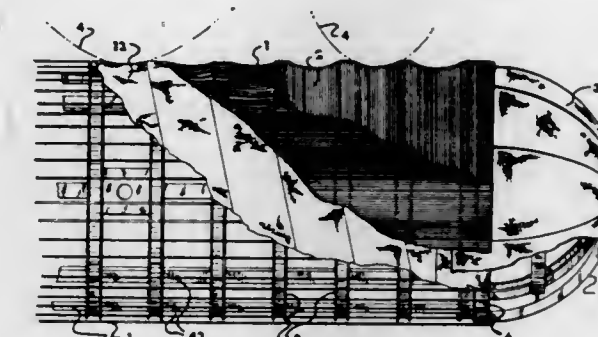
1 Claim



1. In a closure having a closure top and a peripheral skirt extending from the bottom of said top, said skirt including means for attaching said skirt to a container neck in a position in which said top extends across said neck, said closure including a seal structure which is integral with said top located within said skirt and beneath said top for forming a seal with respect to said neck, the improvement which comprises: said seal structure comprising an annular sealing flange having a top, a bottom and concentric sides, said sealing flange being spaced from the interior of said skirt and being formed of a resilient, flexible, self-supporting material, capable of engaging a container neck so as to form a seal therewith,

said flange extending generally parallel to the interior of the skirt, the lower end of said flange remote from said top having a V-shaped bottom, having a lower, downwardly directed edge having separate sides located at an angle with respect to one another of from about 20° to 40°, said flange being attached to said top along the side thereof and beneath the top of said flange remote from the center of said skirt and adjacent to the top of said flange, the innermost side of said flange being separated from a remainder of said closure by a recess, extending the length of said flange and above said flange and being entirely unattached and unsupported, said flange being sufficiently flexible between its top and bottom so as to be capable of deforming to form a seal with a top of said container neck if such a top should have a surface irregularity or should not be flat in a place perpendicular to the axis of said skirt, said flange being mounted so that it will tend to flex inwardly in adjusting to the configuration and location of said container neck relative to the said skirt and said top in forming a seal with said neck, said flange being the only sealing means on said closure top intended to contact the top of said container neck, said cap having an inner surface which extends upward from said flange in vertical alignment with said downwardly directed edge.

into a connected plurality of corrugations, each of said corrugations comprising a corrugated biaxially tensioned laminate having a generally concave parabolic portion formed between a pair of adjacent convex portions intersecting therewith, when viewed in cross section, relative



to said axis, and hardened adhesive means impregnating and bonding said first and second plies together in a common bonding matrix to maintain them and each of said plurality of corrugations in said corrugated laminate configuration.

3,851,787

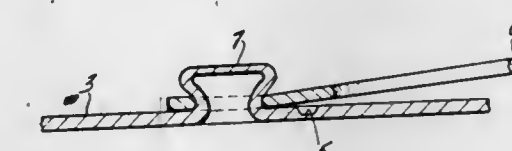
ALUMINUM ALLOY CAN END AND BODY

William C. Setzer, Hamden; Harvey P. Cheskis, Woodbridge, and Joseph Winter, New Haven, all of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 291,835, Sept. 25, 1972, Pat. No. 3,787,248. This application July 5, 1973, Ser. No. 376,740
Int. Cl. B65d 17/20

U.S. Cl. 220-273

5 Claims

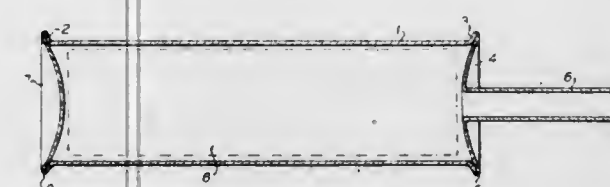


3,851,785
AMPOULE CONSTRUCTION
Karl A. Schulke, Neuberg, Germany, assignor to Heraeus-Schott Quarzschmelze GmbH, Quarzstrasse, Germany
Filed Mar. 27, 1972, Ser. No. 238,219
Claims priority, application Germany, Apr. 27, 1971, 7116134

Int. Cl. H01k 1/42

U.S. Cl. 220-2.2

4 Claims



1. A diffusion ampoule for performing diffusion processes in semi-conductors having a tubular barrel, the ends of which are flanged, one of said flanged ends being closed with a cover member which is concave-convex shaped, the margin of said cover member being permanently placed in a gas-tight manner on the flanged marginal portion of the barrel, said cover member having at least one projecting tube, the other of said flanged ends being closed off in a gas-tight manner by a bottom member of concave-convex shape, said ampoule made of quartz glass.

1. An easy open aluminum can having a body portion and end walls secured thereto, with one of said end walls having a removable portion with a tab element secured thereto by means of an integral portion of said end wall, said body portion and end walls having substantially the same composition of an aluminum base alloy consisting essentially of magnesium from 0.4 to 2.0 percent, manganese from 0.5 to 2.0 percent, balance essentially aluminum, wherein the end wall having said removable portion has a minimum stretch forming height to diameter ratio of 0.210.

3,851,788

PLASTIC DRUM WITH REMOVABLE COVER AND LOCKING RING

Wilhelm Hammes, Hauptstrasse 38, 5203 Much, Germany
Filed Nov. 14, 1973, Ser. No. 415,539

Claims priority, application Germany, Nov. 27, 1972, 2258096

Int. Cl. A47j 27/08, 36/10; B65d 45/00

U.S. Cl. 220-319

10 Claims

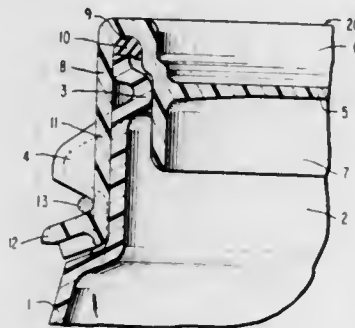
1. A drum and cover therefor comprising:
a drum body portion of plastic composition having a cylindrical neck extending axially parallel to the axis of the drum,
a drawn-in portion adjacent the top of the neck forming an annular bulged-in bead of smaller diameter than the neck,
a plurality of bulge-like projections disposed circumferentially about the neck, each of said bulge-like projections having a lower surface slanting away from the outer cylindrical surface of the neck;

3,851,786
COMPOSITE STRUCTURE
Charles E. Kaempfen, Orange, Calif., assignor to Kaempfen Industries, Inc., Orange, Calif.
Division of Ser. No. 161,536, July 12, 1971, Pat. No. 3,784,441. This application Sept. 21, 1973, Ser. No. 399,630
Int. Cl. F16j 11/06; B29c 17/02; B32b 5/12
U.S. Cl. 220-3

10 Claims

1. A composite structure disposed on a horizontal axis thereof comprising
a first ply of tensioned and compacted continuous first filament strands extending generally in the direction of said axis,
a second ply of tensioned and compacted continuous second filament strands disposed transversely of and superimposed over said first ply to impose a substantially uniform load thereon to deflect said first and second plies

closure means for said drum comprising a cover having an outer cylindrical portion adapted to fit tightly over the neck of drum, said outer cylindrical portion having cut out sections adapted to fit snugly over the bulge-like projections on the neck of the drum, an inner cylindrical portion coaxial with and of smaller diameter than the outer cylindrical portion, said two portions being connected to form an external rim and an inner annular groove, a lip-like reinforcement on the underside of said inner portion providing a bearing surface for the bead on the



neck of the drum, and outwardly projecting reinforcements on the lower edges of the segments of the cover between the bulge-like projections on the neck of the drum, each of said reinforcements having a surface slanting away from the outer cylindrical surface of the cover; sealing means in the bottom of the aforementioned annular groove; and resilient locking means encircling the cover for securing said cover to the neck of drum.

3,851,789

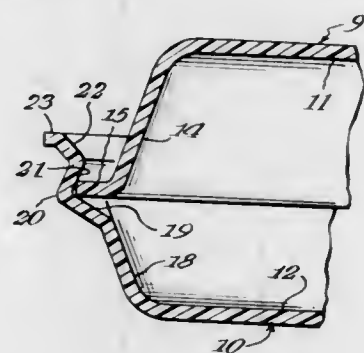
CONTAINER FASTENING MEANS

Charles B. Case, Eau Claire; David M. Hebert, Chippewa Falls; Maylin J. Olson, Augusta, and John C. Schubert, Chippewa Falls, all of Wis., assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 21, 1973, Ser. No. 334,367
Int. Cl. B65d 43/10

U.S. Cl. 220-307

4 Claims



1. A container made of deformable plastic having first and second members, one of said members constituting the top of the container and the other the bottom thereof, each member being provided with a generally flat surface, one of said members having a sidewall attached to said flat surface which slopes away from said planer surface and a lip extending outwardly from the end of said sidewall, said lip being generally parallel to the flat surface of said member; the other of said members having a sidewall attached to the flat surface thereof adapted to engage frictionally the lip on the other of said members and having four sloping sections, the first sloping outwardly from the flat surface, the second sloping outwardly from the end of the first at an angle of 10° to 45° from the flat surface, the third sloping inwardly from the end of the second, and the fourth sloping outwardly from the end of the third, the apex of the angle between said second and third

sections engaging the lip on said other member, said fourth cooperating with said lip to force said lip into position when said members are pushed together; said sidewalls extending substantially completely around said first and second members when these are separate pieces, and when said first and second members are hinged together along a contiguous section, at least the sidewalls opposite said contiguous section having the structure set forth.

3,851,790

LITTER AND TRASH RECEPTACLES

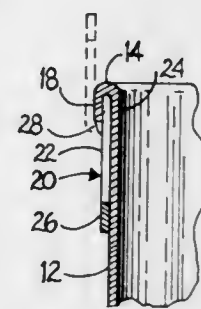
Michael E. Kasper, 924 Delaware Ave., Olean, N.Y. 14760

Filed Feb. 26, 1973, Ser. No. 335,682

Int. Cl. B65d 25/22

U.S. Cl. 220-85 R

5 Claims



1. A litter receptacle, comprising:

- a. an upper annular rim,
- b. a side wall depending from said rim,
- c. a bottom end fixed to said side wall,
- d. means located adjacent said rim for affixing said receptacle to a support structure above ground level, and
- e. means removably attached to said bottom end for supporting said means for affixing when removed and applied to a support structure.

3,851,791

PLASTIC SAFETY CAN FOR CONTAINING FIRES BURNING INFLAMMABLE FLUID INSIDE THE CAN

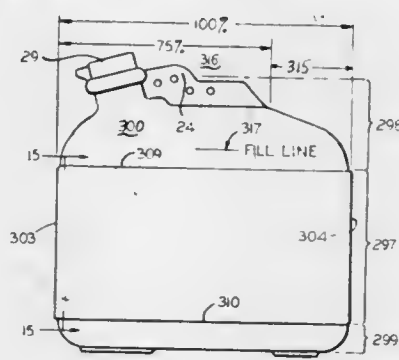
Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 98,557, Dec. 16, 1970, abandoned, Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, Pat. No. 3,727,807, Continuation-in-part of Ser. No. 98,412, Dec. 15, 1970, abandoned, Continuation-in-part of Ser. No. 147,346, May 27, 1971, Pat. No. 3,754,691, Continuation-in-part of Ser. No. 151,354, June 9, 1971, Pat. No. 3,770,160, Continuation-in-part of Ser. No. 147,345, May 27, 1971, Pat. No. 3,729,122, Continuation-in-part of Ser. No. 147,522, May 27, 1971, Pat. No. 3,811,605, Continuation-in-part of Ser. No. 171,537, Aug. 13, 1971, Pat. No. 3,794,235, Continuation-in-part of Ser. No. 171,092, Aug. 12, 1971, Pat. No. 3,746,200. This application Oct. 10, 1972, Ser. No. 296,247

Int. Cl. B65d 25/00, 7/42

U.S. Cl. 220-89 B

5 Claims



1. An integral one piece container of high density polyethylene material having a completely and continuously closed

inner surface terminating in at least one opening, said container further including a cylindrical center section, a superimposed dome-shaped top section and a substantially rounded bottom section, said container having a width at least equal to its height, the cylindrical center section having a uniform wall thickness in the order of 0.150-0.200 inches, said superimposed dome-shaped top section and rounded bottom section having a wall thickness of approximately 10 percent less than said cylindrical section, said 10 percent difference in thickness between said cylindrical section and said dome-shaped top section and said rounded bottom section comprising a perimeter ledge with an angular offset of about 45° off the horizontal to effect a gradual transition in wall thickness.

3,851,792

CONTAINER

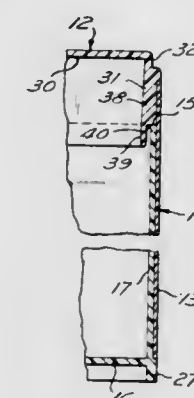
Robert W. Ankney, deceased, late of Walton Hills, Ohio (by Margaret G. Ankney, executrix), assignor to Weatherchem Corporation, Twinsbury, Ohio

Filed Aug. 14, 1972, Ser. No. 280,436

Int. Cl. B65d 41/00, 7/02, 7/24

U.S. Cl. 220-253

7 Claims



1. A container comprising a receptacle, a cover, and a label, said receptacle and said cover each including longitudinally extending skirt portions, said skirt portions each being of polygonal configuration and having a plurality of rounded corners and a plurality of sides, said skirt portions being longitudinally telescopically connected so that said corners and sides of said cover skirt portion confront similarly disposed corners and sides of said receptacle skirt portion, said confronting corners of said skirt portions engaging one another with an interference fit to prevent lateral movement of said cover relative to said receptacle and to provide frictional resistance to longitudinal movement of said cover relative to said receptacle, said label extending between and being secured to said cover and said receptacle to prevent longitudinal movement of said cover relative to said receptacle said sides of the outer one of said skirt portions being substantially straight prior to assembly of said receptacle and cover, said sides of the inner one of said skirt portions being curved in a direction away from said confronting sides of said outer skirt portion convexly when viewed from the interior of said container prior to assembly of said receptacle and cover, whereby deflection of said inner sides upon assembly of said receptacle and cover is always in a direction away from said outer sides.

3,851,793

EASY OPENING CONTAINER WALL

Omar L. Brown, Dayton, Ohio, assignor to Eermal C. Frazee, Dayton, Ohio

Division of Ser. No. 464,909, June 18, 1965, Pat. No. 3,812,803, which is a continuation-in-part of Ser. No. 288,204, June 17, 1963, abandoned. This application May 7, 1973, Ser. No. 357,869

Int. Cl. B65d 17/20

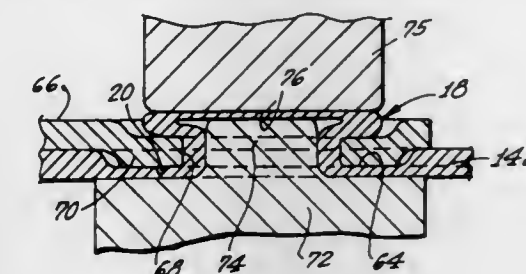
U.S. Cl. 220-270

8 Claims

1. In an easy opening container having a sheet metal wall weakened along a line of scoring to form a tear strip with a tab

attached to the tear strip for manual severance thereof, the improvement comprising:

the sheet metal being thinned in a zone around the leading end of the tear strip, said zone being substantially wider



than the line of scoring, with the line of scoring extending into said zone to provide a residual web of metal along the line of scoring of minimum thickness at the leading end of the tear strip to facilitate initial severance of the tear strip at the leading end thereof.

3,851,794

AN EXPANSIBLE HOLEPLUG WITH SEAL

Klaus Friedrich Hehl, Norderstedt, Germany, assignor to ITW-ATECO G.m.b.H., Norderstedt, Germany

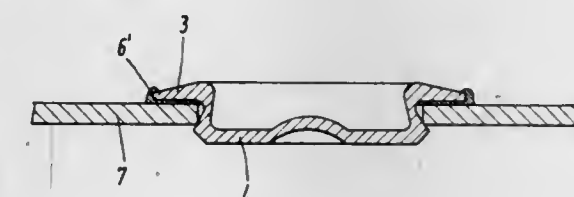
Continuation of Ser. No. 176,173, Aug. 30, 1971, abandoned.

This application July 12, 1973, Ser. No. 378,469

Int. Cl. B65d 39/12

U.S. Cl. 220-308

1 Claim



1. A hole plug with a fusible film characterized in that the hole plug includes a bottom wall conically inverted toward the head and provided at its middle with a bulged portion likewise inverted toward the head as well as an annular bead projecting outwardly from the collar in the vicinity of the bottom wall and that the fusible film is an annular disc the inner diameter of which is larger than the outer diameter of the collar, but is smaller than the outer diameter of the annular bead and the outer diameter of the fusible film is larger than that of the head of the hole plug, the head being substantially conical and thereby adapted to resiliently deform upon the expansion of the annular collar so that the head compresses the sealing film while said film fuses to the head and work panels.

3,851,795

METHOD AND APPARATUS FOR DISPENSING SEMI-FLUID MATERIAL

Ralph F. Anderson, 332 Calvin Park Blvd., Rockford, Ill. 61107

Filed June 25, 1973, Ser. No. 372,972

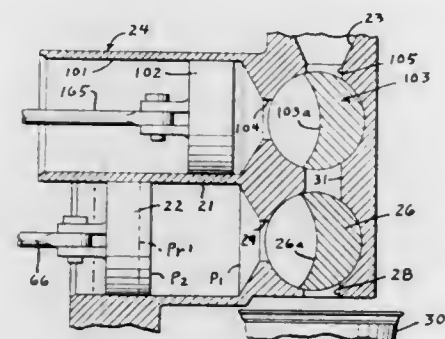
Int. Cl. G01f 11/02

U.S. Cl. 222-1

23 Claims

1. A method of dispensing successive generally gravimetrically uniform charges of semi-fluid material containing varying amounts of gaseous occlusions, from a supply source into atmospherically vented receivers, utilizing a volumetric type dispenser having a measuring chamber and a measuring piston movable in the chamber comprising cyclically: moving the measuring piston from an initial position in an intake stroke of preselected volumetric displacement to a second position to expand the volume of the measuring chamber from a first

preselected volume to a second preselected volume, feeding semi-fluid material containing gaseous occlusions from the supply source under pressure into the measuring cylinder during the intake stroke of the measuring piston and until the pressure on the material and gaseous occlusions in the measuring chamber reaches a preselected pressure of at least two atmospheres at the end of the intake stroke of the piston, shutting off flow of material containing gaseous occlusions into the measuring chamber at the end of the intake stroke of the piston and trapping the material and the gaseous occlusions in the measuring chamber at said preselected pressure, thereafter communicating the measuring chamber only with an atmospherically vented receiver and moving the piston through a discharge stroke back to its initial position whereby the volumetric expansion of the material containing gaseous occlusions in the measuring chamber, when the pressure on the material is decreased to atmospheric pressure, causes the



volume of material containing gaseous occlusions dispensed at atmospheric pressure into a receiver to exceed said preselected volumetric displacement of the piston during its intake stroke by an amount that increases and decreases respectively with increases and decreases in the amount of gaseous occlusions in the material supplied to the measuring chamber, setting said preselected pressure in relation to said second preselected volume in the measuring chamber so that the amount of material dispensed into a receiver due to said volumetric expansion of the material containing gaseous occlusions will approximately compensate for the gaseous occlusions in the material at atmospheric pressure, and repeating the cycle using the same initial position of the piston, the same preselected volumetric displacement of the piston in its intake stroke, and the same preselected pressure at the end of the intake stroke of the piston during each successive cycle to dispense successive generally gravimetrically uniform charges.

3,851,796

PRESSURE-ACTUATED DRUM DISPENSER

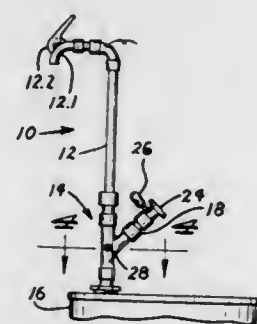
Ervin A. Moos, Minneapolis, Minn., assignor to Thexton Manufacturing Company, St. Louis Park, Minn.

Filed Nov. 19, 1973, Ser. No. 417,474

Int. Cl. B65d 83/14

U.S. Cl. 222-39

10 Claims



1. A pressure-actuated drum dispenser mountable to an opening in the top of a storage drum and comprising;

an upright tubular housing mountable at its lower end to the drum opening and having an air entrance valve intermediate its ends communicating with the housing interior;

an upright discharge pipe extending through the housing and sealed to the upper end of the housing, the pipe being spaced inwardly of the housing to provide an annular space between the housing and the pipe which opens downwardly for communication with the interior of a drum;

a vent and access tube angled upwardly and outwardly at an oblique angle from the housing intermediate the housing ends and communicating with the annular space, the vent tube having a wide, exteriorly accessible mouth, a valve seat on the tube and spaced inwardly of the mouth, an air exit port between the mouth and the valve seat; and

a pressure relief valve pre-set to open under a preselected pressure and including a cap having a spring-biased plug seatable against the valve seat and a cap attachment releasably attaching the cap to the mouth, the attachment having a closed position seating the plug under spring pressure against the valve seat and sealing the cap to the mouth, an open position permitting the cap and plug to be lifted from the mouth as a unit, and a position intermediate the open and closed positions wherein the plug is disengaged from the seat but the cap is retained on the mouth, the latter position permitting air under pressure to be safely bled from the drum through the air exit port while safely maintaining the cap on the mouth of the vent tube.

3,851,797

PORTABLE DISPENSER APPARATUS FOR PRODUCING A CARBONATED BEVERAGE

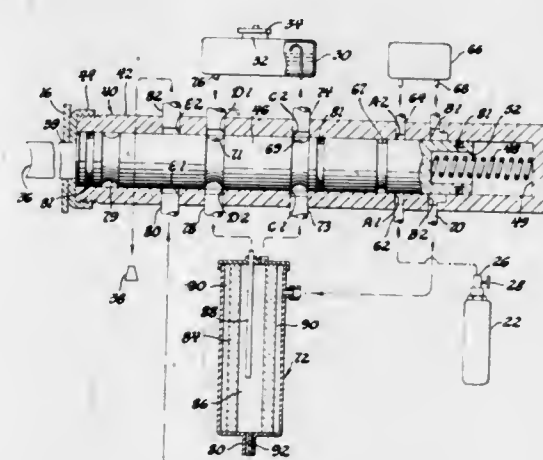
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,865

Int. Cl. B67d 5/56

U.S. Cl. 222-129.4

3 Claims



1. In a carbonated beverage dispenser, the combination comprising, a bottle for holding CO₂ gas under pressure, a regulating spool valve connected to said bottle, means for biasing the spool of said valve into an idle position, a first precharge chamber connected to said spool valve, a cooling reservoir tank containing a water-syrup liquid mixture connected to said spool valve, said tank positioned in said dispenser at an attitude adapted to allow a predetermined volume of the liquid mixture to drain therefrom into said first precharge chamber via said valve when said spool is biased in its idle position, a second precharge chamber connected to said spool valve; actuating means for moving said spool to an initial position whereby said spool valve connects said CO₂ bottle with said second precharge chamber allowing a measured quantity of CO₂ gas to expand from said bottle and occupy said second precharge chamber, said actuating means causing further movement of said spool whereby said spool valve connects said second precharge chamber with said first

precharge chamber such that the liquid mixture in said first precharge chamber is carbonated by the flow of the predetermined volume of high pressure CO₂ gas from said second precharge chamber into said first precharge chamber, said actuating means causing further movement of said spool whereby said spool valve connects said first precharge chamber with a dispenser nozzle whereby a predetermined volume of carbonated liquid mixture is dispensed by said nozzle into a glass or the like.

3,851,798

AUTOMATIC COLORANT DISPENSER

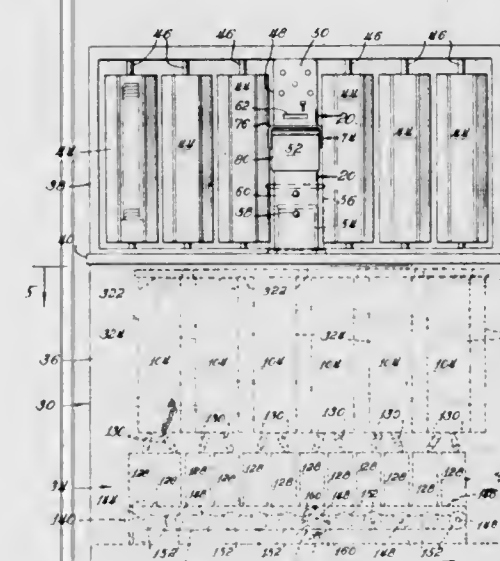
Herbert L. Miller, Roselle, Ill., assignor to Miller Mfg. Co. of Schiller Park, Inc., Addison, Ill.

Filed Nov. 10, 1972, Ser. No. 305,255

Int. Cl. B67d 5/52

U.S. Cl. 222-135

14 Claims



1. Apparatus for dispensing precisely measured volumes of liquid for intermixing with a base material comprising reservoir means for holding a supply of said liquid; a dispenser nozzle for discharging said liquid into said base material; metering pump means for pumping an adjustably selected metered volume of liquid from said reservoir means toward said nozzle for dispensing, said pump means including a pair of positive displacement pumping chambers having different displacement volumes; and a pair of independent drive mechanisms for selectively interconnecting and disconnecting said pumping chambers with a common rotary drive shaft for reciprocally activating each of said pumping chambers through a selectively adjustable number of displacement cycles.

3,851,799

VALVE FOR THE DISTRIBUTION UNDER PRESSURE OF A LIQUID OR PASTE PRODUCT

Jean-Claude Paoletti, Nanterre, France, assignor to Societe De Fabrication Et De Distribution De Parfumerie Et Cosmetique Diparco S.A., Neuilly-sur-Seine, France

Filed Apr. 16, 1970, Ser. No. 29,185

Claims priority, application France, Apr. 22, 1969, 69.12552; Nov. 7, 1969, 69.38372

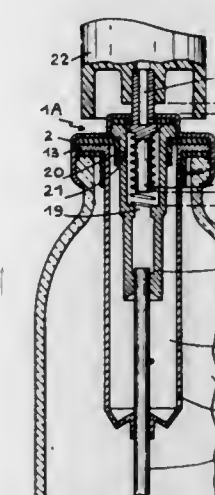
Int. Cl. B65d 83/14

U.S. Cl. 222-145

20 Claims

1. A valve system for the distribution under pressure of a product contained in a receptacle, composed of a valve comprising: a capsule arranged to be fastened onto the receptacle; a body arranged to be set into the receptacle and having an upper part housed in the capsule; and a plunger tube extending with a lower end thereof to the bottom of the receptacle and serving for the removal of the product, said valve being of a type which distributes a product having a propellant mixed therewith,

said system being further composed of an adapter member detachably associated with said valve and comprising: means arranged to be supported by the receptacle and including a wall surrounding said body and partly defining with said body an elongated chamber for containing a propellant therein, said means having an upper portion including a flange which is dimensioned to be slidable into the interior of said capsule, and a lower portion formed as a sleeve forming a removably slidable sleeve



forming a seal with respect to said valve, said wall having an orifice formed therein; and a flap valve mounted to cooperate with said orifice, said flap valve opening in the direction from the interior of said chamber toward the interior of said receptacle, the association of said adapter means with said valve resulting in a system for distributing a product contained in such receptacle under the action of a propellant maintained separate from said product and within said chamber.

3,851,800

PLURAL CHAMBERED, GRAVITY ORIENTED DISPENSER

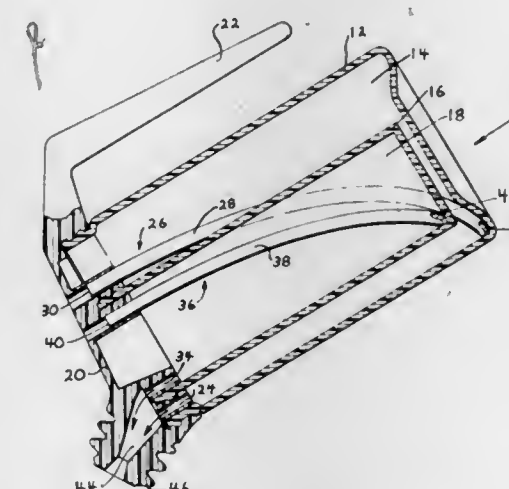
Stephen C. Swain, Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.

Filed Aug. 20, 1973, Ser. No. 389,994

Int. Cl. B67d 5/60

U.S. Cl. 222-145

27 Claims



1. A plural chambered, gravity oriented liquid dispenser comprising:

- a first container means defining a first chamber which is adapted to contain a first liquid;
- a first liquid discharge orifice means fluidly coupled to said first chamber;
- a first air venting means having an inlet and an outlet with the outlet being positioned within said first chamber, said first air venting means outlet and said first liquid discharge orifice means defining a first air venting reference line;

a second container means defining a second chamber which is adapted to contain a second liquid;
 a second liquid discharge orifice means fluidly coupled to said second chamber;
 a second air venting means having an inlet and an outlet with the outlet being positioned within said second chamber, said second air venting means and said second liquid discharge orifice means defining a second air venting reference line; and,
 means for securing said first and second containers with respect to each other so that said first and second air venting reference lines are parallel to each other in a plane.

3,851,801

DISPENSING DEVICE HAVING LOST MOTION PISTON PUMP

Oskar Roth, Zurich, Switzerland, assignor to Involvo AG, Verpackungsmaschinen, Bunzen, Switzerland

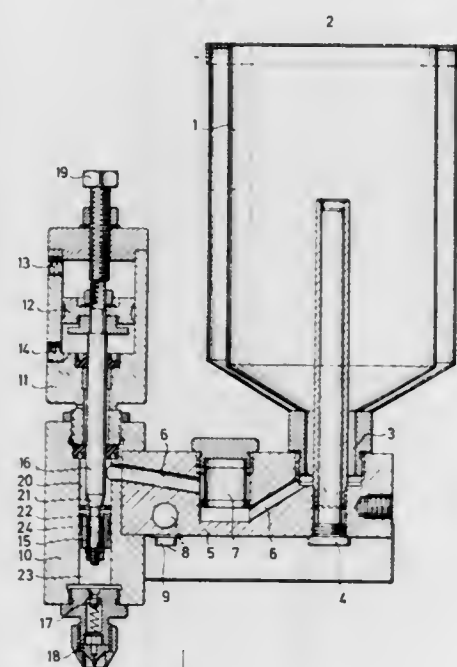
Filed Feb. 11, 1972, Ser. No. 225,421

Claims priority, application Switzerland, Feb. 15, 1971, 2178/71

Int. Cl. B67d 5/40

U.S. Cl. 222-146 HE

12 Claims



1. A dispensing device, particularly for applying a bonding agent, comprising cylinder means having an elongated internal chamber provided with two end walls; dispensing nozzle means having a nozzle passage communicating with said chamber at one of said end walls; a piston rod extending longitudinally through said chamber; a piston surrounding said piston rod and slidable part of the distance between a first and a second position together with said piston rod and part of the distance relative to said piston rod, said piston dividing said chamber into two compartments located at opposite axial sides of the piston; passage means which is open and connects said compartments when said piston slides relative to said piston rod in one direction until said piston is in said first position, and closed when said piston rod and piston slide relative to one another in an opposite direction until said piston is in said second position; supply means communicating with said chamber intermediate said piston and the other of said end walls for supplying material to be dispensed; and valve means interposed in said nozzle passage, including a valve body responsive to the pressure of material resulting from movement of said piston toward said second position for opening said nozzle passage, and a biasing spring urging said valve body to normally close said passage.

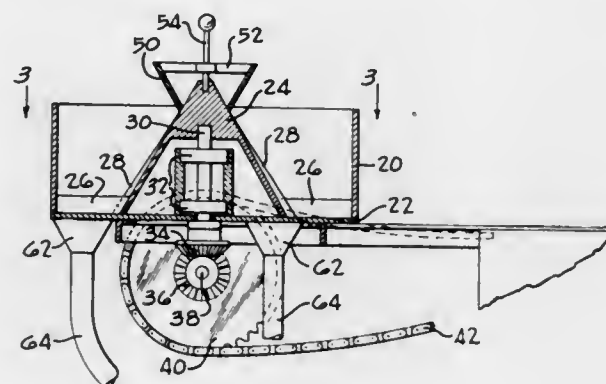
3,851,802
 SINGLE CONE MULTIPLE-ROW PLOT SEEDER
 Harold G. Marshall, Bellefonte, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 15, 1973, Ser. No. 416,304

Int. Cl. A01c 7/12; G01f 11/24

U.S. Cl. 222-162

4 Claims



1. A single cone, multiple row plot seeder distributor, comprising,
 a. a stationary base having a plurality of uniformly spaced slots adjacent to its periphery;
 b. a rotary shell supported on said base;
 c. a cone, the lower portion of which is provided with a plurality of grooves;
 d. a plurality of radially disposed sweeper blades, each of which is connected at its opposite ends to both the cone and the rotary shell so as to permit simultaneous rotary movement of the shell, sweeper blades and cone with respect to the base;
 e. a seed hopper mounted on the upper ungrooved portion of the cone; and
 f. drive means for rotating the cone, shell and sweeper blades.

3,851,803
 SURE SPRAY FOR AEROSOL CAPS AND DISPENSERS
 Hans Grothoff, 5891 Valbert, Auf der Hardt 20, Germany

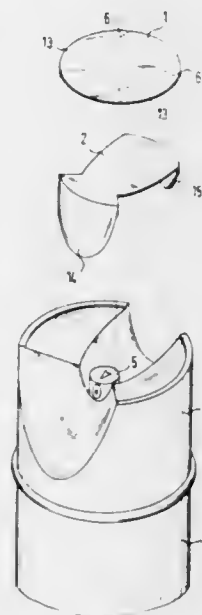
Filed Mar. 21, 1972, Ser. No. 236,700

Claims priority, application Germany, Mar. 22, 1971, 2113781

Int. Cl. B67d 5/06

U.S. Cl. 222-182

14 Claims



1. A tamperproof device of the type designed to be secured to a spray cap used on aerosol cans, said tamperproof device comprising: shield means removably mounted on the cap to partially enclose the button actuator protruding through the

spray cap, said shield means configured and disposed in substantially overlying relation to a groove-like recess formed in the spray cap, said shield means comprising a first depending flange extending transversely to said groove-like recess and a second depending flange oriented in opposed spaced relation to said one flange and extending transversely to the length of said recess, said second flange extending into said recess to a spaced distance from the bottom thereof, thereby defining a finger hole, a cover member attached to the spray cap in overlying relation to said shield means and dimensioned and configured to engage both said shield means and the upper surface means and the upper surface of the spray cap whereby said shield means and cover member is temporarily removed from the spray cap during use of the aerosol can.

3,851,804

APPARATUS FOR FEEDING MATERIAL

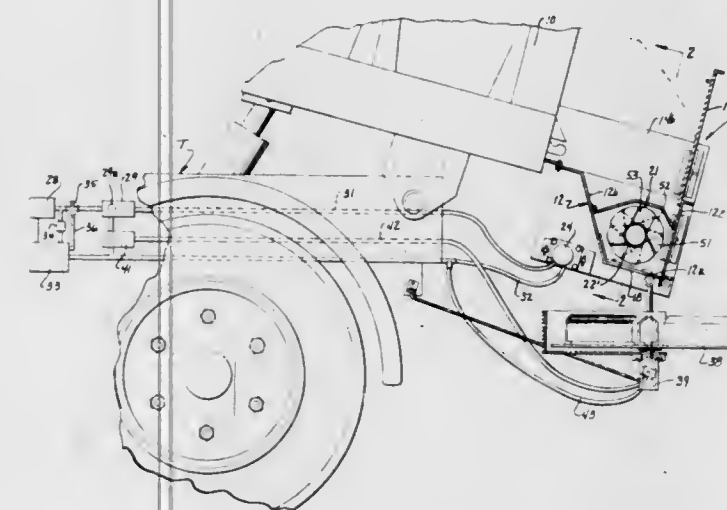
Clas O. F. Fyrk, Rockford, Ill., assignor to Swenson Spreader & Mfg. Co., Lindenwood, Ill.

Filed June 15, 1972, Ser. No. 263,194

Int. Cl. G01f 11/24

U.S. Cl. 222-413

14 Claims



1. In an apparatus for feeding particulate material including a material supply hopper, an elongated trough having an open top material feed section communicating with said material supply hopper and a material metering section communicating with one end of said feed section and having a discharge outlet adjacent the end of the metering section remote from said feed section, an elongated material feed member including a shaft means extending along said metering section and said feed section and having feed vane means in said feed section for feeding material therealong to said metering section and metering vane means in said metering section for advancing a preselected amount of material along the metering section to the discharge outlet during each revolution of the shaft means, and means for rotating the shaft means in one direction, the improvement wherein said feed vane means comprises a plurality of individual feed blades each secured to said shaft means at spaced locations therealong and each having a feed face inclined at substantially the same acute angle to a radial plane through the shaft means to advance material along the feed section of the trough toward the metering section when the shaft means is rotated in said one direction, the plurality of feed blades having a uniform outer diameter and the spacing between the feed blades measured in a direction axially of the shaft means being less in the portion of the feed section adjacent the metering section when in the portion of the feed section remote from the metering section whereby the feed blades withdraw material from the supply hopper along the length of the feed section.

3,851,805
 CHILD-RESISTANT CLOSURES WITH LIMITED SPOUT ACCESSIBILITY

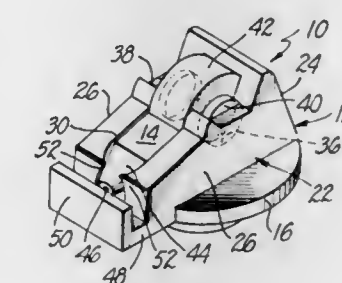
Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Jan. 24, 1973, Ser. No. 326,425

Int. Cl. B65d 25/46, 47/06

U.S. Cl. 222-534

8 Claims



1. In a dispensing closure having a cap adapted to be secured to a container and having a spout rotatably mounted on said cap so as to be capable of being rotated about an axis when said spout is physically engaged between a closed position in which said spout extends horizontally and seals off an opening through said cap and an open position in which said spout extends other than horizontally and is in alignment with said opening, the improvement which comprises:

two vertically extending walls located on said cap so as to extend vertically along and adjacent to both of the sides of said spout when said spout is in said closed position, said vertically extending walls surrounding the sides of said spout when said spout is in said closed position so that only the tip of said spout can be engaged to rotate said spout from said closed position to said open position, a horizontally extending wall located on said cap so as to extend beneath the tip of said spout when said spout is in said closed position, said horizontally extending wall extending from the central part of said cap beyond the tip of said spout when said spout is in said closed position, an end wall located on the extremity of said horizontally extending wall remote from the central part of said cap and extending upwardly from said horizontally extending wall so as to be aligned with the tip of said spout when said spout is in said closed position, said horizontally extending wall and said end wall being located so as to cooperate to define a passage extending transversely of the tip of said spout, at least one end of said passage being open to provide access to an under portion of said tip of said spout when said spout is in said closed position,

said vertically and horizontally extending walls and said end wall serving to prevent said spout from being directly engaged by a finger when it is in said closed position so that said spout cannot be rotated from said closed position to said open position by a finger but serving to permit an under portion of said tip of said spout to be engaged by an extending implement inserted through an end of said passage so that a force can be applied beneath said tip when said spout is in said closed position to rotate said spout to said open position.

3,851,806
 DISPENSER WITH NOZZLE CUT-OFF
 Harry A. Peyser, Olympia Fields, and Herbert S. Rueckberg, Highland Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,809

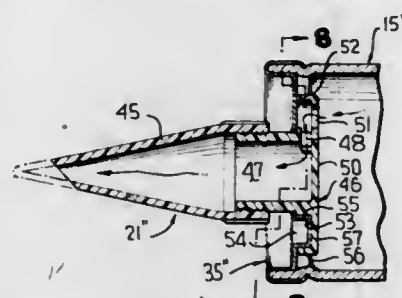
Int. Cl. B65d 47/00

U.S. Cl. 222-555

11 Claims

1. A dispenser comprising a container body having axially opposite end portions between which is defined a container

interior, a closure at one of said end portions toward which material is moved incident to the performance of a dispensing operation, said closure includes a centrally disposed embossment projecting in a direction axially outwardly from the container interior, said embossment includes a peripheral wall and a terminal unapertured end wall, a radially opening aperture in said peripheral wall offset from the axis of said container body, a dispensing nozzle having its axis coincident with said container body axis, said dispensing nozzle having a first end remote from said embossment and a second end in external telescopic relationship thereto, a radially outwardly directed flange carried by said nozzle second end, means coop-



erative with said closure for sandwiching said flange therebetween for relative rotational movement of said nozzle relative to said closure between dispensing and nondispensing positions, said nozzle second end includes an axial passage radially outboard of and in communication with said peripheral wall aperture in said dispensing position, and said axial passage terminates at a position axially outboard of said unapertured end wall whereby in said dispensing position communication is established from the container interiorly radially outwardly through said peripheral wall aperture, axially outwardly through said axial passage to said position outboard of said unapertured end wall, and thereafter through the nozzle first end to atmosphere.

3,851,807

COLLAR FORM AND PRESS APPARATUS

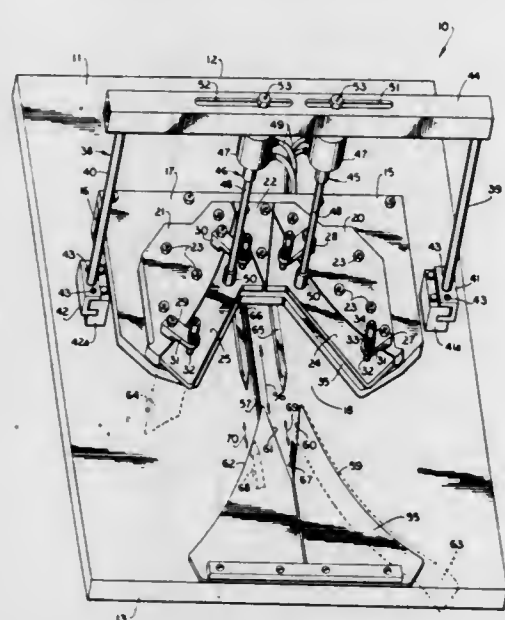
Jack W. Fields, Vidalia, and Robert D. Camp, McRae, both of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Filed Feb. 12, 1974, Ser. No. 441,868

Int. Cl. A41h 43/00, 33/00

U.S. Cl. 223—2

7 Claims



1. In apparatus for shaping collars or the like including a work table, a base plate mounted on said work table, collar shaping plates rigidly connected to said base plate, and a pair of collar presser plates movable toward and away from said base plate adjacent said shaping plates, the combination therewith of a frame mounted on said work table and extending over said base plate, a pair of rams supported by said frame, each ram including a ramrod movable toward and away from

one of said presser plates, and spring means normally holding said presser plates away from said base plate, whereby said rams selectively urge said presser plates toward said base plate.

3,851,808

TRAY HAVING AN EXTRUDED EDGE

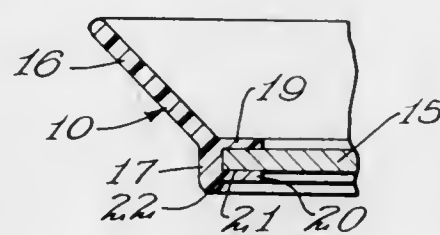
Paul K. Schilling, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Sept. 8, 1972, Ser. No. 287,498

Int. Cl. A47g 23/06

U.S. Cl. 224—48 R

1 Claim



1. A tray including: side and end walls formed of plastic and being of similar cross-sectional shape, said walls being integral and including a vertical wall portion, a pair of integral vertically spaced upper and lower flanges extending inwardly from said vertical wall portion, an upwardly and outwardly inclined wall portion integral with said vertical wall portion, a rim extending downwardly from said vertical wall portion throughout the length thereof, said rim extending below the lower surface of said flanges, means connecting said side and end walls to form a generally rectangular frame, and a bottom panel marginally engaged between said upper and lower flanges, said inner surfaces of said upwardly and outwardly inclined walls terminating at the inner ends of said upper flanges and the outer surface of said upwardly and outwardly inclined walls terminating at the outer surface of said vertical wall portion.

3,851,809

SHEET MATERIAL DISPENSER AND BLANK FOR ASSEMBLING THE SAME

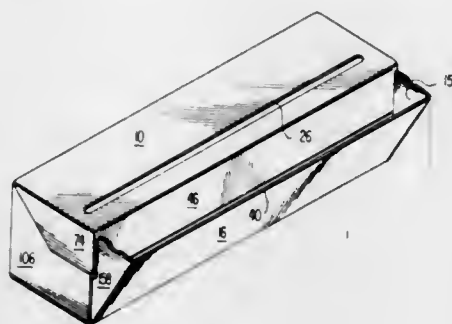
John M. McKibbin, Bridgewater, Conn., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 7, 1972, Ser. No. 312,905

Int. Cl. B26f 3/02

U.S. Cl. 225—20

6 Claims



1. Dispensing carton for a supply roll of sheet material, said carton comprising top wall means comprising panel means hinged at a rear edge and containing an elongated slot, bottom wall means, front wall means including panel means hinged at its bottom

to said bottom wall means and having a free edge at its top, and movable from a position substantially perpendicular to said bottom wall means to a position in obtuse angle relationship with said bottom wall means to space said free edge outward from the panel means of said top wall means,

cutter means associated with said free edge, flap means associated with said front wall means, means depending from a front edge of the panel means of said top wall means, movable by movement of the panel means of the top wall means at the hinge at its rear edge, to overlie and shield said cutter means when the panel means of said front wall means is in a position substantially perpendicular to said bottom wall means, and to interact with said flap means when the panel means of said front wall means is in a position in obtuse angle relationship with said bottom wall means to lock said front wall means in said relationship.

3,851,810

CONTOURED FEED SPRING

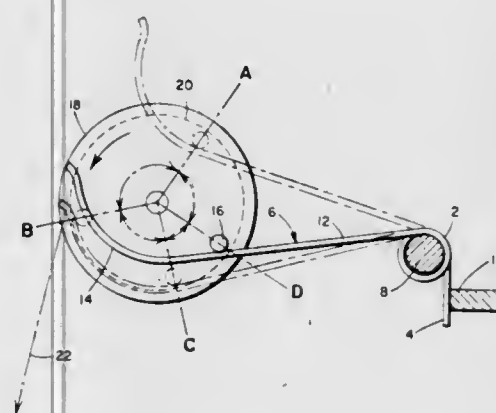
Paul W. Jespersen, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Oct. 9, 1973, Ser. No. 404,135

Int. Cl. B65h 17/22

U.S. Cl. 226—121

5 Claims



1. In a dispenser for flexible sheet material, said dispenser having a chassis and a rotatable feed roller for feeding said material out of the dispenser, said feed roller having a member mounted adjacent one end thereof, said member having a cam follower eccentrically mounted thereon, a drive spring comprising:

an intermediate portion anchored to said chassis; a first outwardly extending portion integrally affixed to one end of said intermediate portion and abutting a portion of said chassis; and a second outwardly extending portion integrally affixed to the opposite end of said intermediate portion and cooperating with said cam follower for deflection thereby during rotation of said feed roller and member, said second portion being configured to provide a decreasing moment against rotation of said feed roller while maintaining substantially constant deflection during a portion of said feed roller rotation.

3,851,811

APPARATUS FOR GUIDING THE EDGES OF WEBS IN PHOTOGRAPHIC COPYING APPARATUS OR THE LIKE

James Turner, London, England, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 10, 1973, Ser. No. 387,782

Claims priority, application Germany, Sept. 12, 1972, 22446293

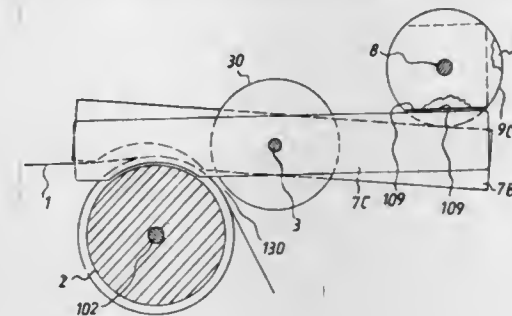
Int. Cl. B65h 23/28

U.S. Cl. 226—199

14 Claims

1. In an apparatus for guiding the edges of elongated webs having different widths, particularly for guiding the edges of

webs which constitute carriers for layers of photosensitive material and are moved lengthwise in a photographic copying apparatus, a combination comprising a plurality of pairs of guide members, the guide members of each of said pairs being movable between an inoperative position and an operative position in which latter position the guide members of the



respective pair are spaced apart a predetermined distance equal to or approximating one of said different widths and in which latter position the guide members of the respective pair define a path for and flank the edges of a web of corresponding width; and actuating means for moving selected pairs of guide members between said operative and inoperative positions.

3,851,812

FORCE FIT PLASTIC CLOSURE

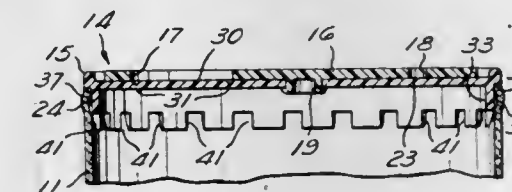
Patricia A. Bittel, Bay Village, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Jan. 21, 1974, Ser. No. 434,785

Int. Cl. B65d 3/16

U.S. Cl. 229—5.5

8 Claims



1. A single piece integral plastic end closure for a tube comprising a laterally extending end portion, an annular skirt portion extending axially from said end portion, said skirt portion having a generally cylindrical outer surface for being received within said tube, and a cantilever fin having a fixed end on said outer surface of said skirt portion remote from said end portion and a free end, said fin being rotatable about said fixed end in one direction from a normal radially outwardly extending position to a mold ejecting position extending axially away from said end portion, and said fin being rotatable about said fixed end in another direction opposite said first direction from said normal radially outwardly extending position to a locking position extending axially toward said end portion.

3,851,813

GENERALLY FRUSTOCONICAL CONTAINER AND BLANK THEREFOR

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 1, 1972, Ser. No. 302,879

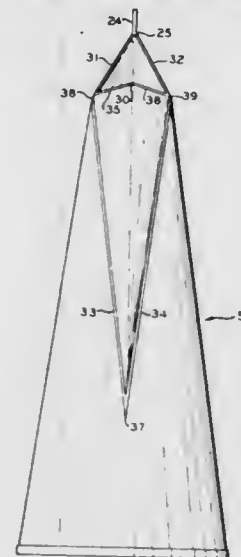
Int. Cl. B65d 5/72

U.S. Cl. 229—17 G

19 Claims

1. A blank for forming the sidewall of a generally conical container, said blank having a top edge, a bottom edge opposite said top edge, and first and second opposite side edges, said bottom edge at least generally corresponding to the arc of a circle having a radius greater than the distance from said bottom edge to said top edge along a radial ray of said circle, said first side edge extending at least substantially along a first radial ray of said circle, said second side edge extending at least substantially along a second radial ray of said circle, at least one of said first and second side edges having a marginal portion extending along the length thereof lying outside the

respective one of the first and second radial rays to provide a seam margin along one of said side edges for overlapping and bonding to the margin along the other of said side edges in the formation of said blank into a generally frustoconical configuration; first and second pinched waist forming score line configurations formed in said blank; said first score line configuration comprising a first pair of score lines extending downwardly and outwardly from a first point on said blank spaced downwardly from said top edge; said second score line configuration comprising a second pair of score lines extending downwardly and outwardly from a second point on said blank spaced downwardly from said top edge, said first and second points being spaced apart on said blank so as to be substantially 180° apart when said blank is formed into said generally frustoconical configuration; said first score line configuration further comprising a third pair of score lines extending upwardly and outwardly from a third point on said blank spaced from said bottom edge to points of intersection with said first pair of score lines, said first pair of score lines being at least substantially equal to each other and said third pair of score lines being at least substantially equal to each other, said first and



third points being at least substantially on a first common radial ray of said circle with said first tetragon being at least substantially symmetrical about said first common radial ray; said second score line configuration further comprising a fourth pair of score lines extending upwardly and outwardly from a fourth point on said blank spaced from said bottom edge to points of intersection with said second pair of score lines to form a second tetragon with said second pair of score lines, said second pair of score lines being at least substantially equal to each other and said fourth pair of score lines being at least substantially equal to each other, said second and fourth points being at least substantially on a second common radial ray of said circle with said second tetragon being at least substantially symmetrical about said second common radial ray, the angle between said first and second common radial rays being such that said first and second common radial rays would be substantially 180° apart when said blank is formed into said generally frustoconical configuration; a first score line extending between the points of intersection of said first pair of score lines with said third pair of score lines; and a second score line extending between the points of intersection of said second pair of score lines with said fourth pair of score lines.

3,851,814

GUSSETED ARTICLE

Leo J. Stage, Roselle Park, N.J., assignor to Arvey Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,981

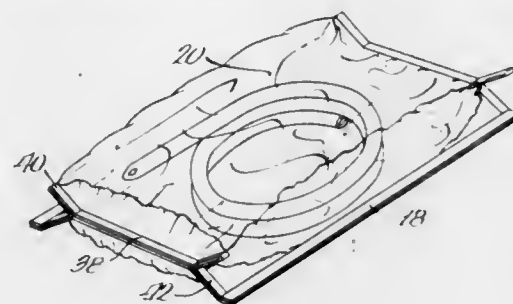
Int. Cl. B65d 31/10

U.S. Cl. 229—53

5 Claims

1. A gusseted article formed from two webs of material interconnected along coterminous marginal edges comprising

a first web of material having a transverse dimension greater than the second web of material; said first web of material comprising a non-heat sealable film having first and second spaced parallel fold lines adjacent each marginal edge to produce a first inwardly extending portion and a second outwardly extending portion having a transverse dimension greater than the transverse dimension of the first portion whereby a gusset is formed in said first web of material adjacent each marginal edge thereof with an outer area of each second portion extending outwardly beyond the adjacent first fold line whereby the outer area of each second portion is exposed at the marginal edges of said first web; means for adhering said first web of material to said second web of material including means sealing the exposed



outer area of the second portions of the first web along at least a portion of their length to an adjacent area of the second web to form a seal adjacent the two marginal edges of said first and second webs, said adhering means further including closure forming means intersecting the sealed marginal edges of said first and second webs, said closure forming means being provided by means sealing the facing surfaces of said first and second webs between said second fold lines, means sealing said inwardly extending first portions of said first film to the adjacent surface of the first film, and means securing the outwardly extending second film, said first and second portions of said first web being in overlapped, unsealed relationship with respect to one another.

3,851,815

FOLDED PRE-WRAP CARTON

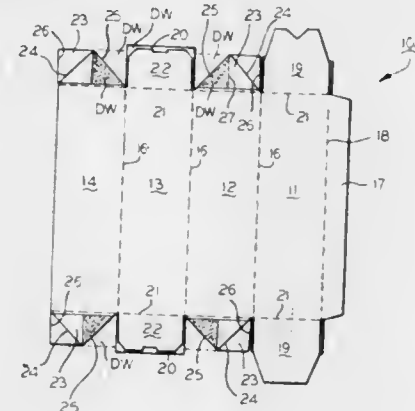
John D. Desmond, and Joseph I. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Dec. 21, 1973, Ser. No. 427,123

Int. Cl. B65d 65/00

U.S. Cl. 229—87 R

2 Claims



1. In a carton having a decorative wrap secured thereto and constructed and arranged in appearance when set up to simulate a carton which is hand wrapped with a detached decorative wrap, said carton being formed from a cut and scored blank of paperboard or the like having the decorative wrap loosely secured thereto and comprising:

a. opposed main and side panels foldably interconnected to define a carton tube of rectangular cross section;

- b. inner and outer closure flaps foldably extending from said main panels and folded into closing position at right angles into the plane of the end of said tube;
- i. said outer closure flap overlapping said inner closure flap and having the distal edge thereof extending approximately to a median line between said opposed main panels;
- c. right trapezoid-shaped closure flaps extending foldably from said side panels and having their right angled sides in proximate relationship and with said first closure flap extending therebetween;
- i. a score line in each of said last named flaps extending from a point adjacent the intersection of the distal edge thereof with the inclined edge thereof to the fold line at the end of the right angle to said fold line;
- d. each of said trapezoidal flaps being folded into confronting relationship at said score line to provide a flap portion of double thickness having a free edge of single thickness at right angle to said fold line.

3,851,816

AUTOMATIC TAPE LOADING TYPE RECORDING AND/OR REPRODUCING APPARATUS HAVING A PINCH ROLLER ACTUATING DEVICE

Hiroshi Katoh, Yokohama-City, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

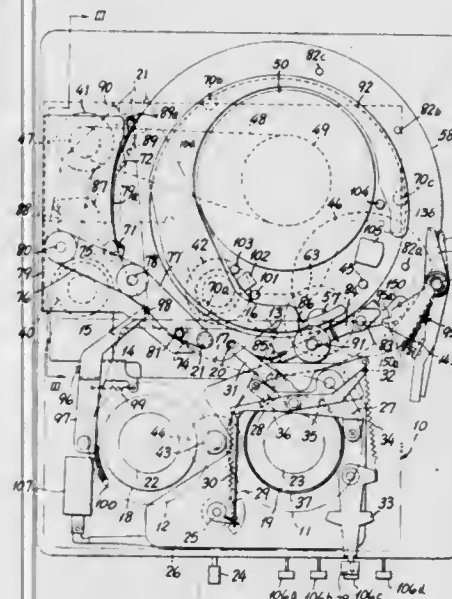
Filed July 18, 1973, Ser. No. 380,342

Claims priority, application Japan, July 21, 1972, 47-72549

Int. Cl. G11b 17/02

U.S. Cl. 226—91

4 Claims



1. Automatic tape loading type recording and/or reproducing apparatus comprising loading means for drawing a tape-form of recording medium out of a tape housing structure and loading the same along a specific tape path, moving means for moving said loading means from a disengaged position to an operative position and for returning the same from the operative position to the disengaged position, a capstan means and pinch roller means disposed along the specific tape path, pinch roller actuating means responsive to the arrival of said loading means at the operative position for pressing said pinch roller against said capstan with the recording medium interposed therebetween to move the recording medium along the specific tape path, and means for recording and/or reproducing from the recording medium moving along the specific tape path signals, said pinch roller actuating means comprising:

- a. a solenoid having a plunger rod, one end of which is provided with a pin;
- b. a lever member engaging the pin of the solenoid plunger, said lever member being pivoted on a pivot pin;
- c. a pressing member swingable between first and second positions, at the first position said pressing member being spaced apart from the pinch roller which is spaced apart from said capstan and releasably engaging the pin of the plunger rod in an unenergized state of said solenoid, at the second position the pressing member pressing the

- pinch roller against said capstan with the recording medium interposed therebetween;
- d. pushing means for releasing said pressing member from engagement with the pin of the plunger rod and moving said pressing member from the first position toward the second position to contact and move the pinch roller toward said capstan, as said loading means moves from the disengaged position toward the operative position;
- e. energizing means responsive to the arrival of said loading means at the operative position for energizing said solenoid to pull the plunger rod and rotate said lever member about the pivot pin whereby said pressing member is impacted by the pin of the moving plunger rod and engaged by the pin of the plunger rod so as to swing to the second position;
- f. locking means responsive to the rotation of said lever member by said energizing means for locking said pressing member at the second position and holding the pinch roller pressed against said capstan while said loading means lies on the operative position.

3,851,817

METHOD AND MEANS FOR CENTRIFUGING CHILLED BLOOD SAMPLES

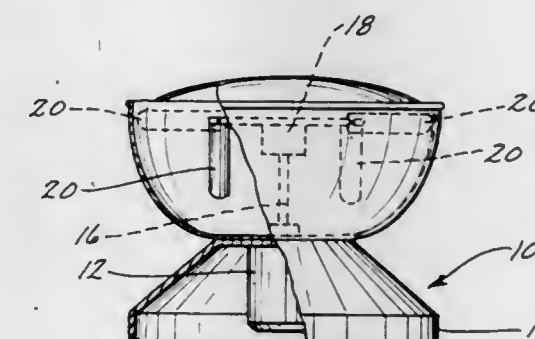
Eleanor S. Buck, 726 50th St., Des Moines, Iowa 50312

Filed May 29, 1973, Ser. No. 364,954

Int. Cl. B04b 15/02

U.S. Cl. 233—11

5 Claims



- 1. In combination, a centrifuge device having at least one supporting means secured to a rotating member and being adapted to support a receptacle during rotation of said supporting means, a receptacle holder element on said supporting means, said holder element comprising inner and outer walls having a space therebetween, a refrigerant material in said space between said wall members, said refrigerant material and said holder element adapted to be chilled, and a receptacle in said holder element containing a test specimen of liquid to be centrifuged, the walls of said receptacle being in close proximity to the inner wall of said holder element so as to permit the refrigerant material to reduce the ambient temperature of said test specimen.

3,851,818

APPARATUS FOR DISCHARGING THE CONTENTS OF A DISCONTINUOUSLY OPERATING CENTRIFUGE

Kurt Pause, Grevenbroich; Ernst Ullrich Dregger, Neuss, and Gottfried Otten, Grevenbroich, all of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Apr. 23, 1973, Ser. No. 353,720

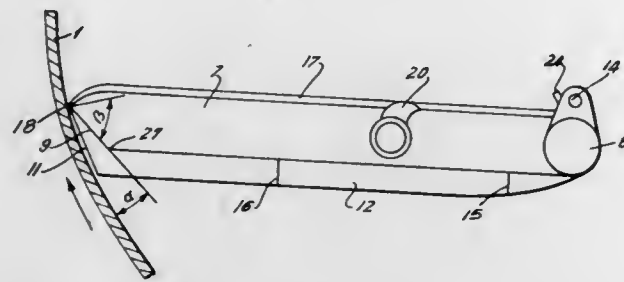
Int. Cl. B04b 11/08

U.S. Cl. 233—22

7 Claims

1. In a discontinuously operating centrifuge, having a drum provided in an upper axial end with an opening, an arrange-

ment for discharging the contents of the drum comprising, in combination, a suction conduit mounted for insertion into and removal from the drum through said opening, and for pivotal displacement within the drum between an operative position and an inoperative position, said suction conduit having a nozzle portion provided with an inlet opening arranged to be



located closely adjacent to an inner circumferential surface of the circumferential wall of said drum and to face opposite the direction of rotation of the drum, the plane of said inlet opening defining, when said conduit is so located, with a tangent to the circumferential wall of the drum a first acute angle, and with the drum radius a second acute angle which is greater than said first acute angle.

3,851,819

DRIVING DEVICE FOR ROTARY CHEMICAL MACHINE

Takaya Tadokoro, Chibashi, Japan, assignor to Tsukishima Kikai Co., Ltd., Tokyo, Japan

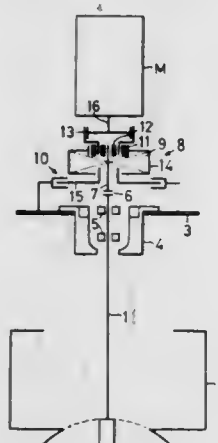
Filed July 27, 1973, Ser. No. 383,180

Claims priority, application Japan, July 28, 1972, 48-75596

Int. Cl. B04b 9/10

U.S. Cl. 233-24

9 Claims



1. A driving device for a rotary chemical machine having a normally and reversely rotatable rotary basket and a rotary shaft affixed to the rotary basket, comprising a reversible prime motor having a cylindrical hollow input shaft driven thereby, an output shaft secured to said rotary shaft, a rotary casing rotatably mounted around said output shaft, a first unidirectional clutch interposed between the input shaft of said prime motor and said rotary casing for coupling the input shaft of said prime motor to said rotary casing when the input shaft rotates in one direction, a second unidirectional clutch interposed between the input shaft of said prime motor and said output shaft secured through the rotary shaft to said rotary basket for coupling the input shaft to said output shaft when the input shaft rotates in the other direction, a reduction gear mechanism contained in said rotary casing and having a first sun gear integrally formed on said output shaft, a sleeve shaft rotatably mounted on said output shaft coaxially adjacent to the sun gear and having a second sun gear integrally formed thereon adjacent to said first sun gear, and further having one end thereof projected externally from said rotary casing, a stub shaft so mounted around said output shaft, so as to be rotatable about its own axis and also around said output shaft within said rotary casing, first and second idle planetary gears rotatably mounted on said stub shaft and engaged with

said first sun gear and second sun gear respectively and driven separately from said rotary casing only when said input shaft of said prime motor is rotated in one direction, a torque control mechanism having a non-restricting element affixed to the projected end of said sleeve shaft, at least one pair of braking elements movable relative to each other toward or away from both surfaces of said non-restricting element, braking element drive control means including a dual-operated air cylinder for actuating said braking elements, control means including a solenoid valve for controlling the quantity of air supplied to said air cylinder and a control circuit for controlling the opening of said solenoid valve and having an electric motor load detector for detecting the amplitude of the load current of said prime motor, a control for urging said braking elements into engagement with said non-restricting element by a desired force, and a control calculator for comparing the detected value detected by said load detector with a preset value preset by said control for producing the output responsive thereto for controlling the actuation of said braking elements so as to impart a desired torque to said output shaft.

3,851,820

SPRAY GUN FOR PRODUCING A FAN-LIKE PATTERN

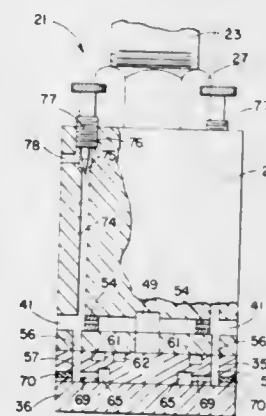
Truman O. Hudson, 3205 Oakwood, Lynwood, Calif. 90262

Filed Feb. 28, 1974, Ser. No. 446,720

Int. Cl. B22d 17/22

U.S. Cl. 239-407

11 Claims



1. A spray gun comprising:
a body having a plurality of orifices formed therein;
said body having first duct means communicating with each orifice;
first means for supplying pressurized air to said first duct means so that air passes through each of said orifices and exists said body;
a bushing having a central aperture disposed within each one of said orifices, spaced inward from the opening thereof so that a Venturi effect is produced by the air passing therethrough;
said body having a second duct means communicating with each orifice in the region between said bushing and the opening thereof;
second means for supplying liquid to said second duct means so that the liquid therein mixes with the air passing through each of said bushings in each of said orifices.

3,851,821

RAIL JOINT

Jose Juncosa Lopez, Po de la Habana No. 80, Madrid, Spain

Filed Jan. 17, 1973, Ser. No. 324,519

Claims priority, application Spain, Jan. 21, 1972, 181885

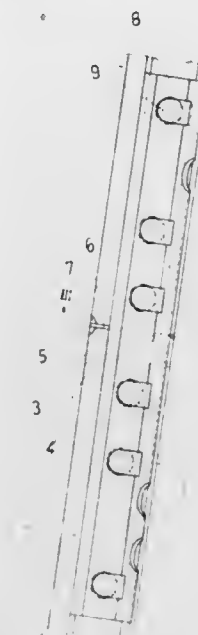
Int. Cl. E01b 11/00

U.S. Cl. 238-230

5 Claims

1. A rail joint comprising a pair of juxtaposed rail ends each having an upper running surface and an outer side face, a cutout extending from an end face of each rail into the latter and being defined by a face parallel to a longitudinal plane of symmetry of the rail, and a second face transverse thereto, said first faces of the pair of rail ends abut against each other,

said second faces being parallel and spaced apart, and further comprising plane triangular shaped truncations respectively extending from said end face and said second face of each rail



obliquely along a line parallel to the longitudinal axis of said rail, and tapering to substantially a point on the intersection of the running surface with the outer side face of the respective rail.

3,851,822

METHOD FOR DEFOGGING A ROADWAY, LANDING STRIP OR THE LIKE

Anton Pocrnja, and Heriberto Wenzel, both of Munich, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

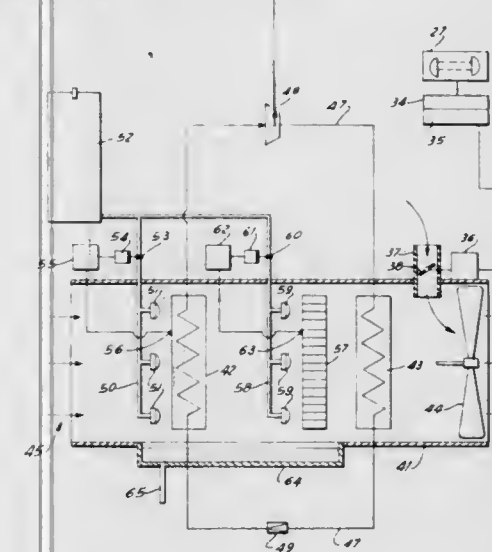
Filed May 16, 1973, Ser. No. 360,909

Claims priority, application Germany, May 19, 1972, 2224657; May 19, 1972, 2224671; May 19, 1972, 2224672

Int. Cl. E01h 13/00

U.S. Cl. 239-2 R

7 Claims



1. A method of defogging an elongated region comprising the steps of:
directing jets of air across said region from opposite longitudinal sides thereof including, a windward and leeward side, and at spaced apart locations along said sides;
dehumidifying at least some of said jets of air;
maintaining the strength of jets generally counter to the wind direction greater than jets generally in the wind direction;
orienting at least one jet on each side generally parallel to the wind direction; and
orienting jets on either side of said one jet at increasing angles to the wind direction away from said one jet.

3,851,823

BURNER WITH ULTRASONIC VIBRATOR

Makoto Hori, Nara; Nerumitsu Rokudo, and Toshiyuki Ishiguro, both of Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

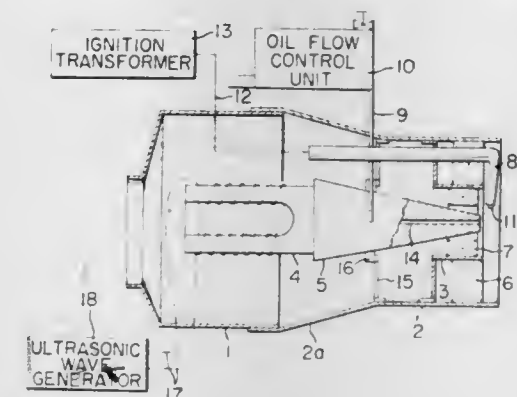
Filed June 26, 1973, Ser. No. 373,685

Claims priority, application Japan, July 4, 1972, 47-67338; July 4, 1972, 47-67390; July 19, 1972, 47-72798; July 28, 1972, 47-76172

Int. Cl. B05b 17/06

U.S. Cl. 239-102

9 Claims



1. A burner with an ultrasonic vibrator comprising
a. a casing and an outer duct fixed to said casing,
b. a frustoconical hollow horn for atomizing liquid fuel disposed within said outer duct coaxially thereof and coupled to an ultrasonic vibrator,
c. means for supplying liquid fuel to a fuel port opened at the front end of said hollow horn,
d. an inner diffuser disposed coaxially of said hollow horn so as to surround the leading portion thereof in spaced apart relation,
e. an outer diffuser disposed coaxially and outwardly of said inner diffuser,
f. an inner duct separating said inner diffuser from said outer diffuser,
g. the front end of said inner diffuser being within the front ends of said outer diffuser and of said hollow horn,
h. the front end of said hollow horn being within the front end of said outer diffuser, and
i. said inner duct surrounding both the outer periphery of said inner diffuser and the inner periphery of said outer diffuser.

3,851,824

NOZZLE FOR PLASMA WELDING TORCH

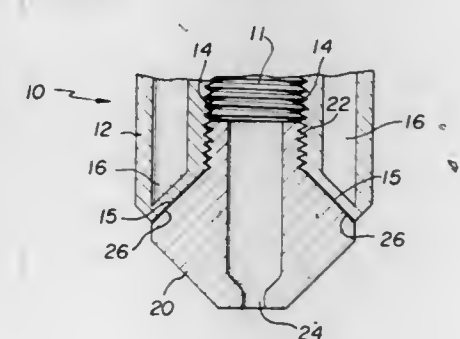
Orvar Anders Svensson, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Mar. 21, 1973, Ser. No. 343,222

Int. Cl. B05b 15/00

U.S. Cl. 239-132.3

8 Claims



1. A nozzle assembly for use with a plasma torch, comprising a threaded nozzle holder; a conical contact surface on said holder; means for cooling the assembly, disposed within said holder; a threaded nozzle and a conical contact surface thereon, adapted to rest against said conical contact surface

on said holder, when said nozzle is threadably engaged in and thereby pressed against said holder, the angle of slope of the conical surface of said nozzle or holder against the longitudinal axis of the torch in which said assembly is disposed and the diameter (D) and length (L) of the threaded portion being chosen so, that the quotient of the radial and the axial movement of a surface element on said conical surface during heating up is always greater than the tangent of the angle of slope (β) of said conical surface.

3,851,825

LEAK-PROOF LAMINAR FLOW DEVICE

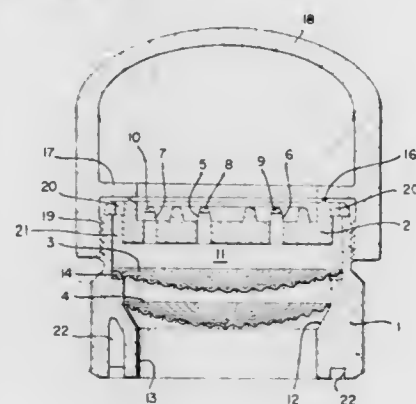
Richard G. Parkison, Somerville, and Barry S. Fichter, Dunellen, both of N.J., assignors to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. No. 332,982, Feb. 15, 1973. This application May 14, 1973, Ser. No. 359,948

Int. Cl. B05b 1/14

U.S. Cl. 239—590.3

10 Claims



1. A non-aerated device for attachment to a spout or faucet for converting the water randomly flowing through the spout or faucet into a single laminar stream substantially free of air, said device comprising a disk having a plurality of substantially equal parallel jet-forming perforations therein parallel to the axis of said device, said disk including means overhanging said perforations for causing the water flowing through said perforations to diverge so that the water jets are divergent in form as they exit from said perforations, said disk also having peripheral openings for receiving water which does not flow through said perforations; and a plurality of screens positioned downstream from said disk and forming a region of sub-atmospheric pressure between said disk and said screens, the screen nearest said disk having a mesh which is coarser than the screen farthest from said disk, and said screens being of spherical or concave shapes bulging toward the downstream direction in said device, said device being further arranged so that water which passes through said peripheral openings in said disk is drawn into said region of sub-atmospheric pressure and is there joined with said water jets exiting from said perforations in said disk, and said device having its smallest internal cross-sectional area at its discharge end.

3,851,826

APPARATUS FOR TREATMENT OF SOLIDS FOR ANALYSIS

I. Lee Perlman, Pound Ridge, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,925

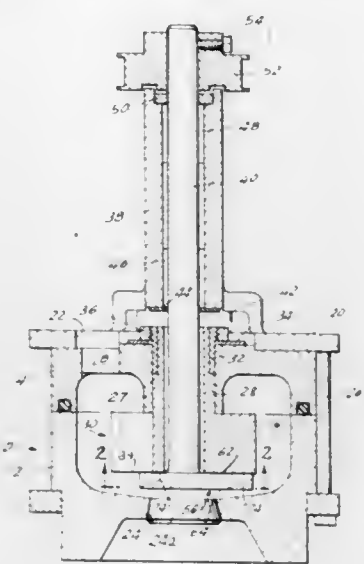
Int. Cl. B02c 18/10

U.S. Cl. 241—46.11

10 Claims

1. Apparatus for mixing solid sample material in a carrier liquid for analysis, comprising: a first cutter element, a second cutter element, said first cutter element being driven relatively to said second cutter element about a rotary axis for a shearing action between said cutter elements which are engageable with one another, and means mounting said first cutter element for floating movement toward and away from said second cutter element, each of said cutter elements having on

one face thereof plural knife edges in array about said axis, said first cutter element having means thereon to shift said first cutter element to gap-closing relationship with said first



element and maintain such relationship during operation of such apparatus for mixing and to move in a direction away from said second cutter element upon termination of such operation.

3,851,827

METHOD AND DEVICE FOR TRANSFORMING SLURRIES COMING FROM WET PURIFICATION PLANTS FOR FUMES FROM BLAST FURNACES AND BASIC OXYGEN FURNACES INTO A CONTROLLED SIZE GRANULAR SOLID MATERIAL

Milvio Carignani, Tarranto; Michele Conti, Genoa-Quarto; Casimiro Dufour-Berte; Geremia Rossi, both of Genoa; Edoardo Pasero, Rome, and Hermann Zmolnig, Genoa, all of Italy, assignors to Italsider S.p.A., Genoa, Italy

Division of Ser. No. 69,054, Sept. 2, 1970, Pat. No. 3,770,415.

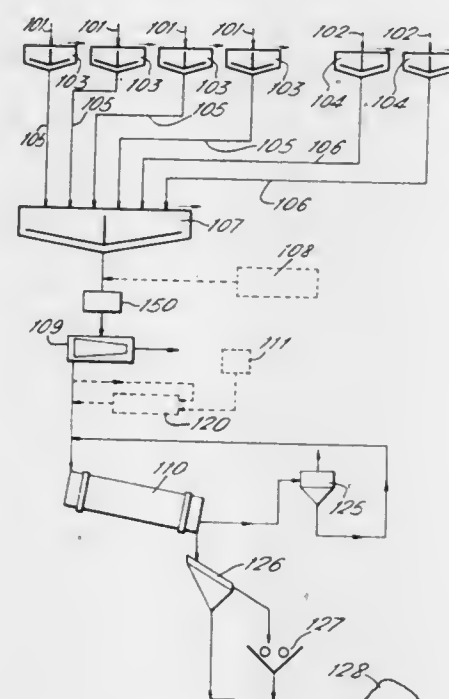
This application July 19, 1973, Ser. No. 380,931

Claims priority, application Italy, Sept. 10, 1969, 7304/69

Int. Cl. B02c 21/00

U.S. Cl. 241—65

11 Claims



1. Apparatus for obtaining from a first slurry coming from a wet purification plant of a blast furnace and a second slurry coming from a wet purification plant of a basic oxygen furnace, a granular solid material of controlled size which is reusable in a blast furnace, said apparatus comprising: at least

one decantation tank for receiving slurries coming from the wet purification devices of the basic oxygen furnace and the blast furnace; a dehydrating device; a drying-granulating device means for passing hot fumes through said drying-granulating device; a sieve for separating the granular material of the desired size, and means for recycling the granules passed through the sieve to an inlet of the drying-granulating device, and means for grinding the granular material of excessive size coming from said drying-granulating device.

3,851,828

MACHINE FOR PROCESSING BONE-IN MEAT CUTS

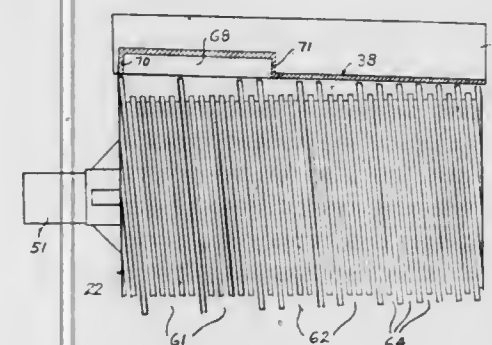
Stephen A. Paoli, Stephen Paoli Manufacturing Company, 520 Sixth St., Rockford, Ill. 61108

Filed Jan. 22, 1973, Ser. No. 325,825

Int. Cl. A22c 17/00, 25/16; B02c 18/00

U.S. Cl. 241—68

12 Claims



1. A machine for processing bone-in cuts of meat, poultry or fish in one continuous operation which includes reducing said material to a coarse agglomeration of fragmented hard and soft tissues while simultaneously separating therefrom boneless comminuted meat free from perceptible bone and other hard tissues, said machine comprising the combination of:

- a machine casing having a feeding opening for raw material;
- a hollow power driven rotor journaled within said casing, said rotor having a driven or inboard end and an outboard end;
- a plurality of axially spaced helical cutting elements in said rotor defining a plurality of constricted helical grooves communicating between the exterior and the interior of said rotor;
- certain of said helical cutting elements being of substantially larger diameter than the remaining ones of said cutting elements and being disposed in graduated spaced relation on said rotor with graduated width pressure pockets defined therebetween;
- a pressure bar fixed to said casing in closely spaced relation with the outer peripheral surface of said rotor;
- a regulator plate fixed to said pressure bar and extending upwardly therefrom in closely spaced nested relation with the outer peripheral surface of said rotor;
- means defining a generally arcuate pocket in said regulator plate adjacent said feeding opening;
- an arcuate abutment on the side of said pocket toward the outboard end of said rotor;
- said abutment being constructed and arranged to coact with said larger diameter helical cutting elements and the pressure pockets therebetween to break said raw material into an agglomeration of hard and soft tissues while comminuted meat is being separated therefrom.

3,851,829

DEVICE FOR CRUSHING SOLID MATERIALS

Walter Dopfer, Kassel; Dietrich Hausler, Ahnatal-Weimar, and Walter Kohler, Kassel, all of Germany, assignors to Rhein Stahl Aktiengesellschaft, Essen, Germany

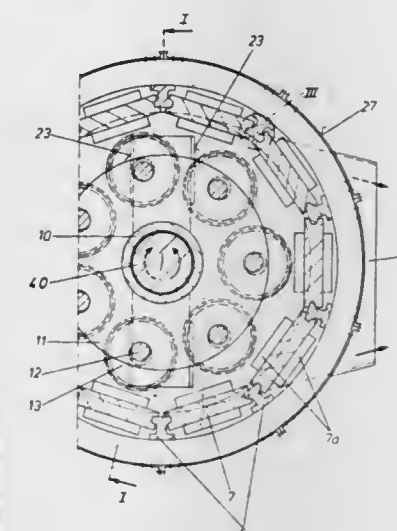
Filed Sept. 27, 1973, Ser. No. 401,342

Claims priority, application Germany, Jan. 19, 1973, 2302446

Int. Cl. B02c 13/282

U.S. Cl. 241—188 R

10 Claims



1. In an apparatus for physically reducing material; a housing substantially circular in cross section disposed on a vertical axis, axial wear plates distributed circumferentially inside said housing and forming the radially inner wall thereof, an axial corner extending along at least one circumferential edge of each wear plate, profiled carrier members on the housing interposed between and extending axially along said wear plates, interfitting elements of key means on the sides of said carrier members and the edges of said wear plates for supporting said wear plates in said housing, a rotor in the housing rotatable on the axis of the housing, and axially spaced rows of circumferentially spaced disc-like beating members on said rotor, means supporting each beating member for rotation on a vertical axis on the rotor, each beating member having a profiled peripheral portion protruding radially from the rotor, the radial gap between the radially inner wall of said housing and the periphery of each said row of beating members decreasing in the downward direction.

3,851,830

METHOD FOR WINDING ELECTRIC COILS AND ELECTRIC COILS PRODUCED THEREBY

Maurice Barthalon, Tournepierre Avenue des Sapins, Verrieres Le Buisson, Essonne, France

Filed Apr. 24, 1973, Ser. No. 353,958

Claims priority, application France, Apr. 25, 1972, 72.14619

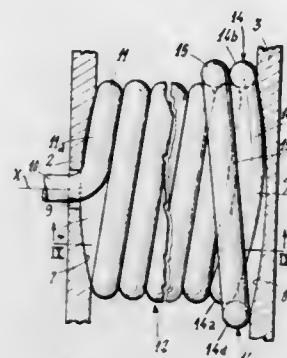
Int. Cl. H01f 41/04, 27/28; B65h 75/14

U.S. Cl. 242—7.03

20 Claims

1. A method of winding electric coils having closely packed turns on a former having a tubular body and a pair of spaced-apart flanges on the body between which the coil is wound, the body of the former having a substantially flat crossing face defined between substantially straight spaced-apart lines of intersection between the surface of the body and angularly related radial-axial planes of the body, each flange having a concavity on its inwardly facing surface the edges of which are defined by lines of intersection between the inner, flat surface of the flange which is substantially perpendicular of the axis of the tubular body, comprising the steps of maintaining each turn of the wire in each layer of the coil substantially in a plane perpendicular to the axis of the body of the former in all portions of such turn except that portion which overlies the crossing face, displacing each full turn in each layer a prede-

terminated pitch distance in a direction parallel to the axis of the body substantially exclusively in said portion thereof which overlies the crossing face, and advancing the wire from the last



turn of one layer to the first turn of the next following layer by displacing it radially away from said axis of the tubular body substantially exclusively within the concavity of one of the flanges.

3,851,831

METHOD AND APPARATUS FOR WRAPPING WIRE ABOUT A CONDUIT

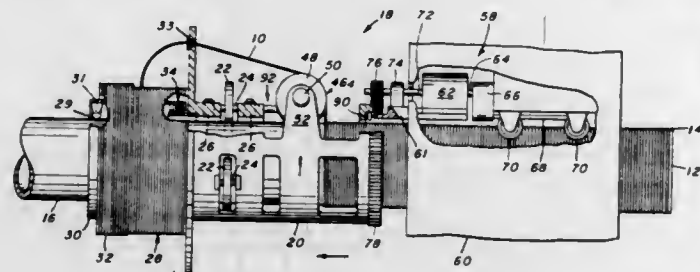
John E. Steiner, Edgewood Borough, and Donald N. Volk, Irwin Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 248,061

Int. Cl. B65h 1/06

U.S. Cl. 242-7.22

24 Claims



1. A wire wrapping apparatus for wrapping high-strength wire, anchored at its free end to a predetermined point on a conduit, under a predetermined tension and pitch about said conduit, said apparatus having:

- a spinning head disposed about said conduit in engagement with said conduit for relative rotating and longitudinal movement with respect to said conduit and for wrapping said wire on said conduit with said predetermined tension and pitch;
- wire supply means either disposed about said conduit in engagement with said conduit for relative rotating and longitudinal movement with respect to said conduit, or mounted on said spinning head and for supplying said wire to said spinning head;
- friction means associated with said wire supply means for providing a friction drag on said wire supply means to prevent uncontrolled payoff of said wire from said wire supply means;
- wire tensioning means mounted on said spinning head and adapted to receive said wire from said wire supply means at a low first tension, to store a plurality of turns of said wire on said wire tensioning means, and to wrap said wire predetermined a higher second tension on said conduit from said predetermined point during the relative rotating and longitudinal movement of said spinning head with respect to said conduit; and
- drive means connected to one member of said spinning head and said conduit for causing relative rotating and longitudinal movement of said one member with respect to the other member of said spinning head and said conduit.

3,851,832

WINDING APPARATUS FOR A WEB

Walter Krueckels, Hausen, and Markus Ruescher, Schofnau, both of Germany, assignors to Maschinenfabrik Zell J. Krueckels KG, Zell, Germany

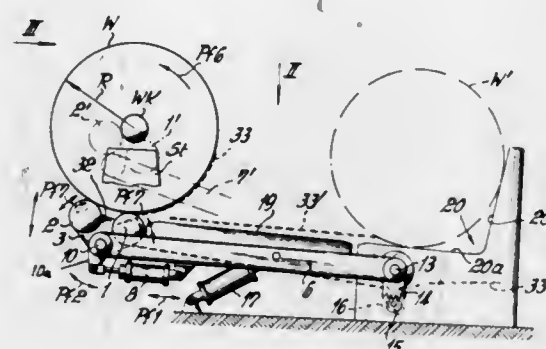
Filed Oct. 16, 1972, Ser. No. 297,989

Claims priority, application Germany, Oct. 16, 1971, 2151615

Int. Cl. B65h 17/08

U.S. Cl. 242-66

16 Claims



1. Winding apparatus for a web comprising a core; bearing means supporting said core for rotation about a core axis; a pair of drive rollers for frictionally engaging and winding up a web on said core; carrier means supporting said drive rollers; supporting means supporting said carrier means with said drive rollers for angular movement about a carrier axis parallel to said core axis, and also for movement with said supporting means toward and away from said core axis; operating means for displacing said supporting means with said carrier means and drive rollers so that said drive rollers are pressed against the web for winding up the web while said carrier means assumes a position in which both said drive rollers abut the web being wound up, irrespective of the diameter of the wound up web roll.

3,851,833

REEL MOUNTINGS

Norman Walter Jackson, London, England, assignor to Molins Limited, London, England

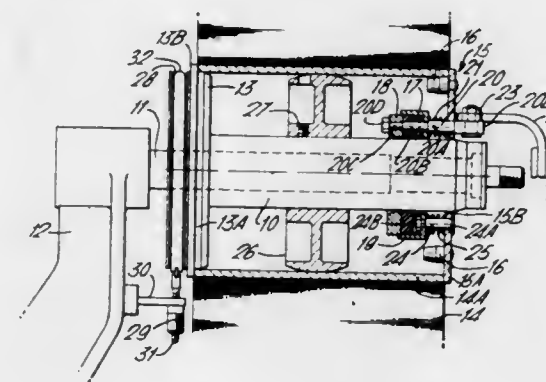
Filed Dec. 20, 1972, Ser. No. 322,899

Claims priority, application Great Britain, Dec. 21, 1971, 59602/71

Int. Cl. B65h 17/02

U.S. Cl. 242-68.3

9 Claims



1. A mounting for a reel having a central aperture, comprising a shaft to pass through the center of the reel and having a first supporting means to receive and position one end of the reel, and a second supporting means to receive and position the other end of the reel, the second supporting means being detachable from the shaft and comprising a plate to support said other end of the reel, a rubber ring closely encircling the shaft and positioned between the first supporting means and the plate, and actuating means operable to effect relative movement between the plate and the ring to bring the plate and the ring together, the actuating means comprising com-

pression means bearing against the side of the ring remote from the plate and extending through the plate, a cam pivotal about said compression means to engage the plate and cause said relative movement between the plate and the ring, and resilient means interposed between the plate and the other side of the ring so that pivoting of the cam causes axial compression of the ring between said resilient means and said compression means, resulting in the ring gripping the shaft and the plate being urged towards the ring to clamp the reel against the first supporting means.

3,851,834

ROLL DRIVE MECHANISM

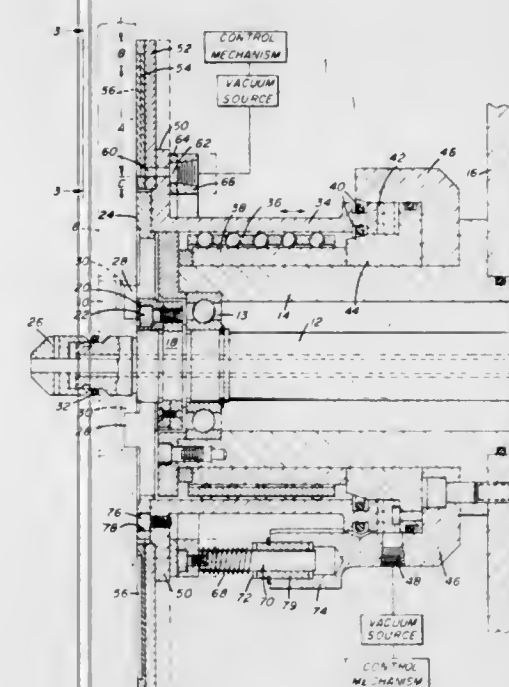
Neil S. White, Rochester; Donald R. Mansfield, Bloomfield, and Noel H. Matthews, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,464

Int. Cl. B65h 19/02

U.S. Cl. 242-68.3

15 Claims



1. In a drive mechanism for a roll of web material, the combination comprising: primary drive means drivingly coupled to said roll for driving said roll of material; and secondary drive means drivingly coupled intermittently to said roll and to said primary drive means, said secondary drive means being movable between a retracted position, in which said secondary drive means is drivingly uncoupled from said roll of material and said primary drive means, and a roll engaged position, in which said secondary drive means is drivingly coupled to said roll of material and to said primary drive means and is responsive to said primary drive means for driving said roll of material.

3,851,835

WINDING-UP DEVICE WITH AUTOMATIC LOCK FOR SAFETY BELT

Artur Fohl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Filed May 3, 1972, Ser. No. 250,010

Claims priority, application Germany, May 5, 1971, 2122419; Dec. 22, 1971, 2163732

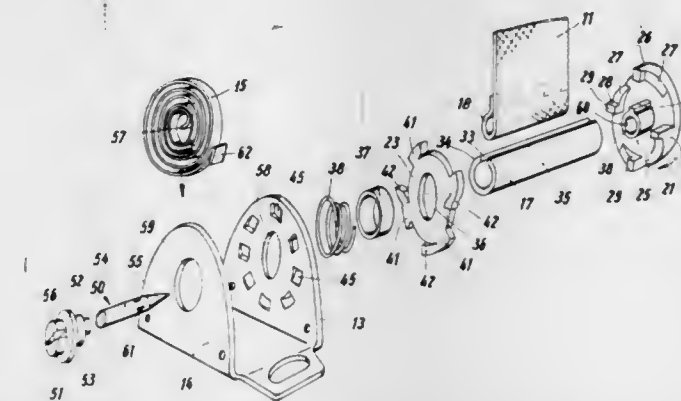
Int. Cl. B65h 75/48

U.S. Cl. 242-107.4

1 Claim

1. In combination with a winding device for a safety belt, a tubular spool formed by rolling up a piece of metal into cylindrical form embossed to have serrated edges thereof defining an axial slot connected to one end of the belt, a return spring biasing the spool in take up direction, a housing having a base and end walls upstanding from the base, the walls having bores

of predetermined diameter receiving ends of said spool journaled thereby, and a locking device independently operatively interposed between said spool and said housing operable in response to acceleration of said spool in pay out direction to lock the spool to the housing, said locking device comprising a support disc fixed to one end of said spool outside one end wall of said housing, an inertia disc mounted loosely over said spool between said one end wall and said support disc for rotation in a plane perpendicular to the longitudinal axis of the spool and for sliding movement along the spool, axial cams on said support disc comprising surfaces inclined toward the inertia disc in a direction opposite to the pay out direction of rotation of said spool, said inertia disc being a stamping formed in star configuration and having radial arms adjacent said inclined surfaces which ride up said surfaces when the spool is accelerated in pay out direction, said radial arms each having at least one circumferential side being bent out of the plane of rotation of said inertia disc, first abutment noses on said one wall of said housing to abut one side of said arms when the arms ride up said inclined surfaces, and second abutment noses on said support disc at the upper ends of said inclined surfaces facing said first abutment noses and engage-



able with the other sides of said arms when the arms ride up said inclined surfaces, said first and second abutment noses being axially offset so as normally freely to pass by one another during rotation of said spool, a bolt extending axially through said spool and arresting the spool axially, said return spring being connected between one end of said bolt and said housing, one end of said bolt fitting closely into said spool relative to one wall of the housing, one end of said belt having a loop thereon which fits over said bolt, said spool being axially slotted to receive said belt, the shank end of said bolt extending to the vicinity of said support disc, said spool being hollow, said support disc having an extension fitting inside said spool, said extension extending into said spool to a location adjacent to the end wall of said housing, a spacer sleeve on said spool between said support disc and said one end wall of said housing, said inertia disc being mounted on said sleeve, and a conical spring between said one end wall and said inertia disc biasing said inertia disc toward said support disc, the axial extent of said inclined surfaces being equal to the axial extent of said radial arms of said inertia disc at the regions which cooperate with said abutment noses plus the axial spacing between said first and second abutment noses.

3,851,836

VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR

Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1973, Ser. No. 390,783

Int. Cl. B65h 75/48

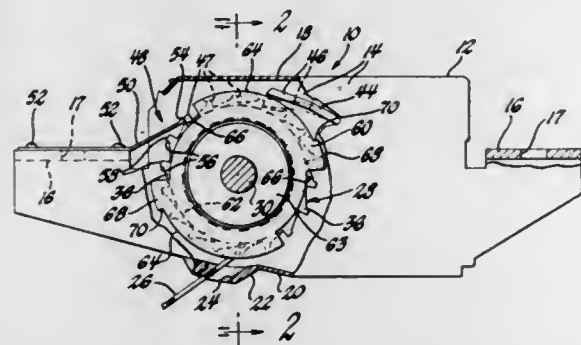
U.S. Cl. 242-107.7

3 Claims

1. In a vehicle occupant restraint belt retractor including a housing adapted to be mounted on a vehicle, a belt reel rotatably supported on the housing for movement in belt winding and unwinding directions so as to wind and unwind an associated restraint belt, spring means normally biasing the belt reel in the belt winding direction of rotation, and an inertia locking

mechanism for selectively locking the belt reel against movement in the belt unwinding direction of rotation, a mechanism for selectively preventing the spring means from rotating the belt reel in the belt winding direction so as to hold the belt in an unwound condition for use, the mechanism comprising:

- a plurality of circumferentially spaced surfaces on the belt reel facing in the belt winding direction of rotation;
- a detent member mounted on the housing and movable between locked and unlocked positions with respect to the surfaces on the belt reel to prevent the spring means from rotating the belt reel in the belt winding direction while in locked position and to allow such rotation while in unlocked position;
- means for biasing the detent member to locked position; and
- a control disk frictionally driven with the belt reel and rotatable with respect thereto about the axis of reel rotation, the control disk including an engagement surface extending circumferentially about the axis of reel rotation for an angle less than 360° so as to engage the detent member and block engagement thereof with a number of the adjacent surfaces on the belt reel, the disk defining a notch receiving the detent member to allow engagement of the detent member and any one of the other surfaces



on the reel so as to prevent the belt winding reel rotation, the detent member being alternately engaged with the engagement surface of the disk or received within the notch as the disk rotates with the reel during belt unwinding reel rotation, the end of the engagement surface located in the belt unwinding direction of rotation having a catch surface that engages the detent member and holds the disk against rotation with the reel while holding the detent member out of engagement with the reel as the spring means rotates the reel in the belt winding direction after proceeding from a condition where the detent member is engaged with the engagement surface, and this engagement between the detent member and the catch surface rotating the disk to a limited extent with respect to the reel when the reel is rotated to a limited extent in the belt winding direction such that this relative rotation changes the rotational position of the disk with respect to the reel so as to change surfaces on the reel which the detent member is engageable with or is blocked from engagement with in a manner that allows selective control of the rotational positions at which the detent member holds the belt reel against the winding bias of the spring means so as to thereby allow adjustment of the length of the belt that is held unwound for use.

3,851,837

VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR
Henry W. Griffin, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,060

Int. Cl. A62b 35/00

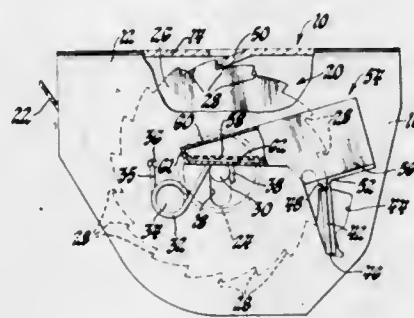
U.S. Cl. 242—107.4

4 Claims

1. A vehicle occupant restraint belt retractor comprising: a housing adapted to be mounted on a vehicle;
- a belt reel rotatably supported by the housing and movable in belt winding and unwinding directions of rotation, the

belt reel including a drum for receiving an associated restraint belt and a pair of end plates at the ends of the drum, and the end plates defining circumferentially spaced locking surfaces facing in the belt unwinding direction of rotation;

- a locking member mounted on the housing for movement between an unlocked position out of engagement with the belt reel and a locked position in engagement with a selected pair of locking surfaces on the end plates so as to prevent belt unwinding rotation of the reel; and



- a receptacle carried by the locking member and having mercury received therein, the receptacle including a lower rearward portion normally receiving the mercury so as to position the locking member in the unlocked position and an upper forward portion to which the mercury moves in response to a predetermined deceleration in the rate of forward vehicle movement so as to thereby move the locking member to locked position and thus prevent belt unwinding rotation of the reel in a manner that restrains a belted vehicle occupant during such deceleration.

3,851,838
SLIP SLEEVES

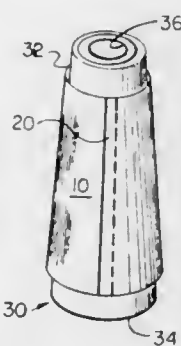
William A. Biggs, Jr., 325 Woodland Dr., and Joseph L. Jacobs, 709 Prestwood Dr., both of Hartsville, S.C. 29550

Filed June 22, 1970, Ser. No. 48,251

Int. Cl. B65h 75/10, 75/26

U.S. Cl. 242—118.32

1 Claim



1. A sleeve for utilization on the surface of a yarn carrier comprising: a single ply of flexible material having predetermined surface characteristics; said sleeve being conical with a slight overlap of edges of a blank; and said overlapped edges secured by an adhesive having electrical conductive characteristics, whereby said sleeve may be interfit with a yarn carrier for overcoming and eliminating surface irregularities while establishing the desired carrier surface for proper delivery of yarn wound thereabout.

3,851,839

COMPLIANCE ROLL

Frank R. Hynes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 21, 1973, Ser. No. 399,590

Int. Cl. B65h 59/00

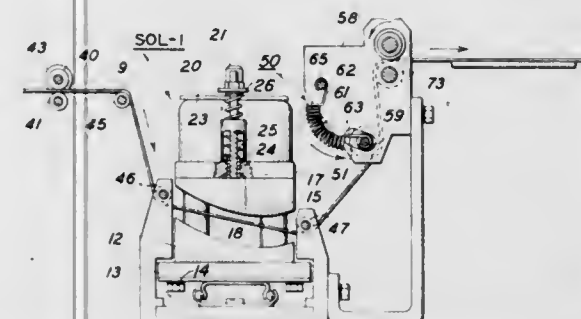
U.S. Cl. 242—147 R

5 Claims

1. In apparatus for processing a web of film having a developing system including a curvilinear surface adapted to move

into contact with said film whereby the film is tensioned against said curvilinear surface, the improvement comprising means to secure said film on both sides of said developing system to form a film loop of predetermined length therebetween having at least one straight run thereon,

- means to place said curvilinear surface into contact with said film along said straight run,
- a compliance roll movably positioned between said curvilinear surface and one of said film securing means whereby said compliance roll contacts said film, said compliance roll being arranged to move in compliance with the



- change in the film loop geometry caused by the curvilinear surface moving into contact with said film,
- bias means operatively associated with said compliance roll for tensioning said roll under a constant load against said film throughout the range of roll movement,
- said bias means including a compression spring of substantially constant compression force throughout its displacement.

3,851,840

HIGH SPEED CARTRIDGE

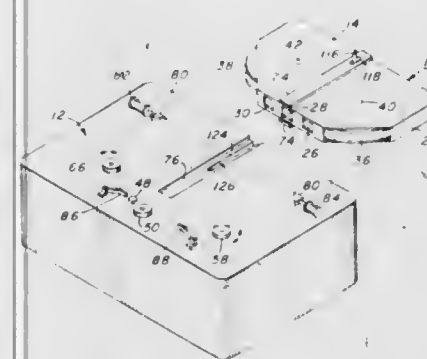
Cedric R. Bastiaans, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,693

Int. Cl. G11b 23/10

U.S. Cl. 242—198

2 Claims



1. A magnetic tape cartridge and playing deck assembly comprising a casing, a pair of spaced reels within the casing, a plurality of tape guides within the casing, a magnetic tape extending from one of said reels around said guides to the other of said reels, opening in the front side wall of said casing for receiving a magnetic head across which the tape will pass, a first roller which engages one side of the tape, a second roller within the casing against which said first roller is pressed with the tape therebetween, a guide slot in said deck, guide strips on opposite sides of said cartridge adapted to be received within said guide slot, a reel brake for said reels, said reel brake comprising a reciprocative body intermediate the reels and having arcuate friction liners on its opposite sides for engagement with the peripheries of said reels, a pin carried on said body and projecting through the top and bottom of said cartridge and said guide strips, and a groove within said guide slot, the groove terminating at a point whereby the pin will engage the end of the groove and disengage the reel brake from said reels when the second roller and tape are pressed against said first roller.

3,851,841

HIGH SPEED TAPE CASSETTE

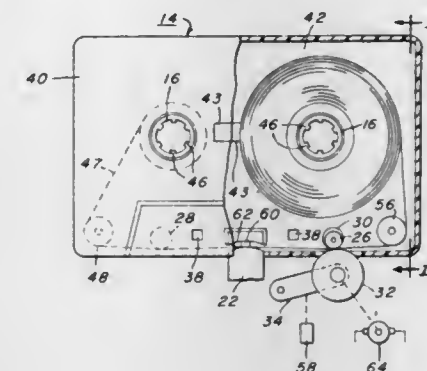
Cedric R. Bastiaans, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,691

Int. Cl. G11b 23/10

U.S. Cl. 242—199

2 Claims



1. A magnetic tape cassette comprising a casing of upper and lower mating halves, a pair of spaced reels within the casing, means for driving one of said reels whereby a tape speed of at least about 120 inches per second is achieved, a plurality of tape guides within the casing, and a magnetic tape extending from one of said reels around said guides to the other of said reels, each of said guides comprising a roller of the hourglass type of generally concave cross-sectional configuration, the tape-engaging surface of the roller defining an arc of a circle in cross section with the roller being symmetrical about a plane passing through the roller midway between its ends.

3,851,842

HIGH SPEED TAPE CASSETTE

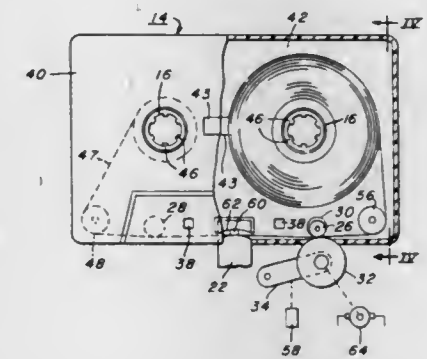
Cedric R. Bastiaans, 133 Glenhurst Dr., Verona, Pa. 15147

Division of Ser. No. 254,691, May 18, 1972. This application Aug. 8, 1973, Ser. No. 386,686

Int. Cl. G11b 23/10

U.S. Cl. 242—199

5 Claims



1. In a high speed tape dubbing system, the combination of a tape deck adapted to receive a magnetic tape cassette, said tape cassette comprising a casing of upper and lower mating halves, a pair of spaced reel hubs within the casing, hourglass guide rollers at two corners of the casing, a magnetic tape extending from one of said reel hubs around said guide rollers to the other of said reel hubs, the path of said tape in passing from one of said guide rollers to the other extending along a side wall of the casing, openings in said side wall for receiving at least one transducer across which the tape passes and a driving capstan mounted on said tape deck, openings in said upper and lower halves for receiving an idler roller also mounted on said tape deck such that with the cassette on the tape deck the idler roller will be behind the tape in front of one of said side wall openings, means for urging said driving capstan through said one side wall opening and into engagement with the side of said tape opposite said idler roller, and means for driving said capstan to achieve tape speeds of at least 120 feet per second.

3,851,843

TRANSFER STATION ASSEMBLY

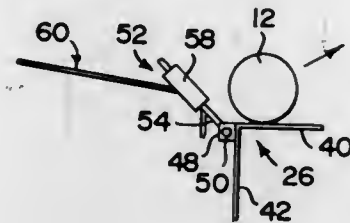
Charles Morris Sandlin, Newnan, Ga., assignor to National Safe Corporation, Clearwater, Fla.

Filed Aug. 24, 1973, Ser. No. 391,222

Int. Cl. B65g 51/32

U.S. Cl. 243—19

5 Claims



1. A transfer station assembly for a carrier used in combination with a delivery portion and a collector portion of a conveyor system, said assembly comprising: tray means movably mounted in interconnected relation between said delivery portion and said collector portion, biasing means connected to said tray means and disposed relative thereto so as to movably bias said tray means in predetermined relation to said delivery portion and said collector portion, tray activating means including a first wall element and a second wall element rigidly connected to one another and movably disposable in carrier engageable position relative to said delivery portion and said collector portion, said first wall element comprising a first activating surface, said second wall element comprising a second activating surface; said first and second activating surfaces normally disposed in direct communication with and in carrier engageable relation to said delivery portion and said collector portions, respectively, by virtue of the relative disposition of said first and second wall elements and said biasing means.

3,851,844

METHOD OF LAYING A BALLISTIC MISSILE

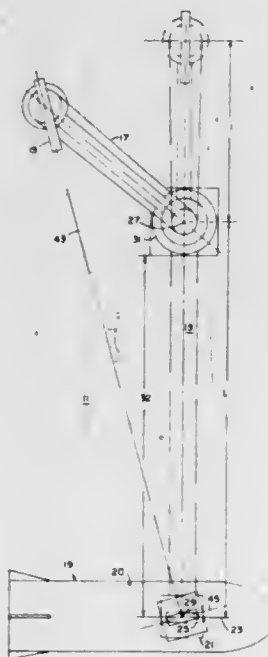
William W. Stripling; Harold V. White, and Joe S. Hunter, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 328,796, Feb. 1, 1973. This application Oct. 15, 1973, Ser. No. 406,405

Int. Cl. F41g 11/00

U.S. Cl. 244—3.16

1 Claim



1. The method of laying in a target azimuth a compass-oriented ballistic missile having a stable platform with an axis and a mirror in parallel relation therewith, comprising:

aligning said connector and said arm with said telescope in autoreflective alignment with said mirror and said proximal and distal ends in respective engagement with the axis of a north-seeking gyro device and the platform axis for normal relation therewith of said arm, determining from the north-seeking gyro device the angle θ between the platform axis and the target azimuth; rotating the telescope through an angle β equal to $\sin^{-1}[L/1 \sin \theta]$ where L and 1 are the respective lengths of the arm and the connector; and rotating the missile platform to autoreflective engagement of the telescope and mirror to lay the missile in the target azimuth.

3,851,845

APERTURE CLOSURE DEVICES

Emrys Ronald Edwards, Chard, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England

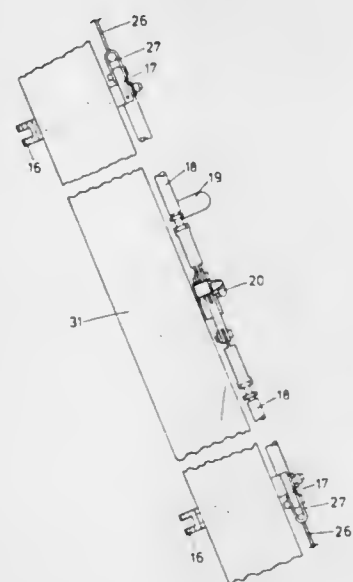
Filed Apr. 9, 1973, Ser. No. 349,197

Claims priority, application Great Britain, Apr. 17, 1972, 17652/72

Int. Cl. B64c 1/00

U.S. Cl. 244—129 D

15 Claims



1. An aperture closure device comprising in combination, a closure member, a plurality of supporting means each comprising a hinge pin spaced from an edge of the closure member parallel therewith and supported at its ends between two parallel flange members extending from the closure member, and a hinge in the form of a bolt-like member rotatably mounted in a supporting structure adjacent the aperture and having a cylindrical shaped head portion for location between the flange members on the closure member when the closure member is fitted, the cylindrical shaped head portion having a slot adapted to mate with the hinge pin supported by the flange members, such that rotation of the hinge is effective to retain and to release its associated pin.

3,851,846

SUPPORT AND LEVELING ARRANGEMENT

Olan L. Long, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,839

Int. Cl. F16m 11/24

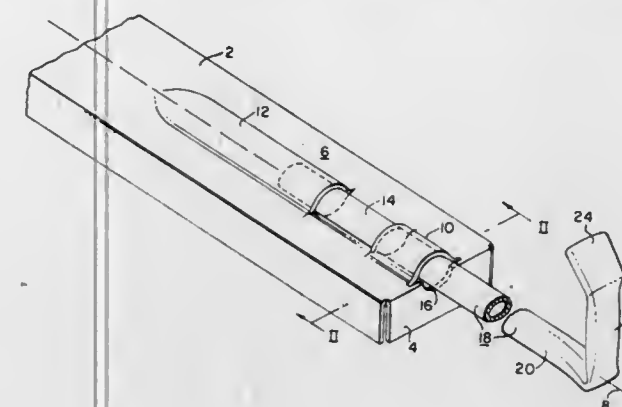
U.S. Cl. 248—188.2

3 Claims

1. A support and leveling arrangement comprising an adjustable leg portion;

a socket for receiving said adjustable leg portion and having a generally oval shaped cross section, said socket formed integral with and deformed from a web and comprised of one semi-oval band projecting out of said web in one direction and a pair of upstanding semi-oval bands lo-

cated on either side of said one band and projecting out of said web in the other direction; said adjustable leg portion having a longitudinal member having a substantially oval cross section along at least a part of its length, said adjustable leg portion being relatively freely movable axially in said socket when the oval cross sections of said socket and said adjustable leg por-



tion are in registry, said oval cross sections of said socket and said adjustable leg portion providing an interference lock between said socket portion and said adjustable leg portion in any adjusted position of said adjustable leg portion when said adjustable leg portion is rotated relative to said socket portion; and means for rotating said adjustable leg portion relative to said socket portion.

3,851,847

SPARK PLUG HOLDER FOR MOTORCYCLES AND THE LIKE

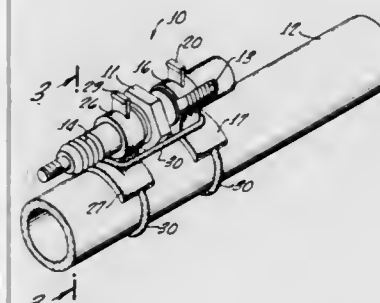
Robert L. Hinkley, 14160 Red Hill Ave., Tustin, Calif. 92680

Filed Oct. 19, 1973, Ser. No. 408,056

Int. Cl. A47I 13/00

U.S. Cl. 248—231

8 Claims



1. An article of manufacture for removably securing a conventional spark plug to a cylindrical support member such as a frame member of a motorcycle comprising:

first means including a first, hollow, cylindrical, spark plug receiving cap and a first, hollow, semicylindrical, frame member engaging base, the axes of said cap and said base being parallel;

second means including a second, hollow, cylindrical, spark plug receiving cap and a second, hollow, semicylindrical, frame member engaging base, the axes of said second cap and said second base being parallel, said first and second means being adapted to be positioned with the axes of said first cap and said first base coaxial with the axes of said second cap and said second base, respectively; and third means consisting of an elongated, resilient, stretchable member interconnecting said first and second bases,

said stretchable member being wrapable around said frame member and connectable to said first and second means to secure said first and second bases to said frame member.

3,851,848

AWNING RAIL

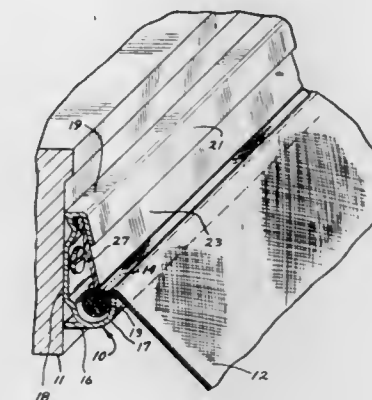
Robert W. Wiele, Jackson, Wyo., assignor to Frank D. Werner, Jackson, Wyo.

Filed Mar. 23, 1973, Ser. No. 344,248

Int. Cl. E04f 10/02; A47h 15/00; E06b 9/08

U.S. Cl. 248—273

5 Claims



1. A fastening device for attaching awnings or similar sheets having an enlarged hem adjacent the edges thereof to a support structure, said device including an elongated member having a base, a first edge portion and a second edge portion spaced from the first edge portion; means to attach said device to a support structure; said first edge portion including a wall extending from the base to form a concave surface facing the second edge portion, said concave surface being of size to receive at least a portion of a hem of a sheet to be held; a flexible lock strip; said second edge portion defining a generally longitudinally extending slot facing said concave surface, said flexible lock strip having a first edge configured to correspond to and being mounted in said slot, said flexible lock strip extending obliquely to the base from said slot toward said wall forming said concave surface, and a second edge of said flexible lock strip being spaced from said wall a distance less than the thickness of a hem of a sheet to be held with the flexible lock strip in a normal rest position, said second edge of said flexible lock strip engaging a hem positioned in the concave surface to lock such a hem in said device, said flexible lock strip being depressable toward said base to permit releasing a hem positioned in the concave surface.

3,851,849

CLAMP ASSEMBLY

Raymond J. Green, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 361,874

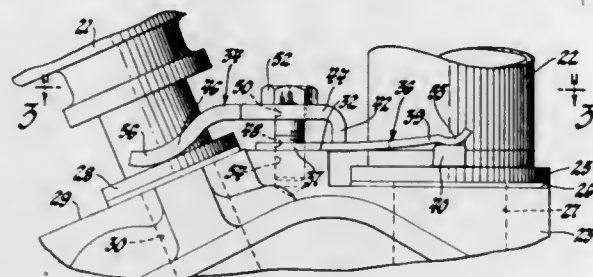
Int. Cl. B25b 5/08

U.S. Cl. 248—361 B

5 Claims

1. A clamp assembly comprising a housing having a pair of component mounting pads and a clamp mounting pad therebetween, first and second components requiring low and high clamping forces respectively against the respective component mounting pads, a pair of clamp members, one of said clamp members being flexible and arranged to rest on said clamp mounting pad while engaging said first component to press said first component against this component's mounting pad, the other of said clamp members being stiff and having a foot extending transverse therefrom arranged to engage said one clamp member, said other clamp member also arranged to engage said second component to press said second component against this component's mounting pad while said foot engages and presses said one clamp member against said

clamp mounting pad and also against said first component, said clamp members having apertures that are aligned and are located intermediate said foot of said other clamp member and where said other clamp member engages said second component, and a single fastener extending through said apertures and secured to said clamp mounting pad for fastening both said clamp members to said clamp mounting pad while also applying force on said other clamp member at a location



intermediate said foot and the engagement of said other clamp member with said second component so that said other clamp members clamps said second component to this component's mounting pad with a high clamping force while said foot acts on said one clamp member so that said one clamp member flexes and clamps said first component to this component's mounting pad with a low clamping force with the difference in said high and low clamping forces decreasing as the distance between said foot and said fastener is increased.

3,851,850

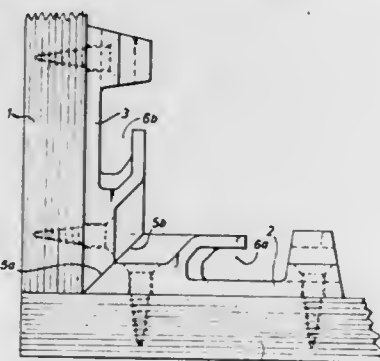
FORMWORK SYSTEM

Harvey Walker Hixon, 39 Park Dr., London, England
Filed June 13, 1972, Ser. No. 262,323

Int. Cl. B22d 7/10

U.S. Cl. 249-194

8 Claims



1. A framework system for connecting a pair of framework panels in either coplanar or mutually transverse relationship, comprising a connecting unit having a single left-hand first attachment shoe having a first front face, a first rear face and a right-hand beveled edge subtending an acute angle with said first rear face, said first shoe being formed with a first groove; a single right-hand second attachment shoe having a second front face, a second rear face, and a left-hand beveled edge subtending an acute angle with said second rear face, said second shoe being formed with a second groove; a first and a second framework panel, each of said panels having at least one edge and at least one major surface; means on said shoes for securing each of said shoes to a respective one of said framework panels, so that the rear surface of each of said shoes is in contact with said major surface of the associated panel; and a pair of alternately usable shoe clamps, including a first shoe clamp for bridging said first and second grooves only when said rear faces of said shoes and therefore said framework panels are substantially coplanar, and a second shoe clamp for bridging said first and second grooves only when said rear faces of said shoes and therefore said framework panels extend transversely to one another, each of said shoe clamps being formed with engaging portions which are

spaced apart from each other and receivable in said first and second grooves, respectively, for urging the beveled edges of said shoes together as the respective clamp moves along said grooves, while the engaging portions of said respective clamp are received in said first and second grooves, respectively.

3,851,851

FLUID LOGIC SYSTEMS, DIAPHRAGM VALVE AND PARTS THEREFORE

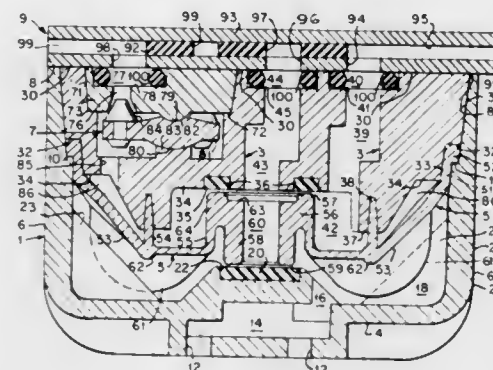
William F. Ginder, Jr., 16-D Seymour Village, Unionville, Conn. 06026

Filed July 5, 1973, Ser. No. 376,734

Int. Cl. F16k 31/385

U.S. Cl. 251-25

37 Claims



1. A valve comprising:
 - a. a housing having a cavity therein;
 - b. a diaphragm forming a chamber in said cavity, said diaphragm having:
 - i. a peripheral portion secured in fluid tight relation in said housing,
 - ii. a central portion having a passage closure element thereon,
 - iii. an intermediate flexible portion and
 - iv. a lever extending radially across said intermediate portion having an inner end adjacent to said center portion and an outer end adjacent to said peripheral portion;
 - c. a fulcrum for said lever between the inner and outer ends thereof;
 - d. a passageway through said housing communicating with said chamber through an orifice closable by said passage closure element; and
 - e. means for applying force to the outer end of said lever to rock it on said fulcrum to move the central portion transversely to open and/or close said passageway.

3,851,852

AERIAL REFUELING NOZZLE

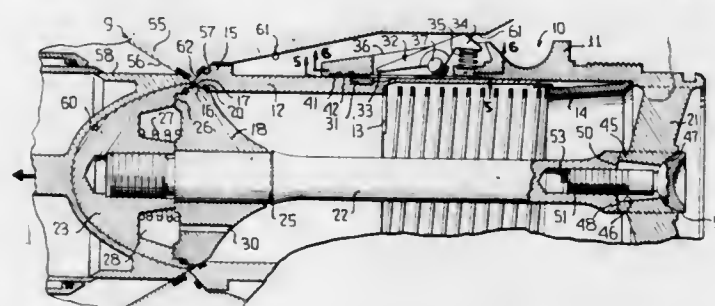
Roger H. Blanchard, Newport Beach, and Charles R. Clark, Mission, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 16, 1972, Ser. No. 281,002

Int. Cl. F16l 37/28

U.S. Cl. 251-149.1

12 Claims



1. In a dispensing head of the type including a nose, a valve seat associated with said nose, and a valve sleeve resiliently

urged towards engagement with said valve seat for sealing against flow and relatively movable to an open position to permit flow around said valve seat and said nose, the improvement comprising mounting means mounting said valve seat for limited axial movement relative to said nose, and means resiliently urging said valve seat away from said nose towards said valve sleeve for maintaining the sealing engagement between said valve sleeve and said valve seat when said sleeve is accidentally bumped.

3,851,853
VALVE

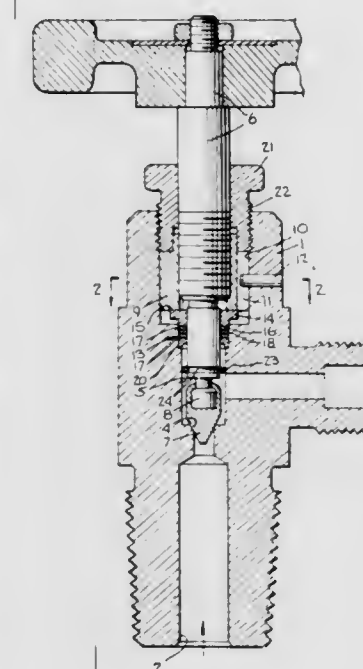
Wilbur O. Teeters, Tenafly, N.J., assignor to Hoke Incorporated, Cresskill, N.J.

Filed Apr. 23, 1973, Ser. No. 353,441

Int. Cl. F16k 41/00

U.S. Cl. 251-214

12 Claims



1. In a fluid control valve having a body with spaced inlet and outlet ports coupled by a conduit including a valve stem seat and having a stem mounting cavity communicating with said conduit an improved valve stem assembly comprising:
 - a stem with a sealing means for engaging said seat at the inner end of said stem and control threads on a portion of said stem intermediate its inner and outer ends,
 - a stem guide slidably positioned in said stem mounting cavity and having a threaded aperture engaging the threaded portion of said stem,
 - means on said guide for preventing relative rotation of said guide in said body,
 - a stem packing positioned between said guide and said body inwardly of the stem control threads and in sealing engagement with said stem, and
 - a packing nut threadedly coupled to said body and having an exposed tool engaging portion outwardly of said body and holding said stem guide in said body and urging said stem guide against said packing thereby compressing said packing into sealing engagement with said stem.

3,851,854

CONSTRUCTION ROBOT

Frank V. Roybal, Rt. 3, Box 125 A, Montrose, Colo. 81401

Filed July 5, 1973, Ser. No. 376,921

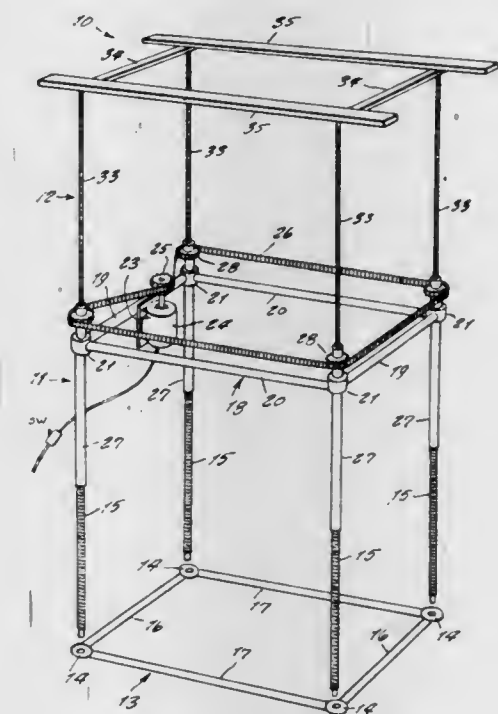
Int. Cl. B60p 1/10

U.S. Cl. 254-7 C

3 Claims

1. An adjustable scaffold which comprises, in combination:
 - a. A vertically adjustable working deck having externally threaded legs extending downward from the corners of said working deck,
 - b. Rotatable sleeves, each having,

1. an upper end internally threaded for engaging one of the externally threaded legs of the working deck,
2. an axially hollow center section for receiving the leg of the working deck and for receiving a lower leg,
3. a sprocket rigidly fixed to the rotatable sleeve and having teeth for engaging a drive chain,
4. an externally protruding flange for supporting a thrust bearing which in turn supports a stationary frame socket fitting loosely around said rotatable sleeve,
5. a lower end internally threaded in the opposite hand from the threads of the upper end of the rotatable sleeve, for engaging an externally threaded lower leg which extends downward to a base,
- c. a stationary frame having sockets at each corner, each stationary frame socket being provided with a downwardly directed opening which is sized and adapted to fit around the rotatable sleeve and to rest upon the thrust



- bearing which in turn rests upon the flange of the rotatable sleeve,
- d. lower legs, each having
 1. a axially hollow section for slidably receiving a leg from the working deck thereby giving maximum vertical extensibility to the scaffold,
 2. external thread extending from the top of the lower leg to substantially the bottom of the lower leg, for engaging the threads of the lower end of the rotatable sleeve,
 3. a non-threaded lower tip of the lower leg for rotatable mounting in a base socket,
- e. a base having a base socket at each corner for receiving the rotatable lower tip of each lower leg,
- f. a drive chain, entrained around each sprocket of each rotatable sleeve in an endless array, such that drive chain actuation simultaneously turns each rotatable sleeve and hence cause simultaneous axial displacement of the working deck legs and the lower legs,
- g. means carried by said stationary frame to actuate said drive chain.

3,851,855

THRUST BALL BEARING CONSTRUCTION FOR TRAILER JACK

Burdette L. Douglass, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Oct. 30, 1973, Ser. No. 411,003

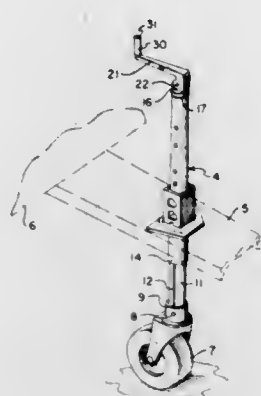
Int. Cl. B66f 3/10; F16c 17/04

U.S. Cl. 254-86 R

3 Claims

1. In a jack ball-bearing construction, an upright housing having an upper wall provided with a center opening through

which a reduced jack screw shank projects upwardly from the housing for manual rotation, a nut threaded on and movable along said jack screw to convert rotation of the screw into axial movement for raising and lowering a load, thrust bearing improvements comprising upper and lower metal washers engageable with the downwardly facing side of the upper wall of said housing and the upwardly facing end of said screw,



respectively, a circle of bearing balls extending around said shank and captivated between said washers, said upper washer being thinner than the lower washer, having a hardness greater than the hardness of the lower washer, and being more resilient than the lower washer, said washers being brinnelled by load contact with said circle of bearing balls with said brinnelling forming races for said balls so as to make the bearing self-aligning.

3,851,856

SHORING JACKING

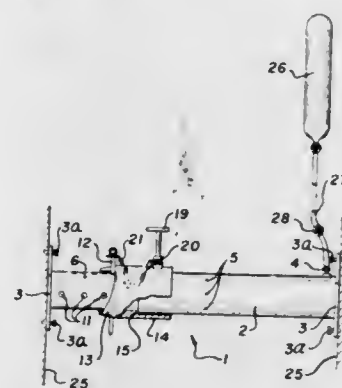
Harry Berg, Abbotsford, British Columbia, Canada, assignor to H. B. Contracting Ltd., Surrey, British Columbia, Canada

Filed May 25, 1972, Ser. No. 256,731

Int. Cl. B66f 3/24

U.S. Cl. 254-93 R

6 Claims



1. A pneumatic jack for use in the shoring of trenches, comprising

a piston and cylinder unit having a port for separately operable mechanical means engageable between the piston and cylinder for the secular and retention thereof against retraction from a random expanded condition, wherein said mechanical means comprises a collar formed with an internal annular step and rotatably engaging the end of said cylinder receiving said piston, said collar having an end extending axially from said cylinder to surround the piston, said end being formed with a pair of inclined circumferential surface profiles, each extending through substantially 180°, an abutting element, and

means for selectively locating said abutting element at one of a plurality of positions along said piston for abutting engagement with said surface profiles,

means for preventing rotation of said collar relative to said cylinder,

whereby, subsequent to the pressurization of said cylinder for an extension of the unit to a final extended condition which applies a shoring force to opposed shoring boards lining the walls of a trench, the abutting element can be located on the piston adjacent to the surface profiles and the collar rotated to bring the surface profiles into abutting engagement with the abutting element without further extension of the unit, and then secured.

3,851,857

AUTOMATIC TILTING SAFETY TRANSMISSION ADAPTER BASE

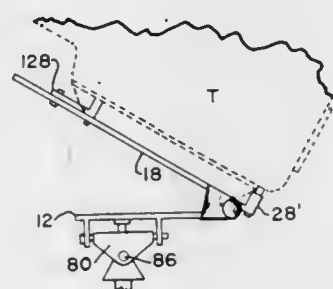
James Burl Notgrass, 1401 E. 52nd St., Odessa, Tex. 79762

Filed June 8, 1973, Ser. No. 368,444

Int. Cl. B66f 3/00

U.S. Cl. 254-134

8 Claims



1. An automatic tilting safety transmission adapter base assembly for removing and installing vehicle transmissions comprising upper and lower contiguous plate members, hinge means pivotally connecting a marginal edge portion of said contiguous plate members together so that the plate members are free to be pivotally moved relative to one another;

stop means connected to said assembly for limiting the angular displacement of one plate member away from the other, said plate members being free to pivot toward and away from one another within the limits of said stop member;

a jack head mount means for removably securing said lower plate member to the head of a jack assembly;

a plurality of elongate swingable brackets, means forming spaced apertures in said brackets; one aperture being for attachment to a transmission;

a plurality of apertures formed in the marginal hinged end portion of said upper plate, bolt means swingably securing one apertured portion of said bracket to said upper plate; and a cut-out in the hinged end of said lower plate member for enabling the plates to be pivoted together with the lower plate member freely clearing said bracket and said bolt means; whereby:

said base assembly can be affixed to a jack head by said jack head mount means, said brackets can be affixed to a transmission, and the transmission can be removed or replaced relative of a vehicle while the plate members freely pivot apart so that the transmission can assume an angular disposition relative to the vehicle and the jack.

3,851,858

TOEBOARD

Frank Charles Komiske, Wexford, Pa., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,372

Int. Cl. E04b 17/20

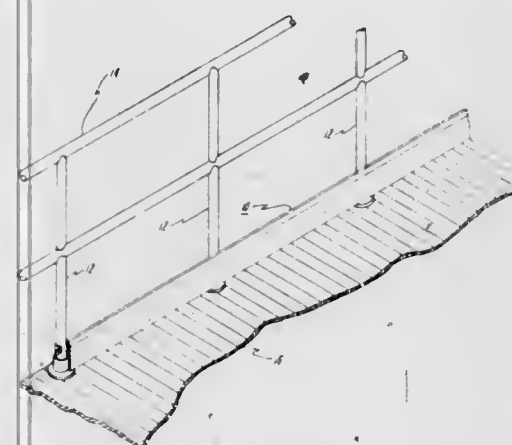
U.S. Cl. 256-59

15 Claims

1. A toeboard for mounting adjacent an edge of a platform, and the like, the toeboard providing a barrier for inhibiting items from sliding off the end of the platform, said toeboard comprising:

a generally planar elongated base member for mounting to the platform along the edge thereof and to extend from said platform in a direction transverse the plane of the platform, said base member having a first dimension for extending in the transverse direction and a second dimension, substantially greater than the first dimension, for extending in the general direction of the edge of the platform, and

attachment means extending from one planar side of the base member for receiving a fastening device for securing the toeboard to the platform, said attachment means extends along the base member in the direction of said



second dimension and is formed with an elongated tubular aperture extending in the direction of said second dimension and with an elongated slot extending parallel to said tubular aperture providing an elongated opening thereto, the dimension of said elongated slot being substantially smaller than the corresponding dimension of said tubular aperture, the arrangement being such that the combination of said tubular aperture and said elongated slot provides a guideway for slidably receiving a fastening device for movement thereof on the direction of the second dimension, for preventing the rotation of the fastening so received, and providing an access for the fastening device.

3,851,859

APPARATUS FOR MIXING CLAY

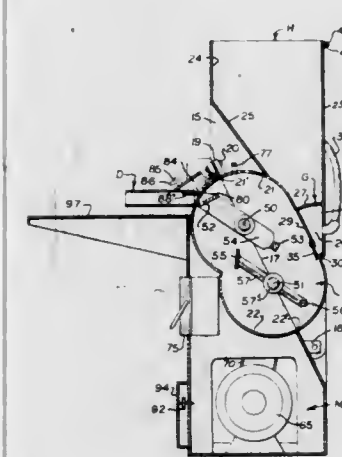
John I. Karp, 1176 20 Rd., Fruita, Colo. 81521

Filed June 4, 1973, Ser. No. 365,999

Int. Cl. B01f 7/02, 7/04

U.S. Cl. 259-6

10 Claims



1. Apparatus for mixing dry and fluid materials such as clay and water to a blend of plastic consistency comprising:

a. a mixing chamber having a cylindrical wall, a rotative paddle means to mix and interblend ingredients within the chamber with one paddle moving close to the cylin-

dric wall as the paddle means rotates; a receiver opening in the chamber to receive such material and a discharge opening in the cylindrical wall of the chamber adjacent to the path of the said one paddle from whence the blended material may be discharged;

b. a means for charging the mixing chamber through the receiver opening with a selected amount of dry material and fluid to permit the mixing chamber to blend the same;

c. a gate at the discharge opening normally closing this opening to retain material within the chamber when the same is being mixed by the paddle means;

d. a swinging means associated with the gate to swing the gate into the mixing chamber to momentarily traverse the path of the said paddle within the chamber to divert clay carried by the paddle into the discharge opening as the paddle moves to the opening but to shift out of the path of said paddle as the paddle moves past said opening, said swinging means normally permitting the paddle and clay upon it to push the gate to its closed position to prevent such diversion; and

e. a manually-actuated biasing means associated with the swinging means to forcibly swing the gate into the mixing chamber to hold the gate open to discharge clay carried by the paddle as the paddle moves toward the opening.

3,851,860

PITCHER

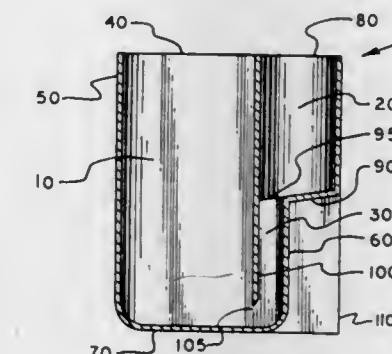
Larry Charles Smith, 22916 Juniper Ave., Torrance, Calif. 90505

Filed Apr. 3, 1972, Ser. No. 240,583

Int. Cl. B01f 11/00

U.S. Cl. 259-55

4 Claims



1. A pitcher for diluting and mixing frozen juice concentrates, comprising:

a main chamber adapted to contain part of the finally mixed juice,

means to support a container of frozen juice concentrate, the support means located adjacent the main chamber and adapted to support the lowermost surface of the container substantially above the bottom of the main chamber, said support means further comprising substantially vertical walls that at least partially enclose the container, a bottom adapted to support the container, and at least one orifice,

a passage from the at least one orifice in the support means which terminates in at least one opening into the main chamber, and

a bottom to the main chamber that slopes downwardly toward the at least one opening near the bottom of the passage,

whereby, when a container of frozen juice concentrate is supported by the support means with the open end down and the concentrate is allowed to thaw, the concentrate will flow into the main chamber, and water poured into the receptacle to dilute the thawed juice concentrate will flow downward through the at least one orifice and out the at least one passage opening near its bottom into the

main chamber where it will dilute and mix the concentrate, and because of the downward slope of the bottom of the main chamber, the frozen juice concentrate will tend to collect near said opening where the water first enters said main chamber and thereby increase the amount of mixing as the water is added through the receptacle, and when the pitcher is tilted back and forth in the direction of the receptacle a pumping action will occur between the receptacle and the main chamber to produce additional mixing.

3,851,861

ULTRASONIC CLEANING DEVICE WITH TEMPERATURE RESPONSIVE CUT-OFF

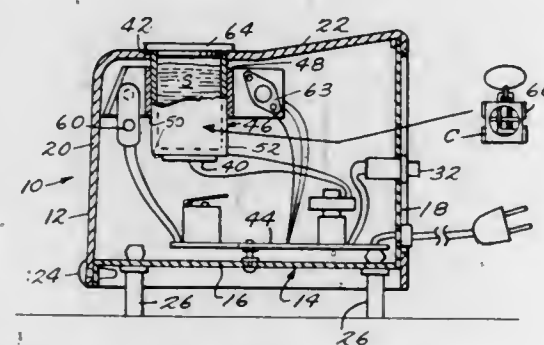
Millard M. Cummins; Robert G. Best, and Thomas Hankins, all of Columbus, Ohio, assignors to Thurman Manufacturing Company, Columbus, Ohio

Filed Sept. 18, 1973, Ser. No. 398,437

Int. Cl. B01f 11/02, 15/06

U.S. Cl. 259-72

3 Claims



1. An ultrasonic cleaning device, comprising: a receptacle for cleansing fluid; a piezoelectric crystal secured on the receptacle for imparting vibrations thereto; heat conducting collar means on said receptacle; electrically operated heat producing means secured on the collar means for imparting additional heat to the receptacle via the collar means while the crystal vibrates; a heat sensor communicated to the collar means distally of the heat producing means so that heat conducted by the collar means during operation of the crystal to produce ultrasonic vibrations in the cleansing fluid eventually raises the temperature sensed by the heat sensor to a predetermined cut-off temperature; power source means for electrically operating the heat producing means and for electrically exciting the piezoelectric crystal, including a manually actuatable, automatically deactuatable switch, communicated to the heat sensor for automatically deactuating the switch when the predetermined cut-off temperature has been reached.

3,851,862

CONCRETE DRUM DRIVE SUPPORT

George Mihulowicz, Greendale, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed July 17, 1972, Ser. No. 272,513

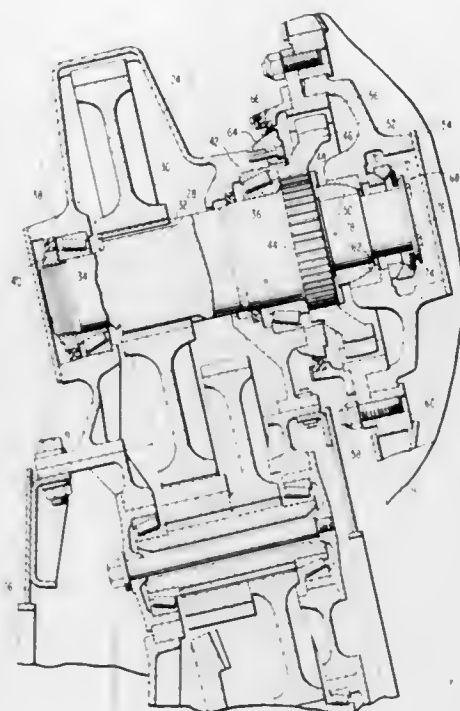
Int. Cl. B28c 5/18

U.S. Cl. 259-177 R

5 Claims

1. In a truck-mixer having a concrete mixer drum which is rotatably supported on an inclined axis and is driven and rotatably supported at its lower closed end by a rotary drive and support shaft with means to allow for misalignment, the improvements comprising: a part spherical bearing between the drum and support shaft with the center of the bearing surfaces at the center of load, a gear coupling drive between the closed end of the drum and the drive shaft in a plane passing through the center of load, bearing means rotatably

supporting the drive shaft including a main shaft support bearing closely adjacent the center of load so as to minimize



the unsupported length of the drive shaft between the main shaft support bearing and the center of load.

3,851,863

METHOD AND APPARATUS FOR PRE-CONDITIONING SOLID PARTICLE RESIN MATERIAL FOR PLASTIC FORMING

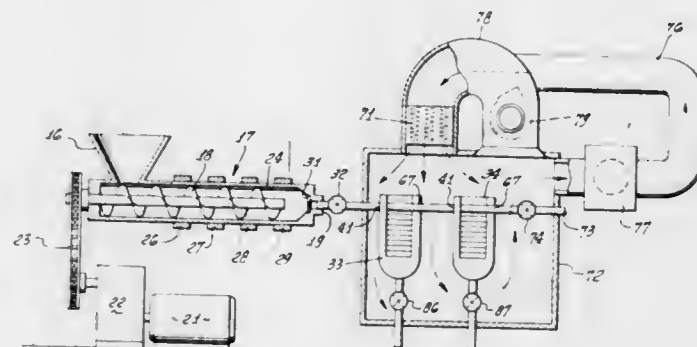
Marvin E. Wallis, 20741 Horace St., Chatsworth, Calif. 91311

Filed Aug. 31, 1972, Ser. No. 285,238

Int. Cl. B29b 3/02

U.S. Cl. 259-191

9 Claims



1. In a plastic forming process requiring preparation of a liquified plastic resin from a starting material of solid resin particles and including the initial step of melting said particles by a process which results in an incompletely liquified resin containing some particles that are only partially melted, the improvement in combination therewith comprising the steps of: forcing the incompletely liquified resin and partially melted particles through separations defined by a plurality of closely spaced parallel plate faces formed of a heat conductive material, spreading or flattening the partially melted particles between the plates as the particles are forced through said separations, and simultaneously applying heat to said resin between the plates whereby conditioning of the resin material in this manner results in a substantially homogenous liquid resin.

3,851,864

APPARATUS AND PROCESS FOR SUPPRESSION OF NOISE AND FUMES GENERATED BY PLASMA-ARC CUTTING OPERATION

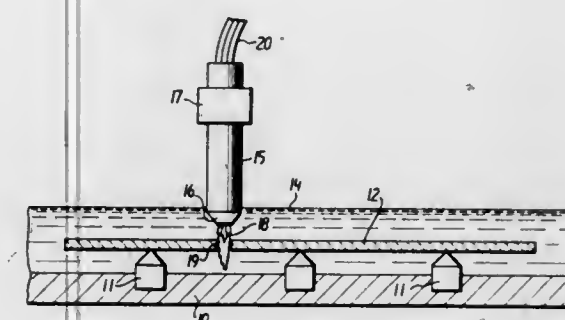
Samuel L. Miller, Honey Brook, Pa., assignor to Lukens Steel Company, Coatesville, Pa.

Filed June 26, 1973, Ser. No. 373,882

Int. Cl. B23k 7/00

U.S. Cl. 266-23 T

17 Claims



1. The combination of a plasma-arc cutting torch and a water layer which is provided to surround the plasma discharge from said torch and suppress noise and fumes generated by the operation of the torch, the combination comprising:

- a nozzle portion included in said torch;
- a jacket surrounding said nozzle portion, said jacket having a water inlet;
- a water conduit for supplying water to said jacket connected to said inlet; and
- water guidance means extending from said jacket so that the normal operating space relative to a workpiece disposed between said nozzle and the kerf is surrounded, said guidance means having a water flow connection with said jacket's outlet and being adapted to isolate said space with a continuing layer of water therein and thereby suppresses noise and fumes generated in said space.

3,851,865

BOTTOM CLAMP FOR OBM VESSELS

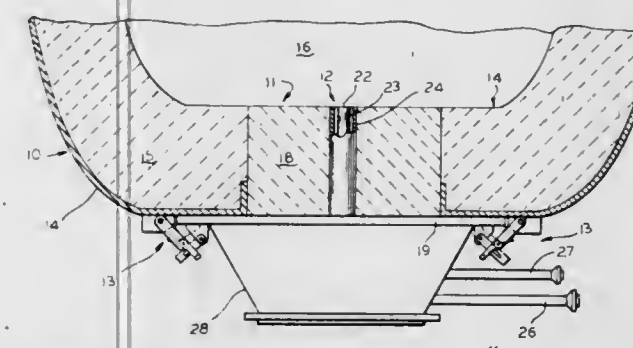
Howard M. Fisher, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed July 16, 1973, Ser. No. 379,591

Int. Cl. C21c 5/48

U.S. Cl. 266-35

12 Claims



1. In combination, a refractory lined metallurgical refining vessel including an opening in the lower portion thereof for receiving a replaceable bottom assembly, a replaceable bottom assembly for being inserted into said opening, tuyere means extending through said bottom for injecting process gases into molten metal to be contained in said vessel, at least one clamping means including a first clamp means pivotally mounted on one of said vessel and bottom for movement into and out of a clamping position relative to the other of said bottom and vessel, a second clamp means mounted on the other of said vessel and bottom and engageable with said first clamp means when the

latter is in its clamping position, said second clamp means including quick release locking means for securing said first clamp means in its clamped position to secure said bottom assembly to said vessel, and

engageable means mounted on the other of said vessel and bottom, said first clamp means being movable into engagement with said engageable means, said engageable means includes a surface having an end located a first radial distance from the pivot axis of said first clamp means and a second portion located a greater radial distance therefrom, said first clamp means including engagement means movable over said end and onto said surface as said first clamp means moves into its clamped position.

3,851,866

PROCESS AND A DEVICE FOR EVEN DISTRIBUTION AND ALTERNATING SUPPLY OF LIQUID AND GASEOUS PROTECTIVE MEDIA FOR THE REFINING GAS TUYERES OF A CONVERTER

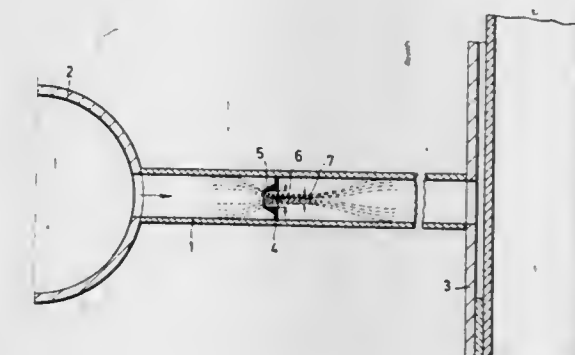
Helmut Knuppel 8458, Richard-Wagner-Strabe 1; Karl Brotzmann, Fentschweg 6, and Hans Georg Fassbinder, Schelmesgraben 20a, all of Sulzbach Rosenberg, Germany Division of Ser. No. 313,308, Dec. 8, 1972. This application Feb. 19, 1974, Ser. No. 443,577

Claims priority, application Germany, Dec. 9, 1971, 2161000

Int. Cl. C21c 5/48

U.S. Cl. 266-41

7 Claims



1. An improved device for evenly distributing and alternately supplying liquid and gaseous protecting media to refining gas tuyeres in a converter wherein each tuyere consists of two concentric tubes, oxygen being supplied into the converter through the central one of the tubes and a liquid or gaseous protecting medium being supplied to said converter through the annular space between the two tubes; which device comprises: separate individual supply lines for the liquid and gaseous protecting media connected to a selecting device near the converter mantle and means connecting said selecting device to each individual tuyere.

3,851,867

PNEUMATIC ACTUATOR CONTROL APPARATUS

John J. Fricko, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 9, 1973, Ser. No. 377,226

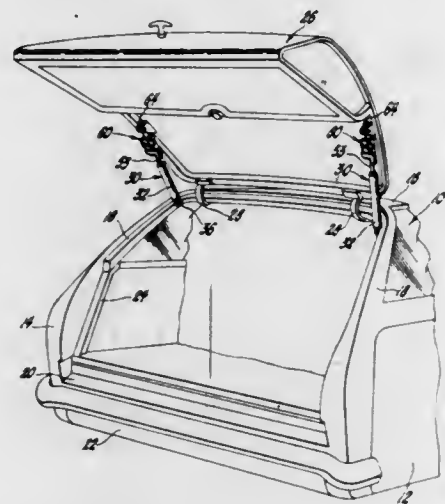
Int. Cl. F16f 5/00

U.S. Cl. 267-120

2 Claims

1. In a pneumatic actuator assembly for effecting relative movement between a pair of structural elements, said actuator assembly being of the type including a cylinder tube portion disposed on one of said structural elements, a piston slidably disposed in said cylinder tube portion and dividing the latter into a pair of chambers, a piston rod slidably disposed on said cylinder tube portion and operatively connected to said piston, means on said piston defining a passage between said pair of chambers, a valve disposed on said piston for movement between an open position and a closed position blocking said passage, a control rod operatively connected to said valve and

disposed on said piston rod for reciprocation between an extended position and a retracted position corresponding respectively to the open and the closed position of said valve, and a pressurized gaseous medium in said chambers for effecting movement of said piston rod in the open position of said valve, the improvement comprising, a support member disposed between said piston rod and the other of said pair of structural elements so that movement of said piston rod relative to said cylinder tube portion effects relative movement between said pair of structural elements, an actuator lever



disposed on said support member for rotation about an axis of said support member between a locking position and an unlocking position, means on said actuator lever defining a cam slot, a cam follower, means rigidly attaching said cam follower to said control rod, said cam follower engaging said cam slot so that movement of said actuator lever from the locking to the unlocking position effects concurrent movement of said control rod from the retracted to the extended position, and means associated with said actuator lever for maintaining the latter in the unlocking position thereof.

3,851,868

ADJUSTABLE DOOR BUCK SPREADER

Guy Lagasse, 94 Bush Hill Rd., Manchester, Conn. 06040

Filed May 30, 1973, Ser. No. 365,167

Int. Cl. E04f 21/04; B23q 3/15

U.S. Cl. 269-8

8 Claims



1. An adjustable door buck spreader for use in installing door frames comprising:

- a pair of elongated members supported in overlapping relation relative to each other;
- buck engaging means mounted at the free ends of said pair of elongated members, said buck engaging means comprising a first plate mounted at the free end of one of said pair of elongated members, a second plate mounted at the free end of the other of said pair of elongated members, a first pair of elements supported in spaced relation on said first plate so as to provide when said first plate and said first pair of elements are in the assembled condition a substantially U-shaped configuration, and a second pair of elements supported in spaced relation on said second plate so as to provide when said second plate and said second pair of elements are in the assembled condition a substantially U-shaped configuration;

- measuring means provided on said pair of elongated members operable for indicating the distance by which said buck engaging means are spaced apart;
- first adjustment means operable for adjusting the relative positions of said pair of elongated members by moving said pair of elongated members relative to each other thereby to vary the distance by which said buck engaging means are spaced apart; and
- second adjustment means operable for adjusting said buck engaging means to enable the spreader to be employed for installing door frames wherein the door bucks thereof have different size ribs, said second adjustment means comprising a first slot formed in said first plate, a second slot formed in said second plate, first mounting means operable for supporting said first pair of elements in said first slot in any one of a plurality of positions, said first mounting means including a threaded opening formed off center in at least one of said first pair of elements operable to divide said one of said first pair of elements into two portions of differing widths so that when each of said first pair of elements is supported in said first slot in one of said plurality of positions thereof with one of said two portions of said one of said first pair of elements disposed towards the other element of said first pair of elements a first distance is defined therebetween and when each of said pair of elements is supported in said first slot in a second of said plurality of positions thereof with the other of said two portions of said one of said first pair of elements disposed towards the other element of said first pair of elements a second distance is defined therebetween wherein through the relative use of said first and second distances the spacing between said first pair of elements is capable of being adjusted, and second mounting means operable for supporting said second pair of elements in said second slot in any one of a plurality of positions, said second mounting means including a threaded opening formed off center in at least one of said second pair of elements operable to divide said one of said second pair of elements into two portions of differing widths so that when each of said second pair of elements is supported in said second slot in one of said plurality of positions thereof with one of said two portions of said one of said second pair of elements disposed towards the other element of said second pair of elements a first distance is defined therebetween and when each of said second pair of elements is supported in said second slot in a second of said plurality of positions thereof with the other of said two portions of said one of said second pair of elements disposed towards the other element of said second pair of elements a second distance is defined therebetween wherein through the selective use of said first and second distances the spacing between said second pair of elements is capable of being adjusted.

3,851,869

ROTATABLE CHUCK FOR SUPPORTING ELONGATE WORK PIECE

Marvin L. Damewood, Knoxville, Tenn., assignor to W. J. Savage Co., Inc., Knoxville, Tenn.

Filed July 18, 1973, Ser. No. 380,372

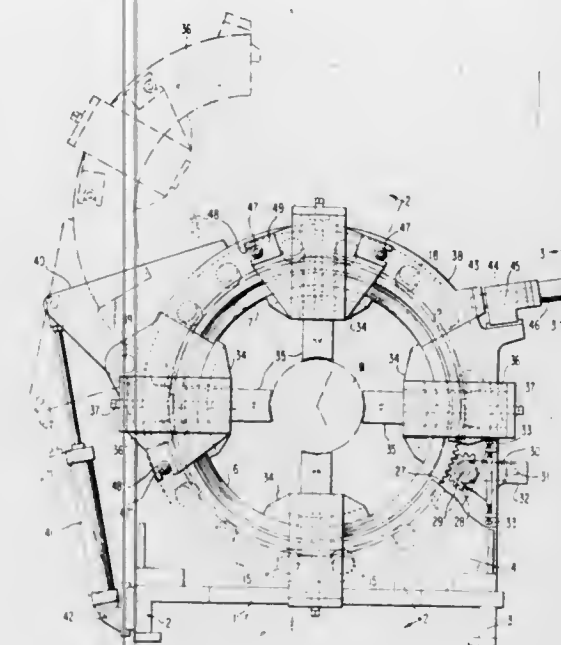
Int. Cl. B23g 1/16

U.S. Cl. 269-61

9 Claims

1. A chuck for an elongated work piece, comprising a support, a ring mounted on the support, means on the ring including jaws mounted for engagement with the work piece, said ring including a body portion and segment detachably mounted thereon for opening movement with respect to the body portion of the ring for insertion and removal of a work piece in the ring, and means carried by said support for circumferentially engaging and supporting the body portion and

the segment of the ring for rotation relative thereto, at least a portion of said engaging and supporting means being adjust-



able radially of the ring, and means independent of the engaging and supporting means for driving said ring in rotation.

3,851,870

SURGICAL OPERATION TABLE

Ronald Joseph Cook, London, England, assignor to Matburn (Holdings) Limited, London, England

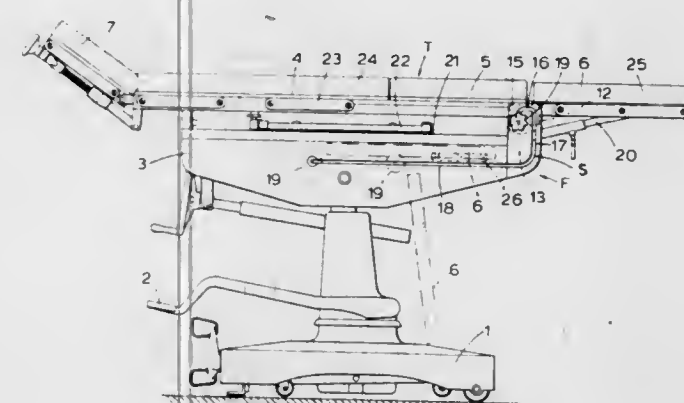
Filed May 11, 1973, Ser. No. 359,339

Claims priority, application Great Britain, May 22, 1972, 23935/72

Int. Cl. A61g 13/00

U.S. Cl. 269-322

1 Claim



1. A surgical operation table comprising a base, a pedestal, and a table top receiving frame supported on the pedestal, the table top comprising a main body section, a lower trunk section, and a leg section, the body, trunk and leg sections being coplanar, the main body section and the leg section being permanently engaged to the table top frame, the lower trunk section being readily removable from between the main body section and the leg section of the table top, the main body section being reciprocally movable towards and into the space vacated by the lower trunk section on removal thereof, the leg section being swingable about its permanent engagement to the table top frame from a position normally coplanar with the main body section to a position at right angles thereto or selectively to storage position below the main body section and wherein the table top supporting frame includes a pair of downwardly extending brackets on opposite sides thereof, slots in the brackets extending downwardly and rearwardly of the table top, and the leg section is provided with laterally extending pins at the end thereof proximate the body section, the pins being engaged to the slots and slidable therealong.

3,851,871

HIGH SPEED SHEET FEEDING APPARATUS

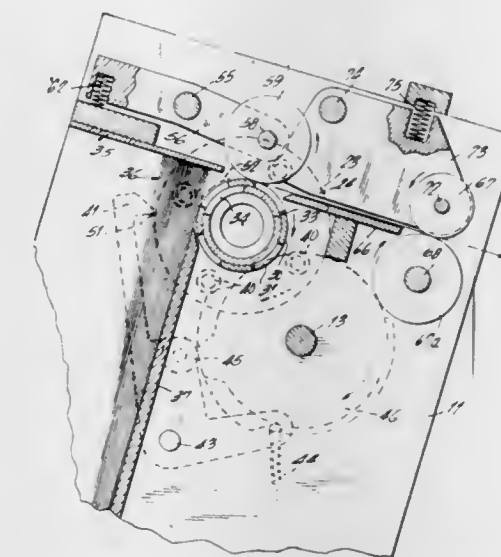
Theodore F. Aronson, 2108 Sunrise Key Blvd., Fort Lauderdale, Fla. 33304

Filed Dec. 10, 1973, Ser. No. 423,144

Int. Cl. B65h 3/10, 5/06

U.S. Cl. 271-11

9 Claims



1. A high speed sheet feeding apparatus for leading individual sheets out of a stack of sheets along a desired path comprising a base plate, spaced upstanding side plates secured to the base plate, opposed first and second shafts carried by the side plates at their outer ends and extending inwardly of the side plates toward each other, a clutch member coupled to the first shaft, means including a drive shaft to impart rotary motion to the clutch member, a hollow perforate cylindrical sheet feed member coaxially carried between the first and second shafts, a hollow cylindrical vacuum chamber within the feed member, said vacuum chamber having at least one slot therein in communication with the interior thereof and a constant source of vacuum attached to said vacuum chamber, a rotatable plate operatively coupled to the sheet feed member, a plurality of spaced pins carried by the plate and extending outwardly thereof, a pawl swingably disposed in the path of the pins to normally restrain the pins, a cam adjacent said pawl to swing the pawl into and out of engagement with the pins, a hopper to receive the stack of sheets having a bottom support and upstanding walls, said bottom support being provided with an opening therein through which the lowermost sheet can be extracted, said bottom support being non-vertically disposed and with the lowermost sheet in contact with the sheet feed member through the bottom member opening, rollers to guide the sheet as it is being fed by the sheet feed member, and a depending detent partially encircling the pin upon which it is brought to rest whereby when the pawl is initially released from the pin, the detent will impart a short counter revolution to the sheet feed member.

3,851,872

SORTING APPARATUS FOR COLLATING SIMPLEX AND DUPLEX COPIES

Dennis P. Gerbasi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 15, 1973, Ser. No. 341,448

Int. Cl. B65h 29/60

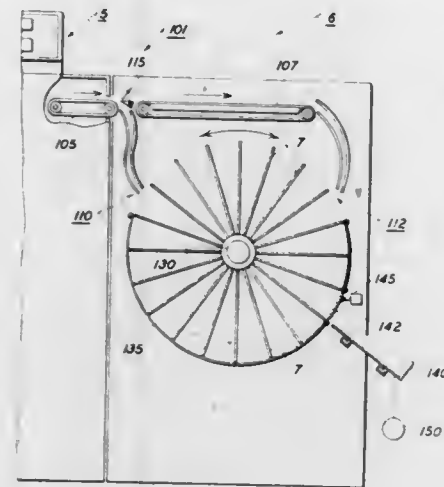
U.S. Cl. 271-173

1 Claim

1. In a copier/duplicator machine which produces simplex and duplex copy sheets to be sorted an improved sorting apparatus for sorting in simplex and duplex modes of operation comprising:

- a frame;
- a rotatable member supported in said frame;
- an array of tray members arranged axially of said rotatable member;

drive means for rotating said rotatable member in one direction when sorting simplex copies and the opposite direction when sorting duplex copies;
conveyor means including a deflector member for directing copy sheets towards one feed zone adjacent the path of said tray members on one side and another feed zone adjacent the path of said tray members on another side;
control means for supplying signals to said drive means and said deflector member to rotate said tray member in



a predetermined direction and direct sheets to a selected feed zone depending on whether simplex or duplex sorting mode of operation is desired;
gate means positioned adjacent to the path of said tray members adapted to unload a collated set of sheets from each tray member into a receiving tray;
wherein said receiving tray is slideable across the sheet discharge path and means to slide the receiving tray in reciprocating fashion upon receiving each copy set.

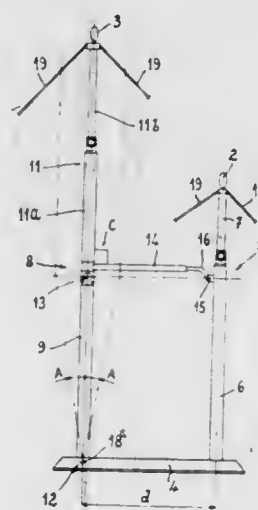
3,851,873

ASYMMETRIC BARS FOR USE IN GYMANASTICS
Bernard Jean Thomasson, Sainte Foy Les Lyon, France, assignor to Thomasson, Lyon, Rhone, France
Filed Sept. 10, 1973, Ser. No. 396,104
Claims priority, application France, Sept. 25, 1972, 72.34464

U.S. Cl. 272-63

Int. Cl. A63b 3/00

5 Claims



1. Adjustable asymmetric bars for use in gymnastics comprising a stand;
a lower handrail supported by at least one upright, each of said at least one lower handrail supporting upright being fixedly mounted to said stand in a vertical position and means for adjusting the level of said lower handrail with respect to said stand;
an upper handrail supported by at least one upright, each of said at least one upper handrail supporting upright being

inclinable and comprising two semi-uprights, the lower of said semi-uprights being pivotally attached at its lower end to said stand and having its upper end located at a level lower than the upper end of said lower hand-rail, and the upper of said semi-uprights being arranged substantially vertically and being pivotally attached at its base to the top of said lower semi-upright by means of a pin arranged substantially parallel to said handrails;
a telescopic bar arranged substantially horizontally pivotally connecting said upright of said lower handrail and being fixedly connected to said upper semi-upright of the adjacent inclinable upright of said upper handrail.

3,851,874

PUSH-PULL TYPE EXERCISING DEVICE
Douglas G. Wilkin, 3061 Evelyn St., La Crescenta, Calif. 91214

Filed Mar. 23, 1973, Ser. No. 344,104

Int. Cl. A63b 21/00

U.S. Cl. 272-81

9 Claims



1. In an exercising machine:
a. a pulley assembly, for receiving a cable;
b. a cable extending around the pulley assembly and having attachments at opposite ends, at least one of the attachments being engageable by a user for moving the cable along the pulley assembly;
c. said assembly having a means which is non-circular so that as the means is rotated by a user acting on the cable a cyclic sidewise movement will be imparted to the cable, causing vibration motion to be set up in the cable which is transmitted to a user during an exercise program.

3,851,875

ELECTRICAL GAME APPARATUS USING A HUMAN BODY AS PART OF THE CIRCUIT
Jeffrey D. Breslow, Chicago, and Norman Kramer, Skokie, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 6, 1972, Ser. No. 215,782

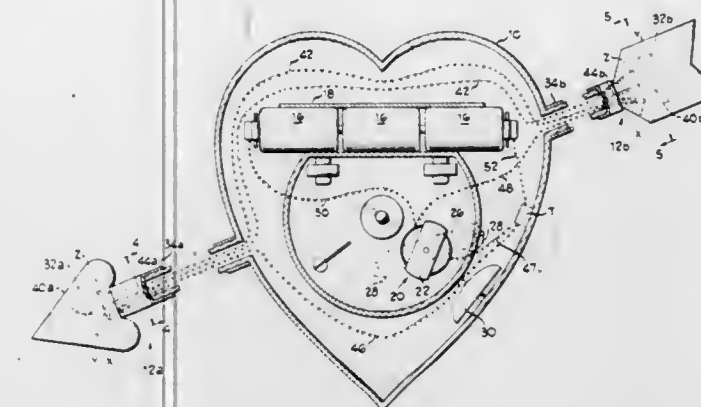
Int. Cl. A63f 9/00

U.S. Cl. 273-1 E

12 Claims

1. A game apparatus comprising:
a housing;
a pair of handles protruding from said housing for grasping by players of the game, said handles having a conductive portion mounted thereon;
an incomplete circuit defining a partial conductive path for electricity, said incomplete circuit including two spaced apart terminals connected to the conductive portions of the handles and a plurality of switches, one for each player, for selectively connecting one portion of the incomplete circuit with another portion of the incomplete circuit in at least two different ways, whereby said incomplete circuit comprises part of a complete electrical circuit whenever the terminals are electrically connected and the switches connect the incomplete circuit together in an electrically complete manner;

signal means mounted within the housing and connected to said incomplete circuit and actuatable in response to said power source whenever the circuit is successfully completed;



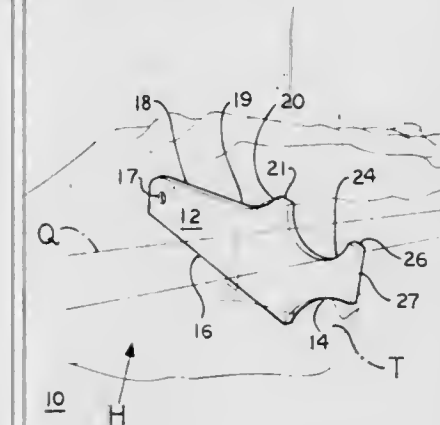
an electrical power source connected to said circuit of insufficient power to harm a player of the game who touches the conductive portions of said handles; and a spinner mounted on said housing having indicia thereon directing which parts of a player's body should be touched by another player.

3,851,876

TRAINING AID-GUIDE DEVICE FOR POOL CUE
Merle W. Baker, 1518 Claybourne Dr., Toledo, Ohio 43614
Filed May 21, 1973, Ser. No. 362,520
Int. Cl. A63d 15/10

U.S. Cl. 273-24

2 Claims



1. A hand-held guide device for pool or billiard cues, said device comprising a principal body of sheet material having a generally rectangular elongate configuration and adapted to be held by an average hand,

a. said body having an upper notch in one corner receptive of a pool cue and serving as a guide or support for the cue in its normal axial movement in use as controlled by the user;
b. said body including a cut out thumb notch in a corner next adjacent said one corner and beneath the upper cue notch, accommodating the thumb of the user in a natural holding or gripping of the device, said notch being contoured and located to receive lateral and upward thumb pressure, and
c. said body including an upper edge adapted for contact with the palm of the hand of the user when the user's thumb is contacting said notch and said upper edge in contact with said palm providing oppositional pressure of said palm meeting generally upward and lateral thumb pressure applied on the thumb notch by the user, whereby hand holding of the device is facilitated.

3,851,877

PUTTER HEAD

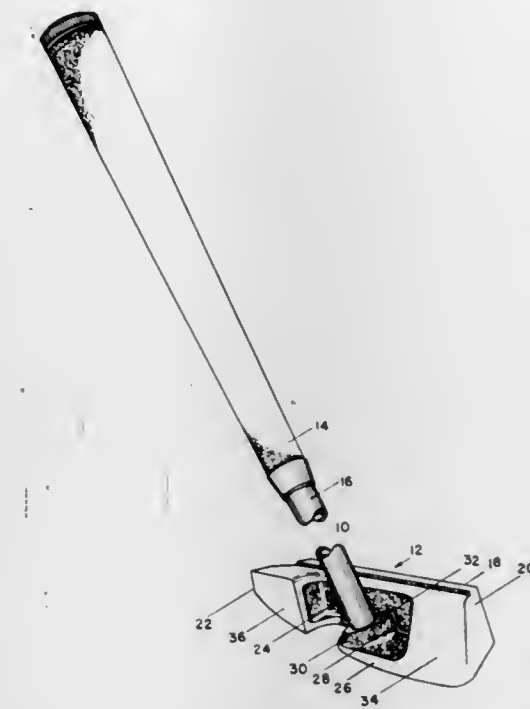
James D. Giambazi, 12 Abbott St., Cumberland Hill, R.I. 02864

Filed Dec. 22, 1972, Ser. No. 317,639

Int. Cl. A63b 53/04

U.S. Cl. 273-78

7 Claims



1. A golf putter having a grip, shaft and head, said head comprising:

a body section having a front face for striking the ball and a back surface behind said front face and a toe portion and a heel portion; each said portion being interconnected with said body section and at least one of said portions extending rearwardly beyond said back surface; a support member, cantilevered from only one of said portions extending rearwardly beyond said back surface, and extending along said back surface behind said front face and spaced from said back surface to form an elongated slot between said back surface and said support member behind said front face and extending along said back surface in the direction of the extent of said front face between said toe and heel portions; and means, on said support member and spaced from said portion from which said support member is cantilevered, for interconnecting said support member and said shaft.

3,851,878

BOARD-TYPE GAME WITH REMOVABLE PLAY SELECTOR MEMBER

Joseph Brian Clarke, Nuns Island, Quebec, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.

Filed May 16, 1972, Ser. No. 253,890

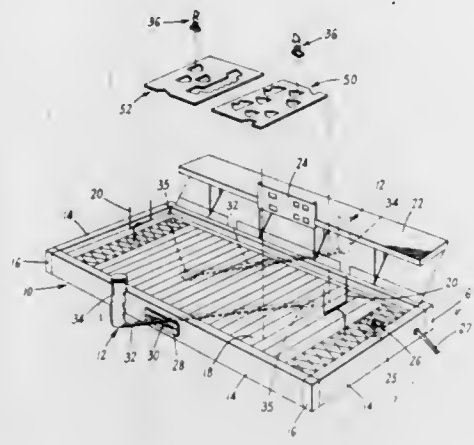
Int. Cl. A63f 7/06

U.S. Cl. 273-94 R

17 Claims

1. In a game apparatus, the combination comprising: a game board member including a substantially planar playing portion having means on the upper surface thereof defining a playing field; an electric vibrating mechanism operatively connected to said playing portion for vibration thereof; a multiplicity of player pieces supported by base portions thereof upon said playing portion of said game board member in opposing team formations; and a pair of substantially planar removable play selector members on said game board upper surface, each of said play selector members having a multiplicity of apertures therethrough spaced inwardly of the side margins thereof and from each other, a multiplicity of said player pieces having their base portions disposed within a multiplicity of said apertures of each said play selector member in a predetermined formation on said playing field defined by said apertures of

said play selector members to provide a line of players along the side of the selector members facing the players of the opposing team and a plurality of player members having their base portions disposed in some of said apertures of each said play selector members in spaced relationship behind said line of players thereof, said apertures being larger than the base portions of said player pieces to permit removal of said selector member from the predetermined formation of said player



members without disturbance thereof, said player members disposed in the apertures of each of said play selector members thus defining an arrangement of two opposing teams on said playing field, said base portions of said player pieces having means thereon cooperating with said playing portion for movement upon said playing portion during vibration thereof whereby vibration of said playing portion causes movement of at least some of said player pieces supported thereon.

3,851,879

GAME DEVICE WITH SELECTIVELY MOVABLE PANEL STRUCTURE

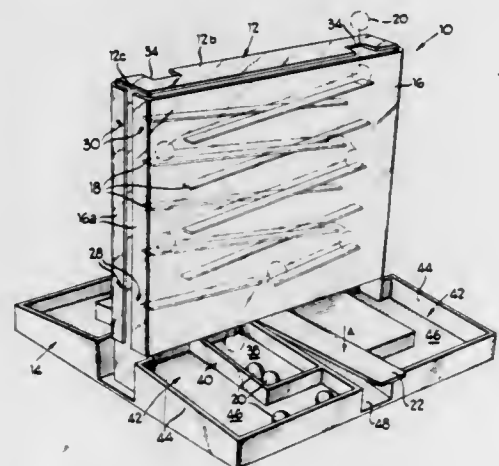
Alan A. Hicks, Wilmette, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 5, 1973, Ser. No. 412,645

Int. Cl. A63f 7/02

U.S. Cl. 273-120 R

15 Claims



1. A game device, comprising:
a base structure;
a pair of generally upright panels mounted on said base structure for relative movement of at least one of said panels toward and away from the other panel;
means defining a tortuous path between said panels from an upper area to a lower area thereof;
a playing object for movement by gravity downwardly along said tortuous path, said playing object having a width greater than the width of at least portions of said tortuous path; and
means for selectively and relatively moving said panels between a clamping position whereby said playing object

is pinched and held between the panels and a release position wherein the playing object is permitted to freely move down said tortuous path under gravity whereby a player of the game attempts to control the downward motion of the playing object along the tortuous path by selectively and relatively moving said panels.

3,851,880

HOCKEY-TYPE GAME APPARATUS

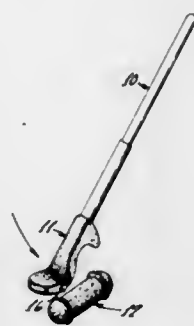
Glen L. Ritch, 3129 S. Tumblerweed Rd., Laguna Niguel, Calif. 93514

Filed Oct. 6, 1972, Ser. No. 295,670

Int. Cl. A63b 59/00, 41/00, 71/02

U.S. Cl. 273-128 R

22 Claims



1. Hockey-type game apparatus, which comprises:

a. a lightweight elongate object shaped to be propelled along a playing surface in a direction longitudinal to said object, and also shaped to roll along said playing surface in a direction lateral to said object, said object having a length greatly in excess of the diameter thereof, and

b. a hockey stick having an elongate shaft adapted to be held by a player, said stick also having at one end of said shaft an elongate blade shaped to strike said object to either propel it along said playing surface in a direction longitudinal to said object, or to roll it along said playing surface in a direction lateral to said object,

said blade having an upwardly concave region at the lower portion thereof so as to fit downward over at least the central portion of said object and thereby move said object along the playing surface in unison with said blade, the relationship between said shaft and said upwardly concave region being such that, when said shaft is held in front of the player, and in upwardly inclined relationship to the playing field, with said upwardly concave region seated over said elongate object, a portion of said blade is behind said object whereby the player may push said object forwardly in a controlled manner.

3,851,881

SUBWAY BOARD GAME APPARATUS

Theodore F. Smith, 82010 Colgate Ave., Apt. 10G, Bronx, N.Y. 10473

Filed Apr. 25, 1973, Ser. No. 354,168

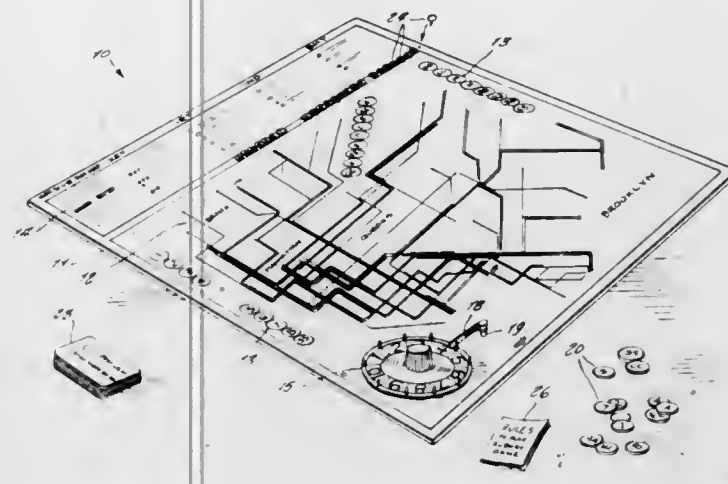
Int. Cl. A63f 3/04

U.S. Cl. 273-134 AC

3 Claims

1. In a subway game, the combination of a game board having thereon a playing field which comprises an actual map of a subway system of a municipality and including a plurality of separate subway lines at least some of which have starting and ending stations different from every other line, said subway lines having thereon a number of stations including visually distinguishable express stations and local stations, a plurality of tacks which can be inserted into the game board, each tack having imprinted thereon the specific designation of one of the trains of the actual subway system which travels along a specific restricted route corresponding to one of the subway lines, a plurality of playing pieces for movement upon said game board, the number of playing pieces corresponding to

the number of said tacks, each of the playing pieces having imprinted thereon a designation identical with that of a corresponding one of the tacks, a plurality of tokens for division among the participants for use by the participants of said



3,851,882

BINGO CARD WITH PIVOTED MASKING TABS

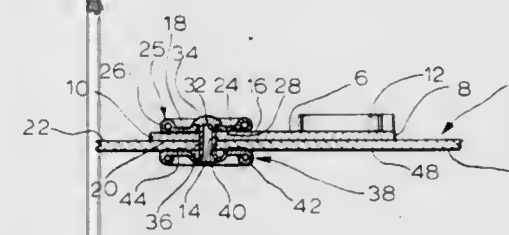
Paul P. Steinle, and Paul R. Steinle, both of 6314 W. Estes Ave., Chicago, Ill. 60646

Filed Oct. 15, 1973, Ser. No. 406,300

Int. Cl. A63f 3/06

U.S. Cl. 273-136 F

4 Claims



1. A bingo card marking device comprising:

a base element having top and bottom sides and having on the top side a series of numerals arranged in horizontal and vertical rows;

a masking element tab adjacent to each numeral;

a snap fastener pivotally securing each tab to the base element and comprising a shank extending through said elements and having a head at one end opposing said base element at the bottom thereof;

means providing a high coefficient of friction between the head and the bottom side of said base element resisting turning of the fastener during normal pivotal movements of the tab element to covering and uncovering positions with reference to the adjacent numeral;

a snap removably fastened to said shank and embracing the respective tab element with the top side of the base element;

means providing a high coefficient of friction between the tab element and the snap to resist pivotal movement of the tab element with respect to said snap and said tab element and said top said of the base element having smooth engaging interfaces for accommodating pivotal movement therebetween with minimal wear.

3,851,883

CHESS GAME BOARD

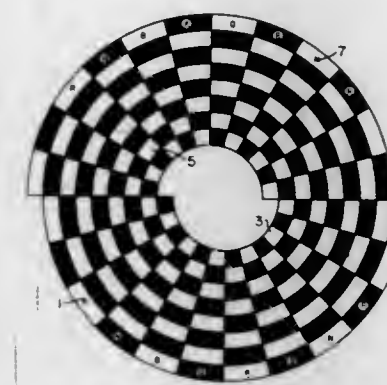
David B. Hitchcock, and James L. Laurie, both of 129 1/2 W. John St., Maumee, Ohio

Filed Jan. 8, 1973, Ser. No. 321,649

Int. Cl. A63f 3/02

U.S. Cl. 273-131 B

6 Claims



1. A chess game board having the outer configuration and playing pattern shown in FIG. 1 of the drawings.

3,851,884

THREE DIMENSIONAL SHEET PUZZLE

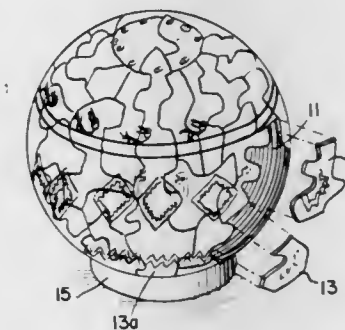
Rolf Myller, 1165 Fifth Ave., New York, N.Y. 10029

Filed May 30, 1973, Ser. No. 365,207

Int. Cl. A63f 9/12

U.S. Cl. 273-157 R

5 Claims



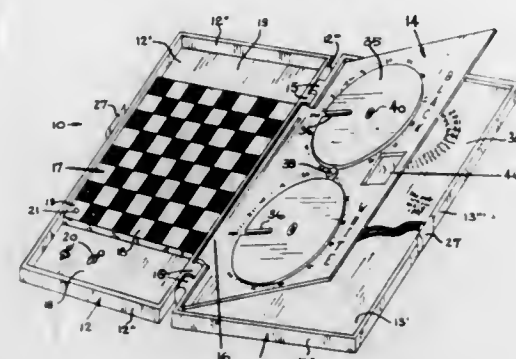
1. A three dimensional sheet puzzle comprising a three dimensional base having a surface curved along two surface dimensions, a plurality of flexible puzzle pieces in sheet form formed from flat sheet material which will lay flat without strain, said puzzle pieces and said base including mounting means to hold said puzzle pieces in position when applied to said curved surface, said mounting means comprising means to provide magnetic attraction between said pieces and said curved surface, the peripheries of said pieces distorting to shapes when applied to said base different from that when laying unstrained and flat because of the curvature of said base along two surface dimensions, said pieces being shaped when formed from said flat sheet material so that said different shapes to which the peripheries of said pieces distort when applied to said base have edges which fit together to cover said curved surface, said puzzle pieces being sufficiently flexible so that said mounting means will hold said pieces in engagement with said curved surface throughout the entire surface of each of said pieces in conformity with the contour of said curved surface.

3,851,885

CHESS GAME DEVICE

Michael Paul Pepkowski, and Guy Jean Houle, both of 316 Windermere Rd., Beaconsfield, Quebec, Canada
 Filed Mar. 8, 1973, Ser. No. 339,110
 Int. Cl. A63f 3/02; G09b 1/00
 U.S. Cl. 273-136 B

8 Claims



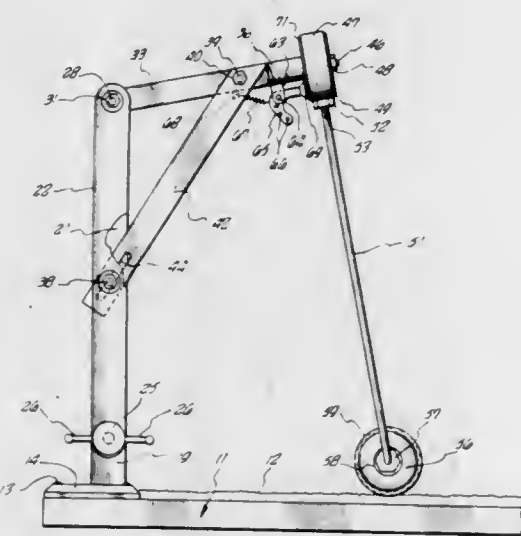
1. A chess game device comprising a plurality of chessmen elements, a checkered chess board on which said chessmen elements may be positioned, at least one data sheet having two complete groups of coded instructions printed thereon to indicate each move in a plurality of moves for particular ones of said chessmen elements of two complete sets of elements in a predetermined chess game, said coded instructions of each group being printed adjacent one another along an arcuate plane on an arc of a circle, a sequential data sheet reading member associated with said at least one data sheet, said reading member being a flat card-like member having a disc secured thereto, said disc having two diametrically opposed data reading slots adjacent the peripheral edge thereof, at least one arcuate aperture in said card-like member and located under said disc adjacent the periphery thereof, said disc being rotatable about its center to said card-like member to permit said data reading slots to travel through a plurality of positions along said at least one arcuate aperture for sequential visual access of said individual ones of said plurality of coded instructions of a respective group of said two groups of coded instructions on said associated data sheet.

3,851,886

FOLDABLE GOLF PRACTICE SWING APPARATUS

Armando E. Acosta, Los Angeles, Calif., assignor to Abner J. Martinson, Redondo, Calif.
 Filed Apr. 15, 1974, Ser. No. 460,872
 Int. Cl. A63b 69/36
 U.S. Cl. 273-197 A

8 Claims



1. A golf swing practice device comprising a substantially planar base, a pair of spaced columns extending from the base,

first pivot means securing the columns to the base, second pivot means at the end of the columns remote from the base, a support arm secured by the second pivot means and adapted to extend from the spaced columns at an angle thereto, means for locking the support arm at a selected angle to the spaced columns, a bearing on the support arm, a target rod fixed to the bearing so as to extend away from the support arm, a target ball retainer at an end of the target rod, and a target ball fixed to the retainer.

3,851,887

COLUMNS OF RECORD THROWERS OF THE AUTOMATIC RECORD PLAYERS

Raul Antonio Vega, Vieytes 1386 Martinez, PCIA de Buenos Aires, Argentina

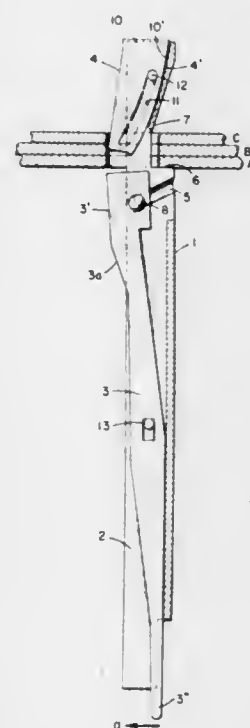
Filed Nov. 20, 1973, Ser. No. 417,573

Claims priority, application Argentina, Jan. 28, 1973, 246338

Int. Cl. G11b 17/04

U.S. Cl. 274-10 S

3 Claims



1. Automatic record player changer mechanism comprising a cylindrical column having a longitudinal groove within said column and running the entire length thereof, a first lever of less length than the groove positioned within the groove and having a fulcrum near the midpoint of the lever, said first lever having a perforation therein near its upper end into which a ball is positioned, a record supporting tooth in the column near the top end of the lever where the record is positioned until freed by the lever, said tooth creating a perforation in the column, said groove near the top of said first lever having on both sides thereof generally transverse grooves extending upwardly toward the tooth and into which transverse grooves the ball is placed so that upon pivoting of the lever transverse to the axis of the column about the fulcrum the lever moves in an ascending or descending direction and releases the bottom most record from the tooth, and a small axially movable lever above the tooth composed of two identically rolled pieces each having a curved slot therein and positioned within the longitudinal groove by means of a pin passing through said slots and column, said small lever being positioned to hold the second record as the bottom most record is released.

3,851,888

MACHINERY SEAL

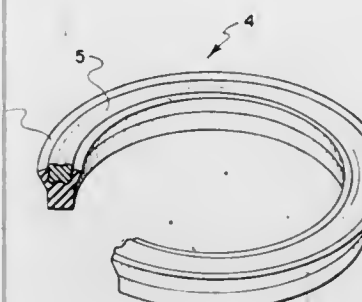
Alma A. Limpson, Jr., 4122 Kestrel, Salt Lake City, Utah 84120, and Gordon T. Zitting, 2136 E. 8200 South, Sandy, Utah 84070

Filed Mar. 21, 1973, Ser. No. 343,324

Int. Cl. F16j 15/32

U.S. Cl. 277-206

2 Claims



1. A composite seal assembly for machinery comprising: an annular elastomeric boot having an exposed annular groove and an elastomeric resilient ring spring received into the annular groove;

the boot being of one-piece construction and comprising (a) a rectangular base portion defined by substantially planar inside and outside surfaces joined one to the other by a substantially planar base surface and (b) a contiguous bifurcated portion defining said annular groove located opposite said planar base surface, said bifurcated portion having a transverse cross-section characterized by a pair of oppositely extending substantially triangular portions each comprising an angular tip and being disposed exterior of the annular groove and respectively bridging between one of said planar side surfaces and the annular groove, the tip-to-tip distance being essentially parallel to but substantially greater than the side surface-to-side surface distance, the surface defining the annular groove comprising opposed inwardly directed lobes extending into and defining the minimum transverse dimension across said groove, the tips and apex of the lobes being generally aligned each with the others, the transverse dimension immediately adjacent said lobes in the annular groove being substantially greater than said minimum transverse dimension;

the spring comprising opposed recesses shaped to correspond to and mate with the lobes, the distance between said recesses being greater than said minimum transverse dimension causing a spreading of the tips when the spring is placed within the annular recess in said mating relationship, the spring further comprising an exposed enlarged portion projecting outward from the annular groove beyond any part of the boot a substantial distance whereby force upon the exposed enlarged portion toward the annular groove will distort the spring filling, at least in part, the recesses and further displacing the tips away from each other by application of said filling force to the boot lobes, for improved sealing.

3,851,889

RECIPROCATING SYSTEM AND HYDRODYNAMIC PISTON RING THEREFOR

Kenneth J. Nisper, Spring Lake, Mich., assignor to Questor Corporation, Toledo, Ohio

Filed Feb. 15, 1973, Ser. No. 332,601

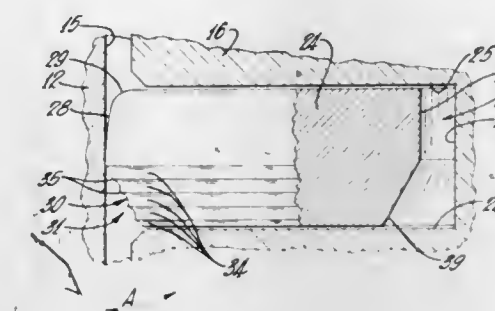
Int. Cl. F16j 9/00

U.S. Cl. 277-214

7 Claims

1. A piston ring construction adapted to be mounted in an annular groove in a piston of a reciprocating system comprising a parted annular body, said body having an exterior peripheral sealing surface adjacent the mid region of the body, and said body having an exterior substantially frusto-conically shaped area below the mid region extending downwardly and

inwardly from the peripheral sealing surface defining a zone for promoting cavitation in said zone during reciprocary



movements of the piston, said frusto-conically shaped area having recesses therein for establishing turbulence in said zone.

3,851,890

QUICK CHANGE SPINDLE ADAPTER AND NUT ASSEMBLY

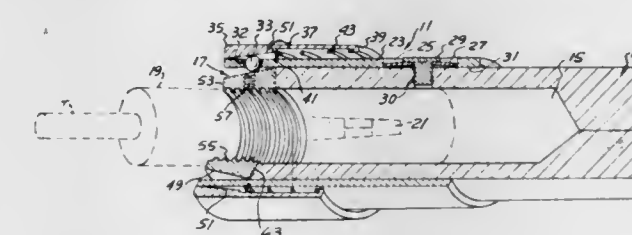
Theodore M. Smith, Detroit, Mich., assignor to Theodore M. Smith Trust, Lucille G. Smith, and Theodore M. Smith (trustees)

Filed Apr. 21, 1972, Ser. No. 246,269

Int. Cl. B23b 31/04

U.S. Cl. 279-75

10 Claims



1. A quick change adapter for a power rotated spindle having a bore adapted to receive a tool holder:

a cylindrical body having a uniform bore mounted upon and secured to said spindle and projecting forwardly thereof;

a forwardly retractable spring biased sleeve movably mounted on said body and including a rearwardly and outwardly tapered inner wall portion;

and an internally threaded nut adapted to threadedly receive said tool holder, projected into said body and bearing against said spindle; its outer surface being straight axially;

there being a series of spaced balls nested in said body: portions of said balls projected radially inward retainingly engaging said nut and projected radially outward for operative engagement with said tapered inner wall portion, the tapered inner wall of the sleeve converging relative to the nut surface providing a cooperating wedging action of the balls between the nut surface and the sleeve inner wall for the purpose of anchoring said nut and tool holder within said body, and whereby forward manual retraction of said sleeve releases said balls facilitating assembly to and manual removal of said tool holder and nut from said body.

3,851,891

CART CONVERTIBLE FROM WHEEL TO SKID TRANSPORT

William C. Liu, Bronx, N.Y., assignor to Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 7, 1973, Ser. No. 338,764

Int. Cl. B62b 13/18

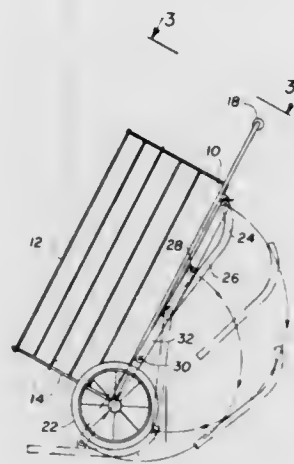
U.S. Cl. 280-11

2 Claims

1. A cart which can be wheeled over hard surfaces and which can be converted to slide over soft surfaces, said cart comprising:

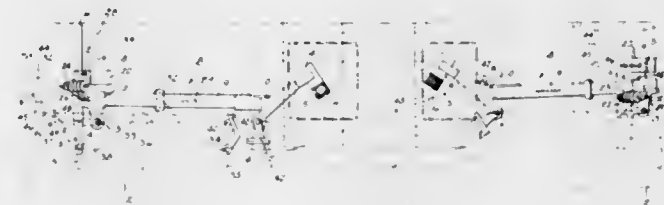
a frame having a bottom, sides, open top and closed bottom; wheel means secured to the bottom of the frame at the bottom end, said means including a horizontal axle extending transversely across the frame with vertical wheels at each end;

a generally flat skid member having an upwardly curved front edge, said member having a width essentially the same as the overall length of the wheel means; and manually operable linkage means secured to the member and the bottom of the frame, the linkage means including



3,851,893
VEHICLE BANKING ARM CONSTRUCTION
Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316
Filed July 23, 1973, Ser. No. 381,991
Int. Cl. B60g 7/04
U.S. Cl. 280-112 A

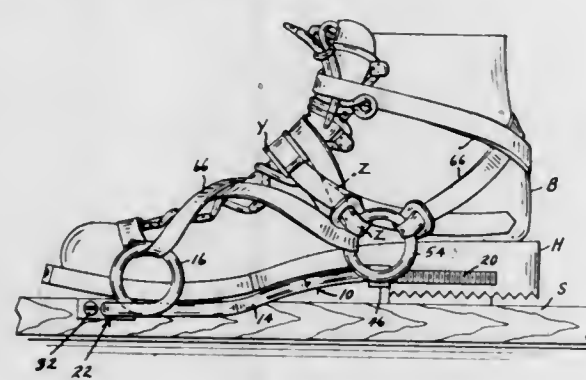
10 Claims



a rod parallel to the axle and secured to the bottom and linkage pivotally secured to opposite sides of the rod, and to opposite sides of the member, the linkage means having a first position at which the member is disposed between said bottom and the bottom of the wheels with the front edge retracted away from the wheels whereby the cart can be moved on wheels, the linkage means having a second position at which the member is lowered and disposed under the wheels and the cart can be slid over sand and the like.

3,851,892
TOURING SKI BINDING
Richard E. Swenson, 1716 Vermilion Rd., Suluth, Minn. 55803
Filed Apr. 2, 1973, Ser. No. 346,896
Int. Cl. A63c 9/10
U.S. Cl. 280-11.35 Y

4 Claims



1. A touring ski binding for attaching a boot to a ski comprising:
 - a. a frame for receiving a boot therewith including first and second substantially straight side arms, extending longitudinally on each side of the ski, each having a right angle threaded portion, extending transversely of the ski, at the forward end thereof and a free end at the rear,
 - b. said frame also including a front loop adjacent each of said right angle portions extending upwardly in a generally longitudinal plane for engagement of a boot therebetween adjacent the toe thereof,
 - c. threaded socket means for mounting transversely on each side of the ski and for threadedly and pivotally receiving the threaded right angle portions of the side arms for

- pivotal and adjustable lateral connection of the frame to the ski.
- d. a rear loop for each of said side arms, extending upwardly in a generally longitudinal plane,
- e. means threadedly mounting said rear loops on said side arms for adjustment longitudinally of the arms, said front and rear loops receiving straps which hold the boot between the loops of the frame.

1. In a vehicle of the class described, having a superstructure, a banking support for the superstructure connecting the superstructure at its forward end to a wheel spindle carrying wheel supported rigid front axle structure and at its rearward end to a rigid wheel supported rear axle housing structure, said banking support comprising a plurality of pairs of cooperating roll banking arms, each arm including a longitudinally extending torsionally operated resilient spring means connected by a separate support member and a ball and socket joint at one end to the superstructure and at the other end to the respective rigid axle structure, a side lever arm forming a part of said separate support member and bearing at its end against a resilient multiturn cushion of polyurethane based material placed near the outer end of the resilient spring means with the ball joint and the multiturn cushion placed a selected distance longitudinally of the vehicle from the related axle structure, and a side lever forming a part of the respective support member and bearing at its end against a resilient multiturn cushion of polyurethane based material supported by the superstructure, each rigid transversely extending axle structure having a predetermined orientation as appearing in side view during static loading of the superstructure by means of a torque control pivot pivotally interconnecting the related axle structure and at least one of its related banking arms to secure and control said orientation of the related axle structure and to carry the axle torque pressures to the superstructure through said resilient means, wherein the improvement comprises the placing of said superstructure side lever carrying at its end the related multiturn cushion, into a position extending diagonally toward the median section of the vehicle and beyond the corresponding end of said spring means a length of about one-third to one-half of the distance between the respective axle supported and superstructure supported banking arm ball and socket joints, to secure elongation of the banking arm for improved space use within the vehicle superstructure.

3,851,894
CONNECTOR
Henri J. St. Pierre, 39 Yarmouth Rd., Nashua, N.H. 03060
Filed May 30, 1973, Ser. No. 365,069
Int. Cl. B60d 1/10, 3/00
U.S. Cl. 280-460 R

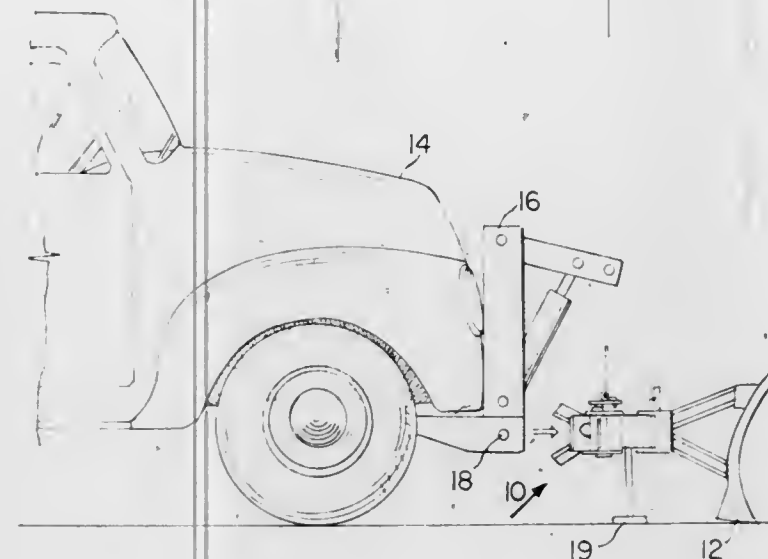
8 Claims

1. A connector for attaching an implement to a vehicle having an attaching shaft thereon, comprising:
 - a main frame having a fork on either side thereof and adapted to receive an attaching shaft;
 - a pair of lock plates, each having a hole therein adjacent the closed end of the fork and disposed outside said forks;

means for laterally biasing said lock plates against said forks such that forces applied to the inner portions of said lock plates by an attaching shaft against said biasing means will

3,851,896
IN-LINE EMITTER FOR HOSE
Donald O. Olson, 5885 Darmouth St., Chula Vista, Calif. 92010
Filed Sept. 24, 1973, Ser. No. 399,866
Int. Cl. F16l 55/00
U.S. Cl. 285-14

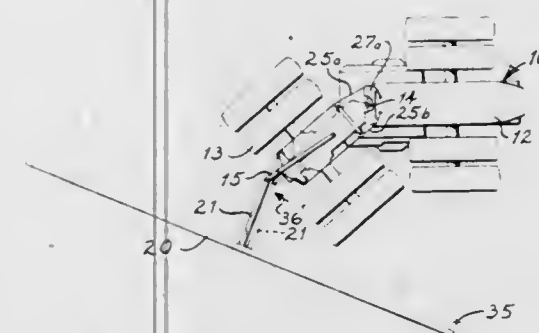
4 Claims



cause outward lateral movement of said lock plates; and means for opening said lock plates to permit release of the attaching shaft.

3,851,895
DRAWBAR STEERING ATTACHMENT FOR ARTICULATED TRACTORS
Maurice E. Davis, Rt. 2, Box 136, Moscow, Idaho 83843
Filed May 21, 1973, Ser. No. 361,969
Int. Cl. B62d 13/00
U.S. Cl. 280-467

10 Claims



8. An attachment for tractors of the type having a front wheel-supported section and a rear wheel-supported section hinged to one another about a vertical steering axis, articulated steering means for steering the tractor by forcibly pivoting the front and rear sections relative to one another about the steering axis, and a rearwardly extending drawbar pivotally mounted to the rear section about a vertical drawbar axis, said attachment comprising:

- a flexible cable having a portion thereof extending from one cable end mounted to the front tractor section, around a forward sheave rotatably mounted about an axis parallel to the steering axis to the rear tractor section, around a rearward sheave rotatably mounted to the rear tractor section about an axis parallel to the steering axis and laterally spaced from the drawbar, to a rearward end pivotally mounted to the drawbar at a location rearward of the drawbar axis.

3,851,897
WELL CONNECTOR
Andre L. Piazza, Houston, and Ado N. Vujasinovic, Humble, both of Tex., assignors to The Rucker Company, Houston, Tex.

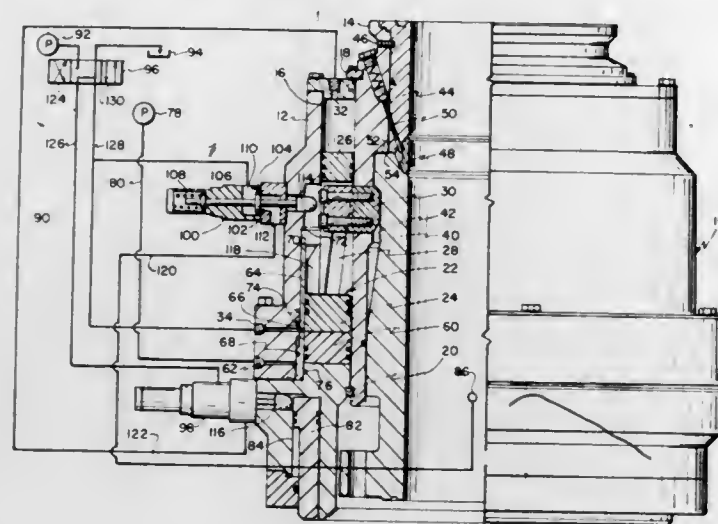
Filed May 24, 1973, Ser. No. 363,344
Int. Cl. F16l 35/00
U.S. Cl. 285-18

9 Claims

1. In a connector for connecting and disconnecting two sections of a drilling system in which one section includes a locking notch and the second section includes a double acting piston having sealing means and connected to and moving a locking lug into and out of said locking notch on reciprocal movement in a cylinder having a first port on one side of the piston for admitting fluid to move the piston in a direction to connect the sections and a second port on the second side of the piston for admitting fluid to move the piston in a direction

disconnecting the sections, the improvement of a secondary disconnect system comprising,

a secondary disconnecting piston having sealing means and positioned in said cylinder on a side of the second port opposite the double acting piston, and



a third port in the cylinder positioned behind the secondary piston for admitting fluid for moving the secondary piston and the double acting piston in a direction for disconnecting the sections.

3,851,898

PIPE CONNECTING DEVICE FOR SUBMERSIBLE PUMP
Eiichi Ihara, Wakayama, Japan, assignor to Elepon Kogyo Kabushiki Kaishi, Osaka Pref., Japan

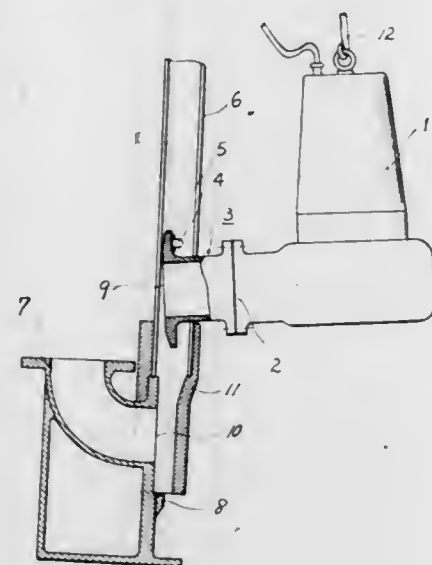
Filed Dec. 13, 1973, Ser. No. 424,619

Claims priority, application Japan, Dec. 19, 1972, 47-146097

U.S. Cl. 285—24

Int. Cl. F16I 37/26

1 Claim



1. A pipe connecting device for a submersible pump comprising a pipe connecting member fixed to the outlet of a submersible pump, said pipe connecting member being provided with a flange at the leading end thereof, a plurality of adjusting screws extending through said flange of said pipe connecting member and projecting toward said outlet of said submersible pump, guide means for said pipe connecting member disposed at both sides of and operatively connected to a liquid delivery pipe, setting arms connected to the lower end of said guides and to said liquid delivery pipe, said setting arms being tapered in the area thereof opposite to the upper portion of the joint face of a rear edge flange of said liquid delivery pipe for contact by said adjusting screws, and suspension means for suspending said pump in a forward inclining position thereby to permit said pipe connecting member to be aligned with said liquid delivery pipe.

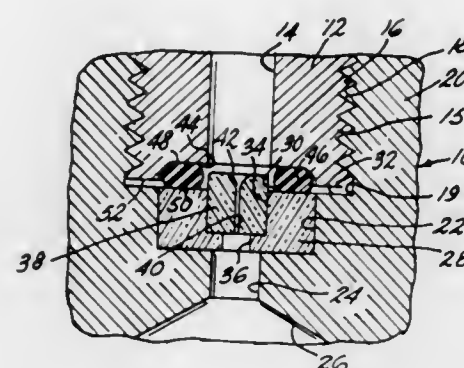
3,851,899
MEANS FOR SEALING FITTINGS AND NOZZLE ASSEMBLIES AT EXTREMELY HIGH FLUID PRESSURES
Norman C. Franz, 1203-4665 W. 10th Ave., Vancouver 8, British Columbia, Canada

Division of Ser. No. 163,456, July 16, 1971, Pat. No. 3,705,693, which is a continuation of Ser. No. 876,301, Nov. 13, 1969, abandoned. This application Aug. 28, 1972, Ser. No. 283,971

Int. Cl. F16I 17/00

U.S. Cl. 285—95

3 Claims



1. In a high pressure fitting, the combination including a pair of tubular elements each having a body defining a fluid passageway, said bodies having spaced confronting surfaces, an annular elastic sealing member disposed between and engageable with said confronting surfaces having at least an inside portion exposed to said fluid passageways, and means for mechanically joining said bodies together forming a joint which allows high pressure fluid leakage between the spaced confronting surfaces of said bodies to the joint between the joining means and the tubular elements without the sealing member whereby said confronting surfaces engage said sealing member with a moderate compression comparable to a finger tightening of a threaded joint between the tubular elements and joining means, and said tubular elements, sealing member and joining means define a space between the spaced confronting surfaces of the tubular elements deforming the sealing member adjacent its outer periphery towards the joint between the joining means and the tubular elements upon application of a high fluid pressure from about 10,000 to in the order of 70,000 pounds per square inch inside the tubular elements to produce a fluid tight seal of the joint.

3,851,900

SEALING DEVICES

Andre Alphonse Mederic Leon Camboulives, Savigny-Sur-Orge; Theophile Francois Le Maout, Cesson; Marc Roger Marchi, Melun, and Roger Alfred Jules Vandenbroucke, Antony, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Sept. 14, 1973, Ser. No. 397,354

Claims priority, application France, Sept. 15, 1972, 72.32848

Int. Cl. F16I 21/00

U.S. Cl. 285—231

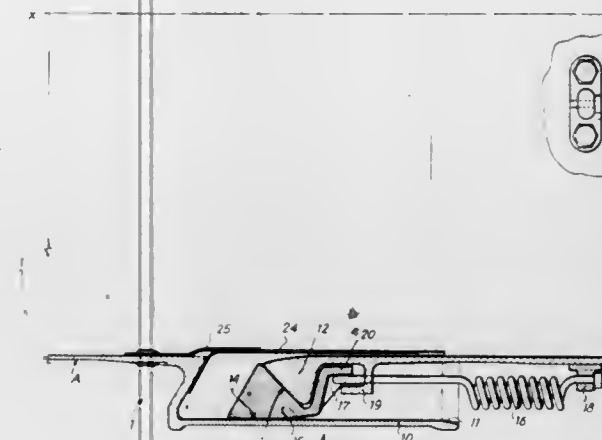
11 Claims

1. Sealing device designed for fitting to a conduit through which a fluid passes in operation, the said conduit being composed of at least two sections of conduit which are axially consecutive and articulated to one another, the said sealing device being of the type comprising, in the zone of junction of two consecutive conduit sections, a first abutment surface integral with one of said two sections and oriented in such manner as to be capable of taking a thrust having a component parallel to the axis of the conduit, a second abutment surface integral with the other of said sections and oriented in such manner as to be capable of taking a thrust having a component normal to the axis of the conduit, and a sealing ring disposed coaxially with said conduit in the immediate vicinity of said abutment surfaces, in which the said sealing ring comprises a

ring of variable peripheral length and the said sealing device moreover comprises a guide ring, disposed coaxially with the conduit and having an oblique face turned towards and located in the immediate vicinity of said sealing ring, and means for applying said oblique face of the guide ring and said sealing

an elongate, planar, flexible, connecting shield positioned around said locking rings and said sealing gasket, the width of said connecting shield being approximately equal to the combined width of said sealing gasket and said pairs of locking rings, the opposite ends of said connecting shield overlapping; and

a pair of hose clamps positioned around the sides of said connecting shield, said clamps being tightenable to secure said sides of said connecting shield in said grooves in said pairs of locking rings to connect said locking rings and said pipe ends together.



3,851,902

DISCONNECTIBLE PIPE UNION

Klas Robert William Robinson, Lovangsvagen 37, 183 30 Taby, Sweden

Continuation of Ser. No. 289,527, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,252, June 15, 1970, abandoned. This application Mar. 18, 1974, Ser. No. 451,789

Claims priority, application Sweden, Nov. 11, 1971, 14472/71; May 13, 1970, 6545/70

Int. Cl. F16I 21/06

U.S. Cl. 285—334.2

4 Claims

ring resiliently against one another in such manner as to urge said sealing ring resiliently both to shift parallel to the axis of the conduit and to vary in peripheral length, and thus to apply said sealing ring simultaneously against said first abutment surface and said second abutment surface.

3,851,901

MECHANICAL PIPE COUPLINGS

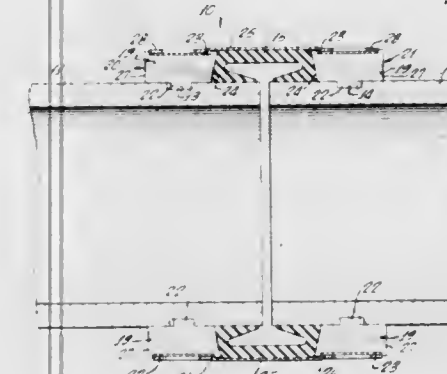
Cecil M. Sills, 530 Catalina Rd., Fullerton, Calif. 92635

Filed Oct. 17, 1973, Ser. No. 407,308

Int. Cl. F16I 17/00

U.S. Cl. 285—112

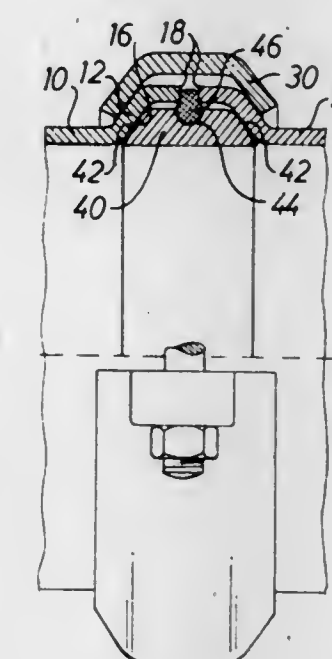
14 Claims



1. A pipe coupling for providing a fluid-tight joint between two abutting pipe ends, each of said pipe ends having an annular groove in the outer surface thereof, comprising:

two pairs of identical, semicircular, locking rings, each locking ring having an inwardly projecting tongue adapted to extend into said grooves in said pipe ends and an annular groove in the outer surface thereof, one pair of said rings being adapted to surround one of said pipe ends and the other pair of said rings being adapted to surround the other of said pipe ends;

a resilient, annular, sealing gasket positioned between said pairs of locking rings and being positionable around said abutting pipe ends;



1. A disconnectible pipe union, comprising a pair of annular collars one on each of the pipe ends to be joined, said collars being flared so as to increase in diameter in a direction towards the medial plane of the joint to form an inwardly facing front face and an outwardly facing back face, each said collar terminating in an outer edge portion having a relatively sharp corner, the sharp corners on said pair of collars substantially confronting one another, a segmented clamping ring having a groove on the radially inner face thereof the sidewalls of which groove converge at an angle corresponding to the angle of convergence of the back faces and engage said back faces, means for tightening said clamping ring, whereby when said clamping ring is tightened, the groove side walls subject the back faces of the collars to a camming action which urges the pipe ends axially towards each other and brings the outer edge portions of the collars near one another, a stiff but resilient primary sealing ring disposed between the front faces of the two collars, said primary sealing ring having a cross sectional shape so as to substantially occupy and fill the axial space defined between said front faces to engage each front face

along a circumferential line contact area thereby to provide a narrow sealing contact zone between each side face of the sealing ring and each of said front faces, the side faces of the primary sealing ring extending at an angle relative to one another whereby the primary sealing ring is subjected to both axial and radial compression when the collars are sealingly clamped thereagainst by the clamping ring, the primary sealing ring being provided with a central peripherally extending outwardly opening groove on the outer peripheral surface thereof, and a secondary sealing ring of elastomeric material seated within said groove and having a part thereof projecting outwardly from said groove such that said part sealingly engages both said outer edge portions of the collars, said clamping ring causing the opposed sharp corners to project into the projecting part of said secondary sealing ring on opposite sides thereof, whereby the projecting part of the secondary sealing ring is deformed so as to extend into the space between and sealingly engage the opposed outer edge portions of the collars.

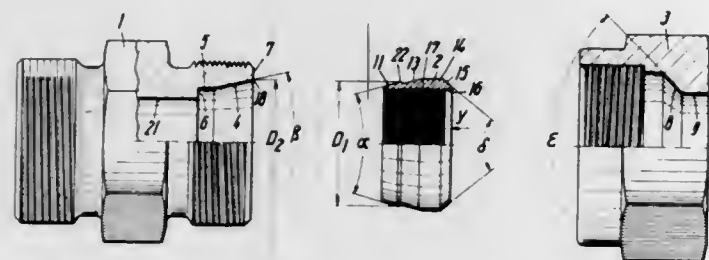
3,851,903

COUPLER FOR CONNECTING TUBULAR MEMBERS
Clemens Nienhaus, Lohmar; Rudolph Pieper, Königswinter, and Hubert Eikenbusch, Augustin, all of Germany, assignors to Jean Walterscheid GmbH, Trier, Germany
Filed Sept. 13, 1973, Ser. No. 396,690
Claims priority, application Germany, Sept. 13, 1972, 2244862

Int. Cl. F16I 17/02, 19/06

U.S. Cl. 285—341

5 Claims



1. A threaded coupling for tightly connecting tubular members and comprising an element having external threads on one end thereof and a bore therethrough with a conical surface (4) at one end of said bore, an annular nut having an internal thread at one end of its bore and adapted to be screwed onto said element, said nut bore comprising a first cylindrical portion inwardly of said internal threads continuing into an inwardly tapering conical surface (8) and a second cylindrical portion (9) having a diameter greater than the tubular member being connected, a clamping ring adapted to be slid over the tubular member and to be retained between said element and said nut and having outer conical surfaces at both its element and nut ends, the element end conical surface (11) of said ring having a smaller angle of taper (α) than the nut end conical surface (15) on the ring and there being annular grooves in the bore of the ring, the taper angle (α) of said conical surface (11) being greater than the taper angle (β) of element conical surface (4) and the maximum diameter of said ring conical surface (11) being approximately equal to or less than the largest diameter of said element conical surface (4), there being a second conical surface (12) on said ring from the maximum diameter of said conical surface (11) and tapering inwardly and connecting to a third conical sur-

face (13) tapering outwardly to a peripheral cylindrical surface (14), said nut end conical surface (15) on said ring having an angle of taper (δ) which is less than the taper angle (ϵ) of nut bore conical surface (8).

3,851,904

Patent Not Issued For This Number

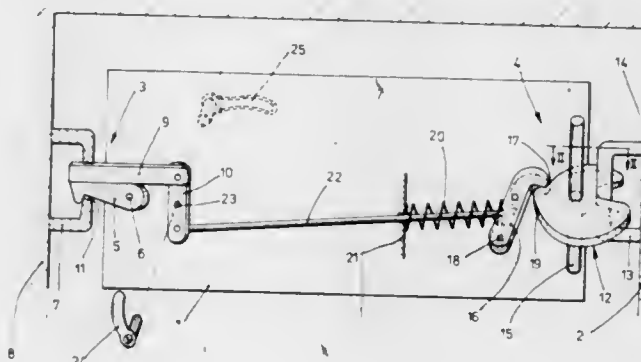
3,851,905

LATCHING MECHANISM FOR SLIDING DOORS IN A MOTOR VEHICLE
Horst Klebba, Weyhausen, Germany, assignor to Volkswagenwerk AG, Wolfsburg, Germany
Filed Dec. 26, 1973, Ser. No. 427,570
Claims priority, application Germany, Dec. 27, 1973, 2263421

Int. Cl. E05c 9/00

U.S. Cl. 292—11

6 Claims



1. A latching mechanism for a sliding door preferably for motor vehicles comprising a first latching means mounted on the door at one end region thereof, locking bolt means on a doorframe cooperating with said first latching member when said first latching member is actuated and the door is in its closed position, a second latching member mounted at the other end of the door opposite to said first latching member, a locking bolt means mounted on the doorframe adjacent said second latching member and cooperating with said second latching member when said door is in its closed position, a safety lever adapted to be forced in a position securing said second latching member in a latching position when the door is in its closed position, means for coupling said first latching member and said safety lever in a safe position when said door is closed, said first latching member including a swivel latch plate means comprising a latching portion cooperating with said locking bolt when said door is in closed position and mounted for pivotable movement for engaging said locking bolt means in the closed position of said door, said swivel plate means including a camming portion and a main ratchet portion, said first latching member further including a pawl means pivotably mounted on said door and secured to said coupling means and adapted for riding over said camming portion during the release position of said door and entering into said main ratchet portion during the latched position of said door, spring means holding said pawl means in contact with said camming and said main ratchet portion, said coupling means coupling said pawl operably with said safety lever and forcing

said safety lever into a latched position with said first latching member when said pawl is in said main ratchet, the movement of said pawl into said main ratchet being in synchronism with the entry of said safety lever means into said latched position with said first latching member.

responding to the threads at the upper portion of the stud for attaching the tensioning means to the stud.

3,851,907

TELESCOPIC COUNTERBALANCE

Bela Sandor, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1973, Ser. No. 354,702

Int. Cl. E05c 17/30

U.S. Cl. 292—262

8 Claims

3,851,906

HEAD CLOSURE SYSTEM

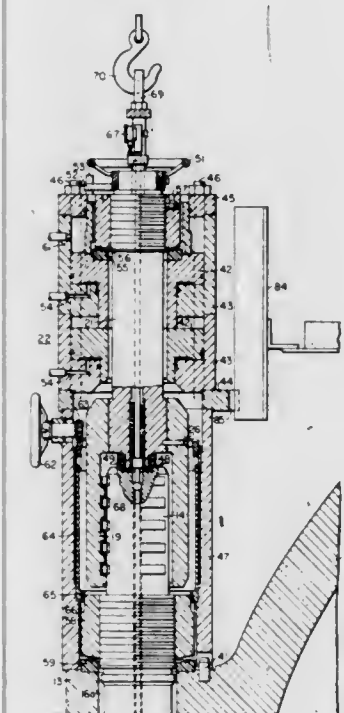
Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1971, Ser. No. 179,703

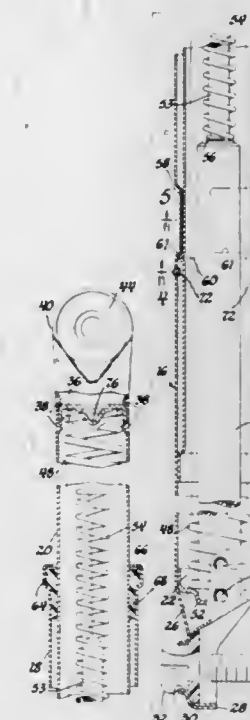
Int. Cl. E05c 5/04

U.S. Cl. 292—256.73

21 Claims



1. A head closure system for a generally cylindrical pressure vessel and a closure head having outwardly extending mating flanges with a plurality of vertically aligned holes therein, comprising studs rotatably disposed in said holes to retain the head on the vessel, each stud having a plurality of separate parallel horizontally extending interrupted threads at its lower portion and also at its upper portion, each hole in the vessel flange having threads therein corresponding to the threads at the lower portion of each stud, said threads being aligned in vertical sections with gaps between sections having a greater angular extent than the angular extent of the thread sections, said stud being rotatable to align the thread sections on the studs with the thread sections in the vessel flange, portable tensioning means adapted for mounting on said closure head for applying tension on each stud to retain the head on the vessel, and said tensioning means having threads therein cor-



1. A telescopic counterbalance for a closure movable between open and closed positions relative to a support comprising, in combination, a pair of telescopic annular members movable inwardly and outwardly of each other, means securing the outer ends of the members respectively to the support and the closure, resilient counterbalance means seating between the members to bias the members in a telescopic outward direction and bias the closure to an open position, booster spring means mounted on one of the members, and abutment means mounted on the other member, the booster spring means being normally in a free position and being engaged and compressed by the abutment means only during final inward telescopic movement of the members to provide a pop-open force cooperating with the resilient counterbalance means in initially biasing the closure to a partially open position.

3,851,908

TELESCOPIC COUNTERBALANCE

Howard D. Hester, Romeo, and Bert R. Wanlass, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,857

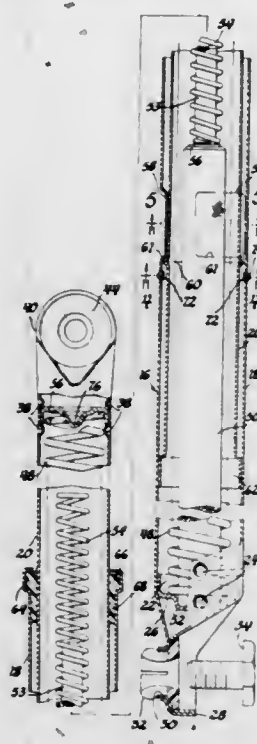
Int. Cl. E05c 17/30

U.S. Cl. 292—262

2 Claims

1. A telescopic counterbalance for a closure movable between open and closed positions relative to a support comprising, in combination, a pair of telescopic annular members movable telescopically inwardly and outwardly of each other and adapted to have their outer ends respectively secured to the closure and to the support, means biasing the members in

a telescopic outward direction to bias the closure to an open position, each telescopic member including bearing means adjacent the inner end thereof and stop means spaced substantially from a respective bearing means, the bearing means of each member slidably bearing on the other member as the members move telescopically relative to each other to provide spaced bearing areas increasing the bending strength of the



telescopic counterbalance, the stop means of the members being engageable with each other upon movement of the members in a telescopic outward direction to provide a fixed stop delineating the extended position of the members and located in spaced relationship to the bearing means intermediately thereof to function as an additional bearing point for increased bending strength.

3,851,909

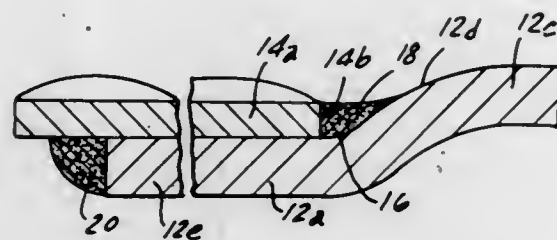
VEHICLE BUMPER CONSTRUCTION AND METHOD OF MAKING SAME

Carl L. Kalitta, Adrian, Mich., assignor to Dura Corporation, Southfield, Mich.

Division of Ser. No. 237,711, March 24, 1972, Pat. No. 3,790,200. This application Feb. 1, 1973, Ser. No. 328,766
Int. Cl. B60r 19/00, 21/14

U.S. Cl. 293-70

4 Claims



1. A method of constructing a bumper having a bar member which has a body portion with a lip extending at an angle to the body portion and a platform member secured to a portion of the lip comprising the steps of
forming an offset at a free edge of the lip to provide a shoulder spaced from the free edge of the lip,
positioning an edge portion of said platform member in overlapping relation on said offset to form a trough between an edge of said platform member and the shoulder of said offset,
rigidly securing said bar member and said platform member to form an assembled bumper,
applying at least one coating of protective material to the assembled bumper, and
filling the trough with a sealer having the same color as the

last applied coating of protective material so that rust which may form between the offset and overlapping platform is prevented from bleeding onto a show surface of the bumper.

3,851,910

AUTOMOTIVE BUMPER AND ENERGY ABSORBING MEMBER THEREFOR

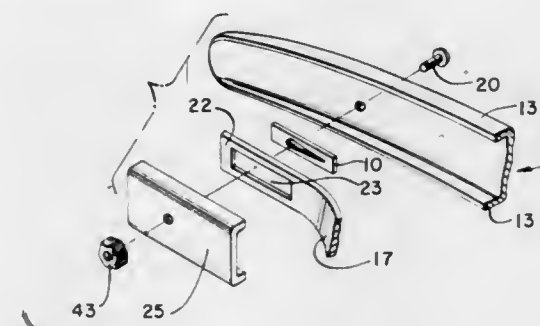
Nathan Levenberg, 2 Windsor Place, Lynbrook, N.Y. 11561

Filed Apr. 10, 1973, Ser. No. 349,720

Int. Cl. B60r 19/04; F16f 1/36

U.S. Cl. 293-89

13 Claims



1. An energy-absorbing member having a predetermined geometrical configuration defining at least a first pair of spaced-apart outer surfaces determining the thickness of said member and an opening in said member extending between and through said first pair of surfaces, said opening having a first portion and a second portion, said first portion adapted to receive a translatable member therein which under a predetermined condition is capable of being translated generally transversely and laterally relative to said first pair of surfaces from said first portion to said second portion of said opening, said second portion of said opening defining a second pair of opposed surfaces for frictionally engaging the periphery of said translatable member to reduce the kinetic energy thereof, said second pair of surfaces extending generally transversely relative to said first pair of surfaces.

3,851,911

IMPACT BUMPER ASSEMBLY

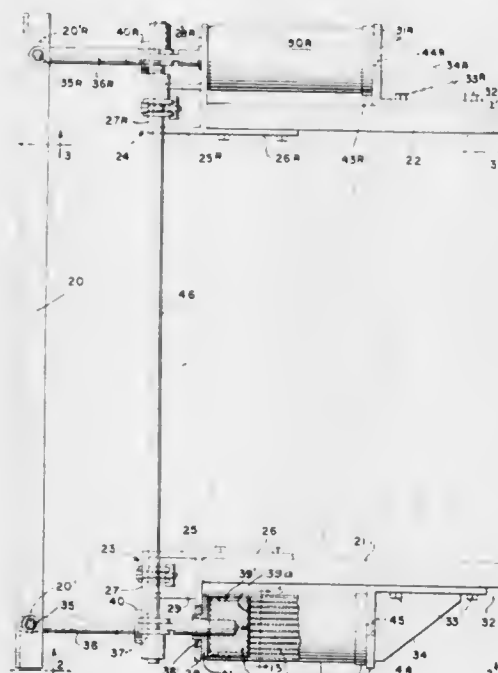
Ralph J. Brooks, Langhorne, Pa., assignor to Andrew R. Klein, Philadelphia, Pa.

Filed Aug. 27, 1971, Ser. No. 175,668

Int. Cl. B60r 19/06; B61f 19/04; F16d 63/00

U.S. Cl. 293-84

11 Claims



1. A vehicle bumper mounting assembly for dissipating the energy generated by a collision comprising a bumper carrying

element, rods, one at each side of said vehicle, mounting said element on the vehicle, said rods being axially movable lengthwise of the vehicle; a torsion bar mounted crosswise of the vehicle and having means to prevent the rotation of one of its ends, and means carried near its other end for engaging one of said rods, said means being adapted, upon movement of said rod, to impart rotation to the said other end of the torsion bar; housings rigidly mounted along the sides of the vehicle, each adapted to receive, confine, and support a mass of crushable material, said housings each also slidably enclosing head structure mounted to that end of the rod within it which is remote from the bumper, said head structure being movable under stress to crush said crushable material against the rear wall of its housing.

3,851,912

VEHICLE WITH FLAT FRAME STRUCTURE

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

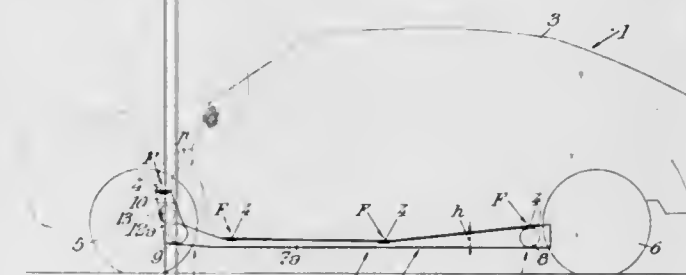
Filed Feb. 20, 1973, Ser. No. 333,658

Claims priority, application France, Feb. 28, 1972, 72.06711

Int. Cl. B62d 21/02, 27/04

U.S. Cl. 296-35 R

11 Claims



1. Vehicle comprising a chassis including a substantially flat, relatively thin, frame on which are fixable wheel-mounting means at front and rear zones respectively, a body, elastic elements connecting said body to said chassis and adapted to filter noise and vibration which may be transmitted from the chassis to the body, said frame having self-rigidity in its plane, the body being substantially undeformable by torsion forces around the longitudinal direction of the vehicle and flexion forces under vertical load, said elastic connecting elements between the body and the chassis being arranged to prevent practically any vertical relative displacement and to permit slight relative longitudinal movement between the chassis and the body, the assembly being such that the body, fixed to the chassis resists buckling of the chassis, the smallest cross-sectional height of the chassis, between the two zones of attachment of the wheel-mounting means being less than a fortieth (1/40th) of the longitudinal distance separating said front and rear zones.

3,851,913

TRACTOR CAB WITH COMBINED TILT PIVOT AND RESILIENT MOUNTS

Harold Monroe Knoth, Davenport, Iowa, assignor to Deere & Company, Moline, Ill.

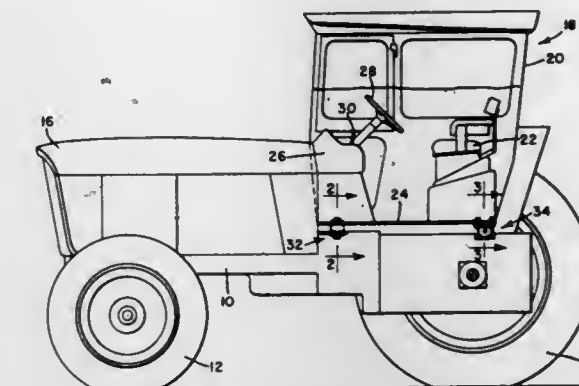
Filed Oct. 1, 1973, Ser. No. 395,499

Int. Cl. B62d 23/00

U.S. Cl. 296-35 R

2 Claims

1. A tractor and operator's station therefor including a cab, means pivotally mounting the cab on the tractor for swinging between normal and tilted positions, an operator's console at least partially within the cab and detachably connected to the cab to combine therewith, to form a unitized console-cab assembly during normal operation of the tractor and to be detached from the cab to remain with the tractor when the cab is tilted, and separable resilient mounting means spaced from the pivot means and connecting the assembly to the tractor in



vibration-isolated relation to the tractor, characterized in that the pivot means comprises a support on the tractor, an intermediate part pivoted to the support, and an elastomer element

connected to the intermediate part and to the cab to complete the vibration-isolated mounting of the assembly during normal tractor operation yet allowing tilting of the cab relative to the tractor and console when the mounting means is separated.

3,851,914

COLLAPSIBLE CHAIR

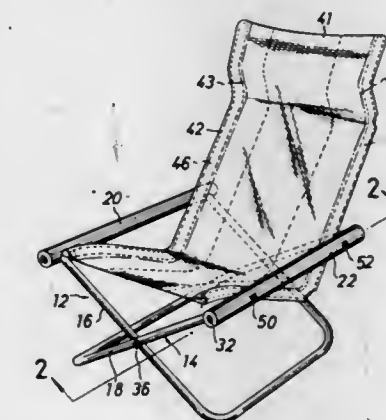
Takeshi Nii, 12, Nishifunabacho 1-chome, Tokushima-shi, Japan

Filed Oct. 30, 1972, Ser. No. 301,949

Int. Cl. A47c 4/28

U.S. Cl. 297-45

6 Claims



1. A collapsible chair comprising: a pair of frameworks each having legs and an arm pivotally mounted on the upper end of said legs, said frameworks being coupled together by a connecting means so as to permit folding of the frameworks inwardly along the center line of said chair;

a thin flexible membrane having folds at each of its sides defining elongated tubular formations; and
a pair of rods inserted into said elongated tubular formations to carry said flexible membrane therebetween, said rods being curved at an angle to form integral seat and backrest portions with said flexible membrane stretched therebetween and being fixed to the inside of said arms of said frameworks in at least two places.

3,851,915

FOLDING AND STACKING CHAIR

Ismael S. Rodrigo, Buenos Aires, Argentina, assignor to Rodrigo Disenos S.A.C.I., Buenos Aires, Argentina

Filed July 30, 1973, Ser. No. 383,542

Claims priority, application Argentina, Aug. 7, 1972, 243465

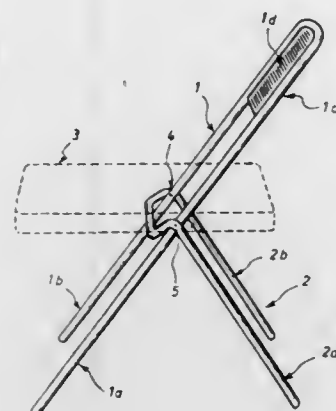
Int. Cl. A47c 4/44

U.S. Cl. 297-56

9 Claims

1. A folding and stacking chair comprising:
a first U-shaped member having two parallel arms and a cross member at one end thereof, the open ends of said

arms serving as the front legs of the chair and the cross member serving as the back of the chair;
 a second U-shaped member having two parallel arms and a cross member at one end thereof, the open ends of said arms serving as the rear legs of the chair, said second U-shaped member being articulated to said first U-shaped member such that said second U-shaped member is pivot-



able about a fixed axis passing through the arms of said first U-shaped member; and
 a seat articulated to said first U-shaped member so as to be pivotable about said fixed axis, wherein said cross member of said second U-shaped member is parallel to said axis and is spaced therefrom and wherein said cross member supports said seat in a generally horizontal position when the chair is in an unfolded position.

3,851,916

BIG GAME FISHING CHAIR

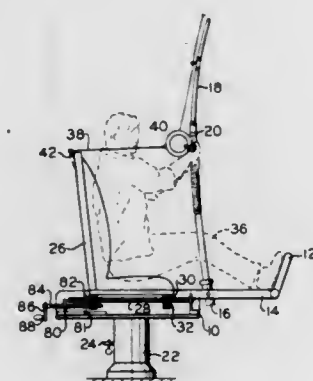
Orpheus F. Quartullo, 230 Nurmi Dr., Ft. Lauderdale, Fla. 33301

Filed Apr. 16, 1973, Ser. No. 351,193

Int. Cl. A47c 7/62

U.S. Cl. 297-188

6 Claims



1. A big game fishing chair including a base, a socket pivotally mounted on the base to receive the butt end of a fishing rod, a foot rest on the base, a chair slidably mounted on the base and movable to and from the socket and foot rest, restraining means releasably securing the chair to said fishing rod at a point spaced vertically of the socket to establish a fixed distance therebetween, movement of said chair away from said socket and foot rest causing said fishing rod to be moved about its pivotal mounting pulled in the direction of movement by said restraining means.

3,851,917
INVALID CHAIRS

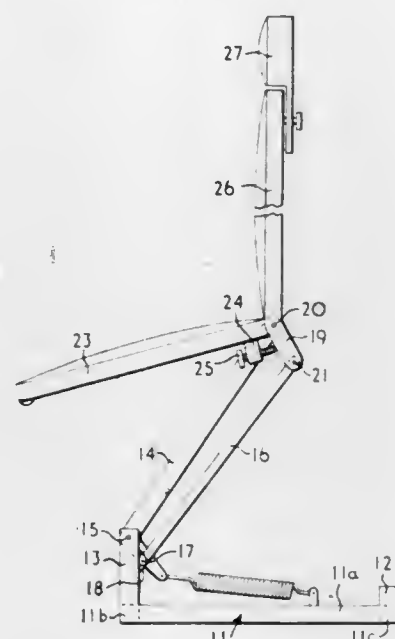
Bevan Graham Horstmann, and Frederick Reginald Vincent, both of Corsham, England, assignors to The Bath Institute of Medical Engineering, Somerset, England

Continuation-in-part of Ser. No. 203,699, Dec., 1971, abandoned. This application Mar. 29, 1973, Ser. No. 345,832
 Claims priority, application Great Britain, Jan. 16, 1973, 02235/73

Int. Cl. A47c 1/02, 1/06, 1/12

U.S. Cl. 297-345

6 Claims



1. An invalid chair comprising:

a chair base;
 a seat portion;
 a back rest;

linkage operatively interconnecting the chair base, seat portion and back rest;

resilient means operatively connected between one end of said linkage and said base to urge the seat portion and back rest to raised positions and thereby assist an occupant in rising from a sitting position;

said linkage comprising a quadrilateral linkage operatively connecting the back rest to the chair base, said quadrilateral linkage including upper and lower links extending forward from the lower part of the back rest, said links having forward ends pivotally connected to the chair base, and rear ends pivotally connected to the back rest; the seat portion being pivoted to one of said back rest and said upper link, in the vicinity of the junction therebetween; and

a bell crank lever pivoted to said upper link intermediate the ends thereof, having one arm engaged with the underside of the seat portion and the other arm operatively connected to said lower link whereby movement of said quadrilateral linkage causes rotation of the lower arm whereby the upper arm also moves and lifts said seat portion with respect to said upper link.

3,851,918

CHAIR BACKREST RECLINING ASSEMBLY

Ralph B. Lay, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ohio

Filed Oct. 12, 1973, Ser. No. 406,084

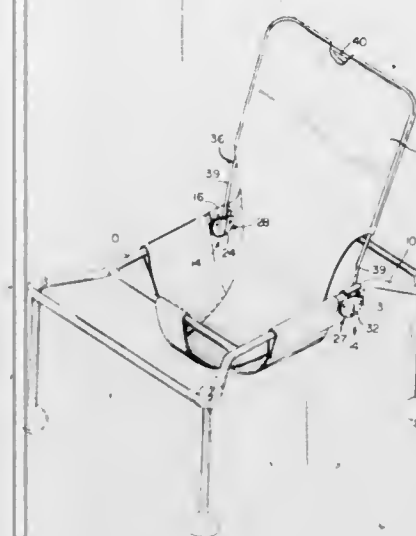
Int. Cl. A47c 1/026

U.S. Cl. 297-357

5 Claims

1. A chair backrest reclining assembly, comprising a pair of supports mounted on the opposed sides of a chair, each such support comprising a first plate mounted on said frame and having a generally L-shaped slot formed therein, second and third plates rotatably connected to said first plate on the opposite sides thereof; and a backrest frame having a pair of

arms connected to said supports, each of the arms having its lower portion received between said first and second plates, and a finger on said lower portion slidably carried in said L-shaped slot and received in said third plate, said finger being movable in said L-shaped slot between a first position in which



said back frame is in a generally upright position and a second position in which said back frame is in a reclining position, said second and third plates rotating with respect to said first plate during movement of said back frame between said upright and reclining positions.

3,851,919

AUTOMOBILE HEADREST

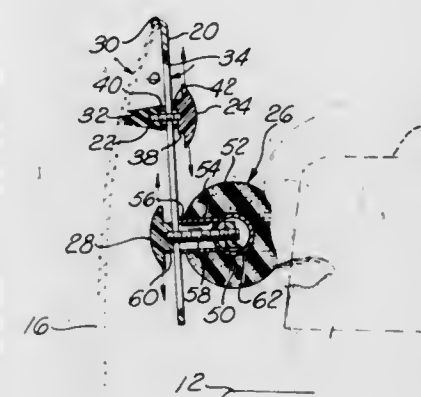
James P. Nagy, 6127 McKenzie Rd., North Olmstead, Ohio 44070

Filed Aug. 1, 1973, Ser. No. 384,485

Int. Cl. A47c 7/36

U.S. Cl. 297-395

7 Claims



1. A vehicle headrest adapted to be supported by a window of a vehicle, said headrest comprising an elongated rigid bracket member, rigid hook means at one end portion of said rigid bracket member for engaging the top portion of the vehicle window and for supporting said rigid bracket member for pivotal movement toward and away from a major side surface of the window, head support means disposed on a first side of said rigid bracket member for engaging the head of an occupant of the vehicle, head support connector means for connecting said head support means to said rigid bracket member and for enabling the position of said head support means to be varied longitudinally along said rigid bracket member to adjust the position of said head support means relative to the top portion of the window to accommodate vehicle occupants of different sizes, and spacer means disposed on a second side of said rigid bracket member for engaging the major side surface of the window at a location

disposed downwardly from the top portion of the window to hold said rigid bracket member and head support means outwardly from the major side surface of the window against the influence of force directed toward the major side surface of the window and applied against said head support means by the head of an occupant of the vehicle.

3,851,920

SHELL CHAIR CONSTRUCTION

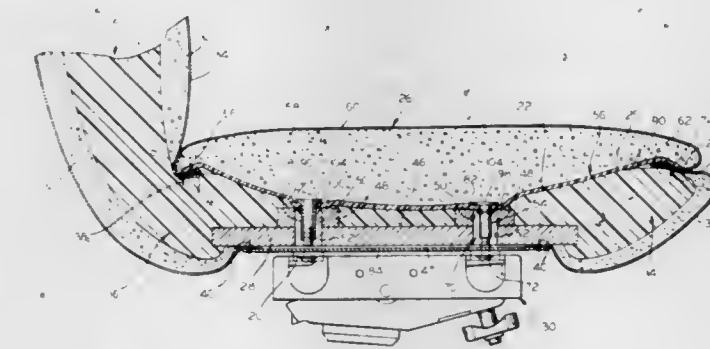
Everett K. Harris, Geneva; William P. Anderson, North Aurora, and James W. Lannert, Oswego, all of Ill., assignors to All-Steel Inc., Aurora, Ill.

Filed July 23, 1973, Ser. No. 381,772

Int. Cl. A47c 1/12, 7/02

U.S. Cl. 297-455

6 Claims



1. A shell chair comprising:

a molded shell defining seat and back portions, said seat portion having molded in same a generally planar reinforcing seat board that is exposed on the underside of said seat portion and underlies the upper side of said seat portion,

said seat portion including said seat board being formed with a plurality of fastener receiving openings extending therethrough,

a seat pan seated on the upper surface of said seat portion and having cushion padding applied thereto, on the upwardly facing side thereof,

a headed tubular fastener element disposed in each of said openings and carried by said pan, with the respective fastener elements having their headed ends disposed in engagement with said surface of said seat pan,

said fastener elements being made fast to said seat pan, a chair base including a seat attachment member defining a plurality of screw receiving openings aligned with said seat portion openings,

and a screw received in each of said screw receiving openings,

said seat board and said seat pan at each of said seat portion openings having a compression resisting insert interposed therebetween through which the respective seat portion openings extend,

said screws being turned to clamp the respective inserts between said seat pan and said seat attachment member to make said seat pan fast to said seat portion.

3,851,921

PAVEMENT SURFACE TREATING APPARATUS

Sumio Makishima, 67-3 Shinmachi 2-chome, Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 320,864

Claims priority, application Japan, Jan. 14, 1972, 47-5818; Oct. 23, 1972, 47-105331

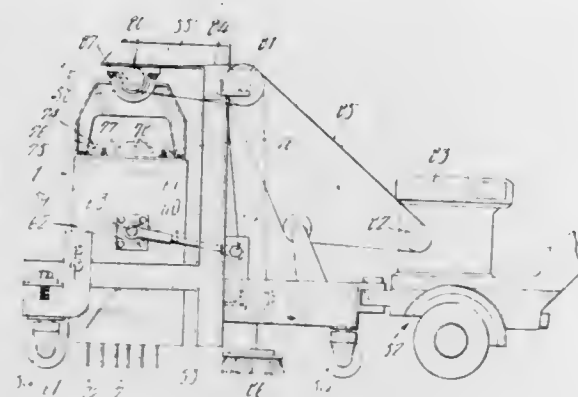
Int. Cl. E01c 23/09

U.S. Cl. 299-37

5 Claims

1. A pavement surface treating apparatus comprising a prime mover, a drive power transmission mechanism operatively connected to said prime mover to receive power from

the prime mover and having a crank, and a pavement surface roughing mechanism being hung from said power transmission mechanism and operatively connected to said power transmission mechanism for vertical and reciprocal movement upon application of power from said transmission mechanism so as to strike against said pavement surface to rough the surface, said roughing mechanism comprising a base guide plate hav-



ing a plurality of through holes, an upper adjustable guide plate positioned above said base plate and having a plurality of through holes in staggered relationship to said holes in the base plate, a plurality of resilient wire sections extending through said holes in the base and upper plates and an anchoring plate positioned above said adjustable upper plate for anchoring one end of said wire sections.

3,851,922

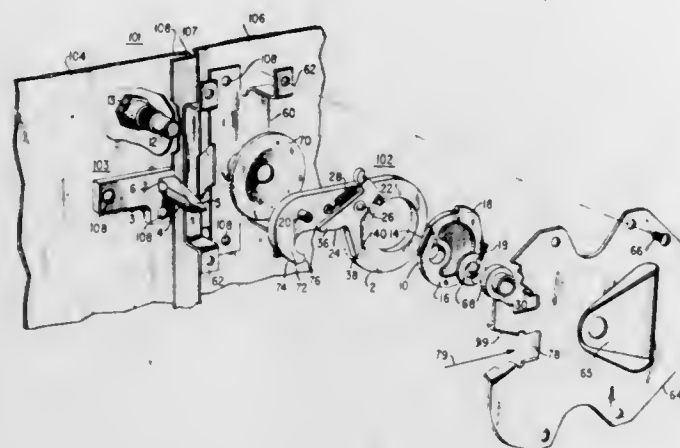
HOOK LATCH

Robert Gordon McCoy, Whippany, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Jan. 7, 1974, Ser. No. 431,032

Int. Cl. E05c 5/02

U.S. Cl. 292-111

5 Claims



1. A latch comprising a sill pin; a rotary eccentric cam having a first shoulder on the periphery thereof; a hook member mounted on said cam and adapted to move into and out of engagement with said sill pin in response to a rotation of said cam to close and open said latch, respectively, a trigger rotatably mounted with respect to said hook member and having a lip thereon adapted to engage said first shoulder on said cam to prevent rotation of said cam to close said latch until said cam, said hook member and said sill pin are properly positioned with respect to each other, characterized in that said latch includes:

first means for maintaining said hook member in engagement with said sill pin until said lip has engaged said first shoulder and until said hook member has been substantially fully extended when said latch is being opened; and

second means for removing said lip from engagement with said first shoulder after said hook member has moved into engagement with said sill pin when said latch is being closed.

3,851,923

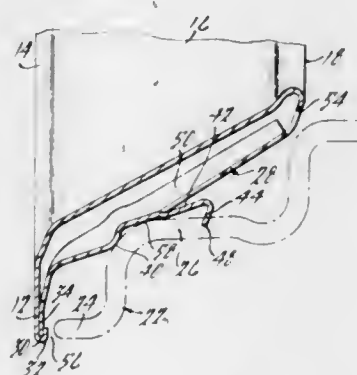
VEHICLE WHEEL TRIM

Hans R. Beisch, Essex, Ontario, Canada, assignor to Norris Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 146,082, May 24, 1971, Pat. No. 3,757,400. This application June 16, 1972, Ser. No. 263,711
Int. Cl. B60b 7/02

U.S. Cl. 301-37 T

9 Claims



1. Wheel trim for a vehicle wheel, comprising: means defining a generally annular body adapted to overlie a portion of a vehicle wheel; means defining a plurality of circumferentially spaced reinforcing elements extending from and integral with the inner periphery of said body, said elements extending generally from said inner periphery to the outer periphery of said body, the free ends of said elements being rigidly affixed to said body adjacent the outer periphery thereof; retention means supported on said elements for removably retaining said body on the vehicle wheel; said body, said reinforcing elements and said retention means being formed from a single sheet of material and being integral with one another.

3,851,924

FIBER DISTRIBUTION APPARATUS

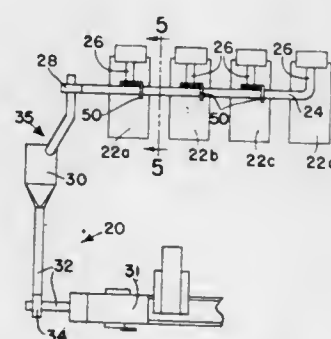
James H. Roberson, and Thomas C. Perry, Jr., both of Greenville, S.C., assignors to Crompton & Knowles Corporation, Worcester, Mass.

Filed Sept. 25, 1970, Ser. No. 75,400

Int. Cl. B65g 53/08, 53/36

U.S. Cl. 302-28

9 Claims



1. Apparatus for selectively supplying fibers to a plurality of fiber processing machines comprising:

- a source of fiber supply;
- a conduit connected to said source of fiber supply;
- a feed duct for each of said fiber processing machines connected to said conduit;

- pneumatic means connected to said conduit between said source of fiber supply and said feed ducts for creating an air flow toward said feed ducts;
- an electromechanical two-position valve located in said conduit between said source and said pneumatic means, said valve being effective in a first position to open said conduit to the atmosphere and to close said conduit to said source and effective in a second position to close said conduit to the atmosphere and open said conduit to said source;
- electromechanical gating means for selectively directing said air flow from said conduit to any one of said feed ducts;
- means for sensing a need for fibers in each of said feed ducts, said sensing means including a sensor switch associated with each of said feed ducts which is actuated by a need for fibers therein;
- first timer switches, one for each of said feed ducts, which are connected in series with respective sensor switches of said sensing means, each of said first timer switches being effective for shifting said two-position valve to its second position or a period of time to initiate a feeding cycle when its corresponding sensor switch is actuated by a need for fibers; and
- second timer switches synchronized with said first timer switches for controlling said gating means to pneumatically connect said conduit to the feed duct whose sensor switch initiates a feeding cycle for the entire time that said two-position valve is in said second position and for a period of time thereafter, whereby fibers are conveyed into a feed duct in which there was sensed a need for fibers for the period of time said two-position valve is in its second position followed by a purging air flow along said conduit and into said feed duct for a period of time thereafter.

3,851,925

FIBER DISTRIBUTION SYSTEM

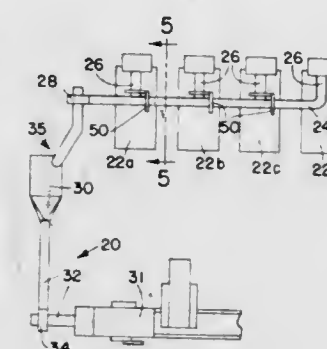
James H. Roberson, Greenville, S.C., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed Sept. 25, 1970, Ser. No. 75,647

Int. Cl. B65g 53/08, 53/36

U.S. Cl. 302-28

4 Claims



1. Apparatus for supplying textile fibers to a plurality of groups of fiber processing machines comprising:

- a source of fiber supply;
- a feed duct for each of said fiber processing machines;
- a satellite conduit for each of said groups connected to respective feed ducts in its group;
- an electromechanical two-position valve for each of said satellite conduits, each of said valves being effective when in a first position to open its conduit to the atmosphere and close its conduit from said source of fiber supply and effective in a second position to close its conduit from the atmosphere and open its conduit to said source of fiber supply;
- pneumatic means for creating an air flow in each of said satellite conduits from their respective two-position valves towards their respective feed ducts;

f. electromechanical gating means associated with each of said groups for selectively connecting each of the feed ducts pneumatically to their satellite conduits; and

g. control means comprising:

- means for sensing a need for fibers in each of said feed ducts, said sensing means including a sensor switch associated with each of said feed ducts which is actuated by a need for fibers;
- first timer switches, one for each of said feed ducts, which are connected in series with respective sensor switches of said sensing means, each of said first timer switches being effective for shifting its respective two-position valve to its second position for a first period of time to initiate a feeding cycle when its corresponding sensor switch is actuated by a need for fibers, said first timer switches being arranged so that only one of said two-position valves may be in its second position at any one time; and
- second timer switches, synchronized with said first timer switches, for controlling said gating means so that a feed duct whose sensor switch initiates a feeding cycle will be pneumatically connected to its corresponding satellite conduit for the entire period of time that said two-position valve is in its second position and for a second period of time thereafter, whereby fibers can be supplied to a feed duct in one of said groups of machines for a first period of time and immediately thereafter a purging air can be directed to said feed duct for a second period of time while fibers are supplied to a feed duct in another of said groups of machines during said second period of time.

3,851,926

PIPE ARTICULATION

Walter Merz, Kuesnacht, Switzerland, assignor to Swiss Aluminium, Ltd., Neuhausen am Rheinfall, Germany

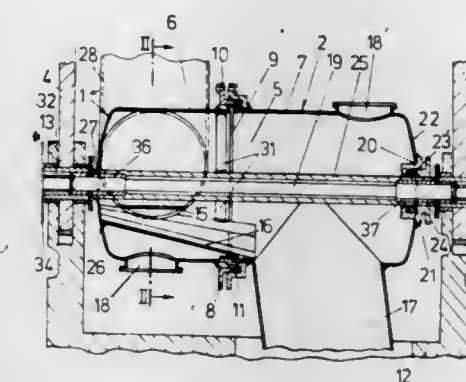
Filed Apr. 13, 1973, Ser. No. 351,088

Claims priority, application Switzerland, Apr. 14, 1972, 5583/72

Int. Cl. B65g 53/52

U.S. Cl. 302-29

9 Claims



1. A pipe articulation, for use in changing the direction of flow of particulate solid materials in a conveyor for particulate solid materials, comprising an inlet duct, an outlet, and first and second housing parts defining a chamber, the housing parts being arranged to rotate relatively to each other about a substantially horizontal axis, the inlet duct intersecting the first housing part, whereby the particulate material is conveyed at relatively low velocity into said first housing part and the outlet being in the second housing part, said inlet duct and said outlet duct being at an angle relative to said horizontal axis whereby the particulate material is conveyed out of said pipe articulation through said outlet, in a direction different than the direction in which it was conveyed into said inlet duct, said inlet direction depending on the relative rotation of said housing parts, the inlet duct having a first fluidising floor, and the first housing part having a second fluidising floor, whereby the particulate matter may be maintained in a fluid-

dised condition to facilitate conveyance through said pipe articulation.

3,851,927

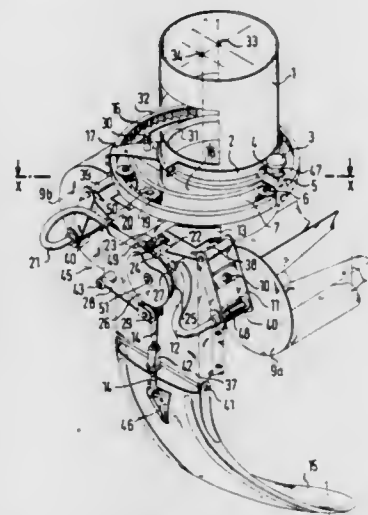
APPARATUS FOR UNIFORMLY DISTRIBUTING MATERIAL DISCHARGED FROM A BLOWER PIPE LINE
Ernst Weichel, Postfach 30, 7326 Geiningen, Germany
Filed May 21, 1971, Ser. No. 145,086

Claims priority, application Germany, May 22, 1970, 2024932

Int. Cl. B65g 65/32

U.S. Cl. 302-60

27 Claims



1. Apparatus for uniformly distributing material issuing from a blower pipe line onto a storage surface, including support means arranged to be detachably connected to the discharge end of the pipe line, a deflecting flap connected to said support means and arranged to be positioned below and in the path of the material discharged from the pipe line, at least one wind wheel arranged to be located in the path of the material discharged from the pipe line and driven by the discharge from the pipe line, means associated with said deflecting flap and said wind wheel and arranged for rotating said deflecting flap about the downward projection of the axis of the discharge end of the pipe line, said means including a cam disc for angularly displacing said deflecting flap about an axis transverse to the axis of the discharge end of said pipe line, wherein the improvement comprises that said support means depend downwardly from the discharge end of said pipe line, said deflecting flap having its upper end connected to said support means at a position spaced below the discharge end of said pipe line, a pair of said wind wheels arranged with their axes of rotation extending transversely of the axis of the discharge end of said pipe line and disposed in laterally spaced relationship and positioned on opposite sides of the axis of the discharge end of said pipe line, so that the radially outer peripheries of said wind wheels are spaced apart, said wind wheels mounted on said support means for rotation in an annular path located in a plane below the discharge end of said pipe line and approximately perpendicular to the axis of the discharge end of said pipe line, said wind wheels extending forwardly from the upright plane containing the upper end of said deflecting flap toward the axis of the discharge end of the pipe line, and each of said wind wheels being in operative connection with said means for rotating said deflecting flap.

3,851,928

BRAKING SYSTEMS

Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions, Limited, Birmingham, England
Filed May 30, 1973, Ser. No. 365,190

Claims priority, application Great Britain, May 30, 1972, 25170/72

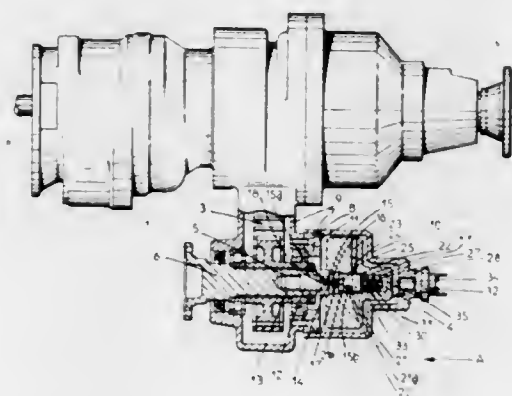
Int. Cl. B60t 8/16

U.S. Cl. 303-21 CG

5 Claims

1. A vehicle anti-skid braking system including an inertial skid sensor comprising a flywheel mounted on a shaft for

movement about and parallel to the longitudinal axis of the shaft, a sealed chamber containing a viscous fluid within the flywheel into which the shaft extends, the portion of the shaft within the chamber being provided with a piston which divides the chamber into two portions, a fluid passageway between said chamber portions incorporating a fluid flow restrictor, two sleeves encircling a portion of the shaft within the chamber, the sleeves being arranged in end to end configuration and adjacent ends of the sleeves being provided with co-operating cam surfaces, one sleeve being connected with the shaft and the other being in screw-threaded engagement at its outer periphery with an internally screw-threaded portion of the wall of the chamber so that the relative axial positions of said other sleeve and the flywheel can be adjusted, locking means carried by the flywheel in order to lock the flywheel and said other sleeve in a fixed axial relationship, and resilient



means biasing the co-operating cam surfaces into mutual engagement so that relative rotation between the shaft and flywheel causes the cam surfaces to displace the flywheel axially relative to the shaft, said axial movement of the flywheel relative to the shaft being damped by displacement of the viscous fluid from one portion of the chamber to the other via the flow restrictor, the sensor being arranged to be driven at a speed proportional to the speed of a braked wheel of the vehicle and arranged to extend substantially parallel to the longitudinal axis of the associated vehicle so that the axial movement of the flywheel caused by the tendency of the flywheel to over-run the shaft in response to a wheel deceleration in excess of a predetermined level indicating a skid condition is opposed by the linear inertia of the flywheel, said axial movement of the flywheel being arranged to reduce the braking torque exerted so as to relieve the skid condition.

3,851,929

BRAKING MECHANISM TENDING TO ELIMINATE LOCKING

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 7, 1973, Ser. No. 339,007

Claims priority, application France, Mar. 9, 1972, 72.8305

Int. Cl. B60t 8/02

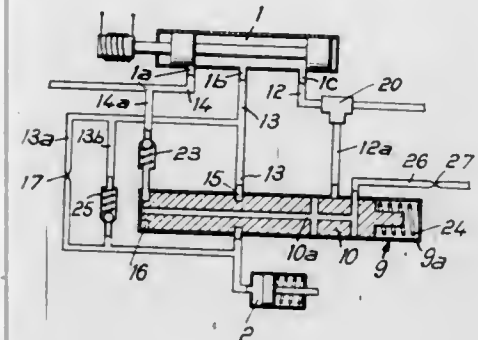
U.S. Cl. 303-21 F

8 Claims

1. An anti-locking braking assembly for a vehicle which comprises:

- a source of fluid under pressure;
- a receiving member means coupled to a brake of a wheel of said vehicle;
- a sensing means detecting the dynamic state of said wheel;
- a first conduit means including a control valve means responsive to said sensing means, said control valve means having an exhaust conduit means, said first conduit means capable of placing said receiving member means in fluid communication with said source of pressurized fluid via said control valve means;
- a distributor means having two positions, said distributor means being disposed in said first conduit means between said control valve means and said receiving member means and dividing said first conduit means into first and

second portion means, said first portion means extending from said control valve means to said distributor means, said second portion means extending from said distributor means to said receiving member means, said distributor means comprising first and second guide means said first guide means enabling said distributor means to maintain a first stable position to provide fluid communication between said first and second portion means, said second guide means enabling said distributor to maintain a sec-



ond stable position whereby fluid communication between said portion means is interrupted upon detection by said sensing means of an abnormal state of said wheel as long as the pressure of said fluid is not appreciably decreased; and

a second conduit means including a fluid flow limiter means connecting said first and second portion means of said first conduit means in shunt relationship with respect to said distributor means.

3,851,930

BRAKING MECHANISM HAVING AN ANTI-LOCKING SYSTEM

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

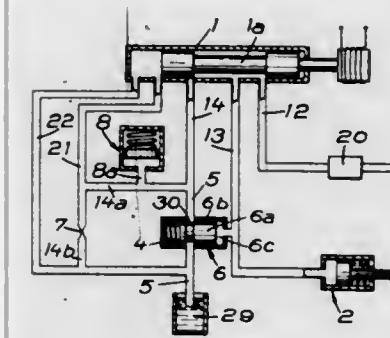
Filed Mar. 7, 1973, Ser. No. 339,009

Claims priority, application France, Mar. 9, 1972, 72.8306

Int. Cl. B60t 8/06

U.S. Cl. 303-21 F

4 Claims



1. Improved braking mechanism having an anti-locking system for at least one wheel of a vehicle comprised of a source of fluid under pressure controlled by the driver, brake operator means receiving said fluid and connected to a brake of said wheel, a valve having two positions controlled by a means detecting abnormal deceleration of said wheel and able to place said brake operator means selectively in fluid communication with said source of fluid under pressure and with a first exhaust pipe including a flow-limiter and a first accumulator wherein said first accumulator is interposed between said control valve and said flow-limiter, the improvement characterized by a second exhaust pipe connected to said first exhaust pipe in parallel flow to said flow-limiter, said second pipe comprising a valve member constituted by a moving member of a second accumulator connected to a pipe supplying said brake operator means between said control valve and said brake operator means, said moving member being in a position to open the second pipe when the volume of said accumulator is minimal.

3,851,931

REVERSIBLE ENDLESS TRACK FOR VEHICLES

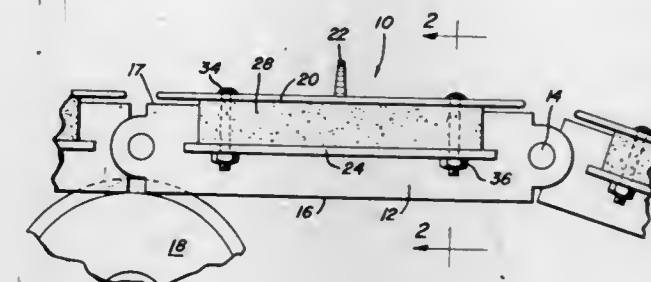
Angelo J. Crisafulli, Box 1051, Glendive, Mont. 59330

Filed Aug. 14, 1973, Ser. No. 388,208

Int. Cl. B62d 55/08

U.S. Cl. 305-54

9 Claims



1. An endless track assembly for crawler type tractors of the type having supporting rollers and the like comprising a pair of substantially parallel links adapted to be pivotally connected to form an endless track chain, a track pad connected with each pair of links, and means removably connecting the track pads to the links to enable the links to be reversed and the endless track chain to be turned inside out, said means connecting the pad to the links including fastening means connected with the pad and connected with the links from either longitudinal edge of the links with equal facility whereby the links may be connected to the pads with either edge facing the supporting rollers for the track assembly, each link being provided with a longitudinally extending flange along each side thereof, said fastening means including bolts extending through each flange on each link and through the track pad, and spacer blocks disposed between the flanges and pads.

3,851,932

MASTER LINK FOR A CRAWLER TRACTOR

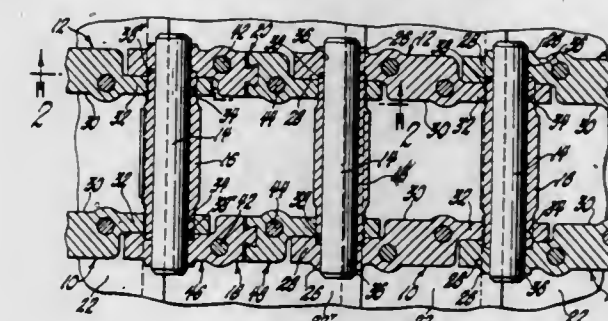
Thomas A. Story, Aurora, and Natabara Khuntia, Hudson, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,790

Int. Cl. B62d 55/20

U.S. Cl. 305-58

1 Claim



1. In a crawler tractor track; a master coupling link for detachably connecting the ends of said track comprising a pair of transversely spaced link members, a track shoe having a flat plate portion extending between said link members, each of said link members having two longitudinally extending separable sections each of which has an outer end portion defining a bore hingedly connected with an end of said track and an inner end portion, said inner end portion of one of said sections being formed with a dove-tail slot having a longitudinal center axis which is offset from the longitudinal center axis of the outer end portion formed with said one of said sections, the inner end portion of the other of said sections being formed with a dove-tail projection having a longitudinal center axis which is offset from the longitudinal center axis of the outer end portion formed with said other of said sections said dove-tail projection adapted to be located within said dove-tail slot to interlock said sections, the dove-tail slot and projec-

tion forming a juncture that is located in a plane perpendicular to the plane of the track shoe so as to prevent separation of the sections along the longitudinal axis of the link member and along an axis parallel to the axis of said bore, and a pair of cap screws extending through said track shoe into said two sections of each link member along a pair of axes that are parallel to and on opposite sides of said juncture and cooperating with the flat plate portion of said track shoe to prevent relative movement of said sections along the longitudinal axis of the dove-tail slot and projection, each of said cap screws extending into one of said two sections only.

3,851,933

HYDRODYNAMIC FLUID-FILM BEARINGS

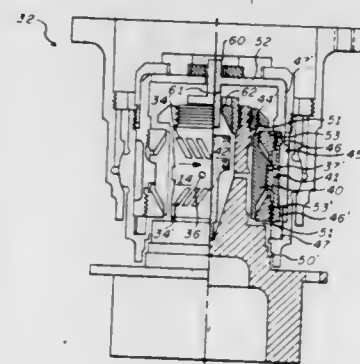
Peter E. Jacobson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,899

Int. Cl. F16c 35/00

U.S. Cl. 308—9

10 Claims



1. A hydrodynamic journal bearing having a specified radial load capacity suitable for operation over a prescribed range of temperatures comprising

journal means including a selected material having a first coefficient of thermal expansion and a specific radial dimension,

sleeve means including at least two selected materials having second and third coefficients of thermal expansion, which are different from each other and each of which is different than the coefficient of thermal expansion of the journal means, and specific radial dimensions, said sleeve means being positioned relative to said journal means to provide a space therebetween, and

fluid means filling said space between said journal means and said sleeve means having a coefficient of viscosity which varies logarithmically with temperature and coats with said selected materials having respective coefficients of thermal expansion whereby said space between said journal and said sleeve means varies as a linear function of temperature thereby providing a hydrodynamic bearing having a radial load capacity which remains substantially constant over said prescribed range of temperatures.

3,851,934

JOURNAL FOR ROLLS

Walter Kufner, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Mar. 30, 1973, Ser. No. 346,583

Claims priority, application Germany, Apr. 21, 1972, 2219466

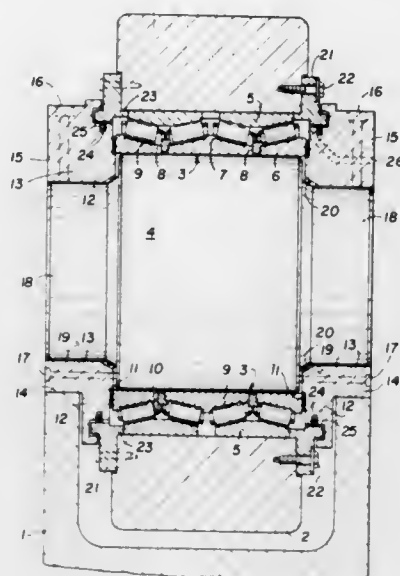
Int. Cl. F16c 13/00, 33/72

U.S. Cl. 308—15

8 Claims

1. A journal for universal mill rolls and the like comprising a mill roll located in a supporting structure having opposed side walls, said mill roll being provided with a roller bearing and axle located within its bore and supported on the side walls, ring shaped cover members sealing each of the axial

ends of said roller bearing, said ring shaped covers being formed integrally with a slide member having a rectangular shape when viewed in plan, said slide member being insertable



within a rectangular opening in the side wall of said supporting structure and having a pair of extending arms engaging the edge of said side wall and means for removably connecting said arms to said side wall.

3,851,935

PIVOTED PAD BEARINGS

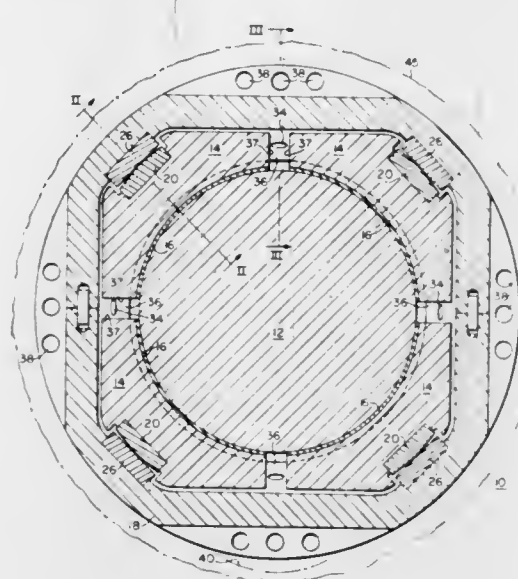
William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,160

Int. Cl. F16c 17/06

U.S. Cl. 308—73

3 Claims



1. A tilting pad journal bearing comprising: an array of four tiltable pad members which are annularly disposed so as to encircle a shaft, a stationary housing surrounding said tiltable pad members, means permitting radial and flexural movement to a shaft disposed inwardly of said pad members, said means comprising a plurality of key members disposed peripherally about said pads, the radially outwardly disposed surfaces of said tiltable pad members defining a generally conical cross-sectional shape across both the transverse and longitudinal axes of each pad, said housing having a mating circumferentially disposed channel having a conically-shaped cross-section for receiving said tiltable pad members.

3,851,936

ATTACHMENT DEVICE FOR MODULAR UNITS

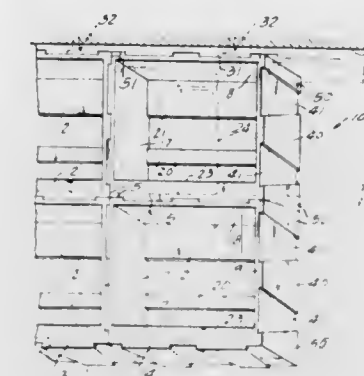
Richard Muller, Highland Park, Ill., assignor to Donat Talbot Archambault, Pools Park, Ill.

Filed Aug. 16, 1973, Ser. No. 388,986

Int. Cl. A47b 87/00, 87/02

U.S. Cl. 312—108

2 Claims



1. A modular unit assembly comprising a plurality of inter-fitting four-sided units with each side of each unit having alternating flutes and ribs extending continuously along the depth from a front to a back of the units, each rib having undercut side edges along the depth thereof, each rib increasing in width along the depth thereof at a wedge angle, and each flute decreasing in width along the depth thereof in complimentary relationship with the ribs, heights of the ribs and depths of the flutes being equal and the undercut edges of the ribs providing a dovetail interlock holding the ribs against the bottoms of the flutes and forming a continuous contact between outside surfaces of interfitting units and the mating wedge angles of the ribs and flutes locking the interfitting units in axially aligned relation.

3,851,937

MODULAR SPICE RACK

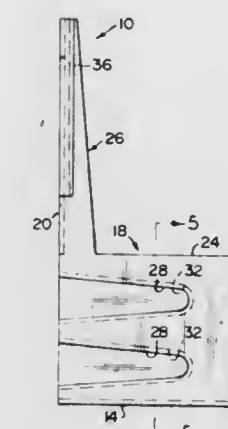
Emanuel A. Winston, 871 Marian Ave., Highland Park, Ill. 60035

Filed May 29, 1973, Ser. No. 364,810

Int. Cl. A47b 73/00, 87/02

U.S. Cl. 312—111

3 Claims



1. A modular rack device, said device comprising: compartment means comprising a bottom and a plurality of walls, said plurality of walls including a front wall attached to said bottom, a plurality of side walls attached to said bottom and front wall, said side walls having lower portions of substantially the same size as said front wall and substantially V-shaped upper portions extending above said lower portions, and a rear wall extending in corresponding relation to said side walls and attached to said bottom and side walls to define said compartment means having an open top and partially open front; and attachment means formed on two of said side walls, said attachment means comprising a plurality of substantially V-shaped grooves formed in said lower portion of one of said side walls and a plurality of substantially V-shaped tongues

formed in said lower portion of another of said side walls, said attachment means further comprising a substantially V-shaped ledge formed on said side wall having said grooves formed thereon along the intersection of said upper portion with said rear wall and a substantially V-shaped slot correspondingly formed on said side wall having said tongues formed thereon, whereby a plurality of said devices may be attached to one another.

3,851,938

STORAGE DEVICE

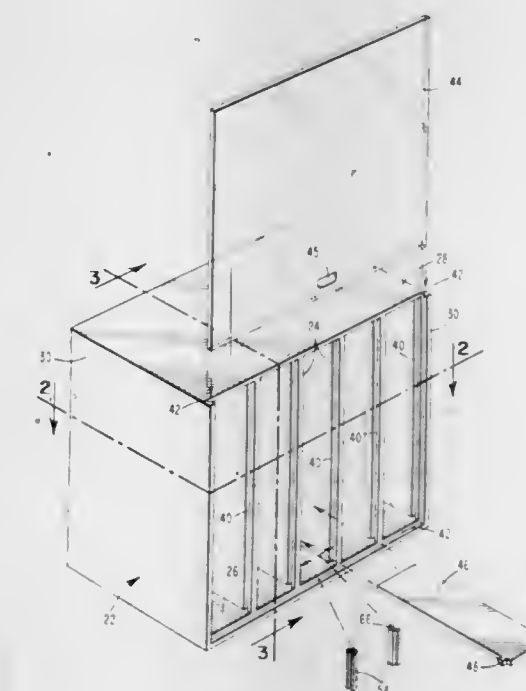
Thomas R. McCowan, 430 Circle Eight Ln., Prescott, Ariz. 86301, and Thomas E. Ritter, Box 10, Kirkland, Ariz. 86332

Filed Sept. 24, 1973, Ser. No. 399,968

Int. Cl. A47f 3/00

U.S. Cl. 312—117

7 Claims



1. A partitionable container for removably storing a plurality of articles in separate readily erectable compartments comprising a bottom wall, a rear wall, a top wall and opposite outer sidewalls including vertical slots formed in the opposing inner surfaces thereof, at least one vertically adjustable shelf including tabs projecting outward from the shelf sides into said vertical slots, first shelf support means for supporting said at least one shelf at a selected height, and second shelf support means for insertion into said vertical slots beneath said tabs and cooperating with said first shelf support means for supporting said shelf at said selected height.

3,851,939

CABINET SLIDING PANEL AND TRACKING ARRANGEMENT

Louis Dean Benasutti, Fairborn, and Robert C. Reid, Springfield, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,592

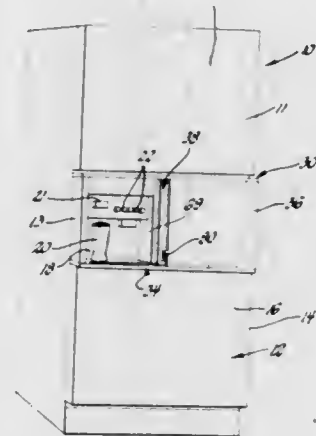
Int. Cl. A47f 3/00

U.S. Cl. 312—138 R

3 Claims

1. In a refrigerator cabinet having an insulated door for closing a compartment therein, said insulated door having a recessed chamber in the outer shell thereof, a pair of vertically spaced horizontally extending top and bottom structural members extending between the side edges of said door so as to define the upper and lower extremities of said chamber, a fixed panel and a movable panel located in side-by-side relation between said structural members such that said panels have their opposed inner edges spaced apart a defined distance, said movable panel normally closing said chamber, means for mounting said movable panel for horizontal sliding

movement between its chamber closed position and an open position in which it underlies said fixed panel, said mounting means comprising first and second pairs of mirror image track grooves in each of said structural members, said movable panel including an integral inwardly offset flange formed along its inner edge and coextensive therewith so as to underlie said fixed panel inner edge whereby said offset flange bridges the space between said fixed and movable panels, said movable panel having outer follower means carried by the upper and lower edges thereof for movement in said second track grooves, said offset flange having inner follower means carried by the upper and lower edges thereof for movement in said first track grooves, said first track grooves having out-



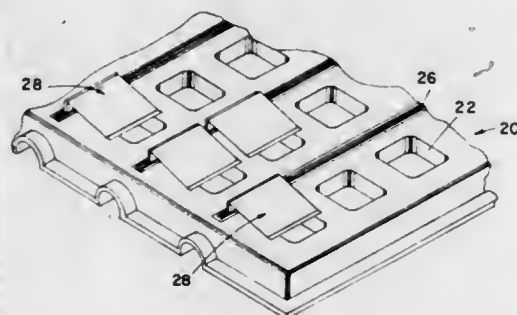
wardly offset ends adjacent said fixed panel inner edge for receiving said offset flange follower means when said movable panel is in its closed position, said first track grooves positioned in spaced relation rearwardly of said fixed panel and pitched at a predetermined angle outwardly and rearwardly from said first track grooves outwardly offset ends, whereby upon initial sliding movement of said movable panel to its service area open position said inner follower means move from said offset ends of said first track grooves causing said movable panel inner edge to clear said fixed panel inner edge, and whereby upon continued sliding movement the pitched angle of said first track grooves allows said movable panel to clear said fixed panel inner edge and slide in an uninterrupted manner to its open position behind said fixed panel.

3,851,940

TRANSPORT APPARATUS FOR UNIT DOSE CONTAINERS OF PHARMACEUTICAL MATERIALS
Kenneth D. Relyea, Grove City, Ohio, and John A. Santangelo, Metuchen, N.J., assignors to Drustar Unit Dose Systems, Inc., Grove City, Ohio

Filed Aug. 13, 1973, Ser. No. 387,905
Int. Cl. A47b 67/00

U.S. Cl. 312-234.5



1. An improved transport apparatus for the delivery and dispensing of unit dose pharmaceutical materials comprising, in combination, a tray means provided with a plurality of recesses spaced from another, each of said recesses being adapted to removably receive an individual pharmaceutical container, said tray means including means defining a slot disposed adjacent to each of said recesses; the improvement comprising container retaining means comprising an integrally formed flexible sheet of plastic material removably disposed

in said slot means and including a resilient flange portion extending over an adjacent container receiving recess in resilient force transmitting engagement with an individual container disposed in said recess, said flange portion including patient and pharmaceutical identifying indicia.

3,851,941

CONCEALED ENCLOSURE LATCH

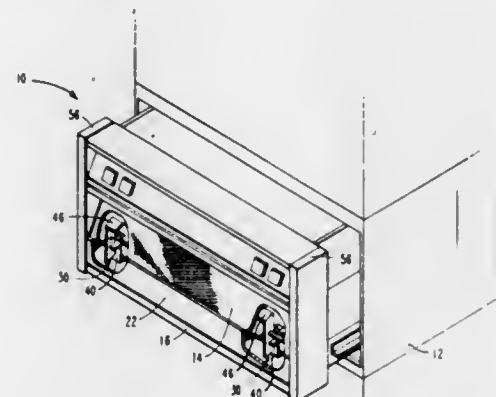
Robert F. Stebe, Thousand Oaks, Calif., assignor to VRC California Inc., Los Angeles, Calif.

Filed May 4, 1973, Ser. No. 357,178

Int. Cl. A47b 88/00

U.S. Cl. 312-333

7 Claims



1. In an electronic equipment enclosure having at least one chamber in which circuit components reside, the combination therewith of:

latch means disposed within the enclosure;
panel means mounted on the enclosure; and
door means mounted on the enclosure and movable between a first position which encloses the chamber and a second position which opens the chamber and permits removal of the circuit components therein;

said latch means extending between a support member in the enclosure and the door means and being engageable with the door means to maintain the door means in the first position and disengageable from the door means when manually actuated to permit movement of the door means into the second position, the panel means at least partially removably concealing the latch means from view while providing access to the latch means for manual actuation thereof when the panel means is at least partially removed.

3,851,942

METER BOX WITH VAULT LATCH

Howard W. Clay, and Donald E. Schmitt, both of Rockford, Ill., assignors to Reed Industries, Inc., Rockford, Ill.

Filed Dec. 3, 1973, Ser. No. 420,945

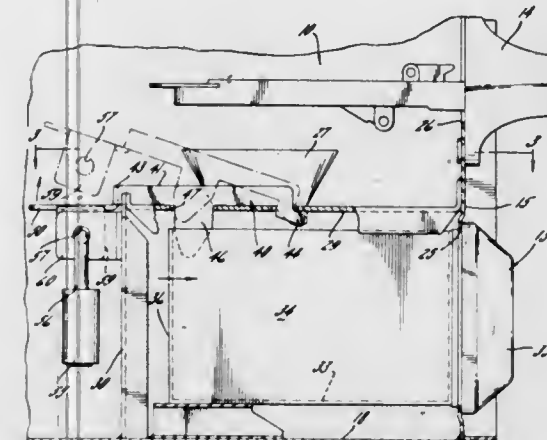
Int. Cl. A47b 88/22; E05c 3/00

U.S. Cl. 312-333

8 Claims

1. Apparatus for use with a coin-operated machine and comprising a box having upright side walls and an upright front wall, an opening formed through said front wall, a cash drawer having upright front and rear walls, said drawer normally being in a closed position within said box but being removable from said box through said opening, a key-operated locking mechanism mounted on one of said front walls and engageable with the other of said front walls to lock said drawer within said box, an access opening formed through one of the side walls of said box, a door normally covering said access opening and normally locked to said one side wall, and a support attached to at least one of the walls of said box, the improvement in said apparatus comprising, a latch mounted on said support and biased to a latched position, said latch having a first surface which, when said latch is in said latched position and said drawer is in said closed position, engages the rear wall of the drawer to hold the drawer in

its closed position, said latch being accessible through said access opening when the latter is uncovered and being manually movable to an unlatched position releasing the rear wall of said drawer, and said latch having a second surface positioned to engage the rear wall of said drawer as the latter is



moved rearwardly toward said closed position and operable as an incident to such engagement to cause camming of said latch to said unlatched position to enable movement of said drawer into said closed position whereupon the latch automatically returns to said latched position.

3,851,943

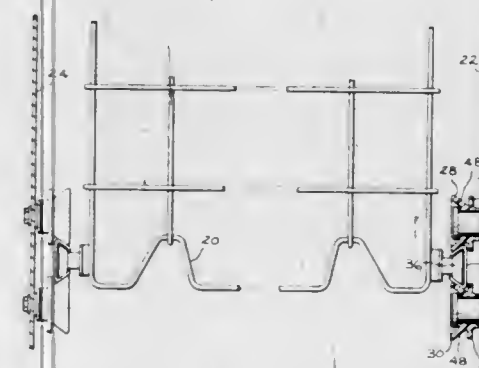
RACK SUPPORT ASSEMBLY IN A DISHWASHER
Matthew K. Afful, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,349

Int. Cl. A47b 88/04

U.S. Cl. 312-347

5 Claims



1. A dishwashing machine of the front-loading type having a wash chamber and an access opening thereto, a rack for supporting dishes to be washed slidably mounted in the chamber for movement between a loading position wherein the rack extends at least partially out through the access opening and a retracted position wherein the rack is fully within the chamber,

support means at each side of the rack including an elongated channel slide member having a substantially flat major body portion and upper and lower projecting flange portions converging toward each other whereby a load bearing surface is provided on the lower flange portion immediate said major body portion, said channel slide member further being disposed to extend generally in a horizontal orientation along the chamber side wall and slidably mounted for forward-rearward reciprocal movement in the direction of its extension, the load bearing surface being inclined relative to the major body portion whereby a center point taken on the load bearing surface is on a line forming an acute angle with the generally vertical surface of the major body portion of the channel slide member whereby the load resultant of rack load on the lower flange portion is oriented substantially near the shear center of the channel slide member.

3,851,944

CURRENT TRANSFORMER CONNECTOR

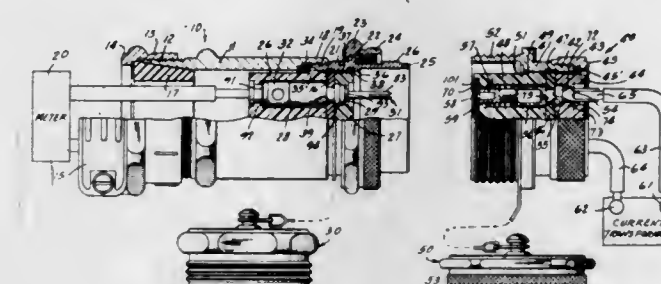
Albert E. Ganzert, Elmwood; Bronius Gaizauskas; Leonard Andrychowski, both of Chicago, and Nabil Mina, Northlake, Ill., assignors to Okzona Incorporated, Asheville, N.C.

Filed Mar. 30, 1973, Ser. No. 346,690

Int. Cl. H01r 31/08

U.S. Cl. 339-19

9 Claims



1. In an electrical connector of the type wherein an electrical circuit is continued over at least two conductor paths through engaged contacts of mated connector parts, the improvement therein comprising:

means for automatically shorting the conductor paths by shorting the contacts of one of said connector parts upon disengagement of said connector parts, said means including

an electrically conductive element mounted in said one connector part adjacent each of the contacts thereof; an electrically conductive shorting actuator movably mounted in each of said contacts of said one connector part and moved away from said conductive element by the corresponding contact of the other connector part upon mating of the connector parts; and

bias means for each of said actuators mounted to urge said actuators into electrical contact with said conductive element upon disengagement of the connector parts, each of said contacts of said one connector part including a hollow portion and each of said actuators including a first portion slidably mounted within and electrically contacting said hollow portion of a respective contact and a second portion having a bore for receiving and releasably engaging the corresponding contact of the other connector part and said bias means including a spring retainer carried on each said actuator and a respective bias spring mounted between said spring retainer and the part which includes the hollow portion of the respective contact.

3,851,945

ELECTRICAL CONNECTOR FOR FLEXIBLE FLAT CABLE

John Covell Collier, Farnworth, England, assignor to AMP Incorporated, Harrisburg, Pa.

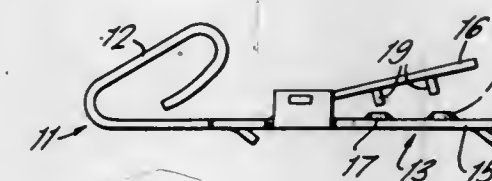
Filed Nov. 20, 1973, Ser. No. 417,664

Claims priority, application Great Britain, Nov. 29, 1972, 55027/72

Int. Cl. H01r 11/20

U.S. Cl. 339-97 C

3 Claims



1. An electrical contact made from sheet material having a part for connection to a flat conductor of a flat, flexible cable,

the part comprising first and second arms arranged in spaced, opposed relationship, the arms being relatively movable towards each other for crimp connection to a flat conductor of the cable, the first arm having an embossment in the form of a dome, the apex of the dome having a through aperture, the second arm having a lance extending towards and in alignment with the aperture so that on crimping, the lance initially pierces the cable and passes through the aperture, subsequent crimping pressure causing the embossment to flatten with a consequent reduction in area of the aperture, the sides of which aperture grip the lance and inhibit withdrawal of the lance from the aperture.

3,851,946

CABLE CONNECTING ASSEMBLY

Robert Edgar Piaget, deceased, 2136 Madison Rd., late of Cincinnati, Ohio 45208, and Dorothy R. Piaget, executrix, 4432 Homer Ave., Cincinnati, Ohio 45227

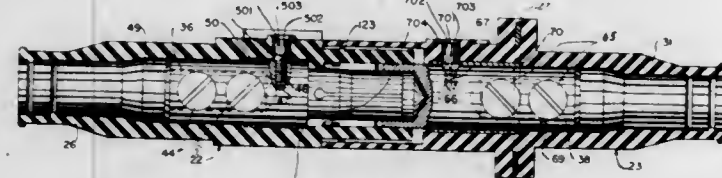
Continuation of Ser. No. 195,975, Nov. 5, 1971, abandoned.

This application Aug. 31, 1973, Ser. No. 393,270

Int. Cl. H01r 13/18

U.S. Cl. 339-259 R

12 Claims



1. In a cable connecting assembly, the combination of a male connector member including a body and a connector head including an outer portion, a frusto-conic intermediate section, and an inner section, the inner section and the intermediate section meeting at a circular contact line, with a female connector member including a body and an annular, open ended connector end portion having a substantially cylindrical socket therein for receiving the connector head of the male member, there being lengthwise slots in the connector end portion of the female member extending from the open end and dividing the end portion of the female member into a plurality of spring teeth, the normal diameter of the socket of the female member being less than the diameter of the contact line and substantially equal to the diameter of the outer portion of the connector head so that the teeth of the female member are engageable with the head of the male member at the contact line to resiliently engage the head of the male member while the outer portion of the head of the female member aligningly cooperates with a portion of said female member spaced from said contact line.

3,851,947

REFLEX REFLECTOR

James R. Montgomery, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1973, Ser. No. 400,241

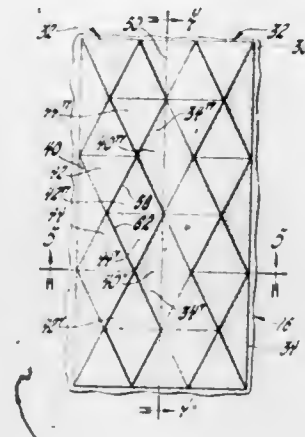
Int. Cl. G02b 5/12

U.S. Cl. 350-103

1 Claim

1. A reflex reflector comprising: an array of interfitting V-block shaped cube corners having three mutually perpendicular reflecting faces within a frontal rectangular boundary and intersecting at an apex, each of said cube corners including a first base bounded by a short side and the diagonals from the ends thereof to the apex, a second face bounded by a long side and the diagonals from the ends thereof to the apex including the diagonal common with the first face, and a third face bounded by the opposite short side and the diagonals from the

ends thereof to the apex including the diagonal common with the second face, the individual faces mating in the array with



the corresponding faces of juxtaposed adjacent cube corners to form a rectangular reflex strip.

3,851,948

HOLOGRAPHIC THERMOPLASTIC MEMORY SYSTEM

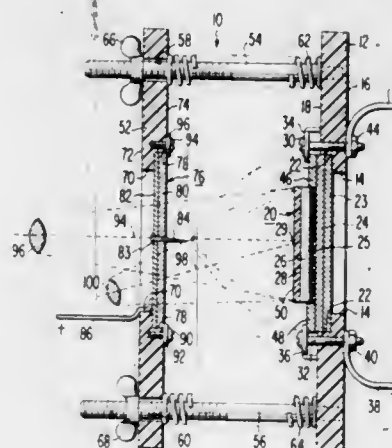
Robert Allen Gange, Belle Mead; Eugene Michael Nagle, Middletown, and Carl Charles Steinmetz, Mercerville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,305

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

6 Claims



1. A holographic memory system, comprising a multi-layer holographic storage device including a transparent thermoplastic recording medium having a large area for the storage of a large number of individual holograms, a photoconductive layer, and at least one layer providing light absorption, electrical conductivity and physical support, means to heat the entire area of said thermoplastic storage medium to a temperature just below the temperature at which said medium becomes plastic, means to place a uniform electric charge on said thermoplastic recording medium, and means to direct an object beam and a reference beam forming an individual hologram to and through a single selected small area of said storage medium and said photoconductor, whereby an electrically conductive pattern is formed in said photoconductive layer which results in a corresponding charge pattern thereon, said object beam and reference beam continuing on to said light absorption layer, whereby heat generated in said light absorption layer causes solely said small area of said recording medium to become plastic, so that it can assume a physical pattern determined by said charge pattern.

3,851,949

MICROSCOPE HAVING A PHOTOMETER

Winfried Kraft, Werdorf; Heiko Wasmund, Asslar, and Karl-Heinz Haas, Wetzlar, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

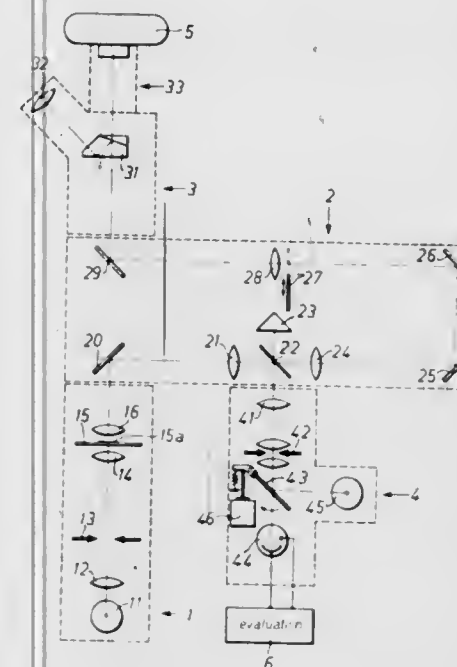
Continuation of Ser. No. 153,691, June 16, 1971. This application Jan. 8, 1973, Ser. No. 321,949

Claims priority, application Germany, June 18, 1970, 2029850; Apr. 10, 1971, 2117535

Int. Cl. G02b 21/18

U.S. Cl. 350-18

9 Claims



1. A microscope apparatus without an additional, separately disposed viewing telescope comprising:

- a first optical means defining a main optical path for microscopic examination of an object positioned on a stage, said first optical means comprising in a first subassembly an illuminator with a field lens and a radiant field stop, a condenser, and an objective positioned in a first housing; in a second subassembly, mirrors, optical lenses, and a movable light blocking stop, defining a folded portion of the main optical path and positioned in a laterally extending intermediate tube coupled to said first housing;
- second optical means for dividing said main optical path into an observation path and a measurement path, one of which is angularly displaced from said main path, said second optical means comprising a beam splitter and a triple mirror positioned in said intermediate tube;
- third optical means defining a restrictive aperture the area of which may be varied, said third optical means comprising a measuring slit, said aperture being located in said measurement path between a folding mirror and a lens, said beam splitting means causing an image of said aperture to be formed in said observation path;
- fourth optical means for ocular observation comprising an ocular positioned in an ocular tube coupled to said intermediate tube for simultaneously observing the images of said object and of said aperture, said image of said aperture positioned to indicate that portion of said object from which the illumination will be measured;
- fifth optical means for illuminating said aperture to permit observation thereof, said optical means comprising a light source and said folding mirror;
- sixth optical means positioned in said measurement path to photometrically receive and measure the intensity of light from said main optical path after passage of said light through said lens and said measuring slit and impingement on a photomultiplier; and
- said triple mirror positioned in said measurement path and located after said beam splitter in said intermediate tube for reflecting the image of said aperture into said observation path.

3,851,950

PROJECTION SCREEN

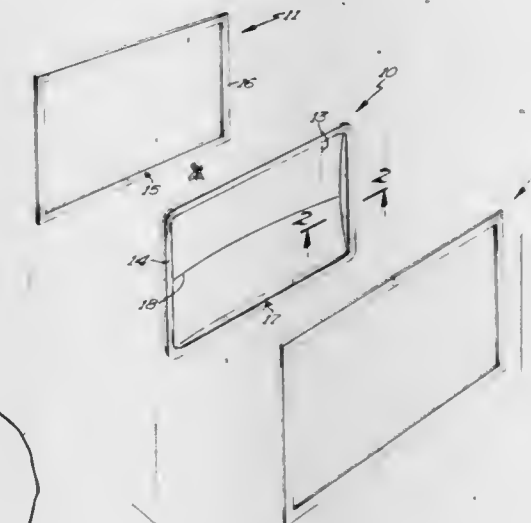
William A. Andres, Hopkins; Larry D. Quanrud, Minneapolis; Charles J. Koppa, Wayzata; Larry F. Becker; William K. Christoffersen, both of Minneapolis, and James L. Keely, Wayzata, all of Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.

Filed June 18, 1973, Ser. No. 370,950

Int. Cl. G03b 21/56

U.S. Cl. 350-125

17 Claims



1. A front projection screen assembly which comprises: an aluminum or aluminum alloy member having a reflecting surface provided with random non-directional surface irregularities formed by the etching of a smooth, bright surface which is free of surface defects; and means for supporting said aluminum member including pivot means engaging said aluminum member for preventing a translation of said aluminum member with respect to said supporting means in at least one direction while allowing said aluminum member to pivot with respect to said supporting means about said pivot means.

3,851,951

HIGH RESOLUTION LASER BEAM RECORDER WITH SELF-FOCUSING ACOUSTO-OPTIC SCANNER

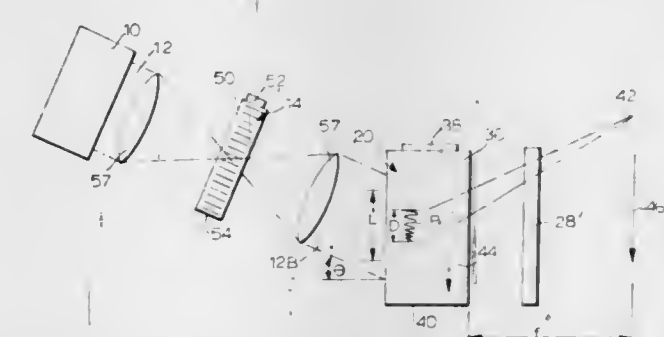
Jason H. Eveleth, Mountain Lakes, N.J., assignor to Isomet Corporation, Oakland, N.J.

Filed Jan. 16, 1974, Ser. No. 433,699

Int. Cl. G02f 1/28

U.S. Cl. 350-161

16 Claims



1. An optical scanner system comprising an acousto-optic diffraction cell, means for introducing acoustic pulses to said cell for travel along the cell, each pulse having a band of acoustic frequencies which vary between the leading end of the pulse and the trailing end of the pulse; means for applying a beam of light to said cell at an angle for diffraction from each pulse, whereby light is focused by diffraction from each pulse to a spot in an image plane, and means providing an image aperture at said image plane across which each spot is scanned in accordance with the movement of the corresponding pulse along said cell, the dimension of said image aperture

along the scanning direction of each spot being very large compared to the corresponding dimension of the spot.

3,851,952

MACRO-ZOOM LENS SYSTEM

Siegfried Werz, Munich, and Johann Zanner, Jr., Unterhaching, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

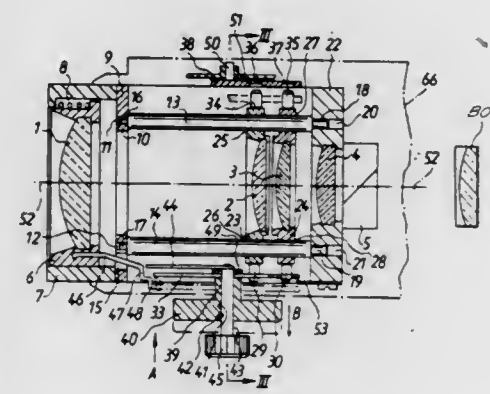
Filed May 7, 1973, Ser. No. 358,095

Claims priority, application Germany, May 6, 1972, 2222411

Int. Cl. G02b 15/00

U.S. Cl. 350—187

3 Claims



1. A macro-zoom lens system comprising a fixed base objective and an adjustable portion having four optical elements; focusing means for adjusting the position of a first one of said four optical elements; focal length adjusting means for adjusting the position of a second and third of said optical elements relative to each other and to the fourth of said optical elements which is stationarily arranged, said focal length adjusting means comprising two control discs, one constituting a macro-adjusting means engageable with said second and said third optical element for adjusting the position of said second and said third element in fixed relationship to each other relative to said fourth element from a telephoto position to a close-up range position, said discs being turnable about a common axis, one of said discs being provided with a pair of cam tracks for close-up photography and the other with a pair of varifocal cam tracks, shiftable means including link means connecting said discs movable together in the direction of said axis between two end positions, in one of which said second and said third optical element are connected to the cam tracks of one of said discs while in the other of said end positions said second and said third optical element are connected to the cam track of the other of said discs, and means for coupling said discs for simultaneous rotation about said axis.

3,851,953

PHOTOGRAPHIC LENS SYSTEM HAVING SHORT OVERALL LENGTH AND LARGE APERTURE RATIO

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,599

Claims priority, application Japan, May 4, 1972, 47-44325

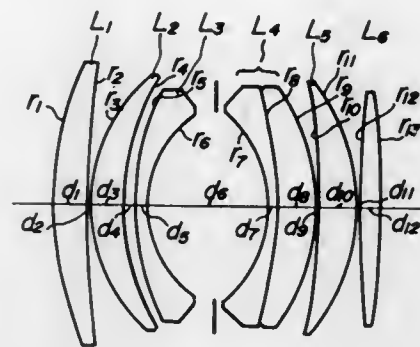
Int. Cl. G02b 9/62

U.S. Cl. 350—215

1 Claim

1. A photographic lens system having a short overall length and a large aperture ratio, which is constructed as six components and seven lenses and consists of a first component of a positive meniscus lens that has its object side a convex surface, a second component of a positive meniscus lens that has its object side a convex surface, a third component of a negative meniscus lens that has its object side a convex surface, a fourth component of a negative meniscus doublet that has its image side a convex surface, a fifth component of a positive meniscus lens that has its image side a convex surface, and a

sixth component of a positive lens, and in which radii of curvature of the lens surfaces r , air spaces and axial thicknesses of



the lenses d , refractive indices n and Abbe's numbers, all counted from the object side are given in the following table:

Lens	Radii r	Air spaces and thicknesses	n	v
L_1	$r_1=0.78185$	$d_1=0.08861$	1.8348	42.8
	$r_2=2.59845$	$d_2=0.00232$	1	
L_2	$r_3=0.42498$	$d_3=0.08784$	1.8061	40.8
	$r_4=0.60180$	$d_4=0.03436$	1	
L_3	$r_5=0.69415$	$d_5=0.02606$	1.7847	26.22
	$r_6=0.28654$	$d_6=0.30888$	1	
L_4	$r_7=0.31581$	$d_7=0.02645$	1.7847	25.7
	$r_8=0.99807$	$d_8=0.09981$	1.8061	40.8
L_5	$r_9=0.52703$	$d_9=0.00193$	1	
	$r_{10}=1.50994$	$d_{10}=0.09691$	1.713	54.0
L_6	$r_{11}=0.50290$	$d_{11}=0.00232$	1	
	$r_{12}=3.38224$	$d_{12}=0.05174$	1.713	54.0
	$r_{13}=1.86805$		1	

Overall focal length $f=1.0$

Backfocal length $f_b=0.741$ and

Overall length $L=0.82723$

3,851,954

OPHTHALMOSCOPIC CAMERA

Naomi Kato, Yokohama, and Morio Tao, Kamakura, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,841

Claims priority, application Japan, Dec. 25, 1971, 46-2147

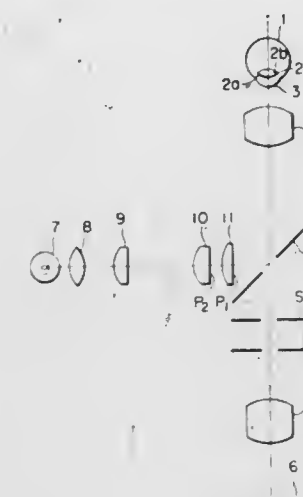
Int. Cl. A61b 3/14

U.S. Cl. 351—7

4 Claims

1. An ophthalmoscopic camera comprising:
a photographic optical system including an objective lens for forming an image of the fundus of an eye;
an illuminating optical system for illuminating the fundus of the eye including a light source, first and second condenser lenses;
a mirror disposed at the intersection between the two optical axes of said photographic and illuminating optical systems for directing the light rays emanating from the light source into said fundus of the eye through said objective lens;
said mirror having an aperture for passing therethrough the image-forming light rays reflected from the fundus of the eye;
a ring-shaped aperture provided in said illuminating optical system and substantially conjugate with a cornea of the eye with respect to said objective lens for preventing the light rays reflected by the corneal surface from entering into the path of said image-forming rays;

a center obscuring stop provided in said illuminating optical system and substantially conjugate with the median point between the front and rear surfaces of a crystalline lens of the eye with the respect to said objective lens for preventing the light rays reflected by the front and rear surfaces of the crystalline lens from entering into the path of the image-forming light rays; and



an aperture stop for passing therethrough only said image-forming light rays passed through said aperture of said mirror, substantially conjugate with the median point between an image of said ring-shaped aperture and an image of said center obscuring stop formed by the objective lens with respect to said objective lens.

3,851,955

APPARATUS FOR CONVERTING MOTION PICTURE PROJECTORS FOR STEREO DISPLAY

Arthur P. Kent, Kew Gardens, and Mortimer Marks, Beechurst, both of N.Y., assignors to Marks Polarized Corporation, Whitestone, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,733

Int. Cl. G03b 35/08

U.S. Cl. 352—60

8 Claims



1. Apparatus for producing stereo motion picture displays comprising in combination with a single film motion picture projector, a projection lens for said projector, a single film strip having a series of image frames with a pair of corresponding stereo images in each frame, an opaque band extending across the center of each frame for separating the images of the stereo pair along their abutting margins, said opaque band having a width of 10 to 12 percent of the image frame, a hollow housing, means to secure one end of the housing to the projection lens, a prism assembly carried by the opposite end of the housing, said prism assembly comprising a first and a second angularly adjustable prism, said first and second prisms abutting each other at their inner edges, a light polarizer laminated to each of said prisms, the plane of polarization of the polarizer of the first prism being disposed normal to the plane of polarization of the polarizer of the second prism, said prism abutment being parallel to and in optical alignment with but spaced from the opaque band between the stereo pairs when they are being projected, said prisms each receiving one of the images of the stereo pair in each of the image frames

and directing them in overlapped relationship together with the opaque band upon a screen with the plane of polarization of the two images of a stereo pair being normal to each other and the opaque band at opposite edges of the screen.

3,851,956

PHOTOGRAPHIC OVERLAPPING APPARATUS HAVING SAFETY DEVICES FOR MOTION PICTURE CAMERAS

Yoshio Komine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Shimomaru-ku, Ohta-ku, Tokyo, Japan

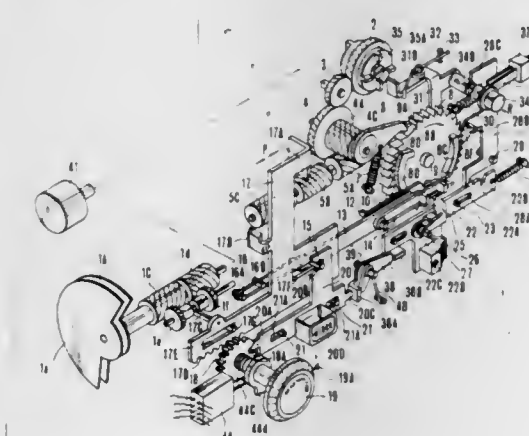
Filed Sept. 11, 1973, Ser. No. 396,300

Claims priority, application Japan, Sept. 14, 1972, 47-92337

Int. Cl. G03b 21/36

U.S. Cl. 352—91 C

14 Claims



1. An overlapping photographing device for a motion picture camera comprising;
a shutter having a variable-exposure aperture,
means for driving said shutter,
means operatively coupled to said driving means for varying said shutter aperture in a fade-out sequence and in a fade-in sequence,
means for alternatively transporting a film in a forward or a reverse direction in accordance with said fade-out sequence and in a film reversing sequence of said overlapping photographing,
switching means for operating said film transporting means to establish it in one of a forward transport state and a reverse transport state,
overlapping photographing control means selectively operable in synchronization with said shutter driving means for automatically controlling the operation of said shutter aperture varying means and said switching means at selected times, said control means being arranged not returnable to an original rest position thereof when once operated, and
a safety mechanism arranged in interlocking relationship with said control means, said mechanism having a manually operable member which when actuated terminates the operation of said control means at any time during the operation thereof.

3,851,957

AUTOMATIC SOUND FILM PROJECTOR-PLAYER

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla. 74136

Filed Mar. 23, 1972, Ser. No. 237,253

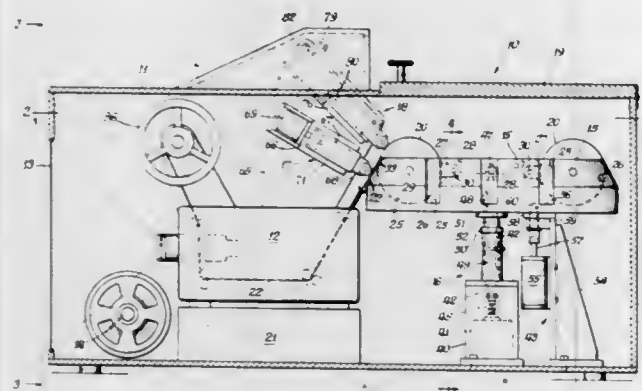
Int. Cl. G03b 1/56, 23/02

U.S. Cl. 352—123

6 Claims

1. An automatic sound film cartridge projector apparatus comprising:
a housing having a plurality of side walls;
a self-threading sound film projector disposed within said housing;
screen projection means supported on one of said side walls for viewing the pictures reproduced by said projector;

selectively positionable film cartridge magazine means for retaining a plurality of film cartridges operatively associated with said projector, said magazine means comprising a rotatable drum formed with a plurality of radial cartridge retention slots, said drum being mounted to rotate in a horizontal plane adjacent to said projector; first electrically actuated drive means for feeding the film from a selected cartridge in said magazine means to said



projector, said first electrically actuated drive means comprising an electric motor carrying a film drive wheel and a solenoid operatively associated with said motor and operable when actuated to move said drive wheel towards said drum into contact with the film for feeding the film along the drum into said projector; and second electrically actuated drive means for rewinding the film into the cartridge upon completion of play by said projector.

3,851,958

PHOTOGRAPHIC SYSTEM FOR PROCESSING AND PROJECTING TRANSPARENCIES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

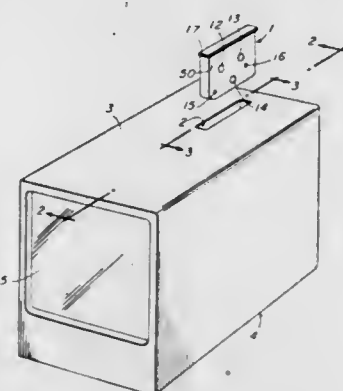
Continuation of Ser. No. 227,080, Feb. 17, 1972, abandoned.

This application July 31, 1973, Ser. No. 384,382

Int. Cl. G03c 11/00

U.S. Cl. 352-130

45 Claims



1. Apparatus for use with a motion picture film handling cassette to effect film processing and projection operations including a substantially opaque housing, a strip of exposed unprocessed motion picture film, a normally inoperative processing station for treating an incremental section of such film strip to develop viewable images thereon, a projection station including access means for permitting illumination from an externally mounted source to be directed through an incremental section of such film strip, and means responsive to externally mounted actuating means for progressively advancing such film strip through such processing station and such projection station, said apparatus comprising:

means for receiving such cassette in an operative position; means for selectively precluding light rays from reaching such access means;

a normally inoperative source of illumination positioned to be in cooperative relationship with such access means when such cassette is positioned in said receiving means; means for selectively energizing said source of illumination; first means for selectively actuating such cassette film strip advancing means and for rendering such processing station operative; and means for automatically sequencing the operation of said light precluding means, said illumination energizing means, and said first means in accordance with a predetermined program to facilitate first the treatment of such exposed film strip to form viewable images thereon and then the projection of such viewable images.

3,851,959

METHOD AND DEVICE FOR CONTROLLING A MOTION PICTURE PROJECTOR, ESPECIALLY A PROJECTOR FOR TEACHING MACHINES

Gerhard Kreutz, 2 Beethovenstrasse, 6901 Bammental; Manfred Moessner, 14 Hebelstrasse, 6991 Eppelhem; Guenther Obstfelder, 26 Im Enkler, 6906 Neim; Gerhard Soehring, 26 Untere Burggarten, 6901 Dossenheim, and Victor Pfirman, 46 Leuschnerstrasse, 6700 Ludwigshafen, all of Germany

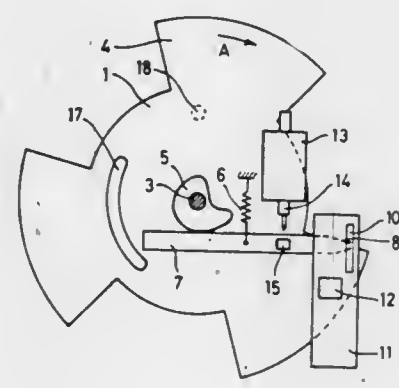
Filed Mar. 15, 1973, Ser. No. 341,327

Claims priority, application Germany, Mar. 16, 1972, 2212176

Int. Cl. G03b 1/00

U.S. Cl. 352-177

6 Claims



1. A method of controlling a film projector for use in a teaching machine, which further includes a tape recorder, the tape of which having signals recorded thereon for initiation or stopping the movement of a film in said projector, on said film there being provided with designations associated with the frames of said film, said designations being formed as optical marks which indicate each frame whether being a frame of a motion picture scene or being a frame for still picture presentation only; said projector including a cam which rotates together with a sector shutter and actuates a claw for moving the film, and an additional actuating element by means of which the claw is prevented from engaging the film for movement or is released for film transport, the operation of said actuating element being controlled by signals derived from the rotation of the sector shutter and from the movement of the film wherein the first of said signals (a) being produced by means of an illuminated slot in the sector shutter and at least one photoelectric component located in the circular path in which the slot moves as the sector shutter rotates and the second of said signals (b) being produced by means of said optical marks on the film and at least one further photoelectric component associated therewith, when an initial or stop signal from the tape recorder is fed to the projector the occurring of said signals (a) and (b) being detected and only when said signals (a) and (b) coincide a control signal activates to initiate or stop film movement.

3,851,960

ULTRAMICROFICHE VIEWER HAVING AXIALLY MOVABLE AND ROTATABLE DRUM

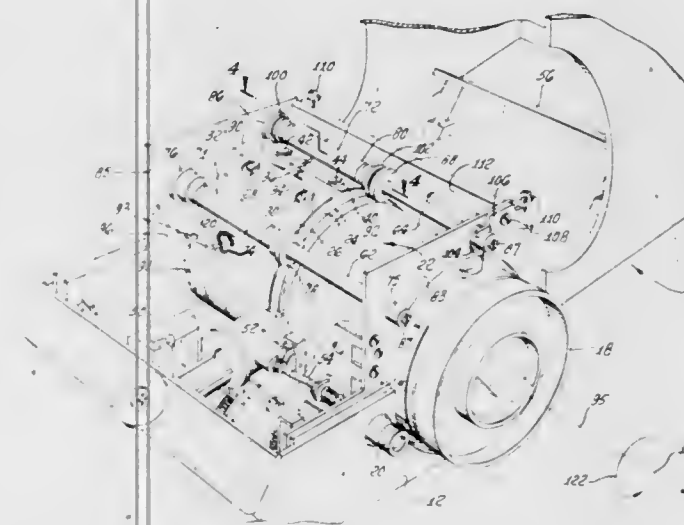
Herbert Brooks, La Verne; John D. Gearheart, Covina, and John L. Jones, Gardena, all of Calif., assignors to UMF Systems Incorporated, Los Angeles, Calif.

Continuation-in-part of Ser. No. 225,712, May 22, 1972, Pat. No. 3,799,663. This application July 26, 1973, Ser. No. 382,956

Int. Cl. G03b 21/11, 23/10

U.S. Cl. 353-27

14 Claims



1. A mounting system for an information carrying drum comprising in combination:
a housing;
a plurality of rollers mounted to said housing so as to be rotatable and translatable relative to said housing; and
a drum supported by said rollers having a handle extending beyond said housing whereby appropriate movement of said handle causes rotation and/or translation of said drum.

3,851,961

LIGHT PROJECTION APPARATUS

Gerhard Winzer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

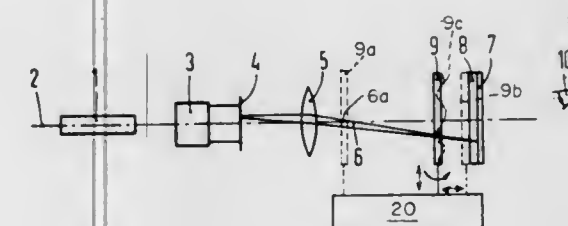
Filed Apr. 3, 1972, Ser. No. 240,660

Claims priority, application Germany, Apr. 28, 1971, 2120939

Int. Cl. G03b 21/14

U.S. Cl. 353-38

10 Claims



1. An apparatus for selectively projecting an undistorted and distorted image having interference lines on a screen

comprising a screen, at least one source of coherent light for projecting a beam of coherent light onto the screen, a film means disposed in the beam of light to impose an image thereto, lens means for focusing the beam of light containing the imposed image onto the screen, and means arranged between the lens means and screen for selectively diffracting the beam of coherent light to selectively create on the screen a distorted image having lines and contours exhibiting interference lines.

3,851,962

ELECTROSTATIC HOLD DOWN APPARATUS

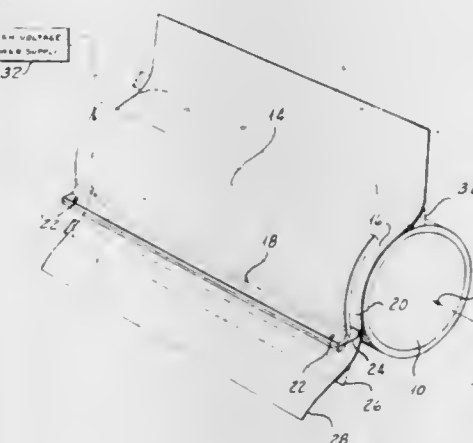
Curtis P. Van Vloten, Acorn Park, Mass., assignor to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,746

Int. Cl. G03g 15/16

U.S. Cl. 355-3 R

4 Claims



1. In a copier having a conductive support the surface of which carries photoconductive material adapted to receive an electrostatic image which is developed with tacky toner and which is to be transferred to a sheet of copy material fed to said surface at a transfer station, apparatus for electrostatically holding said sheet of copy material in contact with said surface at said transfer station including a plate-like electrode of conductive material, means mounting said electrode at said transfer station in closely spaced relationship to said surface to form a passage having an entrance into which said sheet is introduced and an exit from which said sheet emerges in the course of a transfer operation, a source of potential, means for applying said potential to said electrode to produce a static electrical field in said passage, and means for applying said potential directly to said sheet as it moves into said entrance.

3,851,963

Patent Not Issued For This Number

3,851,964

CONTACT TRANSFER ELECTROSTATIC COPYING APPARATUS

Ian Edward Smith, Lockleys; Peter John Hastwell, Elizabeth Grove, and Marinus Cornelius Vermeulen, Valley View, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

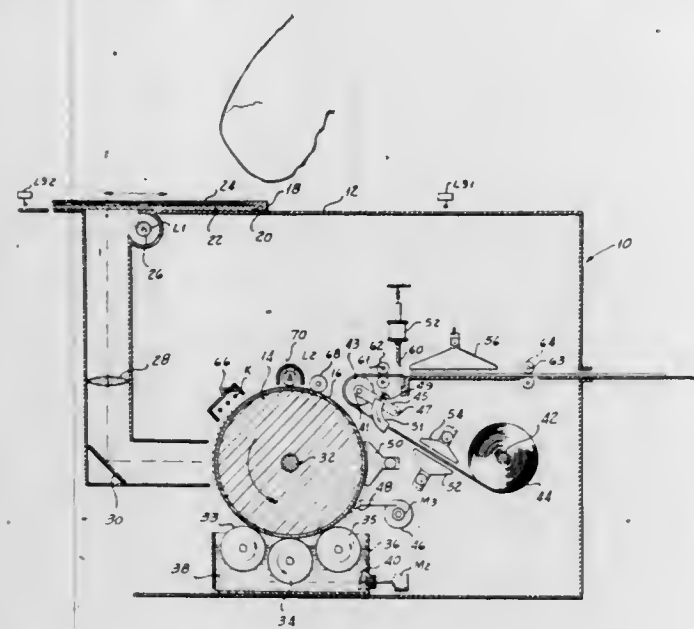
Division of Ser. No. 155,108, June 21, 1971. This application

May 14, 1973, Ser. No. 359,651

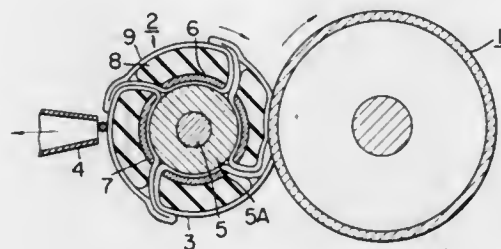
Int. Cl. G03g 15/14, 15/10

U.S. Cl. 355-10

7 Claims



of said cylindrical body and having a suction port adjacent thereto, and a spacer rod located between said suction port and said cylindrical body, whereby, in use, said folded back



portions of said fabric cover are blown away from the periphery of said cylindrical body and toward said spacer rod by an air stream flowing into said air suction port.

3,851,966

REPRODUCTION APPARATUS

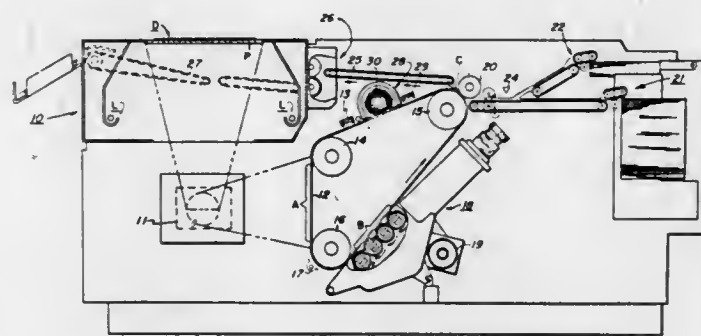
Edward G. Reehil, Henrietta, and Edward L. Steiner, Macdon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1972, Ser. No. 314,218

Int. Cl. G03g 15/16, 15/00

U.S. Cl. 355-17

6 Claims



1. In an electrophotographic apparatus a conductive carrier, a photoconductive surface supported by said carrier, means for charging said photoconductive surface, means for exposing said charged surface to a pattern of light and shade of an image to be reproduced to form a latent electrostatic image, a tank for holding liquid toner, means for subjecting said latent electrostatic image to the action of said liquid toner to form a tacky image, transfer means for bringing sheet material into contact with the tacky image while on said photoconductive surface to transfer the developed image thereto, and means for heating said sheet material before said sheet material arrives at the contacting means.

3,851,965

CLEANING APPARATUS FOR ELECTROCOPYING MACHINES

Masayoshi Furuichi, Tokyo; Nobuo Akiba, Kawasaki, and Seichi Kudo, Tokyo, all of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Yaguchi, Ota-ku, Tokyo-to, Japan

Filed May 3, 1973, Ser. No. 357,073

Claims priority, application Japan, May 8, 1972, 47-053571

Int. Cl. G03g 15/00

U.S. Cl. 355-15

8 Claims

1. Cleaning apparatus for cleaning residual toner from an image forming surface of an electrocopying machine comprising a cylindrical body made up of a plurality of resilient circumferentially adjacent segments, a fabric cover over the outer periphery of said cylindrical body, said fabric cover having a peripheral length longer than that of said cylindrical body, means for securing portions of said fabric cover between said adjacent segments so that portions of said fabric cover are folded back on the surface of said cylindrical body, an air suction nozzle oriented generally in the radial direction

1. In a reproduction machine adapted for making copies of an original through a plurality of process steps including exposure of the original to form a latent electrostatic image of the original on a photoconductive surface, developing the image to provide a toner image of the original on the photoconductive surface, providing an electrical bias on the copy paper and holding the copy paper against the toner image by means of an electrically biased transfer roller to transfer the toner image to the copy paper, a method to minimize toner consumption and toner contamination of the machine comprising the steps of:

continuously energizing the transfer roller and maintaining the transfer roller in contact with the photoconductive surface during a normal copy run;

removing the electrical bias on the transfer roller moving the transfer roller away from the photoconductive surface in the event of a paper misfeed to prevent transfer of toner to the roller; and, de-energizing the developer to prevent development of latent electrostatic images passing by the developer subsequent to a paper misfeed.

3,851,967

EASEL ILLUMINATION MONITORING METHOD

Randolph D. Rubin, 301 W. Ohio, Midland, Tex. 79701

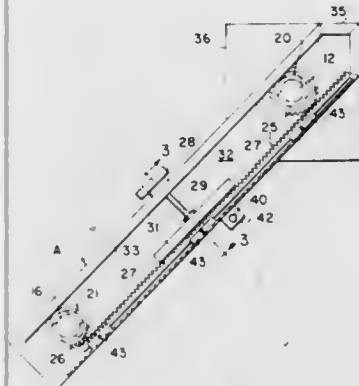
Division of Ser. No. 315,357, Dec. 15, 1972, Pat. No.

3,807,857. This application Mar. 7, 1974, Ser. No. 448,852

Int. Cl. G03b 27/76

U.S. Cl. 355-77

8 Claims



1. Method of controlling the relative exposure light intensity while making different sizes of photographic prints with a projection printing apparatus comprising the steps of:

1. mounting a projection printing apparatus having a primary diaphragm and lens therein in spaced relation respective to an easel;
2. passing light from a light source, through a negative, through the primary diaphragm and lens, and onto printing paper supported by the easel;
3. passing a sample of light from said light source, through a secondary diaphragm and lens, and onto a light sensor apparatus;
4. spacing said light sensor and said secondary lens a distance apart which is proportional to the spacing between said easel and said primary lens;
5. concurrently and proportionally adjusting both diaphragms to thereby select the optimum light intensity for making a first size print;
6. measuring the intensity of the light which passes into the light sensor apparatus;
7. making a second size print by changing the magnification and concurrently and proportionally adjusting both diaphragms to cause the light sensor to receive the same light intensity measured in step (6).

3,851,968

METHOD FOR PHOTOGRAPHING A SET OF VARYING CONTRAST RADIOGRAPHIC X-RAYS

Stanley A. Hoffman, Hedard Hill Rd., R.D. No. 2, Randolph, Vt. 05060, and David J. Paxton, 70 Park Rd., Wyomissing Hills, Reading, Pa. 19609

Continuation-in-part of Ser. No. 129,453, March 30, 1971.

This application Sept. 15, 1972, Ser. No. 289,654 The portion of the term of this patent subsequent to July 9, 1991, has been disclaimed.

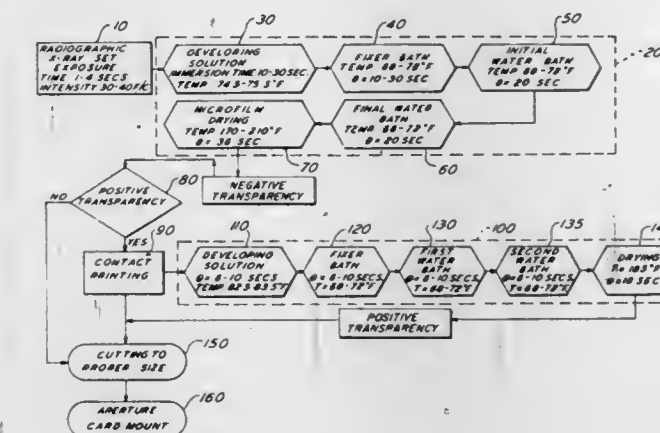
Int. Cl. G03b 27/02

U.S. Cl. 355-132

30 Claims

1. A method of microfilming a set of radiographic x-rays with at least one of said x-rays having a varying contrast with respect to others of said x-rays, to be viewed on a single frame of microfilm inserted into an aperture card, comprising the steps of:

a. photographing said set of radiographic x-rays on said single frame of microfilm at a predetermined single exposure setting in a predetermined reduced contour dimension, said photographing to include transmitting light through said set of radiographic x-rays, said light having a non-uniform intensity subsequent to being transmitted through said set of radiographic x-rays;



- a. photographing said set of radiographic x-rays on said single frame of microfilm at a predetermined single exposure setting in a predetermined reduced contour dimension, said photographing to include transmitting light through said set of radiographic x-rays, said light having a non-uniform intensity subsequent to being transmitted through said set of radiographic x-rays;
- b. developing said microfilm in accordance with said single exposure setting for adjusting a characteristic curve of said film to obtain a predetermined density range of said set of x-rays; and,
- c. positioning said single frame on said aperture card.

3,851,969

COPYING MACHINE WITH TRAVELING LIGHT SOURCE

Hans Haus, 6250 Limxburg Lahn, Hahlgartenweg, Germany

Continuation of Ser. No. 245,852, April 20, 1972, abandoned.

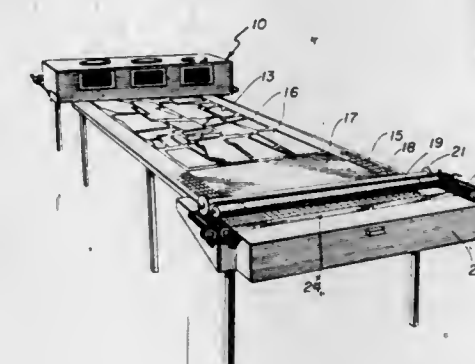
This application July 26, 1973, Ser. No. 382,856

Claims priority, application Germany, Apr. 21, 1971, 2119369

Int. Cl. G03b 27/02

U.S. Cl. 355-132

11 Claims



1. A method of producing photographic copies of a configuration of patterns disposed on a copying table, whereby the pattern pieces are first laid on a transparent base sheet on the plane surface of the lay-marker table and secondly are covered by an overlying second sheet of transparent mesh material and thirdly a web of copy paper passed between the base sheet and table is exposed by a light source traversing said configuration of patterns,

characterized by the fact that prior to its exposure, a web of copy paper is advanced by the traversing of the light source across the exposure position in a straight line between the bottom face of the base sheet on the table and the plane surface of said table, that the web is exposed to said pattern pieces by the return movement of said light source to its starting position, and that after exposure said copy paper web is moved out of said position.

3,851,970

INSTRUMENT FOR MEASURING ULTRA-VIOLET LIGHT
Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen,
both of Switzerland, assignors to Bivator S.A., Grenchen,
Switzerland

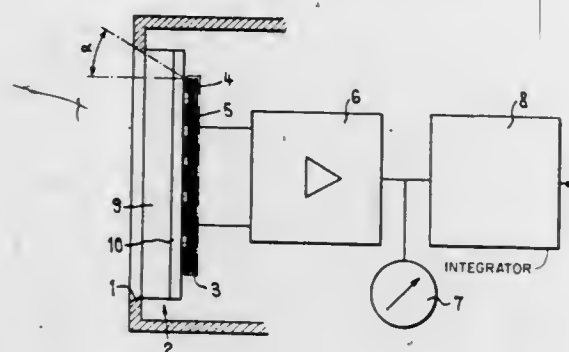
Filed Jan. 3, 1973, Ser. No. 320,708

Claims priority, application Switzerland, Jan. 14, 1972,
496/72

Int. Cl. G01n 21/34; G01j 1/42

U.S. Cl. 356-51

3 Claims



1. An instrument for the measure of the intensity of ultra-violet radiation comprising an optical converter for converting ultra-violet radiation into visible radiation, a photoelectric converter disposed adjacent said optical converter for transforming said visible radiation into an electrical signal, at least one infrared filter and at least one ultra-violet filter disposed one behind the other and having surfaces with dimensions such that the measuring cell has an aperture angle of at least 30° , said filters mounted in front of said optical converter and characterized in that said infrared filter has a thickness of at least 6 mm and said ultra-violet filter a thickness of at least 2 mm, said filters and said converters cooperatively exhibiting a spectral sensitivity only in the effective wavelength domain between 300 and 315 nm, and an amplifier, connecting the measuring cell with an indicator instrument, said amplifier having a transfer function coacting with the non-linear electrical signal from said photoelectric converter such that the reading from said indicator instrument is given in $\mu\text{W}/\text{cm}^2$ linearly in the range of at least 100 nW/cm² to 1 mW/cm².

3,851,971

APPARATUS FOR TESTING THE AUTHENTICITY OF PAPER CURRENCY

Jurgen Koch, Buxtehude, Germany, assignor to National Rectors Inc., GmbH, Buxtehude, Germany

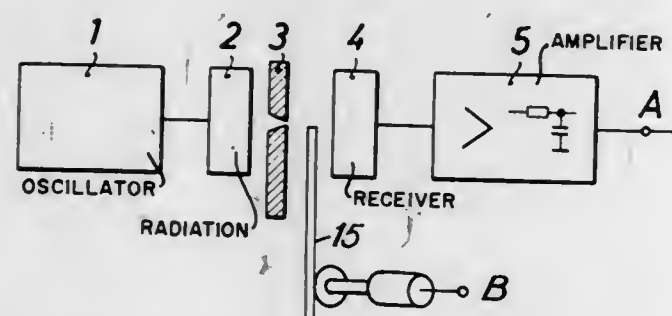
Filed Nov. 6, 1972, Ser. No. 304,091

Claims priority, application Germany, Jan. 29, 1972,
2204284

Int. Cl. G06k 9/08; G01b 11/24

U.S. Cl. 356-71

5 Claims



1. Apparatus for testing the authenticity of paper currency comprising, in combination, an oscillator emitting a radiation oscillating at a predetermined frequency, conveyor means conveying paper currency to be tested across the path of said radiation, said conveyor means generating a synchronizing signal for indicating the location of paper currency conveyed

by said conveyor means, a receiver receiving radiation transmitted from said paper currency sensing the received radiation and producing an output signal determined only by the radiation received oscillating at substantially the same frequency as said predetermined frequency, said receiver comprising photoelectric means generating an AC output signal corresponding to the oscillating frequency of said radiation, an optical filter for transmitting radiation of essentially the same wave length as radiation emitted by said oscillator located between said conveyor means and said photoelectric means, sensing means sensing said output signal selectively generating an accept or reject signal as determined by said output signal, said sensing means including an amplifier amplifying selectively only AC voltages which lie within the range of the oscillating frequency of said radiation, an evaluating channel comprising a second amplifier, a band filter tuned to a preselected frequency and an amplitude discriminator in series with said first mentioned amplifier for receiving the output signal of said amplifier, a collecting stage in series with said evaluating channel for receiving the output signal from said evaluating channel, and means at said collecting stage for switching through said output signal from said evaluating channel at a preselected value of said synchronizing signal produced by said conveyor means.

3,851,972

AUTOMATIC METHOD AND SYSTEM FOR ANALYSIS AND REVIEW OF A PLURALITY OF STORED SLIDES

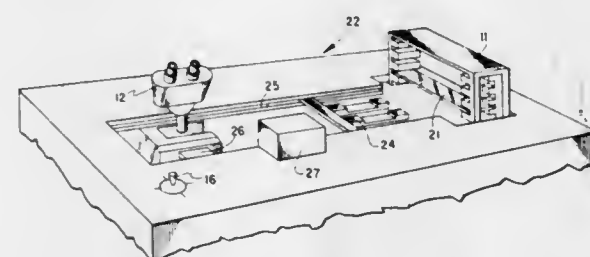
Lester C. Smith, Newton Upper Falls; Garret F. Ziffer, and John Russell Nelson, both of Natick, all of Mass., assignors to Coulter Electronics Inc., Hialeah, Fla.

Filed Oct. 18, 1973, Ser. No. 407,538

Int. Cl. G01n 21/00, 33/16

U.S. Cl. 356-72

32 Claims



1. A system for automatically reviewing slides having biological cells thereon including in combination sequencer means for developing a sequence of first control signals and a sequence of second control signals, storage means for storing a plurality of slides to be studied, scanning means coupled to said sequencer means and said storage means and operative in response to each particular first control signal in said sequence to access a particular slide in said storage means, said scanning means being further operative in response to each particular second control signal in said sequence to locate a particular area on the accessed slide, analyzing means coupled to said scanning means and said sequencer means for analyzing and detecting particular characteristics of each cell scanned on the accessed slide, said analyzing means being operative to develop a detect signal in response to each cell having characteristics other than said particular characteristics, memory means coupled to said sequencer means and said analyzing means and having a plurality of storage locations, said memory means being operative in response to said detect signal to store in a particular storage location, said last developed first and second control signals, said sequencer means including input means operative to develop a review signal, sequentially to access each of said plurality of storage locations and couple said particular first and second control signals located therein to said scanning means.

said scanning means being operative in response to said particular first and second control signals to access said particular slide and locate said particular area thereon.

super-position with the output beam of said machining laser whereby alignment of a workpiece with respect to

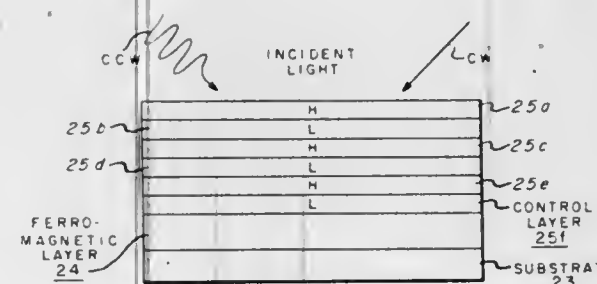
3,851,973
RING LASER MAGNETIC BIAS MIRROR
COMPENSATED FOR NON-RECIPROCAL LOSS
Warren M. Macek, Huntington Station, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,895

Int. Cl. G01b 9/02; G02f 1/26

U.S. Cl. 356-106 LR

15 Claims



1. A ring laser comprising means forming a closed loop optical cavity containing an active lasing medium for providing contradirectional light beams propagating along a closed loop circulatory path in the optical cavity, said optical cavity forming means being constructed, at least in part, of a frequency biasing light reflective multilayer member for imparting a differential phase shift to the contradirectional beams, said multilayer member including a magnetizable layer coated with at least one dielectric layer which has a thickness determined in accordance with the refractive index of the dielectric layer and wavelength and angle of incidence of the contradirectional beams on the multilayer member for substantially eliminating differential reflection of the contradirectional beams normally occurring at the multilayer member from the presence of the magnetizable layer while preserving non-reciprocal phase shift caused thereby.

3,851,974

SYSTEM FOR OPTICAL ALIGNMENT AND ADJUSTMENT OF A LASER

Pierre-Emile Ravussin, Lausanne, and Jean-Pierre Vuille, Epalinges, both of Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Biel, Berne and Alcyon Electronique et Physique S.A., Renens, Vaud, both of, Switzerland

Filed May 7, 1973, Ser. No. 357,828

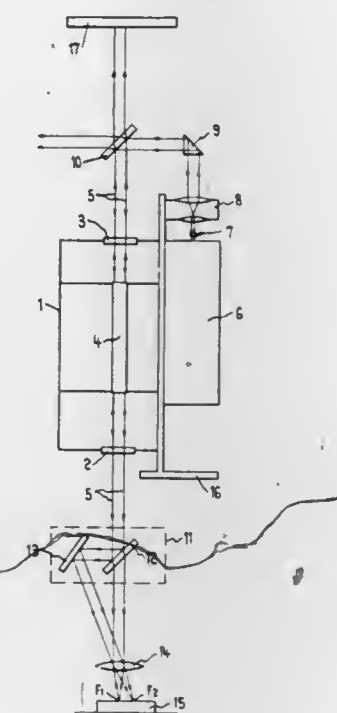
Claims priority, application Switzerland, May 30, 1972,
7959/72

Int. Cl. G01b 11/26

U.S. Cl. 356-153

6 Claims

1. A system for optical alignment and adjustment of a machining laser comprising a base member, a machining laser and an auxiliary, alignment laser fixedly mounted on said base member, and means directing the output beam of said auxiliary laser through the active element of said machining laser in



said auxiliary laser beam accurately determines the point of application of said machining laser beam.

3,851,975
OPTICAL METHOD AND APPARATUS FOR DETECTION OF DEFECTS

Gerard Serret, Paris, France, assignor to Saint-Gobain Industries

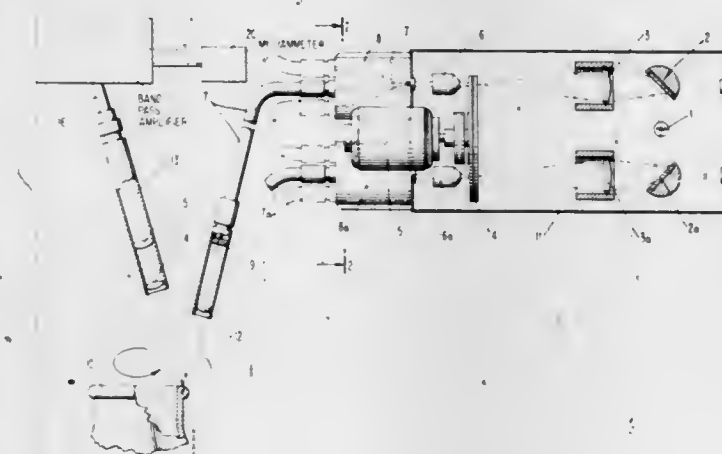
Filed Oct. 8, 1969, Ser. No. 864,624

Claims priority, application France, Oct. 9, 1968,
68.169187

Int. Cl. G01n 21/32

U.S. Cl. 356-198

4 Claims



1. A method of examining a transparent object which comprises projecting onto the object at a single examining station by separate elongated vitreous light conducting means a plurality of focused modulated light beams having different modulated frequencies; transforming into separate modulated electrical signals of different modulated frequencies, by means of separate photoelectric cells, modulated light coming from the object and from said separate beams; amplifying said separate electrical signals in separate amplifiers passing only the frequencies of modulation of those signals respectively; and delivering the amplified modulated signals to separate detectors of signal deviations.

3,851,976
METHOD FOR DETERMINING THE TRANSLUCENCY
AND/OR TURBIDITY OF A MEDIUM AND APPARATUS
FOR APPLYING THE METHOD

Johann Meier, Casa Clarissa, CH-6645 Brione sopra Minusio, Switzerland

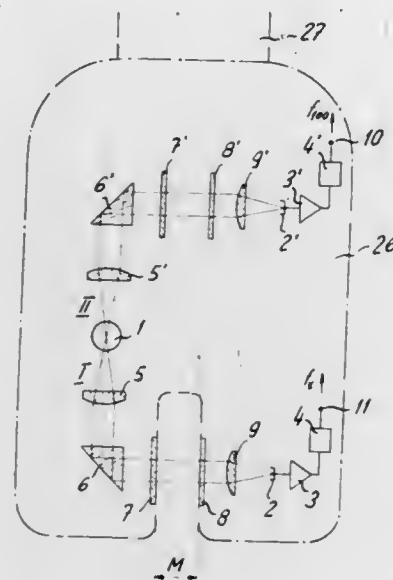
Filed Jan. 24, 1973, Ser. No. 326,171

Claims priority, application Switzerland, Jan. 26, 1972, 1113/72; Aug. 18, 1972, 12248/72

Int. Cl. G01n 21/26

U.S. Cl. 356-206

10 Claims



1. A method for determining the transparency of a medium comprising the steps of:
 producing a first and second light beam from a single light source;
 passing said first light beam through said medium;
 converting first and second light beams to first and second analog voltages proportional to light beam intensity;
 converting said first and second analog voltages to first and second corresponding analog frequencies, the frequency corresponding to said first light beam being applied to a first decade counter to obtain a first count, the frequency corresponding to said second light beam being applied to a second decade counter to obtain a second count;
 storing said first count in a storage unit;
 disconnecting said storage unit when said second decade counter reaches a preset count;
 resetting said decade counters; and
 displaying said first count at a time of disconnecting of said storage unit.

3,851,977
SHAFT MOUNTINGS FOR PULLEYS, SPROCKETS,
COUPLING FLANGES AND OTHER MACHINE
ELEMENTS

Rex Boole, Croydon, England, assignor to The Wellman Bibby Company Limited, Croydon, Surrey, England

Continuation of Ser. No. 880,700, Nov. 28, 1969, abandoned.

This application Dec. 15, 1971, Ser. No. 208,201

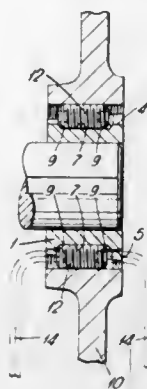
Int. Cl. F16d 1/06

U.S. Cl. 403-16

7 Claims

1. A machine part mounted on a shaft through the intermediary of a split contractible tapered bush and at least two locking screws extending substantially parallel to said shaft, each of said screws being contained for at least the major portion of its length partly in a recess in the bore of the machine part and partly in a registering recess in the tapered surface of the bush, at least one recess in the tapered surface of the bush being threaded and arranged to cooperate with a plain recess in the surface of the bore of the machine part, the

ends of said plain recess being defined by two opposed shoulders or abutments, means being provided which enable access

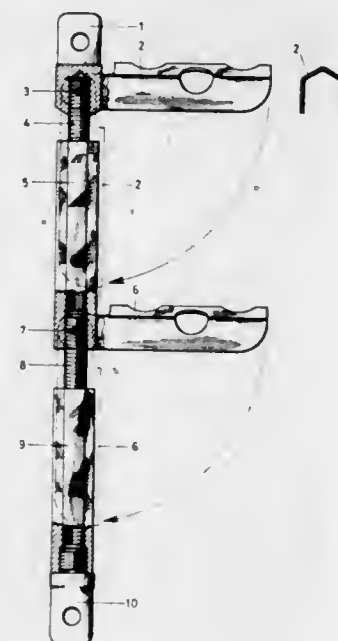


for actuation of both of said screws from each end of said bush.

3,851,978
TURNBUCKLE
 Sytze Arnold Kuipers, Strijpe 11, Terhorne, Netherlands
 Filed Sept. 12, 1973, Ser. No. 396,359
 Int. Cl. F16b 7/06

U.S. Cl. 403-45

1 Claim



1. A turnbuckle comprising three oblong sections which are screwed together in a direct line with an internally threaded sleeve end section and an externally threaded rod end section oppositely threaded respectively to opposite ends of the centre section of the turnbuckle, and two channel-sectioned locking arms pivoted to the center section and one of said end sections respectively about an axis transverse to the sections such that a substantially channel-sectioned portion of each of said locking arms can be brought into tight-fitting engagement with a hexagonal outer circumference of an adjacent sleeve portion for preventing relative rotation of the three sections, one of the two end sections (3, 9) being in the form of an internally threaded sleeve (9) screwed onto an externally threaded rod portion (8) of the middle section (5, 8).

3,851,979
CABLE AND HOSE CLAMP
 William K. Becker, Portage, Mich., assignor to Daniel Woodhead, Inc., Northbrook, Ill.

Filed Sept. 20, 1972, Ser. No. 290,759

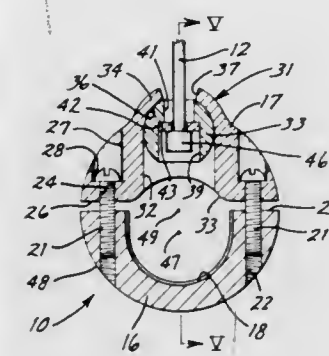
Int. Cl. F16l 27/02

U.S. Cl. 403-76

11 Claims

1. A clamping structure for effecting a universal connection between a cable and a hose, said structure comprising:

first and second arcuate clamping members which, when positioned adjacent one another in opposed relationship, define an annulus for encircling and clampingly engaging said hose, said annulus defining a central opening adopted to receive said hose;
 one of said arcuate clamping members having a substantially radially extending opening formed therein substantially midway between the ends thereof, said one clamping member also having annular lip means fixed thereon and partially closing the radially outer end of said radially extending opening, said annular lip means having a radially inner wall defining a partial spherical bearing surface; threaded connecting means for fixedly connecting said



first and second clamping members in encircling and clamping engagement with said hose; and
 swivel means mounted solely on said one clamping member for connection to an end of said cable for enabling universal swivelling movement of said cable relative to said annulus, said swivel means including ball-like swivel member movably supported solely on said one clamping member, said ball-like swivel member being disposed within said radially extending opening and positioned in bearing engagement with the partial spherical bearing surface defined by said annular lip means, and means for connecting said one end of said cable to said ball-like swivel member.

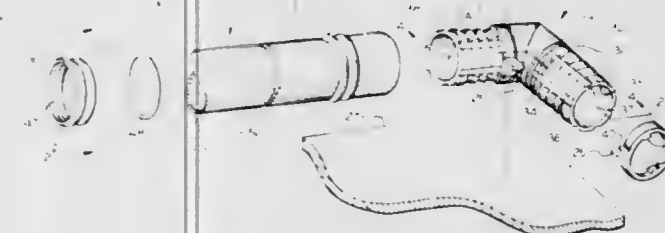
3,851,980
TUBING CONNECTOR
 Lewis R. Worth, 21 E. Greenbriar Dr., Deerfield, Ill. 60015, and Maynard H. Cheris, 2485 St. Johns, Highland Park, Ill. 60035

Filed Apr. 19, 1974, Ser. No. 462,246

Int. Cl. E04g 7/00

U.S. Cl. 403-172

18 Claims



1. A tubing connector comprising a joining member having at least one arm with an outer surface bearing a plurality of rows of ratchet-like teeth, the rows being arranged in a spaced parallel relationship separated by aisles, ring means having an external tab and at least one internal tooth which matches with and passes down an aisle between two of said rows, when said ring is slipped over said arm, whereby the tab may be rotated to any of many alternative angular settings by the expedient of removing, rotating, and replacing the rings.

3,851,981
ASSEMBLY FOR FORMING METAL FURNITURE
STRUCTURES FROM INTERENGAGING ELEMENT
 Piero Corsi, Milan, and Emilio Turco, Massa, both of Italy, assignors to Siam 1922 Societa Italiana Arredamenti Metallici S.p.A., Settimo Torinese (Turin), Italy

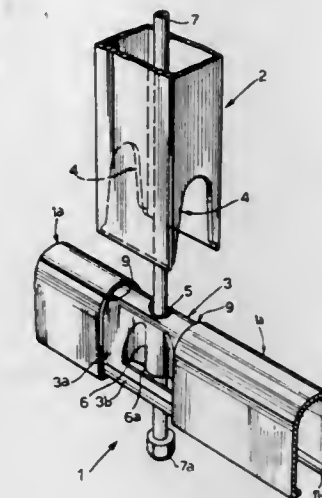
Filed Sept. 15, 1972, Ser. No. 289,386

Claims priority, application Italy, Dec. 10, 1971, 71040/71

Int. Cl. F16m 11/20; A47i 3/00

U.S. Cl. 403-237

3 Claims



1. An assembly of component parts adapted to be assembled to form furniture such as tables, shelving and the like, said assembly comprising at least one first and second elongate elements adapted to fit together, the first element having a channel section with divergent side walls and the second element having a forked end, the internal profile of said forked end being complementary to the external cross-sectional profile of the first element and a tie member adapted to hold said elements tightly interengaged upon assembly thereof, said first element being of sheet metal and including a cut out portion in each side wall which are deformed inwardly with respect to said side walls so that the edges of said cut out portions define an internal abutment within said first element which constitutes a reaction support for one end of said tie member.

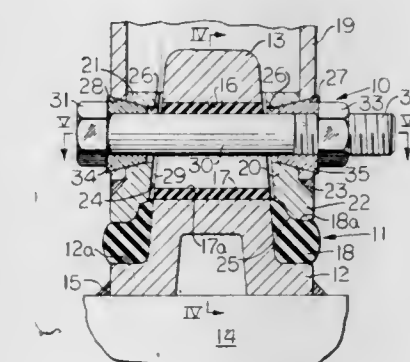
3,851,982
SHOCK CUSHIONING MOUNTING MEANS FOR
VEHICLE ATTACHMENTS
 George L. See, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 10, 1972, Ser. No. 279,695

Int. Cl. F16b 7/18

U.S. Cl. 403-224

8 Claims



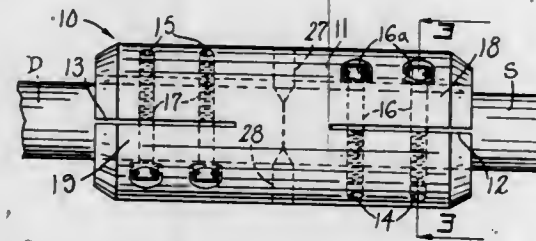
1. A resilient mounting assembly for attaching canopy structures to vehicles, said assembly comprising:
 a base member;
 a tapered bayonet mount extending upward from said base member;

a support member having a tapered socket for receiving said bayonet mount;
 said base member and said support member each including a shoulder disposed in opposed relation;
 resilient means disposed between said shoulders for supporting said support member in spaced relation to said bayonet mount;
 a pair of aligned bores extending transversely through said socket means;
 a bore extending transversely through said bayonet means and partially aligned with said bores in said socket means;
 a bolt extending through said bores; and
 cam means including a tapered sleeve carried by each end of said bolt and with the small ends thereof terminating in said pair of aligned bores to bias said shoulders toward one another to adjustably preload said resilient means so that said support member is normally supported in its vertical direction wholly by said resilient means.

3,851,983 COUPLING

Kenneth H. MacKenzie, 3 Morgan Ter., East Haven, Conn.
 Filed Feb. 20, 1973, Ser. No. 334,028
 Int. Cl. F16b 7/00; F16d 1/00; F16l 21/00
 U.S. Cl. 403—312

3 Claims



1. For use in combination with a drive and a driven shaft, a coupling comprising a one-piece sleeve member having a continuous bore therethrough, a pair of slots defined in said sleeve member at each end thereof and extending longitudinally inwardly of said sleeve member, the slots of each pair terminating in said sleeve short of each other, said pairs of slots permitting each end of said coupling to be tightened on a shaft independent of the other end, threaded screw holes extending through said coupling and bridging each of said slots, a screw received in each of said holes, said screws being effective to clamp the slotted ends of said coupling about each of said shafts.

3,851,984 REMOVABLE ATTACHMENT FOR A HAND APPLIANCE FOR BODY CARE INCLUDING COUPLING RETAINING MEANS

Jean-Pierre Crippa, Geneva, Switzerland, assignor to Les Produits Associes SA, Geneva, Switzerland
 Filed Feb. 23, 1972, Ser. No. 228,574
 Claims priority, application Switzerland, Feb. 26, 1971, 2859/71

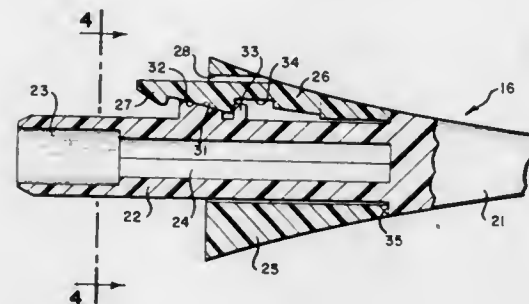
Int. Cl. F16b 7/00

U.S. Cl. 403—322

7 Claims

1. Coupling retaining means for releasably retaining the coupling of a removable attachment to a hand appliance for body care having an output member, an outwardly extending detent member transversely spaced from the output member, and a control member slidably parallel to said output member and adapted to overlap said detent member in spaced relationship thereto, said removable attachment including a body portion having a working head toward the front end thereof and an elongated coupling section at the rear end thereof adapted for coupling with said output member of the hand appliance, said coupling retaining means comprising
 a. a coupling retaining member slidably mounted on said elongated coupling section of the attachment for movement therealong,

- b. said coupling retaining member including a spring arm extending longitudinally of said elongated coupling section with the rear end free for flexible movement outwardly from the elongated section,
 c. a detent on the inner side of said free end of the spring arm for engaging said outwardly extending detent member of the hand appliance,
 d. cooperating cam surfaces on said elongated coupling section and said spring arm, respectively, for moving said



free end outwardly from the detent position thereof upon relative movement which increases the distance of the coupling retaining member from said working head,
 e. and stop means on said attachment for limiting said relative movement,
 f. the inner surface of said control member of the hand appliance and the outer surface of said spring arm of the attachment being designed and adapted to prevent disengagement of the detent from said detent member in a predetermined forward position of the control member.

3,851,985 COLLAR AND METHOD OF MAKING SAME

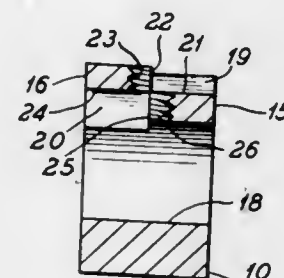
Raymond C. Coleman, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 20, 1972, Ser. No. 290,445

Int. Cl. B22f 3/24

U.S. Cl. 403—362

6 Claims



1. An article adapted for mounting on a member and detachably secured thereon by a threaded element comprising a one-piece body having a first opening extending inwardly from one surface for receiving the member and having a second opening extending from the first opening at an angle thereto, said second opening having threaded segments of a partial annular configuration, said segments being axially offset from each other along an axis of the second opening and coacting to provide the second opening with interrupted threads for receiving a threaded element.

3,851,986 UTILITY INSTRUMENT

Albert E. Daughtry, 700 Wilkes Dr., Eugene, Oreg. 97402
 Filed Sept. 29, 1972, Ser. No. 293,563

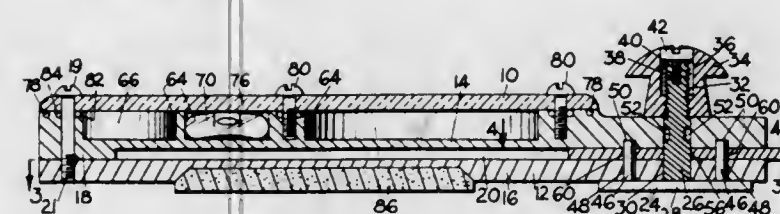
Int. Cl. A01b 1/22

U.S. Cl. 403—373

4 Claims

1. A utility instrument comprising
 a. a handle having forward and rearward ends,
 b. said handle including a longitudinal edge slot therein forming a pair of handle portions,

- c. said handle portions each having a first aperture therethrough adjacent to the forward end of the handle with the said apertures being in axial alignment,
 d. one of said handle portions also having a pair of second apertures therethrough one of which is disposed on one side of said first aperture and the other of which is disposed on the other side of said aperture,
 e. an implement having forward and rearward ends and including a relatively flat shank portion arranged to be received in said slot,
 f. said shank adjacent to its rearward end having a substantially circular pivot aperture and a pair of aligning apertures one on each side of the pivot aperture,
 g. said shank also having a transverse slot extending from its pivot aperture to a side edge of the shank,
 h. the width of said transverse slot being less than the diameter of said pivot aperture,
 i. a lock member having a cross head,
 j. a pivot post on said cross head extending through said first aperture in the handle portions and through the pivot aperture in said shank,
 k. the diameter of said pivot post being less than said pivot aperture but greater than the width of said transverse slot,
 l. means defining a reduced diameter portion on said post intermediate the ends thereof of less dimension than the width of said slot,



- m. a pair of aligning pins on said cross head one on each side of said pivot post and extending through said second apertures in the one handle portion and arranged to extend through said aligning apertures in said shank to hold said implement in substantial longitudinal alignment with the handle,
 n. and releasable means on the opposite end of said pivot post from said cross head,
 o. said releasable means being operative on said post to provide axial movement of the latter to three positions in the first of which the post and aligning pins are pulled in tightly to position the aligning pins in said second apertures and aligning apertures to hold the implement in a secured position, in the second of which the post and aligning pins are released to a position such that the latter are withdrawn from said aligning apertures and said reduced diameter portion is out of alignment with the slot in the handle to permit the implement to pivot between an extended position and a stored position in said slot in the handle and vice versa, and in the third of which the post and aligning pins are released to an intermediate position such that the latter are withdrawn from said aligning apertures and said reduced diameter portion of said post is in alignment with the slot in the handle whereby said shank portion can be detached from the handle by moving it laterally with the said reduced diameter portion of said post moving through said transverse slot.

3,851,987 ECCENTRIC COUPLING MEANS

Thomas Alan Jones, Bolton, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1972, Ser. No. 319,954

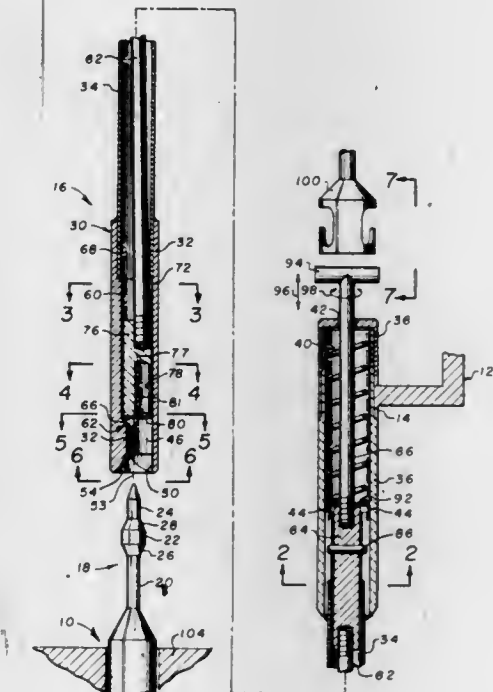
Int. Cl. F16d 1/00

U.S. Cl. 403—374

13 Claims

1. Coupling means including male and female connectors, movable longitudinally and laterally relative to one another:

- a. said male connector including a male member having a neck portion and a laterally enlarged head portion longitudinally outwardly thereon for insertion into said female connector; and
 b. said female connector comprising a housing having a longitudinally extending passage therein for entry and egress of said male member and a chamber at the inner end of said passage only partially in registry therewith for receiving said male member head portion, a laterally extending shoulder connecting said passage and chamber and comprising a retaining surface for said head portion and including:
 i. operating means in said chamber supported for rotation relative thereto about a longitudinally extending axis and



having means therewith eccentrically disposed relative to said axis of rotation for laterally engaging said male member in said chamber, and
 ii. actuating means for rotating said operating means relative to said chamber between first and second positions, said eccentricity and said first and second rotational positions being such that said engaging means is in male member receiving or discharging alignment with said passage in said first position and is displaced toward said retaining surface sufficiently to locate part of said head portion in longitudinal alignment with said retaining surface in said second position, said operating means acting longitudinally in cooperation with said retaining surface to prevent withdrawal of said male member from said female connector in said second position.

3,851,988 SELF-PROPELLING SOIL-COMPACTOR

Kenzaburo Kitai, Yokohama, and Mizuho Tomita, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 19, 1974, Ser. No. 452,643

Claims priority, application Japan, Mar. 19, 1973, 48-32627

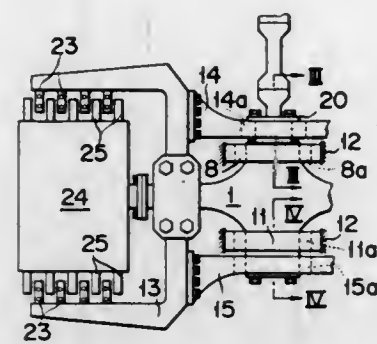
Int. Cl. E01c 19/26

U.S. Cl. 404—129

4 Claims

1. A self-propelling soil-compactor comprising wheel drums, an axle housing having cylindrical extension parts at its longitudinal front and rear sides and a wheel drum cleaning device which consists of cleaner bars attached to both the

right and left sides of said axle housing, means for supporting said axle housing rotatably about the longitudinal axis of said



axle housing, and means for supporting said cleaner bars rotatably about the axis of said axle housing.

3,851,989

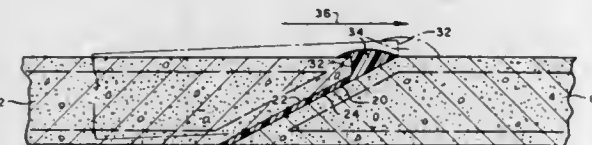
EXPANSION JOINT FOR SLABS OF CONCRETE ROADWAYS

Robert W. Peach, 888 Pine Trail, Arnold, Md. 21012
Filed Nov. 29, 1972, Ser. No. 310,201

Int. Cl. E01c 11/04

U.S. Cl. 404-50

1 Claim



1. In a roadway comprising concrete slabs laid end-to-end relationship each of said slabs having laterally spaced sides, transverse ends, and upper and lower faces, an expansion joint between the ends of adjacent slabs comprising an upwardly facing slope at one end of one slab extending between the upper and lower faces thereof in a unitary plane, a downwardly facing slope at the adjacent end of the next slab and overlying in complementary relationship the slope of said first slab, said slopes having a predetermined angle relative to a vertical plane enabling the downwardly facing slope to slide up the upwardly facing slope upon thermal expansion of the slabs against each other, and enabling said first slope to slide down said second slope solely under the influence of gravity upon thermal contraction of said slabs, said sloping ends being normally spaced slightly apart with sealing material filling the space between said ends, the upper transverse edge of the end having the downwardly facing slope being truncated and both of said ends being reinforced to resist bending stresses in a vertical direction.

3,851,990

DISPOSABLE DRILL GUIDE AND METHOD FOR DRILLING WORKPIECES

Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Nov. 19, 1973, Ser. No. 417,480

Int. Cl. B23b 49/02

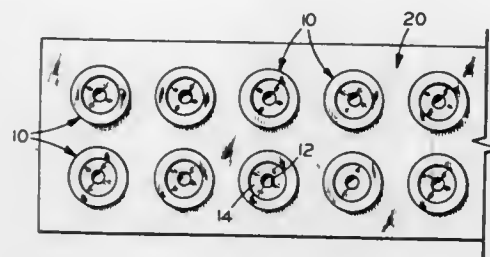
U.S. Cl. 408-1

10 Claims

1. A drill guide for guiding a drill bit into contact with a predetermined location on the surface of a workpiece comprising:

- a guide member formed of relatively soft material and having substantial thickness providing generally parallel top and bottom surfaces, said guide member having a guide passage of generally circular cross section there-through from said top to said bottom surface whereby the guide passage of the drill guide may be aligned over the desired location of the workpiece, said passage having an

outwardly flaring portion adjacent the upper end thereof to provide a guide surface for directing the drill bit into the center of the passage portion at the lower end thereof;



and
b. adhesive means on said lower surface for securing said guide member on the surface of the workpiece.

3,851,991

APPARATUS FOR THE AUTOMATIC OR SEMI-AUTOMATIC REMOVAL OF SURPLUS MATERIAL FROM THE END PORTIONS OF ELONGATE WORKPIECES OF SUBSTANTIALLY CIRCULAR CROSS-SECTION

Derek William Ross Walker, Four Gates, Claverley, Wolverhampton, England

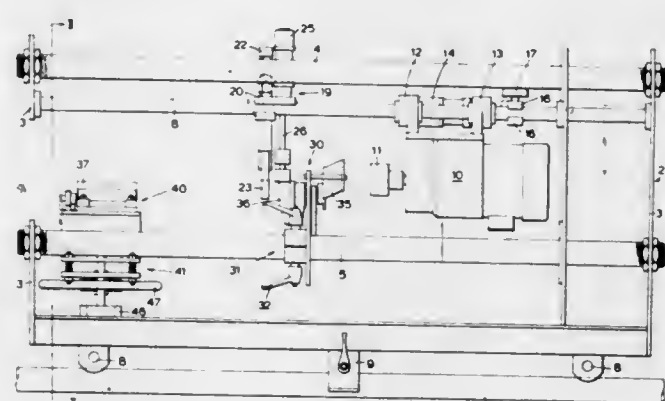
Filed Nov. 30, 1973, Ser. No. 420,693

Claims priority, application Great Britain, Nov. 30, 1972, 55313/72; Jan. 19, 1973, 2868/73

Int. Cl. B23b 39/22

U.S. Cl. 408-37

20 Claims



1. Apparatus for the removal of surplus material from the end portions of elongate workpieces of substantially circular cross-section comprising in combination, frame means, horizontally disposed slide means mounted on said frame means, a pair of opposed co-axial cutting heads slidably mounted on said slide means, each of said cutting heads being drivably connected to a rotary cutter, means for moving said cutting heads and said cutters towards and away from each other for engaging end portions of an elongate workpiece, contact face means on said cutter for centering a workpiece automatically upon simultaneous engagement of said face means with said end portions, holding means for holding a workpiece in substantially co-axial disposition with the axis of rotation of said cutters and comprising resiliently mounted workpiece support means, ramp means for supplying workpieces to said holding means, workpiece stop means for stopping a workpiece descending said ramp means on said support means at a point adjacent to a vertical plane through said axis, and control means for controlling the operation of said moving means and said holding means.

3,851,992

GROOVING MACHINE TOOL

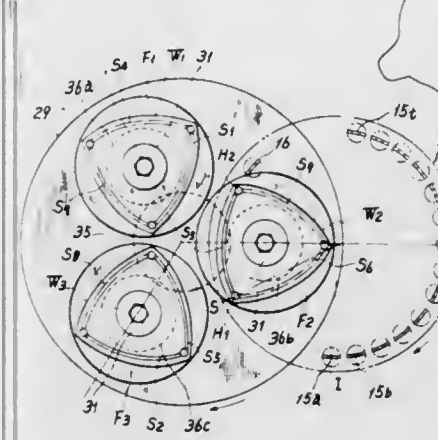
Kingo Sawada, Kariyashi; Masaaki Mizuno, Kariya, and Mabayoshi Ogihara, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan
Filed June 13, 1973, Ser. No. 369,484

Claims priority, application Japan, June 13, 1972, 47-58257

Int. Cl. B23b 41/00

U.S. Cl. 408-54

10 Claims



1. A machine tool for forming arcuate grooves on a plurality of workpieces comprising:

- a base;
- a work head provided on said base;
- a spindle head slidably mounted on said base and movable toward and away from said work head;
- a work spindle rotatably mounted in said work head;
- a tool spindle rotatably supported in said spindle head;
- a tool holder fixedly mounted on said tool spindle at the end thereof and having a series of cutting tools around the peripheral portion thereof;
- an index table secured to one end of said work spindle and including means mounted thereon for supporting said workpieces for rotation about their axes;
- indexing means provided for simultaneously turning each of the workpieces around the axis thereof and around the axis of said work spindle through respective predetermined amounts so as to sequentially index the workpieces into a machining position; and synchronizing means for actuating said indexing means in accordance with the rotation of said tool spindle.

3,851,993

WASHING MACHINE PUMP

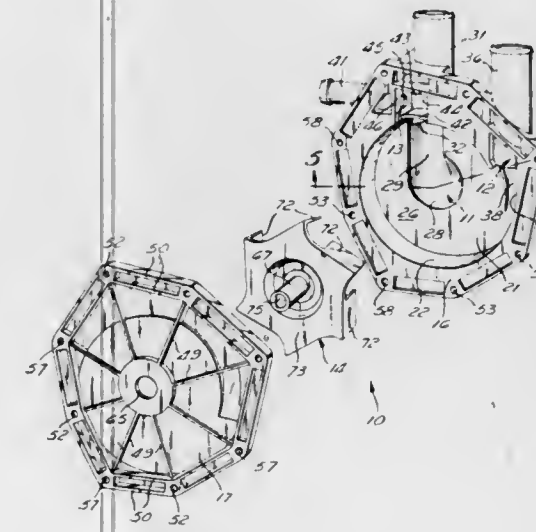
James R. Foster, Webster, Iowa, assignor to Franklin Manufacturing Company, St. Cloud, Minn.

Filed Apr. 16, 1973, Ser. No. 351,630

Int. Cl. F04d 5/00

U.S. Cl. 415-53

15 Claims



1. A reversible pump for a laundry appliance having an internal impeller cavity, an inlet and a main outlet communi-

cating separately with said impeller cavity, an impeller rotatable within said cavity, said impeller including means to pump said water from said inlet to said outlet with positive displacement action when driven in a first direction during a pump out mode; a secondary outlet communicating with said impeller cavity, said impeller including means to pump water from said inlet through said secondary outlet port when driven in an opposite direction in a recirculation mode, and bypass means between said inlet means and said auxiliary outlet means to control pressure in said main outlet when said impeller is rotating in said recirculation mode.

3,851,994

BLADING FOR AXIAL FLOW TURBO-MACHINE

Claude Seippel, Zurich, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

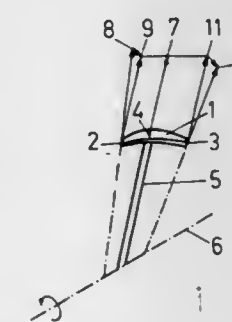
Filed Jan. 12, 1973, Ser. No. 323,094

Claims priority, application Switzerland, Jan. 20, 1972, 76772/72

Int. Cl. F01d 5/14

U.S. Cl. 416-223

2 Claims



1. The improvement in turbine blading for the rotor of a turbo-machine of the axial-flow type wherein for the purpose of allowing a high ratio of external to internal diameter of the flow passageway each of the blades is given a twist about its horizontal axis which is determined at least approximately in accordance with the equation

$$d\beta/dr = T/P \cdot A/I_1 + I_2 \text{ wherein}$$

r is the axial pitch of any blade section on which the following values are based.

β is the angle between the principal inertia axis and the circumferential direction.

$d\beta/dr$ is the degree of blade twist

T is the resultant torsion moment of the blade part from the distance r to the end of the blade

P is the resultant tension force of this part of the blade

A is the cross-sectional area of the profile, and

I_1, I_2 are the maximum and minimum moments of inertia of the blade profile

thereby maintaining constant the amount of the blade twist under the influence of centrifugal forces acting thereon when the motor is operating.

3,851,995

PUMP-OFF CONTROL APPARATUS FOR A PUMP JACK

M. Dee Mills, Box 5554, Midland, Tex. 79701

Filed Aug. 6, 1973, Ser. No. 386,075

Int. Cl. F04b 49/00

U.S. Cl. 417-12

6 Claims

1. A control system for the control of a prime mover of an oil well pump jack apparatus which drives a downhole pump by means of a rod string comprising:

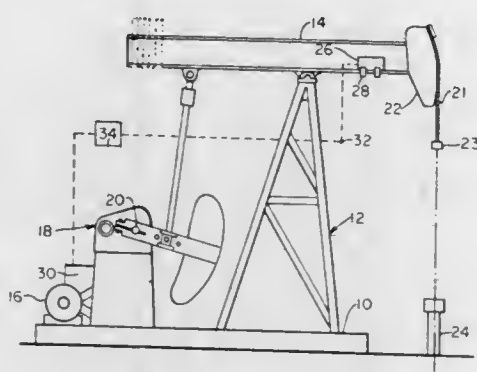
control means by which the prime mover is selectively energized and de-energized;

first switch means mounted to be moved into a conducting configuration during the pump downstroke;

second switch means mounted to be moved into a conducting configuration upon an abnormal movement of the rod string indicative of fluid pounding;

circuit means connected to said first and second switch means and to said control means for counting the number of times said second switch means is closed and for causing said control means to de-energize said prime mover after said second switch means has been moved to the closed position a plurality of times;

a third switch means, said third switch means being a magnetically actuated switch, a magnet for actuating the last



said switch when the magnet is moved into close proximity thereof, said magnet being magnetically attached to structure mounted to said pump jack means so that should a rod string break, the magnet will be forced to move relative to said structure and into proximity of said third switch means, thereby actuating said third switch means; and,

circuit means by which actuation of said third switch means causes said prime mover to be de-energized.

3,851,996

OUTBOARD MOTOR POWERED LOW LIFT PUMP

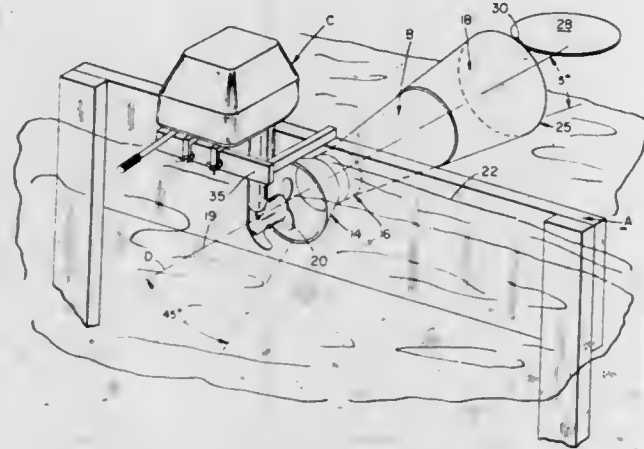
John L. Winther, 263 Calle La Mesa, Moraga, Calif. 94556

Filed Jan. 30, 1974, Ser. No. 438,088

Int. Cl. F04b 21/00; F01d 25/28

U.S. Cl. 417-61

9 Claims



1. An outboard motor powered low head, high volume pump for pumping water from an inlet to an outlet comprising: a weir structure separating the inlet from the outlet; a Venturi tube transpiercing said weir structure, said Venturi tube having an acceleration chamber communicated to said inlet, a deceleration tube communicated to said outlet and a throat section therebetween; and, an outboard motor having a water discharge means for mounting said outboard motor in front of said acceleration chamber of said Venturi tube with said water discharge directed into said acceleration chamber.

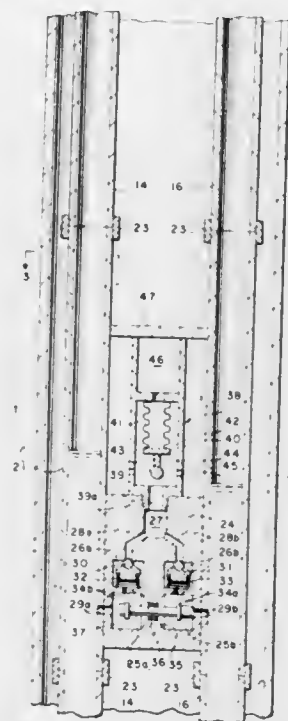
3,851,997
DUAL STRING AUTOMATIC GAS LIFT VALVE
Bobby L. Douglas, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 1, 1974, Ser. No. 447,130

Int. Cl. F04f 1/18; G05d 11/00

U.S. Cl. 417-112

15 Claims



1. A dual string, gas lift injection valve assembly comprising: body means adapted to engage two strings of conduit; passage means in said body arranged to communicate with the strings of conduit; checkvalve means in said passage means adapted to allow fluid flow through said passage means in one direction only; pressure responsive valve means in said passage means communicating with the conduit strings, said pressure responsive means arranged in said passage means to receive fluid pressure from the conduit strings and to move responsively thereto to open and close said passage means alternatively to each of the conduit strings; and means on said body means for delivering pressurized gas to said passage means.

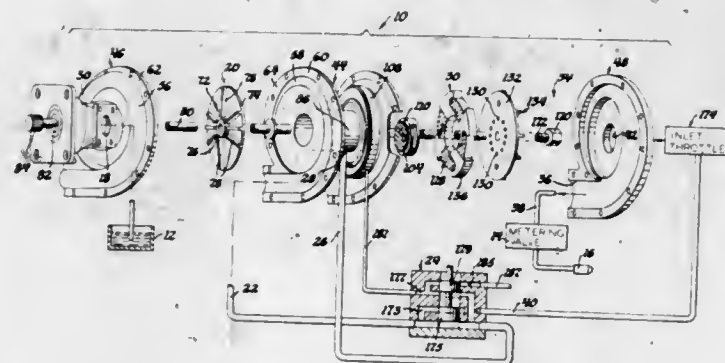
3,851,998
COMPACT HIGH SPEED FUEL PUMP ASSEMBLY
Noel L. Downing, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1973, Ser. No. 370,417

Int. Cl. F04b 23/14; F03c 3/00

U.S. Cl. 417-199 A

7 Claims



1. A pump assembly for producing a high pressure output during a start phase of operation, housing means forming a chamber having an inlet and an outlet thereto, a rotatable shaft directed through said housing driven between first and

second speeds, a rotor located within said chamber radially outwardly of said rotatable shaft including a radially inwardly located central bore therein concentric of said rotatable shaft, coupling means connecting said rotor to said shaft for concurrent rotation therewith, means forming a stationary cam member within said rotor bore having an outer periphery eccentric to said shaft for forming a pump chamber with said rotor in communication with said inlet and outlet, said rotor having a plurality of radial slots therein each opening into said central bore therethrough, a vane located in each of said slots including a radially inner located tip thereon located in sliding engagement with the outer periphery of said cam member for displacing fluid from said chamber between said inlet and outlet, spring means having a predetermined rate for biasing said vanes into sealed engagement with said cam periphery during a start phase of operation between first and second predetermined speeds wherein said vanes positively displace fluid to cause a high lift flow of fluid from the inlet to the outlet of said pump chamber to produce a high pressure fluid discharge during the start phase of operation, said vanes being responsive to centrifugal action at said second predetermined speed to compress said spring means and to move radially outwardly within said slots to disengage the inner tips thereof from the outer periphery of said stationary cam thereby to terminate the positive displacement of fluid from said inlet to said outlet at said second predetermined speed and to reduce frictional wear between said vanes and said cam when said shaft is driven at said second predetermined speed.

3,851,999

SEALING ASSEMBLY

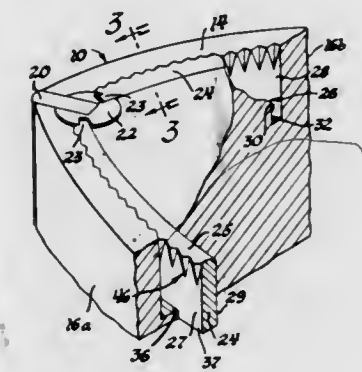
William H. Bibbens, 16500 N. Park Dr., Southfield, Mich. 48075

Filed Dec. 5, 1972, Ser. No. 312,408

Int. Cl. F01c 19/00

U.S. Cl. 418-142

36 Claims



1. A rotary device for eccentric rotor machines comprising: a rotor having an end face lying in a plane substantially normal to the axis of rotation of said rotor; an elongated groove formed in said end face, said groove having a pair of spaced side walls; an elongated sealing strip received in said groove, said sealing strip having an outer edge and a pair of spaced side surfaces; biasing means engaged between said rotor and sealing strip biasing said outer edge to project from said groove; and interengageable force transmitting means on said sealing strip and rotor operable in response to longitudinal forces on said outer edge to apply transverse and axial forces on said sealing strip in a direction to simultaneously urge one of said surfaces into sealing engagement with one side wall of said groove and said outer edge outwardly of said groove.

3,852,000

FLEXIBLE ROTOR FOR FLUID PUMPS

Kenneth John Wilcox, Cyncoed, Cardiff, Wales, assignor to Tudor Accessories Limited, Hayes, Middlesex, England

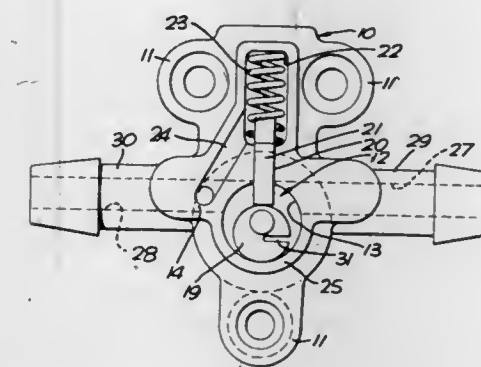
Filed Oct. 24, 1972, Ser. No. 299,776

Claims priority, application Great Britain, Oct. 25, 1971, 49533/71

Int. Cl. F01c 5/02

U.S. Cl. 418-156

4 Claims



1. A fluid pump comprising: a circular chamber the interior of which has parallel opposed walls and a peripheral wall; an inlet port and an outlet port communicating with said chamber; a vane reciprocally mounted in said peripheral wall of said chamber between said inlet and outlet ports for sliding engagement with said opposed parallel walls of said chamber; a circular rotor eccentrically mounted within said chamber and having two opposed faces thereon permanently in sliding engagement with said parallel opposed walls of said chamber and a peripheral surface a part only of which slidably engages said peripheral wall of said chamber as the rotor rotates eccentrically about the central axis of said chamber; means urging said vane into engagement with the periphery of said rotor; an enclosed space outside said chamber into which a part of said vane projects; and a passage placing said space into direct communication with said outlet port of the fluid pump; characterized in that said part of the rotor which slidably engages said peripheral wall of the chamber is resiliently flexible towards and away from the axis of rotation of the rotor; and in that the rotor is formed with an axial open ended slot which extends inwardly from an edge of the rotor between said port of the rotor which engages said peripheral wall of the chamber and the axis of rotation of the rotor.

3,852,001

FLUID TRANSLATOR

Edward T. Miller, Corpus Christi, Tex., assignor to R. J. Polard, San Marcos, Tex., a part interest

Filed Apr. 26, 1973, Ser. No. 354,802

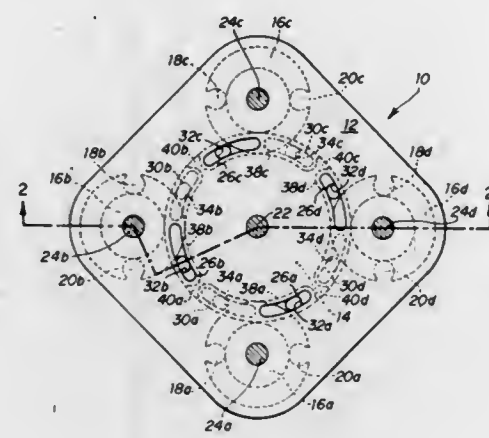
Int. Cl. F01c 1/08

U.S. Cl. 418-196

13 Claims

1. A rotary motor comprising: a casing having opposed walls with elongate slots symmetrically formed through said walls; a circular rotor rotatably mounted between said opposed walls and having grooved portions extending into the periphery of said rotor and spaced about the periphery thereof to define a plurality of piston surfaces, the outer surfaces of said piston surfaces being adjacent the periphery of said rotor; pressure inlet and exhaust outlet ports formed through opposed sidewalls of said rotor to communicate with said grooved portions, said ports periodically communicating

with said slots in said walls during rotation of said rotor, a plurality of circular cylinder heads rotatably mounted between said opposed walls and spaced about the periphery of said rotor such that outer portions of said cylinder heads mate with and are closely received within said grooved portions, plural cylinder grooves being defined in the edges of each said cylinder head, said cylinder grooves being dimensioned for receiving said piston surfaces,



means for synchronizing the rotation of said cylinder heads with said rotor, and
means for applying pressurized fluid through said slots in one of said walls and through said pressure inlet ports into said grooved portions in order to rotate said rotor and said cylinder heads, said pressurized fluid being exhausted from said grooved portions through said exhaust outlet ports and through said slots formed in one of said walls.

3,852,002

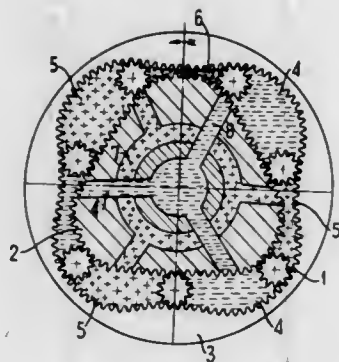
GYRATING-CAM ENGINE, PARTICULARLY AS A HYDRAULIC ENGINE

Bohdan Sieniawski, Gdansk-Oliwa, Poland, assignor to Zaklady Urzadzen Okretowych "Hydroster", Gdansk, Poland
Filed Nov. 28, 1972, Ser. No. 310,077

Claims priority, application Poland, Dec. 1, 1971, 151883
Int. Cl. F01c 1/42; F03c 3/00; F04c 1/16

U.S. Cl. 418—61 R

3 Claims



1. A gyrating-cam hydraulic engine, comprising an outer cam, an inner cam mounted concentrically within said outer cam and forming a space therebetween and rotating toothed planet gears mounted between and in engagement with said cams and separating said space into working chambers, said inner and outer cams having toothed lobes, said inner cam having three lobes and said outer cam having a number of lobes exceeding the number of lobes of said inner cam by at least one; one of said cams being stationary and the other of said cams being rotatable.

3,852,003

PRESSURE-SEALED COMPRESSOR

Gerhard Adalbert; Jurgen Hess, both of Markgroningen, and Ernst Linder, Muhlacker, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

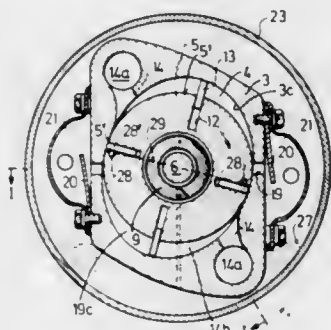
Filed May 10, 1973, Ser. No. 359,030

Claims priority, application Germany, May 12, 1972, 2223156

Int. Cl. F04c 27/00

U.S. Cl. 418—93

10 Claims



1. Pressure-sealed compressor comprising housing means including a central housing part having a cylindrical cavity surrounded by an endless inner actuator surface, a pair of end walls closing the ends of said cavity and having confronting stationary faces, a tubular pintle on one of said end walls, and inlet and outlet means for a fluid, said housing means further including a container for high pressure fluid communicating with said outlet means and having an outlet for high pressure fluid; rotor means mounted on said housing means for rotation about an axis, and including a rotor having rotor end faces slidably engaging said stationary faces and forming clearing gaps therewith, a drive shaft portion mounted in said tubular pintle for rotation and including a thin shaft portion formed with an annular recess, and a plurality of vanes respectively mounted in radial slots of said rotor and having outer ends slidably engaging said actuator surface for forming expanding and contracting chambers between said rotor and said actuator surface, said inlet and outlet means communicating with said chambers, said rotor being formed with an annular space surrounding said pintle and connecting radially inner ends of said slots; said housing means being formed with duct means connecting said outlet means and said annular space so that high pressure in said slots urges said vanes into engagement with said actuator surface, said annular recess forming part of said duct means and communicating with said annular space; and at least one of said end walls being formed with a conduit having one end connected with said outlet means and the other end formed as a port in said stationary face of said end wall opening into the respective gap between the respective stationary face and rotor end face so that fluid is pressed into said gap for sealing the same against leakage.

3,852,004

GEAR PUMPS

Kenneth William Samuel Foster, Prestbury, and Neil McIntosh Wallace, Stockport, both of England, assignors to Renold Limited, Manchester, England

Filed Feb. 22, 1973, Ser. No. 334,802

Claims priority, application Great Britain, Feb. 25, 1972, 8764/72

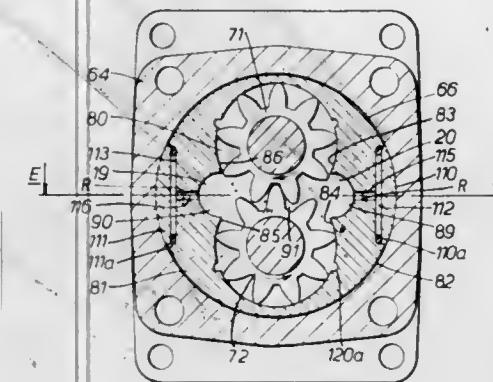
Int. Cl. F01c 19/08

U.S. Cl. 418—131

30 Claims

1. A reversible high pressure gear pump which will function also as a motor, comprising: a pair of externally meshing gears operating in a pump cavity within a pump casing to define with

cylindrically-walled wall portions and confronting side wall portions of the cavity a high pressure zone in the cavity, the pump cavity being defined in part by an insert presenting two sets of said cylindrically-walled wall portions in confronting relationship with one another said insert being displaceable in the casing relative to said confronting side wall portions of the pump cavity and transversely of the axes of rotation of the



gears to load either set of its cylindrically-walled portions into sealing engagement with the tips of the gear teeth and to move the other set out of engagement with the tips of the gear teeth whereby the fluid inlet to the pump cavity, for that period of time, is always in communication with a zone thereof which extends around a major portion of the periphery of said gears during operation of the pump, to pump fluid in either direction.

3,852,005

APPARATUS FOR MOLDING RUBBER

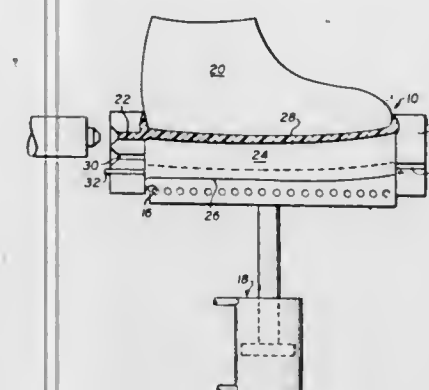
Marvin Americo Sculati, and John Cornelius Gaynor, both of Dublin, Ga., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 203,697, Dec. 1, 1971, abandoned. This application July 25, 1973, Ser. No. 382,414

Int. Cl. B29c 9/00; B29f 1/12; B29h 3/14, 7/08

U.S. Cl. 425—119

5 Claims



1. In apparatus for molding a two colored sole into a tasted upper;

- a mold side ring for defining part of a mold cavity adapted to be closed at one end by a lasted upper;
- a sole plate slidably disposed in said mold cavity in close confronting relation with said side ring means;
- said sole plate having a surface for confronting said lasted upper and a side wall with a peripheral groove there-within and a lip thereon between said lasted upper confronting surface and said groove, said lip extending toward and into close proximity with said side ring;
- a first passage through said ring into said mold cavity for introducing rubber therewithin;
- a second passage through said ring into said mold cavity for introducing gas at high velocity into said mold cavity;
- a third passage through said ring into said mold cavity at a point remote from said second passage for venting

said gas from said mold cavity, whereby said gas will travel across said mold cavity; and
g. means for moving said sole plate toward and away from said one end.

3,852,006

MOULD ASSEMBLY OF TIRE VULCANIZER

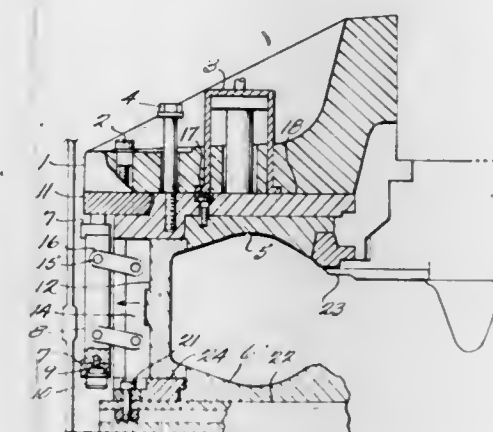
Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kaishiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1973, Ser. No. 402,174

Int. Cl. B29h 5/02

U.S. Cl. 425—47

3 Claims



1. A mould assembly of a tire vulcanizer, of the type having a stationary lower mould, an upper mould moved up and down by a bolster plate, and a plurality of tread moulds arranged around said lower mould and being movable radially of the lower mould, the radial movement of said tread moulds being caused by the vertical movement of said bolster plate, said mould assembly comprising means for vertically moving said bolster plate and said upper mould relative to each other, outer ring walls suspended from said bolster plate and arranged around said tread moulds, links pivotally connecting said outer ring walls with the tread moulds respectively, means for vertically adjusting the points where said links are pivotally connected with said outer ring walls, means provided on said bolster plate for parting said plate from the upper mould in contact with the lower mould and a member provided on the upper mould and having a horizontal guide surface for guiding each tread mould in the radial direction.

3,852,007

APPARATUS FOR MAKING FILTERS

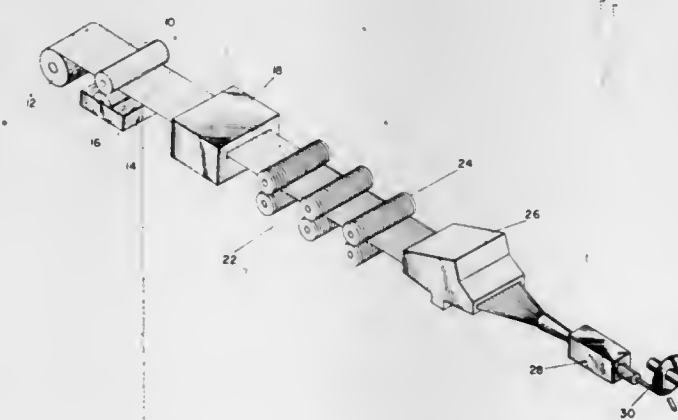
William E. Levers, and Charles H. Keith, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 36,746, May 13, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,904

Int. Cl. B29c 17/02

U.S. Cl. 425—66

7 Claims



1. An apparatus for preparing improved cigarette filters comprising a supply means for providing a web of synthetic

thermoplastic organic fibers having at least one surface thereof impregnated with a film-forming derivative of cellulose which renders the web stiff, flexing and fracturing means for receiving, flexing and fracturing said film-forming derivative of cellulose on said web, patterning means for embossing said web, plasticizing means for applying a plasticizer to at least one surface of the flexed and embossed web, which plasticizer means softens the fractured web and means for converting the plasticized web into a substantially cylindrical tobacco smoke filter rod.

3,852,008

APPARATUS FOR COOLING TIRES DURING POST-INFLATION

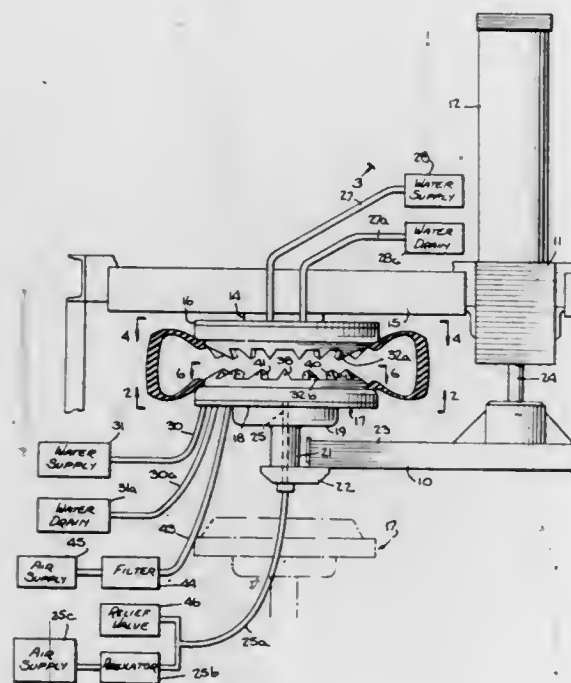
Daniel Shichman, Trumbull, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed July 26, 1973, Ser. No. 382,972

Int. Cl. B29h 17/00

U.S. Cl. 425-28 P

9 Claims



1. Apparatus for post-mold cycle cooling a pneumatic tire, after the removal of the tire from the mold and during the course of a post-inflation treatment, comprising:

- means for supporting a tire to be cooled;
- means for inflating the tire;
- means for cooling said tire-supporting means;
- means for discharging gas into the inflated tire comprising a gas-intake passageway, a gas-discharge passageway, and orifice means between said passageways for establishing gas flow communication therebetween, said gas-discharge passageway comprising a gas-discharge aperture and a lateral wall between said orifice means and said gas-discharge aperture, said lateral wall having a gas-intake aperture therein;
- means for supplying gas at higher pressure than the gas in the tire to said gas-intake passageway of said gas-discharging means to cause gas flow through said orifice means effective to induce gas flow through said gas-intake aperture of said lateral wall and through said gas-discharge passageway against the interior surface of the tire and against said tire-supporting means to transfer heat from the tire to the gas therein and from the gas to said tire-supporting means;
- and means for preventing a pressure build-up above a predetermined value inside the tire.

3,852,009

FILTER MAKING APPARATUS

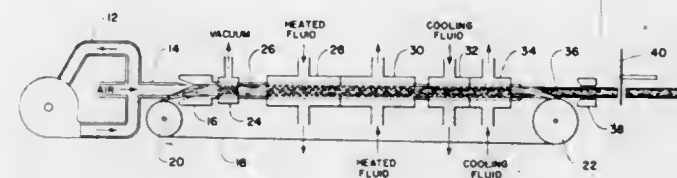
John D. Roberts; John D. Ellenberg, and Charles H. Keith, all of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 224,224, Feb. 7, 1972, abandoned, which is a division of Ser. No. 775,390, Nov. 13, 1968, Pat. No. 3,656,484. This application Oct. 29, 1973, Ser. No. 410,857

Int. Cl. B29c 15/00; B32b 5/08

U.S. Cl. 425-83

3 Claims



1. An apparatus for forming a stable elongated element from short thermoplastic fibers containing a bonding constituent comprising a nonporous cylindrical tube of substantially constant cross sectional dimension, blowing means for conveying discrete short thermoplastic fibers having no dimension greater than the diameter of said tube containing a bonding constituent into said tube to form an element in which said short fibers are predominantly transverse to the longitudinal axis of said element by formations within the nonporous tube, and means for heating said element to activate said bonding constituent.

3,852,010

INJECTION MOLDING MACHINE WITH OPTIONAL PIVOTABLE SUPPORT FRAME

Karl Hehl, Siedlung 183, 7291 Lossburg/Wuerttemberg, Germany

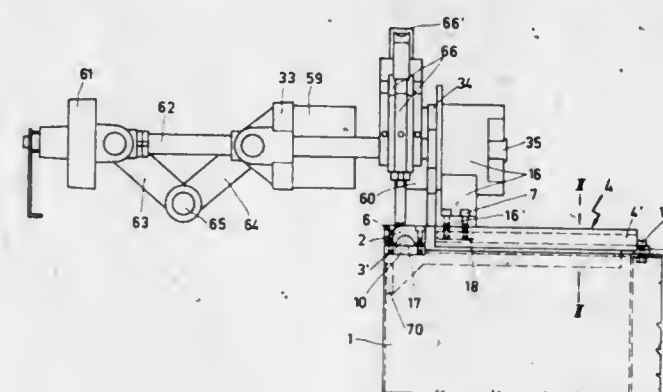
Filed Nov. 15, 1972, Ser. No. 306,629

Claims priority, application Germany, Nov. 16, 1971, 2156818

Int. Cl. B29f 1/00

U.S. Cl. 425-192

10 Claims



1. In an injection molding machine which includes a die closing unit and at least one injection unit on a machine base, a combination of mounting elements for mounting the die closing unit on the machine base in two different assembly configurations, the combination comprising:

- a generally horizontal upper end wall and a generally vertical forward end wall as parts of the machine base;
- a horizontal mounting face defined by the machine base in the area of its upper end wall bordering its forward edge above said forward end wall, the mounting face including two mounting emplacements at opposite sides of the machine base to which the die closing unit is directly attachable in a first, fixed assembly configuration; and
- a pivotable support frame which is interposable between the die closing unit and the mounting face of the machine base in a second, pivotability-providing assembly configuration; and wherein

said support frame includes:

- means for pivotably attaching the support frame to the mounting face at its mounting emplacement so as to permit pivoting of the support frame between a horizontal and a vertical position, said pivoting means including an inner pivot member journaled in the support member and adapted for attachment to the two mounting emplacements of the mounting face; and
- two spaced, parallel rail profiles extending perpendicular to the pivot axis defined by said pivoting means and having generally flat upper mounting faces to which the die closing unit is attachable in said second assembly configuration.

3,852,011

ORIENTED REMOVAL STRUCTURE FOR AN INJECTION MOLDING MACHINE

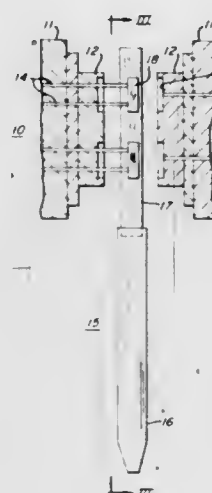
Humbert Luciano Maiocco, Woodlyn, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 25, 1972, Ser. No. 300,511

Int. Cl. B29c 7/00

U.S. Cl. 425-242 R

1 Claim



1. In an apparatus for injection molding thermoplastic products having at least two platens, at least one being movable, mold halves attached to said platens, a mold cavity formed by said mold halves, movable ejector pins extending partially into said cavity, and means for injecting plastic into said cavity, the improvement comprising a movable finished product receiving and orienting means disposed outside the platen area during the molding process and movable upon mold opening to a position between said spaced platens, closely spaced from and about the finished product, said receiving and orienting means being shaped to receive the product and place it in a predetermined orientation, and comprising a telescoping exit trough which is disposed below the mold portions during molding, and which telescopes upward into position about the ejector pin supported product when the mold is opened, said telescoping exit trough having a movable upper receiving portion having ejector pin receiving apertures therein and a stationary lower funneling portion through which the product exits.

3,852,012

CONTINUOUSLY OPERATING PANEL PRESS

Heinrich Pfeiffer, Berliner Ring, Germany, assignor to Maschinenfabrik J. Dieffenbacher & Co., Eppingen, Germany

Filed Aug. 28, 1973, Ser. No. 392,232

Claims priority, application Germany, Aug. 29, 1972, 2242492

Int. Cl. B29d 7/14; B29c 15/00

U.S. Cl. 425-363

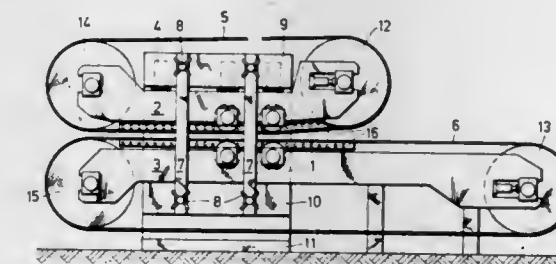
8 Claims

1. A continuously operating press for the fabrication of panels of chips, fibers, plywood and the like, comprising in combination:

an open machine frame which includes a base portion, an upper support member and a lower support member, both arranged at a vertical distance from one another and from the base portion;

a movable press spar and a stationary press spar facing one another vertically on opposite sides of a horizontal work gap between the support members; one of the spars being mounted underneath the upper support member, the other one being mounted above the lower support member;

means for vertically adjusting the movable press spar; and an upper conveyor supported by the spar mounted on the upper support member, and a lower conveyor supported



by the spar mounted on the lower support member; and wherein:

each conveyor includes an endless conveying element, and conveyor drive means; and

the upper conveying element has an outer return strand running above the upper support member and an inner working strand forming the upper side of the work gap, while the lower conveying element has an outer return strand running below the lower support member and an inner working strand forming the lower side of the work gap, both endless conveying elements being removably from their guide drums by laterally sliding them over their respective support members and press spars.

3,852,013

EXTRUDER FOR PLASTICS MATERIAL, PARTICULARLY THERMOPLASTIC OR NON-CROSS-LINKED ELASTOMERIC MATERIALS

Hartmut Upmeyer, zum kahlen Berg 11, 4542 Tecklenburg, Germany

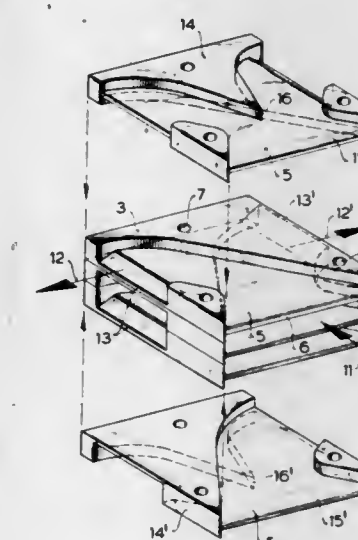
Filed Sept. 19, 1973, Ser. No. 398,794

Claims priority, application Germany, Sept. 19, 1972, 2245820

Int. Cl. B29f 3/02

U.S. Cl. 425-376

2 Claims



1. An extruder for plastics material, wherein a supply passage for the material is provided with a distributor for dividing

the flow of material into two or more branch passages leading to processing tools for the material, and the distributor comprises conduits corresponding in number to the number of branch passages, the inlets of said conduits being disposed in the supply passage and said conduits opening into a respective one of the branch passages, wherein further the conduits comprise a plurality of laminar channels which open on alternate sides into a respective one of the branch passages and the inlets of which extend over the entire cross-section of the supply passage, each outermost laminar channel being subdivided by means of a central blade so that one half opens into one of the part-passages and the other half opens into the other part-passage.

3,852,014

PLASTIC MOLDING MACHINE

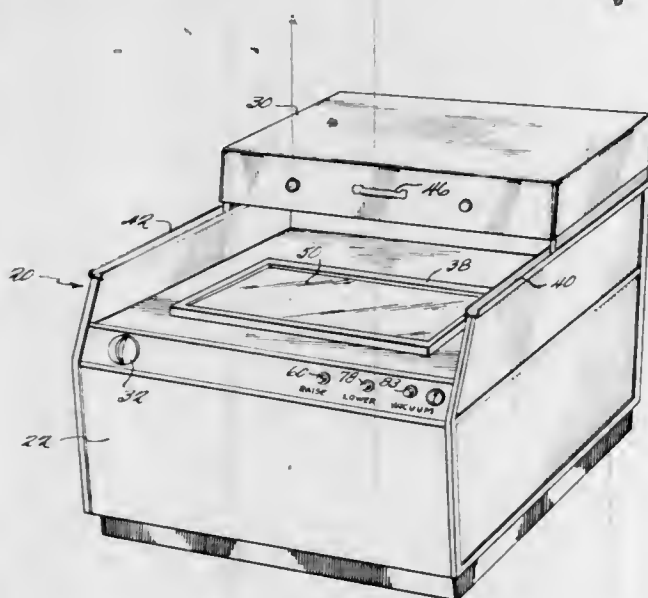
Jerome Watis Kimball, and Kenny Harrell Kimball, both of Savannah, Ga., assignors to Permacraft Corporation, Savannah, Ga.

Filed Mar. 14, 1973, Ser. No. 341,239

Int. Cl. B29c 17/00

U.S. Cl. 425-388

37 Claims



1. A vacuum molding apparatus comprising:
 frame means for receiving and holding a plastic sheet,
 heater means mounted for heating and softening said sheet,
 a forming bed having a mold receiving surface for receiving a mold, and means defining a plurality of vertical and horizontal air channels for guiding air being removed from said bed including a tray having a bottom floor with an opening for removing air, side walls extending upwardly from said floor to define a continuous peripheral edge, said floor having a plurality of grooves for channelizing air flow,
 a mesh screen lying on said floor,
 a further board lying atop said mesh screen and having grooves on the surface remote from said screen for channelizing air flow, and apertures extending therethrough, and
 a composition board lying atop said further board having a corduroy upper surface on which molds can be placed as desired with the corduroy ridges also channelizing air flow.
 vacuum means connected to said forming bed for removing air from a space between a softened plastic sheet and said bed to cause said softened sheet to be drawn about a mold on said mold receiving surface, and
 means for moving said frame means and a held sheet between a position adjacent said heater means for softening

and a position engaging said forming bed for molding a softened sheet about a mold.

3,852,015

BELLING AND HANDLING APPARATUS FOR PLASTIC PIPE

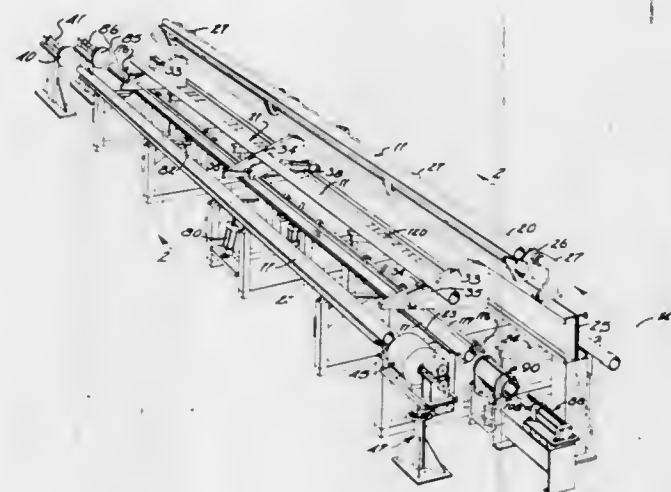
Patrick H. Stansbury, Spokane, Wash., assignor to ASC Industries, Inc., Spokane, Wash.

Filed Mar. 12, 1973, Ser. No. 340,478

Int. Cl. B29c 17/02

U.S. Cl. 425-392

8 Claims



1. A belling and handling apparatus for plastic pipe in pre-selected lengths of constant diameter along a straight pipe axis, comprising:
 first pipe support means in the form of an upwardly open trough for receiving an individual pipe length and fixing the location of the pipe axis;
 pipe delivery means for moving individual pipe lengths to said first pipe support means;
 first pipe locating means at said first pipe support means for longitudinally shifting the position of each pipe along its axis while on said first pipe support means to thereby move the pipe to a preselected longitudinal location;
 pipe heating means movably mounted at one end of said first pipe support means for movement with respect to said first pipe support means between a retracted position clear of pipe at said preselected longitudinal location and an extended position wherein one end of the pipe is received within the pipe heating means;
 second pipe support means in the form of an upwardly open trough transversely and elevationally spaced below the elevation of the trough of said first pipe support means and parallel thereto, said second pipe support means being adapted to hold an individual pipe length;
 pipe transfer means for moving individual pipe lengths from said first pipe support means to said second pipe support means by gravity;
 second pipe locating means at said second pipe support means for longitudinally shifting each pipe length therein along its pipe axis to a preselected longitudinal location thereon;
 pipe clamping means for fixing the location of each pipe at said last-mentioned preselected longitudinal location along the second pipe locating means;
 pipe belling means movably mounted at one end of said second pipe support means for movement with respect to said second pipe support means between a retracted position clear of pipe at said last-mentioned preselected longitudinal location on said second pipe support means and an extended position wherein the heated end of pipe held by said pipe clamping means is engaged by the pipe forming means to alter its circumferential configuration; and
 pipe discharge means for removing each pipe length from said second pipe locating means.

3,852,016

RETRACTABLE MANDREL FOR BULGING OUT AND FORMING AN ANNULAR PERIPHERAL GROOVE IN PLASTIC TUBES

Robert Delauzun, Ecully, France, assignor to Societe Anonyme Seperef TMP Societe pour L'Equipeement Des Reseaux En Comalisations De Matieres Plastiques, Quincieux, France

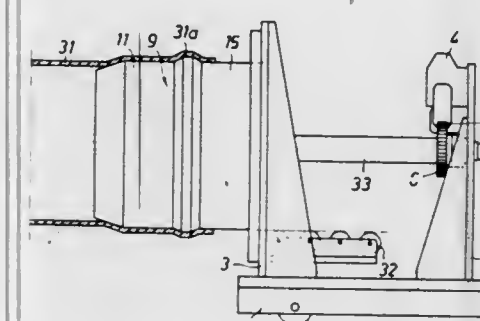
Filed Sept. 12, 1973, Ser. No. 396,570

Claims priority, application France, Sept. 15, 1972, 72.32850

Int. Cl. B29c 17/00; B29d 23/00

U.S. Cl. 425-393

5 Claims



1. A retractable mandrel for bulging out and forming an annular peripheral groove in plastic tubes, comprising a shaft mounted on a carriage, said carriage being displaceable for translatory movement along the longitudinal axis of the shaft, the shaft having a cylindrical end piece with a frusto-conical tip adapted to be inserted in a plastic tube, a drum keyed to the shaft, the shaft passing through the bottom of the drum, four rim-forming sector members adapted to form a complete circular rim, said sector members being pivoted in pairs about a first pair of slidable pivot pins arranged diametrically opposite each other for sliding movement in radial slots in the bottom of the drum, a second pair of slidable pivot pins fixed to diametrically opposed extremities of two of the sector members and passing through parallel slots also in the bottom of the drum, said second pair of pivot pins being received in grooves, said grooves forming together an S with portions extending from the axis of the shaft in a drive disc mounted for rotation, said grooves cooperating with said parallel slots for effecting the outward or expansive movement of the sector members in order to form an annular peripheral groove in the tube in a first direction of rotation of the disc and for retracting or folding the sector members over one another to each side of the line drawn between the axes of said first pair of pivot pins.

3,852,017

APPARATUS FOR A SYSTEM TO EXTRICATE INTRICATE, CERAMIC SHAPES FROM MULTIPLE PIECE MOLDS

Fred L. Derror, Lucas, Ohio, assignor to Mansfield Sanitary, Inc., Perryville, Ohio

Continuation of Ser. No. 139,622, May 3, 1971, abandoned, which is a division of Ser. No. 865,863, Oct. 13, 1969, Pat. No. 3,671,160. This application June 1, 1973, Ser. No. 366,199

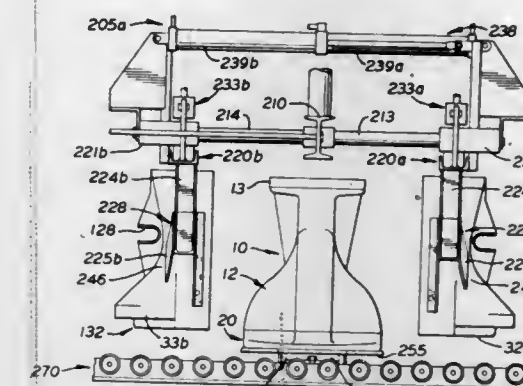
Int. Cl. B28b 21/82

U.S. Cl. 425-451

5 Claims

1. A system for extricating ceramic shapes from a multiple piece mold comprising: a cradle formed by opposed sections of a mold, a green casting supported by said cradle, a gripper means presenting a pair of tong means, each tong means selectively engaging one of the opposed mold sections forming the cradle, first means to effect actuation of each tong means in said pair between an open position in which each tong means may be moved into and out of engagement with the appropriate mold section of said cradle and a locked position in which each tong means grasps the appropriate mold section of said cradle, and second actuating means selectively to maintain said tong means in a first, juxtaposed position or a

second, separated position and further selectively to move said tong means between said first and second positions while



said tong means are disposed in the locked position, thereby separating the opposed mold sections of said cradle.

3,852,018

CONCRETE PIPE STABILIZING RING

Bent Melchior Karlsten Holme, Brønderslev, Denmark, assignor to Pedershaab Maskinfabrik A/S, Brønderslev, Denmark

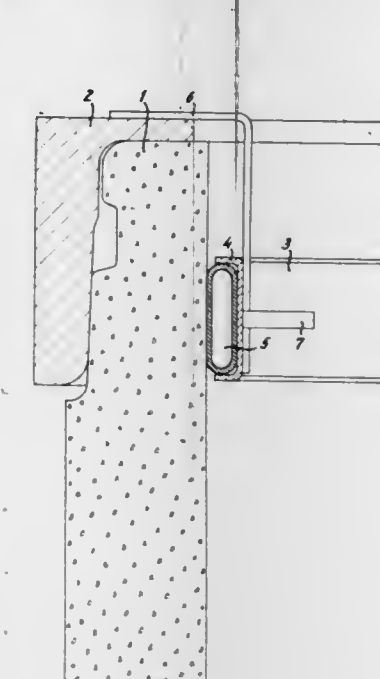
Filed Jan. 31, 1973, Ser. No. 328,331

Claims priority, application Denmark, Feb. 9, 1972, 579/72

Int. Cl. F16m 13/00

U.S. Cl. 425-472

3 Claims



1. Apparatus for stabilizing freshly cast pipe of concrete or similar material while in upright position during the hardening period, comprising:

a rigid outer cylindrical member having a regular inner surface in direct contact with the outer like regular surface of an upper portion of the pipe,
 an inner rigid cylindrical member located within the pipe and of smaller diameter than the inner diameter of the pipe and concentric therewith,
 and an inflatable ring member supported on the outer portion of the inner rigid cylindrical member and located between said inner rigid cylindrical member and the inner surface of the pipe in opposed relation to the rigid outer cylindrical member for bearing against the inner pipe surface and the outer surface of the inner cylindrical member when inflated, for securing between them said upper portion of the pipe.

3,852,019

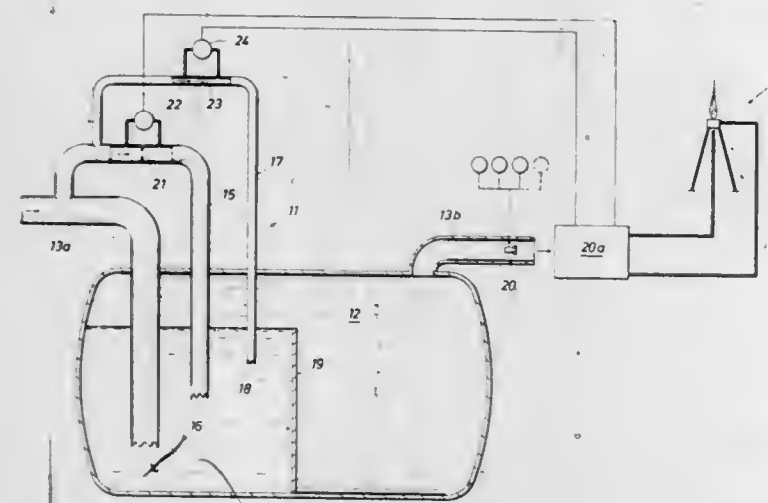
HIGH CAPACITY SMOKELESS FLARE HAVING A VERY LOW GAS FLOW DETECTOR

John Jacob Stranahan, Port Arthur, and John Carroll Lee Hollier, Nederland, both of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 266,795, June 27, 1974, abandoned. This application Dec. 19, 1973, Ser. No. 426,267 Int. Cl. F23n 1/00

U.S. Cl. 431-4

14 Claims



1. A method for maintaining an aspirating steam nozzle gas flare smokeless wherein the gas is supplied to the flare from a large main gas line with a low flow rate which is immeasurable in the large main gas line, the immeasurable flow rate gas range comprising a slow flow rate portion of 1 percent to 3 percent of maximum design flow rate and a very slow flow rate portion of up to 1 percent maximum design flow rate, comprising the steps of:

- a. detecting gas that is flowing at the slow flow rate portion of 1 percent to 3 percent of maximum design flow rate of the immeasurable flow rate range,
- b. detecting gas that is flowing at the very slow flow rate portion of up to 1 percent maximum design flow rate of the immeasurable flow rate range,
- c. varying the amount of steam to the aspirating steam nozzle equal to an empirically determined fixed set amount of steam when the gas flow rate is at least in the very slow flow rate portion for providing a smokeless air-to-gas mixture, and
- d. adding a second empirically determined fixed set of steam to the aspirating steam nozzle when the gas flow rate reaches the slow flow rate portion for providing a smokeless air-to-gas mixture and for conserving steam.

3,852,020

METHOD FOR ADMIXING COMBUSTION AIR IN A BURNER

Charles F. Peczel, and Edward T. Tyrce, both of Mississauga, Ontario, Canada, assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 264,635, June 20, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,719 Int. Cl. F23m 3/00

U.S. Cl. 431-9

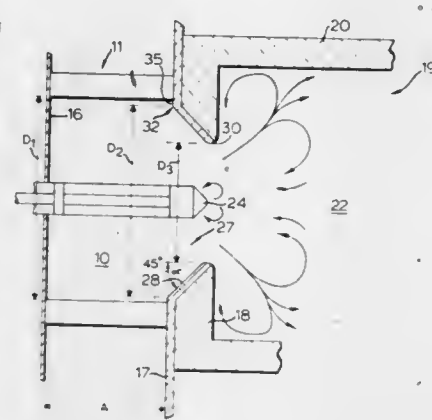
8 Claims

1. A method for admixing combustion air and oil in substantially stoichiometric proportions for combustion at a predetermined rate related to a specific rating R in 10^6 Btu/hr., said specific rating R corresponding to combustion air being supplied at a pressure of about 6 inches water column and at about 80°F , said method comprising the steps:

passing said air tangentially through a plurality of overlapping vanes spaced around a hypothetical cylindrical surface coaxial with an oil atomizer and extending between first and second parallel walls perpendicular to the axis of said surface thereby to give the air an initial rotation, the

diameter of said surface in inches being substantially equal to $4.23 (R + 1)^{1/2}$, the parallel walls being separated by a distance A in inches which is substantially equal to $2.69 (R + 1)^{1/2}$, the total minimum inlet area I between said vanes in square inches being substantially equal to $7.63 R$,

passing said rotating air spirally inwardly from said surface to the outer circular limit of a substantially 45° frusto-conical nozzle in said first wall coaxial with said surface, said outer circular limit in inches being substantially equal to $4.03 (R + 1)^{1/2}$, the inner circular limit of the



frusto-conical nozzle being substantially equal to $2.45 R^{1/2}$

passing the spiralling air (a) radially inwardly adjacent said nozzle and (b) axially out through said nozzle into a substantially cylindrical combustion chamber coaxial with said nozzle and having a forward wall adjacent said nozzle and normal to the combustion chamber axis, and atomizing the oil at the said predetermined rate in the said atomizer centered within said nozzle, thereby to mix said air and said atomized oil in said combustion chamber.

3,852,021

INTERNAL RECIRCULATION BURNER

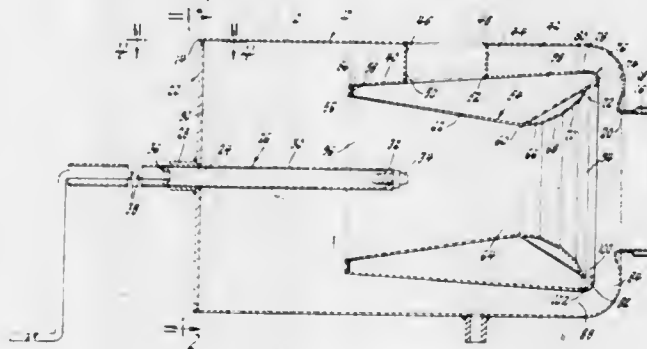
Ronald E. Quinn, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,661

Int. Cl. F23m 9/06

U.S. Cl. 431-116

5 Claims



1. A combustor assembly comprising an outer casing having an inlet and an outlet therein, a combustion liner located within said outer casing and spaced with respect thereto to form an annular external recirculation passage therebetween, means including an inner deflection surface within said combustion chamber liner for forming a primary combustion zone therein having an inlet end and an outlet end, means forming a mixing chamber upstream of the inlet end of said primary combustion zone, means on the inlet end of said outer casing for producing a swirl pattern within said mixing chamber directed through said annular passage and said primary combustion zone to direct hot gases therefrom into said mixing chamber for prevaporization of air-fuel mixture therein,

3,852,022

LIQUID FUEL BURNER HEAD

Renzo Medeot, Padova, and Francesco Cianfrone, Legnago, Verona, both of Italy, assignors to O.F.R. Officine Fratelli Riello S.p.A., Legnago, Verona, Italy

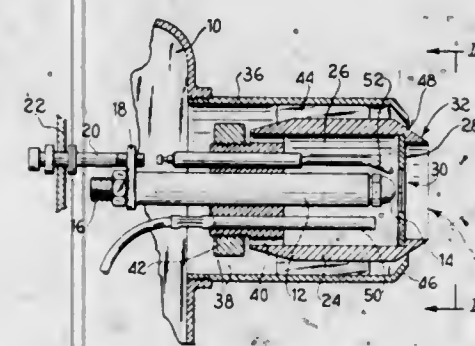
Filed Oct. 1, 1973, Ser. No. 402,374

Claims priority, application Italy, Oct. 6, 1972, 30178/72

Int. Cl. F23c 5/06

U.S. Cl. 431-186

8 Claims



1. An improved liquid fuel burner head comprising coaxial components, a nozzle for delivering a jet of atomized fuel in a direction coincident with the axis of said components and means to deliver flows of combustant air all around said fuel jet, wherein coaxial chambers are formed within said components, to which pressure air is fed in an amount smaller than the stoichiometrically required amount, for the formation of primary air or initial combustion flow, and respectively in an amount at least complementary to attain said stoichiometric amount, for the formation of a secondary air flow adapted to complete the combustion, said chambers comprising systems of axial and respectively annular openings and passages coaxial with said component axis, said annular system delivering said secondary air flow comprising means for guidedly delivering pressure air in the form of a converging, essentially laminar flow that encompasses an inner space wherein an initial combustion with combustant air deficiency occurs, and surrounds an outer space wherein said combustion is completed and the burning mixture is diluted by circulating flows, as induced by the speed of said essentially laminar flow said outlet system from the inner chamber of said coaxial chambers comprising a central orifice in front of said nozzle, as well as essentially radially directed slits that are slanting in respect of a plane perpendicular to nozzle axis, in order to induce at least a part of the air flowing from said system to form a vortex that ensures the mixture of said air and atomized fuel to expand within a space as defined by said convergent laminar flow delivered from the outer chamber outlet systems.

3,852,023

APPARATUS DISPOSING WASTE GAS BY BURNING

Takusen Itoh; Kenji Onose; Takayoshi Ueda; Noboru Okigami, and Iwao Miyabayashi, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Dec. 27, 1972, Ser. No. 319,018

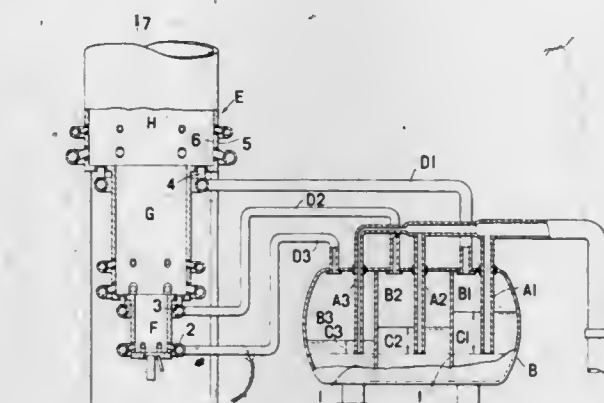
Int. Cl. F23d 13/20

U.S. Cl. 431-202

2 Claims

1. An apparatus for disposing of combustible waste gas carried by a main pipe, comprising:

branch means connected to the main pipe for branching waste gas according to the flow rate in the main pipe; a plurality of branch pipes connected to said branch means, waste gas being channelled into at least one of said branch pipes according to the flow rate in the main pipe; a plurality of connecting pipes, one pipe communicating with each of said branch pipes for carrying waste gas therefrom, and each having a nozzle at the other end thereof; and



a combustion furnace connected to said connecting pipes, said combustion furnace being a continuous cylindrical body comprised of a plurality of stages arranged in vertical order and communicating with adjacent stages, the uppermost stage having a first diameter and the diameters of successively lower stages being successively smaller than the first diameter, gas injection nozzles provided adjacent the bottom of each stage, air suction ports provided adjacent each of said gas injection nozzles and an ignition means positioned within the lowermost stage.

3,852,024

IGNITION DEVICE FOR VAPORIZING BURNERS

Hilding Ake Gerry Carlsson, Skallinge, Sweden, assignor to Monark-Crescent AB, Varberg, Sweden

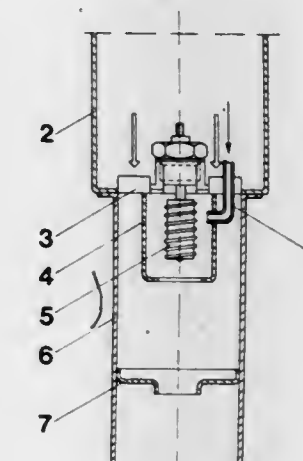
Filed May 21, 1973, Ser. No. 361,964

Claims priority, application Sweden, June 14, 1972, 7785/72

Int. Cl. F23d 11/44

U.S. Cl. 431-208

2 Claims



1. A liquid fuel burner device comprising a hollow vaporizing body means, a liquid fuel tube leading to and ending inside said hollow body, glow coil heat producing means inside said hollow body for both initial heating the end of said tube to a temperature which vaporizes the fuel in said tube and thereafter igniting inside said hollow body the vaporized fuel issuing from said tube, the end of said tube being juxtaposed to the internal surface of said hollow vaporizing body with a relationship such that surface tension spreads liquid fuel flowing out the end of said tube over the internal surface of the vaporizing body, a burning chamber means surrounding and communi-

cating with said vaporizing body for burning fuel vaporized inside said body while heating the outside of said body at least to a vaporizing temperature, and means for removing current from said glow coil after the initial ignition period, whereby said heat producing means may be initially activated to vaporize and ignite fuel in said tube and then deactivated after the ignited fuel has heated the vaporizing body to a point where liquid fuel in said tube is vaporized when the surface tension spreads it over the inside of said body.

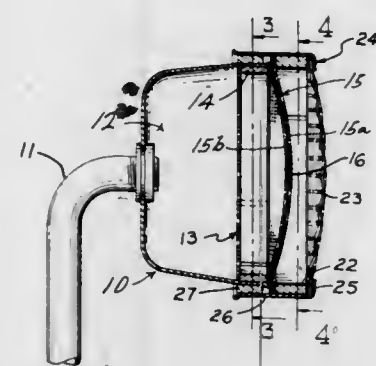
3,852,025

INFRA-RED HEATER

Eugene W. Placek, Middleburg Heights, Ohio, assignor to International Magna Corporation, Cleveland, Ohio
Filed Sept. 28, 1973, Ser. No. 401,837
Int. Cl. F23d 13/14

U.S. Cl. 431-329

9 Claims



1. A gas-fired infra-red heat generator comprising, in combination,
 - an open-ended, cup-shaped body defining a plenum,
 - a combustible fuel mixture inlet into said plenum,
 - a perforated diffuser extending across said body and defining the front margin of said plenum,
 - a first spacer fitting within the open end of said body for holding said diffuser in position,
 - a primary screen having interwoven metal elements, said primary screen extending across the open end of said body and having a size slightly larger than and extending outwardly beyond the end of said body, said primary screen being crowned convex in its central area,
 - a second spacer having an inner diameter substantially equal to the open end of said body and positioned against the margin of said primary screen,
 - a reverberator grid of substantially the same diameter as the outer diameter of said second spacer,
 - the margins of said grid and said primary screen being in direct contact with opposite sides of said second spacer,
 - a cap having an inwardly directed lip engaging the margin of said grid and a perimeter flange extending around and beyond said second spacer and spaced from the outer surface of said body,
 - and a means comprising a locking ring positioned between the inner surface of said cap wall and the outer surface of said body for holding said cap on said body and said diffuser screen, grid and spacers in assembled relationship.

3,852,026

METHOD OF HEATING GOODS AND A HEATING FURNACE

Folke Johansson, Vasteras, Sweden, assignor to Granges Engineering Aktiebolag, Vasteras, Sweden

Filed Nov. 1, 1973, Ser. No. 411,813

Claims priority, application Sweden, Nov. 6, 1972, 14354/72

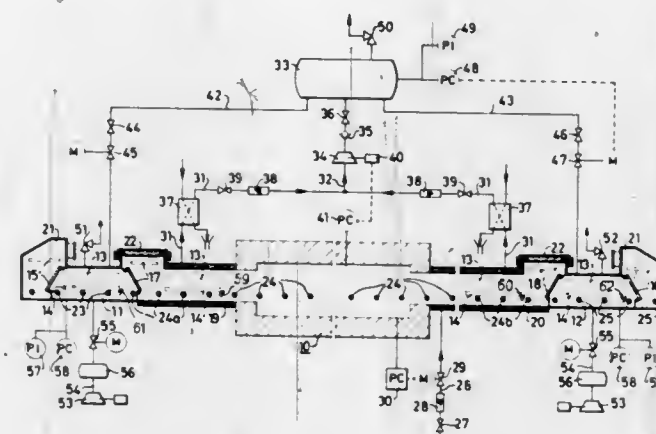
Int. Cl. F27b 11/06

U.S. Cl. 432-23

6 Claims

1. A method for the heating of material in a furnace of the type which is heated without combusting fuel in the furnace space itself and having at least one gas-flushed lock-type feed valve for charging and discharging the furnace, which material

tends to react chemically with the surrounding atmosphere when subjected to heat, said method comprising maintaining in the furnace a controlled atmosphere suitable for the material being treated by supplying at least substantially constantly thereto a gas having a controlled composition, passing the gas



used for maintaining the controlled atmosphere in the furnace at least substantially continuously from said furnace, storing said gas externally of the furnace in a magazine, and passing such stored gas intermittently to the feed valve for flushing the same.

3,852,027

FUME EXTRACTORS FOR THE HEATERS OF TEXTILE PROCESSING MACHINES

Frederick Hugh Howorth, Chorley, England, assignor to Howorth Air Conditioning Limited, Farnworth, Bolton, England

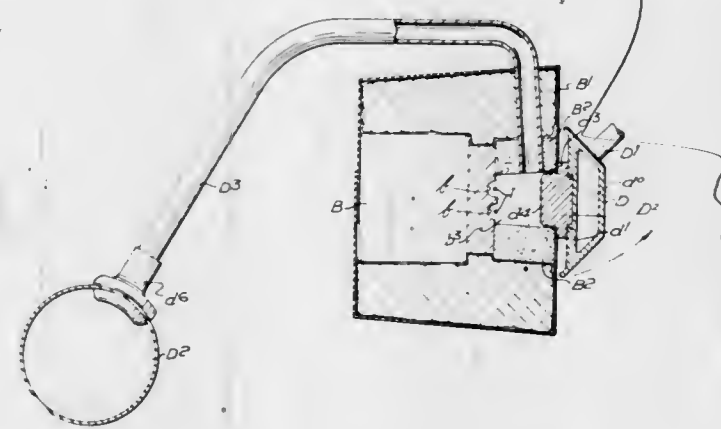
Filed Nov. 28, 1973, Ser. No. 419,520

Claims priority, application Great Britain, Dec. 8, 1972, 56765/72

Int. Cl. F27b 9/28

U.S. Cl. 432-59

1 Claim



1. A fume extractor unit for a heater assembly of a textile yarn or filament processing machine comprising a heater, a container surrounding said heater closed at each end, heat insulation material lining said container, and means defining a treatment chamber within the container through which the yarn or filament is passed for heat treatment by said heater, said chamber having at one side an opening and a normally closed insulated door over said opening, characterized by an exhaust conduit open at one end directly into said chamber and passing through said container insulation in spaced relation to said door opening for connection to an external suction duct, whereby fumes in the chamber resulting from heat treatment of the yarn or filament are directly exhausted from the chamber during processing.

3,852,028

APPARATUS FOR PREHEATING SCRAP

Richard J. Reinbold, Allentown; Eugene M. Rudzki, Bethlehem, and Bradford K. Pease, Allentown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 238,870, March 28, 1972, Pat. No.

3,802,830. This application Oct. 23, 1973, Ser. No. 408,347

Int. Cl. F27b 11/08

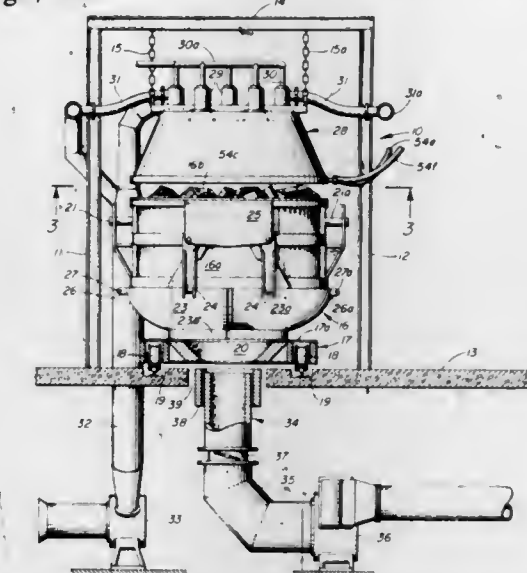
U.S. Cl. 432-162

7 Claims

1. Apparatus for preheating scrap in a preheater station prior to charging said scrap into a furnace, comprising:

- a. containing means adapted to hold said scrap,
- b. heating means adapted to fit atop said containing means to provide hot combustion gases to heat said scrap, said heating means being a burner hood comprising a steel shell in the shape of a frustum of a cone, having a broad bottom base and a narrow upper base, a box-like water-cooled steel ring having a water inlet pipe and a water outlet pipe and a baffle plate therebetween to direct the flow of water around said box-like steel ring attached to the broad bottom base and a steel plate attached to the narrow upper base, a refractory lining on the inside surface of the steel shell and a plurality of downwardly directed burners mounted on said narrow upper base,

- c. supporting means to hold said containing means and adapted to allow hot combustion gases to pass there-through, and



- d. exhausting means adapted to be mated with said support means to exhaust said hot combustion gases from said containing means.

CHEMICAL

3,852,029

STABLE CONCENTRATED SOLUTIONS OF DIRECT DYES AND PROCESS FOR THEIR MANUFACTURE

Hans Rudolf Bolliger, Mere, and Herbert Alexander Potts, Bramhall, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 20, 1971, Ser. No. 191,065

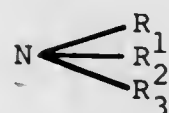
Claims priority, application Switzerland, Oct. 22, 1970, 15607/70

Int. Cl. D06p 1/06

U.S. Cl. 8-41 R

21 Claims

1. A process for the production of a stable concentrated solution of water soluble tertiary ammonium salts of direct dyes, substantially free of inorganic salts which comprises adding at least 2 mols of a tertiary amine of the formula



wherein R₁, R₂ and R₃ independently of each other denote methyl, ethyl, methoxyethyl or hydroxyethyl or wherein R₂ and R₃ together with the nitrogen atom to which they are attached form a pyrrolidine, piperidine, morpholine or thiomorpholine ring

to an aqueous medium containing

A. one mole of a member of the group consisting of (1) a tertiary ammonium salt of an azo sulphonic acid or carboxylic acid compound containing at least one primary or secondary amino group, and (2) a tertiary ammonium salt of a colored anthraquinone sulphonic acid or carboxylic acid compound containing at least one primary or secondary amino group, and (B) one mole of a member of the group consisting of (1) a tertiary ammonium salt of an azo sulphonic acid or carboxylic acid compound containing at least one primary or secondary amino group, and (2) a tertiary ammonium salt of a colored anthraquinone sulphonic acid or carboxylic acid compound containing at least one primary or secondary amino group, to form the tertiary ammonium salts of the said compounds, subsequently adding one mole of phosgene to the said aqueous medium to form the condensation product of the salts of said compounds with phosgene, the condensation reaction being conducted in the presence or absence of further auxiliary products.

3,852,030

SURFACTANT FOR ELECTROLYTE-CONTAINING PROCESSING SOLUTIONS

Joseph A. Komor, Allentown, Pa., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 21,197, March 19, 1970, Pat. No. 3,704,262. This application Aug. 28, 1972, Ser. No. 284,250. Int. Cl. B01F 17/02, 17/14; D06I 3/06

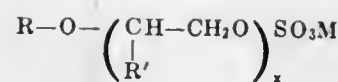
U.S. Cl. 8-111

5 Claims

1. A textile wet-processing bath of improved detergency comprising an aqueous solution containing the functional bath agents; up to 10% of electrolytes; and up to 1% by weight of said bath of a detergent blend of surfactants consisting essentially of

a. 30 to 90 parts by weight of phosphate ester reaction products of phosphorating agents and eight-carbon alcohols, and;

b. 70 to 10 parts by weight of a compound of the formula:



where R is an alkyl radical containing 9 to 16-carbon atoms or an alkylphenyl grouping in which the alkyl substituents contain a total of 6 to 12-carbon atoms; R' is H or a mixture of H and CH₃ wherein the alkyloxy mixture exhibits hydrophilic properties; x is a number corresponding to 10% to 70% alkyloxy by weight of the nonionic intermediate; and M is a water-solubilizing cation.

3,852,031

METHOD OF WET CLEANING OF MATERIAL FIBERS FROM IMPURITIES AND WOOD SWEAT

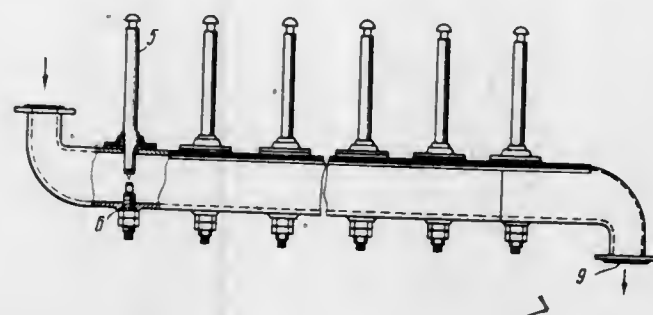
Valery Fedorovich Brodov, ulitsa Mashki Poryvaevoi, 6, kv. 5; Vyacheslav Stepanovich Osipov, ulitsa B. Filevskaya, 23, korpus 3, kv. 18; Mikhail Dmitrievich Zhdanov, Zhigulevskaya ulitsa, 19, korpus 1, kv. 69; Anatoly Anatolievich Burov, ulitsa Tsiolkovskogo, 6, kv. 11; Fedor Lukich Kovalev, ulitsa Alabyana, 10, korpus 6, kv. 159; Anatoly Illarionovich But, B. Akademicheskaya ulitsa, 75, korpus 2, kv. 24; Vadim Georgievich Ivanov, Erevanskaya ulitsa, 17, korpus 1, kv. 39; Nikolai Nikolaevich Belyaev, 3 Pryadilnaya ulitsa, 2, korpus 4, kv. 31, all of Moscow, and Lev Alexandrovich Bashev, ulitsa Tereshkovoi, 2, kv. 51, Mytishchi Moskovskoi oblasti, all of U.S.S.R.

Filed Apr. 6, 1973, Ser. No. 348,628

Int. Cl. D01c 1/00

U.S. Cl. 8-139

4 Claims



1. A method of wet cleaning natural fibres from impurities and wool sweat comprising forming a mixture of said fibres with a washing solution, positioning said mixture between electrodes installed in opposition to each other within a vessel, supplying a voltage to said electrodes within a range of from 20 to 70 kilovolts, and producing a pulse discharge with an energy of from 0.1 to 12 kilojoules between said electrodes, thereby generating a shock hydraulic wave within said mixture for breaking up the impurities and removing the same from said fibres as well as emulsifying the wool sweat and removing it from said fibres.

3,852,032

PROCESS FOR STERILIZING HYDROPHILIC GELATIN LENSES HAVING ULTRAVIOLET STABILIZERS

Jacques Urbach, North Hollywood, Calif., assignor to Uroptics International Incorporated, Los Angeles, Calif.

Division of Ser. No. 150,358, June 7, 1971, abandoned. This application May 7, 1973, Ser. No. 358,058

Int. Cl. A61I 1/00; G02c 13/00

U.S. Cl. 21-54 R

4 Claims

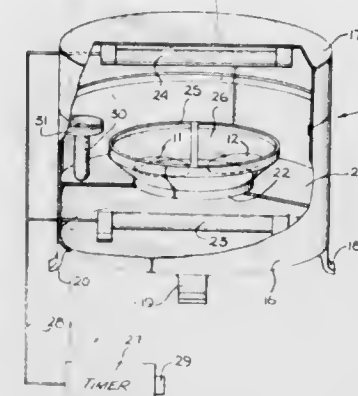
1. A process for the control of bacterial and other organic growth on soft contact lenses formed of hydrophilic gel material, comprising:

DECEMBER 3, 1974

CHEMICAL

243

combining an ultraviolet stabilizer with the hydrophilic gel material of said contact lens, and periodically exposing said lens to ultraviolet radiation of



sufficient intensity and duration to kill or retard said bacterial and other organic growth, the presence of said ultraviolet stabilizer preventing degradation of said lens as a result of said exposure.

3,852,033

PROCESS FOR CONTROLLING CHLORATE AND HYDROGEN ION CONTENT IN THE MANUFACTURE OF CHLORINE DIOXIDE FROM ALKALI METAL CHLORATE AND AN INORGANIC ACID

Bengt Goran Hultman, Domsjoverken, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

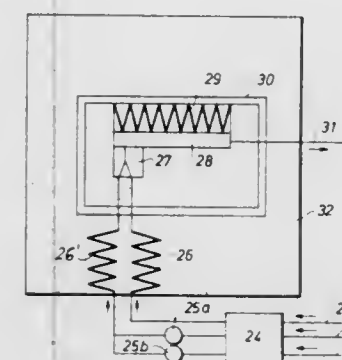
Filed July 9, 1973, Ser. No. 377,857

Claims priority, application Sweden, July 14, 1972, 9343/73

Int. Cl. G01n 25/20; C01b 11/02

U.S. Cl. 23-230 A

24 Claims



1. A process for measuring the chlorate ion and the hydrogen ion concentration of chlorine dioxide-producing reaction mixtures comprising alkali metal chlorate, reducing agent, and inorganic acid by a calorimetric determination, which comprises withdrawing a sample of the reaction mixture, combining it with a chlorate ion reagent which reacts with chlorate ions with liberation of heat, measuring the heat liberated, and from this heat determining the concentration of chlorate ion, withdrawing another sample of the reaction mixture, combining it with a hydrogen ion reagent which reacts with hydrogen ions with liberation of heat, measuring heat liberated and from this heat determining the concentration of hydrogen ion.

3,852,034

INDICATOR FOR EFFECTIVENESS OF ETHYLENE OXIDE STERILIZATION

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed June 21, 1972, Ser. No. 264,746

Int. Cl. G01n 21/06

U.S. Cl. 23-232 R

7 Claims

1. Chemical indicator for use in an ethylene oxide sterilizer to signal whether or not sterilizing has been effective comprising

carrier means; amino substituted indicating compound which contains hydrogen attached to amino nitrogen and which undergoes color change when hydrogen attached to amino nitrogen is replaced by hydroxyethyl, buffering agent selected to provide amino group dissociation equilibrium such that readily visible color change indicates sterilizing effectiveness.

3,852,035

AUTOMATED HANDLING AND TREATING APPARATUS

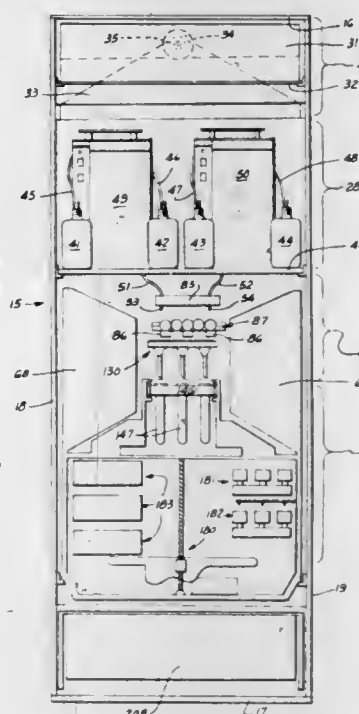
Orville Tungstall Wood, 9828 N. 105th Dr., Sun City, Ariz. 85351, and Harold Wood, Suite K, 2909 Hillcroft, Houston, Tex. 77027

Filed June 1, 1972, Ser. No. 258,517

Int. Cl. G01n 31/00

U.S. Cl. 23-253 R

9 Claims



1. An apparatus for automatically handling and treating a plurality of discrete samples to perform preselected operations thereon, comprising:

a plurality of containers, each of which contains one of said samples;

means for holding stationary said containers, said container holding means having a particular location therein for each of said containers, said locations being positioned in a desired arrangement;

means for sensing which locations in said container holding means have containers held therein;

a plurality of first means for storing reagents used for relatively permanent storage of said reagents;

a plurality of second means for storing reagents used for temporary storage of said reagents, the number and arrangement of said plurality of second storage means corresponding to the number and arrangement of said locations in said container holding means;

means for transferring a preselected quantity of the reagents stored in at least one of said first storage means into at least one of said second storage means to form a desired dosage in at least one of said second storage means;

said reagent transferring means transferring reagents into and forming a dosage only in the one or ones of the second storage means associated with said locations in said container holding means having containers held therein;

means for transferring simultaneously from each of said second storage means said dosages temporarily stored therein to said containers held in said container holding means;

means for transferring simultaneously from each of said second storage means said dosages temporarily stored therein to said containers held in said container holding means;

a plurality of means for performing desired operations on said plurality of samples, each of said performing means being movable with respect to said sample containers held in said container holding means;
means for selectively transporting each of said performing means into a desired operational relationship with said stationary sample containers and for maintaining said performing means in said relationship so that each of said performing means may perform its particular operation; and
means for controlling the operation of said first and second storage means, said reagent transfer means, said dosage transfer means, each of said performing means and said transporting means according to a preselected set of instructions.

3,852,036

BREATH TESTING SYSTEM

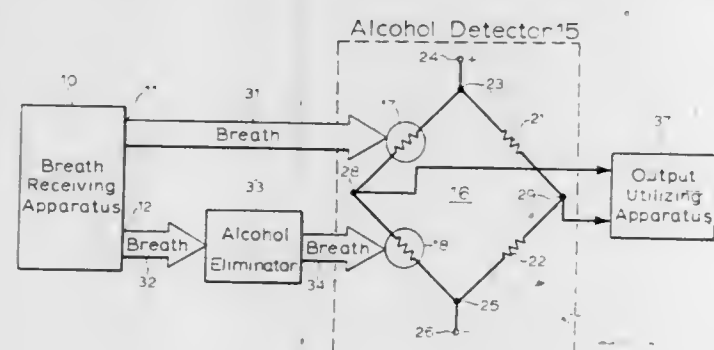
James E. Burroughs, Mt. Prospect; Joseph P. Hoppesch, Streamwood, and James A. Nowak, Glendale Heights, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1971, Ser. No. 213,141

Int. Cl. G01n 31/10, 31/12

U.S. Cl. 23—254 E

1 Claim



1. A breath testing system for determining breath alcohol concentration, comprising:

breath receiving apparatus for providing first and second substantially identical samples of deep lung breath received from a person whose breath includes alcohol, water and carbon dioxide;

an alcohol detector including a normally-balanced, four-legged wheatstone bridge having first and second substantially identical catalyst resistance elements in respective ones of two adjacent legs of the wheatstone bridge and a pair of equal resistors in respective ones of the other two adjacent legs of the bridge;

an alcohol removal stage including a heated platinum wire; means for supplying said first breath sample directly to said first catalyst resistance element;

means for supplying said second breath sample through said alcohol removal stage to eliminate the alcohol content from said second sample and for then supplying the alcohol-free second sample to said second catalyst resistance element;

said first catalyst resistance element responding to the presence of alcohol in said first sample to effect unbalancing of said wheatstone bridge, an output information signal being produced by said bridge having an amplitude directly proportional to and representing the alcohol concentration of said first sample, any effect on said first catalyst resistance element from the water and carbon dioxide in said first sample being balanced by a similar effect on said second catalyst resistance element from the water and carbon dioxide in said second sample,

and a meter controlled by and responsive to the amplitude of said information signal to provide a visual display of the alcohol level in the breath under test.

3,852,037

SELECTIVE IONIZATION DETECTOR

Bruno Kolb, Owingen, and Joachim Bischoff, Überlingen, both of Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH., Überlingen/Bodensee, Germany

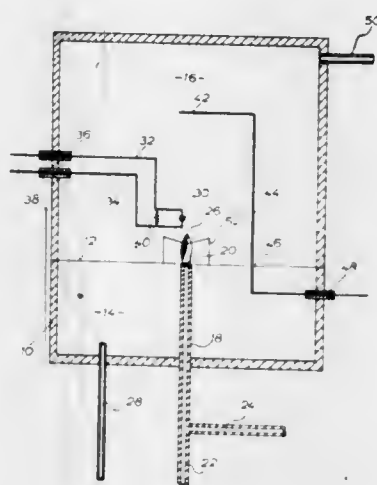
Filed May 4, 1973, Ser. No. 357,496

Claims priority, application Germany, May 6, 1972, 2222396

Int. Cl. G01n 31/12

U.S. Cl. 23—254 EF

8 Claims



1. A selective ionization detector of the type for detecting halogen, phosphorus and nitrogen compounds, comprising a diode through which a sample gas under analysis is fed by means of a transfer gas, and an electrode including an alkali source in the form of a heated alkali-containing glass, so that the electrode exhibits an increased ion emission upon occurrence of such specific substances, the improvement in which: said alkali source comprises alkali glass maintained in a heated softened state during operation of the detector.

3,852,038

APPARATUS FOR THE REACTIVATION OF POWDERED CARBON

Floyd L. Corson, Brookfield, Ill., assignor to CPC International Inc., Chicago, Ill.

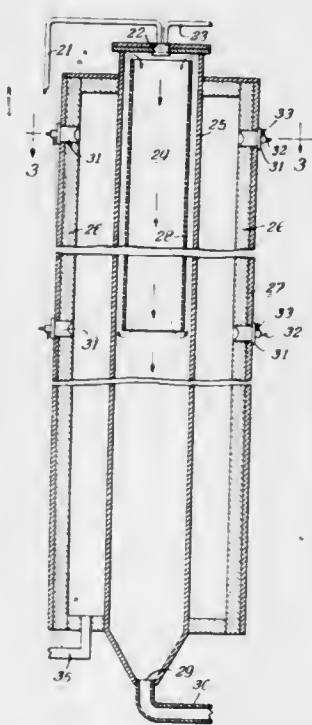
Division of Ser. No. 113,214, Feb. 8, 1971, Pat. No. 3,816,338.

This application Aug. 6, 1973, Ser. No. 385,755

Int. Cl. C01b 31/08

U.S. Cl. 23—259.9

5 Claims



1. Apparatus for the reactivation of spent powdered carbon having organic matter adsorbed thereon, comprising:

an elongate, generally tubular reactor vessel having a wall and a bore, and an inlet at one of its ends and an outlet at the opposite end, and means generally sealing each of its ends to provide, with said wall, an enclosed reaction chamber in the bore of said vessel;

means communicating with said inlet end for supplying to said reaction chamber an aqueous slurry of spent carbon; means for atomizing said aqueous slurry of spent carbon communicating with said inlet end; a convection tube coaxially disposed within said reaction chamber with its upper end positioned adjacent to but spaced from said outlet end and extending downwardly therefrom a distance no greater than about one-third the length of and spaced from said reactor vessel wall to provide an annulus thereabout;

heating means disposed about said reactor vessel wall for radiantly heating said wall to provide a temperature in said reaction chamber in the range from about 1200°F to about 1900°F; a refractory shell which forms a furnace wall coaxially disposed outside said reactor vessel; and means communicating with the outlet end of said reactor vessel for removing processed carbon from the reaction chamber.

3,852,039

FURNACE FOR THE COMBUSTION OF WASTE LIQUORS OR OTHER SOLUTIONS OR SUSPENSIONS CONTAINING COMBUSTIBLE ORGANIC SUBSTANCE AND VARIOUS COMBINATIONS WITH ALKALI

Sven Rudolf Gunnar Hasselberg, Broby, Sweden, assignor to Broby Industrier AB, Broby, Sweden

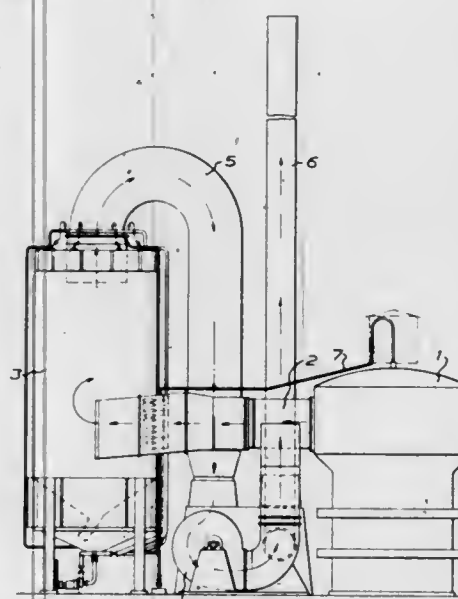
Division of Ser. No. 60,532, Aug. 3, 1970, abandoned. This application Feb. 8, 1973, Ser. No. 330,508

Claims priority, application Sweden, Aug. 4, 1969, 10863/69

Int. Cl. C10b 1/00

U.S. Cl. 23—277 R

4 Claims



1. In a furnace having a substantially circular cross section and a vertical axis for the continuous combustion of waste liquors containing combustible organic substances combined with alkali and having means for spraying said waste liquors into the top of the furnace, in the upper part of which moisture is evaporated from the waste liquor to concentrate the liquor and in the lower part of which the concentrated liquor is subject to combustion, the gaseous products of combustion rising in said furnace to effect the evaporation of moisture from the waste liquors being sprayed therein, the improvement comprising a circular furnace wall means extending circumferentially around the outside of the top of said furnace wall for forming therewith an annular collecting channel, a vault means mounted over the top of the furnace and supported circumferentially on the outer circumference of said

annular channel means, said vault means being spaced from the upper end of said furnace wall to provide an annular, tapered gap therebetween, and an outlet means communicating with said annular channel means for removal therefrom of combustion products and evaporated moisture, the annular, tapered gap being widest at that point diametrically opposite said outlet means and being narrowest at the point adjacent said outlet means, whereby the combustion products and evaporated moisture will flow upwardly in the furnace substantially uniformly, through the annular tapered gap into said annular channel means and finally through said outlet means.

3,852,040

APPARATUS FOR REMOVING UNDESIRABLE SUBSTANCES FROM FLUE GAS OR THE LIKE

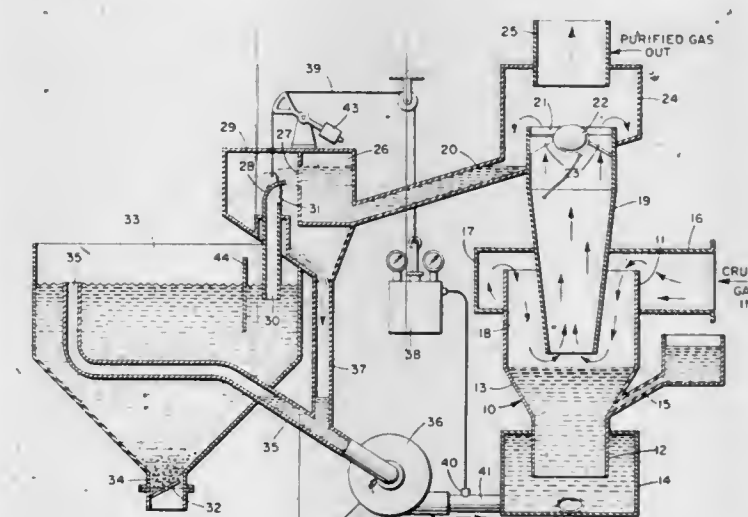
Karl Axel Goran Gustavsson, Enköping, Sweden, assignor to Aktiebolaget Bahco Ventilation, Enköping, Sweden

Filed May 30, 1972, Ser. No. 257,889 The portion of the term of this patent subsequent to May 8, 1990, has been disclaimed.

Int. Cl. B01d 47/02; B01j 1/00

U.S. Cl. 23—284

2 Claims



1. An apparatus for removing pollutants from a gas comprising tank means for a treatment liquid, means for flowing the gas substantially perpendicularly against the surface of the treatment liquid and entraining liquid in the gas, means for flowing the gas upwardly and for reducing its velocity, means for separating liquid and solids carried thereby from the gas, means for flowing the resulting slurry as a stream, and means for dividing the said stream into two sub-streams comprising a conduit for intercepting less than all of the said stream and for carrying the resulting intercepted sub-stream to a settling tank, means for carrying the remaining sub-stream to a means for pumping supernatant liquid from the said settling tank and the said remaining sub-stream to the treatment tank, and means responsive to the pump pressure for positioning the said intercepting conduit with respect to the said means for flowing the slurry as a stream thereby determining the volumes of the said sub-streams.

3,852,041

LOW PROFILE CATALYTIC CONVERTER

Albert J. Moore; James A. Haggart, Jr., both of Davison, and Michael R. Foster, Goodrich, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 211,306, Dec. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 177,947, Sept. 7, 1971, abandoned. This application June 14,

1972, Ser. No. 262,708

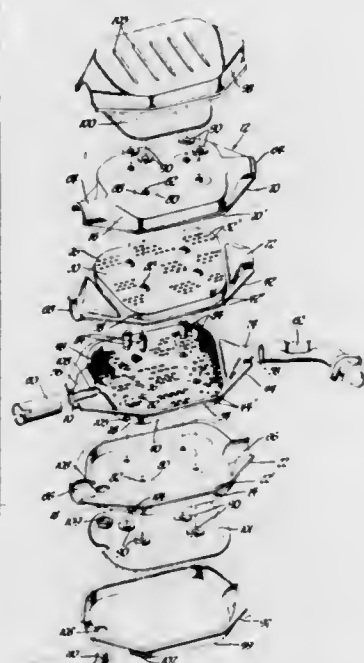
Int. Cl. F01n 3/14

U.S. Cl. 23—288 F

8 Claims

1. A catalytic converter for automobile use, comprising in combination: a top housing plate, a bottom housing plate, and a pair of catalyst retaining plates sandwiched therebetween,

said four plates having mating peripheral faces coterminous over substantially their entire peripheries as seen in plan view so as to form a four-layer sandwich suitable for edge-sealing, said four plates further having like-positioned concave substantially semi-cylindrical peripherally spaced portions defining in combination cylindrical contours adapted to receive engine exhaust inlet and outlet pipes, respectively, said portions being both concave downwardly in the top plate, both concave upwardly in the bottom plate, concave downwardly on both of the catalyst retaining plates at one cylindrical contour, and concave upwardly on both catalyst retaining plates at the other cylindrical contour, whereby exhaust gas passing from the exhaust inlet pipe to the exhaust outlet pipe



must pass through both catalyst holding plates, the top and bottom plates being respectively dished upwardly and downwardly in relation to said peripheral faces so as to define a space for exhaust gas flow from the exhaust inlet pipe to the exhaust outlet pipe, and the catalyst retaining plates being respectively dished upwardly and downwardly inboard of said peripheral faces and at varying distances in relation to said peripheral faces so as to define a catalyst containing space of substantially uniform depth disposed in a general slanting orientation between the exhaust inlet and the exhaust outlet, said catalyst retaining plates further having openings adapted to pass the exhaust gases while retaining catalyst material disposed in said space.

3,852,042

CATALYTIC CONVERTER WITH EXHAUST GAS MODULATING CHAMBER FOR PREVENTING DAMAGE TO CATALYST SUBSTRATE

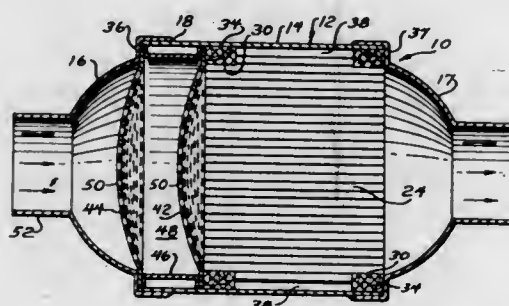
Melvin H. Wagner, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 29, 1973, Ser. No. 327,367

Int. Cl. F01n 3/14; B01j 9/04

U.S. Cl. 23-288 F

10 Claims



1. In a catalytic converter for treating exhaust gases from an internal combustion engine and having a metal housing in-

cluding inlet and outlet means including fittings adapted to receive an exhaust conduit and an axially porous, catalyst coated ceramic element therein, the improvement comprising at least one transversely positioned perforated metal inlet screen positioned intermediate said inlet fitting and said ceramic element, elongated spacer means longitudinally movably positioned intermediate said inlet fitting and said ceramic element, for spacing said ceramic element from said inlet means, said spacer means having a higher temperature coefficient of expansion than said metal housing and said housing having a higher temperature coefficient of expansion than said ceramic element, said spacer means and said housing constituting a thermal effect compensating means arranged and constructed so that the relative shrinkage of said ceramic element relative to said housing during heating will be at least partially offset by the relative expansion of said spacer means relative to said housing.

3,852,043

STABILIZATION OF ALUMINUM HYDRIDE

Norman E. Matzek, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1966, Ser. No. 602,455

Int. Cl. B01j 1/00

U.S. Cl. 23-293

5 Claims

1. A process for increasing the thermostability of a crystalline, substantially non-ether solvated aluminum hydride which comprises placing a crystalline, substantially non-ether solvated aluminum hydride in a substantially inert atmosphere and maintaining said aluminum hydride in the presence of said atmosphere at a maximum temperature of about 0° C. for a period of at least about 4 months.

3,852,044

RECOVERY OF SUBSTANTIALLY POTASSIUM-FREE HYDRATED MAGNESIUM CHLORIDE FROM CONTAMINATED AQUEOUS SOLUTIONS

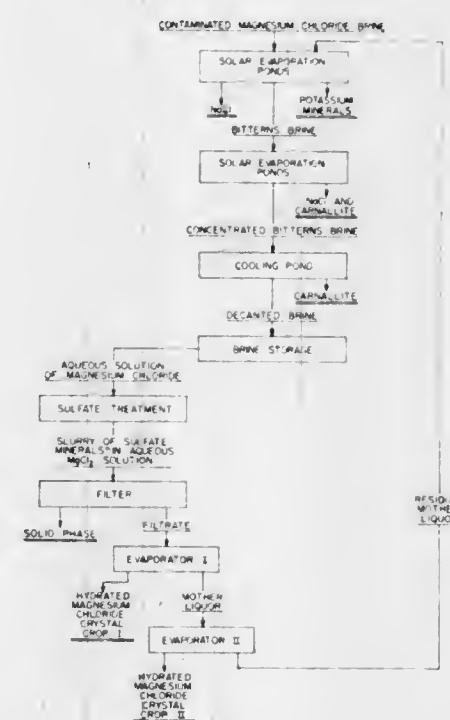
Ulrich E. G. Neitzel; Hans Gerhard Flint, and Jerome A. Lukes, all of Ogden, Utah, assignors to Great Salt Lake Minerals & Chemicals Corporation, Ogden, Utah

Filed Nov. 13, 1969, Ser. No. 876,306

Int. Cl. B01d 9/02; C01d 1/30; C01f 5/26

U.S. Cl. 23-298

8 Claims



1. A process for the production of magnesium chloride from aqueous solutions containing magnesium, chloride, sulfate, sodium, and potassium ions in proportions such that simple evaporation of the solution would produce a crystal crop of

hydrated magnesium chloride contaminated with unacceptable amounts of potassium, which comprises:

concentrating said aqueous solution with respect to magnesium chloride sufficiently to depress the solubility of potassium and sodium salts in said solution thereby to effect the removal of such salts from solution so that the combined concentration of sodium and potassium remaining in said solution is less than about 3 moles per 1,000 moles of water;

cooling said solution sufficiently to further depress the solubility of potassium thereby to effect the removal of potassium from solution so that the concentration of potassium in solution is reduced to a level below about 1 mole per 1,000 moles water;

recovering the solution substantially free from solid sodium and potassium salts;

treating the solution as required to establish the concentration of sulfate therein below about 4 moles per 1,000 moles water without substantially increasing the concentration of sodium or potassium therein;

evaporating the solution to cause the hydrated magnesium chloride to crystallize therefrom, thereby forming a slurry of hydrated magnesium chloride, and holding said slurry at a temperature at which, upon further evaporation, the aqueous phase will become saturated with sodium salts before it becomes saturated with potassium salts; and

recovering the hydrated magnesium chloride from said slurry while the aqueous phase thereof is unsaturated with respect to sodium chloride.

3,852,045

VOID METAL COMPOSITE MATERIAL AND METHOD

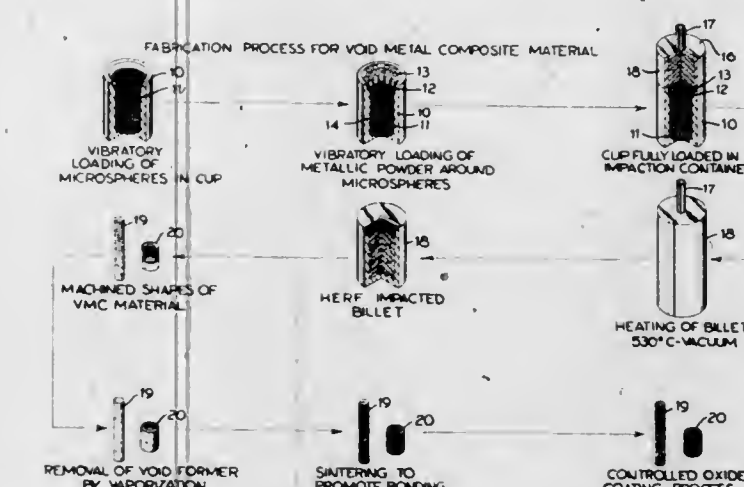
Kenneth R. Wheeler, Richland; Kenneth R. Sump, Kennewick, and Manuel T. Karagianes, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Aug. 14, 1972, Ser. No. 280,266

Int. Cl. C22c 1/08, 1/04; B22f 3/16; A61c 13/30; A61f 1/24

U.S. Cl. 29-182

11 Claims



1. A method of making a porous matrix structure having voids therein for tissue ingrowth applications, comprising: arranging a plurality of elements of an expendable void former of a solid substance within a form cavity, the elements being arranged within the form cavity in a pattern corresponding to the size, shape and spatial pattern of the voids desired in the final matrix;

packing a fine powder of biocompatible metallic particles into the form cavity about the elements of the expendable void former to complete filling of the form cavity with a composite material comprising the expendable void former and metallic particles;

subjecting the composite material to a high energy rate forming process to cause the density of the resulting densified composite material to approach its theoretical density and form a densified matrix of metallic particles having initial bonds between the metallic particles;

removing the expendable void former without disruption of the densified matrix of metallic particles; and subsequently sintering the matrix of metallic particles so as to cause the metallic particles to further bond and thereby form a solid metal matrix about the voids left by removal of the expendable void former.

3,852,046

METHOD FOR RECYCLING WASTE PLASTICS AND PRODUCTS THEREOF

Henry J. Brown, 421 Margo Ave., Long Beach, Calif. 90814

Division of Ser. No. 191,901, Oct. 22, 1971, abandoned. This

application Jan. 3, 1973, Ser. No. 320,694

Int. Cl. C10I 5/14, 5/00, 5/40

U.S. Cl. 44-1 R

2 Claims

1. A method of disposing of mixed waste thermoplastic materials comprising halogen containing plastics and non-halogen containing plastics comprising the steps:

- grinding the materials to form a particulate thermoplastic mixture;
- separating low and high density plastics by floating the mixture through a liquid holding chamber containing a liquid having a density of less than the density of halogen containing plastics;
- recovering the floating particles;
- mixing the recovered particles with a slurry of cellulosic material; and
- compressing the mixture of step (d) to form a combustible product.

3,852,047

MANUFACTURE OF PETROLEUM COKE

Warren G. Schlenger, Pasadena, Calif.; Harold C. Kaufman, and Carroll L. Crawley, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y., by said Schlenger and Kaufman

Division of Ser. No. 831,548, June 9, 1969, Pat. No. 3,673,080.

This application Feb. 23, 1972, Ser. No. 228,587The portion of the term of this patent subsequent to June 27, 1989, has been disclaimed.

Int. Cl. C10I 5/00

U.S. Cl. 44-24

3 Claims

1. A petroleum coke composition consisting of a cluster of solid petroleum coke spheroidal pellets, each pellet having a nucleus and an outside diameter in the range of about 1/32 to 1/4 inch and being at least partially fused and bonded to contiguous pellets in said cluster with about 2 to 30 weight percent of a solid asphaltic-like material, and said petroleum coke pellets and solid asphaltic-like material being simultaneously produced by the delayed coking of a dispersion comprising high boiling liquid petroleum oil containing dispersed throughout about 0.01 to about 0.5 wt. percent minute particulate carbon soot seed particles produced by the partial oxidation of fossil fuels which constitute the said nucleus of said petroleum coke pellets and which have a diameter in the range of about 0.01 to 0.5 microns, an oil absorption No. of about 2-3 cc of oil per gram of carbon soot, and a surface area of about 300-1,000 square meters per gram; and wherein said petroleum coke pellets will withstand a compressive load of 14 pounds minimum when a 1/4 inch diameter pellet is tested by means of a Chatillon light spring tester and are formed and fused together by mixing 0.3 to 4.0 weight percent of liquid water with said dispersion and heating the mixture in a heating zone over a temperature range of about 650° to 930°F. for about 1 to 3 minutes to control cracking, followed by delayed coking at a temperature in the range of about 800° to 895°F. and a pressure in the range of about 20 to 60 psig.

3,852,048

PROCESS FOR PRODUCING INDUSTRIAL FUEL FROM WASTE WOODY MATERIALS

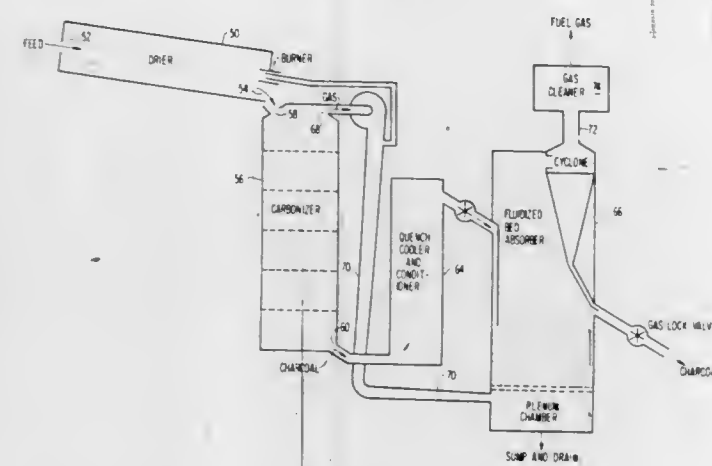
Owen Pyle, Anchorage, Ky., assignor to The Kingsford Company, Louisville, Ky.

Filed July 14, 1972, Ser. No. 271,795

Int. Cl. C10j 3/00

U.S. Cl. 48—209

23 Claims



1. A process for making substantially pollution free solid and gaseous fuels from woody materials comprising the steps of:

- continuously supplying said materials to a drier;
- drying said materials until the moisture content thereof is less than about 15 percent;
- admitting said dried materials to a carbonizer;
- pyrolyzing said materials in said carbonizer to form charcoal having at least about 23 percent volatile combustible matter therein and fuel gas having a fuel value of at least about 150 B.t.u. per standard cubic foot;
- collecting said charcoal, and cooling said charcoal to a temperature of not more than about 150°F;
- collecting at least a major portion of said fuel gas and allowing said collected gas to cool to a temperature of not less than about 220°F;
- admitting said gas and said charcoal to an adsorber;
- cooling said gas in said adsorber and allowing the condensable combustible matter therein to adsorb on said charcoal to form an enriched solid fuel.

3,852,049

VITREOUS-BONDED CUBIC BORON NITRIDE ABRASIVE GRINDING SYSTEM

Louis E. Hibbs, Jr., Schenectady; Kenneth A. Darrow, Sprakers, and William R. Reed, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,920

Int. Cl. C04b 31/16

U.S. Cl. 51—308

3 Claims

1. A vitreous-bonded abrasive article system comprising in combination cubic boron nitride grains, a borosilicate glass and metal powder filler, the metal being selected from the group consisting of molybdenum and alloys thereof.

3,852,050

PROCESS FOR RECOVERING PHOSPHORUS

Chao Hsiao, and Lawrence B. Horton, both of Pocatello, Idaho, assignors to FMC Corporation, New York, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,767

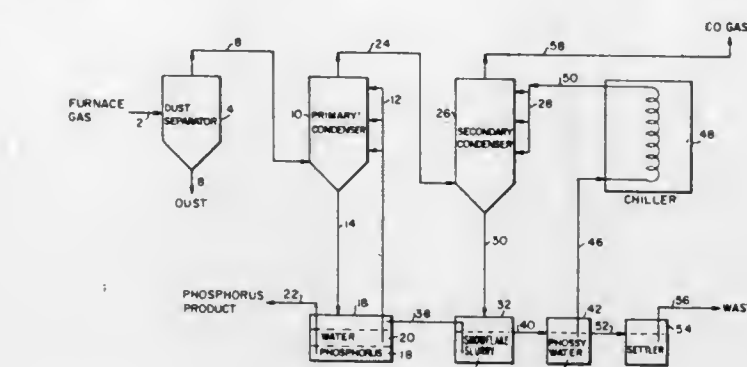
Int. Cl. B01d 53/14

U.S. Cl. 55—73

4 Claims

1. In the process of recovering phosphorus from a solids-free gas stream consisting essentially of carbon monoxide, elemental vaporous phosphorus and water from an electric reduction furnace wherein the phosphorus is condensed in an initial condensing zone and a secondary condensing zone, the

improvement which comprises contacting the gas stream in an initial condensing zone with water at a temperature sufficient to condense a portion of the gaseous phosphorus in said gas stream to liquid phosphorus, passing said liquid phosphorus to a settling zone, passing the exit gas stream from the initial condensing zone containing residual uncondensed phosphorus



into a secondary condensing zone, contacting the gas stream in said secondary condensing zone with water at a temperature sufficient to form particles of solidified phosphorus containing water therein, passing an aqueous slurry of said particles to said settling zone and recovering liquid phosphorus from said settling zone.

3,852,051

METHOD OF COATING GLASS FIBERS WITH A COMBINED SIZING AND COATING COMPOSITION

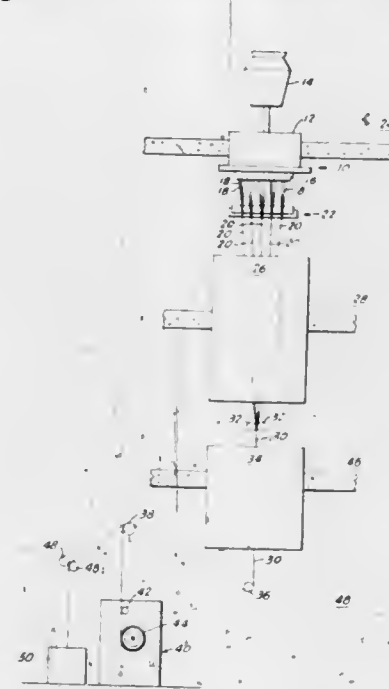
Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 93,937, Dec. 7, 1970, abandoned. This application Dec. 12, 1972, Ser. No. 314,284

Int. Cl. C03c 25/02; B32b 17/04

U.S. Cl. 65—3

6 Claims



1. A method of coating glass fibers to prepare them for use in reinforcing elastomeric compositions comprising drawing glass fibers from a supply of molten glass, coating the glass fibers as they are being drawn with a coating composition comprising an aqueous dispersion containing an elastomeric latex selected from the group consisting of natural and synthetic rubber latices, a rubber adhesive selected from the group consisting of a zinc salt and a mixture of a zinc salt in a resorcinol formaldehyde resin, said zinc salt having a solubility constant of not less than 1×10^{-3} and said zinc salt capable of complexing with ammonia, said dispersion also containing a silane coupling agent; and ammonia in a quantity sufficient to complex the zinc salt present; the quantity of coating applied being 15 to 40 percent by weight basis dry glass weight.

3,852,052

METHOD OF PRODUCING DECORATED GLASS-CERAMIC SURFACES

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,513

Int. Cl. C03c 21/00, 3/00

U.S. Cl. 65—30

9 Claims

1. A method for producing a decorated glass-ceramic article capable of being melted electrically, comprising:

- a. contacting a crystallizable glass which is substantially free of arsenic and antimony oxides with molten tin at a temperature and for a period of time sufficient to ion exchange the tin with the glass,
- b. separating the glass from the molten tin and
- c. applying to a selected portion of a surface of the glass into which the tin has ion exchanged a stain decorating composition containing a colorant selected from the class consisting of platinum, palladium, silver and gold, and thereafter
- d. heating the glass to simultaneously crystallize it and to cause the colorant to penetrate the surface of the glass in the portion where the stain decorating composition was applied.

3,852,053

METHOD OF SEALING A QUARTZ TUBE

Franz Einramhof; Leonardus Henricus Adrianus Theresia Van Kronenburg, and Ghislain Felix Alfons Arthur Verboven, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

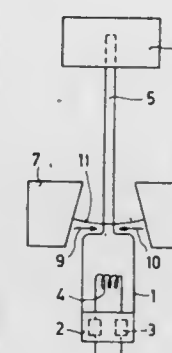
Continuation of Ser. No. 131,601, April 6, 1971, abandoned.

This application Apr. 10, 1973, Ser. No. 349,793

Int. Cl. C03b 21/02, 33/06

U.S. Cl. 65—34

5 Claims



1. A method of deforming a quartz glass body, comprising: a. providing a plasma burner and an electrical conductor, said electrical conductor being disposed opposite said plasma burner and said plasma burner being adapted to emit plasma radiation;

- b. applying an electric voltage between said plasma burner and said electrical conductor so that a secondary arc is formed therebetween, said secondary arc envelops at least a portion of said quartz body and said plasma radiation of said plasma burner being directed onto said quartz glass body; and
- c. deforming said body so as to seal said glass body at said portion thereof and to sever said portion.

3,852,054

METHOD AND APPARATUS FOR PRODUCING AMPOULES

Hans-Joachim Dichter, Sachsendam 93, 1 Berlin 62, Germany

Filed July 6, 1973, Ser. No. 377,050

Claims priority, application Germany, July 7, 1972, 2234061

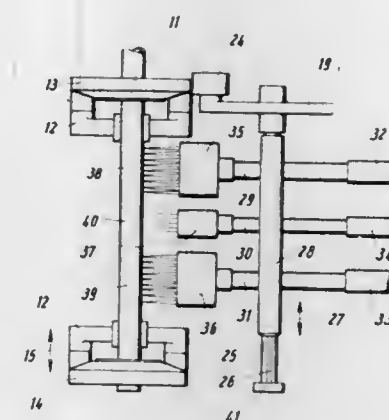
Int. Cl. C03b 23/12

U.S. Cl. 65—109

5 Claims

1. A method of producing ampoules, particularly double ampoules, which comprises drawing an elongated thin neck

into a glass tube at a distance from the end of the tube corresponding to the length of one ampoule body, said neck being twice the normal length of an ampoule neck and being later divided in the middle, and, at a distance from the end of the neck equal to the length of a second ampoule body, melting



off at least one ampoule from the tube with the simultaneous closing of each ampoule bottom, characterised in that during the drawing of the ampoule neck that portion of the double neck where separation is to be effected is cooled to form a funnel-shaped end on each single length neck.

3,852,055

NONCAKING FERTILIZERS

George R. Hawkes, Concord; Clive Hodgson, Forest Knolls; Marion G. Reed, Hacienda Heights, and William G. Toland, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 15, 1973, Ser. No. 323,571

Int. Cl. C05c 1/02

U.S. Cl. 71—59

18 Claims

1. A particulate ammonium salt composition having intimately admixed therewith from about 0.01 to 5% by weight, based on weight total composition, of a hydroxy-aluminum polymer having a hydroxyl to aluminum mol ratio of about 1 to 2.9.

3,852,056

HETEROCYCLIC-SUBSTITUTED N-IMIDAZOL PLANT-GROWTH INFLUENCING AGENTS

Wilfried Draber, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Karl Heinz Buchel, Wuppertal-Elberfeld; Ludwig Eue, Cologne, and Robert R. Schmidt, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1970, Ser. No. 75,264

Claims priority, application Germany, Sept. 27, 1969, 1949013

Int. Cl. A01n 9/20

U.S. Cl. 71—76

1 Claim

1. Method of inhibiting the growth of plants which comprises applying an effective amount of phenyl-4-chlorophenyl-3-(5-methyl)-isoxazolimidazolyl-1-yl methane.

3,852,057

METHOD FOR CONTROLLING AXILLARY SHOOTS OF TOBACCO PLANTS

Thomas W. Findley, La Grange, and John F. Benner, Chicago, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed May 3, 1965, Ser. No. 452,881

Int. Cl. A01n

U.S. Cl. 71—78

3 Claims

1. A method of controlling the growth of the axillary shoots of a tobacco plant which comprises contacting said shoots with a growth-controlling amount of n-dodecyl 2-hydroxypropyl ether.

3,852,058

HERBICIDAL COMPOSITIONS AND METHODS

Clarence W. Huffman, Grandview, Ill., assignor to Monsanto Company, St. Louis, Mo.

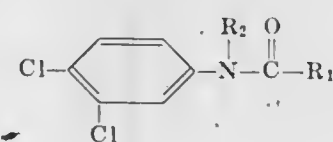
Continuation-in-part of Ser. Nos. 108,317, May 8, 1961, abandoned, and Ser. No. 108,257, May 8, 1961, abandoned, which is a continuation-in-part of Ser. No. 661,575, May 27, 1957, abandoned. This application Nov. 18, 1965, Ser. No. 508,566

Int. Cl. A01n 9/20.

U.S. Cl. 71-118

7 Claims

1. Method of inhibiting the growth of plants which comprises applying thereto in an effective inhibiting amount a compound of the formula:



wherein R₁ and R₂ are lower alkyl.

3,852,059

PROCESS FOR THE PRODUCTION OF SODIUM CHROMATE FROM CHROMITE ORE

Charles Patrick Bruen, Bernardville, N.J.; William Wayne Low, Syracuse, and Edmund Walter Smalley, Brewerton, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,351

Int. Cl. C22b 1/14

U.S. Cl. 75-3

13 Claims

1. A method of producing a green pellet which comprises pelleting a composition prepared by mixing chromite ore with sodium carbonate employing as a pelleting liquid an aqueous solution containing at least about 5 percent by weight of at least one electrolyte selected from the group consisting of sodium hydroxide, sodium aluminate, sodium silicate, and sodium chromate in the absence of added alkaline earth compound, said pelleting liquid being employed in an amount sufficient to contribute about 0.5 to 25 percent of said electrolyte to the weight of the pellet, dry basis.

3,852,060

FORMATION OF METAL FILAMENTS BY SOLID STATE REACTIONS

Howard W. Leavenworth, Jr., Bethesda; Beverly W. Dunning, Jr., Adelphi; Robert C. Gabler, Jr., Grasonville, and Carl E. Goldsmith, Brandywine, all of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 25, 1973, Ser. No. 359,400

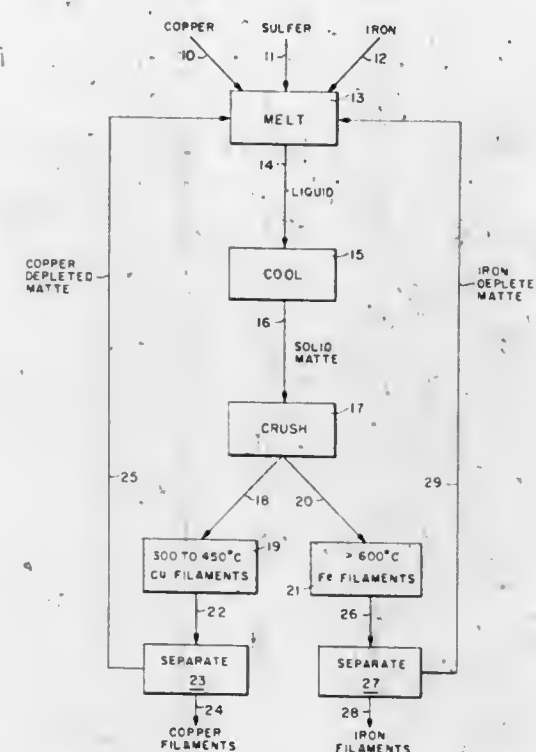
Int. Cl. B22f 9/00

U.S. Cl. 75-.5 B

17 Claims

1. A process for making metal filaments which comprises: heating a mixture of copper, iron and sulfur to a temperature above about 800°C to form a matte which is stoichiometrically deficient in sulfur; cooling the matte; comminuting the cooled matte to form matte particles having a substantial surface area; heating the matte particles to a temperature above about 300°C in a nonreactive atmosphere to grow metal filaments from the surfaces of the matte particles;

cooling the matte, now depleted in metal, and the metal filaments to a temperature below 300°C;



detaching metal filaments from the metal-depleted matte surfaces, and separating metal filaments from the metal-depleted matte.

3,852,061

PROCESS AND EQUIPMENT FOR THE TREATMENT OF A MATERIAL BY MEANS OF AN ARC DISCHARGE PLASMA

Heinrich Wulff, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Germany

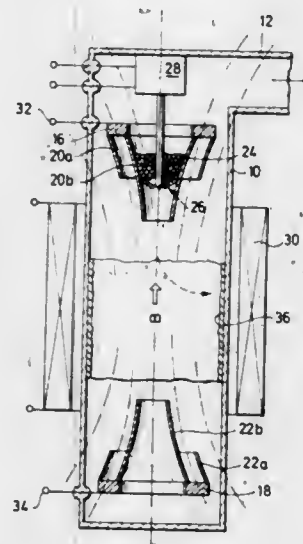
Filed Nov. 20, 1972, Ser. No. 307,838

Claims priority, application Germany, Nov. 20, 1971, 2157606

Int. Cl. C22d 7/00; H05b 7/18

U.S. Cl. 75-10 R

6 Claims



1. A process for the treatment of material by means of an arc discharge plasma in a region of a discharge vessel between two axially spaced electrodes, comprising the following steps: a. maintaining during the process the average pressure in said region at less than one atmosphere; b. producing a magnetic field running substantially parallel to the axis forming the connection line between said electrodes, and which has in at least one part of said region such a high value that the product $\Omega\tau$ of the elec-

tron gyration frequency Ω in the plasma and the time τ within which on an average electron transmits its impulse to the ions of the plasma is greater than 1, and that the arc discharge plasma in said region as a whole in itself rotates around a middle magnetic field line to which the plasma is substantially symmetrical;

c. bringing said material into a part of said region close to the mid-point of said magnetic field under said condition of $\Omega\tau > 1$, whereby a reciprocal action with the plasma occurs, and said material is centrifuged radially outward; and d. recovering treated material from the space lying radially outside of said region.

3,852,062

PROCESS AND A DEVICE FOR EVEN DISTRIBUTION AND ALTERNATING SUPPLY OF LIQUID AND GASEOUS PROTECTIVE MEDIA FOR THE REFINING GAS TUYERES OF A CONVERTER

Helmut Knuppel, Karl Brotzmann, and Hans Georg Fassbinder, all of Sulzbach Rosenberg, Germany, assignors to Eisenwerk Gesellschaft, Maximilianshütte M.B.H., Rosenberg, Germany

Filed Dec. 8, 1972, Ser. No. 313,308

Claims priority, application Germany, Dec. 9, 1971, 2161000

Int. Cl. C21c 5/34

U.S. Cl. 75-60

8 Claims

1. A process for the even distribution and supply of protective media to refining gas tuyeres in a converter, wherein the individual tuyeres consist of two concentric tubes, refining gas, being passed through the central one of the tubes and a liquid or gaseous protective medium being supplied through the annular space between the two tubes, wherein the improvement comprises providing the protective medium from a supply at super atmospheric pressure and lowering the pressure of said protective medium by at least two atmospheres absolute pressure prior to entry of said medium into the tuyeres, said pressure being lowered by means of throttling devices to approximately half the pressure at which said medium is supplied.

3,852,063

HEAT RESISTANT, ANTI-CORROSIVE ALLOYS FOR HIGH TEMPERATURE SERVICE

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Masamitsu Noguchi, Toyota; Tsuneo Uchida, Toyota, and Youhei Katori, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

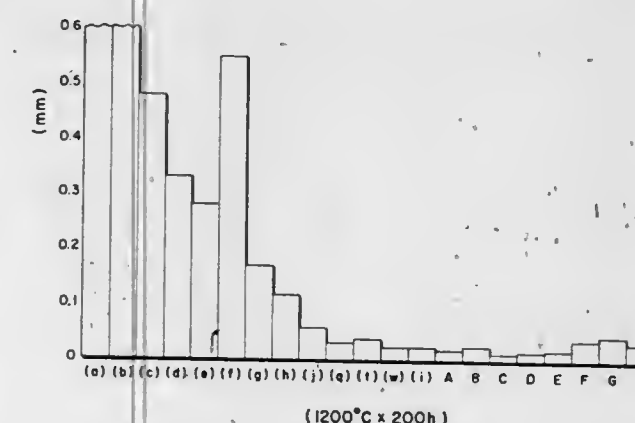
Filed Oct. 4, 1972, Ser. No. 294,981

Claims priority, application Japan, Oct. 4, 1971, 46-77651

Int. Cl. C22c 37/10, 39/14

U.S. Cl. 75-124

4 Claims



1. A heat-resistant, anti-corrosive alloy for high temperature service, said alloy consisting essentially of:

less than 0.07 percent by weight carbon, less than 0.5 percent by weight silicon, 15 to 21 percent by weight chromium; 2.5 to 4.0 percent by weight aluminum, 0.5 to 1.2 percent by weight molybdenum, 0.5 to 1.1 percent by weight vanadium, less than 0.45 percent by weight titanium, less than 0.18 percent by weight zirconium, 0.1 to 0.5 percent by weight of an element selected from the group consisting of niobium and tantalum, at least one element selected from the group consisting of: yttrium in an amount less than 1.5 percent by weight, beryllium in an amount less than 2.0 percent by weight, and boron in an amount less than 0.0050% by weight; and the balance of iron and inevitable impurities.

3,852,064

USE OF DIOXAZINE PIGMENT IN THE PHOTOELECTROPHORETIC PRODUCTION OF IMAGES

Georges Zographos, Zurich; Andre Pugin, Riehen, and Kurt Burdeska, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,320

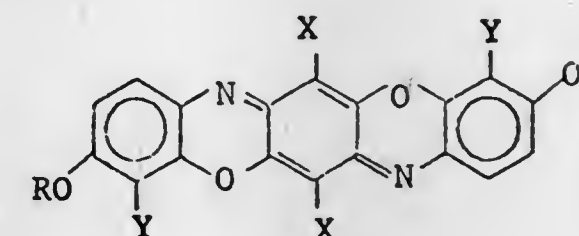
Claims priority, application Switzerland, Dec. 28, 1971, 19047/71

Int. Cl. G03g 13/00, 5/00, 7/00

U.S. Cl. 96-1.3

4 Claims

1. Process for the photoelectrophoretic production of images, wherein a layer of a suspension is exposed to an electrical field between two electrodes of which at least one is transparent and the suspension is simultaneously exposed to an image with an actinic radiation through the transparent electrode, whereupon a pigment image which consists of particles which have migrated is produced on at least one of the electrodes, with the suspension containing a plurality of fine particles of at least one colour which contain a light-sensitive pigment, characterised in that the light-sensitive pigment used is a dioxazine



wherein R denotes an alkyl group with 1-4 C atoms or an optionally substituted phenyl group, X denotes a hydrogen, chlorine or bromine atom and Y denotes a chlorine or bromine atom.

3,852,065

PHOTOCONDUCTIVE BISPHENYL THIOCOMPOUNDS LINKED BY BRIDGING ORGANIC GROUP

Adrianus Marie Petrus Hectors, Venlo, Netherlands, assignor to Océ-van der Grinten N.V., Venlo, Netherlands

Filed May 14, 1971, Ser. No. 143,587

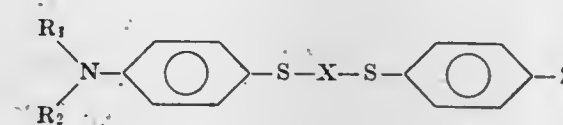
Claims priority, application Great Britain, May 14, 1970, 23484/72

Int. Cl. G03g 5/06, 13/16, 13/22

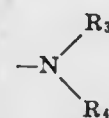
U.S. Cl. 96-1.4

15 Claims

1. A photoconductive composition comprising in admixture with an electrically insulating polymeric organic binder a monomeric organic photoconductor which is a compound having the formula:



wherein R_1 and R_2 each represents a lower alkyl radical, a 5- or 6-membered cycloalkyl radical or an aryl-lower alkyl, or R_1 and R_2 together with the nitrogen atom to which they attach form a morpholine ring; Z represents a hydrogen or halogen atom, a lower alkyl or lower alkoxy radical, or an amino group



in which R_3 and R_4 each represents a hydrogen atom, a lower alkyl radical, a 5- or 6-membered cycloalkyl radical or an aryl-lower alkyl, or R_3 and R_4 together with the nitrogen atom to which they attach form a morpholine ring; and X is a lower aliphatic or an aryl radical or a heterocyclic residue containing at least one nitrogen, oxygen or sulfuration.

3,852,066

SILVER HALIDE WITH AN ORTHORHOMBIC LEAD MONOXIDE AND SENSITIZING DYE

Boris Levy, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 195,785, Nov. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 102,774, Dec. 30, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,707. The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl. G03g 5/08; G03c 1/28, 1/10

U.S. Cl. 96-1.6

26 Claims

1. A photosensitive element which comprises a particulate dispersion of silver halide crystals adapted to be reduced to silver upon contact with a silver halide reducing agent, as a function of said crystals' exposure to incident electromagnetic radiation actinic thereto, having associated therewith in electron donating relationship and sensitizing dye and an orthorhombic lead monoxide semiconductor, each of said dye and semiconductor adapted to donate electrons to said silver halide crystals as a function of the exposure of said element to incident electromagnetic radiation actinic to said element.

3,852,067

PHOTOSENSITIVE ELEMENT WITH SILVER HALIDE, A SEMICONDUCTOR AND A SENSITIZING DYE

Boris Levy, Sayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 195,785, Nov. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 102,774, Dec. 30, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,708

Int. Cl. G03g 5/08; G03c 1/28, 1/10

U.S. Cl. 96-1.6

27 Claims

1. A photosensitive element which comprises a particulate dispersion of silver halide crystals adapted to be reduced to silver upon contact with a silver halide reducing agent, as a function of said crystals' exposure to incident electromagnetic radiation actinic thereto, having associated therewith in electron donating relationship a sensitizing dye and an inorganic, substantially water-insoluble oxygen-free semiconductor, said semiconductor comprising one or more elements from Group IIIa to VIa, inclusive, of the Periodic Table of Elements, possessing an atomic number 13 and 81, wherein said inorganic semiconductor is disposed in electron-donating relationship with said sensitizing dye, said dye and semiconductor adapted to donate electrons to said silver halide crystals as a function of the exposure of said element to incident electromagnetic radiation actinic to said element.

3,852,068

Patent Not Issued For This Number

3,852,069

APPLICATION OF MAGNETIC RECORDING STRIPS TO MOTION PICTURE FILM

August Jean Van Paesschen, Antwerpen, and Joseph Antoine Herbots, Edegem, both of Belgium, assignors to AGFA Gevaert, Mortsel, Belgium

Division of Ser. No. 220,487, Jan. 24, 1972. This application Dec. 3, 1973, Ser. No. 421,266

Claims priority, application Great Britain, Jan. 25, 1971, 3101/71

Int. Cl. G03c 5/14, 1/84

U.S. Cl. 96-39

4 Claims

1. Multilayer motion picture film material comprising a cellulose triacetate support, at least one light-sensitive emulsion layer and at the opposite side of said support an antihalation layer comprising an alkali-soluble polymeric binder containing free carboxyl groups and capable of being detached from said support in the presence of an alkaline medium, and deposited upon said antihalation layer stripes of a coating composition of magnetizable material dispersed in an alkali-insoluble binder in admixture with an organic compound having at least two aziridine groups reactive with the carboxyl groups of said polymeric binder.

3,852,070

PHOTO-IMAGING UTILIZING URANYL COMPOUNDS

Steven Levinos, Chatham, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 24, 1972, Ser. No. 283,465

Int. Cl. G03c 5/24, 1/00

U.S. Cl. 96-48 R

4 Claims

1. Imaging material comprising a support and a coating thereon of a light-sensitive composition consisting essentially of a water-soluble uranyl compound and a water-soluble formate salt in intimate admixture with a substantially water-dispersible film-forming binder selected from the group consisting of polyvinyl alcohol, hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxymethyl cellulose, sodium carboxymethyl cellulose, and saponified cellulose esters.

3,852,071

PROCESS OF PRODUCING POSITIVE IMAGES

Shinpei Ikenoue, and Eiichi Mizuki, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 8, 1972, Ser. No. 304,879

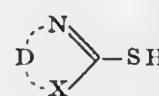
Claims priority, application Japan, Nov. 9, 1971, 46-89266

Int. Cl. G03c 5/24, 1/28

U.S. Cl. 96-64

30 Claims

1. A process of forming positive images which comprises subjecting a light-developable silver halide light-sensitive material having a layer of silver halide grains having occluded therein at least one bismuth compound and containing at least one mercaptan compound which is a non-halogen acceptor represented by the following formula to an imagewise exposure of a high illumination for a short period of time and then subjecting the silver halide light-sensitive material to an overall exposure, whereby imagewise unexposed areas are selectively colored by printing out upon overall exposure to yield the positive image:



wherein X represents an oxygen atom, a sulfur atom, a selenium atom, or —NR; R represents a hydrogen atom, an alkyl group, a substituted alkyl group, a substituted aryl group, a substituted phenyl group, or an aryl group; and D represents an o-phenylene group, a substituted o-phenylene group, a 1,2-naphthylene group, a substituted 1,2-naphthylene group, a 2,3-naphthylene group, or a substituted 2,3-naphthylene group.

3,852,072

PHOTOGRAPHIC PRODUCTS AND PROCESSES COMPRISING SYNTHETIC NUCLEAR ISOTOPES

Arthur M. Gerber, Boston, and Vivian K. Walworth, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 11, 1972, Ser. No. 252,270

Int. Cl. G03c 1/02, 1/28

U.S. Cl. 96-94 R

25 Claims

1. The method for enhancing photographic sensitivity of a silver halide emulsion which comprises disposing a nuclear radiation source in the silver halide emulsion prior to casting a layer of said emulsion in an amount sufficient to provide sufficient interaction with the silver halide grains to provide said enhanced sensitivity.

3,852,073

SILVER HALIDE EMULSIONS COMPRISING POLYMERIC PEPTIZERS

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

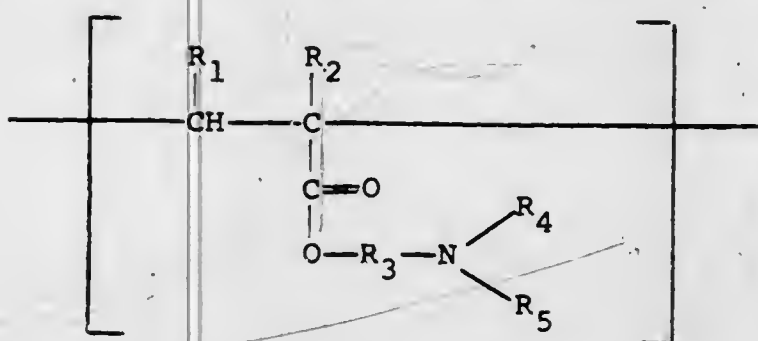
Continuation-in-part of Ser. No. 103,305, Dec. 31, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 294,979

Int. Cl. G03c 1/04

U.S. Cl. 96-114

23 Claims

1. A photosensitive silver halide emulsion wherein the silver halide peptizer comprises a water-soluble homopolymer having in its molecule repeating units with the general formula:



wherein:

R_1 is selected from the group consisting of hydrogen, lower alkyl and halogen; R_2 is selected from the group consisting of hydrogen, lower alkyl, halogen and cyano; R_3 is selected from the group consisting of lower alkyl and lower cycloalkyl; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl, and lower cycloalkyl; R_4 and/or R_5 may be chemically joined with R_3 to form a ring structure; and x is a positive integer greater than 1.

3,852,074

PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING ORGANIC NOBLE METAL COMPOUNDS

Richard M. Rosenberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 25,236, April 2, 1970, abandoned. This application May 22, 1972, Ser. No. 255,816

Int. Cl. G03c 1/68

U.S. Cl. 96-115 P

10 Claims

1. A photopolymerizable composition for producing high yields of highly resolved noble metal patterns comprising on organic solvent having constituents dissolved therein, wherein said constituents comprise:

- 5-85 percent, by weight, of an organic noble metal compound; 0
- 5-30 percent, by weight, of a photopolymerizable compound(s) containing at least 50 percent of a polyfunctional acrylate derived from a polyol in which the hydroxyl groups are separated by at least three atoms;
- 0.5-10 percent, by weight, of an organic sensitizer;

- 0-60 percent, by weight, of organosulfur compound(s);
- 0-50 percent, by weight, of a flux; and
- 0-15 percent, by weight, of a polymeric ester.

3,852,075

HARD SURFACE RINSE-COATING COMPOSITION AND METHOD

Marino Sidney Basadur, Evendale, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 16, 1973, Ser. No. 407,031

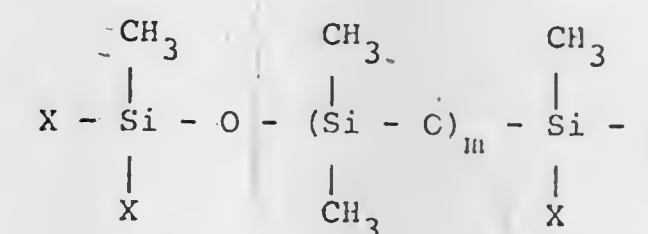
Int. Cl. C09g 1/14; C09k 1/02

U.S. Cl. 106-11

14 Claims

1. An aqueous rinse-coating composition which consisting essentially of:

- 1.45-2.7 percent by weight, non-volatile mineral oil;
- 4.2-6.3 percent by weight amine functional polydimethylsiloxane which is the reaction product of an endblocked polydimethylsiloxane having the formula



wherein X is selected from the group consisting of acetoxy, alkylamino, benzamido and butanonoxime, m is selected so that the viscosity of said polydimethylsiloxane is from 10 to 15,000 cs. at 25°C, and a silane selected from the group consisting of



and



wherein n has a value of from 0 to 2, R is saturated divalent hydrocarbon radical containing 3 to 4 carbon atoms, R' is an alkyl radical containing 1 to 4 carbon atoms, R'' is a saturated monovalent hydrocarbon radical containing 1 to 6 carbon atoms, and wherein the weight ratio of said polydimethylsiloxane to said silane is from about 1:1 to about 20:1; and

- 1.75-3.1 percent by weight cationic emulsifier; wherein the weight ratio of non-volatile mineral oil to amine functional polydimethylsiloxane is from 0.20 to 0.80.

3,852,076

AQUEOUS METHOD OF MICROENCAPSULATION AND CAPSULES

Stephen Charles Grasko, Los Angeles, Calif., assignor to John W. Ryan, Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 228,270

Int. Cl. C09d 11/14, 1/04, 3/12

U.S. Cl. 106-26

46 Claims

1. A method of forming water insoluble particles having a core consisting essentially of a polar group affording organic material and a membrane consisting essentially of an inorganic silicate surrounding and reacted with said polar group of said organic material, which method consists essentially of co-mingling polar group affording organic material and an aqueous colloidal solution of inorganic silicate, said inorganic silicate being essentially the only reactant for said polar groups and being present in an amount at least sufficient to react with polar groups of said polar group affording organic material to form water insoluble particles within a continuous aqueous phase, said particles having a size above colloidal dimensions, where

- said inorganic silicate is hectorite type clay; and
- said polar group affording organic material is character-

ized by the ability to form water insoluble particles having a size above colloidal dimensions when added to an aqueous colloidal solution of synthetic lithium hectorite clay and tetrasodium pyrophosphate peptizing agent, with co-mingling, which polar group affording organic material is selected from the class consisting of (i) simple organic compounds having at least one polar group, (ii) organic hydrophilic colloids, and (iii) water emulsion polymer latexes containing at least one material from (i) and (ii), excluding the water soluble cellulose ether hydrophilic colloids.

3,852,077

GLASSES, GLASS-CERAMICS AND PROCESS FOR MAKING SAME

James Erich Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 5, 1972, Ser. No. 241,448

Int. Cl. C03c 3/22, 3/12

U.S. Cl. 106—39.6

15 Claims

1. A glass ceramic material having a dielectric constant of about 1,099 and a dissipation factor of less than 4 percent, said glass ceramic formed by thermal in situ crystallization of a thermally crystallizable glass consisting essentially of the following composition:

Ingredient	Mole %
GeO ₂	18-40
Nb ₂ O ₅	25-45
Alkali metal oxides	25-45

wherein said alkali metal oxides are a mixture of Na₂O + K₂O and/or Li₂O, the molar ratio of said Na₂O to said K₂O and/or Li₂O is from about 1:1 to about 3:1, the molar ratio of said alkali metal oxides to said Nb₂O₅ is from 0.7:1 to 1.4:1 and,

when said molar ratio of said alkali metal oxides to said Nb₂O₅ is about 1:1, then said oxide and said Nb₂O₅ must be present in amounts of at least 30 mole percent each.

3,852,078

MASS OF POLYCRYSTALLINE CUBIC SYSTEM BORON NITRIDE AND COMPOSITES OF POLYCRYSTALLINE CUBIC SYSTEM BORON NITRIDE AND OTHER HARD MATERIALS, AND PROCESSES FOR MANUFACTURING THE SAME

Masao Wakatsuki, 62 Ichizawa-cho, Asohi-ku, Yokohama; Kazuaki Ichinose, 6278 Ohba, Fujisawa-shi, Kanagawa-ken; Riyutiro Mori, 1-22, Komukainishimachi, Kawasaki-shi, and Toshio Aoki, 3-7, Shiomidai, Isogo-ku, Yokohama-shi, all of Japan

Filed Dec. 23, 1971, Ser. No. 211,564

Claims priority, application Japan, Dec. 24, 1970, 45-117230; Dec. 30, 1970, 45-122892; Dec. 30, 1970, 45-122906

Int. Cl. C04b 35/52

U.S. Cl. 106—43

12 Claims

1. A hard mass comprising a matrix and a dispersed phase substantially comprising more than ten percent by weight of polycrystalline cubic system boron nitride as the matrix and granular diamond homogeneously dispersed within and bonded by the polycrystalline cubic system boron nitride matrix.

3,852,079

BAO-CAO-AL₂O₃ GLASS COMPOSITIONS

Robert F. Davis, Cary, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,628

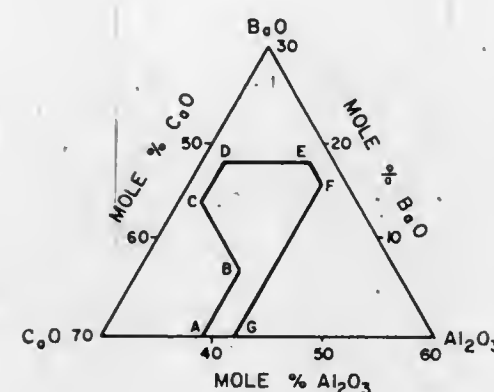
Int. Cl. C03c 13/00

U.S. Cl. 106—50

6 Claims

1. A composition for a glass which is composed, in mole

percent on the oxide basis, of BaO, CaO and Al₂O₃ in proportions falling within the area or along the boundaries of the



polygon ABCDEFGA shown in the BaO-CaO-Al₂O₃ ternary composition diagram comprising FIG. 1 of the DRAWING.

3,852,080

METHOD FOR MAKING MAGNESITE BRICK

Ben Davies, George F. Carini, and Ernest P. Weaver, all of Pittsburgh, Pa., assignors to Dress Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 48,937, June 19, 1970, which is a continuation of Ser. No. 858,524, Sept. 16, 1969, which is a continuation-in-part of Ser. No. 661,193, Aug. 17, 1967, abandoned. This application May 16, 1973, Ser. No. 360,885

Int. Cl. C04b 35/04

U.S. Cl. 106—58

7 Claims

1. The method of making burned magnesite brick comprising the steps of:

- forming a size-graded batch consisting essentially of synthetic dead-burned magnesite having a lime:silica weight ratio in excess of 2:1 and at least 0.1 per cent, by weight, of the total batch finely divided silica, the MgO content of the overall batch being from 90 to about 96 per cent, the lime:silica weight ratio of the overall batch being between 2:1 and 1.4:1, the batch analyzing less than 3.0 per cent R₂O₃ oxides, less than 0.5 per cent TiO₂, less than 0.5 per cent Al₂O₃ and less than 0.05 per cent B₂O₃;
- tempering the batch with a temporary binder;
- pressing the tempered batch into brick;
- drying the brick; and
- firing at temperatures in excess of 2,800°F.

3,852,081

CEMENT COMPOSITIONS CONTAINING ALPHA GYPSUM HAVING IMPROVED LONG-TERM DURABILITY

Carl Theodore Lehman, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed July 30, 1973, Ser. No. 383,745

Int. Cl. C04b 7/02, 11/12

U.S. Cl. 106—89

10 Claims

1. A cement composition which when set is resistant to subsequent deterioration by substantial expansion, weight gain, and loss of compressive strength comprising a mixture of, by weight, about 49-94 percent of alpha calcium sulfate hemihydrate; about 49-5 percent of a portland cement containing not more than about 7 percent by weight tricalcium aluminate; and about 0.5-0.8 percent of a dispersing agent.

3,852,082

FIBRE REINFORCED CEMENT

Amalendu Jyoti Majumdar, St. Albans, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 127,361, March 23, 1971, Pat. No. 3,783,092. This application July 26, 1972, Ser. No. 275,421

Claims priority, application Great Britain, Aug. 5, 1971, 36856/71

Int. Cl. C04b 7/12

U.S. Cl. 106—99

17 Claims

1. A fibre-reinforced pozzolanic cement product in which the cement matrix contains at least 10% by weight of a pozzolana and from 0.5 to 10% by weight of fibres which are alkali-resistant glass fibres comprising a silica/zirconia glass containing at least 6.0 mol percent of zirconia.

3,852,083

MANUFACTURE OF PLASTER OF PARIS PRODUCTS CONTAINING LATEX

Julie Chi-sun Yang, 45L Franklin Green South, Somerset, N.J. 08873

Continuation-in-part of Ser. No. 239,752, March 30, 1972, abandoned. This application Sept. 22, 1972, Ser. No. 291,498

Int. Cl. C04b 11/00

U.S. Cl. 106—111

26 Claims

1. A process for the production of good quality, shaped, set plaster of Paris products, which comprises:

- providing an unset mixture comprising, on a dry basis, 30 to 80 weight percent of plaster of Paris, 0.1 to 30 weight percent of fiber, 0.05 to 10 weight percent of hydromodifier, 0.5 to 10.0 weight percent of latex, and 0 to 60 weight percent of auxiliary cementing agent, with individual concentrations within these ranges selected to total 100 weight percent, and water in a water:solids weight ratio of from about 0.20:1 to about 0.80:1, with the proportionate amounts being such as to cause said mixture to be a plastic tractable mixture having shape retaining characteristics, enhanced plastic flow characteristics, and capacity for resisting dewatering under relatively high pressures so as to enable the mixture to flow and to prevent the separation of an appreciable amount of water from the mixture, when said mixture is subjected to pressures of considerable magnitude such as is normally developed in plastic forming operations exemplified by those employing ram and auger extruders;
- plastic forming said mixture under pressure of the order described in part (a) above, without separating an appreciable amount of water from said mixture, to produce a shaped body which is generally shape retaining; and
- subjecting said shaped body to plaster of Paris setting conditions, to set said shaped body and impart strength to the resulting shape retaining set product.

3,852,084

CEMENTITIOUS COMPOSITION CONTAINING ACTIVATED LIME-FLY ASH MIXTURE

William C. Webster, 3008 Potshot Rd., Norristown, Pa. 19403, and Charles L. Smith, 34 Corson Rd., Conshohocken, Pa. 19428

Continuation-in-part of Ser. No. 23,887, March 30, 1970.

This application Aug. 31, 1972, Ser. No. 285,257

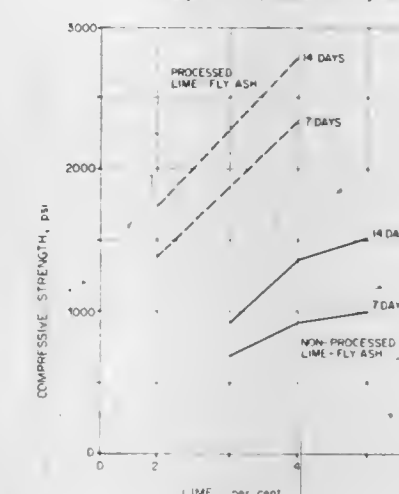
Int. Cl. C04b 7/34

U.S. Cl. 106—118

3 Claims

1. A method of producing a hardenable, load-bearing composition comprising placing, in a space where a hardened composition is required, cementitious composition consisting of a mixture of at least 65%, by weight, untreated fly ash and no more than 35%, by weight, of a pre-mix consisting of from 10 to 96 weight % highly activated, reduced particle size fly

ash composition, and 4 to 90 weight % deagglomerated lime, the maximum particle size dimension of which is generally

LIME-FLY ASH-OTTAWA SAND TESTS
1:2 weight ratio in processed lime-fly ash

below 35 microns, said lime constituting from 1 to 40 weight % of said composition.

3,852,085

STABLE REFRACTORY SLURRY COMPOSITION

Ginter Vurlicer, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1974, Ser. No. 431,861

Int. Cl. C08h 17/02; C08b 27/02

U.S. Cl. 106—193 R

9 Claims

1. A suspending agent system useful for suspending refractory grains comprising (a) carboxymethyl cellulose and (b) a water-soluble carboxyvinyl polymer having a molecular weight within the range of about 250,000 to 4,000,000 in a total amount of about 36 to 65 weight percent with the relative amount of (a) to (b) varying from a weight percent ratio of about 1:4 to 4:1 and (c) magnesium montmorillonite clay in a concentration of about 35 to 64 weight percent.

3,852,086

SOLID DIFFUSION SOURCES FOR PHOSPHORUS DOPING

Yorihiro Murata, North Tonawanda, and Carl H. McMurtry, Lewiston, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed June 28, 1973, Ser. No. 374,706

Int. Cl. C08h 17/24

U.S. Cl. 106—286

8 Claims

1. A solid phosphorus containing source body for semiconductor diffusion doping, said body comprising from about 5 to about 95% by weight of compounds of silicon and phosphorus selected from the group consisting of SiP₂O₇, Si₃P₂O₈, and mixtures thereof, and from about 95 to about 5% by weight of an additive material having a melting point greater than 2000°C, selected from the group consisting of Al₂O₃, CaO, HfN, HfO₂, MgO, NbN, TaN, ThO₂, TiN, VN, Y₂O₃, ZrN, ZrO₂, and ZrSiO₄.

3,852,087

COMPOSITE PIGMENT FOR BLOCKING TANNIN

John S. Nordyke, 440 Sulgrave Rd., Pittsburgh, Pa. 15211, and William C. Spangenberg, 236 Parker Dr., Mt. Lebanon, Pa. 15216

Continuation-in-part of Ser. No. 236,955, March 22, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 436,975

Int. Cl. C08h 17/04

U.S. Cl. 106—288 B

14 Claims

1. The method of rendering a water-based paint capable of inhibiting the migration of tannins through paint coatings

when applied to the surface of wood which contains tannins, comprising incorporating into a pigment-containing water-based paint composition an amount of at least one amphoteric metal hydrate effective to insolubilize and thereby inhibit the migration of said tannins through said paint coating.

3,852,088

SECURITY DOCUMENT SYSTEM AND METHOD

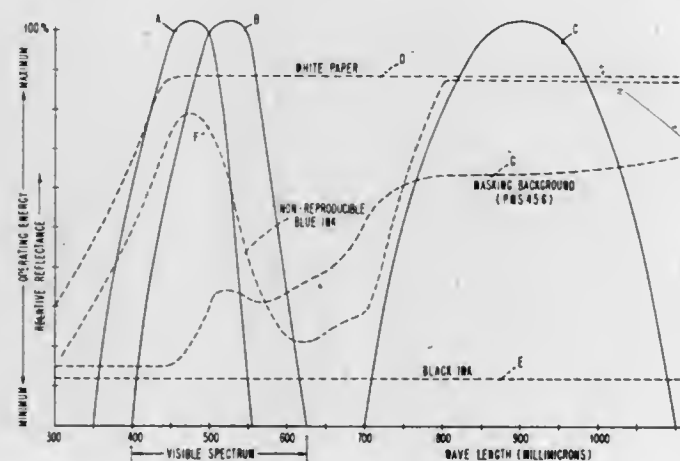
Robert B. Godlewski, Hightstown; Robert D. Harris, Somerset, and Michael J. Tinghitella, Hightstown, all of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1972, Ser. No. 235,980

Int. Cl. B41m 3/14; B44f 1/12

U.S. Cl. 117-1

10 Claims



1. The method of precluding generation of legible copies of human readable indicia from a master by any one of a plurality of convenience office copiers having different operating energy ranges, comprising the steps of

providing an ink of a color that is highly reflective across the operating energy range of at least one group of copiers including electrostatic copiers operating predominantly in the blue region of the spectrum and thermographic copiers operating in the infrared region of the spectrum, but which ink is at least partially absorptive within different operating energy ranges of another group of copiers including electrostatic copiers operating predominantly in the green to blue-green regions of the spectrum, providing on the master a background of another color that absorbs light within such different operating energy ranges and masks the ink color which would be legible in the blue-green to green regions, and printing the human readable indicia over said background with said ink,

whereby said copiers of said one group will fail to reproduce the indicia printed in said ink because of its reflectance and said other group of copiers will reproduce illegible indicia printed in said ink and masked by said background.

3,852,089

METHOD FOR CORRECTING MISTYPED BUSINESS FORMS

Victor Barouh, 935 Plum Tree Rd., W., Westbury; Robert Glenn, 70-20 108th St., Forest Hills, and Sylvester Giaccone, 99-05 59th Ave., Flushing, all of N.Y.

Filed Apr. 5, 1972, Ser. No. 241,305

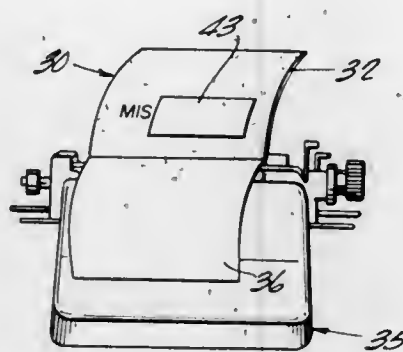
Int. Cl. B41m 5/00; B32b 35/00

U.S. Cl. 117-2 TC

3 Claims

1. A method of correcting a mistyped carbonless business form set, including an original sheet provided with a chemical coating on the back face thereof and a different chemical coated copy sheet having an encapsulated receptor coating on the other side thereof, comprising the steps of providing a first opaquesheet including a substrate having a pressure-transferable pigmented coating having a tacky surface, placing

said first opaquesheet in front of said copy sheet with said coating adjacent to said copy sheet, providing a second opaquesheet having a pressure-transferable coating, placing said second opaquesheet over said original sheet with said coating adjacent to said original sheet, retyping the error to transfer said coating from first opaquesheet and said coating from the second opaquesheet to said copy sheet and said original sheet, and removing said opaquesheets, then inserting over the opaquesheet on copy sheet or sheets, an image transfer sheet having a coating of a color corresponding to the



characters formed by reaction after typing of said coated and said encapsulated coated sheets, then retyping the correct indicia on said original sheet and thereafter removing said image transfer sheet, said coating of said first opaquesheet including a base coat and a top coat, said first opaquesheet having a shield between said base coat and said substrate, said tacky surface including aluminum stearate and ethylcellulose, said image transfer sheet comprising coating of a pigment, a binder and a plasticizer.

3,852,090

WATERPROOF, BREATHABLE COATED TEXTILE SUBSTRATE

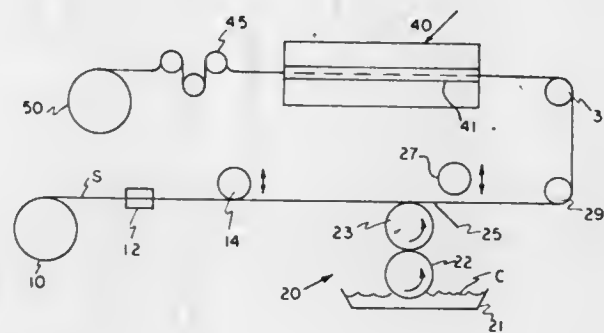
William A. Leonard, Lyman; Anthony F. Kunak, Spartanburg; Cecil M. Burns, Greer, and Warren N. Parsons, Spartanburg, all of S.C., assignors to M. Lowenstein & Sons, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 238,250, March 27, 1972, which is a continuation of Ser. No. 885,831, Dec. 17, 1969, abandoned. This application Oct. 2, 1972, Ser. No. 294,354

Int. Cl. B44d 1/02; D09d 1/00

U.S. Cl. 117-14

9 Claims



1. A waterproof, breathable textile substrate, said substrate having an extensible film coating secured to one side of said substrate only, said film having been formed in situ substantially covering said side of said substrate and not striking through said substrate and having a characteristic of at least about 1,000 per cent extensibility based on a film thickness of 0.005 inch, said substrate being waterproof from the direction of said uncoated side.

3,852,091

THERMOGRAPHIC TRANSFER SHEETS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon & Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

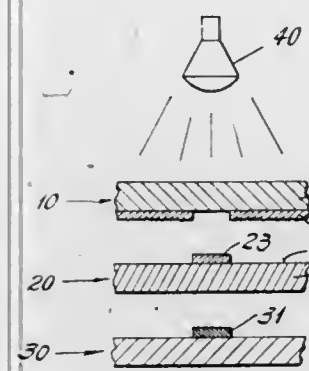
Division of Ser. No. 109,132, Jan. 25, 1971, Pat. No.

3,751,318. This application Sept. 11, 1972, Ser. No. 288,016

Int. Cl. B41c 1/06

U.S. Cl. 117-36.1

4 Claims



1. Thermographic transfer sheet comprising a flexible foundation carrying a uniform thin volatile-liquid-applied imaging layer of discrete particles which soften at a temperature within the range of from about 150° F to 220° F comprising a major amount by weight of wax and a minor amount by weight of resinous film-former having a higher melting point than the wax, the particles being separated, at least partially, by an interface and air voids to form areas which are transferable to a copy sheet, the said air voids and interfaces providing a thermal insulation and weakened severing points between heated and unheated particles.

3,852,092

THERMALLY RESPONSIVE ELASTIC MEMBRANE

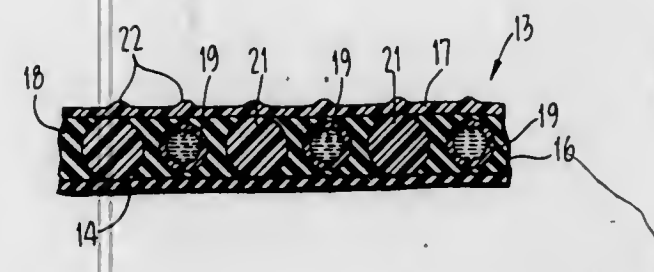
James A. Patterson, and Eugene D. Finkle, both of P.O. Box 304, Menlo Park, Calif. 94025

Filed June 5, 1972, Ser. No. 259,429

Int. Cl. B41m 5/26

U.S. Cl. 117-36.7

6 Claims



1. A thin sheet of material for indicating temperature differentials comprising an elastic membrane of material having imbedded as a layer therein an intimate mixture of encapsulated particles of a cholesteric liquid crystalline material exhibiting differential surface reflection of light dependent upon the temperature thereof and to particles of a material which is incompressible relative to said encapsulated particles, said incompressible particles being larger in size than said encapsulated particles to protect the latter from compressive stress within said film; said encapsulated particles of a cholesteric material each including a central body which is light absorptive at its surface, a layer of said cholesteric material overlying the exposed light absorptive surface of said body, and a protective layer of a light-transparent material for isolating said cholesteric material from the external environment surrounding said body and said layer of cholesteric material thereon.

3,852,093

HEAT-SENSITIVE COPY-SHEET

Kevin P. O'Leary, Minneapolis, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

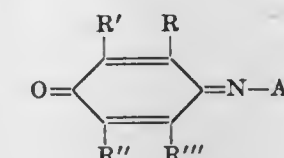
Filed Dec. 13, 1972, Ser. No. 314,687

Int. Cl. B41m 5/00

U.S. Cl. 117-36.8

7 Claims

1. Colored sheet material capable of undergoing localized loss of color when thermographically heated in presence of a reducing agent and containing a p-quinoneimine color body in a film-forming binder, wherein said color body has the structure



wherein Ar is an aromatic radical and the R, R', R'' and R''' substituent radicals may be hydrogen, halogen, alkyl, alkoxy or amido, or wherein adjacent substituent radicals may constitute a fused polycyclic or heterocyclic ring.

3,852,094

MEANS FOR DESENSITIZING CARBONLESS PAPERS

Dean R. Yarian, Alton, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

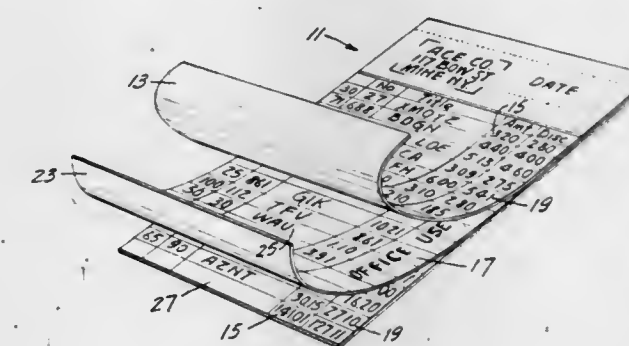
Division of Ser. No. 110,876, Jan. 29, 1971, Pat. No.

3,809,668. This application Nov. 23, 1973, Ser. No. 418,470

Int. Cl. B41m 5/00; C08g 51/26

U.S. Cl. 117-36.8

4 Claims



1. A printed form comprising a paperlike sheet, a material present on at least part of a surface of said paperlike sheet, said material being color-reactive with a dye precursor, and interacted with at least a portion of said material, a complexing agent soluble in organic media and capable of forming a coordination compound with a salt or nickel, copper, cobalt, or cadmium, wherein said complexing agent is capable of forming a complex in said organic media with coreactant salts such that said complex is more stable than complexes of dithiooxamide or derivatives thereof with said metal salts.

3,852,095

METHOD AND APPARATUS FOR APPLYING WAX TO CAN LID RIMS

Edwin F. Hogstrom, Sheffield Lake, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Sept. 28, 1970, Ser. No. 76,167

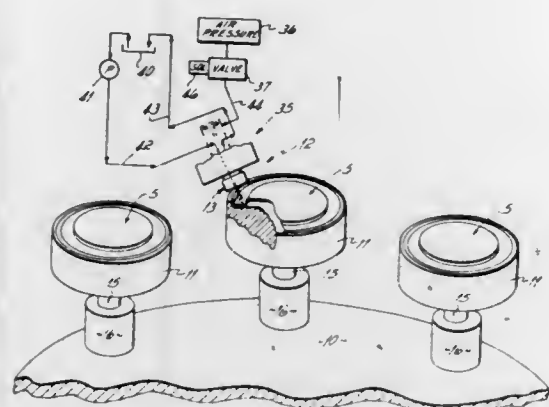
Int. Cl. B05c 1/16; B05b 13/02

U.S. Cl. 117-43

10 Claims

1. The method of applying a 100 percent solids protective layer of wax in the configuration of an annular ring to the rim of a can end without the addition of any solvent so that the end need not be baked to drive off solvent from the wax, which method comprises:

rotating the end relative to the orifice of a nozzle of a spray gun, melting a 100 percent solids wax and supplying it in the as melted condition to the nozzle of said spray gun without the addition of any solvent,



ejecting said melted wax in the form of a fan-shaped sheet of liquid from said nozzle orifice and directing it onto the rotating end, said end being located sufficiently close to the nozzle orifice that said wax film is applied to the end as an unatomized curtain sheet of wax.

3,852,096

PROCESS FOR FABRICATING AN ARTICLE FROM A MULTIPHASE COPOLYMER COMPOSITION

Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

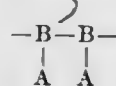
Filed Feb. 25, 1972, Ser. No. 229,487

Int. Cl. B44d 1/092; C09d 3/74

U.S. Cl. 117-47 H

10 Claims

1. A process for fabricating an article from a thermoplastic composition, said thermoplastic composition being a multiphase copolymer of the A-B-A, (A-B)_n, or



type, wherein *n* is greater than 1 and wherein polymer blocks, A and B, are each thermoplastic, comprise above about 10 monomer units, and have softening points substantially above 25°C. with B being present in at least about 30 to about 95 percent by weight of the total polymer, which comprises the steps of:

- suspending said thermoplastic composition in finely divided form in a liquid medium in such amounts that the solids content of the resulting suspension is in the range of from about 15 to about 75 weight percent; said liquid medium being nonvolatile and being capable of plasticizing the B block of said thermoplastic composition near or above the softening point of that block, but no more than 10 weight percent of said liquid medium will be incorporated into said A block;
- applying said suspension to a surface; and
- heating said surface to a temperature at least approximately equal to that of the highest softening point of said composition.

3,852,097

PROCESS FOR TREATING SURFACES

William John Owen, Sully; Bryan Ewart Cooper, Bridgend, and Stephen Westall, Barry, Glamorgan, all of Wales, assignors to Dow Corning Limited, London, England

Filed Feb. 8, 1973, Ser. No. 330,560

Int. Cl. B44d 1/50

U.S. Cl. 117-93.31

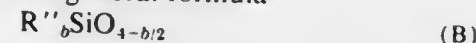
8 Claims

1. A process for treating a surface of a solid organic polymer containing less than 12 per cent by weight of hydroxyl radicals

and having at least one chemical linkage selected from carbon to hydrogen bonds and olefinically-unsaturated linkages, said process comprising (1) applying to said surface a coating of an organosiloxane having in the molecule at least one unit of the general formula



and at least one unit of the general formula



wherein each R and each R'' represents a hydrogen atom or a monovalent hydrocarbon or halogenated hydrocarbon radical having less than 19 carbon atoms, R' represents a divalent aliphatic radical having from 1 to 12 inclusive carbon atoms and composed of carbon and hydrogen a is 0, 1 or 2 and b is 1, 2 or 3, there being present in the organosiloxane at least 1 mol percent of (A) units, and (2) exposing the applied organosiloxane to one or more of high energy radiation, ultra violet light and a temperature from 80°C. to just below the decomposition temperature of the organic polymer.

3,852,098

METHOD FOR INCREASING RATE OF COATING USING VAPORIZED REACTANTS

Karl H. Bloss, Dietzenbach-Steinberg, and Harald Molketin, Frankfurt, both of Germany, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 15, 1972, Ser. No. 315,384

Int. Cl. C23c 11/08

U.S. Cl. 117-106 R

2 Claims

1. A method of coating a glass substrate with a metal oxide coating comprising the steps of:

- dispersing a powdered coating reactant having a standard vaporization entropy of at least 40 Clausius and a melting point-to-vaporization point span of less than about 120°C. into a stream of air that is sufficiently hot to vaporize the coating reactant so that a mixture of air and vaporized coating reactant is formed;
- maintaining the mixture at a temperature above that at which it is saturated with the coating reactant and below that at which the coating reactant pyrolyzes;
- heating the glass substrate to a temperature sufficient to cause the coating reactant to pyrolyze; and
- delivering the mixture sufficiently closely to the hot glass substrate to cause the coating reactant to pyrolyze forming a coating on the substrate.

3,852,099

DENSE SILICON CARBIDE CERAMIC AND METHOD OF MAKING SAME

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1972, Ser. No. 309,676

Int. Cl. C04b 41/24; C22c 29/00

U.S. Cl. 117-119

9 Claims

1. A silicon carbide ceramic body comprising a silicon carbide matrix filled with a composition consisting essentially in weight percent of 55-70 percent of boron carbide, 30-45 percent of silicon carbide and, based on the total weight of the composition, an amount up to 10 percent by weight and at least sufficient to lower the temperature of liquid formation of said composition, of a member selected from the group consisting of silicon metal and aluminum carbide.

3,852,100

TREATMENT OF POROUS SURFACES OF ARTICLES OF MANUFACTURE

Perry A. Argabright, Larkspur; C. Travis Presley, Denver, and John A. Davis, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 26, 1972, Ser. No. 317,883

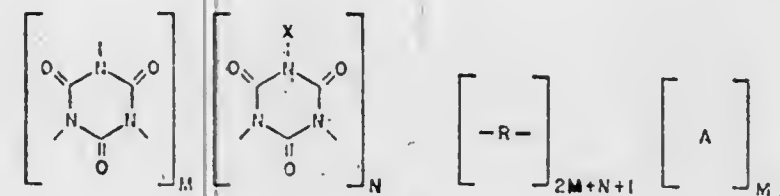
Int. Cl. C03c 17/00

U.S. Cl. 117-123 C

4 Claims

1. In a process for the sealing of porous surfaces of articles of manufacture to reduce their permeability to fluids, the improvement comprising:

- preparing an aqueous solution containing a water soluble salt of a polyisocyanuric acid and polyvinyl alcohol or hydroxyethyl cellulose,
- adjusting the pH of said aqueous solution as desired for a given application, always having a pH in excess of 7, and
- applying said aqueous solution to said porous surfaces and maintaining contact between said porous surfaces and said aqueous solution for a time sufficient to permit gelation within the void space of said permeable surfaces, wherein said isocyanurate salt has the structure:



wherein:

- R = divalent hydrocarbon radical
- X = a metal, hydrogen, quaternary ammonium or a combination thereof,
- A = monovalent group selected from the following: isocyanate, urethane, urea, amino, $\text{NH}_2\text{CO}_2\text{R}'$,
- R' = monovalent hydrocarbon radical
- M = average number of trisubstituted isocyanurate rings, a positive number from 0 to about 400,
- N = average number of isocyanuric acid or derivative rings, a positive number from above 1 to about 10,000,
- $2M+N+1$ = average number of divalent R groups
- $M+2$ = average number of A groups.

3,852,101

STABILIZATION OF POLYESTER FIBERS WITH CARBODIIMIDE

David H. Batchelor, Jr., Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

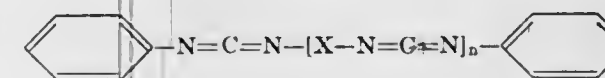
Filed Nov. 1, 1972, Ser. No. 302,710

Int. Cl. C08g 51/60; D06m 13/38

U.S. Cl. 117-138.8 F

8 Claims

1. Filaments composed of at least 85 percent by weight of an ester of ethylene glycol and terephthalic acid having an aliphatic ether concentration of 0-3 mole percent and surface coated with about 1/2-2 percent, based on the weight of the filaments of a compound having the general structural formula:



where *x* is a radical selected from the group consisting of 2, 4-tolylene, 2, 6-tolylene, and mixtures of the above; and *n* has an average value of about 1.

3,852,102

PERMANENT ANTI-SNAG FINISH FOR FABRICS

James W. Lalk, Shepherd, and Jobie Crear, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 26, 1973, Ser. No. 383,024

Int. Cl. C08j 1/44

U.S. Cl. 117-139.5 A

7 Claims

1. A method for reducing the snagging of fabrics comprising the application to the fabric of an aqueous latex of a polymer comprising from about 25 to 50 weight percent of a hydroxy lower alkyl acrylate, from about 6 to 12 weight percent acrylonitrile, from about 40 to 60 weight percent of a lower alkyl acrylate having from two to eight carbon atoms in the alkyl group and from about 1 to 5 weight percent acrylic acid wherein said polymer is of a molecular weight to be insensitive to chlorinated solvents and water followed by dewatering the coating and curing the polymer.

3,852,103

RASTER PATTERN MAGNETORESISTORS

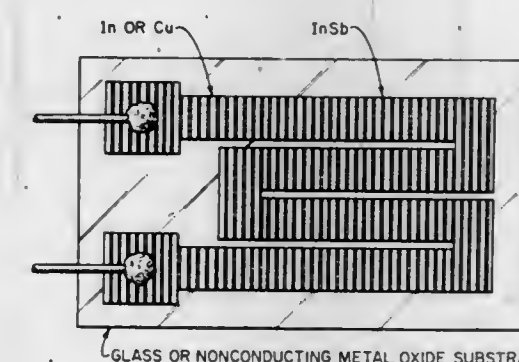
David A. Collins, 6234 Pearl Lake Ave., and Harry H. Wieder, 2860 Chatsworth Blvd., both of San Diego, Calif.

Continuation-in-part of Ser. No. 748,069, July 26, 1968, Pat. No. 3,592,708. This application Mar. 1, 1971, Ser. No. 119,978

Int. Cl. B44d 1/18; C23b 5/50

U.S. Cl. 117-212

3 Claims



1. A high sensitivity raster pattern magnetoresistor device whose resistance shows a strong variation with magnetic field, comprising:

- a non-conducting substrate,
- an electron beam microzone-crystallized semiconducting thin film having microscopic thickness of from 3 to 5 μm and selected from the group of intermetallic compounds consisting of InSb and InAs in a magnetoresistor pattern formed on said substrate;
- a high density raster pattern of identical metallic lines of microscopic thickness on the surface of said conducting thin film, said raster pattern of metallic lines together with said semiconducting thin film providing a series-connected array of identical semiconductor parallelepipeds whose thickness is slight with respect to their other dimensions such that the semiconducting film between the metallic lines has a small length to width ratio in the direction of applied current and the width of the metallic lines is identical with the spacing between said lines;
- said metallic lines being of the order of 0.5 to 2.0 μm in thickness;
- the initial resistance of said magnetoresistance device being between 10 and 1,000 ohms which resistance increases with an applied magnetic field reaching a value greater than a factor of 10 of the initial resistance in a magnetic field of 10 kOe, said magnetoresistor also having a large surface-to-volume ratio which provides for efficient thermal dissipation of heat from the body of said magnetoresistor to its surroundings.

3,852,104

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Else Kooi; Reinier De Werdt, both of Eindhoven; Maria Magdalena Mathilda Nijdam-Paffen, Kerkrade, all of Netherlands, and U.S. Philips Corporation, New York, N.Y.

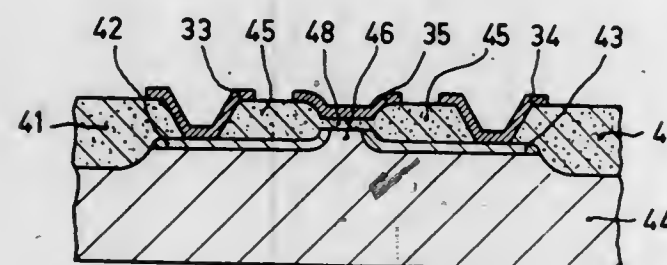
Filed Oct. 2, 1972, Ser. No. 293,782

Claims priority, application Netherlands, Oct. 2, 1971, 7113561

Int. Cl. H01L 7/54

U.S. Cl. 117-212

5 Claims



1. A method of manufacturing a semiconductor device, comprising providing on one side of a semiconductor body a patterned etchant-resistant and oxidation-resistant masking layer, subjecting the semiconductor body to an etching treatment with an etchant which does not substantially attack the masking layer to form recesses in the semiconductor body at the unmasked areas, the semiconductor underetching at the masking layer edges whereby the latter project over the recesses, thereafter removing the masking layer edges which project over the recesses, and thereafter subjecting the masked body to an oxidation treatment with the masking layer in place to form an oxide inset in the body at the recesses, said oxidation treatment being continued until the surface of the grown oxide reaches at least the level of the masking layer.

3,852,105

FABRICATION OF DARK HEATERS

John Richard Hale, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,240

Int. Cl. B44d 1/18

U.S. Cl. 117-217

4 Claims

1. A method of providing a coating on a heater structure comprising:

preparing a substantially rheologically stable bath by dispersing tungsten particles in a liquid vehicle until the apparent specific gravity of said bath, as measured by a hydrometer, is substantially equal to the true specific gravity of the bath taken as a whole, and then passing said heater into and out of said bath within a period of time in which the difference between the apparent and true specific gravities of said bath is not greater than 5 percent.

3,852,106

POLYAMIDE-IMIDE POLYMER HAVING AN ORDERED STRUCTURE

Joseph H. Incremona, Salt Lake City, Utah, and Daniel Strugar, Cherry Hill, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

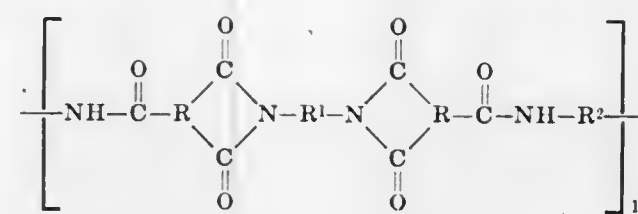
Continuation-in-part of Ser. No. 650,195, June 30, 1967, abandoned. This application July 22, 1969, Ser. No. 843,848

Int. Cl. C08g 20/32

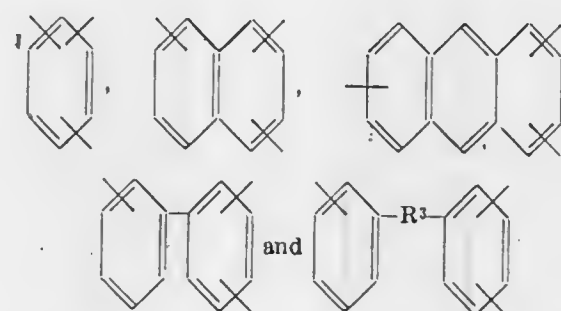
U.S. Cl. 117-218

15 Claims

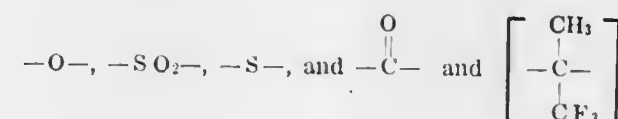
1. A film-forming polyamide-imide polymer having an ordered structure of recurring amide-imide-imide-amide linkages in the polymer chain consisting essentially of the following recurring structural units:



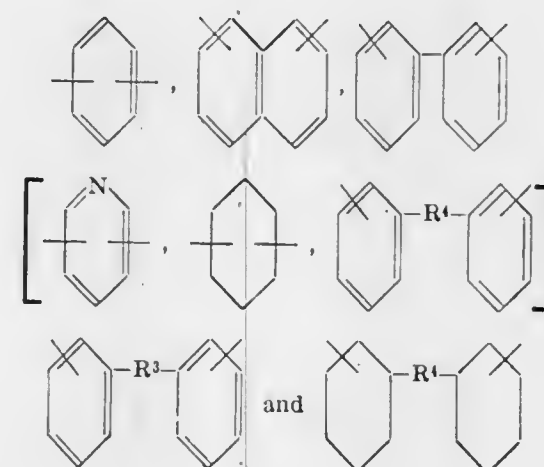
where R is a trivalent aromatic radical selected from the group consisting of



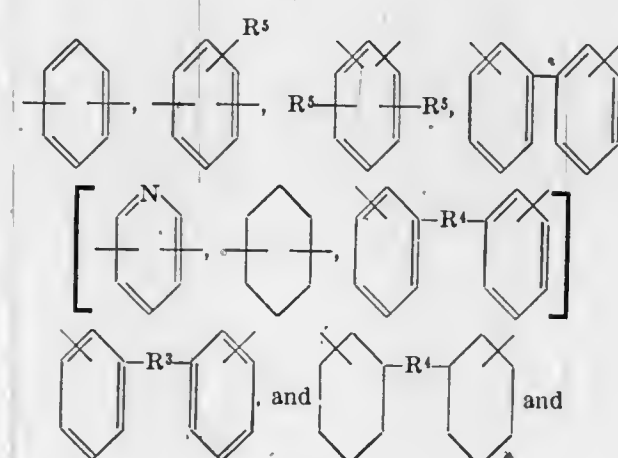
wherein R³ is selected from the group consisting of an alkylene radical having 1-3 carbon atoms,



wherein R¹ is a divalent organic radical selected from the group consisting of an alkylene radical having 2-8 carbon atoms,



and R² is a divalent organic radical selected from the group consisting of an alkylene radical having 2-6 carbon atoms,



wherein R⁴ is selected from the group consisting of an alkylene radical containing 1-3 carbon atoms;

3,852,109

CLEANING MOVING WEBS BY PASSAGE BETWEEN OPPOSED FLEXIBLE POLYURETHANE FOAM WIPERS

John Norman Cheetham, Ashted, England, assignor to Yarsley Research Laboratories Limited, Chessington, Surrey, England

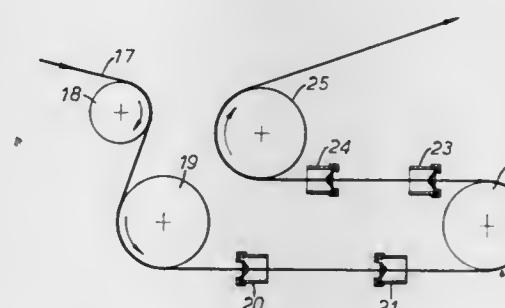
Filed May 8, 1973, Ser. No. 358,392

Claims priority, application Great Britain, May 8, 1972, 21365/72

Int. Cl. B08b 1/02, 7/00

U.S. Cl. 134-9

12 Claims



1. A method of cleaning a continuous support web prior to forming a thin polymer film thereon, which comprises the step of passing the support web at a rate of at least 15 feet/minute between at least one pair of dry wipers, one wiper of the pair bearing against one surface of the support web and the other wiper bearing against the other surface and the wipers being formed of a flexible polyurethane foam material.

3,852,110

GASTIGHT ALKALINE BATTERY WITH PASTE AND SINTERED ELECTRODE

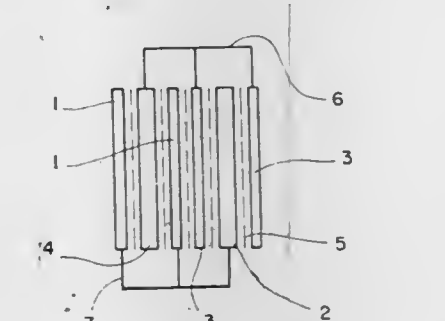
Siegfried Dickfeldt, Hagen, Germany, assignor to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed Oct. 11, 1973, Ser. No. 405,291

Int. Cl. H01m 35/00

U.S. Cl. 136-6 R

6 Claims



1. A gastight alkaline battery, comprising positive and negative paste groups each of which comprises both paste and sintered electrodes.

3,852,111

LEAD STORAGE BATTERY CELL

Juergen Brinkmann, Berenbostel, and Gerwin Trippe, Gevelsberg, both of Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed Oct. 23, 1973, Ser. No. 408,815

Claims priority, application Germany, Oct. 23, 1972, 2251870

Int. Cl. H01m 35/32

U.S. Cl. 136-26

10 Claims

1. Plate electrode means for storage batteries comprising: a plurality of separate plate segments, spaced from each other and positioned vertically above one another, and

3,852,107

PROTECTION OF GRAPHITE ELECTRODES

Clive Graham Lorkin, Borken, and Josef Schiffrath, Postfach, both of Germany, assignors to Fosco International Limited, Birmingham, England

Filed Nov. 27, 1972, Ser. No. 309,919

Claims priority, application Great Britain, Nov. 26, 1971, 55128/71

Int. Cl. B44d 1/44

U.S. Cl. 117-228

13 Claims

1. In a method of protecting an arc furnace electrode formed of graphite wherein the electrode is held by means of clamps in the arc furnace, the improvement which comprises applying to the electrode a protective coating comprising 15 - 90 percent by weight of matrix material having a melting point of less than 1,000°C and which is a graphite-wetting material, and 10 - 85 percent by weight of a refractory filler, the protective coating being applied over only that part of the electrode which, in use, is below the level of the electrode clamps.

3,852,108

METHOD AND DEVICE FOR RECOVERING GLASS FIBER FROM GLASS FELT REJECTS

Martin Lindberg, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

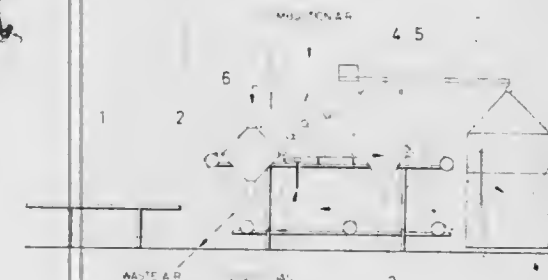
Filed Aug. 20, 1973, Ser. No. 390,099

Claims priority, application Finland, Sept. 4, 1972, 2440/72

Int. Cl. C03c 23/00

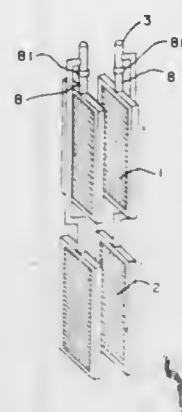
U.S. Cl. 134-2

3 Claims



1. A method for recovering glass fibers from glass mat containing a binding agent dispersed upon glass fibers, which comprises introducing a fuel and air into a combustion zone to maintain a combustible atmosphere therein, preheating the glass mat by conducting exhaust gases from said combustion zone through the mat, conveying the glass mat into said combustion zone, directing the flow of fuel and air into said combustion zone to thereby support the mat in suspension therein, and maintaining the temperature in said combustion zone below the softening temperature of the glass fibers but above the combustion temperature of the binding agent to burn said binding agent away from the glass fibers, and conveying the glass fibers thus separated from the mat out of said combustion zone.

separate current take-off connectors for said respective segments mechanically linking said segments and con-



necting them electrically in parallel, said connectors having substantially equal electrical resistance.

3,852,112

ACTIVATION OF NICKEL BATTERY PLATES

Trevor Stanley Turner, Kidderminster, and John Edward Whittle, Sutton Coldfield, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.
Division of Ser. No. 107,422, Jan. 18, 1971, abandoned. This application Feb. 8, 1973, Ser. No. 330,695

Int. Cl. H01m 43/04

U.S. Cl. 136—29

5 Claims

1. In a process for activating a solid nickel surface for use as a positive electrode in alkaline storage batteries wherein the said solid nickel surface is anodically treated for at least 5 minutes at an anode current density of about 0.1 to 1000 mA/cm² in an aqueous electrolyte at a temperature not exceeding 35°C. which contains in solution ammonia and a nickel salt selected from the group consisting of nickel nitrate, nickel acetate, nickel sulfate and nickel chloride, the ratio of gram-molecules of ammonia to grams-ions of nickel being from 0.1 to 3, whereby a battery active mass of Ni(OH)₂ is deposited on said nickel surface; the improvement for stabilizing the electrolyte comprising adding to the electrolyte an ammonium salt having the same anion as the nickel salt, the ratio of the molar concentration of the ammonium salt to that of the nickel salt being at least 0.1:1 but not exceeding 3:1.

3,852,113

POSITIVE ELECTRODE FOR HIGH ENERGY PRIMARY CELLS AND CELLS USING SAME

Noriyuki Yokota, Ashiya; Nobuatsu Watanabe, Kyoto; Shingo Tokuda, Nishinomiya; Yasuhiro Kanaya, and Hirokatsu Shimizu, both of Osaka, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

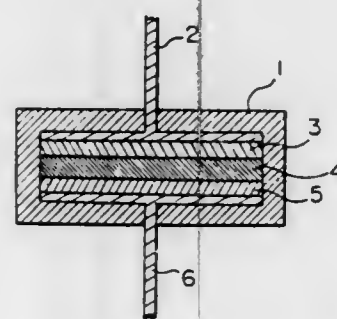
Filed Dec. 27, 1972, Ser. No. 318,775

Claims priority, application Japan, Dec. 30, 1971, 46-2595; Apr. 1, 1972, 47-32713; Aug. 8, 1972, 47-79792

Int. Cl. H01m 17/00

U.S. Cl. 136—83 R

20 Claims



1. A positive electrode for high energy primary cells which comprises a homogeneous mixture of a finely divided chlori-

nated amorphous carbon whose chloride content ranges between 20 and 80% by weight and an electrically conductive material selected from the group consisting of finely divided conductive carbons, conductive carbon fibers, finely divided conductive metals, conductive metallic fibers and mixtures thereof, said homogeneous mixture being bonded with a synthetic resin binder, and the chlorine content of said finely divided chlorinated amorphous carbon ranges between 5 and 70% by weight of the positive electrode.

3,852,114

CELL CASING AND HERMETICALLY SEALED PRIMARY SODIUM-SULFUR CELL

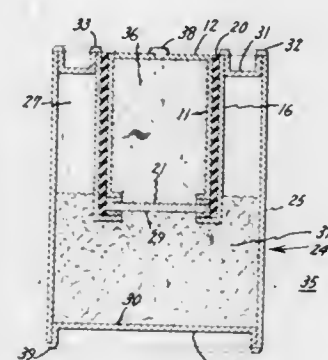
Robert R. Dubin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,375

Int. Cl. H01m 21/14, 1/00

U.S. Cl. 136—83 T

4 Claims



1. A battery casing comprising a first inner metallic casing with a closed end, a fill opening, and an opposite open end, a first inwardly extending metallic flange affixed to the open end of the first inner casing, a second inner metallic casing with opposite open ends, the second inner casing surrounding the first inner casing and spaced therefrom, a second inwardly extending metallic flange affixed to one open end of the second inner casing adjacent to the first flange and spaced therefrom, a layer of electrical insulation positioned between the two inner casings and filling the space therebetween, a solid sodium ion-conductive material disc positioned between the adjacent flanges of the inner casings, low temperature melting glass seals sealing the adjacent flanges to the disc at its periphery, an outer metallic casing comprising a side wall, a removable closed end, and an opposite open end, the side wall of the outer casing surrounding at least partially the inner casings, the side wall of the outer casing extending beyond the flange of the second inner vessel thereby providing a chamber between one surface of the disc and the interior surface of the removable end of the outer casing, the outer casing being spaced from the second inner casing, and a metallic annular ring affixed to the outer casing and the second inner casing at the open end of the outer casing thereby closing the open end of the outer casing.

3,852,115

PRIMARY CELL CASE

Richard W. Lewis, E. Grinstead, and Richard J. Lines, Maidenhead, both of England, assignors to Timex Corporation, Waterbury, Conn.

Continuation of Ser. No. 107,390, Jan. 18, 1971, abandoned.

This application Jan. 15, 1973, Ser. No. 323,663

Int. Cl. H01m 1/02

U.S. Cl. 136—111

4 Claims

1. A button type of energy cell for timepieces comprising a case containing active anode and cathode materials, said case comprising:

a can-like member having a base and free-standing side walls extending substantially vertically upward from said

base and defining an opening to receive said cathode material,
a top cap to receive said anode material, said cap having a top protruding contact portion and a descending flange portion extending downwardly and outwardly at an oblique angle from the horizontal and terminating in a vertically descending end portion,
separating means for separating said anode material from said cathode material,
said separating means comprising a plurality of separator plates positioned within an annular flexible sealing grommet, and
a plurality of barrier plates positioned within said can and the peripheral edges of said barrier plates in contact with the free-standing walls of said can, the periphery of said barrier plates underlying a base portion of said grommet and thereby supporting said grommet and separating said base portion of said grommet and the plurality of said separators from said cathode material in said can-like member,
said annular flexible sealing grommet consisting essentially of said base portion and an inner upwardly extending leg and an outer upwardly extending leg, said pair of spaced

an electrically conductive support, the improvement comprising heating said catalyst in the presence of oxygen to a temperature of about 70°C. to about 110°C. for a period of at least about three-quarters of an hour to less than about two hours to retard the rate of decay of the electrode on continued contact with the electrolyte.

3,852,117

SEAL FOR ELECTROCHEMICAL CELLS AND THE LIKE

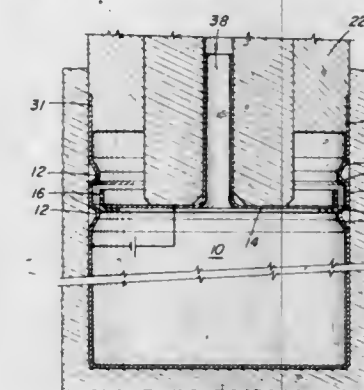
Anthony Vincent Fraioli, Essex Fells, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 18, 1970, Ser. No. 38,387

Int. Cl. H01m 1/02

U.S. Cl. 136—133

1 Claim



1. A method of sealing a cylindrical battery case which comprises a metal wall which is a hollow cylinder, said method comprising the steps of

- forming two spaced apart circumferential indentations spaced apart longitudinally in said metal cylinder wall, each of said indentations comprising a longer section and a shorter section of said cylinder wall inclined inwardly from regular sections of said cylinder wall adjacent said indentation and joined at a concentric circle inside said cylinder, the said shorter member of each of said indentations extending inward from an intermediate regular section of said cylinder wall separating said indentations;
- positioning a circular closure plate concentrically inside said cylinder between said two indentations and
- deforming said indentations by compressive force transmitted through said cylinder wall to deform said circumferential indentations and forming thereby two inwardly extending members of said cylinder wall, each of such members approximating the shape of a frustum of a hollow right angle cone joined at the larger base of said frustum to a regular section of said cylinder wall and extending inwardly to the smaller base of said frustum which provides a circular sealing edge inside said cylinder bearing against one face of said closure plate, the respective said sealing edges of said two members each bearing against one of the opposed faces of said closure plate.

3,852,118

THERMOELECTRIC COMPOSITION

Edward F. Hampl, Jr., Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 36,145, May 11, 1970, abandoned.

This application Apr. 7, 1972, Ser. No. 242,219

Int. Cl. H01v 1/18

U.S. Cl. 136—238

3 Claims

1. In a thermoelectric generator, an N-type thermoelectric leg, at least a section of which consists essentially of a cast alloy composition of at least four ingredients reacted together while in melted castable form and selected from the group consisting of silver, copper, tellurium, selenium, and sulfur in proportions, such that the total of silver and copper is in excess of 66% atomic percent and less than 67.7 atomic percent of the composition, with copper being present in an

3,852,116

STABILIZATION OF NICKEL BORIDE CATALYST IN POTASSIUM HYDROXIDE ELECTROLYTES

Stuart G. Meibuh, Birmingham, and Edward J. Zeitner, Jr., Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 291,584

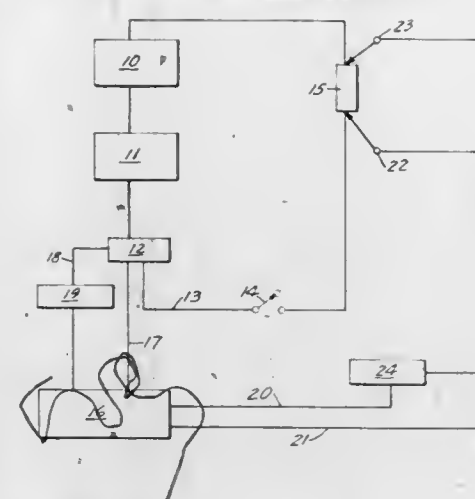
Int. Cl. H01m 13/00

U.S. Cl. 136—120 FC

3 Claims

1. In the method of making fuel cell electrodes for use in an aqueous potassium hydroxide electrolyte including the principal step of depositing fine particles of nickel boride catalyst on

amount between 0.1 and 5 atomic percent of the composition; sulfur is present in an amount between 0 and 5 atomic percent of the composition; and the balance of the composition is



tellurium and selenium in proportions such that the ratio of the atomic percent of tellurium in the composition to the atomic percent of selenium is about 60:40.

3,852,119

METAL-INSULATOR-SEMICONDUCTOR STRUCTURES HAVING REDUCED JUNCTION CAPACITANCE AND METHOD OF FABRICATION

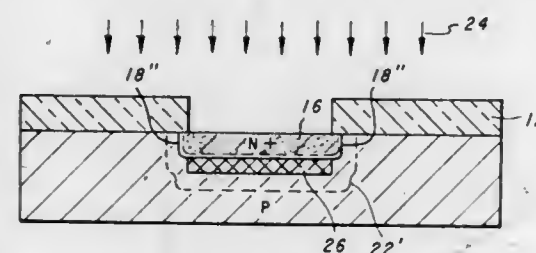
William Milton Gosney, Richardson, Tex., and Martin George Buehler, Gaithersburg, Md., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1972, Ser. No. 306,505

Int. Cl. H01L 7/54

U.S. Cl. 148-1.5

7 Claims



1. In a process for fabricating a metal-insulator-semiconductor structure having at least one p-n junction extending from a surface of a semiconductor substrate and characterized by relatively low capacitance, the steps of:

- forming a mask on the surface of a semiconductor substrate of one conductivity type, said mask defining an aperture exposing a first region of said substrate;
- introducing doping impurities of opposite conductivity type through said aperture into said first region to form in said substrate, a pocket of said opposite conductivity type having a bottom boundary substantially parallel to said surface and side walls substantially perpendicular to said surface so that said pocket defines a p-n junction with said substrate extending along said boundary and is characterized by a space-charge region defined by the relative doping levels of said pocket and said substrate, and
- introducing doping impurities into said substrate only into a second region adjacent to said bottom boundary of the pocket, said impurities being introduced in quantity sufficient to produce at least partial conductivity type compensation of said substrate material in said second region and thereby reduce the capacitance of said p-n junction by reducing the width of said space-charge region along said bottom boundary while leaving the width of said space-charge region along said lateral boundary substantially unchanged.

3,852,120 METHOD FOR MANUFACTURING ION IMPLANTED INSULATED GATE FIELD EFFECT SEMICONDUCTOR TRANSISTOR DEVICES

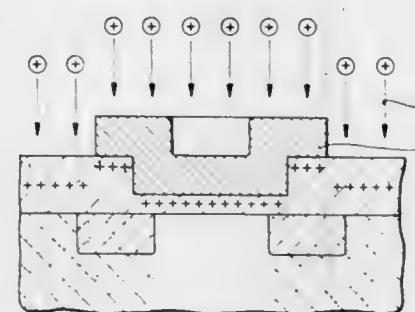
William S. Johnson, Hopewell Junction, and San-mei Ku, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1973, Ser. No. 364,800

Int. Cl. H01L 7/54

U.S. Cl. 148-1.5

7 Claims



1. A method for ion implanting the dielectric layer on an insulated gate field effect transistor comprising implanting ions selected from the group consisting of hydrogen and helium to a dose of between 10^{10} to 10^{14} per square centimeter and annealing the implanted device at a temperature of between 200° - 750° C, whereby mobile ion contamination due to alkaline metal ions and in particular sodium in said dielectric layer is substantially eliminated and suppressed.

3,852,121

PROCESS FOR MAKING A NOVEL COPPER BASE ALLOY

Jacob Crane, Woodbridge; Sam Friedman, Hamden, and Michael Joseph Pryor, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 268,485, July 3, 1972, Pat.

No. 3,816,109. This application Sept. 20, 1973, Ser. No.

399,073

Int. Cl. C22f 1/08

U.S. Cl. 148-2

8 Claims

1. A method of preparing copper alloys consisting essentially of about 0.8-2.3% iron and about 0.3-1.7% cobalt, such that the amount of iron plus cobalt ranges from about 1.5 to 2.5%, from 5 to 13% zinc and the balance essentially copper, to provide improved strength, bend properties, and electrical properties which comprises:

- hot rolling the alloy at a temperature of at least 500° C, but below its melting temperature; and
- cold rolling to at least 50% cold reduction wherein said cold rolling includes successive cold reductions and at least one interanneal conducted therebetween at temperatures ranging from about 400° to 600° C for a period of at least 15 minutes.

3,852,122

METHOD OF PRODUCING A WELDABLE AND AGEABLE ALUMINIUM ALLOY OF GREAT STRENGTH AND PRODUCT

Aksel Ola Aarflot; Fred Rudi, both of Sunndalsora; Gunnar Birger Sorensen, Asker; Bjarne Alvsaker, Holmestrand, and Otto Berg, Oslo, all of Norway, assignors to A/S Ardal og Sunndal Verk, Oslo, Norway

Filed Mar. 5, 1973, Ser. No. 338,183

Claims priority, application Norway, Mar. 10, 1972, 778/72

Int. Cl. C22f 1/04

U.S. Cl. 148-3

4 Claims

1. A weldable, heat-treatable aluminium alloy consisting essentially of from 4.5 to 5.8% zinc, from 1.0 to 1.8% magnesium, from 0.10 to 0.30% zirconium, from 0 to 0.30% iron,

from 0 to 0.15% silicon, from 0 to 0.25% manganese, less than 0.05% each of other elements, the sum of these other elements not exceeding 0.15%, and the balance being aluminium, which alloy comprises metastable precipitates of zirconium aluminate having a particle size less than 2000 Å uniformly distributed in the alloy in an amount greater than 10^{10} per mm^3 .

SO_4^{--} ; the composition being characterized by a pH of about 3.0 to about 4.5.

3,852,126

GAS CUTTING METHOD

Hiromichi Yaguchi, Kameo Tachibana, and Tetsuo Matsumoto, all of Tamanoshi, Okoyama, Japan, assignors to Mitsui Shipbuilding & Engineering Co. Ltd., Tokyo, Japan

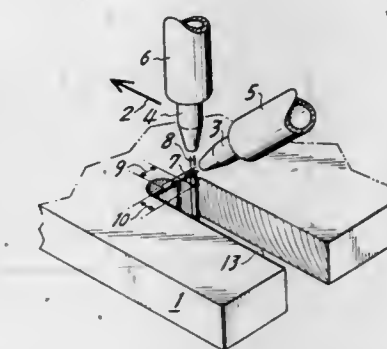
Filed Aug. 11, 1972, Ser. No. 279,840

Claims priority, application Japan, Aug. 27, 1971, 46/65755; Sept. 30, 1974, 46/76535

Int. Cl. B23k 7/00

U.S. Cl. 148-9 R

7 Claims



3,852,123

SEALING RINSES FOR PHOSPHATE COATINGS ON METAL

Kurt Goltz, Exton, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 20, 1972, Ser. No. 308,072

Int. Cl. C23c 3/00

U.S. Cl. 148-6.14

16 Claims

1. The process of sealing a phosphate coated metal comprising wetting the phosphate coated metal by contacting it for a period ranging from about 1 second to about 1 hour with an aqueous solution having a temperature ranging from ambient temperature to about 200° F. of one or more aluminum polymers having a concentration of at least about 0.25 grams per liter of aluminum and selected from the group consisting of aluminum nitrate polymer, aluminum lactate polymer, aluminum formate polymer, aluminum oxalate polymer, aluminum chloride polymer, aluminum perchlorate polymer and aluminum iodide polymer, said aluminum polymers being prepared by slowly adding one mole of aluminum hydroxide gel to one mole of the particular monobasic acid or acid salt desired, and then drying the wetted metal without rinsing.

3,852,124

DUPLEX SEALING PROCESS

Wayne M. Fassell, Newport Beach, Calif., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Sept. 22, 1972, Ser. No. 291,249

Int. Cl. C23c 1/10; C23f 7/08; C23b 5/50

U.S. Cl. 148-6.15

10 Claims

1. A process for improving the corrosion resistance of an anodized aluminum coating of an aluminum based article comprising:

- contacting said anodized coating with a first aqueous solution of salt selected from the group consisting of acetates, propionates, sulphates, chlorides, bromides, iodides and nitrates, which salt disassociates in water to form a divalent cation selected from the group consisting of iron, cobalt, nickel, lead, magnesium, zinc, cadmium, barium, calcium, copper, manganese, strontium and tin;
- rinsing said anodized coating; and
- contacting said anodized coating with a second aqueous solution of a sodium, potassium or ammonium salt which disassociates in water to form an anion selected from molybdate, acid phosphate, phosphate, chromate, dichromate, silicate and chlorate.

3,852,125

SURFACE CONVERSION TREATED MAGNESIUM

James A. Brown, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 192,558, Oct. 26, 1971, Pat. No. 3,784,417, which is a continuation-in-part of Ser. No. 89,130, Nov. 12, 1970, abandoned. This application Aug. 2,

1973, Ser. No. 385,114

Int. Cl. C23f 7/16

U.S. Cl. 148-6.15 R

22 Claims

1. A magnesium body having a surface layer formed by treating at least a portion of the magnesium surface with an aqueous composition comprising a water solution of about 9.4 to about 19.5 grams per liter NH_4^+ ; about 50 to about 103 grams per liter PO_4^{--} ; about 1.0 to about 2.8 grams per liter Ca^{++} ; and a total of about 1.9 to about 4.8 grams per liter of ions selected from the group consisting of Cl^- , NO_3^- , and

3,852,127

METHOD OF MANUFACTURING DOUBLE DIFFUSED TRANSISTOR WITH BASE REGION PARTS OF DIFFERENT DEPTHS

Jack Stewart Lamming, Garston, Watford, England, assignor to U.S. Philips Corporation, New York, N.Y.

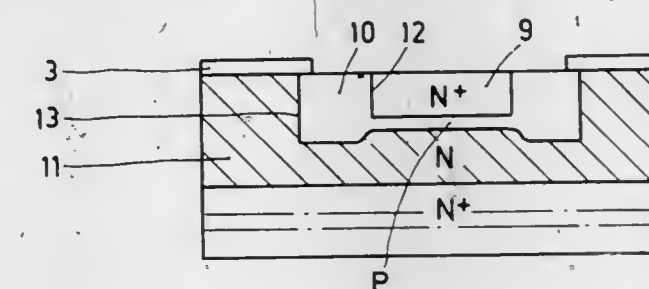
Filed July 27, 1966, Ser. No. 568,314

Claims priority, application Great Britain, July 30, 1965, 32843/65

Int. Cl. H01L 7/44

U.S. Cl. 148-187

3 Claims



1. A method of manufacturing a transistor, comprising providing a body having at least a semiconductive part of silicon containing a substantially uniform concentration of one type of conductivity-type-determining impurities and a

plane surface, forming on the said plane surface an adherent protective insulating layer, providing a first opening in the insulating layer to form a first exposed limited portion of said plane surface of said body part, diffusing into said first exposed surface portion said one type impurities having a relatively slow rate of diffusion therein and in quantities yielding a relatively high diffused concentration, thereafter forming in the insulating layer a second opening larger than the first opening to form a second exposed limited portion of said plane surface of said body part, and diffusing into said second exposed surface portion conductivity-type-determining impurities of the opposite type having a relatively high rate of diffusion in the body part but in quantities yielding a relatively lower diffused concentration until the opposite type impurities penetrate into said body part to a greater depth than said one type diffused impurities forming a first p-n junction with the initial body part and a second p-n junction with the body part containing the diffused one type impurities, said insulating layer being impervious to both diffused one type and opposite type impurities, said second exposed plane surface portion having a greater surface area than and including and completely surrounding on all sides said first exposed plane surface portion, whereby the later diffused opposite type impurities which traverse a region of said body part which contains the one type diffused impurities are selectively retarded and penetrate to a lesser depth than those which traverse surrounding regions free of said one type diffused impurities and thus the part of the first p-n junction underneath the first exposed portion lies less deeply in the body than the parts of the first junction in surrounding portions.

3,852,128

METHOD OF DIFFUSING IMPURITIES INTO SEMICONDUCTOR WAFERS

Karl-Heinz Kreuzer, Heilbronn, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation of Ser. No. 12,011, Feb. 17, 1970, abandoned.

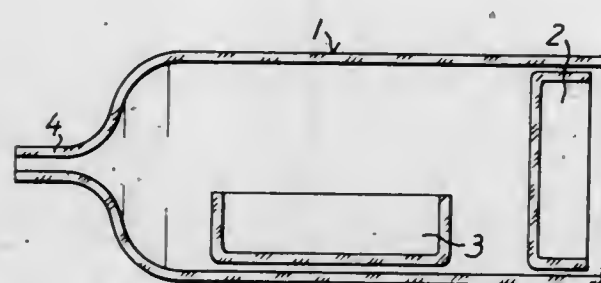
This application Apr. 17, 1972, Ser. No. 244,961

Claims priority, application Germany, Feb. 22, 1969, 1909030

Int. Cl. H01J 7/44

U.S. Cl. 148—189

10 Claims



1. A method of diffusing impurities into a semiconductor wafer, comprising the steps of determining by diffusing in an exhausted and sealed off diffusion chamber with a doped semiconductor wafer means as doping source and under diffusion parameters otherwise fixed the impurity concentration achieved at the surface of a semiconductor wafer means to be diffused as a function of the ratio of the area of the doped semiconductor wafer means to the area of semiconductor wafer means to be diffused, selecting a desired impurity concentration for a given semiconductor wafer means to be diffused, and diffusing impurities into said given wafer means under the fixed diffusion parameters used in the step of determining and at the appropriate ratio determined in the step of determining.

3,852,129 METHOD OF CARRYING OUT DIFFUSIONS WITH TWO SOURCES

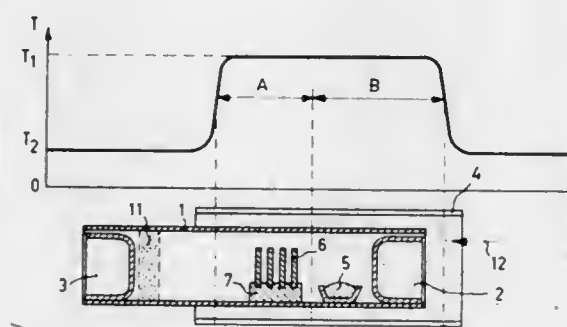
Daniel Diguët, Herouville-St.-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 346,081

Claims priority, application France, Apr. 5, 1972, 72.11912
Int. Cl. H01J 7/44

U.S. Cl. 148—189

9 Claims



1. A method of diffusing doping material in a semiconductor body in which the doping material is transported to the said body via the vapour phase from a doping source and in which the said source and the body are heated in a space, characterized in that the said space comprises three regions, namely a central region in which the said body is placed and two end regions which are present on either side of the said central region and which are destined for at least two sources of the same doping material but of different composition and that the said space in a first phase is arranged so that the said body and a single doping source are present in a zone of high temperature, after which the space is moved relative to the heating means and, in a second phase, the said body and only a second doping source are held in the said zone of high temperature.

3,852,130

Patent Not Issued For This Number

3,852,131

METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

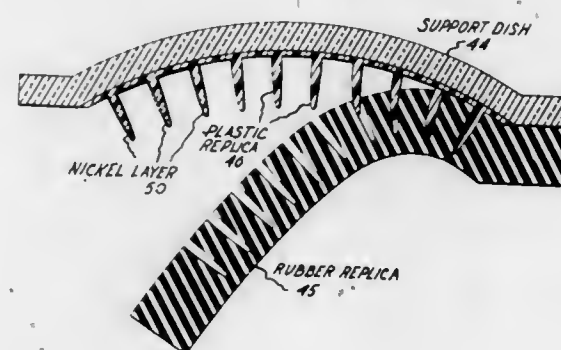
Division of Ser. No. 254,100, May 17, 1972, Pat. No.

3,783,299. This application July 19, 1973, Ser. No. 380,845

Int. Cl. C23f 1/02; H01j 31/49

U.S. Cl. 156—3

7 Claims



1. A method for manufacturing an improved x-ray image intensifier input phosphor screen comprising the steps of forming an electrically conductive plastic replica having wall-like projections forming a waffle-like surface on a first major side thereof and a smooth surface on a second major side,

forming a thin, relatively high reflectivity metal layer on the waffle-like surface of the plastic replica, dissolving the plastic material thereby leaving a thin metal replica having wall-like projections forming a waffle-like surface on a first major side thereof and the second major side having indentations corresponding to the wall-like projections on the first side, transferring the metal replica to the face plate of an x-ray image intensifier tube, and positioning the metal replica on the inner surface of the face plate, firmly attaching the metal replica to the face plate, depositing a phosphor layer on the waffle-like surface of the metal replica to a thickness wherein the phosphor layer extends slightly beyond the ends of the wall-like projections, smoothing the outer surface of the phosphor layer to obtain a surface substantially parallel to the inner surface of the face plate, and depositing a thin uniform coating of a photoemitter material on the outer surface of the phosphor layer.

3,852,132

METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

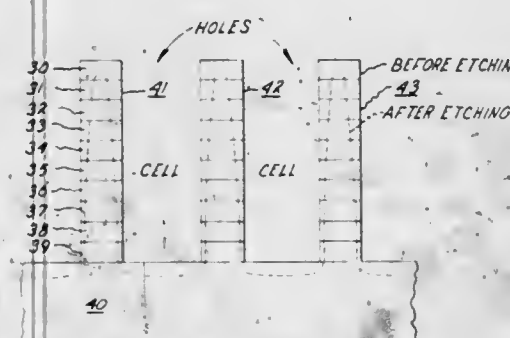
Division of Ser. No. 254,099, May 17, 1972, Pat. No.

3,783,298. This application July 19, 1973, Ser. No. 380,844

Int. Cl. C23f 1/02; H01j 31/49

U.S. Cl. 156—3

6 Claims



1. A method for manufacturing an improved x-ray image intensifier input phosphor screen comprising the steps of forming a silicone resin-granular phosphor replica having solid wall-like projections forming a waffle-like surface on a first major side thereof and a smooth surface on a second major side conforming to the concave-shaped inner surface of a face plate of an x-ray image intensifier tube, firmly attaching the silicone resin-granular phosphor replica to the face plate of the x-ray image intensifier tube wherein the smooth surface of the replica is attached to the concave-shaped inner surface of the face plate, depositing a transparent phosphor layer on the waffle-like surface of the silicone resin-granular phosphor replica to a thickness wherein the phosphor layer extends slightly beyond the ends of the wall-like projections, smoothing the outer surface of the phosphor layer to obtain a surface substantially parallel to the concave-shaped inner surface of the face plate, and depositing a thin uniform coating of a photoemitter material on the outer surface of the phosphor layer.

3,852,133

METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

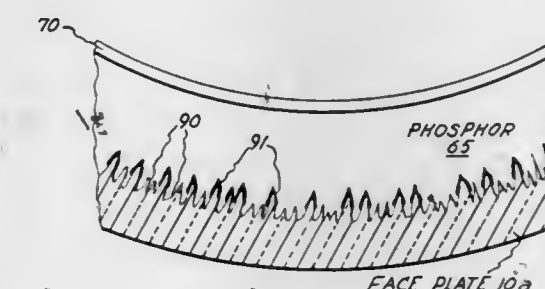
Division of Ser. No. 254,065, May 17, 1972, Pat. No.

3,673,438. This application July 19, 1973, Ser. No. 380,846

Int. Cl. C23f 1/02; H01j 31/49

U.S. Cl. 156—3

10 Claims



1. A method for manufacturing an improved X-ray image intensifier input phosphor screen comprising the steps of forming a waffle-like surface along the concave-shaped major side of a face plate of an X-ray image intensifier tube wherein the waffle-like surface has light-reflective floor portions and rib-like projections extending outward therefrom, coating the rib-like projections with a light-absorbing material, depositing a phosphor layer on the waffle-like surface to a thickness wherein the phosphor layer extends substantially beyond the ends of the rib-like projections, and depositing a thin uniform coating of a photoemitter material on the outer surface of the phosphor layer.

3,852,134

METHOD FOR FORMING SELECTIVELY PERFORATE STUDIES

Charles P. Bean, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

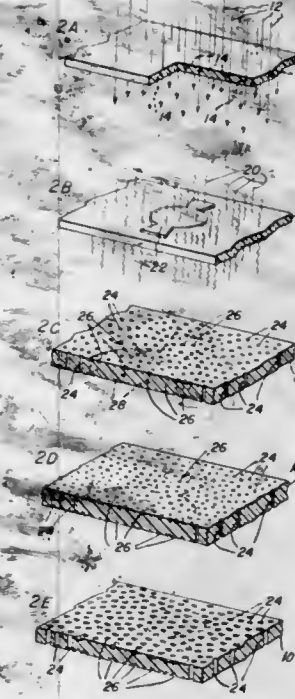
Continuation of Ser. No. 821,703, May 5, 1969, abandoned.

This application Nov. 20, 1972, Ser. No. 308,158

Int. Cl. G01T 5/00

U.S. Cl. 156—8

3 Claims



1. A method of perforating a solid body in a predetermined pattern comprising subjecting said body to a homogeneous bombardment of charge particles having an energy level form-

ing damage tracks extending through said body, exposing a selective portion of said homogeneously bombarded body in an oxygen containing ambient to radiant energy for a period required to alter the solubility rate of said exposed damage tracks, etching said body for a period sufficient to etch through those damage tracks lying within the selectively exposed portion of said body, said etch period being insufficient to etch through damage tracks lying outside said exposed portion of said body, annealing the selectively perforate body for a period required to obliterate the altered solubility of said damage tracks and etching said body to enlarge the perforations formed through said body during said initial etch of said body.

3,852,135

PATCHING DAMAGED CATION-ACTIVE PERMSELECTIVE DIAPHRAGMS

Edward H. Cook, Jr., Lewiston; Alvin T. Emery, Youngstown, both of N.Y., and Blaine O. Schoepfle, New Canaan, Conn., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 212,171, Dec. 27, 1971. This application Aug. 9, 1973, Ser. No. 387,072
Int. Cl. B32g 35/00

U.S. Cl. 156—94

13 Claims

1. A process for repairing damaged sections of a hydrolyzed copolymer of a perfluorinated hydrocarbon containing from two to five carbon atoms and a fluorosulfonated perfluorovinylether which comprises

- a. forming a solution of a second hydrolyzed copolymer of a perfluorinated hydrocarbon containing from 2 to 5 carbon atoms and a fluorosulfonated perfluorovinylether, said second copolymer having a lower equivalent weight than said damaged copolymer in a lower hydrocarbon alcohol,
- b. wetting the area adjacent to the damaged area of the damaged copolymer,
- c. covering the wetted area with a patch of hydrolyzed copolymer of the same equivalent weight as that of said damaged copolymer and
- d. removing the lower alcohol solvent from the covered area.

3,852,136

PRODUCTION OF LAMINATED GLAZING

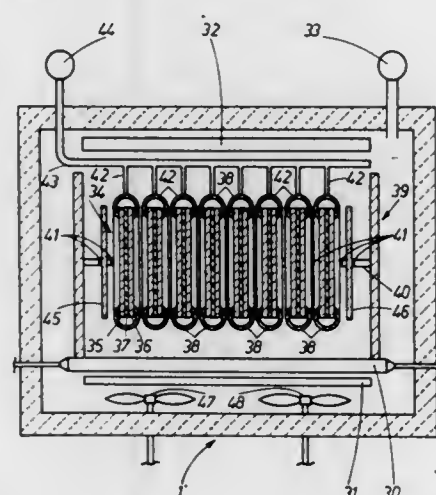
Emile Plumet, Gilly; Robert Van Laethem, Loverval; Pierre Colignon, Charleroi; Michel Wasterlain, Trazegnies, and Pierre Votquenne, La Louviere, all of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Continuation-in-part of Ser. No. 148,401, June 1, 1971, abandoned. This application Aug. 25, 1972, Ser. No. 283,792
Claims priority, application Great Britain, Dec. 8, 1971, 57079/71; Belgium, July 11, 1972, 4190

Int. Cl. B32b 17/10, 31/20

U.S. Cl. 156—103

24 Claims



1. In a process of forming a laminate by heating an assembly including at least two sheets of glass or vitrocristalline mate-

rial and an intervening thermoplastic layer, to at least soften the thermoplastic layer, and applying pressure to and heating the assembly sufficiently to firmly bond the sheets by means of such thermoplastic layer, the improvement prior to the step of applying pressure to and heating the assembly, comprising the steps of: simultaneously applying a sub-atmospheric environmental pressure to the assembly and heating the assembly to soften the thermoplastic layer and applying along the margins of the assembly a sub-atmospheric pressure which is lower than the sub-atmospheric environmental pressure applied to the assembly, whereby the intersheet spaces are subjected to suction.

3,852,137

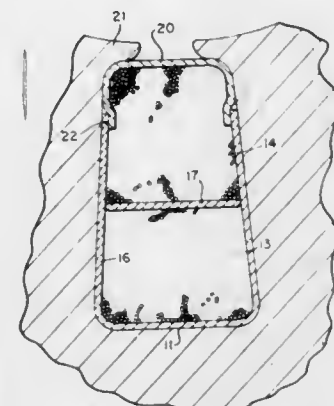
CHANNEL SHAPED LAMINATED HIGH TEMPERATURE SLOT WEDGE FOR DYNAMOELECTRIC MACHINES

Roy Leonard Balke, and Domenico Cipriani, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Division of Ser. No. 133,820, April 4, 1971, Pat. No. 3,735,169. This application Sept. 18, 1972, Ser. No. 290,095
Int. Cl. B31f 7/00

U.S. Cl. 156—196

1 Claim



1. A process for fabricating a channel-shaped, laminated, slot wedge comprising the steps of:

1. Coating a plurality of thin, resilient, high temperature polyimide films with a curable, epoxylated, novolac, resin adhesive;
2. Pressing together said plurality of polyimide films, said polyimide films having their contacting surfaces coated with the uncured epoxylated novolac resin adhesive to form a flat laminate;
3. Forcing the laminate and the as yet uncured adhesive into the desired channel shape;
4. Heating the laminate for a period of three hours at a temperature in the range of 160°–165°C to cure the epoxylated novolac resin adhesive which the laminate is held in the said channel-shape whereby the adhesive becomes rigid and the resilient films are retained in the desired channel configuration.

3,852,138

METHOD OF MAKING FOLDS IN COATED FIBER CONTAINERS

James Leslie Deuel, Long Grove, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 13, 1972, Ser. No. 305,727

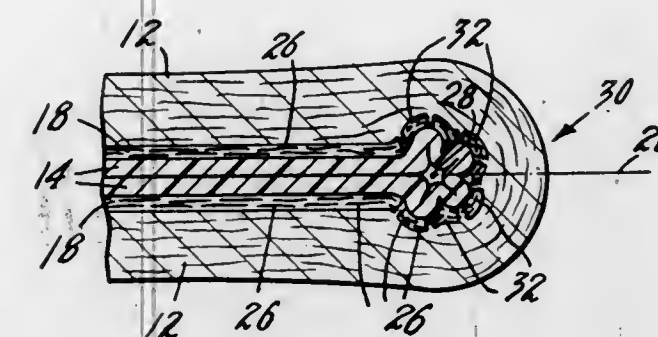
Int. Cl. B31f 1/00

U.S. Cl. 156—227

4 Claims

1. A method of making folds in a coated fiber container produced from a fiberboard layer having an impervious coating pre-laminated to a surface of the fiberboard layer which forms the interior of the container, the impervious coating penetrating the surface of the fiberboard layer thereby cohesively bonding the fibers in an intermediate layer at the surface of the fiberboard layer together, the method including inversely pre-folding the laminate thereby weakening, distort-

ing, and breaking the surface fibers in the fiberboard layer which have been stiffened by the penetration of the coating



material, and folding said laminate along the same fold lines so that the fiberboard layer is folded upon itself and only the impervious coating is exposed at the extremity of the folds.

3,852,139

METHOD OF DISPENSING LABELS

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

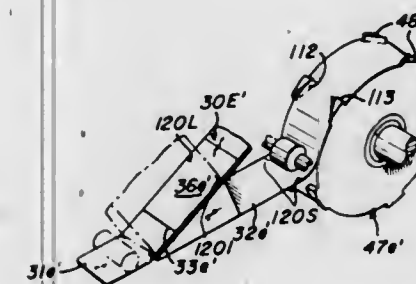
Division of Ser. No. 206,061, Dec. 8, 1971, Pat. No. 3,783,038, which is a continuation-in-part of Ser. No. 155,740, June 23, 1971, abandoned. This application June 4, 1973, Ser. No.

366,918

Int. Cl. B32b 3/10

U.S. Cl. 156—250

2 Claims



1. Method of dispensing labels, comprising the steps of: providing a plurality of labels releasably secured by pressure sensitive adhesive to a web of supporting material, the web having spaced apart groups of cuts disposed within the edges of the web, each group of cuts comprising at least two cuts spaced apart by a frangible portion, one of the cuts of each group providing a feed edge, causing the web to undergo a sharp change in direction at a delaminating zone where the labels are successively delaminated from the web, guiding the delaminated part of the web into cooperation with a toothed driver, severing the frangible portion by advancing a tooth of the toothed driver into engagement with the feed edge, and pulling on the delaminated part of the web by continuing the advance of the toothed driver to effect delamination of a label at the delaminating zone.

3,852,140

METHOD OF MAKING COMPOSITE WEB OF LABELS

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 206,061, Dec. 8, 1971, Pat. No. 3,783,083, which is a continuation-in-part of Ser. No. 155,740, June 23, 1971, abandoned. This application June 4, 1973, Ser. No.

366,826

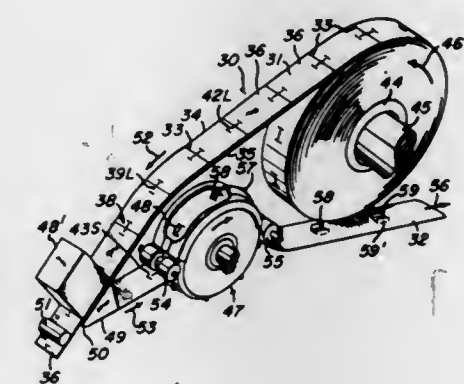
Int. Cl. B32b 31/18, 3/10, 3/16

U.S. Cl. 156—253

2 Claims

1. Method of making a composite web of labels, comprising the steps of: providing label material on a web of supporting material, pressure sensitive adhesive releasably securing the

label material to the supporting material, severing only the label material transversely to provide a plurality of labels carried by the web of supporting material, simultaneously cutting both the label material and the supporting material to foam spaced apart groups of aligned cuts through both the label material and the supporting material, the cuts in the label material rendering the label more difficult to remove when applied to merchandise and the cuts in the supporting material facilitating advance of the composite web, each group of cuts formed during the cutting step including a cut through the supporting material web defining a feed edge and at least one



other cut through the supporting material web spaced from the feed edge to provide a frangible portion, the frangible portion preventing a hole from being formed and preventing accompanying flap portions from being folded out of the plane of the supporting material web upon delamination of the labels but when an advancing tooth of a driver engages the supporting material web at one group of cuts the tooth will cause the frangible portion of the supporting material web to be severed to form a hole in the supporting material web so that the tooth can engage the feed edge to advance the composite web.

3,852,141

STRAND CLAMPING APPARATUS FOR AUTOMATIC KNOCK OFF SYSTEM

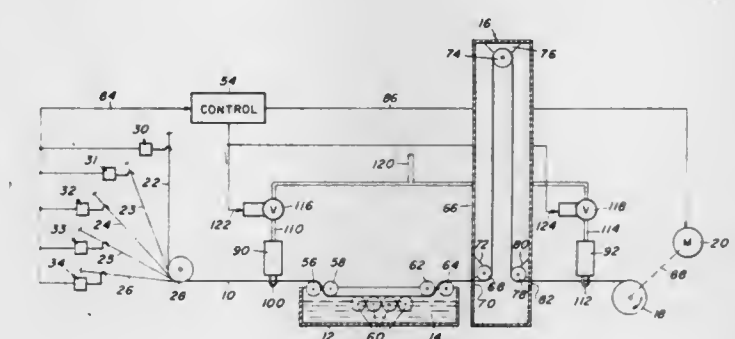
Christopher G. Cross, Forest City, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1972, Ser. No. 313,911

Int. Cl. B23b 31/00; B65h 63/02; B05c 11/00

U.S. Cl. 156—351

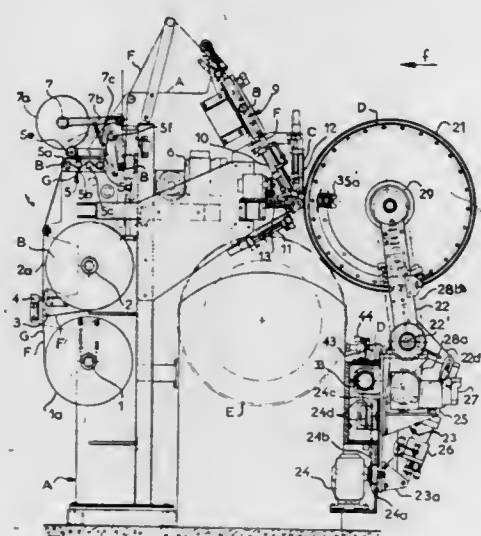
11 Claims



1. In an automatic knock-off system for use with a fiber glass coating apparatus, a source of supply for a plurality of glass filaments, means for forming said plurality of filaments into a single strand, means for feeding said single strand through said coating apparatus, motor driven winder means for wrapping said single strand onto a package after the single strand has been coated, clamp means responsive to a discontinuity in any one of said plurality of filaments for grasping said single strand on both sides of said coating apparatus to thereby hold said

single strand taut in said apparatus, said clamp means including first and second strand holders, said strand holders being actuatable substantially simultaneously to grasp said strand and each including therein mechanically movable strand gripping means around said single strand and biased to allow free movement of said single strand and actuator means for said clamp means for moving each said strand gripping means into contact with said single strand to grasp and hold said strand.

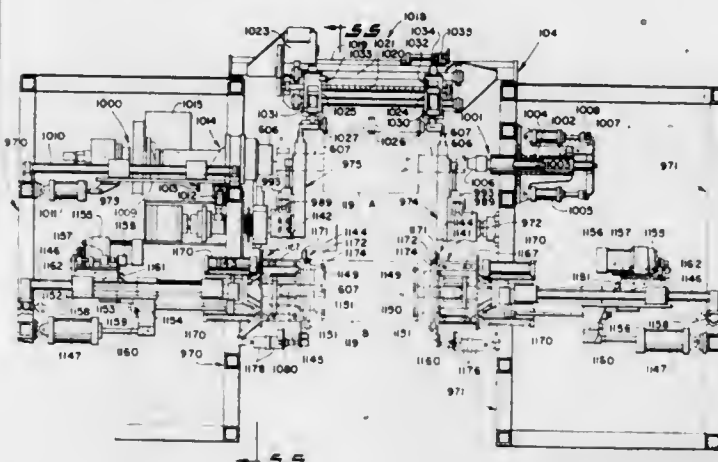
3,852,142
APPARATUS FOR APPLYING A RUBBER STRIP ONTO A PNEUMATIC TIRE CARCASS
Jean Rene Leblond, and Jean Armand Biet, both of Compiegne, France, assignors to Uniroyal, Clarioix, France
Filed May 22, 1972, Ser. No. 255,488
Claims priority, application France, June 3, 1971, 71.20233
Int. Cl. B29h 17/20
U.S. Cl. 156—395 17 Claims



1. An apparatus for applying a rubber strip of a desired length to a pneumatic tire carcass mounted on a tire building drum, said apparatus comprising means for supplying said strip to an application means; application means for receiving said strip and for winding said strip on a transfer drum located at a first position adjacent said application means, said transfer drum having an outer surface to which said strip adheres, said application means including means for pressing said strip onto the transfer drum; means for cutting said strip to a desired length corresponding to the circumferential length of the carcass on the tire building drum after winding said strip on the transfer drum;

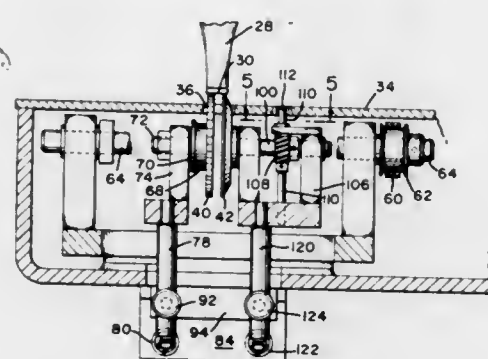
means for axially moving the transfer drum and said adhered strip to a second position adjacent the tire-building drum; means for radially moving the transfer drum and said adhered strip into tangential rotational contact with said tire-building drum; means for locking the transfer drum in a plurality of desired rotational positions, said locking means including a plurality of engageable elements located on the transfer drum and a cooperating element located on the axial movable means for engaging each of said engageable elements; and independent means for detecting the position of the means for axially moving the transfer drum; for detecting the rotational position of the transfer drum; and for detecting, respectively, whether the cutting means, the application means and the pressing means is in an operative or inoperative position.

3,852,143
TURRET ASSEMBLY
Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdinand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, Ohio, and Fred Grove Elder, Atwater, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526.
This application Sept. 15, 1971, Ser. No. 180,920
Int. Cl. B29h 17/00
U.S. Cl. 156—396 2 Claims



1. Mechanism for clamping a tire building drum by its drum shaft and rotating it in a vertical plane to a plurality of spaced stations, comprising:
a. a drive shaft;
b. arcuately spaced radial turret arms fixed at each end of said drive shaft;
c. a pair of arcuate fingers at the radially outer end of each arm, pivoted to open and close selectively about a tire building drum shaft;
d. means to rotate said drive shaft; and
e. means to operate said fingers.

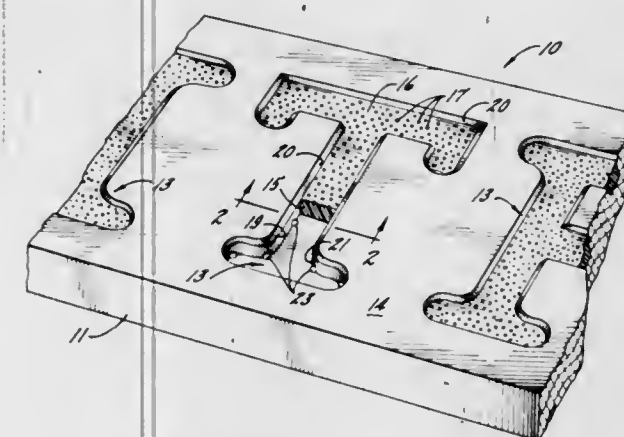
3,852,144
ULTRASONIC SEAMING AND CUTTING APPARATUS
Frank Parry, Monroe, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Mar. 16, 1973, Ser. No. 341,860
Int. Cl. B06b 3/00; B23k 1/06
U.S. Cl. 156—510 18 Claims



1. An ultrasonic seaming and cutting apparatus comprising: a horn adapted to be resonant at a predetermined frequency of sound having a frontal surface for imparting ultrasonic energy to a workpiece fed in front and in contact with said surface;
electroacoustic converter means coupled to said horn for causing said horn to be resonant;
a rotatably mounted anvil wheel disposed opposite said frontal surface for engaging the underside of a workpiece and responsive to being rotated feeding the workpiece by

contact with the peripheral surface of said wheel past said frontal surface;
an instrumentality having a cutting edge mounted in juxtaposition with said anvil wheel and opposite said frontal surface in a manner to cause the cutting edge to be disposed for engaging the underside of the workpiece as the workpiece is fed past said frontal surface, and means coupled to said anvil wheel and said instrumentality for independently urging the peripheral portion of said wheel disposed opposite said frontal surface and said cutting edge toward engagement with the frontal surface of said horn for effecting seaming and cutting of the workpiece.

3,852,145
SIGN WITH INLAID LETTERS
Kenneth R. Klowit, 1304 Leaman Pl., Rockford, Ill. 61108
Filed Nov. 16, 1973, Ser. No. 416,615
Int. Cl. B44f 7/00
U.S. Cl. 161—18 6 Claims

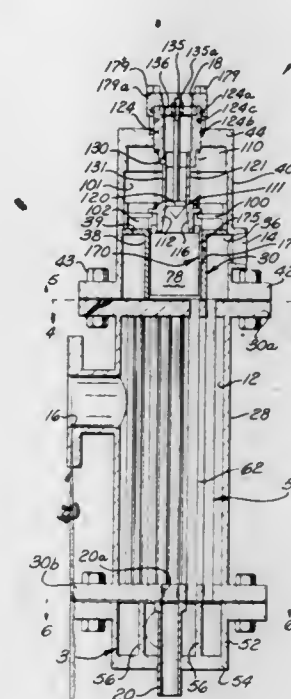


1. A sign with intelligible figures having an engraved appearance comprising a wooden base with a planar outer surface, an outwardly opening groove formed within said base and defining one of said figures, a thermosetting plastic inlay partially filling said groove and having an exposed surface spaced inwardly of and extending generally parallel with the outer surface of said base, a plurality of reflective beads embedded within said inlay, a cavity formed adjacent the bottom of said groove and extending laterally thereof into said base, a portion of said inlay being received within said cavity to lock said inlay within said groove, and a chamfer formed in said base and around said groove so as to slant away from said groove upon progressing outwardly from the exposed surface of the inlay toward the outer surface of said base thereby increasing the field of readability of said figure.

3,852,146
CONTOURED ARTICLE WITH THREE DIMENSIONAL SURFACE THEREON
William H. Squier, Taylors, and William E. Poteat, Greer, both of S.C., assignors to M. Lowenstein and Sons, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 272,340, July 17, 1972., This application Oct. 2, 1972, Ser. No. 294,353
Int. Cl. B44f 7/00
U.S. Cl. 161—19 14 Claims

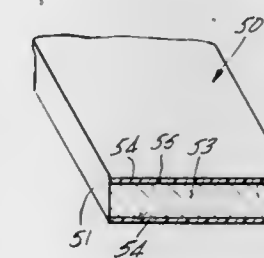
1. A molded article of manufacture, said article comprising a molded foam polymeric mass of a predetermined shape, said mass having a three dimensional design molded in situ into at least a portion thereof, said three dimensional surface having an adhesive layer thereon and textile fibers secured to said adhesive layer.

3,852,147
HEAT EXCHANGER
Warren M. Wilson, 809 Superior Dr., Huron, Ohio 44839
Filed Apr. 24, 1972, Ser. No. 246,622
Int. Cl. G05d 23/00
U.S. Cl. 165—36 25 Claims



1. Apparatus for heating water by steam comprising a heat exchanger having a steam chamber, fluid conduit means for directing water through said steam chamber to a water outlet chamber, inlet steam conduit means for delivering steam to said steam chamber, a member located in said water outlet chamber and movable therein in response to a change in the demand for hot water, and bypass valve means controlled by movement of said member for continuously directing some cold water to said outlet chamber without flowing through said fluid conduit means so as to continuously mix with heated water during flow conditions.

3,852,148
ARCHITECTURAL PRODUCTS FORMED OF GLASS OR CERAMIC-TO-METAL COMPOSITES
Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Va.
Continuation-in-part of Ser. Nos. 78,899, Oct. 7, 1970, Pat. No. 3,676,292, and Ser. No. 231,834, March 6, 1972., This application May 18, 1972, Ser. No. 254,666
Int. Cl. B32b 15/04, 15/20
U.S. Cl. 161—41 7 Claims



1. A panel comprising:
a backing member having a side and an opposing side; and
a composite facing comprising:
a. a metal sheet having a major face and an opposing major face, and being prepared from a copper base alloy comprising from about 2 to about 12% aluminum, .001 to 3% silicon, up to 35% zinc and a grain refining element selected from the group consisting of iron up

to 4.5%, chromium up to 1%, zirconium up to 0.5%, cobalt up to 1% and mixtures thereof, balance essentially copper, and

- b. a coating selected from the group consisting of glasses and ceramics which is involved in a bond selected from the group consisting of glass-to-metal bonds and ceramic-to-metal bonds, and is formed over at least one of said major face and said opposing major face of said sheet,

said composite facing being affixed to at least one side of said backing member whereby the uncoated major face, if any, of said sheet is in contact with the side or sides of said backing member.

3,852,149

INSULATING GLASS WINDOW ASSEMBLIES

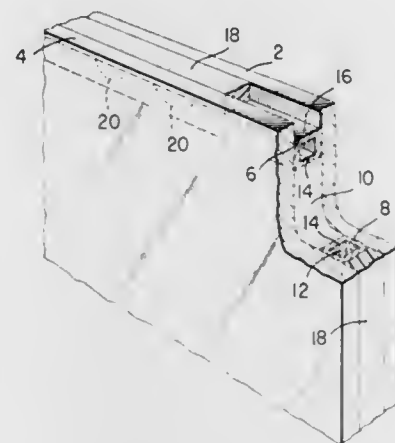
Matthew M. Sitter, Convent Station, N.J.; Robert M. Meyers, Fairless Hills, Pa., and Edward F. Kutch, Trenton, N.J., assignors to Novogard Corporation, Trenton, N.J.

Filed Apr. 19, 1972, Ser. No. 245,596

Int. Cl. E06h 3/24; C03c 27/00

U.S. Cl. 161—45

14 Claims



1. A window assembly comprising a plurality of panes of glass, spacing means located between said panes of glass adjacent the edges thereof and serving to hold said panes in predetermined spaced relation, said spacing means and glass panes cooperating to present an outwardly facing channel extending about the periphery of the assembly, and a hot melt sealant composition in continuous fluid contact with said glass and spacing means, said sealant being of the type which is fluid at temperatures above about 200°F but hardens upon cooling without undergoing chemical reaction and has a hardness at room temperature of about 10 to 80 on a Shore A Durometer, said sealant composition consisting essentially of from about 20 to 100 parts by weight of an elastomeric polymer having a molecular weight not less than about 15,000 and selected from the group consisting of copolymers of isobutylene and isoprene, polyisobutylene, styrene-butadiene polymers, styrene-isoprene polymers, chlorinated rubber and solid polysulfide polymers; from 15 to 150 parts by weight of plasticizing and tackifying resins; from 0 to about 44 parts by weight of adhesion promoters, and from about 0 to 150 parts by weight of fillers and pigments; said composition having a moisture transmission not exceeding 8 as determined by ASTM-E96-63T procedure B.

3,852,150

RESILIENT ENERGY ABSORBING ASSEMBLY

Peter A. Weller, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Jan. 15, 1973, Ser. No. 323,483

Int. Cl. B32b 3/12, 3/30; B60r 19/08

U.S. Cl. 161—96

18 Claims

1. An energy absorbing assembly comprising: yieldable material; and composite network means embedded within said material, said composite network means including a plurality

of integral sheets of material each joined at at least three spaced points with adjacent sheets to define a plurality of compartments, said composite network means including at least two elongated means in substantially parallel spaced relationship and link means interconnecting said elongated means to define said compartments, said elongated means and



said link means being defined by said plurality of sheets of material each of which defines at least a portion of each of two adjacent elongated means and a link means extending therebetween each sheet extending along a first elongated means and through a first link means inclined forwardly to a second elongated means and then through a second link means inclined rearwardly to a third elongated means.

3,852,151

POLYESTER-METAL LAMINATES

Erich Knapp, Kufstein/Tirol, Austria, assignor to Ciba-Geigy A-G, Basel, Switzerland

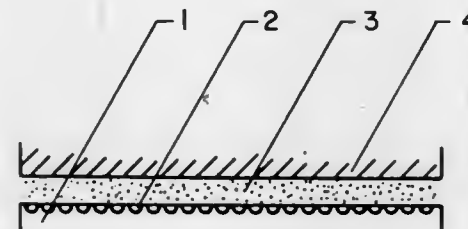
Filed Mar. 30, 1972, Ser. No. 239,724

Claims priority, application Austria, Apr. 2, 1971, 2832/71

Int. Cl. B32b 5/16

U.S. Cl. 161—162

2 Claims



1. A laminate comprising one or more layers each of 0.3 to 100 mm thickness of a saturated thermoplastic polyester with a melting point not lower than 200°C, one or more continuous metal layers each bonded by an adhesive layer to said polyester layer, which laminates are characterized by the polyester layer having imbedded on at least one of its bonding surfaces with an additional discontinuous layer imparting greater adhesive power wherein said discontinuous layer is a material selected from the group consisting of manganese, iron, aluminum, copper, nickel, chromium, bismuth, tin, magnesium, brass, bronze, antimony-lead, corundum, gypsum, calcite, clay, and silicate, particles of 10 to 100 microns in size applied in amounts of 10 to 300 grams per square meter, of the polyester bonding surface.

3,852,152

RESILIENT CUSHION

Helmut Werner, Elsenfeld, and Hans Stapp, Mommilingen, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 807,301, March 14, 1969, Pat. No. 3,687,759. This application July 13, 1972, Ser. No. 271,355 Claims priority, application Germany, Mar. 21, 1968, 1778026 The portion of the term of this patent subsequent to Sept. 12, 1989, has been disclaimed.

Int. Cl. B32b 5/02; D04h 3/16

U.S. Cl. 161—168

6 Claims

1. A resilient cushioning unit consisting essentially of a plurality of continuous melt-spun filaments of a substantially amorphous synthetic thermoplastic fiber-forming polymer with a filament diameter of between about 0.1 and 1 mm.,

each of said continuous filaments extending side by side in the direction of compression of the cushioning unit in the form of filamentary springs having substantially periodic helical to sinuous loops which coil around parallel vertical axes corresponding to said direction of compression, said loops of each



filamentary spring spreading laterally in overlapping relationship with the corresponding loops of the next adjacent filamentary springs with a random adhesive bonding of the filaments at their points of intersection to form a cohesive structure substantially more resilient in the vertical direction than in the direction transverse thereto.

3,852,153

CONTROL ROD DRIVE IN A NUCLEAR REACTOR

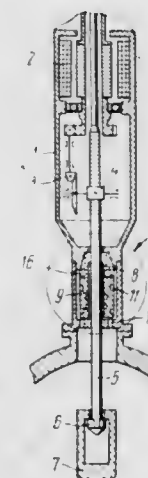
Boris Arkadievich Maslenok, Kolpino, ulitsa V. Slutskoi, 34, kv. 40; Anatoly Sergeevich Khegai, Kolpino, ulitsa Vokzal'naya, 11, kv. 10; Viktor Grigorievich Zlobin, Kolpino, ulitsa V. Slutskoi, 38, kv. 223; Viktor Georgievich Mednitsky, Kolpino, prospekt Lenina, 9/15, kv. 15; Lev Isaakovich Genkin, 2 Sovetskaya ulitsa, 18/2, kv. 5; Nikolai Fedorovich Petrichenko, Pushkin, Leningradskaya ulitsa, 18, kv. 9, all of Leningrad, and Boris Ivanovich Mitrofanov, ulitsa Mira, 8, kv. 31, Podolsk Moskovskoi oblasti, all of U.S.S.R.

Filed Apr. 5, 1972, Ser. No. 241,236

Int. Cl. G21c 7/12

U.S. Cl. 176—36 R

1 Claim



1. A control rod drive in a nuclear reactor comprising in combination, a pressurized nuclear reactor; a casing affixed to said nuclear reactor; pressurized driving means in said casing; a drive rod linked to said driving means; a control rod connected to said drive rod; and means for preventing spontaneous movement of said control rod and comprising: a chamber at the bottom of said casing, a piston in said chamber, spring means for abutting said piston against a predetermined surface in the lower end of said chamber, said chamber, piston and spring means being coaxial with said drive rod, said piston having a tapered surface at the top of said piston and having radial slots, said chamber having a tapered top portion mateable with the tapered surface of said piston, ball-shaped members in said radial slots of said piston for rolling against the tapered portion of said chamber into contact with said drive

rod when said driving means is depressurized and said piston is moved upwardly by the pressure in said nuclear reactor, said ball-shaped members holding said drive rod and said control rod in locked position for preventing spontaneous movement of said control rod, and a partition tube in said chamber, said partition tube being fixedly positioned to the lower end of said chamber and coaxial with said drive rod and said piston for preventing said ball-shaped members from contacting said drive rod and holding said drive rod in locked position when said drive means is under pressure and the piston is at the lower end of said chamber, said chamber having openings communicating with the active zone of the nuclear reactor and with the pressurized driving means, said partition tube having a length less than the axial length of said chamber.

3,852,154

NUCLEAR REACTOR SPACER DEVICE

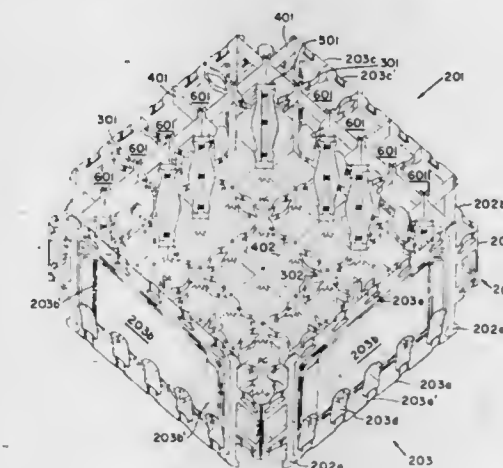
Roy C. Carlson, Richland; Loyd L. King, Benton City, and George A. Sofer, Richland, all of Wash., assignors to Jersey Nuclear Company, Bellevue, Wash.

Filed Feb. 4, 1972, Ser. No. 223,528

Int. Cl. G21c 3/34

U.S. Cl. 176—78

13 Claims



1. A spacer device for maintaining the spatial integrity of fuel elements assembled in a nuclear reactor subassembly and having fuel element openings at least at the corners thereof which comprises:

- a peripheral support band comprising corner means having an open webbed configuration consisting of vertical and horizontal interconnected members and including spaced dimples which are open at the top and bottom thereof and extend into said openings in spaced relation relative to said members and side means adjacent thereto, said corner means being attached to said side means, said side means including an outward raised middle section having openings in the lower portion thereof leading to a cavity formed by said raised middle section;
- upper and lower support strips attached to said peripheral support band and intersected to form said fuel element openings within said peripheral support band; and
- elongated spring assemblies captured internally at opposite ends thereof by said upper and lower support strips respectively where at least some of said support strips intersect, said support strips located externally at opposite ends of said spring assemblies.

3,852,155

CRYOPRESERVATION OF EQUINE CELL CULTURES

Richard W. Moore, Box 3568, Bryan, Tex. 77801

Filed Sept. 2, 1971, Ser. No. 177,453

Int. Cl. C12b 3/00, 9/00

U.S. Cl. 195—1.8

6 Claims

1. A method for the cryopreservation of an equine cell culture selected from the group consisting of horse leukocyte cultures and equine primary kidney cultures which comprises:

suspending said equine cell culture in a cryopreservative medium comprising 8 to 10 percent by volume dimethyl sulfoxide and a nutrient medium containing sheep serum of fetal bovine serum in an amount sufficient to provide more than 80 percent by volume of said composition; and
subjecting the suspension to cryogenic temperatures to freeze said suspension.

3,852,156

PROCESS FOR THE PREPARATION OF 6-AZAUACIL RIBOTIDE

Kiyoshi Nakayama, Sagami-hara, and Haruo Tanaka, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 737,375, June 17, 1968, abandoned, which is a continuation of Ser. No. 671,561, Sept. 29, 1967, abandoned. This application Apr. 18, 1973, Ser. No. 352,349

Claims priority, application Japan, Oct. 6, 1966, 41-65428 Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

14 Claims

1. A process for the preparation of 6-azauracil ribotide by fermentation which comprises culturing a microorganism belonging to a genus selected from the group consisting of *Brevibacterium*, *Corynebacterium*, *Arthrobacter* and *Micrococcus* under aerobic conditions in an aqueous nutrient medium containing at least one phosphate ion source and as an additive substance a compound selected from the group consisting of 6-azauracil and 6-azauridine to produce and accumulate said 6-azauracil ribotide in said medium, and then recovering the 6-azauracil ribotide from the resultant culture liquor.

3,852,157

COMPOUNDS FOR ENZYME AMPLIFICATION ASSAY

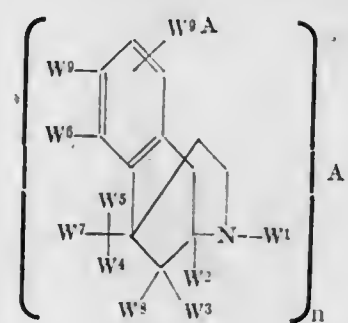
Kenneth E. Rubenstein, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 304,157 Int. Cl. G01n 31/14; C07g 7/02

U.S. Cl. 195—63

11 Claims

1. An enzyme-bound-ligand of the formula:



wherein:

any one of the W groups can be —X* or an H of any of the W groups may be replaced by —X* wherein —X* is a bond or a linking group;

A* is an enzyme bonded at other than its reactive site, having *n* ligands, wherein *n* is in the range of 1 to the molecular weight of —A* divided by 2,000;

W¹ is hydrogen, or hydrocarbon of from one to eight carbon atoms;

W², W³ and W⁴ are hydrogen;

W⁵ is hydrogen or taken together with W³ a divalent radical of from three to six carbon atoms and zero to two oxygen atoms, forming a 6-membered carbocyclic ring with the carbon chain to which they are attached;

W⁶ is hydrogen or hydroxyl;

W⁷ is hydrogen, hydroxyl, or taken together with W⁵, oxy;

W⁸ is hydrogen or methyl;

W⁹ is hydrogen, methyl, or hydroxyl;

W⁹ is hydrogen, hydroxy, acyloxy of from one to three carbon atoms, hydrocarbyloxy of from one to three carbon atoms, 2-(N-morpholino)ethoxy, or glucuronyl.

3,852,158

CULTURE MEDIA FOR STARTER PRODUCTION

Delmar L. Anderson, 208 Blueberry Ln., Syracuse, N.Y. 13219; Louis R. Boston, 1802 Chestnut Ridge Rd., Chittenango, N.Y. 13037, and William A. Seleen, 200 Dewittshire Rd., De Witt, N.Y. 13214

Filed June 5, 1972, Ser. No. 259,862 Int. Cl. C12k 1/10, 3/00

U.S. Cl. 195—100

5 Claims

1. A culture media for producing bacterial starter cultures consisting essentially of on a dry basis:

a. from about 70 to 95 parts of a milk product consisting essentially of a major amount of undecalcified sweet whey, and a minor amount of undecalcified nonfat dry milk;

b. from about 0.5 to 10 parts of a nitrogen source selected from the group consisting of yeast extract, yeast autolysate, solubilized yeast and food yeast and;

c. from about one to about 30 parts, based upon citrate anion exclusive of cation weight, of an added citrate source selected from the group consisting of citric acid and salts of citric acid, such ingredients being combined in such a manner so as to provide about 100 total parts of ingredients.

3,852,159

COKE QUENCHING CAR ALIGNMENT INDICATING SYSTEM

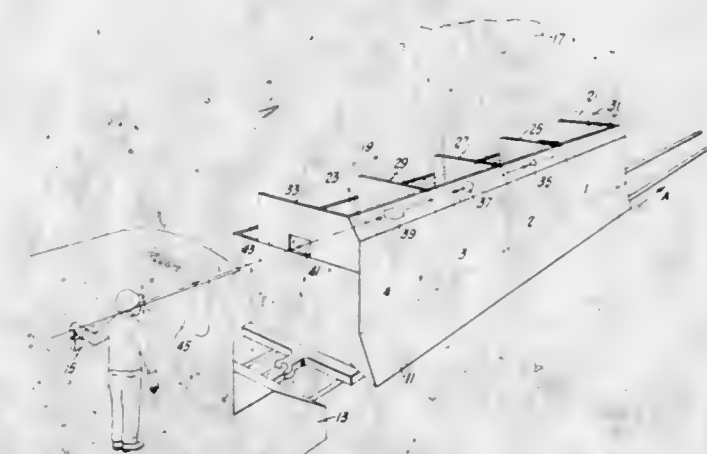
Ronald O. McClelland, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed July 24, 1973, Ser. No. 382,161

Int. Cl. C10b 39/14; B61b 3/00

U.S. Cl. 202—227

6 Claims



1. In a coke quenching car having end and side walls connected endwise to a locomotive having an operator therein, the improvement comprising:

a. at least one transverse baffle subdividing said car into two coke-receiving compartments said baffle having an aperture disposed along a line of sight observed by said operator; with

b. the end wall of said car adjacent said locomotive having therein an aperture that is larger than the aperture in said baffle and that is disposed along said line of sight.

3,852,160

DISTILLATION OF PENTACHLOROPHENOL WITH SALICYLALDEHYDE AND WATER

William David Watson, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1973, Ser. No. 363,224 Int. Cl. B01d 3/34; C07c 39/36

U.S. Cl. 203—6

3 Claims

1. A process for purifying impure pentachlorophenol which comprises distilling said pentachlorophenol at subatmospheric pressure in the presence of contacting water and about 0.05–2 percent of salicylaldehyde based on the weight of pentachlorophenol, thereby separating purified pentachlorophenol as a distillate from higher boiling impurities.

3,852,161

DISTILLATION OF PENTACHLOROPHENOL

Masao Yoshimine, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 5, 1973, Ser. No. 376,756 Int. Cl. B01d 3/34; C07c 39/36

U.S. Cl. 203—6

3 Claims

1. A process for purifying impure pentachlorophenol which comprises distilling said pentachlorophenol at subatmospheric pressure from its mixture with about 0.05–3 percent based on the weight of pentachlorophenol of the distillation residue remaining from the Reimer-Tiemann preparation of salicylaldehyde wherein said distillation residue is that obtained by heating a reaction mixture of phenol with at least about an equivalent amount of chloroform and aqueous sodium hydroxide in substantial molar excess over the chloroform at about 50°C. to the boiling point of said reaction mixture until the reaction is substantially complete, acidifying the resulting reaction mixture with a strong mineral acid, thereby forming an oil layer, and distilling said oil layer until substantially all of the product salicylaldehyde has been separated by distillation from the thereby formed distillation residue.

3,852,162

DYNAMIC PRESSURIZED CONDENSING METHOD

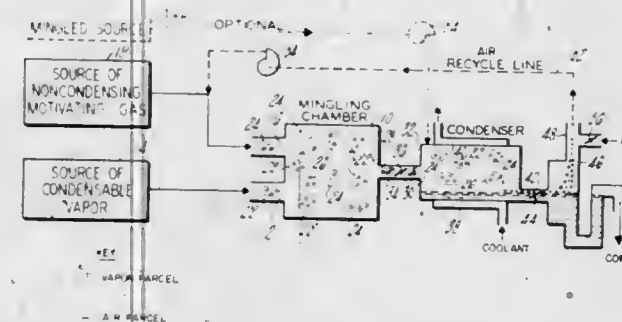
George S. Light, P.O. Box 496, Winsted, Conn. 06098

Filed May 4, 1973, Ser. No. 357,333

Int. Cl. B01d 3/00, 3/10, 3/34, 1/14

U.S. Cl. 203—10

3 Claims



1. A method of condensing water vapor in the presence of air and removing a heat transfer inhibiting film from the condenser heat transferring surfaces comprising the steps of:

a. providing an enclosed pressurizable condenser having cooling surfaces forming a vapor condensing zone whereon the heat transfer inhibiting film is formed;

b. introducing intermingled but nondiffused parcels of water vapor and air by adding and intermingling parcels of motivating air having relatively higher pressure and velocity force components with parcels of water vapor to provide added dynamics to the flow of the water vapor through the condenser;

c. immediately after intermingling feeding the intermingled relatively nondiffused vapor and air parcels against the cooling surfaces under said force components to condense some of said vapor and continuously sweep said heat transfer inhibiting film from said cool surfaces by said motivating air;

d. maintaining the dynamics of the motivating air to encourage turbulence and the sweeping action thereof as the vapor content decreases during condensation while discharging the air from the condenser; and

e. discharging the condensed water vapor from the condenser.

3,852,163

SPENT DYE LIQUOR CLEAN-UP AND VEHICLE RECOVERY

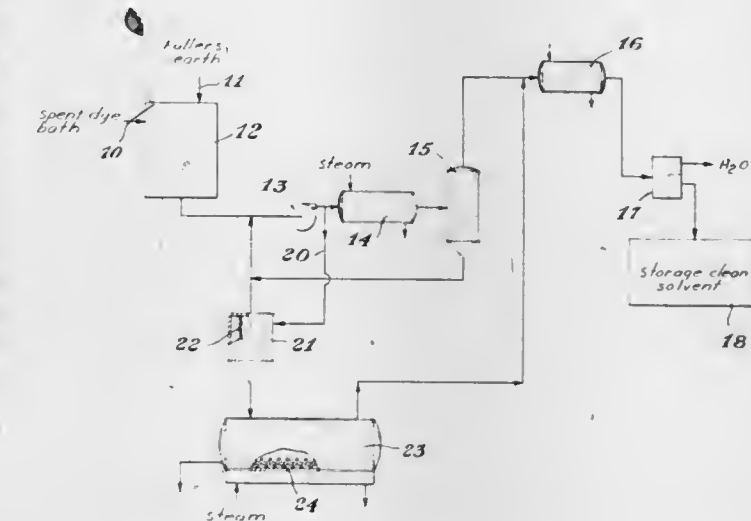
James L. Dunn, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1972, Ser. No. 233,433

Int. Cl. B01d 21/00

U.S. Cl. 203—47

3 Claims



1. A method for recovering solvent dye vehicle from a spent solvent dye bath by incorporating into the spent bath a solid absorbent in finely divided form, distilling a major portion of the volatile solvent therefrom, separating a major portion of the remaining solvent from the solid by filtration; distilling said filtrate and combining it with said first distillate; and, finally vaporizing the residual solvent from the filter cake, condensing the various solvent vapors produced and storing the condensate for reuse.

3,852,164

PURIFICATION OF 1,4-BUTANEDIOL BY VACUUM DISTILLATION WITH SIDE STREAM RECOVERY

Sidney Hsin Huai Chow, 4118 Bayon Grove Dr., and James Daniel Verbsky, 103 Whispering Oaks Dr., both of Seabrook, Tex. 77586

Filed Mar. 30, 1973, Ser. No. 346,675

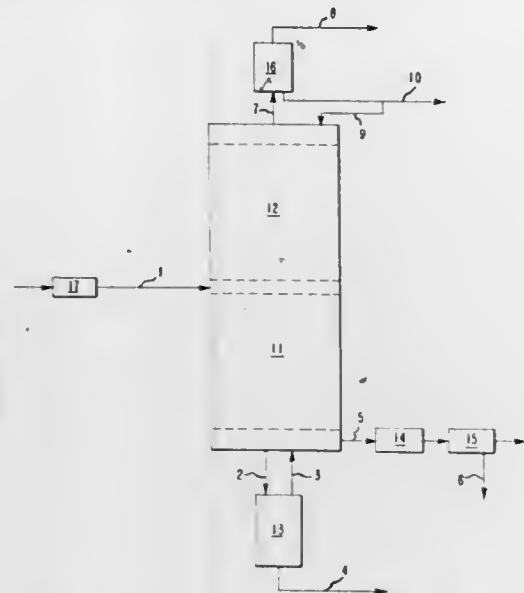
Int. Cl. B01d 3/10; C07c 29/26

U.S. Cl. 203—91

6 Claims

1. A process of recovering 1,4-butanediol containing a minimum of water from a crude mixture containing, by weight, 1 to 20% water plus low boiling organic impurities, 80 to 99% 1,4-butanediol, and 0.05 to 5% combined high boiling organic tars and inorganic salts, which method comprises passing the crude mixture to a distillation column operating at subatmospheric pressure and adapted with a reboiler, withdrawing the overhead, passing the bottoms to the reboiler,

withdrawing liquid from the reboiler, passing vapor from the reboiler to the bottom of the distillation column, and with-



drawing vapor from the bottom portion of the distillation column as substantially pure 1,4-butanediol.

3,852,165

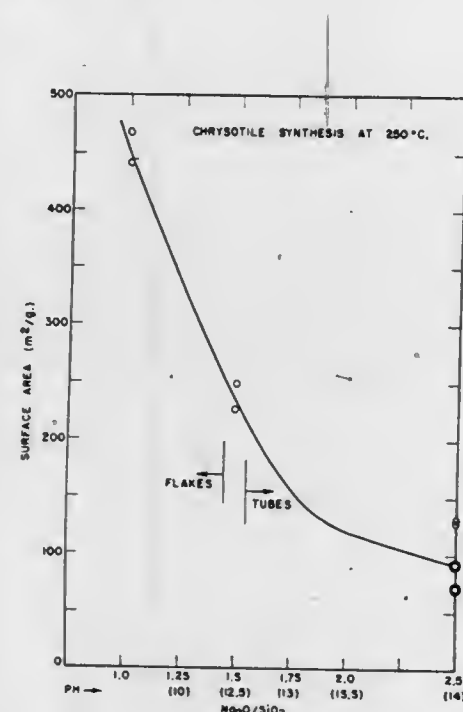
HYDRODESULFURIZATION OF HYDROCARBON FEEDSTOCKS WITH A CATALYST COMPOSITE OF CHRYSOTILE AND GROUP VIB AND/OR VIII HYDROGENATION COMPONENT

Harry E. Robson, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 233,368, March 9, 1972, Pat. No. 3,804,741, which is a division of Ser. No. 68,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,353

Int. Cl. C10g 23/02

U.S. Cl. 208-216



1. A process for the hydrodesulfurization of sulfur-containing hydrocarbon feedstock boiling above about 340°C. which comprises contacting said feedstock with hydrogen and a catalyst composite comprising chrysotile and a hydrogenation component selected from the group consisting of Group VIB metal, Group VIII metal, oxides of said metals, sulfides of said metals and mixtures of said metals, said oxides and said sulfides.

3,852,166

PROCESS FOR SEPARATING HYDROCARBON MATERIALS

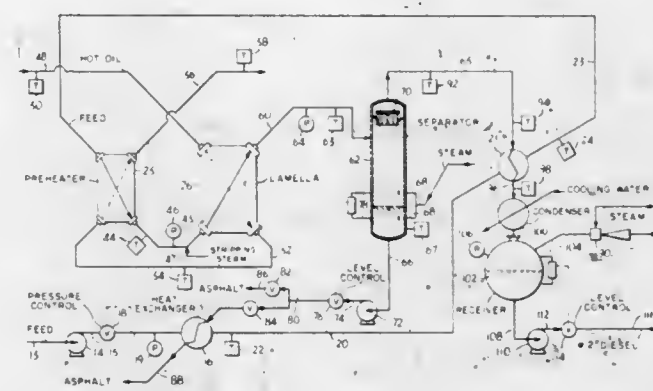
Einar Henry Palmason, Santa Barbara, Calif., assignor to A. Johnson & Co., Inc., New York, N.Y.

Filed July 20, 1973, Ser. No. 381,059

Int. Cl. C10g 7/00

U.S. Cl. 208-347

22 Claims



1. A continuous process for separating at least one hydrocarbon fraction of high definition out of a liquid hydrocarbon material, which comprises continuously introducing the liquid hydrocarbon material into a flow path of which a portion in cross-section transverse to the flow of the liquid hydrocarbon material therethrough is elongated in one direction and relatively narrow in a generally perpendicular direction; passing the liquid hydrocarbon material through the flow path while supplying heat at least along the portion of the flow path to cause the volatilization of part of the liquid hydrocarbon material in the portion of the flow path; continuing to pass a mixture of concentrated liquid hydrocarbon material and vapors released therefrom through the portion of the flow path while continuing to supply heat thereto, thereby to effect a high rate of vapor release and impart a high velocity to the mixture as it passes through the portion of the flow path; discharging the mixture from the flow path, without substantial additional release of vapors from the concentrated liquid hydrocarbon material and without a substantial change in pressure, and permitting the released vapors rapidly to separate and become isolated from the concentrated liquid hydrocarbon material, the concentrated liquid hydrocarbon material including said at least one hydrocarbon fraction and the released vapors including a second hydrocarbon fraction.

3,852,167

FLOTATION OF NICKEL SULFIDE ORES

Guy H. Harris, Concord, Calif., and David J. Collins, Darwin, Australia, assignors to The Dow Chemical Company, Midland, Mich.

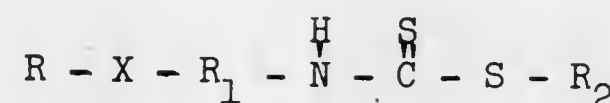
Continuation-in-part of Ser. No. 224,609, Feb. 8, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,409 Claims priority, application Malagasy Republic, Feb. 8, 1973, 54830; Australia, Feb. 5, 1973, 51809/73

Int. Cl. B03d 1/02

U.S. Cl. 209-166

10 Claims

1. In the process of concentrating sulfide minerals of nickel by froth flotation, the improvement which comprises contacting a sulfide nickel ore in the form of a pulp with a flotation collector comprising a compound corresponding to the formula



wherein R represents H or a hydrocarbyl group containing from one to 10 carbons, R₁ is an alkylene moiety containing from one to five carbons, R₂ is a hydrocarbon radical containing from one to seven carbons and X is O or S.

3,852,168

STRATIFIER WITH A PNEUMATIC PRODUCT RECIRCULATION

Hans Oetiker, Salisstrasse 4, 9000 St. Gallen, Switzerland Continuation of Ser. No. 12,108, Feb. 17, 1970, abandoned.

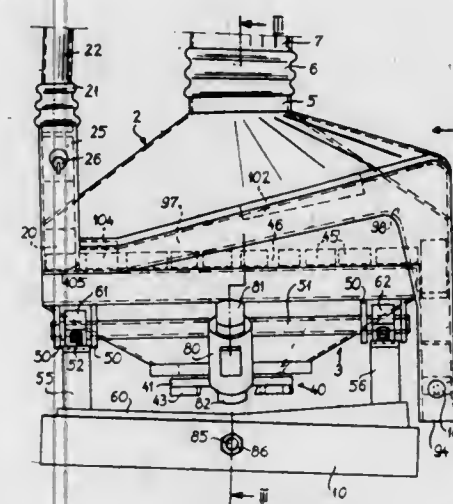
This application Dec. 7, 1972, Ser. No. 312,950

Claims priority, application Switzerland, Feb. 21, 1969, 2706/69

Int. Cl. B07b 4/08, 11/06

U.S. Cl. 209-469

24 Claims



1. In a method for separating bulk material mixtures into separated fractions, in accordance with the specific gravities of the mixture components, under the influence of vibrations of a material support carrying the bulk material in a layer and conveying it from an inlet to outlets for separated fractions, and under the influence of aeration by an aeration air current flowing through the material support and the layer, which aeration air current is collected in a hood covering the material support and is exhausted from the hood; the improvement comprising the steps of providing an additional air current flowing along a path separate from the path of flow of the aeration air current flowing through such layer, the path of flow of such additional air current being completely outside such layer of bulk material; discharging at least one separated fraction of the bulk material, leaving its outlet into such additional air current; thereafter separating the additional air current flow from such at least one separated fraction; returning such at least one separated fraction to such layer; and exhausting the aeration air current from said hood conjointly with exhaustion of the separated additional air current.

3,852,169

MEASUREMENT OF CARBON MONOXIDE IN GAS MIXTURES

Elbert Victor Kring, Hockessin, and William Ray Wolfe, Jr., Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 1, 1972, Ser. No. 302,859

Int. Cl. G01n 27/00, 27/46

U.S. Cl. 204-1 T

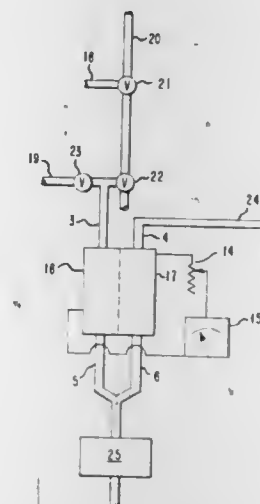
11 Claims

1. Method of measuring the concentration of carbon monoxide in internal combustion engine exhaust gas, said exhaust gas comprising carbon monoxide and other reductant gases, the volume ratio of the other reductant gases to CO being in the range 0.1:1 to 3.0:1, the method comprising the steps:

a. supplying simulated or actual internal combustion exhaust gas containing a known concentration of carbon monoxide; said simulated gas containing a concentration of carbon monoxide equivalent to that in the actual gas, at a constant flow rate and temperature, to a gas permeable, hydrophobic, electronically conductive, anodic electrode of an electrochemical cell which is operated at a temperature within the range 80-320°F., which electrode is capable of effecting electrochemical oxidation of carbon monoxide to carbon dioxide and is separated from

a cathodic electrode in the cell by an ionically conductive electrolyte which is stable at the cell operating temperature,

b. at the same time supplying an oxygen-containing gas at a constant flow rate and temperature to the cathodic electrode which is a gas permeable, hydrophobic, electronically conductive electrode which is capable of effecting electrochemical reduction of oxygen to O²⁻,
c. measuring the resultant current or voltage generated in the electrochemically stoichiometric anodic and cathodic reactions in an external circuit between the two electrodes,



3,852,170

METHOD AND APPARATUS FOR CARRYING OUT CONTINUOUS THICK CHROME PLATING OF BAR, WIRE AND TUBE, BOTH EXTERNALLY AND INTERNALLY

Sergio Angelini, Milan, Italy, assignor to B.E.S. Brevetti Elettrolitici Superfiniture S.A., Eschen-Liechtenstein, Liechtenstein

Continuation-in-part of Ser. Nos. 89,428, Nov. 13, 1970, Pat. No. 3,75,344, and Ser. No. 261,419, June 9, 1972, abandoned.

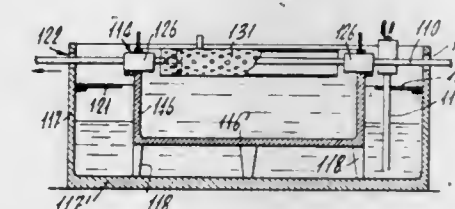
This application Feb. 2, 1973, Ser. No. 329,220

Claims priority, application Italy, 20337-A/72

Int. Cl. C23b 5/58; B01k 3/00; C23b 5/68

U.S. Cl. 204-28

21 Claims



1. A method for continuously electroplating a plurality of elongated bars in a plating comprising:

a. mechanically attaching said bars together by couplings of the same section as said bars to provide a generally continuous electroplatable surface;

- b. serially cleaning said attached bars prior to plating by passing said bars consecutively through a cleaning medium;
- c. serially passing said bars into contact with an electrode whereby said bars are charged with an electroplating current;
- d. serially heating said bars to the temperature of said bath prior to plating;
- e. serially passing said bars through said electroplating bath and in the proximity of an electrode whereby said bars are electroplated; and
- f. serially passing the plated bars out of said bath.

3,852,171

PROCESS FOR MANUFACTURING TANTALUM-OXIDE SEMICONDUCTOR CAPACITORS

Georgy Sergeevich Turchaninov, Studgorodok, 5, kv. 916, and Anatoly Vasilievich Voronkov, Studgorodok, 5, kv. 911, both of Krasnoyarsk, U.S.S.R.

Continuation of Ser. No. 230,945, March 1, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 406,097. Claims priority, application U.S.S.R., Mar. 29, 1969, 1313063

Int. Cl. C01b 13/14; C23b 11/02

U.S. Cl. 204—38 A

2 Claims

1. A process for manufacturing tantalum-oxide semiconductor capacitors comprising: forming a tantalum oxide layer on a tantalum substrate by electrochemical oxidization means including an electrolytic bath containing an aqueous manganese salt solution with a current flowing through the electrolytic bath sufficient to provide a voltage across said bath 2 to 3 times greater than the rated voltage of the capacitor to be manufactured; forming a semiconductive manganese oxide layer on said tantalum oxide layer when said voltage has been achieved by depositing manganese oxide thereon in said electrolytic bath containing said aqueous manganese salt solution under potentiostatic conditions; applying a conducting coating onto said semiconductive manganese oxide layer.

3,852,172

ZINC OXIDATION PROCESS

Nicolo Guglielmi; Settimo Vittone, and Gianfranco Rolando, all of Turin, Italy, assignors to Ing. C. Olivetti & S.p.A., Torino, Italy

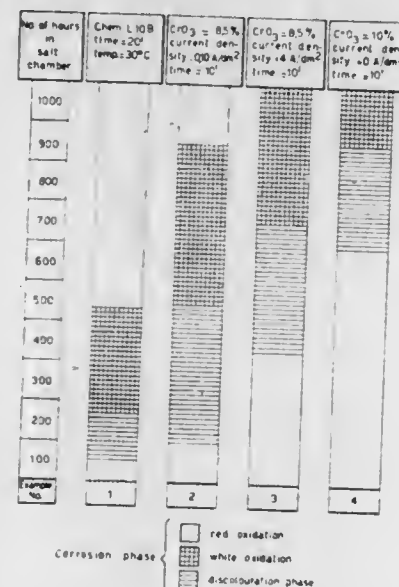
Filed June 8, 1972, Ser. No. 260,796

Claims priority, application Italy, June 9, 1971, 68985/71

Int. Cl. C23b 9/00, 5/00

U.S. Cl. 204—56 R

10 Claims



1. A method of forming an oxide layer on an object having a surface of zinc comprising the steps of:

- a. immersing said object in an electrolytic bath including a solution of hexavalent oxide of the type XO_3 , where X is an element selected from the group consisting of chromium molybdenum and tungsten, in a mixture of melted

alkali metal salts, said bath having a melting point lower than the melting point of zinc;

- b. passing a direct current of constant density through said bath using said object as an anode.

3,852,173

ALUMINA REDUCTION PROCESS

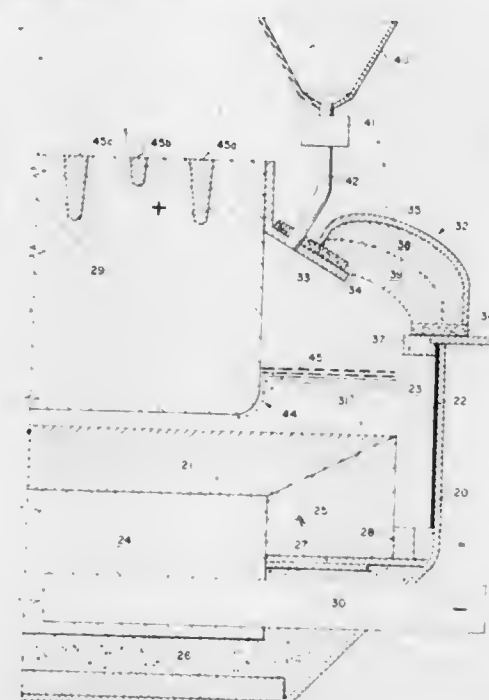
Stanley C. Jacobs; Noel Jarrett, both of Lower Burrell, Pa.; Robert W. Graham, Port Lavaca, Tex.; Perry A. Foster, Jr., New Kensington, Pa.; William C. Sleppy, Belleville, Ill.; C. Norman Cochran, Oakmont, Pa.; Warren E. Haupin, Lower Burrell, Pa., and Ronald J. Campbell, Apollo, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 28, 1973, Ser. No. 374,802

Int. Cl. C22d 3/12

U.S. Cl. 204—67

15 Claims



1. A process for producing aluminum, comprising electrolytically decomposing alumina to aluminum metal in an electrolyte bath between a carbon anode and a cathodic interface formed between aluminum metal and the electrolyte bath, the bath

- a. consisting essentially of Al_2O_3 , NaF, and AlF_3 , and
- b. having a weight ratio NaF to AlF_3 up to 1:1:1, while maintaining said bath at an operating temperature effective for preventing bath crusting in interfacial areas between bath and aluminum metal, while enclosing the top of the cell for keeping the surface of the bath molten, and while feeding alumina

- a. substantially continuously onto the molten bath surface,
- b. the alumina having a water content effective for preventing anode dusting,
- c. the carbon anode being exposed to the gaseous water evolved from the alumina, whereby anode dusting is prevented.

3,852,174

HYDROPHOBIC COATINGS AND SYNTHESIS BY ELECTROCHEMICAL REDUCTION OF SULFONIUM COMPOUNDS

William J. Settineri, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 879,511, Nov. 24, 1969, abandoned, which is a continuation-in-part of Ser. Nos. 647,895, June 22, 1967, Pat. No. 3,480,525, and Ser. No. 647,896, June 22, 1967, Pat. No. 3,486,527. This application Sept. 26, 1972, Ser. No. 292,292

Int. Cl. C07b 19/06; B01k 1/00; C23i 7/00

U.S. Cl. 204—73 R

26 Claims

1. A process for applying a nonpolymeric hydrophobic coating to a solid electroconductive article having a resistivity of less than about 10^8 ohm-cm. at 300° K. and being used as

a cathode in a system comprising an anode, a cathode, an aqueous electrolysis solvent which is predominantly water and a means for applying and maintaining an electrical potential between said anode and cathode, said process comprising subjecting a solution of an organic monosulfonium salt in said aqueous electrolysis solvent to an electrical potential sufficient to reduce said salt; said hydrophobic coating being substantially insoluble in said electrolysis solvent.

3,852,175

ELECTRODES HAVING SILICON BASE MEMBERS

Howard H. Hoekje, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 260,790, June 8, 1972. This application Feb. 27, 1973, Ser. No. 336,288

Int. Cl. B01k 3/06; C01d 1/06

U.S. Cl. 204—98

89 Claims

1. An electrode having an electroconductive surface on a metallic base comprising at least 50 weight percent silicon, which base contains a dopant chosen from the group consisting of phosphorous, arsenic, antimony, bismuth, boron, aluminum, and gallium in an amount sufficient to provide said base with an electroconductivity greater than 100 (ohm-centimeters) $^{-1}$.

3,852,176

EMBRITTLMENT MACHINING METHOD

Paul Rosenthal, Amherst, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

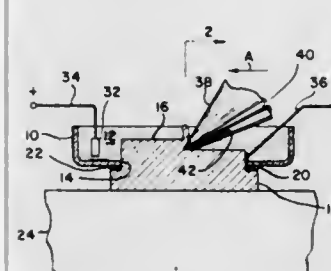
Continuation of Ser. No. 117,995, Feb. 23, 1971, abandoned.

This application Dec. 6, 1972, Ser. No. 336,115

Int. Cl. B23p 1/00

U.S. Cl. 204—129.46

2 Claims



1. Embrittlement machining method comprising the steps of:

1. placing in a container an electrolytic solution the main constituent of which is alcohol,
2. immersing a workpiece having a portion to be machined in said solution adjacent a cutting head,
3. supplying an embrittling agent of mercury or mercury amalgam to said portion of the workpiece,
4. placing a first electrode in said solution forming an anode, and
5. applying a voltage potential across said anode and said workpiece.

3,852,177

METHOD OF RADIATION CROSS-LINKING OLEFIN POLYMERS CONTAINING ACRYLATE CROSS-LINKING PROMOTERS

George J. Atchison, and Donald J. Sundquist, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1972, Ser. No. 293,787

Int. Cl. B01j 1/10, 1/12

U.S. Cl. 204—159.17

3 Claims

1. A method of producing cross-linked polyethylene comprising applying high energy ionizing radiation to a mixture of

3,852,178

ELECTROSTATIC FILTERING FOR CLEANING DIELECTRIC FLUIDS

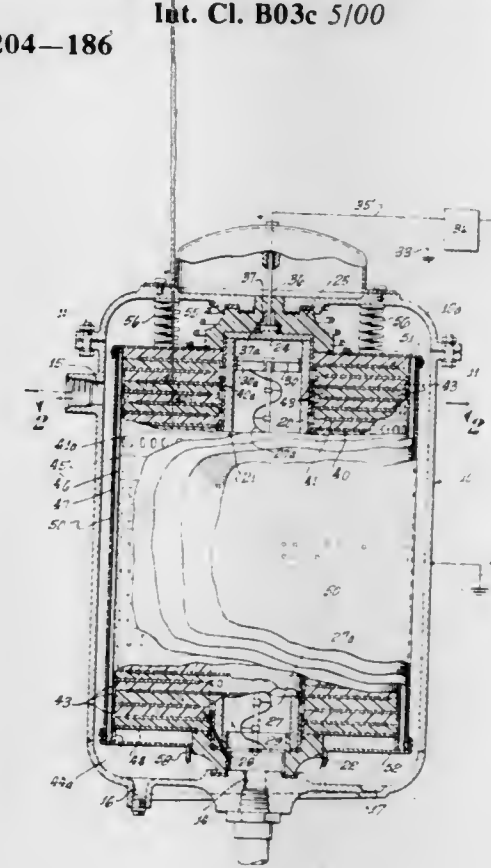
Edward A. Griswold, 2072 E. Galbreth Rd., Pasadena, Calif. 91104

Division of Ser. No. 538,275, March 29, 1966, Pat. No. 3,544,441, which is a continuation-in-part of Ser. No. 190,457, April 26, 1962, Pat. No. 3,252,885. This application Aug. 27, 1970, Ser. No. 67,585

Int. Cl. B03c 5/00

U.S. Cl. 204—186

23 Claims



1. The method of separating particles suspended in a dielectric fluid stream that includes the steps of:

- maintaining a substantially uniform, high voltage unidirectional electric field,
- flowing the fluid stream through the electric field in a direction generally transversely to the field;
- directly impacting the particles onto a surface by flowing the fluid stream at a sufficiently high velocity under turbulent flow conditions to effect contact charging of the particles at the surface followed by separation of the charged particles from said surface; and
- collecting the charged and separated particles on stationary structure in a unidirectional electric field.

3,852,179

BIPOLAR DIAPHRAGM ELECTROLYTIC CELL HAVING INTERNAL ANOLYTE LEVEL EQUALIZING MEANS

Carl W. Raetzsch, Jr., and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,122

Int. Cl. B01k 3/10

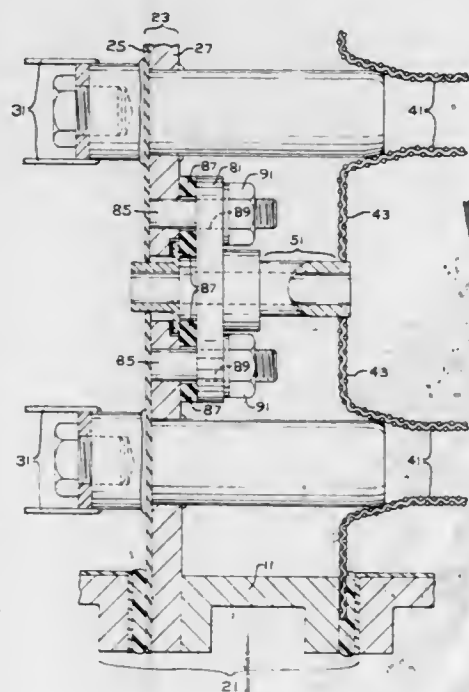
U.S. Cl. 204—256

3 Claims

1. In a bipolar electrolyzer comprising a pair of diaphragm cells electrically and mechanically in series and separated by

a backplate having a catholyte-resistant surface facing the first of the pair of cells, and an anolyte-resistant surface facing the second of the pair of cells, an electrolyte permeable cathode in said first cell, spaced from and mechanically and electrically connected to the cathodic surface of said backplate and defining a catholyte volume therebetween, brine feed means to each of said cells, and gas recovery and product recovery means from each of said cells, the improvement comprising: an aperture in said backplate;

bolt means extending from the catholyte-resistant surface of said backplate; collared, anolyte-resistant conduit means extending through the anolyte-resistant surface of said backplate, the flange thereof bearing upon the catholyte-resistant surface of said backplate;



collared, catholyte-resistant conduit means corresponding to said anolyte-resistant conduit means, and extending from said anolyte-resistant conduit means to said cathode, whereby to provide equalizer means through said catholyte volume between anolyte volumes of said pair of cells independent of said brine feed means, gas recovery means, and product recovery means;

said bolt means passing through the collar of said catholyte-resistant conduit means, and nut means on said bolt means compressively bearing on said collar and said anolyte-resistant flange means whereby to provide an electrolyte tight seal between said anolyte-resistant conduit means and said catholyte-resistant conduit means; and an electrolyte tight seal between said anolyte-resistant conduit means and the anolyte-resistant surface of said backplate.

3,852,180

APPARATUS FOR CO CONVERSION TO METHANE
Derek P. Gregory, Hinsdale, Ill., assignor to SKF Industrial Trading and Development Company, Amsterdam, Netherlands

Division of Ser. No. 223,546, Feb. 4, 1972, Pat. No. 3,766,027.
This application Mar. 19, 1973, Ser. No. 342,506

Int. Cl. B01k 3/00

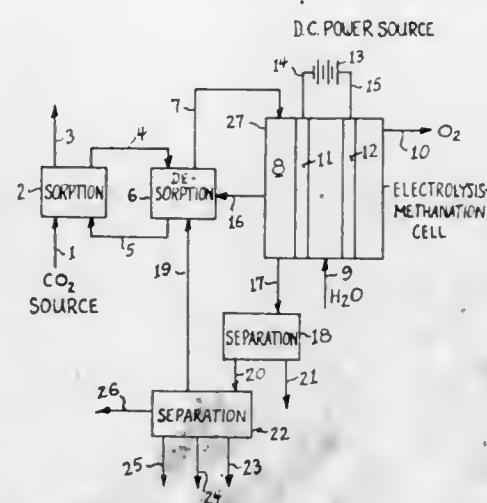
U.S. Cl. 204-277

7 Claims

1. An apparatus for simultaneous electrolysis of water and methanation of CO₂ comprising in combination:

- a housing,
- an external DC power source,
- a cathode and an anode disposed in said housing connected to the external DC power source, said cathode being adapted to electrochemically evolve hydrogen therefrom,

- said anode and cathode adapted to have an electrolyte disposed between them and
- means for supplying water to said electrolyte,
- means for separating CO₂ from a gas stream containing CO₂ to produce a CO₂ containing gas stream relatively



- free of oxygen,
- means for supplying said CO₂ stream to said cathode, to exothermically produce methane, and
- means for exhausting a methane-containing product gas from said cathode.

3,852,181

CONTINUOUS CATHODE SPUTTERING SYSTEM
Werner Cirkler, Munich; Alois Schauer, Gruenwald, and Helmut Kausche, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin-Munich, Germany

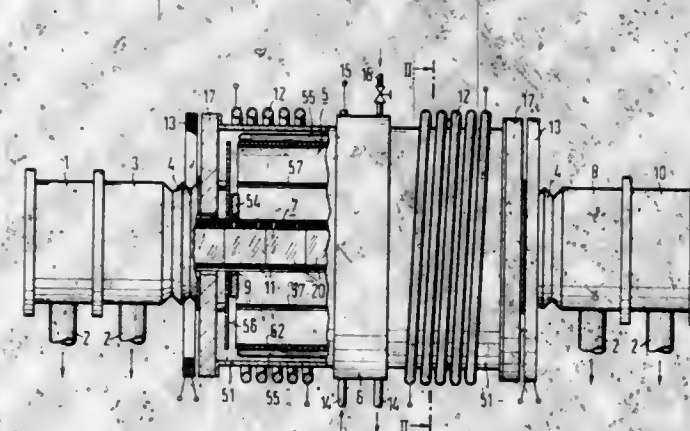
Filed Oct. 30, 1973, Ser. No. 411,088

Claims priority, application Germany, Nov. 2, 1972, 2253769

Int. Cl. C23c 15/00

U.S. Cl. 204-298

15 Claims



1. Coating apparatus comprising an input chamber, a heating chamber, a sputtering chamber, a cooling chamber, and an output chamber, means for connecting said chambers in series to permit a substrate member to be transported sequentially therethrough, said sputtering chamber comprising two cylindrical tubes formed of insulating material interconnected in axially aligned relationship by a metal connector, means for supporting a plurality of electrodes on said ring in position to envelop said chamber internally thereof, means on said ring for establishing a connection between at least one of said electrodes and a source of d.c. voltage, means for evacuating said sputtering chamber, means for introducing a gas into said sputtering chamber, a high frequency coil surrounding said sputtering chamber, and a transport means mounted centrally within said sputtering chamber and adapted to transport a plurality of groups of said substrates sequentially through the center of said sputtering chamber.

3,852,182

COAL LIQUEFACTION

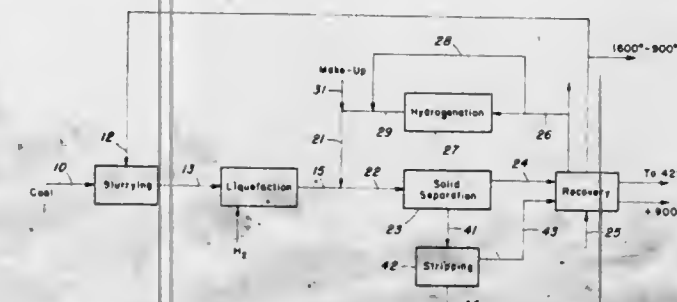
Morgan C. Sze, Upper Montclair, and George J. Snell, Fords, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 7, 1972, Ser. No. 304,320

Int. Cl. G10g 1/04

U.S. Cl. 208-8

14 Claims



1. A process for separating insoluble material from a coal liquefaction product produced from a coal feed and comprised of insoluble material and a coal solution of carbonaceous matter dissolved in a coal liquefaction solvent, comprising:

- introducing said coal liquefaction product and a liquid promoter into a gravity settling zone, said liquid promoter having a 5 volume percent distillation temperature of at least about 250°F., and a 95 volume percent distillation temperature of at least about 350°F. and no greater than about 750°F., said liquid promoter having a characterization factor (K) of at least 9.75, said liquid promoter having a characterization factor greater than said coal liquefaction solvent and being added in an amount sufficient to produce a coal extract essentially free of insoluble material;
- recovering by gravity settling as overflow a coal extract essentially free of insoluble material;
- separating from said coal extract a fraction having a 5 volume distillation temperature of at least about 250°F. and a 95 volume distillation temperature of at least about 350°F. and no greater than about 750°F.;
- hydrogenating at least a portion of said fraction to produce a liquid promoter having a characterization factor greater than the characterization factor of said coal liquefaction solvent, said characterization factor being at least 9.75; and
- employing liquid promoter from step (d) in step (a).

3,852,183

COAL LIQUEFACTION

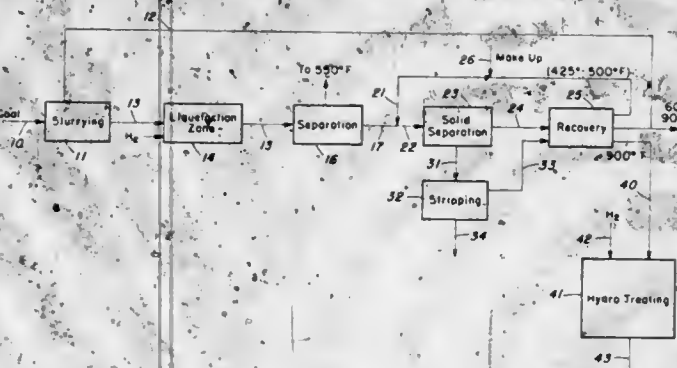
George J. Snell, Fords, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 29, 1972, Ser. No. 319,837

Int. Cl. C10g 1/04

U.S. Cl. 208-10

8 Claims



1. A process for liquefying coal to produce a coal liquefaction product from which insoluble material is more readily separated, comprising:

hydrogenating coal in contact with a coal liquefaction solvent to effect liquefaction thereof, said hydrogenation being effected at a temperature of from about 700°F to about 900°F, a space velocity from about 1.0 to about 4.0 hr.⁻¹ and a hydrogen partial pressure from about 800 to about 3,000 psia to produce a coal liquefaction product comprised of carbonaceous matter dissolved in the coal liquefaction solvent and insoluble material dispersed in the liquefaction solvent having a weight ratio of ash free Benzene insolubles in the product to moisture ash free carbonaceous matter dissolved and dispersed in the coal liquefaction solvent from about 0.10 to about 0.18.

3,852,184

ISOMERIZATION OF REFORMER FEED USING A METAL HALIDE/HYDROGEN HALIDE CATALYST
Michael Siskin, Maplewood, and Joseph J. Porcelli, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 210,607, Dec. 21, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,609

Int. Cl. C10g 35/04; B01j 11/78; C07c 13/18

U.S. Cl. 208-64

16 Claims

1. A process for treating a reformer feedstock containing alkylcyclopentane and a component selected from the group consisting of sulfur compounds, aromatics, and mixtures thereof which comprises contacting said feedstock in the presence of hydrogen at a temperature between about -30° and 125°C. under substantially liquid phase isomerization conditions with a catalyst comprised of:

- a metal halide wherein said metal is aluminum, gallium, tin, lead, vanadium, niobium, tantalum, arsenic, chromium, molybdenum, tungsten, rare earth and/or transuranium metal and said halide is fluoride, chloride, bromide and/or iodide, and
- at least an equimolar amount, based on metal halide, of a hydrogen halide, said halide being fluoride, chloride, bromide and/or iodide, at least a portion of said metal halide being dissolved in said hydrogen halide; said contacting producing a treated feedstock having a reduced alkylcyclopentane content and an increased cyclohexane or alkylcyclohexane content.

3,852,185

HYDRODESULFURIZATION AND FCC OF BLENDED STREAM CONTAINING COKER GAS OIL

Robert D. Christman; Joel D. McKinney; Thomas C. Readal, and Stephen J. Yanik, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1973, Ser. No. 346,176

Int. Cl. C10g 23/04

U.S. Cl. 208-89

6 Claims

1. A process for improving the ratio of gasoline to total conversion in a zeolitic riser cracking operation comprising passing a non-asphaltic sulfur-containing petroleum hydrocarbon feed oil comprising a sulfur-containing petroleum coker gas oil in minor proportion and a sulfur-containing virgin petroleum gas oil in major proportion and having a volume average boiling point of at least 700°F. together with hydrogen downflow over a fixed bed of hydrodesulfurization catalyst comprising Group VI and Group VIII metals on a non-cracking alumina support to remove at least 80 weight percent of the sulfur from the feed oil, regulating the amount of hydrodesulfurization catalyst in the bed to avoid excessively decreasing the boiling characteristics of the feed oil whereby an increase in the temperature differential between the 10 and 90 percent boiling points of the feed oil occurs but does not exceed 20°F. while the 90 percent boiling point of the feed is decreased at least 10°F., passing effluent from the hydrodesulfurization zone boiling above the gasoline range to a zeolite riser cracking process which avoids formation of a catalyst bed in the reaction flow path, and recovering a cracked gasoline product.

3,852,186 COMBINATION HYDRODESULFURIZATION AND FCC PROCESS

Robert D. Christman, Penn Hills Township; Joel D. McKinney, Indiana Township, and Thomas C. Readal, McCandless Township, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1973, Ser. No. 346,121
Int. Cl. C10g 23/04

U.S. Cl. 208—89

9 Claims

1. A process for improving the ratio of gasoline to total conversion in a zeolitic riser cracking operation comprising passing a non-asphaltic sulfur-containing petroleum hydrocarbon feed oil having a volume average boiling point of at least 700°F. together with hydrogen downflow over a fixed bed of hydrodesulfurization catalyst comprising Group VI and Group VIII metals on a non-cracking alumina support to remove at least 80 weight percent of the sulfur from the feed oil, regulating the amount of hydrodesulfurization catalyst in the bed to avoid excessively decreasing the boiling characteristics of the feed oil whereby an increase in the temperature differential between the 10 and 90 percent boiling points of the feed stream occurs but does not exceed 20°F. while the 90 percent boiling point of the feed is decreased at least 10°F., passing effluent from the hydrodesulfurization zone boiling above the gasoline range to a zeolite riser cracking process which avoids formation of a catalyst bed in the reaction flow path, and recovering a cracked hydrocarbon product having an increased ratio of gasoline to total conversion as compared to the ratio obtainable with said feed oil under the same cracking conditions in the absence of said hydrodesulfurization.

3,852,187

HYDRODESULFURIZATION PROCESS FOR PRODUCING FUEL OIL AND FCC FEED

Robert D. Christman; Joel D. McKinney; Thomas C. Readal, and Stephen J. Yanik, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1973, Ser. No. 346,183
Int. Cl. C10g 23/04

U.S. Cl. 208—89

6 Claims

1. A process comprising blending a sulfur-containing zeolite riser cracking petroleum heavy gas oil feed and a sulfur-containing petroleum furnace oil feed to form a non-asphaltic sulfur-containing total hydrodesulfurization feed oil having a volume average boiling point of at least 700°F., passing said total feed oil together with hydrogen downflow over a fixed bed of hydrodesulfurization catalyst comprising Group VI and Group VIII metals on a non-cracking alumina support to remove at least 80 weight percent of the sulfur from the total feed oil, regulating the amount of catalyst in the bed to avoid excessively decreasing the boiling characteristics of the total feed whereby an increase in the temperature differential between the 10 and 90 percent boiling points of the total feed stream occurs but does not exceed 20°F. while the 90 percent boiling point of the total feed is decreased at least 10°F., removing an effluent stream from said hydrodesulfurization process and passing at least the desulfurized heavy gas oil of the effluent stream to a zeolite riser cracking unit.

3,852,188

HYDROCARBON CRACKING IN A REGENERABLE MOLTEN MEDIA

John J. Dugan, and James P. Higgins, both of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

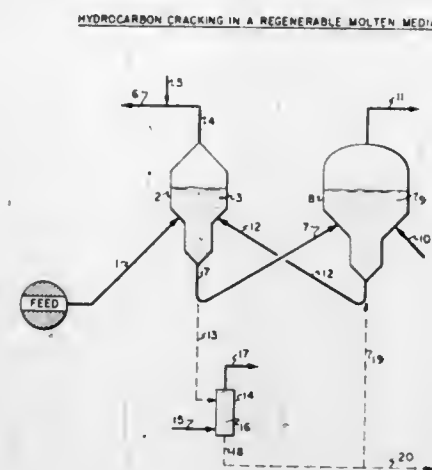
Continuation-in-part of Ser. No. 186,776, Oct. 5, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,182
Int. Cl. C10g 11/02

U.S. Cl. 208—114

17 Claims

1. A process for cracking a hydrocarbon feedstock which comprises contacting said feedstock with a regenerable molten media comprising an oxide of phosphorus in combination

with an alkali metal compound selected from the group consisting of alkali metal oxides, alkali metal hydroxides, alkaline earth metal oxides, alkaline earth metal hydroxides and mixtures thereof, wherein the mole ratio of the alkali metal compound expressed as the oxide thereof to the oxide of phosphorus



is in the range of from about 1.2 to about 2.5, at a temperature in the range of from above the melting point of said media to about 3,000°F. for a time sufficient to form cracked hydrocarbon products and to uniformly suspend the carbonaceous materials formed during said cracking operation throughout the molten media.

3,852,189

SHAPE-SELECTIVE CONVERSION IN THE LIQUID PHASE

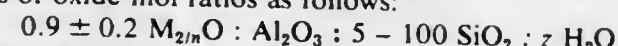
Nai Y. Chen, Titusville, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 94,569, Dec. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 865,470, Oct. 10, 1969, Pat. No. 3,700,585. This application May 30, 1972, Ser. No. 257,729
Int. Cl. C10g 11/18; C01b 33/28

U.S. Cl. 208—120

4 Claims

1. A process for dewaxing petroleum charge stocks boiling above 350°F which comprises contacting said charge in the absence of added hydrogen and at a temperature of 400°–900°F and a pressure sufficient to maintain said charge in the liquid phase, said pressure ranging from about 100–3,000 psig with a crystalline aluminosilicate zeolite having an X-ray diffraction pattern set forth in Table 1 so as to selectively crack straight-chain hydrocarbons and branched-chain hydrocarbons free from quaternary carbon atoms in their structure, said aluminosilicate having a composition, in terms of oxide mol ratios as follows:



wherein M is a cation, n is the valence of said cation and z is from 0 to 40.

3,852,190

REFORMING WITH PLATINUM ON ALUMINA DERIVED FROM A BYPRODUCT OF A ZIEGLER PROCESS

Waldeen C. Buss, Richmond, and Harris E. Kluksdahl, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 27, 1972, Ser. No. 301,696
Int. Cl. C10g 35/08

U.S. Cl. 208—138

3 Claims

1. A process for reforming a naphtha feedstock which comprises contacting the feedstock at reforming conditions with a catalyst comprising 0.01 to 5 weight percent platinum disposed on an alumina support wherein the alumina is obtained by removing water from aluminum hydroxide produced as a byproduct from a Ziegler higher alcohol synthesis reaction, and wherein the alumina is calcined at 1,150° to 1,350°F. so as to have a surface area of 165–215 square meters per gram.

3,852,191

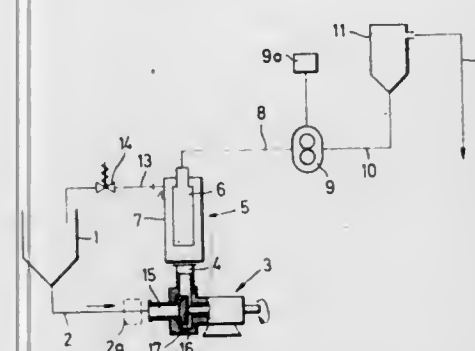
PROCESS AND APPARATUS FOR THE PRODUCTION OF A DISPERSION OR SOLUTION FROM COMMUNUTED SOLID SUBSTANCES AND A DISPERSION MEDIUM OR SOLVENT

Friedrich Josef Zucker, Mulheim (Ruhr), and Hans-Dieter Bruchmann, Cologne-Deutz, both of Germany, assignors to Deutsche Supraton Bruchmann & Zucker KG, Dusseldorf, Germany

Continuation of Ser. No. 136,761, April 23, 1971, abandoned. This application Dec. 29, 1972, Ser. No. 334,788
Int. Cl. B01d 29/42

U.S. Cl. 210—71

9 Claims



1. A process for the continuous production of a filtrate from a mixture of solid materials and a fluid medium consisting essentially of the steps of:

- supplying solid materials having varying particle sizes and a fluid medium to form a mixture thereof,
- subjecting the mixture to a comminuting treatment in a comminuting treatment zone,
- introducing the mixture of the solid material and the fluid medium into a filtering zone directly from the comminuting treatment zone,
- passing an acceptable portion of the mixture of solid material and fluid medium through a filter which allows a predetermined particle size of solid material to pass therethrough thereby leaving a rejected residue, and then
- recycling said rejected residue which contains particle sizes exceeding said predetermined particle size directly to the comminuting treatment zone.

3,852,192

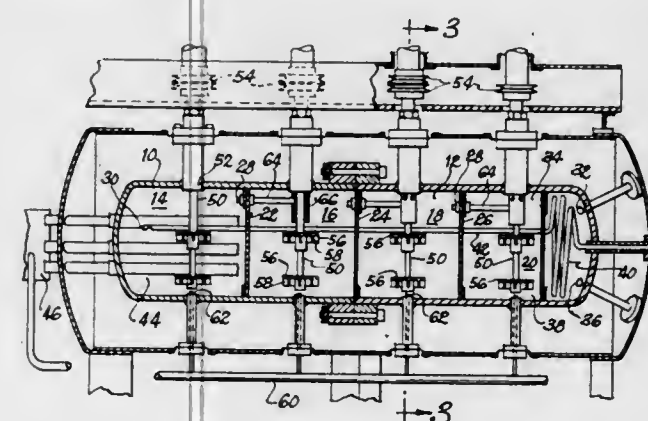
REACTOR FOR WET OXIDATION OF ORGANIC MATTER

W. Martin Fassell, Newport Beach, and Donald W. Bridges, Irvine, both of Calif., assignors to Barber-Colman Company, Rockford, Ill.

Continuation-in-part of Ser. No. 346,152, March 29, 1973., This application Oct. 4, 1973, Ser. No. 403,652
Int. Cl. C02b 1/34

U.S. Cl. 210—63

25 Claims



1. A reactor for wet oxidation of combustible organic matter in solution or dispersion in aqueous medium at elevated temperature and pressure comprising an elongate horizontally disposed housing having an inlet at one end portion for the introduction of the aqueous medium for wet oxidation and an

outlet at the opposite end portion for the removal of aqueous medium which has been subjected to wet oxidation during travel through the housing, vertical walls longitudinally spaced in the housing to subdivide the housing into a number of completely separated compartments, passages communicating one compartment with another for flow of fluid therethrough from one compartment to the other and whereby the compartments are divided into a vapor zone above the level of the communicating passage and a liquid zone below the level of the communicating passage, a source of oxygen containing gas, means for introducing the oxygen containing gas into the compartment, and agitation means in compartments for maintaining the aqueous medium under a high state of agitation whereby oxygen containing gas which accumulates in the vapor space is re-entrained with aqueous medium, said means for introducing the oxygen containing gas being disposed for introduction of same in the immediate vicinity of the zone of agitation whereby the oxygen containing gas is reduced into fine droplets for intimate association with the organic matter dissolved or dispersed in aqueous medium to provide reactive oxidation sites.

3,852,193

LIQUID-PURIFYING PROCESS AND APPARATUS

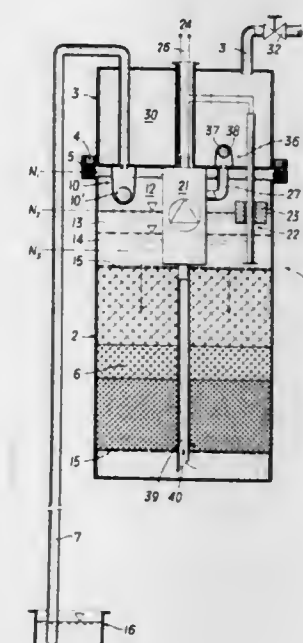
Peter Jakubek, Gebirge, and Karl Biswanger, Wien, both of Austria, assignors to Firma Research Filter- und Patentforschungs-Ges.m.b.H., Wien, Austria

Filed Mar. 16, 1973, Ser. No. 342,252
Claims priority, application Austria, Mar. 20, 1972, 52349/72

U.S. Cl. 210—73

Int. Cl. B01d 21/24, 23/26

34 Claims



1. A process of purifying a polluted liquid which contains a liquid impurity having a lower specific gravity than the polluted liquid, which process comprises intermittently sucking said polluted liquid from an antechamber into a filter through a separating chamber, intermittently sucking filtered liquid from said filter and discharging said filtered liquid under pressure through an equalizing chamber, controlling the intermittent sucking and discharge of said liquid in dependence on the liquid level in said antechamber; and subjecting said liquid in said separating chamber to a pre-separation to remove a major portion of said liquid impurity.

3,852,194

APPARATUS AND METHOD FOR FLUID COLLECTION AND PARTITIONING

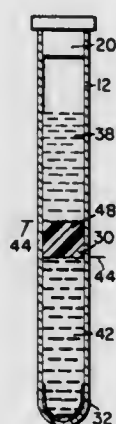
Anthony R. Zine, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,270

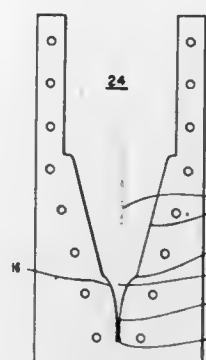
Int. Cl. B01d 21/26

U.S. Cl. 210-83

3 Claims



d. above said expansion area an enlarged zone characterized by interior planar surfaces to further spread out the



liquid while maintaining a horizontal interface between layers of the liquid.

3,852,196

FLUID TREATMENT SYSTEM

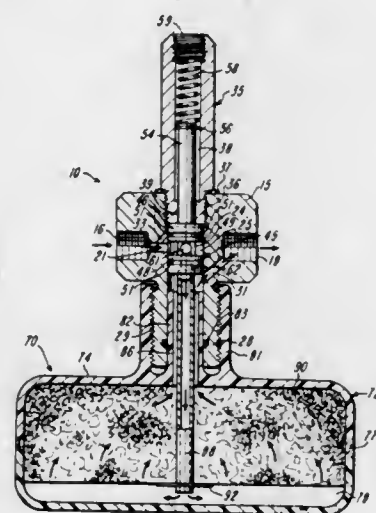
Roman Szpur, Kettering, Ohio, assignor to Vital Research & Development, Inc., Dayton, Ohio

Filed Sept. 8, 1972, Ser. No. 287,480

Int. Cl. B01d 35/02, 27/10

U.S. Cl. 210-133

3 Claims



1. A fluid collection and partitioning assembly for collecting a specimen of blood within a sealed fluid collection chamber, centrifugally separating the heavier and lighter fluid phases of said blood specimen, and physically and chemically partitioning the separated phases, comprising:

- a container having an open end and a closed end;
- gel-like means initially positioned within said container adjacent said closed end for forming a transversely continuous contact seal with an annular surface portion within said container at a subsequently formed interface between said heavier and lighter phases;
- closure means for vacuum-sealing said open end of said container and for defining a closed fluid collection chamber containing said gel-like means therewithin, said closure means being pierceable by a needle for supplying blood to said closed fluid collection chamber which is adapted to draw the blood specimen therewithin;
- said gel-like means being a thixotropic material and including a mixture of a fluid which is generally inert to body fluids and a powdered inorganic filler; and
- said gel-like means having a specific gravity intermediate those of said lighter and heavier phases and being of such a thixotropic composition such that during the centrifugation of said blood specimen into its component phases, said gel-like material is flowable from its initial position adjacent said closed end toward said sealed open end and effects a semi-rigid seal at the interface of said separated fluid phases which physically and chemically partitions said phases within said container.

3,852,195

LAYERING CONE

Grant G. Slater, 986 Somera Rd., Los Angeles, Calif. 90024

Filed July 17, 1972, Ser. No. 272,481

Int. Cl. B01d 17/00

U.S. Cl. 210-94

6 Claims

1. A layering cone device adapted to rapidly layer heavier liquids below lighter ones with a horizontal interface between layers which comprises:

- a constricted inlet passage adapted to produce turbulent flow which communicates at an angle with,
- a constricted riser adapted to contain turbulent flow,
- communicating with and above said riser an expansion area characterized by interior surfaces which are of a concave curvature to quickly dissipate the turbulent flow and initiate non-turbulent flow while preventing faster or slower flow along said interior surfaces, and

1. A fluid treatment system comprising a valve body including means defining an inlet passage and an outlet passage adapted to receive a fluid, said valve body having an elongated internal cylindrical valve chamber intersecting said inlet and outlet passages, said valve chamber having a first inner end portion and a second outer end portion, a cylindrical valve member slidably supported within said valve chamber for axial movement between a first position adjacent said inner end portion and a second position adjacent said outer end portion, said valve member including a first cylindrical inner portion and a second cylindrical outer portion disposed in axially spaced relation and each having an outer diameter conforming to the diameter of said valve chamber, a circumferentially extending sealing member on each of said inner and outer portions of said valve member and forming a sliding fluid-tight seal with said body, means defining a radially extending fluid passage within said valve member between said inner and outer portions of said valve member, means defining a passage extending axially through said second outer portion of said valve member to intersect said radially extending passage, means defining a bleed passage within said valve body for connecting said inlet passage to said second inner end portion of said valve chamber, a fluid-tight container enclosing a fluid treating media, means for removably connecting said container to said valve body and including a cylindrical outer tube having an outer diameter substantially the same as the inner diameter of said valve chamber and an inner tube spaced concentrically within said outer tube and having an end por-

tion positioned to engage said second outer portion of said valve member for removably connecting said end portion of said inner tube to said valve member second outer portion, said passages within said valve member cooperating with said inner and outer tubes to by-pass fluid from said inlet passage through the treating media within said container and then to said outlet passage in response to said valve member being in said first position, said valve member constructed and arranged to block the flow of fluid from said inlet passage through said outer end of said valve chamber in response to said valve member being in said second position when said container is removed, and said valve member being movable between said first and second positions in response to axial movement thereof by said inner and outer tubes being inserted into said outer end portion of said valve chamber.

3,852,197

MUD AND SHALE SEPARATING APPARATUS

James Gordon Thompson, Calgary, Alberta, Canada, assignor to Key Oilfield Supply & Rental Ltd., Calgary, Alberta, Canada

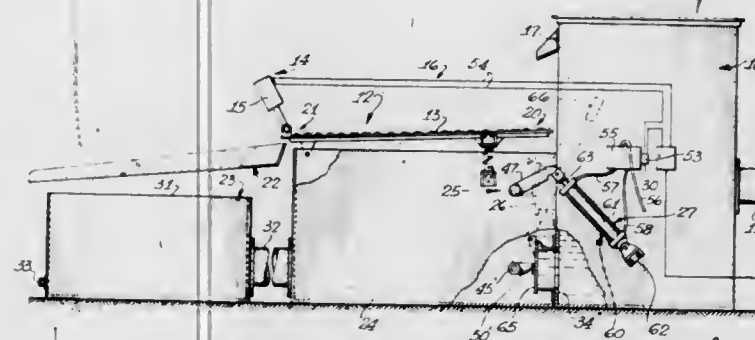
Filed Mar. 16, 1973, Ser. No. 342,128

Claims priority, application Canada, May 31, 1972, 143575

Int. Cl. B01d 33/22

U.S. Cl. 210-143

8 Claims



1. A mud and shale separating apparatus comprising a tank for receiving a mud and shale mixture from a drill hole, a vibrating screen having an infeed end, an outfeed end, said tank having outlet means for permitting a flow of the mixture from said tank onto said infeed end of said screen, motor means for driving said screen and thereby causing the mud to pass through the screen and the shale to be conveyed therealong during operation of said motor means, means for conducting power to said motor means, collecting means below said screen for receiving the mud passed through said screen, passage means defining communication between said tank and collecting means, a door movable between an opened position and a closed position for blocking said passage means, door operating means having an actuator energizable by the power conducting means, said door operating means on de-energization of said actuator permitting said door to move to said opened position whereby the mixture is permitted to flow through said passage means when power is not being conducted to said motor means.

3,852,198

DIALYZING APPARATUS FOR ARTIFICIAL KIDNEY
Kenkichi Murakami, Osaka, Japan, assignor to Kabushiki Kaisha Plastic Kogaku Kenkyusho, Osaka-shi, Osaka-fu, Japan

Filed Feb. 12, 1973, Ser. No. 331,531

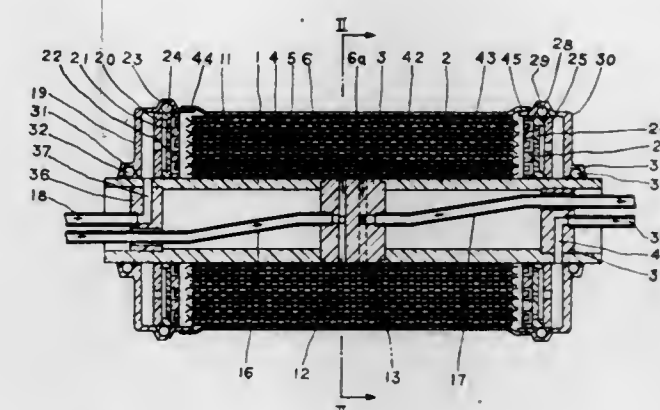
Claims priority, application Japan, Feb. 12, 1972, 47-15077; Mar. 2, 1972, 47-22126; Mar. 28, 1972, 47-30966

Int. Cl. B01d 31/00

U.S. Cl. 210-321

10 Claims

1. A dialyzing apparatus for an artificial kidney comprising an outer sleeve, a core arranged within the outer sleeve, said core including passage means communicating to the exterior of said outer sleeve, a plurality of tubes made of semipermeable dialyzing membranes in which blood flows, and partition



walls interposed between each tube; said tubes being arranged around the core in the peripheral direction, said tubes and partition walls being arranged in parallel to each other around the core spirally, said tubes having inlets and outlets for blood, said inlet and outlets being connected to said passage means,

and a passage for dialyzing fluid being formed outside said tubes between an inlet and an outlet for dialyzing fluid at both ends of said outer sleeve and flow adjusting plate means positioned within said outer sleeve at the end thereof for causing a uniform flow of dialyzing fluid through said outer sleeve.

3,852,199

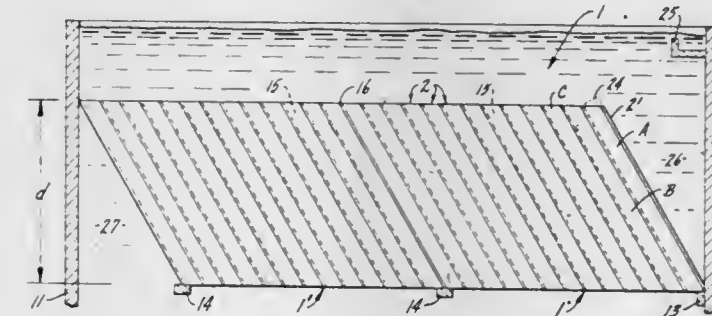
APPARATUS FOR SEPARATING SOLIDS FROM LIQUIDS
William A. Wachsmuth, Mississauga, Ontario, and Anders Lindstol, Oakville, Ontario, both of Canada, assignors to Ecodyne Corporation, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,319

Int. Cl. B01d 21/10

U.S. Cl. 210-522

14 Claims



1. Apparatus for separating solids from liquids including means defining a plurality of parallel tubes comprising:

- a member having a series of spaced-apart slot means defined on a first surface thereof;
- generally flat ribs extending from the opposite surface of said member, each such rib having an edge dimensioned to fit into said slot means;
- at least two of said members being aligned parallel to each other with the respective slot means on each such member being aligned with corresponding slot means on the other member; and
- at least three of said ribs each being received in and secured to the slot means of one of said members so as to define with said two members at least two adjacent tubes for receiving a mixture of liquids and solids.

3,852,200

DRILLING LIQUID CONTAINING MICROCRYSTALLINE CELLULOSE

W. Keith Meyer, Indiana Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 8, 1973, Ser. No. 330,567

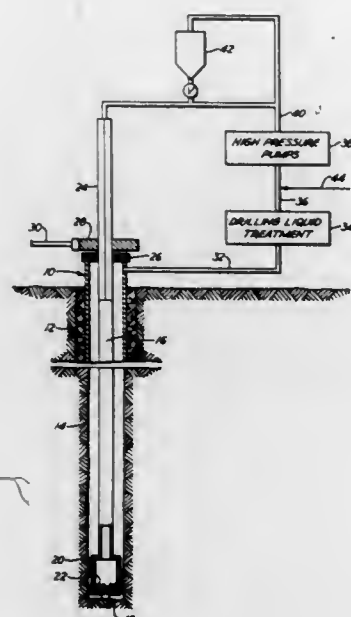
Int. Cl. C09k 3/14

U.S. Cl. 252-8.5 A

5 Claims

1. A drilling liquid for abrasive jet drilling of wells comprising water, microcrystalline cellulose dispersed in the water in a concentration of about 4 to 7 percent by weight of the water,

and ferrous abrasive particles suspended in the dispersion in a concentration of 4 to 20 percent, by bulk volume, of the



dispersion, said microcrystalline cellulose having a level-off degree of polymerization in the range of 40 to 300.

3,852,201

CLAY FREE AQUEOUS DRILLING FLUID

Jack M. Jackson, P.O. Box 35221, Houston, Tex. 77035
Continuation-in-part of Ser. No. 101,177, Dec. 23, 1970, abandoned. This application Mar. 21, 1973, Ser. No. 343,228
Int. Cl. C10m 3/04, 3/02, 3/22, 1/28

U.S. Cl. 252—8.5 A 8 Claims
1. A clay-free aqueous drilling fluid consisting essentially of water, an electrolyte inhibitor for preventing hydration and swelling of drilled solids selected from the group consisting of at least 600 ppm calcium ion, at least 200 ppm aluminum ion or chromium ion, at least 1,500 ppm potassium chloride, at least 5,000 ppm sodium chloride and combinations thereof, a viscosifying amount of hydroxyethyl cellulose, and from about 25 percent by weight of magnesia based on the combined weight of hydroxyethyl cellulose and magnesia, said drilling fluid being further characterized as not having thixotropic properties or structured type viscosity and not tending to form a filter cake.

3,852,202

INERT PACKER FLUID ADDITIVE COMPRISING ASBESTOS AND FUMED ALUMINA

Paul C. Wells, and Raymond E. McGlothlin, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 18, 1972, Ser. No. 298,966
Int. Cl. C09k 3/10

U.S. Cl. 252—8.55 R 9 Claims
1. A well completion packer fluid additive comprising finely divided asbestos and fumed alumina.

3,852,203

SLIDING BEARING MEMBER

Nobukazu Morisaki, Aichi-ken, Japan, assignor to Daido Metal Company Ltd., Kita-ku, Nagoya, Japan
Filed Dec. 18, 1973, Ser. No. 425,895
Claims priority, application Japan, Aug. 9, 1973, 48-89575
Int. Cl. C10m 5/14, 5/12, 5/10

U.S. Cl. 252—12 6 Claims
1. A sliding member made of a material consisting of 0.1–15 percent by weight of an organic fiber material having a length less than about 3mm. and a diameter of about 15–50 microns and having oil affinity, 1–15 percent by weight of a hydrocarbon lubricating oil, and the balance of polyacetal resin.

3,852,204

LUBRICANT COMPOSITIONS

Georges Jules Pierre Souillard, and Frederic Francois Paul Van Quathoven, both of Wezembeek-Oppem, Belgium, assignors to Cosden Oil and Chemical Company, Big Spring, Tex.

Continuation-in-part of Ser. No. 555,050, June 3, 1966, abandoned, Continuation-in-part of Ser. No. 73,575, Sept. 18, 1970, Pat. No. 3,753,905, which is a continuation-in-part of Ser. No. 778,858, Nov. 25, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,572

Claims priority, application Belgium, Aug. 24, 1966, 23479; Aug. 24, 1966, 23769 The portion of the term of this patent subsequent to Aug. 21, 1990, has been disclaimed.

Int. Cl. C10m 1/40

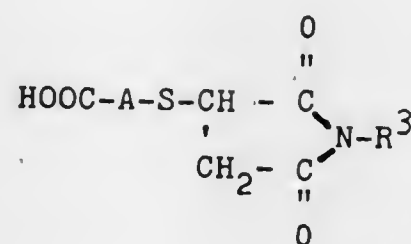
U.S. Cl. 252—33.4 7 Claims
1. A lubricant for internal combustion engines comprising from 10 to 75 percent of liquid polybutene having a viscosity in the range of about 30 up to 600 SSU at 210°F and a molecular weight of less than about 1,000, 5 to 80 percent mineral lubricating oil having a viscosity in the range of about 50 to 1,000 SSU at 100°F, and 3 to 30 percent of a sulfonic acid superbased with an alkaline earth metal selected from the group consisting of calcium, barium and magnesium, the proportions being by weight.

3,852,205

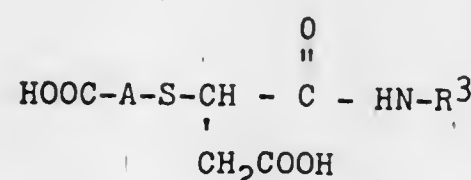
TRANSMISSION FLUID COMPOSITIONS AND METHOD
Mahmound S. Kablaoui, Wappingers Falls; Arthur W. Godfrey, Fishkill, and Robert E. Reid, Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.
Filed Nov. 5, 1973, Ser. No. 413,100

Int. Cl. C10m 1/38

U.S. Cl. 252—47.5 12 Claims
1. A mineral oil composition comprising at least about 50 wt. percent of a mineral lubricating oil and between about 0.01 and 50 wt. percent of a friction modifier selected from the group consisting of S-carboxylalkylene hydrocarbylsuccinimide characterized by the formula:



S-carboxylalkylene hydrocarbylsuccinamic acid characterized by the formula:



and mixtures thereof where R³ is alkyl or alkenyl of from 8 to 30 carbon atoms and A is a divalent saturated aliphatic hydrocarbon of from 1 to 16 carbons.

3,852,206

SULFUR HALOGENATED CUTTING OIL AND PROCESS OF MAKING

Robert L. Dinsmore, Long Beach, and Herbert D. Ivey, Pasadena, both of Calif., assignors to Lubrication Company of America, Los Angeles, Calif.

Filed Sept. 10, 1973, Ser. No. 395,742

Int. Cl. C10m 1/38

U.S. Cl. 252—48.8 14 Claims

1. The process which comprises reacting a naphthenic-base mineral oil, boiling between 350°–1,500°F with about 0.1 percent w. of sulfuric acid, such amount of sulfuric acid being less than the maximum amount required to react completely with the oil, removing the sludge formed thereby, reacting the unneutralized product with a normally liquid, sulfur halide, and separating the resulting precipitate and hydrogen halide therefrom, to leave a stable and homogeneous oil characterized by lack of offensive odor and containing up to about 18 percent w. of total sulfur and up to about 5 percent w. total halide in oil soluble organic compounds which have anti-weld properties.

3,852,207

PRODUCTION OF STABLE LUBRICATING OILS BY SEQUENTIAL HYDROCRACKING AND HYDROGENATION

Bruce E. Stangeland, Berkeley, and Clark J. Egan, Piedmont, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 26, 1973, Ser. No. 345,142

Int. Cl. C10g 3/114, 37/10

U.S. Cl. 208—58 10 Claims

1. A two-stage process for producing a lubricating oil having good UV stability from a hydrocarbon feedstock boiling in the range 700° to 1,200°F., which comprises:

- catalytically hydrocracking said feedstock in a hydrocracking zone at hydrocracking conditions at a per pass conversion of at least 20 volume percent to materials boiling below the initial boiling point of said feedstock; and
- catalytically hydrogenating in a hydrogenating zone at least a substantial portion of the effluent from said hydrocracking zone boiling in the range 550°–1,200°F. at hydrogenation conditions including:
 - a temperature of from 400° to 700°F.,
 - a pressure of from 1,500 to 5,000 psig,
 - an LHSV of from 0.2 to 1.5, and
 - a hydrogen supply rate of from 500 to 20,000 SCF/barrel of said effluent fed to said hydrogenating zone,
 in the presence of a hydrogenation catalyst comprising
 - a refractory oxide, and
 - a hydrogenating component comprising a noble metal; to produce a lubricating oil having good UV stability.

3,852,208

PHOTOCONDUCTIVE TONER COMPOSITION

Shinichiro Nagashima, and Kaichi Tsuchiya, both of Tokyo, Japan, assignors to Canon Inc., Tokyo, Japan
Division of Ser. No. 888,886, Dec. 29, 1969, Pat. No. 3,721,554. This application Dec. 13, 1972, Ser. No. 314,519
Claims priority, application Japan, Dec. 30, 1968, 43-96504; May 12, 1969, 44-36431

Int. Cl. G03g 9/00, 9/02

U.S. Cl. 252—62.1 3 Claims

1. In a toner for developing an electrostatic latent image, the improvement which comprises that the effective component of the toner is the reaction product obtained by condensing

- an organic photoconductive compound selected from the group consisting of photoconductive polycyclic aromatic compounds having an amino substituent, and photoconductive polycyclic aromatic compounds having an hydroxyl substituent, and

- a colored substance selected from the group consisting of compounds 35–44 of the specification.

3,852,209

NON-PHOSPHATE AUTOMATIC DISHWASHER DETERGENT

Patricia A. Hofmann, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 133,338, April 12, 1971, Pat. No. 3,701,735. This application June 8, 1972, Ser. No. 260,721 The portion of the term of this patent subsequent to Oct. 31, 1989, has been disclaimed.

Int. Cl. C11d 7/54

U.S. Cl. 252—95 8 Claims

1. An alkaline dishwasher detergent capable of inhibiting overglaze attack and essentially free of inorganic phosphates consisting essentially of at least about 25% by weight of a water-soluble aminopolycarboxylic compound and about 30–65% of at least one water-soluble inorganic builder salt selected from the group of silicates, carbonates and borates, about 1–20% sucrose, and about 1–20% overglaze protector.

3,852,210

STABLE LIQUID DETERGENT CONCENTRATES CONTAINING ACTIVE OXYGEN

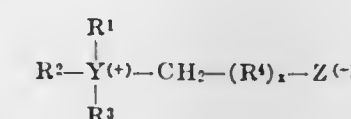
Joseph Z. Krezanoski, Los Altos, Calif., assignor to Flow Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Aug. 11, 1972, Ser. No. 279,801

Int. Cl. C11d 7/54

U.S. Cl. 252—95 16 Claims

1. A stable liquid concentrate composition consisting essentially of:
a. about 0.1–50% of an active oxygen yielding compound;
b. about 0.5–50% of a water soluble zwitterionic detergent selected from the group consisting of sulfobetaine and betaine surfactants of the formula:



wherein R² is a long chain radical and contains an alkyl, alkenyl, or hydroxy alkyl radical of from about 8 to about 24 carbon atoms, from 0 to about 10 ethylene oxide moieties and from 0 to 1 glyceryl moiety; Y is nitrogen; R¹ and R³ are short chain alkyl or monohydroxy alkyl groups containing 1 to about 3 carbon atoms; x is 0 to 1; R⁴ is an alkylene or hydroxy alkylene of from 1 to about 4 carbon atoms; and Z is a radical selected from the group consisting of carboxylate and sulfonate groups;
c. about 1–50% of a nonionic polyoxyethylene-polyoxypropylene block copolymer surfactant having a water solubility of at least one gram per 100 ml. of water and a molecular weight within the range of about 1,000 to about 15,000; and
d. 10–80% water.

3,852,211

DETERGENT COMPOSITIONS

Tom H. Ohren, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 9, 1972, Ser. No. 279,127

Int. Cl. C11d 9/10, 3/065

U.S. Cl. 252—110 17 Claims

1. A fabric laundering composition comprising
A. granular particles which comprise
i. from about 30% to about 80% by weight of said granular particles of a soap compound, and

ii. from about 1% to about 30% by weight of said granular particles of a soap-curd-dispersing agent; and
B. an impalpable smectite clay having an ion exchange capacity of at least about 50 meg/100 grams, attached to the surface of said granular particles;
said composition having a weight ratio of granular particles to impalpable smectite clay of from about 20:1 to 3:1.

3,852,212

METHOD OF PRODUCING HYDRATED SODIUM TRIPOLYPHOSPHATE COMPOSITION
Harvey F. Groening, and Paul L. Hensler, both of Lawrence, Kans., assignors to FMC Corporation, New York, N.Y.
Filed Nov. 29, 1972, Ser. No. 310,309
Int. Cl. C11d 3/06

U.S. Cl. 252-135

3 Claims

1. In the method of producing hydrated granular sodium tripolyphosphate of low bulk density wherein anhydrous sodium tripolyphosphate feed material, containing at least 10 percent by weight of anhydrous sodium tripolyphosphate having a particle size below 100 mesh, is hydrated with not in excess of 105 percent of the theoretical quantity of water necessary to produce the hexahydrate, and wherein the water is distributed uniformly over said anhydrous feed material while it is being agitated at a rate to keep the hydrating mixture below 80° C and to produce an agglomerated hydrate by the action of the water, grinding the coarse, agglomerated hydrate, separating a particle size range of about -20 to +60 mesh as product, and recycling remaining hydrated sodium tripolyphosphate fines to the feed material, the improvement which comprises adding to said anhydrous sodium tripolyphosphate feed material prior to hydration at least about 2 percent by weight of an alkali metal pyrophosphate and recovering a sodium tripolyphosphate hexahydrate product whose bulk density has been reduced to a range of from 0.65 to 0.71 g/cc.

3,852,213

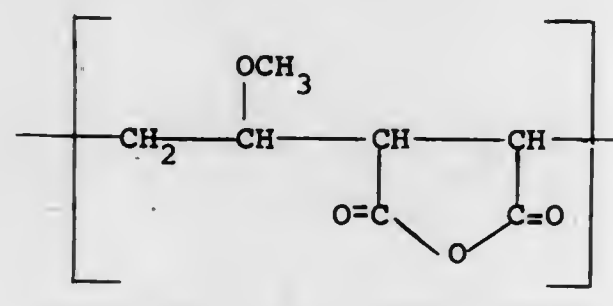
CHELATING COMPOSITIONS AND DETERGENT COMPOSITIONS PERTAINING TO SAME
William J. Cooney, Hixson, Tenn., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,225
Int. Cl. C02b 5/00

U.S. Cl. 252-181

1 Claim

1. The method of preparing a chelating composition consisting essentially of 97-70 percent of a polyvinyl methyl ether-maleic anhydride copolymer characterized by the formula:



and having a specific viscosity of from about 0.1 to about 3.5 determined from a solution of 1 g. of the copolymer in 100 ml of methyl ethyl ketone at 25°C and 3-30 percent of a boron compound consisting essentially of a hydrated sodium, lithium or potassium borate sufficient to provide the necessary pH control and furnish water required for hydrolysis of said polyvinyl methyl ether-maleic anhydride copolymer which comprises dry blending between 97-70 percent of said copolymer and between 3-30 percent of said borate to provide an intimate mixture and then dissolving said mixture in water.

3,852,214
LIQUID POLYSULFIDE POLYMER GLASS-TO-METAL SEALANT COMPOSITION

John P. Gallagher, Milton Square, N.J.; Robert M. Meyers, Fairless Hills, Pa.; Earl H. Surg, Trenton, N.J., and Clark M. Willits, Levittown, Pa., assignors to Thiokol Corporation, Bristol, Pa.

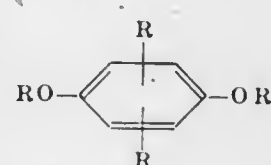
Division of Ser. No. 76,300, Sept. 28, 1970, Pat. No. 3,697,472. This application May 25, 1972, Ser. No. 256,737
Int. Cl. B01j 1/18

U.S. Cl. 252-403

5 Claims

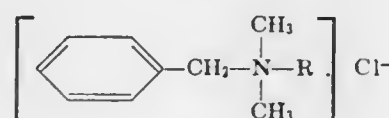
1. An ultraviolet radiation adhesion stabilizing and curing and adhesion rate regulating composition for use with curable systems of liquid polysulfide polymers and metal oxide curing agents comprising in admixture:

a. from about 0.1 to 5 parts by weight per 100 parts by weight of liquid polysulfide polymer of ultraviolet radiation adhesion stabilizer selected from the group consisting of quinone and a composition having the formula



where R is selected from the group consisting of H and an alkyl having from 1 to 6 carbon atoms; and

b. from about 0.1 to 1 part by weight per 100 parts by weight of said polymer of curing and adhesion rate regulator quaternary ammonium chloride represented by the formula



wherein R represents an alkyl containing from 8 to 24 carbon atoms.

3,852,215

CATALYST FOR HYDROCARBON CONVERSION
Pierre Duhaud, Vesinet, and Jean Miquel, Paris, both of France, assignors to Societe Francaise des Produits Pour Catalyse, Rueil-Malmaison, France

Filed Dec. 13, 1972, Ser. No. 314,588

Claims priority, application France, Dec. 13, 1971, 71.44781

Int. Cl. B01j 1/178, 1/112

U.S. Cl. 252-441

10 Claims

1. A new catalyst containing (a) an alumina carrier, (b) platinum, (c) iridium and (d) at least one metal selected from the group consisting of scandium, yttrium, titanium, zirconium, hafnium and thorium, the catalyst containing from 0.005 to 1% by weight of platinum, from 0.005 to 1% by weight of iridium and from 0.005 to 5% by weight of at least one metal of the group consisting of scandium, yttrium, titanium, zirconium, hafnium and thorium, with respect to the catalyst carrier.

3,852,216

PROCESS FOR PRODUCING COARSE PARTICLES OF ACTIVE CARBON IN A FLUIDIZED BED WITH ADDED INERT PARTICLES

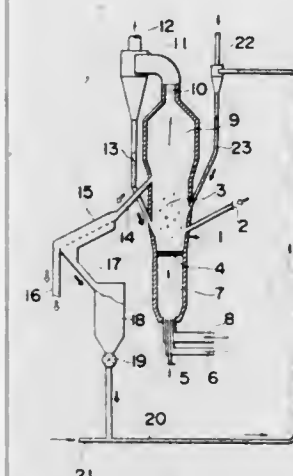
Nobutaka Ninomiya, Kyoto, and Daizo Kunii, Tokyo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 31, 1972, Ser. No. 285,363

Claims priority, application Japan, Sept. 4, 1971, 46-68417
Int. Cl. C01b 31/08

U.S. Cl. 252-421

4 Claims



1. A process for producing coarse particles of active carbon which consists essentially of continuously supplying to a fluidized bed, particles of carbon or a carbonaceous material from the group consisting of coke, charcoal, and coal having an average particle size of 2 to 20 mm with a finely powdered inert material having a particle size of from 0.05 to 2.0 mm, which inert material does not interfere with the reaction and can be readily separated from the active carbon thus-produced, said inert material being present in an amount of 1 to 4 times by volume of the carbon or carbonaceous particles, introducing a combustion gas, a waste gas or a hot waste gas of a temperature within the range of 600° to 2000°C containing 20 to 80 percent by volume of steam into the mixture of particles and inert material so as to execute the activation or the carbonization and activation of said particles while the mixture is forming a fluidized bed in the reactor, taking out the produced coarse particles of active carbon together with the inert material from the reactor, separating the produced coarse particles of active carbon from the inert material, and recycling said inert particles to said fluidized bed; and wherein in said process both the particles of carbon or carbonaceous material and the inert material are introduced to the lower portion of the fluidized bed and taken out from the upper portion of the fluidized bed to the outside while the gas flows to pass through the fluidized bed from the lower portion to the upper portion.

3,852,217

METHOD OF REGULATING THE HALOGEN CONTENT OF HYDROCARBON CONVERSION CATALYSTS

Philippe Engelhard, and Joseph Edouard Weisang, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Aug. 23, 1972, Ser. No. 283,062

Claims priority, application France, Aug. 26, 1971, 71.31010

Int. Cl. B01j 1/178

U.S. Cl. 252-442

17 Claims

1. A chlorine-stabilized hydrocarbon conversion catalyst consisting essentially of a chlorinated support, said support being a porous refractory oxide, and platinum deposited on said support by impregnation with a solution containing platinum, said catalyst having been over-chlorinated during the impregnation step, thereafter calcinated and then washed with liquid water to remove substantially all the water-extractable

chlorides to leave a more stabilized final chlorine content of between 0.5 and 1.2% of the weight of the catalyst, where the percentage of chlorine is calculated on the basis of the elemental form.

3,852,218

SICL₄-ALCL₃ COCATALYST SYSTEM
Ronald Frank Phillips, New Milford, Conn., assignor to Arizona Chemical Company, Wayne, N.J.

Division of Ser. No. 318,947, Dec. 27, 1972, Pat. No. 3,816,381. This application Oct. 29, 1973, Ser. No. 410,934
Int. Cl. B01j 1/178

U.S. Cl. 252-442

2 Claims

1. A substantially anhydrous cocatalyst system consisting essentially of from 1 to 2 parts of silicon tetrachloride and from 5 to 10 parts by weight of aluminum chloride.

3,852,219

ODORANT COMPOSITIONS INCLUDING 2-BUTYL-1-ALKYNYLCYCLOALKAN-1-OLS AND DERIVATIVES THEREOF

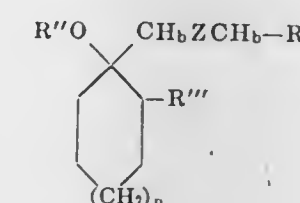
Edward J. Nikawitz, Glen Rock; Robert F. Tavares, Cedar Grove, and William M. Easter, Jr., Hasbrouck Heights, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.
Division of Ser. No. 88,494, Nov. 10, 1970, Pat. No. 3,769,330.
This application May 25, 1973, Ser. No. 363,933

Int. Cl. C11b 9/00

U.S. Cl. 252-522

4 Claims

1. An odorant composition comprising a perfume mixture including an olfactible amount of a compound of the formula



where

R' is hydrogen or methyl.

R'' is hydrogen or lower alkanoyl

R''' is butyl

n is 0, 1 or 2; Z is a single, double, or triple bond, and b corresponds to 2, 1, or 0.

3,852,220

ISOCYANURATE-BASED POLYELECTROLYTE DETERGENT COMPOSITION

Albert L. Kimmel, Kansas City, Mo.; Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

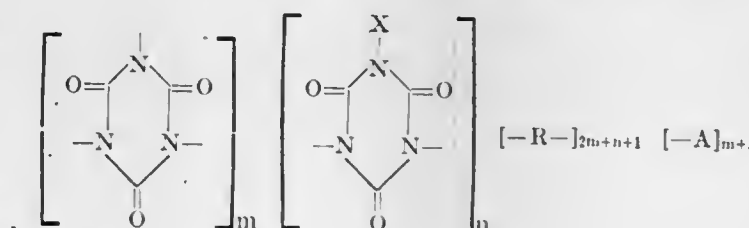
Filed Jan. 12, 1972, Ser. No. 217,223

Int. Cl. C07d 55/00; C08g 22/04; C11d 3/28

U.S. Cl. 252-524

6 Claims

1. An improved detergent composition consisting essentially of at least about 2 to about 70 weight percent of a surfactant and about 2 to about 20 weight percent of an isocyanurate-based polyelectrolyte, wherein said isocyanurate-based polyelectrolyte has the following chemical structure:



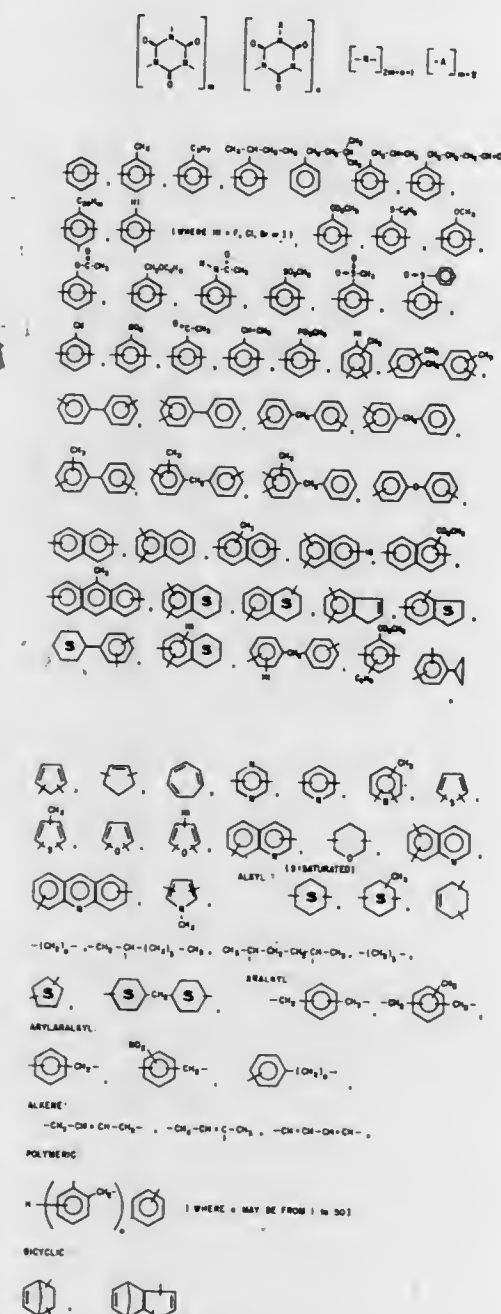
wherein:

R = divalent hydrocarbon or substituted hydrocarbon radical and contains about 2 to about 30 carbon atoms selected from the groups of FIGS. 2 and 3

X = a monovalent radical selected from the group consisting of: Li, Na, K, Rb, Cs, Ca, Ag, Be, Mg, Ca, Sr, Ba, Ra, Zn, Cd, Hg, B, Al, Ac, Ga, In, Tl, Ti, Zr, Hf, Ge, Sn, Pb, V, Nb, Ta, Sb, Bi, Cr, Mo, W, Mn, Fe, Ru, Co, Ni, Rh, Pd, Ir, hydrogen and quaternary ammonium groups,

A = a monovalent organic radical,

R' = monovalent hydrocarbon or substituted hydrocarbon radical,



m = average number of trisubstituted isocyanurate rings and is a positive integer from 0 to about 400,
 n = average number of isocyanuric acid and/or isocyanurate salt groups, and is a positive integer from 1 to about 10,000,
 2m + n + 1 = average number of divalent R groups and is a positive integer from 2 to about 110,000,
 m + 2 = average number of A groups and is a positive integer from 2 to about 2,000,
 and wherein there are no N-to-N bonds, no A-to-A bonds, and no R-to-R bonds.

3,852,221

LIQUID OLEFIN SULFONATE DETERGENT

Floyd Edward Bentley, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Aug. 19, 1971, Ser. No. 173,314

Int. Cl. C11d 1/14, 1/831

U.S. Cl. 252-548

6 Claims

1. A detergent composition consisting essentially of a clear homogeneous liquid of (A) 19 to 30 wt. percent of an olefin

sulfonate component; (B) 8 to 15 wt. percent of an alcohol ether sulfate component; (C) 3 to 7 wt. percent of a substituted fatty acid amide component; (D) 1 to 8 wt. percent of a sulfonated hydrotrope component; (E) 1 to 8 wt. percent of a monohydric water-miscible alcohol; and (F) 32 to 68 wt. percent water; wherein said component (A) consists essentially of (1) 7 to 60 wt. percent of a C₁₄ alpha-olefin sulfonate, and (2) 93 to 40 wt. percent of a vinylidene-olefin sulfonate, wherein said vinylidene-olefin sulfonate (2) consists essentially of C₁₄ or C₁₆ vinylidene-olefin sulfonate, and admixtures thereof, provided however that the total amount of said vinylidene olefin sulfonate component (2) shall not exceed 80 wt. percent of said component (A) when said vinylidene-olefin sulfonate contains 95 wt. percent or more C₁₆ vinylidene-olefin sulfonate; wherein said component (B) is a sulfated 2 to 5 mole polyethoxylate of a monohydric C₁₀ to C₁₈ alcohol; wherein said component (C) is a fatty acid monoethanolamide, a fatty acid isopropanolamide, a fatty acid diethanolamide, or a fatty acid glyceryl amide and wherein the fatty acid portion is a C₁₀ to C₁₆ aliphatic acid, and admixtures thereof, and wherein said component (D) is an alkali metal salt of xylene sulfonate, toluene sulfonate, benzene sulfonate, or admixtures thereof.

3,852,222

FLUORINATED EPOXY RESINS

Donald E. Field, Falls Church, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

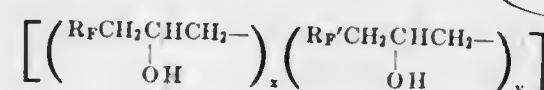
Filed June 25, 1973, Ser. No. 373,322

Int. Cl. C08g 22/14, 30/02

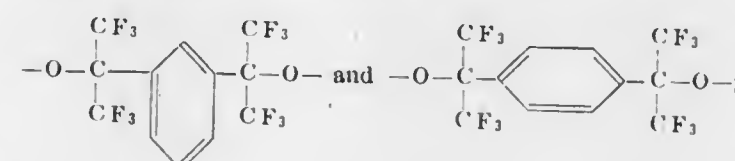
U.S. Cl. 260-2 EP

10 Claims

1. A random epoxy-terminated copolymer comprising recurring units of the formula:



wherein R_F is selected from the group consisting of



R_F' is -OCH₂(CF₂)_zCH₂O- z being an integer from about 2 to 12; x is an integer from 1 to about 4, and y is an integer from 0 to about 4, with proviso that y is not always equal to 0.

3,852,223

PROCESS FOR DISPOSING OF HALOGEN-CONTAINING PLASTICS

Reinhard D. Bohme, Burr Ridge, Ill., and Ritchie A. Wessling, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 3, 1972, Ser. No. 268,466

Int. Cl. C08f 47/24, 9/00

U.S. Cl. 260-2.3

4 Claims

1. In the process of disposing of vinylidene chloride polymers by incineration wherein the polymer is preheated to dehydrohalogenation temperatures the improvement comprising the sequential steps of (1) preparing an admixture of vinylidene chloride polymer and catalytic amounts of a Lewis acid, (2) degassing said mixture, (3) heating said mixture under vacuum or in an inert atmosphere at a temperature of at least about 70°C. to produce a substantially linear, soluble, conjugated polymer of chloroacetylene among other chlorine-containing by-products, then (4) removing said polymer of chloroacetylene and said other halogen-containing by-products by extraction thereof in an organic solvent.

3,852,224

MICROPOROUS FILMS

Douglas J. Bridgford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Sept. 14, 1972, Ser. No. 289,197

Int. Cl. C08f 47/08; C08b 29/12; C08c 17/12

U.S. Cl. 260-2.5 M

16 Claims

1. In a process for forming a microporous solid polymer in which said polymer is solidified in admixture with a finely dispersed poreformer which is subsequently leached therefrom, the improvement which comprises solidifying said polymer in admixture in a liquid medium with a poreformer surfactant material finely dispersed as micelles and treating said solidified polymer with a solvent in which said polymer is substantially swollen and in which said micelles revert to molecular size whereby the micellar poreformer is leached out producing a microporous structure comprising a plurality of pores of the size of micelles or micelle aggregates.

3,852,225

POLYMER COMPOSITION HAVING HIGH FLOW PROPERTY

Narimasa Ishikawa, Tokyo; Susumu Suzuki; Yasuhiro Ougusa, both of Yokohama, and Koozo Arai, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,827

Claims priority, application Japan, Dec. 14, 1972, 47-125532

Int. Cl. C08c 9/04, 11/22; C08d 9/04

U.S. Cl. 260-5

13 Claims

1. A polymer composition having a high flow property, which comprises 100 parts by weight of a polymer component consisting of at least one polybutadiene having a 1,2-addition unit content of 70 percent or higher, a crystallinity of 5 to 50 percent, and an intrinsic viscosity of 0.7 dl/g or higher as measured in toluene at 30°C., or a polymer component consisting of a major amount of at least one said polybutadiene and a minor amount of a rubbery polymer co-vulcanizable therewith; 1 to 200 parts by weight of a filler; and up to 200 parts by weight of a process oil.

3,852,226

MELT-CONDENSED POLYAMIDE INTERPOLYMERS

Jerome William Sprauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 208,930, Dec. 16, 1971, Pat. No. 3,784,495. This application Apr. 19, 1973, Ser. No. 352,740

The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.

Int. Cl. C08g 20/04

U.S. Cl. 260-18 N

9 Claims

1. A melt-condensed polyamide interpolymer consisting essentially of at least four different recurring polyamide repeat units in which

- 35 to 55 percent of the amide equivalents are polymethylene-ω-amino acid repeat units of six to 20 carbon atoms,
 - 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of six to 20 carbon atoms and the diacid is polymethylene diacid of six to 20 carbon atoms,
 - 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of six to 20 carbon atoms and the diacid is polymethylene diacid of six to 20 carbon atoms different from the diacid of (b) above, and
 - 10 to 30 percent of the amide equivalents are diamine diacid repeat units in which the diamine is polymethylene diamine of six to 20 carbon atoms and the diacid is polymethylene diacid of six to 20 carbon atoms different from the diacids of (b) and (c) above,
- said polyamide interpolymer having a crystalline heat of fusion of 3 to 15 calories per gram and melting completely at 125°C.

3,852,227

PHOTO-DEGRADABLE POLYOLEFIN RESIN COMPOSITION

Hisayuki Matsuda, Kyoto; Hirohumi Mori, Osaka, and Hajime Matoba, Nara, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1972, Ser. No. 318,777

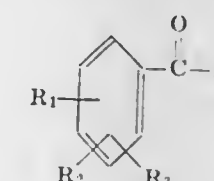
Claims priority, application Japan, Dec. 28, 1971, 47-2182

Int. Cl. C08f 45/00

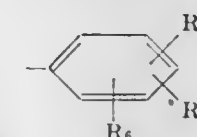
U.S. Cl. 260-23 H

15 Claims

1. A photo-degradable polyolefin comprising (A) a polyolefin and (B) 0.2 to 10 parts by weight per 100 parts by weight of said polyolefin, of a photo-degrading agent consisting of (a) 5 to 70% by weight, based on the photo-degrading agent of, at least one carbonyl compound expressed by the following formula



wherein R is a member selected from the group consisting of lower alkyl groups which may be substituted by halogen, lower alkoxy or nitro and which may be bonded to the carbon atom at the ortho-position of the benzene nucleus of formula (1) directly or via -CO- to form a fused ring, and groups expressed by the following formula



with the proviso that the carbon atom adjacent to the carbon atom bonded to -CO- in formula (1) may be bonded to the carbon atom at the ortho-position of the benzene nucleus of formula (1) directly or via -CO-; and R₁, R₂, R₃, R₄, R₅ and R₆, which may be the same or different, represent a member selected from the group consisting of hydrogen, halogen, hydroxyl, lower alkyl, lower alkoxy and nitro, with the proviso that when at least one of R₁, R₂, R₃, R₄, R₅ and R₆ is a hydroxyl group, said hydroxyl group is not bonded to the carbon atom of the benzene nucleus adjacent to the carbon atom of the benzene nucleus bonded to the -CO- group in formula (1);

and (b) 30 to 95 percent by weight, based on the photo-degrading agent, of at least one compound selected from the group consisting of aliphatic carboxylic acids having 6 to 20 carbon atoms, and zinc, magnesium, aluminum, calcium and barium salts of said aliphatic carboxylic acids.

3,852,228

THIXOTROPIC COATING COMPOSITION

Don R. Brothers, 3857 Fairway Dr., Canfield, Ohio

Continuation-in-part of Ser. No. 104,455, Jan. 7, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,265

Int. Cl. C08d 9/08

U.S. Cl. 260-23.7 M

13 Claims

1. A sprayable thixotropic coating composition comprising: a. about 3 to about 15 weight percent of butyl rubber; b. about 3 to about 15 weight percent polybutene, said polybutene having a molecular weight of at least about 50,000; c. about 2 to about 30 weight percent drying oil; d. about 13 to about 25 weight percent aromatic solvent; e. about 4 to about 23 weight percent of pigment; and f. up to about 2 weight percent of a drier.

wherein each R is individually selected from hydrogen, or alkyl of up to 4 carbon atoms per R group such that at least one R group represents —COOM, the total of —COOM groups is not over 2, and M represents hydrogen or said metal of Group IA or IIA.

3,852,238 FLAME RETARDANT POLYCARBONATE COMPOSITION

John B. Luce, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 215,155, Jan. 3, 1972, Pat. No. 3,796,772.

This application Oct. 15, 1973, Ser. No. 406,602

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 R

3 Claims

1. A flame retardant polymer composition comprising mixtures of a carbonate polymer and 0.01–2.0 weight percent of calcium titanate, said polycarbonate composed of a copolymer of an unsubstituted dihydric phenol and halogen substituted dihydric phenol; said halogen being selected from the group consisting of bromine and chlorine.

3,852,239

ADAMANTANE BASE POLYBENZOXAZOLE

Gunter Gert Bellmann, Geneva; Alain Maurice Groult, Annemasse, and John Harry Arendt, Collonge-bellerive, all of France, assignors to Etat Francais, represente par le Ministre d'Etat Charge de la Defense Nationale-Delegation Ministerielle Pour l'Armement-Direction des Recherches et Moyens d'Essais, Paris, France

Filed June 21, 1973, Ser. No. 372,043

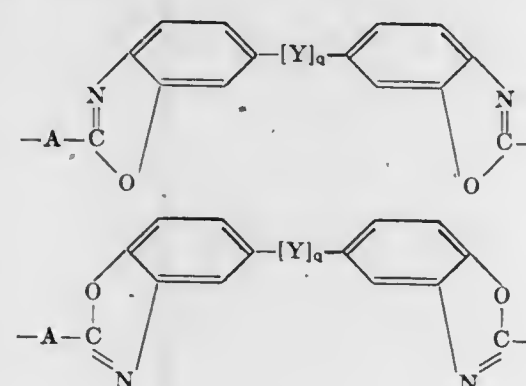
Claims priority, application France, June 21, 1972, 72.22291

Int. Cl. C08g 33/02

U.S. Cl. 360—46.5 R

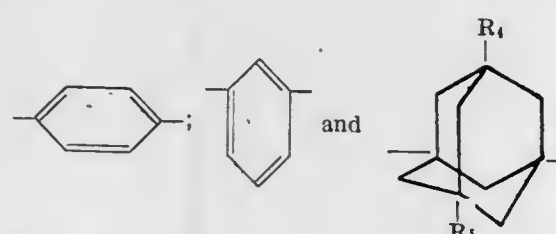
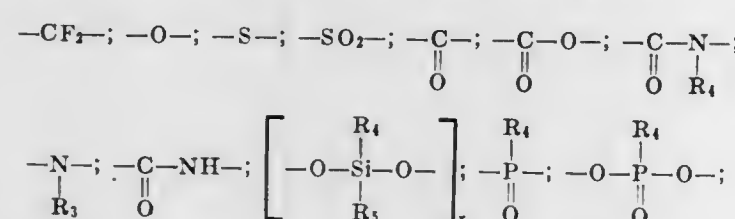
1 Claim

1. Polybenzoxazole consisting essentially of recurrent units forming macromolecular chains and being of one of the two following formulas:



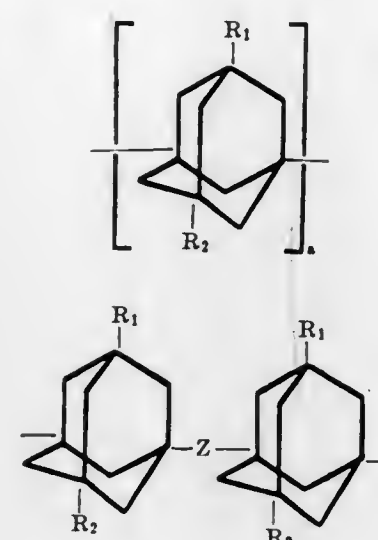
in which

Y represents one of the following atoms or groups:



R₄ and R₅ each representing an alkyl or alkoxy group with 20 carbon atoms at the most, or a phenyl or phenoxy

group, and x is a whole number equal to 3 at the most; q is 0 or 1; A is a divalent organic group having one of the two following formulas:

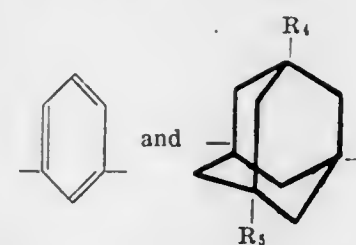
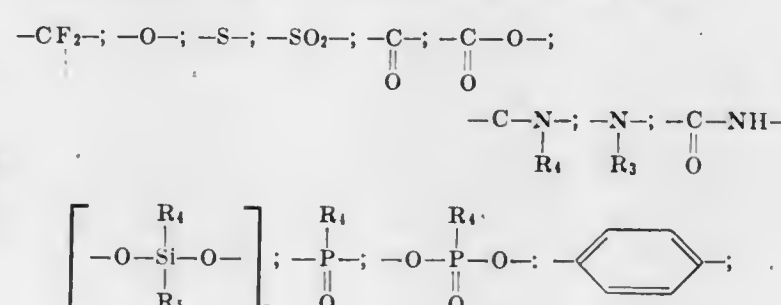


wherein

a is a whole number equal at the most to 3,

R₁ and R₂ each represent an atom or group selected from among the following: H, alkyl with at the most 20 carbon atoms, CF₃, Si(R₃)₃, adamantyl, phenyl, alkoxy with 20 carbon atoms at the most, O-Si(R₃)₃, R₃ being a phenyl radical or an alkyl radical with 20 carbon atoms at the most, and

Z represents one of the following atoms or groups:



R₄ and R₅ each representing an alkyl or alkoxy group having 20 carbon atoms at the most, or a phenyl or phenoxy group, and x is a whole number equal to 3 at the most.

3,852,240

RAPID SETTING FORMALDEHYDE-EPOXY RESIN COMPOSITIONS

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 18, 1973, Ser. No. 324,738

Int. Cl. C08g 30/04, 30/14

U.S. Cl. 260—47 EP

10 Claims

1. A room temperature stable epoxy resin composition comprising

A. an epoxy resin having an average of more than one glycidyl ether group per molecule and

B. formaldehyde, linear or cyclic polymers thereof, or an adduct of formaldehyde with a compound containing a plurality of aliphatic hydroxyl groups;

wherein the weight ratio of epoxy resin:formaldehyde is from about 3.6:1 to about 36:1 and wherein component B is dissolved in a solvent selected from water, alcohols, or monoethers of ethylene polyglycols and propylene polyglycols.

3,852,241

AROMATIC COPOLYAMIDES CONTAINING QUINAZOLINEDIONE RINGS AND THREADS THEREOF WITH HIGH MODULUS OF ELASTICITY AND HIGH TENSILE STRENGTH

Gerhard Dieter Wolf; Hans Egon Kunzel, both of Dormagen; Gunter Blankenstein, Stommeln, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 4, 1973, Ser. No. 403,390

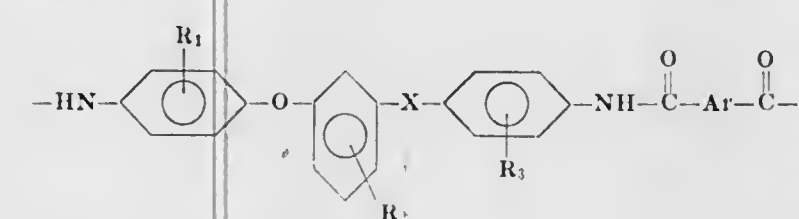
Claims priority, application Germany, Oct. 4, 1972, 2248663

Int. Cl. C08g 20/20

U.S. Cl. 260—47 CZ

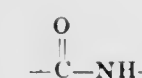
7 Claims

1. A high-molecular weight aromatic copolyamide, consisting essentially of 50 to 95 mols-% of structural units of the general formula I

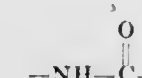


in which

X represents the group



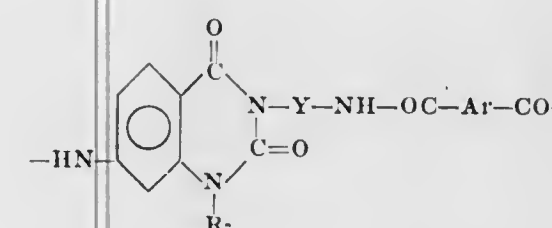
or



R₁ and R₂ are independent of each other and represent hydrogen, a C₁–C₄ alkoxy group, an alkyl group or halogen atom,

R₃ represents hydrogen, halogen, a C₁–C₄ alkyl group, an alkoxy group, a nitrile group, a —COOR₄— or a CONR₅R₆ group,

Ar represents a divalent aromatic group, R₄ representing hydrogen or a C₁–C₄ alkyl group and R₅ and R₆ representing, independently of each other, hydrogen, a C₁–C₄ alkyl group or an aryl group, and 5–50 mols-% of structural units which contain 2,4-(1H,3H)-quinazolinedione ring systems, which structural units are represented by the following general formula II



in which

R₇ represents hydrogen or a C₁–C₄ alkyl group,

Y represents a bivalent aromatic group, consisting of one or more condensed aromatic rings or aromatic rings which are joined together by a single bond or by a —CO—, —CR₇R₇—, —O—S— or —SO₂— group, and their alkyl substitution or halogen substitution products, and

Ar represents a divalent aromatic group, the copolyamides having a relative solution viscosity (η_{rel}) determined on a 0.5% solution of the copolyamide in concentrated sulphuric acid at 25°C) of 1.4 to 4.

3,852,242

METHOD FOR MAKING POLYETHERIMIDE

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

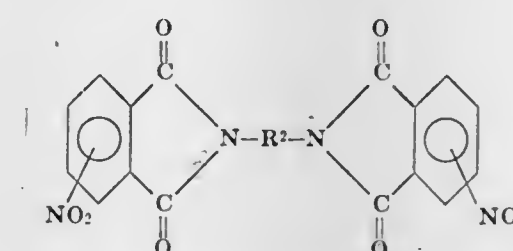
Filed Dec. 3, 1973, Ser. No. 421,262

Int. Cl. C08g 20/32

U.S. Cl. 260—47 CZ

7 Claims

1. A method for making polyetherimide which comprises, 1. effecting reaction at temperatures up to 80°C in the presence of a dipolar aprotic solvent between a bis-(nitrophthalimide) of the formula,



where R² is a divalent aromatic radical, and at least an equal molar amount of an alkali metal diphenoxide to form polyetherimide,

2. effecting the precipitation of the polyetherimide from the resulting reaction mixture, and 3. recovering the polyetherimide from (2), where said alkali metal diphenoxide is the dry powder reaction product of a sodium alkoxide and a dihydric phenol in the presence of a C₍₁₋₃₎ alkanol.

3,852,243

POLYPHENYLQUINOXALINES CONTAINING LATENT CROSSLINKING GROUPS

Paul M. Hergenrother, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 287,407, Sept. 8, 1972, Pat. No. 3,778,412, which is a continuation-in-part of Ser. No.

139,884, May 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 846,576, July 31, 1969, abandoned. This application July 23, 1973, Ser. No. 381,913 Claims priority, application Great Britain, Aug. 21, 1972, 38828/72

Int. Cl. C08g 33/02

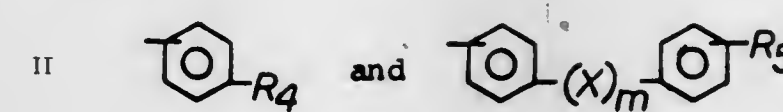
U.S. Cl. 260—50

36 Claims

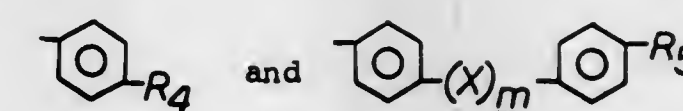
1. Polymers comprising units of the formula



wherein Ar is a tetravalent aromatic group, R₁ is a divalent aromatic group and R₂ and R₃ are individually selected from the group



wherein m is 0 or 1, X is —O—, —S—, —CH₂— or



and R₄ and R₅ are —CN or —OCN.

3,852,244

POLYETHERQUINOXALINES

Darrell R. Heath, Overland Park, Kans., and Joseph G. Wirth, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

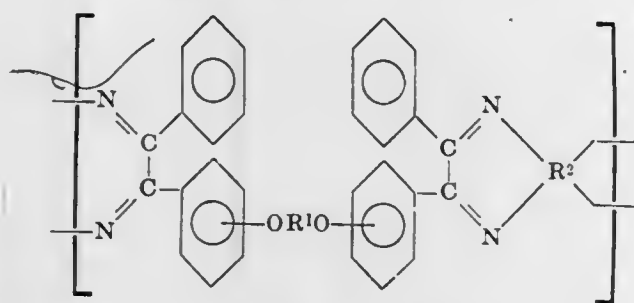
Filed Nov. 23, 1973, Ser. No. 418,250

Int. Cl. C08g 33/02

U.S. Cl. 260—50

8 Claims

1. Moldable polymeric materials having recurring quinoxaline groups and an intrinsic viscosity of from 0.1 to 2.0 in chloroform at 25°C consisting essentially of the following chemically combined units



where R¹ is a divalent aromatic radical having from 6-30 carbon atoms, and R² is a tetravalent aromatic organic radical.

3,852,245

LOW TEMPERATURE EPOXY RESIN CURING AGENT COMPRISING BLEND OF AN ANHYDRIDE MIXTURE, AN ANHYDRIDE HALF ESTER, AND URANYL SALT

Norman W. Gregorik, Minneapolis, and Frank D. Swanson, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 185,861, Oct. 10, 1971, abandoned. This application June 14, 1973, Ser. No. 370,076

Int. Cl. C08g 30/06, 30/12

U.S. Cl. 260—59

1 Claim

1. A composition which is useful with material sensitive to shock, extreme temperature or chemical attack comprising an epoxy novolac resin, which is cured with a curing agent at a temperature less than 170°F, and said curing agent comprising an eutectic mixture of 30.8 percent by weight chlorendic anhydride, 23.1 percent by weight maleic anhydride and 46.1 percent by weight methyl tetrahydrophthalic anhydride which is partially reacted to the corresponding half ester by reaction with dipropylene glycol and a catalyst comprising uranyl acetylacetonate dispersed in said glycol such that from 50 percent to 80 percent by weight is dissolved in said glycol.

3,852,246

POLYESTERIMIDE RESINS

Karl Schmidt, and Gerhard Neubert, both of Hamburg, Germany, assignors to Dr. Beck & Co. GmbH, Hamburg, Germany

Continuation of Ser. No. 18,373, March 12, 1970, abandoned, which is a continuation of Ser. No. 706,187, Feb. 16, 1968, abandoned, which is a continuation of Ser. No. 458,746, May 25, 1965, abandoned. This application Feb. 29, 1972, Ser. No. 230,535

Int. Cl. C08g 20/32

U.S. Cl. 260—75 N

8 Claims

1. In a process for the preparation of a heat-hardenable polyesterimide resin which comprises the steps of reacting at least one polybasic carboxylic acid or reactive derivative thereof with at least one polyhydric alcohol and at least one polyvalent primary amine or reactive derivative thereof to form a polycondensation product containing, in addition to ester groups, at least one five-membered imide ring in the polymer chain, the improvement which comprises carrying out the reaction of the starting materials to form said polycondensation product in the presence of a surplus of at least one lower molecular weight, volatile glycol, said surplus being at

least 2 mol glycol per ester group present in said polycondensation product, at least a part of the surplus of said glycol being separated off after the polycondensation has been effected.

3,852,247

POLYMERIZATION CATALYST

Louis Vizurraga, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

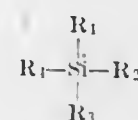
Division of Ser. No. 86,302, Nov. 2, 1970, Pat. No. 3,758,535, which is a continuation-in-part of Ser. No. 879,618, Nov. 24, 1969, abandoned. This application May 11, 1973, Ser. No. 359,178

Int. Cl. C08g 17/015

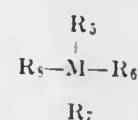
U.S. Cl. 260—75 R

29 Claims

1. In a process for preparing a polyester comprising condensing a lower dialkyl ester of a dicarboxylic acid with a glycol, the improvement which comprises condensing said ester and said glycol in the presence of from about 0.01 to about 2.0 percent (by weight of said ester) of the product of the process of reacting a first compound of the formula



with a second compound of the formula



wherein:

- M is selected from the group consisting of aluminum, germanium, tin, titanium, zirconium, arsenic, antimony, and bismuth;
- R₂ and R₄ are selected from the group consisting of chlorine and hydroxy;
- The remaining R substituents are selected from the group consisting of alkyl of 1 to about 18 carbon atoms, acyl of 1 to about 18 carbon atoms, alkoxy of 1 to about 18 carbon atoms, aryl of 6 to about 18 carbon atoms, aryloxy of 6 to about 18 carbon atoms, and hydrogen, provided that at least one of R₃, R₆, R₇, and R₈ is not hydrogen; and
- in said reaction from about 0.1 to about 20 moles of said second compound per mole of said first compound are reacted, for from about 1.0 to about 6 hours.

3,852,248

FILM FORMING POLYAMIDE COMPOSITION CONTAINING FUMARIC ACID AND TRIMELLITIC ACID RESIDUES

James R. Stephens, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

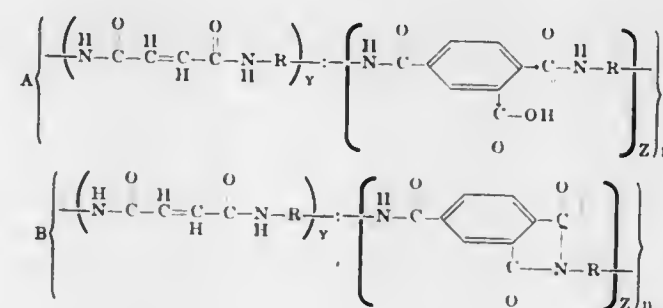
Filed Mar. 13, 1972, Ser. No. 234,395

Int. Cl. C08g 20/32

U.S. Cl. 260—78 TF

3 Claims

1. A film forming copolymer consisting essentially of a polyamide and polyamide-imide of repeating units of the formula:



wherein → indicates isomerism, R is a divalent aromatic carbocyclic radical, and Y is the mole fraction of the fumaric acid diamido moiety and Z is the mole fraction of the aromatic acid diamido moiety in the polymer chain and the ratio of Y:Z ranges from 20:1 to 0.05:1 and n is an integer greater than 5.

3,852,249

ANTISTATIC AGENT FOR POLYMERIC MATERIALS

Yoshio Miyabe, Ibaragi; Takehiko Fujimoto, Kyoto; Shogo Nukina, and Ataru Suwada, both of Osaka, all of Japan, assignors to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo and Sanyo Chemical Industries, Ltd., Kyoto-fu, both of, Japan

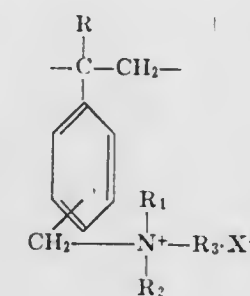
Filed Mar. 5, 1973, Ser. No. 338,184

Int. Cl. C08f 15/40, 27/08

U.S. Cl. 260—78.5 R

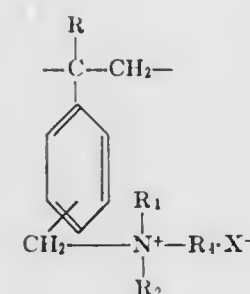
14 Claims

1. A water-soluble antistatic agent for polymeric materials, said antistatic agent comprising a water-soluble polymer containing, as indispensable components, constituent units respectively represented by the formula



(1)

and the formula



(2)

Where:

- R is hydrogen atom or an alkyl group having at the most 4 carbon atoms;
R₁, R₂, and R₃ are independently alkyl groups each having at the most 4 carbon atoms;
R₄ is an alkyl group having at least 16 carbon atoms; and
X⁻ is an anion,
and a constituent unit obtained from a copolymerizable carboxylic acid or a salt thereof.

3,852,250

VULCANIZATION SYSTEM CONTAINING A THREE-COMPONENT ACCELERATOR SYSTEM

Frank S. Maxey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 18, 1972, Ser. No. 245,263

Int. Cl. C08c 11/62; C08d 9/00; C08f 27/06

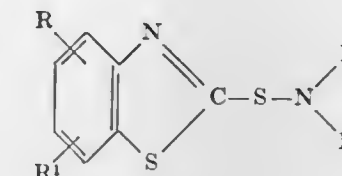
U.S. Cl. 260—79.5 B

8 Claims

1. A sulfur vulcanizable rubber containing 0.00 to 3.25 parts by weight of free sulfur per 100 parts by weight of rubber

and 0.5 to 5.50 parts by weight per 100 parts by weight of rubber, of an accelerator system comprising

- 2-(morpholinodithio)-benzothiazole,
- at least one benzothiazole accelerator having the following structural formula



wherein R and R¹ are selected from the group consisting of hydrogen, nitro, chloro, alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms and wherein R² is selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R³ is selected from hydrogen and the radicals for R² and R² and R³ can be joined through a member selected from the group consisting of —CH₂—, —O— and —S— to constitute with the attached nitrogen group a heterocyclic radical and

C. 4,4'-dithiomorpholine
wherein the weight ratio of A/B/C is 20 to 70/10 to 60/10 to 60 based on 100 parts by weight of A, B and C, and wherein the total weight of sulfur plus accelerator system is from 2.25 to 5.50 parts by weight per 100 parts by weight of rubber.

3,852,251

TWO-COMPONENT ACCELERATOR SYSTEM FOR VULCANIZABLE RUBBERS

Frank S. Maxey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 18, 1972, Ser. No. 245,264

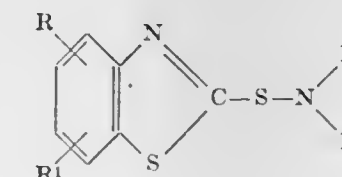
Int. Cl. C08c 11/62; C08d 9/00; C08f 27/06

U.S. Cl. 260—79.5 B

7 Claims

1. A sulfur vulcanizable rubber containing 0.10 to 3.25 parts by weight of free sulfur per 100 parts by weight of rubber and 0.5 to 3.25 parts by weight per 100 parts by weight of rubber, of an accelerator system comprising

- 2-(morpholinodithio)-benzothiazole, and
- at least one benzothiazole accelerator having the following structural formula



wherein R and R¹ are selected from the group consisting of hydrogen, nitro, chloro, alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms and wherein R² is selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R³ is selected from the group consisting of hydrogen and the radicals for R², and R² and R³ can be joined through a member selected from the group consisting of —CH₂— and —S— to constitute with the attached nitrogen group a heterocyclic radical wherein the weight ratio of A/B is 3/5 to 4/1, and wherein the total weight of sulfur plus accelerator system is from 2.25 to 5.50 parts by weight per 100 parts by weight of rubber.

wherein R is selected from the group consisting of hydrogen and monovalent hydrocarbonyl radicals and Ar is a phenylene radical.

3,852,260

PROCESS FOR PREPARING FISH PROTEIN USING PROPANOL OR BUTANOL

Trygve Lund Knutsen, Motellvagen, and Sven-Olof Osterman, Havrekornsgatan, both of Sweden, assignors to Astra Nutrition Aktiebolag, Molndal, Sweden

Filed Feb. 2, 1973, Ser. No. 329,205

Claims priority, application Great Britain, Feb. 4, 1972, 5419/72

Int. Cl. A23j 1/04

U.S. Cl. 260—112 R

5 Claims

1. In a process for preparing a substantially fat-free tasteless and odorless protein from fresh fish, wherein fish material in fresh condition is subjected to disintegration, boiling, deboning, separation, pressing and partial dewatering, whereby bones, stick water and certain fats are removed and wherein the fish material thereafter is stored in an air and gas impervious container, and thereafter the fish material is subjected to extraction for removing fat, and taste- and order-producing substances with one or more solvents selected from the group consisting of solvents which can remove or substantially remove fat and taste- and order-producing substances from fish material and which group consists of isopropanol, n-butanol, sec-butanol and isobutanol, the improvement which comprises said dewatering being to a water content 12 to 20 percent by weight, and mixing said dewatered material prior to said storage with a member of said group of solvents in an amount of 10 to 30 percent by weight of such solvent calculated on the amount of said water retained in the material.

3,852,261

5-ARYLAZO-6-HYDROXYPYRIDONE-2 DYES BEARING A CATIONIC GROUP IN THE 3-POSITION

Willy Steinemann, Basel, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed , Ser. No. 87,602

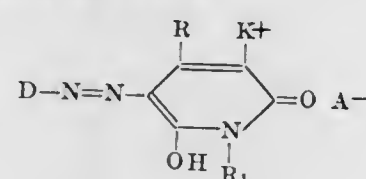
Claims priority, application Switzerland, Dec. 7, 1969, 16561/69; Dec. 23, 1969, 19042/69; Aug. 13, 1970, 12175/70; Aug. 18, 1970, 12339/70

Int. Cl. C09b 29/36, 31/14; D06p 3/76

U.S. Cl. 260—156

35 Claims

1. A compound of the formula



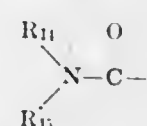
wherein

D is phenyl, naphthyl, anthraquinonyl, 2-thiazolyl, 2-benzothiazolyl or 1,2,4-triazolyl, or a substituted derivative thereof, wherein each substituent of each substituted derivative is independently lower alkyl, lower alkoxy, halo, nitro, cyano, trifluoromethyl, phenyl, lower alkanamidophenyl, phenoxy, chlorophenoxy, benzyloxy, anilino, nitroanilino, dinitroanilino, lower alkanoyl, benzoyl, lower alkylbenzoyl, carbamoyl, dilower alkylcarbamoyl, phenylcarbamoyl, N-(dilower alkylamino lower alkyl)carbamoyl, lower alkoxy-carbonyl, dilower alkylaminolower alkanoyl, lower alkanamido, dilower alkylaminolower alkanamido, lower alkoxy-carbonylamino, benzamido, lower alkylsulfonyl, phenylsulfonyl, chlorophenylsulfonyl, benzylsulfonyl, phenoxy-sulfonyl, sulfamoyl, lower alkylsulfamoyl, dilower alkylsulfamoyl, phenylsulfamoyl, chlorophenylsulfamoyl, N-phenyl-N-lower alkylsulfamoyl, naphthylsulfamoyl, N-(dilower al-

kylaminolower alkyl) carbamoylphenyl, phenylazo, nitrophenylazo, chlorophenylazo, chloro-nitrophenylazo, lower alkylphenylazo, lower alkoxyphenylazo, dilower alkylaminophenylazo, lower alkanamidophenylazo, phenylazophenylazo, phthalimido, 2-oxopyrrolidinyl-1, 2-oxo-1,3-oxazolidinyl-1 or 6-lower alkylbenzothiazolyl-2;

K⁺ is pyridinium, quinolinium, isoquinolinium, quinoxalinium, thiazolium, pyrimidinium, imidazolium, pyrazinium, benzimidazolium, benzotriazolium, benzothiazolium, triazolium, tetrazolium, thiadiazolium, indazolium, or 3-oxopyrazolinium, or a substituted derivative thereof, wherein each substituent of each substituted derivative is independently lower alkyl, lower alkoxy, chloro, bromo, cyano, lower hydroxyalkyl, benzyl, phenyl or dilower alkylcarbamoyl;

R is hydrogen, lower alkyl, monosubstituted lower alkyl, phenyl, furyl, pyridyl, lower alkoxy-carbonyl or



wherein the substituent of monosubstituted lower alkyl is lower alkoxy, lower alkoxy-carbonyl, lower alkylsulfonyl, cyano, phenoxy, phenyl, dilower alkylcarbamoyl, phenylcarbamoyl or pyrrolidinocarbonyl, and

each of R₁₄ and R₁₅ is independently hydrogen, alkyl of 1 to 6 carbon atoms, monosubstituted lower alkyl, phenyl, tolyl or lower alkoxy, wherein the substituent of monosubstituted lower alkyl is hydroxy, phenyl, lower alkoxy-carbonyl, lower alkoxy, cyano, morpholino, piperazino, tetrahydrofuryl or dilower alkylamino, or

R₁₄ and R₁₅ taken together and with the nitrogen to which they are bound are pyrrolidino, piperidino, N'-lower hydroxyalkylpiperazino, hydrazino, N'-lower hydroxyalkylhydrazino or N',N'-dilower hydroxyalkylhydrazino;

R₁ is hydrogen, alkyl of 1 to 8 carbon atoms, monosubstituted lower alkyl, phenyl, chlorophenyl, tolyl, N,N-dimethylaminophenyl, anilinophenyl, diphenyl, lower alkylcarbamoyl, amino, dilower alkylamino, lower hydroxyalkylamino, pyrrolidino, morpholino, N-lower alkylpiperazino, pyridyl, tetrahydrofuryl, lower alkylthiazolyl or N-lower alkylpyrrolidinyl + A⁻, wherein the substituent of monosubstituted lower alkyl is lower alkoxy, hydroxy, dilower alkylamino, lower hydroxyalkylamino, dilower hydroxyalkylamino, cyano, phenyl, lower alkoxy-carbonyl, piperazino, N-lower alkylpiperazino, morpholino, pyridinium + A⁻ or N,N-dilower alkylhydrazinium + A⁻, and

A⁻ is an anion.

3,852,262

METHOD OF REDUCING ORGANIC COMPOUNDS BY MEANS OF SODIUM-ALUMINUM HYDRIDES

Jaroslav Vit; Bohuslav Casewsky; Milan Mamula, all of Prague, and Jiri Marchacek, Rez, all of Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Division of Ser. No. 594,971, Nov. 10, 1966, Pat. No. 3,652,662. This application Jan. 8, 1970, Ser. No. 7,308

Claims priority, application Czechoslovakia, Nov. 13, 1965, 6771-65; Mar. 26, 1966, 2009-66; Mar. 26, 1966, 2010-66

Int. Cl. C07b 29/00

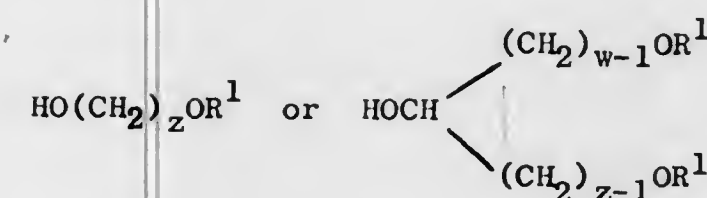
U.S. Cl. 260—205

16 Claims

1. In the method of reducing ketones, esters, carboxylic acid halides, and dialkylamides to alcohols and aromatic nitro compounds to azo compounds by reaction of the said compounds in an organic solvent with a reducing agent at an elevated temperature, the improvement which comprises effecting the said reduction in solution in an organic solvent with a reducing agent that is soluble in the said organic solvent, the

said reducing agent being a substituted sodium aluminum hydride having the formula NaAlH_{4-x}Q_x in which x is an integer from 1 to 3 and Q is an organic radical derived by the removal of an active hydrogen atom from

a. a tetrahydrofurfuryl alcohol,
b. a tetrahydropyranyl alcohol, c. an ether alcohol having the formula



in which R¹ is alkyl containing 1 to 4 carbon atoms or phenyl and w and z are each integers from 2 to 4,

d. a polyether alcohol having the formula HO(CH₂)_wO(CH₂)_zOR¹ in which formula members w, z and R¹ have the same significance as hereinbefore, or

e. an amino alcohol having the formula R''R'''N(CH₂)_zOH in which R'' and R''' each have the same significance as the R¹ radical hereinbefore, or an alkoxyalkyl radical having the formula R¹O(CH₂)_z, in which formula R¹ and z have the same significance as hereinbefore.

3,852,263

SUBSTITUTED

4-(N-SULPHOALKYLENE-AMINOSULPHONYL)-PHENYL-AZO-PHENYL COMPOUNDS

Edgar Siegel, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 14, 1972, Ser. No. 217,961

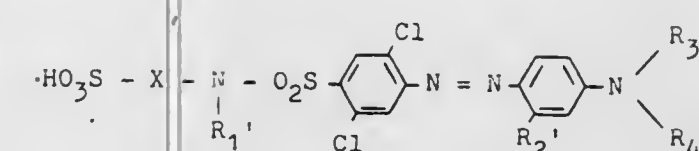
Claims priority, application Germany, Jan. 15, 1971, 2101685

Int. Cl. C09b 29/08

U.S. Cl. 260—205

8 Claims

1. Monoazo dyestuff, which in the form of a free acid, has the formula



in which X is alkylene with 2 to 4 carbon atoms;

R₁' and R₂' are hydrogen or methyl;

R₃' is methyl, ethyl or propyl; and

R₄' is methyl, ethyl, propyl or benzyl.

3,852,264

GENTAMICIN C OXAZOLIDINE DERIVATIVES

Jay Weinstein, Bloomfield, N.J., and David Cooper, Swedeland, Pa., assignors to Schering Corporation, Bloomfield, N.J.

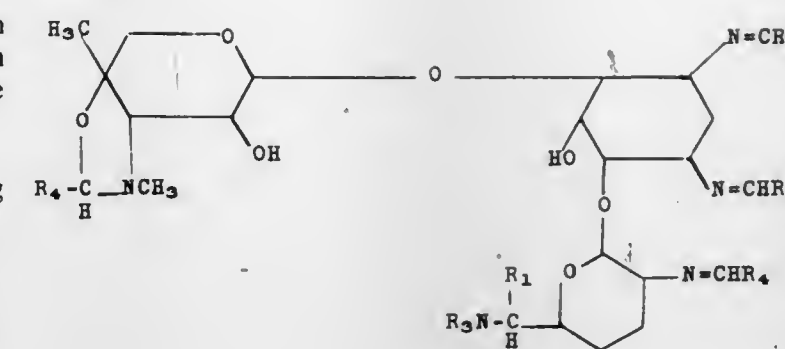
Continuation-in-part of Ser. No. 852,948, Aug. 25, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,263

Int. Cl. C07c 47/18

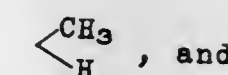
U.S. Cl. 260—210 AB

7 Claims

1. A composition of matter having the structural formula:



wherein R₁' is hydrogen or methyl; R₃ is R₄HC= or



and R₄ is an organic radical.

3,852,265

2',3'-O-LOWER ALKYLIDENE OR CYCLOHEXYLIDENE PERIPLORHAMNOSIDE COMPOUNDS

Johannes Hermann Hartenstein, Wittental, and Gerhard Satzinger, Im. Mattenbühl, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

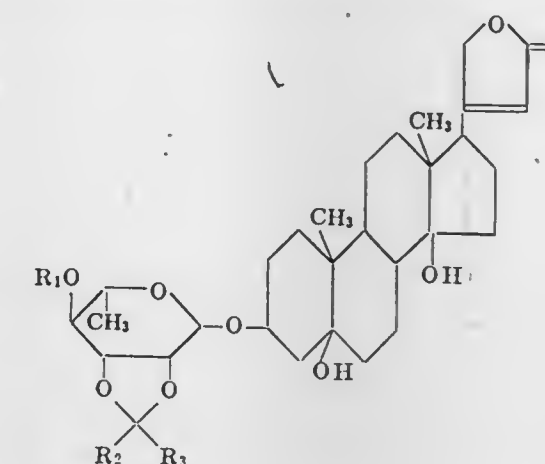
Filed Oct. 5, 1972, Ser. No. 295,384

Int. Cl. C07c 173/00

U.S. Cl. 260—210.5

6 Claims

1. Periplorhamnoside derivatives of the formula:



wherein R₁ is selected from the group consisting of hydrogen, methyl, ethyl, methoxy-methyl, ethoxy-methyl, and the acyl residue of a carboxylic acid with 1 to 5 carbon atoms; and wherein R₂ and R₃ taken individually are lower alkyls, or taken together is a 5 or 6 membered alicyclic ring.

3,852,266

PROCESS FOR PRODUCING 5-IDO-DEOXY-URIDINE

Tetsuo Kiyanagi; Morio Suzuki, and Hiroshi Yoshino, all of Cboshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba-ken, Japan

Filed Dec. 22, 1971, Ser. No. 211,098

Claims priority, application Japan, Dec. 24, 1970, 45-116709

Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R

5 Claims

1. A process for producing 5-iodo-deoxy-uridine which consists essentially of admixing a solution of 2'-deoxy-uridine in water or a mineral acid selected from the group consisting of nitric acid, sulfuric acid and hydrochloric acid with a solu-

tion of iodine in a water soluble organic solvent, heating the resultant mixture at a temperature of from 85° to 110°C in the presence of a strong acidic cation exchange resin in an amount of from 1 to 5% by weight, based on the weight of said mixture, while agitating said mixture, thereby iodizing said 2'-deoxy-uridine.

3,852,267

PHOSPHORAMIDATES OF 3',5'-CYCLIC PURINE NUCLEOTIDES

Rich B. Meyer, Jr., Laguna Beach; Dennis A. Shuman, Mission Viejo, and Roland K. Robins, Santa Ana, all of Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

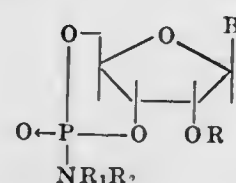
Filed Aug. 4, 1972, Ser. No. 277,972

Int. Cl. C07d 51/52, 51/54

U.S. Cl. 260—211.5 R

11 Claims

1. A 9-(β-D-ribofuranosyl) purine 3',5'-cyclic phosphoramidate of structure



wherein R is hydrogen or acyl, B is adenine, guanine or, when R is acyl, N⁶-acyladenine or N²-acylguanine, and wherein R₁ and R₂ are alkyl groups joined to form a six-membered heterocyclic ring or, independently, hydrogen or C₁—C₅ alkyl, each acyl moiety being C₁—C₁₈ acyl.

3,852,268

INOSINE-5-CARBOXYLIC ACID AMIDES

Raj Nandan Prasad, Pierrefonds, Quebec, Canada, and Herman Hal Stein, Skokie, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

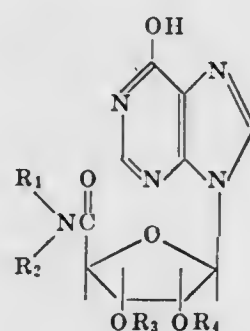
Filed Feb. 12, 1973, Ser. No. 331,397

Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

6 Claims

1. A compound of the formula



wherein R₁ and R₂ each are selected from the group consisting of hydrogen, loweralkyl, lowerhaloalkyl, lowerhydroxyalkyl, lowercycloalkyl, loweralkylcycloalkyl, loweralkenyl or loweralkynyl; and R₃ and R₄ each are hydrogen, loweralkanoyl, or R₃ and R₄ taken together form an isopropylidene or benzylidene moiety, and the pharmaceutically acceptable salts thereof.

3,852,269

DIPHENYLALKYL LACTAMIDE DERIVATIVES

Johann Martin Grisar, and Robert Douglas MacKenzie, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

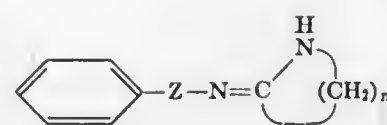
Filed Apr. 18, 1972, Ser. No. 245,195

Int. Cl. C07d 41/04, 25/00

U.S. Cl. 260—239 B

10 Claims

1. A compound selected from a base of the formula



wherein n is a positive whole integer of from 3 to 7; Z is selected from the group consisting of a straight or branched divalent alkylene chain of from two to six carbon atoms wherein any one of the carbon atoms one through six of said alkylene chain is substituted with one phenyl radical with the proviso that the alkylene chain carbon atom adjacent to the exocyclic nitrogen has at least one hydrogen atom attached to it; and pharmaceutically acceptable acid addition salts thereof.

3,852,270

PROCESS FOR THE PREPARATION OF 7-CHLORO-5-PHENYL-3H-1,4-BENZODIAZEPINE-2-(1H)ONE

Antonio Ziggliotti, Vezia Ticino, Switzerland; Giovanna Riva, Milan, and Francesco Mauri, Sesto San Giovanni, both of Italy, assignors to Ravizza S.A., Lausanne, Switzerland

Filed Mar. 1, 1972, Ser. No. 230,993

Claims priority, application Great Britain, Mar. 5, 1971, 6138/71

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

1 Claim

1. Process for the preparation of 7-chloro-5-phenyl-3H-1,4-benzodiazepine-2-(1H)one characterized in that:

- 2-chloroacetamido benzophenone is cyclized with ammonia in the presence of dimethylsulphoxide, at a temperature of 50–100° C. and
- the thus obtained 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-one is selectively chlorinated in the 7-position with chlorine in the presence of nitro-benzene as the solvent.

3,852,271

PROCESS FOR THE PREPARATION OF 7-CHLORO-BENZODIAZEPINE DERIVATIVES

Antonio Ziggliotti, Vezia Ticino, Switzerland; Francesco Mauri, and Giovanna Riva, both of Milano, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

Filed Mar. 1, 1972, Ser. No. 230,994

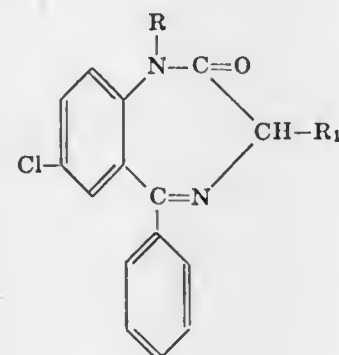
Claims priority, application Great Britain, Mar. 5, 1971, 6140/71

Int. Cl. C07d 53/06

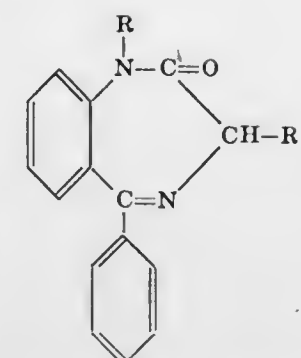
U.S. Cl. 260—239.3 D

1 Claim

1. A process for the preparation of a 7-chloro-benzodiazepine-2-one of the formula



wherein R = H, CH₃; R₁ = H, OH, OCOCH₃, characterized in that a benzodiazepine of the formula



wherein R and R₁ have the above indicated meanings, is chlorinated with elemental chlorine in the presence of nitrobenzene as the solvent at a temperature of not higher than 20° C.

3,852,272

PROCESS FOR REMOVING LACTAMS

Abraham Hermanus DeRoos, Geleen, Netherlands, assignor to Stamcarbon N.V., Heerlen, Netherlands

Filed May 2, 1972, Ser. No. 249,642

Claims priority, application Netherlands, May 7, 1971, 7106343

Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A

5 Claims

1. In a process for recovering lactam from a mixture of lactam and sulphuric acid, said process comprising counter-currently extracting lactam from said mixture with a water-immiscible organic lactam solvent, the improvement comprising partly neutralizing and diluting said mixture of lactam and sulphuric acid by the addition of ammonia and water, wherein the amount of ammonia added is such that the molar ratio



in the resulting partially neutralized solution is about 0.30:1 to 0.65:1, and wherein the amount of water added is between about 3 and about 10 moles of water per mole of sulphur trioxide originally present in the form of free sulphur trioxide and in the form of sulphur trioxide bound as sulphuric acid and, after the lactam is removed from the mixture, thermally decomposing the remainder of the mixture to produce a gas containing SO₂ and/or SO₃.

3,852,273

PROCESS FOR PREPARING AND RECOVERING LACTAMS

Abraham H. De Rooij, Geleen, Netherlands, assignor to Stamcarbon N.V., Heerlen, Netherlands

Filed May 2, 1972, Ser. No. 249,727

Claims priority, application Netherlands, May 7, 1971, 7106341; Nov. 3, 1971, 7115110

Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A

5 Claims

1. A process for preparing lactams without requiring the substantial addition or discharge of sulphuric acid or other sulfur-containing compounds to the process, said process comprising the following steps:

- reacting a first amount of SO₂, ammonium hydroxide and ammonium nitrite to form a solution of ammonium hydrogen sulfate and hydroxylammonium sulfate,
- neutralizing the reaction mixture in step (a) above with ammonia to form a solution of ammonium sulfate and hydroxylammonium sulfate,
- reacting the neutralized product obtained in step (b) with a ketone and additional ammonia to produce the corresponding ketoxime and a solution of ammonium sulfate,
- separating the ketoxime from the ammonium sulfate solution of step (c),
- making oleum from a second amount of SO₂,
- subjecting the oxime separated in step (d) to the Beckmann rearrangement with the oleum of step (e) to produce a solution of lactam and sulfuric acid,

3,852,274

DERIVATIVES OF 1,4-BENZODIAZEPIN-2-ONE AND METHODS FOR PREPARATION THEREOF

Franjo Kajfez, Tomislav Kovac, and Vitomir Sunjic, all of Chiasso, Switzerland, assignors to CRC Compagnie Di Ricerca Chimica S.A., Chiasso, Switzerland

Filed Sept. 14, 1972, Ser. No. 289,143

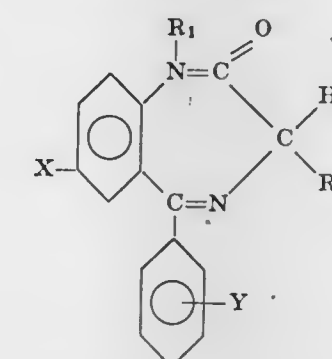
Claims priority, application Switzerland, Sept. 15, 1971, 13498/71; May 26, 1972, 7856/72

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

6 Claims

1. A compound having the formula



wherein R₁ represents a hydrogen atom or an alkyl group having at most 4 carbon atoms.

R₂ represents an alkoxy group having at most 6 carbons atoms and at least one hydroxyl group or a vicinal isopropylidenedioxy group; or a trihaloacetoxo group; X represents a hydrogen atom, a halogen atom, a methoxy group, a nitro group or a trifluoromethyl group and Y represents a hydrogen atom, a halogen atom or a trifluoromethyl group.

3,852,275

PYRAZOLINE OPTICAL BRIGHTENING AGENTS

Annick Marthe Suzanne Simone Domergue, Eaubonne; Georges Raymond Henry Mingasson, Paris, and Sureau, Robert Frederic Michel, Enghien les Bains, all of France, assignors to Ugine Kuhlmann, Paris, France

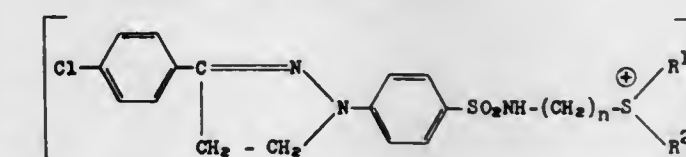
Filed Nov. 24, 1971, Ser. No. 201,993

Int. Cl. C07d 49/10

U.S. Cl. 260—239.9

5 Claims

1. A compound of the formula:



wherein R¹ and R² represent alkyl groups containing one to five carbon atoms, which may be the same or different, n is 2 or 3 and X represents an anion selected from the group consisting of halide sulfate, and sulfonate.

3,852,276

5-BENZYL PYRIMIDINES INTERMEDIATE THEREFORE, AND METHOD

Ronald M. Cresswell, Scarsdale; John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, all of N.Y., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

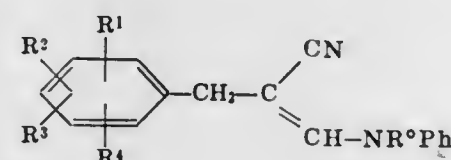
Division of Ser. No. 16,606, March 4, 1970, Pat. No. 3,694,512. This application June 2, 1972, Ser. No. 259,338 Claims priority, application Great Britain, Mar. 6, 1969, 11908/69; Mar. 6, 1969, 11909/69; May 16, 1969, 25171/69; June 13, 1969, 30247/69

Int. Cl. C07c 121/42

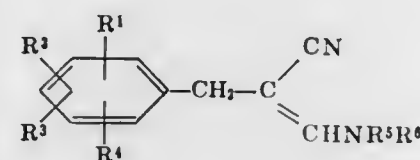
U.S. Cl. 260—240 R

13 Claims

1. The method of preparing a compound of the formula (I)



where R⁰ is lower alkyl or hydrogen, where R¹—R⁴ are the same or different and each is hydrogen, halogen, lower alkyl, lower alkoxy or benzyloxy, or R³ and R⁴ taken together may be methylenedioxy when both R¹ and R² are hydrogen, where Ph is aryl of 6 to 12 carbons which may be substituted in one, two, or three positions with lower alkyl, lower alkoxy or halogen and in the above lower alkoxy and lower alkyl contain 1 to 4 carbon atoms which comprises reacting an acid addition salt of HNR⁰Ph with a compound of the formula II



(II)

where the free amine of NR⁰R⁶ has a pK_a of about 3 or more units higher than that of the free amine of NR⁰Ph, and R¹—R⁴ are as defined above, and NR⁰R⁶ is an aliphatic, aromatic or cyclic amino group containing not more than 12 carbon atoms.

3,852,277

3-[(α-METHOXY-4-SUBSTITUTED CINNAMOYL)OXYMETHYL]-7-ACYLAMIDOCEPH-3-EM-4-CARBOXYLIC ACIDS

David P. Jacobus, Princeton; William J. Leanza, Berkley Heights, and Burton G. Christensen, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

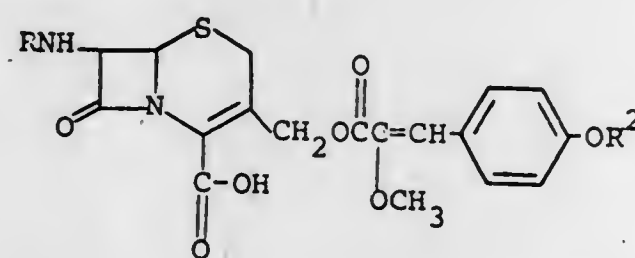
Filed Aug. 2, 1972, Ser. No. 277,444

Int. Cl. C07d 99/24

U.S. Cl. 260—240 J

10 Claims

1. A compound of the formula



wherein R is an acyl radical and R² is hydrogen, sulfo, phosphono, acetyl, pivaloyl, pivaloxyloxymethyl or lower alkyl and the non-toxic, pharmaceutically acceptable salts and esters thereof.

3,852,278

PREPARATION OF 4-(2-(FURFURYLIDENEAMINO)-PHENYL)-3-THIOALLOPHANATES

Ronald P. Owen, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

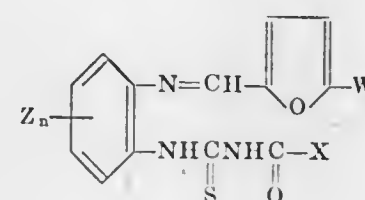
Filed Jan. 22, 1973, Ser. No. 325,783

Int. Cl. C09b 23/00

U.S. Cl. 260—240 A

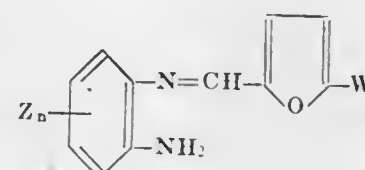
10 Claims

1. A method for preparing a compound of the formula

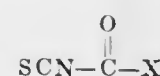
wherein X is R¹O— or R¹S—wherein R¹ is

- alkyl, straight or branched, of 1 to 12 carbon atoms,
 - alkyl of 1 to 12 carbon atoms substituted with halo, or methoxy groups,
 - alkenyl of 2 to 12 carbon atoms,
 - alkynyl of 3 to 12 carbon atoms,
 - phenyl,
 - phenyl substituted with halo, methyl, methoxy or nitro,
 - benzyl or
 - benzyl substituted with halo, methyl, methoxy or nitro;
- W is hydrogen, acetoxymethyl, chloro, methyl, or nitro; Z is halo, methyl, methoxy or nitro and n is an integer 0 to 3,

which comprises mixing at a temperature in the range of -20° C. to about 35° C. and thereby reacting a compound of the formula



wherein W, Z and n have the above meanings with a compound of the formula



wherein X has the above meanings in an inert solvent containing 0.5 to 20 mole percent of a tertiary amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, triisobutylamine, methyldiethylamine, tetramethylethylenediamine, N,N-dimethylethanolamine and dimethylaniline.

3,852,279

7-SUBSTITUTED -3,3A,4,5,6,7-HEXAHYDRO-3-SUBSTITUTED-2H-PYRAZOLO (4,3-C)PYRIDINES

John Krapcho, Somerset, and Chester Frank Turk, Elizabeth, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

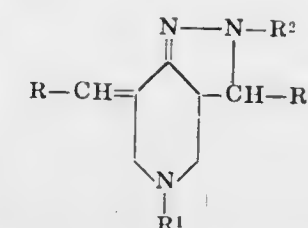
Filed Mar. 12, 1973, Ser. No. 340,408

Int. Cl. C09b 23/00, 23/04

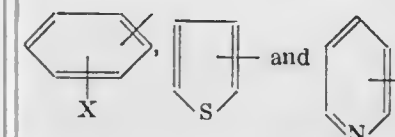
U.S. Cl. 260—240 F

9 Claims

1. A compound of the formula



wherein R and R³ are selected from the group consisting of



X and X¹ are selected from the group consisting of hydrogen, chloro, fluoro, lower alkyl, lower alkoxy and trifluoromethyl; R¹ and R² are selected from the group consisting of hydrogen, lower alkyl,



hydroxy lower alkyl and lower alkanoyl and N-oxides and acid addition salts thereof.

3,852,280

1-BENZYL-4-(ALKYLIDENE)-HEXAHYDRO-4H-AZEPINES

John T. Suh, 3709 W. Scenic Dr., 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Ln., Brown Deer, Wis. 53223

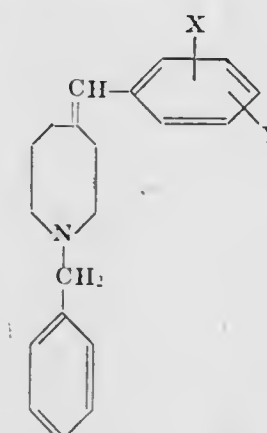
Filed June 29, 1973, Ser. No. 375,182

Int. Cl. C09b 23/00; C07d 41/08

U.S. Cl. 260—240 F

5 Claims

1. A compound of the formula



in which X and Y are selected from hydrogen, bromo, chloro, fluoro, trifluoromethyl, methylenedioxy, lower alkyl of 1 to 4 carbons, and lower alkoxy of 1 to 4 carbons.

3,852,281

PROCESS FOR THE PREPARATION OF 7-SUBSTITUTED AMINO-DESACETOXYCEPHALOSPORANIC ACID COMPOUNDS

Jan Verweij, Leiden, Netherlands, assignor to Koninklijke Nederlandsche Gis-En Spritus-Fabriek N.V., Delft, Netherlands

Filed Feb. 16, 1971, Ser. No. 115,883

Claims priority, application Great Britain, Feb. 18, 1970, 7892/70; July 23, 1970, 35796/70

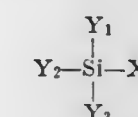
Int. Cl. C07d 99/16, 99/24

U.S. Cl. 260—243 C

18 Claims

1. In the process for the preparation of 7β-acylamido-3-methyl-ceph-3-em-4-carboxylic acid compounds by heating

between 50° and 160° C. the corresponding 6β-acylamidopenicillanic sulfoxide, ester or amide the improvement comprising conducting the heating under anhydrous conditions in the presence of at least 10 moles of a nitrogen containing organic base with a pK_a (in water) between 4 and 10 per mole of penicillanic sulfoxide and a silicon-halogen compound of the formula



wherein Y₁, Y₂, and Y₃ are individually selected from the group consisting halogen, alkyl of 1 to 4 carbon atoms optionally substituted by halogen, phenyl and phenylalkyl having one to two alkyl carbon atoms and X is halogen.

3,852,282

CERTAIN 2-SUBSTITUTED CEPHALOSPORINS

Joseph E. Dolfini, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

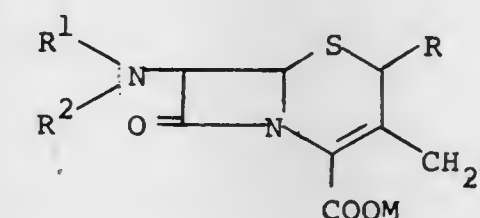
Continuation-in-part of Ser. No. 812,386, April 1, 1969, abandoned. This application Oct. 16, 1972, Ser. No. 298,172

Int. Cl. C07d 99/24

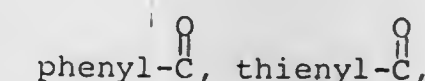
U.S. Cl. 260—243 C

5 Claims

1. A compound of the formula:



wherein A is selected from the group consisting of hydrogen, acetoxy, hydroxy, and pyridinium and when taken together with M, a monovalent carbon-oxygen bond; M is selected from the group consisting of hydrogen, sodium, potassium, ammonium, calcium, triethylamine, N-ethylpiperidine, dibenzylethylenediamine, benzyl, trimethylsilyl, t-butyl, trichloroethyl, an anionic charge when A is pyridinium, or when taken together with A, a monovalent carbon-oxygen bond; R¹ and R² are both hydrogen, or R² is hydrogen and R¹ is selected from the group consisting of acetyl,



phenylacetyl, thienylacetyl, phenoxyacetyl, or R¹ and R² taken together with the nitrogen atom to which they are attached form phthalimido; and R is selected from the group consisting of iodo, chloro, and bromo.

3,852,283

AMINO ACID DERIVATIVES OF CEPHALOSPORINS
Joseph Edward Dolfini, Princeton, and Raymond Curry Erickson, Metuchen, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

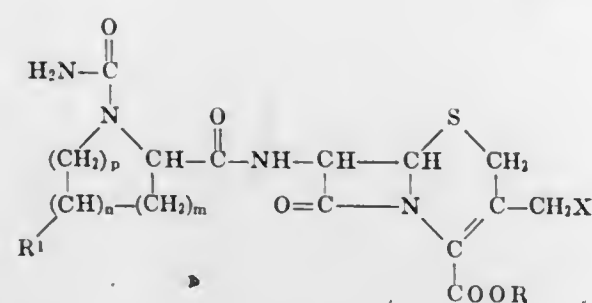
Filed Dec. 11, 1972, Ser. No. 313,708

Int. Cl. C07d 99/24

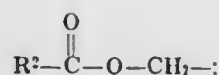
U.S. Cl. 260—243 C

6 Claims

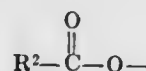
1. A compound of the formula



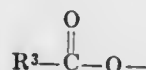
wherein R is hydrogen, lower alkyl,



an alkali metal, or an alkaline earth metal; R¹ is hydrogen, hydroxy, or



R² is lower alkyl or monocyclic carbocyclic aryl; X is hydrogen, hydroxy, or



wherein R³ is lower alkyl; or together X and R represent a bond linking carbon and oxygen in a lactone ring; n is 0 or 1; m is 0, 1, 2, 3, or 4; p is 1, 2, 3, or 4; and the sum of m + n + p is 1, 2, 3, 4, or 5.

3,852,284

NOVEL SUBSTITUTED OXAZINO(5,6-E)INDOLES

Claude P. Fauran; Michel J. Turin; Guy M. Raynaud, all of Paris, and Claude J. Gouret, Meudon, all of France, assignors to Delalande S.A., Courbevoie, (Hauts de Seine), France

Filed June 6, 1972, Ser. No. 260,298

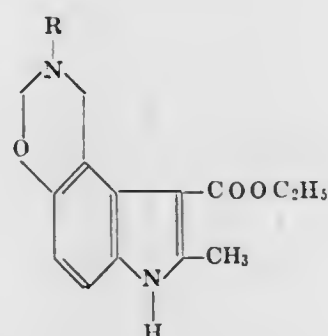
Claims priority, application France, June 8, 1971, 71.20708

Int. Cl. C07d 87/20

U.S. Cl. 260—244 R

1. A compound of the formula:

7 Claims



in which R is:

alkyl having 2 or 3 carbons, alkyl having 2 or 3 carbons and substituted by one hydroxy or dialkylamino in which the latter alkyl has 1 to 4 carbons, alkenyl having up to 3 carbons, or cycloalkyl having up to 6 carbons.

3,852,285

PYRANO- AND THIOPYRANOINDOLE DERIVATIVES

Christopher A. Demerson; Leslie G. Humber, both of Montreal; Andre A. Asselin, Lemoyne; Ivo Jirkovsky, and Thomas A. Dobson, both of Montreal, Quebec, all of Canada, assignors to Ayerst, McKenna and Harrison Limited, Montreal, Canada

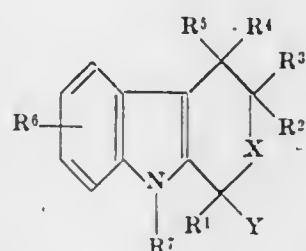
Filed Jan. 13, 1972, Ser. No. 217,627

Int. Cl. C07d 87/46

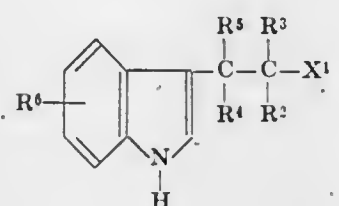
U.S. Cl. 260—247.1

1 Claim

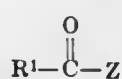
1. A process for preparing a compound of formula



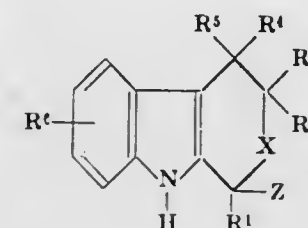
in which R¹ is lower alkyl or lower cycloalkyl; R², R³, R⁴ and R⁵ are the same or different selected from the group consisting of hydrogen and lower alkyl; R⁶ is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R⁷ is lower alkyl, lower alkenyl, propargyl, phenyl(lower)alkyl or an amino(lower)alkyl radical or formula —Alk—NR⁸R⁹ wherein Alk is an alkylene selected from the group consisting of CR¹⁰R¹¹CR¹²R¹³, CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵ and CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵CR¹⁶R¹⁷ wherein R¹⁰, R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁶ and R¹⁷ are hydrogen or lower alkyl and R⁸ and R⁹ are either the same or different selected from the group consisting of hydrogen and lower alkyl, or R⁸ and R⁹ together with the nitrogen atom to which they are joined from a heterocyclic amine radical selected from the group consisting of 1-pyrrolidinyl, piperidino, morpholino, piperazino, 4-(lower alkyl)-1-piperazinyl and 4-[hydroxy(lower)alkyl]-1-piperazinyl; X is oxy or thio and Y is an amino(lower)alkyl of formula Alk—NR⁸R⁹ in which Alk is an alkylene selected from the group consisting of CR¹⁰R¹¹, CR¹⁰R¹¹CR¹²R¹³, CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵ and CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵CR¹⁶R¹⁷ wherein R¹⁰, R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁶ and R¹⁷ are as defined herein, which comprises (a) reacting in the presence of an inert organic solvent and an acid catalyst selected from the class consisting of p-toluenesulfonic acid, aluminum chloride, phosphorus pentoxide, boron trifluoride, zinc chloride, hydrochloric acid, perchloric acid, trifluoroacetic acid and sulfuric acid from 10 minutes to 60 hours at a temperature within the range from 20°C. to the boiling point of the reaction mixture substantially equal molar equivalents of a compound of the formula:



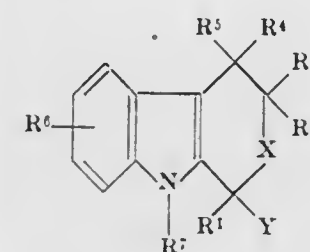
in which R², R³, R⁴, R⁵ and R⁶ are as defined herein and X¹ is hydroxy or mercapto, with the compound of formula



in which R¹ is lower alkyl or lower cycloalkyl and Z is selected from the group consisting of COOR¹⁹ and Alk¹ - COOR¹⁹ in which R¹⁹ is hydrogen or lower alkyl and Alk¹ is an alkylene selected from the group consisting of CR¹⁰R¹¹, CR¹⁰R¹¹CR¹²R¹³ and CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵ wherein R¹⁰, R¹¹, R¹², R¹³, R¹⁴ and R¹⁵ are hydrogen or lower alkyl; with the proviso that when R¹⁹ is hydrogen then Alk¹ is an alkylene selected from the group consisting of CR¹⁰R¹¹CR¹²R¹³ and CR¹⁰R¹¹CR¹²R¹³CR¹⁴R¹⁵ as defined herein, to provide a tricyclic compound of formula



in which R¹, R², R³, R⁴, R⁵, R⁶, X and Z are as defined herein, (b) subjecting the tricyclic compound to hydrolysis to the corresponding acid in the case where R¹⁹ is lower alkyl; (c) subjecting the acid product to N-alkylation with an appropriate organic halide to introduce the R⁷ substituent; (d) subjecting the latter compound to amidation with an appropriate amine of formula NHR⁸R⁹ in which R⁸ and R⁹ are as defined herein to give the corresponding amide, reducing the amide with a suitable complex metal hydride to give the corresponding compound of formula



in which R¹, R², R³, R⁴, R⁵, R⁶ and X are as defined herein, R⁷ and y are as defined herein and, if desired, forming the acid addition salt thereof with a pharmaceutically acceptable acid.

3,852,286

DIHYDROINDANE CARBOXYLIC AND CYCLOHEXADIENE ACETIC ACIDS, ESTERS AND SALTS

Charles M. Hall, and William J. Wechter, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

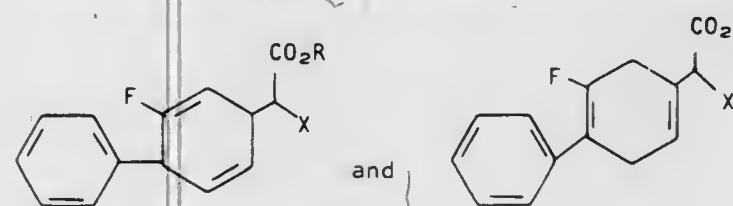
Filed Feb. 16, 1973, Ser. No. 333,395

Int. Cl. C07c 63/50, 69/76

U.S. Cl. 260—247.2 R

5 Claims

1. A compound selected from the group consisting of



wherein R is selected from the group consisting of hydrogen, alkyl of from one to three carbon atoms, inclusive, and a pharmaceutically acceptable metal or amine cation;

X is selected from the group consisting of —CH₃, and —CH₂CH₂— with the proviso that —CH₂— is attached to the two carbon atom of the cyclohexadiene, thereby forming an indane type compound.

3,852,287

PREPARATION OF THIONAMIDES

Mikhail M. Girgis, Guelph, Ontario, Canada, assignor to Uniroyal, Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 23,063, March 26, 1970, Pat. No. 3,700,664. This application Sept. 7, 1972, Ser. No.

287,173 The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.

Int. Cl. C07d 87/46

U.S. Cl. 260—247.1 T

8 Claims

1. In a method of preparing a benzo, o-tolu, m-tolu, nicotino, picolino, N-morpholino, or phenylacetothionamide, which comprises reacting a benzo, o-tolu, m-tolu, nicotino, picolino, N-morpholino, or phenylacetoneitrile with a substantially equimolar amount of hydrogen sulfide in a closed reactor at elevated temperature in the presence of a basic catalyst, the improvement which comprises conducting the reaction in the presence of a mole ratio of catalyst to nitrile in the range of 1:6.5 to 1:15.

3,852,288

PROCESS FOR COLOR STABLE ALKYL AND ALKENYL ACID PHOSPHATE COMPOSITIONS

Arthur A. Baum, Wilmington, Del., and Leonard A. Rothman, Brooklyn, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

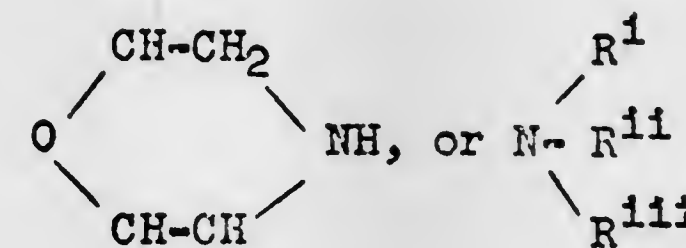
Continuation-in-part of Ser. No. 67,581, Aug. 27, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,566

Int. Cl. C07d 87/32

U.S. Cl. 260—247.7 D

2 Claims

1. In a process for preparing alkyl and alkenyl acid phosphates, and salts thereof, by reacting a C₄ to C₁₈ alcohol, or mixture of alcohols, with phosphorus pentoxide, to form the acid phosphates, and reacting the acid phosphate formed thereby with a member selected from the group of salt-forming reactants consisting of sodium potassium and lithium hydroxides, and an amine of the formula

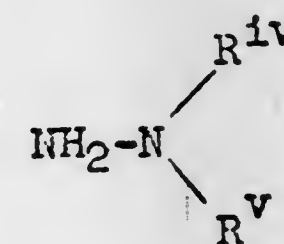


wherein

Rⁱ, Rⁱⁱ and Rⁱⁱⁱ are selected from —H, —CH₃, —C₂H₄OH or —C₃H₆OH with no more than 2 of Rⁱ, Rⁱⁱ, and Rⁱⁱⁱ being —H or CH₃.

to form the corresponding salt of the acid phosphate,

the improvement which comprises reacting the acid phosphate reactants with a hydrazine of the formula



wherein each of R^{iv} and R^v is independently H or an alkyl group having from 1 to 4 carbon atoms.

3,852,289 SULFENYLATION OF N-ARYLHETEROCYCLIC COMPOUNDS

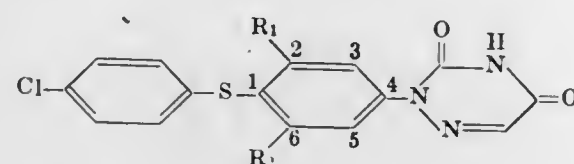
Banavara L. Mylari, Waterford, and Thomas M. Brennan, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 342,969

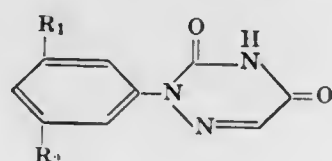
Int. Cl. C07d 55/10

U.S. Cl. 260—248 AS

1. A process for the preparation of compound of the formula:



wherein R_1 is selected from the group consisting of methyl and hydrogen; and R_2 is selected from the group consisting of methyl and chloro, which comprises contacting p-chlorosulfonyl chloride with a compound of the formula:



in the presence of a reaction-inert solvent at a temperature of 25-110°C.

3,852,290 THIOCARBONATES

Takeshi Nagasawa, Katumasa Kuroiwa, and Kouichi Narita, all of Koriyama, Japan, assignors to Nitto Boseki Co. Ltd., Fukushima-shi, Japan

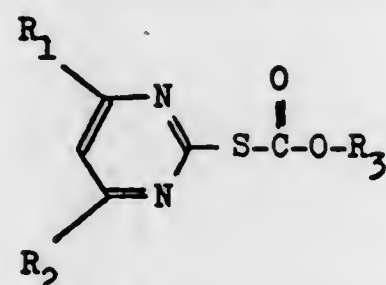
Filed Sept. 8, 1972, Ser. No. 287,410

Claims priority, application Japan, Sept. 17, 1971, 46-72261; Sept. 27, 1971, 46-75306; Sept. 30, 1971, 46-76555; Jan. 10, 1972, 47-5116

Int. Cl. C07d 51/36

U.S. Cl. 260—251 R

1. A thiocarbonate represented by the formula,



wherein R_1 and R_2 are individually a hydrogen atom or a methyl group, and R_3 is a straight chain or branched chain alkyl group having 1 to 5 carbon atoms, a straight chain or branched chain alkenyl group having 2-5 carbon atoms, or a benzyl or benzhydryl group which may be nuclear substituted.

3,852,291 HETEROCYCLIC DERIVATIVES OF PHENOXYPROPANOLAMINES

Joachim Augstein, Woodhouse Eaves; David Alexander Cox, Canterbury, and Allan Leslie Ham, Broadstairs, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,159

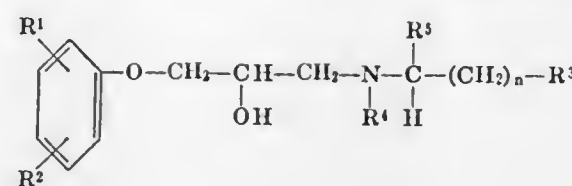
Claims priority, application Great Britain, Aug. 4, 1971, 36606/71

Int. Cl. C07d 51/28

U.S. Cl. 260—256.4 C

1. A compound having the formula:

20 Claims



where R^1 is hydrogen or a lower alkanoyl amino;

R^2 is hydrogen or methyl;

R^3 is an at least partially hydrogenated imidazoline or pyrimidine linked to the remainder of the molecule by one of its nitrogens and having a ring oxo or thio substituent adjacent to that nitrogen and optionally a second oxo or thio substituent adjacent to a nitrogen and/or one or more lower alkyl substituents;

R^4 is hydrogen, lower alkyl, lower alkanoyl or benzyl;

R^5 is hydrogen or methyl;

and n is 1 to 3;

3,852,292 2-(PYRIDYL)-IMIDAZOLE-4,5-DICARBOXYLIC ACID AND DERIVATIVES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 250,505, May 5, 1972, Pat. No. 3,812,136.

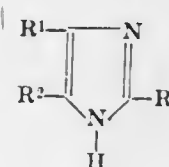
This application July 30, 1973, Ser. No. 383,851

Int. Cl. C07d 31/34

U.S. Cl. 260—295 R

1. A compound of the formula:

4 Claims



wherein R is pyridyl and R^1 and R^2 are the same or different and represent carboxy, lower alkoxy, and the non-toxic, pharmacologically acceptable acid addition salts thereof.

3,852,293 4-PHENYL-2-(3-PYRIDYL)-THIAZOLE CARBOXAMIDES

Zaven S. Ariyan, Woodbury, Conn., and William A. Harrison, Guelph, Ontario, Canada, assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Montreal, Quebec, Canada

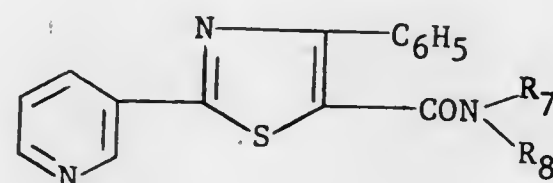
Filed June 21, 1972, Ser. No. 264,817

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 D

1. A compound of the formula:

4 Claims



wherein R_7 is hydrogen or an alkyl group of up to three carbon atoms and R_8 is an alkyl group of up to three carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

(B)

3,852,294 BIS-QUATERNARY PYRIDINIUM SALTS

Ilse Hagedorn, Freiburg, Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

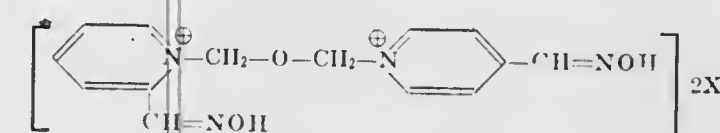
Continuation-in-part of Ser. No. 755,752, Aug. 27, 1968, Pat. No. 3,773,775. This application Dec. 20, 1972, Ser. No. 316,929

Int. Cl. C07d 31/40

U.S. Cl. 260—296 M

1. A pharmaceutically acceptable quaternary salt of the formula

2 Claims



wherein

X is an equivalent of a mono- or polyvalent anion.

3,852,295 SALTS OF MONO-O-SUBSTITUTED AND O,O-DIARYL SUBSTITUTED PHOSPHORIC ACIDS AND A NITROGEN BASE

William Graham, Pinner, and Lewis Aubrey Wetherill, North Wembley, both of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Division of Ser. No. 18,284, March 10, 1970, Pat. No. 3,725,397. This application Jan. 12, 1973, Ser. No. 323,213

Int. Cl. C07d 31/28

U.S. Cl. 260—297 P

1. A salt formed from a monoamine which is an unsaturated heterocyclic tertiary nitrogen base selected from pyridine or lower alkyl pyridine having a pK_b as measured in water at 25°C of not less than 4 and an acid selected from the group consisting of lower alkyl, phenyl lower alkyl and phenyl dihydrogen phosphates and such dihydrogen phosphates wherein the lower alkyl, phenyl lower alkyl or phenyl group is substituted by at least one of a halogen atom or a nitro group; 2-chloromethyl-4-nitrophenyl dihydrogen phosphate; and diphenyl hydrogen phosphates and such hydrogen phosphates in which at least one of the phenyl groups is substituted by at least one of a halogen atom or a nitro group.

8 Claims

3,852,296 MANNICH BASES OF CYCLOPENTANONES AND CYCLOPENT-2-ENONES AND PROCESS OF PREPARING THE SAME

Rene Viterbo, Paris, France; Michele Mastursi, and Giulio Cesare Perri, both of Naples, Italy, assignors to Richardson-Merrell S.p.A., Naples, Italy

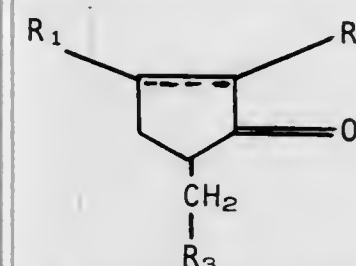
Continuation-in-part of Ser. No. 163,487, July 16, 1971, abandoned. This application June 5, 1972, Ser. No. 259,972

Int. Cl. C07d 87/34

U.S. Cl. 260—247.7 K

1. A compound having the formula

10 Claims



where R_1 and R_2 are each separately alkyl of 1 to 8 carbon atoms, phenyl, halophenyl, benzyl, carboethoxymethyl diethylacetamide and acetomorpholide, R_3 is mono(lower)alkylamino, di(lower)alkylamino, anilino, pyrrolidino, morpholino, piperidino, and (lower)alkylpiperazino wherein the alkyl portion of the (lower)alkyl radicals have 1 to 4 carbon atoms.

3,852,297 NICKEL COMPLEXES OF 2-(2-HYDROXYPHENYL)-Y-TRIAZOLES

Paul Moser, Riehen, and Jean Rody, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,336

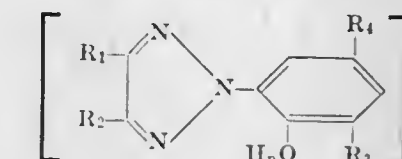
Claims priority, application Switzerland, Nov. 10, 1971, 16322/71

Int. Cl. C07d 55/02

U.S. Cl. 260—299

1. Compounds of the formula

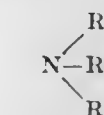
14 Claims



(I)

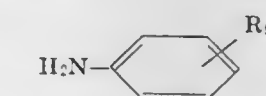
in which R_1 denotes an alkyl group with 1 to 18 carbon atoms, the phenyl group, or a methylphenyl, dimethylphenyl, chlorophenyl or alkoxyphenyl group, the latter with 7 to 14 carbon atoms, R_2 denotes hydrogen or, if R_1 denotes an alkyl group with 2 to 18 carbon atoms, also denotes an alkyl group which is one carbon atom lower than R_1 , and in the case that R_1 denotes the phenyl group or a substituted phenyl group, also denotes an alkyl group with 1 to 16 carbon atoms, the phenyl group or a methylphenyl, dimethylphenyl, chlorophenyl or alkoxyphenyl group, the latter with 7 to 14 carbon atoms, or R_1 and R_2 together denote unsubstituted or lower alkyl-substituted tetramethylene, R_3 and R_4 independently of one another denote hydrogen, an alkyl group with 1 to 18 carbon atoms, an aralkyl group with 7 to 9 carbon atoms, a cycloalkyl group with 6 to 8 carbon atoms or the α -methylcyclohexyl group, with R_3 and R_4 together containing at most 22 carbon atoms, Y denotes a nitrogen-containing organic base of the following group

a. amines of the formula



wherein R_5 , R_6 and R_7 independently of one another denote hydrogen, alkyl with 1 to 18 carbon atoms, alkenyl with 3 to 18 carbon atoms, benzyl, cyclohexyl, 2-hydroxyethyl or 2-aminoethyl, or R_5 and R_6 together denote the radicals $-(CH_2)_5-$, $-(CH_2)_2-O-(CH_2)_2-$, $-(CH_2)_2-NH-(CH_2)_2-$, $-CH(CH_3)-(CH_2)_4-$, $-CH_2-CH(CH_3)-(CH_2)_3-$ or $-(CH_2)_2-CH(CH_3)-(CH_2)_2-$

b. anilines of the formula



wherein R_8 denotes alkyl with 1 to 8 carbon atoms or alkoxy with 1 to 8 carbon atoms, or

c. pyridines of the formula



wherein R_9 and R_{10} independently of one another denote hydrogen or methyl or R_9 and R_{10} together denote a benzo ring, Z^- denotes the anion of an alkanecarboxylic acid with 2 to 18 carbon atoms, an alkenylcarboxylic acid with 3 to 15 carbon atoms, benzoic acid, an alkylbenzoic acid with 8 to 11 carbon atoms or a naphthoic acid, or denotes the hydroxyl ion, the chloride ion or the bromide ion, M^{+1} denotes a monovalent alkali metal ion and n denotes 0 or 1, m denotes 0, 1 or 2, x denotes 1 or 2, y denotes 0 or 1, w denotes all values between 0 and 2 and z denotes $(2+m)-x(1-n)$.

3,852,298

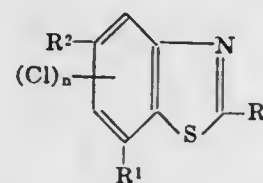
CERTAIN POLYSUBSTITUTED BENZOTHAZOLES
 Klaus Wagner, Cologne; Hans Scheinpflug, and Paul-Ernst Frohberger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
 Filed July 10, 1972, Ser. No. 270,391
 Claims priority, application Germany, July 23, 1971, 2136923

Int. Cl. C07d 91/44

U.S. Cl. 260—304

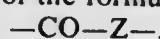
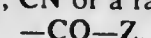
7 Claims

1. A substituted benzthiazole of the formula



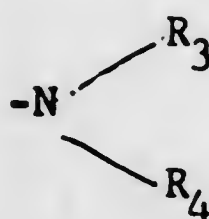
in which

R is CN or a radical of the formula

R¹ is halogen, nitro, trifluoromethyl, trifluoromethoxy or a radical of the formulaR² is hydrogen, halogen, trifluoromethyl, trifluoromethoxy, nitro, methyl, ethyl, CN or a radical of the formula

n is 0, 1 or 2, and

Y and Z each independently is hydrogen, alkyl, cycloalkyl or alkoxy with up to 6 carbon atoms, benzyl or phenyl, or a radical of the formula



in which

R³ and R⁴ each independently is hydrogen, alkyl or alkoxy-alkyl with up to 12 carbon atoms, or phenylalkyl or phenyl wherein the phenyl may be substituted by chlorine, bromine, trifluoromethyl or methyl, or R³ and R⁴, together with the attached nitrogen atom, form a pyrrolidine, piperidine or morpholine ring.

3,852,299

3,4-BIS(CARBETHOXY)-2-ISOXAZOLINE AND PROCESS
 William M. Hutchinson, Bartlesville, Okla., assignor to Philips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 507,700, Nov. 15, 1965, Pat. No. 3,591,621. This application Jan. 25, 1971, Ser. No. 109,582
 Int. Cl. C07d 85/16

U.S. Cl. 260—307 F

2 Claims

1. 3,4-Bis-(carbethoxy)-2-isoxazoline.

3,852,300
CERTAIN

6-PHENYL-4H-S-TRIAZOLO[1,5-a][1,4-BENZODIAZEPINES]

Andre Gagneux, Basel; Roland Heckendorn, Arlesheim, Basel-Land, and Rene Meier, Buus, Basel-Land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
 Filed Dec. 8, 1971, Ser. No. 206,176

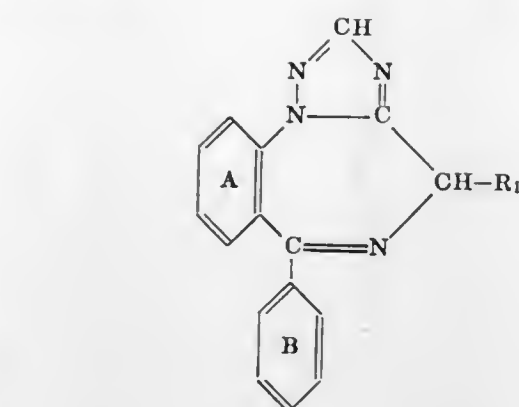
Claims priority, application Switzerland, Dec. 11, 1970, 18385/70; Aug. 4, 1971, 5232/70

Int. Cl. C07d 57/02

U.S. Cl. 260—308 R

6 Claims

1. A compound of the formula Ia



wherein

R₁ represents a hydrogen atom or an alkyl group having from one to three carbon atoms, and wherein each of the rings A and B may be unsubstituted or substituted by one chlorine, fluorine or bromine atom, nitro group, trifluoromethyl group, alkyl group having from one to six carbon atoms or alkoxy group having from one to six carbon atoms, and the 5-oxide and the pharmaceutically acceptable acid addition salts thereof.

3,852,301

ENOL BETAINES OF IMIDAZOLES
 Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

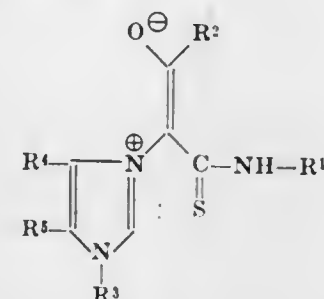
Filed June 21, 1973, Ser. No. 372,356

Int. Cl. C07d

U.S. Cl. 260—309

5 Claims

1. A compound of the formula



wherein R¹ is selected from the group consisting of lower alkyl, allyl, benzyl, cyclohexyl, phenyl and phenyl substituted by fluoro, chloro, lower alkyl or lower alkoxy; R² is selected from the group consisting of phenyl and phenyl substituted by chloro, lower alkyl, lower alkoxy, phenyl, bromo, fluoro or nitro; R³ is selected from the group consisting of lower alkyl and benzyl; and R⁴ and R⁵ are both hydrogen.

3,852,302

DIACRYLIC ACID ESTER DERIVATIVES OF HYDANTOIN COMPOUNDS

Juergen Habermeyer, Pfeffingen, Basel-Land, and Daniel Porret, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,386

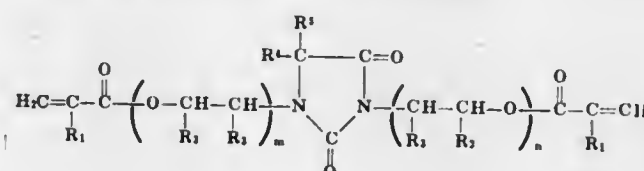
Claims priority, application Switzerland, Apr. 16, 1971, 5557/71

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5

6 Claims

1. A diacrylic acid ester of the formula



wherein R₁ and R₂ are independently hydrogen or methyl, R₃ is hydrogen, lower alkyl or lower alkyl interrupted by oxygen,

R⁴ and R⁵ are independently hydrogen or alkyl of one to four carbons, m and n are each a whole number having a value of 1 to 30.

3,852,303

PROCESS FOR IMIDAZO[2,1-a]ISOINDOLES AND INTERMEDIATES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc.
 Division of Ser. No. 812,948, March 5, 1969, abandoned. This application Nov. 30, 1972, Ser. No. 310,821

Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

3 Claims

1. The N₂-dilithium derivative of 2-phenyl-2-imidazoline.

3,852,304

FLUOROALKYLPHENYL CYCLOAMIDINES AND THEIR PRODUCTION

Hartmund Wollweber, Wuppertal-Elberfeld; Edgar Enders, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 22, 1971, Ser. No. 117,709

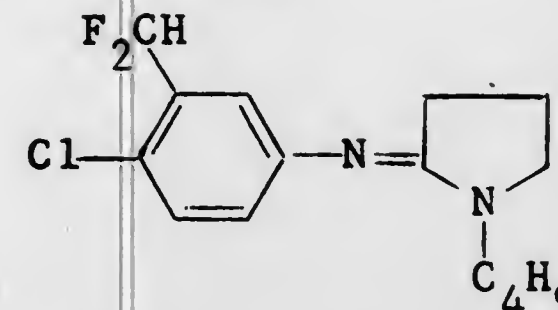
Claims priority, application Germany, Feb. 26, 1970, 2009019

Int. Cl. C07d 27/04

U.S. Cl. 260—326.85

14 Claims

1. The compound which is



3,852,305

ISOMERIZATION OF ALKENYL-ALKOXYBENZENES
 Tsuneyuki Nagase; Gohu Suzukamo, and Masami Fukao, all of Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Nov. 16, 1971, Ser. No. 199,174

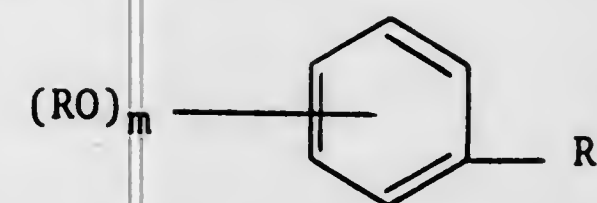
Claims priority, application Japan, Nov. 26, 1970, 45-104647; June 23, 1971, 46-045861

Int. Cl. C07d 13/00

U.S. Cl. 260—340.9

14 Claims

1. A method for isomerization of alkenyl-alkoxybenzenes which comprises contacting an alkenyl-alkoxybenzene of the formula:



wherein m is an integer of 1 to 5, R is lower alkyl or, when m is 2 or more and at least two of R are adjacent, the adjacent two R may represent lower alkylene including methylene and R' is an alkenyl group having a double bond at the position not conjugated with the benzene ring, with a catalyst to give the corresponding alkenyl-alkoxybenzene wherein the double bond in the alkenyl group represented by R' is migrated to the position conjugated with the benzene ring, the said catalyst being prepared by heating alumina, from 0.01 to 100% by weight of the alumina of an alkali metal hydroxide, and from 0.01 to an equimolar amount with respect to the alkali metal hydroxide of an alkali metal at a temperature higher than the

melting point of the alkali metal to give a catalyst composition which is colored white to gray and which does not show any X-ray diffraction pattern for alkali metal as a simple substance therein.

3,852,306

CARBOXYMETHYL DIOXOLANE POLYCARBOXYLATES

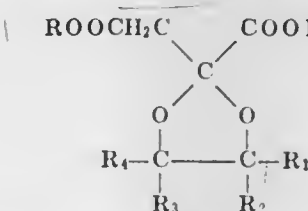
John N. Rapko, and Russel D. Harken, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
 Filed May 8, 1972, Ser. No. 251,161

Int. Cl. C04d 13/04

U.S. Cl. 260—340.9

3 Claims

1. A compound represented by the formula



wherein R₁ is selected from the group consisting of —COOR and —CH₂COOR; R₂, R₃ and R₄ are selected from the group consisting of —COOR, —CH₂COOR, hydrogen and methyl; and R is selected from the group consisting of methyl, ethyl, propyl, butyl, hydrogen, alkali metal and ammonium.

3,852,307

SYNTHESIS OF ZEARALANONE AND RELATED COMPOUNDS

Wilbert Herbert Urry, Chicago, Ill., and Guy Towns Mullenbach, Berkeley, Calif., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

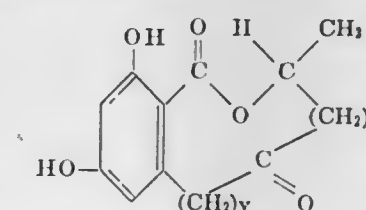
Filed Apr. 25, 1972, Ser. No. 247,343

Int. Cl. C07d 9/00, 7/20

U.S. Cl. 260—343.2 F

3 Claims

1. A compound of the formula



wherein X is an integer having the value of from 0 to 6 and Y is an integer having the value of from 3 to 8, with the proviso that when X is 3, Y is not 5.

3,852,308

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Robert C. Ryder, Bethel Park; Robert E. Ryan, and William J. Klapproth, Jr., both of Pittsburgh, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 81,334, Oct. 16, 1970, abandoned.

This application Jan. 26, 1973, Ser. No. 326,777

Int. Cl. C07c 63/18

U.S. Cl. 260—346.4

5 Claims

1. In a process for the production of phthalic anhydride by the oxidation of naphthalene in vapor form wherein a mixture of air and naphthalene vapors flows upwardly at an elevated temperature through a dense fluid bed of oxidation catalyst at a vertical velocity to maintain the catalyst in a fluidized condition, said catalyst being comprised of about 3 to 10 percent by weight of vanadium pentoxide and about 15 to 35 percent by weight of potassium sulfate supported on about 55 to 75 percent by weight of silica gel, the improvement comprising:

a. maintaining the reaction zone at a superatmosphere pressure of at least 25 pounds per square inch gauge;

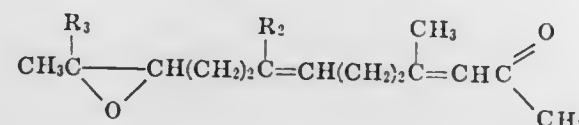
b. maintaining the air to naphthalene weight ratio within the range of 6.0 : 1 to 8.5 : 1;

whereby a naphthalene to catalyst contact ratio of at least 4.0×10^{-4} pounds of naphthalene per pound of catalyst is maintained.

26 Claims

$$\begin{array}{c}
 \text{---OCH}_2\text{---} \begin{array}{|c|} \hline \text{S} \\ \hline \text{O} \\ \hline \end{array} \text{---} \quad \text{---O---(C}_6\text{H}_{12}\text{O)}_y\text{---C}_n\text{H}_{2n}\text{N} \begin{array}{l} \text{R}_1 \\ \text{R}_2 \end{array} \\
 \\
 \begin{array}{c} \text{R}_1\text{N} \text{---} \text{C}_n\text{H}_{2n}\text{OR} \\ \text{C}_n\text{H}_{2n}\text{O---} \end{array}
 \end{array}$$

2 Claims



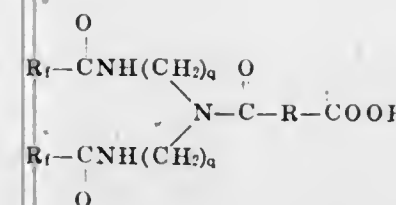
3 Claims

26 Claims

$$\begin{array}{l} \text{R}^1 \\ \text{R}^2 \end{array} \begin{array}{l} \diagup \\ \diagdown \end{array} \text{N-CH}_2\text{-OH}$$

5 Claims

I. Compounds having the formula


$$\begin{array}{c} R_1 \\ | \\ F-C-R_2 \\ | \\ F-C-O- \\ | \\ F-C-R_2 \\ | \\ R_1 \end{array}$$

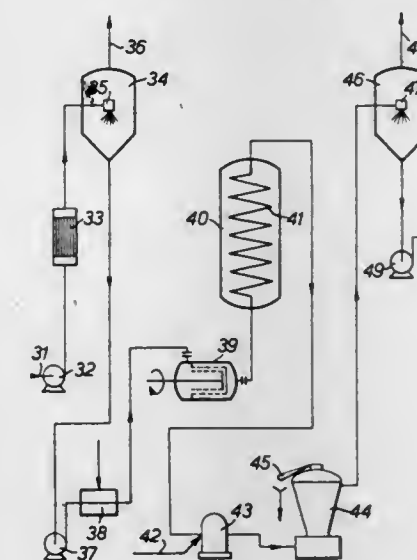
17 Claims

$$\begin{array}{ccccc}
 & X & & Y & \\
 & | & & | & \\
 & \text{CHO} & & \text{OHC} & \\
 & | & \delta^- & | & \\
 & \text{CHO} & \text{--- B ---} & \text{OHC} & \\
 & | & \vdots & | & \\
 & Y & \text{H} & Y &
 \end{array}$$
$$n \text{H}_2\text{C} - \left(\begin{array}{c} -\text{CH}- \\ | \\ \text{OZ} \end{array} \right)_n - \text{radical}$$
$$\text{H}_2\text{C}-\left(\text{CH}-\right)_n$$

OZ

OZ

8 Claims



2 Claims

[illegible]

wherein R is hydrogen, alkyl of one to 8 carbon atoms, or a pharmacologically acceptable cation.

3,852,317

PRODUCTION OF ISOCYANATES

Fritz Zanker, Worms, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigskafen/Rhine, Germany

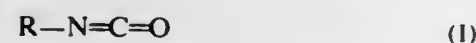
Filed Oct. 25, 1972, Ser. No. 300,738

Int. Cl. C07c 119/04

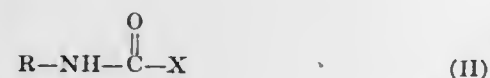
U.S. Cl. 260-453 P

12 Claims

1. A process for the production of an isocyanate of the formula:



in which R is alkyl of 1 to 12 carbon atoms, alkenyl or alkynyl of 2 to 6 carbon atoms each, cycloalkyl of 5 to 8 carbon atoms onto which through two or three common carbon atoms a five-membered or six-membered alicyclic ring may be condensed, alkyl of 1 to 6 carbon atoms which may be substituted by cycloalkyl of 5 or 6 carbon atoms onto which through two or three common carbon atoms a five-membered or six-membered alicyclic ring may be condensed, aralkyl of 7 to 12 carbon atoms, phenyl or naphthyl with the proviso that all of said radicals R may bear inert substituents selected from the group consisting of alkyl, alkoxy or alkylthio of 1 to 5 carbon atoms each, carbalkoxy, alkenyl or alkynyl of 2 to 5 carbon atoms each, chlorine, fluorine, bromine, trifluoromethyl, nitrile, phenylthio, cyclohexylthio or benzylthio, which process comprises eliminating hydrogen halide from a carbamyl halide of the formula:



in which R has the meanings given above and X is bromine or chlorine, by contact with a liquid aqueous acidic reaction medium consisting essentially of water and an acid selected from the group consisting of hydrogen chloride and hydrogen bromide at a temperature of from -30° to +30°C., the acid concentration increasing over the course of the reaction but being controlled such that it does not exceed about 30% by weight of hydrogen halide based on the total weight of water.

3,852,318

SUBSTITUTED BENZYL-THIOLCARBAMIC ACID ESTERS

Akio Kudamatsu, Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer-Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 875,546, Nov. 10, 1969, abandoned.

This application Aug. 10, 1971, Ser. No. 170,655

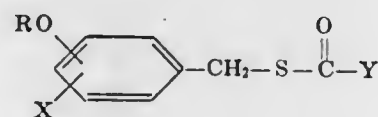
Claims priority, application Japan, Nov. 12, 1968, 43-82249

Int. Cl. C07c 155/02

U.S. Cl. 260-455 A

18 Claims

1. A substituted benzyl-thiolcarbamic acid ester of the formula



in which R is alkyl of 1-4 carbon atoms, X is selected from the group consisting of chloro, bromo and alkyl of 1-4 carbon atoms, and Y is dialkylamino having 1-4 carbon atoms in each alkyl moiety.

3,852,319

SUBSTITUTED THIO-AND DITHIO-CARBANILATES

Fred Y. Edamura, and Thomas J. Giacobbe, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 194,532, Nov. 1, 1971, Pat. No. 3,790,619.

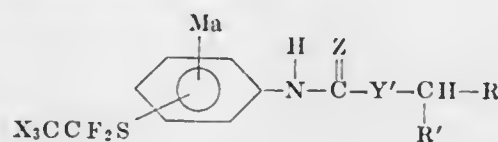
This application Sept. 24, 1973, Ser. No. 400,474

Int. Cl. C07c 155/02, 155/08

U.S. Cl. 260-455 A

2 Claims

1. Substituted thio- and dithio- carbanilate compounds corresponding to the formula:



wherein:

each X independently represents hydrogen, bromo, chloro, or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y, Y' and Z each independently represent oxygen or sulfur; each M independently represents bromo, chloro, fluoro, iodo, nitro or lower alkyl of from one to about four carbon atoms;

a represents an integer of from 0 to 3, both inclusive;

R represents hydrogen, lower alkyl of from one to five carbon atoms, lower alkenyl of from two to four carbon atoms, or lower alkynyl of from two to four carbon atoms; and

R' is hydrogen or methyl.

3,852,320

ALLYL 2,2-DINITROPROPYL CARBONATE

Albert L. Rocklin, Walnut Creek, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 81,638

Int. Cl. C07c 69/00

U.S. Cl. 260-463

8 Claims

1. Allyl 2,2-dinitropropyl carbonate.

3,852,321

3,3-DIMETHYLCYCLOHEXYLIDENEACETONITRILES

James H. Babler, 125 Callan, Evanston, Ill. 60602

Filed Oct. 13, 1972, Ser. No. 297,421

Int. Cl. C07c 121/48

U.S. Cl. 260-464

2 Claims

1. The mixture of Z and E-3,3-dimethylcyclohexylideneacetonitrile containing 28 to 65 percent Z-3,3-dimethylcyclohexylideneacetonitrile.

3,852,322

PROCESS FOR CITRIC ACID PRODUCTION AND INTERMEDIATES THEREFOR

Hermann Faubl, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

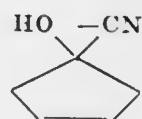
Filed June 15, 1973, Ser. No. 370,337

Int. Cl. C07c 121/48

U.S. Cl. 260-464

1 Claim

1. A compound of the formula:



3,852,323

PHENYLACETIC ACIDS

Julius Diamond, Lafayette Hill, and Norman Julian Santora, Roslyn, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

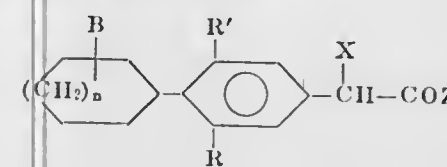
Continuation-in-part of Ser. No. 34,870, May 5, 1970, This application June 11, 1971, Ser. No. 152,387

Int. Cl. C07c 63/54, 65/14, 121/64

U.S. Cl. 260-465 D

42 Claims

1. A compound of the formula



where:

n is 0-2;

B is hydrogen or loweralkyl;

R is halo, nitro, loweralkylsulfonyl, trifluoromethyl or cyano;

R' is fluoro, chloro, bromo, trifluoromethyl, cyano, nitro or loweralkylsulfonyl

X is halo;

Z is -OH, loweralkoxy, phenyl loweralkoxy, -OM where M is an alkali, alkaline earth or aluminum metal or an ammonium salt which is pharmaceutically acceptable.

3,852,324

N,N-(CYANO-PHENYLENE) DIOXAMIC ACIDS

John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

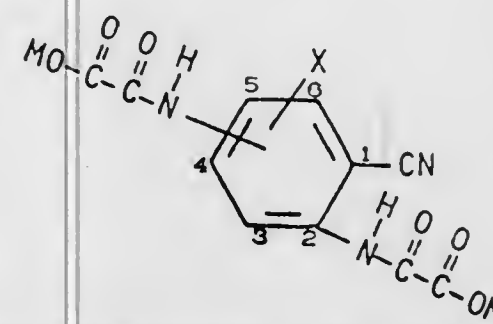
Filed Dec. 20, 1972, Ser. No. 316,975

Int. Cl. C07c 121/78

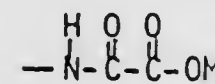
U.S. Cl. 260-465 D

7 Claims

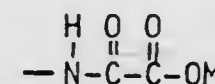
1. A compound of the formula



wherein M is selected from the group consisting of hydrogen and a pharmaceutically acceptable metal or an amine cation and



is at one of the positions 4,5 and 6 with the proviso that when



is at 4, then when X is at the three position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive;

when X is at the 5 position, X is selected from the group consisting of hydrogen, halogen, alkoxy from one to three carbon atoms, inclusive, and cyano; and

when X is at the 6 position, X is selected from the group consisting of hydrogen and halogen;

5, then when X is at the 3 or 6 position, X is hydrogen; and when X is at the 4 position, X is selected from the group consisting of hydrogen, halogen, alkyl from one to three carbon atoms, inclusive; and alkoxy from one to three carbon atoms, inclusive;

3,852,325

SELECTIVE ISOMERIZATION OF PENTENENITRILES

Charles M. King, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1973, Ser. No. 392,515

Int. Cl. C07c 121/30

U.S. Cl. 260-465.9

7 Claims

1. A process for isomerizing a pair of geometric isomers of the group consisting of cis- and trans-2-pentenitrile and cis- and trans-3-pentenitrile in a mixture of these pentenenitriles, the geometric pair initially being present in a ratio greater than 1.19 trans-2-pentenitrile/cis-2-pentenitrile or 8.0 trans-3-pentenitrile/cis-3-pentenitrile and bringing the geometric pair of isomers to its equilibrium ratio said equilibrium ratio of trans-2-pentenitrile to cis-2-pentenitrile being 1.19 and 8.0 for trans-3-pentenitrile to cis-3-pentenitrile was substantially no carbon-carbon double bond migration,

which comprises contacting the mixture of pentenenitriles at a temperature in the range of 90°-200°C. with from 1 to 40% by weight, based on the weight of the pentenenitriles, of a catalyst consisting essentially of a compound of the formula R₂CX wherein R is an aryl radical having up to 18 carbon atoms and X is of the group consisting of -H, -Cl, -Br, -SH, -I, -B(C₆H₅)₄, -AsF₆, -SbF₆, -PF₆ and -BF₄.

3,852,326

CYANOPERFLUORO(VINYL ETHERS), THEIR PREPARATION AND COPOLYMERS THEREOF

James E. Nottke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

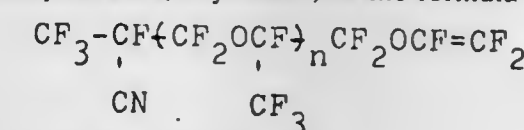
Filed June 14, 1972, Ser. No. 262,590

Int. Cl. C07c 121/02, 121/30

U.S. Cl. 260-465.6

8 Claims

1. A cyanoperfluoro(vinyl ether) of the formula



where n is an integer from 0 to 4.

3,852,327

SELECTIVE CIS/TRANS ISOMERIZATION OF 2-PENTENITRILE IN A SOLUTION OF PENTENITRILE ISOMERS

Joe D. Druliner, Orange, Tex., and Charles M. King, Arundel, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1973, Ser. No. 392,514

Int. Cl. C07c 121/30

U.S. Cl. 260-465.9

8 Claims

1. A process for altering the isomer ratio of cis-2-pentenitrile to trans-2-pentenitrile in a product stream consisting essentially of cis-2-pentenitrile, trans-2-pentenitrile, 3-pentenitrile and 4-pentenitrile, the cis-/trans-2-pentenitrile ratio not being at the equilibrium ratio and bringing the mixture closer to the equilibrium cis-/trans-2-pentenitrile ratio while effecting substantially no isomerization of 3-pentenitrile to 2-pentenitrile, which comprises contacting the mixture of pentenenitriles at a temperature in the range of 25°-200°C. with from 0.1 to 50% by weight, based on the total reaction mixture, of a catalyst composition consisting essentially of a Lewis acid and a Lewis base, the mole ratio of the Lewis acid to Lewis base being from about 1:5 to about 5:1.

3,852,328

CATALYTIC ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE TO A LINEAR PENTENENITRILE

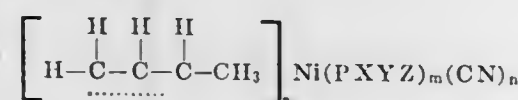
Yuan-Tsan Chia, Wilmington, Del., and William C. Seidel, Orange, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 26, 1973, Ser. No. 401,073
Int. Cl. C07c 121/30

U.S. Cl. 260—465.9

8 Claims

1. A process of isomerizing 2-methyl-3-butenitrile and thereby producing 3-pentenitrile which comprises contacting the 2-methyl-3-butenitrile at a temperature of 0° to 120°C. with a catalyst consisting essentially of a π -allyl nickel complex of the formula



wherein PXYZ is a sigma-pi bonding ligand in which X is OR, Y and Z are R or OR and R is an aryl radical or an alkyl hydrocarbonyl radical having up to 18 carbon atoms, wherein the R radicals of a given ligand are so chosen that the ligand has a cone angle in the range of 130° to 170°, a has a value of 1, m has a value of 1-2 and n has a value of 1, the mole ratio of 2-methyl-3-butenitrile to catalyst being in the range of 1:2 to 2,000:1.

3,852,329

PROCESS FOR ISOMERIZATION OF 2-METHYL-3-BUTENE-NITRILE TO A LINEAR PENTENENITRILE

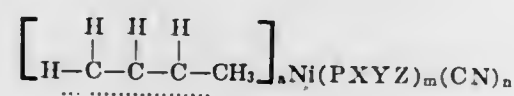
Peter E. Tomlinson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1973, Ser. No. 402,905
Int. Cl. C07c 121/30

U.S. Cl. 260—465.9

12 Claims

1. A process of isomerizing 2-methyl-3-butenitrile and thereby producing 3-pentenitrile which comprises contacting 2-methyl-3-butenitrile in a reactor at a temperature in the range of 10° to 200°C. with a catalyst consisting essentially of a nickel complex of the group consisting of a zerovalent nickel compound of the formula $\text{Ni}(\text{PXYZ})_4$ and a π -allyl nickel compound of the formula



wherein PXYZ is a sigma-pi bonding ligand in which X is OR, Y and Z are R or OR and R is of the group consisting of alkyl and aryl radicals of up to 18 carbon atoms wherein for the π -allyl nickel compound the R radicals of a given PXYZ ligand are so chosen that the ligand has a cone angle of 130° to 170°; a has a value of 1, m has a value of 1-2 and n has a value of 1, wherein the 2-methyl-3-butenitrile and the catalyst are contacted with an activated crystalline metal aluminosilicate zeolite molecular sieve having substantially uniform pore diameters in the range of about 3A to about 13A.

3,852,330

BOLL WEEVIL SEX ATTRACTANT

Rene C. Zurfluh, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 870,009, Oct. 22, 1969, abandoned. This application May 5, 1972, Ser. No. 250,546
Int. Cl. C07c 61/36, 69/74

U.S. Cl. 260—468 H

3 Claims

1. The compound, cis 1-methyl-2-acetyl-cyclobutylacetic acid and lower alkyl esters thereof.

3,852,331

STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

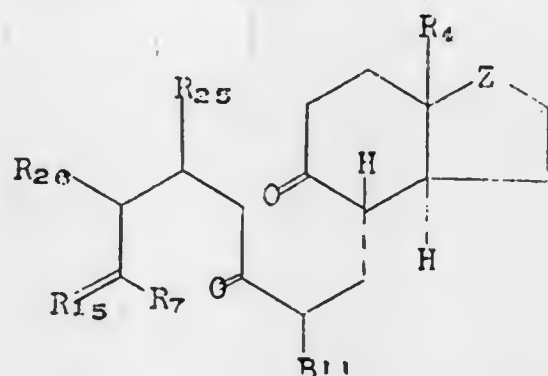
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968, This application Oct. 16, 1972, Ser. No. 298,070
Int. Cl. C07c 69/00

U.S. Cl. 260—468 G

3 Claims

1. A compound of the formula



wherein R_{15} is selected from the group consisting of oxo, lower alkylendioxy or (hydrogen and lower alkoxy); B'' is selected from the group consisting of lower alkoxy-carbonyl, lower aryloxy-carbonyl, cyano, lower alkyl sulfinyl, lower alkyl sulfonyl; R_{25} and R_{26} are independently selected from the group consisting of hydrogen, hydroxyl and lower alkyl; Z is selected from the group consisting of carbonyl, lower alkylendioxy or $\text{CH}(\text{OR}_2)$; R_4 and R_7 are both lower alkyl and R_2 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxy-benzoyl, trifluoroacetyl, or camphorsulfonyl.

3,852,332

ESTERS OF (ALKYNYLOXY) AND (ALKENYLOXY) CARBANILIC ACID

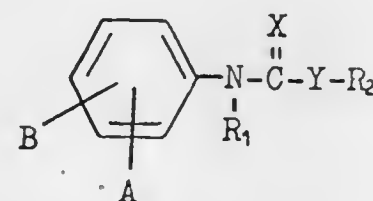
Barrington Cross, Rocky Hill, and Robert Louis Arotin, Willingboro, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 30, 1972, Ser. No. 267,838
Int. Cl. C07c 125/06

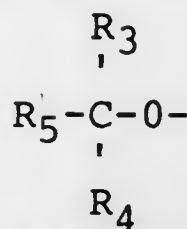
U.S. Cl. 260—471 C

10 Claims

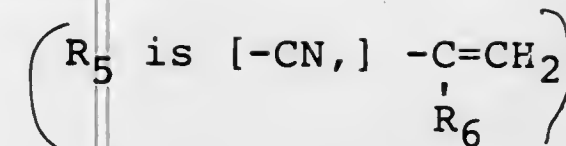
1. Compounds of the formula:



wherein A is hydrogen, halogen, alkyl (C_1-C_4), alkoxy (C_1-C_4), monohaloalkyl (C_1-C_4), dihaloalkyl (C_1-C_4), trihaloalkyl (C_1-C_4), or nitro; B is



X and Y are oxygen; R_1 is hydrogen or alkyl (C_1-C_4); R_2 is alkyl (C_1-C_{10}), cycloalkyl (C_3-C_7), benzyl, chlorobenzyl, methylbenzyl, phenyl, chlorophenyl, methylphenyl, alkenyl (C_2-C_6), monohaloalkenyl (C_2-C_6), alkenyl (C_2-C_6), monohaloalkenyl (C_2-C_6), alkenyl (C_2-C_6), monohaloalkynyl (C_2-C_6) or monomethoxyalkynyl (C_2-C_6); R_3 and r_4 are hydrogen or methyl;



or 13 C $C-R_7$; R_6 is hydrogen, methyl or halogen; and R_7 is hydrogen, halogen, alkyl (C_1-C_4), alkoxyalkyl (C_2-C_6) or haloalkyl (C_1-C_4), provided that A and B are respectively attached to the carbons in the ring which are meta- and para- or para- and meta- to the carbon attached to the nitrogen; and provided that when B is $\text{CH}_2=\text{CHCH}_2\text{O}-$, X is oxygen.

3,852,333

NEW ANTHRANILIC ACID- α -MONOGLYCERIDES

James R. Fisher, Royal Oak, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Oct. 23, 1967, Ser. No. 677,051

Int. Cl. C07c 101/54

U.S. Cl. 260—471 R

2 Claims

1. A compound which is 2,3-dihydroxypropyl N-(2,3-xylyl)anthranilate.

3,852,334

SUBSTITUTED CARBAZIC ACID ESTERS

John Paul Dusz, Nanuet; Harry Lee Lindsay, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

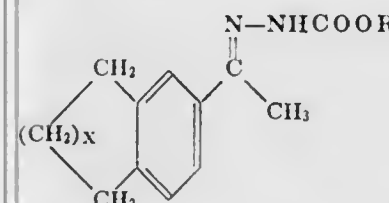
Filed Dec. 17, 1973, Ser. No. 425,422

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

3 Claims

1. A compound of the formula:



wherein R is lower alkyl (C_1 to C_6) and X is 1 or 2.

3,852,335

SEPARATION OF BASIC INORGANIC COMPOUNDS FROM THE REACTION MIXTURE OBTAINED IN THE MANUFACTURE OF HYDROXYPIVALIC ACID NEO-PENTYLGLYCOL ESTER (2,2-DIMETHYL-1,3-PROPANEDIOL-HYDROXYPIVALIC MONOESTER

Franz Merger, Frankenthal, and Gerd Duembgen, Dannstadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed July 9, 1973, Ser. No. 377,613

Int. Cl. C07c 60/66

U.S. Cl. 260—484 R

3 Claims

1. A process for separating basic inorganic compounds from the reaction mixture obtained in the conversion of hydroxy-pivalaldehyde to hydroxypivalic acid neopentylglycol ester in the presence of basic catalysts, wherein formic acid is added to the reaction mixture, which is then filtered.

3,852,336

ANTHELMINTIC COMPOUNDS

Morton Harfenist, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Triangle Park, N.C.

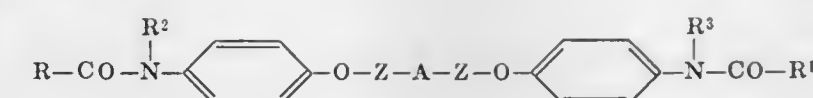
Filed Feb. 25, 1972, Ser. No. 229,563

Int. Cl. C07c 69/40, 69/48

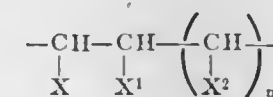
U.S. Cl. 260—485 J

5 Claims

1. The compound of the formula



wherein R and R^1 are the same or different and each is hydrogen, a saturated aliphatic hydrocarbon group having 1 to 7 carbon atoms or an unsaturated aliphatic hydrocarbon group having 2 to 4 carbon atoms; R^2 and R^3 are the same or different and each is hydrogen or an alkyl having 1 to 4 carbon atoms; Z is the group



where m is 0 or 1, and X, X^1 and X^2 are the same or different and each is hydrogen or an alkyl group having 1 to 3 carbon atoms;

A is $-\text{O}-\text{Y}-\text{O}-$ and Y is $-\text{CO}-$ or $-(\text{W})_1-(\text{CO})_p-$ wherein W is an unsubstituted aliphatic hydrocarbon residue having 1 to 12 carbon atoms, and p is 1.

3,852,337

PGF TETRAOLS AND ALKANOYL ESTERS

Sune Bergstrom, and Jan Sjoval, both of Kemiska Institutionen Karolinska Institutet, Stockholm 60, Sweden

Continuation of Ser. No. 115,110, Feb. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 203,752, June 20, 1962, Pat. No. 3,598,858, which is a continuation-in-part of Ser. No. 199,209, April 9, 1962, abandoned, which is a continuation-in-part of Ser. No. 738,514, May 28, 1958, Pat. No. 3,069,322. This application Aug. 23, 1972, Ser. No. 282,952

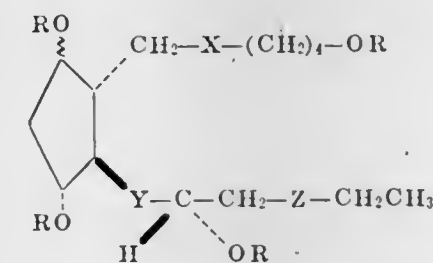
Claims priority, application Great Britain, Mar. 29, 1962, 12139/62

Int. Cl. C07c 35/06, 69/20, 69/32

U.S. Cl. 260—488 R

27 Claims

1. A compound of the formula:



wherein Y is $-\text{CH}_2\text{CH}_2-$ or $\text{trans}-\text{CH}=\text{CH}-$, and both X and Z are $-\text{CH}_2\text{CH}_2-$, or wherein Y is $\text{trans}-\text{CH}=\text{CH}-$, X is $\text{cis}-\text{CH}=\text{CH}-$, and Z is $-\text{CH}_2\text{CH}_2-$ or $\text{cis}-\text{CH}=\text{CH}-$, wherein R is hydrogen or lower alkanoyl, all R groups being the same, and wherein ~ indicates attachment of $-\text{OR}$ to the ring in alpha or beta configuration.

3,852,338

N-SUBSTITUTED PHENYLALANINE DERIVATIVES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 21, 1971, Ser. No. 191,486

Claims priority, application Switzerland, Oct. 30, 1970, 16043/70

Int. Cl. C07c 101/08

U.S. Cl. 260—501.12

2 Claims

1. N-[(o-nitrophenyl)-thio]-L-dopa or salts thereof with pharmaceutically acceptable acids or bases.

3,852,339

AMINOALKOXYPHENYLUREA DERIVATIVES

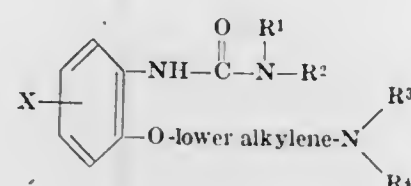
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 46,520, June 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 760,072, Sept. 16, 1968, abandoned. This application Jan. 25, 1972, Ser. No. 220,699

Int. Cl. C07c 127/16

U.S. Cl. 260—501.12

1. A compound having the formula



or a salt thereof with pharmaceutically acceptable acids, wherein the X is hydrogen, halogen, trifluoromethyl, lower alkyl or lower alkoxy; R¹ and R² and R³ and R⁴ are the same or different and each is hydrogen, lower alkyl, allyl, cyclo-lower alkyl, phenyl or X-phenyl.

3,852,340

PLANT HORMONE CARBOXYLIC ACID SALTS OF ALIPHATIC POLYAMINES

Richard A. Reck, Hinsdale, and Walter W. Abramitis, Downers Grove, both of Ill., assignors to Akzona Incorporated, Ashville, N.C.

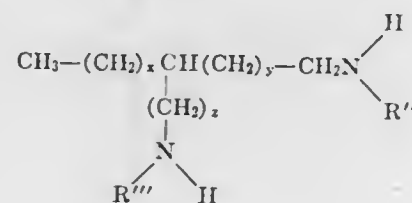
Continuation-in-part of Ser. No. 581,725, Sept. 26, 1966, Pat. No. 3,683,010, which is a continuation-in-part of Ser. No. 300,108, Aug. 5, 1963, abandoned. This application Apr. 21, 1970, Ser. No. 30,608. The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.

Int. Cl. C07c 87/14

U.S. Cl. 260—501.16

8 Claims

1. A plant hormone carboxylic acid salt of an aliphatic polyamine selected from the group consisting of aminostearylamine, aminomethylstearylamine, aminoundecylamine, and aminomethylundecylamine and γ -aminopropyl derivatives thereof having the following formula:



wherein

x = 0 to 15

y = 0 to 15

z = 0 or 1

x + y = 8 or 15

R'', R''' = H or γ -aminopropyl

said plant hormone carboxylic acid being selected from the group consisting of 2,4-dichlorophenoxyacetic acid; 2,4,5-trichlorophenoxyacetic acid; methylchlorophenoxyacetic acid; chlorinated benzoic acid; dichloropropionic acid; β -indolylacetic acid α -naphthaleneacetic acid; indolylbutyric acid; indolylpropionic acid; phenylacetic acid; fluoroacetic acid; 2,5-dichloro-3-nitrobenzoic acid; 3-amino-2,5-dichlorobenzoic acid, and 3,6-endoxohexahydrophthalic acid.

3,852,341

NOVEL IODINE CONTAINING POLYMERS USEFUL AS X-RAY CONTRAST AGENTS

Lars Bjork; Uno Eugen Erikson; Kirsti Annikki Granath; Bjorn Gustav-Adolf Ingelman, and Bernt Jabes Lindberg, all of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Division of Ser. No. 869,926, Oct. 27, 1969, Pat. No.

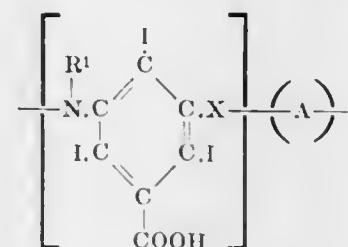
3,733,397 which is a division of Ser. No. 686,340, Nov. 28, 1967, abandoned and 775,920, Nov. 14, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,665

Int. Cl. C07c 101/54, 103/30

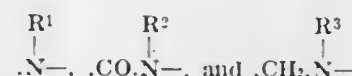
U.S. Cl. 260—519

10 Claims

1. A polymer consisting of repeating units of the formula



wherein X is a member selected from radicals having the formulas



where R¹ and R³ each are a member selected from the group consisting of hydrogen, alkanoyl and alkyl having each no more than 5 carbon atoms and R² is a member selected from the group consisting of hydrogen and alkyl having no more than 5 carbon atoms, and wherein A is an alkylene group substituted by at least one hydroxyl group, said alkylene containing 3-30 carbon atoms, and being broken by at least one oxygen bridge and said polymer being built up of alternating 2,4,6-triiodobenzoic acid derivative groups of the formula indicated above and the groups A and said polymer containing at least three such 2,4,6-triiodobenzoic acid derivative groups and having an average molecular weight of at least 1900 and physiologically acceptable salts thereof.

3,852,342

PROCESS FOR THE LIQUID PHASE OXIDATION OF METHYLAROMATIC COMPOUNDS INTO POLYCARBOXYLIC ACIDS

Jacques D. V. Hanotier, Brussels, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed Sept. 1, 1972, Ser. No. 285,733

Int. Cl. C07c 63/02

U.S. Cl. 260—524 R

6 Claims

1. A process for the liquid phase oxidation of methylaromatic compounds having at least one methyl substituent on a nuclear carbon atom vicinal to another nuclear carbon atom substituted by a radical selected from the group consisting of methyl, hydroxymethyl, formyl and carboxyl radicals, to form aromatic polycarboxylic acids having at least two carboxyl groups on vicinal nuclear carbon atoms, which process comprises reacting in acetic acid said methylaromatic compounds with a cobalt salt while maintaining such a concentration of cobaltic ions that 2x-A is at least 0.4, x and A being respectively the molarity of said cobaltic ions and said cobalt salt in the reaction mixture, at a temperature of between 20 and 100°C and in the presence of molecular oxygen at a partial pressure of from 0.2 to 20 atmospheres.

3,852,343

A PROCESS FOR THE PRODUCTION OF BENZENE CARBOXYLIC ACIDS FROM ETHYL SUBSTITUTED BENZENES

Jacques D. V. Hanotier, and Pierre M. J. G. DeRaditzky D'Ostrowick, both of Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

Continuation of Ser. No. 129,250, March 29, 1971,

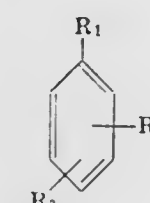
abandoned. This application June 26, 1973, Ser. No. 374,792

Int. Cl. C07c 63/02

U.S. Cl. 260—524 R

7 Claims

1. A process for the production of benzene carboxylic acids, which comprises reacting ethyl-substituted benzene compounds having the general formula



where R₁ is an ethyl radical, R₂ and R₃ are each a member of the group comprising hydrogen and ethyl, acetyl, 1-hydroxyethyl, 1-acetoxyethyl and carboxyl radicals, said radicals being spaced apart from at least one unsubstituted nuclear carbon atom, with molecular oxygen at a temperature between 120° and 200°C in a solvent mixture consisting of acetic acid and water in a volume ratio of between 1:1 and 5:1, acid to water, the amount of said solvent mixture employed being such that at least 10 percent of the reaction mixture is water, and wherein the volume ratio of said solvent mixture to said ethyl-substituted benzene compound is between 1:1 and 10:1 in the presence of a catalyst mixture consisting essentially of a cobalt carboxylate, said cobalt carboxylate present in an amount of 0.010 to 0.100 mole per liter of reaction mixture, and a manganese carboxylate, said manganese carboxylate present in an amount of 0.001 to 0.010 mole per liter of reaction mixture, said carboxylates being soluble in the reaction mixture, and maintaining the concentration of unreacted ethyl-substituted benzene compound in the reaction mixture at a value of at least 5 percent by volume on a solvent-free basis.

3,852,344

PROCESS FOR RECOVERING IMINODIACETIC ACID FROM SODIUM CHLORIDE SOLUTIONS

Robert W. Bragdon, Marblehead, Mass.; Jon C. Thunberg, Amherst, and William P. Moore, Durham, both of N.H., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 319,539, Dec. 29, 1972, Pat. No. 3,808,269. This application Nov. 15, 1973, Ser. No.

416,027

Int. Cl. C07c 99/12

U.S. Cl. 260—534 E

24 Claims

1. A process for recovering iminodiacetic acid from an aqueous solution consisting essentially of water, iminodiacetic acid, and sodium chloride, the mole ratio of iminodiacetic acid to sodium chloride being 1:1.0-15.0, said solution having a temperature of about 0°-50°C and containing at least about 5 percent iminodiacetic acid, said process comprising adjusting the pH of said aqueous solution to 1.4-3.0 to precipitate iminodiacetic acid therefrom; separating the precipitated iminodiacetic acid; and recovering the separated iminodiacetic acid.

3,852,345

HERBICIDES AND FUNGICIDES

Sidney B. Richter, Chicago, and Leonard J. Stach, Riverside, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

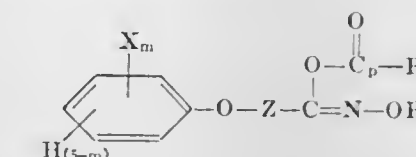
Division of Ser. No. 782,716, Dec. 10, 1968, abandoned. This application Dec. 23, 1970, Ser. No. 101,191. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. C07c 119/00

U.S. Cl. 260—545 R

2 Claims

1. A compound of the formula



wherein X is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, halogen, nitro, amino, lower alkylamino, di(lower alkyl)amino and cyano; m is an integer from 0 to 5; Z is a carbon chain of from 1 to 4 carbon atoms; R¹ is lower alkyl; p is 1; and R² is selected from the group consisting of lower alkylamino and di(lower alkyl)amino.

3,852,346

PRODUCTION OF CARBOXYLIC ACID ANHYDRIDES

Denis Forster, University City; Arnold Hershman, and Frank E. Paulik, both of Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,125

Int. Cl. C07c 51/14

U.S. Cl. 260—546

10 Claims

1. An improved process for the production of carboxylic acid anhydrides by the reaction of ethylenically unsaturated feedstock compounds having from 2 to 30 carbon atoms, which comprises contacting the said compound with carbon monoxide, and at least one reactant selected from the group consisting of carboxylic acids having from 2 to 30 carbon atoms and water, at a temperature from 50°C to 300°C and a partial pressure of carbon monoxide of 1 psia to 2,000 psia, the improvement comprising the production of carboxylic acid anhydrides in the presence of a catalyst system consisting essentially of:

1. a rhodium or iridium compound, and
2. an iodide component subject to the conditions that the atomic ratio of iodide to rhodium or iridium is from 1:1 to 300:1, and
3. hydrogen as a catalyst preserver or regenerator component in a molar ratio of 5:1 to 10,000:1 to the rhodium or iridium with the proviso that when the process is conducted in the presence of both carboxylic acids having from 2 to 30 carbon atoms and water as reactants, the ratio of moles of water fed to the reactor per mole of carbon monoxide consumed is less than 0.5, and that when the reactant of the group of carboxylic acids and water, is water, the ratio of moles of water fed to the reactor per mole of carbon monoxide consumed is at least 0.5 but less than 1.0.

3,852,347

SUBSTITUTED CYCLOALKYL UREAS

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

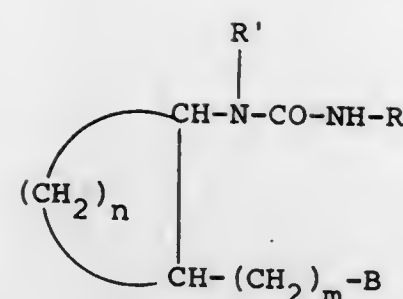
Filed Sept. 15, 1972, Ser. No. 289,394

Int. Cl. C07c 127/18

U.S. Cl. 260—553 A

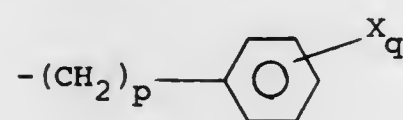
2 Claims

1. A compound of the formula



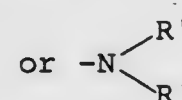
or salts thereof with pharmaceutically acceptable acids wherein

n is 3, 4, 5 or 6;
 R' is H or alkyl of from 1 to 6 carbon atoms;
 R is H, alkyl of from 1 to 6 carbon atoms, or a radical of the formula



wherein

p is 0, 1, 2 or 3;
 X is F, Cl, Br or I, CF_3 , nitro, amino, alkyl of from 1 to 6 carbon atoms or $-\text{OR}$ wherein R is H, alkyl of from 1 to 6 carbon atoms, cycloalkyl of from 5 to 8 carbon atoms, or benzyl; and
 q is 0 or 1;
 m is 1, 2, or 3; and
 B is pyrrolidino, piperidino,



wherein R' is as defined previously.

3,852,348

ETHER AND SULFIDE META-SUBSTITUTED PHENYL UREAS

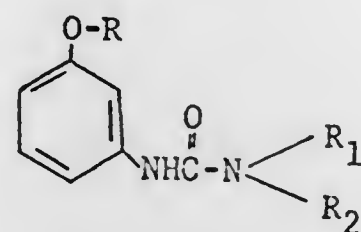
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 90,854, Nov. 18, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 340,142

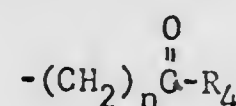
Int. Cl. C07c 127/18

U.S. Cl. 260—553 A

1. A compound having the formula



in which R is ketoalkyl of the formula



wherein n is 1 or 2 and R_4 is straight or branched chain alkyl having 1 to 4 carbon atoms, inclusive, R_1 is hydrogen or lower alkyl having 1 to 4 carbon atoms, inclusive, R_2 is lower alkyl having 1 to 4 carbon atoms, inclusive, or alkenyl having 3 to 6 carbon atoms, inclusive.

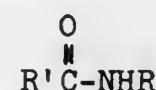
3,852,349
REACTION OF PEROXIDES WITH NITRILES
 John O. Turner, West Chester, Pa., and Richard V. Norton, Wilmington, Del., assignors to Sun Ventures, Inc., St. Davis, Pa.

Continuation-in-part of Ser. No. 144,345, May 17, 1971, abandoned. This application Oct. 20, 1972, Ser. No. 299,508
 Int. Cl. C07c 103/08

U.S. Cl. 260—558 R

10 Claims

1. A process for the preparation of an N-alkyl amide of the formula



wherein R is a secondary or tertiary aliphatic or alicyclic group having from 3 to 12 carbon atoms and R' is an alkyl, alkenyl, aryl or aralkyl group having from 1 to 20 carbon atoms, and wherein the aryl group may be unsubstituted or substituted with substituents which are inert to the conditions of the reaction, said inert substituents comprising hydroxy, nitro, mercapto, lower alkoxy, lower alkyl, and halo groups, which comprises reacting a nitrile of the formula $\text{R}'\text{CN}$ with a peroxide compound of the formula ROOR or ROOH , wherein R and R' are as defined above, in an alkanol-acid medium, wherein said acid is a mineral acid, sulfonic acid, p-toluene sulfonic acid, or an acid-treated molecular sieve, at a temperature in the range of from about 10° to 80°C .

3,852,350

PROCESS OF PREPARING AMIDES

Farris H. Wilson, Jr., Cuyahoga Falls, and Thomas J. Slam, Parma, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

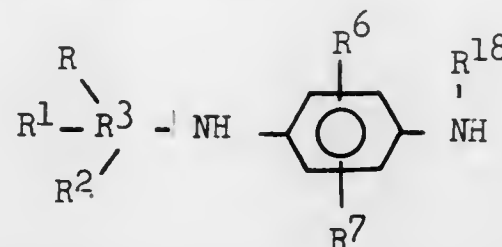
Filed Sept. 5, 1972, Ser. No. 286,476

Int. Cl. C07c 103/44

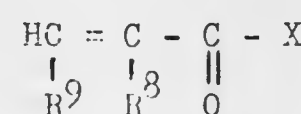
U.S. Cl. 260—562 P

11 Claims

1. A process of preparing an amide by reacting an aromatic amine with an acid chloride in an aprotic solvent solution thereof in the presence of an inorganic neutralizing agent and a catalytic amount of a tertiary amine, wherein the aromatic amine, neutralizing agent and tertiary amine are combined in the aprotic solvent, said combination then being combined with the acid chloride at a temperature of less than 50°C , and the reaction occurring at a temperature of less than 50°C , wherein at least one mole equivalent of the neutralizing agent is used per mole of aromatic amine and wherein the catalytic amount of the tertiary amine is 0.0033 mole to 0.20 mole per mole of aromatic amine and wherein the aromatic amine has the following structural formula

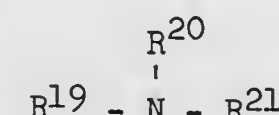


and the acid chloride has the following structural formula

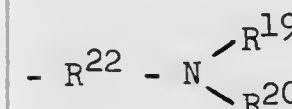


wherein R^3 is an aryl radical, R and R^1 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms, R^2 is selected from the group consisting of hydrogen,

alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms and wherein R^6 and R^7 are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms, R^8 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, aryl radicals having from 6 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals, and R^9 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, aryl radicals having from 6 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, carboxyl radical and carbalkoxy radicals and wherein R^{18} is selected from the group consisting of hydrogen, alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms and aralkyl radicals having 7 to 13 carbon atoms and wherein the tertiary amine has the following structural formula



wherein R^{19} and R^{20} are selected from the group consisting of alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 10 carbon atoms, aralkyl radicals having 7 to 15 carbon atoms, hydroxy alkyl radicals having 2 to 12 carbon atoms, and hydroxy cycloalkyl radicals having 5 to 10 carbon atoms, and wherein R^{21} can be selected from the same group of radicals as R^{19} and R^{20} and in addition can be an aryl radical having 6 to 12 carbon atoms or a radical having the following structure



wherein R^{22} is selected from the group consisting of alkylene radicals having 1 to 6 carbon atoms, cycloalkylene radicals having 5 to 10 carbon atoms, and arylene radicals having 6 to 12 carbon atoms and wherein any two of the three radicals R^{19} , R^{20} and R^{21} can be combined to form a heterocyclic ring and wherein R^{19} , R^{20} and R^{21} can be combined to form an aromatic ring and wherein the inorganic neutralizer is selected from the group consisting of hydroxides, carbonates, bicarbonates and oxides, the anionic portion thereof being selected from the group consisting of sodium, potassium, barium, calcium, lithium, cesium and magnesium.

3,852,351

CHLORINATION OF ACETOACETAMIDES

William G. Scharpf, Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 294,458

Int. Cl. C07c 103/00

U.S. Cl. 260—562 B

5 Claims

1. A process for the production of alpha-chloroacetoacetamides comprising the direct chlorination with chlorine of acetoacetamides between 0° and 35°C , in a reaction medium consisting of a polar solvent and in the presence of a Lewis acid capable of causing enolization of the amide.

3,852,352

METHOD OF PRODUCING ALPHA-METHYL-1-ADAMANTYLMETHYL-AMINE HYDROCHLORIDE

Yanis Jurievich Polis, ulitsa Maskavas, 266/4, kv. 38, and Ilze Yanovna Grava, ulitsa Tallinas, 41/43, kv. 46, both of Riga, U.S.S.R.

Filed Dec. 30, 1971, Ser. No. 214,381

Claims priority, application U.S.S.R., Apr. 13, 1971, 1641577

Int. Cl. C07c 87/40

U.S. Cl. 260—563 P

11 Claims

1. A method of producing α -methyl-1-adamantylmethylamine hydrochloride comprising reacting 1-adamantylmethyl ketone with a mixture of acetamide and formic acid at the boiling temperature of the reaction mixture to form an acyl derivative of α -methyl-1-adamantylmethylamine, then hydrolyzing said acyl derivative with HCl and isolating the desired product.

3,852,353

ORAL HYPOGLYCEMIC AMINOPHENYLSULFONYL-HYDROCARBYLBIGUANIDES

Clifford John Heaphy, 1635 Harvard N.E., Albuquerque, N. Mex. 87106

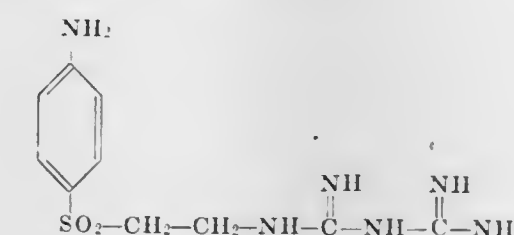
Filed Dec. 12, 1972, Ser. No. 314,545

Int. Cl. C07c 133/10

U.S. Cl. 260—564 B

1 Claim

1. A compound having the formula:



3,852,354

HIGHER ALKYL THIURAM SULFIDE

Teruyoshi Usamoto, Osaka; Yasutaka Hatada, Higashi-Osaka; Itsuro Furuichi, Yoyonaka City, and Masao Matsuo, Takatsuki, all of Japan, assignors to Sumitoma Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 70,934, Sept. 9, 1970, Pat. No. 3,706,819. This application Mar. 1, 1972, Ser. No. 230,957

Int. Cl. C07c 155/10

U.S. Cl. 260—567

1 Claim

1. A chemical which is N,N'-diisopropyl-N,N'-dioctadecyl thiuram disulfide.

3,852,355

CYCLOALIPHATIC UNSATURATED KETONES AS ODOUR- AND TASTE-MODIFYING AGENTS

Valentin Rautenstrauch, 3, Grand-Lancy/Geneva, and Ferdinand Naf, Geneva, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed Aug. 29, 1972, Ser. No. 284,467

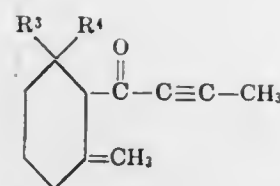
Claims priority, application Switzerland, Aug. 31, 1971, 12755/71

Int. Cl. C07c 49/48

U.S. Cl. 260—586 R

2 Claims

1. A compound of the formula



wherein R^3 and R^4 represent lower alkyl radicals containing 1 to 6 carbon atoms.

3,852,356

PRODUCTION OF ALIPHATIC AND CYCLOALIPHATIC ALPHA-NITROKETONES

Hans Martin Weitz; Hans-Henning Vogel, both of Frankfurt; Kurt Kahr, Neustadt, and Hugo Fuchs, Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 6, 1972, Ser. No. 295,442

Claims priority, application Germany, Oct. 6, 1971, 2149821

Int. Cl. C07c 45/00, 49/06, 49/30

U.S. Cl. 260—586 R

16 Claims

1. A process for the production of an aliphatic or cycloaliphatic α -nitroketone which comprises: reacting a ketone selected from the group consisting of acetone, butanone-2, pentanone-3, methyl isobutyl ketone, cyclopentanone, cyclohexanone, cycloheptanone, cyclooctanone, cyclodecanone and cyclododecanone with concentrated nitric acid having a water content of less than 5.0 percent by weight in the presence of an inert solvent selected from the group consisting of halogenated hydrocarbons, nitroalkanes, nitrocycloalkanes, nitroaromatic hydrocarbons, aliphatic hydrocarbons, cycloaliphatic hydrocarbons, linear and cyclic sulfones, cyclic ethers, tetrahydrothiophene-1,1-dioxide, dimethoxy ethane and mixtures thereof with halogenated hydrocarbons, and at a reaction temperature of less than 90°C.

3,852,357

2-ALLYL-3-CHLORO-2-CYCLOHEXEN-1-ONES AND THEIR PREPARATION

Jerry G. Strong, Fanwood, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

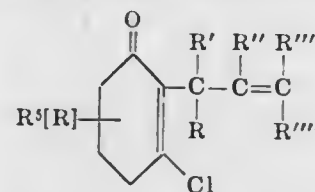
Continuation-in-part of Ser. No. 11,898, Feb. 16, 1970, abandoned. This application Jan. 18, 1973, Ser. No. 324,632

Int. Cl. C07c 49/48

U.S. Cl. 260—586 R

6 Claims

1. 2-allyl-3-chloro-2-cyclohexen-1-ones having the formula:



wherein R, R', R'', R''' and R⁵ are hydrogen or C₁-C₃ alkyl.

3,852,358

PROCESSES FOR REACTING DI-SUBSTITUTED DIENOPHILES WITH CYCLOPENTADIENE

John B. Hall, Rumson, and James Milton Sanders, Eatontown, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

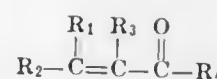
Filed Dec. 7, 1972, Ser. No. 311,709

Int. Cl. C07c 45/00

U.S. Cl. 260—586 G

12 Claims

1. A process for producing cyclic derivatives which comprises reacting cyclopentadiene with a substituted dienophile having the formula



wherein R_1 and R_4 are alkyl groups, and one of R_2 and R_3 is an alkyl group and the other is hydrogen, the alkyl groups having from one to about three carbon atoms and being the same or different, in the presence of aluminum chloride, bismuth trichloride, stannic chloride, titanium tetrachloride, ferric chloride, or boron trihalide as a Lewis acid catalyst to obtain a cycloalkenyl derivative and in the presence of a liquid reaction hydrocarbon or halogenated hydrocarbon vehicle at a temperature of from about 0°C to 50°C.

3,852,359

2-(SULFUR-SUBSTITUTED)-3-HYDROXY-5,3-DIMETHYL-2-CYCLOHEXEN-1-ONES AND PREPARATION

Joseph E. Dunbar, and Thomas J. Bohnert, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

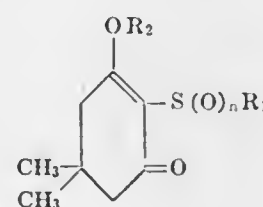
Filed Dec. 29, 1972, Ser. No. 319,361

Int. Cl. C07c 49/80, 49/82

U.S. Cl. 260—590

15 Claims

1. A 2-(sulfur-substituted)-3-hydroxy-5-dimethyl-2-cyclohexen-1-one corresponding to the formula



wherein R_1 represents benzyl, halobenzyl, lower alkylbenzyl or nitrobenzyl group, R_2 represents hydrogen, ammonium or alkali metal and n represents an integer from 0 to 2.

3,852,360

PREPARATION OF HYDROXYCITRONELLAL

Michel Vilkas, Paris, and Guy Senechal, Saint Cloud, both of France, assignors to L'Air Liquide Societe Anonyme Pour l'Etude et Exploitation des Procédes Georges Claude, Paris, France

Filed Sept. 18, 1970, Ser. No. 73,626

Claims priority, application France, Sept. 23, 1969, 69.3282

Int. Cl. C07c 47/26, 119/08

U.S. Cl. 260—602

10 Claims

1. A process for the preparation of 7-hydroxy dihydrocitronellal, comprising:

reacting citronellal with a secondary lower alkyl amine or pyrrolidine, in liquid phase, to provide an enamine, at between about -30°C and ambient temperature;

converting said enamine to the immonium of citronellal by treatment in the liquid phase of said enamine in a 30% to 70% solution of sulfuric acid at between about -30° and 0°C;

heating the resultant reaction mixture to ambient temperature and maintaining at ambient temperature to hydrate said immonium citronellal to form immonium 7-dihydroxy citronellal;

hydrolysing said immonium 7-dihydroxy citronellal in the liquid phase to 7-hydroxy-dihydrocitronellal; and recovering the 7-hydroxy dihydrocitronellal.

3,852,361

PRODUCTION OF FORMALDEHYDE

Hans Haas; Heinrich Sperber, and Wilhelm Friedrichsen, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed June 22, 1970, Ser. No. 48,444

Claims priority, application Germany, June 28, 1969, 1932892

Int. Cl. C07c 45/16

U.S. Cl. 260—603 C

6 Claims

1. A process for the production of formaldehyde which comprises oxidizing methanol with oxygen at 280°-420°C. in the presence of a catalyst composed of iron oxide and molybdenum oxide deposited on a carrier consisting essentially of magnesium silicate particles having diameters of 4-12 millimeters and an internal surface area of 0.01 to 5 square meters per gram of said catalyst, said catalyst containing 5-20% by weight, based on said magnesium silicate carrier, of said iron oxide and said molybdenum oxide.

3,852,362

PREPARATION OF TERTIARY ORGANOPHOSPHINE OXIDES

Ronald F. Lambert, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 888,023, Dec. 24, 1969., This application

Aug. 27, 1973, Ser. No. 391,631

Int. Cl. C07f 9/28

U.S. Cl. 260—606.5 P

8 Claims

1. A method of oxidizing a tertiary organophosphine to the corresponding tertiary organophosphine oxide which comprises treating a tertiary organophosphine of the formula $PR'R''R'''$ with aqueous alkali having a pH of at least 9 at a temperature between about 20°C. and 100°C. under an inert atmosphere, said tertiary organophosphine being soluble in said aqueous alkali and said R' , R'' and R''' in the above formula each being selected from alkyl and phenyl and at least one of said R' , R'' and R''' being substituted with a hydroxy group.

3,852,363

NAPHTHYL ACETALDEHYDE DERIVATIVES; METHOD OF USE THEREOF; AND PROCESSES FOR THE PREPARATION THEREOF

John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

Division of Ser. No. 814,855, April 9, 1969, Pat. No.

3,663,713, which is a continuation-in-part of Ser. No. 741,900, July 2, 1968, Pat. No. 3,626,012. This application May 5,

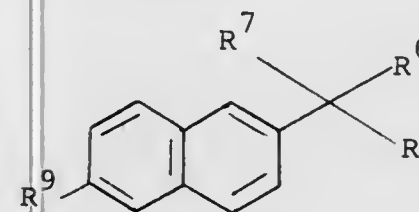
1972, Ser. No. 250,733

Int. Cl. C07c 43/20

U.S. Cl. 260—613 D

8 Claims

1. A compound of the formula:



wherein R is $-CHR^2R^1$; R^1 and R^2 are alkoxy having 1 to 6 carbon atoms, cycloalkoxy having 3 to 7 carbon atoms, benzyloxy, or 2-phenylethoxy;

one of R^6 and R^7 is hydrogen, the other is hydrogen, methyl, ethyl or difluoromethyl; or R^6 and R^7 taken together are methylene, halomethylene or ethylene;

and R^9 is lower alkoxy.

3,852,364

ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREFOR

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

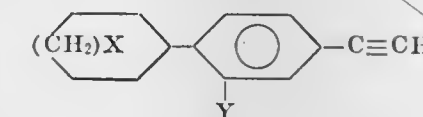
Filed July 3, 1972, Ser. No. 268,419

Int. Cl. C07c 25/18, 25/26

U.S. Cl. 260—649 R

6 Claims

1. A compound of the formula:



where X is 0-2 and Y is halo.

3,852,365

PREPARATION OF PERCHLOROFLUOROBENZENES

Walter Mahler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 5, 1973, Ser. No. 367,331

Int. Cl. C07c 25/00

U.S. Cl. 260—650 F

8 Claims

1. Method of preparing perchlorofluorobenzenes which comprises heating a reaction mixture consisting essentially of two or more perhalobenzenes selected from the group consisting of hexachlorobenzene, hexafluorobenzene, and perchlorofluorobenzenes in which the number of chlorine or fluorine atoms in the components of the mixture differ by at least two at a temperature of at least 475°C. for a period of time sufficient to obtain a different perchlorofluorobenzene having an intermediate number of chlorine and fluorine atoms.

3,852,366

A COMPOSITION OF ISOMERIC TRICHLORODIFLUOROBENZENES

Max Fredrick Bechtold, Kennett Square, and Charles William Tullock, Landenberg, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 172,513, Aug. 17, 1971, Pat. No.

3,774,393. This application Sept. 17, 1973, Ser. No. 397,724

Int. Cl. C07c 25/00

U.S. Cl. 260—650 F

1 Claim

1. A composition consisting, by weight, of about 12% 1,3,5-trichloro-2,4-difluorobenzene, about 58% 1,2,4-trichloro-3,5-difluorobenzene, about 6% 1,2,3-trichloro-4,5-difluorobenzene, about 16% 1,2,5-trichloro-3,4-difluorobenzene, about 7% 2,3,4-trichloro-1,5-difluorobenzene and about 1% 1,3,4-trichloro-2,5-difluorobenzene.

3,852,367

STABILIZED TRICHLOROETHYLENE OR TETRACHLOROETHYLENE

Seiichi Katsuragawa, and Norihisa Koketsu, both of Saitama-ken, Japan, assignors to Central Glass Co., Ltd., Yamaguchi-ken, Japan

Filed Dec. 21, 1971, Ser. No. 210,576

Claims priority, application Japan, Dec. 23, 1970, 45-115687

Int. Cl. C07c 17/40, 17/42

U.S. Cl. 260—652.5 R

1 Claim

1. A stabilized composition consisting essentially of trichloroethylene or tetrachloroethylene and
a. 0.0001 to 1.0 weight percent of glycerin;
b. 0.00001 to 0.1 weight percent of at least one phenolic derivative selected from the group consisting of p-methoxyphenol, 2,6-di-tert-butyl-4-methylphenol, p-

tert-butylphenol, p-sec-butyl-phenol and thymol;
c. 0.0001 to 0.1 weight percent of diisopropylamine; and
d. 0.001 to 1.0 weight percent of epichlorohydrin.

3,852,368

AMINE PROMOTERS FOR HYDROHALOGENATION
Jesse K. Boggs, Seabrook, Tex., assignor to Exxon Research
and Engineering Company, Linden, N.J.
Filed Aug. 13, 1971, Ser. No. 171,607
Int. Cl. C07c 17/16

U.S. Cl. 260—657 12 Claims
1. In the liquid phase chlorination of a tertiary alcohol to produce the corresponding tertiary alkyl chloride by injecting gaseous hydrogen chloride into a liquid reaction medium containing said alcohol and from about 20 to about 50 weight percent of a hydrocarbon solvent which boils in the range between about 75° and about 360° F. and is an inert liquid at the chlorination temperature, the improvement which comprises adding from about 0.3 to about 15 weight percent of an amine promoter selected from the group consisting of tributylamine, triethylamine, n-butylamine, tetraethylammonium hydroxide, and pyridine to said medium, injecting said gaseous hydrogen chloride into said medium at a temperature between about 20° and about 100° F. and a pressure between about 0.5 and 100 psig, and recovering a tertiary alkyl chloride from said reaction medium.

3,852,369

PROCESSES FOR DEHYDROGENATION OF HYDROCARBONS

Darrell W. Walker, Brent J. Bertus, and Floyd Farha, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 140,966, May 6, 1971, Pat. No. 3,781,223. This application May 24, 1973, Ser. No. 363,485
Int. Cl. C07c 5/18

U.S. Cl. 260—680 E 8 Claims
1. A process for the oxidative dehydrogenation of a paraffin hydrocarbon feedstock having from two to 12 carbon atoms which comprises contacting said feedstock with a catalyst consisting essentially of (1) at least one ferrous metal selected from the group consisting of nickel, iron and cobalt in an amount sufficient to add to the final catalyst from 26 to 75 weight percent ferrous metal, based on total weight of the final catalyst, (2) at least one tin-containing compound in an amount sufficient to add to the final catalyst about 1 to about 50 weight percent tin, and (3) phosphorus in an amount sufficient to add to the final catalyst about 0.5 to about 10 weight percent phosphorus, wherein at least one of said ferrous metal, tin or phosphorus is combined with oxygen.

3,852,370

OXIDATIVE DEHYDROGENATION WITH PROMOTED BARIUM FERRITE CATALYSTS

Robert E. Hinkson, and William H. Taylor, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 249,963, May 3, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,755
Int. Cl. C07c 5/18

U.S. Cl. 260—680 E 5 Claims
1. A process for the oxidative dehydrogenation of hydrocarbons having four to seven carbon atoms having a straight chain of at least 4 carbon atoms to produce less saturated hydrocarbons of the same number of carbon atoms which comprises contacting, at a temperature of greater than 400°C., said hydrocarbon, a halogen or halogen compound which would liberate halogen under the conditions of reaction and from 0.2 to 2.5 moles of oxygen per mole of said hydrocarbon with a catalyst for the dehydrogenation consisting essentially

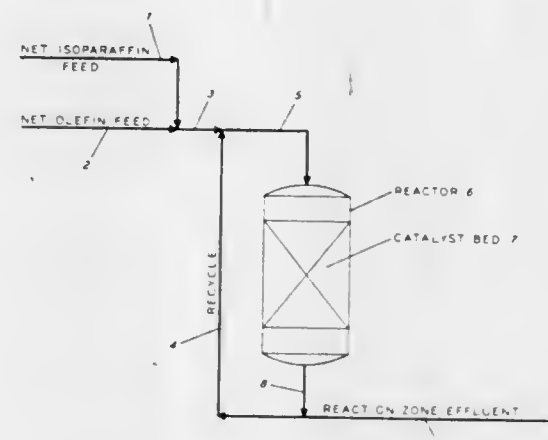
of barium ferrite and 0.35 to 1.3 moles per mole of barium ferrite of a metal oxide modifier selected from the group consisting of ZnO, MnO₂, PbO and mixtures thereof.

3,852,371

ISOPARAFFIN-OLEFIN ALKYLATION WITH A SUPPORTED HF ANTIMONY PENTAFLUORIDE CATALYST

Jacob D. Kemp, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Apr. 11, 1973, Ser. No. 350,222
Int. Cl. C07c 3/54

U.S. Cl. 260—683.47 6 Claims



1. A process for alkylating olefins with isoparaaffins which comprises feeding a net feed of a C₂-C₅ olefin or mixtures thereof and a C₄-C₇ isoparaaffin or mixtures thereof to an alkylation reaction zone, therein contacting said feed with a catalyst comprising HF-antimony pentafluoride supported on a solid fluorinated alumina base under reaction conditions including a temperature between 10°F and 60°F, an olefin LHSV through the reaction zone of between 0.25 and 0.9, an olefin content in said olefin-isoparaaffin net feed of between 1 and 15 volume percent, withdrawing reaction zone effluent mix from said reaction zone, and recycling a portion of said reaction zone effluent mix amounting to at least 2 parts of said mix per part of the olefin-isoparaaffin net feed.

3,852,372

ISOMERIZATION WITH FLUORIDED COMPOSITE ALUMINA CATALYSTS

Robert M. Suggitt, John H. Estes, both of Wappingers Falls, and Stanley Kravitz, Wicopee, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Division of Ser. No. 49,958, June 25, 1970, Pat. No. 3,717,586.
This application Feb. 2, 1972, Ser. No. 223,030
Int. Cl. B01j 11/16; C07c 5/24; C01b 33/28
U.S. Cl. 260—683.68 10 Claims

1. An isomerization process which comprises contacting a feedstock containing C₁₀-C₁₄ hydrocarbons at a temperature of from 200° to 1,000°F. in the presence of hydrogen with a catalyst comprising a hydrogenating component, alumina and from about 0.5 to 15.0 weight percent chemically combined fluorine, said chemically combined fluorine introduced by contacting alumina having associated therewith a hydrogenating component selected from the group consisting of the metals, oxides, sulfides and salts of the metals of Groups VIB and VIII of the Periodic Table and mixtures thereof with a combination of hydrogen and an organic fluoride compound containing from two to 16 carbon atoms corresponding to the formula C_aF_bH_cX, where X is nitrogen or oxygen and where n is 2 to 16, a is 1 to 2n+m, b is 0 to 2n+m-1 and c is 1, where

m is equal to 2 when X is oxygen and m is equal to 3 when X is nitrogen, wherein the ratio of hydrogen to said fluoride compound is from 0.5 to 100 gram moles of hydrogen per gram atom of fluorine in said compound, at a temperature of from about 200° to 1,200°F.

3,852,373

PROCESS FOR THE PRODUCTION OF LIQUID BUTADIENE POLYMERS

Karl-Dieter Hesse, and Hans Von Portatius, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed May 9, 1972, Ser. No. 251,648
Claims priority, application Germany, May 10, 1971, 2122956

Int. Cl. C08f 1/52

U.S. Cl. 260—680 B 5 Claims

1. In a process for the production of gel-free liquid polybutadiene polymers having an average molecular weight of 500–10,000 and a viscosity of 50–50,000 cps measured at 20°C in the Hoesler fallingball viscometer according to Haake, and 30–90 percent cis-double bonds, 10–70 percent trans-double bonds and less than 5 percent vinyl double bonds, at least 90 percent of the double bonds being centrally positioned, which process comprises polymerizing 1,3-butadiene in an inert diluent and in the presence of a negligible quantity of less than 2 percent by weight of oxygen and water based on the amount of catalyst with a catalytic amount of a mixed catalyst comprising

- at least one diluent-soluble organonickel compound selected from the group consisting of nickel octoate, nickel oleate, nickel acetylacetonate, nickel tetracarbonyl, Ni[O]bis-cyclooctadiene, diallylnickel and dicyclopentadienyl-nickel, and
- an alkylaluminum sesquihalide having 1–2 carbon atoms in the alkyl group, in a molar ratio of the nickel compound a) to the aluminum compound b) of 1:4 to 1:50, the improvement which comprises: conducting the polymerization in the presence of a molecular weight regulating amount of 1–15 percent by weight ethylene or about 30 percent by weight propylene at a temperature of 10°–180°C to produce said liquid polybutadiene polymer.

3,852,374

TANNING AGENTS

Hans Erdmann, Heidelberg; Franz-Friedrich Miller, Ludwigshafen, and Alfred Zissel, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany
Filed Nov. 24, 1972, Ser. No. 309,471
Claims priority, application Germany, Nov. 26, 1971, 2158610

Int. Cl. C14c 3/20; C08g 37/16

U.S. Cl. 260—839 5 Claims

1. A process for the production of tanning agents based on condensation products by reaction of a sulfonated phenol devoid of condensed ring systems with formaldehyde, urea, melamine and/or dicyandiamide and a bisulfite, wherein

- a condensation product from phenolsulfonic acid, urea and formaldehyde in a molar ratio of 1:1 to 1.5:1.2 to 2.2 and
- a methylol compound of urea, melamine and/or dicyandiamide of a degree of sulfitation which corresponds to a molar ratio of bisulfite to nitrogenous compound of from 1:0.2 to 1:1.2 are reacted at 40°–80°C. at a pH in the range of 10 to 13 in a molar ratio of (a) to (b) of 1:1 to 1:9 and the product is then adjusted to a pH of from 3 to 5.

3,852,375

COATING COMPOSITIONS

Uwe Biethan, Marl; Jorg Dorffel, Lippramsdorf; Karl-Heinz Hornung, Marl, and Franz Riemhofer, Gossmannshofen, all of Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

Filed Apr. 20, 1971, Ser. No. 135,691

Claims priority, application Germany, Apr. 22, 1970, 2019282

Int. Cl. C08g 37/34

U.S. Cl. 260—850 13 Claims

1. In a coating composition having a viscosity of up to 500 poises and whose binder consists essentially of an aminoplast-ester mixture consisting of

- 45–15 percent of at least one of an aminoplast component and a low-molecular precursor thereof, and
- 55–85 percent by weight of a hydroxyl group-containing ester component having an acid number of less than 10 mg. KOH/g., and produced by the esterification of

- an alcohol reactant consisting essentially of:
 - 0–50 percent of one or more aliphatic polyols of 3 or 4 hydroxyl groups and 3–6 carbon atoms, and
 - 100–50 molar percent of a diol component consisting essentially of:
 - at least 70 molar percent of one or both of ethylene glycol and 1,2-propanediol, and
 - 0–30 molar percent of one or more other aliphatic or cycloaliphatic diols whose hydroxyl groups are separated by 2–8 carbon atoms and 0–2 of the carbon atoms in the chain are substituted by oxygen atoms which are separated from each other and from the hydroxyl groups by at least 2 carbon atoms, and
- an acid mixture consisting essentially of:
 - 80–20 molar percent of at least one aromatic or cycloaliphatic dicarboxylic acid whose carboxyl groups are positioned ortho or meta or a functional acid derivative thereof convertible to an ester of the alcohol reactant, and
 - 20–80 molar percent of at least one saturated aliphatic dicarboxylic acid of 4–12 carbon atoms or a functional acid derivative thereof convertible to an ester of the alcohol reactant the improvement wherein the coating composition contains from 0–20 percent solvent and the polyester has an average molecular weight of 200–400.

3,852,376

LOW SHRINKAGE UNSATURATED POLYESTER RESIN COMPOSITIONS CONTAINING GRAFT COPOLYMERS

Satoshi Bando; Kazuo Hara; Toshihiko Yoshitake, and Takeo Tasaka, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed Jan. 30, 1973, Ser. No. 328,050

Claims priority, application Japan, Feb. 3, 1972, 47-12461; Mar. 30, 1972, 47-32340

Int. Cl. C08f 43/02, 43/08

U.S. Cl. 260—862 6 Claims

1. A low-shrinkage unsaturated polyester resin composition comprising an unsaturated polyester resin consisting of the uncured mixture of an essentially linear unsaturated polyester of a polycarboxylic acid dissolved in a cross-linking unsaturated monomer having radical copolymerizability with the unsaturated alkyd resin, and dispersed therein a powder of a polyolefinic resin graft polymerized with an unsaturated monomer capable of radical polymerization or copolymerization and of forming a polymer that is soluble or swellable in either or both components of the unsaturated polyester resin.

3,852,377

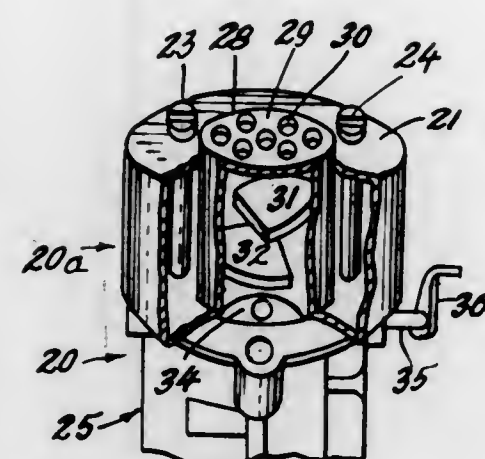
SPIT-BACK FOR CARBURATORS

Leo Heintzelman, 4990 Burlingame, Wyoming, Mich. 48104,
and Albert G. Roy, R. No. 4, Box 103, Greenville, Mich.
48838

Filed June 19, 1972, Ser. No. 264,202
Int. Cl. F02m 17/30

U.S. Cl. 261-1

11 Claims



1. A spit-back device for a carburetor having an air intake opening, said spit-back device comprising:

a hollow housing mounted over the air intake opening, said housing having a mixing chamber therein, with the mixing chamber having inlet means for introducing air into the mixing chamber and outlet means for delivering said air to the intake opening of the carburetor, and spaced baffle means mounted in the mixing chamber said baffle means and extending across a portion of said chamber preventing any fuel and residue spit back from the carburetor through the carburetor intake opening into said housing from escaping from said housing inlet means.

3,852,378

WATER-PURIFYING ATTACHMENT FOR BOATS

Robert F. Guida, 744 Main St., Lake Geneva, Wis. 53147
Filed Oct. 3, 1973, Ser. No. 403,106

Int. Cl. B01f 3/04

U.S. Cl. 261-4

4 Claims



1. An attachment for a boat movable forwardly on a body of water, comprising a tube under the boat opening with one end forwardly to absorb water from said body during the advance of the boat, an upright tank carried by the boat and receiving the rear end of the tube at the bottom for said water to be received into and rise in the tank, a filling of filtering material in the tank and adapted to divest the water of impurities during its rise in the tank, and an outlet from the top region of the tank trained downwardly with a nozzle to direct a spray of the purified water toward said body, such spray designed to absorb oxygen from the air and further purify the water emitted by the spray.

3,852,379

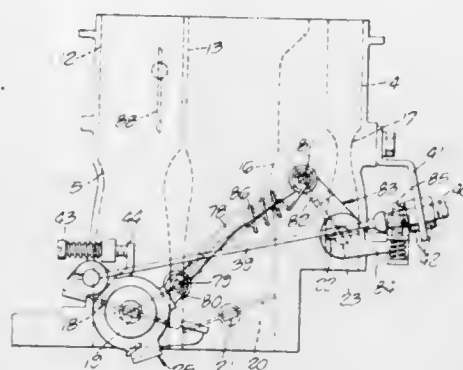
CARBURETOR

Toshimasa Shishido, Tokyo, and Minoru Atsumi, Kawagoe,
both of Japan, assignors to Honda Giken Kogyo Kabushiki
Kaisha, Tokyo, Japan

Filed July 30, 1973, Ser. No. 383,784
Int. Cl. F02m 11/04

U.S. Cl. 261-23 A

23 Claims



1. A carburetor assembly for use with an internal combustion engine having at least one main combustion chamber and an auxiliary combustion chamber connected thereto by a torch nozzle, said carburetor assembly having, in combination: a primary passage adapted to supply a lean mixture to the main combustion chamber of the engine, an auxiliary passage adapted to supply a rich mixture to the auxiliary combustion chamber of the engine, each of the passages having a throttle valve therein carried on a shaft, means mounting said shafts for turning movement, said means including a hollow stationary hub encircling a portion of one of said shafts, a member mounted to turn on the hub, means for applying a linear force to said member to cause it to turn in one direction, resilient means connected to turn the member in the other direction, means on an end of the shaft projecting from the hub connecting said member to turn said shaft, and means for coordinating turning movements of said shafts.

3,852,380

WATER LEVEL INDICATOR AND CONTROL

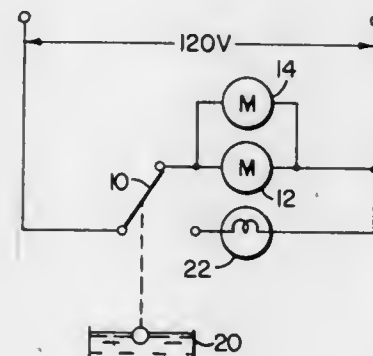
Woodrow W. Wiseman, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,773

Int. Cl. B01f 3/04

U.S. Cl. 261-27

9 Claims



1. In a portable humidifier;
a cabinet;
a removable water container in the lower part of said cabinet;
electrically energized means for creating a flow of air adapted to be humidified through said cabinet;
a water level indicator and control assembly in the upper part of said cabinet including movable means carrying

water level indicia presented thereon, means biasing said movable means toward a full water level indication, means limiting movement of said movable means beyond said full water level indication, and switch means located to be operated by movement of said movable means to a position corresponding to a low water condition to control said electrically energized means;

a float;

flexible line means connected to said movable means at one end and connected to said float means at the other end, said line extending in a direction from said movable means that movement of said line in said lastmentioned direction opposes said biasing means; and

stop means on said line means, spaced apart from said float, and cooperating abutment means on said cabinet, for maintaining the portion of said line between said stop means and said movable means in tension and thereby preventing disengagement of said flexible line from said movable means when said float is moved to positions corresponding to positions in a direction above the position of full water level indication.

3,852,381

CARBURETOR

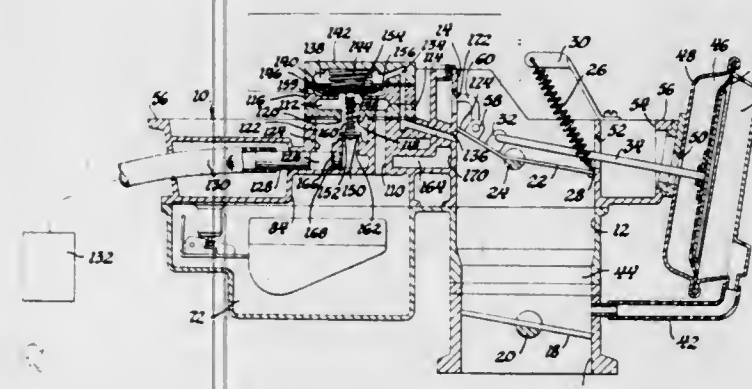
Stanley H. Mick, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,554

Int. Cl. F02m 5/08

U.S. Cl. 261-50 A

8 Claims



1. An internal combustion engine carburetor comprising a mixture conduit, an air valve disposed in said mixture conduit, means controlling said air valve to maintain a region of substantially constant subatmospheric pressure in said mixture conduit downstream from said air valve during engine operation, a fuel bowl containing fuel up to a certain level therein, a fuel vapor passage opening from said fuel bowl above said level, said fuel vapor passage having a first branch extending to said mixture conduit and a second branch, valve means disposed in said vapor passage for alternatively directing the flow of fuel vapor through said first and second branches, said valve means including a diaphragm responsive to the pressure in said region to position said valve means for directing the flow of fuel vapor from said fuel bowl through said first branch to said mixture conduit during engine operation and for directing the flow of fuel vapor from said fuel bowl through said second branch when the engine is not operating.

3,852,382

SKIRTED MAIN METERING JET FOR A CARBURETOR

George W. Wentis, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1973, Ser. No. 322,711

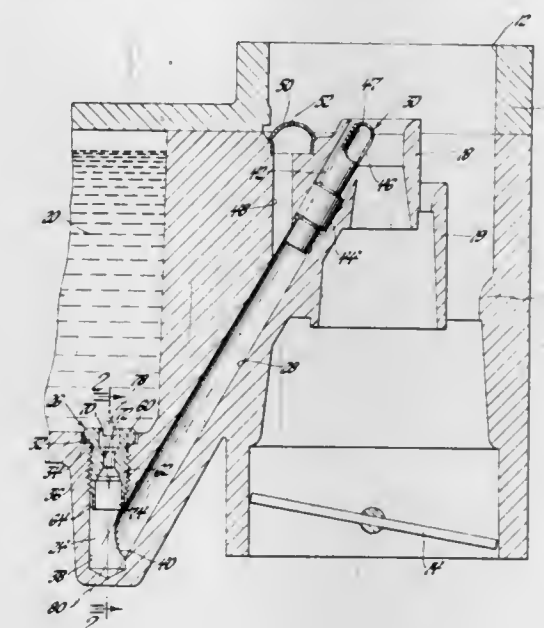
Int. Cl. F02m 7/22

U.S. Cl. 261-51

1 Claim

1. A carburetor for an internal combustion engine comprising: a mixture conduit; a fuel supply; a fuel metering system

interconnecting said fuel supply and said mixture conduit including a first downwardly extending vertical passage communicating with said fuel supply; an annular seating surface surrounding said vertical passage; a second passage in said fuel metering system angularly disposed with respect to said first passage, said second passage having an outlet at said mixture conduit and an inlet at said first passage, said inlet being variably axially disposed within a predetermined tolerance of said seating surface; a metering jet having a shank section disposed on said first bore and a head section having a flat annular surface adjacent the shank section seated against said seating surface; a cylindrical skirt on said shank section, said



skirt having a diameter smaller than said shank section, extending substantially below said shank section, and terminating with a lower rim spaced a predetermined distance from said flat annular surface of said head section, said predetermined distance being sufficient to ensure that said rim extends axially below the edge of said inlet of said second passage for all locations of said inlet within said predetermined tolerance to ensure that fuel is discharged at said skirt interior of the projected envelope of said second passage thereby defining a uniform turning point for fuel passing from said jet to said second passage irrespective of the relative locations of said passages.

3,852,383

PART THROTTLE ADJUSTMENT

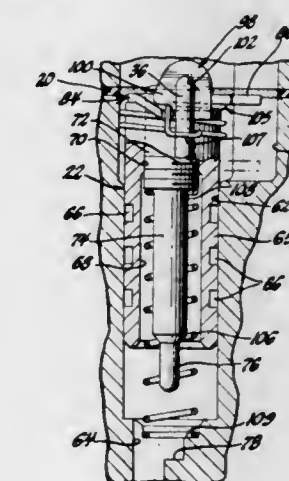
Jack L. Seaman, Fairport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 386,008

Int. Cl. F02m 7/06

U.S. Cl. 261-69 R

5 Claims



1. A part throttle adjustment mechanism for a carburetor comprising: a housing having a bore therein exposed at one

end to atmosphere and at the other end to a vacuum source, a power piston slidably supported for reciprocation in said bore and having an internal opening therethrough, an adjustment pin located within said opening, means on said piston for locating a metering rod within a metering jet, coating means on said pin and said piston for adjustably positioning said piston along the length of said pin to adjust the part throttle position of said piston, a compression spring interposed between said adjustment pin and said housing having a fixed height when the piston is maintained in a part throttle position by a first vacuum level at the other end of said bore, said spring moving said piston to a fuel enrichment position in response to a predetermined reduced vacuum at the other end of said bore at all part throttle adjusted positions of said piston to provide extra enrichment of fuel supply through the metering jet.

3,852,384

LIQUID TREATMENT APPARATUS

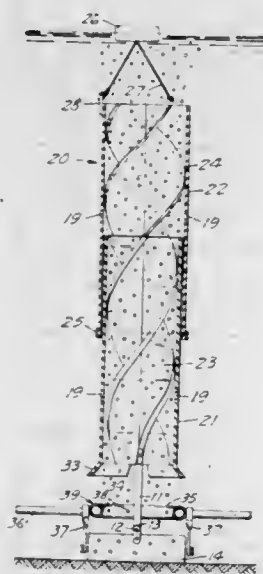
John E. Bearden, Minneapolis, Minn., assignor to Environmental Technology Corporation, Bloomington, Minn.

Filed July 21, 1972, Ser. No. 273,734

Int. Cl. B01f 3/04

U.S. Cl. 261-177

11 Claims



1. In an apparatus for aerating a liquid in a treatment pond comprising, a submerged vertically positioned open ended elongated tube, said tube having a plurality of smooth openings in the wall thereof and spaced along the extent of the wall intermediate the ends thereof, said openings providing for liquid communication between the interior of said tube and the main body of liquid in the pond; a helical baffle positioned longitudinally in the interior of said tube to provide at least two tortuous passages therein with said openings in said wall of the tube being positioned to provide communication between the exterior of the tube and each of said passages; and a gas bubble generator disposed beneath the lower end of said tube and adapted to be anchored with said tube on the bottom of said pond, said generator discharging bubbles into the liquid of said pond and being constructed and arranged to discharge streams of bubbles in generally opposed directions so as to produce a shearing action therebetween as the bubbles engage one another and to produce an upward flow of liquid and bubbles through the interior of said tube and into the tortuous passages of the baffle therein, said upward flow of liquid and bubbles inducing additional flow of liquid from the pond through the openings in the wall of said tube.

3,852,385

GAS HUMIDIFICATION APPARATUS

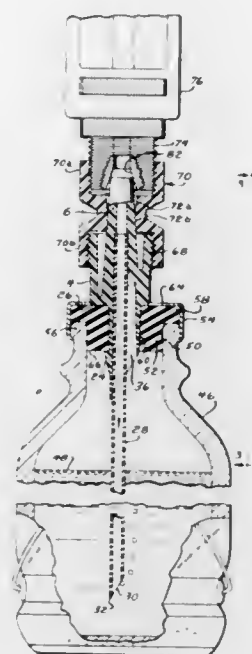
James A. Huggins, Libertyville, Ill., assignor to Med-Pak Corporation, Charlestown, W. Va.

Filed Dec. 6, 1972, Ser. No. 312,670

Int. Cl. B01f 3/04; A61m 15/00

U.S. Cl. 261-121 R

3 Claims



1. A connector assembly for use in a gas humidification system that includes a container with liquid and an opening with a closure therein, said connector comprising a body having first tubular means for receiving gas from a gas supply, a threaded coupling cooperable with said body for connecting said first tubular means to the gas supply, second tubular means, third tubular means telescoped within said second tubular means and being in communication with said first tubular means, said third tubular means having a sharp pointed end for piercing a hole in the closure, an end portion of said second tubular means being cross-sectionally larger than said third tubular means and shaped to enlarge the hole pierced by said pointed end, said end portion of said second tubular means being barbed to prevent accidental withdrawal of said connector assembly from the closure and to permit the container to be suspended from said connector assembly, said third tubular means and said second tubular means defining a chamber that is part of the bore of said second tubular means, a part of said third tubular means that includes said pointed end extending beyond end portion of said second tubular means for immersion in the liquid of the container such that gas will flow from said first tubular means through said third tubular means into the liquid to humidify the gas and the humidified gas will then flow from the surface of the liquid into said chamber, and means forming a conduit for conveying said humidified gas from said chamber, said conduit projecting laterally from said second tubular means and having a decreasing external diameter in a direction away from said second tubular means for telescopically receiving a nasal cannula.

3,852,386

MANUFACTURE OF FILM HAVING FORMED FASTENER MEANS THEREIN

Raymond D. Behr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 99,782, Dec. 21, 1970, abandoned. This application Jan. 3, 1972, Ser. No. 214,835

Int. Cl. B29d 7/22, 23/04

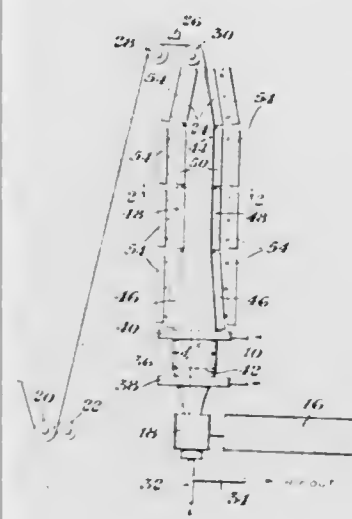
U.S. Cl. 264-40

4 Claims

1. In a method of manufacturing film, the steps of:
a. continuously extruding a seamless tube of film while providing pressure internally to the tube, and then col-

lapsing the moving tube at an area remote from the point of extrusion,

b. integrally extruding with the tube, a first thickened profile defining a continuous gap the width of which is sensitive to hoop tension in the tube during a period of its manufacture, and at least a second thickened profile spaced circumferentially from the gap defining profile and adapted to be interlockingly receivable in said gap by means of cooperative sizing and configuration between the profiles, said profiles extending continuously in the direction of extrusion along the inner surface of the tube, c. clamping the tube between opposed racks of heat conductive roller means for a substantial extent of the area



between the film frost line and the frost line of the profiles, said roller means rotatably engaging opposite sides of the moving tube, and externally contacting the area comprising the base of the gap defining profile at a time in the process when the ultimate gap width is sensitive to hoop tension, and
d. cooperatively with step (c), cooling the rotating roller means to withdraw heat from said base area, said heat withdrawal step being practiced at a rate to control the width of the gap defining profile with respect to the size of the profile receivable therein, to thereby establish a proper interlocking relationship between said profiles.

3,852,387

DOUBLE BELT PLASTIC SHEET FORMING AND TAKE-OFF METHOD

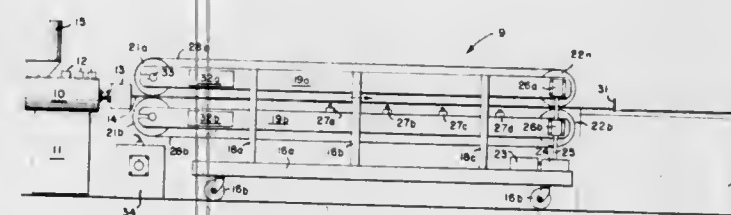
Newman M. Bortnick, 509 Orelan Mill Rd., Orelan, Pa. 19075; James W. White, 3308 Christmas Ave., Tucson, Ariz. 185716, and Eddy A. Hazbun, 3 Valley Dr., Leven Rd., Yarm, England

Continuation-in-part of Ser. No. 31,704, April 24, 1970, abandoned. This application Aug. 10, 1972, Ser. No. 279,573

Int. Cl. B29d 7/14, 7/22

U.S. Cl. 264-40

9 Claims



1. The method of producing plastic sheets having desirable surface characteristics, superior dimensional stability, and which approach isotropic properties, comprising the steps of:
a1. extruding through an adaptor a viscous, unplasticized

thermoplastic polymer at low pressure in a temperature range above the glass transition temperature but below the degradation temperature of said polymer wherein a rope-like strand is continuously formed at a volumetric flow rate wherein said thermoplastic polymer is selected from the group consisting of:

poly(methyl methacrylate), copolymers of methyl methacrylate with up to 50 percent of lower alkyl acrylates, lower alkyl methacrylates, isobornyl methacrylate, styrene, and acrylonitrile; blends of said polymethacrylate homo and copolymers with multi-staged acrylic rubber impact modifiers; polyvinyl chloride; copolymers of vinyl chloride with up to 10 percent of such monomers as vinyl pivalate, vinyl acetate, ethylene and propylene; blends of vinyl chloride homo and copolymers with multistaged acrylic and butadiene rubbers, and with polymethacrylate homo and copolymers; acrylonitrile/butadiene/styrene and α -methylstyrene plastics; acrylonitrile/styrene/acrylate plastics; methyl methacrylate/acrylonitrile/butadiene/styrene plastics; methyl methacrylate/butadiene/styrene plastics; impact polystyrene blends; polyphenylene oxide; blend of poly(phenylene oxide) and polystyrene, impact polystyrene and multistaged butadiene rubber impact modifiers; polycarbonates; polysulfones; and poly (2,2-bis(4-hydroxyphenyl) propane isophthalate);

a. promptly delivering at said temperature range said strand to take-up means comprising juxtaposed endless conveyor belts which are adapted to take up the same and adhering thereto;
b. compressing, spreading and flattening the continuous strand between said take-up means by adjustment of the linear take-off rate-up speed of said take-up means in relation to said volumetric flow rate;
c. driving said belts synchronously;
d. adjustably heating said belts in the zone of their intake nip within a temperature gradient ranging from above the glass temperature of the thermoplastic material being processed but below the deterioration temperature thereof;
e. maintaining the belt tension to compensate for variations in the belt length attributable to variable heating thereof, whereby the belts run true;
f. cooling both of said belts to a temperature below the glass temperature of said sheet to further allowing parting of said formed sheets without adherence to either belt; and
g. taking off the resulting cooled polished polymer sheets from the discharge end of said belts.

3,852,388

PREPARATION OF ASYMMETRIC POLYMER MEMBRANES

Shiro G. Kimura, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 158,979, July 1, 1971, Pat. No. 3,762,136, which is a division of Ser. No. 36,923, May 13, 1970, Pat. No. 3,709,774. This application Apr. 19, 1973, Ser. No. 352,428

Int. Cl. B29d 27/04; B01d 39/16

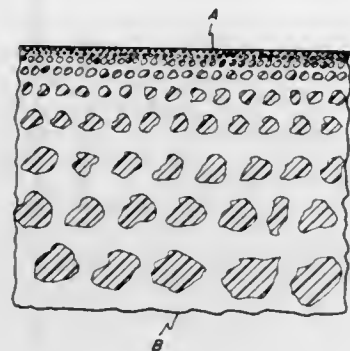
U.S. Cl. 264-41

2 Claims

1. A method for the preparation of asymmetric polymer membranes comprising the steps of:

a. dissolving at least about 5 percent by weight of polyarylene oxide in a solvent system, said solvent system consisting of chloroform and dichlorobenzene,
b. casting a layer of the polyarylene oxide solution so formed on a flat clean surface in a thickness ranging from about 5 to 25 mils, whereby a single major surface is exposed,
c. permitting desolvation to occur for less than 1 minute,

- d. immersing said layer in methanol,
e. removing the asymmetric polyarylene oxide membrane so



- produced having a non-porous skin and
f. drying said polyarylene oxide membrane.

3,852,389

METHOD OF MAKING FOAM PLASTIC BODIES HAVING LIFELIKE OUTER SKINS

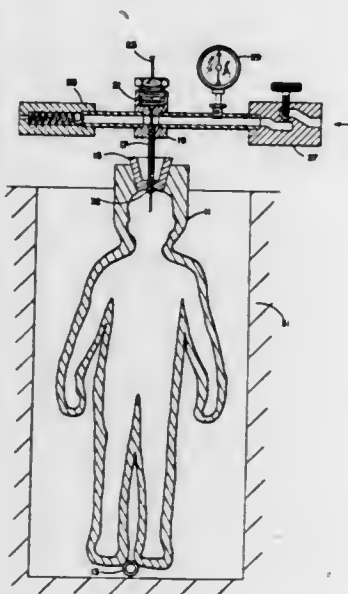
Seymour Adler; Fleet E. Nuttall, both of Los Angeles, and Wallace H. Shapero, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 792,921, Jan. 22, 1969, abandoned. This application Dec. 7, 1970, Ser. No. 95,596

Int. Cl. B29d 27/04

U.S. Cl. 264-46.4

4 Claims



1. A method of making foamed plastic bodies having an outer skin fused thereto comprising:
 - providing a suitable mold having the desired size and shape of said body,
 - coating all of the inner walls of said mold with a first plastisol composition, said composition including a blowing agent, and suitable activator capable of causing a small amount of gas to be released in said composition,
 - heating said mold after said first plastisol is coated thereon to gel a layer of said plastisol without releasing any blowing agent,
 - depositing a second plastisol on the heated surface of said first plastisol before activation of the activator in said first plastisol composition whereby the residual heat gels a layer of said second plastisol without releasing any blowing agent therein; said second composition including a blowing agent and suitable activator capable of causing a larger amount of blowing agent to be released in said second plastisol than said first plastisol, and then simulta-

neously heating both said first and second plastisols for a sufficient period of time to cause a small amount of gas to be released in said first plastisol and a larger amount of gas to be released in said second plastisol.

3,852,390

METHOD FOR FILLING THIN WALL CUP CAVITIES WITH PLASTIC BEADS

James M. Harrison, Fort Worth, Tex., assignor to Crest Container Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 126,628, March 22, 1971, abandoned. This application Aug. 25, 1972, Ser. No. 283,936

Int. Cl. B29d 27/00

U.S. Cl. 264-53

3 Claims

1. In a method of filling a thin wall cup mold cavity having a spacing of from 0.030 to 0.100 inches with lightweight foam polystyrene beads impregnated with an expanding agent in which a thin wall cup mold is defined by two parts, a generally tapered core element and a correspondingly tapered cavity element, with an inlet port in the center of the cavity element in the middle of what will be the bottom of the cup and an annular outlet at what will be the lip of the cup around the periphery thereof, with an airstream through the mold cavity entering at the inlet opening in the center of the cavity element and leading through the annular outlet at what will be the lip of the cup to convey the beads into the mold cavity and an offset annulus at the small end of the core element so that the resulting cup will have an internal stacking annulus in the bottom of the cup, the improvement comprising the step of off-setting the airstream inwardly laterally opposite the offset annulus in the core element at a point between the offset annulus and the end of the core element such that the side wall of the cavity at what will be the bottom of the cup will be fully filled with beads during molding.

3,852,391

CARBURETOR WITH DECELERATION CIRCUIT

Takashi Hisatomi, and Kenichi Sasaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

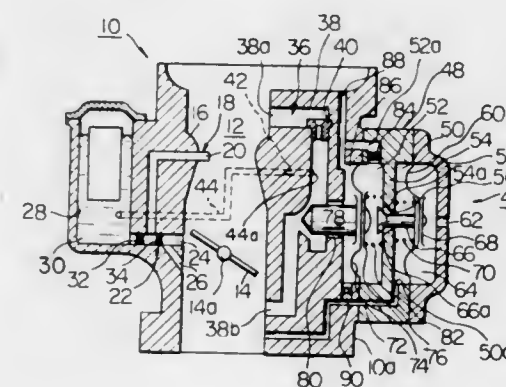
Filed Mar. 10, 1972, Ser. No. 233,602

Claims priority, application Japan, Mar. 11, 1971, 46-13272

Int. Cl. F02m 7/12

U.S. Cl. 261-69 R

1 Claim



1. A carburetor for an internal combustion engine comprising a carburetor body, a carburetor induction passage formed in said carburetor body, a venturi in said carburetor induction passage, a throttle valve operatively disposed in said carburetor induction passage, a main mixture circuit opening into said venturi in said carburetor induction passage for supplying an air-fuel mixture to said carburetor induction passage for high-speed and acceleration operations of said engine, an idling and slow-running mixture circuit opening into said carburetor induction passage downstream of said throttle valve for supplying an air-fuel mixture to said carburetor induction passage for low-speed and deceleration operations of said engine, a float chamber which supplies fuel to said two circuits, a by-

pass passage having an inlet port communicating with said carburetor induction passage upstream of said venturi and an outlet port communicating with said carburetor induction passage downstream of said throttle valve, an air jet provided in said by-pass passage to control the flow rate of air passing therethrough, a fuel jet provided in a fuel supply by-pass passage opening to the first mentioned by-pass passage downstream of said air jet and leading directly from said float chamber, and a control unit for controlling the flow of air-fuel mixture passing through the first mentioned by-pass passage in response to the vacuum prevailing in said carburetor induction passage downstream of said throttle valve, said control unit including a housing having first and second vacuum chambers and a spring seat intervening therebetween said spring seat having formed therein a central aperture, said second vacuum chamber provided with a port communicating with said carburetor induction passage upstream of said venturi through a calibrated air bleed, a passage having one end communicating with said carburetor induction passage downstream of said throttle valve and the other end communicating with said first vacuum chamber, a cap member attached to one end of said housing and having an opening vented to the atmosphere, a first diaphragm member interposed between said one end of said housing and said cap member, a first atmosphere chamber formed between said first diaphragm member and the inner surface of said cap member, a control valve element connected to said first diaphragm member and extending through said central aperture formed in said spring seat to control communication between said first and second vacuum chambers, a first compression spring disposed in said first vacuum chamber for biasing said first diaphragm member in a direction to cause said control valve element to close said central aperture of said spring seat for thereby interrupting communication between said first and second vacuum chambers, a second diaphragm member interposed between the other end of said housing and said carburetor body, a second atmospheric chamber defined in a cavity formed in said carburetor body and said second diaphragm member, said second atmospheric chamber communicating with said carburetor induction passage upstream of said venturi, means defining an orifice between said second atmospheric chamber and said passage having one end communicating with said induction passage downstream of said throttle valve, an adjusting valve element connected to said second diaphragm member and extending through an opening formed in said carburetor body into said by-pass passage to open and close said by-pass passage, and a second compression spring disposed in said second vacuum chamber for biasing said second diaphragm member in a direction to cause said adjusting valve element to close said by-pass passage, said first vacuum chamber being subjected to the vacuum prevailing in said carburetor induction passage downstream of said throttle valve, whereby when the vacuum in said first vacuum chamber exceeds a predetermined value during deceleration operation of said engine, said first diaphragm member is moved against the force of said first compression spring in a direction to cause said control valve element to open said central aperture formed in said spring seat for interconnecting said first vacuum chamber with said second vacuum chamber to permit the vacuum to act on and cause said second diaphragm member to move against the force of said second compression spring in a direction to cause said adjusting valve element to open said by-pass passage.

3,852,392

METHOD OF REMOVING PLASTICIZER MIST FROM AIR

Willard Parker Davis, Tewksbury; Jerold Julius Golner, Lowell, and Sumner Sheldon Feinstein, Peabody, all of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Dec. 18, 1972, Ser. No. 316,345

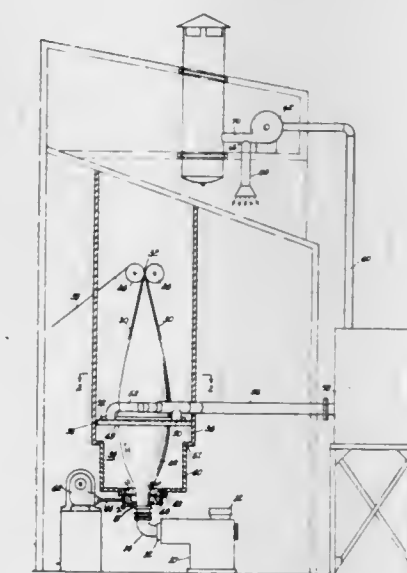
Int. Cl. B29d 7/00

U.S. Cl. 264-89

5 Claims

1. In a blown tube method for making plasticized polyvinyl chloride film wherein molten plasticized thermoplastic is

extruded in the form of a seamless tubing with the tubing being flattened at a point spaced from the point of extrusion and inflated to a predetermined diameter intermediate the point of extrusion and the point of the tubing where plasticizer mist is no longer released in any substantial quantity from the surface of the film; the exterior surface of tubing being wholly enveloped in the vicinity of the point of extrusion with a cooling medium of chilled gas, the chilled gas circulated through the enclosure such that the chilled gas wholly envelops the exterior surface of the molten plastic being extruded to cool the plastic to its solidification point and to pick up



plasticizer mist being generated, the cooling gas containing plasticizer mist passed to a mist removal device, the mist removed and the cooling gas discharged from the mist removal device to the atmosphere outside of the enclosure, wherein the improvement comprises adjusting an iris diaphragm opening surrounding the inflated extruded seamless tubing at a point of the tubing where plasticizer mist is no longer released in any substantial quantity from the surface of the film to provide an opening from 1/4 to 3 inches between the inner edge of the iris diaphragm and the outer edge of the tubing passing through the iris diaphragm.

3,852,393

RESINOUS COMPOSITION COMPRISING A BLEND OF AN ABS RESIN AND POLYCARBONATE RESIN

Shogi Furukawa; Yuzo Sonoyama, and Akira Ohi, all of Osaka, Japan, assignors to Daicel Ltd., Higashi-ku, Osaka, Japan

Filed Oct. 5, 1972, Ser. No. 295,118

Claims priority, application Japan, Oct. 6, 1971, 46-78562

Int. Cl. C08g 39/10

U.S. Cl. 260-873

15 Claims

1. A blended resinous composition, in which the resin constituents of said composition consist essentially of (1) from 30 to 75 percent by weight of a graft copolymer prepared by bulk suspension polymerization of polybutadiene or a copolymer comprising butadiene, as the rubber component, and a vinyl cyano compound and a vinyl aromatic compound as the monomer component, and (2) the balance of said resin constituents is a polycarbonate of a di-(monohydroxyphenyl)-substituted aliphatic hydrocarbon.

3,852,394

**THERMOPLASTIC
POLYCARBONATE/POLYBUTADIENE-
METHACRYLATE-STYRENE GRAFT
POLYMER/STYRENE-ACRYLONITRILE COPOLYMER
BLENDS**

Hiroaki Kubota; Yoshitugu Nakamura, and Ryoichi Hasegawa, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

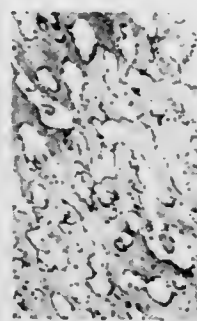
Filed Dec. 27, 1972, Ser. No. 318,703

Claims priority, application Japan, Dec. 29, 1971, 46-2837

Int. Cl. C08g 39/10, 51/58

U.S. Cl. 260-873

2 Claims



1. A thermoplastic composition (D) comprising
 - A. a resin obtained by graft polymerizing 90 - 10 parts by weight of a monomeric mixture consisting of 90 - 10 percent by weight of a monomeric methacrylic acid ester and 10 - 90 percent by weight of an aromatic vinyl monomer, in the presence of 10 - 90 parts by weight of a polybutadiene of butadiene-styrene copolymer containing at least 50 percent by weight of butadiene unit;
 - B. a thermoplastic resin obtained by copolymerizing an aromatic vinyl monomer with 15 - 70 percent by weight of said aromatic monomer of a vinyl cyanide monomer; and
 - C. a polycarbonate resin derived from a (4,4' - dihydroxy diphenyl) alkane by the ester exchange or phosgene method;
 with the provision that the ratio of the total amount contained of the resin (A) and the thermoplastic resin (B) to resin (C) is in the range of 70:30 - 10:90, and that polybutadiene or the butadiene copolymer component containing at least 50 percent by weight of butadiene unit is contained in an amount of 5 - 50 percent by weight of the total amount contained of the resin (A) and the thermoplastic resin (B).

3,852,395

**TRIS-(3,5-DI-T-BUTYL-4-HYDROXYPHENYLTHIO)
PHOSPHINE**

Tamotsu Fujisawa, Yamato, and Michio Aiba, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,386

Claims priority, application Japan, Aug. 3, 1972, 47-77288

Int. Cl. C07f 9/18

U.S. Cl. 260-953

1 Claim

1. Tris-(3,5-di-t-butyl-4-hydroxyphenylthio)phosphine.

3,852,396

**2-CHLOROVINYL ETHYL ISOPROPYL
PHOSPHORAMIDATE AND 2-CHLOROVINYL ETHYL
DIETHYL PHOSPHORAMIDATE**

Donald D. Phillips, Westfield, N.J., and Loyal F. Ward, Jr., deceased, late of San Jose, Calif. (by Melba L. Ward, executrix), assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 5, 1973, Ser. No. 329,910

Int. Cl. C07f 9/22; A01n 9/36

U.S. Cl. 260-957

2 Claims

1. 2-Chlorovinyl ethyl isopropylphosphoramidate.
2. 2-Chlorovinyl ethyl diethylphosphoramidate.

3,852,397

**PROCESS FOR THE SYNTHESIS OF
BIS-N-PHOSPHORYLATED COMPOUNDS**
Roger Vernon Kendall, Cranbury, N.J., assignor to American Cyanamid Company, Stamford, Maine

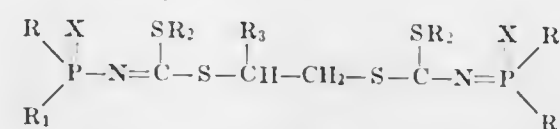
Filed Feb. 22, 1973, Ser. No. 334,540

Int. Cl. C07f 9/40

U.S. Cl. 260-968

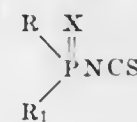
7 Claims

1. A process for the preparation of bis-N-phosphorylated compounds of the formula:



wherein R and R₁ is alkyl (C₁-C₄), alkoxy (C₁-C₄) or phenyl; X is sulfur or oxygen; R₂ is alkyl (C₁-C₄), alkenyl (C₁-C₄), benzyl or halo-substituted benzyl; and R₃ is hydrogen or alkyl (C₁-C₄), said process comprising the steps of:

1. reacting a thiocyanate of the structure

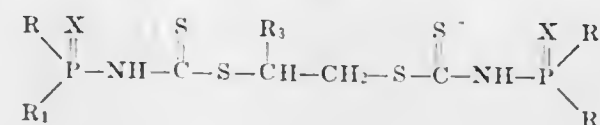


with a dithiol of the structure

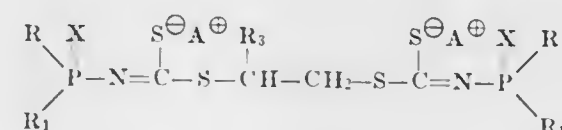


in the presence of an inert solvent and acid acceptor at a temperature between 0° and 40°C.;

2. treating the thus-formed reaction mixture with ethyl ether followed by acidification with a mineral acid thereby obtaining the product of the structure



3. reacting the thus-formed product with an alkali metal alkoxide (C₁-C₄) in the presence of an aprotic solvent;
4. separating from the thus-formed reaction mixture a dialkali salt free of any excess base of the formula



and

5. treating said dialkali salt in an aprotic solvent at a temperature of 0° to 50°C. with an excess of alkylating agent of the formula



wherein A is the alkali metal; and Z is iodine or bromine.

3,852,398

**METHOD FOR HEATING TRANSFERRING AND BLOW
MOLDING TUBULAR PARISONS**

Lawrence A. Moore, B-B 16 Valley View, King of Prussia, Pa. 19406

Division of Ser. No. 3,003, Jan. 15, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,645

Int. Cl. B29c 17/07

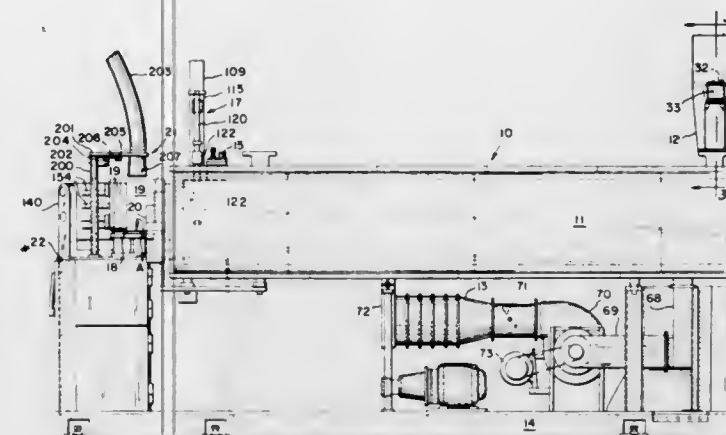
U.S. Cl. 264-94

11 Claims

1. A method for converting a tubular parison of thermoplastic material into a container comprising the steps of: heating the parison to a forming temperature in an oven, conveying

the heated parison to a mould station by grasping the heated parison with a transfer device and moving it vertically out of the oven and then horizontally to a mould station, and then at the mould station while the parison is still held by the transfer

izing liquid are so treated in a conventional horizontally positioned pelletizer.



device, stretching the parison axially thereof, closing the mould on the stretched parison, creating an outward pressure differential across the parison to shape the container against the mould and opening the mould.

3,852,399

**PROCESS FOR THE PRODUCTION OF CARBON BLACK
BEADS**

Lothar Rothbuhl, and Walter Fritz, both of Hermulheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

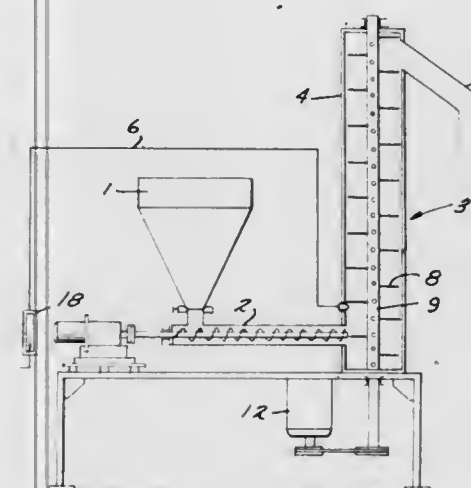
Filed Sept. 6, 1972, Ser. No. 286,749

Claims priority, application Germany, Sept. 23, 1971, 2147503

Int. Cl. B01j 2/10

U.S. Cl. 264-117

4 Claims



1. In a process for wet pelletizing carbon black in a pelletizing apparatus comprising an elongated cylindrical housing having a longitudinal axis on which a centrally positioned pin shaft rotates, the improvement comprising:

- a. introducing carbon black and a pelletizing liquid into a lower inlet of said pelletizer having said longitudinal axis substantially vertically positioned;
- b. rotating said pin shaft to move said carbon black and liquid vertically upwardly through said pelletizer while forming carbon black pellets therein; and
- c. removing from an upper exit of said pelletizer, carbon black pellets having a higher bulk density, increased strength, increased abrasion resistance and requiring less pelletizing liquid than when said carbon black and pellet-

3,852,400

**ROLLING METHOD FOR MANUFACTURING PLASTIC
GEARS**

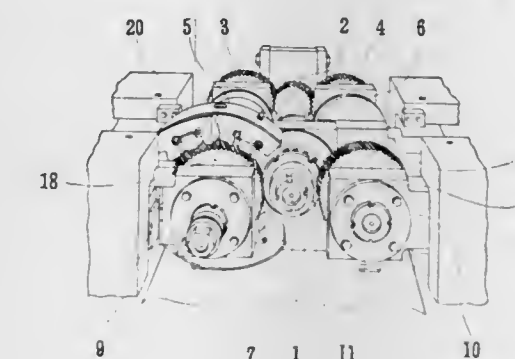
Toshimasa Arai, Nagoya, Japan, assignor to President of Nagoya Institute of Technology, Kokichi Sano, Nagoya, Japan

Filed Mar. 12, 1973, Ser. No. 340,531

Int. Cl. B29c 17/00; B29d 15/00

U.S. Cl. 264-154

13 Claims



1. A method of making plastic gears from a thermoplastic gear blank comprising rough rolling said gear blank by pressing a hot instrument held at a temperature higher than the softening temperature of said plastic material into contact with said gear blank to form gear teeth in said gear blank, and subsequently finish rolling said gear blank by pressing a cold instrument held at a temperature lower than the temperature of said hot instrument into contact with said gear blank to solidify said plastic and finish form said gear teeth to desired dimensions with said cold instrument.

3,852,401

**METHOD FOR PRODUCING ARTIFICIAL FIBERS
CONTAINING MICROCAPSULES**

Hiroshi Suzuki, and Tadashi Ichimaru, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed June 27, 1972, Ser. No. 266,744

Claims priority, application Japan, June 29, 1971, 46-47524

Int. Cl. D01f 7/00

U.S. Cl. 264-182

14 Claims

1. In a method for producing artificial fibers containing microcapsules of a fiber modifier selected from the group consisting of sanitary processing agents, flame resistant agents, luminous substances, deodorants, softening agents, perfumes, antistatic agents, antioxidants and U.V. absorbers, by extruding a spinning solution containing the microcapsules in a finely dispersed state, a fiber forming polymer selected from the group consisting of polyamides, polyesters, polyvinyl chloride, polyvinyl alcohol, polyacrylonitrile, copolymers of acrylonitrile with one or more other vinyl monomers and cellulose acetate, and a solvent for the polymer, the improvement wherein the spinning solution containing the microcapsules is prepared by finely dispersing in the spinning solution the fiber modifier which is incompatible with the spinning solution and a film-forming substance soluble in the spinning solution or fiber modifier, and forming a film insoluble in the spinning solution on the surface of the dispersed particles of the fiber modifier to form microcapsules enclosing the fiber modifier therein.

3,852,402

PROCESS FOR THE PREPARATION OF POLYVINYL ALCOHOL FIBERS

Shoichi Tanaka, 550-1, Yasue; Susumu Kousaka, 1273-4, Nakasho, both of Kurashiki-City, and Toshio Kimura, 2-208, Katsuragi-Cho, Nara-City, all of Japan
Continuation-in-part of Ser. No. 90,816, Nov. 18, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,576
Claims priority, application Japan, Nov. 25, 1969, 44-94790; Apr. 30, 1970, 45-37354

Int. Cl. D01f 7/00

U.S. Cl. 264-185

5 Claims

1. Process for the preparation of polyvinyl alcohol fibers comprising:

- spinning an aqueous polyvinyl alcohol solution comprising 10 to 30 percent by weight of a polyvinyl alcohol having a degree of polymerization ranging from 1,200 to 3,500 and 1 to 5 percent boric acid or a substantially water soluble borate salt thereof based on the weight of polyvinyl alcohol;
- coagulating the spun polyvinyl alcohol solution in an aqueous solution containing 10 to 100 gms/liter sodium or potassium hydroxide and 100 to 330 gms/liter sodium sulfate to obtain fibers;
- roller drawing said fibers;
- neutralizing alkali adhered to said fibers with acid;
- wet-heat drawing said fibers;
- rinsing said fibers with water to adjust the amount of residual boric acid or borate salt to 0.2 to 0.9 percent by weight of polyvinyl alcohol;
- dehydrating and drying said fibers; and
- dry-heat drawing said fibers to a total drawing ratio of at least 1,300 percent, thereby obtaining polyvinyl alcohol fibers exhibiting the following high temperature properties:
Yarn tenacity at 120° C. — at least 7.5 gms/denier
Yarn initial modulus at 120° C. — at least 100 gms/denier
Yarn creep at 135° C. — less than 2 percent.

3,852,403

LEACHING URANIUM ORES FLUIDIZED WITH A POLYELECTROLYTE

Robert Ben Booth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 58,338, July 27, 1970, Pat. No. 3,746,641, which is a continuation-in-part of Ser. No. 179,287, March 7, 1962, Pat. No. 3,524,682, which is a continuation-in-part of Ser. No. 698,429, Nov. 25, 1957, abandoned. This application Nov. 17, 1972, Ser. No. 307,666
Int. Cl. B01d 11/00; C01g 43/00

U.S. Cl. 423-18

5 Claims

1. In the leaching of uranium ore which includes the steps of grinding the ore to minus 48 mesh material, mixing with aqueous sulfuric acid containing about 60 grams of sulfuric acid per liter, to form a suspension in which the solids range from comparatively coarse, larger than 65 mesh, to very fine materials, smaller than 325 mesh, and which suspension has at least about 30 percent solids on a weight basis, and which suspension in the absence of a suspending agent, when in a quiescent state tends to separate with the formation of a solid unwieldy cake which stalls agitators and resists resuspension, and has about 4 pounds of sodium chlorate per ton of ore present, leaching at about 45° C., over a leaching cycle of about 48 hours, while continuously agitating the leaching suspension, the step which comprises: adding to said acidic suspension a small but effective amount of a suspending agent, from 0.005 to 5 pounds per ton of suspended solids of a water soluble polyelectrolyte which is an ampholytic linear carbon chain vinyl polymer consisting essentially of recurring carbamylethylene and carboxyethylene linkages, and not more than a minor amount of nitriloethylene linkages and salts thereof, having a weight average molecular weight in excess of

100,000, thereby producing a suspension which is of uniform characteristic and from which the solids drop out as an unclassified readily resuspendable material, said polymer increasing the viscosity of the aqueous phase, insuring laminar flow at higher velocities, thereby reducing pumping power requirements, and simultaneously stabilizing the suspension, so that during interruptions in agitation, the suspension remains fluidized, and in pumpable condition.

3,852,404

PREPARATION OF CRYSTALLINE SULFIDES AND SELENIDES OF CADMIUM ZINC AND MERCURY

James Ernest Daly, Hudson Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 24, 1972, Ser. No. 300,028

Int. Cl. C01g 9/08; C01b 19/00, 17/00

U.S. Cl. 423-99

6 Claims

1. A process for converting a crude, essentially amorphous precipitate of cadmium sulfide, or a mixture of cadmium sulfide and cadmium selenide, zinc sulfide or mercury sulfide into a pigment having an x-ray diffraction pattern characteristic of the hexagonal crystalline structure, which process comprises treating said crude, essentially amorphous precipitate with sufficient of an aqueous solution containing from about 5 percent to about 55 percent by weight of ammonium sulfide to provide a weight ratio of solution to precipitate of at least 2:1 and a weight ratio of ammonium sulfide to precipitate of 0.1:1 to 10:1 at a temperature from about 20° C. to about 275° C. for a period of time ranging from about 1 to about 6 days until said precipitate is converted to the well-ordered hexagonal crystalline state and recovering the crystalline pigment so produced.

3,852,405

LAMINAR HEAVY METAL ALUMINOSILICATES

William T. Granquist, Houston, Tex., assignor to N L Industries, Inc., New York, N.Y.

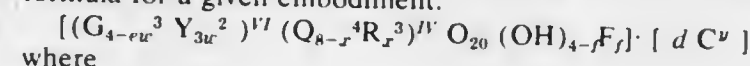
Filed Sept. 22, 1972, Ser. No. 291,252

Int. Cl. C01b 33/26, 33/28; B01j 11/40

U.S. Cl. 423-118

15 Claims

1. A laminar 2 : 1 layer-lattice aluminosilicate mineral possessing an inherent negative charge balanced by cations exterior to said lattice and corresponding to the following formula for a given embodiment:



where

2	e	3
0.01	w	2
0.02	ew	4
0.05	x	2.0
f	4	

wherein said first bracket represents said layer-lattice unit cell formulation and said second bracket represents said charge balancing cations; and wherein

G is at least 0.8 mol fraction aluminum ion, the remainder consisting of trivalent metal cations having an ionic radius not to exceed 0.75 Å;

Y is selected from the class consisting of divalent metallic ions having an ionic radius not to exceed 0.75 Å and mixtures thereof;

Q is at least 0.95 mol fraction silicon ions, the remainder consisting of tetravalent ions having an ionic radius not to exceed 0.64 Å;

R is selected from the group consisting of trivalent ions having an ionic radius not to exceed 0.64 Å and mixtures thereof; and

C is at least one charge-balancing cation, with y being its valence and d being the number of such cations C where: $dy = x + 3(e - 2)w$.

3,852,406

METHOD OF REMOVING OXYGEN FROM GASES

Hans Ludwig Krauss, and Hans Stach, both of Munich, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Continuation of Ser. No. 737,425, June 17, 1968, abandoned.

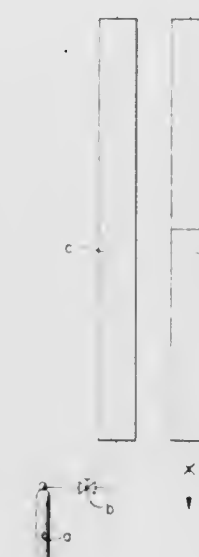
This application July 1, 1971, Ser. No. 159,049

Claims priority, application Germany, June 20, 1967, 62598

Int. Cl. B01d 53/34

U.S. Cl. 423-219

2 Claims



1. A method for removing oxygen by chemisorption from a gas selected from the group consisting of hydrocarbons, ethers, nitrogen, argon, neon, krypton, xenon, and carbon dioxide, said method comprising contacting said gas with an activated mass including an impregnated heat proof oxidic carrier, said carrier having a surface area of about 200 to about 500 m²/gm, said impregnated carrier being obtained by impregnating said carrier with an aqueous solution of CrO₃ or a chromium salt to obtain an air-dry impregnated carrier having a chromium content by weight of about 1% to about 5%, said mass being activated by treatment with oxygen at a temperature from about 300°C to about 600°C for a period of time of about 30 minutes to about 240 minutes and subsequently being reduced with carbon monoxide or hydrogen at a temperature in the range of about 250°C to about 400°C but at a temperature below said activating temperature for a period of time of about 5 minutes to about 60 minutes whereby the chromium in said impregnated carrier is changed from 6-value chromium to bivalent chromium.

3,852,407

METHOD FOR REMOVING ALKYL IODIDES FROM AIR BY MERCURIC NITRATE SOLUTION

John M. Schmitt; David J. Crouse, Jr., and William B. Howerston, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,842

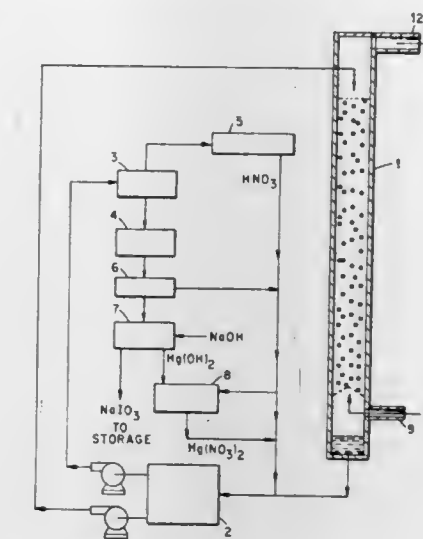
Int. Cl. C01b 11/72, 11/12; C01g 13/04

U.S. Cl. 423-240

9 Claims

1. A method for removing alkyl iodides from an air stream comprising the steps of contacting said air stream with an aqueous solution of nitric acid at a concentration of from 6 to

14 molar containing mercuric nitrate at a concentration of at least 0.1 molar, at a temperature of from 25° to 80°C, thus



sorbing said iodides from said air stream into said solution and removing the sorbed iodine from said solution.

3,852,408

PROCESS FOR THE REMOVAL OF SULFUR DIOXIDE FROM CARRIER GASES

Thomas K. Ewan, Daingerfield; Orvis L. Holland, Linden; Willis Leon Martin, Longview, and James E. Hulse, Mt. Pleasant, all of Tex., assignors to Lone Star Steel Company, Dallas, Tex.

Filed Sept. 21, 1972, Ser. No. 291,007

Int. Cl. C01b 17/00

U.S. Cl. 423-242

26 Claims

1. A process for the removal of gaseous sulfur dioxide from a carrier gas comprising driving the carrier gas through an elongate mixing tube and forming a turbulent mixture of steam, atomized water and sulfur dioxide-containing carrier gas by directing water, heated to a temperature above its boiling point at atmospheric pressure and maintained under pressure sufficient to prevent boiling at that temperature, through a converging-diverging nozzle to form a jet of atomized water and steam directed into the mixing tube, introducing a fluid-contained alkaline reagent into the central portion of said turbulent mixture in said mixing tube by forming a series of intense jets of said fluid-contained alkaline reagent disposed circumferentially about the jet of atomized water and steam emerging from said nozzle and injecting said intense jets generally in the direction of movement of and into the jet of atomized water and steam emerging from said nozzle, further mixing the alkaline reagent and the sulfur dioxide-containing carrier gas by the continued expansion of the utilized water within the mixing tube, and so regulating the flow of said turbulent mixture through said mixing tube as to provide retention time of said turbulent mixture in said mixing tube sufficient for reaction of sulfur dioxide in said carrier gas with the alkaline reagent to form aqueous droplets of sulfur-containing reaction products and for growth in size of said aqueous droplets, and thereafter separating said aqueous droplets thus grown in size from the remainder of said carrier gas.

3,852,409

PROCESS FOR THE REMOVAL OF PARTICULATE MATTER AND ACIDIC GASES FROM CARRIER GASES

Willis Leon Martin, Longview; Orvis L. Holland, Linden; Thomas K. Ewan, Daingerfield, and James E. Hulse, Mt. Pleasant, all of Tex., assignors to Lone Star Steel Company, Dallas, Tex.

Filed Oct. 31, 1972, Ser. No. 302,608

Int. Cl. C01b 17/00

U.S. Cl. 423-242

28 Claims

1. A process for the removal of particulate matter from a carrier gas comprising driving the carrier gas through an elon-

gate mixing tube and forming a turbulent mixture of steam, atomized water and particulate-containing carrier gas in said mixing tube by (a) continuously supplying pressurized steam to the inlet of the nozzle of a steam ejector and expanding said steam through said nozzle to form a jet of said steam directed into the mixing tube, (b) forming a series of jet sprays of relatively cold aqueous liquid in a first atomized condition disposed circumferentially about the jet of steam emerging from said nozzle and (c) further atomizing said aqueous liquid by directing said jet sprays into the outer regions of said jet of steam; further mixing the particulate-containing carrier gas with said further atomized aqueous liquid and said steam within the mixing tube, and so regulating the flow of said turbulent mixture through said mixing tube as to provide retention time of said turbulent mixture in said mixing tube sufficient for the formation of aqueous droplets and entrainment of said particulate matter in said droplets and for growth in size of said particulate-containing aqueous droplets, and thereafter separating said particulate-containing aqueous droplets thus grown in size from the remainder of said carrier gas.

5. A process for the removal of particulate matter and gaseous sulfur dioxide from a carrier gas comprising driving the carrier gas through an elongate mixing tube and forming a turbulent mixture of steam, atomized water and carrier gas containing particulate matter and gaseous sulfur dioxide in said mixing tube by (a) continuously supplying pressurized steam to the inlet of the nozzle of a steam ejector and expanding said steam through said nozzle to form a jet of said steam directed into the mixing tube, (b) forming a series of jet sprays of relatively cold aqueous liquid containing an alkaline reagent in a first atomized condition disposed circumferentially about the jet of steam emerging from said nozzle and (c) further atomizing said aqueous liquid containing said alkaline reagent by directing said jet sprays into the outer regions of said jet of steam; further mixing the carrier gas with said further atomized aqueous liquid and said steam within the mixing tube, and so regulating the flow of said turbulent mixture through said mixing tube as to provide retention time of said turbulent mixture in said mixing tube sufficient for reaction of sulfur dioxide in said carrier gas with said alkaline reagent for the formation of aqueous droplets of sulfur-containing reaction products and entrainment of said particulate matter in said droplets and for growth in size of said droplets, and thereafter separating said droplets thus grown in size from the remainder of said carrier gas.

3,852,410

SULFUR DIOXIDE AND PARTICULATE CONTAMINANT REMOVAL FROM INDUSTRIAL STACK GASES

Richard D. Rivers; Mohiuddin Pasha; Jesse M. Goldsmith, and Robert T. Pring, both of Louisville, all of Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Dec. 7, 1972, Ser. No. 311,735

Int. Cl. B01j 9/04, 9/08, 9/12, 9/16, 9/20; C01b 17/00

U.S. Cl. 423-244

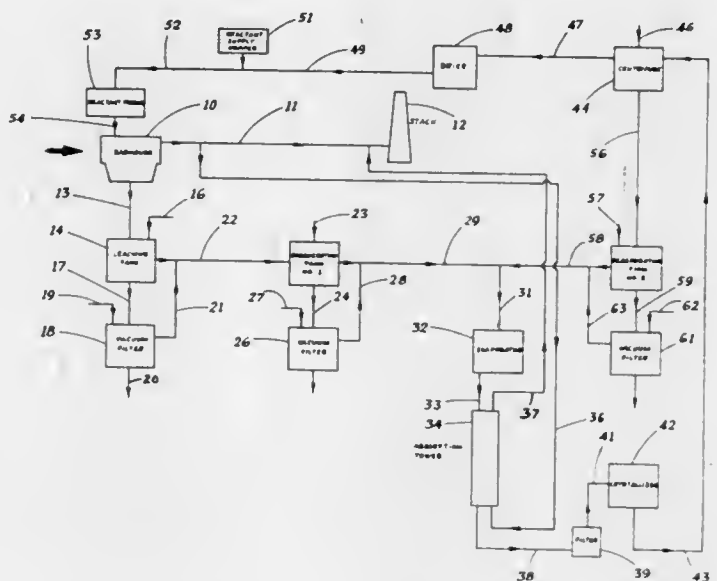
10 Claims

1. A method for removal of sulfur dioxide and particulate contaminants from industrial waste gases prior to their discharge into the atmosphere, said method utilizing sulfur dioxide reactants of suitable activity which are subsequently regenerated, said method further resulting in stable insoluble sulfur containing compounds to be discarded, said method comprising:

depositing soluble, alkaline sodium compounds onto filtering surfaces of a fabric tube type dust collector said finely divided alkaline sodium compounds being selected from the group of sodium carbonate, sodium bicarbonate, hydrated sodium carbonates, sodium sesquicarbonate, the naturally occurring ores, nahcolite and trona, containing said alkaline sodium compounds, and combinations thereof;

passing waste gases comprising sulfur dioxide, carbon dioxide and particulate contaminants through said dust collector whereupon said particulate contaminants are re-

strained by said dust collector and whereupon a portion of said sulfur dioxide reacts with said soluble alkaline sodium compounds to form soluble reaction products; periodically removing said soluble reaction products, unreacted soluble alkaline sodium compounds and particulate contaminants from said dust collector; leaching said soluble reaction products and the unreacted portion of said soluble alkaline sodium compounds from said particulate contaminants into a leach liquor; treating said leach liquor with calcium hydroxide to precipitate stable calcium salts, having anions including ele-



ments selected from the group sulfur and carbon, to be discarded leaving dissolved sodium compounds in said leach liquor; reforming said soluble alkaline sodium compounds by reacting said dissolved sodium compounds with carbon dioxide; converting the reformed soluble alkaline sodium compounds to solids; and, redepositing said reformed soluble alkaline sodium compounds onto said filtering surfaces of said fabric-type dust collector for reaction with sulfur dioxide contained in waste gases.

3,852,411

METHODS FOR THE PREPARATION OF IMPROVED FAUJASITE COMPOSITIONS

Dale D. Maness, Austin, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 169,069, Aug. 4, 1971, Pat. No. 3,701,629.

This application July 28, 1972, Ser. No. 275,908

Int. Cl. C01b 33/28, 33/26

U.S. Cl. 423-329

6 Claims

1. A method for preparing a faujasite-type zeolite from clinoptilolite crystalline aluminosilicate zeolite which comprises preparing an aqueous reaction mixture containing said clinoptilolite crystalline aluminosilicate zeolite, alkali metal hydroxide and water such that the ratio of water/zeolite in said mixture will be from between about 0.3 g./g. to about 2.0 g./g. and the mole ratio of $\text{Na}_2\text{O}/\text{SiO}_2$ in said mixture will be from about 0.40 to about 0.50, maintaining said reaction mixture at a temperature in the range of from about 25° to 150°C. for an initial holding period of from 0.5 to 2.5 hours, acidifying and thereby reducing the $\text{Na}_2\text{O}/\text{SiO}_2$ mole ratio of said reaction mixture so that the $\text{Na}_2\text{O}/\text{SiO}_2$ mole ratio is within the range of from 0.30 to 0.45, maintaining said reaction mixture for a second holding period of from 8 to 40 hours, and recovering a crystallized product having a silica/alumina mole ratio greater than about 4.

3,852,412

NITRIC ACID RECOVERY SYSTEM

Walter Brenner, Teaneck, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 23, 1973, Ser. No. 408,324

Int. Cl. C01b 21/46

U.S. Cl. 423-390

4 Claims

1. A method for treating aqueous nitric acid solutions containing ferric nitrate to produce substantially pure nitric acid and ferric oxide wherein substantially no insoluble nitrogen oxide gases are evolved comprising:

- adjusting the nitric acid concentration to the nitric acid-water azeotrope, and
- distilling the solution under nitric acid azeotropic conditions.

3,852,413

LABELLED SULFATED AMYLOPECTINS AND METHOD OF DETERMINING ABNORMAL GASTROINTESTINAL MUCOSA

Peter S. Cammarata, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 52,707, July 6, 1970, abandoned. This application July 3, 1972, Ser. No. 268,641

Claims priority, application Germany, July 2, 1971, 2133005

Int. Cl. A61k 27/04

U.S. Cl. 424-1

16 Claims

1. A composition comprising an alkali metal salt of sulfated potato starch amylopectin, which is characterized by a molecular weight of about $1-30 \times 10^7$ and a sulfate content of about 1-1.8 sulfate groups per glucose unit, chemically combined with a diagnostically effective, physiologically suitable labeling agent.

3,852,414

BONE SEEKING TECHNETIUM 99m STANNOUS PHOSPHATE COMPLEX

Norman Adler, Arlington, and Leopoldo Lazaro Gamin, Lexington, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Filed Sept. 13, 1972, Ser. No. 288,683

Int. Cl. A61k 27/04

U.S. Cl. 424-1

10 Claims

1. A metabolizable radioactive bone seeking composition for in vivo concentrating ^{99m}Tc in the skeletal structure of mammals comprising a technetium-99m-stannous-phosphate complex, at least 15 to 20% by weight of the phosphate moiety of which is a ring phosphate having the formula $\text{P}_n\text{O}_{3n-n}$ and a molecular weight of less than 300, said phosphate moiety containing no more than 25% by weight of linear polyphosphates of formulation $\text{P}_n\text{O}_{3+1}^{(n+2)}$ having a molecular weight greater than that of pyrophosphate.

3,852,415

COMPOSITIONS FOR USE IN RADIOIMMUNOASSAY AS A SUBSTITUTE FOR BLOOD PLASMA EXTRACT IN DETERMINATION OF CARCINOEMBRYONIC ANTIGEN

Jacques Pierre Vandervoort, West Caldwell, N.J., assignor to Hoffman-La Roche, Inc., Nutley, N.J.

Filed Oct. 13, 1972, Ser. No. 297,565

Int. Cl. A61k 27/04

U.S. Cl. 424-1

7 Claims

1. A diluent composition suitable for forming an antibody to CEA titration curve or a CEA standard inhibition curve substantially identical to that resulting when blood plasma is used as the diluent, said composition having a pH 6.45-6.55 and comprising per liter; an amount of a salt of an organic carboxylic acid with an alkali metal which is equivalent to 1.3 grams of disodium ethylenediamine tetraacetic acid dihydrate, 0.17 grams of an antimicrobial preservative, 70 μl . of a 30 percent w/w aqueous solution of bovine serum albumin, sodium hydroxide, and sufficient water to make 1 liter.

3,852,416

TICK AND FLEA COLLAR OF SOLID SOLUTION PLASTICIZED VINYLIC RESIN-CARBAMATE INSECTICIDE

Larry M. Grubb, 3029 High Plateau, Garland, Tex. 75040, and James K. Baxter, 920 Waterview Cir., Richardson, Tex. 75080

Continuation of Ser. No. 147,664, May 27, 1971, abandoned.

This application Jan. 22, 1973, Ser. No. 325,714

Int. Cl. A01k 27/00, 29/00

U.S. Cl. 424-14

13 Claims

1. In an animal collar having a buckle attached thereto, optionally punched with holes, for the control fleas and ticks on cats and dogs, the improvement consisting of a solid pesticidal composition, in the form of an elongated band suitable for forming said animal collar for the control of fleas and ticks on cats and dogs, which consists essentially of 5 to 15 percent of a carbamate selected from 1-naphthyl N-methyl carbamate and 2-isopropoxyphenyl N-methyl carbamate; 40 to 70 percent of a solid thermoplastic vinyl resin; and from 10 to 50 percent plasticizer selected from the phthalic esters, adipic esters and phosphoric esters, said percentages, by weight of the total composition, said composition characterized by being essentially dry and the property of providing a self-replenishing coating of particles of the carbamate on the surface of the composition by migration of the carbamate from the body of the composition, said migration occurring whenever carbamate particles are displaced from the surface of the composition.

3,852,417

SHAVING CREAM COMPOSITION

James H. McLaughlin, Ridgefield, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed May 2, 1973, Ser. No. 356,614

Int. Cl. A61k 7/14

U.S. Cl. 424-47

8 Claims

1. A foaming shaving cream composition packaged in a pressure container having a dispensing valve, said composition consisting essentially of 4 to 15 percent by weight of a mixture of water-soluble potassium and sodium stearates wherein the weight ratio of potassium stearate to sodium stearate is in the range of 2:1 to 7:1; 0 to 5 percent by weight of a water-soluble soap selected from the group consisting of sodium, potassium and triethanol ammonium cocoates and mixtures thereof; about 12 to 25 percent by weight of a liquid, water-immiscible oily material having skin lubricating or emollient properties and being selected from the group consisting of mineral oil having a Saybolt viscosity of 75 to 100 seconds at 100°F., cod liver oil, vegetable oils, alkyl esters of C_{12} - C_{18} fatty acids and mixtures thereof; about 1 to 5 percent by weight of a C_{10} - C_{16} fatty acid monoethanolamide or diethanolamide as a supplemental emollient, the weight ratio of said oily material to alkylolamide being in the range of about 5:1 to 25:1; 0 to 8 percent by weight of a humectant selected from the group consisting of glycerine and propylene glycol; about 40 to 78 percent by weight of water; and about 5 to 15 percent by weight of a liquefied, normally gaseous chlorofluorinated C_1 - C_2 hydrocarbon propellant, said propellant being effective to provide a pressure in the range of about 30 to 70 p.s.i.g. at 70°F.

3,852,418

EMBALMANT

Eli Jordan Tucker, Jr., Memorial Professional Bldg., Suite 1007, Houston, Tex. 77002

Continuation-in-part of Ser. No. 532,011, Nov. 30, 1965, abandoned, and a continuation-in-part of Ser. No. 797,681, Feb. 7, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,122

Int. Cl. A10n 1/00

U.S. Cl. 424-75

4 Claims

1. An embalment composition for intravenous injection consisting essentially of hematoxylin and dimethyl sulfoxide in a ratio of 1.75 to 5.5 cc of dimethyl sulfoxide per gram of hematoxylin.

3,852,419

TRANS-8-TRANS-10-DODECADIEN-1-OL AS AN ATTRACTANT

Wendell Roelofs, 652 W. North St., Geneva, N.Y. 14456; Andre Comeau, 1082 Principal, Richmond, Quebec, Canada, and Ada Hill, 575 White Springs Rd., Geneva, N.Y. 14456

Division of Ser. No. 136,692, April 23, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,233

Int. Cl. A01n 17/14

U.S. Cl. 424—84

2 Claims

1. A method of attracting and trapping males of the species *Laspeyresia pomonella*, which comprises charging an insect trap with from about 1 to about 10,000 μ g per trap of trans-8-trans-11-dodecadien-1-ol, and placing said trap in an area infested with *Laspeyresia pomonella*.

3,852,420

EQUINE STRANGLES VACCINE AND METHOD OF PREPARING AND USING THE SAME

Myron G. Usdin, Kansas City, Mo., assignor to Richardson-Merrell Inc., New York, N.Y.

Division of Ser. No. 108,147, Jan. 20, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,228

Int. Cl. A61k 23/00

U.S. Cl. 424—92

3 Claims

1. A vaccine effective in protecting equines against infection by virulent strains of *Streptococcus equi* which consists essentially of an immunizing dosage, in an injectable vehicle, or adjunct, of a proteinaceous antigen, which is not the capsule, extracted from the cell surface of *Streptococcus equi* bacterial cells, said vaccine being free of insoluble cellular material and being prepared by culturing virulent *Streptococcus equi* bacteria under aerobic conditions in a culture medium producing minimum concentration proteinase under temperature (about 37°C) and pH (about 7.8 to 6.3) conditions inhibiting formation of proteinase, until large capsules surrounding *Streptococcus equi* cells are present, separating the bacterial cells from their culture medium after about 4 to 20 hours growth, extracting from the cell surface of the bacteria a proteinase-sensitive proteinaceous antigen which is not the capsule and which is effective against *Streptococcus equi*, by heating the bacterial cells to extract the proteinaceous antigen from the cells, adjusting the hydrogen ion concentration of the solution to above 7.0 to separate the spent cells from the extracted antigen, removing the insoluble material and adjusting the pH to below 7.0.

3,852,421

EXCIPIENT AND SHAPED MEDICAMENTS PREPARED THEREWITH

Shunichi Koyanagi, Kinya Ogawa, Yoshiro Onda, all of Niigata-ken, and Akira Yamamoto, Naoetsu, all of Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation-in-part of Ser. No. 80,203, Oct. 12, 1970, abandoned. This application Sept. 20, 1971, Ser. No. 182,226

Claims priority, application Japan, Mar. 23, 1970, 45-24203

Int. Cl. A61j 3/10

U.S. Cl. 424—94

7 Claims

1. A medicament solid dosage form comprising a medicament and 1 to 50% by weight, based on the weight of the medicament solid dosage form, of a cellulose ether excipient selected from the group consisting of hydroxy alkylcellulose and hydroxyalkyl-alkylcellulose, in which the average total number of substituted moles of hydroxyalkyl groups and alkyl groups per anhydrous glucose unit is 0.1 to 1.30, the average number of substituted moles of hydroxyalkyl group per anhydrous glucose unit is 0.05 to 1.00, and the average number of substituted moles of alkyl groups per anhydrous glucose unit is 0 to 1.00.

3,852,422

LONG-ACTIVE GONADOTROPINS

Pietro Donini, Rome, Italy, assignor to Istituto Farmacologico Sero S.p.A., Rome, Italy

Filed Nov. 30, 1971, Ser. No. 203,486

Claims priority, application Italy, June 26, 1971, 26333/71; July 30, 1971, 52011/71

Int. Cl. A61k 17/00, 17/06

U.S. Cl. 424—100

10 Claims

1. An injectable pharmaceutical preparation suitable for treating disorders of the functions of the genitals comprising a suspension having pH 7.1–7.4 and containing a gonadotropin selected from the group consisting of human menopausal gonadotropin, human chorionic gonadotropin, human pituitary gonadotropin, pregnant mare serum, and mixtures thereof, 4–12 weight percent of said gonadotropin being in the form of soluble hormone in the supernatant and the remainder being in the form of a precipitation product of said gonadotropin and an inorganic precipitation component selected from the group consisting of zinc hydroxide in an amount corresponding to 0.4–0.7 mg Zn per mg gonadotropin and aluminum hydroxide in an amount corresponding to 0.9–1.4 mg Al per mg gonadotropin.

3,852,423

INTERFERON INDUCER AND PROCESS FOR PREPARING THE SAME

Yasukiyo Nakase, Yokohama, and Yasuhiko Kojima, Musashino, both of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Filed Mar. 21, 1972, Ser. No. 236,670

Claims priority, application Japan, Mar. 22, 1971, 46-15825

Int. Cl. C12d 13/00

U.S. Cl. 424—115

4 Claims

1. A process for the preparation of an interferon inducer for viral infections which comprises culturing phase II or III Bordetella pertussis in a liquid culture medium, separating a supernatant liquid from the cultured medium, filtering the thus obtained supernatant under sterile condition to obtain a filtrate, extracting the thus obtained filtrate by ultra filtration or chromatography to obtain the effective fraction, said effective fraction being capable of providing an interferon inducing effect.

3,852,424

PURIFIED FERRIMYCIN AND PROCESS FOR OBTAINING SAME

Ernst Gaeumann, deceased, late of Zurich, Switzerland; Tino Gaeumann, legal representative, Mont Sur Lausanne; Vladimir Prelog, Zurich; Ernst Vischer, Basel, and Hans Bickel, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 245,349, Dec. 11, 1962, abandoned, which is a continuation-in-part of Ser. No. 32,294, May 27, 1960, abandoned, which is a continuation-in-part of Ser. No. 749,616, July 21, 1958, abandoned. This application Oct. 19, 1966, Ser. No. 626,650

Claims priority, application Switzerland, July 26, 1957, 48868/57; July 8, 1958, 61491/58; May 29, 1959, 73755/59; Mar. 18, 1960, 3062/60

Int. Cl. A61k 21/00

U.S. Cl. 424—118

4 Claims

1. Ferrimycin A₁ of the formula C₄₇H₆₅O₁₄N₁₀Fe having pK_{MCs} values of 4.11, 7.87 and 11.4 and exhibiting the following maxima in the ultraviolet spectrum: λ_{max} 229 m μ ($\epsilon_{1cm}^{1\%}$ = 336), 319 m μ ($\epsilon_{1cm}^{1\%}$ = 37) and 425 m μ ($\epsilon_{1cm}^{1\%}$ = 27.6) and the IR-spectrum in potassium bromide shown in FIG. 2.

3,852,425

MITOCROMIN AND PROCESS FOR PREPARING SAME

Wen-Chih Liu, Paramus, and Koppaka V. Rao, Pine Brook, both of N.J., assignors to Pfizer & Co., Inc., New York, N.Y.

Filed Nov. 27, 1968, Ser. No. 779,464

Int. Cl. A61k 21/00

U.S. Cl. 44—119

2 Claims

1. A process for the production of the antibiotic mitocromin which comprises cultivating a microorganism of the genus *Streptomyces* selected from the group consisting of *Streptomyces viridochromogenes* ATCC No. 21343, *Streptomyces griseo-laqueus* ATCC No. 21344, and *Streptomyces* sp. ATCC No. 21345 in an aqueous nutrient medium under submerged aerobic conditions until substantial antibiotic activity against *B. subtilis* is imparted to said medium.

3,852,426

PROCESS FOR PRODUCING COPYAMYCIN DERIVATIVES

Kinichi Nakano, and Norio Nishiyama, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 827,402, May 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 674,981, Oct. 12, 1967, abandoned. This application Mar. 31, 1970, Ser. No. 24,380

Claims priority, application Japan, Oct. 13, 1966, 41-66900

Int. Cl. A61k 21/00

U.S. Cl. 424—120

6 Claims

1. Acetyl copiamycin having the infra-red absorption spectrum of FIG. 1 and the following elemental analysis:

C—58.54%
H—8.83%
N—3.08%

and having a melting point of 100–103 °C.

3,852,427

SODIUM BICARBONATE SPHERULITES FROM SODIUM D ESQUICARBONATE

Robert J. Hoffman, Liverpool, and Lawrence P. Gould, Syracuse, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,455

Int. Cl. C01d 7/10, 7/12, 7/40

U.S. Cl. 423—422

6 Claims

1. A process for making sodium bicarbonate in the form of crystalline spherules from sodium sesquicarbonate comprising:

- preparing an aqueous solution of the sodium sesquicarbonate;
- introducing 150 to 2,000 ppm by weight of a water-soluble alkali metal phosphate selected from the group consisting of (NaPO₃)₆, K₃P₃O₁₀, Na₃P₃O₁₀, Na₄P₃O₇ and K₄P₃O₇;
- carbonating the solution at an initial temperature of about 45° to 70°C., cooling the solution gradually during the carbonation to below about 35°C. while continuing carbonation until substantially all of the sodium carbonate has been converted to bicarbonate; and
- recovering the resulting sodium bicarbonate product from the carbonated solution.

3,852,428

MANUFACTURE OF CARBON FIBRES

John Lawrence Powell, Lower Kingswood; Peter John Winter, Great Bookham, and Ernest Pritchard, Woking, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Aug. 24, 1971, Ser. No. 174,552

Claims priority, application Great Britain, Sept. 8, 1970, 42992/70

Int. Cl. C01b 31/07

U.S. Cl. 423—447

4 Claims

1. In a process for the production of fibers, filaments or films consisting essentially of carbon by spinning or extruding organic material consisting mainly of hydrocarbons selected from the group consisting of an extract of coal, pitch from coal, tar from coal and a bitumen to form a fiber, filament or film of said organic material; oxidizing the fiber, filament or film whereby the spun or extruded fiber, filament or film is stabilized to heat treatment and carbonizing the stabilized fiber, filament or film whereby a fiber, filament or film consisting essentially of carbon is formed; the improvement whereby the said organic material spun or extruded consisting of hydrocarbons contains as an additive thoroughly dissolved or dispersed in said organic material from 0.05 to 30 percent by weight of one or more polymers compatible with said organic material and being selected from the group consisting of polypropylene and polymethylmethacrylate.

3,852,429

METHOD FOR PRODUCTION OF SHAPED CARBON ARTICLES

Naohiro Murayama, and Takayuki Katto, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-To, Japan

Continuation-in-part of Ser. No. 62,210, Aug. 7, 1970, This application Apr. 9, 1973, Ser. No. 349,127

Int. Cl. B29c 25/00

U.S. Cl. 423—449

12 Claims

1. A method for producing a shaped carbon article from a shaped polymer while retaining the original shape of the shaped polymer, which comprises the steps of:

- subjecting a shaped body of a polymer material selected from the group consisting of a vinylidene fluoride homopolymer and copolymers thereof, containing vinylidene fluoride as the principal constituent, to a pretreatment with a nucleophilic reagent selected from the group consisting of ammonia, a liquid ammonia-sodium system, ethylene-diamine, n-butylamine, and di-n-butylamine at a temperature of from a room temperature to 90°C for a time period until the fluorine content of the shaped body is reduced by 0.5 to 4.5 percent by weight with respect to the weight of the original polymer shaped body; and
- heat-treating the thus pretreated and infusibilized polymer shaped body in an inactive gas atmosphere by raising the heating temperature to the maximum range of from 300° to 500°C to remove hydrogen fluoride therefrom, thereby producing the carbonized shaped article.

3,852,430

METHOD FOR THE PRODUCTION OF CONCENTRATED HYDROHALOGEN ACIDS AND METAL OXIDES

Rainer Lienau, Planegg, and Friedrich Hofmann, Saarbruecken, both of Germany, assignors to Sud-Chemie Aktiengesellschaft, Munich, Germany

Division of Ser. No. 38,185, May 18, 1970, Pat. No. 3,658,483. This application Oct. 18, 1971, Ser. No. 190,259

Int. Cl. C01b 7/00, 7/08; C01g 1/02

U.S. Cl. 423—481

14 Claims

1. Process for producing concentrated aqueous hydrohalogen acids and metal oxides from aqueous solutions of divalent and/or polyvalent metal halides which comprises:

- pre-concentrating said aqueous solution by indirect heat exchange;

- b. evaporating the pre-concentrated solution to a solids content of from about 40 to about 60 percent by weight by directly contacting said pre-concentrated solution with the combustion gases of a submerged combustion evaporator, and using the waste heat of said submerged combustion evaporator to pre-concentrate said aqueous solution in step (a);
- c. decomposing the evaporated concentrate at elevated temperatures in the presence of water vapor into the corresponding hydrogen halides and metal oxides;
- d. cooling the hydrogen halides; and
- e. recovering concentrated aqueous hydrohalogen acids and the corresponding metal oxides.

3,852,431

METHOD OF OBTAINING TITANIUM TANNING AGENT AND ITS APPLICATION FOR TANNING HIDES, PELTS AND FUR SKINS

David Lazarevich Motov, ulitsa Fersmana, 18, kv. 19; Vladimir Ivanovich Konstantinov, ulitsa Fersmana, 18, kv. 44; Vladimir Georgievich Rumyantsev, Zapadnaya ulitsa, 3, kv. 56; Valentin Ivanovich Belokoskov, ulitsa Fersmana, 16, kv. 19; Eduard Osvoldovich Ude, ulitsa Fersmana, 22, kv. 12; Artur Grigorievich Babkin, ulitsa Fersmana, 18, kv. 34, all of Apatity, Murmanskoi oblasti; Alexandr Ivanovich Metelkin, Nagornaya ulitsa, 46/48, korpus 20, kv. 31, Moscow; Vasily Georgievich Suchkov, Leninsky prospekt, 87a, korpus 4, kv. 48, Moscow; Nina Ivanovna Kolesnikova, Izmailovo, Nikitinskaya ulitsa, 31, kv. 31, Moscow; Alexandr Vasilievich Motovilov, ulitsa Dzerzhinskogo, 185, kv. 55., Taganrog, Rostovskoi oblasti; Nina Trofimovna Rusakova, ulitsa Rudneva, 1a, kv. 71, Vladivostok; Tatyana Vladimirovna Nixonova, bulvar Generala Karbysheva, 7, korpus 6, kv. 32, Moscow; Nina Ivanovna Polyaniyova, ulitsa Dzerzhinskogo, 174 A, kv. 10, Taganrog; Mikhail Grigorievich Sinenko, ulitsa Dzerzhinskogo, 183, kv. 21., Taganrog, Rostovskoi oblasti; Irina Fedorovna Krylova, Komsomolsky prospekt, 19, kv. 36, Moscow, and Vladimir Mikhailovich Yakutin, ulitsa Dzerzhinskogo, 185, Taganrog, Rostovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 20,133, March 16, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 314,038

Int. Cl. C01c 1/24

U.S. Cl. 423—549

1 Claim

1. A method for preparing ammonium titanyl double sulfate monohydrate which comprises dissolving titanium-containing material in sulfuric acid to form a solution containing titanium-ions; adding ammonium sulfate to said solution in an amount of 180 to 300 g/l and adjusting the content of H_2SO_4 to 300 to 450 g/l while keeping the aggregate concentration of ammonium sulfate and H_2SO_4 to from 520 to 620 g/l in order to precipitate substantially all the titanium from said solution as ammonium titanyl double sulfate monohydrate, $(NH_4)_2 TiO(SO_4)_2 \cdot H_2O$, at a temperature of 12° to 30°C.; removing said precipitate; washing said precipitate with a solution containing 300 to 450 g/l H_2SO_4 and 180 to 300 g/l of $(NH_4)_2 SO_4$; and then washing the precipitate with a solution containing 300 to 400 g/l of ammonium sulfate to produce a stabilized ammonium titanyl double sulfate, monohydrate.

3,852,432

DIAGNOSTIC DEVICE AND METHOD OF TREATMENT

Robert I. Henkin, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 107,279, Jan. 18, 1971., This application

Aug. 21, 1972, Ser. No. 282,024

Int. Cl. A61k 27/00

U.S. Cl. 424—145

2 Claims

1. The method of treating idiopathic hypoguesia in humans consisting of administering orally to a patient suffering there-

from, from 25 to 150 milligrams of zinc ion daily, in the form of a salt selected from the group consisting of zinc acetate, zinc chloride and zinc sulfate.

3,852,433

URIDINE-5-MONOPHOSPHATE COMPOSITIONS

Shunkichi Tamura, Funabashi, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha, Chiba-ken, Japan

Filed Apr. 6, 1973, Ser. No. 348,658

Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424—180

8 Claims

1. A pharmaceutical composition as an accelerator for glucuronide formation in dosage unit form comprising an effective amount of uridine-5'-monophosphate or its pharmaceutically acceptable salt as active ingredient and a pharmaceutical carrier.

3,852,434

POTENTIATION OF (—)

CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID AND ANALOGUES THEREOF

Frederick M. Kahan, and Patrick J. Cassidy, both of Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 71,247, Sept. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 863,351, Oct. 2, 1969, abandoned. This application Apr. 20, 1973, Ser. No. 353,046

Int. Cl. A61k 21/00, 27/00

U.S. Cl. 424—180

14 Claims

1. A method of potentiating the activity of a phosphonomycin antibiotic in antibiotic therapy which comprises contacting susceptible bacteria with an effective amount of an inducer capable of providing a hexose-phosphate transport system or enhancing the α -glycerophosphate transport system for said bacteria and later or concomitantly contacting said bacteria with an effective amount of a phosphonomycin antibiotic.

3,852,435

URIDINE-5'-DIPHOSPHATE-GLUCURONIC ACID COMPOSITIONS

Shunkichi Tamura, Funabashi, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha

Filed Oct. 30, 1972, Ser. No. 301,728

Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424—180

8 Claims

1. A pharmaceutical composition as an accelerator for glucuronide formation in a dosage unit form selected from the group consisting of powder, tablets, pills capsules, dragees and aqueous solutions comprising uridine-5'-diphosphate glucuronic acid or its sodium salt as an active ingredient and a pharmaceutical carrier.

3,852,436

BIOCIDAL COMPOSITIONS AND THEIR METHOD OF PREPARATION EMPLOYING A GRAPEFRUIT DERIVATIVE

Jakob Harich, Orlando, Fla., assignor to Rush-Hampton, Inc., Longwood, Fla.

Filed Apr. 29, 1971, Ser. No. 138,817

Int. Cl. A01n 9/02, 9/08

U.S. Cl. 424—195

12 Claims

1. A method of preparing an antibacterial and antifungal composition comprising:

1. adding tetrachloroethylene to an organic alcoholic ether selected from the group consisting of 2-phenoxy-ethanol, diethylene glycol methyl ether, ethylene glycol ethyl

ether, and mixtures thereof, at a temperature between about 180° and 200°F. to form a first intermediate mixture the weight ratio of tetrachloroethylene to alcoholic ether being about between 3:2 and 2:3;

2. adding, based on 140 to 160 grams of organic ether, between about 16 to 21 grams of 2,3,5,6-tetrachloro-4-(methyl sulfonyl) pyridine, between about 40 to 46 grams of salicylanilide, and 30 to 50 grams of a polyhalo substituted diaryl selected from the group consisting of 3,4,5-tribromosalicylanilide, 2,4,4'-trichloro-2'-hydroxydiphenyl ether, and mixtures thereof, to the mixture of step 1 to obtain a reaction mixture, said additions being carried out at a temperature between about 180° and 200°F.
3. adding, based on 140 to 160 grams of organic ether, 3 to 5 grams of at least one substituted dimethyl benzyl ammonium chloride to the reaction mixture and heating at a temperature between about 180° and 200°F. to obtain a final reaction product; and
4. adding, to said final reaction product, based on 140 to 160 grams of alcoholic ether, between about 20 to 85 grams of a grapefruit derivative prepared by reacting the pulps of fresh grapefruit with a non-toxic polyhydric alcohol in the presence of ultraviolet light, and separating the resultant grapefruit derivative from the pulp residue.

3,852,437

STABLE PESTICIDAL COMPOSITIONS

Hans Helfenberger, Reinach, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 876,089, Nov. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 703,280, Feb. 6, 1968, abandoned. This application Nov. 15, 1971, Ser. No. 198,988

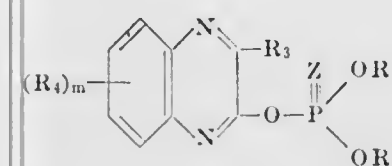
Claims priority, application Switzerland, Feb. 7, 1967, 1829/67

Int. Cl. A01n 9/36, 9/06

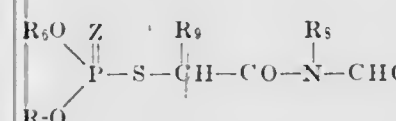
U.S. Cl. 424—200

11 Claims

1. A stabilized insecticidal composition comprising:
 - A. 100 parts by weight of a compound selected from the group consisting of:
 1. a compound of the formula:



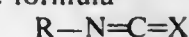
and 2. a compound of the formula:



wherein

- R₁ is alkyl of 1 to 4 carbon atoms,
- R₂ is —O—R₅, —NH—R₅ or —N(R₅)₂,
- R₃ is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or —COOR₁,
- R₄ is hydrogen, alkyl of 1 to 4 carbon atoms, or halo,
- m is 1, 2, 3 or 4,
- R₅ is alkyl of 1 to 4 carbon atoms,
- each of R₆ and R₇ is independently methyl or ethyl,
- R₈ is alkyl of 1 to 3 carbon atoms,
- R₉ is hydrogen or alkyl of 1 to 3 carbon atoms, and
- Z is oxygen or sulfur, and

- B. between 0.5 part to 30 parts by weight of a stabilizing compound of the formula



wherein

X is oxygen or N—R

R is hydrogen, alkyl of up to 10 carbon atoms, cycloalkyl of from 6 to 8 carbon atoms, phenyl, phenyl substituted by one or two chloro substituents, phenyl substituted by one or two alkyl substituents in which each alkyl substituent contains up to 4 carbon atoms, nitrophenyl or phenylalkyl of 7 to 9 carbon atoms.

3,852,438

PESTICIDAL COMPOSITIONS CONTAINING 1-HALO-2-RYLOXY-VINYL-(2)-PHOSPHATES

Henry Martin, and Jozef Drabek, both of Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

Division of Ser. No. 64,648, Aug. 17, 1970, Pat. No. 3,732,343.

This application Feb. 14, 1973, Ser. No. 332,470

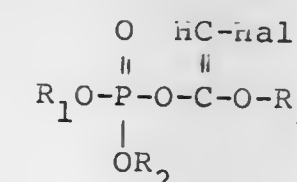
Claims priority, application Switzerland, Aug. 18, 1969, 12553/69; Sept. 25, 1969, 14452/69

Int. Cl. A01n 9/36

U.S. Cl. 424—217

21 Claims

1. A pesticidal composition useful for combating pests selected from the group consisting of insects and acarinae comprising (1) a pesticidally effective amount of a compound of the formula



in which Hal represents chlorine or bromine; each of R₁ and R₂ represents alkyl of from 1 to 4 carbon atoms; and R₃ represents phenyl, naphthyl or phenyl substituted by from 1 to 5 substituents selected from the group consisting of halogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, alkylthio of from 1 to 4 carbon atoms, nitro, trifluoromethyl, cyano, the group —COO-alkyl in which the alkyl group has from 1 to 4 carbon atoms and the group —CO-alkyl in which the alkyl has from 1 to 4 carbon atoms and (2) a suitable carrier.

3,852,439

COMPOSITIONS WITH A BASE OF PHOSPHORIC ESTERS COMBINED WITH A STABILISER

Claude Hennart, Aubervilliers, and Marcel Louis Dulat, Poitiers, both of France, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Sept. 14, 1971, Ser. No. 180,507

Claims priority, application France, Sept. 11, 1970, 70.33013

Int. Cl. A01n 9/36

U.S. Cl. 424—219

6 Claims

1. A pesticidal composition consisting essentially of:

- A. at least one phosphoric ester insecticide, the molecule of which has at least one alkyl group of one to three carbon atoms attached to the phosphoric anion wherein on contact with molecules of water, at least partial decomposition of the ester takes place by protonization replacement of said lower alkyl group by hydrogen, and
- B. a 1,3-benzodioxole insecticide synergist as a principal agent for stabilizing the said ester against decomposition by protonization and used in an effective stabilizing amount of from at least about 0.2 to not more than about

10% based on the weight of the phosphoric ester, said benzodioxole having no action as a toxicity synergist in the insecticide phosphoric acid ester in said proportions, said benzodioxole being selected from the group consisting of:

- 5-(2-octylsulphanylpropyl) benzodioxole
- 5-propyl-6-(2,5,8-trioxadodecyl) benzodioxole
- 5-allyl benzodioxole
- 5-formyl benzodioxole
- 5-(3,6,9-trioxa undecyl-2-oxo) benzodioxole
- 5,6-bis(propyloxycarbonyl)-7-methyl-5,6,7,8-tetrahydronaphtho(2,3-d)-1,3-dioxole
- 2,6-bis(5-benzodioxole-1,3-yl)-3,7-dioxabicyclo(3,3,0) octane
- 2-(5-benzodioxole-1,3-yl)-6-(5-benzodioxole-1,3-yl-oxo)-3,7-dioxabicyclo(3,3,0) octane
- 5-hydroxy benzodioxole
- 5-hydroxymethyl benzodioxole
- 5-(propen-1-yl) benzodioxole
- 5-acetonyl benzodioxole
- 5-(3-oxo-buten-1-yl) benzodioxole
- 5-cyanomethyl benzodioxole
- 5-(2-amino propyl) benzodioxole
- 5-(5-methyl 4-dioxane-1,3-yl) benzodioxole
- 5-benzoylmethyl benzodioxole
- benzodioxole
- 5-bromo benzodioxole
- 5-nitrobenzodioxole
- 5-cyanobenzodioxole
- 5-(2-N-phenylcarbamyl ethyl) benzodioxole
- 5-[2-(4-methylbenzoyl)vinyl]benzodioxole
- 5-propyl benzodioxole
- 5-(2-nitrovinyl) benzodioxole
- N-piperonylidene (4-methyl aniline)
- N-piperonylidene (5-chloro-2,4-dimethoxy aniline)
- 5-methoxy benzodioxole
- sodium 7-methyl-5,6,7,8-tetrahydronaphtho[2,3-d][1,3]dioxole 5,6-dicarboxylate
- zinc 3-(5-benzodioxole) acrylate
- piperidine 3-(5-benzodioxole) acrylate
- lead 3-(5-benzodioxole) acrylate
- piperidine 5-benzodioxole carboxylate
- 2-benzoyl 3-(2-pyrrolidinoethoxy)(1,3-dioxolo) [4,5-f]indole
- 1-(4-methyl-2-nitrophenyl azo)-3-ethoxycarbonyl-4,4-dimethyl-1,2,6-dioxo cyclohexane
- 5-allyl benzodioxole
- 5-(3-oxo-butene-1-yl) benzodioxole

3,852,440

REDUCING CHOLESTEROL LEVELS WITH SITOSTEROLS AND CHOLANIC ACID DERIVATIVES

Alan Hugh Weigand, Fort Lee, N.J., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.
Continuation-in-part of Ser. No. 208,887, Dec. 16, 1971, abandoned, and a continuation-in-part of Ser. No. 259,062, July 2, 1972, abandoned, which is a continuation of Ser. No. 126,296, March 19, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 304,295

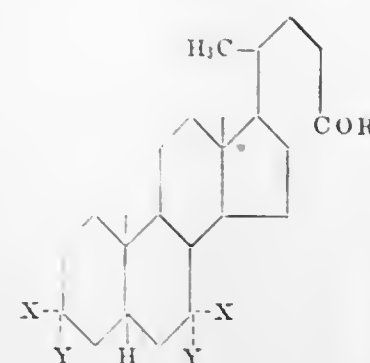
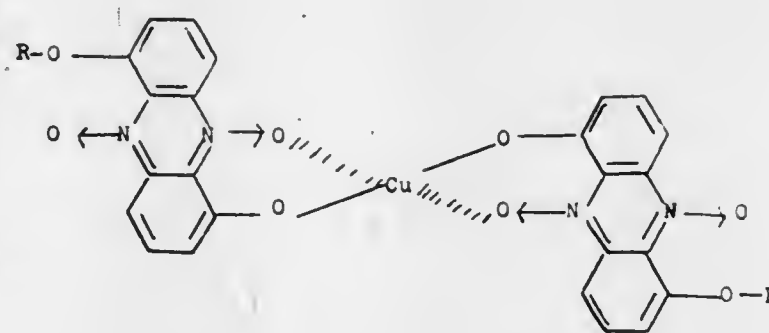
Int. Cl. A61k 17/00

U.S. Cl. 424-239

10 Claims

1. A composition useful in reducing the cholesterol and lipid levels of human beings which consists of, in combination;
a. A small but effective amount sufficient to effect a reduction in the cholesterol and lipid levels of said human being, of a sitosterol selected from the group consisting of α -sitosterol, β -sitosterol, and γ -sitosterol; and

b. A small but effective amount sufficient to effect a reduction in the cholesterol and lipid levels of said human being, of a steroid compound of the formula:



wherein

R is hydroxy, acyloxy of a hydrocarbon carboxylic acid of less than 12 carbon atoms, alkoxy of less than 13 carbon atoms, NHCH_2COOH , or $\text{NHCH}_2\text{CH}_2\text{SO}_3\text{H}$;

each X is hydrogen;

each Y is hydroxy, or acyloxy of a hydrocarbon carboxylic acid of less than 12 carbon atoms;

and X and Y when taken together is oxo (O=); and the non-toxic, pharmaceutically acceptable salts thereof.

3,852,441

SYNERGISTIC MIXTURES OF DIPHENYLBISMUTH ACETATE AND THE ZINC SALT OF 1-HYDROXY-2-PYRIDINE THIONE EFFECT AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

John A. Kooistra, Jr., Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 98,085, Dec. 14, 1970, abandoned.

This application Mar. 14, 1973, Ser. No. 341,191

Int. Cl. A01n 9/02, 9/22, 11/001

U.S. Cl. 424-245

2 Claims

1. An antibacterial and antifungal composition, active against *Pseudomonas aeruginosa* and *Escherichia coli* bacteria, said composition containing a mixture of:

- A. zinc 1-hydroxy-2-pyridinethione; and
- B. diphenylbismuth acetate in the ratio of (A) to (B) of from about 1:9 to about 9:1.

3,852,442

PHARMACEUTICAL COMPOSITIONS CONTAINING ORGANOMETALLIC DERIVATIVES OF 6-LOWER ALKOXY-1-PHENAZINE 5,10-DIOXIDE

Willy Leimgruber, Montclair, N.J.; Gian Paolo Maestroni, Stanten Island, N.Y.; Milan Mitrovic, Nutley, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffman-La Roche, Nutley, N.J.

Continuation-in-part of Ser. No. 814,429, April 8, 1969, Pat. No. 3,586,674, which is a continuation-in-part of Ser. No. 739,191, June 24, 1968, abandoned. This application Apr. 23, 1971, Ser. No. 139,291

Int. Cl. A01n 9/22; A61k 27/00

U.S. Cl. 424-245

32 Claims

1. A composition for the treatment of localized topical microbial infections comprising as the active ingredient a compound represented by the formula

wherein R is lower alkyl of 1 to 3 carbon atoms together with a pharmaceutically acceptable carrier wherein the amount of the compound is effective in treating the localized topical microbial infection.

3,852,443

2-MERCAPTOQUINOXALINE-1-OXIDES, SALTS THEREOF AND-(1-OXOQUINOXALINYL) DISULFIDES FOR TREATING HAIR AND SKIN

Miriam Lois Douglass, Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

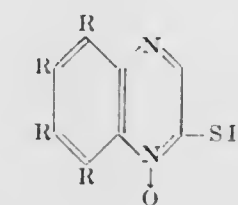
Division of Ser. No. 880,413, Nov. 26, 1969, Pat. No. 3,733,323. This application Nov. 6, 1972, Ser. No. 303,778

Int. Cl. A61k 27/00

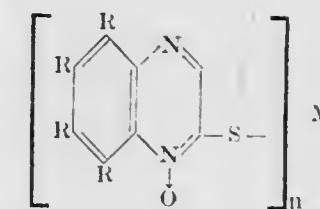
U.S. Cl. 424-250

5 Claims

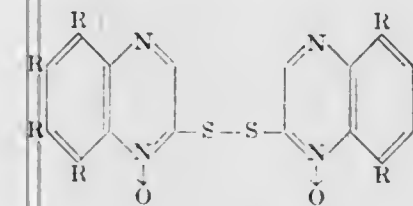
1. A method for counteracting the growth of microbes selected from the group consisting of bacteria and fungi on skin or hair which comprises applying to the skin or hair a fungicidal or bactericidal amount of a compound selected from the group consisting of 2-mercaptoquinoxaline-1-oxides of the formula



salts thereof of the formula



and disulfides thereof of the formula



wherein R is hydrogen or an alkyl group of 1 to 12 carbon atoms, M is selected from the group consisting of alkali metals, alkaline earth metals, transition element metals, Group III A metals, Group IV A metals, Group V A metals, ammonium and quaternary ammonium, wherein substituents on the quaternary nitrogen are selected from the group consisting of alkyl groups of 1 to 18 carbon atoms, and arylalkyl groups of 7 to 24 carbon atoms, and n, representing the valence of M, is either 1, 2 or 3.

3,852,444

FUNGICIDAL AND BACTERICIDAL 2-(N-2-CYANOETHYLDITHIOCARBAMYL METHYLENE)-HYDROXY-4H-PYRAN-4-ONE AND METAL CHELATES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 228,368, Feb. 22, 1973, Pat. No. 3,799,945. This application Dec. 3, 1973, Ser. No. 421,312

Int. Cl. A01n 9/00

U.S. Cl. 425-245

11 Claims

1. The method of inhibiting the growth of fungi or bacteria which comprises applying to the habitat of the organism a

fungicidal or bactericidal amount of 2-(N-2-cyanoethylthiocarbamylmethylene)-5-hydroxy-4H-pyran-4-one or a metal chelate thereof.

3,852,445

[CNS COMPOSITIONS AND METHOD WITH 4-(5,10-DIHYDRO-4H-BENZO[5,6]CYCLOHEPTA[1,2-B]THIENYL-4-YL)-1-PIPERAZINYL-ALKYL-3-ALKYL-2-IMIDAZOLIDINONES

Guenther Doerhoefer, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 260,877, June 8, 1972, This application July 5, 1973, Ser. No. 376,759

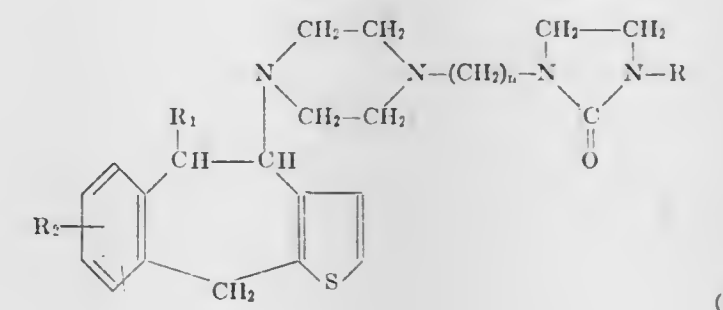
Claims priority, application Switzerland, June 17, 1971, 8822/71

Int. Cl. A61k 27/00

U.S. Cl. 424-250

4 Claims

1. A therapeutic preparation comprising a central nervous system depressant effective amount of a compound of the formula I



wherein

R is a lower alkyl group having 1 to 4 carbon atoms,

R₁ is hydrogen or the methyl group,

R₂ is hydrogen, halogen up to atomic number 35, trifluoromethyl, a lower alkyl or alkoxy group having 1 to 4 carbon atoms, or a di-lower alkylsulphamoyl group of which the lower alkyl groups each have 1 to 4 carbon atoms, and n is 2 or 3

or a pharmaceutically acceptable salt thereof, in combination with a pharmaceutical excipient.

3,852,446

ORGANIC COMPOUNDS IN TREATMENT OF PSYCHOTIC DISTURBANCES

Jean Schmutz, Muri Near Berne, and Fritz Hunziker, Berne, both of Switzerland, assignors to Sandoz, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 60,976, July 6, 1970, Pat. No. 3,758,479, which is a division of Ser. No. 769,373, Oct. 21, 1968, Pat. No. 3,539,573, which is a continuation-in-part of

Ser. No. 712,956, March 14, 1968, abandoned. This application Mar. 19, 1973, Ser. No. 342,399

Claims priority, application Switzerland, Mar. 13, 1967, 3582/67; Mar. 22, 1967, 4103/67; May 9, 1967, 6557/67; July 14, 1967, 10115/67; Nov. 3, 1967, 15453/67; Feb. 14, 1968, 2201/68

Int. Cl. A61k 27/00

U.S. Cl. 424-250

7 Claims

1. A pharmaceutical composition in the form of a tablet, capsule or dragee useful in treating psychotic disturbances in animals comprising as active ingredient, a therapeutically effective amount of

2-nitro-11-(4-methyl-1-piperazinyl)dibenzo[b,f] [1,4]thiazepine, or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutical carrier or diluent.

3,852,447

PHARMACEUTICAL COMPOSITIONS CONTAINING SULFONATE DERIVATIVES OF 1,4-BIS(PROPYONYL) PIPERAZINE

Alexander Senning, Brabrand; Hans Christian Buchholt, Risskov, both of Denmark; Robert Bierling, Wuppertal-Elberfeld, Germany; Dieter Steinhoff, Bochum, Germany, and Gerhard Trossmann, Bonn-Bad Godesberg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

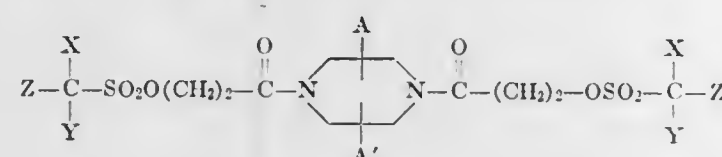
Division of Ser. No. 180,501, Sept. 14, 1971, Pat. No. 3,798,222. This application Mar. 23, 1973, Ser. No. 344,141
Claims priority, application Germany, Sept. 18, 1970, 2046087

Int. Cl. A61k 27/00

U.S. Cl. 424-250

6 Claims

1. A composition comprising in unit dosage form from 0.5 to 90% by weight of a compound of the formula:



in which

A and A' are each hydrogen or primary or secondary lower alkyl of 1 to 6 carbon atoms;
Z is chloro, bromo or iodo, and
X and Y are each hydrogen, chloro, bromo or iodo, and an inert pharmaceutical carrier.

3,852,448

N-SUBSTITUTED AMINO-N-NITROSO-AMINOACETONITRILES FOR TREATING HYPERTENSION

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

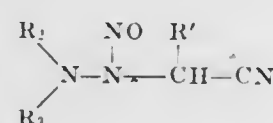
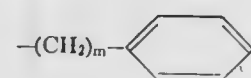
Division of Ser. Nos. 326,405, Feb. 4, 1971, Pat. No. 3,780,180, which is a continuation-in-part of Ser. No. 41,056, May 27, 1970, abandoned. This application Aug. 22, 1973, Ser. No. 390,531

Int. Cl. A61k 27/00

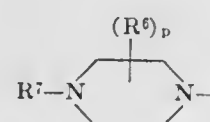
U.S. Cl. 424-250

2 Claims

1. A method for treating hypertension, which comprises orally or parentally administering to a mammal is need of said treatment an anti-hypertensive effective amount of a compound of the formula,

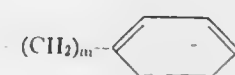
in which R¹ represents hydrogen, alkyl or

where m is 0, 1 or 2 and in which R₂ and R₃ together with N represent

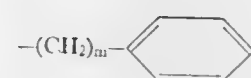


where p is 0, 1 or 2,

R⁶ Represent hydroxy; halo having an atomic weight of about 19 to 36; lower alkyl; lower alkoxy; alkanoyl having 2 to 4 carbon atoms; alkanoyloxy having 2 to 4 carbon atoms; ω-hydroxy lower alkyl; alkoxyalkyl having 2 to 4 carbon atoms substituted with 1 to 4 halogen atoms having an atomic weight between about 19 to 36; or



where R⁷ is hydrogen; lower alkyl; alkanoyl having 2 to 4 carbon atoms; ω-hydroxy lower alkyl; alkoxyalkyl having 2 to 4 carbon atoms; lower alkyl having 1 to 4 carbon atoms substituted with 1 to 4 halogen atoms having an atomic weight between 19 to 36; or



3,852,449

TREATMENT AND PREVENTION OF COCCIDIOSIS IN POULTRY

Toshio Ishii; Yasuto Takamatsu, both of Tokyo; Shojiro Yurugi, Kyoto, and Katsutada Masuda, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 7,362, Jan. 30, 1970, which is a continuation of Ser. No. 621,753, March 9, 1967, abandoned.

This application Oct. 26, 1971, Ser. No. 192,326

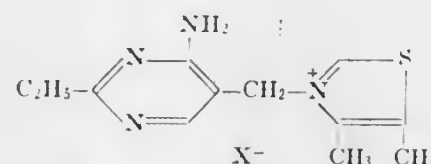
Claims priority, application Japan, May 30, 1966, 41-34922

Int. Cl. A61k 27/00

U.S. Cl. 424-251

6 Claims

1. A method for the treatment or prevention of coccidiosis in poultry, which comprises administering to the poultry an effective amount of thiazolium mono salt of the formula



wherein X⁻ is a member selected from the group consisting of NO₃⁻, NO₂⁻, I⁻, SCN⁻ and ClO₄⁻

3,852,450

ANTIBACTERIAL COMPOSITIONS CONTAINING RIFAMPICIN AND A PYRIMIDINE DERIVATIVE

Luigi Silvestri, Fara, and Vittorio Arioli, Como, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Dec. 14, 1972, Ser. No. 315,107

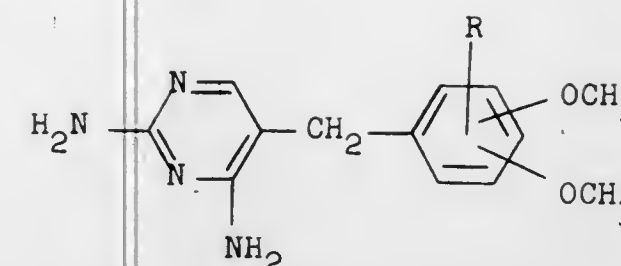
Claims priority, application Italy, Dec. 23, 1971, 32838/71

Int. Cl. A61k 21/00, 27/00

U.S. Cl. 424-251

13 Claims

1. A composition comprising a pyrimidine compound selected from a compound corresponding to the formula:



wherein R represents hydrogen, methoxy or lower alkyl, and the salts thereof with pharmaceutically acceptable acids; and from about 0.2 to about 10 parts by weight of rifampicin per part by weight of the pyrimidine compound.

3,852,451

PIG GROWTH FEED COMPOSITION CONTAINING METHYL XANTHINES AND SALTS OF METHYL XANTHINES AND METHOD OF USE

Hugh M. Cunningham, 1054 Castle Hill Cres., Ottawa, Canada

Continuation-in-part of Ser. No. 728,881, May 14, 1968, abandoned. This application Dec. 3, 1971, Ser. No. 204,677

Int. Cl. A61k 27/00

U.S. Cl. 424-253

20 Claims

1. A method of increasing at least one of the feed efficiency and the protein to fat ratio of pigs; or of regulating the growth rate of pigs, comprising; administering orally to a pig a compound selected from the group consisting of methyl xanthines and ingestible salts of methyl xanthines, said compound being administered in an effective amount equivalent to between about 0.25 to 2.5 grams of 1, 3, 7-trimethyl xanthine per kg of feed.

3,852,452

BENZOCYCLOHEPTAISOQUINOLINE DERIVATIVES AS CNS DEPRESSANTS

Francois T. Bruderlein, Montreal, and Leslie G. Humber, Dollard des Ormeaux, Quebec, both of Canada, assignors to Ayerst, McKenna and Harris Limited, Quebec, Canada

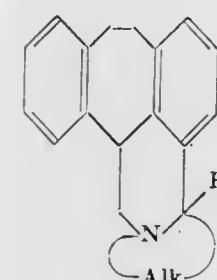
Continuation-in-part of Ser. No. 97,481, Dec. 21, 1970, which is a continuation-in-part of Ser. No. 10,306, Feb. 10, 1970, Pat. No. 3,657,250. This application Apr. 10, 1972, Ser. No. 242,839

Int. Cl. A61k 27/00

U.S. Cl. 424-258

2 Claims

1. A pharmaceutical composition having central nervous system activity containing a carrier and an amount up to about 500 milligrams effective to produce a central nervous system depressant effect in a mammal without deleterious side-effects of a compound selected from those of the formula:



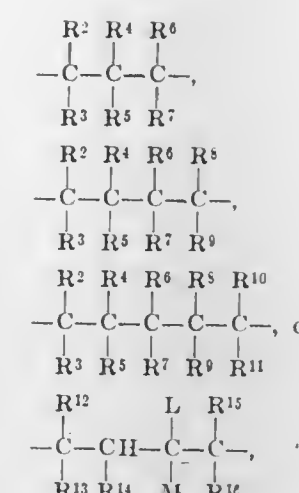
in which R¹ is selected from the group which consists of hydrogen and lower alkyl, and Alk represents an organic radical selected from the group which consists of

A:

B:

C:

D:



designated A, B, C or D respectively, in which R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, R¹⁰, R¹¹, R¹², R¹³, R¹⁴, R¹⁵, and R¹⁶ are each the same or different radicals selected from the group which consists of hydrogen and lower alkyl, with the proviso that the carbon atoms to which R² and R³, or R¹² and R¹³ are attached is bonded to the nitrogen atom of said compound; L represents hydroxyl or lower alkanoyloxy; and M is selected from the group which consists of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, and cycloalkyl containing from three to six carbon atoms which may be optionally substituted by lower alkyl or phenyl; and their acid addition salts with pharmaceutically acceptable acids.

3,852,453

METHOD OF ENHANCING VINCAMINE COMPOSITIONS
Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, and Jean-Pierre Rene Gabriel, Tours, both of France, assignors to Synthelabo, Paris, France

Filed May 21, 1973, Ser. No. 362,239

Claims priority, application France, May 26, 1972, 72.18880; June 21, 1972, 72.22289; May 9, 1973, 73.16633

Int. Cl. A61k 27/00

U.S. Cl. 424-262

3 Claims

1. In the method of providing an enhanced serum level of an orally administered vincamine compound selected from the group consisting of vincamine, vincaminol, vincanol, vincamone, vincaminic acid, apovincaminic acid, desoxyvincaminic acid, and the pharmaceutically acceptable salts, amides, esters and N-oxide forms thereof to a patient, the improvement which comprises orally administering to said patient a mixture of said vincamine compound and ascorbic acid or a pharmaceutically acceptable salt thereof, the ratio of said vincamine compound to said ascorbic acid being from about 2:1 to 1:5.

3,852,454

TREATMENT OF RHEUMATOID ARTHRITIS

Israeli A. Jaffe, New York, N.Y., assignor to Merck & Co., Inc., Rahway, N.J.

Filed June 15, 1973, Ser. No. 368,773

Int. Cl. A61k 27/00

U.S. Cl. 424-263

3 Claims

1. A method of treating rheumatoid arthritis which consists of administering to a patient in need of such treatment an effective amount of 5-mercaptopyridoxine, pyriothione, or pharmaceutically acceptable salts thereof.

3,852,455

4-(α -HYDROXYBENZYL)PIPERIDINO-4-1
FLUOROBUTYROPHENONE DERIVATIVES AS
TRANQUILIZERS

Albert A. Carr, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.

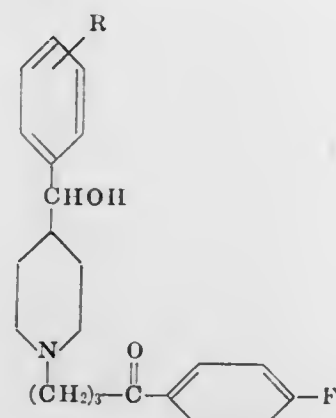
Continuation of Ser. No. 93,495, Nov. 27, 1970, abandoned.
This application May 3, 1972, Ser. No. 249,886

Int. Cl. A61u 27/00

U.S. Cl. 424-267

7 Claims

1. A method of obtaining tranquilizing effects in a patient comprising administering to said patient from 0.005 to 10 milligrams per kilogram of body weight of the patient a compound of the formula



wherein R is a member selected from the group consisting of chlorine, fluorine, bromine, alkyl having from 1 to 4 carbon atoms, or alkoxy having from 1 to 4 carbon atoms and is attached at the para position of the phenyl ring; or a pharmaceutically acceptable acid addition salt thereof.

3,852,456

METHOD FOR CONTROLLING PSORIASIS

Sydney H. Silverman, 20821 Wakefield, Southfield, Mich. 48075

Filed Aug. 24, 1973, Ser. No. 391,456

Int. Cl. A61k 27/00

U.S. Cl. 424-267

6 Claims

1. A method for arresting and controlling psoriatic conditions in a human comprising:
administering pentazocine in therapeutic quantities.

3,852,457

CARBAMOYL BENZOTRIAZOLE ANTHELMINTICS

Maurice William Baker, Clifton; Jennifer Crowley, Newark; Thomas Iswel Watkins, West Bridgeford, and Nigel George Clark, St. Albans, all of England, assignors to Boots Pure Drug Company Limited, West Nottingham, England

Division of Ser. No. 162,622, July 14, 1971, Pat. No. 3,732,238. This application Feb. 7, 1973, Ser. No. 330,338

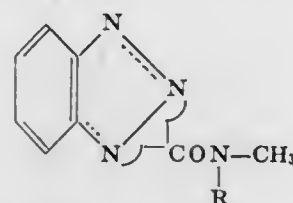
Claims priority, application Great Britain, Aug. 5, 1970, 37878/70

Int. Cl. A61k 27/00

U.S. Cl. 424-269

4 Claims

1. A pharmaceutical composition having anthelmintic activity in dosage unit form comprising a pharmaceutical carrier and an anthelmintically effective amount of a compound of the formula



in which R is alkyl of from 5-9 carbon atoms.

3,852,458

ANTIDEPRESSIVE ACTIVITY OF TETRAMISOLE

Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignor to Janssen Pharmaceutical N.V., Beerse, Belgium

Filed July 11, 1973, Ser. No. 378,306

Int. Cl. A61k 27/00

U.S. Cl. 424-270

5 Claims

1. The method of relieving depression which comprises internally administering to a depressed mammal an effective anti-depressant amount of a member selected from the group consisting of the racemic, dextro and levo form of 2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazole and the therapeutically active acid addition salts thereof as an active ingredient in admixture with a pharmaceutically acceptable carrier.

3,852,459

METHOD OF PREPARATION AND PACKAGING OF
INJECTABLE NITROFURANTOIN SODIUM

Leslie Boros, Plainview, N.Y., and Diana Loftin, Houston, Tex., assignors to Savage Laboratories, Inc., Houston, Tex.

Filed June 20, 1972, Ser. No. 264,670

Int. Cl. A61k 27/00

U.S. Cl. 424-273

8 Claims

1. A process for the preparation of nitrofurantoin sodium dissolved in a solution suitable for intravenous injection, comprising the steps of forming a dispersion by suspending finely divided nitrofurantoin in an isotonic saline solution in the ratio of 164 mg of nitrofurantoin to 5 cc of said solution, said solution also containing 1.5 percent of benzyl alcohol and 50 percent of at least one alcohol selected from the group consisting of glycerine and propylene glycol, separately dissolving an alkaline sodium compound selected from the group consisting of sodium hydroxide and sodium carbonate in water for injection containing 1.0 to 1.5 percent of benzyl alcohol, the quantity of said alkaline sodium compound in said solution being such that on mixing said solution with an equal volume of nitrofurantoin suspension, the pH of the resultant solution lies between 8.5 and 9.5, mixing said solution and said dispersion containing suspended nitrofurantoin, and shaking the resultant mixture to bring said nitrofurantoin into solution as nitrofurantoin sodium, the quantities of nitrofurantoin and alkaline sodium compound being selected to form a dosage amount of nitrofurantoin sodium, and all steps in said process being carried out under sterile conditions.

3,852,460

ACID SALTS OF 2-BENZIMIDAZOLECARBAMIC ACID,
ALKYL ESTERS AS FUNGICIDES

Clarence A. Littler, Rt. 1, Box 727, Sequim, Wash. 98382, and Bert Lorin Richards, Jr., 240 Larchwood Rd., Wilmington, Del. 19803

Division of Ser. No. 104,485, Jan. 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 52,144, July 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 727,070, May 6, 1968, abandoned, which is a

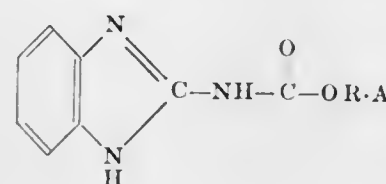
continuation-in-part of Ser. No. 696,694, Jan. 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 629,911, April 11, 1967, abandoned. This application Nov. 2, 1972, Ser. No. 303,209

Int. Cl. A01n 9/22

U.S. Cl. 424-273

5 Claims

1. A method of controlling fungi comprising applying to the locus to be protected a fungicidally effective non-phytotoxic amount of a fungicidal composition consisting essentially of a compound of the formula:



DECEMBER 3, 1974

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wherein

R is methyl or ethyl and

A is an acid having an ionization constant greater than 1×10^{-6} with additional acid having an ionization constant greater than 10^{-6} such that the composition at spray concentration has a pH of 4 or less.

3,852,461

BENZODIAPINES USED AS MINOR TRANQUILIZERS

Jackson B. Hester, Jr., Galesburg, and Martin Gall, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

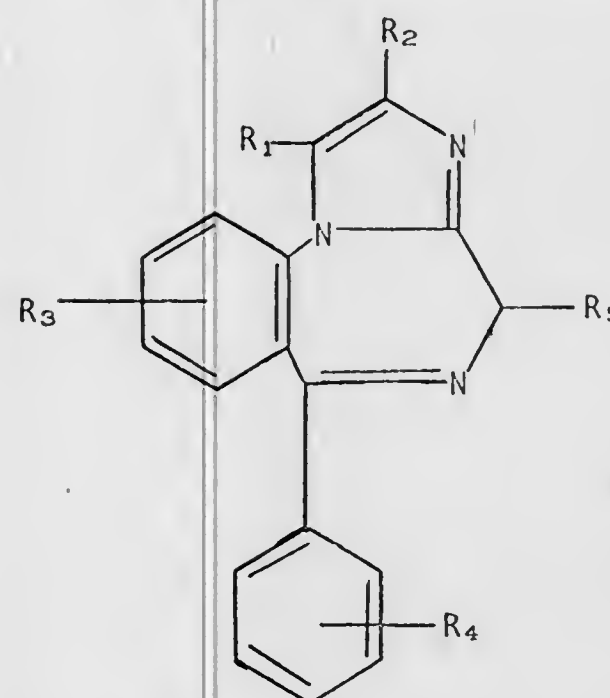
Continuation-in-part of Ser. No. 169,091, Aug. 4, 1971, abandoned. This application July 12, 1973, Ser. No. 378,527

Int. Cl. A61k 27/00

U.S. Cl. 424-273

19 Claims

1. A process for treating tension and anxiety or inducing sleep comprising the administration to a human or animal subject, in unit dosage form, from about 0.001 to about 0.4 mg./kg. body weight of a compound of the formula:



Formula I

wherein R₁ and R₂ and R₃ are hydrogen or alkyl of from 1 to 3 carbon atoms, inclusive; R₄ and R₅ are hydrogen or halogen, or a pharmacologically acceptable acid addition salt thereof in association with a pharmaceutical carrier.

3,852,462

THIOLPULVINIC ACID DERIVATIVES

Joseph Weinstock, Phoenixville, Pa., assignor to Joseph A. Marlino; Richard D. Foggio and Smithkline Corporation, Philadelphia, Pa.

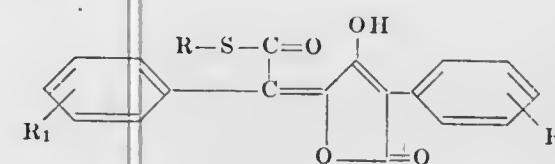
Division of Ser. No. 267,762, June 30, 1972, Pat. No. 3,780,064. This application Aug. 30, 1973, Ser. No. 393,236

Int. Cl. A61u 27/00

U.S. Cl. 424-279

2 Claims

1. A pharmaceutical composition having anti-arthritis activity in dosage unit form comprising a pharmaceutical carrier and from about 10 mg. to about 50 mg. of a chemical compound of the formula:



wherein:

R is lower alkyl of from 1 to 4 carbon atoms, phenyl, or benzyl; and

R₁ and R₂ are each hydrogen, chlorine, bromine, fluorine, phenyl, trifluoromethyl, methylenedioxy in adjacent positions, lower alkyl of from 1 to 4 carbon atoms, or lower alkoxy of from 1 to 4 carbon atoms.

3,852,463

COMBATING FUNGI WITH
AMIDOPHENYLISOTHIUREAS

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch-Gladbach; Hans Scheinpflug, Leverkusen; Ferdinand Grewe, Burscheid; Helmut Kaspers, and Paul-Ernst Frohberger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 141,978, May 10, 1971. This application May 15, 1973, Ser. No. 360,484

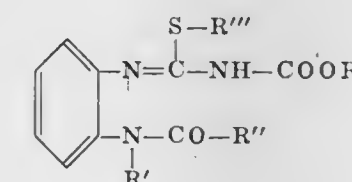
Claims priority, application Germany, May 25, 1970, 2025412

Int. Cl. A01n 9/12, 9/20

U.S. Cl. 424-300

9 Claims

1. A fungicidal composition comprising a fungicidally effective amount of an amidophenylisothiourea of the formula



in which

R is lower alkyl,
R' is hydrogen,
R'' is phenyl, phenoxymethyl, cyclohexyl, methyl, ethyl, propyl, isopropyl, butyl or isobutyl, and
R''' is alkyl of up to 4 carbon atoms,
in admixture with a diluent.

3,852,464

MITICIDAL FLUORINATED CARBONATES

Donald E. Hardies, Wadsworth, and Jay K. Rinehart, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

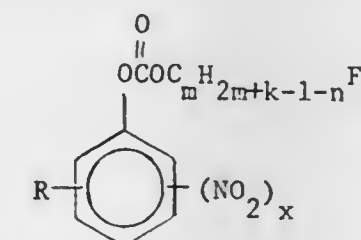
Division of Ser. No. 76,275, Sept. 28, 1970, Pat. No. 3,742,010. This application Oct. 24, 1972, Ser. No. 299,968

Int. Cl. A01n 9/20

U.S. Cl. 424-301

7 Claims

1. A method of killing mites which comprises applying to the mites or their plant habitat a miticidally effective amount of a compound of the formula:



wherein

x is 1, 2 or 3;
k is -2, 0 or 2;
m is an integer ranging from 1 to 15 when k is 2;
m is an integer ranging from 2 to 15 when k is 0 or -2;
n is an integer ranging from 1 to (2m+k-1); and
R is hydrogen, lower alkyl, halo lower alkyl, lower alkenyl, halo lower alkenyl, lower alkylthio, halo lower alkylthio, lower alkenylthio, halo lower alkenylthio, lower cycloalkyl or halo lower cycloalkyl.

3,852,465

ABORTION BY MYOMETRIAL ADMINISTRATION OF PROSTAGLANDINS

Kenneth T. Kirton, Oshkemo; Edward M. Southern, Kalamazoo, both of Mich., and Jerome H. Lemelson, Metuchen, N.J., assignors to The Upjohn Company, Kalamazoo, Mich. Continuation-in-part of Ser. No. 291,110, Sept. 21, 1972, abandoned, Continuation of Ser. No. 744,048, July 1, 1968, abandoned, and a continuation-in-part of Ser. Nos. 703,287, Feb. 6, 1968, Pat. No. 3,412,431, and Ser. No. 84,186, said Ser. No. 744,048, is a continuation-in-part of Ser. No. 439,548, March 15, 1965, Pat. No. 3,366,993, which is a continuation-in-part of Ser. No. 734,340, May 9, 1958, Pat. No. 3,173,175, said Ser. No. 84,186, is a continuation-in-part of Ser. No. 281,306, May 17, 1963, Pat. No. 3,364,292, which is a continuation-in-part of Ser. No. 732,937, May 5, 1958, abandoned. This application Aug. 16, 1973, Ser. No. 389,000

Int. Cl. A61k 27/00; B29d 27/04
U.S. Cl. 424—305 8 Claims

1. A method of accomplishing a medical abortion in a gestating mammal consisting essentially of administering into the myometrial muscle a sterile pharmaceutical dosage form for myometrial injection consisting essentially of an effective non-toxic amount for accomplishing said abortion of an abortifacient prostaglandin.

3,852,466

METHOD AND COMPOSITION FOR PROPHYLAXIS AND TREATMENT OF CARDIAC DISORDERS USING 3,4,5-TRIMETHOXYBENZAMIDO-ALKANOIC ACIDS OR SALTS THEREOF

Aldo Garzia, Milan, Italy, assignor to Istituto Chemioterapico Italiano S.p.A., Milan, Italy

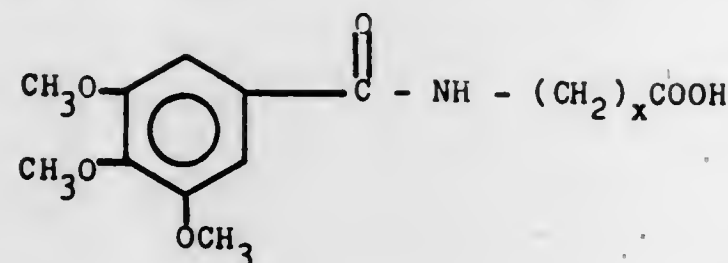
Continuation-in-part of Ser. No. 50,949, June 29, 1970, Pat. No. 3,697,563, which is a continuation-in-part of Ser. No. 840,841, July 10, 1969, abandoned. This application June 15, 1972, Ser. No. 262,937

Int. Cl. A61k 27/00

U.S. Cl. 424—318

16 Claims

1. A method of prophylaxis or for treatment of ischemic cardiac disorders in humans and animals comprising administering a compound represented by the formula



wherein x is an integer of 3 to 8 or a pharmaceutically acceptable salt thereof at a dosage sufficient for prophylaxis or for treatment of cardiac disorders.

3,852,467

ANTIINFLAMMATORY COMPOSITIONS

Ronald F. Borne, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

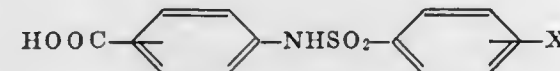
Division of Ser. No. 304,485, Nov. 7, 1972, Pat. No. 3,773,712. This application July 24, 1973, Ser. No. 382,281

Int. Cl. A61k 27/00

U.S. Cl. 424—319

26 Claims

1. Antiinflammatory composition consisting essentially of a compound having the formula:



wherein X is a halogen and a non-toxic pharmaceutically acceptable inorganic or organic salt thereof in a therapeutically effective amount, in admixture with a non-toxic, pharmaceutically-acceptable carrier.

3,852,468

ALKANOLAMINE DERIVATIVES AS β -ADRENERGIC BLOCKING AGENTS

Ralph Howe, and Leslie Harold Smith, both of Macclesfield, England, assignors to Imperial Chemical Industrial Limited, London, England

Continuation-in-part of Ser. Nos. 618,994, Feb. 27, 1967, abandoned, and Ser. No. 675,295, Oct. 16, 1967, Pat. No. 3,562,297, and Ser. No. 677,027, Oct. 23, 1967, Pat. No. 3,574,749, and Ser. No. 754,456, Aug. 21, 1968, Pat. No. 3,634,511, and Ser. No. 760,999, Sept. 19, 1968, Pat. No. 3,712,927, which is a continuation-in-part of Ser. No. 488,252, Sept. 17, 1965. This application Nov. 6, 1970, Ser. No. 87,651

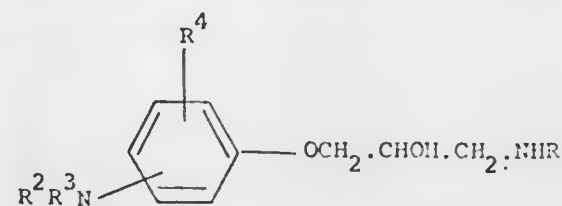
Claims priority, application Great Britain, Sept. 30, 1964, 29774/64

Int. Cl. A61k 27/00

U.S. Cl. 424—324

15 Claims

1. A pharmaceutical composition for β -adrenergic blocking which contains as active ingredient an effective β -adrenergic blocking amount of an alkanolamine derivative selected from the group consisting of compounds of the formula:



wherein R¹ is unsubstituted alkyl of up to 10 carbon atoms, unsubstituted cycloalkyl of up to 8 carbon atoms, or alkyl of up to 6 carbon atoms which is substituted by hydroxy, phenyl or methoxyphenyl; wherein R² is hydrogen or alkyl of up to 4 carbon atoms; wherein R³ is alkanoyl of up to 10 carbon atoms, hydroxyalkanoyl, halogenoalkanoyl or alkoxyalkanoyl each of up to 6 carbon atoms, alkanesulphonyl of up to 6 carbon atoms, alkenoyl of up to 6 carbon atoms, cycloalkyl, anecarbonyl of up to 8 carbon atoms, phenylalkanoyl or phenoxyalkanoyl each of up to 10 carbon atoms, phenylalkanoyl of up to 10 carbon atoms, benzoyl, halogenobenzoyl, nitrobenzoyl, alkylbenzoyl of up to 12 carbon atoms, acylaminobenzoyl of up to 12 carbon atoms, furoyl, benzenesulphonyl or alkylbenzenesulphonyl of up to 10 carbon atoms; and wherein R⁴ is hydrogen, halogen, hydroxy, nitro, cyano, acetamido, trifluoromethyl, alkyl of 1 to 10 carbon atoms, alkoxyalkyl of up to 10 carbon atoms, phenylalkyl or phenylalkoxy each of up to 10 carbon atoms, aryl or aryloxy each of up to 10 carbon atoms, cycloalkyl of up to 8 carbon atoms, hydroxyalkyl, alkoxy or alkylthio each of up to 5 carbon atoms, alkenyloxy or alkenyl each of up to 5 carbon atoms, or alkanoyl or alkoxyalkanoyl each of up to 5 carbon atoms; and the non-toxic, pharmaceutically acceptable acid-addition salts thereof; said active ingredient being associated with a non-toxic, pharmaceutically acceptable or carrier therefor.

3,852,469

ANTIINFLAMMATORY COMPOSITIONS

Ronald F. Borne, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

Division of Ser. No. 290,404, Sept. 19, 1972, Pat. No. 3,772,377. This application July 24, 1973, Ser. No. 382,280

Int. Cl. A61k 27/00

U.S. Cl. 424—319

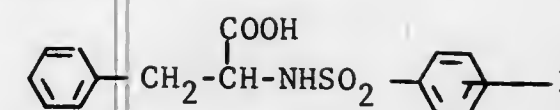
10 Claims

1. Antiinflammatory composition consisting essentially of a compound in an effective amount having the formula:

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wherein X is F, Cl, or Br and the non-toxic pharmaceutically acceptable inorganic or organic salts thereof in admixture with a non-toxic, pharmaceutically acceptable carrier.

3,852,470

DIHALOCYCLOPENTENEDIONE FUNGICIDAL AND BACTERICIDAL AGENTS

Klaus Grohe, Odenthal-Erberich; Helmut Kaspers, and Hans Scheinplug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1972, Ser. No. 277,826

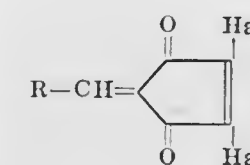
Claims priority, application Germany, Aug. 13, 1971, 2140737

Int. Cl. A01n 9/24

U.S. Cl. 424—331

6 Claims

1. A method of combating fungi or phytopathogenic bacteria which comprises applying to the fungi or bacteria or a plant habitat thereof, a fungicidally or bactericidally effective amount of at least one dihalocyclopentenedione of formula



Wherein R is (a) vinyl substituted with alkyl of up to 4 carbon atoms or phenyl; or (b) unsubstituted aryl or aryl substituted with at least one substituent selected from the group consisting of chlorine, bromine, nitro, alkyl of up to 3 carbon atoms, hydroxy, methoxy, formyl, carboxy, di-(lower alkyl)-amino, (lower alkyl) (chloro-lower alkyl) amino and di-(chloro-lower alkyl) amino, and Hal is halogen.

3,852,471

SYNERGISTIC MICROBICIDAL COMPOSITION EMPLOYING CERTAIN PHENOLS AND A BENZYL ALCOHOL

Wilfried Paulus, and Otto Pauli, both of Farbenfabriken Bayer Aktiengesellschaft, Krefeld, Germany

Filed Oct. 2, 1970, Ser. No. 77,729

Claims priority, application Germany, Oct. 8, 1969, 1950677

Int. Cl. A01n 9/24

U.S. Cl. 424—334

4 Claims

1. A synergistic bactericidal, mold fungicidal and yeasticidal agent which comprises a mixture containing (1) the product produced by heating a benzyl alcohol selected from the group consisting of benzyl alcohol, 3,4-dichlorobenzyl alcohol and 0-tolyl alcohol and about 1 to 2 times the molar amount of formaldehyde in the presence of a basic catalyst, and (2) a phenol selected from the group consisting of 2-phenyl-phenol, pentachlorophenol, 4-chloro-3,5-dimethyl-phenol, 2,2'-dihydroxy-5,5'-dichloro-diphenylmethane, 3-methyl-4-chloro-phenol, 2,4,6-tribromo-phenol, 2-benzyl-4-chloro-phenol and 2,4,5-trichloro-phenol, the benzyl alcohol-formaldehyde reaction product being present in about 3 to 5 times the weight of the phenol.

3,852,472

CERTAIN ETHERS OF OPEN CHAIN TERPENOIDS AS INSECT CONTROL AGENTS

William S. Bowers, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

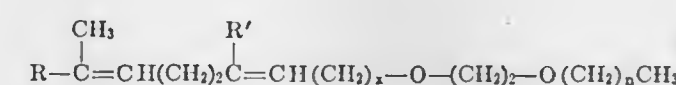
Division of Ser. No. 78,577, Oct. 6, 1970, abandoned. This application May 23, 1973, Ser. No. 363,295

Int. Cl. A01n 9/24

U.S. Cl. 424—342

6 Claims

1. A method of controlling the maturation of insects selected from the group consisting of *Tenebrio molitor* (L.) and *Epilachna varivestis* comprising contacting said insects at an immature stage of growth with an effective maturation inhibiting amount of a compound of the formula



in which R and R' are straight chain alkyls containing from 1 to 2 carbon atoms; x is a number from 1 to 2; and n is a number from 0 to 3.

3,852,473

METHOD AND COMPOSITION FOR INCREASING FEED INTAKE OF ANIMALS USING TERTIARY ALCOHOLS

Clifton A. Baile, Glen Mills; Gregory Gallagher, Collegeville; Carol L. McLaughlin, Malvern, and Robert Lee Webb, West Chester, all of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Jan. 31, 1973, Ser. No. 328,235

Int. Cl. A61k 27/00

U.S. Cl. 424—343

14 Claims

1. The method of increasing feed intake in an immature ruminant animal subject comprising administering orally or by implant to said animal subject a quantity effective for increasing feed intake but nontoxic to the subject of a tertiary alcohol having the formula:



in which:

R is lower alkyl of from 1-9 carbons or hydroxy lower alkyl of from 1-9 carbons;
R' is lower alkyl of from 1-9 carbons, fluoro, bromo or chloro;
R'' is lower alkyl of from 1-9 carbons, lower alkenyl of from 2-9 carbons and, when R and R' are lower alkyl or hydrogen, phenyl; and
X is -OH.

3,852,474

ANESTHETIC TRIFLUOROMETHYLCYCLOBUTANES

Charles W. Simons, Bedford, and Robert S. Holdsworth, Arlington, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Sept. 7, 1971, Ser. No. 178,398

Int. Cl. A61k 27/00

U.S. Cl. 424—352

5 Claims

1. The process of inducing anesthesia in a mammal which comprises administering by inhalation to said mammal an effective quantity to induce anesthesia of a cyclobutane selected from the group consisting of the 1-chloro-2-trifluoromethyl-2,3,3-trifluorocyclobutane, 1-bromo-2-trifluoromethyl-2,3,3-trifluorocyclobutane, 1-methyl-2-trifluoromethyl-2,3,3-trifluorocyclobutane and 1,2,3,3-tetrafluoro-2-trifluoromethylcyclobutane.

3,852,475

TOPICAL COMPOSITIONS CONTAINING PETROLATUM AND HYDROPHOBIC STARCH

Emil V. Tarangul, Clinton, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Continuation of Ser. No. 868,576, Oct. 22, 1969, abandoned.

This application July 28, 1972, Ser. No. 276,121

Int. Cl. A61k 9/00, 9/06

U.S. Cl. 424—361

2 Claims

1. A solid petrolatum composition comprising a blend of solid petrolatum and a hydrophobic starch comprising an aluminum salt of a low-substituted starch half-ester of octenyl succinic acid, wherein said starch is present in an amount sufficient to reduce the composition's greasy appearance and greasy feel and its resistance to washing with cold water and soap or detergent compositions.

3,852,476

PROCESS FOR STERILIZING FOODSTUFFS AND BEVERAGES

Yuji Nagano, 9-13, 3-Chome, Tsurukawa, Machida-shi, and Iwao Sato, 15-51, 3 Chome, Asahi-machi, Machida-shi, both of Tokyo, Japan

Filed July 27, 1973, Ser. No. 383,433

Claims priority, application Japan, July 27, 1972, 47-74628

Int. Cl. A231 3/34

U.S. Cl. 426—7

5 Claims

1. A process for sterilizing foodstuffs and beverages containing spore-bearing microorganisms by use of relatively low temperatures for sterilization which comprises adding thereto an enzyme selected from the group consisting of (a) cellulase, and (b) lysozyme, for a treatment period, and then subjecting said foodstuff and beverage to relatively low temperature sterilization conditions.

3,852,477

RECOVERING FLAVOR AND AROMA SUBSTANCES FROM FERMENTATION GASES

Peter Jacobus Venter, 5 Tortelduif Ave., and Johannes Daniel Malan, 5 Kroiendal Ave., both of Stellenbosch, Cape, South Africa

Continuation-in-part of Ser. No. 222,224, Jan. 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 160,095, July 7, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,576

Int. Cl. C12g 1/00, 3/00

U.S. Cl. 426—15

4 Claims

1. A method of upgrading a beverage produced by a fermentation process from a base material including the steps of:

- fermenting the base material to produce an alcoholic beverage, and off-gases resulting from the fermentation process containing hydrogen sulphide and flavouring and aroma substances,
- passing the off-gases through a layer of material selected from the group consisting of activated carbon, copper metal particles and copper oxide, that absorbs hydrogen sulphide to purify the gases,
- passing the purified gases through a bed of activated carbon to load the carbon with flavouring and aroma substances,
- desorbing the flavouring and aroma substances on the carbon, and
- adding some of the desorbed flavouring and aroma substances to the beverage.

3,852,478

MILK-CLOTTING ENZYME

David Robert Farr, La Tour-de-Peilz, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 29, 1972, Ser. No. 319,772

Claims priority, application Switzerland, Jan. 20, 1972, 820/72

Int. Cl. C07g 7/02; A23c 19/02

U.S. Cl. 426—42

8 Claims

1. A process for the production by biosynthesis of a milk-clotting agent comprising culturing the microorganism *Physarum polycephalum* under aerobic conditions in an aqueous nutrient medium therefor until a substantial quantity of milk-clotting enzyme having the ability to cleave the phenylalanine-methionine bond of a kappa-casein polypeptide chain is accumulated extracellularly in said medium, and separating said agent comprising said enzyme from said microorganism.

3,852,479

PROCESS FOR PRODUCING A PROTEIN HYDROLYSATE

Tamotsu Yokotsuka, Nagareyama; Takashi Iwaasa, and Mituharu Fujii, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Noda-shi, Japan

Continuation-in-part of Ser. No. 102,878, Dec. 30, 1970, abandoned. This application Mar. 27, 1973, Ser. No. 345,455

Int. Cl. A23j 1/14

U.S. Cl. 426—44

11 Claims

1. A process for producing a protein hydrolysate having a high glutamic acid content, which comprises adding a glutaminase together with a proteolytic enzyme to a salt free denatured protein-containing raw material and hydrolyzing in a closed system the protein contained in the raw material.

3,852,480

BLAND SOY PROTEIN

Wilmore Williams, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Apr. 11, 1972, Ser. No. 243,079

Int. Cl. A23j 3/00

U.S. Cl. 426—46

10 Claims

1. A method of producing a bland soy protein consisting essentially of suspending soy protein in an aqueous medium, adjusting the pH of the resulting suspension to between about 1.5 and 4.0, adding to the suspension an Acid Fungal Protease, allowing the Acid Fungal Protease to act on the suspension at temperatures of from 40°C up to about 55°C until a bland protein is produced, and essentially neutralizing the suspension to adjusting the pH to 6 to 8.

3,852,481

SYNTHETIC GRINDER GAS AROMAS AND PROCESSES

Jacob R. Feldman, New City; Matthew Hamell, Orangeburg, both of N.Y., and Ellen Danielczik, Fort Lee, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 18,296, March 10, 1970, abandoned.

This application June 2, 1972, Ser. No. 258,961

Int. Cl. A231 1/26

U.S. Cl. 426—65

6 Claims

1. A process for preparing synthetic grinder gas comprising contacting for each one mole of methyl mercaptan a molar excess of carbonyl compounds including 0.6 to 30 moles of acetone, 2 to 50 moles of acetaldehyde, 0.02 to 3 moles of butyraldehyde and 0.2 to 5 moles of a lower alkane α -diketone selected from the group consisting of 2,3-butanedione, 2,3-pentanedione and mixtures thereof to form a reaction mixture and maintaining said reaction mixture for a period of time sufficient to obtain a grinder gas aroma.

3,852,482

PROCESS OF ALTERING THE FLAVOR OF A TOMATO SOUP MIX WITH 2-PHENYL-4-PENTENAL

William Lewis Schreiber, Jackson; Manfred Vock, Locust, both of N.J.; Edward Joseph Shuster, New York, NY, and Alan O. Pittet, Atlantic Highlands, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,651

Int. Cl. A231 1/26

U.S. Cl. 426—65

1 Claim

1. A process for altering the organoleptic properties of a tomato soup mix which comprises adding to said tomato soup mix 2-phenyl-4-pentenal and then bringing the resulting mixture to a boil, the amount of 2-phenyl-4-pentenal being in effective amount to impart a fresh tomato character to the soup mix.

3,852,483

INTERMEDIATE MOISTURE FOOD WITH MONOGLYCERIDE AND PROPYLENE GLYCOL PRESERVATIVE

Edward V. Oberst, Ballwin, Mo., and Robert K. Mohrman, Belleville, Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 14,225, Feb. 25, 1970, abandoned.

This application Oct. 24, 1972, Ser. No. 299,903

Int. Cl. A231 1/10, 3/34

U.S. Cl. 426—94

8 Claims

1. A process for producing an improved, intermediate moisture food product of the low sugar type having a starchy base and having a moisture content of from about 20–35 percent by weight, comprising mixing about 15–60 percent by weight of farinaceous base materials, about 15–60 percent proteinaceous materials, and about 20–35 percent by weight water, and mixing a glyceryl monostearate starch conditioner in proportions of between about 0.25–0.75 percent by weight of the product capable of reacting with the starch to cause the starch to tightly bind water and resist drying and extruding the mixture at high temperature and pressure to form the mixture into particles, adding a propylene glycol preservative system to the surfaces of the formed particles in proportions of between about 3–8 percent by weight, coating the preserved particles with fat, and heating the fat coated particles.

3,852,484

METHOD OF PRODUCING VEGETABLE PROTEIN SEAFOOD SUBSTITUTES

John M. Cabot, Quincy, Ill., assignor to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Jan. 10, 1972, Ser. No. 216,834

Int. Cl. A23j 3/00

U.S. Cl. 426—104

9 Claims

1. A method of producing vegetable protein seafood substitutes which comprises:

- taking an aqueous solution of a vegetable protein essentially free of fibrous residue and other non-proteinaceous materials and adjusting the temperature to less than about 150° F. and the pH to from about 4.5 to about 4.8 whereby the major globulin fractions precipitate as a curd, removing sufficient of said solution from said curd so that the resultant, separated curd has a solids content of from about 15 to about 25 percent by weight;
- dispersing large particles or agglomerates in said curd;
- raising the pH of said curd to about 5.5 to about 7.0;
- heating said curd at the last mentioned pH in an extruder to a temperature of from about 200° to about 300° F. and extruding the heated curd at a pressure of from about 75 to about 200 psi whereby the curd is modified to produce an extrudate having textural properties resembling those of seafood.

3,852,485

PACKAGE FOR UNIFORMLY SHAPED CHIP TYPE SNACK FOOD PRODUCTS

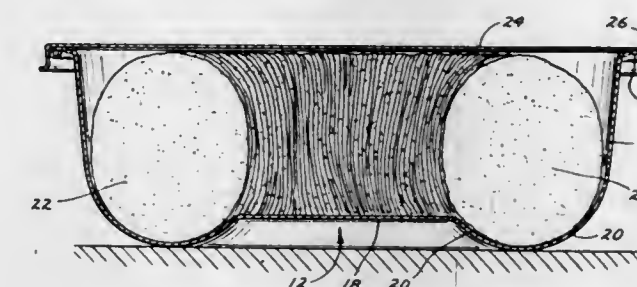
Nelson J. Beall, Albertville, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 159,891, July 6, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,811

Int. Cl. B65b 23/00

U.S. Cl. 426—106

5 Claims



1. A package of uniformly shaped chip-type snack food products, said package comprising a plurality of chips of substantially uniform shape, size, and thickness, each of said chips having major surfaces curved in at least one plane, each of said chips being nested with adjacent chips and having its major surfaces thereof positioned in abutting relationship with major surfaces of other of said chips in interlocking effect to provide a closed loop array having outer and lower exterior edges, a substantially rigid bowl shaped container having a side wall and a bottom wall, said side wall conforming to at least the lower portion of the outer exterior edges of said closed loop array of said chips adjacent thereto, said bottom wall having a portion thereof conforming with at least a portion of the lower edges of said closed loop array, said bottom wall further having means defining a raised portion for holding said chips in said closed loop array and a cover secured along the upper edge of said side wall.

3,852,486

PROCESS OF PRESERVING SHELLFISH MEAT, AND PRODUCT OF SAID PROCESS

Eugene L. Walker, deceased, late of 1833 Ravenwood Dr., Concord, Calif. 94520 (Joan E. Walker, administratrix), and Antoine R. Ferrandini, deceased, late of 337 Laurel Pl., San Rafael, Calif. 94901 (Suzanne W. Ferrandini, executrix)

Continuation-in-part of Ser. Nos. 615,333, Feb. 13, 1967, abandoned, and Ser. No. 665,959, Sept. 7, 1967, abandoned.

This application Nov. 30, 1970, Ser. No. 93,830

Int. Cl. A23b 3/00, 3/01

U.S. Cl. 426—129

19 Claims

1. A shellfish meat product comprising shellfish meat that has been cooked to a degree such that it is edible and which is in pasteurized condition, said cooked, pasteurized shellfish meat being impregnated with an aqueous solution, said solution being an aqueous solution of (a) a chloride, (b) an antibacterial agent other than said chloride (a), and (c) a strong organic acid capable of producing an aqueous solution of pH less than about 5; said chloride (a) being selected from the group consisting of sodium chloride, potassium chloride and calcium chloride, said antibacterial agent (b) and acid (c) being non-toxic for human consumption; said chloride (a) being present in an amount not less than 2.5 percent; said antibacterial agent being present in amount sufficient to inhibit growth of bacteria in the shellfish meat; said acid (c) being present in sufficient amount to produce a pH of about 5 or less; said impregnated shellfish meat being enclosed in a container which serves to prevent access of ambient organisms and loss of said aqueous solution.

3,852,487

MEAT PASTE PRODUCT AND PROCESS FOR PREPARING SAME

Ferdinand Maria Van Werven, Rhoon, and Frits Peter Bohlmeier, Berghem, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 67,573, Aug. 27, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,459
Claims priority, application Great Britain, Aug. 28, 1969, 42844/69

Int. Cl. A22c 18/00, 25/00

U.S. Cl. 426—149

10 Claims

1. A process for preparing a shaped, consolidated meat product from a meat paste having a moisture content of from about 50 percent to about 80 percent and a fat content of from about 1 percent to about 40 percent, which process comprises the steps of:

- subdividing raw meat to a finely divided state in the form of an emulsion of fat and water stabilized at least partly by raw meat protein, the raw meat having an average particle size of less than 2 mm;
- subdividing cooked meat to provide separated muscle fibre bundles, each fibre bundle being from 2 to 50 mm in length and from 0.5 to 2 mm in diameter;
- blending from 30 to 97.5 parts by weight of the finely divided raw meat emulsion and from 2.5 to 70 parts by weight of the separated muscle fibre bundles of cooked meat to provide a meat paste;
- extruding said meat paste to form a product wherein the proportion of muscle fibre bundles which are in substantial parallel alignment with each other is from 70 to 100 percent; and
- consolidating said product by freezing or by heat.

3,852,488

MUSTARD PASTE WHOSE PUNGENCY MAY BE PRESERVED FOR LONG STORAGE AND PROCESS FOR MANUFACTURE THEREOF

Hayashi Yoda, Tokyo, Japan, assignor to S & B Shokuhin Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1972, Ser. No. 277,886

Int. Cl. A23j 1/26

U.S. Cl. 426—199

2 Claims

1. A mustard paste characterized by preservation of its pungency, comprising a paste containing white and black mustard powder, organic acid and other condiments, a member selected from the group consisting of sorbitol and a liquid sweetening agent, and a small quantity of water, said paste having dispersed therein a mixture of an extract of white mustard powder and a distillate of black mustard powder dissolved into fatty oil.

3,852,489

FOOD PRODUCTS AND THE PRESERVATION AND ENHANCING OF THE APPEARANCE THEREOF

Sun W. Yip, Vancouver, British Columbia, Canada, assignor to New England Fish Company, Seattle, Wash.

Continuation-in-part of Ser. No. 348,770, April 6, 1973, abandoned. This application Feb. 22, 1974, Ser. No. 444,992
Int. Cl. A23b 3/00

U.S. Cl. 426—212

20 Claims

1. A process for preserving the reddish color of salmon roe comprising impregnating red colored salmon roe with a non-toxic water soluble citrate or sulfite, in an amount sufficient to maintain the reddish color of said roe.

3,852,490

ORGANIC PESTICIDE RESIDUE REMOVAL FROM AQUEOUS SOLUTIONS

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 6, 1973, Ser. No. 338,792

Int. Cl. A23i 1/02

U.S. Cl. 426—271

13 Claims

1. A process for removing organic pesticides selected from chlorinated hydrocarbons, haloalkyl sulfonylated carboximides, haloalkyl sulfonylated phthalimides, benzimidazole carbamates, thioureidobenzenes, oxazolidinediones, hydrocarbyl aryl methylcarbamates or phosphate esters from aqueous solutions containing about 0.01 ppm to 1,000 ppm of said pesticides which comprises contacting said aqueous solution with from 1 to 200 percent by weight, based on weight of aqueous solution, of a C_2-C_4 alkene-vinyl C_2-C_4 alkanolate polymer having a melt index of about 2 to 500 g/10 min., an inherent viscosity of about 0.5 to 1.1, a density of about 0.93 to 0.96 g/cc, and from about 15 to 45 percent by weight based on weight of polymer, of vinyl alkanolate.

3,852,491

HIGH PROTEIN READY-TO-EAT BREAKFAST CEREAL

Wayne Robert Malzahn, Ballwin, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Mar. 22, 1972, Ser. No. 237,166

Int. Cl. A23i 1/18, 1/10

U.S. Cl. 426—346

3 Claims

1. A process for the production of a puffed protein fortified cereal product having a bulk density of between 0.046 g/cc and 0.135 g/cc with a protein content of between about 35 to 60 percent wherein the fortifying protein is uniformly dispersed within the puffed structure of the cereal product thereby improving palatability and rehydration characteristics of the cereal product without a deleterious effect on puffing of the product comprising: forming a dough by the addition of moisture to a mixture of ingredients comprising soy protein isolate and farinaceous ingredients, the amount of added moisture being from about 17 percent to about 30 percent by weight based on the weight of the mixture of ingredients, the amount of soy protein isolate being from about 35 percent to about 60 percent by weight based on the weight of the mixture of ingredients, and the amount of farinaceous ingredients being the substantial remainder of the mixture of ingredients; and extruding the dough at a temperature of between about 225 and 345°F. at a pressure of between 1,000 and 2,200 p.s.i.g. to form a puffed, protein fortified cereal product.

3,852,492

PREPARATION OF HIGH PROTEIN EXPANDED FOOD PRODUCT

Arthur V. Brown, Jr., Fults, Ill., and Edward V. Oborsh, Ballwin, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 712,592, March 13, 1968, abandoned. This application Apr. 24, 1972, Ser. No. 247,038

Int. Cl. A23j 3/00

U.S. Cl. 426—364

26 Claims

1. A process for converting one or more of the particulate materials, meat meal, fish meal and poultry by-product meal into an expanded food product comprising the steps of moistening the meal with water to form an extrudable mixture and mixing uniformly therethrough an effective amount of an edible water soluble processing additive selected from the group consisting of amines, amides, ammonium hydroxide and ammonium salts of strong acids, maintaining the mixture at an elevated pressure and at an elevated temperature above 212°F. but below 410°F. for a period of time sufficient to cause the mixture to have an expanded structure as it is finally discharged and extruding the product through a restricted orifice into a zone of substantially lower temperature and pressure to cause flash off of moisture and expansion of the mixture thereby resulting in an expanded food product.

3,852,493

PROCESS FOR DEFLUORINATION OF PHOSPHATE ROCK

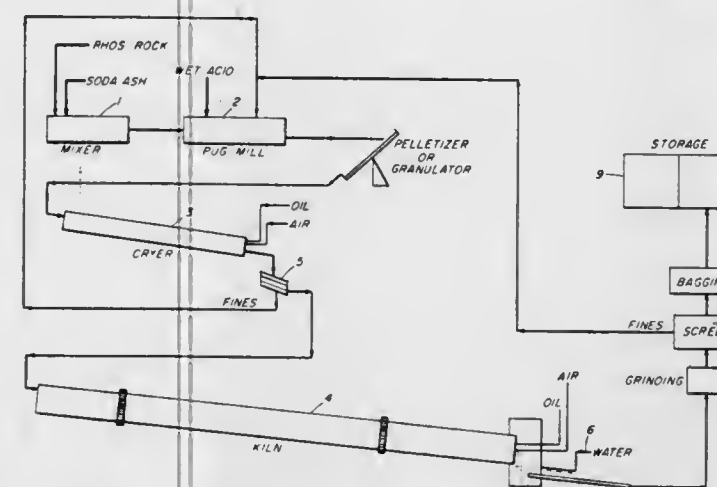
Ashok Babubhai Amin, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 10, 1972, Ser. No. 279,586

Int. Cl. C05b 13/00

U.S. Cl. 426—381

7 Claims



1. A process for manufacturing phosphatic materials containing at least 18% P and not more than 0.18% F, comprising: mixing 68-74% BPL phosphate rock, containing 2-6% SiO_2 , with water, wet process phosphoric acid and soda ash in sufficient amounts to provide 3.5 to 6 parts by weight of Na_2O and 9 to 15.5 parts by weight of P_2O_5 in the added components per 100 parts by weight of rock and further to provide a Na_2O/P_2O_5 mole ratio in the added components of between 0.70 and 0.95;

granulating said mixture with recycled fines from a later calcination step;
drying said granules and separating fines therefrom;
calcining said dried granules, from which fines have been removed, at a temperature between about 1,315°C. and 1,540°C. in an atmosphere containing about 5 to 30 percent of water vapor;
quenching said calcined granules to a temperature less than 800°C;
crushing and screening said quenched granules;
recycling from about 6 to 30 percent by weight of the fine particles from said crushing and screening step to the granulating step; and
recovering the product from said screening step.

3,852,494

METHODS AND APPARATUS FOR DECORATING CONFECTIONERY ITEMS

Elmer V. Williamson, 7729 Dones Ave., Cincinnati, Ohio 45243

Filed Apr. 30, 1973, Ser. No. 355,515

Int. Cl. A21d 13/08

U.S. Cl. 426—383

7 Claims



1. A method of decorating confectionery items such as cakes, cookies and the like comprising the steps of,

applying a colored lining material to a design stamp having portions delineating a predetermined design,
applying said portions of said design stamp to a confectionery item and transferring colored lining material from said portions to said confectionery item in lines delineating said predetermined design,
removing said stamp from said confectionery item and leaving the said predetermined design on the surface of said confectionery item, and
applying colored fill material to complete said design by coloring and decorating said design within said lines.

3,852,495

PREPARATION OF A LOW ALCOHOL DIETARY BEER

Franz-Wilhelm Schimpf, Hamburg, and Wilfried Rinke, Halstenbeck, Holstein, both of Germany, assignors to Aktiengesellschaft fur Brauerei-Industrie, Basel, Switzerland

Continuation of Ser. No. 105,058, Jan. 8, 1971, abandoned.

This application Aug. 17, 1973, Ser. No. 389,170

Claims priority, application Switzerland, Oct. 7, 1970, 15011/70

Int. Cl. C12c 11/00

U.S. Cl. 426—14

12 Claims

1. A process for producing a dietary beer having a low-alcohol content, a low-carbohydrate content and a low-calorie value comprising:

- allowing a mixture containing wort, hops and yeast to partially ferment in a first fermentation step at a temperature of about 4° to 8°C for 2 to 5 days to an apparent degree of fermentation of about 40 to 85 percent;
- reducing the content of alcohol in the partially fermented mixture to about 1 percent by boiling;
- filtering the partially fermented mixture;
- adding fresh yeast to the partially fermented mixture;
- allowing the partially fermented mixture to continue to ferment in a second fermentation step at a temperature of about 12° to 20°C for 7 to 10 days;
- clarifying the partially fermented mixture after the second fermentation step has begun;
- adding about 5 volume percent of a solution of diastase having a high content of marginal dextrinase which acts on alpha-1,6 marginal dextrin to the partially fermented clarified mixture;
- allowing the clarified mixture to age; and
- clarifying the fermented mixture.

3,852,496

TREATMENT OF WHEY WITH IMMOBILIZED LACTASE AND GLUCOSE ISOMERASE

Howard H. Weetall, Elmira, and Sidney Yaverbaum, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,294

Int. Cl. C07g 7/02

U.S. Cl. 426—41

4 Claims

1. A method of treating a solution of whey containing lactose to produce useful sweeteners which comprises the steps of reacting the solution with a composite comprising beta-galactosidase covalently bonded to a high surface area, porous glass material through an intermediate silane coupling agent to hydrolyze a portion of the lactose to glucose and galactose; removing the majority of the calcium ions from the solution; adjusting the pH of the solution above 7.0; and then reacting the solution with a composite comprising glucose isomerase covalently bonded to a high surface area, porous glass material through an intermediate silane coupling agent to isomerize a portion of the glucose to fructose.

3,852,497

CEREAL PRODUCTS CONTAINING MAGNESIUM COMPOUNDS AS NUTRITIONAL SUPPLEMENTS
James S. Skelcey; David W. Richards, and Alan M. Hart, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1973, Ser. No. 337,862

Int. Cl. A231 1/30; A21d 2/02

U.S. Cl. 426—74

7 Claims

1. A cereal-containing foodstuff which is fortified with about 0.02 to about 0.5 weight percent, cereal basis, of a magnesium compound in particulate form selected from the group consisting of (1) magnesium oxide calcined at about 700°C. to about 1,700°C.; (2) magnesium phosphate, magnesium potassium phosphate, magnesium pyrophosphate, magnesium hydrogen phosphate and hydrates thereof; and (3) mixtures thereof.

3,852,498

METHOD FOR SORPTION OF UREA BY WHOLE CEREAL GRAINS

Harold N. Barham, 3205 46th St., and Harold N. Barham, Jr., 3035 57th St., both of Lubbock, Tex. 79413

Filed Oct. 19, 1972, Ser. No. 298,820

Int. Cl. A23k 1/22

U.S. Cl. 426—69

5 Claims

1. A method for supplementing the natural protein content of whole feed grains to produce a grain having a total equivalent protein content up to about 58 percent which comprises: a. contacting the raw whole feed grains with water to provide a moisture content in the grain from about 14 to 25 percent by weight;

b. contacting the treated grain of step (a) with urea in amounts up to about 20 percent based on the dry grain weight, the particles of urea being smaller than about 450 microns by at least two dimensions; and

c. maintaining contact of urea and whole grain until the urea has been sorbed by the grain; whereby a whole grain product is produced capable of being converted by the animal's digestive system to provide up to 58 percent protein based on the original dry grain weight.

3,852,499

RESIN ACID MODIFIED OILSEED MEAL

Frances A. Greer, Grayslake, Ill., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Nov. 28, 1969, Ser. No. 880,916

Int. Cl. A23k 1/10; A231 1/36

U.S. Cl. 426—93

14 Claims

1. An animal nutrient consisting essentially of an oilseed meal having substantially evenly distributed on its surface an effective amount of a material selected from the group consisting of resin acids, hydrogenated resin acids, dehydrogenated resin acids, dimerized resin acids, mixtures of said compounds and divalent metal salts thereof, whereby the meal is protected from attack by microorganisms.

3,852,500

PRESERVATION OF CRAWFISH MEAT WITH HEPATOPANCREATIC CRAWFISH DISTILLATE

Aubrey C. Heumann, Jr., Breau Bridge; Wayne L. Denton, and Jimmie D. Fitzpatrick, both of Lafayette, La., assignors to Mr. Crawfish, Inc.

Filed Apr. 23, 1973, Ser. No. 353,736

Int. Cl. A29c 29/00; A23p 3/34

U.S. Cl. 426—151

9 Claims

1. A method of preserving crawfish meat comprising: separating the hepato-pancreatic tissue from the crawfish;

heating the hepato-pancreatic tissue to a temperature ranging from about 60°C. to about 100°C. under a pressure which causes continuous distillation;

collecting from about 50 to about 70 parts by weight of distillate material based on 100 parts of initial charge of hepato-pancreatic tissue; and

treating the uncooked crustacean meat with at least 5 ml. of said distillate per pound of meat to help preserve the meat under low temperature storage.

3,852,501

PROCESS FOR IMPARTING THE TASTE, TEXTURE, AND APPEARANCE OF FAT FRYING TO FOODSTUFFS WHICH ARE BAKED

Thomas Laurence Fazzina, Naperville; Daniel Robert McSweeney, Lombard, and Gregory Jay Gilmore, Chicago, all of Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,390

Int. Cl. A22c 18/00

U.S. Cl. 426—293

3 Claims

1. A process for imparting the taste, texture, and appearance of fat frying to foodstuffs which are baked, comprising: moistening the surface of a foodstuff, coating the moistened foodstuff with a dry, edible mix consisting essentially of 10–50 percent of an edible powdered shortening, 8–35 percent farinaceous material, 15–35 percent of a corn starch hydrolyzate, and 5–18 percent of a modified food starch, at least some of which food starch is ungelatinized, and baking said coated foodstuff until cooked.

3,852,502

THE METHOD OF STABILIZING FOODS WITH AN ANTIOXIDANT

Solomon J. Bishov, and Albert S. Henick, both of Framingham, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,588

Int. Cl. A231 3/34

U.S. Cl. 426—328

2 Claims

1. A process for the stabilization against oxidation of oxidation susceptible foods, which comprises adding thereto an antioxidant amount of an antioxidant composition comprising (a) a compound selected from the group consisting of butylated hydroxyanisole, butylated hydroxytoluene, and α -tocopherol, and (b) autolyzed yeast protein, said autolyzed yeast protein being present in said antioxidant composition in an amount which is effective as a synergist for the antioxidant action of said compound selected from the group consisting of butylated hydroxyanisole, butylated hydroxytoluene, and α -tocopherol.

3,852,503

METHOD OF MAKING PUDDINGS CONTAINING SOY PROTEIN

Pete Joseph Magnino, St. Louis; Ralph Anthony Hoer, Ballwin, both of Mo., and Robert Erick Hahn, Edwardsville, Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 219,156, Jan. 19, 1972., This application Jan. 10, 1973, Ser. No. 322,461

Int. Cl. A23j 3/00; A231 1/14

U.S. Cl. 426—364

6 Claims

1. A process of forming a pudding which has a pH less than about 4.2 containing isolated soy protein comprising the steps

3,852,505

PROCESS FOR PREPARING SHRIMP

Leon Rubin, New York, N.Y., assignor to Atlantic Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 153,877, June 16, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,195

Int. Cl. A231 1/325

U.S. Cl. 426—370

3 Claims

of: (a) preparing isolated soy protein consisting of the steps of extracting protein and sugars from solvent extracted soybean material, separating the extracted liquor from the solid soybean material, adjusting the pH of the liquor to about the isoelectric point of the protein to precipitate the protein, and separating the precipitated protein from the residue of any remaining sugars and solid soybean material to obtain the isolated soy protein; and (b) thereafter forming an aqueous slurry of the isolated soy protein having a pH of about 2.0 to about 4.2 and a solids content within the range of 3–20 percent; practically instantly heating successive portions of the slurry to a temperature of about 250°–320° F., subsequently retaining the slurry at said temperature range under positive pressure for at least a sufficient period of time to destroy the trypsin inhibitor therein and then suddenly releasing the pressure thereon, such sudden pressure release causing flash off volatilization and cooling of the aqueous slurry of isolated soy protein; and (c) blending approximately 1.0–4.5 percent on a dry weight basis of the isolated soy protein with a mixture of pudding ingredients, the blended mixture having a moisture content of approximately 65–70 percent, a pH less than about 4.2 and a starch content of approximately 3.5–7 percent on a dry weight basis, heating the blended mixture to a temperature of about 240° F. to about 320° F. for approximately 45 seconds to 3 seconds, and thereafter cooling the blended mixture to below 100° F. to form a pudding.

1. A process for preparing molded shrimp from very small shrimp with or without fragments of larger shrimp which consists in subjecting very small decapitated and deshelled refrigerated shrimp to tempering until they rise from a chilled temperature of between –5° and 0°F to a temperature of about 20° to 30°F, passing the tempered shrimp through a one-eighth inch aperture to effect braying, thereby placing said shrimp in a smooth moist condition for subsequent treatment, agitating the thus treated shrimp for 5 minutes at 85 to 125 rpm, discomposing the thus agitated shrimp to effect trituration, fluttering the triturerated shrimp for 2–3 minutes at 40° to 55°F and then subjecting the same to molding at high pressure of 50 to 150 psi and low temperature of below 32°F and down to –300°F to produce a form closely resembling natural shrimp and which does not disintegrate or break up into small pieces.

3,852,506

DISPERSIBLE IMPROVED WHEY PROTEIN COMPOSITION AND METHOD

Roger M. Burge, Battle Creek, Mich.; Charles W. Groesbeck, Seymour, Conn., and Diane D. Dowd, Madison, Wis., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 21, 1973, Ser. No. 362,149

Int. Cl. A23c 21/00

U.S. Cl. 426—453

1 Claim

1. A process for making dried whey protein which comprises finely grinding hollow spheres of spray dried demineralized and delactosed whey protein isolates to a particle size wherein at least 55 percent of the subdivided particles have a micron size of less than 44 microns, and thence agglomerating the subdivided particles thereof.

3,852,507

SURFACE FREEZING A SHAPED PIECE OF MEAT

Daniel J. Toby, South San Francisco, Calif., assignor to Toby Enterprises, South San Francisco, Calif.

Filed May 25, 1972, Ser. No. 257,020

Int. Cl. A23b 1/06

U.S. Cl. 426—513

3 Claims

3,852,504

PROCESS FOR COMPLETE SEPARATION OF CONSTITUENTS OF RICE-BRAN AND THE LIKE

Shigetoshi Mihara; Yanosuke Inaba, both of Tokyo; Koichi Tachibana; Tomio Endo, both of Saitama, and Eiichiro Yasui, Urawa, all of Japan, assignors to Nakataki Pharm. Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 26,089, April 6, 1970, abandoned.

This application Sept. 5, 1972, Ser. No. 286,602

Claims priority, application Japan, Apr. 9, 1969, 44-27363

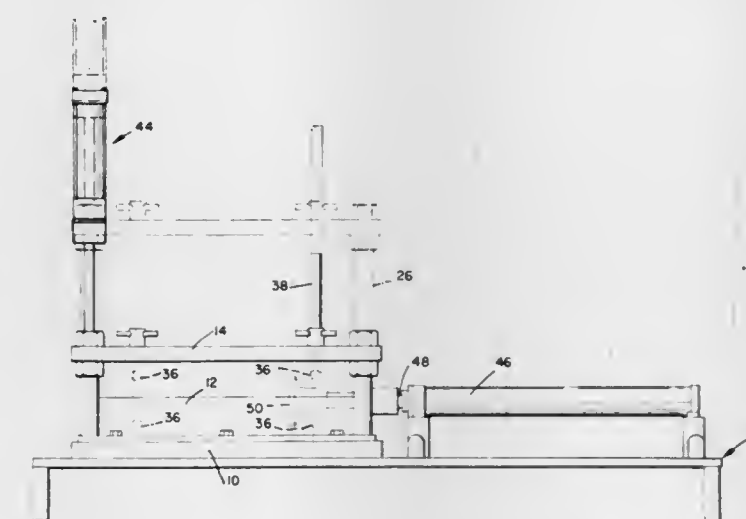
Int. Cl. A23j 1/14

U.S. Cl. 426—373

7 Claims

1. A process for separating and recovering the constituents of a starting material consisting of non-deoiled seeds or brans of cereal grains, said starting material containing the naturally occurring amount of oil of said seeds or bran together with protein, crude fiber, starch, Phytin, water soluble carbohydrates and water, which consists of the steps of

1. mixing said starting material with an aqueous acid solution having a pH in the range of from 1 to 6, the amount of said aqueous acid solution being from two to 10 times by weight, of the starting material, and mechanically pulverizing the mixture consisting of said starting material and said aqueous acid solution to obtain a pulverized mixture of components consisting essentially of
 - a. a solid phase consisting essentially of large size crude fibers and small size starch particles
 - b. a liquid phase consisting essentially of
 - i. protein bonded with oil, emulsified in
 - ii. an aqueous phase containing dissolved therein Phytin and water soluble carbohydrates;
2. separating from the mixture and recovering separately the large size crude fibers and small size starch particles;
3. filtering component (b) and recovering separately constituents (i) and (ii);
4. then treating constituent (i) with a solvent to recover separately said protein and said oil, and
5. adjusting the pH of constituent (ii) in the range of 8 to 10 to precipitate Phytin and then separating the precipitated Phytin from the aqueous solution containing dissolved therein the water soluble carbohydrates.



1. The method of forming an irregular mass of a meat into an elongated and at least partially frozen piece having a sub-

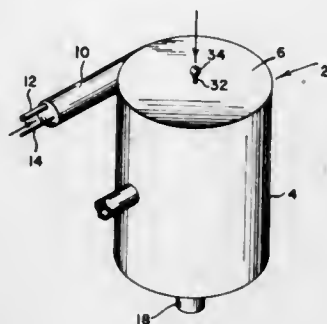
stantially uniform cross-sectional shape throughout the length of its elongation, which comprises the steps of: placing and supporting said irregular mass of meat on a longitudinally extending hollow lower die member, having an upwardly opening channel of uniform transverse cross-sectional configuration throughout its length corresponding to approximately one-half of the desired cross-sectional shape of said elongated piece to be produced; relatively moving a longitudinally extending hollow upper die member, having a downwardly opening channel of uniform transverse cross-sectional configuration throughout its length corresponding to approximately the other one-half of the desired cross-sectional shape of said elongated piece to be produced, into contact with said lower die member, and forming an elongated tubular chamber portion with opposite open ends and of uniform transverse cross-section throughout its length corresponding to the cross-sectional shape of said elongated piece to be produced with the mass of meat within said chamber; closing one of said ends of said chamber; forcing the head at the distal end of a piston, having a transverse cross-sectional configuration corresponding to the transverse cross-sectional configuration of said chamber, into the other of said ends and along said chamber toward said one end, and simultaneously forming said mass into said desired cross-sectional shape of said elongated piece; circulating refrigerant through said hollow dies to effect a cooling of said dies to substantially below the freezing temperature of said formed meat and freezing at least the surface of the formed meat in contact with said dies; and removing the elongated and at least partially frozen formed meat from said dies by first opening said one end of said chamber, and then further moving said head along the length of said chamber toward said one end to force said at least partially frozen elongated formed meat through said opened one end and from between the dies.

3,852,508
STEAM CONDENSER FOR RETORT AND METHOD
John M. De Voe, Nashville, Tenn., assignor to United States Tobacco Company, Greenwich, Conn.

Filed Feb. 9, 1973, Ser. No. 331,259
Int. Cl. B05b 7/10; A23I 3/00

U.S. Cl. 426-521

11 Claims



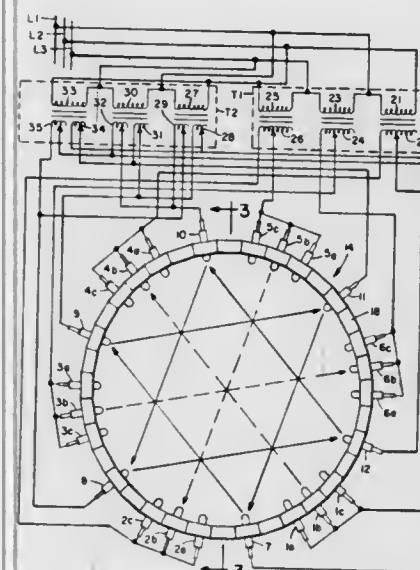
1. A method of discharging steam from a retort of the type which is used in canning foods, the steps of, passing a stream of the steam from the retort through a restricting passageway, expanding the stream of steam from said passageway into a manifold chamber of substantially increased cross-sectional area whereby there is a reduction in the velocity and pressure and temperature, discharging the stream of steam longitudinally from said manifold chamber into the upper portion of a condensing zone with a tangential flow which tends to produce a cyclonic action within said zone, spraying water throughout the portion of said zone within which the steam is discharged from said manifold chamber and elsewhere within said zone to condense the steam and produce condensate in the water, and discharging the water and condensate with the aid of gravity.

3,852,509
ELECTRICAL FURNACE FOR MELTING THERMOPLASTIC MATERIAL
Heath A. Rutledge, Myron A. Smith, and Paul F. Spemulli, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,853
Int. Cl. C03b 5/02

U.S. Cl. 13-6

8 Claims



1. A furnace for electrically heating thermoplastic material comprising:
 - a. a bottom wall and an upstanding peripheral wall symmetric about a center-line, with said bottom and peripheral walls defining a chamber for containing a body of thermoplastic material to be melted;
 - b. a first set of six equidistantly spaced means for providing, through said thermoplastic material, at least three cross-firing current paths intersecting in the vicinity of said center-line;
 - c. a second set of six electrode means for providing, through said thermoplastic material, intraphase peripheral-firing current paths, being symmetric about said center-line; and
 - d. supply circuit means for transmitting alternating electrical current to said first and second set electrode means, including
 1. a supply of polyphase electrical power;
 2. first and second sets of voltage sources fed by said supply, with said first voltage source set furnishing intraphase voltages of respectively equal magnitude and relative phases represented by voltage vectors corresponding at least approximately to lines joining said first set electrode means and with said second voltage source set furnishing intraphase voltages of respectively equal magnitude and relative phases represented by voltage vectors corresponding at least approximately to lines joining said second set electrode means; and
 3. conductor means for connecting said first and second sets of voltage sources respectively to said first and second sets of electrode means to apply voltages of respectively equal magnitudes across said at least three cross-firing paths, to apply voltages of respectively equal magnitudes across said symmetric peripheral-firing paths, and voltages of respectively equal magnitudes between all corresponding pairs of electrode means not connected by said intraphase cross-firing and peripheral-firing current paths.

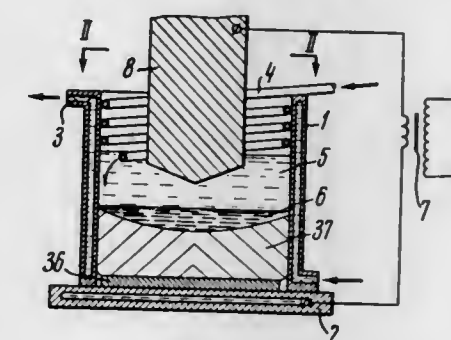
ELECTRICAL

3,852,510
METHOD OF ELECTROSLAG REMELTING AND DEVICE EFFECTING

Boris Evgenievich Paton, ulitsa Kotsjubinskova, 5, kv. 21; Boris Izhailevich Thedovar, bulvar Lesi Ukrainki, 2, kv. 6; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scharbakova, 49a, kv. 10; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Vasily Ivandvich Us, ulitsa Saxaganskogo, 58, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Georgy Alexandrovich Boiko, ulitsa VI, Libedskaya, 16, kv. 106; Anatoly Konstantinovich Isikulenko, ulitsa Babushkina, 23, kv. 38; Vasily Vladimirovich Ivon, Darnitskoe shosse, 107/2, kv. 10, and Leonid Viktorovich Pavlov, Borschagouskaya ulitsa, 234, kv. 6, all of Kiev, U.S.S.R.
Continuation of Ser. No. 339,068, March 8, 1973, abandoned, Division of Ser. No. 125,744, March 18, 1971, Pat. No. 3,767,294. This application Dec. 17, 1973, Ser. No. 425,550
Int. Cl. H05b 7/06

U.S. Cl. 13-18

2 Claims



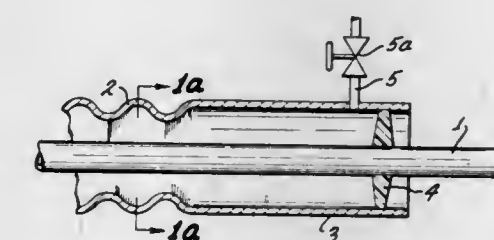
1. A consumable electrode for use with a mold for effecting electrosag remelting, comprising a massive rod and a nozzle for blowing agents into the melt in the mold for improving the quality of the ingot, the nozzle being a coil wound around said rod and made of the same material as the rod.

3,852,511
GAS INSULATED HIGH VOLTAGE CABLE
Jan Arthauer, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed July 5, 1973, Ser. No. 376,521
Claims priority, application Germany, July 6, 1972, 2233217

Int. Cl. H01b 9/06; H02g 15/24
U.S. Cl. 174-11 R

6 Claims



1. In a long, gas insulated high voltage cable comprising: relatively long, reelable, individually sealed and self-contained sections, each section being filled with insulative gas and being at least as long so as to permit winding in several turns on a drum;

each section having (a) an inner conductor, (b) an outer conductor constructed as a metal strip with edges and bent around the inner conductor in concentric relation thereto to establish a tubular configuration and having a welding seam along the strip edges for sealing the space between the tubularly bent strip and the inner conductor, the bent strip with welding seam being corrugated and constituting a corrugated tube, each section further having (c) a first and a second sleeve respectively secured in gas tight and sealed relation to or integral with opposite ends of the bent, welded and corrugated strip as constituting said tube, (d) a first and a second washer respectively in said sleeves, the washers being made of insulating material and being respectively sealingly traversed by the inner conductor or by a closed-surface extension thereof, thereby sealing the interior of the section to which they pertain; and (e) means on at least one of the sleeves of each section for providing a fluid inlet and outlet on the side of the respective washer facing the interior of said tube;

said gas filled sections being interconnected by means of one each of their respective sleeves as adjoining the sections having been prefilled prior to interconnection of two sections through their respective adjoining sleeves.

3,852,512

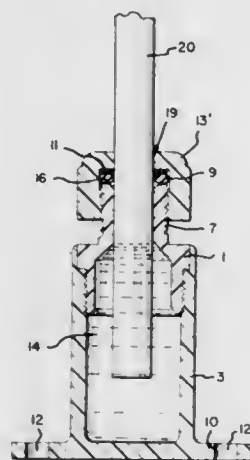
HIGH VOLTAGE CORONA-FREE WIRE TERMINATION
Henry Otto Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 15, 1973, Ser. No. 370,578

Int. Cl. H02g 15/06; G01 31/20

U.S. Cl. 174-19

6 Claims



1. An electrical conductor subjected to a high voltage having a termination comprising:
a hollow enclosure formed of an electrically insulating material, said enclosure including an aperture through its wall,
an electrically insulating liquid filling at least a portion of said enclosure,
closure means for said aperture mounted on said enclosure about the aperture,
said conductor passing through the closure means, extending through the aperture and terminating within the liquid, said closure means including an O-ring seated on the rim of said aperture and means to force said O-ring against said rim and said conductor.

3,852,513

ELECTRICAL WIRING SYSTEM

Richard G. Flahive, 2665 Balboa Vista, San Diego, Calif. 92105

Filed Jan. 9, 1973, Ser. No. 322,138

Int. Cl. H02g 3/12

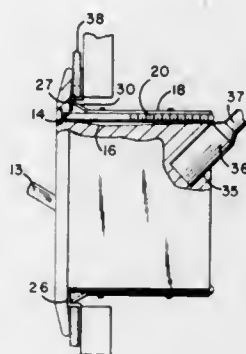
U.S. Cl. 174-55

2 Claims

1. An electrical outlet device comprising:
a hollow body member having an electrical device disposed

therein and a peripheral flange extending laterally from the face thereof to define a face plate;
a pair of locking plates, slidably disposed on opposite sides of said body;

means extending through the said face plate to cause transverse movement of said slideably locking plates;



means mountable to a wall and being formed with an aperture defined by inwardly extending flanges, said body member being disposed in said aperture whereby, upon movement of said locking plates, said locking plates and the outer flanges of said face plate grip said inwardly directed flanges to thereby mount said electrical outlet device on said wall.

3,852,514

NON-METALLIC LOAD CENTER HAVING HOUSING ACCOMMODATING PLURAL COVER FORMS

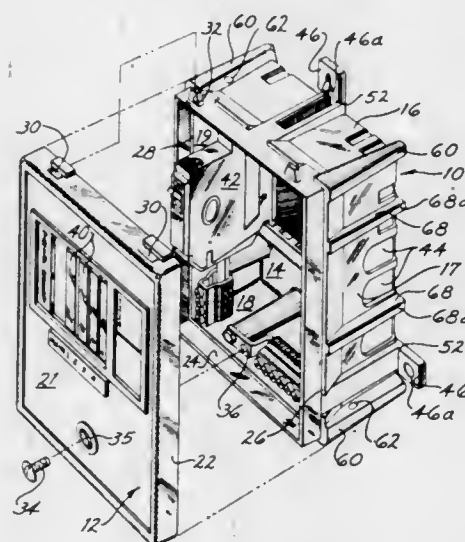
Robert W. Lauben, Farmington, Conn., assignor to General Electric Company, New York, N.Y.

Filed June 14, 1973, Ser. No. 369,868

Int. Cl. H05k 5/03

U.S. Cl. 174-58

6 Claims



1. A non-metallic enclosure for electrical equipment comprising, in combination:

A. a molded, electrically insulative housing including a backwall and integrally formed, upstanding sidewalls, said sidewalls terminating in a perimetrical lip circumscribing the open front of said housing;

B. first mounting means integrally formed with said housing externally of said sidewalls facilitating the mounting of said enclosure to the surface of a wall;

C. second mounting means integrally formed with said housing externally of said sidewalls facilitating mounting of said housing to a wall stud in recessed relation to the wall surface;

D. a molded insulative cover for said housing, said cover including a rectangular front wall and an integrally formed, perimetrical flange depending from said front wall, said flange telescopically interfitting with said lip in closure relation to the open front thereof;

E. first attachment means integrally formed with said housing facilitating attachment of said cover to said housing when mounted to a wall surface; and

F. second attachment means integrally formed with said housing facilitating attachment of said cover to said housing when mounted in recessed relation to a wall surface.

3,852,515

WEATHERPROOF BUS DUCT HOUSING

George N. Jorgensen, and Frank J. Wartner, both of Oxford, Ohio, assignors to Square D Company, Park Ridge, Ill.

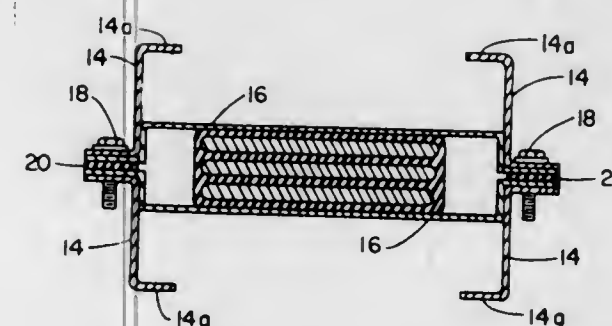
Continuation of Ser. No. 77,821, Oct. 5, 1970, abandoned.

This application Sept. 21, 1973, Ser. No. 399,585

Int. Cl. H02g 5/06

U.S. Cl. 174-68 C

4 Claims



1. A bus duct housing comprising a pair of elongated outwardly flanged channel members in reversely positioned relationship to each other, each flange of one channel member being secured to a flange of the other channel member, means at each pair of secured-together flanges providing a pair of elongated generally Z-shaped auxiliary housing members reversely positioned with respect to each other and secured to the pair of secured-together flanges with free end positions pointing toward the other pair of generally Z-shaped auxiliary housing members secured to the other pair of secured-together flanges, the flanges of the channel members and corresponding portions of the generally Z-shaped auxiliary housing members being cut away at opposite ends of the housing and on opposite sides thereof to provide four flat surface areas; and four end plate members secured respectively to the flat surface areas.

3,852,516

MOISTURE PROOF SPLICE ENCLOSURE FOR ELECTRICAL APPLICATION

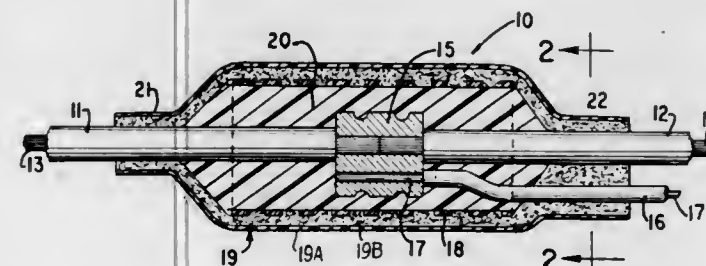
Cornelius J. Vander Ploog, Pompton Plains, N.J.; Arnold W. Henry, Pomona, N.Y., and Franklin J. Connolly, Sparta, N.J., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed May 2, 1973, Ser. No. 356,281

Int. Cl. H02g 15/08

U.S. Cl. 174-71 R

6 Claims



1. A sealed connection of electrical cables comprising means connecting the ends of the conductors of the cables, a

rigid plastic tubular member positioned over said connecting means and cable ends and having a diameter larger than the diameter of said connection means to define a space between said cables and said tubular member, a thermoset electrically insulating material within such space and enclosing said tubular member, and a cover of electrically insulating material enclosing said thermoset material and extending beyond the ends of said tubular member, the cover ends being brought together over the cables and sealed to form a moisture-proof connection.

3,852,517

CONDUCTIVE INSERT FOR HEAT RECOVERABLE ELECTRICAL CONNECTOR

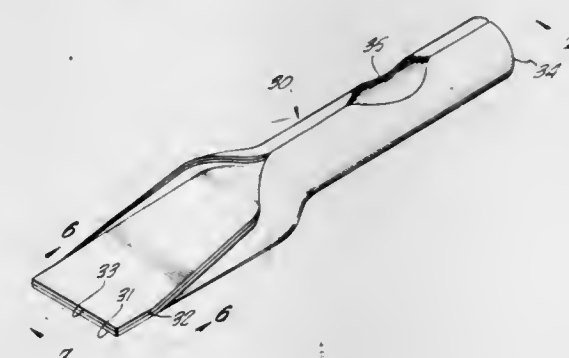
Donald A. Del Fava, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed June 12, 1972, Ser. No. 262,084

Int. Cl. H02g 15/08

U.S. Cl. 174-84 R

1 Claim



1. A connector including a conductive insert disposed within a heat recoverable member for forming an electrical and mechanical connection between conductors, said insert comprising: a heat recoverable member having disposed therein an elongated layer of a conductive material, each end of said layer having an inner surface for receiving a conductor; and

a layer of electrically conductive solder means disposed on at least a portion of one of said inner surfaces of said conductive elongated layer, recovery of the heat recoverable member after positioning at least one conductor proximate to each of said inner surfaces resulting in the melting of said solder means and in the electrical and mechanical connection between the conductors, said insert being adapted to connect a flat conductor to a round conductor wherein one end of said layer of conductive material is formed into a cylindrical shape having a viewing port located in the side thereof and the other end of said layer of conductive material being formed into a generally flat shape.

3,852,518

IRRADIATION CROSS-LINKED COMPOSITE LOW DENSITY/HIGH DENSITY POLYETHYLENE INSULATED 600 VOLT POWER CABLES

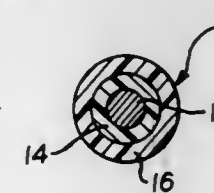
Bernard Wargotz, Middletown, and David A. Silver, Livingston, both of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Filed Nov. 29, 1973, Ser. No. 419,949

Int. Cl. H01b 7/28

U.S. Cl. 174-120 SR

8 Claims

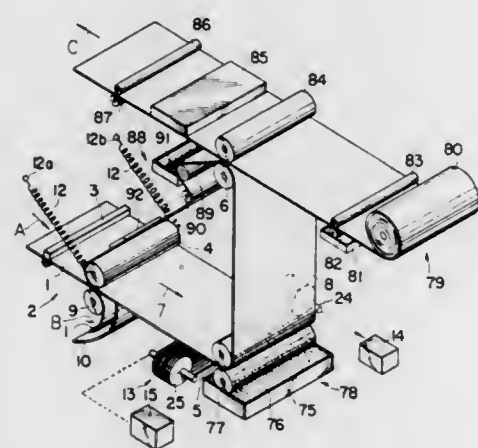


1. A power cable comprising a conductor core, a composite insulation surrounding the core and comprising an inner layer

pressing means operatively connected to said endless transfer magnetic sheet and said recording medium for pressing together the magnetized recording medium and said endless magnetic sheet;

means supplying an AC field coupled to said pressing means for transferring the first magnetic signals to the endless magnetic sheet while said endless magnetic sheet and said record medium are being pressed together;

a scanning means positioned downstream along the path of said endless sheet from said pressing means and having at least one recording head for recording a second magnetic signal onto said endless transfer magnetic sheet, said second magnetic signal being received by a receiving means from an outside source, and having at least one magnetic head for reading a magnetic latent image on said endless transfer magnetic sheet for transmitting said signal to an outside station via a transmitting means;



induction coil means coupled to said scanning means for transferring signals from said endless magnetic sheet to the transmission means via said magnetic head and for transferring signals to the receiving means to said endless magnetic sheet via said recording head;

developing means positioned adjacent said endless transfer magnetic sheet downstream from said scanning means for developing the magnetic latent image on said endless sheet by means of a magnetic powder, said powder being coated onto said endless sheet;

printing means positioned along the path of travel of said endless sheet and downstream from the development means for transferring a magnetic image from said endless sheet to a recording paper, said printing means comprised of a pressing means for pressing the magnetic image onto the recording paper by transferring the magnetic powder and a fixing means for fixing the magnetic powder onto the recording paper; and

demagnetizing means positioned along the path of said endless sheet downstream of said printing means for erasing the magnetic image on said transfer magnetic sheet.

3,852,526

INSPECTION INSTRUMENT

Edward E. McCullough, Brigham City; Kerry G. Zundel, Tremonton, and La Ron D. Binggeli, Logan, all of Utah, assignors to Thiokol Corporation, Bristol, Pa.

Filed Oct. 9, 1973, Ser. No. 404,522

Int. Cl. H04n 7/18

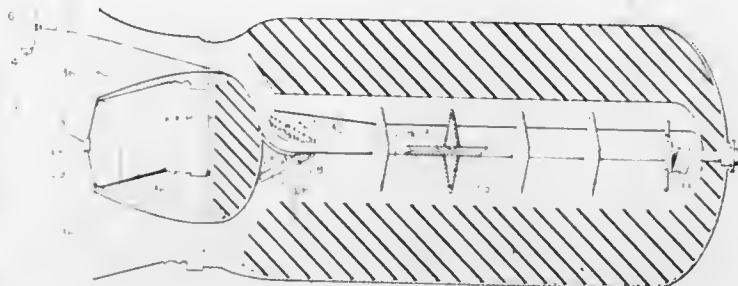
U.S. Cl. 178-7.1

10 Claims

1. A bore inspection instrument comprising:

- an inflatable base;
- means for anchoring the base to some stationary part adjacent the bore to be inspected;
- a cable held by the base, capable of sliding motion relative thereto, and including pneumatic tubes;
- inflatable braces attached to the cable, each being attached to a tube therein;

means for controlling fluid flow, attached to the tubes of the cable and attachable to a source of gas, for controlling inflation of the base and of the inflatable braces; and



observation means attached to the end of the cable opposite the end attached to a control means.

3,852,527

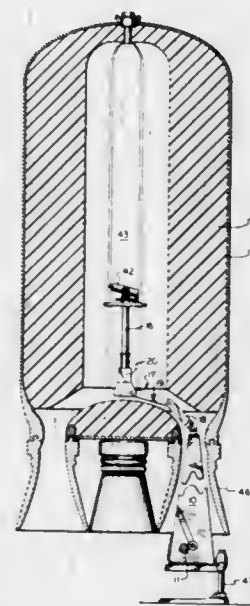
ARTICULATE INSPECTION INSTRUMENT
Richard M. McQuivey, Brigham City, Utah, assignor to Thiokol Corporation, Bristol, Pa.

Filed Oct. 9, 1973, Ser. No. 404,553

Int. Cl. H04n 7/18

U.S. Cl. 178-7.1

9 Claims



1. An instrument for inspecting elongated cavities, comprising:

- a pedestal;
- an articulate arm having a plurality of segments hinged together in series, one end segment being hinged to the pedestal;
- an orifice member hinged to the free end of the articulate arm;
- a pair of long bands of spring material, biased to form tubes, threaded upwardly through the pedestal, the articulate arm, and extending through the orifice member;
- means in the pedestal for anchoring and storing the lower end portion of the bands;
- means in the pedestal and in the articulate arm for maintaining the bands flat until they are released to form concentric tubes;
- means for extending and withdrawing the bands relative to the storage place therefor;
- means for positioning the segments of the articulate arm as desired; and
- observation means attached to the upper end of the concentric tubes formed by the bands.

3,852,528

MESSAGE DISPLAY DEVICE

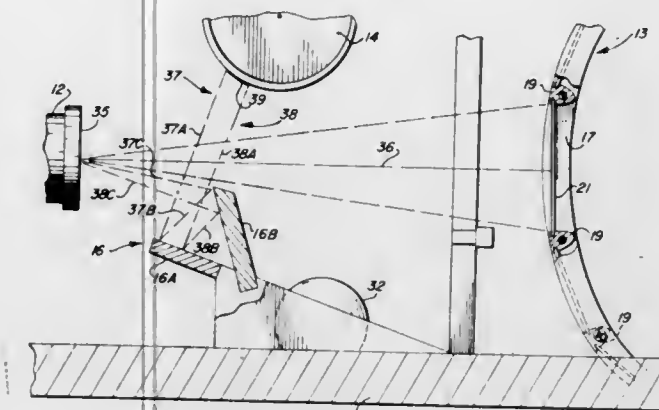
Gilbert A. Robinson, 2441 E. Hemosa, Tempe, Ariz. 85282

Filed Oct. 23, 1973, Ser. No. 408,738

Int. Cl. H04n 5/24

U.S. Cl. 178-7.88

12 Claims



1. A message display device comprising in combination:

- a frame,
- a display assembly having a cylindrically shaped display surface rotatably mounted on said frame for presenting sequentially its display surfaces to a viewer mountable on said frame,
- said surface defining a plurality of areas sequentially positioned around said display surface, each for receiving and holding a plurality of replaceable display items,
- means mounted on said frame for rotating said display assembly about a fixed axis,
- said means comprising a drive shaft for engaging a peripheral surface of said display assembly for rotation thereof about its longitudinal axis, and
- illumination means for illuminating each item as it sequentially comes into view of the viewer upon rotation of said display assembly.

3,852,529

ACOUSTIC HORN

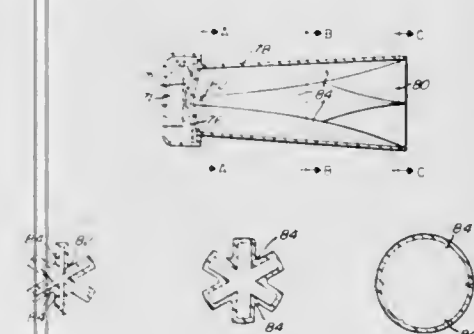
Hugo Willy Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 10, 1973, Ser. No. 322,601

Int. Cl. H04r 1/20

U.S. Cl. 179-1 MG

16 Claims



1. A horn for providing an impedance transformation between an acoustic translating means and an acoustic transmission medium comprising: an elongated tube member having a throat end connectible to said acoustic translating means and a mouth end for transferring acoustic energy between said horn and said acoustic transmission medium, said tube member having a plurality of elongated ribs positioned longitudinally within the interior of said tube member, each rib extending from an interior surface of said tube member into the space enclosed thereby to reduce the cross-sectional area, thereof, adjacent ones of said ribs being spaced substantially an equal distance from each other within said tube member

and defining therebetween longitudinally extending passages having substantially equal lengths between said throat and mouth end to provide maximum high frequency response and to minimize phase cancellations within the operating range of said horn.

3,852,530

SINGLE STAGE POWER AMPLIFIERS FOR MULTIPLE SIGNAL CHANNELS

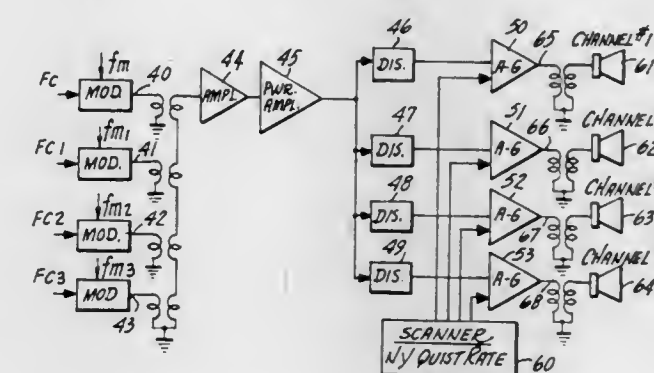
Michael T. Shen, 8 Place Dargent, Eich, Luxembourg

Filed Mar. 19, 1973, Ser. No. 342,836

Int. Cl. H04r 5/00

U.S. Cl. 179-1 GQ

9 Claims



1. Apparatus for amplifying a plurality of audio information signals by means of a common power amplifying stage, comprising:

- a plurality of modulating means each operating at a separate carrier frequency and having a separate output, each separate one of said modulating means associated with one of said audio signals for providing a plurality of separate modulated signals each representative of one of said audio signals and differing one from the other by said carrier frequency,
- power amplifying means having an input terminal and an output terminal, said input terminal including means for coupling each of said output terminals of said modulating means to said input terminal of said power amplifying means to provide at said output a composite signal representing the combination of all of said modulated signals,
- a plurality of discriminator circuits, each associated with a separate one of said modulated signals each of said discriminator circuits having an input coupled to said output of said power amplifying means and an output for providing thereat said associated audio information signal,
- a plurality of utilization means each separate one coupled to one of said discriminator output circuits,
- scanning means operative to provide a plurality of waveforms at a plurality of separate outputs, each of said waveforms having the same repetition rate which rate is relatively higher than any frequency component contained in said audio information signals, and each having a predetermined signal duration and a specified delay between each waveform, and
- means coupling a separate one of said outputs to one of said utilization means to cause said utilization means to utilize said discriminator output signal only during said predetermined signal duration.

3,852,531

ANSWER-ORIGINATE DATA COMMUNICATION SYSTEM

Richard D. Fretwell, and James W. Azbell, both of Columbus, Ohio, assignors to Design Elements, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 76,793, Sept. 30, 1970,

abandoned. This application Feb. 5, 1971, Ser. No. 112,954

Int. Cl. H04m 11/06

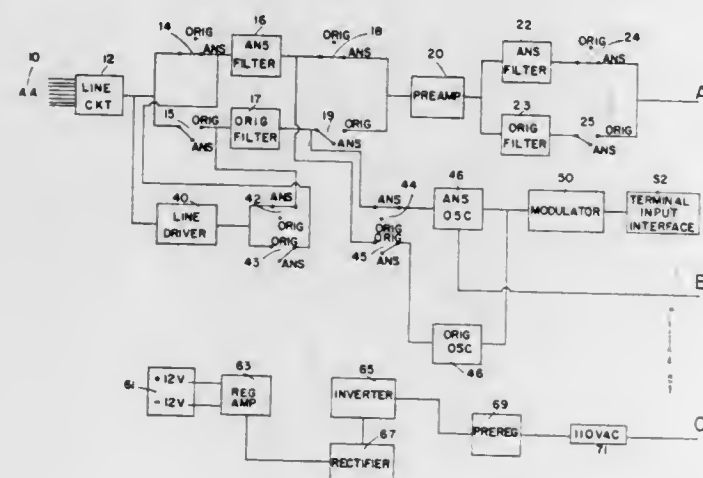
U.S. Cl. 179-2 DP

12 Claims

1. A data system for communication over the standard type of telephone line in the answer or originate modes at inter-

changeable frequencies to a time shared computer, Teletype, or other data line comprising:

- a telephone handset operable to receive an acoustical dual frequency signal,
- a carrier detector having a predetermined level output representative of a suitable carrier level,
- means coupling said carrier detector to said telephone signal including an originate and an answer line filter,
- a limiter also connected to said coupling means for converting said carrier signal to a constant-amplitude noise-free signal, said limiter including an integrated circuit operational amplifier with feedback circuit comprising a pair of transistors in a bridge configuration to limit signals to a predetermined level and to provide a signal of constant amplitude,
- an originate discriminator and an answer discriminator for detecting said dual frequency signal to produce a bipolar output signal corresponding to the data received,
- a slicer operable to increase the signal-to-noise ratio of said discriminated signal and to produce a squarewave output,



- a Teletype driver for combining the data signal from said slicer and the carrier present signal from said carrier detector with that of preselected keyboard signals,
- a transmit section including an originate oscillator and an answer oscillator for generating a dual frequency signal, means for providing said dual frequency signal to said transmit section for duplex operation,
- a plurality of field effect transistor switching circuits, including a first and second field effect transistor switching circuit for said originate discriminator and said answer discriminator, and a third and fourth field effect transistor switching circuit for said originate oscillator and said answer oscillator; said switching circuits operable to activate interchangeably said discriminators and said oscillator and a fifth and sixth field effect transistor switching circuit for said originate line and answer line filters.

3,852,532

CONTROL SYSTEM FOR AN ELECTRICAL POWER LINE
Ronald L. Giles, Altavista, and Daniel L. Wetherell, Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed May 30, 1973, Ser. No. 366,075
Int. Cl. H04q 9/00

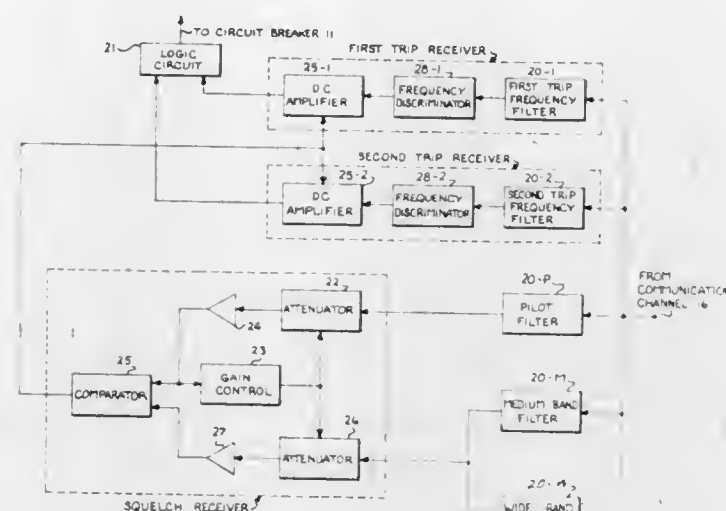
U.S. Cl. 179-2 R

6 Claims

4. An improved control arrangement for power lines and the like comprising:

- a. input means adapted to be connected to sensing equipment on the power line for receiving a trip signal in response to an undesired condition on said power line;
- b. transmitting means connected to said input means for producing a pilot frequency at a first level, a first guard frequency, and a second guard frequency in the absence of said trip signal; and for producing said pilot frequency

at a level higher than said first level, a first trip frequency in place of and higher in frequency than said first guard frequency, and a second trip frequency in place of and lower in frequency than said second guard frequency in response to said trip signal;



- c. and output means connected to said transmitting means and adapted to be connected to a communication channel for applying said frequencies to said communication channel.

3,852,533

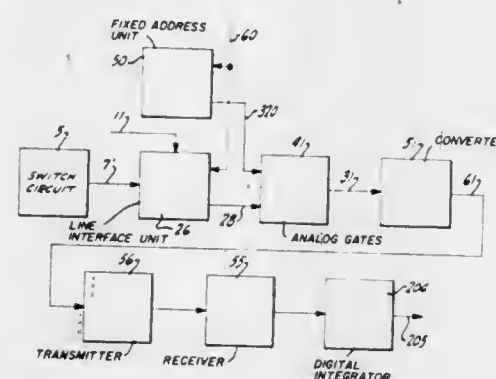
SAMPLING AND ANALOG-TO-DIGITAL CONVERTER APPARATUS FOR USE IN A TELEPHONE MESSAGE METERING SYSTEM

Gary C. Henrickson, Palo Alto, and John C. McDonald, Los Altos, both of Calif., assignors to Vidar Corporation, Mountain View, Calif.

Filed Jan. 5, 1973, Ser. No. 321,376
Int. Cl. H04m 15/38

U.S. Cl. 179-8 A

18 Claims



1. In a message metering system for metering the usage of a plurality of subscriber units in a telephone system, the apparatus comprising,
 - metering line means for carrying multi-level signals, one signal for each of a plurality of subscriber units in the telephone system,
 - attenuator means connected to receive said multi-level signals for forming multi-level attenuated signals where said attenuated signals include a plurality of levels representing usage conditions,
 - analog gate means for sampling said attenuated signals to form sampled signals,
 - analog-to-digital converter means for converting said sampled signals to digital representations.

3,852,534

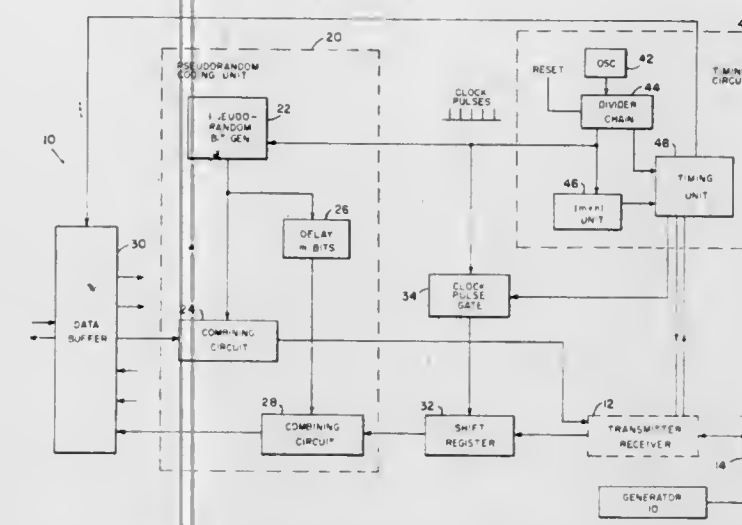
METHOD AND APPARATUS FOR SYNCHRONIZING PSEUDORANDOM CODED DATA SEQUENCES
Tonis Tilk, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 7, 1973, Ser. No. 367,697

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

2 Claims



1. A method of maintaining synchronization between pseudorandom generators at separate locations when a communication channel is being used on a time shared, non-continuous basis, comprising the steps of:
 - generating, by individual stations, a periodic time period for transmission or reception of a communications signal during the time period;
 - transmitting message bits a fixed number of bit durations after the leading edge of the time period;
 - coding said message bits with the output from a pseudorandom bit generator;
 - time correlating said coding and said time period with a common time generating source;
 - receiving transmitted messages by a receiver station;
 - delaying the received message until the instant of the trailing edge of the time period; and
 - deciphering the delayed message by combining the message with coding bits from a pseudorandom bit generator.

3,852,535

PITCH DETECTION PROCESSOR
Jean-Frederic Zurcher, 34 Residence Corlay, Lannion, France (22300)

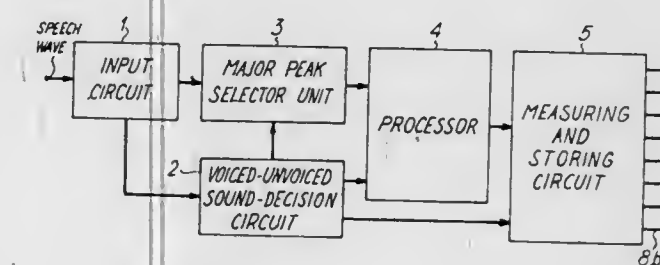
Filed Nov. 16, 1973, Ser. No. 416,623

Claims priority, application France, Nov. 16, 1972, 72.40703

Int. Cl. G101 1/00

U.S. Cl. 179-1 SA

3 Claims



1. A processor for the detection of the pitch of a speech wave for use in connection with a vocoder system comprising means for detecting the major peaks of said speech wave means for converting said major peaks into a train of marker

pulses, each pair of consecutive marker pulses of said train defining a pitch period, means for cancelling in said train each marker pulse separated from the preceding marker pulse by an interval shorter than the preceding pitch period by more than a tolerance amount, means for prohibiting the cancellation of more than a first given number of consecutive marker pulses, means for storing the value of each pitch period defined by two consecutive non-cancelled marker pulses and not differing from the preceding pitch period by more than a tolerance amount, means for substituting the preceding pitch period for each pitch period differing from said preceding pitch period by more than a tolerance amount and means for prohibiting the substitution for more than a second given number of consecutive pitch periods, of the respective preceding pitch periods.

3,852,536

TEST-THROUGH VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS

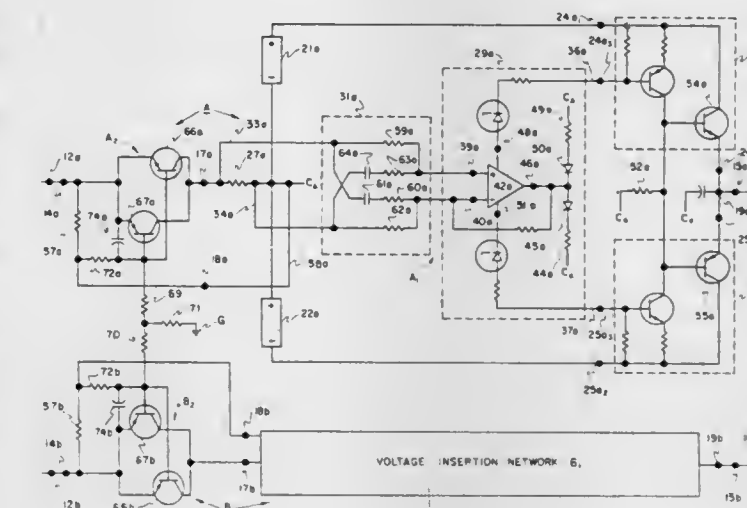
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed May 16, 1973, Ser. No. 360,775

Int. Cl. H04g 1/28

U.S. Cl. 179-16 F

14 Claims



1. In a circuit adapted to introduce a d-c boost voltage in series with a subscriber line when operating current flows therethrough and to withhold such d-c boost voltage when test current flows therethrough, in combination, a central office terminal, a subscriber terminal, bi-directional switching means for conducting or blocking the flow of current between said terminals, through said bi-directional switching means, means for establishing a d-c boost voltage of a first polarity between said terminals when current flows through said bi-directional switching means in a first direction and has a magnitude which exceeds a first predetermined value, means for establishing a d-c boost voltage of a second polarity between said terminals when current flows through said bi-directional switching means in a second direction and has a magnitude which exceeds a second predetermined value, means for bypassing said switching means and for conducting current between said central office and subscriber terminals when said bi-directional switching means is non-conducting, and means for connecting said switching means in voltage responsive relationship to said central office terminal to conduct when the driving voltage at said central office terminal exceeds a predetermined value and to block when the driving voltage at said central office terminal is less than said predetermined value.

3,852,537

TELEPHONE STATION DISCONNECT DEVICE

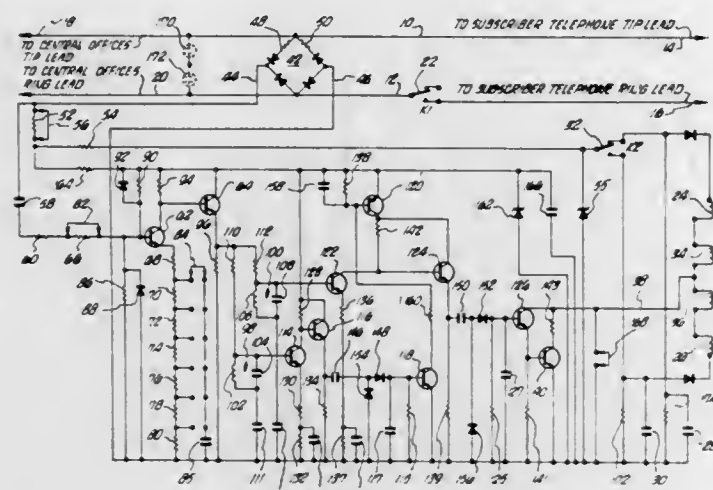
Ogden W. Vincent, Anaheim, Calif., assignor to San/Bar Corporation, Santa Ana, Calif.

Filed Feb. 22, 1973, Ser. No. 334,633

Int. Cl. H04m 3/16

U.S. Cl. 179-17 B

16 Claims



1. A disconnect device intended for use with individual subscriber telephones in a multi-subscriber telephone system for enabling remote connection or disconnection of the individual subscriber telephones to a single pair of line conductors by which telephone service is extended from a central facility to all subscribers, said device comprising:

first means for being operated to complete or break an electrical connection between at least one of said pair of line conductors and a subscriber telephone, said first means being electrically installed between at least one of said pair of line conductors and said telephone; and second means for operating said first means in response to the concurrent application of two predetermined frequency signals for a predetermined period.

3,852,538

ARRANGEMENT AND METHOD OF COMBINING TRUNKS AND A MATRIX INTO A SINGLE FRAME

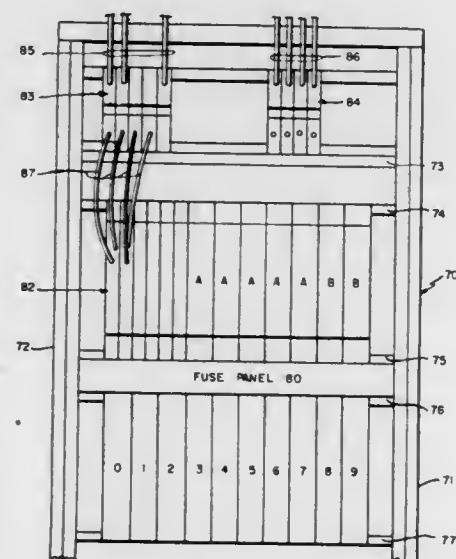
Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,546

Int. Cl. H04q 1/04; H02b 15/04

U.S. Cl. 179-91 R

1 Claim



1. In a common control communication switching system including a plurality of trunks connectable through a matrix including A, B and C stages to any one of a plurality of service

circuits, said trunks being machine wired to said A stage and said service circuits being connected to said C stage, a plurality of links connecting said A and B stages and a plurality of links connecting said B and C stages, said matrix being a concentration type matrix which is used only during the processing of a call and then released at the end of the call setup, the improvement comprising a frame, said trunks and said A and B stages being contained within said frame, said A stage performing a reduction of inlets to outlets and said B stage performing a further reduction of inlets to outlets, whereby the number of wires which have to be cabled to said C stage matrix frame is reduced, said trunks being assigned on an individual frame basis and a given pattern of said trunks being wired into said A stage, a standard wiring pattern being used between said A and B stages, said C stage being contained within another frame and a standard wiring pattern being used between said B and C stages.

3,852,539

LINE SURGE PROTECTION DEVICE FOR TELEPHONE LINES

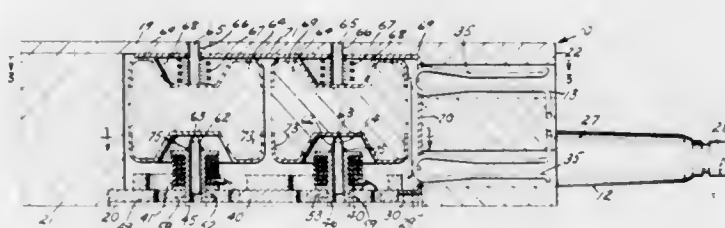
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,386

Int. Cl. H04m 1/74; H03k 17/00

U.S. Cl. 179-174

3 Claims



1. In a line voltage surge protective device for telephone systems, of a type adapted to conduct a surge to ground potential, and remain in non-conductive condition with respect to ground during normal operation, the improvement comprises: a housing defining a cavity, means on said housing for electrical interconnection to a line to be protected, and to a source of ground potential, a gaseous discharge device interconnecting said line and said source of ground potential operative to conduct a voltage substantially above normal operating voltage, and heat sensitive means connected in series with said line to be protected and operative to short said gaseous discharge device to permit excess current to be conducted directly to ground.

3,852,540

EAR HEARING APPARATUS

Beda Diethelm, Zollikon, Switzerland, assignor to AG fur Elektroakustik

Filed Dec. 13, 1972, Ser. No. 314,902

Claims priority, application Switzerland, Dec. 30, 1971, 19184/71

Int. Cl. H04r 25/02

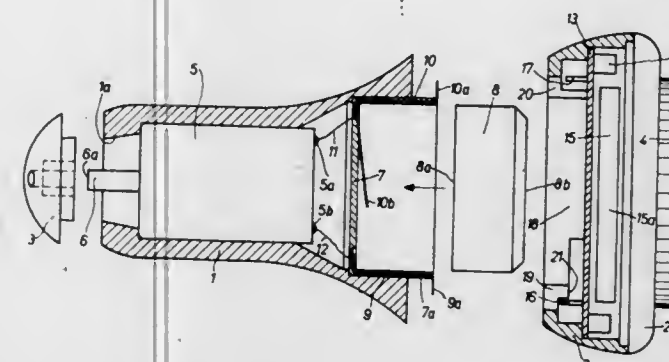
U.S. Cl. 179-107 E

4 Claims

1. A hearing apparatus arranged to be inserted into the auditory channel of the user, said apparatus including:

- a substantially elongate two-part housing;
- means for releasably interconnecting the two portions of said housing;
- an output transducer arranged in a first portion of said housing;
- an input transducer capable of magnetic and electrical reception, an amplifier and a gain control arranged in the second portion of said housing;
- a voltage source;

- means for receiving and retaining said voltage source in said first housing portion between said output transducer and said amplifier when said portions of said housing are releasably connected at the region of interconnection;
- said output transducer having a pair of input terminals;
- said amplifier having contacts; and



- said retaining means being provided with two contact elements which are fixedly connected, respectively with the two input terminals of said output transducer and releasably connected with the contacts of said amplifier, one such contact element coming into contact with one pole of said voltage source whereas the other pole of said voltage source is coupled with the amplifier.

3,852,541

BURGLAR ALARM ACTUATED BY CUT TELEPHONE WIRE

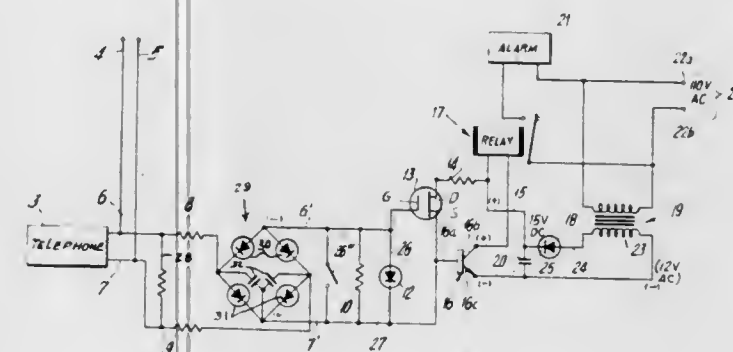
Edmund C. Altenberger, Box 595, Bernardsville, N.J.

Filed Aug. 10, 1973, Ser. No. 387,462

Int. Cl. H04m 3/22

U.S. Cl. 179-175.25

15 Claims



1. A telephone set cut-line alarm device, comprising in combination: separate positive and negative connector leads; at least each of a first resistor means and a zener diode connected across said leads; at a corresponding end of each of said connector leads, second and third resistor means connected one per lead in series, and at an opposite end of each respective resistor means each resistor means being connectable to a telephone-set line of optional polarity; said zener diode being connected for unidirectional electron flow from said negative lead to said positive lead; a field effect transistor having separate gate, drain and source leads, said gate lead being connected to said zener diode at a negative lead thereof; first switch means having second circuit input and output switch contacts for turning on and off respectively a first current flow controllable of a first relay-activation circuit-second current flow, said first switch means being operatively connected to one of said source leads and to said drain lead of said field effect transistor; a first capacitor means having first and second leads at least one of which is operatively connected to said zener diode at a positive terminal thereof

such that discharge of potential at said gate takes place whenever telephone line voltage on either of said connector leads is terminated or significantly decreased, such that the gate potential is prior to discharge, of a predetermined magnitude large enough to prevent current flow through said drain to said source; a second current-flow circuit including in series within said second current-flow circuit a direct current means provable of direct current, first relay means having first-circuit input and output actuation leads connected for activating said first relay means, and said switch of said first switch means, and operatively connected to said source lead; fourth resistor means connected between said drain lead and one of said first relay means input and output leads; and said first relay means including alarm-circuit switch contacts, said first relay input lead being connected in series with one of said first switch means second circuit contacts; and said capacitor means being for attenuating AC current.

3,852,542

ADJUSTABLE CAM MULTIPLE CONTACT SWITCH ARRANGEMENT

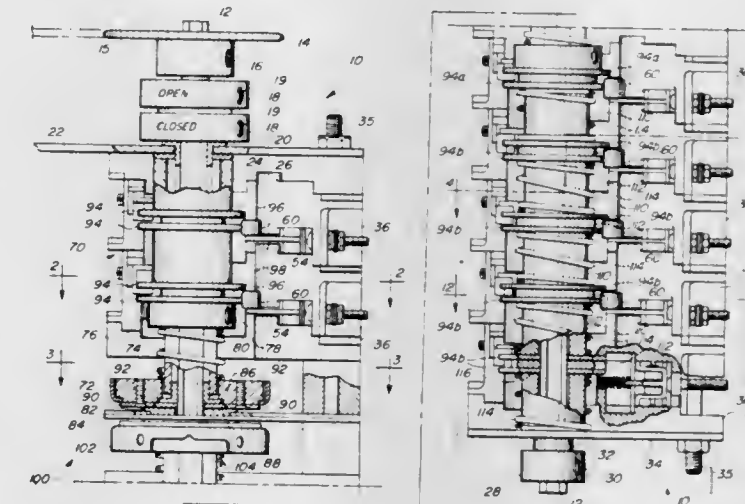
Edward J. Rogers, Chicago, and David Evans, Palatine, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sept. 14, 1973, Ser. No. 397,415

Int. Cl. H01h 19/62

U.S. Cl. 200-31 R

1 Claim



1. A multiple contact switch arrangement comprising: a first end plate; a second end plate; a shaft removably mounted for rotation between said first and second end plates; means for rotating said shaft; a plurality of switch support blocks removably mounted against one another between said end plates in a stacked relationship adjacent to said shaft, said switch support blocks having coincident openings therethrough parallel to said shaft; removable mounting means positioned through the openings in said switch block for disengageably mounting said switch support blocks between said first and second end plates; a first set of cams removably mounted on said shaft for rotation with said shaft, said first set of cams having protrusions positioned on the periphery thereof; a second set of cams removably mounted on said shaft for rotation with said shaft, said second set of cams having protrusions positioned on the periphery thereof; a pair of stationary contacts mounted on each of said support blocks; a plurality of movable contact bridging members each slidably mounted on a respective support block for electrically connecting a respective pair of stationary contacts; spring means for biasing said movable contact bridging members toward said stationary contacts;

a plurality of cam followers, each pivotably mounted on a respective support block, each of said cam followers having a first end engaging and following a respective cam and a second end connected to a respective movable contact bridging member so that when said first end engages the protrusion on its respective cam, said cam follower moves its respective contact bridging member to electrically disengage the respective stationary contacts; first adjusting means for permitting adjustment of the angular position of said first set of cams with respect to the angular position of said shaft as a unit so that the angular position of said shaft at which each of said respective contact bridging member disengages its respective stationary contacts can be predetermined; and second adjusting means for permitting adjustment of the angular position of each cam of said second set of cams independently with respect to the angular position of said shaft so that the angular position of said shaft at which each of said respective contact bridging members disengages its respective stationary contacts can be independently predetermined.

3,852,543

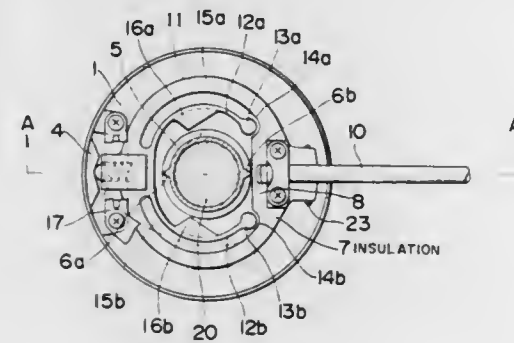
DIRECTION INDICATOR AUTOMATIC RETURN DEVICE
Masaru Suzuki, Takemura Atsui, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan, by said Suzuki
Filed Dec. 20, 1972, Ser. No. 316,821

Claims priority, application Japan, Dec. 28, 1971, 47-1174[U]

Int. Cl. H01h 3/16

U.S. Cl. 200-61.27

6 Claims



1. A direction indicator automatic return device for use in a motor vehicle comprising:

a restoring cam, secured to a steering column in the motor vehicle, having a pair of cam lobes arranged on opposite sides of the steering column;

a main body arranged concentrically around the steering column; and

a movable bracket supported by said main body in concentric relation with the steering column for rotation about said steering column,

said movable bracket including a curved peripheral outer portion, a pair of curved, cantilever-like ratchet arms spaced from an inner surface of said outer portion, and flexible holding means for holding said movable bracket into one of a left-turn, right-turn and neutral position, each of said pair having one end secured to said movable bracket to form a first gap between said ratchet arms and said inner surface over substantially the length of said ratchet arms and having a free end separated from said inner surface by a second smaller gap,

each said ratchet arms having a triangular engagement portion disposed approximately in a central portion of each said ratchet arms and said triangular engagement portion having a vertex facing said steering column, wherein, upon rotation of said movable bracket to one of a position indicating a left turn and a right turn, one of said triangular engagement portions comes into the circle of

rotation of said cam lobes so that one of said cam lobes engages an oblique side face of said one triangular engagement portion during turning of said steering column such that said free end closes said second smaller gap and contacts said inner surface, thereby forming a centrally flexible beam that enables flexion of said ratchet arm to allow said cam lobe to pass over said triangular engagement portion.

3,852,544

FLUID OPERATED ELECTRICAL CONTACTOR WITH CONTACT COOLANT MEANS

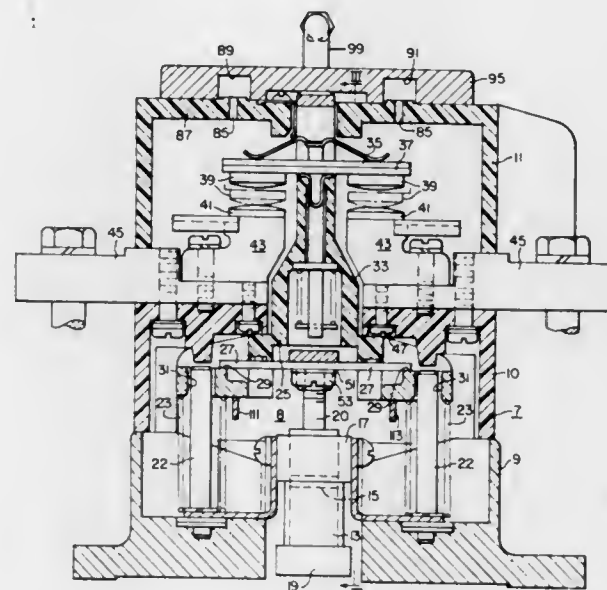
Kurt A. Grunert, Beaver; Charles R. Paton, and John A. Sentak, both of Brighton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1973, Ser. No. 398,021

Int. Cl. H01h 35/38

U.S. Cl. 200-82 R

5 Claims



1. A circuit interrupter structure comprising an electrically insulating housing, a plurality of sets of contacts within the housing and comprising stationary contacts and movable contacts movable between open and closed positions, an elongated contact carrier along which the sets of movable contacts are disposed in spaced relationship, reversible fluid drive means comprising at least two fluid cylinder and piston structures and having piston shafts connected to and at spaced positions along the elongated contact carrier, the fluid drive means comprising a remotely controlled valve mechanism directing fluid into one or the other side of the fluid cylinders uniformly so that the assembly of the elongated contact carrier and the sets of movable contacts is movable in a stable, non-binding manner.

3,852,545

SWITCHING MECHANISM ASSOCIATED WITH GOVERNOR MECHANISM

Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan

Filed Nov. 14, 1973, Ser. No. 415,785

Claims priority, application Japan, Nov. 29, 1972, 47-137203

Int. Cl. H01h 35/10

U.S. Cl. 200-80 R

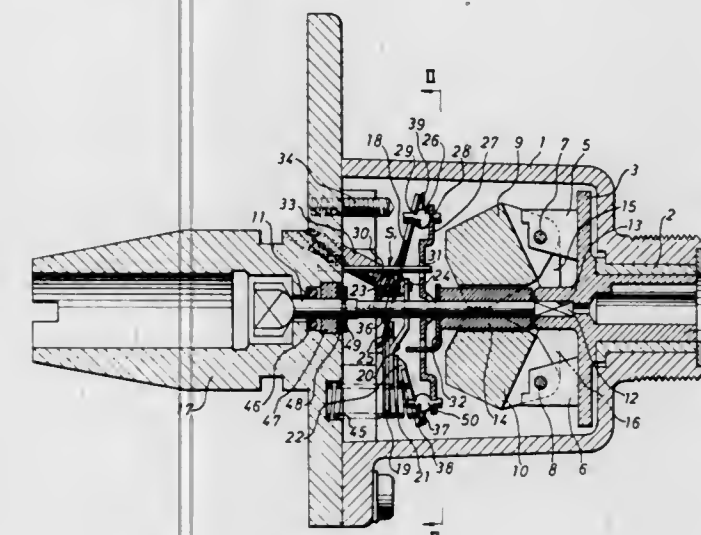
9 Claims

1. In a governor switch apparatus comprising a housing mounted on a switch base, a governor mechanism assembled within said housing to be driven at various speeds of a rotary element, and a switching mechanism assembled on said switch base to be actuated by said governor mechanism, the improvement wherein said switching mechanism comprises

a seesaw lever to be actuated at its central portion by said governor mechanism in response to the speed of said rotary element;

a first switching means with self-biased over-center snap action connected with a first end of said lever and including a first normally open switch;

a second switching means with self-biased over-center snap action connected with a second end of said lever to be arranged symmetrically with said first switching means around said lever and including a second normally open switch;



means for blocking the movement of the first end of said seesaw lever after closure of said first switch by means of actuation of said lever; and

a resilient means interposed between said second switching means and said switch base for normally biasing the second end of said seesaw lever against actuating force exerted on said lever to close said second switch after the closure of said first switch.

3,852,546

PRESSURE ACTUABLE SWITCH APPARATUS WITH BELLOWS AND FLUID DAMPING MEANS

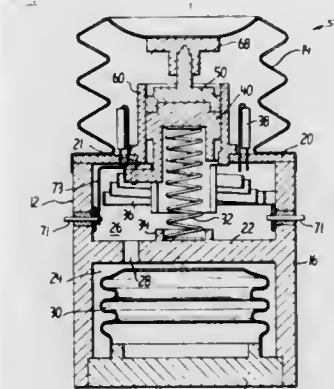
Richard F. Maxwell, Jr., Baltimore, Md.; Forrest E. Coyle, Pittsburgh, and George W. Gillespie, West Mifflin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,488

Int. Cl. H01h 35/34

U.S. Cl. 200-83 C

2 Claims



1. Pressure actuable switch apparatus comprising:

a. an envelope for receiving switch means therein and having a diaphragm portion displaceable in response to changes of external pressure with respect to that established within said envelope;

b. first and second contacts disposed within said envelope, at first and second switch positions, respectively;

c. said switch means comprising a switch member movable to each of said first and second switch positions;

d. translating means for securely setting said switch member at each of said first and second positions and responsive to the displacement of said diaphragm portion to release said switch member from said first position and move said switch member to said second position, said translating means effecting the movement of said switch member from said first position to said second position in response to the increase of the external pressure from a normal pressure level to a first pressure level and the subsequent decrease of the external pressure from said first level to said normal pressure level; and

e. reset means responsive to the increase of external pressure from said normal level to a second level greater than said first level for disposing said switch member to said first position.

3,852,547

DIFFERENTIAL PRESSURE SWITCH WITH HINGED PLATE ON DIAPHRAGM

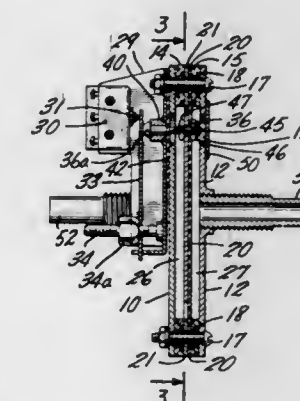
Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Filed Aug. 24, 1973, Ser. No. 391,052

Int. Cl. H01h 35/34

U.S. Cl. 200-83 Y

7 Claims



1. A differential pressure switch comprising a housing comprising two spaced, opposed plates defining a fluidtight space therebetween, a flexible pressure responsive diaphragm comprising a flexible material and a diaphragm pressure plate bonded to said flexible material separating said space into two compartments, a rigid member having an edge surface in said space opposed to an edge surface of said pressure plate and in close proximity therewith, the edge surfaces jointly defining a hinge for said pressure plate about which the pressure plate pivots, an electrical contact mounted on said housing exteriorly of said space, an actuator for actuating said contact to an operative position comprising a flexible flat spring mounted exteriorly of said casing for flexing to a position to close said contact, an axially displaceable pin in communication with the interior of said housing and extending outwardly thereof for bearing against said flat spring to deflect it in a direction for closing said contact, an actuating element mounted on said diaphragm for movement therewith to contact and engage said pin to actuate it in response to a pressure differential in said compartments flexing the diaphragm in a direction for actuating said switch, and connectors for applying a medium to one of said compartments to develop said differential pressure.

3,852,548

ACTUATING MECHANISM FOR CONTACT AND BLAST VALVE UNIT

Edwin C. Goodwin, Jr., Canton, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 18, 1973, Ser. No. 380,250

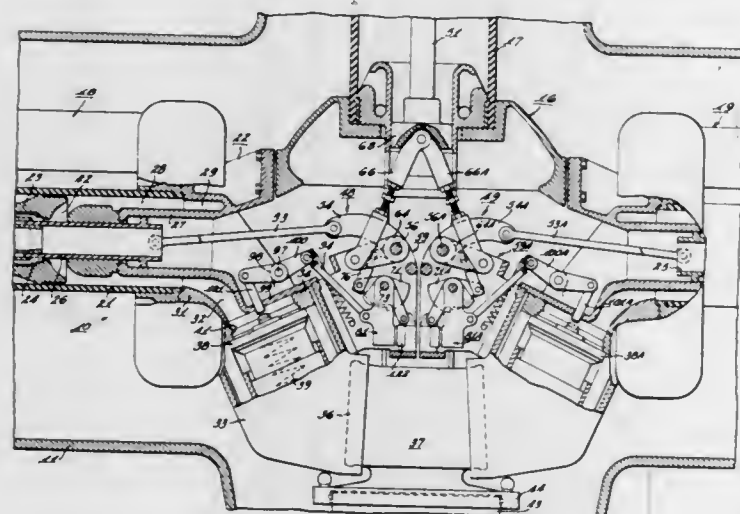
Int. Cl. H01h 33/42

U.S. Cl. 200-148 F

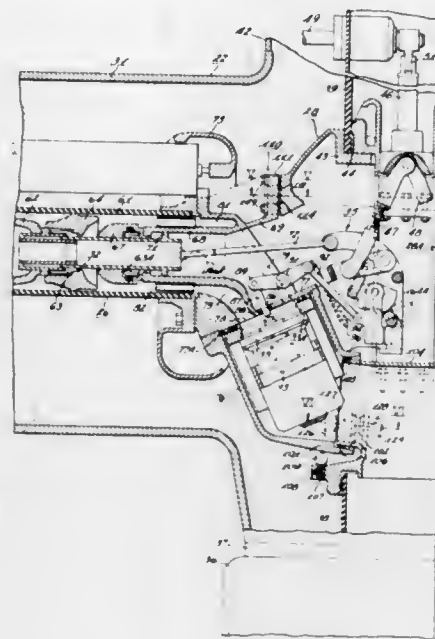
12 Claims

1. A circuit breaker of the fluid-blast type including a stationary contact;

- a movable contact separable from said stationary contact to establish an arc;
- a source of fluid under pressure;
- a blast valve operably connected between said source of fluid under pressure and the area where an arc is drawn between said contacts, said blast valve being normally biased to a closed position, and operable when mechanically actuated to an open position to direct a blast of fluid under pressure to the area of arcing;
- a frame;
- a rocker arm pivotally supported by said frame;
- a blast valve engaging rod carried by said rocker arm in position to engage and displace said blast valve to an open position when said rocker arm is pivoted in one direction;



an O-ring carried by said outlet for effecting a gas-tight seal between said outlet and inlet when mating engagement is



effected between said inlet and outlet upon insertion of said contact and blast valve unit into operating position within said tank.

3,852,550 NON-RESTRICTING CONDUCTOR FILTERING SYSTEM FOR A HIGH-VOLTAGE CIRCUIT BREAKER

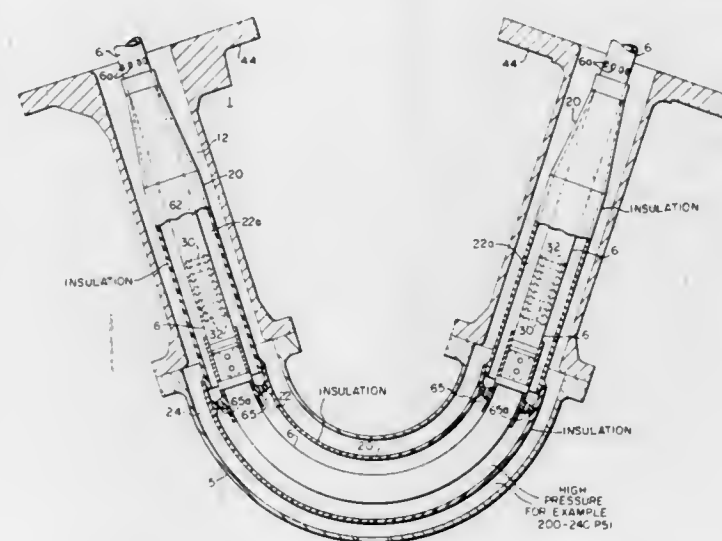
August U. Bertolino, Jeannette; Joseph A. Penkova, and William G. Carrell, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,843

Int. Cl. H01h 33/54

U.S. Cl. 200-148 B

17 Claims



3,852,549 PLUG-IN CONTACT AND BLAST VALVE UNIT

Edwin C. Goodwin, Jr., Canton, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 18, 1973, Ser. No. 380,248

Int. Cl. H01h 33/54

U.S. Cl. 200-148 R

20 Claims

1. In a gas-insulated circuit breaker:
 - a circuit breaker tank having a service opening;
 - a contact and blast valve unit insertable through the service opening in said tank into operative position in said tank;
 - a gas supply distribution member supported within the interior of said tank;
 - an outlet formed on said distribution member;
 - a tapered inlet formed in said contact and blast valve unit to cooperate with said outlet of said distribution member; and,

- e. a hollow insulating barrier member (20) surrounding said high-voltage metallic line-conductor (6) and defining an annular sealed second high-pressure region (22);
- f. means defining a third outer high-pressure region (24) freely communicating pneumatically with said high-pressure interrupting region (15) and disposed about said barrier member (20); and,
- g. means defining equalization opening means (32) provided in the wall of said inner hollow metallic high-voltage line-conductor (6) which pneumatically intercommunicates the interior (62) of the high-voltage metallic line-conductor (6) with the annular region (22) within the barrier member (22), whereby a sudden drop of pressure within the outer high-pressure region (24) will not fracture the barrier member (20) because of the permissible rapid equalization of pressure across the barrier member (20) provided by said equalization opening means (32).

3,852,551 PUFFER-TYPE COMPRESSED-GAS CIRCUIT-INTERRUPTER

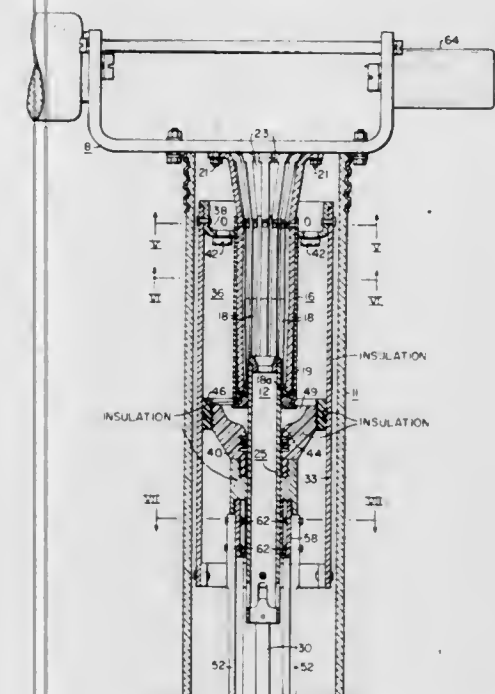
Charles M. Cleaveland, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,209

Int. Cl. H01h 33/88

U.S. Cl. 200-148 A

7 Claims



1. A gas-blast puffer-type circuit-interrupter including a longitudinally-extending insulating casing having a first end and an oppositely-disposed second end, means at least partially of metal closing said first end of the casing and stationarily supporting therewithin a generally tubularly shaped stationary contact structure, a combined stationary fixed piston and hollow orifice structure fixedly supported from the other second end of the insulating casing, support-rod means extending longitudinally interiorly of said insulating casing to fixedly support said combined fixed piston and hollow orifice structure from the second end of the insulating casing, a movable tubular venting contact linearly movable and operable from the second end of the casing through said combined fixed piston and orifice structure and into and out of contacting engagement with said generally tubularly shaped stationary contact structure, a movable operating cylinder (33) operatively mechanically linked to the movable contact adjacent the second end of the casing and having an annularly-shaped closed-end portion (38) encircling said generally tubularly shaped stationary contact structure, said movable operating cylinder (33) during the opening operation compressing gas and forcing the compressed gas to flow into the tubularly

shaped stationary contact structure and also in the opposite direction through said combined fixed piston and hollow orifice structure and then into the interior of the moving tubular venting contact for arc-extinction purposes, the outer peripheral portion of the fixed piston and hollow orifice structure being wholly composed of insulating material so that in the fully-open-circuit position insulating gas is interposed between said peripheral portion of the fixed piston structure and said stationary tubular contact to thereby eliminate creepage and arc tracking over insulating surfaces and thereby avoid electrical breakdown.

3,852,552 TOGGLE SWITCH

Hiroatsu Kimijima; Shohei Iizuka, both of Yokohama, and Hironao Fujii, Kawasaki, all of Japan, assignors to Fujisoku Electric Co., Ltd., Kawasaki-shi, Japan

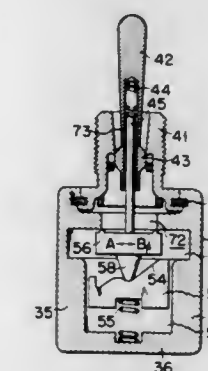
Filed Sept. 20, 1973, Ser. No. 399,093

Claims priority, application Japan, Sept. 20, 1972, 47-109082; Dec. 1, 1972, 47-138356

Int. Cl. H01h 3/46, 5/10

U.S. Cl. 200-153 G

5 Claims



1. A toggle switch comprising a cylindrical sleeve; a case having the edge of an opening at one end fitted with the cylindrical sleeve and bored with horizontal and vertical grooves; a toggle lever penetrating the cylindrical sleeve with the operative end of said lever exposed to the outside and rotatably supported on the inner walls of the cylindrical sleeve; a slidable member fitted to the end of the toggle lever received in the case so as to slide through the horizontal groove of the case and having one part of the underside provided with a conical projection and another part of said underside bored with an engagement groove; a cam having its surface sufficiently undulated to assure the operative and inoperative conditions of the toggle switch and, when the toggle lever is operated, designed to move upward or downward through the vertical groove of the case according to the movement of the projection of the slidable member in contact with the undulated surface; a spring positioned between the underside of the cam and the inner wall of the case bottom so as to urge the cam upward against the depressive force of the projection; a support plate fitted to the inside of one side wall of the case to protect the projection, cam and spring; a movable contact member having its base rotatably supported on the support plate and its upper end fitted into the engagement groove; a pair of stationary contact members fixed to the support plate in a manner to face each other across the movable contact member; and contact terminals projecting from the base of the movable contact member and stationary contact members to the outside of the case.

3,852,553

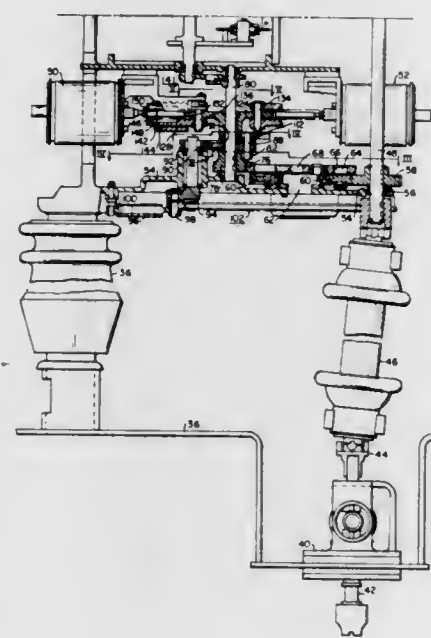
VACUUM SWITCH WITH TOGGLE ASSEMBLY OPERATING MECHANISM

Robert C. Lingenfelter, and Andrew Sabella, both of Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1973, Ser. No. 385,197
Int. Cl. H01h 3/46

U.S. Cl. 200—153 G

9 Claims



1. Tap changing apparatus comprising:
a selector switch which is moveable to contact different tap terminals;
first, second, and third vacuum switches switchable in a predetermined sequence to transfer a load connected to the tap changing apparatus from one tap terminal to another tap terminal, each of said vacuum switches having a stationary and a moveable contact;
a moveable cam;
connecting means for connecting the moveable contact of each vacuum switch to said cam;
drive means coupled to said cam to receive the force which moves said cam;
forcing means for applying the moving force to said drive means;
toggle means for quickly moving said forcing means when said toggle means has been shifted to a predetermined position;
input means for shifting said toggle means to the predetermined position; and
an input shaft which drives said input means, with said input means comprising a plurality of mechanical members coupled to said input shaft and said toggle means, and with the rotation of said input shaft in one direction providing movement of said forcing means and said toggle means together until said toggle means has been shifted to the predetermined position, and then allowing the forcing means to be quickly moved by said toggle means without a change in the speed of rotation of said input shaft.

3,852,554

BIDIRECTIONAL ROTARY PUSH-BUTTON SWITCH

Stanford M. Heide, Kenosha, Wis., assignor to Chicago Dynamics Industries, Inc., Chicago, Ill.

Filed Nov. 21, 1973, Ser. No. 417,714

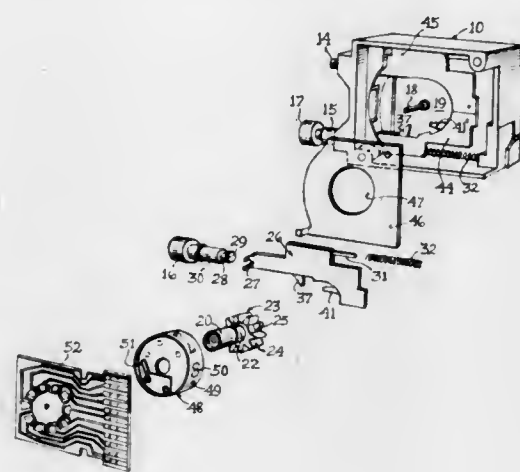
Int. Cl. H01h 13/58

U.S. Cl. 200—156

6 Claims

1. In a bidirectional rotary push-button switch having switch contacts rotatable in either direction through a plurality of switch positions and housed within an open-sided hollow case, and a removable side cover therefor, the combination comprising

a. a rotatable gear member having teeth of a predetermined width for rotating said switch contacts in either direction within the case,
b. a pair of operating members diametrically disposed on opposite sides of the axis of said gear member and laterally offset with respect to each other and mounted for independent reciprocal linear movement tangentially with respect to said gear member,



c. gear-rotating means carried by each of said operating members independently and alternately engageable with the teeth of said gear member to rotate said switch contacts step-by-step in either direction, and
d. means on said gear member limiting the continuous rotation of the switch contacts in either direction beyond a selected number of switch positions.

3,852,555

VACUUM SWITCH

Dieter Schuocker, Wien, Austria, and Hans Joachim Lippmann, Boxdorf, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

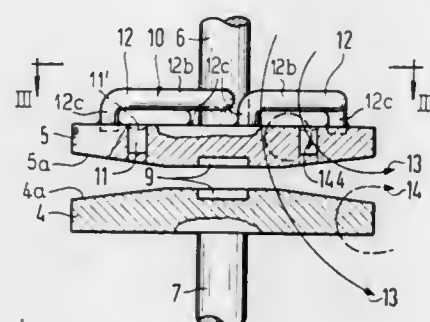
Filed July 17, 1973, Ser. No. 379,995

Claims priority, application Germany, July 19, 1972, 2235359

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

20 Claims



1. A vacuum switch having an evacuated housing containing a pair of relatively separable disk-shaped switching contacts, one of which contacts has a central portion attached to a central electrically conductive supporting member which is coaxially surrounded by a coil structure electrically parallel to the supporting member, the improvement comprising:
said coil being connected to an area of said one contact which is spaced from said supporting part;
said area being at least partially separated by a gap from said central portion;
and a permeable material in said gap.

3,852,556

COMBINATION HAND-JACK, SEMAPHORE AND TRAVEL INDICATOR FOR HIGH-VOLTAGE CIRCUIT INTERRUPTER

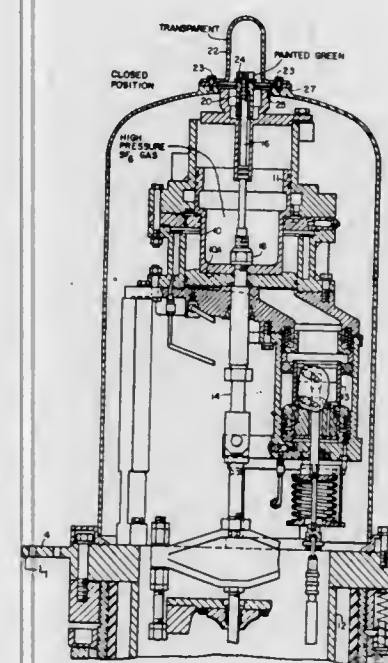
Richard E. Kane, Monroeville, and William H. Fischer, Penn Hills, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,635

Int. Cl. H01h 9/16

U.S. Cl. 200—310

4 Claims



1. A circuit breaker comprising, in combination:
a. a movable contact cooperable with a stationary contact to establish an arc and open the connected circuit;
b. an indicator-rod responsive to movement of the movable contact in its opening and closing movements;
c. a semaphore secured to the indicator-rod to indicate visibly the open and closed-circuit positions of the circuit breaker;
d. said indicator-rod including thread means whereby a manually operable hand-jack threadably related to said indicator-rod may be substituted for the semaphore indicator, said manually operable hand-jack causing the relatively slow opening and closing movement of said circuit breaker.

3,852,557

ELECTRIC SWITCH WITH PIVOTING AND WIPING MOVABLE CONTRACTOR

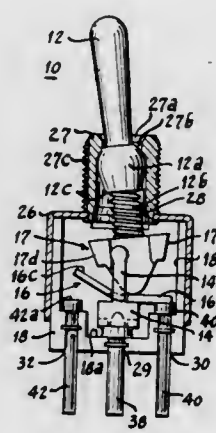
Harry W. Brown, Big Bend, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 12, 1973, Ser. No. 378,410

Int. Cl. H01h 1/22

U.S. Cl. 200—241

4 Claims



1. In an electric switch, in combination:
an insulating housing,

a plurality of stationary contacts mounted in spaced relation in said housing,
a rigid movable contactor support member in circuit with and mounted in limited lateral rocking relation on one of said stationary contacts,
a movable contactor pivotably mounted on said support member to selectively engage with the other of said stationary contacts, and
operating means comprising an actuating member for sliding on and pivoting said contactor into engagement with said other of said stationary contacts and having lost motion driving connections with said support member to engage with and rock said support member to slide said contactor on each of said other of said stationary contacts following engagement therewith.

3,852,558

MAGNETICALLY COUPLED CONTROL FOR COOKING PLATFORM

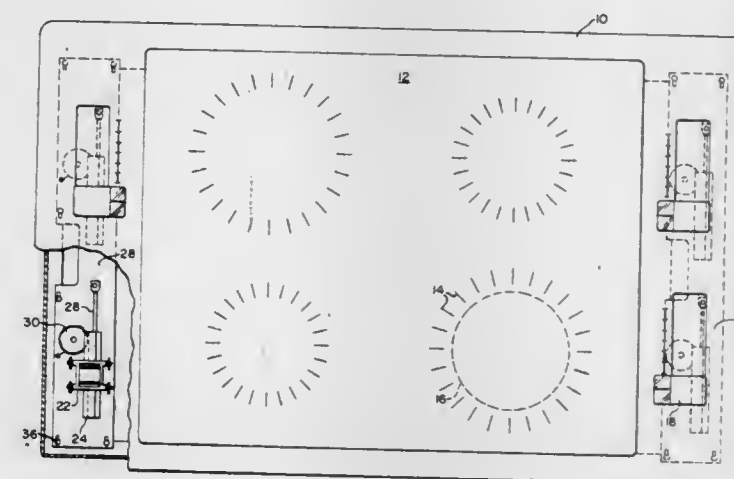
Earl W. McCleerey, Monroeville, and William A. English, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,158

Int. Cl. H05b 5/08

U.S. Cl. 219—10.49

5 Claims



1. In a magnetically coupled type of control arrangement for a cooking platform having a heat producing element:
a user-operated control member on the accessible side of a control panel;
a follower member on the other side of said panel adapted to be magnetically coupled to said control member;
a support plate spaced from said other side of said panel;
a controller for controlling energization of said heat producing element mounted to said support plate and including a rotatable shaft projecting therefrom and having a pinion gear fixed thereon;
a guide bar mounted at its ends on said plate and having a straight length extending on both directions beyond said gear; and
a support member for said follower member having a gear rack on one side for engagement with said pinion gear, and provided with a pair of opposite, open-ended slots on the opposite side to accommodate the ends of said guide bar in the rectilinear movement of said support member, said guide bar ends serving as opposite end limits to movement of said support member.

3,852,559

STUD WELDING APPARATUS

Dankmar Tauern, Triesenberg, Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

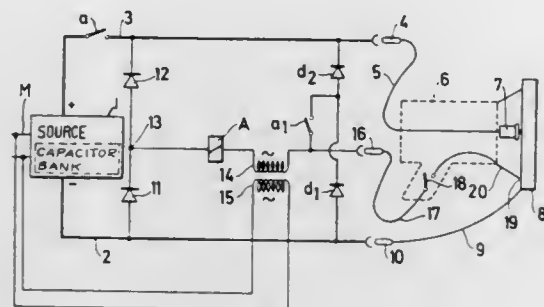
Filed July 12, 1973, Ser. No. 378,385

Claims priority, application Germany, July 12, 1972, 2234304

Int. Cl. B23k 9/20

U.S. Cl. 219—98

16 Claims



1. A stud welding apparatus for direct current welding of an elemental part to a base part, comprising a direct current source of welding energy, a pair of conductive lines of different polarity coupled to the source for carrying current from said source, welding gun means for positioning the elemental part relative to the base part so that welding can take place, connector means for reversably connecting one of said lines having one polarity to one of the parts and a second of said lines having the other polarity to the other of the parts, circuit means having a common section connected by the gun means to one of the parts and first and second portions respectively coupling said common section to each of said lines and decoupling the lines from each other for forming a current path through the one of the lines through which the connector means connects the one of the parts normally open actuable trigger means mounted in the gun means and connected in the common section for normally opening and closing the path, and switch means in one of the lines and in the common section for opening and closing one of said lines in response to flow of current in the path, said circuit means including an alternating current source in said common section for applying alternating cycles through the path.

3,852,560

CONTINUOUS ELECTRONIC HEATING DEVICE FOR METALLIC WIRE AND SHEET METAL

Dominique Streel, Sclessin-Ougree, Belgium, assignor to Cock-erill-Ougree-Providence et Esperance-Longdoz, Seraing-lez-Leige, Belgium

Filed May 21, 1973, Ser. No. 362,608

Claims priority, application Belgium, May 31, 1972, 43722

Int. Cl. B23k 15/00

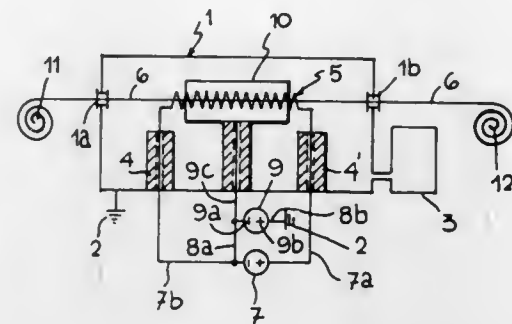
U.S. Cl. 219—121 EB

6 Claims

1. An electron heating device for a metallic wire or sheet comprising, in combination:

- a processing enclosure in which is maintained a vacuum of 10^{-3} to 10^{-5} torr and which is traversed by a continuously advancing metallic wire or sheet to be heated;
- an electron emitter mounted in the enclosure, said emitter comprising an electrical conductor in the form of a coil having at least one turn and along the axis of which the metallic wire or sheet is continuously advancing;
- a first source of current connected to said coil;
- a second source of current whose negative terminal is connected to said coil and which has a very strong negative potential, thereby establishing an electrostatic field for accelerating the emitted electrons toward the metallic wire or sheet; and

a metallic electron reflecting means connected to the negative terminal of said second source of current for reflecting back to the metallic wire or sheet any electrons which have escaped the electrostatic field.



ing back to the metallic wire or sheet any electrons which have escaped the electrostatic field.

3,852,561

CONSTANT SPEED CONTROL FOR AN AUTOMATIC WELDER

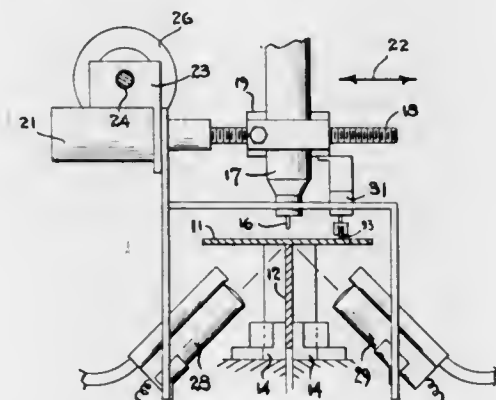
Dale R. Brubaker, 2906 Onrado, Torrance, Calif. 90503, and Daniel S. Weinstein, 3320 Starline Dr., Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 244,376, April 17, 1972, abandoned. This application Apr. 30, 1973, Ser. No. 355,626

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R

12 Claims



1. A constant speed control for a tool to be moved along a predetermined curved path in a plane of a workpiece, said control comprising:

- first means for moving said tool along a longitudinal axis parallel to the longitudinal axis of said workpiece;
- second means for simultaneously moving said tool along a transverse axis with respect to said longitudinal axis of said workpiece; and
- speed control means for maintaining a constant speed of said tool along said curved path, said speed control means coupled for travel with said tool.

3,852,562

WELDING CRATER FILL MECHANISM

Richard L. Linam, League City, Tex., assignor to Kelso Marine, Inc., Galveston, Tex.

Filed May 22, 1973, Ser. No. 362,779

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R

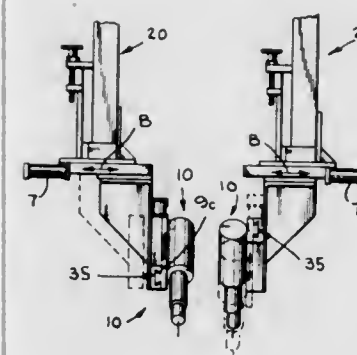
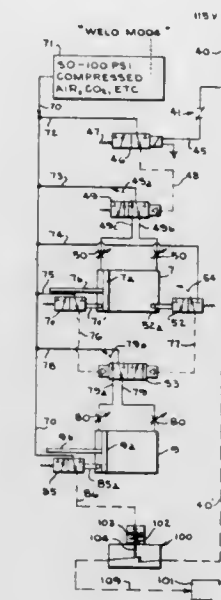
15 Claims

1. A welding crater fill mechanism for use with a welding gun on weldment components moving relative to the welding gun comprising:

- a. support means for supporting the welding gun;
- b. means on said support means to accommodate movement of the welding gun into position for welding the weldment components;

c. means to determine the length of the weld between the weldment components; and

a plurality of semiconductor devices diffused into the body of the semiconductor material;



d. means to effect movement of the welding gun at the termination of the weld length so that the welding gun overlaps at least a portion of the weld.

3,852,563

THERMAL PRINTING HEAD

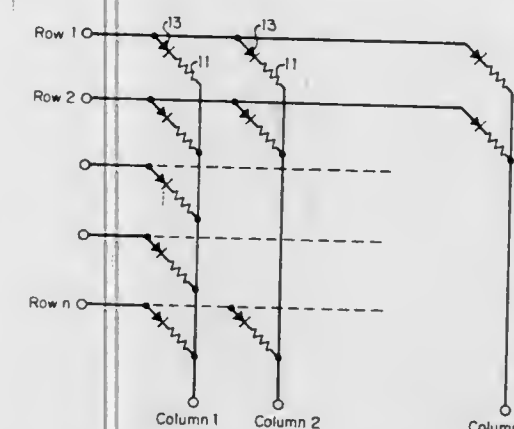
Jaime H. Bohorquez, Escondido, and Norman H. MacNeil, Poway, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 1, 1974, Ser. No. 438,883

Int. Cl. H05b 1/00

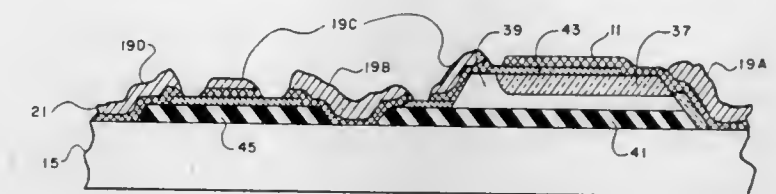
U.S. Cl. 219—216

5 Claims



1. A thermal printing device comprising:

- a sapphire substrate;
- a body of semiconductor material epitaxially grown on the substrate;
- a plurality of thin film heating elements on the body of semiconductor material;



a plurality of metallic interconnections among the heating elements and the semiconductor devices; and a plurality of highly conductive regions diffused in a single layer of the body of semiconductor material, said regions being interconnected among the heating elements and the semiconductor devices to serve as electrical connections therebetween.

3,852,564

ELECTRICALLY HEATED WINDOWS

Hans Baum, Porz-Urbach; Ralf Reinicke, Porz-Zundorf, and Dieter John, Porz-Eil, all of Germany, assignors to Saint-Gobain Industries, Neuilly sur-Seine, France

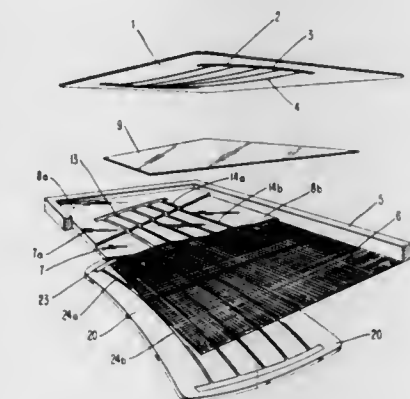
Division of Ser. No. 17,182, March 6, 1970, abandoned. This application Apr. 9, 1973, Ser. No. 349,431

Claims priority, application Germany, Mar. 7, 1969, 1911555; Mar. 8, 1969, 1911561

Int. Cl. H05b 3/06

U.S. Cl. 219—522

4 Claims



1. A thermal window comprising a smooth-surfaced transparent glass sheet, a plurality of opaque electrically conductive resistance lines of hardened metallic ink adhered to a surface of said sheet, at least some of said lines being of uniform composition along the length thereof and having a cross-section which is smaller over a common viewing portion of the length thereof between their ends than over the end portions thereof for increased heating within said viewing portion, said at least some lines extending substantially parallel to each other and having a width and being separated one from the other by a distance so as not to obstruct visibility through said glass sheet, and electrically conductive resistance lines adhered to said surface and connecting ends of said plurality of lines into a single circuit.

3,852,565

SOLDER FEEDING SOLDERING GUN WITH TEMPERATURE CONTROL

Alfred Kager, 71, Inkeidener Strasse, Frankfurt am Main, Germany

Filed Sept. 12, 1972, Ser. No. 288,466

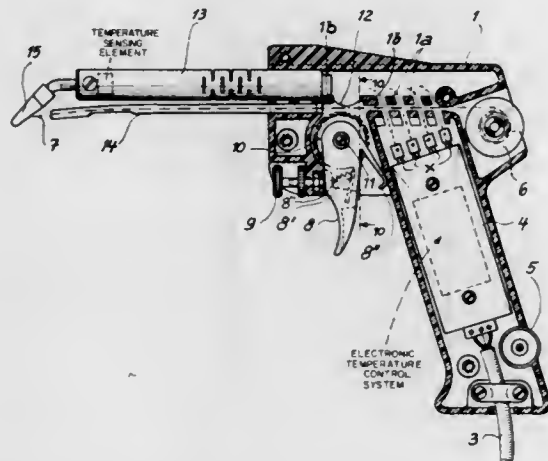
Int. Cl. H05b 1/02; B23k 3/06

U.S. Cl. 219—241

5 Claims

1. A one-hand soldering gun having temperature control means comprising

- a. a two-part hollow plastic casing including a butt portion;
- b. a barrel and a feed tube projecting forwardly from said casing;
- c. a heating element in the barrel;
- d. a replaceable soldering iron on the forward end of the barrel;
- e. means for feeding a soldering wire from a supply bobbin toward said soldering iron, said feeding means including a ratchet feed wheel rotatable on a pivot pin and arranged directly to contact and advance the soldering wire, a trigger having a longitudinally extending slot therein mounted on said pin, said ratchet wheel being located in said slot in said trigger, and a spring biased pawl mounted in said slot in said trigger for engaging said ratchet wheel;
- f. elements defining a slideway for the soldering wire;



- g. a pair of spaced slotted holders, a press-down spring detachably secured and extending between said slotted holders and pressing said soldering wire against the periphery of said feed wheel, and
- h. pins for the detachable affixation of terminals on a divided conductor plate supporting an electronic temperature control system contained inside the casing, said pivot pin, said elements defining the slideway, said slotted holders and said pins for the detachable affixation of the terminals on the divided conductor plate being formed integral with said one of the parts of the two-part plastic casing.

3,852,566

FAIL-SAFE ELECTRIC WATER HEATER

Virgil P. Quirk, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

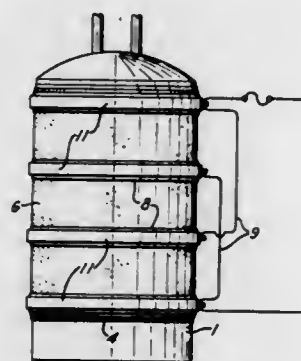
Division of Ser. No. 256,757, May 25, 1972. This application

Oct. 11, 1973, Ser. No. 405,440

Int. Cl. H05b 3/16; F24h 1/18

U.S. Cl. 219-311

6 Claims



1. A fail-safe electric water heater comprising a water tank, a porous layer of heat-fused insulating material powder on the tank and adhering thereto, a porous layer of heat-fused electrical resistance material powder covering the insulating layer

and adhering thereto, said resistance material having a negative temperature coefficient of resistivity, electric terminals connected to said resistance layer, dielectric material filling the pores of said porous layers, and means for electrically connecting the terminals with current-actuated circuit breaking means that will be operated by increased current flow through the resistance layer if that layer reaches a predetermined maximum temperature.

3,852,567

ELECTRIC HEATER UNIT

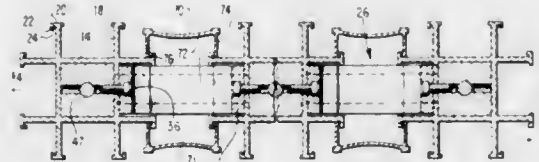
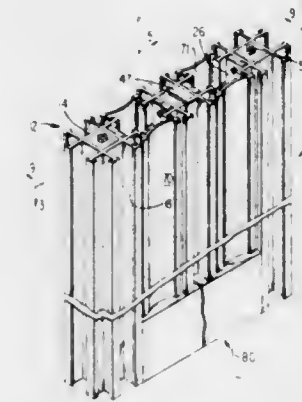
Roger P. Michaud, 5 McKinney Rd., Falmouth Foreside, Maine 04105, and Jacques Cordes, 30-32 Rue D'Anjou, Versailles, France (78)

Filed Jan. 9, 1973, Ser. No. 322,116

Int. Cl. F24h 9/00; H05b 1/00

U.S. Cl. 219-365

15 Claims



1. A heater unit comprising a plurality of elongated bars disposed in spaced generally parallel side by side relation one to the other with each bar defining a passage for containing a heating fluid, means interconnecting said bars adjacent opposite ends thereof to permit circulation of fluid from one bar to another, each of said bars having a pair of fins projecting from each of the front, rear and side faces thereof, said fins being substantially coextensive in length with said bars, means carried by said heater unit for heating the fluid adapted to circulate through said bars, a pair of elongated covers disposed between each next adjacent pair of bars and respectively adjacent the front and rear sides thereof, means for connecting said covers to said next adjacent bars whereby said pairs of covers and adjacent bars define air ducts for circulating air heated by the fluid adapted to circulate through said passages, each of said covers being generally channel-shaped in cross section, and means carried by the legs of each channel-shaped cover for securing the same to a pair of opposed side fins of the next adjacent bars.

3,852,568

ELECTRIC RESISTANCE HEATING ELEMENT

Jack M. Clement, Tecumseh, Mich., assignor to Gould Inc., Chicago, Ill.

Filed Feb. 1, 1973, Ser. No. 328,856

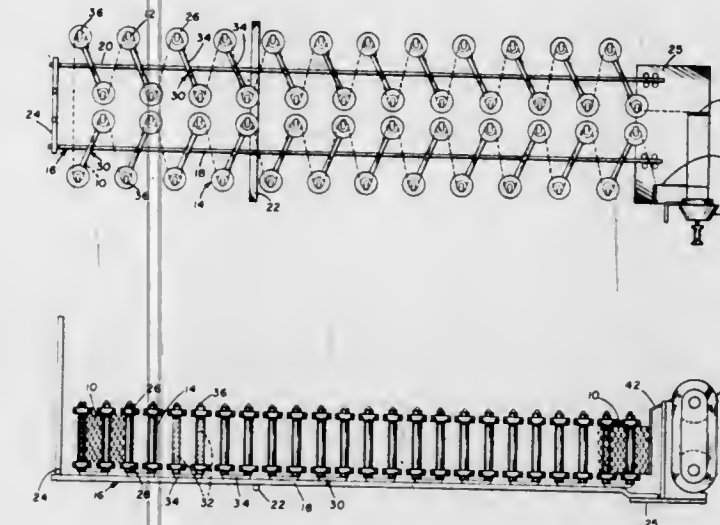
Int. Cl. H05b 3/02; F24h 3/04; H01c 3/00

U.S. Cl. 219-375

8 Claims

1. A resistance heating assembly comprising:
 - a. a support framework;
 - b. a plurality of tubular insulators supported on said framework and located at the points of direction reversal of a serpentine path;

- c. means coacting between the framework and each insulator for supporting said insulators in axially fixed relation; wherein the framework includes elongated wire member means and the insulator support means include a plurality of wire members each having one portion secured to said elongated wire member means and having a free end extending into a tubular insulator;



- d. a thin strip of apertured, foil-like electrical resistance material retained and supported by said insulators at intervals along the length of said strip, said strip being formed as a grid along a serpentine path; and
- e. electric terminal means communicating with each extremity of said strip.

3,852,569

ELECTRIC GRILL

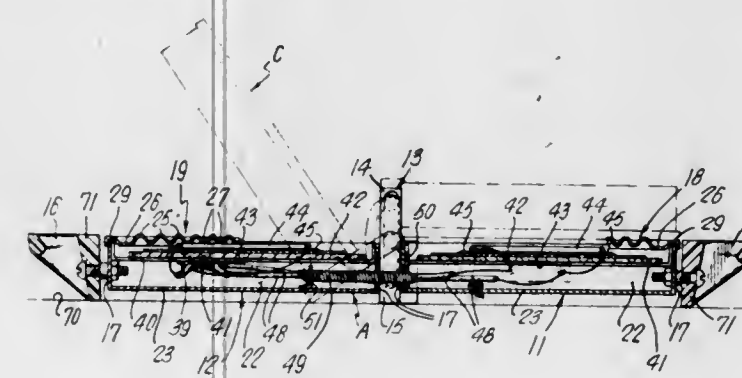
Alfred M. Potvin, Beauceville, Quebec, Canada, assignor to Heetco Ltee., Quebec, Canada

Filed Dec. 26, 1972, Ser. No. 318,558

Int. Cl. H05b 3/06

U.S. Cl. 219-525

2 Claims



1. An electric grill comprising a lower and an upper grill chassis, each said grill chassis having a bottom wall, sidewalls about said bottom wall and a grill plate made of heat-conductive metal and defining an upper wall; means to removably secure each said grill plate to their respective chassis, an electrically-insulated resistive heating element in each grill chassis intermediate said bottom wall and said grill plate and supported in close proximity to said grill plate, means electrically interconnecting the heating elements of both chassis, electrical terminals in said lower chassis connected to said electrically interconnecting means and adapted to be connected to an electric power source, a sheet of heat-insulating material secured in a substantially horizontal plane and elevated from said bottom wall, a reflector plate secured above said sheet of insulating material, said sheet and reflector plate disposed between said heating element and said bottom wall, said heating element being secured onto said reflector plate, whereby heat will be reflected on said grill plate positioned in

close proximity thereof, support means to support each said chassis bottom wall above a common horizontal plane, a hinge connecting said lower and upper chassis along one of their sidewalls to permit said upper chassis to be displaced through a 180° arc from a position where both said grill plates lie side by side in a common horizontal plane to a further position where both said grill plates face each other in substantially juxtaposition, each said grill chassis being of substantially rectangular shape and defining two elongated sidewalls and two end walls, said hinge having a channel member secured to each end wall of said bottom chassis adjacent the end edge of a sidewall and extending above said lower chassis grill plate, an elongated connector member secured to a sidewall of said upper chassis near each end edge thereof and extending above said upper chassis grill plate to define a connecting end, an elongated channel in said channel member extending vertically to the plane of said lower chassis grill plate, and a pin of circular transverse cross-section in said connecting end of said connector member and extending perpendicular thereto and outwardly towards a respective end wall of said upper chassis, each said pin being received within a respective channel to thereby interconnect said upper chassis of said lower chassis and permitting said upper chassis displacement and said upper chassis to be spaced a predetermined distance above said bottom chassis when juxtaposed, and further including a handle member secured to each said lower and upper chassis and located centrally of the side wall remote from the hinge.

3,852,570

FLEXIBLE ELECTRICAL RESISTANCE HEATING ELEMENT

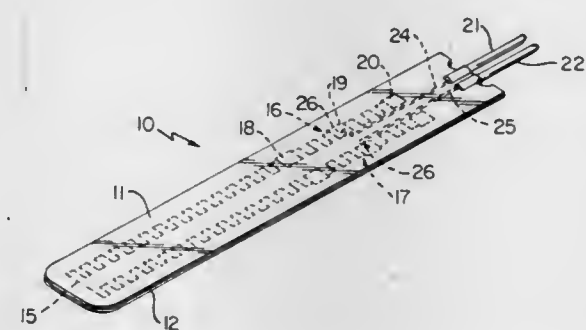
Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 29, 1973, Ser. No. 410,539

Int. Cl. H05b 3/34

U.S. Cl. 219-528

10 Claims



1. An electrical element comprising a conductor having a pair of lead attaching ends, each lead attaching end having a plurality of spaced and predetermined lead attaching parts therealong, a pair of leads respectively electrically attached to one preselected lead attaching part of each end of said conductor so that a desired electrical resistance is provided through said conductor between said leads, and an electrically non-conductive and flexible encasing structure having opposed ends completely covering said conductor and having part of one of said opposed ends covering part of said leads whereby the remainder of said leads extend from said one opposed end of said encasing structure.

3,852,571

SYSTEM OF TRANSFERRAL OF FUNDS

Bruce Wood Hall, Syosset, and Michael J. Shade, Coram, both of N.Y., assignors to Hempstead Bank, Hempstead, N.Y.

Continuation of Ser. No. 38,173, May 18, 1970. This

application Aug. 16, 1972, Ser. No. 280,984

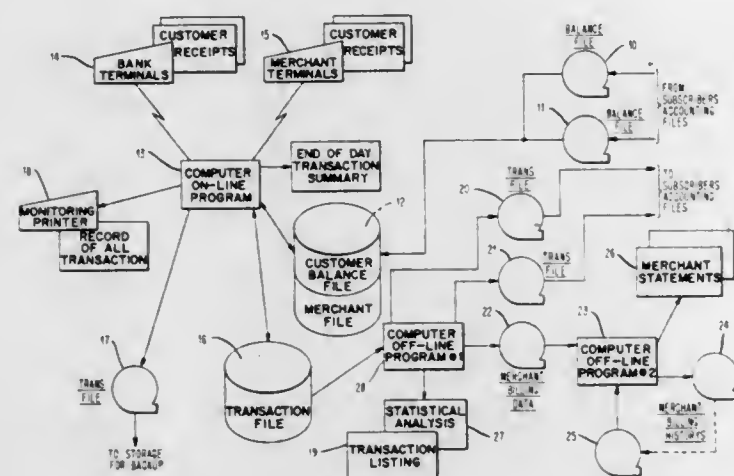
Int. Cl. G06k 15/18, 7/08, 7/00

U.S. Cl. 235-61.7 B

8 Claims

1. A system for transferring funds between customers' accounts and retail merchants' accounts comprising:

an identification card for each of a plurality of customers, each card having machine sensible identifying indicia, input terminals at the points of sale of the retail merchants for encoding the identification of the retail merchant, the identifying indicia of the customer making a transaction and the amount to be transferred, means at a central location for storing the customer's available balance which can be drawn against the accounts of a plurality of customers,



means at said central location for storing retail merchants' accumulated credit for the accounts of a plurality of said retail merchants,

a communication link connected to said input terminals and connected to said central location for transmitting the encoded identifying indicia and amount to be transferred from each input output terminal to said central location, a digital computer at said central location connected to said means at said central location for completing the transfer which simultaneously debits said amount against said customer's available balance and credits said amount to the identified retail merchant's accumulated credit, in response to transmission of said encoded identifying indicia and said amount to be transferred,

means for applying to said communications link a signal signifying completion of transfer only if the customer's stored available balance exceeds the amount to be transferred and for applying a signal indicating no transfer if the amount exceeds the customer's available balance, and a printer at each point of sale connected to an input terminal at that point of sale and producing a hard copy receipt recording the transaction in response to the receipt of said signal signifying completion of transfer, said receipt providing visual evidence of the transfer for comparison with the customer's statement.

3,852,572

IDENTITY CARD READER

Jean-Daniel Nicoud, Belmont, Switzerland, assignor to Sodeco/Saia, Geneva, Switzerland

Filed Jan. 3, 1973, Ser. No. 320,749

Claims priority, application Switzerland, Jan. 3, 1972, 3072/72

Int. Cl. G06k 7/10

U.S. Cl. 235-61.11 E

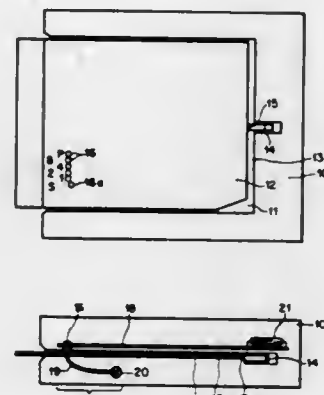
4 Claims

1. Card reading apparatus for reading cards having a plurality of information bearing tracks, with indicia arranged in a predetermined pattern, including a direction synchronization track and a plurality of data, tracks, the indicia being arranged in columns transverse to the information bearing tracks, comprising:

a housing having a slot arranged therein for accommodating a card, said slot having a closed end and an open end for receiving the card;

detection means for each track to detect the indicia present in each track, said detection means for the direction

synchronization track being offset relative to said detection means for said data tracks; direction indicating means including bistable means electrically coupled to said synchronization track detection means and said data detection means for producing an error signal corresponding to a particular state of said



bistable means to indicate that the card is being moved in the wrong direction relative to said detection means; end of reading indicating means coupled to data detection means for producing a signal in response to removal of the end of the card from the slot; and data reading means coupled to data detection means for reading the information in the data tracks.

3,852,573

ALIGNMENT CORRECTION FOR READ SCAN RASTER FIELDS

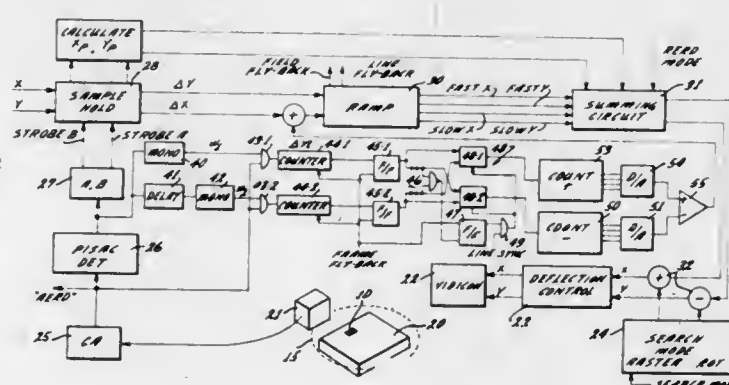
Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Nov. 16, 1973, Ser. No. 416,372

Int. Cl. G06k 7/015, 19/06; G08c 9/06

U.S. Cl. 235-61.11 E

9 Claims



1. In a method for preparation for reading information from a data carrier, the information being defined by contrasting data markings arranged on the carrier within a particular area on the carrier bounded by an upper and/or a lower boundary which is not necessarily delineated by a contiguous marking, whereby above the lower or below the upper boundary markings are provided having extension transverse to the boundary, there being space free from markings below the lower and above the upper boundaries, the method including providing a scanning raster defined by a scanning line extending in a first direction and shifting the scanning line in a second direction transverse to the first direction, and providing a video signal in response to scanning by means of the raster, the method further including orienting the scanning raster so that the scanning lines run at least approximately parallel to the boundaries, the improvement comprising:

providing video signal manifestation of passage of the scanning lines across at least one of the boundaries, the passage defined by passage across plural markings as preceded or succeeded by absence of such passage;

providing representation of different phases of such passages in and along the respective scanning lines for different ones of the scanning lines in the same raster field; selecting a plurality of such lines in association with different phases of these lines to establish a representation of angular misalignment between the direction of the scanning lines and the direction of the boundaries; and correcting the orientation of the raster field in accordance with the latter representation, prior to reading of the data by operation of the corrected raster field.

3,852,574

DIGITAL RATE METER

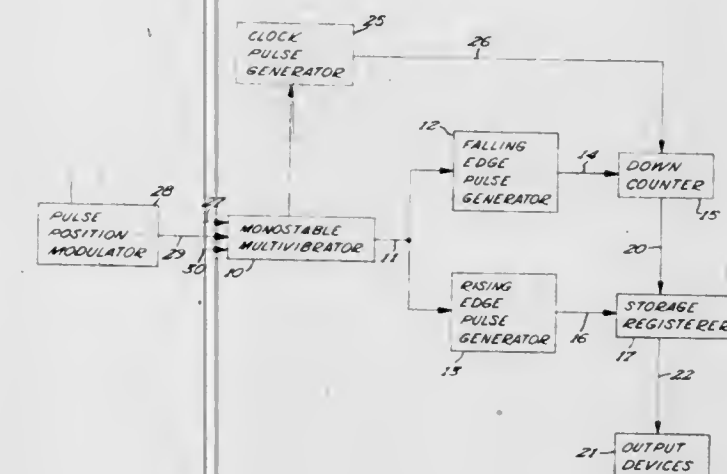
Aydin M. Bilgutay, 7424 W. Shore Dr., Minneapolis, Minn. 55424, and Ilhan M. Bilgutay, 2601 Sunset Blvd., Minneapolis, Minn. 55416

Filed Nov. 6, 1972, Ser. No. 304,021

Int. Cl. H03k 21/34

U.S. Cl. 235-92 PL

13 Claims



1. In a digital rate meter for approximating the frequency of a repeatable function, the repeatable function frequency being lower than a first predetermined frequency, of the type having clock pulse generator means and register means responsive to said clock pulse generator means, the improvement which comprises:

said clock pulse generator means being selectively sequentially operable at first and successive clock pulse repetition rates, said first repetition rate being substantially equal to $1/n$ times the increase in period resulting from a decrease in frequency from said first predetermined frequency to a second lower frequency, n being a constant number greater than 1, with said successive repetition rates being substantially equal to $1/n$ times the increase in period from successive decreases in frequency, each successive decrease in frequency being substantially equal to the decrease in frequency from said first predetermined frequency to said second lower frequency; and means responsive to said clock pulse generator means for sequentially switching said clock pulse generator means from said first repetition rate through said successive repetition rates, said switching being effected after n pulses at each repetition rate.

3,852,575

STRAPPABLE INACTIVITY TIMER FOR DATA SET

Leander Bruce Daniels, and Richard D. Fretwell, both of Columbus, Ohio, assignors to MI², Inc., Columbus, Ohio

Filed Mar. 21, 1973, Ser. No. 343,206

Int. Cl. G06m 3/02

U.S. Cl. 235-92 T

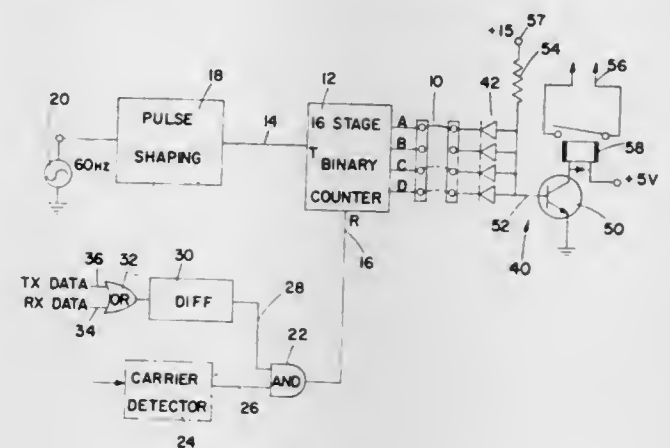
6 Claims

1. A strappable inactivity timer for a data set, said data set being connected to a 60 Hz power source and having a carrier detector, the timer comprising:

a. a strapping terminal board having a plurality of adjacent, non-conductively connected, associated terminal pairs which are selectively connectable;

b. a multiple stage binary counter having a trigger input connected to 60 Hz pulses from said power source and having outputs of selected stages connected to one of each of said associated terminal pairs;

c. a first AND gate logic means having its output connected to a reset input of said counter having a first input connected to said carrier detector and a second input connected to the data set circuit at a node where communicated data pulses occur, for resetting said counter in response to the presence of a carrier and of data bits; and



d. decoding means having inputs connected to the other terminal of each of said associated pairs and an output connected to a clear circuit of said data set for clearing said data set in response to actuation of all of stages of said counter to which the inputs of said decoder means are selectively connected.

e. an OR gate having one input connected to a source of transmitted data bits and another input connected to a source of received data bits;

f. a differentiator circuit with its input connected to the output of said OR gate and its output connected to said second input of said first AND gate.

3,852,576

PREMIUM ALLOCATION DEVICE

Kenneth Norman Rudd, Eight Greenacres, London Rd., Ashington, England

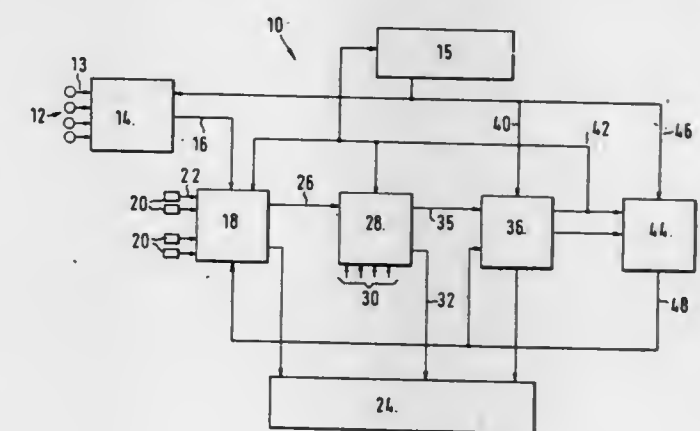
Filed Mar. 29, 1973, Ser. No. 346,193

Claims priority, application Great Britain, Mar. 29, 1972, 14764/72; Feb. 7, 1973, 5986/73

Int. Cl. G07c 3/10

U.S. Cl. 235-92 GA

13 Claims



1. Apparatus for determining the allocation of a bonus comprising: means for registering a plurality of individual sales transactions and for providing a total indicative of the sum

value of the individual transactions added together, means responsive when the total reaches a predetermined amount to condition the apparatus in readiness to allocate said bonus, and means for delaying the allocation of said bonus so that any customer making a sales transaction at the time that said predetermined amount is reached is prevented from receiving said bonus.

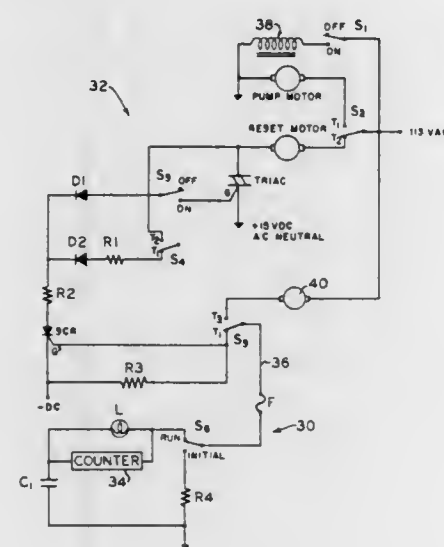
3,852,577

REMOTE VENDING CONTROL APPARATUS

Lawrence Michael Moon, and Herbert W. Timms, both of Tucson, Ariz., assignors to Herbert W. Timms, Tucson, Ariz.
Filed Apr. 2, 1973, Ser. No. 346,843
Int. Cl. H03k 21/32

U.S. Cl. 235—92 FL

5 Claims



1. A remote vending control apparatus whereby a remote controller may enable and monitor the dispensing of gasoline through a solenoid control valve of a motor actuated gasoline pump having a computer for registering the amount of gasoline dispensed by a customer, comprising:

- first switch means controlled by the remote controller for initially gating an SCR into a conducting state and subsequently providing a path of conduction from a signal generating source to a monitoring device;
- second switch means connected to the SCR and activated by the customer for initializing the gasoline pump computer and enabling the pump to dispense gasoline; and
- third switch means, connected to the first switch means by a single control wire, which is automatically actuated after the initialization of the computer for activating the solenoid control valve and pump motor and further enabling the signal generating source and connecting the signal generating source to the first switch means, the control wire carrying an initialization signal to the SCR prior to actuation of the third switch means and signals from the signal generating source to the monitoring device after such actuation.

3,852,578

CONTROL SYSTEM AND METHOD FOR MACHINE OR PROCESS HAVING DEAD TIME

James S. Rice, Columbus, Ohio, assignor to Industrial Nuclear Corporation, Columbus, Ohio

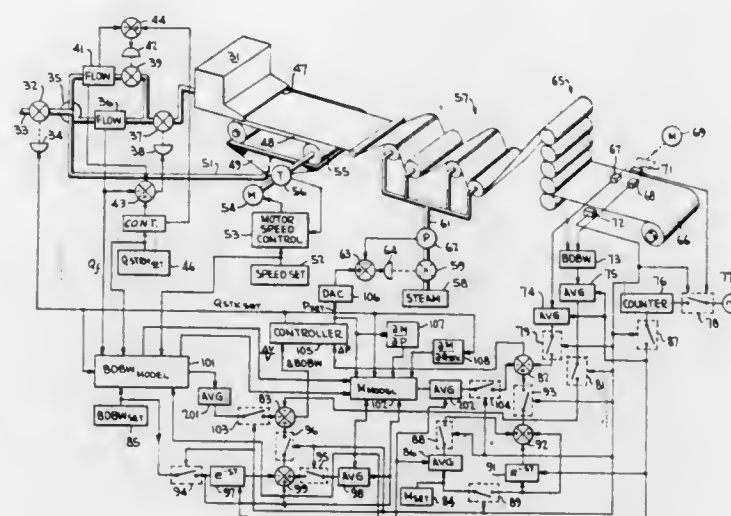
Filed Feb. 3, 1970, Ser. No. 8,377
Int. Cl. D21d 1/20; D21f 1/06

U.S. Cl. 235—151.1

56 Claims

1. A method of controlling an output of a machine or process having a dead time between the time a control action affecting the output is taken and the time the output is affected by the control action, comprising the steps of sampling the output at discrete time intervals which are less than the dead time, deriving a signal indicative of the error between the

sampled output and a set point for the output, in response to the error signal initiating control for the machine or process, providing a model of the machine or process, coupling to said model a signal indicative of the control action for the machine or process, and modifying the response of said model with the



magnitude of the error signal to determine the magnitude of the control for the machine or process, said model response having characteristics such that subsequent transient and steady state errors between the output and the setpoint in response to the control action are fully corrected at time intervals which are less than the dead time.

3,852,579

METHOD AND APPARATUS FOR DETERMINING THE SURFACE CONFIGURATION OF ELONGATE OBJECTS, PARTICULARLY LOGS

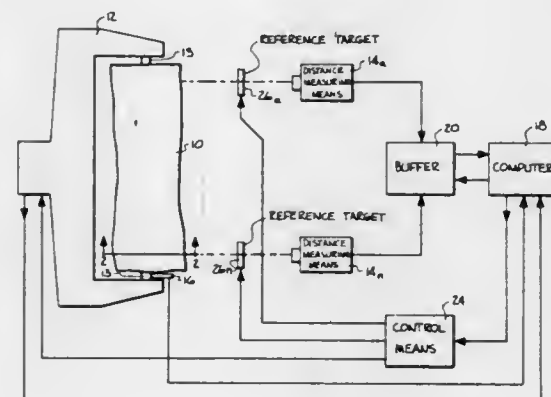
Fred Sohn, Roseburg; Larry C. Hunter, and James Frederick Holmes, both of Corvallis, all of Oreg., assignors to Sun Studs, Inc., Roseburg, Oreg.

Filed Mar. 23, 1973, Ser. No. 344,175

Int. Cl. G01b 11/10

U.S. Cl. 235—151.3

13 Claims



1. An apparatus for determining the surface configuration of an elongate object, such as a log, comprising:

- a. means for gripping said object by its respective ends and rotating it about a longitudinal axis;
- b. a plurality of distance measuring means spaced along the length of said object for scanning the circumferential contour of said object at said spaced locations, while said object is being continuously rotated each of said distance measuring means comprising an optical ranging system in the form of a transceiver means for radiating light energy which is then reflected back from an opposed point on the surface of said object and processed by said transceiver to produce a data signal

descriptive of said circumferential contour at said respective spaced location; and
c. a computer for processing said data signals received from said plurality of distance measuring means to determine the surface configuration of said object.

3,852,580

HYPOTENUSE CORRECTION CIRCUIT

Clifford Michael Bailey, Eaton Ford, England, and Gerardus Adrianus Mous, Overloon, Netherlands, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

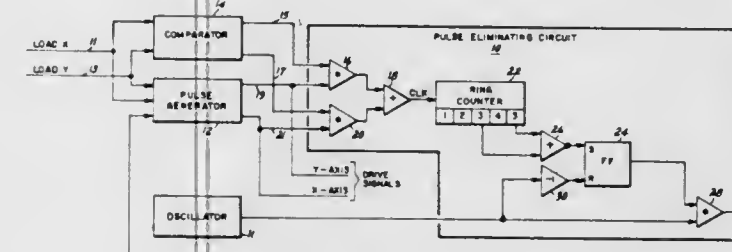
Filed Nov. 1, 1973, Ser. No. 411,746

Claims priority, application Great Britain, Mar. 1, 1973, 10036/73

Int. Cl. G06f 15/46, 1/02

U.S. Cl. 235—152

5 Claims



1. An apparatus of the type for use in a numerical control comprised in part of a pulse generator responsive to a feedrate signal and input signals representing displacements of a movable member along at least two perpendicular axes of motion for producing periodic drive signals causing said member to move at a predetermined velocity along a predetermined path defined by said displacements, wherein the improvement comprises:

- a. means for producing a pulse train representing the predetermined velocity;
- b. means responsive to the input signals for comparing said signals and producing an output signal in response to an input signal representing the largest displacement;
- c. means responsive to the output signal and one of the drive signals corresponding to the axis of motion having the shortest displacement for generating elimination pulses as a function of a predetermined fraction of the number of periods of the one of the drive signals; and
- d. means responsive to the pulse train and the elimination pulses for producing the feedrate signal by inhibiting one pulse in the pulse train in response to each elimination pulse.

3,852,581

TWO BIT BINARY DIVIDER

Fred T. Reynard, King of Prussia; Donald E. Feldpush, Drexel Hill, and Joseph S. Schibinger, King of Prussia, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 14, 1972, Ser. No. 314,979

Int. Cl. G06f 7/52

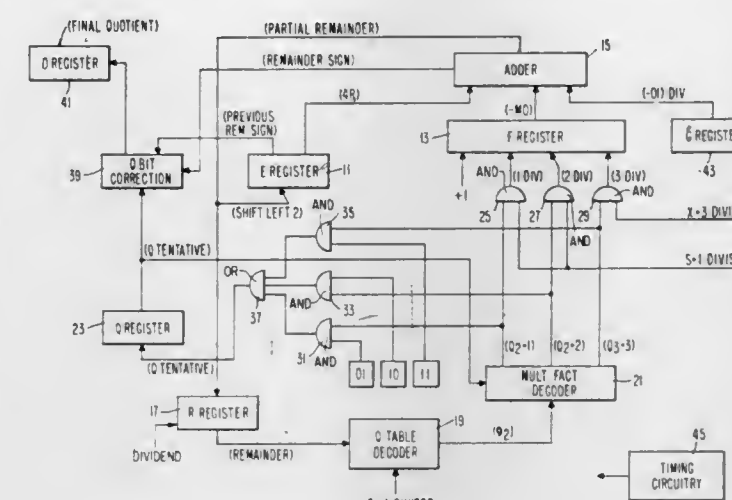
U.S. Cl. 235—164

6 Claims

1. A 2-bit, non-restore, look-ahead, binary divider, comprising:

- means for subtracting a multiple of the divisor from four times the remainder for providing a new remainder in each cycle of operation;
- means for developing a tentative divisor multiplication factor in each cycle of operation and concurrently with the operation of said subtracting means, said developing means being tied to said subtracting means;
- means for correcting said tentative factor developed, concurrently with the operation of said subtracting means, said factor correcting means being connected to said tentative factor developing means;

means for generating tentative bits of quotient in each cycle of operation, being connected to said factor correcting means; and
means for correcting said tentative quotient bits generated



in each operating cycle to corrected quotient bits, said quotient bit correcting means being connected with said tentative quotient bit generating means and said subtracting means.

3,852,582

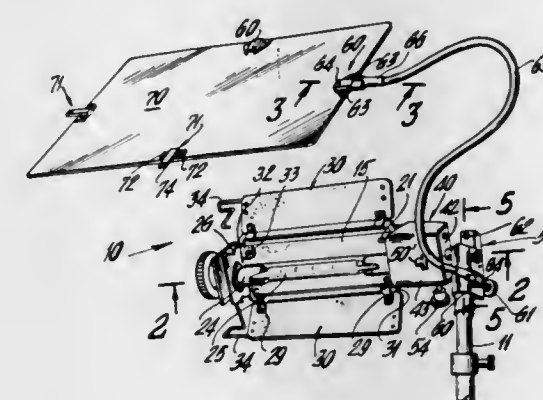
LIGHTING ARRANGEMENT FOR PHOTOGRAPHIC WORK

Ross Lowell, P.O. Box 114, Lincolnale, N.Y. 10540
Filed June 20, 1973, Ser. No. 371,933

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

20 Claims



1. A readily portable lighting arrangement for photographic work comprising, in combination, a luminaire, including a relatively elongated reflector, as a main component; lamp mounting and connection means on said luminaire for mounting a lamp in operative relation with said reflector; and luminaire mounting means secured to said reflector, and arranged to clampingly engage a mounting post for adjustably mounting the luminaire thereon; said luminaire mounting means being formed with aperture means adapted to disengageably receive mounting elements of additional lighting arrangement components; said luminaire including a substantially rectangular panel having a highly reflecting outer surface and constituting said reflector; an inner housing member including a substantially rectangular planar base and first and second end walls bent outwardly from said base; means mounting said reflector panel on said base with at least portions of said reflector panel spaced from said base to provide passages for flow of cooling air between said panel and said base; respective lamp sockets mounted on each of said end walls and extending toward each other in alignment to receive a tubular lamp; an outer housing member having a substantially rectangular planar base extend-

ing parallel to the base of said inner housing member and having an outwardly extending wall extending in spaced parallel relation to said first end wall of said inner housing member; and means securing said housing member bases to each other in spaced parallel relation to provide a further passage for flow of cooling air between said inner and outer housing members.

3,852,583 HEADLAMP

Oliver Puyplat, Paris, France, assignor to Cibil Projecteurs, Bobigny, France

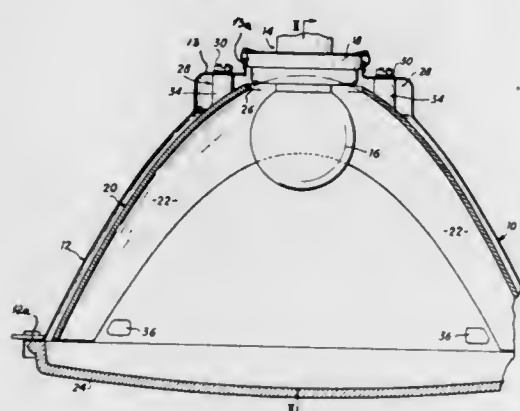
Filed June 19, 1972, Ser. No. 264,194

Claims priority, application France, June 18, 1971, 71.22333

Int. Cl. F21v 7/00

U.S. Cl. 240—41.35 R

2 Claims



1. An automobile vehicle headlamp, comprising a rigid external metallic body, a reflector within said body, said reflector having at least one parabolic reflecting area, and an electric bulb optically cooperating with said reflector to create a luminous beam, said body having a crown surrounding an opening, said crown and body being formed as a one piece element a bulb holder within said opening and secured to said crown, said bulb holder supporting said bulb, said reflector being a rigid structure formed of molded plastic material and having a central opening in registry with the opening in said body, said bulb being of such a size so as to be capable of passing freely through said opening without contacting said reflector, and means for securing said reflector to said body only in the vicinity of said openings, said securing means comprising lugs molded integral with said reflector and abutting said crown of said body, and fasteners extending through said crown into said lugs, and abutments projecting inwardly from said body near the free end of said reflector for steadying said reflector.

3,852,584 OMNIDIRECTIONAL LIGHT BEACON WITH TOROIDAL FLASH LAMP

Robert E. Levin, South Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 22, 1972, Ser. No. 317,791

Int. Cl. F21v 7/00

U.S. Cl. 240—41.35 R

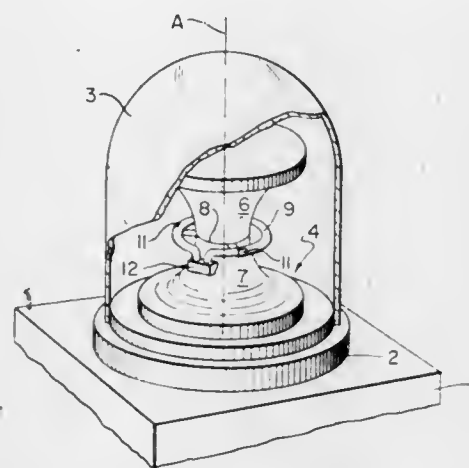
1 Claim

1. A multidirectional light comprising: a lamp of toroidal volume having an axis concentric with the toroidal volume and having its central plane intersected perpendicularly by the lamp axis, the lamp being curved substantially around and equidistant from the lamp axis, a reflector encircled by the lamp with reflecting surfaces extending substantially above and below the central plane of the lamp, and means to mount the lamp in fixed relation thereto, the reflector comprising a continuous surface of revolution curved around the lamp axis and defined by a generatrix

of the surface intersecting the central plane of the lamp between the lamp and its axis, wherein the generatrix is defined by the equation:

$$(r^2 - 2Dr \cos p + D^2 - R^2)^{1/2} - R \tan^{-1} [(r^2 - 2Dr \cos p + D^2 - R^2)^{1/2} / R] + R \tan^{-1} [r \sin p / (r^2 \cos^2 p - p - 2Dp \cos p + D^2)^{1/2}] - (r^2 \cos^2 p - 2Dr \cos p + D^2)^{1/2} - 2H = 0$$

wherein p is the angle to a given locus on the generatrix in the vertical plane, r the variable radius to the locus, R the fixed



radius of the toroidal lamp volume, D the displacement of the lamp volume center in the central plane of the lamp from the vertex of the reflector, and H a parameter dependent on reflector size, the central plane of the lamp being vertically asymmetric with respect to the vertex of the reflector so as to produce an asymmetric reflected light distribution pattern with a peak intensity close to and above the lowermost ray issuing from the reflector.

3,852,585 MOTOR VEHICLE LAMP UNIT

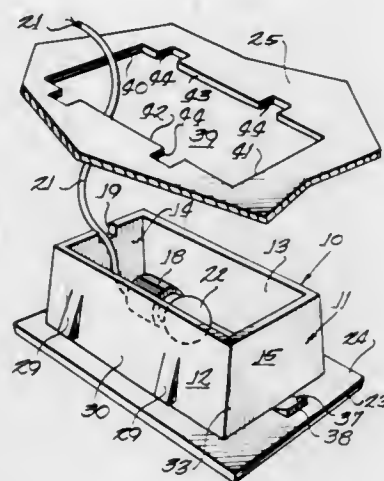
Ronald N. Brunger, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Mar. 15, 1973, Ser. No. 341,657

Int. Cl. B60q 3/02

U.S. Cl. 240—57

9 Claims



1. A vehicle lamp unit supported upon an interior wall panel of a vehicle body, said wall panel having an opening formed therethrough, the combination including said wall panel, comprising:

an open-ended lamp housing having means for supporting a lamp therein, the lamp housing being movable along a straight line substantially normal with respect to the wall panel to effect insertion of the lamp housing through said panel opening and placement of said lamp housing in a first position wherein a plurality of spaced, generally flat, outwardly facing wall surface portions of said lamp housing are disposed closely adjacent spaced respective edge portions of said wall panel partially defining said opening

therethrough, said lamp housing being bodily movable with respect to said wall panel from said first position to a second position along a substantially straight line wherein one of said generally flat, outwardly facing wall surface portions of said lamp housing is moved away from and is spaced from the respective edge portion partially defining said panel opening that said one of said flat, outwardly facing wall surface portion was disposed closely adjacent to when said lamp housing was in its first position;

translucent lens means integrally formed with and closing one end of said lamp housing;

a support flange integrally formed with and extending radially outwardly from said lamp housing and said lens means adjacent the periphery of said lens means, said support flange being effective to abut said wall panel when said lamp housing is in its first and second positions, said support flange being effective to bridge the space formed between said one of said outwardly facing wall surface portion of said lamp housing and said last-mentioned respective edge portion partially defining said panel opening when said lamp housing is in its second position; and

releasable securing means carried by the lamp housing and operably engageable with the wall panel when the lamp housing is in its second position to firmly connect the lamp housing to the wall panel, said releasable securing means being effective to operably engage the wall panel upon movement of said lamp housing from its first position to its second position.

3,852,586

HOUSING FOR A ROAD VEHICLE LAMP

Samuel Michael Goodyer, Sutton Coldfield, and John Leslie Mulhall, Solihull, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England

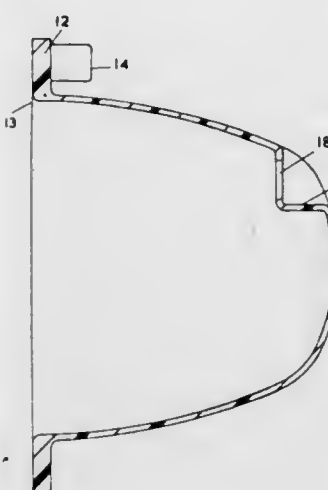
Filed May 17, 1973, Ser. No. 361,246

Claims priority, application Great Britain, May 20, 1972, 23834/72; Nov. 7, 1972, 51267/72

Int. Cl. B60g 1/00

U.S. Cl. 240—57

7 Claims



1. A housing for a road vehicle lamp, said housing comprising a body having a flange projecting therefrom, said flange being adapted to be secured, in use, to the bodywork of the road vehicle so as to mount the housing on the vehicle, wherein said flange is formed from a foamed, moulded synthetic resin material.

3,852,587

COMBINATION HEAD AND CASE MOUNTED LIGHT

Carlton L. Koehler, Box 236, Avalon, Calif. 90704

Filed Nov. 5, 1973, Ser. No. 412,531

Int. Cl. A42b 1/24

U.S. Cl. 240—60

8 Claims

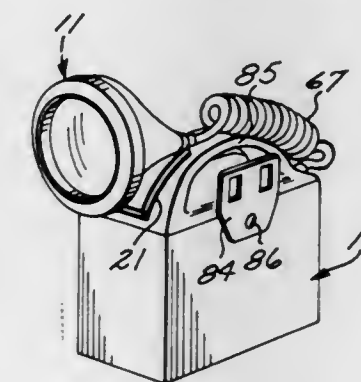
1. Combination head and case mounted light apparatus for use with a flexible diver's hood which assumes various convex

curvatures corresponding with the heads of wearers, comprising:

first mounting means attached to the hood and projecting forwardly and rearwardly over the top of said hood, said first mounting means being flexible so as to conform to various curvatures taken by said hood;

a light device including a housing having one side formed with a concave curvature for complementally fitting said various convex curvatures of said first mounting means; a battery-powered lamp mounted on one end of said housing;

second mounting means mounted within the concave curvature on said one side of said housing, said second mounting means being cooperative with said first mounting means in response to said first and second mounting means being pressed into oblique contact with one another to selectively mount said light device from said hood;



a battery case including battery means and an exterior convex surface for complementally interfittng said concave curvature on said one side of said housing; carrying means for carrying said battery case from said wearers;

third mounting means on said convex curvature of said battery case and cooperative with said second mounting means in response to being brought into oblique contact therewith to selectively mount said light device from said battery case; and

elongated electrical lead means leading from said light device to said battery whereby said hood may be worn by different wearers and will conform to the forward and rearward curvature of the heads of said wearers and said light device may be selectively mounted from said head-piece and said battery case.

3,852,588

ELECTRIC LAMP MEANS

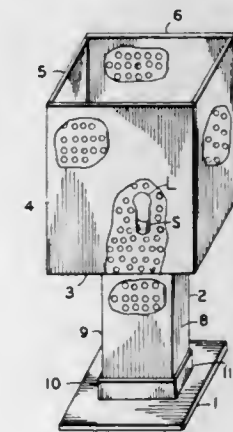
Ollie Lee Crawford, 18 Wagner Ave., Roosevelt, N.Y. 11575

Filed Nov. 29, 1973, Ser. No. 420,260

Int. Cl. F21v 1/00

U.S. Cl. 240—108 R

3 Claims



1. Electric lamp means comprising means to mount an electric light,

light permeable reflective means connected to and surrounding said mounting means on all sides comprising a plurality of honeycomb panels with apertures separated by thin walls, said apertures covering a greater portion of said panels than said separating walls, said panels being covered on all surfaces with a reflecting covering to thereby enhance the direct and indirect light emerging from said lamp.

3,852,589

READER FOR RADIOTHERMOLUMINESCENT DOSIMETER

Roger Chenault, Boulogne, and Raymond Prigent, Gif-sur-Yvette, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

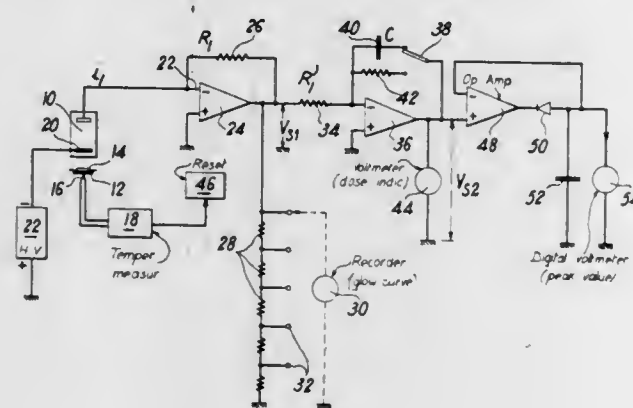
Filed Dec. 1, 1970, Ser. No. 94,074

Claims priority, application France, Dec. 5, 1969, 69.42147

Int. Cl. G01t 1/11, 1/20

U.S. Cl. 250-71.5 R

4 Claims



1. A device for reading a radioluminescent dosimeter comprising: means for heating the dosimeter in accordance with a predetermined law; a transducer sensitive to the light emission of the dosimeter and delivering an electric current proportional to the light; and amplifying and measuring means, wherein said means comprise a first operational linear amplifier, a second operational amplifier, manually operable means for closing a loop including said second amplifier either on an integration capacitor or on a high value resistance, a voltmeter for measuring the output voltage of said second amplifier, said voltmeter providing the integrated light emission at the end of the heating period when said second amplifier is closed on said capacitor, a third operational amplifier, a loop associated with said third operational amplifier and comprising rectifier means, and voltage measuring means for measuring the output voltage of said diode, said first, second and third amplifiers being connected in cascade.

3,852,590

COORDINATE CONTOUR TRACER

Frans Brouwer, Glencoe, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,633

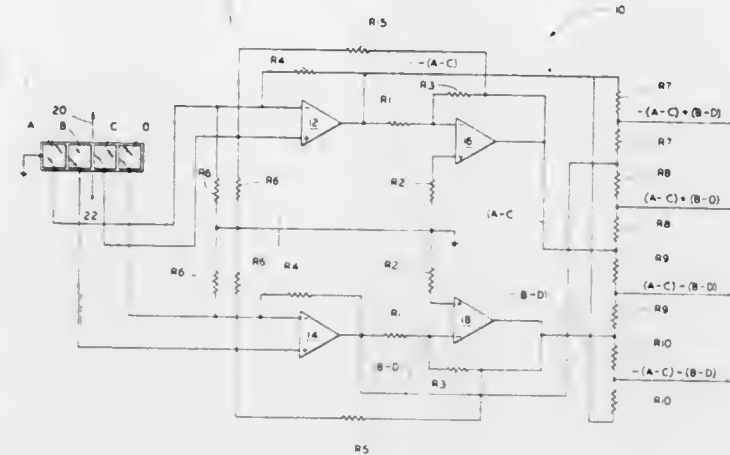
Int. Cl. G06k 11/02

U.S. Cl. 250-202

6 Claims

1. For use in a contour tracing system of the type including a rotatable tracing head having a resolver rotated with said head by a steering motor to control the orientation of said head and resolver relative a longitudinally extending contour and enable said resolver to control the speed of a pair of coordinate drive motors for moving said head longitudinally along said contour, the improvement comprising a plurality of light sensitive cells of substantially equal area carried by said

head, said cells arranged in adjacent juxtaposed positions with two of said cells intermediate the other of said cells, said two intermediate cells being offset from the other cells in the direction of head movement, means for combining the output of one of said intermediate cells with the output of a respective one of the other cells spaced adjacent the other intermediate cell and the output of said other intermediate cell with a



respective other cell spaced adjacent one intermediate cell to provide a respective combined output signal for each intermediate cell and respective other cell, and means enabling said combined output signals to be combined for application to said steering head motor to control said steering head motor and coordinate drive motors for moving said head and cells longitudinally along said contour.

3,852,591

GRADED BANDGAP SEMICONDUCTOR PHOTODETECTOR FOR EQUALIZATION OF OPTICAL FIBER MATERIAL DELAY DISTORTION

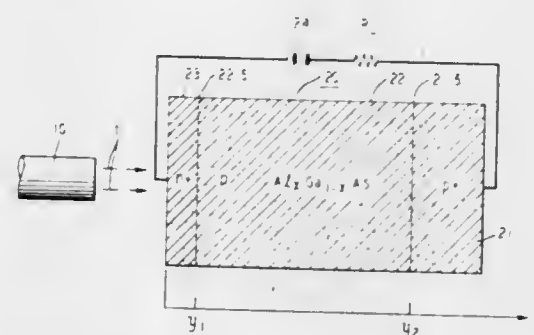
Tien Pei Lee, Middletown, and Tingye Li, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 19, 1973, Ser. No. 408,086

Int. Cl. H01j 39/12

U.S. Cl. 250-211 J

13 Claims



1. Apparatus for equalizing the delay distortion of optical radiation, which comprises a semiconductor body portion having a graded energy bandgap terminated by a charge carrier collection means, whereby different wavelength components in said radiation incident upon the body are absorbed in the body portion at different average positions according to said wavelength, thereby producing charge carriers which drift within the body portion having the graded energy bandgap to the charge collection means, said body located in the path of the optical radiation emanating from an optical fiber in which different wavelength components of said radiation undergo different optical time delays in accordance with the material dispersion property of the fiber, said graded energy bandgap being such that the different optical time delays of the different

wavelength components in the fiber are substantially compensated by the different delays of the drifting charge carriers in the body portion generated by said wavelength components.

3,852,592

AUTOMATIC DOOR OPERATOR

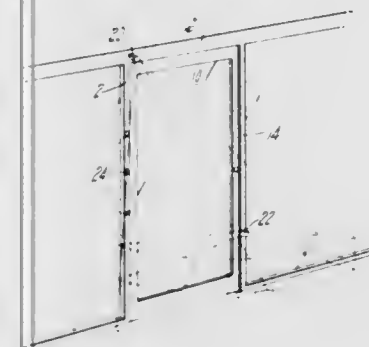
Andrew E. Scoville, Ellington, and William R. Davis, West Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed June 7, 1973, Ser. No. 367,734

Int. Cl. H01j 39/12

U.S. Cl. 250-221

9 Claims



1. An automatic door operator comprising a reversible drive including a drive motor for powering a door through a door opening and door closing cycle and a traffic responsive control therefor, said traffic responsive control comprising radiant energy emitter means for emitting a divergent beam of radiant energy spanning the path of travel of traffic through the door and radiant energy detector means spaced from said emitter and having an axis of sensitivity disposed transversely of said beam of radiant energy to intersect said beam and define in the intersection thereof a discrete divergent three-dimensional control zone for sensing diffuse reflected radiant energy from traffic within said three-dimensional control zone to control the actuation of said reversible drive, said three-dimensional control zone being spaced above and having a lower boundary substantially parallel to the floor along said path of travel of traffic through the door.

3,852,593

PULSED NEUTRON CAPTURE LOGGING FOR DETERMINING RESIDUAL OIL

Joseph D. Robinson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 300,700, Oct. 25, 1972, abandoned. This application May 10, 1973, Ser. No. 359,160

Int. Cl. G01v 5/00

U.S. Cl. 250-259

6 Claims

1. A method for determining the residual oil present in a formation by the measurement of decay of capture gamma activity using a pulsed neutron capture technique wherein a portion of the indigenous formation fluid is displaced by another fluid and measurements of the decay of capture gamma activity are made before and after the displacement of the indigenous formation fluid, said method comprising:

measuring said decay of capture gamma activity by counting after the production of the neutron pulse the gamma rays during two separate time intervals, the first of said time intervals starting at least 500 microseconds after the production of a neutron pulse.

3,852,594

X-RAY DIFFRACTION APPARATUS

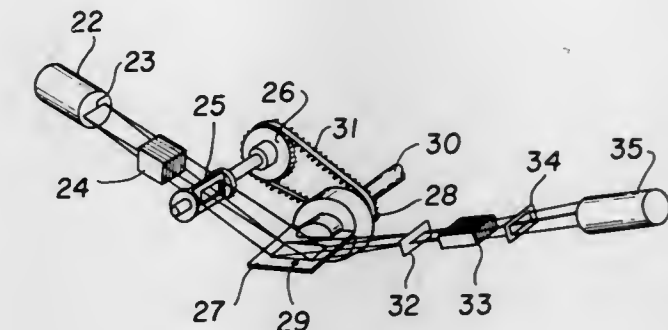
Frank Rudolph Paolini, Stamford, Conn., assignor to Pepi Inc., New York, N.Y.

Filed July 25, 1973, Ser. No. 382,481

Int. Cl. G01n 23/00

U.S. Cl. 250-278

7 Claims



1. An X-ray diffraction apparatus comprising:
a. a source of X-rays;
b. means for holding an X-ray diffraction specimen in the path of said X-ray beam such that a portion of said specimen can be impinged by said beam;
c. means for rotating said specimen at a first angular velocity from a first position to a second position;
d. a diffraction slit disposed between said specimen and said source such that said X-rays pass through the opening of said slit;
e. means for rotating said diffraction slit simultaneously with the specimen, said diffraction slit being so rotated at a second angular velocity lower than said first angular velocity; and
f. means for measuring the intensity of X-rays reflected from said specimen, whereby said irradiated portion remains substantially constant throughout the rotation of said specimen.

3,852,595

MULTIPOINT FIELD IONIZATION SOURCE

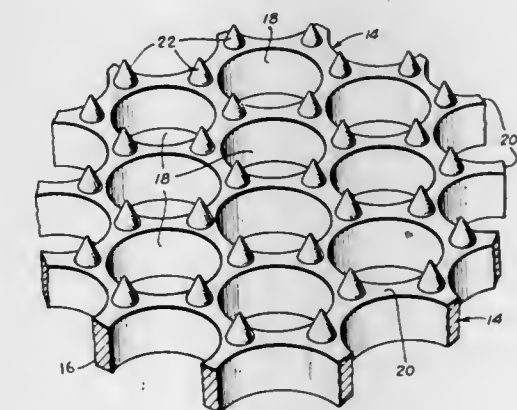
William H. Aberth, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 21, 1972, Ser. No. 290,900

Int. Cl. H01j 39/36, 1/30

U.S. Cl. 250-288

12 Claims



1. A field ionization source comprising a plate-like porous substrate pervious to flow of substantially all gases and a multiplicity of needle-like elements located on one surface of said substrate, said needle-like elements being highly uniform in space and uniformly spaced on said substrate.

3,852,596

COLD CATHODE GASEOUS DISCHARGE DEVICE FOR PRODUCING ELECTRONS IN AN X-RAY FLUORESCENCE ANALYSIS APPARATUS

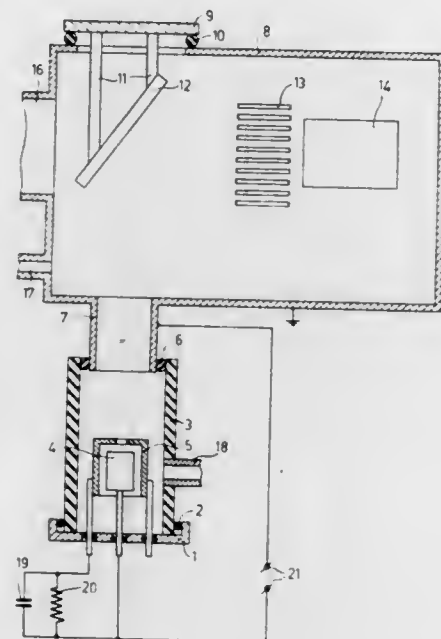
Elberthus Houtman, and Jakob Gerard Siekman, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 121,392, March 5, 1971. This application Mar. 7, 1973, Ser. No. 338,869

Int. Cl. G01n 23/22

U.S. Cl. 250-310

8 Claims



1. Apparatus for causing X-ray fluorescence of the surface of a material, comprising:

walls defining a first chamber, a second chamber and a straight channel connecting said chambers, said walls forming a gas tight enclosure and the walls defining said first chamber and said channel being electrically conductive;

an exhaust outlet in said first chamber for exhausting gas therefrom to establish and maintain a low gas pressure inside said enclosure, said low gas pressure being within a range suitable for establishing and maintaining a cold cathode gas discharge within said enclosure;

a non-heated cathode disposed within said second chamber opposite said channel;

means for electrically connecting between said non-heated cathode and said walls defining said channel a source of sufficiently high voltage to establish and maintain a cold cathode gas discharge between said non-heated cathode and said channel, thereby causing an electron stream to travel through said channel into said first chamber; and

means for supporting a material within said first chamber in the path of said electron stream, the surface of a material supported thereby and exposed to said electron stream being caused to X-ray fluoresce.

3,852,597

METHOD AND APPARATUS FOR OBSERVING A LOW MAGNIFICATION ELECTRON MICROSCOPE IMAGE

Takashi Yanaka, and Kohei Shirota, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,669

Claims priority, application Japan, May 22, 1972, 47-50594

Int. Cl. H01j 37/26

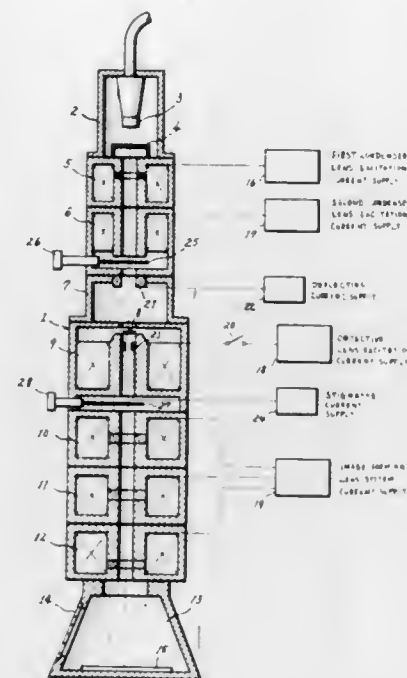
U.S. Cl. 250-311

5 Claims

1. A method for observing a low magnification image using a typical electron microscope having an electron beam condenser lens system including one or more lenses, and a projector lens system including an objective lens and one or more intermediate lenses arranged in sequential order along the

optical axis of the microscope, an imaging means and means for adjusting the excitation current to the lens comprising the steps for:

- keeping the specimen arranged between the objective lens magnetic gap fixed;
- disconnecting the objective lens excitation current;
- replacing the final stage condenser lens aperture by an



aperture having a diameter of at least 0.5mm;

D. inserting a contrast aperture in the electron beam path adjacent the intermediate lens on the object side thereof;

E. adjusting the current in the condenser lens system so as to form a focal point at the contrast aperture; and

F. adjusting the current in the projector lens system to focus a low magnification image on the imaging means.

3,852,598

SCINTILLATION CAMERA WITH IMPROVED RESOLUTION

Agne Larsson, Barytongatan 13, 421 38 Vastra Frolunda, Sweden

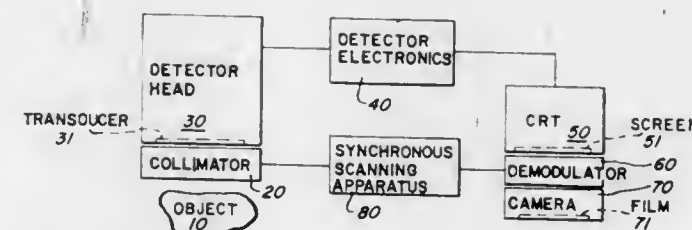
Filed Nov. 21, 1972, Ser. No. 308,539

Claims priority, application Sweden, Nov. 23, 1971, 14953/71

Int. Cl. G01t 1/20

U.S. Cl. 250-327

6 Claims



1. In combination:

a radiation detector, including a radiation sensitive transducer, of the type producing an output representing spatial coordinates of interaction of a quantum of radiation with said transducer;

a collimator mounted on said detector adjacent said transducer comprising a regular array of separated channels for radiation quanta;

a documentation medium; and

demodulation means receiving said output of said detector operative to produce on said documentation medium a documenting spot at a position comprising a mirror image

reversal of said spatial coordinates of interaction with respect to a central axis of one of said channels traversed by said quantum of radiation.

3,852,599

VIAL TRANSFER MECHANISM

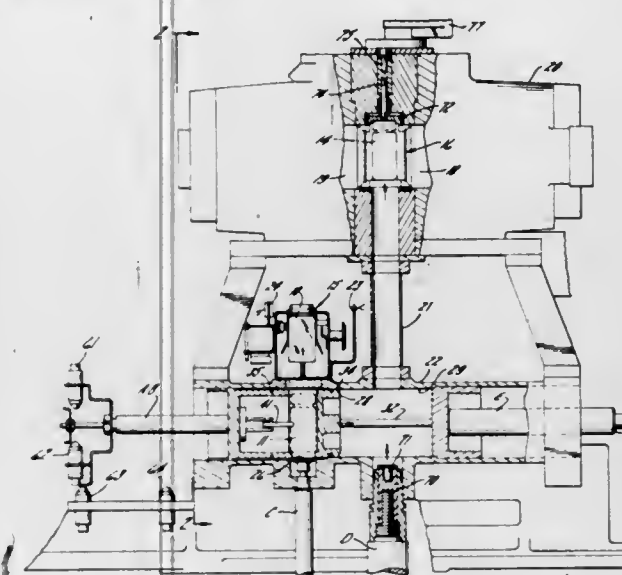
Roy E. Smith, Villa Park, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed July 9, 1973, Ser. No. 377,392

Int. Cl. G01t 1/00

U.S. Cl. 250-328

7 Claims



1. A device for transferring samples from a sample changer to a measurement chamber and for thereafter returning said samples to the sample changer after a measurement period, comprising:

a sample changer accessible through the bottom thereof, a vertical sample transferring conduit extending to said chamber,

a horizontal sample transferring conduit extending to said vertical sample transferring conduit,

a sample-receiving carriage movable in said horizontal sample transferring conduit between a sample receiving position near said sample changer and a position beneath said vertical sample transferring conduit, and means for sequentially (a) transferring a sample from said sample changer to said sample-receiving carriage, (b) moving said carriage from its sample-receiving position to its position beneath said vertical sample transferring conduit, (c) elevating said sample from said carriage into said sample chamber, and means for moving said sample back to said sample changer in a reverse sequence.

3,852,600

X-RAY METHOD AND APPARATUS FOR DETECTING MISLOCATION OF STEEL REINFORCEMENTS IN GREEN TIRES

John E. Faulkner; J. Richard Hansen, both of Pittsburgh, and Eugene G. Vaerewyck, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1973, Ser. No. 334,513

Int. Cl. G01t 1/20

U.S. Cl. 250-360

7 Claims

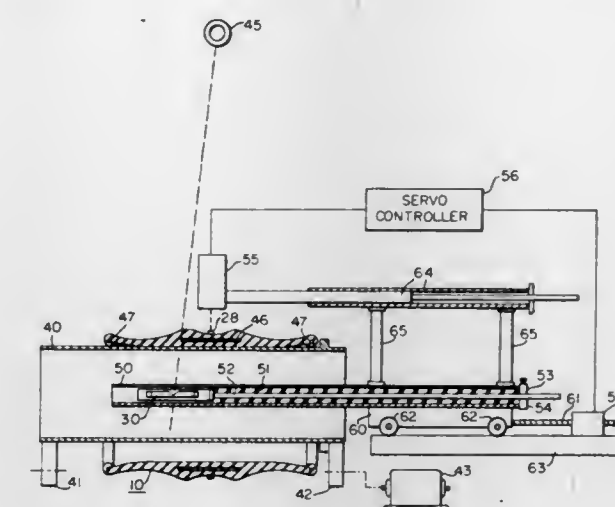
1. A method of inspecting a green tire for misalignment of metal reinforcing elements embedded therein, comprising the steps of:

marking a reference stripe at a particular widthwise location around the circumference of the green tire while yet remaining on the collapsible forming drum on which it was fabricated,

placing the stripe-marked tire on rotary means for turning it about its central axis,

directing penetrative radiation radially through a peripheral portion thereof while disposed on said rotary means,

detecting the intensities of such radiation transmitted through the tire discretely at a plurality of select widthwise detector locations of such tire relative to said stripe, comparing the intensities so detected to give information



with respect to location of the aforesaid metal reinforcing elements, and tracking the reference stripe on the tire during its rotation to automatically maintain the positional relationship between stripe and detector locations.

3,852,601

SCANNING DEVICE FOR SCINTIGRAPHY ACCORDING TO THREE ORTHOGONAL PLANES

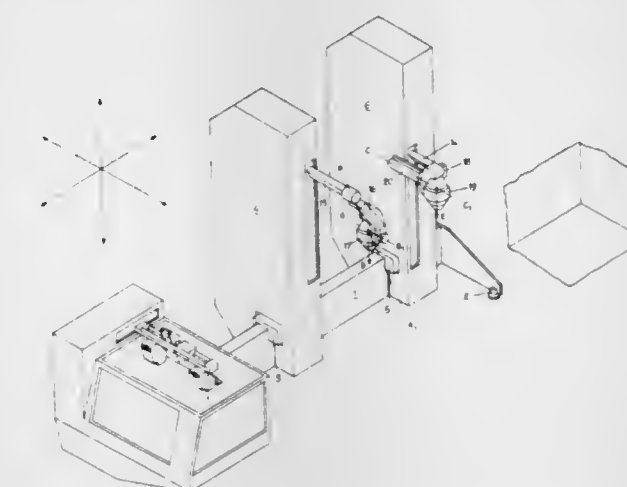
Renato Casale, Rome, Italy, assignor to Ital Eletttronica S.p.A., Rome, Italy

Filed July 7, 1972, Ser. No. 269,668

Claims priority, application Italy, July 15, 1971, 51666/71

U.S. Cl. 250-366

6 Claims



1. In a device for scintigraphic scanning according to three orthogonal planes employing two detecting heads arranged for adjustment along, above and transversely of a longitudinal and horizontal beam position the improvement comprising:

a beam horizontally disposed in said position, two vertical column structures including chain means for moving the same along said beam;

two recording devices;

frame support means mounted fixedly on said beam including longitudinally extending carriage guide means and transverse guide means;

a horizontally disposed recording surface mounted on said frame parallel to said guide means;

chain drive means for moving said carriage along said horizontally extending and transverse guide means respectively;

two column carriages mounted for vertical movement along

3,852,607

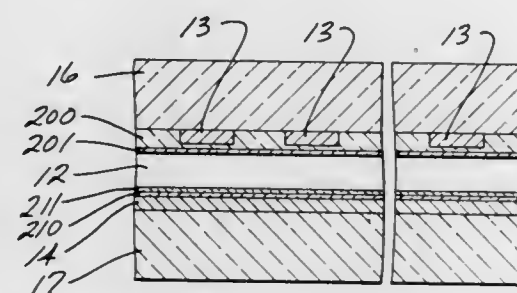
MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING THIN FILM DIELECTRIC CHARGE STORAGE MEMBER

Harold J. Hoehn, Toledo, and Roger E. Ernsthausen, Luckey, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 21, 1973, Ser. No. 399,548

Int. Cl. H01j 61/30, 65/04

U.S. Cl. 313-201

3 Claims



1. In a gaseous discharge display/memory device comprising an ionizable gaseous medium in a sealed gas chamber formed by a pair of opposed charge storage members backed by electrode members, the improvement wherein at least one charge storage member, consisting of at least two thin continuous dielectric layers, has an effective thickness ranging between about 250 angstrom units and about 150,000 angstrom units, the minimum thickness being sufficient to store charges without deteriorating upon gas discharge and the maximum thickness being less than that thickness at which said charge storage member becomes discontinuous due to breakdown caused by deposition originated stresses, said charge storage member having a first layer of silicon oxide and at least one additional layer selected from the oxides of Al, Ti, Zr, Hf, Pb, and Group IIA.

3,852,608

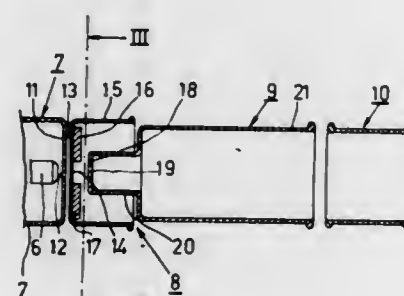
CATHODE-RAY TUBE HAVING AN ASTIGMATIC LENS ELEMENT IN ITS ELECTRON GUN

Johannes Hendricus Maria Johanns, and Jan Hasker, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 126,425, March 22, 1971, abandoned. This application Nov. 27, 1972, Ser. No. 309,710
Int. Cl. H01j 29/02, 29/56

U.S. Cl. 313-449

3 Claims



1. A cathode ray tube for color television, comprising:
a. an evacuated envelope having a window at one end thereof;
b. a screen disposed at said window and comprising electron-responsive luminescent areas emitting light of various colors;
c. means for scanning an electron beam across said luminescent screen in the direction from a first side thereof toward an opposite side;
d. electron gun means within said envelope for producing an electron beam, said electron gun comprising a cathode

and at least a first, second, and third grids, said first and second grids respectively controlling and accelerating said electron beam, said second grid having a surface portion facing said first grid and said third grid having a first surface portion remote from said cathode and facing toward said luminescent screen, said electron gun further comprising plate means comprising an astigmatic lens element located between said surface portion of said second grid and said first surface portion of said third grid, said astigmatic lens element being a rotationally non-symmetric passage through which said electron beam passes and which has two main axes which are orthogonal with respect to each other and with respect to the axis of said electron gun, the dimension of said passage along one of said main axes significantly exceeding that along the other said axis and said one axis being substantially parallel to said scanning direction of said electron beam; and

e. a shadow mask having a plurality of apertures extending therethrough located between said luminescent screen and said electron gun, and having said apertures disposed at said electron-responsive areas that are accessible to said electron beam via said apertures, said shadow mask being substantially parallel to and proximate with said luminescent screen, whereby there is a reduced incidence of visible moire fringes resulting from interference between a pattern of lines on said luminescent screen scanned by said electron beam and a pattern of said apertures arranged along lines on said color selection electrode.

3,852,609

CONTROL APPARATUS FOR SUPPLYING OPERATING POTENTIALS

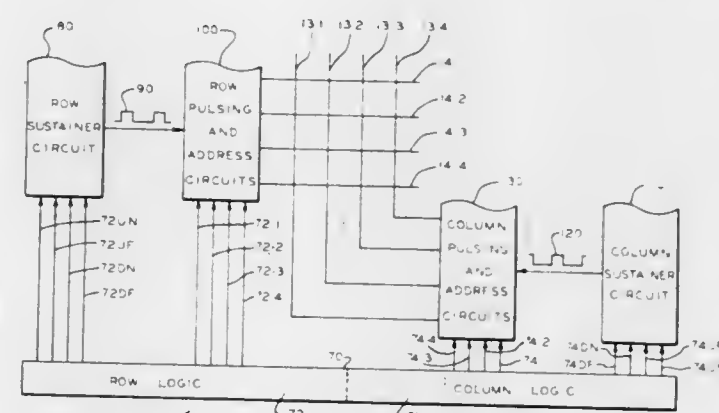
Edwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,448

Int. Cl. H05b 37/00

U.S. Cl. 315-169 TV

5 Claims



1. In a system for supplying operating potentials to a load device wherein at least two transversely oriented conductors are dielectrically isolated from a gas discharge medium between said two conductors, comprising

a. means for applying a load sustaining potential having at least two different potential levels to one of the transverse conductors including a parallel path having at least two branches, a first branch having a first unidirectional device connected therein for permitting current flow in a first direction, a second branch having a second unidirectional device connected therein for permitting current flow in a second direction;
b. means for applying a load signal potential across the end connections of said parallel path;
c. transistor means having a base-emitter junction, a collector-base junction, a collector electrode, a base electrode,

and an emitter-electrode and having an emitter-collector circuit connected in one of said branches to permit current flow in the same direction as the unidirectional device in that branch so as to control current flow in said one branch;

d. means for applying a turn-on signal to the base-emitter junction of the transistor means having a magnitude which is sufficient to drive said transistor means into saturation and allow current flow through the emitter-collector circuit thereof; and
e. means for establishing a reverse bias on the collector-base junction of said transistor means including means for applying a reverse bias signal to said base-emitter junction, isolating diode means connected to prevent current flow between the collector electrode and the base electrode of the transistor means in response to collector potentials that would establish a forward bias across said base-emitter junction and permitting flow of current from said reverse bias signal across said collector-base junction in a reverse direction to discharge the minority carriers from said saturated junction to enable said transistor means to turn off quickly, and means for connecting a reverse bias source to said reverse bias applying means.

3,852,610

TRANSMISSION ION CHAMBER

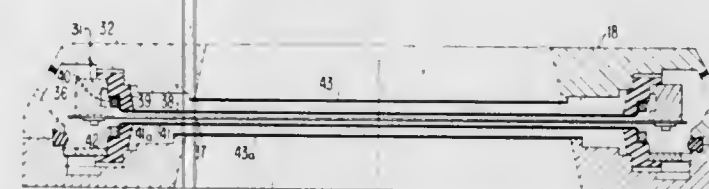
Raymond D. McIntyre, Los Altos Hills, Calif., assignor to Varian Associated, Palo Alto, Calif.

Filed Feb. 26, 1973, Ser. No. 335,633

Int. Cl. G01t 1/18

U.S. Cl. 250-385

29 Claims



1. In a particle accelerator system including means for forming and projecting a beam of charged particles along a substantially linear path, and target means disposed in said beam path for developing a radiation field upon being struck by said charged particles: ionization chamber means disposed in said radiation field and including a housing member; an insulative support sheet mounted within said housing member, said insulative support sheet having first and second oppositely facing surfaces; first electrode means comprising a film of conductive material secured to at least a portion of one of said surfaces of said insulative support sheet and positioned in superimposed parallel relationship with respect to said one of said surfaces; second electrode means spaced apart from said first electrode means, said second electrode means comprising a sheet of conductive material supported by said housing member in spaced parallel relationship with respect to said conductive film of said first electrode means; third electrode means comprising a film of conductive material secured to at least a portion of the other of said surfaces of said insulative support sheet and positioned in superimposed parallel relationship with respect to said other of said surfaces; fourth electrode means spaced apart from said third electrode means, said fourth electrode means comprising a sheet of conductive material supported by said housing member in spaced parallel relationship with respect to said conductive film of said third electrode means; and enclosure means sup-

ported by said housing member for maintaining an ionizable gas in the spaced region between said electrode means.

3,852,611

RADIODIAGNOSTIC APPARATUS INCLUDING A PIVOTABLE X-RAY TABLE

Jean Cesar, Paris, France, assignor to Compagnie Generale De Radiologie, Paris, France

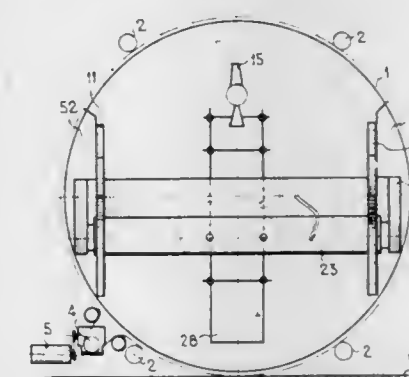
Filed May 1, 1973, Ser. No. 356,139

Claims priority, application France, May 5, 1972, 72.16106

Int. Cl. G03b 41/16

U.S. Cl. 250-445

7 Claims



1. Radiodiagnostic apparatus for X-ray and, in particular, tomographic examinations of a patient, including: a fixed base; a ring-shaped support located in a vertical plane and mounted on said base for rotation about a horizontal first axis coinciding with that of the ring; two parallel circular arcuate arms extending perpendicularly to and having one of their ends secured integrally to said ring-shaped support at diametrically opposite locations thereof, said arcuate arms being located symmetrically in relation to the first axis and the centers of their radii defining a second axis perpendicular to said first axis; a pair of first carriages respectively mounted on said arcuate arms for simultaneous parallel displacements therealong; first motor means for controlling said displacements of said first carriages; rigid beam-shaped supporting means parallel to said second axis fixedly interconnecting said first carriage pair; a second carriage mounted on said beam-shaped supporting means for independent translational displacements therealong; fork-shaped supporting means fixedly mounted on said second carriage having at their respective ends a pair of first and second concentric shafts both coaxial with said second axis, said first shaft pair being the outer one; panel-shaped patient supporting means having ends respectively secured to said first shaft pair for rotation therewith about said second axis; second motor means carried by said second carriage for driving said first shaft pair in rotation; third motor means carried by said second carriage for driving said second shaft pair in rotation, said second shaft pair being coupled to means for displacing said panel-shaped supporting means in parallel to itself; a third carriage mounted on said beam-shaped supporting means for independent translational displacements therealong parallel to the displacements of said second carriage; plate-shaped supporting means mounted integrally with said third carriage and extending away from said beam-shaped means to the opposite side relatively to said fork-shaped means; an elongated supporting system mounted on said plate-shaped means for omnidirectional pivoting about a plane parallel thereto; an X-ray source and an X-ray image receiver means respectively articulately mounted to both ends of said elongated system for respective location on either side of a patient placed on said panel-shaped supporting means, said X-ray source emitting an X-ray beam whose axis always intersects with said second axis and is incident on the center of said image receiver means; whereby the center of gravity of the assembly carried by said first carriage pair will always be located in the vicinity of said beamshaped means.

3,852,612

SELECTIVE LOW LEVEL IRRADIATION TO IMPROVE BLOCKING VOLTAGE YIELD OF JUNCTIONED SEMICONDUCTORS

John S. Roberts, Export, and Michael W. Cresswell, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 285,165, Aug. 31, 1972, abandoned.

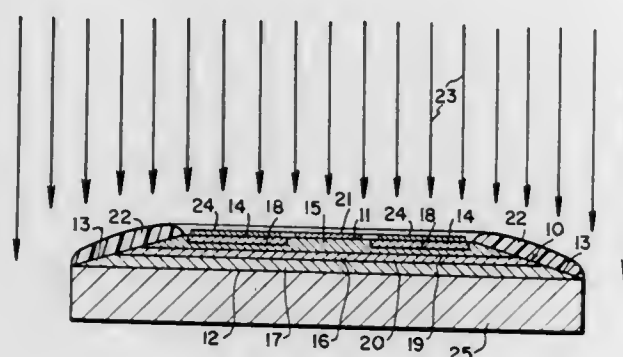
This application Feb. 1, 1974, Ser. No. 438,931

Claims priority, application Belgium, Aug. 10, 1973, 532273

Int. Cl. H01j 37/00

U.S. Cl. 250—492 A

4 Claims



1. A method of increasing the blocking voltage of certain semiconductor devices without significantly increasing the forward voltage drop comprising the steps of:

- positioning a semiconductor body containing the semiconductor device with a major surface of the body to be exposed to a radiation source;
- thereafter increasing the blocking voltage of the semiconductor device without significantly increasing the forward voltage drop by selectively irradiating the semiconductor body to a low level of exposure corresponding to an exposure of less than 1×10^{13} electrons/cm² with 2-Mev electron radiation.

3,852,613

ARRANGEMENT TO TEST THE OPERATION OF AN ANTISKID SYSTEM

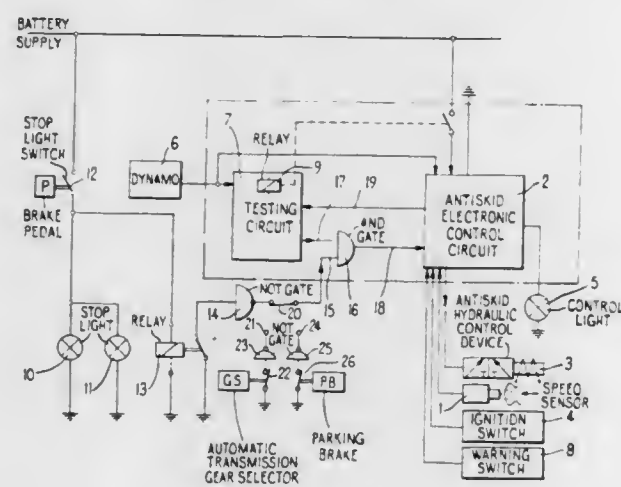
Franz Josef Wienecke, Oberstedten, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 391,170

Int. Cl. B60t 8/00

U.S. Cl. 307—10 R

8 Claims



1. An arrangement to test the operation of an antiskid control system contained in a motor vehicle prior to moving the vehicle comprising:

- a hydraulic brake system having stop lights;
- a parking brake;
- an automatic transmission gear selector having a park position;

an ignition switch;
an antiskid control system having an electronic control circuit and a hydraulic control device;
a testing circuit actuated by said ignition switch to produce a testing signal to cause said electronic control circuit and said hydraulic device to go through one entire cycle of antiskid operation; and
a circuit arrangement coupled between said electronic control circuit and said testing circuit and to said hydraulic brake system, said parking brake and said gear selector to enable said testing signal to be coupled to said electronic control circuit only upon occurrence of one or more of any of the following conditions: said hydraulic brake system being inoperative, said parking brake being operative, and said automatic transmission gear selector being set to said park position.

3,852,614

DUAL-MODE SECURITY CIRCUIT FOR AUTOMOTIVE VEHICLES AND THE LIKE

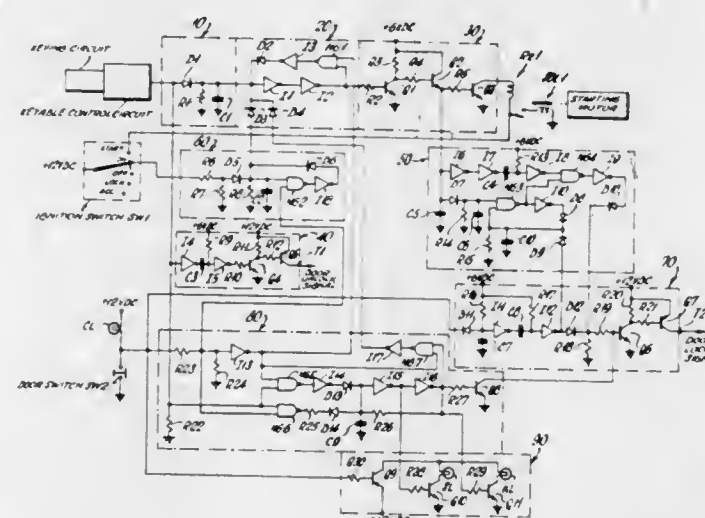
Paul A. Carlson, New Providence, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Nov. 23, 1973, Ser. No. 418,683

Int. Cl. H02g 3/00

U.S. Cl. 307—10 AT

32 Claims



1. In a vehicle comprising a keyable control means operative when keyed to generate a control signal, a multi-position ignition switch having at least OFF, ON and START positions, at least one door switch, at least one door lock/unlock means, and engine starting means, the improvement comprising: dual-mode security circuit means operative; the security mode in response to said control signal (1) to actuate said at least one door lock/unlock means so as to unlock the associated door and (2) to enable energization of said engine starting means by actuation of said multi-position ignition switch to the START position within a predetermined period of time after the actuation and de-actuation of said at least one door switch, said dual-mode security circuit means being switched to the key mode of operation upon actuation of said at least one door switch and subsequent generation of said control signal, said dual-mode security circuit means being operative in the key mode to enable energization of said engine starting means by actuation of said multi-position ignition switch to the START position, said dual-mode security circuit means being switched back to the security mode by generation of said control signal.

3,852,615

Patent Not Issued For This Number

3,852,616

FREQUENCY SELECTION BY PERIOD TIMING

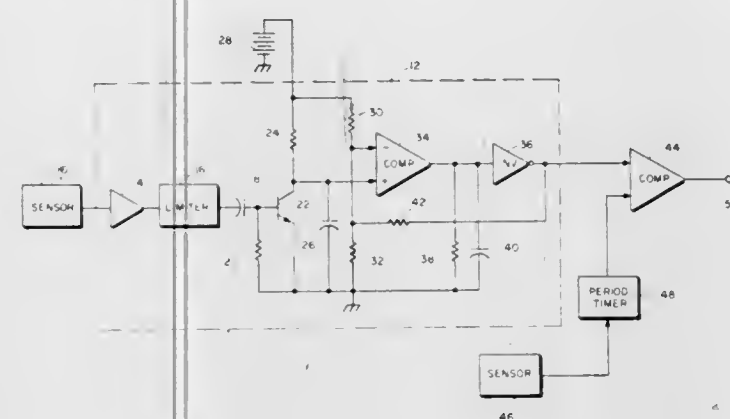
Ralph W. Carp; Harold E. Weissler, II, both of Newport News, Va., and Gale F. Krawczak, Grafton, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 21, 1973, Ser. No. 334,330

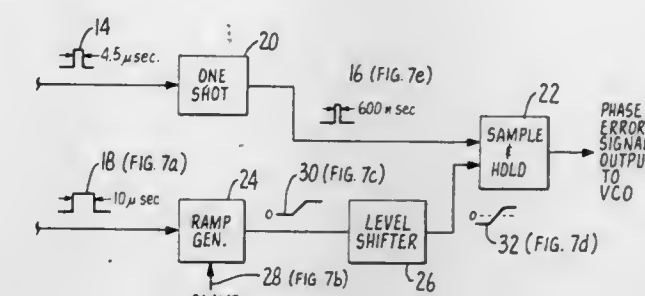
Int. Cl. H03k 17/00

U.S. Cl. 307—233

10 Claims



differential means for subtracting a first signal voltage from a second signal voltage,
means connected to said voltage divider means for applying



the voltage thereat to said differential means as said first signal voltage, and
means for further applying said input signal to said differential means as said second signal voltage.

3,852,618

THYRISTOR INITIATING DEVICE FOR HIGH VOLTAGE D.C. LINE

Jacques Dutilleul, Mont-Sur-Marchienne, Belgium, assignor to Acec (Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium)

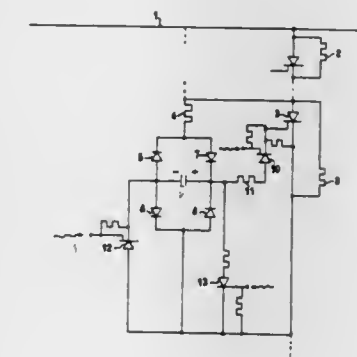
Filed June 25, 1973, Ser. No. 373,485

Claims priority, application Belgium, June 28, 1972, 4156

Int. Cl. H02m 1/08

U.S. Cl. 307—252 Q

5 Claims



1. A converting circuit comprising:

- a plurality of series connected thyristors, each thyristor having a cathode, an anode and a gate, and each thyristor connected in a control circuit comprising:
- resistive means connected for shunting said thyristor,
- rectifying bridge means connected to the cathode and anode of said thyristor,
- capacitive means connected to said bridge circuit for triggering said thyristor,
- a first optically controlled switching element connected between one side of said capacitive means and the gate of said thyristor,
- a second optically controlled switching element connected to the other side of said capacitive means and to the cathode of said thyristor, and
- means for simultaneously activating said first and second optically controlled switching elements, whereby said capacitive means is charged when said thyristor is non-conducting and discharged through said first and second optically controlled switching elements for triggering said thyristor.

3,852,617

APPARATUS FOR LEVEL SHIFTING INDEPENDENT OF SIGNAL AMPLITUDE HAVING A PASSIVE PEAK DETECTOR

Nikola Vidovic, Sunnyvale, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed Jan. 2, 1973, Ser. No. 320,092

Int. Cl. H03k 17/00

U.S. Cl. 307—235

4 Claims

1. Level shifter apparatus comprising a transistor having an emitter, base and collector,
means for applying an input signal to be level shifted between said emitter and ground,
capacitor means connected between said collector and ground,
resistor means connected between said base and ground,
voltage divider means connected between said collector and ground,

3,852,619

SIGNAL SHAPING CIRCUIT

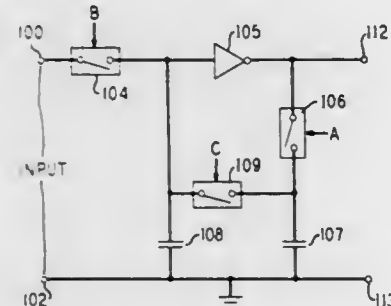
Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 9, 1973, Ser. No. 377,590

Int. Cl. H03k 5/01

U.S. Cl. 307-268

22 Claims



1. A signal shaping circuit comprising means for receiving samples of an input signal in periodically recurring time intervals, first and second storing means, coupling means having an input connected to said first storing means and an output, first means for applying the signal in said first storing means to said second storing means through said coupling means during a first portion of said time interval, second means for separately applying a sample of said input signal from said receiving means to said first storing means during said first portion, and third means operative during the remainder of said time interval for interconnecting said first and second storing means to combine the signal sample in said first storing means with the coupled signal previously applied to said second storing means whereby the signal at said coupling means output is modified in a predetermined manner with respect to said input signal.

3,852,620

ELECTRICAL PULSE GENERATING CIRCUIT AND METHOD

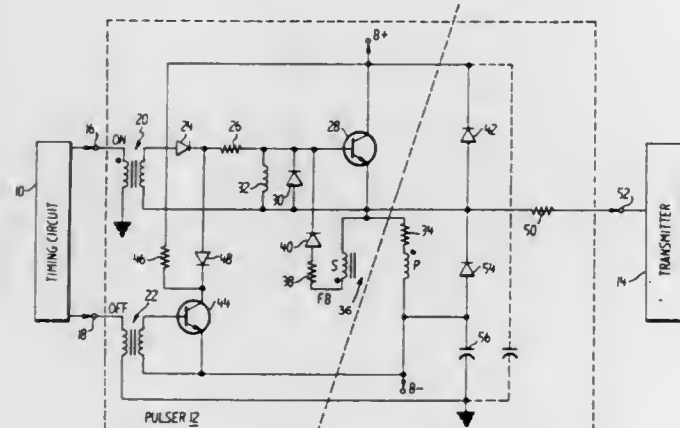
Walter E. Milberger, Severna Park, and Donald C. Lewns, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,342

Int. Cl. H03k 5/12, 5/01

U.S. Cl. 307-268

17 Claims



1. A circuit for intermittently energizing a wave energy transmitter comprising: first and second semiconductor means each including first and second electrodes and a control electrode for controlling current flow between the first and second electrodes; means including positive signal feedback means operatively connected to the control electrode of said first semiconductor means to drive said first semiconductor means into

saturation in response to the application of a first trigger signal to the control electrode of said first semiconductor means and to hold said first semiconductor means in saturation;

circuit means including said second semiconductor means operatively connected to the control electrode of said first semiconductor means, said circuit means being operable to drive said first semiconductor means from saturation into a nonconductive condition in response to the application of a second trigger signal to the control electrode of said second semiconductor means;

means for driving said first semiconductor means from saturation into a nonconductive condition at a predetermined time, said predetermined time being subsequent to the expected time of arrival of said second trigger signal and prior to the time when current flow in said first semiconductor means exceeds the current capacity of said first semiconductor means; and,

output circuit means operatively connected to said first semiconductor means for providing a transmitter energizing signal responsively to the saturation and nonconductive conditions of the said first semiconductor means, the amplitude of said energizing signal being independent of the amplitude of said trigger signals and the duration of said energizing signal being substantially equal to the spacing between corresponding portions of said first and second trigger signals.

3,852,621

MULTIVIBRATOR HAVING TWO LEVELS TRIGGERING CAPABILITY AFTER INITIATION

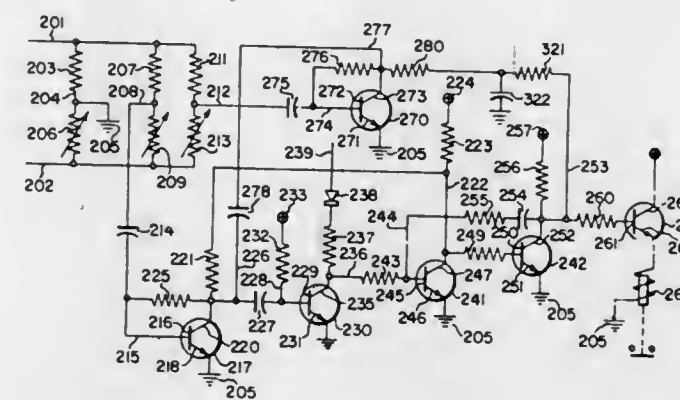
Basil M. Lide, Pittsburgh, and Harry Kowalcheck, West Newton, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 453,692, May 6, 1965.. This application Apr. 30, 1970, Ser. No. 31,807

Int. Cl. H03k 3/10

U.S. Cl. 307-273

2 Claims



3,852,625

SEMICONDUCTOR CIRCUIT

Masaharu Kubo, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

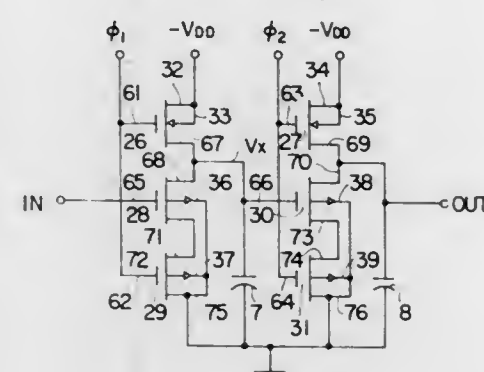
Filed Mar. 30, 1973, Ser. No. 346,310

Claims priority, application Japan, Apr. 3, 1972, 47-32651

Int. Cl. H03k 17/60, 19/08

U.S. Cl. 307-304

14 Claims



1. A semiconductor circuit, comprising:
a first field-effect transistor of the N-channel type and a second field-effect transistor of the P-channel type each of which has a gate, a source, a drain and a substrate;
an input circuit which includes at least one transistor adapted to effect switching in response to an input signal, and which has an input terminal for coupling said input signal to said transistor and first and second output terminals;
a capacitor, one terminal of which is connected to said drain of said first transistor;
means for coupling said drain of said first transistor to the first output terminal of said input circuit;
means for connecting said drain of said second transistor to the second output terminal of said input circuit;
a first voltage source for supplying a relatively low voltage, which is commonly connected to said source and substrate of said first transistor;
pulse supply means which is connected to said gates of said first and second transistors, and which supplies predetermined clock pulses thereto;
a second voltage source for supplying a relatively high voltage, which is commonly connected to said source and substrate of said second transistor;
at least one input source which supplies the input signal to said input terminal of said input circuit; and
means for connecting the other terminal of said capacitor to said second voltage source.

3,852,626

LINEAR INDUCTION MOTOR

Murray W. Davis, 20501 Woodmont, Harper Woods, Mich. 48225

Continuation-in-part of Ser. No. 176,087, Aug. 30, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,738

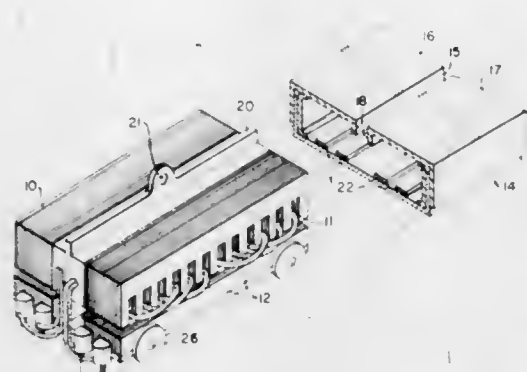
Int. Cl. H02k 41/02

U.S. Cl. 310-13

14 Claims

1. In a linear induction motor including primary field windings, an elongated metal channel having an upper, flat base, the base having a central slit extending the full length thereof to form a pair of co-planar strips with the strips thus forming secondary conductors, and means for electrically energizing the primary field windings, the improvement comprising:
two flat, plate-like, primary cores of magnetically permeable material, each arranged above one of said coplanar strips and each of said primary cores having a plurality of transverse slots with the slots in each primary core opposing and aligned with a corresponding slot in the other primary core, and further having one set of primary field windings linking both primary cores without end turns

therebetween by extending from a slot in one primary core directly to the opposed, aligned corresponding slot in said other primary core,
two flat, plate-like secondary cores of magnetically permeable material, each arranged below one of said coplanar strips and aligned beneath one of said primary cores with each secondary core having substantially the same surface area as its aligned primary core,



means extending through said slit and between said strips for rigidly spacing one of said primary cores from the other and for interconnecting both of said primary cores and both of said secondary cores to form a unit,
whereby upon the energization of said primary field windings to cause the primary core-secondary core unit to move linearly along the length of said channel, the alignment of said cores establishes only usable magnetic flux paths from each primary core to its aligned secondary core.

3,852,627

COMPOSITE STATOR CONCENTRIC LINEAR INDUCTION MOTOR

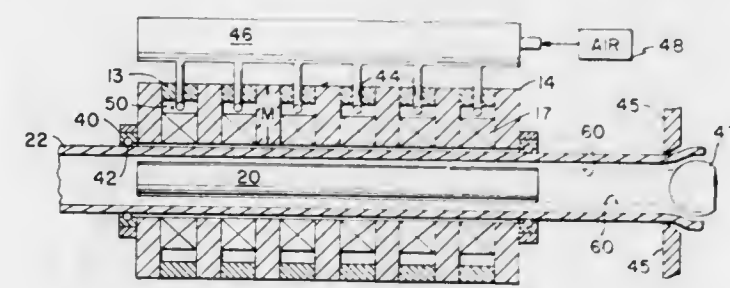
Murray W. Davis, 20501 Woodmont, Harper Woods, Mich. 48225

Filed Apr. 9, 1973, Ser. No. 349,227

Int. Cl. H02k 41/02

U.S. Cl. 310-13

13 Claims



1. A converging flux, concentric linear induction motor especially adapted for moving rotor means, over long distances, said rotor means having a generally circular cross-section and a length greatly exceeding its diameter, said motor comprising:

a hollow, cylindrical stator member made of a material of high magnetic permeability and positioned to surround said rotor means concentrically;
said stator member including a plurality of annular teeth having teeth faces, said teeth being longitudinally spaced apart to define annular slots therebetween;
a plurality of energizable coils positioned in said slots and concentrically surrounding said rotor means, and
a discrete facing on said teeth faces, said discrete facing being of a material having a higher magnetic permeability and saturation level than said stator member, said discrete facing being of a radial thickness sufficient to prevent magnetic saturation of both said discrete facing and said stator member;

whereby upon energization of said coils, said small diameter rotor means is moved axially by the generation of increased rotor forces without magnetic saturation of the stator member or said discrete facing or rotor means.

3,852,628

RECTIFIER ASSEMBLY FOR BRUSHLESS EXCITATION SYSTEMS

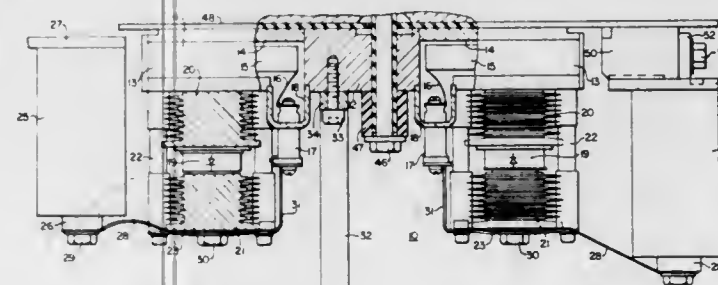
Andrew J. Spisak, Bethel Park, and Thayer L. Dillman, North Versailles, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,923 The portion of the term of this patent subsequent to Mar. 20, 1990, has been disclaimed.

Int. Cl. H02k 11/00

U.S. Cl. 310-68 D

16 Claims



1. In a brushless excitation system including an alternating current exciter and a rotating rectifier assembly having a rectifier wheel mounted on a shaft and insulated therefrom, a rectifier module adapted to be mounted on said wheel, said module comprising conducting base means, two diode assemblies, each of said diode assemblies having a disc-type rectifier diode disposed between two heat sinks in electrical and thermal contact therewith, one heat sink of each diode assembly engaging the base means and the two diode assemblies being disposed so that the diodes are of opposite polarity with respect to the base means, spring means for applying force to the other heat sink of each diode assembly to maintain contact between said one heat sink and the base means and between the diode and the heat sinks of each assembly, a fuse adjacent each diode assembly, means for electrically connecting each fuse separately to the adjacent diode assembly, and means for making electrical connection to the base means.

3,852,629

OFFSET STINGER FOR ARC LAMP

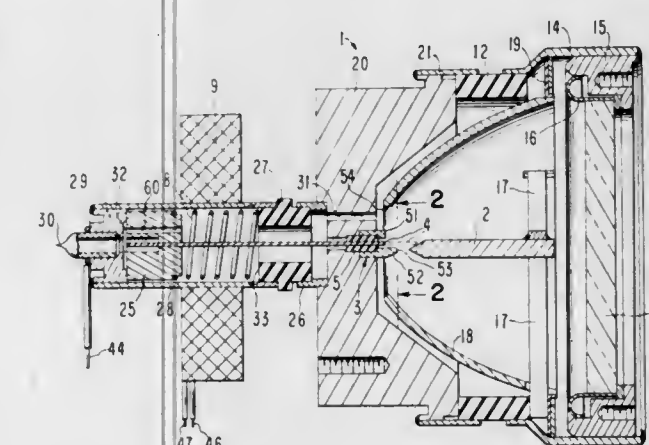
William R. Stuart, San Carlos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 13, 1973, Ser. No. 424,399

Int. Cl. H01j 61/00

U.S. Cl. 313-152

11 Claims



1. An arc lamp comprising a sealed envelope containing an ionizable gas, first and second electrodes mounted in fixed

positions in said envelope, each fixed electrode having an apical end portion spaced apart from an apical end portion of the other fixed electrode to form an arc gap therebetween, a stinger electrode movably mounted in said envelope, means for moving said stinger between a first position in contact with a surface portion of said first fixed electrode to a second position away from contact with said first fixed electrode, said surface portion of said first fixed electrode being located at other than the apex of the apical end portion thereof.

3,852,630

HALOGEN CONTAINING HIGH-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Gustaaf Adolf Wesselink, and Hendrik Roelofs, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

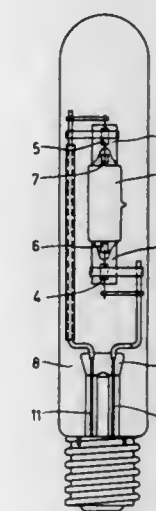
Filed Mar. 12, 1973, Ser. No. 340,256

Claims priority, application Netherlands, Mar. 20, 1972, 7203720

Int. Cl. H01j 61/20, 61/22

U.S. Cl. 313-228

7 Claims



1. A high-pressure mercury vapour discharge lamp comprising a discharge vessel whose wall is subjected to a power of between 10 and 100 W per sq. cm. during operation of the lamp and consisting of a rare gas as an ignition gas, at least one of the halogens iodine, bromine and chlorine, from 0.5 to 40 mg of mercury per cubic cm of content of the discharge vessel, such a quantity of sodium in the form of sodium halide that unevaporated sodium halide is present during operation, from 0.25 to 25 percent by weight of thallium calculated on the quantity of mercury and from 0 to 15 percent by weight of indium calculated on the quantity of mercury, wherein the discharge vessel furthermore contains calcium in a quantity of between 1 and 30 percent by weight of the quantity of mercury and that the quantity of halogen is at least equal to the chemical equivalent of sodium and calcium present and is not more than twice the chemical equivalent of sodium, calcium, thallium and indium present.

3,852,631

INCANDESCENT LAMP AND BASE

Melvin W. Evans, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,974

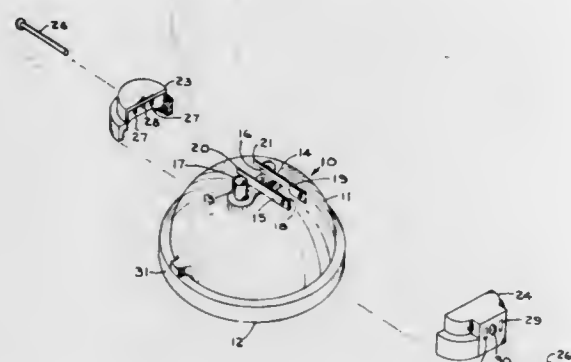
Int. Cl. H01j 5/48, 5/50

U.S. Cl. 313-318

7 Claims

1. An electric lamp comprising a glass envelope, an energy translation device connected to lead-in conductors which are hermetically sealed to said envelope, wherein the improvement comprises a base structure comprising contact prongs attached to the lead-in conductors and extending away from said lead-in conductors in both directions, said contact prongs comprising socket prongs at one end and a predetermined length extended away from said lead-in conductor at the other

end, and two base sections made of insulating material, one of said base sections containing a hole and at least one alignment slot for receiving at least one of said predetermined lengths of said contact prong, said alignment slot formed as an indentation in the wall of said first base section, said alignment slot not extending through the wall of said first base section, said



other base section containing two through openings for receiving said contact prongs and a hole in alignment with the hole of said first base section, said holes adapted to receiving a clamping means, and a clamping means inserted in and through said holes to firmly hold said base sections together.

3,852,632

PHOTOCATHODE HAVING AN INTERMEDIATE LAYER BETWEEN ITS CARRIER AND ITS LUMINOUS LAYER
Karl Franz, Erlangen; Hermann Christgau, Furth, and Aribert Stachowiak, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

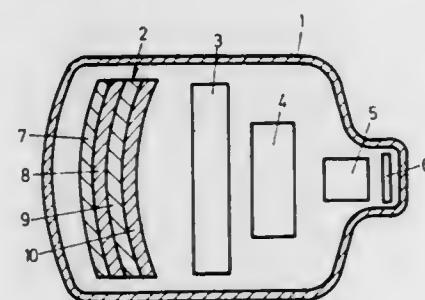
Filed July 10, 1972, Ser. No. 270,341

Claims priority, application Germany, July 12, 1971, 2134762

Int. Cl. H01j 31/50

U.S. Cl. 313-380

9 Claims



1. A photo cathode, comprising a carrier layer, an intermediate layer carried by said carrier layer and consisting of a deformable material, a luminous layer carried by said intermediate layer and a photo cathode layer carried by said luminous layer.

3,852,633

GRIDDED ELECTRON GUN

Gordon T. Hunter, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 13, 1972, Ser. No. 314,660

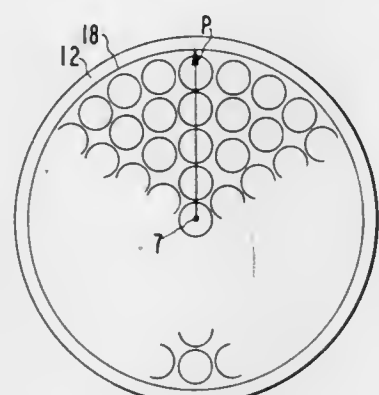
Int. Cl. H01j 29/00

U.S. Cl. 313-411

6 Claims

1. In a gridded electron gun: thermionic cathode emitter means having a concave cathode emitting surface for providing a copious supply of electrons; anode electrode means spaced from said concave cathode emitting surface and having a central aperture in axial alignment with said concave cathode emitting surface for drawing a beam of electrons from said cathode through said central aperture in said anode;

concave control grid means interposed between said concave cathode emitting surface and said anode means, said concave control grid means including a plurality of beam passageways therethrough of generally uniform cross-sectional area defining electrostatic focusing lenses for



focusing said electrons into individual beamlets passable therethrough, said individual focusing lenses of said control grid increasing in length from the outer periphery toward the center of said control grid, said control grid means being operative at a varying control grid potential relative to said cathode emitter means.

3,852,634

SWITCH DEVICE FOR POINT SELECTOR ELECTRODES IN FLAT TELEVISION SCREENS

Ludwig Sullos, Acevedo 1439, Banfield, Buenos Aires, Argentina

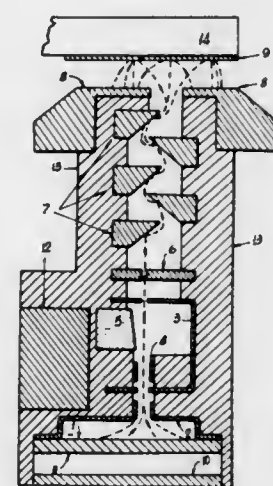
Filed Feb. 12, 1973, Ser. No. 331,443

Claims priority, application Argentina, Feb. 17, 1972, 240578

Int. Cl. H01j 29/74, 29/56

U.S. Cl. 313-422

2 Claims



1. Deflection apparatus for flat imaging screens, comprising in combination:

- a cathode and focusing electrodes for generating a flat electron beam having a width substantially equal to that of the image to be produced, two deflecting electrodes positioned on opposite sides of the path of said flat beam and in parallel relationship to said focusing electrodes, one of said deflecting electrodes being of resistive material and having two terminals by which current may be applied through said one deflecting electrode to flow in a direction perpendicular to the electron flow in said flat electron beam, and an electrode disposed in parallel relationship to said deflecting electrodes on the side thereof remote from said cathode and having a slit parallel to said deflecting electrodes;
- multiplier electrodes having a length substantially the same as that of said deflecting electrodes and being dis-

posed in parallel relationship to said slit, said multiplier electrodes being followed by a terminal collector anode of the same length;

- a row of tabs disposed in parallel relationship to said multiplier electrodes and having respective secondary emission surfaces in position to be impinged successively by said flat electron beam as the beam is narrowed and undergoes deflection in the direction of said row under the influence of said deflecting electrodes, each tab being electrically connected to one end of a respective one of a plurality of image control grids arranged in a common plane without touching each other and lying perpendicular to said row, the opposite ends of said image control grids being coupled by way of resistive means to a common terminal; and,
- a duplication of (a), (b) and (c) wherein the common planes of the two pluralities of image control grids are adjacent and parallel, with said pluralities being mutually perpendicular to form a matrix of image control grids, said matrix being adapted to be disposed in non-contacting relationship to and between transparent photoluminescent and photoemissive plane parallel surfaces equal in size to that of the image to be produced so as to control the impingement of electrons emitted from the photoemissive surface upon the photoluminescent surface.

3,852,635

TRANSIT-TIME AMPLIFIER TUBE WITH STABILIZED DELAY

Hinrich Heynisch, Graefelfing, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

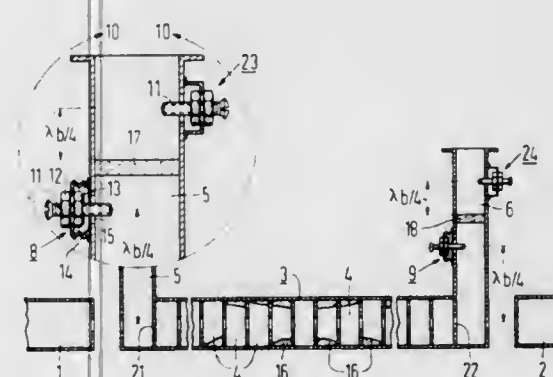
Filed July 6, 1973, Ser. No. 377,017

Claims priority, application Germany, July 31, 1972, 2237694

Int. Cl. H01j 25/34

U.S. Cl. 315-3.5

18 Claims



1. A transit-time amplifier tube comprising an input wave guide, an output wave guide, a delay line coupled between said input wave guide and said output wave guide and at least one adjustable wave reflector arranged outside of said delay line for adjusting the frequency-dependent gain, said wave reflector positioned in one of said wave guides outside of said delay line.

3,852,636

KLYSTRONS

Christopher John Edgcombe, Cambridge, England, assignor to English Electric Valve Company Limited, Essex, England

Filed Oct. 11, 1973, Ser. No. 405,545

Claims priority, application Great Britain, Oct. 11, 1972, 467572

Int. Cl. H01j 23/20

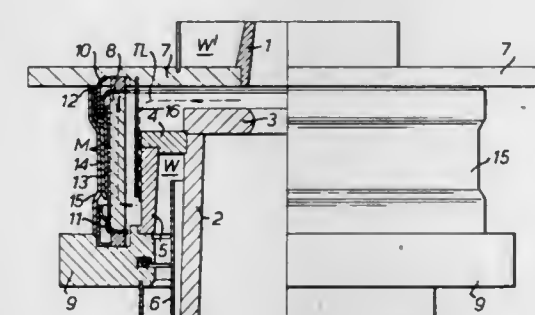
U.S. Cl. 315-5.54

7 Claims

1. In a klystron structure of the type including a high frequency interaction section terminating in a last drift tube, said interaction section operating over a selected frequency band, a collector section spaced from said last drift tube to define a

gap through which high frequency radiation within said frequency band tends to escape, a sleeve-like insulating member surrounding an end of said collector section and interposed between said sections to preserve evacuated condition within said klystron structure, a transmission line having at least a first section defined between said last drift tube and said collector section and leading radially outwardly of said gap and an end section extending parallel to the axis of the klystron structure, and high frequency short circuit means connected to said end section for providing a high frequency short circuit located externally of said klystron structure, the improvement wherein:

said end section of the transmission line is defined by a metallic film in surrounding contiguous relation to said



insulating member and a tubular metallic surface within the evacuated interior of said klystron structure, and said metallic surface being spaced to provide a dielectric within and along the length of said end section of said transmission line which is constituted partially by said insulating member and partially by the vacuum within the klystron structure, said end section being so dimensioned that said transmission line is of electrical length which is an integral number (including unity) of half wavelengths of the center frequency of said frequency band and also does not correspond to an electrical length approximately to an odd number (including unity) of quarter wavelengths of any frequency or of the second harmonic of any frequency within said frequency band.

3,852,637

ELECTRON GUN STRUCTURE WITH UNIPOTENTIAL AND BIPOTENTIAL LENS

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

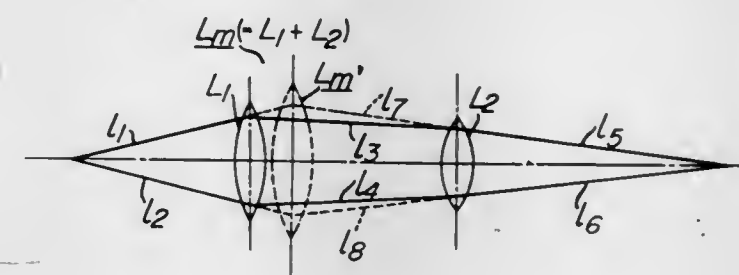
Filed Jan. 25, 1972, Ser. No. 220,641

Claims priority, application Japan, Feb. 5, 1971, 46-4232

Int. Cl. H01j 29/56

U.S. Cl. 315-16

9 Claims



1. In an electron gun structure having a plurality of electrodes for focusing an electron beam on a screen, the improvement comprising a main focusing lens assembly comprising first electrode means for forming a unipotential electron lens and second electrode means for forming a bipotential electron lens.

3,852,638

DITHER TUNED MICROWAVE TUBE

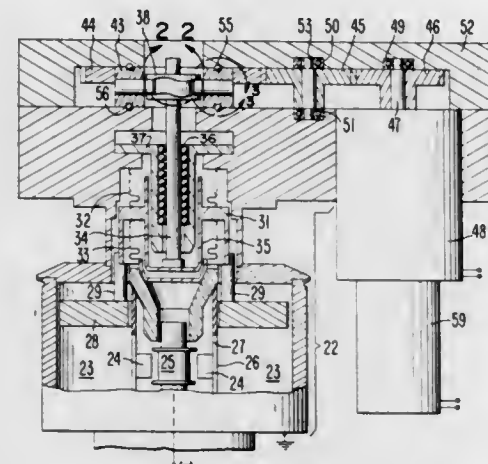
Richard C. Stoke, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 14, 1974, Ser. No. 450,964

Int. Cl. H01j 25/50

U.S. Cl. 315-39.61

4 Claims

**1. In a dither tuned microwave tube:**

cathode emitter means for emitting a stream of electrons; microwave circuit means disposed adjacent said cathode emitter means in electromagnetic wave energy exchanging relation with the stream of electrons;

means for applying an anode potential to said microwave circuit means relative to said cathode means for drawing the stream of electrons from said cathode means towards said microwave circuit means and for generating wave energy on said microwave circuit means as a result of the electromagnetic wave interaction between the fields of said microwave circuit and the electrons of said electron stream;

tuning means for displacing electromagnetic fields of said microwave circuit means for tuning of said microwave circuit means and thus the frequency of the wave energy generated on said microwave circuit means;

said tuning means including, a tuning structure movable relative to said microwave circuit for variably displacing fields of said microwave circuit, tuner actuator means coupled to said tuning structure for effecting reciprocal rectilinear translation of said tuning structure, and motor means for imparting rotary motion to said actuator means for actuation thereof;

said tuner actuator means including cam means having a circular cam track to receive a cam follower means, said circular cam track being scalloped in a direction normal to the mean plane of the circular cam track, and cam follower means following said circular cam track, and cam track to derive reciprocal rectilinear translation of one of said cam means relative to said microwave circuit means, and means for coupling said tuning structure to effect reciprocal rectilinear translation thereof.

3,852,639

VISUAL DISPLAY APPARATUS

Willem Aling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,649

Claims priority, application Netherlands, June 17, 1972, 7208319

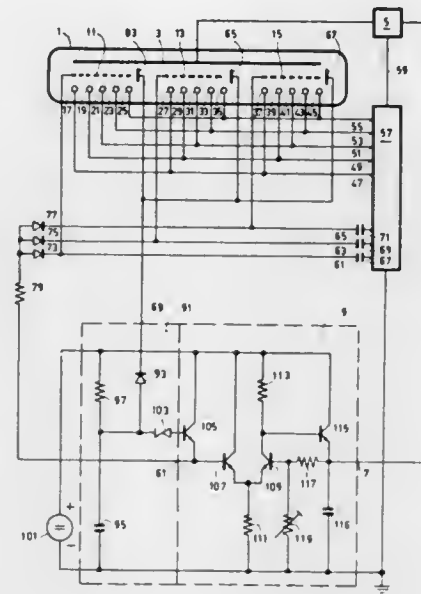
Int. Cl. H05b 41/36

U.S. Cl. 315-84.6

14 Claims

1. A visual display apparatus comprising, a gas discharge display tube including an extinction voltage measuring electrode and a system of anode and cathode electrodes arranged to define a plurality of discharge gaps within said display tube,

a bias control circuit for controlling the supply voltage applied to the electrodes of the gas discharge tube, means for selectively applying the supply voltage to the tube electrodes in a sequence that is independent of the gas discharge condition across the discharge gaps between the tube electrodes, and an



3,852,640

CATHODE RAY TUBE CIRCUIT

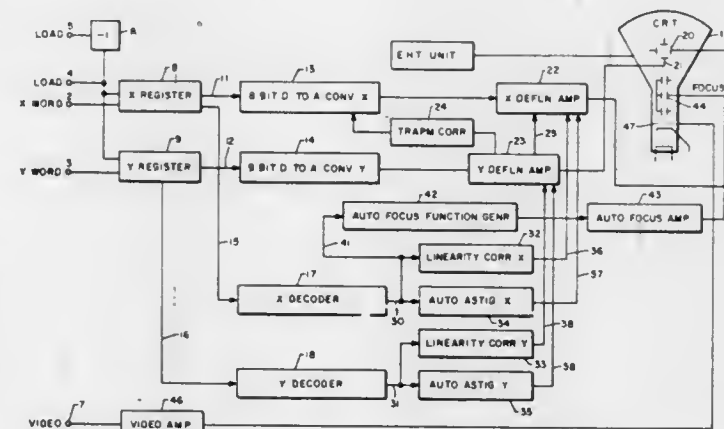
Brian D. McCarthy, Oxted, England, assignor to Sanders Associates, Inc., South Nashua, N.H.

Continuation-in-part of Ser. No. 129,824, March 31, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,038

Int. Cl. H01j 29/70

U.S. Cl. 315-276 D

7 Claims



1. A cathode ray tube circuit having first and second means for generating x and y beam deflection signals, respectively, to provide a raster scan, a connection for coupling a signal proportional to the y deflection signal to the x deflection signal generating means to modify the x deflection signal according to the y deflection signal thereby to provide a correction for the trapezium distortion of an image on the screen that might otherwise occur, first and second digitally operated control means connected for controlling the said first and second beam deflection signal generating means respectively, a decoder having an input connected to the output from one of the control means and a function generator having an input connected to the output from the decoder and an output providing a signal for modifying a control signal for a cathode ray tube beam.

3,852,641

PROTECTIVE SYSTEM FOR MOBILE ELECTRIC POWER APPARATUS

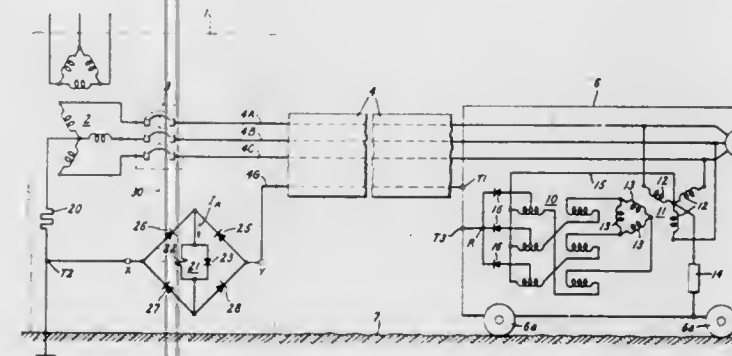
Charles H. Titus, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 5, 1973, Ser. No. 329,455

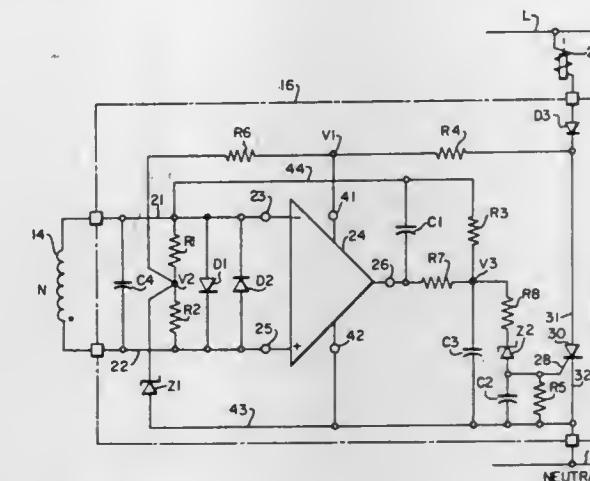
Int. Cl. H02h 1/02

U.S. Cl. 317-18 B

4 Claims



1. In a system for supplying three phase electric current through a power circuit including a flexible cable from a fixed source location to a mobile utilization apparatus having a conductive frame, a three phase power transformer at said source location having line and neutral terminals, a ground terminal at said source location conductively connected to said neutral terminal, said cable including line conductors connected to said line terminals and a ground conductor, an electrical load device carried by said conductive frame and having load terminals connected for energization to said line conductors, the electrical neutral of said load device normally floating at a voltage near ground potential under balanced load conditions, a potential transformer mounted on said frame and having wye-connected primary windings connected to said load terminals and secondary windings, said potential transformer primary windings having a neutral terminal normally floating electrically, a wye connected zig-zag autotransformer mounted on said frame, said zig-zag autotransformer having phase windings connected to said secondary windings and a neutral terminal conductively connected to said neutral terminal of said potential transformer primary windings, a three phase rectifier energized from intermediate voltage phase winding taps on said zig-zag transformer phase windings and having a common terminal connected to said conductive frame, means connecting one end of said ground conductor to said frame, and means including a low impedance signal relay connecting the other end of said ground conductor to said ground terminal at said source location, whereby a unidirectional monitor signal current supplied by said rectifier normally traverses said ground conductor and said relay and follows a return path through said power transformer neutral terminal and the neutral terminal and phase windings of said zig-zag transformer.



state switching device responsive to a predetermined output of said amplifier means to result in a change of conductive state.

3,852,643

PRINTED CIRCUIT BOARD ASSEMBLY AND HEAT SINK
Hideki Seki, Saijo; Sachinori Furuya, Ibaragi, and Mamoru Hiroyasu, Saijo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

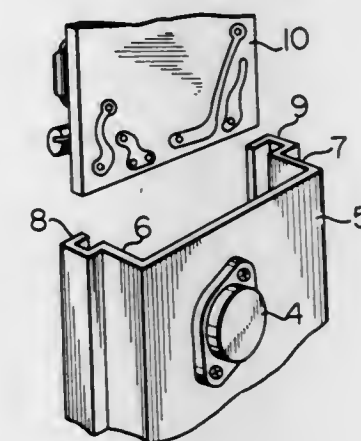
Filed Feb. 6, 1973, Ser. No. 330,099

Claims priority, application Japan, Feb. 7, 1972, 47-13737

Int. Cl. H05k 7/20

U.S. Cl. 317-100

4 Claims



1. A printed circuit board assembly comprising a radiator member of square shape carrying directly heat producing components, a pair of bent boards having a certain width formed by bending opposite ends of said radiator member, and a pair of grooves provided on said pair of opposing bent boards and having a width slightly greater than the thickness of a slightly curved printed circuit board, said slightly curved printed circuit board being attached to said radiator member by inserting opposite ends of said printed circuit board into said pair of grooves.

3,852,642

SENSING AMPLIFIER AND TRIP CIRCUIT PARTICULARLY FOR GROUND FAULT CIRCUIT INTERRUPTER

Joseph C. Engel; Robert T. Elms, both of Monroeville, Pa., and John J. Misencik, Shelton, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1972, Ser. No. 302,949

Int. Cl. H02h 3/28

U.S. Cl. 317-18 D

24 Claims

1. Electronic apparatus comprising: a source of sensed signals; amplifier means receiving sensed signals directly from

3,852,644

PRINTED WIRING CIRCUIT GUARD RING

Helmut G. Seidler, Schwenksville, and James T. Walker, Norristown, both of Pa., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed June 22, 1973, Ser. No. 372,593

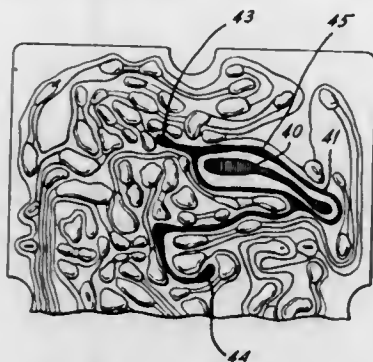
Int. Cl. H05k 5/00

U.S. Cl. 317-101 C

2 Claims

1. A printed wiring circuit board for mounting a group of electronic components and interconnecting said components to form an electronic circuit, said board comprising:

an insulating substrate, an array of conductors disposed on said substrate, said array being contoured to complete the interconnections between said components to achieve said circuit, a first conductor in said array interconnecting elements of said components to form a point operating at an imped-



ance that is high relative to the impedance normally encountered at other points in said circuit, and a second conductor in said array adjacent to and surrounding said first conductor, said second conductor being connected to a source of potential approximating the potential at said point.

3,852,645

TELEPHONE RELAY REPAIR KIT WITH SPACED CONTACT BOARDS

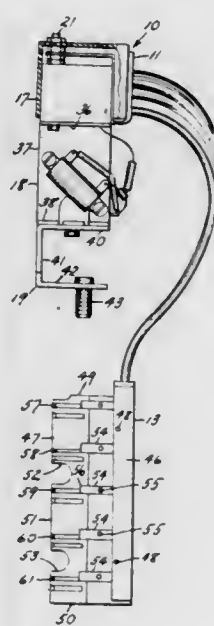
Paul V. DeLuca, Port Washington, N.Y., assignor to Porta Systems, Corp., Syosset, N.Y.

Filed July 23, 1973, Ser. No. 381,801

Int. Cl. H02b 1/04

U.S. Cl. 317-113

3 Claims



1. In combination, an inoperative telephone flat spring relay including a plurality of rows of contacts separated by interstices selectively opened and closed by an armature operated by a relay coil, device and a device for repairing said inoperative relay comprising: a replacement relay, means for mounting said replacement relay in the area of said relay coil, a plurality of spaced planar contact boards, individual conductive cables interconnecting each of said boards to said replacement relay, and permitting adjustable relative spacing therebetween, said contact boards each having a planar configuration and being sufficiently thin to be readily inserted in said interstices formed between said rows of contacts to be retained thereby, said contact boards upon being so positioned serving to mate with the rows of contacts to permit retention

of said contacts in opened condition and to establish electrical communication to contacts on said replacement relay, whereby said rows of contacts are in effect opened and closed by operation of said replacement relay.

3,852,646

SOLENOID DRIVE CIRCUIT

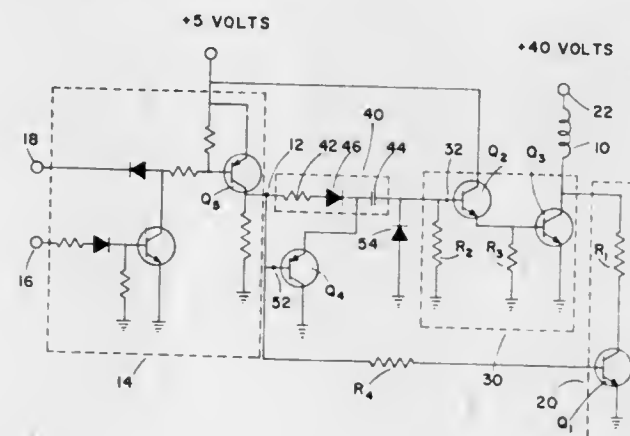
Edwin E. Mason, Harrisburg, Ohio, assignor to Design Elements, Inc., Columbus, Ohio

Filed Dec. 28, 1970, Ser. No. 101,502

Int. Cl. H01h 47/18

U.S. Cl. 317-141 S

5 Claims



1. A solenoid drive circuit for energizing and de-energizing a solenoid in response to suitable signals at a drive circuit input, said circuit comprising:

- a first electronic switch means in series with said solenoid and a source of driving power for switching a current through said solenoid, the first switch means having a control input connected to and being controlled at said drive circuit input;
- an electronic valve means connected parallel to said first switch means for providing a time changing current through said solenoid, the valve means having a control input;
- a timing means for providing a time changing current for controlling said valve means and comprising serially connected timing resistance, capacitance and a diode connected to permit current flow in a direction to turn on said valve means and to charge said capacitance, said timing means connected between the control input of the valve means and said drive circuit input; and
- capacitance discharge means for at times discharging the capacitance and comprising a second electronic switch means connected to discharge said capacitance when turned on and a second diode connected in series with the second electronic switch means and said capacitance in a polarity to be reverse biased except during discharge of the capacitance.

3,852,647

EXPLOSION PROOF STRUCTURE FOR ELECTROLYTIC CAPACITOR

Hiroshi Ishii, Nagano-ken, Japan, assignor to Nichicon Capacitor Limited, Kyoto, Japan

Filed June 15, 1973, Ser. No. 370,210

Claims priority, application Japan, June 21, 1972, 47-73457[U]

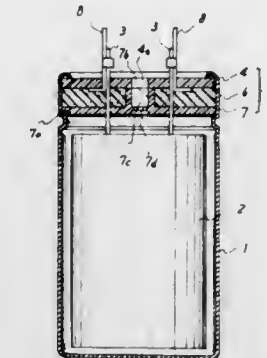
Int. Cl. H01g 9/00

U.S. Cl. 317-230

2 Claims

1. An electrolytic capacitor, comprising a metal casing, a capacitor element and a terminal plate fitted in the opening of said casing, said terminal plate including a bottom plate made of thermoplastic resin and an overlying layer of relatively soft material for sealing the casing, said bottom plate being pro-

vided with a cylindrical projection having a hollow passage therein and a thin diaphragm within and closing said passage, said diaphragm and said projection being formed integrally



with said bottom plate and spaced inwardly from the bottom surface of the bottom plate a distance not greater than one-half the length of said passage.

3,852,648

CONTROL CIRCUIT

Vincent T. Barry, and George T. Privon, both of Camillus, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

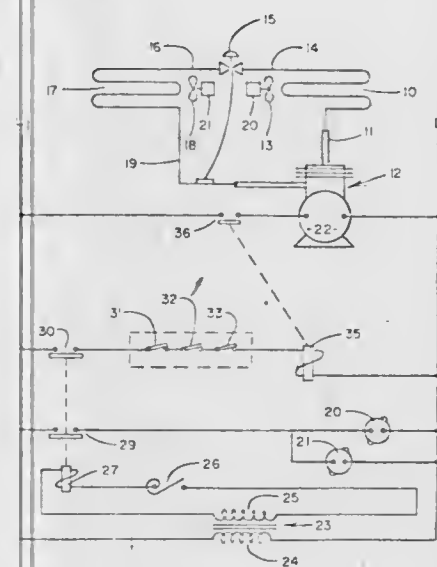
Continuation of Ser. No. 146,710, May 25, 1971, abandoned.

This application Feb. 15, 1973, Ser. No. 332,858

Int. Cl. H02p 1/44; G05d 23/32

U.S. Cl. 318-221 H

7 Claims



1. In an air conditioning system operable to supply treated air to an area including a refrigeration unit comprising a compressor, a condenser, an evaporator and expansion means connected in a closed circuit, a motor for actuating said compressor, said motor having a main winding and an auxiliary winding connected in parallel, the improvement which comprises a control circuit to regulate the operation of the compressor motor of said refrigeration unit comprising:

- a supply circuit for providing electrical energy to said compressor motor, including thermally responsive switch means operable to energize said supply circuit in response to temperature conditions in said area;
- a temperature responsive resistance element connected in series with said auxiliary winding of said compressor motor, the resistance of said responsive element substantially increasing as a function of its temperature, the temperature thereof being increased by the flow of current therethrough;
- first capacitor means connected in series with said auxiliary winding and in parallel with said temperature responsive element, current to said auxiliary winding during starting conditions flowing through both said first capacitor means and said temperature responsive element in a

predetermined relationship; current to said auxiliary winding passing only through said capacitor means when the resistance of said element substantially eliminates the flow of current therethrough when normal operating conditions have been obtained; and

- heat sensitive means responsive to the temperature of said resistance element, said heat sensitive means being placed in a state so as to substantially interrupt the flow of electrical energy therethrough in response to the increase of the temperature level of said resistance element, caused by the flow of current therethrough, said heat sensitive means when in its energy interrupting state operating to prevent reenergization of said compressor motor once the supply of electrical energy thereto has been interrupted, reenergization being prevented until said heat sensitive means is placed in a state to permit the passage of energy therethrough in response to the temperature of said resistance element decreasing due to the interruption of current flow therethrough.

3,852,649

MATERIAL HANDLING APPARATUS WITH CARRIAGE DRIVE MEANS

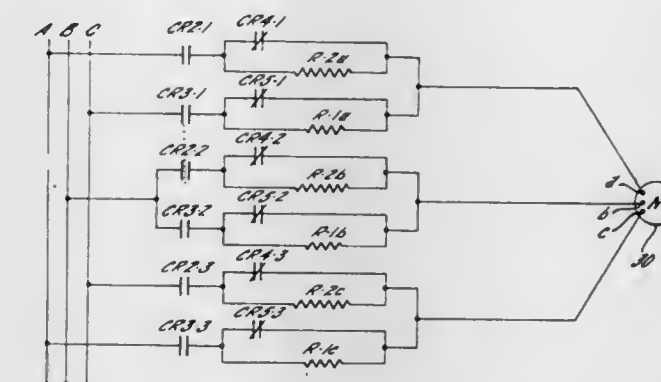
Lee Kindgren, Rockford, and William B. Scott, Steward, both of Ill., assignors to W. A. Whitney, Corporation, Rockford, Ill.

Filed Nov. 7, 1973, Ser. No. 413,501

Int. Cl. H02p 7/40

U.S. Cl. 318-257

6 Claims



1. The combination of, a power-driven, reversible conveyor adapted to support an elongated structural member for movement in an endwise direction, control means selectively operable to advance, reverse and stop said conveyor and the supported member, a carriage movable forwardly and rearwardly along said conveyor and having an element engageable with the forward end of said member, a reversible a.c. induction motor for moving said carriage, and means responsive to said control means for supplying said motor with:

- a first voltage for causing said carriage to move reversely when said member is moved reversely, said first voltage being of sufficient magnitude to cause said carriage, in the absence of said member, to move at a rate greater than the rate of said member thereby to keep said element in engagement with said member;
- a second voltage for causing said carriage, in the absence of the member, to move reversely when said member is stopped, said second voltage being of lower magnitude than said first voltage so as to cause said element to remain pressed against the stopped member without said motor developing excessive heat; and
- a third voltage for causing said carriage to tend to move forwardly when said member is moved forwardly, the magnitude of said third voltage being insufficient to advance said carriage at a rate greater than the rate of said member whereby said element is held in engagement with said member while said motor reduces the force with which said member must push said carriage to move the latter forwardly.

3,852,650

SERVO APPARATUS FOR MARINE AUTOPILOT

Isao Masuzawa, Kuki; Tsuneo Awano, and Kazutoshi Onishi, both of Yokohama, all of Japan, assignors to Kabushikikai-sha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

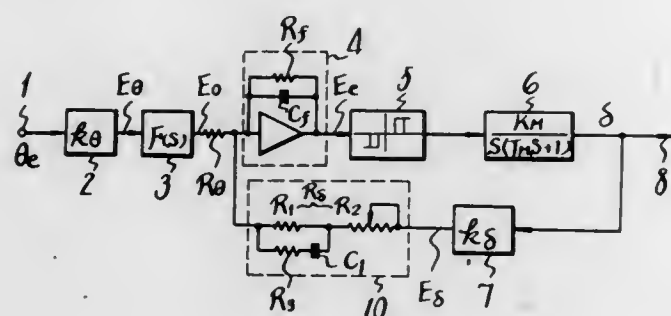
Filed May 23, 1973, Ser. No. 363,167

Claims priority, application Japan, May 27, 1972, 47-52736

Int. Cl. G05d 1/00; B63h 25/02

U.S. Cl. 318-588

4 Claims



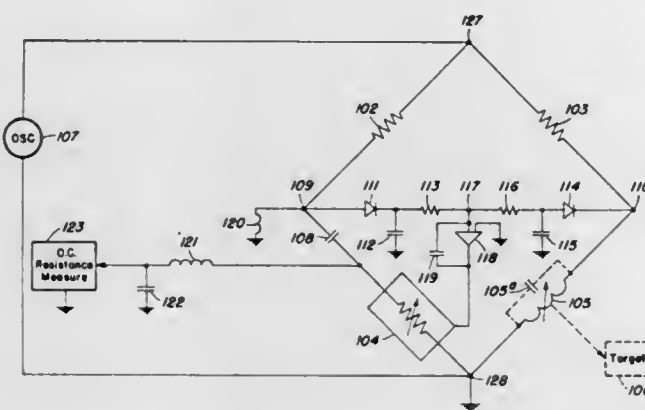
loop forming a normally open circuited magnetic flux path with two poles associated therewith, said magnetic cores positioned longitudinally along said housing; an annular ring of magnetically soft material affixed to each of the poles of said magnetic cores respectively, said annular rings closely receiving said housing within the center thereof; a saturable transformer having a primary and secondary winding forming at least a portion of each of said first magnetic loops; magnetic biasing means for magnetically biasing each of said magnet cores and providing a sufficient source of flux to saturate said transformer, said biasing means producing a flux field within said magnetic cores, respectively, which is in opposition to the flux field induced by said drive rod at the point in movement thereof where said drive rod appears across the poles of said magnetic cores, said drive rod having a sufficient source of flux to unsaturate said transformer when closing said normally open circuited magnetic core flux path; AC excitation means for exciting said primary transformer windings; and indication means for indicating a change in current across said transformer secondary windings.

3,852,662

PROXIMITY MEASURING EMPLOYING A SELF-BALANCING BRIDGE AND MEASURING THE ADJUSTABLE BALANCING COMPONENT THEREOF

Bernard R. Katz, 33 Philip Pl., Irvington, N.J. 07111
Continuation of Ser. No. 126,238, March 19, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 385,180
Int. Cl. G01r 33/00
U.S. Cl. 324-34 PS

11 Claims



1. In apparatus for determining the interstice between a target means and variable inductance sensing means including bridge means having a network branch including said variable inductance sensing means; means for applying an energizing signal to said bridge means; control signal generating means coupled to said bridge means for generating a control signal proportional to the deviation by said bridge means from a balanced potential condition; and target means magnetically coupled to said variable inductance sensing means and adapted to vary the impedance thereof in accordance with said interstice, thereby altering a balanced potential condition of said bridge means, the improvement comprising:

first peak detection means included in said control signal generating means comprised of positive half wave rectifying means having an input terminal connected to a first output terminal of said bridge means and an output terminal coupled to the input of a first low pass filter means; second peak detection means included in said control signal generating means comprised of negative half wave rectifying means having an input terminal connected to a second output terminal of said bridge means and an output terminal coupled to the input of a second low pass filter means;

comparator means coupled to the outputs of said first and second low pass filter means for generating a signal proportional to the difference in magnitude between signals appearing at said outputs; integrator means coupled to said comparator means for producing a slowly varying control signal; adjustable resistance means included in another network branch of said bridge means, said adjustable resistance means comprising photoresistive cell means optically coupled to light emitting diode means, said diode means coupled to said integrator means and said photoresistive cell means having a resistance that is dependent upon the intensity of light received thereby such that said light emitting diode means emits light having an intensity determined by the magnitude of said control signal; conductor means connected between said integrator means and said adjustable resistance means for applying said control signal to said adjustable resistance means for modifying the resistance thereof in accordance with said control signal to restore said bridge means to its balanced potential condition; and resistance measuring means coupled to said adjustable resistance means for measuring the resistance thereof when said bridge means is restored to its balanced potential condition, said resistance being a function of said interstice.

3,852,663

PULSE EDDY CURRENT TESTING APPARATUS USING PULSES HAVING A 50% DUTY CYCLE AND PRECISE QUADRATURE GATES

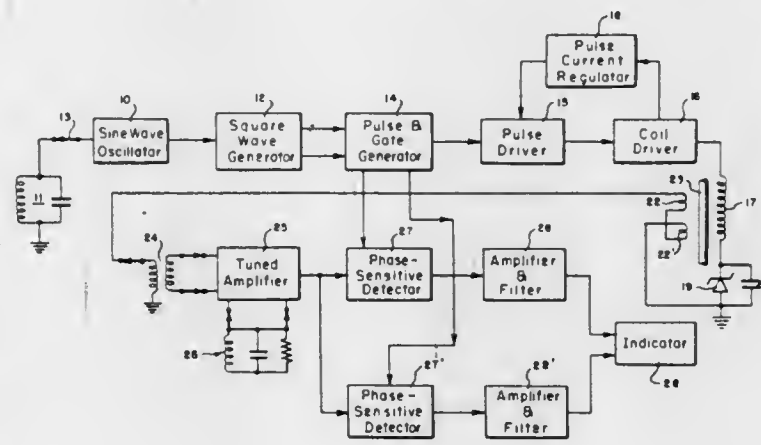
Robert A. Brooks, Rye, and Paul J. Bebeck, Bronx, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 332,874, Feb. 15, 1974, Pat. No. 3,798,539. This application Feb. 11, 1974, Ser. No. 441,148

Int. Cl. G01r 33/12

U.S. Cl. 324-40

4 Claims



1. Pulse eddy current testing apparatus which comprises

- a sine wave oscillator,
- a square wave generator supplied with the sine wave from said oscillator for producing a square wave therefrom,
- pulse generator means for producing from said square wave substantially 50 percent duty cycle pulses having leading and trailing edges substantially coinciding with alternate edges of the square wave and 25 percent duty cycle pulses having leading and trailing edges coinciding with successive edges of the square wave,
- said 50 percent and 25 percent duty cycle pulses each having a PRF one-half the frequency of said square wave,
- gate generating means for producing from predetermined edges of said pulses one series of gating pulses coinciding with the leading or trailing edges of said 50 percent duty cycle pulses and a second series of gating pulses coinciding with edges of said 25 percent duty cycle

3,852,665

APPARATUS FOR TESTING POTENTIOMETERS

Manfred Wolfgang Bothner, Geretsried, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

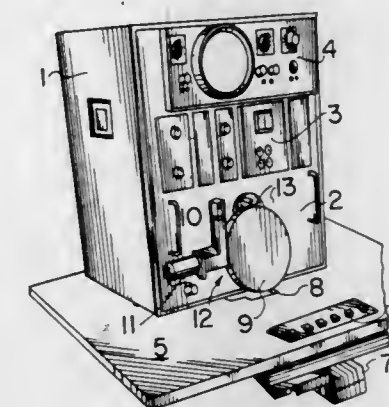
Filed Feb. 12, 1973, Ser. No. 332,008

Claims priority, application Germany, Feb. 17, 1972, 2207525

Int. Cl. G01r 27/02

U.S. Cl. 324-63

17 Claims



- pulses lying halfway between the edges of the 50 percent duty cycle pulses or halfway between successive 50 percent duty cycle pulses,
- test coil means supplied with said 50 percent duty cycle pulses for inducing eddy currents in an object under test and producing output signals varying with defects or flaws in the object,
- an amplifier supplied with said output signals and tuned to substantially the PRF of said 50 percent duty cycle pulses,
- a pair of phase-sensitive detectors supplied with respective series of said gating pulses and with the output of said tuned amplifier for producing quadrature signal components thereof,
- and means for utilizing the signal components from said phase-sensitive detectors to produce indications of said defects or flaws in the object under test.

3,852,664

MAGNETIC REED SENSOR SUITABLE FOR USE IN IGNITION TIMING SYSTEMS

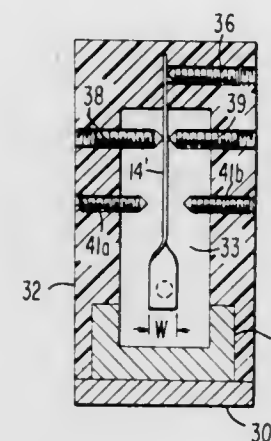
Leonard Robin Hulls, Marblehead, Mass., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 346,670, March 30, 1973, Pat. No. 3,813,596. This application Sept. 19, 1973, Ser. No. 398,876

Int. Cl. G01r 33/00; H01h 36/00

U.S. Cl. 324-41

7 Claims



1. A magnetic reed sensor comprising, in combination: a housing of non-magnetic material; a permanent magnet mounted at one end of said housing, said magnet having first and second end poles defining a gap of given distance therebetween and establishing a magnetic flux path thereacross; a reed of flexible magnetic material fixedly mounted at one of its ends to the other end of said housing, said reed having a portion of its other end disposed centrally in said gap between said end poles in said magnetic flux path, so that said reed is normally maintained in a central position of stable equilibrium in said gap; a magnetic member adapted to be mounted external of said housing and to be movable in a path passing in close proximity to said magnetic flux path, to disturb the magnetic flux path established across said poles only when said member is in close proximity to said housing, thereby to cause said flexible reed to be deflected away from the path of said moving member and toward the more distant one of said end poles; and means for determining the position of said reed relative to said end poles.

1. An apparatus for testing potentiometers having a resistor element with two end terminals and a slider contact which traverses said resistor in response to rotation of a spindle, comprising a carrier having a plurality of potentiometer supports at spaced points thereon, and a plurality of devices positioned at stations adjacent to said carrier, said carrier being movable to locate each support successively at said stations in a predetermined sequence, wherein the improvement comprises

an adjusting device at one of said stations including rotary driving means engageable with the spindle of a potentiometer in a support on said carrier adjacent to said one station, means applying a constant potential to the end terminals of said potentiometer, means sensing the potential appearing between the slider contact and one end terminal, and means disengaging said driving means from said spindle when the ratio between the potential across the end terminals of said potentiometer to the potential between the slider contact and said one end terminal has a predetermined value, and an evaluation device at a subsequent one of said stations, including second rotary driving means engageable with the spindle of a potentiometer in a support on said carrier adjacent to said subsequent station, means passing a constant current from one end terminal of said potentiometer through the slider contact thereof, and means visibly displaying the magnitude of the potential between said last mentioned slider contact and the other end terminal.

3,852,666

METHOD AND APPARATUS FOR COMPENSATION OF THE TEMPERATURE-DEPENDENCY OF THE CONDUCTIVITY OF A FLUID WITH SUSPENDED PARTICLES

Hermann Gahwiler, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed May 21, 1973, Ser. No. 362,011

Claims priority, application Switzerland, June 30, 1972, 009830/72

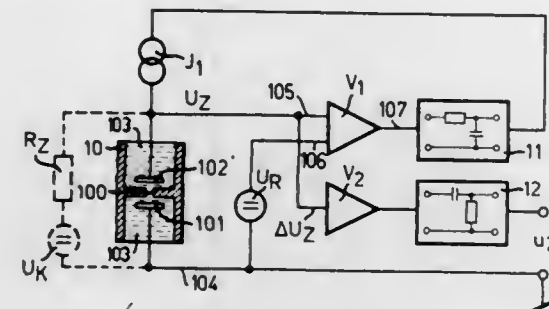
Int. Cl. G01n 27/00, 27/42

U.S. Cl. 324-71 CP

6 Claims

2. An apparatus for compensating the temperature-dependency of the conductivity of an electrically conductive

liquid during pulse amplitude measurement of particles suspended in the liquid by means of a conductivity cell comprising means for compensating the temperature-dependency of the electrically conductive liquid, said compensating means



embodying a constant direct-current voltage source and at least one frequency filter, the conductivity cell being electrically coupled with the constant direct-current voltage source and said frequency filter.

3,852,667

PROBE FOR ELECTROSTATIC VOLTMETER

Bruce T. Williams, Lockport, and Clarence R. Hare, Barker, both of N.Y., assignors to Trek Inc., Gasport, N.Y.

Filed May 10, 1973, Ser. No. 359,004

Int. Cl. G01r 31/02

U.S. Cl. 324-72

15 Claims



1. A sensor for an electrostatic voltmeter comprising:
 - a. a housing including an operative surface having an opening therein;
 - b. a voltage sensitive electrode having an operative surface disposed toward said opening; and
 - c. vibrator means in said housing to vibrate said electrode in a direction generally transversely of said opening to vary the amount of said electrode operative surface which is exposed through said opening to an external electrical field or potential being measured, said vibrator means comprising a generally elongated element having a resonant mechanical vibration characteristic, electro-mechanical driver means adapted to be converted to an electrical signal source and operatively connected to said element adjacent one end thereof and means to connect said electrode to said element adjacent the other end thereof;
 - d. whereby the capacitive coupling between said electrode operative surface and the external field or potential being measured is varied as a function of the rate of vibration of said electrode whereby an alternating voltage is induced on said electrode having an amplitude proportional to the amplitude of the external electrical field or potential being measured.

3,852,668

ELECTROMETER SYSTEM

James M. Hardenbrook, Columbus, and Paul G. Andrus, Powell, both of Ohio, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 14, 1973, Ser. No. 388,505

Int. Cl. G01r 31/02

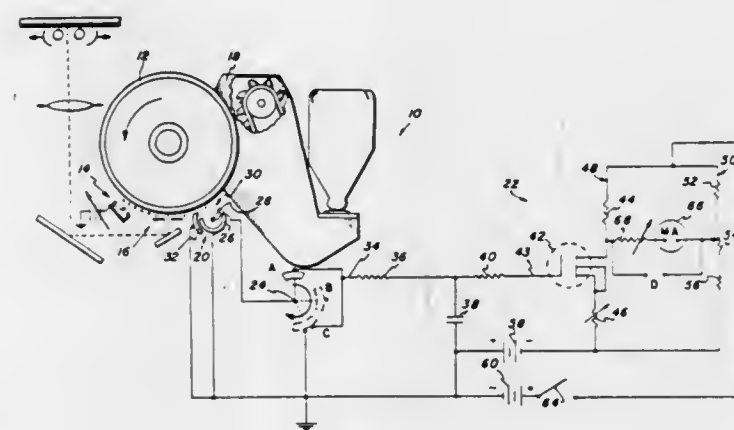
U.S. Cl. 324-72

13 Claims

1. In an electrometer system for non-contact detection of the electrostatic charge on an electrostaticographic surface

including an electrometer probe containing a probe electrode and an electrometer circuit providing an output signal corresponding to a charge induced on said probe electrode from said surface, wherein said electrometer circuit is mounted in a chassis unit, the improvement wherein:

said electrometer probe comprises first and second concentric elongated small diameter conductive hollow tubes relatively movable with respect to one another and electrically shielding said probe electrode,



said tubes extending from said chassis unit to define an elongated small diameter probe, said probe electrode extending through said tubes, said first tube containing a relatively small probe window substantially spaced from said chassis in a side of said tube for exposing said probe electrode, and said second tube containing a probe shutter area for covering said probe window in said first tube by said relative movement between said first and second tubes.

3,852,669

CIRCUIT TO PROTECT RF OUTPUT AMPLIFIER AGAINST MISMATCH DAMAGE

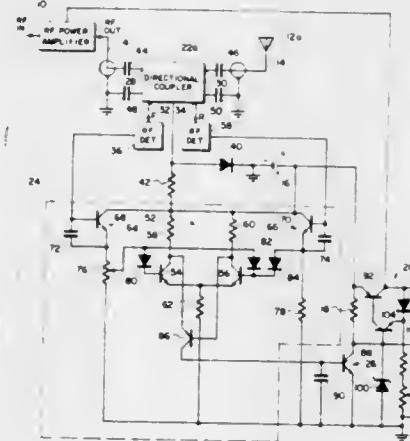
Dennis W. Bowman, Eatontown, and Robert E. Horn, Middletown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 26, 1973, Ser. No. 373,830

Int. Cl. H03g 3/18

U.S. Cl. 325-151

6 Claims



1. In combination with an output rf power amplifier and a dc power source for the rf power amplifier, a load for the rf power amplifier and rf power delivering means coupling the rf power amplifier to the load,

a resistor and a normally off electronic switch connected in series across the dc power source, regulator means including a zener diode connected across said electronic switch and short-circuited by said electronic switch.

tronic switch when the latter is turned on, for delivering power from the dc power source to the rf power amplifier at one level when the electronic switch is off and at a lower level when the electronic switch is on, means for sampling selected parameters in the rf power delivering means that are representative of magnitude of forward power and reflected power, respectively, power cutback means including a pair of essentially equal gain emitter followers, one of said emitter followers having a potentiometer output, means for coupling the selected parameter representative of forward power to the input of the emitter follower with the potentiometer output and means for coupling the selected parameter representative of reflected power to the input of the other emitter follower,

means coupled to the outputs of both emitter followers to turn on said electronic switch only when and for so long as the selected parameters representative of reflected power and forward power, respectively, exceed a predetermined ratio for instantaneously reducing the dc power to said rf power amplifier to substantially reduce the level of forward rf power while continuing operation of said power cutback means.

3,852,670

TUNER WITH INTEGRAL INPUT FILTER

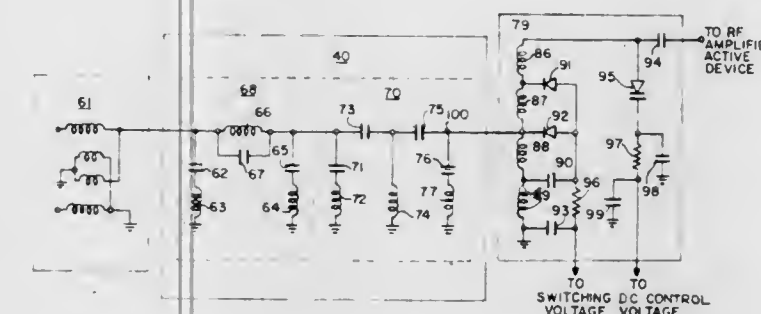
John Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,937

Int. Cl. H04b 1/18

U.S. Cl. 325-357

6 Claims



1. A television tuner for converting the frequency of a received signal to an intermediate frequency, said tuner comprising:

a shielded housing; an RF amplifier, a mixer and a local oscillator stage in said shielded housing each including tuned circuit components having variable reactance, for adjusting the resonant frequencies of said stages; an input filter network in said shielded housing, coupling the received signal to said RF amplifier, and reducing the levels of signal frequencies within a predetermined band of frequencies; and means, including an RF amplifier input network, permitting alignment of said input filter network while coupled to said RF amplifier stage by altering the impedance of said RF amplifier input network to terminate said filter network, for signals within said band of frequencies, in an impedance suitable for alignment of said filter.

3,852,671

COMMUNICATION RECEIVING APPARATUS EMPLOYING SEVERAL SAMPLES OF BASEBOARD NOISE TO DETECT AN INCOMING SIGNAL AND TURN ON THE APPARATUS

Curtis A. Risley, Sharon, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 25, 1973, Ser. No. 373,412

Int. Cl. H04b 1/06

U.S. Cl. 325-492

10 Claims

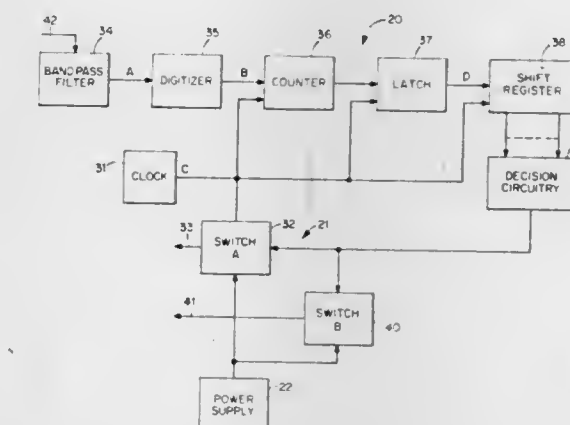
8. Apparatus responsive to pulses of electromagnetic energy comprising

filter means adapted to receive electromagnetic energy and operable to pass electromagnetic energy of predetermined frequencies;

digitizing means coupled to said filter means for generating a pulse in response to each pulse of electromagnetic energy of the predetermined frequencies and of predetermined amplitude;

counting means coupled to said digitizing means and operable to count pulses from the digitizing means for a predetermined period of time;

latch means coupled to said counting means and operable to produce a first indication when the counting means counts less than a predetermined number of pulses within said predetermined period of time and a second indication when the counting means counts said predetermined number of pulses within said predetermined period of time;



storage means coupled to said latch means for storing a plurality of indications from said latch means; and decision means coupled to said storage means and having first and second output conditions, said decision means being operable to change from the second output condition to the first output condition in response to a first predetermined combination of first and second indications being stored in said storage means and being operable to change from the first output condition to the second output condition in response to a second predetermined combination of first and second indications being stored in said storage means;

said storage means including a shift register having an input connection connected to the latch means and a plurality of stages arranged in series, each stage having a first state and a second state and an output connection, and being in the first state to store a first indication and the second state to store a second indication; and said decision means being connected to the output connections from the stages of the shift register.

3,852,672

FOUR-QUADRANT MULTIPLIER-NOTCH FILTER DEMODULATOR

Everett J. Nelson, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 29, 1973, Ser. No. 410,433

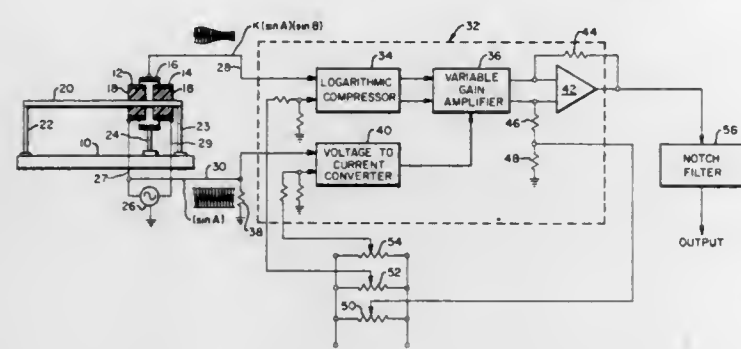
Int. Cl. G01b 7/16

U.S. Cl. 328-1

5 Claims

1. A carrier-suppressed amplifier demodulator comprising: means for generating a carrier signal of fixed frequency, means for generating an oscillatory modulating signal, means for modulating said carrier signal with said modulating signal to produce a modulated signal,

means for multiplying said modulated signal with said carrier signal to produce an output multiplied signal, and



means for passing said multiplied signal through a notch filter to produce an output signal proportional to the modulating signal.

3,852,673

METHOD AND CIRCUIT ARRANGEMENT FOR PRODUCING AND TRANSMITTING ELECTRICAL REFERENCE PULSES

Volker Guyot, Klein-Gerau; Paul Holdinghausen, and Martin Mueller, both of Bickenbach, all of Germany, assignors to Carl Schenck AG, Darmstadt, Germany

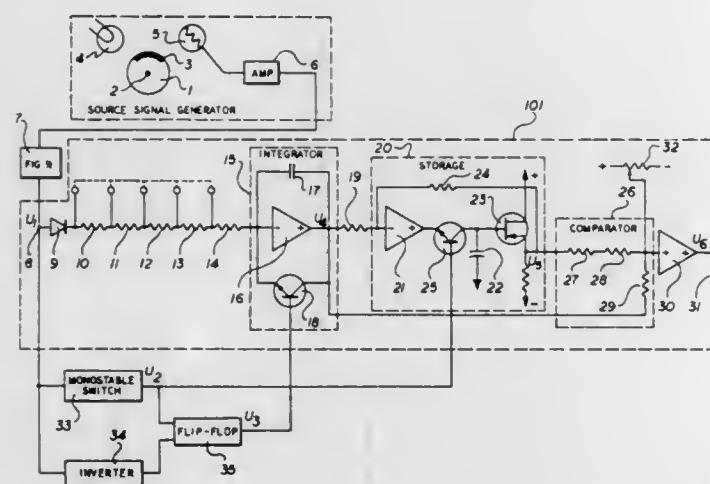
Filed May 5, 1972, Ser. No. 250,727

Claims priority, application Germany, May 10, 1971, 2122967

Int. Cl. G01m 1/02

U.S. Cl. 328-127

12 Claims



1. A circuit arrangement for producing electrical reference pulse signals having timed relationships to the pulses of a sequence of pulses and transmitting such signals to an output terminal, comprising a pulse source signal generator, signal integrating means having an input and an output, first circuit means operatively arranged for supplying source signals produced by said source signal generator to the input of said signal integrating means, signal amplitude storage means, second circuit means for connecting said signal storage means to the output of said signal integrating means, comparator means, third circuit means for connecting said comparator means to said signal storage means and to said signal integrating means, said comparator being further connected to said output terminal, timing means having an input connected to said source signal generator, said timing means further having output means connected to said signal integrating means and to said signal storage means, whereby a signal value at the output of said integrator means is transferred to said signal storage means in response to an end of a given pulse signal signified by said timing means, whereupon the content of said signal integrating means is erased also in response to said timing means, and wherein a predetermined amplitude por-

tion of a signal stored in said signal storage means is compared in said comparator means with a signal appearing at the output of said signal integrating means as a result of the next pulse signal following said given pulse signal, whereby said electrical reference pulse signals are transmitted to said output terminal in response to the center of the pulse source signals produced by said source signal generator.

3,852,674

PARABOLA AND SAWTOOTH GENERATOR

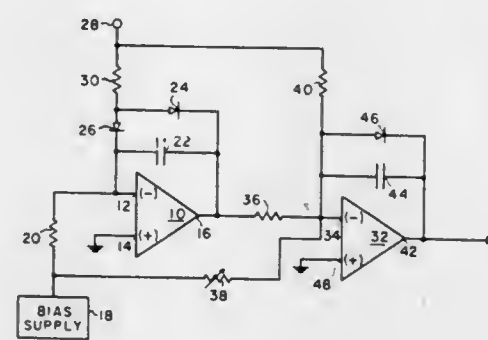
Frederik J. Van Roessel, Upper Saddle River, N.J., assignor to Philips Broadcasting Equipment Corporation, Montvale, N.J.

Filed Aug. 24, 1973, Ser. No. 391,077

Int. Cl. G06g 7/18

U.S. Cl. 328-127

11 Claims



1. A circuit for integrating an input voltage in accordance with a keying signal, said circuit comprising a first amplifier having a non-inverting first input means for receiving a reference potential, an inverting second input means for receiving said input voltage and said keying signal, and an output means for supplying a first amplifier signal in accordance with the potential difference between said inputs; a first capacitor coupled between said output and said second input; first means for eliminating the effects of direct current offsets on said circuit comprising a first diode having an anode-cathode voltage drop coupled between said output and said second input; and means for compensating for said voltage drop comprising a second diode series coupled between said first diode and said second input.

3,852,675

tone DETECTION AND SWITCHING CIRCUIT

Edward F. Stewart, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

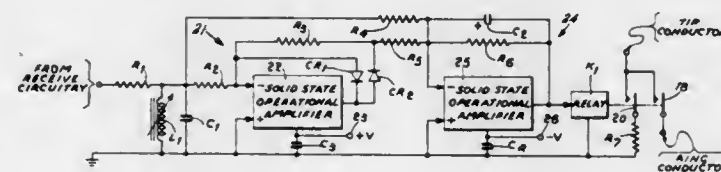
Division of Ser. No. 296,728, Oct. 11, 1972, Pat. No.

3,790,723. This application Aug. 13, 1973, Ser. No. 387,889

Int. Cl. H03k 9/06

U.S. Cl. 328-138

2 Claims



1. A tone detector comprising:
an input for a tone having a given frequency;
a tuned circuit coupled to said input, said tuned circuit being tuned to said given frequency;
a precision halfwave rectifier circuit coupled to said tuned circuit; and
an output circuit coupled to the output of said rectifier circuit and to said tuned circuit to produce a full wave rectified output signal with voltage gain upon detection of said tone;

said tuned circuit including

ground potential,
a first resistor having one terminal connected to said input, and

a parallel coupled inductor-capacitor tuned circuit coupled between the other terminal of said first resistor and said ground potential; and

said rectifier including

a first solid state operational amplifier having an inverting input, a non-inverting input and an output, said non-inverting input being directly connected to said ground potential,

a second resistor coupled between the junction of said first resistor and said parallel tuned circuit and said inverting input of said first amplifier,

a first solid state diode being poled in a given direction connected between said output and said inverting input of said first amplifier, and

a series circuit coupled between said output and said inverting input of said first amplifier in parallel with said first diode,

said series circuit having
a second solid state diode poled in a direction opposite to said given direction, and
a third resistor.

3,852,676

DETECTOR CIRCUIT

Masayuki Hongu, Tokyo, and Isamu Ikeda, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

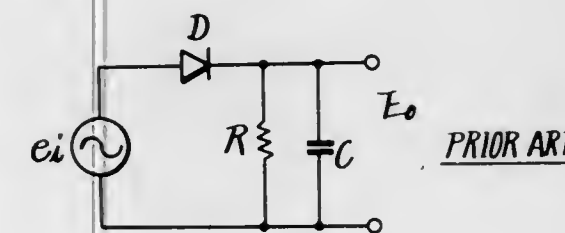
Filed Apr. 26, 1973, Ser. No. 354,681

Claims priority, application Japan, Apr. 28, 1972, 47-43072

Int. Cl. H03d 1/18

U.S. Cl. 329-103

11 Claims



1. A detector circuit comprising:

A. a power source having first and second voltage terminals,
B. signal current input means comprising first and second constant current circuits connected in series between the first and second voltage terminals, the first constant current circuit supplying a direct current I_1 , means for superposing an input signal current $\pm \Delta i$ on the current I_1 , the second current source supplying a direct current I_2 , the direction of the currents I_1 and I_2 being the same with respect to the first and second voltage terminals, and the value of the currents I_1 and I_2 being substantially the same; and

C. detector means comprised of a series circuit connected between said first and second voltage terminals, said series circuit including a transistor having input and output terminals for providing a detected signal at the output terminal in response to the input signal current $\pm \Delta i$ supplied to the input terminal, a load impedance connected to said output terminal and a diode connected to said input terminal and poled to conduct current when said transistor is conductive said input terminal being further connected to a connection point between the first and second constant current circuits, and said transistor being biased to a predetermined state of conductivity such that the transistor bias is varied as a function of said input signal current supplied to said input terminal.

3,852,677

DEMODULATOR

Claude Neuville, Paris, France, assignor to Compteurs Schlumberger, Montrouge, France

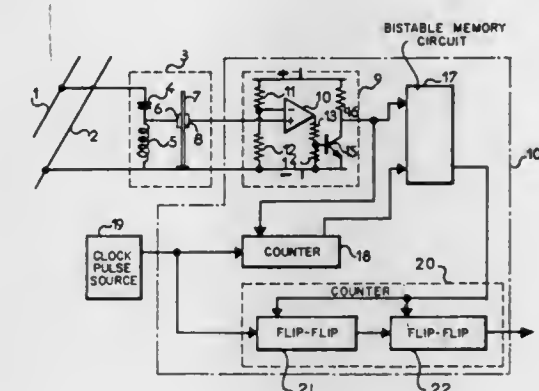
Filed June 28, 1973, Ser. No. 374,451

Claims priority, application France, June 30, 1972, 72.23729

Int. Cl. H03k 9/02

U.S. Cl. 329-109

4 Claims



1. A demodulator for producing a delayed output signal in response to an input signal of the type including a pulse which has been modulated at a predetermined frequency and consisting of a limited train of pulse signals at the predetermined frequency comprising

bistable circuit means for receiving the input signal and for changing from a first state to a second state in response to the beginning of the first pulse of the train of pulse signals;

a source of clock pulses;

first counter means for receiving and counting clock pulses from said source and for producing a reset output signal when the count accumulated thereby reaches a predetermined total;

first circuit means for coupling said reset output signal from said first counter means to said bistable circuit means to return said bistable circuit means to said first state;

second circuit means for coupling the train of pulse signals in said input signal to said first counter means to reset said first counter means and restart the counting of clock pulses in response to each pulse received thereby;

second counter means for receiving and counting clock pulses from said source and for producing the delayed output signal representative of the arrival of an input signal,

said second counter means being operative to initiate said output pulse after a preselected number of clock pulses has been counted by said second counter means; and

third circuit means connected between said bistable circuit means and said second counter means for providing to said second counter means a reset signal when said bistable circuit means returns to said first state.

3,852,678

PUSH-PULL AMPLIFIER WITH CURRENT MIRRORS FOR DETERMINING THE QUIESCENT OPERATING POINT

George Joseph Frye, 12175 S.W. Douglas, Portland, Oreg. 97225

Filed May 7, 1973, Ser. No. 358,152

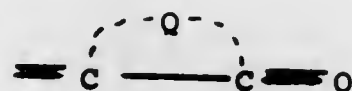
Int. Cl. H03f 3/26

U.S. Cl. 330-15

10 Claims

1. A push-pull amplifier circuit comprising:
input signal means having input terminal means connected thereto for supplying input current signals to said input signal means, said input signal means including means for performing impedance transformation of said input current signals such that the input terminal means appears loaded by a low impedance, said transformation extending to zero frequency or DC;

R^2 and R^3 each represent a hydrogen atom when R^1 or R , respectively, is a hydrogen atom or an alkyl radical;
 R^3 , R^4 , D and D' each represent a member selected from the group consisting of a cyano radical, an alkoxycarbonyl radical, an acyl radical, a substituted sulfonyl radical and when R^3 and R^4 or D and D' are taken together with the carbon atom to which they are attached, represent a radical of the structure:



in which Q represents the non-metallic atoms necessary to complete a 5- or 6-membered nucleus selected from the group consisting of an isoxazolinone nucleus, an oxindole nucleus, a 2,4,6-triketohexa-hydropyrimidine nucleus, a 2(3H)-imidazo[1,2-a]pyridone nucleus, a 5,7-dioxo-6,7-dihydro-5-thiazolo[3,2-a]pyrimidine nucleus, a 2-thio-2,4-oxazolidinedione nucleus, a thianaphthenone nucleus, a 2-thio-2,5-thiazolidinedione nucleus, a 2,4-thiazolidinedione nucleus, a thiazolidinone nucleus, a 4-thiazolinone nucleus, a 2-imino-2-oxazolin-4-one nucleus, a 2,4-imidazolidinedione nucleus, a 1,3-indanedione nucleus, a dioxanedione nucleus and a pyrantetrone nucleus; and

R^4 represents a hydrogen atom, an alkyl radical or a monocyclic aryl radical.

3,852,684 LASER DEVICE COMPRISING A COMPOUND OSCILLATOR AND AMPLIFIER FOR GENERATING THE FUNDAMENTAL MODE

Dieter Roess, Planegg, and Guenter Ziedler, Unterpfeffenhofen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

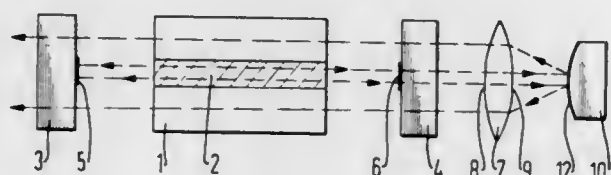
Filed Apr. 4, 1973, Ser. No. 347,781

Claims priority, application Germany, Apr. 28, 1972, 2221057

Int. Cl. H01s 3/08

U.S. Cl. 331-94.5

8 Claims



1. A laser device for generating and amplifying a laser of a fundamental mode, comprising a body of laser active material, an optical resonator including a pair of mirrors with the body of laser active material being positioned therebetween, said pair of mirrors having their cross sectional dimension less than the cross sectional dimension of the laser active material so that only a portion of the laser active material coats with the pair of mirrors to form a fundamental mode oscillator with the remaining portion of the body of material being an amplifier portion, one of said pair of mirrors being partially transparent to decouple a beam from the resonator, and means being positioned to receive the beam decoupled from the resonator through the one mirror and to direct the decoupled beam through the amplifier portion of the laser active material for amplification of the beam.

3,852,685 HEATING MEANS FOR METAL VAPOR LASERS

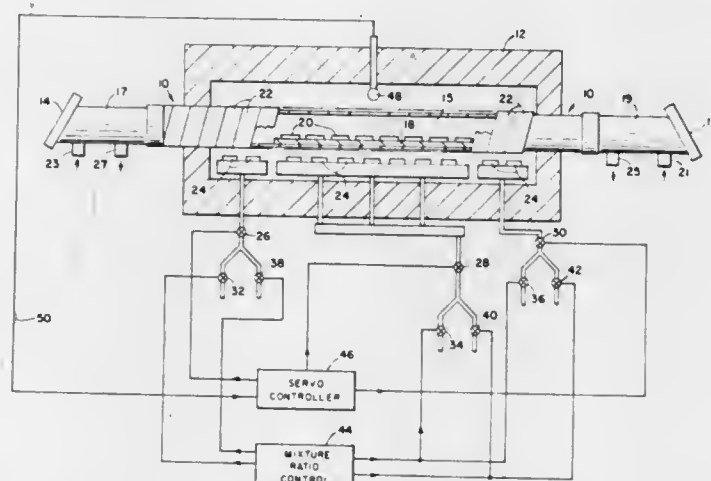
John J. Ehrlich, and Pasquale Martignoni, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 27, 1973, Ser. No. 383,205

Int. Cl. H01s 3/22

U.S. Cl. 331-94.5

2 Claims



1. In a metallic vapor gas laser, the combination comprising:
 a ceramic tube,
 metallic chips in said tube to be vaporized,
 a furnace structure surrounding said tube,
 a plurality of gas burners in the lower portion of said furnace,
 a supply of oxygen for said burners,
 a supply of fuel gas for said burners,
 means for individually controlling the flow of fuel gas and oxygen to said burners,
 a temperature sensing device in said furnace,
 means connecting said temperature sensing device to said flow control means to automatically control the temperature in said furnace,
 a metal plate located in said ceramic tube, said plate having a higher melting point than said metallic chips and being capable of being wetted by the molten metal of said chips, and
 a strip of tantalum foil spirally wound about the outer surface of said ceramic tube to distribute the heat evenly over said tube and to act as a coaxial ground path for the discharge current of said laser.

3,852,686 AUTOMATIC FREQUENCY CONTROL CIRCUIT

Kokichi Morii, Chigasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

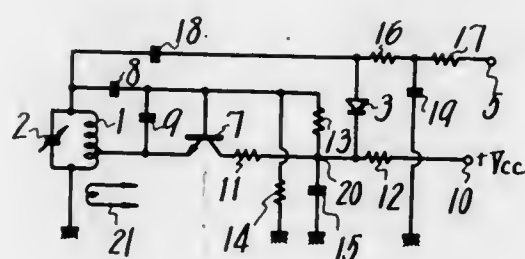
Filed Nov. 21, 1973, Ser. No. 417,782

Claims priority, application Japan, Nov. 25, 1972, 47-135637

Int. Cl. H03c 3/22

U.S. Cl. 331-177 V

5 Claims



1. An automatic frequency control circuit, comprising:
 an L-C resonant circuit;
 a transistor connected to said L-C resonant circuit to

thereby form an oscillator circuit, said transistor including a collector electrode connected to the base electrode thereof by a DC feedback path;
 a source of energizing potential coupled to the collector electrode of said transistor by first resistance means for supplying an energizing potential thereto;
 varicap diode means connected in AC parallel relationship to the capacitance means of said L-C resonant circuit, said varicap diode means being further connected to the collector electrode of transistor to receive a reverse bias voltage therefrom; and
 means for supplying a frequency controlling signal to said varicap diode means to vary the capacitance thereof, whereby the oscillating frequency of said oscillating circuit is correspondingly varied.

3,852,687 HIGH RATE DIGITAL MODULATION/DEMODULATION METHOD AND MEANS

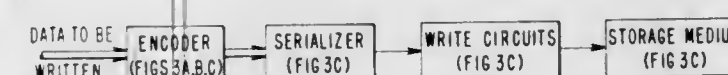
Paul Hodges, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1973, Ser. No. 375,405

Int. Cl. H03k 13/17

U.S. Cl. 332-11 R

6 Claims



1. Electrical apparatus for modulating an electrical wave with each received byte containing first and second groups of electrical bit signals, the modulated electrical wave having minimum and maximum multiple clock periods of run-length-limited coding, comprising
 a clock circuit for generating a set of electrical timing pulses for each received byte to sequentially signal a plurality of clock periods in first and second sequential clock pulse sections,
 an encoder circuit having first and second parts respectively receiving the first and second groups of electrical bit signals and the timing pulses of the first and second sequential clock pulse sections,
 the first part in said encoder circuit having means for switching a first electrical waveform between two electrical levels with the first group of electrical bit signals and the timing pulses of the first sequential clock pulse section to generate a different electrical waveform for each different combination of electrical bit signals in said first group, the electrical switchings in the first waveform being spaced by at least two clock periods during said first sequential clock pulse section, and said first waveform excluding a bounding clock period of the first section,
 the second part in said encoder circuit having means for switching a second electrical waveform between two electrical levels with the second group of electrical bit signals and the timing pulses of the second sequential clock pulse section to generate a different electrical waveform for each combination of electrical bit signals in the second group, the electrical switchings in the second waveform being spaced by at least two clock periods during said second sequential clock pulse section, and said second waveform excluding a bounding clock period of the second section,
 third and fourth means in said first and second parts, respectively, for further switching the electrical level during each bounding clock period in the first and second electrical waveforms if no switching occurs in any clock period adjacent to each bounding clock period, and
 serializer means connected to an output of said first and second parts to sequentially connect the first and second electrical waveforms as the modulated output signal for each received byte.

3,852,688 TRANSISTOR CIRCUIT

Masashi Takeda, Isehara, Japan, assignor to Sony Corporation, Tokyo, Japan

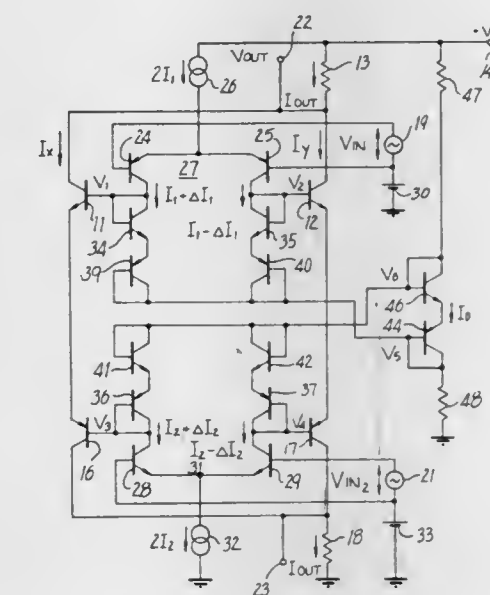
Filed Aug. 9, 1973, Ser. No. 387,181

Claims priority, application Japan, Aug. 11, 1972, 47-80524

Int. Cl. 332 43 B; H03c 1/54

U.S. Cl. 332-31 T

4 Claims



1. A transistor circuit comprising:

- A first pair of transistors comprising first and second transistors of one conductivity type, each having base, emitter, and collector electrodes;
- A second pair of transistors comprising third and fourth transistors of the opposite conductivity type and each having base, emitter and collector electrodes;
- A load impedance, the collector electrodes of said first pair of transistors being connected thereto, said load impedance being connected in series between said collector electrodes of said first pair of transistors and a power supply terminal to receive direct current from said terminal;
- Means for connecting the emitter electrodes of said first and second transistors to the emitter electrodes of said third and fourth transistors, respectively, the collector electrodes of said third and fourth transistors being connected to a second power supply terminal;
- A first pair of converter circuits, each having a logarithmic input-output characteristic and being connected to the base electrodes of said first pair of transistors respectively;
- A second pair of converter circuits, each having a logarithmic input-output characteristic and being connected to the base electrodes of said second pair of transistors respectively;
- A first input signal source for supplying a first pair of opposite polarity signals to said first pair of converter circuits; and
- A second input signal source for supplying a second pair of opposite polarity signals to the other of said pairs of converters.

3,852,689 WAVEGUIDE COUPLERS

Barry Kenneth Watson, Witham, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Nov. 2, 1973, Ser. No. 412,503

Claims priority, application Great Britain, Nov. 4, 1972, 50949/72

Int. Cl. H01p 5/14

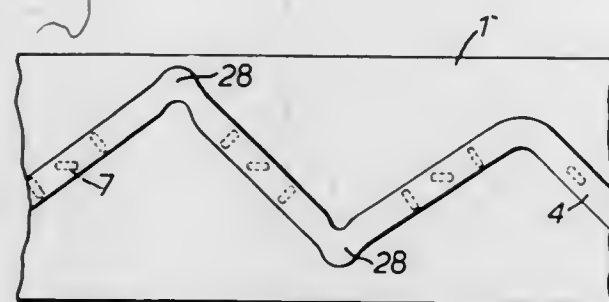
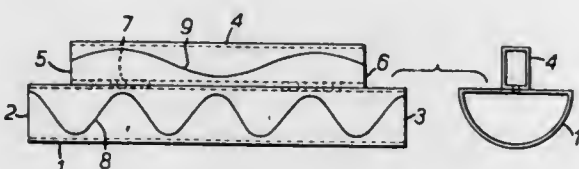
U.S. Cl. 333-10

20 Claims

1. A waveguide coupler for coupling energy between two lengths of waveguide each capable of supporting electromag-

netic waves having phase velocities different from those supportable by the other, a common interconnecting wall between said two lengths which is such that one of the waveguides has a non-rectilinear form in the longitudinal direction such that the ratio of the non-rectilinear length of said one waveguide to the length of the other waveguide is substantially

and conductively joining said center conductor to a circuit area on said substrate located on the opposite side of said substrate from, and in registration with, the portion of said ground plane circuit which is bonded to said strap.



equal to the ratio of their respective phase velocities and wherein coupling apertures are provided in the common interconnecting wall so that energy from an incident electromagnetic wave in said non-rectilinear length of waveguide is capable of being coupled to the other waveguide, or vice versa, to produce a coupled output electromagnetic wave therein.

3,852,690

MICROWAVE TRANSMISSION LINE TO GROUND PLANE TRANSITION

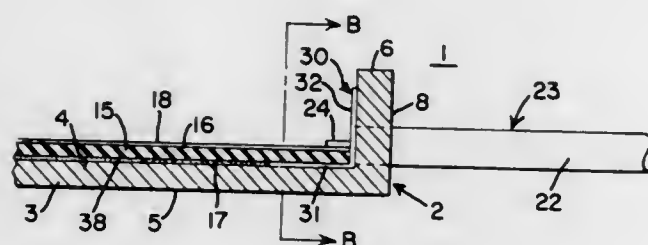
Thomas Andrew Telfer, Clinton, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,346

Int. Cl. H01p 3/08

U.S. Cl. 333-84 M

4 Claims



1. A method for providing a low resistance transition from a coaxial cable to a substrate having metallized circuit areas on both surfaces, one of the latter being a ground plane microwave circuit, comprising the steps of:

providing a strap of thin conductive material with an aperture near one end thereof; conductively joining an end of said strap to said substrate ground plane circuit; positioning said substrate on a conductive support member having a coaxial cable affixed thereto with the outer conductor electrically joined therewith, the aperture in said strap being aligned such that the center conductor of said cable extends therethrough; bonding said substrate and said strap to said support member;

3,852,691

MOTORIZED RADIO SEARCH TUNER

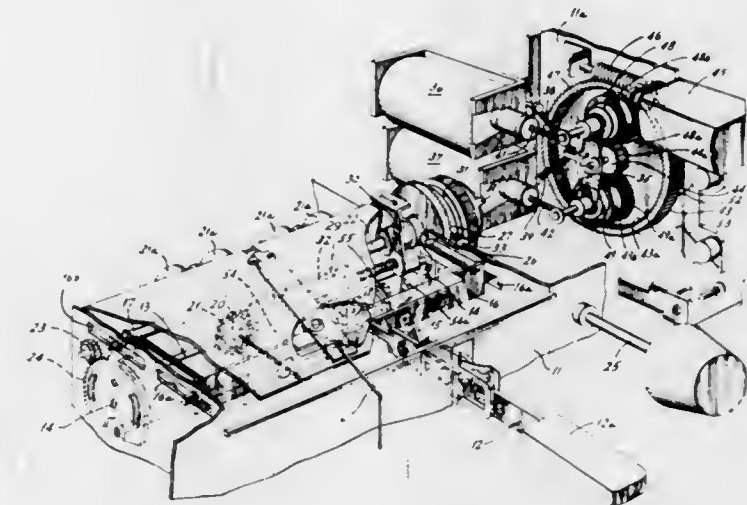
Howard A. Kell, Jr.; Eugene W. Yeager, both of Lansdale, Pa., and Allen A. Manteghian, Sao Paulo, Brazil, assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Jan. 25, 1974, Ser. No. 436,794

Int. Cl. H03j 1/08, 1/12

U.S. Cl. 334-19

11 Claims



1. In radio receiving apparatus of the type including adjustable means for tuning over a predetermined band of frequencies, improved drive means for moving said tuning means at a relatively slow rate for tuning in one direction of travel and at a relatively rapid rate for repositioning in the opposite direction, said drive means comprising: a unidirectionally rotatable motor; a lever; first and second solenoid means coupled with said lever, each selectively energizable to rock said lever in one or the other direction; first and second drive wheel means, of different diameters, driven by said motor; and a pair of idler wheels on said lever, one idler wheel being driven by said first drive wheel means of larger diameter, the other idler wheel being driven by said second drive wheel means of lesser diameter, said lever being operable to move said other idler wheel into driving engagement with the tuning means, to provide a relatively slow drive coupling between said first drive wheel means and said tuning means, upon energization of said first solenoid means to rock said lever in one direction, and said lever being operable to move said one idler wheel into driving engagement with the tuning means, to provide a relatively rapid drive coupling between said second drive wheel means and said tuning means, upon energization of said second solenoid means to rock said lever in the other direction.

3,852,692

MAGNETICALLY OPERATING SWITCH

Earl J. Moorman, 231 Ashwood Ave., Dayton, Ohio 45405

Filed Feb. 19, 1974, Ser. No. 443,803

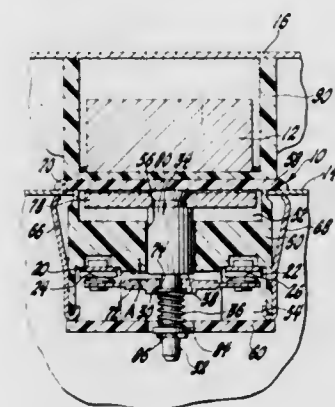
Int. Cl. H01h 9/00

U.S. Cl. 335-205

5 Claims

1. In a domestic clothes washer, the combination of a clothes washer wall having an access opening, an access lid hingedly mounted with respect to said wall along one edge of said lid and adapted to close said access opening when a movable edge of said lid lies adjacent said wall, a magnet located on said movable edge, and a magnetically operated switch located adjacent said magnet when said access lid is closed, said switch comprising a switch housing of nonmag-

netic material in fixed relation to said wall and generally imperforate to moisture and access through said wall in the vicinity of said access opening, a pair of stationary contacts in said housing adapted to be electrically connected in the power supply circuit of said clothes washer, a pair of movable contacts in said housing for electrically bridging said stationary contacts to close said power supply circuit, and support means for said pair of movable contacts axially movable in said housing in two directions, said support means including as a unit an actuating plate portion, impact portion, shaft portion and spring, said spring having one end supported on said shaft portion and another end yieldingly supporting said pair of movable contacts between said spring and said impact portion, said actuating plate portion being of magnetic material axially movable in response to the presence of said magnet when said access lid is closed for axially moving said support means in one direction to move said movable contacts into bridging relation with said stationary contacts, said support means axially movable in the opposite direction in response to the absence of said magnet when said access lid is open to



move said movable contacts out of bridging relation with said stationary contacts, said shaft portion loosely interfitted with said pair of movable contacts and axially movable relative thereto, said impact portion having a shoulder spaced a predetermined distance from said pair of movable contacts when said access lid is closed to condition the shoulder of said impact portion for impacting on said pair of movable contacts when said access lid is opened, said spring supporting said pair of movable contacts against said shoulder when said access lid is open, said spring maintaining the bridging relation of said pair of movable contacts with said stationary contacts after the axial movement of said support means in said one direction when said access lid is closed and inducing the axial movement of said support means in the opposite direction to cause said shoulder to impact on said pair of movable contacts when the access lid is opened, the mass of said support means in cooperation with said predetermined distance and the rate of said spring being sufficient to suddenly and surely break the bridging relation and any tack welding of said movable contacts with said stationary contacts, thereby to open the power supply circuit as soon as said access lid is opened.

3,852,693

MAGNETIC CONVERGENCE DEVICE FOR CATHODE RAY TUBES

Walter A. Schwalm, 745 Barberrry Ln., Lake Forest, Ill. 60045

Filed Dec. 4, 1973, Ser. No. 421,675

Int. Cl. H01f 1/00

U.S. Cl. 335-212

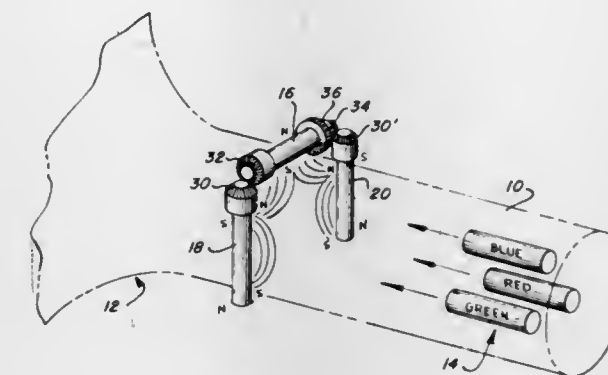
14 Claims

1. A magnetic convergence device for a cathode ray tube having electron gun means for developing three electron beams, which comprises:

a first magnetic member;
a second magnetic member;
a third magnetic member;

said second and third magnetic members being spaced from each other and being coupled to said first magnetic mem-

ber with the axes of said second and third magnetic members extending angularly with respect to the axis of said first magnetic member; and



means coupling said first, second and third magnetic members, whereby rotation of one of said magnetic members about its axis will result in simultaneous rotation of the other two magnetic members about their respective axes.

3,852,694

OVERLOAD RELAY WITH FAST ACTING BIMETAL ON HIGH CURRENT

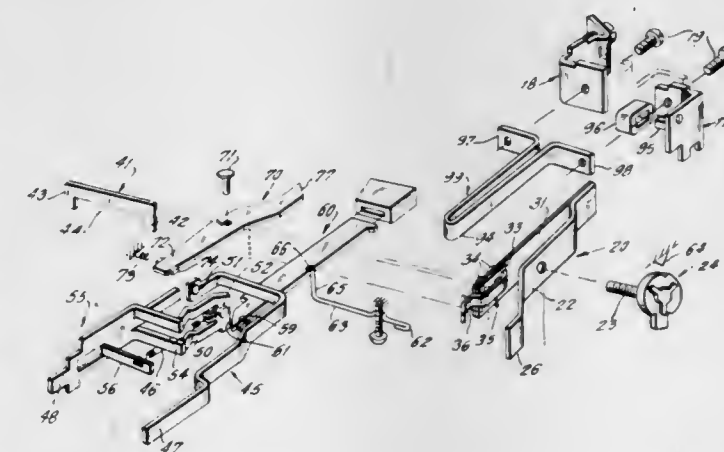
Bernard Di Marco, Bellefontaine, and Andrew J. Kralik, Marysville, both of Ohio, assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 26, 1973, Ser. No. 428,097

Int. Cl. H01h 71/16, 61/02

U.S. Cl. 337-62

5 Claims

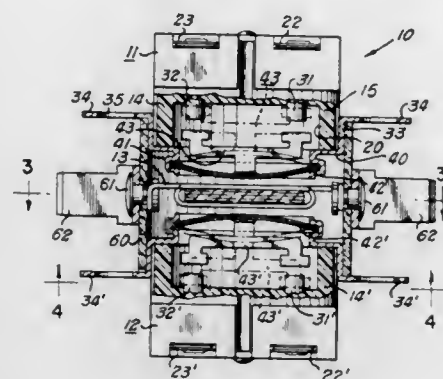


1. A switch device including cooperating contacts mounted for operation between first and second positions wherein said contacts are engaged and disengaged, respectively; first means operatively connected to said contacts for moving same between said positions; bimetal means which upon predetermined deflection thereof in a first direction operates said first means to move said contacts from one to the other of said positions; said bimetal means including a main bimetal and an auxiliary bimetal; said main bimetal upon heating thereof contributing a component of deflection in said first direction to said bimetal means; said auxiliary bimetal upon heating thereof contributing a component of deflection to said bimetal means in a second direction opposite to said first direction; heater means positioned adjacent said bimetal means for heating both the main and auxiliary bimetal by convection during normal overload conditions; said main bimetal being interposed between said heater means and said auxiliary bimetal to substantially shield the latter from direct radiation of heat limited by said heater means whereby upon extremely rapid heating of said heater means said bimetal means undergoes said predetermined deflection during a period of time when deflection of said auxiliary bimetal relative to said main bimetal is much less than during normal overload heating of the bimetal means.

3,852,695 ELECTRICAL SWITCHING SYSTEM

Leonard L. Northrup, Jr., 4312 Westway, Dallas, Tex. 75205
Filed Apr. 9, 1973, Ser. No. 349,253
Int. Cl. H01h 61/00
U.S. Cl. 337—102

10 Claims

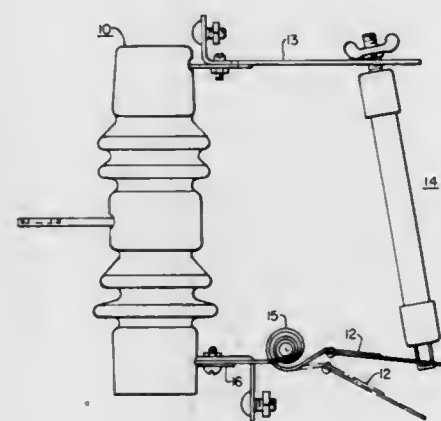


1. An electrical switching system comprising: an electrically activated pilot heater connectible with and responsive to a thermostat; and a plurality of heat-responsive electrical switches supported in spaced relation to said pilot heater each switch being electrically connected with separate circuits independent of the circuit including said pilot heater for controlling circuit connected with said switches in response to heat sensed by said switches from said pilot heater whereby said circuits connected with said switches are energized and de-energized responsive to the temperature sensed by said thermostat.

3,852,696 DROPOUT ELECTRICAL FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 10, 1973, Ser. No. 405,196
Int. Cl. H01h 85/36
U.S. Cl. 337—240

8 Claims

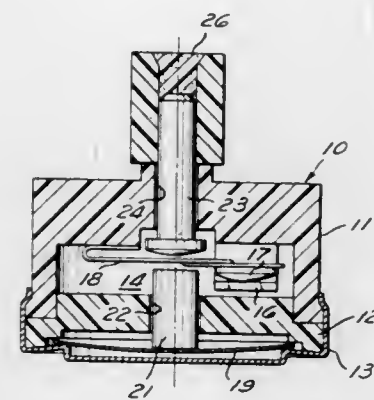


1. A dropout fuse structure comprising a fuse tube, first and second ferrules at the ends of the fuse tube, a core composed of electrically insulating material, the core having a first bore, a plug in at least one end of the bore, each plug having a second bore, a fusible strain element extending through the first bore and having opposite end portions in operative electrical contact with the corresponding ferrules, a fuse element mounted on the exterior of the core and having opposite end portions secured to the corresponding ferrules, an end portion of the fusible strain element extending into the second bore of a plug, a conductor connected to said end portion of the fusible strain element and extending outwardly from the plug, and an axially movable member secured to the conductor operative to dislodge the conductor from the plug upon fusion of the fusible strain element.

3,852,697 BIMETAL SNAP DISC

Harold F. Snider, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio
Filed July 11, 1973, Ser. No. 378,256
Int. Cl. H01h 37/74
U.S. Cl. 337—348

10 Claims



1. A snap disc comprising a piece of bimetal formed of a material having a deflection curve which is positive as the temperature of the material varies from a predetermined temperature in either direction said disc having a portion formed with a shallow dished shape, said disc providing two positions of stability between which it moves for snap action, said disc when in said first position snapping to said second position upon reaching a calibration temperature different than said predetermined temperature.

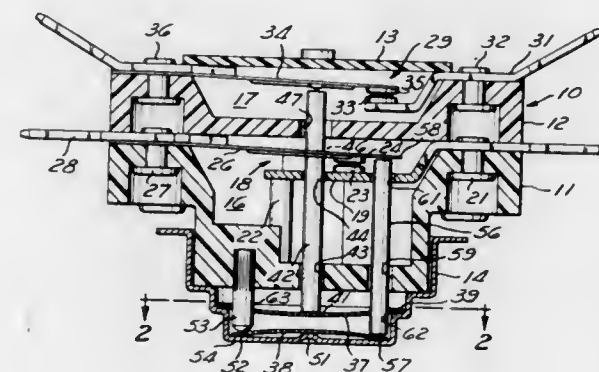
3,852,698 DUAL TEMPERATURE THERMOSTAT

Donald J. Schmitt, Mansfield, and Richard M. Anderson, Shelby, both of Ohio, assignors to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed July 23, 1973, Ser. No. 381,914
Int. Cl. H01h 37/52

U.S. Cl. 337—354

23 Claims



1. A thermostat comprising a body assembly, first and second bimetal snap discs on said body assembly, first and second switches supported on said body assembly, said first disc being supported at its periphery and providing a central portion movable with snap action in response to temperature changes, said first switch providing first means operating said first switch in response to movement of said central portion, said second disc being mounted at its center and at one peripheral location and providing a peripheral portion movable with snap action in response to temperature changes, said second switch providing second means operating said second switch in response to movement of said peripheral portion.

3,852,699 TUBE SOCKET HAVING A PLURALITY OF ELECTRICAL DISCHARGE GAPS

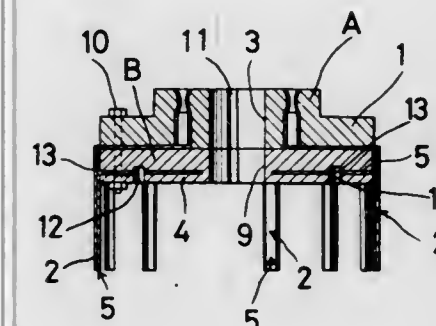
Seiichi Kimura, Takao Suzuki, and Masahiro Nakajima, all of Takasaki, Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1973, Ser. No. 379,729

Claims priority, application Japan, July 18, 1972, 47-71228
Int. Cl. H01r 3/06

U.S. Cl. 339—14 T

3 Claims



1. A socket having electrical discharging gaps, comprising a first member including a plurality of tubular connecting pins for receiving electrodes of a Braun tube or the like; an insulating material base plate having said pins circularly disposed and embedded therein, leg portions extending respectively from each of said connecting pins and extending radially to the perimeter of said base plate, and then extending axially exteriorly and normal to a rear surface of said base plate; and a second member having a plurality of terminal members corresponding in number and spatial positioning to said connecting pins, a single grounding terminal member, a second insulating material base plate having said terminal members and a grounding terminal member disposed radially and embedded therein; leg portions respectively extending from said terminal members and from said grounding terminal member extending exteriorly of said second base plate, said first and second members being in superimposed relationship so as to facilitate the leg portions of the connecting pins of said first member and the leg portions of the terminal members of said second member to be respectively mechanically and electrically interconnected, said terminal members being shaped to form said electrical discharging gaps within the base plate of said second member.

3,852,700 GROUNDING BASE FOR CONNECTOR

Edward Leon Haws, Houston, Tex., assignor to Michael P. Breston, Houston, Tex.

Continuation of Ser. No. 817,476, April 18, 1969, abandoned.
This application Apr. 30, 1973, Ser. No. 356,254

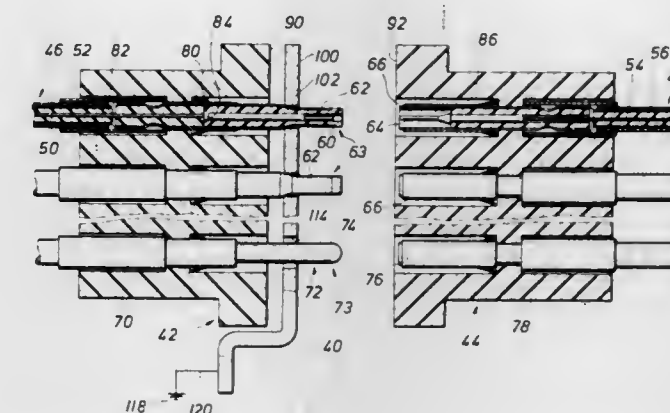
Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

2 Claims

1. A coaxial electrical connector assembly comprising:
a. a pair of cooperable plug members carrying a plurality of coaxially-engageable, pin-and-socket connector elements in opposed end faces of the plug members;
b. certain ones of the said connector elements having mating ends extending outwardly of said end face of said plug member, each said pin element having a conically-tapered, enlarged-diameter portion spaced inwardly from said mating end, said diameter of said tapered portion increasing in the direction away from said mating end;
c. a thin, flexible metal grounding plate separate from said plug members disposed in between the opposed end faces of said plug members;
d. the body of said grounding plate defining a sufficient number of insert-free, cylindrical holes to permit passage therethrough of all of the connector pin elements projecting outwardly from said plug member; and

e. the diameters of the individual holes being made such that when the plug members are moved into mating engagement with each other, said tapered portions of said connector pin elements become engaged in wedging pressure contact with the encircling walls of their mating holes, of said grounding plate while one side of said plate



remains spaced from said end face of said plug member containing said pin elements, and while said other end face of said other plug member engages the opposite side of said plate, each such pressure contact establishing a mechanical and electrical contact with the grounding plate.

3,852,701 POWER CONNECTION SYSTEM

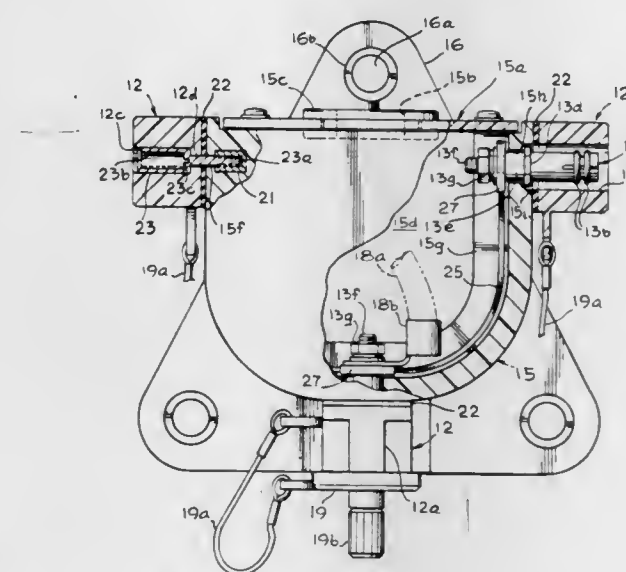
Lee Minitz, Granada Hills, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 10, 1972, Ser. No. 296,417

Int. Cl. H01r 13/62

U.S. Cl. 339—64 M

14 Claims



1. In combination:
an electrical contact supporting structure having a contact receiving hole,
an electrical terminal disposed adjacent said contact receiving hole,
a contact disposed in said contact receiving hole,
means for securing said contact to said terminal, said contact and said means for securing being constructed and arranged in conjunction with said contact receiving hole in a manner so as to permit movement of the secured terminal and contact relative to said supporting structure, and
resilient means connected to said terminal for providing resiliency of said movement of the secured terminal and contact.

3,852,702

ELECTRICAL TERMINAL HAVING PYRAMID TEETH THEREON

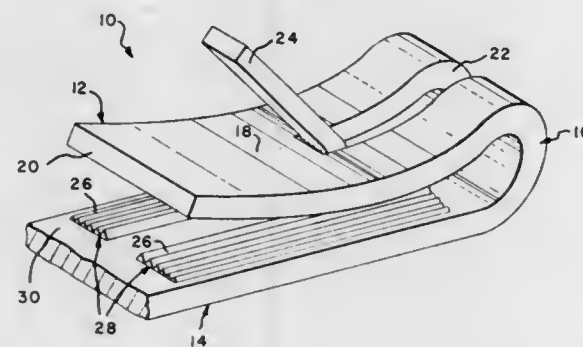
Edward Camp Dowling, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 27, 1973, Ser. No. 383,368

Int. Cl. H01r 11/20

U.S. Cl. 339-97 R

6 Claims



1. An electrical terminal for electrical wire, which comprises:

- a. an elongated shank having a plurality of parallel, elongated teeth extending axially along one surface with each tooth being progressively different in height relative to the next tooth, and the shank further having an elongated tab extending generally upwardly from the one surface;
- b. an elongated leg positioned movably over the shank and hinged thereto, said leg having an opening therein with said tab extending therethrough so that as the tab is bent against the leg and toward the shank, the leg approaches the one surface of the shank and pushes an electrical wire which may be lying across the shank into electrical and mechanical engagement with the teeth.

3,852,703

MODULAR JACK STRIP ASSEMBLY

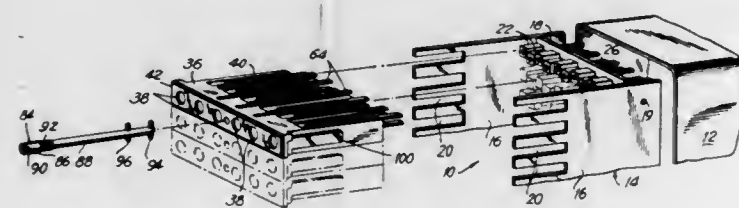
William V. Carney, Valley Stream, and Paul V. Deluca, Port Washington, both of N.Y., assignors to Porta Systems, Roslyn, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,365

Int. Cl. H01r 9/00

U.S. Cl. 339-198 H

19 Claims



1. A modular jack strip assembly comprising a housing assembly, and a plurality of modular jack strips, said housing assembly including a mounting plate member, and jack strip mounting means connected to said mounting plate member said housing assembly being adapted to receive said plurality of modular jack strips, each of said jack strips comprising an insulated structure having a plurality of individual jack terminals each terminal having at least one electrical contact finger extending outwardly of said terminals, a plurality of electrical contact members positionally secured to said mounting plate member in a predetermined array,

each of said jack strips including mounting members connected therewith, said jack strip mounting members being secured with said jack strip mounting means to positionally secure said jack strips with respect to said housing assembly, and corresponding ones of said electrical contact fingers being disposed in seated engagement with corresponding ones of said electrical contact members.

3,852,704

ELECTRICAL PLUG-AND-SOCKET-CONNECTOR, ESPECIALLY FOR COMMUNICATIONS ENGINEERING APPLICATIONS

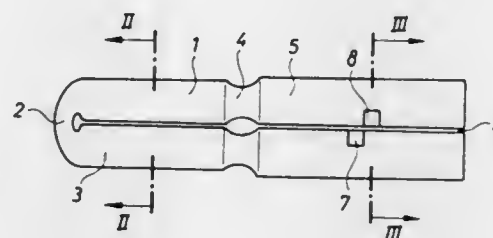
Edwin Muz, D 7519 Muhlbach Uhlandstrasse 8, Germany

Filed July 24, 1973, Ser. No. 382,060

Int. Cl. H01r 11/22

U.S. Cl. 339-252 P

4 Claims



1. An improved electrical connector, especially for communication equipment, comprising a substantially tubular body having a resiliently yielding plug portion at one end of the body, a socket portion at the other end of said body, and an intermediate portion connecting the two; said body being formed from a single piece of metallic sheet material; said socket portion having substantially identical semicylindrical halves opening toward each other and extending from said intermediate portion to an open end, said halves being circular in cross section and, together, defining a cylindrical volume, said halves terminating in longitudinally extending parallel edges defining two longitudinal slits; and said plug portion having a tip in the shape of a hollow hemisphere, and substantially identical semicylindrical halves opening toward each other and extending between said tip and said intermediate portion; said identical halves terminating in longitudinally extending parallel edges defining longitudinal slits aligned with the slits in said socket portion, said halves each being elliptical in cross section, the major axis of the ellipse formed by said halves being larger, and the minor axis thereof being smaller than the inner diameter of the cylindrical volume defined by the halves of said socket portion.

3,852,705

SONAR DEPTH TRACKING SYSTEM

William R. Backman, Jr., Portsmouth, and George M. Walsh, Middletown, both of R.I., assignors to Raytheon Company, Lexington, Mass., by said George M. Walsh

Continuation of Ser. No. 146,729, May 25, 1974, abandoned.

This application Mar. 26, 1973, Ser. No. 345,026

Int. Cl. G01s 9/68, 7/66

U.S. Cl. 340-3 R

22 Claims

1. In combination: means for transmitting sequential quanta of radiant energy towards an energy reflecting subject; means responsive to quanta of radiant energy reflected from said subject for recording the occurrences of said reflection as a function of the distance from said transmitting means to said subject;

3,852,707

SONAR BROADBAND CONSTANT BEAMWIDTH SHADING NETWORK

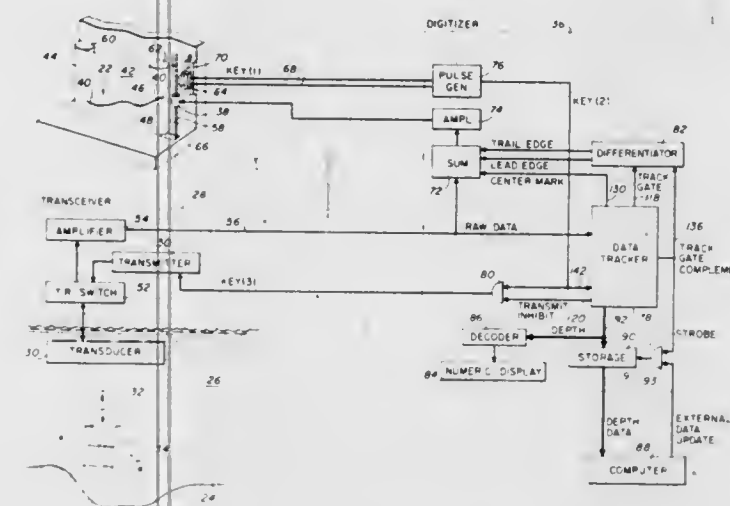
Samuel W. Autrey, Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1968, Ser. No. 707,595

Int. Cl. G01s 3/80

U.S. Cl. 340-6 R

3 Claims



means including means for displaying a sequence of past values of said estimates superposed about a sequence of past values of the recordings of said occurrences of said reflections simultaneously with said displaying of said estimate superposed about said recording of said succeeding reflection.

3,852,706

OBJECT LOCATION SYSTEM

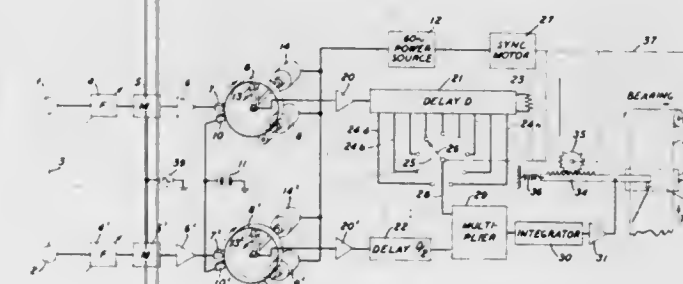
Harold L. Barney, Madison, and Edward E. David, Jr., Berkeley Hts., both of N.J., assignors to Bell Telephone Laboratories, Inc., New York, N.Y.

Filed June 10, 1955, Ser. No. 514,417

Int. Cl. G01s 3/80

U.S. Cl. 340-6 R

15 Claims



1. Apparatus for locating a source of radiations through ambient noise of substantial strength, which comprises at least two transducers, spaced apart, means individual to each of said transducers for continuously recording its output on a recording medium, means for rapidly and repeatedly scanning each of said recording media to derive a time signal which is expanded in frequency and compressed in time as compared with that of said source, means for variously delaying one of said time signals relatively to the other, means for comparing said time signals for various values of said delay, means for deriving from said comparing means a measure of the degree of similarity of said time signals, whereby said measure reaches an extreme value when said time signals are coincident in time, and means for indicating the magnitude of said relative delay for which said measure attains said extreme value.

3,852,708

MULTIPLE ELEMENT PHASED ARRAY WITH SHADED SUB-ELEMENT GROUPS

Richard D. Doolittle, Washington, D.C., and John A. Dorr, Crofton, Md., assignors to Chesapeake Instrument Corporation, Shady Side, Md.

Filed Jan. 24, 1972, Ser. No. 219,939

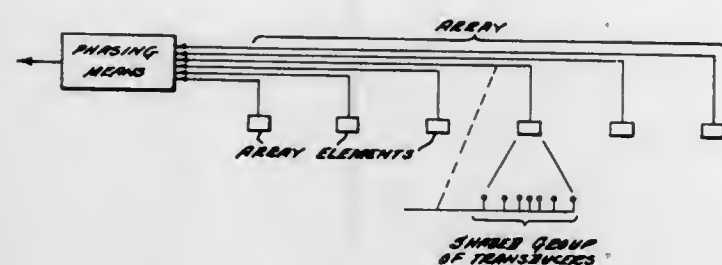
Int. Cl. G01v 1/38

U.S. Cl. 340-7 R

19 Claims

1. A linear signal receiving array of grouped transducers comprising a plurality of substantially co-linear spaced-apart array elements adapted to respond to incident signals as a linear towed array in a liquid medium wherein each of said elements in the linear array itself comprises a group of substantially co-linear individual transducers forming a second linear array within every element and wherein the second

linear arrays within said elements are shaded to reduce their end-fire response characteristics with respect to locally gener-



ated tow noise propagating along and within the array at a velocity substantially less than the propagation velocity of said incident signals.

3,852,709

METHOD & APPARATUS FOR SEISMIC HOLOGRAPHIC EXPLORATION

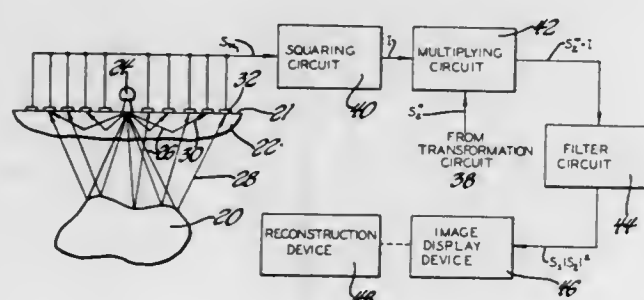
Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 25, 1972, Ser. No. 283,888

Int. Cl. G01v 1/34, 1/28

U.S. Cl. 340—15.5 DS

18 Claims



1. A method of developing a hologram of a subterraneously disposed object displaced beneath a mask comprising the steps of:

- irradiating the object and the mask with coherent acoustic energy of a first predetermined frequency selected to permit penetration of the coherent acoustic energy through the mask and to the object;
- detecting the energy reflected from both the object and the mask at the first predetermined frequency;
- irradiating the mask with coherent acoustic energy of a second predetermined frequency selected to permit penetration of the coherent acoustic energy to the mask only;
- processing the reflected energy so as to remove the mask component from the energy reflected both from the object and the mask and thereby develop an output having an enhanced image component representing the object only; and
- displaying the enhanced image component to develop a hologram of the object.

3,852,710

AIRCRAFT GYROHORIZON INDICATOR WITH SIGNAL LAMP POSITIONAL ATTITUDE INDICATING MEANS

Ralph Hernandez, Jr., Miami, Fla., assignor to Aircraft Instruments, Inc., Miami Beach, Fla.

Continuation of Ser. No. 854,633, Sept. 2, 1969, abandoned.

This application June 13, 1972, Ser. No. 272,935

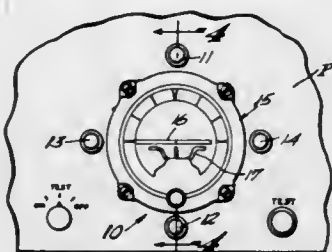
Int. Cl. G08g 5/00

U.S. Cl. 340—27 AT

2 Claims

1. A device for signalling departure beyond predetermined limits from straight and level flight as indicated by the dial of a gyrohorizon instrument having a casing, an outer gimbal

pivotaly journaled within the casing, the relative rotational position thereof, with respect to the casing, being determinative of deviation of an aircraft in the roll axis, and an inner gimbal, pivotaly journaled within the outer gimbal about an axis perpendicular to the journal axis of the outer gimbal, the relative rotational position thereof, with respect to the outer gimbal, being determinative of deviation of an aircraft in the pitch axis; the combination comprising, a first pair of signal lamps indicating, when energized, "nose up" and "nose down" aircraft positional attitude, respectively, in the pitch axis, a second pair of signal lamps for indicating, when energized, "left wing down" and "right wing down" aircraft positional attitude, respectively, in the roll axis, a first means controlled by the relative position of said inner gimbal with respect to said outer gimbal for selectively energizing one or the other of said first signal lamps in accordance with corresponding "nose up" and "nose down" aircraft positional atti-



tude, and a second means controlled by the relative position of said outer gimbal with respect to said casing for selectively energizing one or the other of said second pair of signal lamps in accordance with corresponding "left wing down" and "right wing down" aircraft positional attitude, said first pair of signal lamps being mounted directly above and below the indicating dial of the gyrohorizon instrument in an aircraft panel, and said second pair of signal lamps being mounted directly at each side of said instrument dial, said first and second energizing means including an audible signal device and means for simultaneously energizing said audible signal device upon the energization of any one of the said signal lamps, both said audible signal device and said first and second pair of signal lamps thereby serving as a warning that the aircraft has departed from safe flight parameters, said first and second pair of signal lamps also serving to indicate the direction of aircraft deviation and whether such deviation is in pitch or in roll, or both pitch and roll.

3,852,711

ALTITUDE ALERTING INSTRUMENT

Leonard M. Greene, Chappaqua, N.Y., assignor to Safe Flight Instrument Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 204,052, Dec. 2, 1971,

abandoned. This application Nov. 21, 1972, Ser. No. 308,568

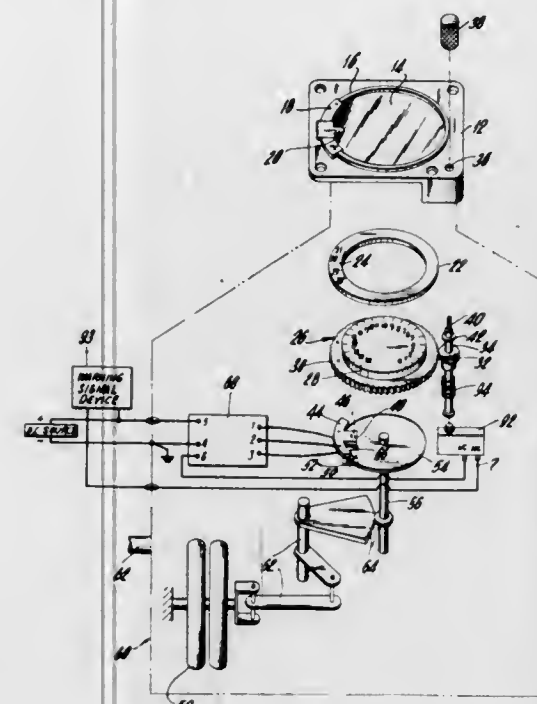
Int. Cl. G08g 5/00

U.S. Cl. 340—27 R

10 Claims

1. An aircraft altitude alerting instrument settable in accordance with a prevailing sea level pressure reference, said instrument comprising a stationary pressure reference element having thereon a scale of pressure markings, a pressure reference marker, means mounting said pressure reference marker for manual movement relative to said stationary pressure reference element, said pressure reference marker being adjacent to said stationary pressure reference element, an altitude setting element movable relative to said pressure reference element and being adjacent thereto and adjacent to said pressure reference marker, said altitude setting element including a scale of altitude markings thereon, means for manually moving said altitude setting element so that a selected altitude reading thereon is immediately adjacent said pressure reference marker whereby said pressure reference

marker can be moved to a pressure marking on said pressure reference element which corresponds to a prevailing sea level pressure and said altitude setting element can then be moved by said moving means so that a selected altitude on said alti-



tude setting element is adjacent said pressure reference marker, a warning signal device, and means responsive to the static pressure outside the aircraft and coupled to said altitude setting element moving means for activating said warning signal device.

3,852,712

AUTOMOTIVE VEHICLE ROTARY DISPLAY DEVICE FOR INDICATING THE OCCURRENCE OF A SINGLE OR A PLURALITY OF EVENTS

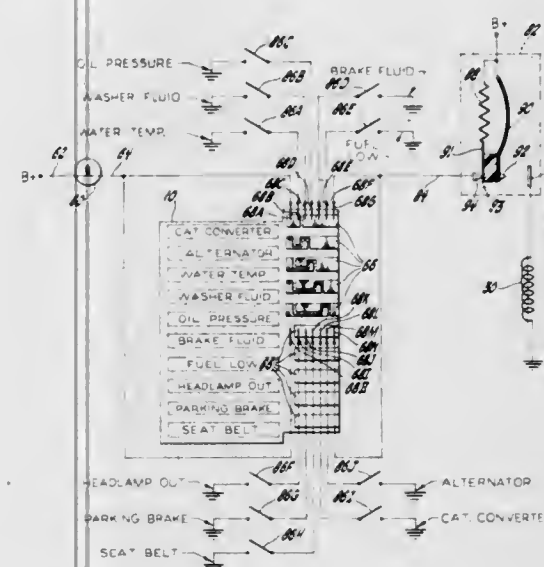
Roy G. Hynes, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1973, Ser. No. 384,482

Int. Cl. G08b 19/00

U.S. Cl. 340—52 F

3 Claims



1. An automotive vehicle rotary display device for indicating the occurrence of events at remote locations in the vehicle, comprising: a plurality of event sensors positioned at remote locations in the vehicle, each of said event sensors being responsive to the occurrence of a respective event for generating a signal upon said occurrence; a viewing window; a drum rotatably supported adjacent the viewing window; a plurality of messages spaced around the drum so as to be

sequentially positioned adjacent the viewing window as the drum is indexed, each of said messages representing the occurrence of a respective one of the events; a lamp positioned within the drum; drive means for indexing the drum; and circuit means responsive to the angular position of the drum for coupling the event sensor responsive to the event represented by the message adjacent the viewing window to the lamp and coupling the remaining event sensors to the drive means, the lamp being energized by a signal generated by one of the event sensors coupled thereto for illuminating the message positioned adjacent the viewing window to thereby provide an indication of the occurrence of the event represented by said message and the drive means being energized by a signal generated by one of the event sensors coupled thereto for indexing the drum to sequentially position the messages thereon adjacent the viewing window, the drive means including delay means for maintaining each message positioned adjacent the viewing window for a predetermined time period when the drive means is energized to index the drum, whereby a continuous indication is provided of the occurrence of a single event and an indication having a predetermined time duration is provided for the occurrence of each of a plurality of events which has occurred.

3,852,713

ALARM SYSTEM HAVING PULSE PAIR CODING

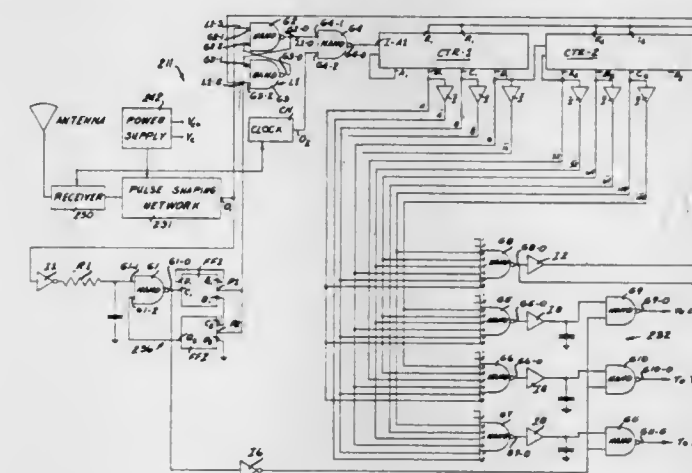
Victor B. Roberts, 3969 Sentry Ave. N.E., Marietta, Ga. 30060; Charles V. Stephenson, 1993 Williamsburg Dr., Decatur, Ga. 30033, and Robert E. Good, Jr., 1955 Maple Dr., Kennesaw, Ga. 30144

Filed May 26, 1972, Ser. No. 257,307

Int. Cl. H04q 5/14

U.S. Cl. 340—164 R

12 Claims



1. An alarm system responsive to certain preconceived conditions to produce an alarm signal comprising: transmitter means for generating a signal having pulse pairs with a prescribed time interval between said pulses of each said pulse pair upon occurrence of the preconceived conditions; receiver means for detecting said generated signal and producing a corresponding operating signal output; enabling means operatively connected to said receiver means for generating a reference enabling pulse a predetermined time interval after receipt of said first pulse of said pulse pair equal to said prescribed time interval between said pulses of each said pulse pair; coincidence means operatively connected to said receiver means and said enabling means for generating an output signal pulse upon coincidingly receiving said reference enabling pulse and said second pulse of said pulse pair; and, noise isolation means for preventing further receipt of pulses by said coincidence means from said receiver means after receipt of a second generated pulse from said receiver means after said first generated pulse for a second prescribed period of time.

3,852,724

SURFACE WAVE CLOCK AND SERIAL DATA STORAGE UNIT

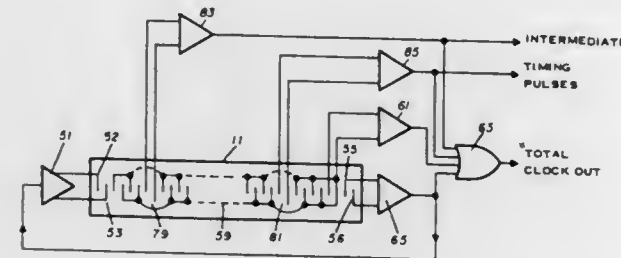
Robert J. Schwartz, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 30, 1973, Ser. No. 346,517

Int. Cl. G11c 21/00

U.S. Cl. 340-173 RC

8 Claims



1. A digital, serial data storage unit formed on a common substrate comprising:
 - a. a surface wave clock circuit having a driver and driver electrodes and a receiver and receiver electrodes, and further including clock electrodes positioned between and electrically isolated from the driver and receiver electrodes, the spacing between each of the electrodes determining the propagation delay therebetween;
 - b. at least one surface wave device having a driver and driver electrodes, and a receiver and receiver electrodes, with a predetermined propagation delay between the driver and receiver electrodes;
 - c. means for applying an initial pulse to the surface wave clock;
 - d. clock transmission means connected to transmit a propagated clock pulse from the electrodes in the surface wave clock circuit; and
 - e. input means having first gate means for receiving the serial digital data and connected to the transmission means, to permit entry of the data when a clock pulse is present.

3,852,725

MAGNETIC PLATED WIRE MEMORY DEVICE

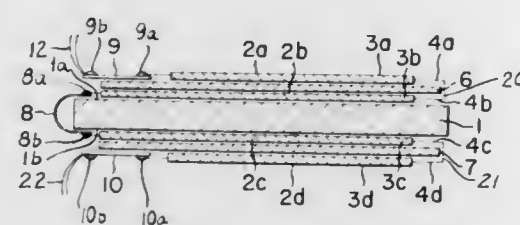
Isamu Ogura, Takaaki Miyashita, and Yoshimoto Aida, all of Tokyo, Japan, assignors to Oki Electric Industry Co. Ltd., Minato-ku, Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,086

Int. Cl. G11c 11/04, 11/14, 5/06

U.S. Cl. 340-174 BC

5 Claims



1. A memory assembly comprising:
 - a rigid planar mounting board;
 - a first set of spaced parallel row windings positioned on one surface of said board;
 - a second set of spaced parallel row windings arranged on the opposite side of said board parallel to said first set;
 - a third set of spaced parallel row windings arranged immediately above and in spaced parallel fashion with said first set of row windings;
 - a fourth set of spaced parallel row windings arranged immediately below and adjacent the second set of row windings and being parallel thereto;
 - first and second magnetic keeper board means positioned between said first and third sets of row windings and said

second and fourth sets of row windings respectively for minimizing mutual electro-magnetic coupling between said first and third and said second and fourth sets of row windings;

means included in each row winding set for electrically insulating the row windings of the set from one another;

first connecting means for connecting a first end of each of the row windings in the third set of row windings to an associated one of the row windings in the first set of row windings;

second connecting means for electrically coupling the opposite ends of said windings in said first set of said row windings to associated windings in said second set of row windings;

third connecting means for electrically connecting each of the windings in the second set of row windings to an associated winding in the fourth set of row windings;

first and second end connector means for electrically coupling the remaining ends of the windings in said third and fourth sets of row windings to peripheral circuitry;

first, second, third, and fourth sets of word windings, each set of word windings being comprised of a plurality of spaced parallel word lines; said first, second, third, and fourth sets of word windings being arranged in orthogonal fashion and being positioned immediately adjacent said first, second, third, and fourth sets of row windings respectively;

each of said sets of word windings further comprising X and Y selection means coupled to opposite ends of selected ones of said word lines for word selection purposes;

said keeper board means also minimizing electromagnetic coupling between said first and third sets of word windings and said second and fourth sets of word windings.

3,852,726

REMOTE METER MONITOR

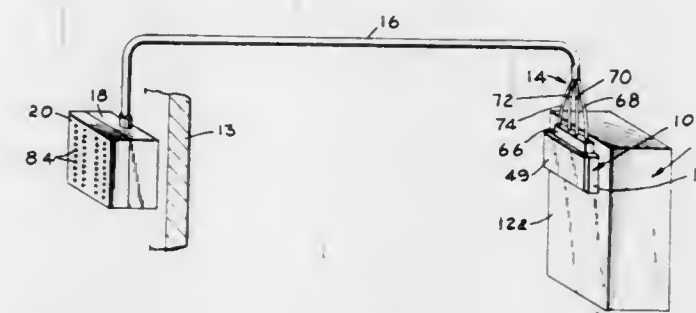
Pat Romanelli, Harrington Park, N.J., assignor to Ram Domestic Products Company, Northvale, N.J.

Filed July 26, 1973, Ser. No. 383,300

Int. Cl. G08c 19/32

U.S. Cl. 340-188 R

7 Claims



1. Remote meter monitor apparatus for connection to a circular type meter with a rotatably driven pointer having a magnetic free end, comprising a circular array of spaced magnetic field sensitive elements in proximate concentric peripheral position with respect to the circular sweep of said magnetic free end of said pointer, whereby said magnetic field sensitive elements will be selectively actuated in accordance with the proximate position therewith of said magnetic free end of said pointer to produce a digital electrical signal representing the angular position of said pointer and the reading on said meter, a housing adaptable to be mounted over the dial face of said meter, said housing having a cylindrical chamber for enclosing said meter pointer and a circular array of bores therein surrounding said chamber for receiving and positioning said magnetic field sensitive elements in said concentric peripheral position and perpendicular to said dial face, remote terminal means located at a position remote from said meter, electrical transmission means interconnecting said magnetic field sensitive elements and said remote terminal means for transmitting said digital electrical signal to said remote termi-

3,852,727

MULTIPLE VOLTAGE MONITORING APPARATUS

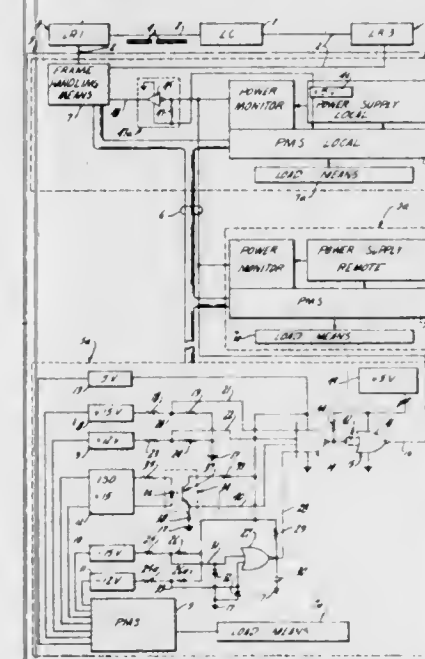
Manuel Frank Chacon, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,569

Int. Cl. G08b 23/00

U.S. Cl. 340-213 R

13 Claims



1. A multiple voltage monitoring apparatus for remote station connection in a loop communication system comprising a multiple input trigger means having a plurality of inputs, any one of said inputs being independently operable to trigger an output, a plurality of voltage power supply connection means, separate voltage monitoring means connected to each voltage supply connection means and providing a continuous monitoring of the corresponding voltage supply, means connecting each monitoring means to a separate input of the trigger means and each monitoring means being independently operable to actuate the trigger means in response to a selected deviation of the supply from a predetermined voltage, and an externally-powered buffer gate means having a separate power supply which is independent of other monitored power supplies and having an input connected to the output of the trigger means and establishing a voltage fault signal in response to any one of said deviations which actuates the trigger means and in response to a failure of its own power supply.

3,852,728

STOVE WARNING DEVICE

Willard A. Flagg, Jr., Topsfield, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.

Filed Oct. 29, 1973, Ser. No. 410,809

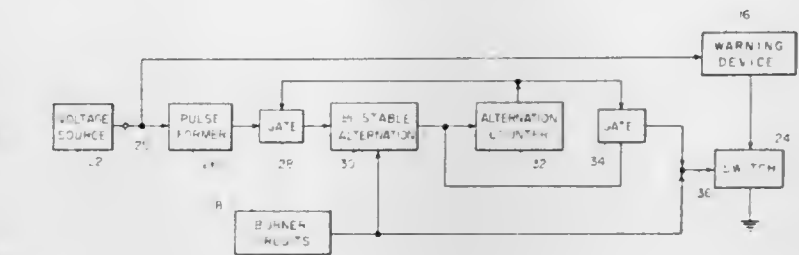
Int. Cl. H05b 3/68

U.S. Cl. 340-227 R

14 Claims

1. Apparatus for operating a warning device for use with a stove having one or more electric burner circuits, comprising: an energizing circuit for said warning device, including a switch means governing the operation of said warning device, a first control circuit for said switch means, said control circuit having means to receive a signal indicating operation of at least one of the burner circuits, and means to set said switch means in a mode completing an energizing path for the warning device during receipt of said burner operation signal, and a second control circuit for said switch means, including bi-

stable means alternatable in response to discontinued operation of said burner circuits between first and second states respectively setting and not setting the switch means in a mode



completing an energizing path for the warning device, means to alternate said bi-stable means, and means to terminate operation of said bi-stable means after a predetermined number of alternations.

3,852,729

FLAME FAILURE CONTROLS

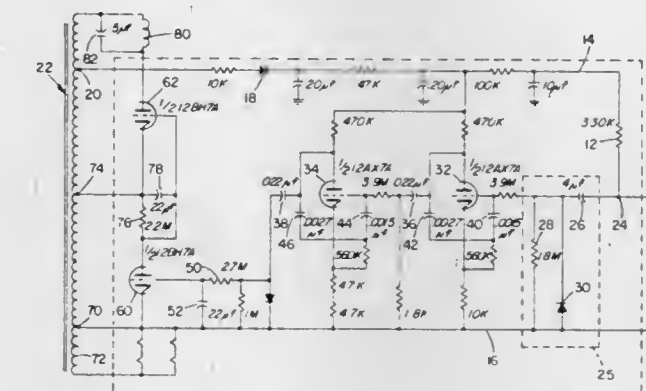
Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 6, 1973, Ser. No. 338,540

Int. Cl. G08b 17/12; F23r 5/08

U.S. Cl. 340-228.2

12 Claims



1. A condition responsive system comprising a radiation sensitive condition sensor for producing an output signal in response to the sensing of a condition to be detected, an output device arranged to assume a first state indicative of the condition being sensed when said sensor senses said condition and a second state indicative of the absence of said condition to be sensed when said sensor does not sense said condition, discriminator circuitry connecting said sensor and said output device for placing said output device in said first state in response to the production of a fluctuating output signal by said condition sensor, and circuitry responsive to an abrupt decrease in the condition sensed by said sensor for placing said output device in said second state independent of fluctuations of the signal produced by said sensor.

3,852,730

EMISSION MONITORING SYSTEM

James A. Commins, 7708 Orchard Way, Philadelphia, Pa. 19118

Filed Oct. 12, 1971, Ser. No. 188,197

Int. Cl. H04q 9/00

U.S. Cl. 340-237 R

10 Claims

1. A system for monitoring a predetermined parameter of the atmospheric emissions flowing through a stack from a source of such emissions, comprising: means for measuring in said stack the values of several parameters of said emissions different from each other and also different from said predetermined parameter;

rendered conductive to thereby generate an output signal from said signal means, and said SCR being thereafter rendered non-conductive only by operating said SCR switch.

3,852,737

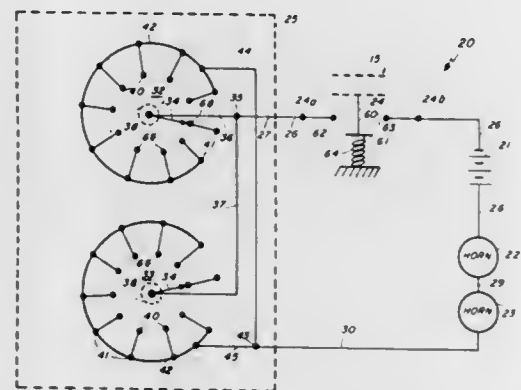
PRODUCT VENDING MACHINE ALARM

Claude E. Gordon, 4521 Blonigen Ave., Orlando, Fla. 32806
Filed Oct. 12, 1973, Ser. No. 405,932

Int. Cl. G08b 13/08

U.S. Cl. 340—274 R

2 Claims



1. In a product vending machine having an internal compartment with an external wall, an exterior door closing an entranceway to said compartment and being movable to an open position, and a signaling device for signaling an unauthorized opening of said door, the improvement where said device includes an alarm circuit comprising an open switch component which closes in response to opening movement of the door and has a pair of terminals, circuit components for establishing an electrically conductive circuit connection between said terminals including a DC battery, sound producing means connected in series with the battery and energizable by completion of the alarm circuit to sound an audible alarm, and a mechanism for arming and disarming said alarm circuit, said device including a housing for said mechanism which is located in said compartment and mounted on said wall, and a housing for said DC battery and said sound producing means which is restingly located within said compartment and randomly locatable therein, said mechanism comprising a switching component connected in series with said battery and said sound producing means and being manipulatable to make and break said conductive circuit connection, said switching component having an element that is rotatably manipulatable about an axis to selectable positions which include a plurality of positions at each of which said circuit connection is complete, and a position at which said circuit connection is broken, said element being manipulatable at the exterior of the housing for said mechanism and inwardly offset from the exterior surface of the wall, said element being arranged with its axis normal to the exterior wall surface and having an end with a recess shaped to receive the working end of a tool for use in the rotative manipulation thereof, and said wall having an opening which is arranged in working alignment with the end of said element and arranged to receive the working end of the tool.

3,852,738

RIPPLE-CONTROL RECEIVER RESPONSIVE TO MULTIPLE COMMAND CONTROL

Felix Niederberger, Zug, and Christian Schweizer, Steinhausen, both of Switzerland, assignors to Landis & Gyr AG, Zug, Switzerland

Filed July 24, 1972, Ser. No. 274,223

Claims priority, application Switzerland, June 26, 1971, 11014/71

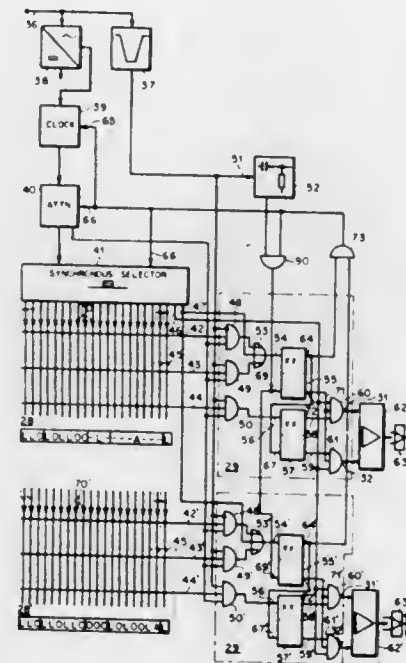
Int. Cl. H04q 5/00

U.S. Cl. 340—310

14 Claims

1. A ripple control receiver responsive to a transmitted program containing a start command, control commands and a confirmation command including:

- a receiver means for receiving said transmitted start command, control commands and confirmation command;
- a program storage means wherein are stored a start command, control commands and a confirmation command;
- a comparator means operably connected to said receiver means and said program storage means and responsive thereto for comparing said transmitted and stored start



- commands, control commands and confirmation commands; and
- execute means operably connected to the output of said comparator means and responsive thereto for executing the commanded control operation upon a favorable comparison of said transmitted and stored start, control and confirmation commands.

3,852,739

MOVEMENT DETECTING AND VISUAL INDICATING DEVICE

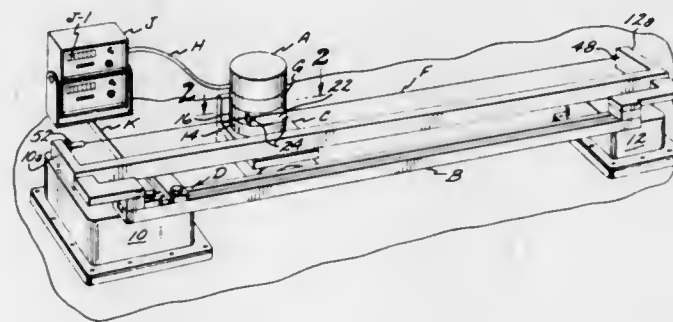
Henry G. Mohr, III, 1418 N. Center St., Orange, Calif. 92667

Filed June 29, 1973, Ser. No. 375,114

Int. Cl. H03k 13/00; G01b 3/00

U.S. Cl. 340—347 AD

9 Claims



1. In combination with a machine having a movable element that traverses a straight path between first and second upwardly extending portions of said machine, a device for indicating the extent of movement of said element in traversing said path, said device including:

- a. an elongate resilient member having first and second ends;
- b. first tensioned spring means that secure said first end to said first upwardly extending portion;
- c. second means for securing said second end to said second upwardly extending portion, with said first and second means cooperatively holding said resilient member in a tensioned condition parallel to said path;

3,852,741

NOZZLE AREA MEASUREMENT

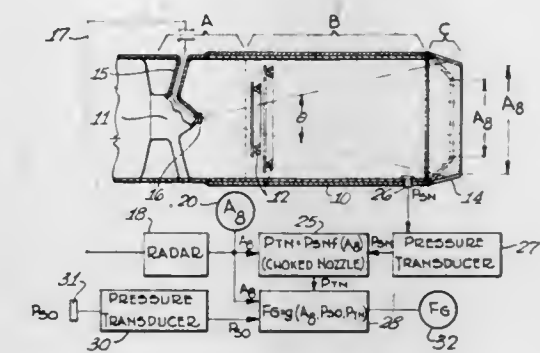
George B. McDonald, Ottawa, Canada, assignor to Control Data Canada, Ltd., Willowdale, Ontario, Canada

Filed June 11, 1973, Ser. No. 368,810

Int. Cl. G01s 9/02; G011 5/14

U.S. Cl. 343—5 R

8 Claims



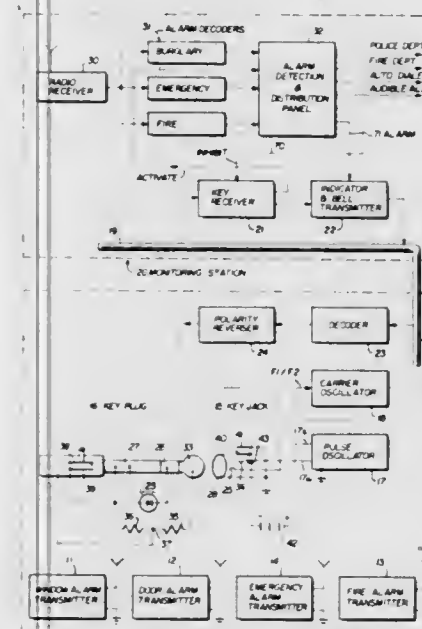
3,852,740
ALARM SYSTEM WITH RADIO ALARM LINK AND EQUIPMENT-ACTIVATING POWER LINE LINK
Irving Haymes, Tamarac, Fla., assignor to Earl Yale Fine; Kenneth Borzage; Soley Goldberg and Steven Fine, part interest to each

Filed Apr. 16, 1973, Ser. No. 351,164

Int. Cl. G08b 25/00

U.S. Cl. 340—416

20 Claims



1. In an alarm system having:
a monitoring station with alarm monitoring equipment;
a protected premises which is interconnected with the monitoring station through electrical power lines;
a radio link comprising one or more radio transmitters at the protected premises for transmitting an intrusion alarm signal when an intrusion alarm condition is detected there, and a radio receiver at the monitoring station for receiving said radio alarm signals and operatively coupled to said alarm monitoring equipment to actuate the latter when a radio alarm signal is received;
and a power line link comprising means selectively operable at the protected premises for transmitting over power lines to the monitoring station signals for activating the alarm monitoring equipment there to respond to intrusion alarm signals broadcast from the protected premises;
the improvement wherein said power line link further comprises means at the monitoring station for transmitting over power lines to the protected premises signal information as to whether the alarm monitoring equipment there is activated to respond to intrusion alarm signals broadcast from said protected premises.

3,852,742

DIGITAL MTI CANCELLER APPARATUS USING INITIALIZATION

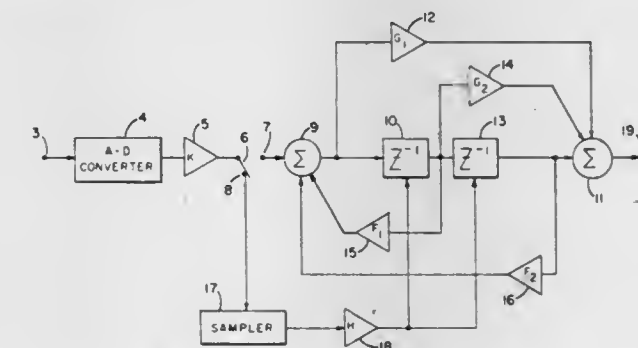
Robert H. Fletcher, Jr., and Donald W. Burlage, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 8, 1973, Ser. No. 322,045

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

8 Claims



1. A digital MTI canceller having means for converting analog radar echos into digital signals; first and second shift register storage means each having a signal input, an output, and a preset input; first and second summers each having inputs and an output; plural multipliers each having an input and an output; means connecting said output of said means for converting to an input of said first summer; wherein said output of said first summer is connected to said signal input of said first storage means and to the input of a first one of said multipliers, said output of said first storage means is connected to respective inputs of second and third multipliers and to said signal input of said second storage means, said output of said second storage means is connected to the input of a fourth multiplier and to an input of said second summer, the outputs of said first and second multipliers are connected to respective inputs of said second summer, and the outputs of said third and fourth multipliers are connected to respective

13 Claims



3 Claims

8 Claims

1. A lens antenna adapted to operate over a wide range of frequencies, said antenna comprising a first spherical conductive shell subtending a predetermined solid angle having a first center of curvature, the radius of said first shell being large compared to a wavelength at the lowest frequency in said wide range of frequencies; a second spherical conductive shell having said first center of curvature and subtending a solid angle that is at least coextensive with said predetermined solid angle, the radius of said second shell being no more than one-half the radius of said first shell; a third spherical conductive shell having a second center of curvature spaced from said first center of curvature and a radius of curvature equal to the radius of curvature of said second shell; means including a

plurality of antenna elements disposed over the convex side of said second shell for directing an electromagnetic wave of predetermined polarization towards the inner surface of said first shell from a predetermined location on said second shell and for receiving energy reflected from said first shell of a polarization orthogonal to said predetermined polarization at locations corresponding to each antenna element of said plurality thereof on said second shell; a corresponding plurality of antenna elements disposed in corresponding positions on the concave side of said third shell; and means connecting respective antenna elements on said second shell to corresponding antenna elements on said third shell for transmitting said reflected energy thereto over paths of equal electrical length.

3,852,749

RADIOLOCATION SYSTEM

Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

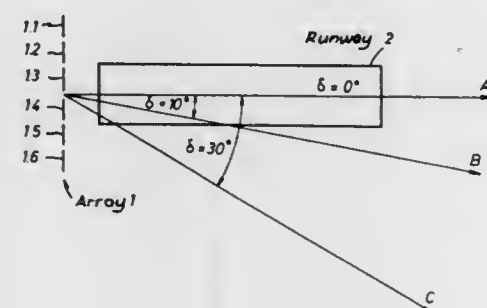
Filed Jan. 24, 1973, Ser. No. 326,513

Claims priority, application Germany, Jan. 25, 1972, 2203442

Int. Cl. G01s 1/08

U.S. Cl. 343—102 R

9 Claims



1. In a radio navigation system for determining at least one angle in a plane of a remote receiving station with respect to a reference angle in said plane established at a ground station, said ground station including a linear array antenna having a plurality of elements energized cyclically and sequentially from a transmitter through a commutator arrangement to transmit RF oscillations from said elements sequentially, the combination comprising:

first means within said remote receiving station responsive to said ground transmitted RF oscillation pulses for measuring the phase and amplitude of said RF oscillations discretely for each pulse received from each of said elements of said ground station antenna with respect to a predetermined one of said elements;

second means for vectorially adding said measured phases and amplitudes and for determining the absolute value of the sum thereof over a cycle of said commutator arrangement;

third means associated with said first means for modifying the phase of the RF oscillations of each received pulse corresponding to the transmitting time of one of said commutated elements by a predetermined phase angle offset value multiplied by the ordinal number of the corresponding element commutated at the time, said phase offset value being varied for each of a predetermined number of commutation cycles of said ground antenna array, said second means thereby producing a corresponding plurality of said absolute values each corresponding to a cycle of said commutation;

and fourth means responsive to said plurality of absolute values to determine the point of inflection in the series of them and the value of said offset angle corresponding thereto, said corresponding offset angle value being indicative of said angle in a plane.

3,852,750 NAVIGATION SATELLITE SYSTEM

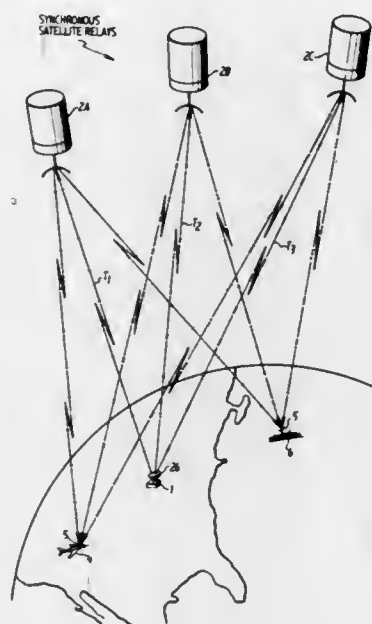
Perry Ian Klein, Washington, D.C., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 16, 1972, Ser. No. 298,138

Int. Cl. G01s 1/30

U.S. Cl. 343—105 R

11 Claims



1. A method of determining the position of an object comprising:

- transmitting in succession from each of at least three synchronous satellites an RF carrier, said carrier being modulated with at least one very low frequency (VLF) tone;
- receiving said successive transmissions at said object;
- demodulating said successive transmissions;
- measuring the phase difference between tones of the same frequency transmitted from different ones of said satellites;
- using two or more of said measured phase differences to determine the location of said object.

3,852,751 DATA HANDLING RECEIVER AND PHASE TRACKING

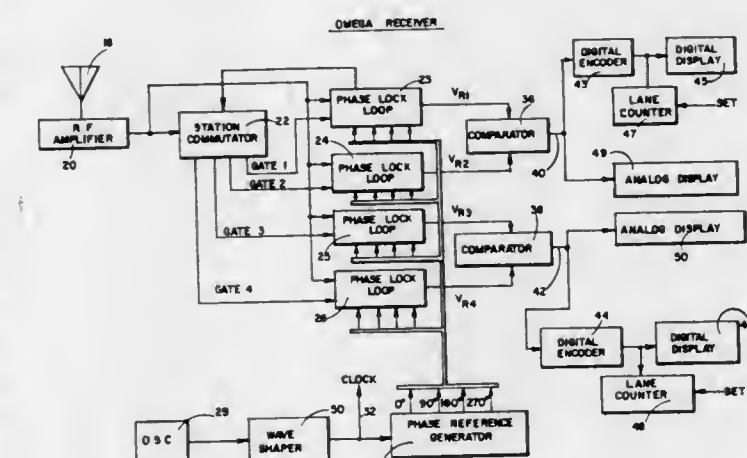
Robert L. Wood, South Gate, and Lyle R. Frederickson, Plantencia, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1972, Ser. No. 317,440

Int. Cl. G01s 1/36

U.S. Cl. 343—105 R

21 Claims



1. A navigation receiver for use with a group of mutually spaced stations that transmit station signals in sequence from one station after another, each sequence of station signal transmissions being repetitive at a group repetition rate, said receiver comprising

means for receiving said station signals, a commutator comprising a recycling multi-stage shift register, means for synchronizing the commutator with the sequence of signal transmissions from said group of stations, first and second phase reproducing means each responsive to an input signal thereto of relatively short duration for generating a continuous output signal having a fixed phase relative to the phase of the input signal thereto, means for feeding said received station signals as individual input signals to respective ones of said first and second phase reproducing means, means responsive to said shift register for selectively activating individual ones of said phase reproducing means in synchronism with sequence of signal transmissions for selected ones of said stations, comparator means for comparing output signals of said first and second phase reproducing means, and means responsive to said comparator means for indicating phase difference of said selected received station signals.

3,852,752

DIFFERENTIAL AMPLITUDE ANGLE GUIDANCE

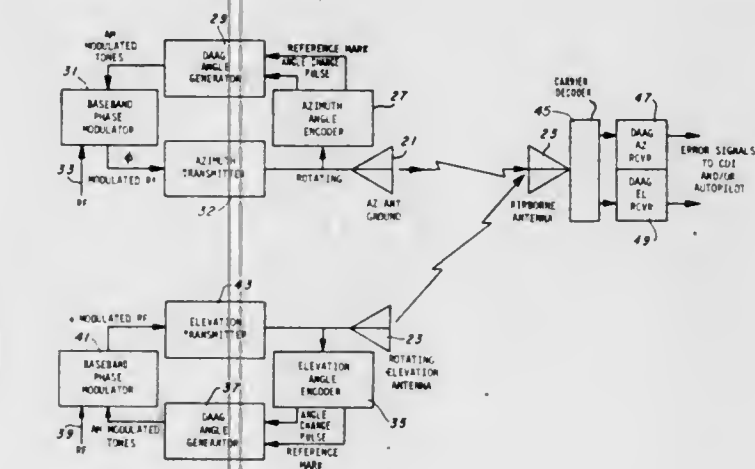
James B. Couvillon, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1972, Ser. No. 318,077

Int. Cl. G01s 1/14

U.S. Cl. 343—108 M

6 Claims



1. An instrument landing system operable with a scanning beam antenna system for providing glideslope and runway centerline indications to an aircraft comprising:

- an azimuth antenna rotating in a plane parallel to the earth's surface;
- an elevation antenna rotating in a plane normal to the earth's surface;
- first means for generating a first pair of AM modulated tones representing the instantaneous position of said azimuth antenna, said tones having substantially equal amplitudes when the antenna is aligned with the runway;
- second means for generating a second pair of AM modulated tones representing the instantaneous position of said elevation antenna, said tones having substantially equal amplitudes when the antenna is aligned with the correct glideslope;
- azimuth transmitter means coupled to the azimuth antenna for generating a first carrier signal having a predetermined frequency, and elevation transmitter means coupled to the elevation antenna for generating a second carrier signal having a second predetermined frequency;
- means for FM modulating said first carrier signal with said first pair of tones and said second carrier signal with said second pair of tones;
- airborne means for receiving said first and second carrier signals;

- means for detecting when said first and second carrier signals are illuminating the position in space occupied by said aircraft; and
- means for detecting said two pairs of tones and comparing their relative amplitude, wherein equal amplitudes indicate proper glideslope and/or centerline of runway.

3,852,753

POSITION LOCATING ARRANGEMENTS

Thomas Raymond Blakemore, Chelmsford, England, assignor to The Marconi Company, Limited, Chelmsford, Essex, England

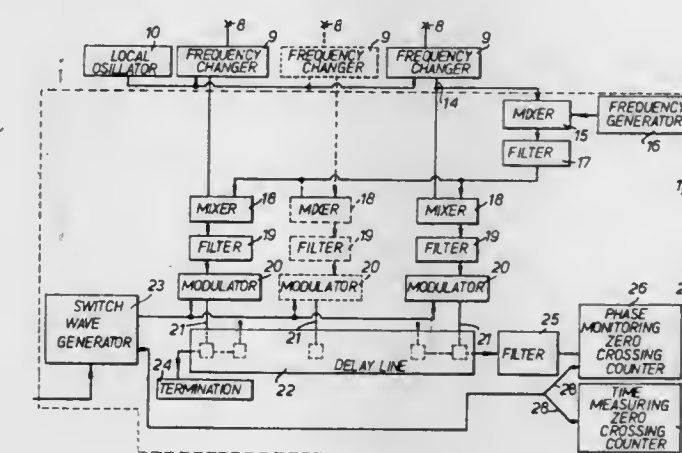
Filed Oct. 6, 1972, Ser. No. 295,712

Claims priority, application Great Britain, Oct. 8, 1971, 46994/71

Int. Cl. G01s 5/02

U.S. Cl. 343—113 R

5 Claims



1. A direction finding arrangement for determining the bearing of a point from which radio frequency electromagnetic radiation is received, comprising:

- an array of aerial elements for receiving said radiation;
- modulator means for simultaneously gating for a predetermined period of time signals derived from the respective aerial elements;
- delay means for delaying the gated signals by different amounts to arrange the gated signals sequentially in time whereby to produce an information signal having a frequency representative of the bearing of said point; and means for determining the frequency of said information signal;
- said signals derived from each aerial being produced by heterodyning the signals received by each aerial with signals produced by a local oscillator, additively mixing the heterodyned signals received by one aerial with a reference frequency, and subtractively mixing the resultant signal with the heterodyned signals received by each of a second set of aerials.

3,852,754

BINARY BEAM SYSTEM

Edsel A. Worrell, Bethesda, Md., assignor to Litton Systems, Inc., College Park, Md.

Filed Sept. 21, 1971, Ser. No. 182,461

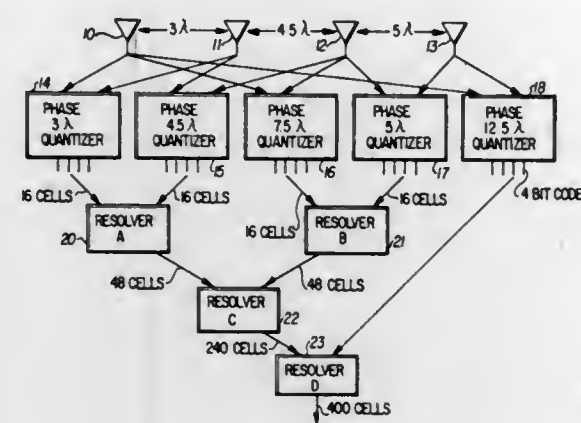
Int. Cl. G01s 5/02

U.S. Cl. 343—113 R

11 Claims

1. A digital direction finding system comprising: an array including a first pair of antennas spaced apart at a distance that is a greater multiple than $\frac{1}{2}$ of the wavelength of the signal to be detected, said array including antenna means providing a second pair of antennas having a spacing greater than the first pair, first and second phase comparator means for determining the time phase displacement of signals from each pair and providing first and second signals proportional to such phase displacements,

and a resolver energized by said first and second signals for producing a unique digital code defining the direction of



an incoming wave with fewer ambiguities than the signal from either phase comparator.

3,852,755

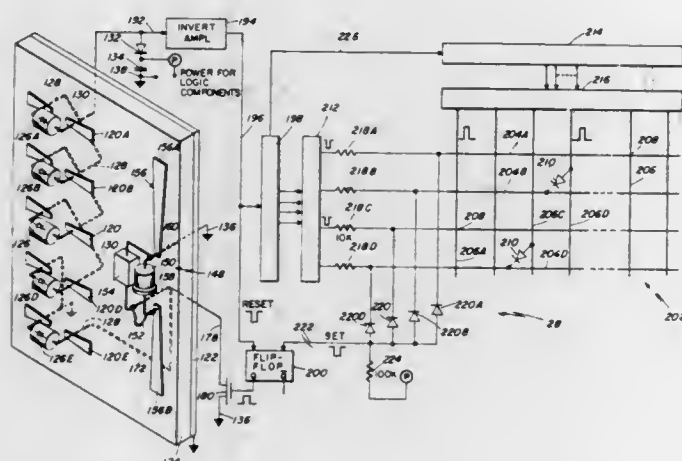
REMOTELY POWERED TRANSPONDER HAVING A DIPOLE ANTENNA ARRAY

George A. Works; John C. Murray, both of Hudson, and Nathan Freedman, West Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 165,219, July 22, 1971, Pat. No. 3,745,569. This application Feb. 12, 1973, Ser. No. 331,920 Int. Cl. H01q 21/12

U.S. Cl. 343—701

7 Claims



1. In combination:
a reflector;

an array of radiating elements each of which comprises a dipole type structure positioned in front of and spaced apart from said reflector; a plurality of serially connected diodes, each of said diodes being couple to respective ones of said radiating elements at the midpoints thereof; means interposed between said array and said reflector for positioning said radiating elements a uniform distance in front of said reflector such that an electric field provided by the radiating elements of said array in response to radiation incident upon said array and said reflector induces a voltage across said diodes.

3,852,756

ELECTRICALLY SMALL RESONANT ANTENNA WITH CAPACITIVELY COUPLED LOAD

Joe Reese, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 442,933
Int. Cl. H01q 1/36

U.S. Cl. 343—708

10 Claims

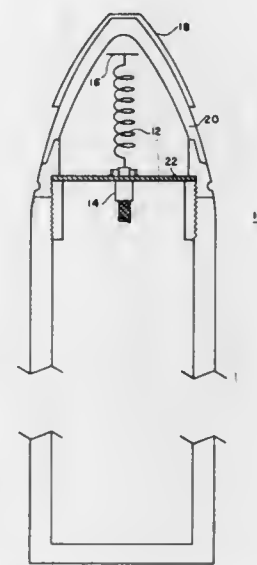
1. A physically small resonant antenna designed for utilization in applications having a relatively small volume in which

to position an antenna for the wavelength to be transmitted or received, comprising:

an electrically conductive helical member having first and second opposite ends;

means for reducing the capacitive reactance of said antenna, including first and second electrically conductive members wherein said members are physically spaced apart and the first member is coupled near the first end of said helical member;

circuit means for processing an electrical signal, having at least first and second terminals;



a coaxial member having a plurality of electrically conductive elements wherein the first element couples said circuit means to the second end of said helical member; and an electrically conductive enclosure containing said circuit means and said coaxial member, wherein the second terminal of said circuit means is coupled by the second element of said coaxial member to said enclosure; such that said antenna is a dipole antenna having first and second arms wherein the apparent electrical length of the first arm sufficiently approximates the electrical length of the second arm so that said antenna operates as a dipole antenna for the chosen frequency of interest.

3,852,757

ANTENNA CONSTRUCTION

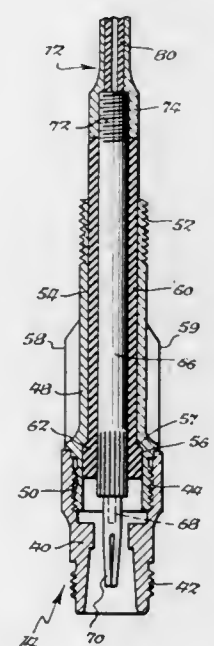
Robert G. Kaiser, 394 Woodstock, Tonawanda, N.Y. 14150

Filed Apr. 26, 1973, Ser. No. 354,474

Int. Cl. H01q 1/10, 1/32

U.S. Cl. 343—713

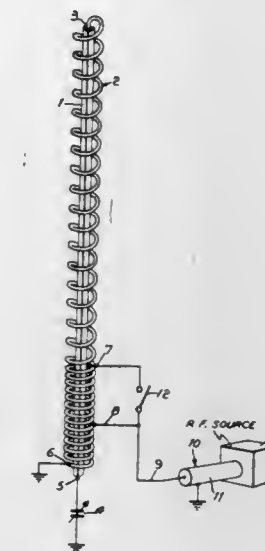
16 Claims



1. A mounting arrangement for a land vehicle antenna providing both standard radio reception and two-way radio

operation, said antenna including a mast portion extending from the body of the vehicle and having the appearance of a standard vehicle radio antenna and an antenna connector portion extending from said mast portion and to which electrical connection is made, said mounting arrangement comprising:

- a generally hollow mounting element having a connector portion of electrically conducting material and adapted to be secured to the body of a vehicle and having a supporting portion extending from the vehicle body;
- said antenna connector portion having one end adjacent said connector portion of said mounting element and a part thereof in said supporting portion;
- insulator means fixed in said supporting portion of said mounting element and firmly contacting said antenna connector portion, said antenna connector portion being fixed in said insulator means; and
- means releasably connecting said antenna mast portion to said antenna connector portion whereby said mast portion can be removed from said mounting arrangement.



able capacitive tuning means connected to the other end of said second radiating element.

3,852,758

COUPLING METHOD AND DEVICE FOR ANIMAL MOUNTABLE ELECTRONIC PACKAGE

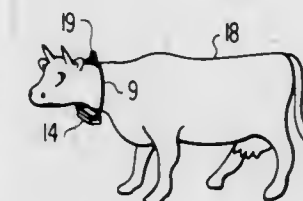
Jerry H. Polson, 7823 Greenbriar Cir., Denver County, Colo. 80301

Filed Mar. 12, 1973, Ser. No. 340,567

Int. Cl. H01q 1/44

U.S. Cl. 343—718

3 Claims



1. An animal mountable device having low vulnerability to breakage, said device comprising: a tube; a conductor extending through said tube and being freely movable relative thereto; a magnetic core fastened around said tube; a coil fastened to a portion of said magnetic core to establish coupling capability between said coil and said conductor, said coil being connected with predetermined electronic circuitry; and means to fasten the ends of said conductor together to form a loop antenna about a predetermined portion of an animal, said conductor supporting said tube having said core fastened thereto so that said tube is freely movable along said conductor without adversely affecting signal coupling between said conductor and coil.

3,852,759

BROADBAND TUNABLE ANTENNA

Robert A. Felsenfeld, 4 Cliffside Dr., Livingston, N.J., and Copthorne MacDonald, 81 Windsor Cir., Elmira, N.Y., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 1, 1960, Ser. No. 19,248

Int. Cl. H01q 1/36

U.S. Cl. 343—729

13 Claims

1. A broadband tunable antenna comprising a first radiating element resonant at a first band of frequencies, a second radiating element resonant at a second band of frequencies disposed parallel to and coextensive with said first radiating

3,852,760 ELECTRICALLY SMALL DIPOLAR ANTENNA UTILIZING TUNED LC MEMBERS

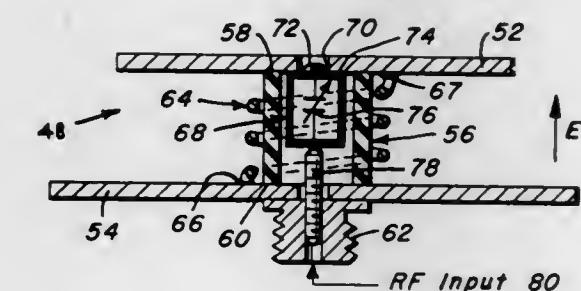
Frank Reggia, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1973, Ser. No. 386,486

Int. Cl. H01q 9/28

U.S. Cl. 343—747

5 Claims



1. A miniaturized dipolar antenna comprising:
first and second capacitor plates disposed in coaxial parallel spaced relation;
a helically wound inductor coil positioned between the plates in coaxial relation thereto for electrical connection therewith to form a tuned LC resonant circuit;
adjustably positioned ferrite core coaxially disposed inwardly of the coil for tuning the operating frequency of the antenna; and
means connected to the inductor and the capacitor plates for introducing an r.f. signal to the antenna which energizes the inductor and the capacitor plates causing radiation of energy into a far field from the capacitor plates.

3,852,761

LENS FED ANTENNA ARRAY SYSTEM

Bruce Fredric Bogner, Mt. Holly, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,421

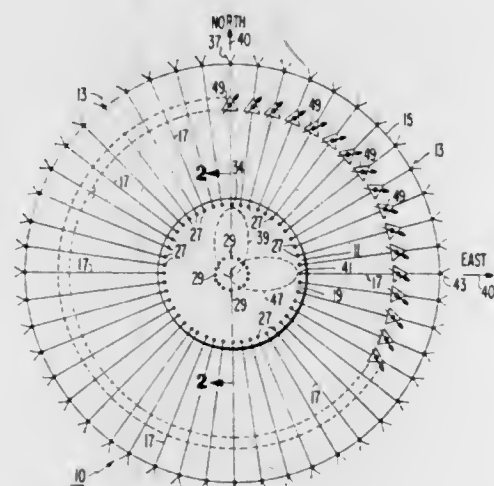
Int. Cl. H01q 3/26

U.S. Cl. 343—754

10 Claims

1. An antenna array system comprising:
an enclosed transmission line including a pair of parallel conductive plates spaced from each other with a dielec-

tric medium therebetween and a conductive ring-like band about the periphery thereof, a first plurality of probes spaced in a ring-like pattern coaxial with the conductive band and that extends near the periphery of the enclosed transmission line, each of said first plurality of probes extending through one of said plates in a coupling manner with said transmission line, a second plurality of probes being arranged in a pattern clustered near the center of the enclosed transmission line, said second plurality of probes extending through one of said plates in a coupling manner to said transmission line formed between said plates, a plurality of radiating elements, means coupling each one of said radiating elements to a selected one of said first plurality of probes,



means coupled to said second plurality of probes for exciting said second plurality of probes in a manner to produce a given electromagnetic wave energy distribution within said transmission line with maximum power emanating from the center of said enclosed transmission line in only selected radial directions in a plane substantially parallel to said plates, said first plurality of probes being disposed in a radial direction from said second plurality of probes a distance to cause only selected probes of said first plurality of probes to be appreciably excited in response to said given electromagnetic wave energy distribution and thereby produce a given radiated pattern from said radiating elements and means for changing said given electromagnetic wave energy distribution to control the radiated pattern from said radiating elements.

3,852,762

SCANNING LENS ANTENNA

George Henf, Pleasantville, and Leonard Schwartz, Scarsdale, both of N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 14, 1973, Ser. No. 415,634

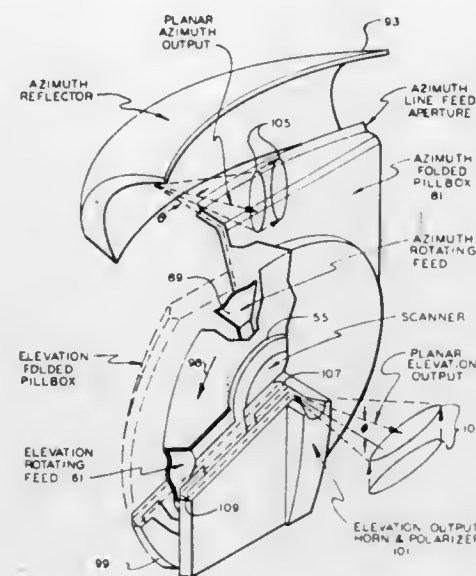
Int. Cl. H01q 19/12, 19/08

U.S. Cl. 343-756

13 Claims

1. A scanning lens microwave antenna comprising:
 - a. a fixed circular reflector;
 - b. a scanner comprising an annular shaped rectangular waveguide split in half with the inner half containing a fixed inlet port and forming a stator and the outer half containing a plurality of rotatable outlet ports and forming the rotor and means in said waveguide to cause only one output at a time to couple to said input;
 - c. a parallel plate waveguide directing energy from said scanner to said reflector whereby said scanner will scan energy across said reflector; and
 - d. a parallel plate dielectric lens located at the end of said

parallel plate waveguide, said dielectric lens mounted within a thin metal outer casing which is coupled to said



waveguide and having a tapered matching section extending into said waveguide.

3,852,763

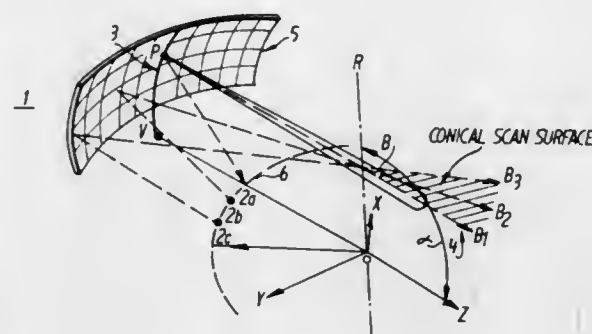
TORUS-TYPE ANTENNA HAVING A CONICAL SCAN CAPABILITY

Randall William Kreutel, Jr., and Geoffrey Hyde, both of Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 44,450, June 8, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 311,984 Int. Cl. H01q 19/12

U.S. Cl. 343-761

7 Claims



1. A torus-type reflector antenna wherein the reflector surface is described by a substantially smooth generating curve rotated about an axis of rotation which is coplanar with the generating curve and disposed on the concave side of said curve and wherein the reflector surface, when illuminated with electromagnetic energy from a feed means lying at a feed point in the plane defined by said generating curve and said axis of rotation forms a substantially focused beam along an axis of beam direction defined by a line lying in said plane and drawn between the reflecting surface and a remote target point, the improvement comprising:

- a. said generating curve substantially comprising a conic section, except a conic section which is the arc of a circle;
- b. said reflector surface being formed by rotating said generating curve about an axis of rotation which intersects the axis of beam direction at an angle α which is not equal to 90° ;
- c. said feed means being capable of illuminating said reflector surface from one or more points on an arc, defined by the rotation of said feed point about the axis of rotation, whereby the axes of beam direction of beams formed and directed by the reflecting surface intersect the axis of rotation at said angle α and define the surface of a cone having a half angle of $180^\circ - \alpha$ for $90^\circ < \alpha < 180^\circ$.

3,852,764

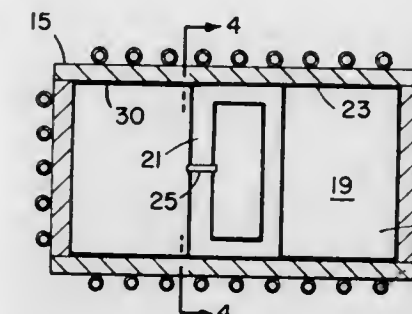
PHASED ARRAY ANTENNA WITH PHASE SHIFTER COOLING

Bob L. Smith, 4402 Judith La. SW, Huntsville, Ala. 35805 Filed Oct. 10, 1973, Ser. No. 405,232

Int. Cl. H01q 13/00

U.S. Cl. 343-778

5 Claims



1. An antenna comprising a plurality of waveguides disposed in honeycomb relation and connected to a common source of microwaves to produce a wavefront; and toroidal phase shifters respectively disposed in said waveguides for selective control of the speed of the waves in said conduits for scanning the wavefront and wicking means lining portions of the inner surfaces of said waveguides and the outer surfaces of the toroidal phase shifters to dissipate heat by capillary action.

3,852,765

SPHERICAL DOUBLE REFLECTOR ANTENNA

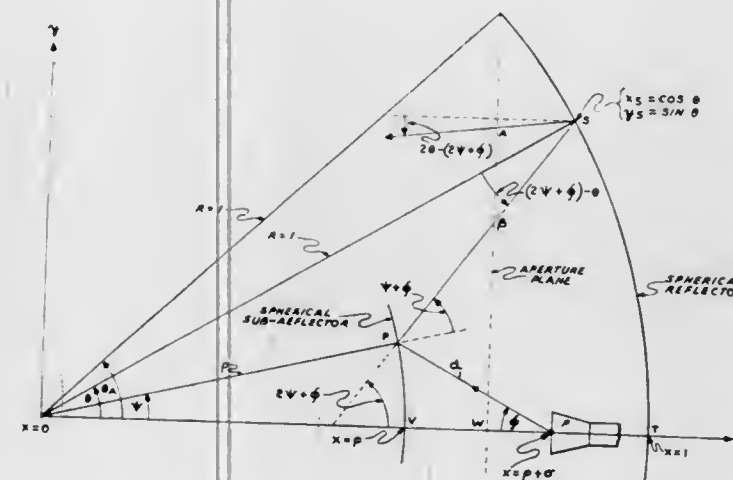
Aaron D. Bresler, Merrick, N.Y.; Emanuel Stein, Fair Lawn, and M. Otto Erdmann, Denville, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 19, 1972, Ser. No. 316,617

Int. Cl. H01q 19/14

U.S. Cl. 343-781

18 Claims



1. An antenna arrangement comprising a spherical main reflector surface, a spherical subreflector surface having a radius of curvature origin coincident with that for the main reflector, and at least one feed predeterminably arranged relative to said main and subreflector surfaces to illuminate said subreflector surface.

3,852,766

POLYPOLE BROADBAND ANTENNA ARRAY

Irving G. Olson, San Diego, Calif., and Hardy K. Landkov, Tempe, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1973, Ser. No. 423,339

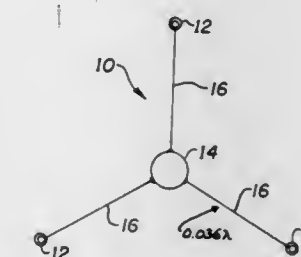
Int. Cl. H01q 21/00

U.S. Cl. 343-844

4 Claims

1. A broadband antenna array comprising:

a plurality of identical, equal-length monopoles vertically disposed with respect to each other in a symmetrical manner at each of the apexes of a selectively predetermined geometrical configuration and upon said ground plane; insulation means rigidly connected between each of said monopoles and said ground plane to provide a structur-



ally rigid monopole configuration with respect to said ground plane; and, energy feed means disposed and located in a central position with respect to all of said monopoles; said array further including equal-length feed-wires connected from said feed means to each of said monopoles; said feedwires being oblique to said ground plane.

3,852,767

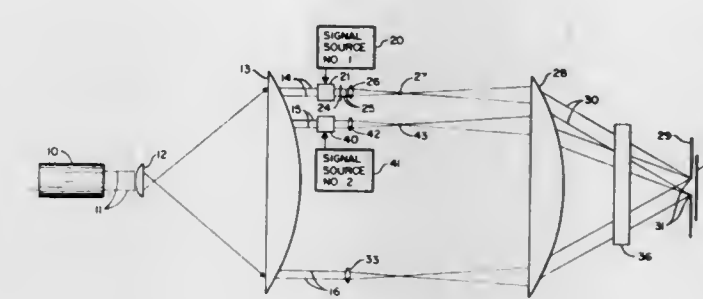
OPTICAL SIGNAL RECORDING METHOD

Robert E. Brooks, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 282,670, Aug. 22, 1972, Pat. No. 3,812,496. This application Dec. 19, 1973, Ser. No. 426,381 Int. Cl. G01d 9/28

U.S. Cl. 346-1

2 Claims



1. The method of optically recording a plurality of electrical analog signals, each having a wide range of amplitudes on a recording material comprising the steps of:

- a. generating simultaneously a first, a second and a third collimated beam of coherent light;
- b. directing said beams to coincide at an angle to each other in a predetermined plane;
- c. disposing a recording material in the predetermined plane;
- d. causing a continuous relative movement between the recording material and the beams in the predetermined plane;
- e. modulating the first beam in accordance with a first analog signal to be recorded; and
- f. modulating the second beam in accordance with a second analog signal to be recorded, the first and third beams forming a first predetermined angle at the predetermined plane, the second and third beams forming a second different predetermined angle at the predetermined plane, whereby two linear gratings are recorded on the recording material, each having a different grating constant and each being modulated by one of the two signals.

3,852,768

CHARGE DETECTION FOR INK JET PRINTERS

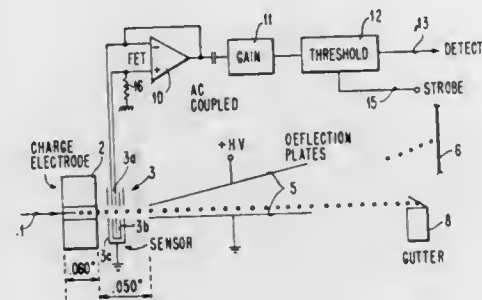
John M. Carmichael; Donald L. West, and Robert A. Williams, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,291

Int. Cl. G01d 18/00

U.S. Cl. 346—75

6 Claims



1. A sensor system for ink jet printers, particularly providing reduced noise and improved signal to noise ratio, comprising: nozzle means for forming and propelling a stream of ink jet drops, charging means for charging said ink drops, deflecting means for deflecting said ink drops in accordance with the charge on said drops in a predetermined path toward a document to be printed, or the like;

sensor means positioned downstream from said nozzle means in the path of travel of said ink drops, said sensor means comprising an assembly of laminar elements including a sensor element, an inner shield, and an outer shield, and said sensor means having an aperture through which said ink drops pass, the arrangement being such that drops passing through said aperture are capacitively coupled to said sensor means for generating charges thereon in timed relation to passage of drops through the aperture of said sensor means;

means interconnected with said outer shield for electrically grounding said outer shield to thereby reduce noise pickup by said sensor means;

and a circuit interconnected with said sensor element and said inner shield for developing signals representative of detected charges.

3,852,769

DUAL CHANNEL STRIP CHART RECORDER WITH VISIBLE STYLI

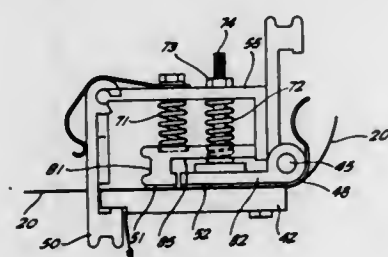
Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 26, 1973, Ser. No. 344,498

Int. Cl. G01d 9/30

U.S. Cl. 346—49

4 Claims



1. In a chart recorder adapted for forming closely spaced multiple traces from one side of a section of chart paper that are viewable from the other side of the chart paper, means for selectively aligning said section of chart paper within a recording station, said chart paper having first and second sides;

a transparent viewing and writing plate position at said recording station adjacent the first side of said section of the chart;

two flexible bands longitudinally movable parallel to each other in a plane parallel to said chart paper adjacent the second side of said chart paper;

two styli located at said recording station on the second side of said chart paper, each of said styli projecting from the surface of one of said bands transversely thereto toward said second side of said chart paper for forming a trace on said chart paper that is visible from the first side of said chart paper through said viewing and writing plate, each stylus being at the edge of one band adjacent the edge of the other band whereby they are movable in closely adjacent parallel paths, said paths being also parallel to said section of said chart paper and to said viewing and writing plate, and

means for causing said styli to bear continuously and resiliently against said chart paper and said transparent viewing and writing plate for causing the chart paper to be pressed against the viewing and writing plate and thereby forming traces thereon that are immediately viewable through said viewing and writing plate.

3,852,770

CODED LEGEND MARKING ASSEMBLY HAVING TRANSMIT AND RECEIVE PRINTING CIRCUITRY

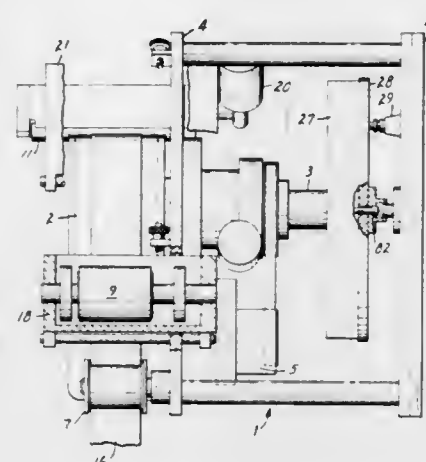
Derrick A. Jones, and Michael G. Golden, both of St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 21, 1973, Ser. No. 362,094

Int. Cl. G01d 15/06

U.S. Cl. 346—74 ES

11 Claims



1. A marking assembly for automatically marking on a dielectric tape web various patterns, each forming a particular coded legend, which assembly comprises:

a rotatably driven drum around which said tape is advanced upon rotation of said drum whereby there is substantially no slippage between the drum and the web;

coded legend marking means disposed at the outer cylindrical surface of said drum for producing said coded legends on said tape web, said marking means including an array of individually controlled electrodes supported on said drum; and

actuating circuitry for selectively energizing said marking means such that said marking means produces on said web a pattern from particular ones of said controlled electrodes to form a particular coded legend on the web to impart information about an object upon which the web is to be affixed at the conclusion of the marking operation, which circuitry includes a circuit branch having a transmit circuit portion that is nonrotatably disposed on said assembly and a receive circuit portion that is physically separated from said transmit portion and is positioned to rotate in correspondence with said drum whereby said circuit portions communicate with each other to provide legend printing data to said controlled electrodes.

3,852,771

ELECTRON BEAM RECORDING PROCESS

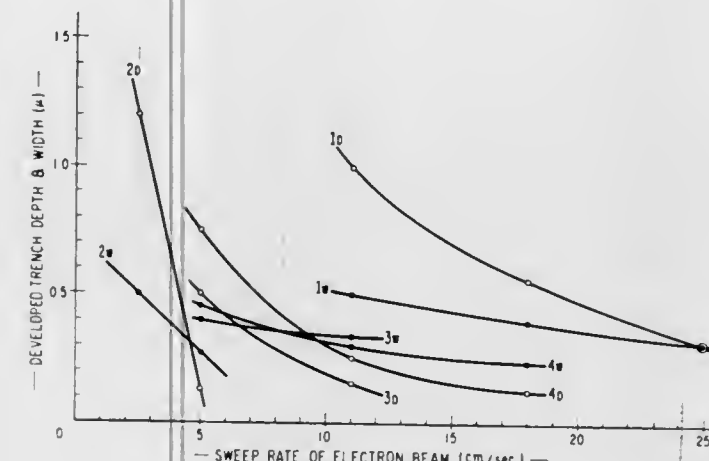
Daniel Louis Ross, Princeton, and Lucian Anthony Barton, Trenton, both of N.J.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 332,025

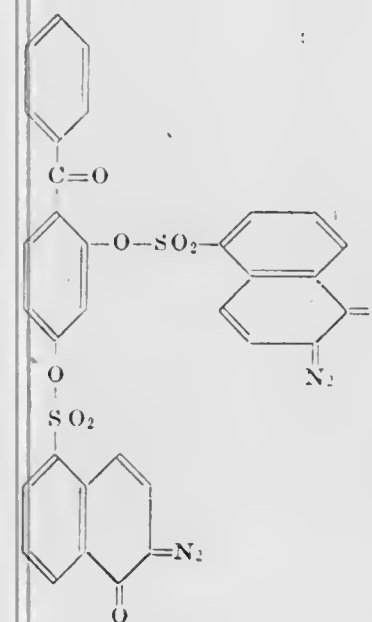
Int. Cl. G01d 15/06

U.S. Cl. 346—74 E

5 Claims



1. In a method of recording information whereby a modulated beam of electrons is scanned across a surface of an electron beam sensitive material which becomes more soluble in a developer solvent when impinged upon by the beam of electrons and the electron beam sensitive material is developed with the developer solvent so as to remove the solubilized portion, the improvement which comprises employing in an electron beam sensitive layers of said material a mixture consisting essentially of from about 1 to about 50% by weight, as based on the total weight of the mixture of an active compound of the structure



said connector means and said inlet channel, said valve constituting means for reducing pressure surges in the fluid in the forward direction of fluid flow and those in the direction opposite the flow, and for closing the flow path between said connector means and said inlet channel when there is a drop in pressure in such line.

3,852,774

ELECTRIC SHUTTER FOR SINGLE LENS REFLEX CAMERA

Tatsuya Taguchi, Tokyo; Yukio Iura, Kawasaki, and Yoshiyuki Takishima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 106,872, Jan. 15, 1971, abandoned.

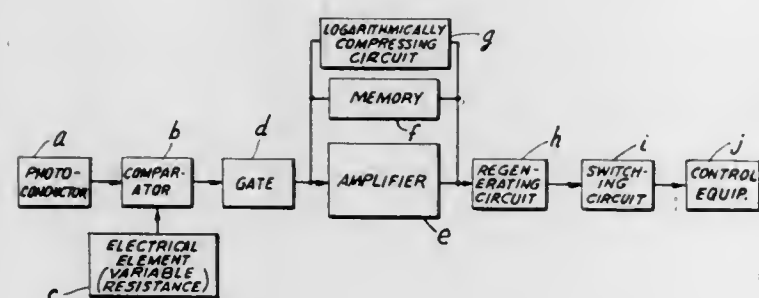
This application Nov. 21, 1972, Ser. No. 308,442

Claims priority, application Japan, Jan. 16, 1970, 45-4703; Feb. 10, 1970, 45-013174

Int. Cl. G01j 1/00

U.S. Cl. 354-24

30 Claims



1. An electric shutter, comprising light sensing means for producing an output corresponding to the light sensed, storage means coupled to said sensing means for storing electrical values on the basis of the output from said sensing means, compression means coupled to said storage means and said sensing means for logarithmically compressing the output of the sensing means so that the value stored by said storage means is a logarithmic compression of the output of said sensing means, variable timing means for opening and closing the shutter at a variable rate after initiation of the timing means, circuit means coupling said storage means to said timing means for varying the rate at which the timing means operates on the basis of the value in said storage means, first switch means coupled to said storage means for decoupling said storage means from said light sensing means and said compression means so as to cause said storage means to maintain a constant value after operation of said first switch means, and second switch means operable after said first switch means for initiating operation of said variable timing means, said storage means including an operational amplifier and capacitor in feedback connection across said operational amplifier.

3,852,775

MOVING BELT SCANNING PRINTER

Donald S. Cary, Perinton, N.Y.; Charles H. Hutchinson, deceased, late of Rochester, N.Y. (NY), and Carol W. Hutchinson, administratrix, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn., by said Cary

Filed Dec. 20, 1973, Ser. No. 426,985

Int. Cl. B41b 15/06

U.S. Cl. 354-14

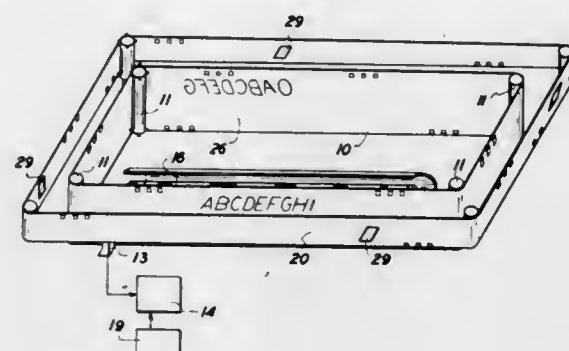
3 Claims

1. An arrangement for scanning character images across a photosensitive medium comprising:

an endless character belt having formed thereon a plurality of light transmitting areas corresponding to a font of characters,

an endless aperture belt concentrically arranged with and around said character belt and having a portion thereof located between said medium and said character belt, said aperture belt containing a plurality of light transmit-

ting zones each being spaced from each other at least a distance approximately equal to the length of a printed line of characters to be printed on the medium, flash illumination means located interior the closed surface formed by said character belt, means for continuously rotating said character belt and said aperture belt with said character belt moving at a speed



greater than said aperture belt and one of said light transmitting zones being located at successive character print positions opposite said medium, and control means for flashing said lamp successively when selected characters to be printed pass in alignment with the light transmitting zone at each character print position whereby selected characters on said character belt are projected onto said medium.

3,852,776

CONTROL ARRANGEMENT FOR A CAMERA SHUTTER

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

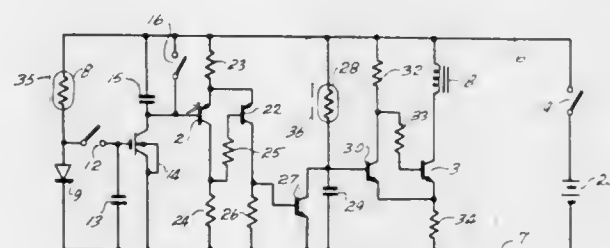
Filed Nov. 19, 1973, Ser. No. 417,130

Claims priority, application Japan, Nov. 22, 1972, 47-116572

Int. Cl. G03b 7/08; G01j 1/46

U.S. Cl. 354-31

5 Claims



1. In a camera having a shutter button and a shutter mechanism having an electromagnet, a front curtain that moves upon actuation of the shutter button, and a rear curtain that is released incident to electrical control of the electromagnet so as to move in spaced relation with the front curtain, an arrangement for controlling the exposure time of the shutter mechanism in accordance with the amount of light from an object to be photographed and with an exposure factor, which comprises:

first and second tandem-connected, separately controllable timing circuits operable for respectively defining in succession first and second sub-intervals of the exposure time, the first timing circuit commencing to define the first sub-interval when the leading curtain begins to move, and the second timing circuit electrically controlling the electromagnet so that the rear curtain is released at the end of the second sub-interval; and

means for separately controlling the first and second timing circuits so that the duration of the first sub-interval is dependent upon said amount of light but is independent

of said exposure factor and the duration of the second sub-interval is dependent upon both said amount of light and said exposure factor.

3,852,777

EXPOSURE CONTROL APPARATUS

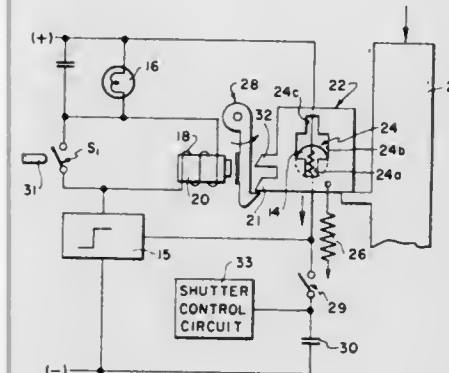
Ernst Lieser, Stuttgart-Bad Cannstatt; Wolfgang Ort, Grunbach; Otto Wisst, and Clemens Hopfner, both of Stuttgart, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1974, Ser. No. 451,713

Int. Cl. G03b 7/08, 17/18

U.S. Cl. 354-49

8 Claims



1. In a camera adapted to receive film of various exposure latitudes and to make exposures of varying duration, the combination comprising:

light sensitive means for sensing the intensity of received scene illumination and having a parameter variable as the intensity of illumination thereon varies;

exposure control apparatus, coupled with said light sensitive means and being responsive to variations of said parameter, for varying the duration of an exposure in relation to said parameter and thus to received illumination intensity;

means for sensing the presence in said camera of film of a predetermined exposure latitude;

control means, coupled with said light sensitive means and cooperative therewith and with said film sensing means, to become active upon the concurrent sensing of the presence of such film of predetermined exposure latitude and an illumination intensity in a range of predetermined intensities that correspond to exposures exceeding a predetermined duration, for providing a control output; and

illumination adjustment means, coupled with said control means and being responsive to said output, for increasing the illumination received by said light sensitive means.

3,852,778

SINGLE LENS REFLEX CAMERA OF TTL PHOTOMETRY TYPE

Yukio Iura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 98,552, Dec. 16, 1970, abandoned.

This application Nov. 13, 1972, Ser. No. 306,038

Claims priority, application Japan, Dec. 19, 1969, 44-105446

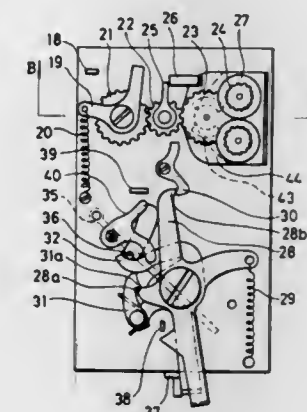
Int. Cl. G03b 7/08

U.S. Cl. 354-51

11 Claims

1. A through-the-lens light measuring and exposure control apparatus for a single lens reflex camera having an objective lens, comprising a photosensitive element exposed to light through the objective lens and having a delayed time response characteristic which produces a time delay, shutter means, an information storage capacitor, openable and closable switching means selectively connecting said capacitor to said element for inserting information from said element into said

storage capacitor, a view finder including a movable reflector, normally open automatic diaphragm means, diaphragm driving means for driving said diaphragm means to a predetermined aperture, operation initiating means coupled to said driving means for initiating operation of said driving means and coupled to said switching means for closing said switching means, said driving means operating independently of said initiating means after the operation of said driving means is initiated and said driving means being engaged with said switching means to open said switching means and said shutter means when said diaphragm reaches its predetermined aper-



ture, control means responsive to said capacitor for closing said shutter means in accordance with the information in said capacitor, and actuating means coupled to said driving means and said movable reflector for moving said movable reflector so as to block the light path to said element when said shutter means has been opened; said driving means including delay means for delaying the driving action, for a predetermined time longer than the time delay produced by the delayed time response characteristic, after said initiating means closes said switching means to allow the capacitor to store information from said element.

3,852,779

RELEASE DEVICE FOR A CAMERA HAVING A MEMORY TYPE ELECTRONICS TIME CONTROL DEVICE

Masayoshi Yamamichi, Kanagawa-ken, and Hiroshi Aizawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

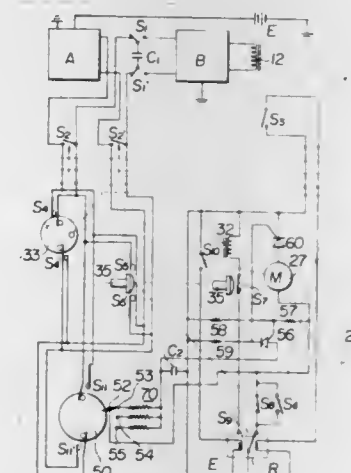
Filed June 29, 1973, Ser. No. 375,034

Claims priority, application Japan, July 5, 1972, 47-67403

Int. Cl. G03b 7/08

U.S. Cl. 354-51

15 Claims



1. Camera having an automatic exposure control device comprising a light receiving transducer element for producing an exposure signal, exposure signal storage means having a

capacitor for storing an exposure signal responsive to the output from the transducer element, exposure control means for controlling an exposure in said exposure signal storage means, release means for actuating the control means to produce an exposure, retaining means for retaining the signal in said storage means for multiple exposures regardless to successive release operations, and a setting means for transferring said retaining means from a non-retaining condition to retaining condition, thereby multiple exposure being achieved without successive exposure signal holding operations.

3,852,780

FILM PACK ADAPTER

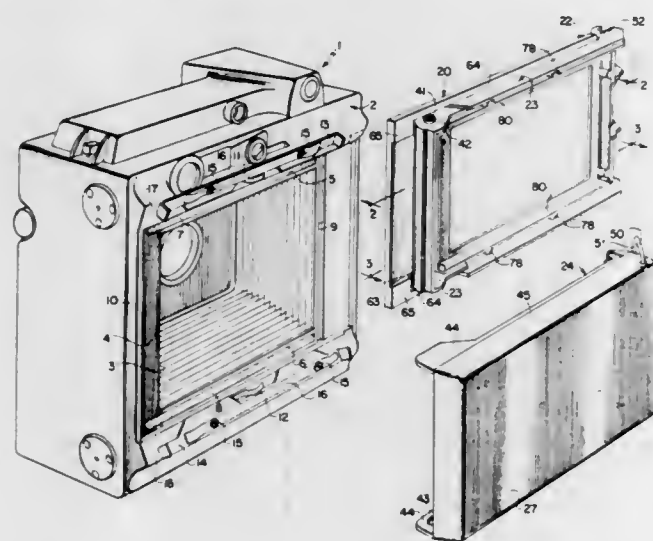
Rolf M. Augustin, Jr., Wellesely Hills, and Donald E. Moodie, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 5, 1973, Ser. No. 338,098

Int. Cl. G03b 17/50

U.S. Cl. 354—86

9 Claims



1. A front housing for a film pack holder comprising a plane front wall formed with a rectangular framing aperture, a rectangular groove formed in said front wall on a first side of said front wall and surrounding said framing aperture, a series of bosses formed on a second side of said front wall opposite said first side and surrounding said framing aperture within the confines of said rectangular groove, and means forming fastener receiving apertures extending through said front wall and into each of said bosses, said fastener receiving apertures being located between said groove and said framing aperture in an array extending about three sides of said framing aperture.

3,852,781

VARIABLE DRIVE FOR PHOTOGRAPHIC APPARATUS

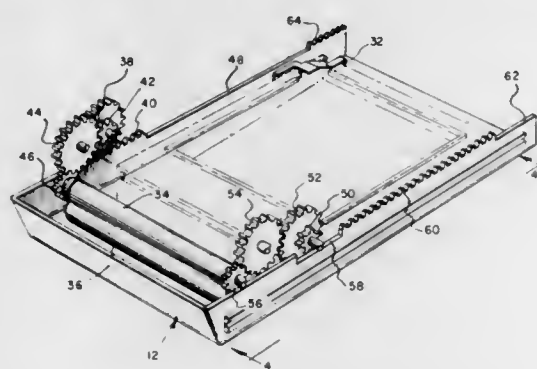
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 23, 1973, Ser. No. 418,656

Int. Cl. G03b 17/50

U.S. Cl. 354—86

14 Claims



1. Apparatus for conveying an article comprising: roller means including at least one roller contacting the

surface of an article being conveyed during movement of the article past said roller means; transport means for supporting and transporting the article to said roller means; and drive means coupled with said roller and said transport means and actuated by said transport means to vary the driving force applied by said roller to the article in proportion to variations in resistance to movement of the article past said roller means.

3,852,782

IMAGING SYSTEM

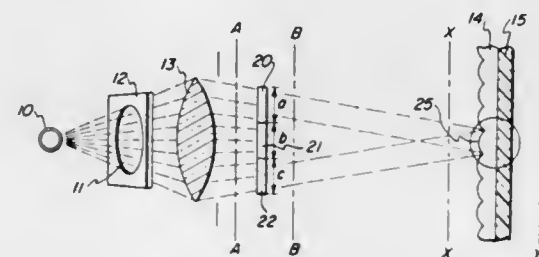
Robert W. Gundlach, Victor, and Lloyd F. Bean, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 1,591, Jan. 9, 1970, abandoned. This application June 28, 1972, Ser. No. 266,966

Int. Cl. G03b 35/08

U.S. Cl. 354—110

13 Claims



1. A photographic apparatus comprising:
a. optical means for producing a light image;
b. a photoreceptor;
c. light attenuation means varying in light transmission density equally at all light wavelengths in preselected different light density ranges for differentially attenuating said light image in corresponding different light density ranges as said light image is transmitted through said light attenuation means; and
d. lenticulated means comprising a surface having a plurality of cylindrically shaped segments for receiving a portion of said differentially attenuated light image and for focusing that portion of the differentially attenuated light image onto a corresponding segment of the photoreceptor in preselected contiguous areas,
wherein said apparatus is capable of forming a reproduction of an original image which when viewed in its entirety will show more of the image information present in the original image than a reproduction of the original image which was recorded on the photoreceptor without using the light attenuation means and the lenticulated means.

3,852,783

PHOTOGRAPHIC APPARATUS FOR SUCCESSIVELY PRESENTING A SEQUENCE OF FILM UNITS TO AN EXPOSURE STATION AND THEN PROCESSING THE FILM UNITS

C. Bruce Kennedy, and John F. Pasioka, both of Acton, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 321,668, Jan. 8, 1973. This application Jan. 2, 1974, Ser. No. 429,763

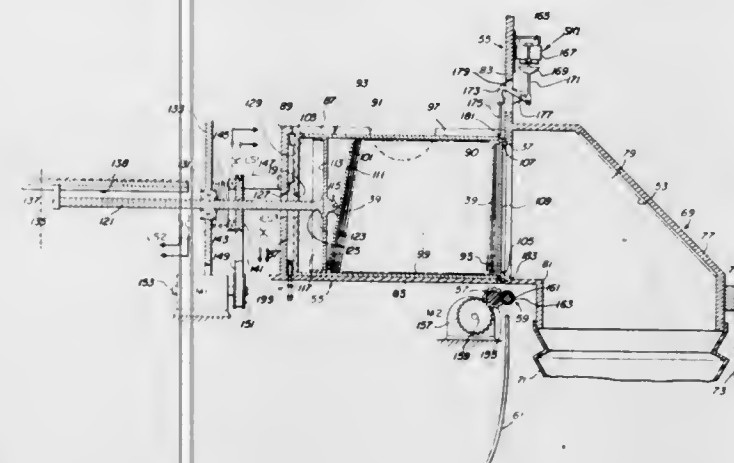
Int. Cl. G03b 19/10

U.S. Cl. 354—174

6 Claims

1. A photographic cassette for holding a stack of film units of the type having pods of processing fluid at one end so that the film units stack at progressively greater angles relative to a first film unit in a stack as the number of film units in the stack is increased, comprising wall means forming a housing for receiving a stack of such film units, means forming a framing aperture in said housing adapted to register with a first film unit in a stack in said housing, force-receiving means adapted to be engaged by an external force-applying member, means

mounting said force-receiving means in said housing for movement toward and away from said framing aperture, a pressure plate adapted to engage the last film unit in a stack in said housing, and means pivotally mounting said pressure plate on said force-receiving means for rotation about an axis normal



to the direction of movement of said force-receiving means so that said pressure plate assumes a position parallel to the last film unit in a stack in said housing when a force directed toward said framing aperture is applied to said force-receiving member.

3,852,784

EARLY METERING FAILURE PREVENTION DEVICE

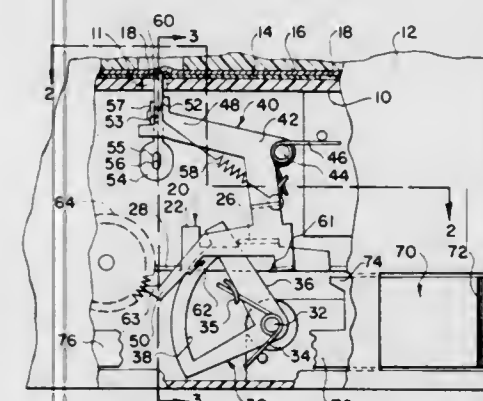
Jeffrey Richard Stoneham, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,620

Int. Cl. G03b 1/16, 9/68

U.S. Cl. 354—206

7 Claims



1. A camera having a shutter and adapted for receiving a film having metering discontinuities spaced at predetermined intervals therealong, said camera comprising:
means for advancing a received film, said advancing means having an active condition wherein said advancing means is movable for advancing film and an inactive condition wherein said advancing means is locked against movement for advancing film;
means for metering a received film in predetermined increments by preventing further advancement of the film, said metering means comprising:
sensing means for engaging a metering discontinuity in a received film, said sensing means being movable to a metering position subsequent to engaging a metering discontinuity; and
means coupling said sensing means and said advancing means for placing said advancing means in said inactive condition in response to movement of said sensing means to said metering position;

means, including a member releasable from a cocked position, for actuating the shutter and for placing said advancing means in said active condition; and
means interconnecting said metering means and said shutter actuating means for preventing said sensing means from engaging a film discontinuity when said releasable member is not in its cocked position.

3,852,785

SELF-TIMER FOR A CAMERA

Masuo Ogiwara, Chiba, and Tomoo Yonemoto, Funabashi, both of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

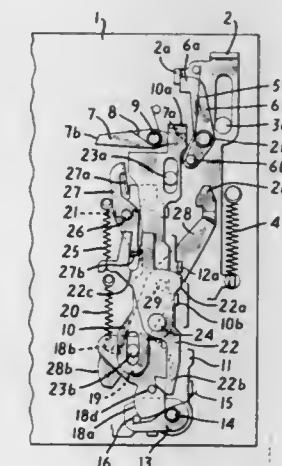
Filed Mar. 20, 1974, Ser. No. 453,085

Claims priority, application Japan, Mar. 31, 1973, 48-38256

Int. Cl. G03b 9/64, 17/40

U.S. Cl. 354—239

3 Claims



1. A self-timer for a camera having a depressable release plate having a camera release lever pivoted thereon and a shutter release lever actuated by said release lever when the depressable plate is depressed, the self-timer comprising, a self-release plate actuatable longitudinally, an interlocking lever pivotally mounted on the self-release plate, a governor having a rotatable gear for charging the governor, means for rotating the gear to charge the governor, a braking lever actuated by said interlocking lever for releasably locking said governor and for unlocking the governor, said gear having means for initiating movement of said self-release plate for transporting the interlocking lever to a position for camming the camera release lever out of the path of the shutter release lever when the depressable release plate is depressed when the governor is cocked for timed exposures, said interlocking lever having means releasing the governor when said depressable release plate is depressed and said interlocking lever is in said position, said governor having means restoring the self-release plate to a rest position when released by said braking lever, and said self-release plate having means actuating the shutter release lever when said governor restores it to said rest position.

3,852,786

SHUTTER ASSEMBLY HAVING MEANS FOR DAMPING THE RAPID MOTION OF THE SHUTTER BLADES

Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi, both of Nakagawa, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,521

Claims priority, application Japan, Aug. 25, 1972, 47-98405

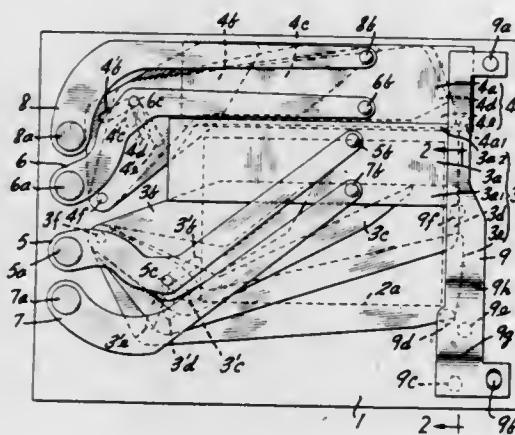
Int. Cl. G03b 9/20

U.S. Cl. 354—252

7 Claims

1. A shutter assembly for a camera comprising: means defining a shutter aperture; a plurality of actuatable shutter blades comprising a first group of shutter-opening shutter blades actuatable through a working stroke from an extended

position wherein they close said shutter aperture to a retracted position wherein they open said shutter aperture, and a second group of shutter-closing shutter blades actuable through a working stroke from a retracted position wherein they open said shutter aperture to an extended position wherein they close said shutter aperture; shutter actuating means for sequentially actuating the first and second shutter blade groups through their respective working strokes to effect first opening and then closing of said shutter aperture thereby defining an exposure; and damping means disposed along the path of



travel of both groups of the shutter blades and having first means responsive to engagement by a leading part of each group of said shutter blades past a given location corresponding to when said shutter blades have parts thereof overlying each other near completion of their working stroke and having second means for engaging with a succeeding part of said shutter blades in response to said engagement of said first means and said leading part to thereby effectively dampen the motion of each group of shutter blades and press the overlying parts of said shutter blades together.

3,852,787

THREE DIMENSIONAL PICTURES AND METHOD OF COMPOSING THEM

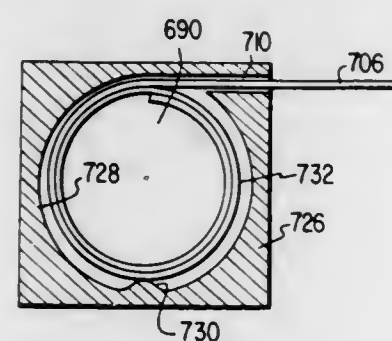
Jerry Curtis Nims, Atlanta, Ga., and Allen Kwok Wah Lo, Kowloon, Hong Kong, assignors to Dimensional Development Corporation, Atlanta, Ga.

Division of Ser. No. 171,269, Aug. 12, 1971. This application July 16, 1973, Ser. No. 379,387

Int. Cl. G03b 17/26, 1/44, 17/28

U.S. Cl. 354—275

2 Claims



1. In a camera having a housing provided with a film supply well and a film take-up well, the improvement wherein said take-up well is formed by a body portion having a generally cylindrical inner surface, means providing a film entrance mouth into said take-up well substantially tangential to said inner surface, and a rounded rib formed on said inner surface substantially diametrically opposite said entrance mouth for engagement with film entering said take-up well so as to tend to hold said film out of substantial frictional engagement with said inner surface.

3,852,788 CAMERA OUTFIT FOR CONNECTING A FLASH UNIT TO A PHOTOGRAPHIC CAMERA

Hiroshi Ueda, Nara, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

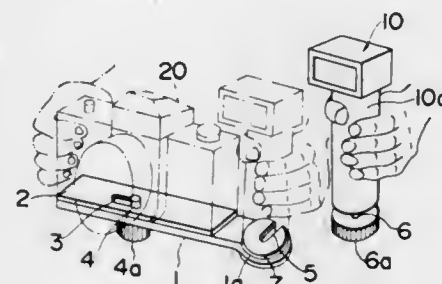
Filed June 12, 1973, Ser. No. 369,215

Claims priority, application Japan, July 6, 1972, 47-80456; July 6, 1972, 47-80457; Dec. 1, 1972, 47-138581

Int. Cl. G03b 17/56

U.S. Cl. 354—293

22 Claims



1. A connecting device for connecting detachably between a flash unit and a photographic camera, comprising: a solid strip, means formed in said solid strip for securing said solid strip to said camera, a groove formed at one end of said solid strip, and means for mounting said flash unit to said groove, said groove extending completely through said solid strip, said mounting means having one end formed with a head portion and the other end engaged to said flash unit, a substantially intermediate portion thereof being adapted to be inserted through said groove when said flash unit is to be mounted to said solid strip.

3,852,789

RAPID ACCESS GRAPHIC ARTS FILM PROCESSOR

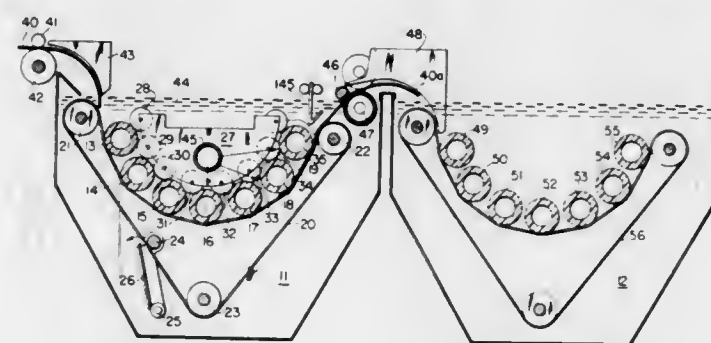
Harold D. Russell, Clinton, N.Y.; Gerald Stone, Placentia, Calif.; James Lin, Springfield, Va.; William F. Hamilton, Alexandria, Va., and James Allen Royston, Woodbridge, Va., assignors to LogEtronic Inc., Springfield, Va.

Filed June 1, 1973, Ser. No. 365,945

Int. Cl. G03d 13/08

U.S. Cl. 354—339

10 Claims



1. A graphic arts film processor for rapidly processing sheets of graphic arts film, which comprises

- a first transport section having a plurality of rollers arranged to define one side of a horizontal arcuate film transport path, said path having a chord to middle ordinate ratio of at least 1:1;
- a second transport section having a plurality of endless belts arranged in side-by-side relation to one another below said rollers of said first transport section to define the other side of said film transport path, each of said belts being associated with a plurality of said rollers and extending along a horizontal arcuate also having a chord to middle ordinate ratio of at least 1:1 whereby each said belt is arranged to follow the radius of curvature of said

- one side of said arcuate film transport path defined by said plurality of rollers,
- means for urging each of said belts into tangential contact with a plurality of the rollers of said first transport section to provide a positive drive therebetween for advancing sheets of film along said transport path, said belts being operative to support said rollers to prevent deflection of said rollers,
- first and second fluid processing tanks, said first and second transport sections mounted within said first fluid processing tanks,
- first guide means for guiding sheets of graphic arts film into said arcuate film transport path with the emulsion side of said film in contact with the rollers of said first transport section,
- second guide means for guiding sheets of graphic arts film from said first tank to said second tank after said film had been transported through said arcuate transport path,
- means for supplying and circulating said photographic processing fluid in said first tank to remove exhausted processing fluid from the surface of said film,
- means for driving said belts and rollers to cause each to rotate in synchronism with one another in a common direction and thereby transport said film through said processing fluids.

3,852,790

UNIVERSAL MOUNT FOR ELECTRONIC FLASH UNIT

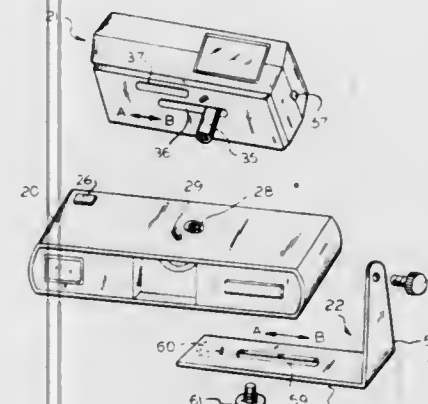
Jack A. Robinson, Chicago, Ill., assignor to Acme-Lite Manufacturing Co., Chicago, Ill.

Filed June 7, 1973, Ser. No. 367,780

Int. Cl. G03b 15/05

U.S. Cl. 354—145

11 Claims



1. A universal electronic flash unit having mounted thereon an integral longitudinally and rotatably moveable post with a cross-section which fits into a percussive flash-cube socket built in a camera, said moveable post making a mechanical connection between said flash unit and said camera, means for completing an electrical circuit between said flash unit and a shutter synchronized operator on the camera, and means for mechanically stabilizing said mechanical connection, said stabilizing means comprising a longitudinally adjustable bracket for fixedly attaching said flash unit on the camera.

3,852,791

VIEWFINDER MIRROR BUFFER DEVICE FOR A SINGLE-LENS REFLEX CAMERA

Susumu Eukuda, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 31, 1973, Ser. No. 393,364

Claims priority, application Japan, Sept. 4, 1972, 47-88439

Int. Cl. G03b 19/12

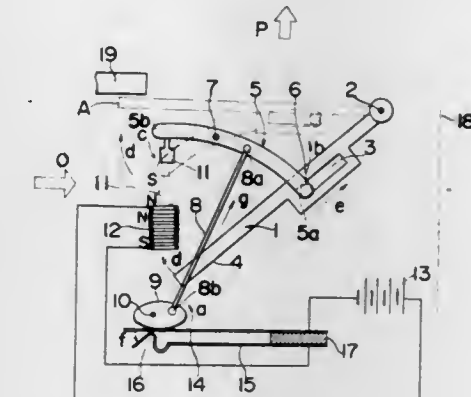
U.S. Cl. 354—152

6 Claims

1. In a single-lens reflex camera having a body, a film plane, a viewfinder and a mirror which is moved relative to the body simultaneously with shutter operation from a first position for introducing light to the viewfinder to a second position for

introducing light to the film plane, an improved buffer device for the mirror, comprising:

- a magnet,
- electromagnetic means,
- switch means for energizing said electromagnetic means when said mirror is moved, and
- mechanical linkage means coupling said mirror to one of



said magnet and electromagnetic means and arranged to cause relative movement between said magnet and said electromagnetic means in response to movement of said mirror, means mounting the other of said magnet and electromagnet to the camera body, to thereby produce a restraining force opposing such relative movement and hence opposing the relative movement of said mirror when said electromagnetic means is energized.

3,852,792

PHOTOGRAPHIC APPARATUS

Erhard Nikitsch; Johann Putscher, both of Munchen, and Peter Utschig, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

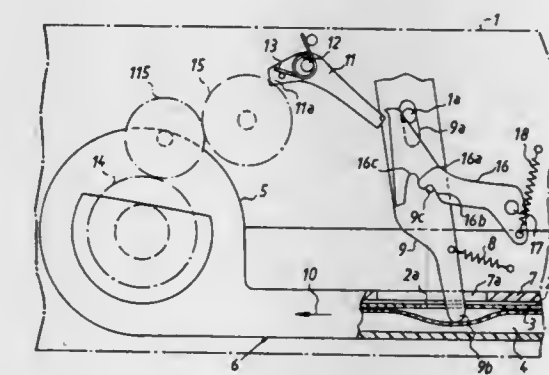
Filed Aug. 23, 1973, Ser. No. 390,922

Claims priority, application Germany, Aug. 29, 1972, 2242364

Int. Cl. G03b 1/62, 19/04, 1/14

U.S. Cl. 354—213

11 Claims



1. In a photographic apparatus for use with roll film having a row of perforations of predetermined length, one for each film frame, and with a web of backing paper for the film, a combination comprising film transporting means operable to advance the film and backing paper along a predetermined path; a movable feeler device having a scanning portion adjacent to said path opposite the backing paper and being in register with the row of perforations, the width of said scanning portion as considered in the direction of film movement along said path being less than said predetermined length; biasing means for urging said scanning portion against the film in said path so that said scanning portion enters an oncoming perforation during transport of the film and is thereupon entrained by the moving film; control means movable between

first and second positions in which said control means respectively permits and effects an interruption of the transport of film along said path; and a displaceable motion transmitting device arranged to receive motion from said feeler device while said scanning portion is being entrained by the film in said path and to thereby effect the movement of said control means from said first to said second position as well as to displace said scanning portion in the adjacent perforation so that said scanning portion extends with clearance through the adjacent perforation and bears against the backing paper in said path.

3,852,793

APPARATUS FOR CONSERVING THE USE OF WATER ELECTRICITY, AND THE LIKE IN AUTOMATIC FILM PROCESSORS

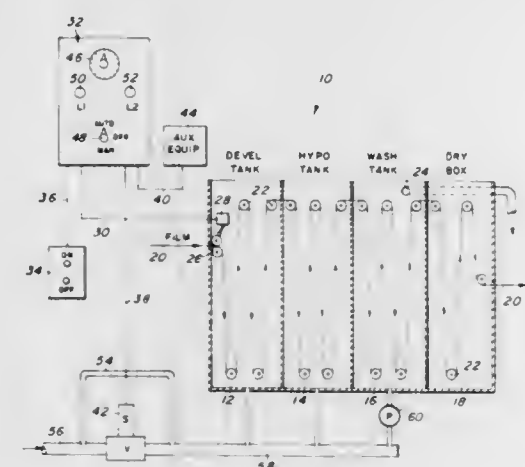
Earl A. McClintock, 6406 Riverton Ave., North Hollywood, Calif. 91606

Filed Jan. 31, 1973, Ser. No. 328,390

Int. Cl. G03d 3/02

U.S. Cl. 354-324

10 Claims



1. An apparatus for conserving the resources consumed by a conventional photographic processor in which a plurality of film elements are treated, comprising:
a mechanically operable switch means for detecting the presence of a film element as it enters said processor; an electronic unit actuable by said switch means; and a valve means responsive to said electronic unit for controlling the flow of water into said processor, said electronic unit including:
a resettable motorized timer means; and
a relay type means including means for resetting said resettable motorized timer means when said switch means detects the presence of another film element as it enters said processor;
wherein said electronic unit controls the duration of the flow of said water through said valve means.

3,852,794

HIGH SPEED BULK SEMICONDUCTOR MICROWAVE SWITCH

Gerald L. Pearson, Portola Valley, and Giovanni A. Foggiano, Cupertino, both of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed May 11, 1972, Ser. No. 252,423

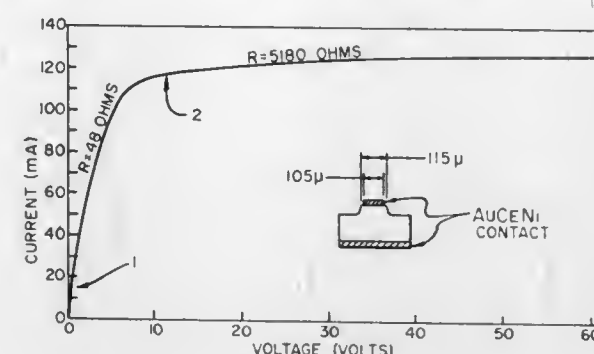
Int. Cl. H03k 17/56, 17/74; H01p 1/10

U.S. Cl. 357-3

2 Claims

1. A semiconductor switching device including a body of semiconductor material and spaced terminal means on said body whereby at least a portion of said body is disposed be-

tween said terminals in which said body of material comprises n -type semiconductor $\text{Ga}_{1-x}\text{Al}_x\text{As}$ where x is 0.40 ± 0.03 to provide energy bands having small energy differences and



which switches from a low resistance to a high resistance with current saturation responsive to a switching voltage applied between said terminals.

3,852,795

JOSEPHSON TUNNELING CIRCUITS WITH SUPERCONDUCTING CONTACTS

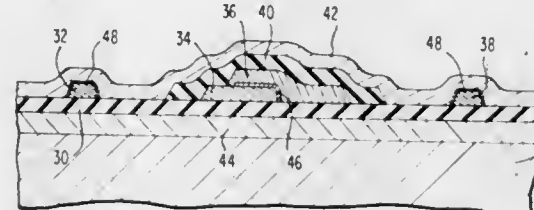
Irving Ames, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1973, Ser. No. 320,784

Int. Cl. H01l 9/00, 3/00

U.S. Cl. 357-5

12 Claims



- A superconducting circuit on a substrate comprising:
a. a first patterned superconducting layer formed over said substrate,
b. a second patterned superconducting layer formed over said substrate subsequent to formation of said first superconducting layer,
c. a Josephson tunneling device comprising an underlying portion of said first superconducting layer, a portion of said second superconducting layer overlaying said underlying portion and a tunnel barrier therebetween,
d. a third patterned superconducting layer formed on said substrate subsequent to formation of said second superconducting layer,
e. at least one superconducting contact between a portion of at least one of said first and second superconducting layers and a portion of said third superconducting layer which overlays and contacts said portion of at least one of said first and second superconducting layers, and
f. said third superconducting layer including a material having a higher free energy of oxide formation than the said superconducting layer which forms the said superconducting contact with said third superconducting layer.

3,852,796

GaN SWITCHING AND MEMORY DEVICES AND METHODS THEREFOR

Jerome J. Cuomo, Bronx, and Harold J. Hovel, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1972, Ser. No. 260,861

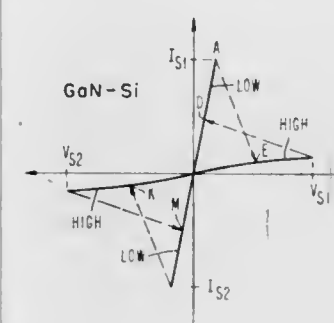
Int. Cl. H03k 17/56, 17/70

U.S. Cl. 357-16

23 Claims

1. A non-volatile memory, comprising:
a heterojunction device having a first region of crystalline silicon of one conductivity type; and

a second region of crystalline GaN forming a junction with said first region, said GaN containing a high density of material imperfections including deep energy traps existing at densities greater than approximately 10^{18} cm^{-3} with said traps including double or more acceptor-like traps in the bulk of said GaN and donor-like traps in the vicinity of said junction so as to form a memory that exhibits a non-volatile high impedance state and a non-volatile low impedance state with both said high impedance state and



said low impedance state being accessible in both a bipolar and unipolar mode; and
means for accessing said non-volatile high impedance state and non-volatile low impedance state, said means for accessing including means for applying unipolar voltage pulses to said device for accessing both said non-volatile high impedance state from said non-volatile low impedance state and said non-volatile low impedance state from said non-volatile high impedance state using said unipolar pulses.

3,852,797

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE

Jacques Lehallay, and Jean-Claude Dubois, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

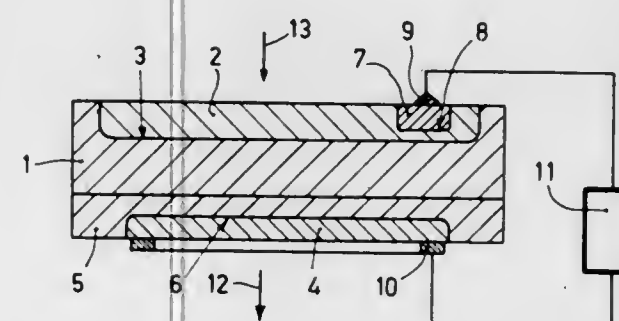
Filed Mar. 7, 1973, Ser. No. 338,841

Claims priority, application France, Mar. 14, 1972, 72.08826

Int. Cl. H01l 15/00

U.S. Cl. 357-19

10 Claims



1. A monolithic semiconductor device comprising four successive regions of alternately p and n conductivity type which together constitute three p-n junctions, the first p-n junction between first and second ones of said regions having electroluminescent properties and said first region and a fourth one of said regions comprising ohmic contact electrodes, a second one of said regions comprising at least two zones, a first one of said zones adjoining said first region and having the same composition as said first region and a second one of said zones adjoining a third one of said regions and substantially isolating optically said third region from the first junction, said second zone consisting essentially of a material having a forbidden energy bandgap corresponding to an energy level which is smaller than the energy of the photons emitted by said first junction, and said third region consisting

essentially of a material having photoconductive properties and comprising a surface that admits photons originating outside the device

3,852,798

ELECTROLUMINESCENT DEVICE

Jacques Lehallay, and Jean-Claude Dubois, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

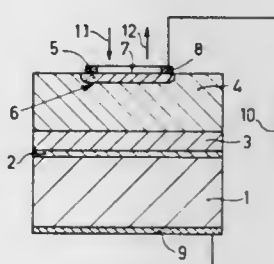
Filed Mar. 12, 1973, Ser. No. 340,217

Claims priority, application France, Mar. 14, 1972, 72.08823

Int. Cl. H01l 15/00

U.S. Cl. 357-19

12 Claims



- An electroluminescent device comprising:
a. a monolithic crystalline semiconductor body, said body having in electrical series relationship
i. a first surface region of a first conductivity type,
ii. a second region of a second conductivity type opposite to said first type and adjoining the first region and forming with the latter a P-N junction having electroluminescent properties and capable of emitting photons within a certain energy range when current is passed through the P-N junction,
iii. a filter layer of the second conductivity type, and
iv. a photoconductive semi-insulating layer of the second conductivity type and having a forbidden bandwidth which is smaller than the energy of the photons emitted by the electroluminescent junction, said filter layer having a forbidden bandwidth which lies between that of the photoconductive layer and the energy of the photons emitted by the electroluminescent junction, and
b. first and second electrodes connected to the body for passing current through the series connected regions and layers whereby the photon output from the device is controlled by the resistance of the photoconductive layer which in turn is controlled by external illumination.

3,852,799

BURIED CHANNEL CHARGE COUPLED APPARATUS

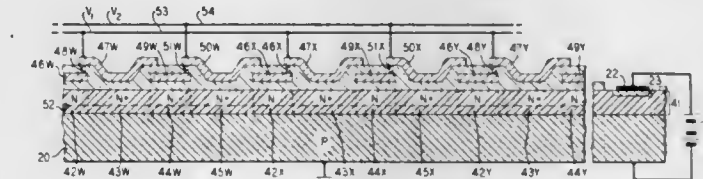
Robert Henry Walden, Warren, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1973, Ser. No. 355,214

Int. Cl. H01l 13/00

U.S. Cl. 357-23

9 Claims



1. A buried channel charge coupled device of the type adapted for storing and sequentially transferring mobile charge carriers coupled to locally induced internal potential wells comprising

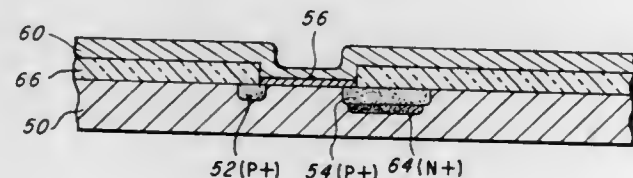
a semiconductive storage layer of a first conductivity type overlying a barrier layer;
an insulating layer overlying the storage layer;
contact means for biasing said storage layer in order to deplete said storage layer of mobile charge carriers;
a plurality of electrodes disposed over and forming a path along the surface of the insulating layer;
detection means at one end of said path for detecting mobile charge carriers in said storage layer;
means in response to two-phase voltages of sufficient magnitude applied between the electrodes and the storage layer for causing under each electrode the formation of an asymmetric potential well internal to the storage layer, the asymmetry in the potential wells being sufficient in response to the two-phase voltages for causing mobile charge carriers to propagate unidirectionally in the bulk of said storage layer toward said detection means.

3,852,800

ONE TRANSISTOR DYNAMIC MEMORY CELL
Atsushi Ohwada, and John A. Arnold, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 168,324, Aug. 2, 1971, Pat. No. 3,740,731.
This application Apr. 6, 1973, Ser. No. 348,781
Int. Cl. H011 11/00, 15/00

U.S. Cl. 357—24

2 Claims



1. A dynamic data storage cell comprising:
 - a. a semiconductor substrate of one conductivity type;
 - b. a first elongated diffused region of opposite conductivity type extending to the surface of said substrate;
 - c. a second diffused region of said opposite conductivity spaced from said first diffused region and substantially parallel thereto, said second diffused region also extending to the surface of said substrate;
 - d. a third diffused region underlying said second diffused region, of said one conductivity type and having a lower resistivity than said substrate, formed within at least a portion of the area occupied by said second diffused region, forming a P-N junction therewith;
 - e. an insulating layer covering the surface of said substrate, said insulating layer having a first thin region overlying an area of said substrate bridging said first and second diffused regions thereby defining a channel of a FET, and a second thin region overlying a portion of said second diffused region;
 - f. a first elongated conductive region extending over said first thin insulating region, thereby forming a gate of said FET, said conductive region substantially orthogonal to said first diffused region;
 - g. a second elongated conductive region spaced from and substantially parallel to said first elongated conductive region, extending over said second thin region to form a capacitor; and
 - h. means for connecting said second conductive region to said substrate.

3,852,801 CHARGE-COUPLED SEMICONDUCTOR DEVICE PROVIDED WITH BIASING CHARGES

Yokichi Itoh, Hachioji; Hideo Sunami, Musashino, and Yoshiaki Kamigaki, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

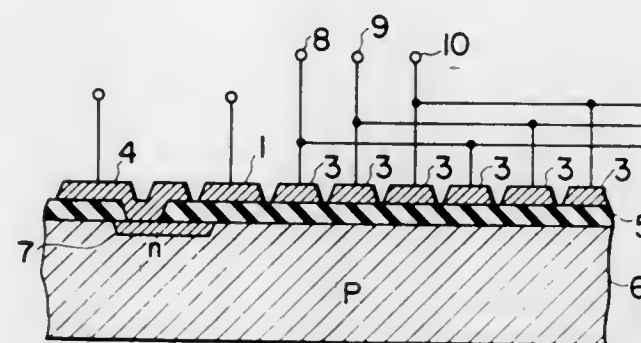
Filed Dec. 29, 1972, Ser. No. 319,612

Claims priority, application Japan, Dec. 29, 1971, 46-1656

Int. Cl. H011 11/14

U.S. Cl. 357—24

21 Claims



1. A charge-coupled semiconductor device provided with biasing charges comprising:
 - a semiconductor body of a first conductivity type;
 - a layer of insulating material disposed on a first surface of said semiconductor body;
 - first means, coupled to said semiconductor body, for injecting charge carriers into said semiconductor body;
 - a plurality of electrodes disposed on the surface of said layer of insulating material;
 - second means, coupled to said semiconductor body, for detecting charge carriers transferred thereto;
 - a second body made of a material selected from the group consisting of a semiconductor and a conductor, on which said semiconductor body is disposed, and which defines a rectifying junction with said semiconductor body;
 - third means for applying pulse voltages to said electrodes, so as to transfer said injected charge carriers along the interface between said semiconductor body and said layer of insulating material, the pulse voltages being of sufficient magnitude to form depletion regions, the edges of which come into contact with said rectifying junction, when the quantity of charge stored in said interface is less than a predetermined normalized charge, so that charge carriers are injected from said second body into a portion of said interface adjacent at least one of said electrodes, until the quantity of charge stored in said interface reaches a predetermined level.

3,852,802

INTEGRATED CIRCUIT HALL EFFECT DEVICE AND METHOD

Helmut F. Wolf, San Mateo, and David Kleitman, Los Altos Hill, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

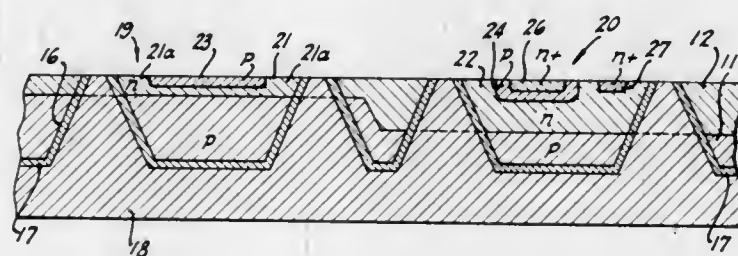
Continuation of Ser. No. 249,248, May 1, 1972, abandoned.

This application Oct. 10, 1973, Ser. No. 405,066

Int. Cl. H011 19/00

U.S. Cl. 357—27

5 Claims



1. An integrated circuit comprising: a single crystal semiconductor body of one conductivity type, a layer of semicon-

ductive material of the opposite conductivity type carried on one face of said semiconductor body said layer having a planar outer surface and a stepped inner boundary contiguous to said semiconductor body to provide both a relatively thick layer and a relatively thin layer; means for electrically isolating at least a portion of said thin layer from at least a portion of said thick layer; a Hall effect device formed in said thin layer portion; and a transistor formed in said thick layer portion.

3,852,803

HEAT SINK COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY HAVING LIQUID METAL INTERFACE

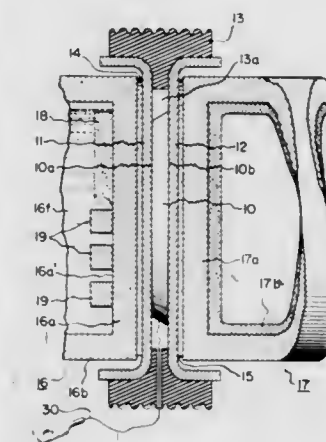
Gunnar E. Walmet, Schenectady; James C. Corman, and Michael H. McLaughlin, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 18, 1973, Ser. No. 370,838

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—82

28 Claims



1. A high pressure-interface-free heat-pipe cooled power semiconductor device assembly comprising
 - a pressure-interface-free thin integral power semiconductor device-cup member unit including
 - a power semiconductor device consisting of a body of semiconductor material defined by first and second flat parallel major surfaces,
 - first and second thin cup-like members having outer bottom surfaces respectively bonded directly to the first and second flat parallel surfaces of the body of semiconductor material so that the integral power semiconductor device-cup member unit is pressure-interface-free, said cup-like members fabricated of a good electrically and thermally conductive material, and
 - creepage path lengthening means formed along outer side wall portions of said cup-like members for increasing the creepage path across said power semiconductor device, said power semiconductor device defined as developing a thermal density of at least 100 watts per square inch of surface area,
 - a first long nonwicked gravity-return heat pipe having an evaporating surface end wall in thermal contact with an inner bottom surface of said first cup-like member for removing heat therefrom,
 - said first nonwicked gravity-return heat pipes comprising
 - a first enclosed elongated hollow chamber having an evaporator section at a first end thereof respectively defined by the evaporating surface end wall and a condenser section at a second end thereof remote from the first end, and
 - a two-phase fluid coolant contained within said first chamber and being of sufficient volume in the liquid state to cause full immersion of at least the heated portion of the evaporating surface,
 - first and second electrical conductors respectively connected to said assembly for supplying electrical power to said power semiconductor device,
 - a static first thin film of a high thermal and electrical conductivity metal disposed external of said integral semi-

conductor device-cup member unit between the inner bottom surface of said first cup-like member and evaporating surface end wall of said first heat pipe and in wetting contact therewith and forming a static first thin liquid metal interface therebetween during operation of said semiconductor device, said first thin film of metal of thickness in the range of 1/10 to 5 mils, the thin liquid metal interface not mechanically stressing the thin integral power semiconductor device-cup member unit and the high thermal and electrical conductivity of the liquid metal permitting the cooling of large diameter semiconductor devices without the need for large clamping forces to obtain high pressure joints between said heat pipe and said thin integral power semiconductor device-cup member unit, the close spacing between the first heat pipe and heat-emitting power semiconductor device and lack of pressure interfaces therebetween and in the integral power semiconductor device-cup member unit substantially decreasing the steady-state thermal resistance as well as improving the transient response of the heat-pipe cooled power semiconductor device assembly to obtain improved single-sided cooling of the device without requiring a costly and mechanically complex clamping device, and

means connected only to the evaporating surface of said first heat pipe for enhancing the evaporating surface so as to increase the rate of heat transfer from the first cup-like member to the fluid coolant in said first heat pipe.

3,852,804

DOUBLE-SIDED HEAT-PIPE COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY

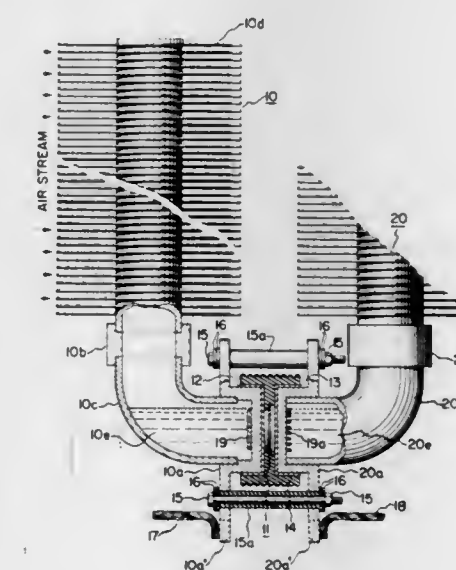
James C. Corman; Michael H. McLaughlin, both of Scotia, and Gunnar E. Walmet, Schenectady, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed May 2, 1973, Ser. No. 356,565

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—82

14 Claims



1. A heat-pipe cooled power semiconductor device assembly comprising
 - an integral power semiconductor device unit including a power semiconductor device consisting of a body of semiconductor material defined by first and second flat parallel major surfaces, and first and second support plates having first major surfaces forming interfaces with the first and second flat parallel surfaces of the body of semiconductor material, said support plates fabricated of an electrically conductive high strength material having a coefficient of thermal expansion substantially equal to that of the semiconductor material, said first support plate bonded to said body of semiconductor material along the first surface thereof, said second support plate not being bonded to said body of semiconductor material

but merely in pressure contact therewith to prevent damage to the body of semiconductor material due to stresses that would be induced by the thermal expansions of both support plates and body of semiconductor material when the semiconductor device is operating under normal conditions if both support plates and body of semiconductor material were bonded together, said integral power semiconductor device unit further including first and second cup-like members fabricated of a good thermally and electrically conductive material and having outer bottom surfaces respectively in pressure contact with second major surfaces of said first and second support plates, and creepage path lengthening means formed along side wall portions of said cup-like members for increasing the creepage path across said integral power semiconductor device unit, said power semiconductor device defined as developing a thermal density of at least 100 watts per square inch of surface area,

first and second relatively thin pressure plates having first major surfaces respectively in pressure contact with inner bottom surfaces of said first and second cup-like members,

mean for clamping said first and second pressure plates together to obtain a pressure in the order of 2,000 lbs. per square inch against said semiconductor device and for providing easy removal of said integral power semiconductor device unit from the assembly,

means for connecting a pair of electrical conductors to said assembly or supplying electrical power to said power semiconductor device,

a first long nonwicked gravity-return heat pipe having an open evaporator section end enclosed by and connected to said first pressure plate along a side wall portion thereof, a second major surface of said first pressure plate functioning as a first evaporating surface of the first heat pipe in close proximity to the heat-emitting power semiconductor device for decreasing the steady-state thermal resistance as well as decreasing transient temperature rise for long term heat overloads to obtain improved single-sided vaporization cooling of the device superior to that obtained with conventional finned heat sinks or with wicked heat pipes,

a second long nonwicked gravity-return heat pipe having an open evaporator section end enclosed by and connected to said second pressure plate along a side wall portion thereof, a second major surface of said second pressure plate functioning as a second evaporating surface of the second heat pipe in close proximity to the heat-emitting power semiconductor device to obtain improved double-sided vaporization cooling of the device superior to that obtained with conventional finned heat sinks or with wicked heat pipes, said nonwicked heat pipes being substantially greater in length and having improved cooling characteristics than wicked heat pipes which are limited in length due to wick pumping losses,

said first and second nonwicked gravity-return heat pipes comprise

first and second enclosed elongated hollow chambers having evaporator sections at first ends thereof respectively defined by said first and second pressure plates and condenser sections at second ends thereof remote from the first ends,

a two-phase fluid coolant contained within said chambers and being of sufficient volume in the liquid state to cause full immersion of at least the heated portion of the evaporation surface enhancing means in the liquid coolant, and means connected only along the second major surfaces of said first and second pressure plates for enhancing the evaporation surfaces thereof and thereby increasing the rate of heat transfer from the pressure plates to the liquid coolant in the heat pipes which is vaporized,

said clamping means comprising a relatively large diameter threaded connection between said first and second heat pipes,

said large diameter threaded connection comprising

a first collar member joined to the outer surface of a side wall of said first heat pipe adjacent the first end thereof, said first collar being threaded along its outermost surface,

a second collar member joined to the outer surface of a side wall of said second heat pipe adjacent the first end thereof,

a rotatable sleeve member retained along the outer surface of the side wall of said second heat pipe and retained longitudinally therealong by said second collar member, said sleeve member having a projecting portion, and

a U-shaped hollow cylindrical member having a first end portion threaded for mating with the threaded portion of said first collar member, and a second end portion bearing against an outermost side of the projecting portion of said sleeve member, said U-shaped hollow cylindrical member being rotatable in a first direction for applying pressure against said integral power semiconductor device unit, and rotatable in a second direction or easy removal of said integral power semiconductor device unit from the assembly, said large diameter threaded connection providing a high degree of self-alignment of said pressure plates and integral power semiconductor device unit.

3,852,805

HEAT-PIPE COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY HAVING INTEGRAL SEMICONDUCTOR DEVICE EVAPORATING SURFACE UNIT

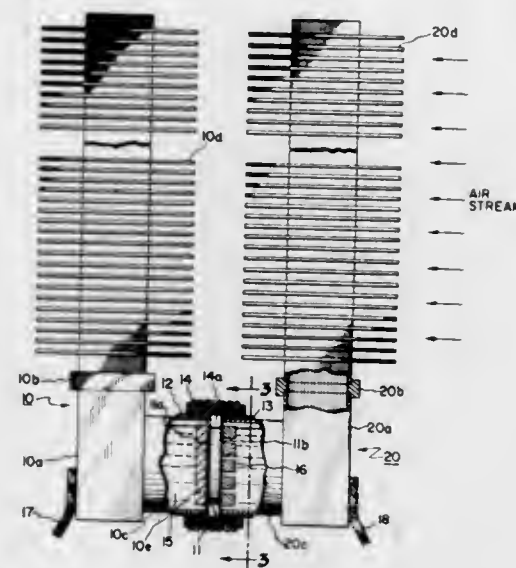
Steven J. Brzozowski, Saratoga, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed June 18, 1973, Ser. No. 370,937

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—82

26 Claims



1. A high pressure-interface-free heat-pipe cooled power semiconductor device assembly comprising
 - a pressure-interface free integral power semiconductor device-evaporating surface unit including
 - a power semiconductor device consisting of a body of semiconductor material defined by first and second flat parallel major surfaces,
 - first and second thin cup-like members having outer bottom surfaces respectively bonded to the first and second flat parallel surfaces of the body of semiconductor material so that the power semiconductor device-cup like member unit is pressure-interface-free, said cup-like members fabricated of a good electrically and thermally conductive material, and
 - creepage path lengthening means formed along outer side wall portions of said cup-like members for increasing the creepage path across said power semiconductor device, said power semiconductor device defined as developing

a thermal density of at least 100 watts per square inch of surface area,

a first long nonwicked gravity-return heat pipe having an open evaporator section end closed by and connected to said first cup-like member along the side wall portion thereof by high pressure-free means, an inner bottom surface of said first cup-like member functioning as an evaporating surface in the evaporator section end of said first heat pipe, said first nonwicked gravity-return heat pipe being substantially greater in length and having improved cooling characteristics than wicked heat pipes which are limited in length due to wick pumping losses, said integral power semiconductor device-evaporating surface unit further including means bonded only along the inner bottom surface of said first cup-like member for enhancing the evaporating surface thereof to thereby increase the rate of heat transfer from the first cup-like member to a liquid coolant in said first heat pipe which becomes vaporized, the close spacing between the evaporating surface and heat-emitting power semiconductor device due to the thinness of said first cup-like member and lack of any pressure interfaces in the integral power semiconductor device-evaporating surface unit substantially decreasing the steady-state thermal resistance as well as improving the transient response of the heat-pipe cooled power semiconductor device assembly to obtain improved single-sided vaporization cooling of the device superior to that obtained with conventional finned heat sink or wicked heat pipe assemblies.

3,852,806

NONWICKED HEAT-PIPE COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY HAVING ENHANCED EVAPORATED SURFACE HEAT PIPES

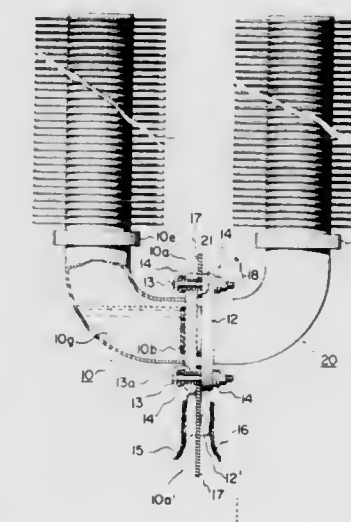
James C. Corman; Michael H. McLaughlin, both of Scotia, and Gunnar E. Walmet, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 2, 1973, Ser. No. 356,566

Int. Cl. H011 3/00, 5/00

U.S. Cl. 357—82

12 Claims



1. A heat-pipe cooled power semiconductor device assembly comprising
 - a power semiconductor device including a body of semiconductor material defined by first and second flat parallel major surfaces, and first and second support plates having first major surfaces forming interfaces with the first and second flat parallel surfaces of the body of semiconductor material, said support plates fabricated of an electrically conductive high strength material having a coefficient of thermal expansion substantially equal to that of the semiconductor material, said first support plate bonded to said body of semiconductor material along the first surface thereof, said second support plate not being bonded to said body of semiconductor material but merely in pres-

sure contact therewith to prevent damage to the body of semiconductor material due to stresses that would be induced by the thermal expansions of both support plates and body of semiconductor material when the semiconductor device is operating under normal conditions if both support plates and body of semiconductor material were bonded together to form an integral body, said power semiconductor device defined as developing a thermal density of at least 100 watts per square inch of surface area,

first and second relatively thin pressure plates fabricated of a thermally conductive material and having first major surfaces respectively in pressure contact with second major surfaces of said first and second support plates, said pressure plates are each of thickness in the range of 100 to 300 mils,

means for clamping said first and second pressure plates together to obtain a pressure in the order of 2,000 lbs. per square inch against said semiconductor device and for providing easy removal of said power semiconductor device from the assembly,

means for connecting a pair of electrical conductors to said pressure plates for supplying electrical power to said power semiconductor device,

a first long nonwicked gravity-return heat pipe having an open evaporator section end enclosed by and connected to a second major surface of said first pressure plate which functions as an evaporating surface of the first heat pipe in close proximity to the heat-emitting power semiconductor device for decreasing the steady-state thermal resistance as well as decreasing transient temperature rise for long term heat overloads to obtain improved vaporization cooling of the device superior to that obtained with conventional finned heat sinks or with wicked heat pipes, a second long nonwicked gravity-return heat pipe having an open evaporator section end enclosed by and connected to a second major surface of said second pressure plate which functions as an evaporating surface of the second heat pipe in close proximity to the semiconductor device to obtain improved double-sided vaporization cooling of the device,

means connected only along the second major surfaces of said pressure plates for enhancing the evaporation surfaces thereof and thereby increasing the rate of heat transfer from the pressure plates to a liquid coolant in the heat pipes which is vaporized,

said first and second nonwicked gravity-return heat pipes each comprise

an enclosed elongated hollow chamber having an evaporator section at a first end thereof defined by said pressure plates and a condenser section at a second end thereof remote from the first end,

a two-phase fluid coolant contained within each said chamber, the liquid state of the fluid coolant having sufficient volume to cause immersion of at least the heated portion of the evaporation surface enhancing means in the liquid coolant, and

at least a substantial portion of each of said first and second heat pipes being oriented at an angle greater than 0° with respect to the horizontal.

3,852,807

AUTOMATIC HUE CONTROL CIRCUIT

Gerald L. Caprio, Des Plaines, and Norman W. Parker, Wheaton, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 248,164, April 27, 1972, abandoned.

This application Sept. 24, 1973, Ser. No. 399,701

Int. Cl. H04n 9/12

U.S. Cl. 358—28

13 Claims

1. In a color television receiver for receiving a composite signal comprising at least brightness signal components, a subcarrier signal component modulated in phase and amplitude to represent hue and saturation of a color image, and a

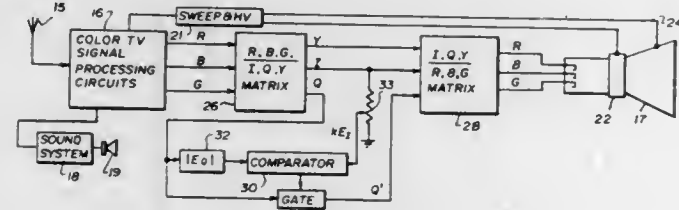
burst component for phase locking the signal of an oscillator of the receiver to control color signal demodulators for the subscriber at different phases of the oscillator output signal, an automatic hue control circuit for controlling hue variations about a predetermined phase of said subcarrier signal component relative to the output signal of the oscillator, said automatic hue control circuit including in combination:

first circuit means responsive to at least the subcarrier component of said composite signal for providing a first demodulated signal at said predetermined phase and having a magnitude corresponding to the magnitude of signals at said predetermined phase;

second circuit means responsive to at least the subcarrier component of said composite signal for producing a first control voltage representative of the absolute magnitude of signals in quadrature with signals at said predetermined phase;

means for supplying said composite signal to said first and second circuit means;

comparator circuit means having first and second inputs and an output;



first coupling means connecting said second circuit means with said first input of said comparator circuit means for applying said first control voltage thereto;

second coupling means connecting said first circuit means with the second input of said comparator circuit means for applying a second control voltage thereto, said second control voltage having a magnitude which has a predetermined value relative to the magnitude of said first demodulated signal;

gating circuit means having a signal input, an output, and a control input and operative to pass signals from the input to the output thereof in response to the application of an enabling signal on the control input thereof;

means for applying said quadrature signals to the input of said gating circuit means;

means coupling the output of said comparator circuit means to the control input of said gating circuit means to apply an enabling signal thereto whenever said first control voltage is greater than said second control voltage; and

means for utilizing the output of said gating circuit means to produce color signals for reproduction by said television receiver.

3,852,808

COLOR AMPLITUDE CORRECTION IN PLURAL TRANSDUCER SIGNAL PLAYBACK SYSTEMS

Koichi Sadashige, Berlin, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,735

Claims priority, application Great Britain, Apr. 4, 1973, 16020/73

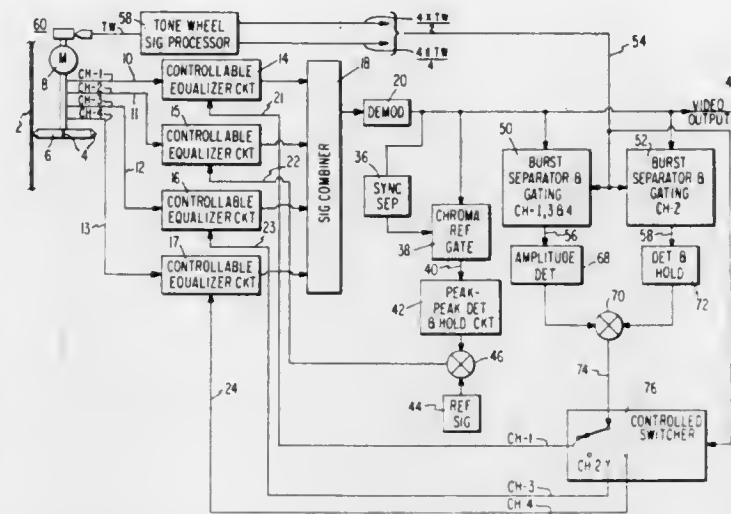
Int. Cl. H04n 9/02

U.S. Cl. 358-8

5 Claims

1. In a system for correcting chroma amplitude errors in a signal recovered from a record medium by sequential scan of a plurality of transducers, wherein the signal includes color burst portions and a color amplitude reference signal portion, said system having playback circuitry including means for varying its response to said signal in accordance with an error signal applied thereto, the combination comprising: means providing a first error signal in accordance with a difference

of said reference signal portion and a norm, means applying said first error signal to said response varying means in said playback circuitry, means for comparing said burst signal



portions as recovered from a given one of said scanning transducers with that of a further transducer to provide a second error signal, and means for applying said second error signal to said response varying means in said playback circuitry.

3,852,809

RETURN TO ZERO DETECTION CIRCUIT FOR VARIABLE DATA RATE SCANNING

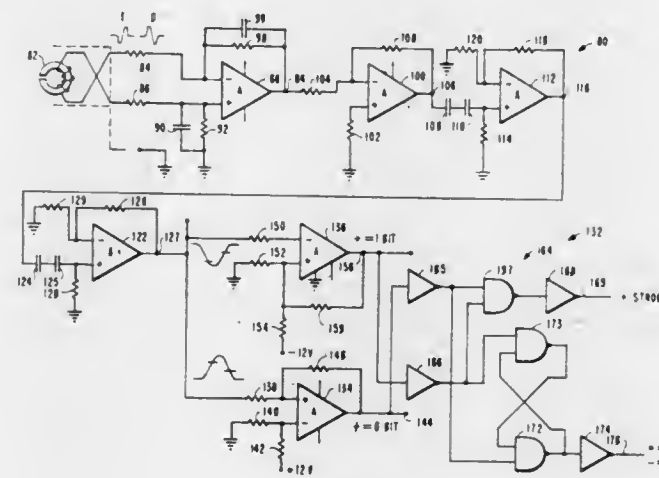
Charles Walter Coker, Jr., Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1973, Ser. No. 376,620

Int. Cl. G11b 5/02

U.S. Cl. 360-40

10 Claims



1. For use in a digital recording system wherein binary bits of information are stored in a return to zero format by a storage medium and wherein translational motion between a read head and the storage medium causes the read head to generate successive initial and subsequent distinguishable electric signals having a relative nature dependent upon the information content of a binary bit being read, a self-clocking information detection circuit connected to receive the electric signals from the read head, the detection circuit comprising an integrator connected to receive a read head electric signal and generate an integrated read head electric signal as an output; first and second detectors connected to detect positive and negative pulses respectively on the integrated read head electric signal, each detector including circuitry for initiating a predetermined detector output signal when a pulse of a polarity to which the detector is responsive exceeds a first predetermined magnitude and terminating a detector output pulse only when the pulse magnitude is less than a second predetermined magnitude which is less than the first predetermined magnitude.

3,852,810

SELF-CLOCKING NRZ RECORDING AND REPRODUCTION SYSTEM

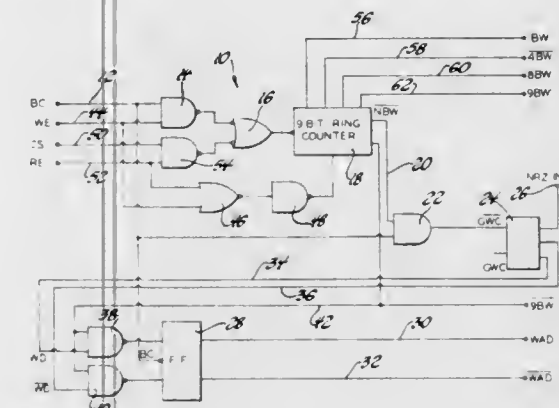
Ronald P. McGrath, Livonia, and William A. Bleher, Detroit, both of Mich., assignors to General Instrument Corporation, New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,583

Int. Cl. G11b 5/02

U.S. Cl. 360-51

3 Claims



1. In a system for storing and retrieving data in a magnetic medium according to a binary code wherein first and second data quantities are represented by first and second discrete flux conditions in the medium; data writing means responsive to input data to produce a substantially continuous data pattern in the medium at a clocked rate thereby to produce a sequence of data cells each having a discrete flux condition; means operatively associated with said writing means for interrupting the data pattern after every n cells and inserting a sync cell having a flux condition which is opposite to the flux condition of the preceding cell; data reading means responsive to said flux conditions for producing output representative thereof and at a rate corresponding to said clock rate thereby to define discrete data bits corresponding to said data cells; and synchronizing means including a clock source operatively associated with said reading means for timing the reading of said flux conditions, said synchronizing means including means for resetting the clock source after the reading of said sync cell flux condition; and means responsive to the flux transitions in the data cells immediately proximate the sync cell for adjusting the timing of said clock source to compensate for sync cell shifting due to pulse crowding.

3,852,811

DIGITAL DATA ENCODING AND RECONSTRUCTION CIRCUIT

Shirzad Aghazadeh, Burbank, Calif., assignor to The Singer Company, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,520

Int. Cl. G11b 5/09

U.S. Cl. 360-51

4 Claims

1. In a digital recording and reconstruction circuit of the type comprising:

gating means responsive to a master clock signal and a binary data input signal for generating a first alternating signal having a cycle of one phase representing a binary "1" and a cycle of the opposite phase representing a binary "0";

dividing means coupled to said gating means and responsive to said first alternating signal for generating a second alternating signal having a frequency of one-half that of said first alternating signal;

said second alternating signal having midbit transitions representing a binary "1," and transitions at the beginning of bits between contiguous binary "0's" of the input signal representing a binary "0";

recording means for recording and for reading and shaping said second alternate signal;

an edge detector coupled to the output of said recording means and responsive to said second alternate signal for

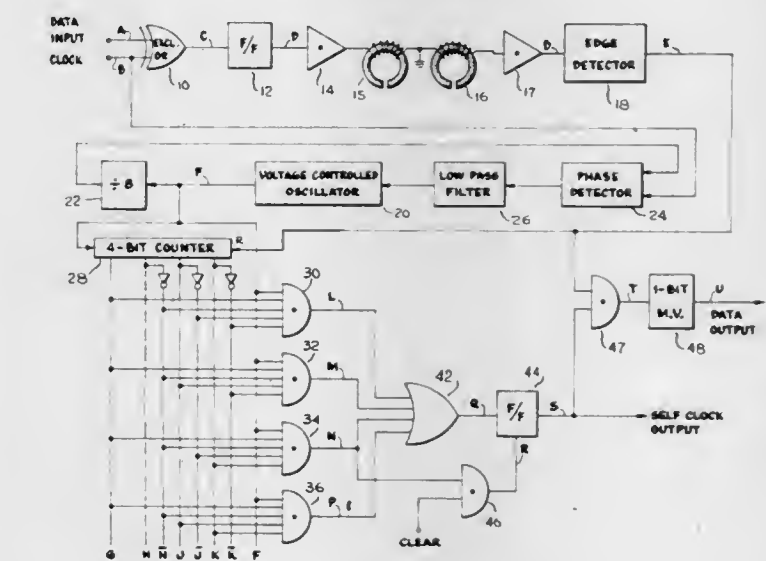
producing data spike signals at points corresponding in time to the edges of said shaped second alternate signal; clock circuitry coupled to said edge detector and responsive to the data spike signals for generating a self-clocking signal having a frequency corresponding to said master clock signal;

gating circuitry coupled to said clock circuitry and to said edge detector for producing output spike signals when the polarity of said self-clocking signal corresponds to that of the data spike signals; and

pulse generating means coupled to said gating circuitry for generating output pulses of one bit in width upon receipt of each output spike signal;

the improvement being in the said clock circuitry which comprises:

generating means for producing recurring pulses at a



frequency that is a multiple of said master clock signal frequency;

a binary counter coupled to said generating means for producing output signals having pulse widths that are twice, four times, eight times, and sixteen times the width of the pulses produced by said generating means; gating means coupled to receive selected output signals from said binary counter and the recurring pulses from said generating means for producing output pulses having widths of one-quarter, three-quarters, one and one-quarter, and one and three-quarters of one cycle of said master clock signal; and

a flip-flop coupled to the output of said gating means said flip-flop adapted to change state upon the arrival of each output signal from said gating means for generating a substantially square wave clocking signal corresponding to said master clock signal.

3,852,812

SYMMETRICAL DIRECT CURRENT TUNNEL ERASING

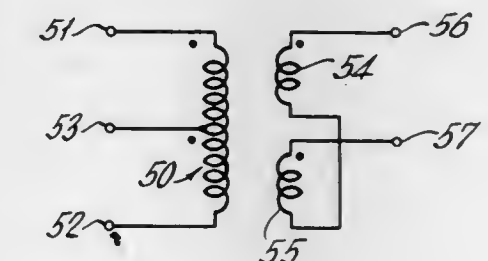
Frederick Reifeld, Commack, N.Y., assignor to Potter Instrument Company, Inc., Melville, N.Y.

Filed July 25, 1973, Ser. No. 382,417

Int. Cl. G11b 5/02, 5/20, 5/47

U.S. Cl. 360-66

5 Claims



1. In a magnetic transducer head of the type having a first magnetic core with a gap defining the width of a magnetic

track to be recorded, a read/write coil on said first magnetic core, second and third magnetic cores having gaps positioned to erase opposite sides of said magnetic track, and erase coils on said second and third cores; the improvement comprising means for direct current energizing said erase coils and means interconnecting said energizing means and said erase coils for producing magnetic fields of opposite polarity at the respective gaps of said cores with respect to the lengthwise direction of said magnetic track.

3,852,813

METHOD AND CIRCUIT FOR RECORDING AUDIO SIGNALS ON MAGNETIC TAPE

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

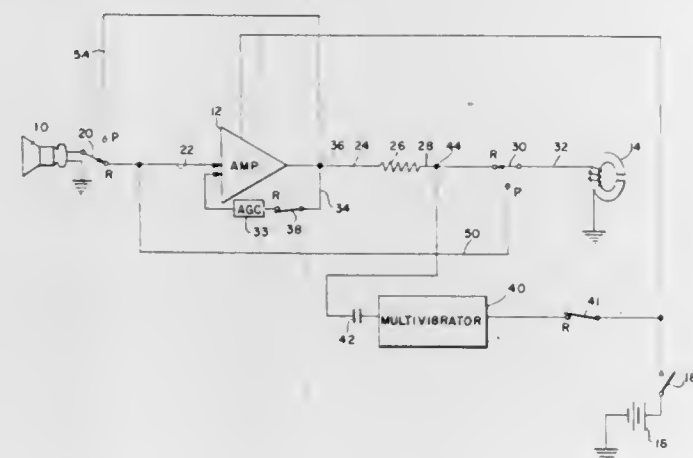
Continuation of Ser. No. 44,441, June 8, 1970, abandoned.

This application Sept. 11, 1972, Ser. No. 288,147

Int. Cl. G11b 5/02, 5/44

U.S. Cl. 360-66

5 Claims



1. Recording apparatus of a low package volume variety comprising:

speaker-microphone means having a record mode for receiving an audio signal and having an output corresponding thereto; amplifier means connected to said speaker-microphone for amplifying said output; means coupled between the input and output of said amplifier means providing automatic gain control over said amplifier means when said speaker-microphone is in said record mode; free-running multivibrator means having an output generating a bias signal having a repeating, symmetrical, substantially rectangular wave form; a magnetic recording head; circuit means for amplitude summing said bias signal with said amplified output and applying said summed signal to said recording head, said bias signal being selected to cause said audio signal to be recorded linearly.

3,852,814

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS HAVING MEANS TO RELOCATE A PREVIOUS TERMINATION OF RECORDING OR REPRODUCING

Delmar R. Johnson, Barrington, Ill., and Rickard J. Elkus, Jr., Atherton, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Oct. 31, 1972, Ser. No. 302,517

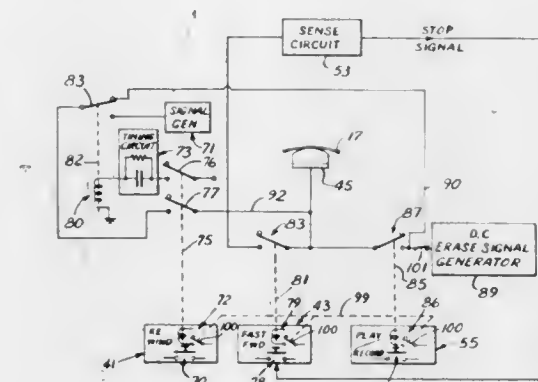
Int. Cl. G11b 15/02, 19/18

U.S. Cl. 360-72

8 Claims

1. An apparatus for automatically marking a spot on a magnetic tape at termination of a playback or recording operation and for subsequently transporting at high speed and returning the magnetic tape at high speed to this spot for resumption of recording and/or reproducing at low speed, said apparatus comprising means carrying a coil of magnetic tape, a transducer means past which said magnetic tape travels for a playback or recording operation, a tape transport means for transporting said tape past said transducer means at a first

predetermined low speed and at a second predetermined high speed, play/record selector means for operating said tape transport means to feed said tape in a forward direction at said first predetermined speed and for causing a playback or recording operation a manually operable fast forward selector means for operating said tape transport means to transport said tape in a forward direction at said said predetermined speed substantially faster than said first predetermined speed, a manually operable rewind selector means for operating said tape transport means to transport said tape in reverse direc-



tion at said second predetermined speed, means for recording activated upon operation of one of said fast forward or rewind selector means for forming a location signal on said magnetic tape at the spot of termination of a playback or recording operation, and sensing means activated by manual operation of the other one of said fast forward or rewind selector means causing tape transport at said high speed for sensing said location signal and for terminating said high speed tape transport so that playback or recording may be resumed at the proximate location of the last playback or recording operation.

3,852,815

METHOD OF CHECKING THE POSITION OF A MAGNETIC HEAD RELATIVE TO A MAGNETIC RECORDING MEDIUM AND A TEST MAGNET RECORDING MEDIUM FOR EFFECTING SAID METHOD

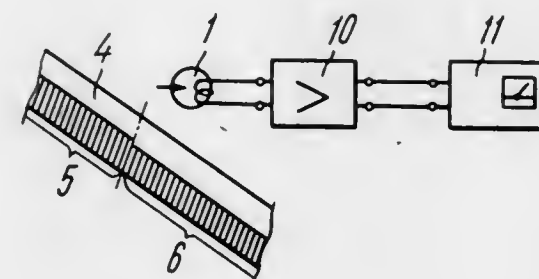
Mark Lipovich Ljudmirsky, Bulvar Druzhny narodov, 14, kv. 4, Georgy Mironovich Forshtator, ulitsa Kropivnitskogo, 14, kv. 4, and Yakov Solomonovich Shkurovich, ulitsa Cheljusintsev, 8, kv. 24, all of Kiev, U.S.S.R.

Filed Apr. 11, 1973, Ser. No. 350,023

Int. Cl. G11b 5/46, 27/34

U.S. Cl. 360-75

2 Claims



1. A method of checking the position of a magnetic head relative to a magnetic recording medium, said method comprising the steps of:

recording a test signal pattern having two sections with mutually displaced recording tracks on the magnetic recording medium, said tracks being disposed on the magnetic recording medium so that the bottom edge of the recording track of one of the two sections is aligned with the bottom edge of the recording medium and so that the top edge thereof is positioned at a minimum allowable distance a from the top edge of the recording

medium, the bottom edge of the recording track of the other section being also aligned with the bottom edge of the magnetic recording medium and the top edge thereof being positioned at a maximum allowable distance b from the top edge of the magnetic recording medium; reproducing successively both sections of the test signal pattern so as to determine the output of the magnetic head; and producing an output only from the section of the test signal pattern wherein the top edge of the recording track is positioned at the minimum allowable distance from the top edge of the magnetic recording medium in order to indicate that the magnetic head is in the required position.

3,852,816

CARRIAGE ASSEMBLY FOR A VIDEO DISC PLAYBACK DECK

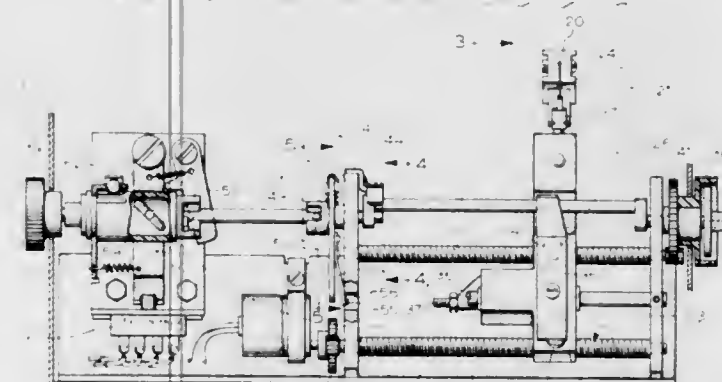
David S. Stewart, Palatine, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 1, 1972, Ser. No. 277,074

Int. Cl. G11b 5/52

U.S. Cl. 360-86

4 Claims



1. A carriage assembly for advancing a pickup element over an independently driven rotating information storage disc containing a spiral modulation track comprising: a carriage supporting said pickup element adjacent the surface of said disc;

a frame; carriage support means for supporting said carriage on said frame for travel along a path parallel to the surface of said disc;

motor driven carriage advancing means comprising a first lead screw rotatably journaled on said frame for rotation about an axis parallel to said carriage travel path for propelling said pickup element across the surface of said disc at a velocity proportional to the radial progression of the rotating spiral track;

user actuated carriage positioning means comprising a rotatable control and a second lead screw also rotatably journaled on said frame for rotation about an axis parallel to said carriage travel path for manually positioning said pickup to a desired location along said spiral track in response to rotation of said control;

selector means coupled to said carriage for selectively engaging said carriage with either said motor driven lead screw or said user actuated lead screw;

first and second followers individually engageable, respectively, with said carriage advancing lead screw and said carriage positioning lead screw; and

means for pivotally mounting said carriage on said carriage support means for displacement, in response to actuation of said selector, between an operating position in which said first follower engages said carriage advancing lead screw and said pickup is presented to said track for sensing modulation thereon, and

a retracted position in which said second follower engages said carriage positioning lead screw as said pickup is withdrawn from presentation to said track.

3,852,817

COMBINATION CARD AND TAPE RECORDER

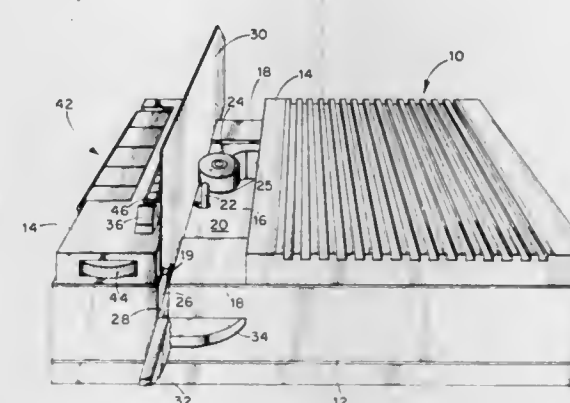
Charles R. Budrose, 127 Country Club Rd., Melrose, Mass. 02176

Continuation-in-part of Ser. No. 273,441, July 20, 1972. This application Oct. 16, 1972, Ser. No. 297,947

Int. Cl. G11b 5/00, 15/60, 19/20

U.S. Cl. 360-88

15 Claims



1. An audio recording and reproducing machine capable of handling either a tape cassette or card having a magnetic media associated therewith comprising:

a housing having means defining a well for receiving the tape cassette;

means for driving the tape in the cassette;

said housing defining a guide channel having a track for said card to pass along;

means for driving said card through the guide channel, said housing defining an opening for receiving said card driving means;

manually operable means for selecting either the card or tape mode of operation;

and mode selection means responsive to said manually operable means being in the tape mode of operation for maintaining said card drive means in said opening and enabling said tape drive means, and responsive to said manually operable means being in the card mode of operation for moving said card drive means out of said opening adjacent to said channel and disabling said tape drive means.

3,852,818

TAPE CARTRIDGE PLAYER MECHANISM

Gerald Dee Pyles, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,482

Int. Cl. G11b 21/10, 23/12

U.S. Cl. 360-92

18 Claims

1. In a tape cartridge player of the type having tape playing mechanisms including a movable transducer assembly adapted to be positioned to scan across different tracks of a cartridge tape, a structure comprising:

a plurality of cartridge receptacles each adapted to receive a tape cartridge which is positionable in said receptacle in a first position out of engagement with portions of the tape playing mechanism of said player and in a second position in operative engagement with said portions of said tape playing mechanism;

drive means providing a source of mechanical power;

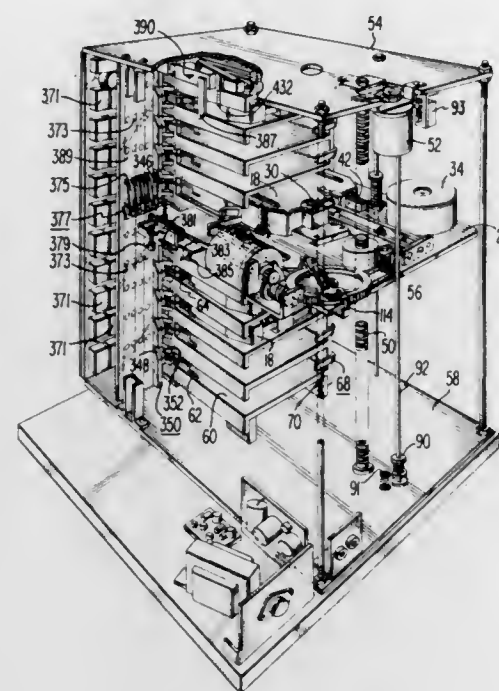
means mounting said drive means for movement between respective ones of said cartridge receptacles;

first means for moving the tape cartridge between said first and said second positions;

second means for moving said transducer assembly to position said transducer assembly to scan across the different tracks of the cartridge tape; and

cycling means supported on said means mounting said drive

means for movement between respective ones of said cartridge receptacles and coupled to said drive means to

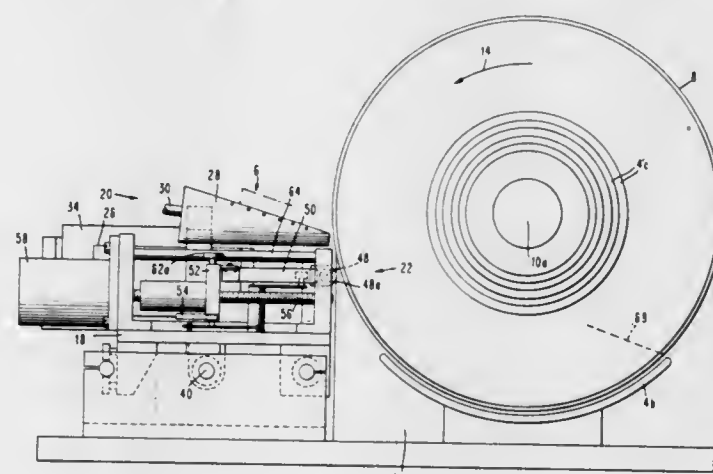


adjacent said guide means for movement downward and toward said guide means by gravity and carrying tape and reel drive elements adapted upon such movement of said tape transport to be introduced into the openings of a cassette while said cassette is being lowered by gravity to operatively engage elements within the cassette, and means connected to said tape transport for supporting a cassette in said guide means and movable downward with said tape transport to lower said cassette by gravity along said guide means to its playing position.

3,852,820
STABILIZATION OF PARTITIONABLE MEMORY WITH FLEXIBLE ROTATING DISCS
 Raymond A. Barbeau; Bernard W. McGinnis, and Frederick A. Schultz, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed July 2, 1973, Ser. No. 375,988
 Int. Cl. G11b 15/00

U.S. Cl. 360-99

16 Claims



1. In a random access laminar disc file array, wherein rotating flexible discs in a laminar aggregate configuration are separated for transducing access by movement of a partitioning mechanism into a randomly selected interface between discs causing deformation of the path of rotation of a randomly selected segment of the laminar aggregate, improved stabilizing means comprising:

flexible motion stabilizing means connected to one axial end of the aggregate and subject to rotation and deformation with said segments upon operation of said partitioning mechanism;

rigid means positioned at the other axial end of the aggregate, opposite said one end, for maintaining a constant rotational reference for complementary disc segments whose rotational paths are undisturbed by the partitioning mechanism;

means bounding a portion of the circumferential path of revolution of the partitioned aggregate for reducing turbulence at said selected interface due to operation of said partitioning mechanism; and

means incorporated in said partitioning mechanism for augmenting the airflow within the partitioned interface to stabilize the motion of the discs in the said complementary segments during operations of the partitioning mechanism.

DESIGN PATENTS

GRANTED DECEMBER 3, 1974

ERRATA

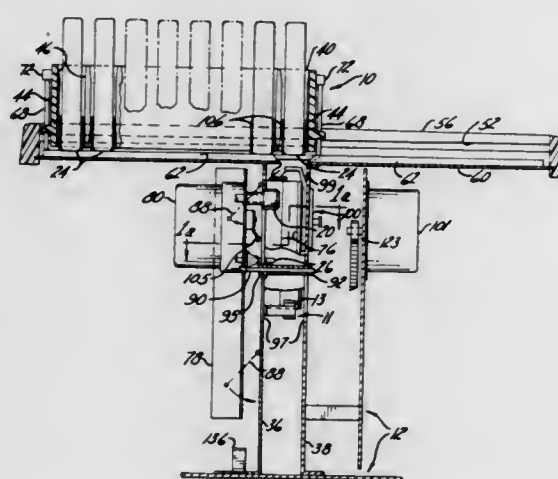
For
 CLASS
 D10-123

See
 PATENT NO.
 D233,851

provide controlled movement of said first and second means.

3,852,819
AUTOMATIC CHANGER FOR CASSETTE PLAYER-RECORDER
 Theophil Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to S. A. Staar, Brussels, Belgium
 Filed Apr. 10, 1968, Ser. No. 720,236
 Claims priority, application Belgium, June 15, 1967, 44973
 Int. Cl. G11b 5/00, 23/04
 U.S. Cl. 360-92

44 Claims



1. In a cassette player-recorder equipped with an automatic changer and having a magazine for storing a plurality of cassettes each having openings for introduction of tape transport elements within the cassette, said magazine being movable to locate a cassette stored therein for transfer in a downward direction to a playing position, the combination comprising, guide means for constraining the movement of a cassette received from said magazine to a single vertical plane to and from its playing position, a tape transport movably mounted

DESIGNS

DECEMBER 3, 1974

233,805
WRESTLING SHOE
 Takeshi Kubo, Kobe, Japan, % Design Room
 Modific 1-18, 6-chome
 Filed Mar. 19, 1973, Ser. No. 342,366
 Term of patent 14 years
 Int. Cl. D2-04
 U.S. Cl. D2-309



233,807
CHAIR OR SIMILAR ARTICLE
 Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-
 Entwicklungs-AG, Koblenz, Switzerland
 Filed Dec. 11, 1972, Ser. No. 313,948
 Claims priority, application Switzerland June 29, 1972
 Term of patent 14 years
 Int. Cl. D6-01
 U.S. Cl. D6-31



233,806
BRUSH
 Hiroshi Hukuba, Nagareyama, Japan, assignor to Kabu-
 shiki Kaisha Hukuba Future Research, Nagareyama,
 Japan
 Filed July 27, 1973, Ser. No. 383,400
 Term of patent 14 years
 Int. Cl. D4-01
 U.S. Cl. D4-12



233,808
CHAIR OR SIMILAR ARTICLE
 Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-
 Entwicklungs-AG, Koblenz, Switzerland
 Filed Dec. 11, 1972, Ser. No. 313,951
 Claims priority, application Switzerland June 29, 1972
 Term of patent 14 years
 Int. Cl. D6-01
 U.S. Cl. D6-31



**233,809
CHAIR**

Warren Platner, New Haven, Conn., assignor to
Steelcase Inc., Grand Rapids, Mich.
Filed Mar. 26, 1973, Ser. No. 344,850
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—31

**233,810
RECLINING LOUNGE CHAIR**

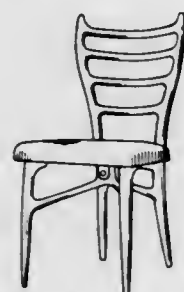
Tim M. Uyeda, South San Gabriel, Calif., assignor to
Samsonite Corporation, Denver, Colo.
Filed Mar. 2, 1973, Ser. No. 337,462
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—38

**233,811
CHAIR**

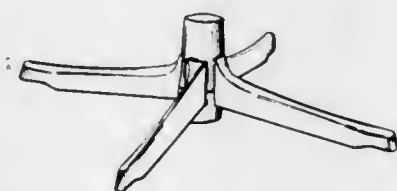
Akihiko Noda, and Akira Hirose, Tokyo, Japan, assignors
to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,500
Term of patent 7 years
Int. Cl. D6—01

U.S. Cl. D6—76

**233,812
CHAIR BASE**

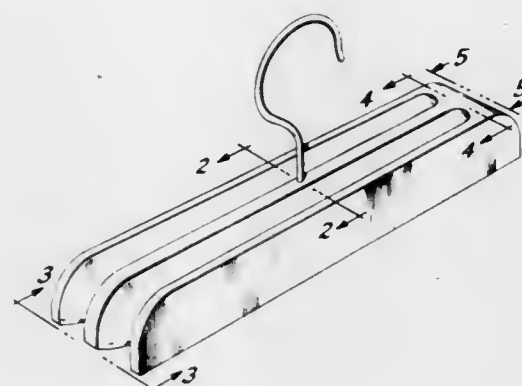
Warren Platner, 18 Mitchell Drive,
New Haven, Conn. 06511
Filed Mar. 26, 1973, Ser. No. 344,852
Term of patent 14 years
Int. Cl. D6—06

U.S. Cl. D6—196

**233,813
TROUSER HANGER**

Bernard Shyffer, 4212 Palos Verdes Drive E.,
Miraleste, Calif. 90732
Filed Feb. 12, 1973, Ser. No. 331,364
Term of patent 14 years
Int. Cl. D6—08

U.S. Cl. D6—247

**233,814
GRATED CHEESE BOWL**

Augusto Salviate, Corso Mario Abbiate, 110,
Vercelli, Italy
Filed June 11, 1973, Ser. No. 369,050
Term of patent 14 years
Int. Cl. D7—01

U.S. Cl. D7—17

**233,815
COMBINED SET OF CONDIMENT JARS
AND TRAY THEREFOR**

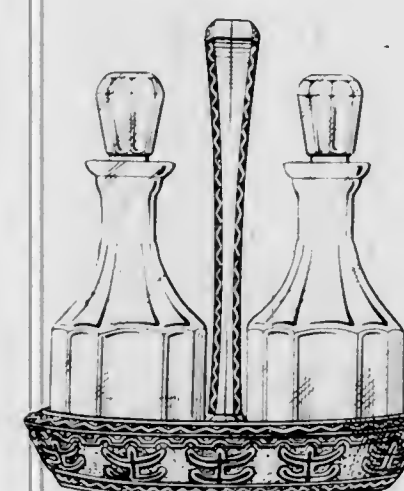
Augusto Salviate, Corso Mario Abbiate, 110,
Vercelli, Italy
Filed June 11, 1973, Ser. No. 369,026
Term of patent 14 years
Int. Cl. D7—06

U.S. Cl. D7—52

**233,816
COMBINED CRUET SET AND TRAY THEREFOR**

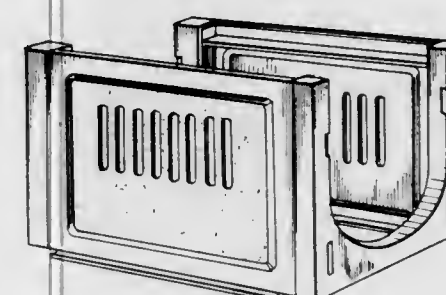
Augusto Salviate, Corso Mario Abbiate, 110,
Vercelli, Italy
Filed June 11, 1973, Ser. No. 368,892
Term of patent 14 years
Int. Cl. D7—06

U.S. Cl. D7—58

**233,817
WINE RACK**

Ralph James Mathews, Stanmore, and Alan Ernest Clif-
ford, London, England, assignors to British Oxygen
Company Limited, London, England
Filed Sept. 26, 1972, Ser. No. 293,853
Term of patent 7 years
Int. Cl. D6—04

U.S. Cl. D7—70

**233,818
BRUSH CLEANER**

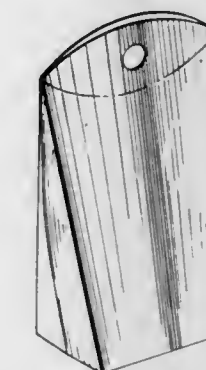
Hiroshi Hukuba, 2-320-82 Matsugaoka,
Nagareyama, Japan
Filed June 4, 1973, Ser. No. 366,660
Claims priority, application Japan Dec. 6, 1972
Term of patent 14 years
Int. Cl. D7—05

U.S. Cl. D7—181

**233,819
DISPOSABLE LITTER CONTAINER OR
SIMILAR ARTICLE**

Sidney Biderman, 5524 E. Utah Place,
Denver, Colo. 80222
Filed July 3, 1972, Ser. No. 268,699
Term of patent 14 years
Int. Cl. D7—07

U.S. Cl. D7—193

**233,820
CORDLESS ELECTRIC UPRIGHT GRASS SHEAR**

William E. Bartasevich, Jr., Glenshaw, and James E.
Edgell, Bradford Woods, Pa., assignors to Disston Inc.,
Pittsburgh, Pa.
Filed July 16, 1973, Ser. No. 379,380
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—8



233,821

DECORATIVE SLIDE BOLT

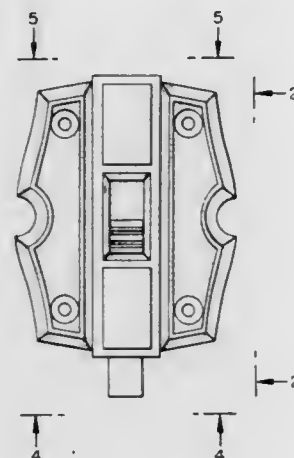
Roger Dahl and David R. Crouch, Los Angeles, Calif.,
assignors to Ajax Hardware Corporation, City of
Industry, Calif.

Filed June 28, 1973, Ser. No. 374,493

Term of patent 14 years

Int. Cl. D8—07

U.S. Cl. D8—131



233,822

SWITCH PLATE

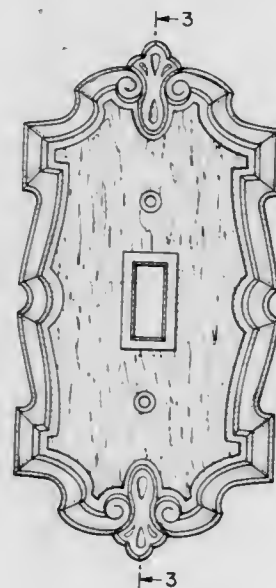
David P. Zagaroli, Hickory, N.C., assignor to Ajax
Hardware Corporation, City of Industry, Calif.

Filed Mar. 14, 1973, Ser. No. 341,022

Term of patent 14 years

Int. Cl. D13—99; D8—99

U.S. Cl. D8—181



233,823

ELECTRIC FENCE INSULATOR

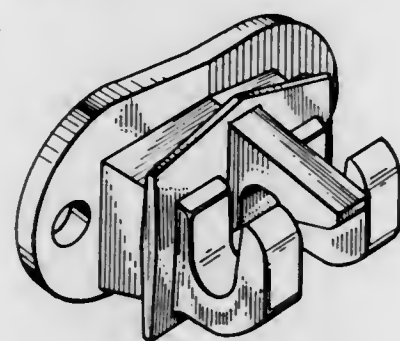
Howard Langlie and Albert T. Berg, Jr., both of
Ellendale, Minn. 56026

Filed July 31, 1972, Ser. No. 276,551

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D8—230



233,824

ELECTRIC FENCE INSULATOR

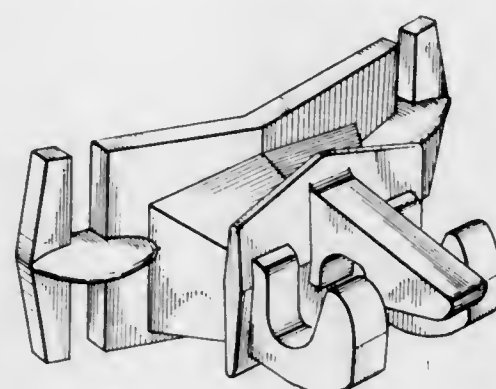
Albert T. Berg, Jr., and Howard Langlie,
both of Ellendale, Minn. 56026

Filed July 31, 1972, Ser. No. 276,552

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D8—230



233,825

BOTTLE

Keith N. Thomas, Los Angeles, Calif., assignor to
Purex Corporation, Ltd., Lakewood, Calif.

Filed Nov. 15, 1972, Ser. No. 306,861

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—41



233,826

BATTERY WATER DISPENSER

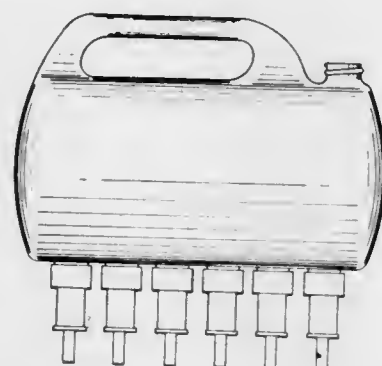
Robert W. Olsen, Hinsdale, Ill., assignor to
Efficiency Dispensers Corporation

Filed June 18, 1973, Ser. No. 371,279

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—53



233,827

BOTTLE

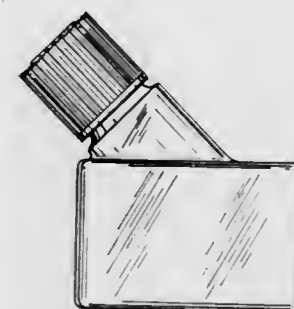
Misdrabi Henry, 71 Blvd. Brune,
Paris, France 75014

Filed May 21, 1973, Ser. No. 361,867

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—71



233,828

BOTTLE

Donald J. Leary, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 9, 1973, Ser. No. 349,117

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—160



233,829

JAR OR SIMILAR ARTICLE

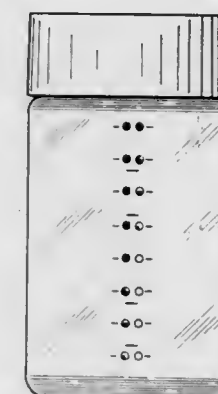
Sara L. Balbach, New York, and Richard W. Greger,
Corning, N.Y., assignors to Corning Glass Works,
Corning, N.Y.

Original design application July 20, 1970, Ser. No.
24,040, now Patent No. 225,309. Divided and this
application Sept. 27, 1971, Ser. No. 184,334

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—164



233,830

PACKAGE OF SPOONS OR THE LIKE

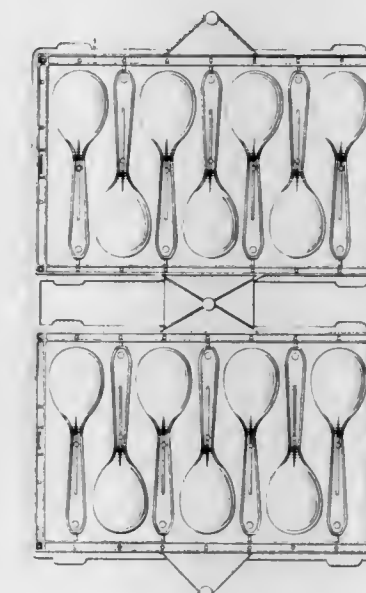
Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg,
Md., assignors to Maryland Plastics Incorporated,
Federalsburg, Md.

Filed Sept. 13, 1972, Ser. No. 288,696

Term of patent 14 years

Int. Cl. D9—99

U.S. Cl. D9—193



233,831

AUTOMOBILE BODY

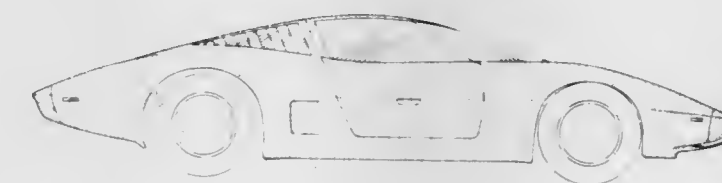
Henry G. Haga, Bloomfield Hills, Charles M. Jordan,
Franklin, William L. Mitchell, Bloomfield Hills,
and Jerry P. Palmer, Royal Oak, Mich., assignors to
General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1973, Ser. No. 427,850

Term of patent 7 years

Int. Cl. D12—08

U.S. Cl. D12—91



233,832

TENNIS COURT FLOORING UNIT OR THE LIKE

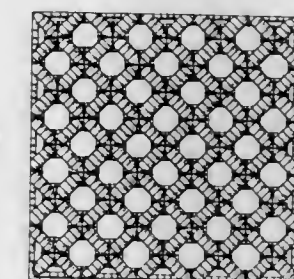
Jean Becker, 13 Avenue de la Gare,
Soissons, France

Filed July 25, 1972, Ser. No. 274,866

Term of patent 14 years

Int. Cl. D25—02

U.S. Cl. D13—1 J



233,833

FISHING LUREHarley E. Warrick, General Delivery,
Stratton, Ohio 43961Continuation-in-part of abandoned application Ser. No.
259,365, June 2, 1972. This application May 31, 1973,
Ser. No. 365,694Term of patent 14 years
Int. Cl. D22—05

U.S. Cl. D22—27



233,834

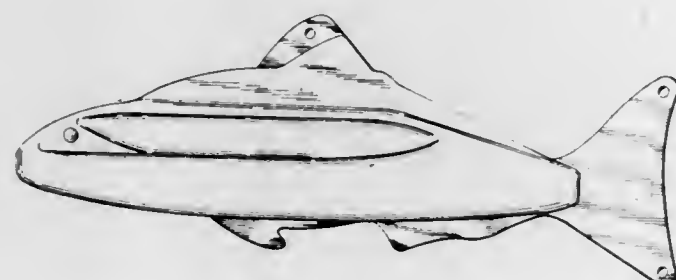
FISHING LUREDouglas W. Swanningson, Kenosha, Wis., assignor to
Swannee Dee Industries, Kenosha, Wis.

Filed Apr. 23, 1974, Ser. No. 463,357

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—27



233,835

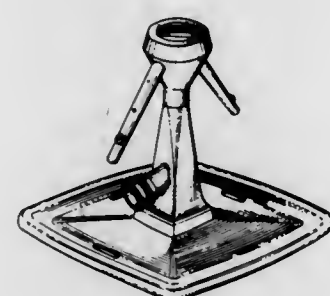
ROTARY LAWN SPRINKLERJean O. Reinecke, Pasadena, Calif., assignor to Rain
Bird Sprinkler Mfg. Co., Glendora, Calif.

Filed May 3, 1973, Ser. No. 357,033

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—7



233,836

SAFETY VALVEDieter Raffler and Franco Clivio, Ulm, Germany, as-
signors to Messrs. Kupex AG, Glarus, Switzerland

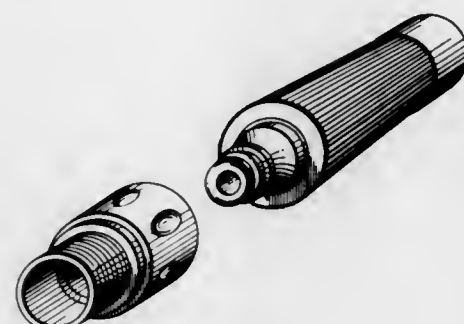
Filed July 12, 1972, Ser. No. 271,062

Claims priority, application Germany Jan. 18, 1972

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—19



233,837

WATER CLOSET

George Vincent Brady, Philadelphia, Pa., assignor to

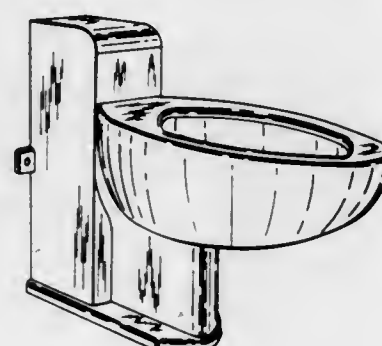
Kelsey-Hayes Company, Romulus, Mich.

Filed Jan. 22, 1973, Ser. No. 325,535

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—67



233,838

**ROOM AIR CONDITIONER OUTER CASE
OR SIMILAR ARTICLE**

Walter Baker, Jr., Louisville, Ky., assignor to

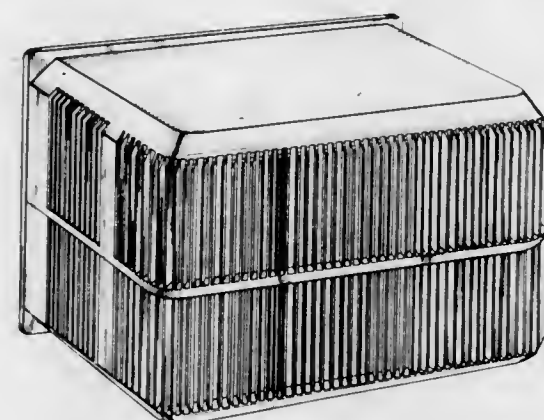
General Electric Company

Filed July 30, 1973, Ser. No. 383,812

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—141



233,839

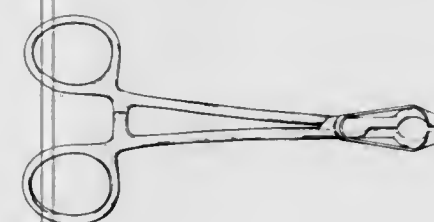
**COMBINED DENTAL FORCEPS AND PROTECTIVE
TONG COVER THEREFOR**Norman E. Royse, 2140 Shattuck Ave.,
Oakland, Calif. 94704

Filed Oct. 2, 1972, Ser. No. 297,765

Term of patent 14 years

Int. Cl. D24—02; D8—03

U.S. Cl. D24—1 D



233,841

MAGNETIC TAPE PLAYERDavid V. Charlesworth, Seaford, and John Grey, Lon-
don, England, assignors to Clarke & Smith Manufac-
turing Company Limited, Wallington, Surrey, England

Filed Nov. 22, 1972, Ser. No. 308,727

Claims priority, application Great Britain May 25, 1972

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—14 B



233,842

**ENCLOSURE FOR HIGH FIDELITY
LOUDSPEAKER SYSTEM**

Michael L. Petroff, Los Angeles, Calif., assignor to

Equasound Corporation, Los Angeles, Calif.

Filed Feb. 23, 1973, Ser. No. 335,428

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—14 G



233,840

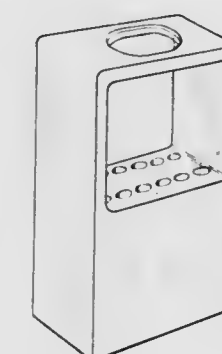
ELECTRICAL CONTACT CONNECTORRalph R. Hensley, Gahanna, and Earl Graham, Jr.,
Whitehall, Ohio, assignors to Twyco, Inc., Blacklick,
Ohio

Filed Nov. 10, 1972, Ser. No. 305,456

Term of patent 14 years

Int. Cl. D13—99

U.S. Cl. D26—1 A



233,843

FACSIMILE TRANSCIEVER

William Lansing Plumb, New York, N.Y., assignor to
Rapifax Corporation, Valhalla, N.Y.
Filed June 11, 1973, Ser. No. 369,122
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 R



233,845

SWIVEL CONNECTOR FOR MEDICAL ADMINISTRATION EQUIPMENT

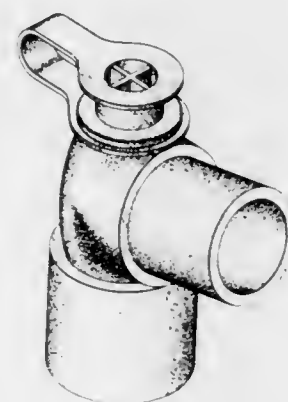
Bruce E. Fettel, Diamond Bar, and Samuel Burd, Long Beach, Calif., assignors to Shiley Laboratories, Inc., Santa Ana, Calif.

Filed Mar. 15, 1973, Ser. No. 341,382

Term of patent 14 years

Int. Cl. D24—04; D24—99

U.S. Cl. D32—1 R



233,844

CAT PERCH AND EXERCISE POLE

Guy W. Tucker, Littleton, Colo., assignor to
The Rotuc Corporation, Windsor, Colo.
Filed June 22, 1972, Ser. No. 265,189
Term of patent 14 years
Int. Cl. D30—07

U.S. Cl. D30—42



233,846

DOLL OR SIMILAR ARTICLE

Marie Leavitt, 85 Free St., Hingham, Mass. 02043

Filed Aug. 30, 1973, Ser. No. 393,047

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—4 C



233,847

TOY SHOOTING GALLERY

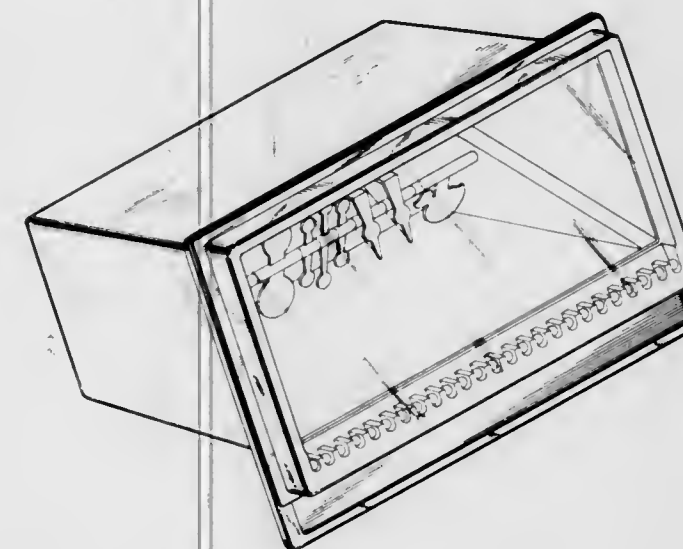
Raymond J. Lohr and Martin Condry, Erie, Mahlon E. Hirsch, Fairview, and Laurie Jay Campbell and Maxmillian P. Rogers, Erie, Pa., assignors to Louis Marx & Co., Inc.

Filed May 29, 1973, Ser. No. 364,578

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—5 PP



233,849

NOVELTY TRACKWAY FOR GRAVITY-DEFYING ROLLING CONE

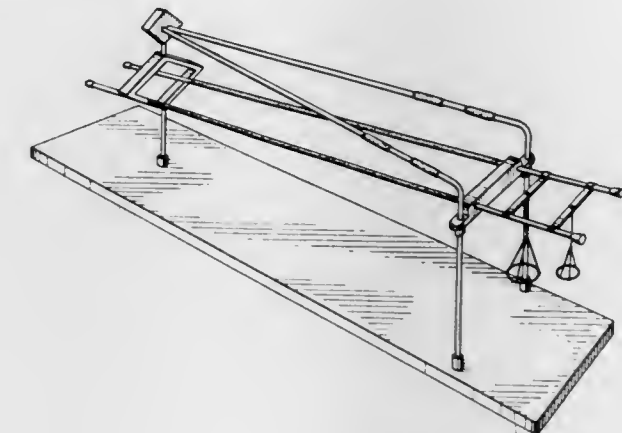
Jerome Cohen, 178 N. Pleasant Ave., Ridgewood, N.J. 07450

Filed Mar. 30, 1971, Ser. No. 129,656

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 K



233,850

PUZZLE

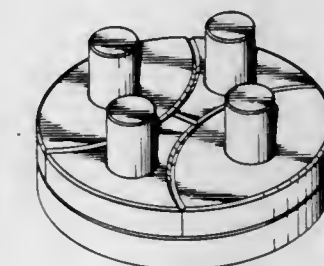
Lloyd A. Nielsen, 4441 South Avenue W., Missoula, Mont. 59801

Filed Mar. 30, 1973, Ser. No. 346,601

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 M



233,848

GOLF ACCESSORY HOLDER

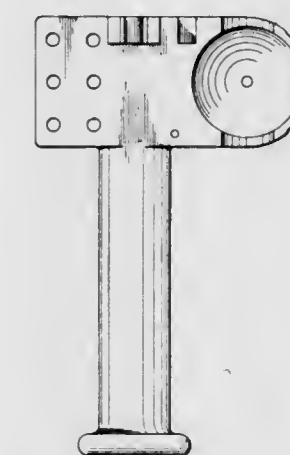
Raymond J. Gottliebowski, 5192 Haverford Drive, Lyndhurst, Ohio 44124

Filed July 2, 1973, Ser. No. 375,735

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D34—5 CB



233,851

WATCH FACE

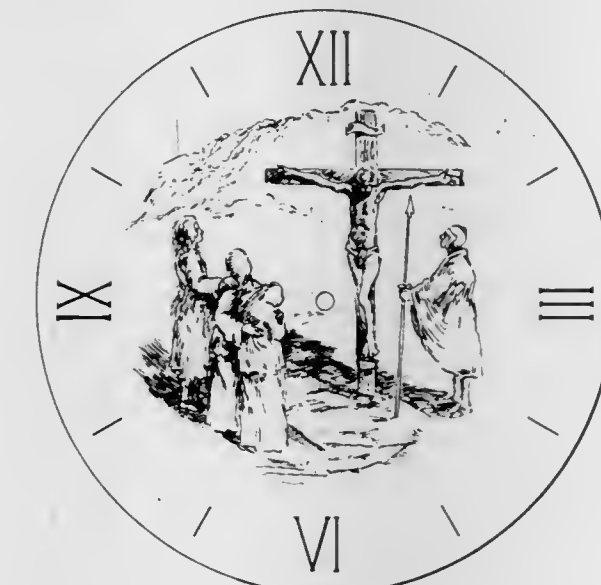
Alex Luna Miramon, 9465 Wilshire Blvd., Beverly Hills, Calif. 90212

Filed Apr. 5, 1973, Ser. No. 348,335

Term of patent 14 years

Int. Cl. D10—07

U.S. Cl. D10—123

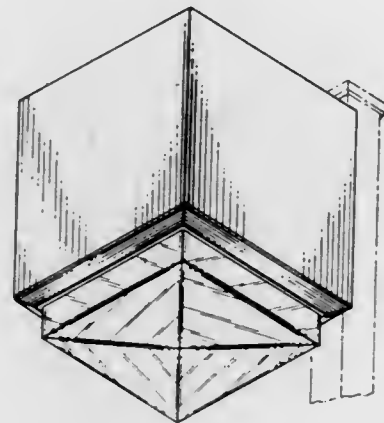


233,852
LUMINAIRE

Russell A. Czellath, Brook Park, and Donald E. Husby, Fairview Park, Ohio, assignors to Westinghouse Electric Corporation

Filed Oct. 6, 1972, Ser. No. 295,618
Term of patent 14 years
Int. Cl. D26—03

U.S. Cl. D48—31



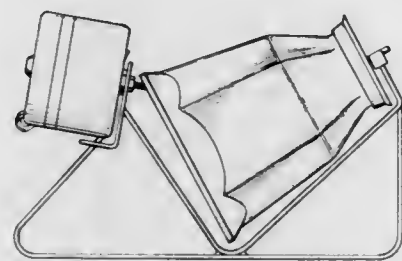
233,853

TUMBLER FOR GEM STONES

Joseph A. Ferrara, 2809 Industrial Parkway, Santa Maria, Calif. 93454

Filed Sept. 5, 1972, Ser. No. 286,829
Term of patent 14 years
Int. Cl. D15—09

U.S. Cl. D55—1 D



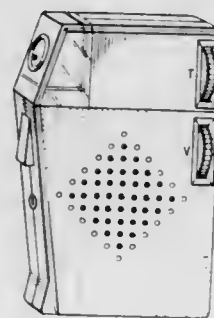
233,854

COMBINED POCKET RADIO AND FLASHLIGHT

Gilbert Y. Y. Yue, 320 Ma Tau Wei, 2nd Floor Hong Kong

Filed May 16, 1973, Ser. No. 360,691
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D56—4 B



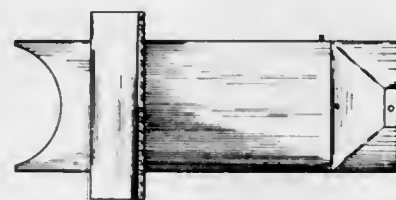
233,855

IDENTIFICATION PHOTOGRAPHY JIG

Ronald E. Mertens and Frank W. Davis, Indianapolis, Ind., assignors to Photo Communications, Inc., Indianapolis, Ind.

Filed Apr. 25, 1973, Ser. No. 354,233
Term of patent 14 years
Int. Cl. D16—99

U.S. Cl. D61—1 E



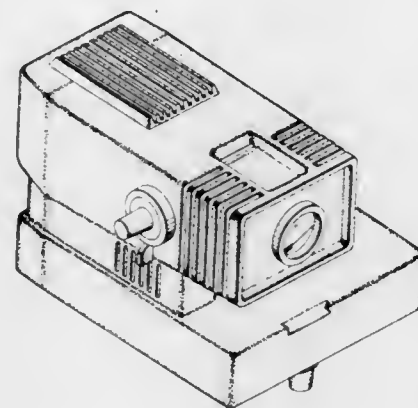
233,856

FILM STRIP PROJECTOR

Hiroshi Kira, Oxnard, Calif., assignor to Norman Holtzman, Los Angeles, Calif.

Filed June 18, 1973, Ser. No. 371,283
Term of patent 14 years
Int. Cl. D16—02

U.S. Cl. D61—1 J



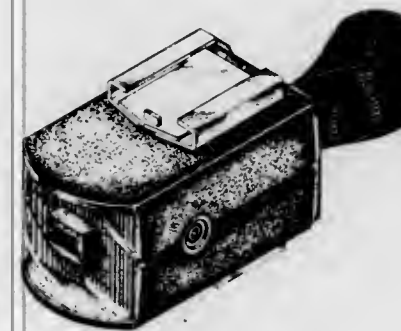
233,857

PHOTOGRAPHIC FLASHLIGHT SLAVE TRIGGERING UNIT

Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 28, 1973, Ser. No. 374,560
Term of patent 14 years
Int. Cl. D16—05

U.S. Cl. D61—1 F



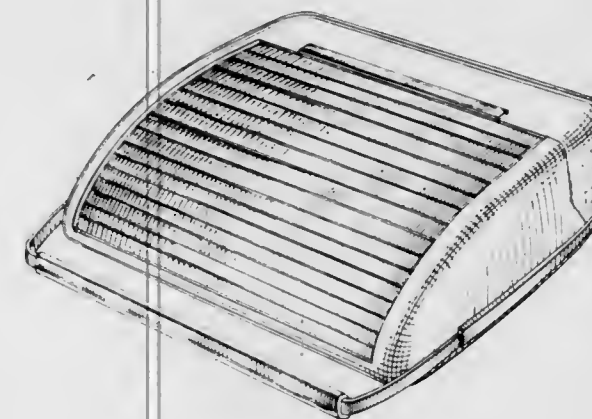
233,858

TYPEWRITER HOUSING WITH TAMBOUR COVER

Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed June 7, 1973, Ser. No. 367,808
Term of patent 14 years
Int. Cl. D18—01

U.S. Cl. D64—11 A

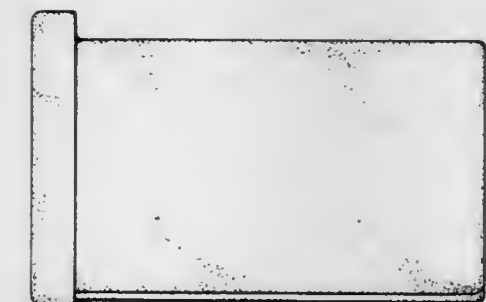
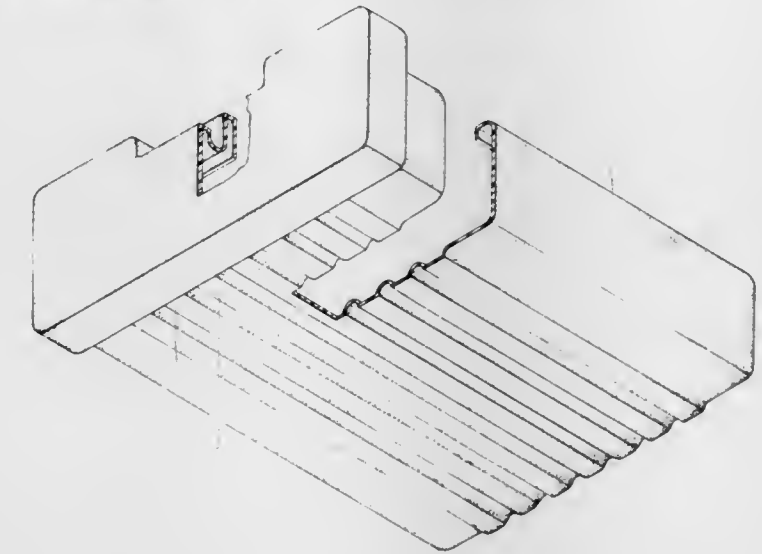


233,859
DRAWER

Charles R. Tyke, Lexington, Ohio and William C. Anderson, Grand Rapids, Mich., assignors to Westinghouse Electric Corporation

Filed Apr. 3, 1973, Ser. No. 347,512
Term of patent 14 years
Int. Cl. D15—07; D6—06

U.S. Cl. D67—3 B



233,860
CANDLE

Vaughn G. Evans, and Laura A. Evans, both of 4016 Redbridge Road, Kansas City, Mo. 64106

Filed Oct. 26, 1971, Ser. No. 192,701
Term of patent 14 years
Int. Cl. D26—04

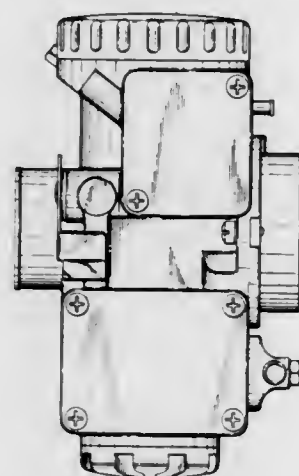
U.S. Cl. D73—1



233,861 CARBURETTOR BODY

Geoffrey Hartshorne, Shenstone, England, assignor to AMAL Limited, Birmingham, Warwickshire, England
Filed June 27, 1972, Ser. No. 266,730
Claims priority, application Great Britain Jan. 5, 1972
Term of patent 14 years
Int. Cl. D15—01

U.S. Cl. D77—1 A



233,862

BLOOD CELL ANALYZER OR SIMILAR ARTICLE

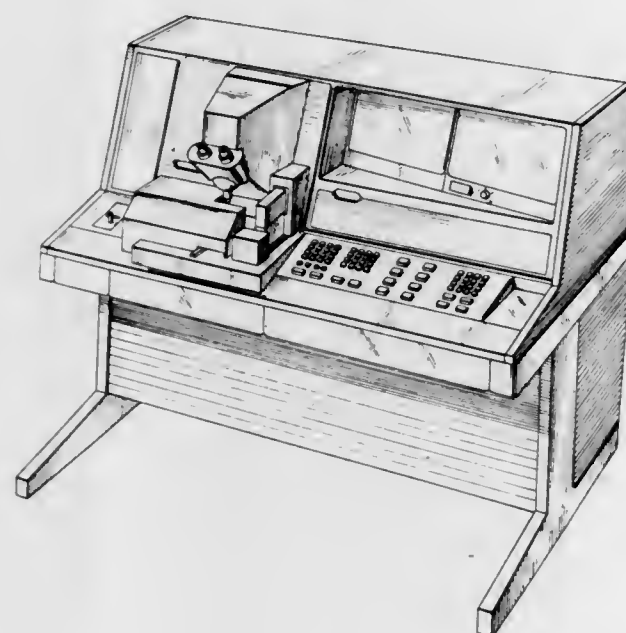
John Russell Nelson, Natick, Mass., David Edward Roche, Nashua, N.H., and Joseph John Montagna, Acton, Mass., assignors to Coulter Electronics Inc., Hialeah, Fla.

Filed Oct. 18, 1973, Ser. No. 407,535

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D83—1 F



233,863 WATER PIPE

Helmut Keidl, 2344 N. 57th St., Milwaukee, Wis. 53210, and Rick A. Lemke, Milwaukee, Wis. (18060) Lamp Lighter Lane, Brookfield, Wis. 53005
Filed May 11, 1972, Ser. No. 252,542
Term of patent 14 years
Int. Cl. D27—02

U.S. Cl. D85—8 A



233,864

TWEezer OR SIMILAR ARTICLE

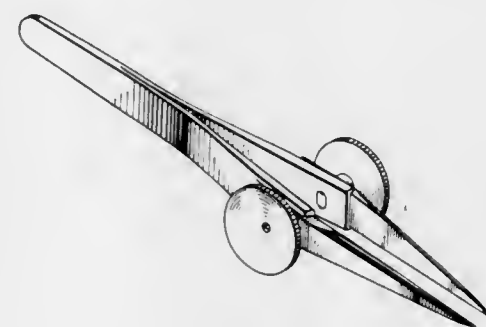
Edgar M. McClure, Roanoke, Va., assignor to Scientific Components, Inc., Roanoke, Va.

Filed Jan. 3, 1973, Ser. No. 320,816

Term of patent 14 years

Int. Cl. D8—05; D24—02

U.S. Cl. D86—10 B



LIST OF PATENTEEs

TO WHOM

PATENTS WERE ISSUED ON THE 3d DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Osakeyhtio Noormarkku: See—
Lindberg, Martin, 3,852,108.
A/S Ardal og Sundal Verk: See—
Aarflot, Aksel Ola; Rudi, Fred; Sorensen, Gunnar Birger; Alvsaker, Bjarne; and Berg, Otto, 3,852,122.
AAI Corporation: See—
La Costa, Nicholas Joseph, 3,851,590.
Aarflot, Aksel Ola; Rudi, Fred; Sorensen, Gunnar Birger; Alvsaker, Bjarne; and Berg, Otto, to A/S Ardal og Sundal Verk. Method of producing a weldable and ageable aluminium alloy of great strength and product. 3,852,122, Cl. 148-3.000.
AB Nynas-Petroleum: See—
Brisman, Sven Brynolf, 3,851,438.
Abbott Laboratories: See—
Prasad, Raj Nandan; and Stein, Herman Hal, 3,852,268.
Aberg, Bertil, to Allmanna Svenska Elektriska Aktiebolaget. Method for hydrostatic extrusion. 3,851,511, Cl. 72-60.000.
Aberth, William H., to Stanford Research Institute. Multipoint field ionization source. 3,852,595, Cl. 250-288.000.
Abramitis, Walter W.: See—
Reck, Richard A.; and Abramitis, Walter W., 3,852,340.
Achenbach, Gary D.: See—
Maxson, Orwin G.; and Achenbach, Gary D., 3,851,704.
Acme-Lite Manufacturing Co.: See—
Robinson, Jack A., 3,852,790.
Acosta, Armando E., to Mortinson, Abner J. Foldable golf practice swing apparatus. 3,851,886, Cl. 273-197.00a.
Adalbert, Gerhard; Hess, Jurgen; and Linder, Ernst, to Bosch, Robert, G.m.b.H. Pressure-sealed compressor. 3,852,003, Cl. 418-93.000.
Adams, Frederick John; and Alderton, Howard Kenneth, to Cam Gears Limited. Collapsible steering columns. 3,851,542, Cl. 74-492.000.
Adams, Leonard H.: See—
Schneider, Kurt A.; Adams, Leonard H.; and Hilpert, Conrad R., 3,851,739.
Adler, Karl; and Ducommun, Georges, to Bivator S.A. Instrument for measuring ultra-violet light. 3,851,970, Cl. 356-51.000.
Adler, Norman; and Gamin, Leopoldo Lazaro, to New England Nuclear Corporation. Bone seeling technetium 99m stannous phosphate complex. 3,852,414, Cl. 424-1.000.
Adler, Seymour; Nuttall, Fleet E.; and Shapero, Wallace H., to Mattell, Inc. Method of making foam plastic bodies having lifelike outer skins. 3,852,389, Cl. 264-46.400.
Afful, Matthew K., to General Electric Company. Rack support assembly in a dishwasher. 3,851,943, Cl. 312-347.000.
AG fur Elektroakustik: See—
Diethelm, Beda, 3,852,540.
AGA Aktiebolag: See—
Svensson, Orvar Anders, 3,851,824.
Agejev, G. Sz.: See—
Heller, Laszlo; Forgo, Laszlo; Bodas, Janos; Alekszejev, I. A.; and Agejev, G. Sz., 3,851,702.
Agency of Industrial Science & Technology: See—
Furukawa, Kenji; Uyama, Hirofumi; Tsuchiya, Takashi; Kodo, Chikashi; and Torii, Keiichi, 3,851,405.
Teshirogi, Naohisa; and Nakahara, Hiroo, 3,851,632.
AGFA Gevaert Mortsel: See—
Van Paesschen, August Jean; and Herbots, Joseph Antoine, 3,852,069.
Agfa-Gevaert Aktiengesellschaft: See—
Maurischat, Guenther; and Mueller, Juergen, 3,851,403.
Nikitsch, Erhard; Putscher, Johann; and Utschig, Peter, 3,852,792.
Turner, James, 3,851,811.
Werz, Siegfried; and Zanner, Johann, Jr., 3,851,952.
Aghazadeh, Shirzad, to Singer Company, The. Digital data encoding and reconstruction circuit. 3,852,811, Cl. 360-51.000.
Agness, Jay Byron; Ziegler, Duane Herbert; and Penfold, Garn Farley, to Deere & Company. Automatic height control system for a crop harvester. 3,851,451, Cl. 56-10.200.
Ahrweiler, Karl-Heinz; Appenzeller, Valentin; Quoos, Kurt; and Kusters, Edward, to Kusters, Eduard, Maschinenfabrik. Continuous press. 3,851,685, Cl. 144-281.00b.
Aiba, Michio: See—
Fujisawa, Tamotsu; and Aiba, Michio, 3,852,395.
Aida, Yoshimoto: See—
Ogura, Isamu; Miyashita, Takaaki; and Aida, Yoshimoto, 3,852,725.
Aircraft Instruments, Inc.: See—
Hernandez, Ralph, Jr., 3,852,710.
Aisin Seiki Kabushiki Kaisha: See—
Sakakibara, Naoji, 3,852,545.
Aizawa, Hiroshi: See—
Yamamichi, Masayoshi; and Aizawa, Hiroshi, 3,852,779.
Akiba, Nobuo: See—
Furuichi, Masayoshi; Akiba, Nobuo; and Kudo, Seiichi, 3,851,965.
Aktiebolaget Bahco Ventilation: See—
Gustavsson, Karl Axel Goran, 3,852,040.
Aktiebolaget Electrolux: See—
Blomberg, Peter Erik; and Boren, Karl Gunnar, 3,851,497.
Aktiengesellschaft fur Brauerei-Industrie: See—
Schimpf, Franz-Wilhelm; and Rinke, Wilfried, 3,852,495.
Akzona Incorporated: See—
Ganzert, Albert E.; Gaizauskas, Bronius; Andrychowski, Leonard; and Mina, Nabil, 3,851,944.
Werner, Helmut; and Stapp, Hans, 3,852,152.
Akzona Incorporated, mesne: See—
Reck, Richard A.; and Abramitis, Walter W., 3,852,340.
Aladdin Industries, Incorporated: See—
Bridges, John A., 3,851,599.
Alais, Michel; and Stahl, Andre, to Compagnie Industrielle des Telecommunications Citalcatel. Method for manufacturing thermoelectric modules. 3,851,381, Cl. 29-573.000.
Albany International Corp.: See—
Egan, Cleon J., 3,851,681.
Alberto, Bocca; and Mario, Pagani. Universal charging device for the insertion of eyelets, rivets, hooks and similar by retreating machines. 3,851,743, Cl. 193-2.00c.
Alchorn, Terence R.; Gans, Werner A.; and Mellana, William D., to United States of America, Navy, mesne. Explosive energy transfer system. 3,851,587, Cl. 102-27.00r.
Alcyon Electronique et Physique S.A.: See—
Ravussin, Pierre-Emile; and Vuille, Jean-Pierre, 3,851,974.
Alderton, Howard Kenneth: See—
Adams, Frederick John; and Alderton, Howard Kenneth, 3,851,542.
Alekszejev, I. A.: See—
Heller, Laszlo; Forgo, Laszlo; Bodas, Janos; Alekszejev, I. A.; and Agejev, G. Sz., 3,851,702.
Ales, David Edward: See—
Holoubek, George Henry; Ales, David Edward; Harms, Harland Elmer; Erickson, Warren E.; Dittmars, Maurice A.; and Brookhart, J. Keith, 3,851,568.
Alexander, Alex E., to Kam-Act Enterprises, Inc. Force multiplying type archery bow. 3,851,638, Cl. 124-24.00r.
Alexander, David: See—
Augstein, Joachim; Alexander, David; and Ham, Allan Leslie, 3,852,291.
Alfa Romeo S.p.A.: See—
Colucci, Ivo, 3,851,433.
Alfa-Laval Bergedorfer Eisenwerke GmbH: See—
Rossborg, Werner, 3,851,677.
Aling, Willem, to U.S. Philips Corporation. Visual display apparatus. 3,852,639, Cl. 315-84.600.
All-Steel Inc.: See—
Harris, Everett K.; Anderson, William P.; and Lannert, James W., 3,851,920.
Allied Chemical Corporation: See—
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,852,313.
Bruen, Charles Patrick; Low, William Wayne; and Smalley, Edmund Walter, 3,852,059.
Hoffman, Robert J.; and Gould, Lawrence P., 3,852,427.
Allis-Chalmers Corporation: See—
Goodwin, Edwin C., Jr., 3,852,548.
Goodwin, Edwin C., Jr., 3,852,549.
Allmanna Svenska Elektriska Aktiebolaget: See—
Aberg, Bertil, 3,851,511.
Alps Motorola, Inc.: See—
Noguchi, Masaru, 3,851,499.
Altenberger, Edmund C. Burglar alarm actuated by cut telephone wire. 3,852,541, Cl. 179-175.250.
Aluminum Company of America: See—
Clawson, Robert G.; and Willis, Wilburn C., 3,851,782.
Jacobs, Stanley C.; Jarrett, Noel; and Graham, Robert W., 3,852,173.
Alvsaker, Bjarne: See—
Aarflot, Aksel Ola; Rudi, Fred; Sorensen, Gunnar Birger; Alvsaker, Bjarne; and Berg, Otto, 3,852,122.
American Air Filter Company, Inc.: See—
Rivers, Richard D.; Pasha, Mohiuddin; Huntington, Robert G.; Goldsmith, Jesse M.; and Pring, Robert T., 3,852,410.
American Can Company: See—
Deuel, James Leslie, 3,852,138.

- American Coldset Corporation: *See*—
Thompson, Charles T.; and Thompson, Bobby J., 3,851,719.
- American Cyanamid Company: *See*—
Amin, Ashok Babubhai, 3,852,493.
Booth, Robert Ben, 3,852,403.
Cross, Barrington; and Arotin, Robert Louis, 3,852,332.
Dusza, John Paul; Lindsay, Harry Lee; and Bernstein, Seymour, 3,852,334.
Fraio, Anthony Vincent, 3,852,117.
Kendall, Roger Vernon, 3,852,397.
- American Standard Inc.: *See*—
Parkison, Richard G.; and Fichter, Barry S., 3,851,825.
- American Sterilizer Company: *See*—
Gunther, Donald A., 3,852,034.
- American Velcro Inc.: *See*—
Ribich, William A.; and Russell, David B., 3,851,357.
- Amerock Corporation: *See*—
Anderson, Lloyd L., 3,851,354.
McCurdy, Donald L., 3,851,508.
- Ames, Irving, to International Business Machines Corporation. Josephson tunneling circuits with superconducting contacts. 3,852,795, Cl. 357-5.000.
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- Anderson, Ray C. Automatic sound film projector-player. 3,851,957, Cl. 352-123.000.
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- Anderson, William P.: *See*—
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- Andres, William A.; Quanrud, Larry D.; Koppa, Charles J.; Becker, Larry F.; Christoffersen, William K.; and Keely, James L., to Washington Scientific Industries, Inc. Projection screen. 3,851,950, Cl. 350-125.000.
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- Ariyan, Zaven S.; and Harrison, William A., to Uniroyal, Inc., and Uniroyal, Ltd. 4-phenyl-2-(3-pyridyl)-thiazole carboxamides. 3,852,293, Cl. 260-294.800.
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- Ball, Charles W.; and Brodsky, Alexander. Combination spade or shovel and sifter. 3,851,763, Cl. 209-419.000.
- Bando, Satoshi; Hara, Kazuo; Yoshitake, Toshihiko; and Tasaka, Takeo, to Kuraray Co., Ltd. Low shrinkage unsaturated polyester resin compositions containing graft copolymers. 3,852,376, Cl. 260-862.000.
- Banks, Neil K., Jr., to Bomco, Incorporated. Acoustic damping structures. 3,851,724, Cl. 181-33.000.
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- Carini, George F.: See—
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- Carlson, Donald C.: See—
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- Carlson, Paul A., to Wagner Electric Corporation. Dual-mode security circuit for automotive vehicles and the like. 3,852,614, Cl. 307-10.0at.
- Carlson, Roy C.; King, Loyd L.; and Sofer, George A., to Jersey Nuclear Company, mesne. Nuclear reactor spacer device. 3,852,154, Cl. 176-78.000.
- Carlsson, Hilding Ake Gerry, to Monark-Crescent AB. Ignition device for vaporizing burners. 3,852,024, Cl. 431-208.000.
- Carmichael, John M.; West, Donald L.; and Williams, Robert A., to International Business Machines Corporation. Charge detection for ink jet printers. 3,852,768, Cl. 346-75.000.
- Carney, William V.; and Deluca, Paul V., to Porta Systems Corporation, mesne. Modular jack strip assembly. 3,852,703, Cl. 339-198.00h.
- Carp, Ralph W.; Weissler, Harold E., II; and Krawczak, Gale F., to Bendix Corporation. The. Frequency selection by period timing. 3,852,616, Cl. 307-233.000.
- Carr, Albert A., to Richardson-Merrell Inc. 4-[4-(α -Hydroxybenzyl) piperidino]-4'-fluorobutyrophenone derivatives as tranquilizers. 3,852,455, Cl. 424-267.000.
- Carrell, William G.: See—
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- Carrier Corporation: See—
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- Carson, John C., to Eocom Corporation. Adaptive imaging system. 3,852,714, Cl. 340-146.30f.
- Carter-Wallace Inc.: See—
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- Cary, Donald S.; and Hutchinson, Charles H.; deceased (by Hutchinson, Carol W.; administratrix), said Cary assor. to Xerox Corporation. Moving belt scanning printing. 3,852,775, Cl. 354-14.000.
- Casale, Renato, to Ital Elettronica S.p.A. Scanning device for scintigraphy according to three orthogonal planes. 3,852,601, Cl. 252-366.000.
- Case, Charles B.; Hebert, David M.; Olson, Maylin J.; and Schubert, John C., to Standard Oil Company. Container fastening means. 3,851,789, Cl. 220-307.000.
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- Cassidy, Patrick J.: See—
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- Jorgensen, Stanley A., 3,851,731.
- Lukavich, Paul James, 3,851,413.
- Purcell, Robert J., 3,851,712.
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- Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys and products thereof. 3,852,130, Cl. 156-3.000.
- Cechach, Frydant V.: See—
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- Celanese Corporation: See—
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- Central Glass Co., Ltd.: See—
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- Cesar, Jean, to Compagnie Generale de Radiologie. Radiodiagnostic apparatus including a pivotable X-ray table. 3,852,611, Cl. 250-445.000.
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- Chacon, Manuel Frank, to Johnson Service Company. Multiple voltage monitoring apparatus. 3,852,727, Cl. 340-213.00r.
- Chambers, Charles W., Jr., to Lorain Products Corporation. Test-through voltage booster circuit for telephone systems. 3,852,536, Cl. 179-16.00f.
- Chamness, Leland D.: See—
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- Charter, Wayne M., to Quaker Oats Company. The. Apparatus for making a marbled meat pet food. 3,851,570, Cl. 99-450.200.
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- Chen, Karl K.; and Patel, Hiralal V., to Weatherhead Company, The. Swing-open crimper. 3,851,514, Cl. 72-402.000.
- Chen, Nai Y.; and Garwood, William E., to Mobil Oil Corporation. Shape-selective conversion in the liquid phase. 3,852,189, Cl. 208-120.000.
- Chenault, Roger; and Prigent, Raymond, to Commissariat a l'Energie Atomique. Reader for radiothermoluminescent dosimeter. 3,852,589, Cl. 250-337.000.
- Cheris, Maynard H.: See—
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- Christgau, Hermann: See—
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- Christman, Robert D.; McKinney, Joel D.; Readal, Thomas C.; and Yanik, Stephen J., to Gulf Research & Development Company. Hydrodesulfurization and FCC of blended stream containing coker gas oil. 3,852,185, Cl. 208-89.000.
- Christman, Robert D.; McKinney, Joel D.; and Readal, Thomas C., to Gulf Research & Development Company. Combination hydrodesulfurization and FCC process. 3,852,186, Cl. 208-89.000.
- Christman, Robert D.; McKinney, Joel D.; Readal, Thomas C.; and Yanik, Stephen J., to Gulf Research & Development Company. Hydrodesulfurization process for producing fuel oil and FCC feed. 3,852,187, Cl. 208-89.000.
- Christoffersen, William K.: See—
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- Cirkler, Werner; Schauer, Alois; and Kausche, Helmut, to Siemens Aktiengesellschaft. Continuous cathode sputtering system. 3,852,181. Cl. 204-298.000.
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- Clarke-Gravelly Corporation: *See*—
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- Clasen, Claus J. Werner, to Standard Car Truck Company. Dampened railway truck bolster wear plate. 3,851,595. Cl. 105-197.000.
- Clawson, Robert G.; and Willis, Wilburn C., to Aluminum Company of America. Container closure with vent opening means. 3,851,782. Cl. 215-56.000.
- Clay, Howard W.; and Schmitt, Donald E., to Reed Industries, Inc. Meter box with vault latch. 3,851,942. Cl. 312-333.000.
- Cleaveland, Charles M., to Westinghouse Electric Corporation. Puffer-type compressed-gas circuit-interrupter. 3,852,551. Cl. 200-148.000.
- Clement, Jack M., to Gould Inc. Electric resistance heating element. 3,852,568. Cl. 219-375.000.
- Coal Industry (Patents) Limited: *See*—
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- Cofield, Eugene P., Jr.; and Rowe, Richard G., to Scripto, Inc. Finger-print apparatus. 3,851,619. Cl. 118-31.500.
- Coker, Charles Walter, Jr., to International Business Machines Corporation. Return to zero detection circuit for variable data rate scanning. 3,852,809. Cl. 360-40.000.
- Coleco Industries, Inc.: *See*—
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- Coleman, Raymond C., to Xerox Corporation. Collar and method of making same. 3,851,985. Cl. 403-362.000.
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- Comer, Glen S., Jr.; Cryder, John R.; and Waggoner, John B., to Caterpillar Tractor Company. Supplemental fluid supply. 3,851,721. Cl. 180-79.200.
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- Cook, Edward H., Jr.; Emery, Alvin T.; and Schoepfle, Blaine O., to Hooker Chemical Corporation. Patching damaged cation-active permselective diaphragms. 3,852,135. Cl. 156-94.000.
- Cook, Kenneth J.; and Korwitz, Norman H., to Beaumont, William, Hospital. Bed egress alarm circuit. 3,852,736. Cl. 340-279.000.
- Cook, Ronald Joseph, to Matburn (Holdings) Limited. Surgical operation table. 3,851,870. Cl. 269-322.000.
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- Corman, James C.; McLaughlin, Michael H.; and Walmet, Gunnar E., to General Electric Company. Double-sided heat-pipe cooled power semiconductor device assembly. 3,852,804. Cl. 357-82.000.
- Corman, James C.; McLaughlin, Michael H.; and Walmet, Gunnar E., to General Electric Company. Nonwicked heat-pipe cooled power semiconductor device assembly having enhanced evaporated surface heat pipes. 3,852,806. Cl. 357-82.000.
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- Correll, Quentin E.; Swain, Allan L.; Oudijk, Tommy A.; Chamness, Leland D.; and Rudin, Melvin, to Day, Albert J. Credit card voucher imprinter. 3,851,580. Cl. 101-45.000.
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- Corson, Floyd L., to CPC International Inc. Apparatus for the reactivation of powdered carbon. 3,852,038. Cl. 23-259.900.
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- Court, Patrick R., to Optical Systems Corporation. Video and audio encoding/decoding system employing suppressed carrier modulation. 3,852,519. Cl. 178-5.100.
- Couvillon, James B., to Texas Instruments Incorporated. Differential amplitude angle guidance. 3,852,752. Cl. 343-108.000.
- Cox, Don O. Article retainer for a refrigerator. 3,851,765. Cl. 211-184.000.
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- CPC International Inc.: *See*—
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- Crane, Jacob; Friedman, Sam; and Pryor, Michael Joseph, to Olin Corporation. Process for making a novel copper base alloy. 3,852,121. Cl. 148-2.000.
- Crawford, John T., to Towmotor Corporation. Lift truck fork retaining pins. 3,851,779. Cl. 214-731.000.
- Crawford, Ollie Lee. Electric lamp menans. 3,852,588. Cl. 240-108.000.
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- CRC-Croce International, Inc.: *See*—
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- Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. 5-Benzyl pyrimidines intermediate therefor, and method. 3,852,276. Cl. 260-240.000.
- Crest Container Corporation: *See*—
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- Crippa, Jean-Pierre, to Les Produits Associes SA. Removable attachment for a hand appliance for body care including coupling retaining means. 3,851,984. Cl. 403-322.000.
- Crisafulli, Angelo J. Reversible endless track for vehicles. 3,851,931. Cl. 305-54.000.
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- Cross, Barrington; and Arotin, Robert Louis, to American Cyanamid Company. Esters of (alkynyloxy) and (alkenyloxy) carbanilic acids. 3,852,332. Cl. 260-471.000.
- Cross, Christopher G., to PPG Industries, Inc. Strand clamping apparatus for automatic knock off system. 3,852,141. Cl. 156-351.000.
- Crouse, David J., Jr.: *See*—
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- Crowley, Jennifer: *See*—
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- Cryder, John R.: *See*—
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- Cummins, Millard M.; Best, Robert G.; and Hankins, Thomas, to Thurman Manufacturing Company. Ultrasonic cleaning device with temperature responsive cut-off. 3,851,861. Cl. 259-72.000.
- Cunningham, Hugh: *See*—
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- Cunningham, Hugh M. Pig growth feed composition containing methyl xanthines and salts of methyl xanthines and method of use. 3,852,451. Cl. 424-253.000.
- Cuomo, Jerome J.; and Hovel, Harold J., to International Business Machines Corporation. GAN switching and memory devices and methods therefor. 3,852,796. Cl. 357-16.000.
- Cuscino, Richard T.: *See*—
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- Daido Metal Company Limited: *See*—
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- Daly, James Ernest, to Hercules Incorporated. Preparation of crystalline sulfides and selenides of cadmium zinc and mercury. 3,852,404. Cl. 423-99.000.
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- D'Amico, John Joseph, to Monsanto Company. Fungicidal and bactericidal 2-(N-2-cyanoethyl-dithio carbamylmethylene)-5-hydroxy-4H-pyran-4-one and metal chelates. 3,852,444. Cl. 424-245.000.
- Daneilczik, Eilen: *See*—
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- Daniels, Leander Bruce; and Fretwell, Richard D., to MI², Inc. Strappable inactivity timer for data set. 3,852,575. Cl. 235-92.000.
- Darling, Phillip H., to Kendall Company, *mesne*. Closed drainage system with double lumen tube. 3,851,650. Cl. 128-350.000.
- Darrow, Kenneth A.: *See*—
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- Dart Industries, Inc.: *See*—
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- Daughtry, Albert E. Utility instrument. 3,851,986. Cl. 403-373.000.
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- Kneth, Harold Monroe, 3,851,913.
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- Herbets, Joseph Antoine: See—
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- Herrmann, Henry Otto, Jr., to AMP Incorporated. High voltage corona-free wire termination. 3,852,512, Cl. 174-19.000.
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- Ingenious Devices, Inc.: See—
- Armour, Philip D., 3,851,613.
- Inoue, Tadashi: See—
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- Instituto Chemioterapico Italiano S.p.A.: See—
- Garzia, Aldo, 3,852,466.
- Instituto Farmacologico Sersono S.p.A.: See—
- Donini, Pietro, 3,852,422.
- Instytut Wlokiennictwa: See—
- Jozwicki, Ryszard; Kubica, Henryk; Ankudowicz, Wacław; Jedryka, Tadeusz; Roszewska, Irena; Kurzyniec, Stanislaw; Swietoslowski, Roman; and Olczyk, Franciszek, 3,851,455.

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- International Business Machines Corporation: See—Ames, Irving, 3,852,795.
- Barbeau, Raymond A.; McGinnis, Bernard W.; and Schultz, Frederick A., 3,852,820.
- Braun, Roland J.; and Buckley, Frederick, 3,852,658.
- Carmichael, John M.; West, Donald L.; and Williams, Robert A., 3,852,768.
- Coker, Charles Walter, Jr., 3,852,809.
- Cuomo, Jerome J.; and Hovel, Harold J., 3,852,796.
- Godlewski, Robert B.; Harris, Robert D.; and Tinghitella, Michael J., 3,852,088.
- Hodges, Paul, 3,852,687.
- Johnson, William S.; and Ku, San-Mei, 3,852,120.
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- Wu, Wei-Wha, 3,852,723.
- International Flavors & Fragrances, Inc.: See—Hall, John B.; and Sanders, James Milton, 3,852,358.
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- International Harvester Company: See—Brunger, Ronald N., 3,852,585.
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- International Magna Corporation: See—Placek, Eugene W., 3,852,025.
- International Minerals & Chemical Corporation: See—Greer, Frances A., 3,852,499.
- International Nickel Company, Inc.: See—Turner, Trevor Stanley; and Whittle, John Edward, 3,852,112.
- International Standard Electric Corporation: See—Kohler, Karl, 3,852,749.
- International Telephone and Telegraph Corporation: See—Bresler, Aaron D.; Stein, Emanuel; and Erdmann, M. Otto, 3,852,765.
- Felsenheld, Robert A.; and MacDonald, Copthorne, 3,852,759.
- Stewart, Edward F., 3,852,675.
- International Video Corporation: See—Vidovic, Nikola, 3,852,617.
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- Involvo AG: See—Roth, Oskar, 3,851,801.
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- Ishiguro, Toshiyuki: See—Hori, Makoto; Rokudo, Nerumitsu; and Ishiguro, Toshiyuki, 3,851,823.
- Ishii, Hiroshi, to Nichicon Capacitor Limited. Explosion proof structure for electrolytic capacitor, 3,852,647, Cl. 317-230.000.
- Ishii, Toshio; Takamatsu, Tasuto; Yurugi, Shojiro; and Masuda, Katsutada, to Takeda Chemical Industries, Ltd. Treatment and prevention of coccidiosis in poultry, 3,852,449, Cl. 424-251.000.
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- Isomet Corporation: See—Eveleth, Jason H., 3,851,951.
- Ital Elettronica S.p.A.: See—Casale, Renato, 3,852,601.
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- Ito, Takashi: See—Watanabe, Eiji; Kato, Eizo; Shimomura, Takayuki; Ito, Takashi; Nakamura, Koichiro; and Fujii, Tadashi, 3,852,605.
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- Itoh, Yokichi; Sunami, Hideo; and Kamigaki, Yoshiaki, to Hitachi, Ltd. Charge-coupled semiconductor device provided with biasing charges, 3,852,801, Cl. 357-24.000.
- ITT Industries, Inc.: See—Wienecke, Franz Josef, 3,852,613.
- ITW-ATECO G.m.b.H.: See—Hehl, Klaus Friedrich, 3,851,794.
- Iura, Yukio, to Canon Kabushiki Kaisha. Single lens reflex camera of TTL photometry type, 3,852,778, Cl. 354-51.000.
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- Ivanov, Vadim Georgievich: See—Brodov, Valery Fedorovich; Osipov, Vyacheslav Stepanovich; Zhdanov, Mikhail Dmitrievich; Buron, Anatolievich; Kovalev, Fedor Lukich; But, Anatoly Illarionovich; Ivanov, Vadim Georgievich; Belyaev, Nikolai Nikolaevich; and Bashev, Lev Alexandrovich, 3,852,01.
- Ivanova, Raina V.: See—Ivanov, Borislav S.; and Ivanova, Raina V., 3,851,746.
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- Ivon, Vasily Vladimirovich: See—Paton, Boris Evgenievich; Thedorvar, Boris Izhailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Makhailovich; Aramonov, Viktor Leonidovich; Bodarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,852,510.
- Iwai, Shigeru: See—Noguchi, Kazuo; Iwai, Shigeru; Sato, Yukihiko; and Kitamura, Yoshiaki, 3,851,769.
- Jackson, Jack M. Clay free aqueous drilling fluid, 3,852,201, Cl. 252-8.50a.
- Jackson, Norman Walter, to Molins Limited. Reel Mountings, 3,851,833, Cl. 242-68.300.
- Jacobs, James W., to General Motors Corporation. Protable dispenser apparatus for producing a carbonated beverage, 3,851,797, Cl. 222-129.400.
- Jacobs, Joseph L.: See—Biggs, William A., Jr.; and Jacobs, Joseph L., 3,851,838.
- Jacobs, Orville W., to East Dayton Tool & Die Company, The. Method of pulley manufacture, 3,851,366, Cl. 29-159.00r.
- Jacobs, Stanley C.; Jarrett, Noel; and Graham, Robert W., to Aluminum Company of America. Alumina reduction process, 3,852,173, Cl. 204-67.000.
- Jacobson, Peter E., to Sperry Rand Corporation. Hydrodynamic fluid-film bearings, 3,851,933, Cl. 308-9.000.
- Jacobus, David P.; Leanza, William J.; and Christensen, Burton G., to Merck & Co., Inc. 3-[(α -Methoxy-4-substituted cinnamoyl) oxymethyl]-7-acylamidoceph-3-em-4-carboxylic acids, 3,852,277, Cl. 260-240.00j.
- Jaffe, Israeli A., to Merck & Co., Inc. Treatment of rheumatoid arthritis, 3,852,454, Cl. 424-263.000.
- Jakubek, Peter; and Biswanger, Karl, to Research Filter- und Patentforschungs-Ges. m.b.H., Firma. Liquid-purifying process and apparatus, 3,852,193, Cl. 210-73.000.
- Jalbert, Domina C. Spinnaker construction, 3,851,612, Cl. 114-103.000.
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- Janosko, Michael J. Non-marring horizontal clamp, 3,851,358, Cl. 24-248.00c.
- Janssen, Paul Adriaan, to Janssen Pharmaceuticals, N.V. Antidepressive activity of tetramisole, 3,852,458, Cl. 424-270.000.
- Janssen Pharmaceuticals, N.V.: See—Janssen, Paul Adriaan, 3,852,458.
- Japan Exlan Company Limited: See—Suzuki, Hiroshi; and Ichimaru, Tadashi, 3,852,401.
- Japan Synthetic Rubber Co., Ltd.: See—Ishikawa, Narimasa; Suzuki, Susumu; Ougusa, Yasuhiro; and Arai, Koozo, 3,852,225.
- Jaquith, Howard Randall: See—Symonds, James Arthur; and Jacquith, Howard Randall, 3,851,530.
- Jarrett, Noel: See—Jacobs, Stanley C.; Jarrett, Noel; and Graham, Robert W., 3,852,173.
- Jarva, Inc.: See—Fink, Trevor, 3,851,718.
- Jasinski, Leon, to Motorola, Inc. Rapid battery charging system and method, 3,852,652, Cl. 320-35.000.
- Jeanmaire, David: See—Glaus, Heinrich; and Jeanmaire, David, 3,851,683.
- Jeannet, Jean-Pierre; and Leuba, Jean-Pierre, to Tesa S.A. Micrometer with digital reading, 3,851,397, Cl. 33-166.000.
- Jedryka, Tadeusz: See—Jozwicki, Ryszard; Kubica, Henryk; Ankudowicz, Wacław; Jedryka, Tadeusz; Roszewska, Irena; Kurzyniec, Stanislaw; Swietoslowski, Roman; and Olczyk, Franciszek, 3,851,455.
- Jefferson Chemical Company, Inc.: See—Bentley, Floyd Edward, 3,852,221.
- Jenkins, Cecil; and Woollsey, Joseph R., to Moore, Lee C. Pivoted well drilling mast and separate tower, 3,851,770, Cl. 214-2.500.
- Jenkins, William A., to Monarch Marking Systems, Inc. Method of dispensing labels, 3,852,139, Cl. 156-250.000.
- Jenkins, William A., to Monarch Marking Systems, Inc. Method of making composite web of labels, 3,852,140, Cl. 156-253.000.
- Jersey Nuclear Company, mesne: See—Carlson, Roy C.; King, Loyd L.; and Sofer, George A., 3,852,154.
- Jespersen, Paul W., to Georgia-Pacific Corporation. Contoured feed spring, 3,851,810, Cl. 226-121.000.
- Jessop, Thomas C., to Eastman Kodak Company. Photographic processing solution filling and circulating apparatus, 3,851,662, Cl. 137-563.000.

- Jet, Marion Barney; and Spriggs, Dennis Mitchell, to Dresser Industries, Inc. Dual hydraulically actuated oil well packer, 3,851,705, Cl. 166-120.000.
- Jetsew, Inc.: See—Rockerath, John L., 3,851,605.
- Jett, Marion Barney, to Dresser Industries, Inc. Uni-directional unitary anchor slip, 3,851,707, Cl. 166-212.000.
- Jirkovsky, Ivo: See—Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 3,852,285.
- Jobe, Benjamin L.: See—Cannon, Glyn E.; Kruger, James R.; Short, Theodore A.; and Jobe, Benjamin L., 3,851,492.
- Johanns, Johannes Hendricus Maria; and Hasker, Jan, to U.S. Philips Corporation. Cathode-ray tube having an astigmatic lens element in its electron gun, 3,852,608, Cl. 313-449.000.
- Johansson, Folke, to Granges Engineering Aktiebolag. Method of heating goods and a heating furnace, 3,852,026, Cl. 432-23.000.
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- Baum, Hans; Reinicke, Ralf; and John Dieter, 3,852,564.
- Johnson, A., & Co., Inc.: See—Palmason, Einar Henry, 3,852,166.
- Johnson, Delmar R.; and Elkus, Rickard J., Jr., to Ampex Corporation. Magnetic tape recording and/or reproducing apparatus having means to relocate a previous termination of recording or reproducing, 3,852,814, Cl. 360-72.000.
- Johnson, Marvin M.: See—De Vault, Albert M.; and Johnson, Marvin M., 3,852,252.
- Johnson Service Company: See—Chacon, Manuel Frank, 3,852,727.
- Johnson, William S.; and Ku, San-Mei, to International Business Machines Corporation. Method for manufacturing ion implanted insulated gate field effect semiconductor transistor devices, 3,852,120, Cl. 148-1.500.
- Jones, Derrick A.; and Golden, Michael G., to Minnesota Mining & Manufacturing Company. Coded legend marking assembly having transmit and receive printing circuitry, 3,852,770, Cl. 346-74.0es.
- Jones, John L.: See—Brooks, Herbert; Gearheart, John D.; and Jones, John L., 3,851,960.
- Jones, Marcellus. Pencil sharpener, 3,851,687, Cl. 145-3.100.
- Jones, R. A., & Company, Incorporated: See—Jones, Wickliffe, 3,851,751.
- Jones, Ralph Godfrey, to Preci-Spark Limited. Stacked trays, 3,851,754, Cl. 206-549.000.
- Jones, Thomas Alan, to Combustion Engineering, Inc. Eccentric coupling means, 3,851,987, Cl. 403-374.000.
- Jones, Wickliffe, to Jones, R. A., & Company, Incorporated. Method and apparatus for forming, filling and sealing packages, 3,851,751, Cl. 198-179.000.
- Jorgensen, George N.; and Wartner, Frank J., to Square D Company. Waterproof bus duct housing, 3,852,515, Cl. 174-68.00c.
- Jorgensen, Stanley A., to Caterpillar Tractor Company. Lubrication system for gear drive mechanisms, 3,851,731, Cl. 184-6.200.
- Jozwicki, Ryszard; Kubica, Henryk; Ankudowicz, Wacław; Jedryka, Tadeusz; Roszewska, Irena; Kurzyniec, Stanislaw; Swietoslowski, Roman; and Olczyk, Franciszek, to Instytut Wlokiennictwa. Method for manufacturing yarn from natural and chemical fibers and a device for carrying out the method, 3,851,455, Cl. 57-58.950.
- Juncosa Lopez, Jose. Rail joint, 3,851,821, Cl. 238-230.000.
- Jury, Harold Rex; and Howells, Ronald McKenzie, to Comalco (J. & S.) Pty. Limited. Expanded mesh, 3,851,362, Cl. 29-6.100.
- Just, Franklin H.; and Powell, Brent L., to Waters, John A. Solid state ignition circuitry, 3,851,636, Cl. 123-148.00e.
- Justice, Gregory, to Hewlett-Packard Company. High efficiency power supply, 3,852,655, Cl. 321-9.000.
- Justrite Manufacturing Company: See—Flider, Frank S., 3,851,791.
- Kabat, John L., to Honeywell, Inc. Flame detection system utilizing a radiation coupling, 3,852,606, Cl. 250-551.000.
- Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: See—Artbauer, Jan, 3,852,511.
- Kablauoi, Mahmoud S.; Godfrey, Arthur W.; and Reid, Robert E., to Texaco Inc. Transmission fluid compositions and method, 3,852,205, Cl. 252-47.500.
- Kabushiki Kaisha Daini Seikosha: See—Noguchi, Kazuo; Iwai, Shigeru; Sato, Yukihiko; and Kitamura, Yoshiaki, 3,851,769.
- Kabushiki Kaisha Komatsu Seisakusho: See—Kitai, Kenzaburo; and Tomita, Mizuho, 3,851,988.
- Kabushiki Kaisha Plastic Kogaku Kenkyusho: See—Murakami, Kenkichi, 3,852,198.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—Suzuki, Masaru (said Suzuki assor. to), 3,852,543.
- Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.): See—Masuzawa, Isao; Awano, Tsuneo; and Onishi, Kazutoshi, 3,852,650.
- Kaelin, Bette M., to Glass, Marvin, & Associates. Reversible doll, 3,851,419, Cl. 46-153.000.
- Kaempfen, Charles E., to Kaempfen Industries, Inc. Composite structure, 3,851,786, Cl. 220-3.000.
- Kaempfen Industries, Inc.: See—Kaempfen, Charles E., 3,851,786.
- Kager, Alfred. Solder feeding soldering gun with temperature control, 3,852,565, Cl. 219-241.000.
- Kahan, Frederick M.; and Cassidy, Patrick J., to Merck & Co., Inc. Potentiation of (-) cis-1,2-epoxypropyl phosphonic acid and analogues thereof, 3,852,434, Cl. 474-180.000.
- Kahr, Kurt: See—Weitz, Hans Martin; Vogel, Hans-Henning; Kahr, Kurt; and Fuchs, Hugo, 3,852,356.
- Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. N-substituted phenylalanine derivatives, 3,852,338, Cl. 260-501.120.
- Kaiser, Robert G. Antenna construction, 3,852,757, Cl. 343-713.000.
- Kajfez, Franjo; Kovac, Tomislav; and Sunjic, Vitomir, to CRC Compagnie di Ricerca Chimica S.A. Derivatives of 1,4-benzodiazepin-2-one and methods for preparation thereof, 3,852,274, Cl. 260-239.30d.
- Kalitta, Carl L., to Dura Corporation. Vehicle bumper construction and method of making same, 3,851,909, Cl. 293-70.000.
- Kam-Act Enterprises, Inc.: See—Alexander, Alex E., 3,851,638.
- Kamigaki, Yoshiaki: See—Itoh, Yokichi; Sunami, Hideo; and Kamigaki, Yoshiaki, 3,852,801.
- Kampf, Richard S., to Beckman Instruments, Inc. Dual channel strip chart recorder with visible styli, 3,852,769, Cl. 346-49.000.
- Kanai, Hiromi: See—Yamazaki, Eiichi; and Kanai, Hiromi, 3,852,637.
- Kane, Richard E.; and Fischer, William H., to Westinghouse Electric Corporation. Combination hand-jack, semaphore and travel indicator for high-voltage circuit interrupter, 3,852,556, Cl. 200-310.000.
- Kaneko, Yasuhisa: See—Niimi, Itaru; Kaneko, Yasuhisa; Noguchi, Masamitsu; Uchida, Tsuneo; and Katori, Youhei, 3,852,063.
- Karagianes, Manuel T.: See—Wheeler, Kenneth R.; Sump, Kenneth R.; and Karagianes, Manuel T., 3,852,045.
- Karla, Heinz: See—Kuife, Siegfried; Karla, Heinz; and Frings, Gerd, 3,851,368.
- Karp, John I. Apparatus for mixing clay, 3,851,859, Cl. 259-6.000.
- Kasper, Michael E. Litter and trash receptacles, 3,851,790, Cl. 220-85.00r.
- Kaspers, Helmut: See—Grohe, Klaus; Kaspers, Helmut; and Scheinpflug, Hans, 3,852,470.
- Kassel, Walter Dopper; Hausler, Dietrich; and Kohler, Walter, to Rheinstahl Aktiengesellschaft. Device for crushing solid materials, 3,851,829, Cl. 241-188.00r.
- Kato, Eizo: See—Watanabe, Eiji; Kato, Eizo; Shimomura, Takayuki; Ito, Takashi; Nakamura, Koichiro; and Fujii, Tadashi, 3,852,605.
- Kato, Naomori; and Tao, Morio, to Nippon Kogaku K.K. Ophthalmoscopic camera, 3,851,954, Cl. 351-7.000.
- Katoh, Hiroshi, to Victor Company of Japan. Automatic tape loading type recording and/or reproducing apparatus having a pinch roller actuating device, 3,851,816, Cl. 226-91.000.
- Katori, Youhei: See—Niimi, Itaru; Kaneko, Yasuhisa; Noguchi, Masamitsu; Uchida, Tsuneo; and Katori, Youhei, 3,852,063.
- Katsuragawa Denki Kabushiki Kaisha: See—Furuichi, Masayoshi; Akiba, Nobuo; and Kudo, Seiichi, 3,851,965.
- Katsuragawa, Seiichi; and Koketsu, Norihisa, to Central Glass Co., Ltd. Stabilized trichloroethylene or tetrachloroethylene, 3,852,367, Cl. 260-652.50r.
- Katto, Takayuki: See—Murayama, Naohiro; and Katto, Takayuki, 3,852,429.
- Katz, Bernard R. Proximity measuring employing a self-balancing bridge and measuring the adjustable balancing component thereof, 3,852,662, Cl. 324-34.0ps.
- Katz, Morris H.; and Brandberg, Lawrence C., to Pillsbury Company. The Heat and moisture activated savory coating system for popcorn, 3,851,574, Cl. 426-107.000.
- Kaufman, Harold C.: See—Schlinger, Warren G.; Kaufman, Harold C.; and Crawley, Carroll L., 3,852,047.
- Kaufmann, John, Jr. Anti-pollution exhaust conversion systems, 3,851,470, Cl. 60-298.000.
- Kausche, Helmut: See—Cirkler, Werner; Schauer, Alois; and Kausche, Helmut, 3,852,181.
- Kawaragi, Hiroshi. Apparatus for re-sharpening the cutting edges of a drill, 3,851,424, Cl. 51-133.000.
- Kay, Edward L.: See—Lohr, Delmar F., Jr.; and Kay, Edward L., 3,852,229.
- Keating, Richard T.; and Keating, Richard T., Jr. Deep fat fryer with controllable heat-up for cold fat melt, 3,851,640, Cl. 126-391.000.
- Keating, Richard T., Jr.: See—Keating, Richard T.; and Keating, Richard T., Jr., 3,851,640.
- Keely, James L.: See—Andres, William A.; Quanrud, Larry D.; Koppa, Charles J.; Becker, Larry F.; Christoffersen, William K.; and Keely, James L., 3,851,950.
- Keith, Charles H.: See—Levers, William E.; and Keith, Charles H., 3,852,007.
- Roberts, John D.; Ellenberg, John D.; and Keith, Charles H., 3,852,009.

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- Kell, Howard A., Jr.; Yeager, Eugene W.; and Manteghian, Allen A., to Philco-Ford Corporation. Motorized radio search tuner. 3,852,691, Cl. 334-19.000.
- Kellner, Raymond M.; and Gee, Minor E. Process for fabricating walls. 3,851,384, Cl. 29-430.000.
- Kelso Marine, Inc.: *See—*
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- Kemp, Jacob D., to Chevron Research Company. Isoparaffin-olefin alkylation with a supported HF antimony pentafluoride catalyst. 3,852,371, Cl. 260-683.470.
- Kendall Company, *mesne—See—*
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- Kendall Company, The: *See—*
Villari, Frank K., 3,851,649.
- Kendall, Roger Vernon, to American Cyanamid Company. Process for the synthesis of bis-N-phosphorylated compounds. 3,852,397, Cl. 260-968.000.
- Kennedy, C. Bruce; and Pasieka, John F., to Polaroid Corporation. Photographic apparatus for successively presenting a sequence of film units to an exposure station and then processing the film units. 3,852,783, Cl. 354-174.000.
- Kenny, Philip C.: *See—*
Bliss, Arthur E.; and Kenny, Philip C., 3,852,521.
- Kent, Arthur P.; and Marks, Mortimer, to Marks Polarized Corporation. Apparatus for converting motion picture projectors for stereo display. 3,851,955, Cl. 351-60.000.
- Kepple, Richard K.; and Smith, Claude A., to General Motors Corporation. Transmission. 3,851,546, Cl. 74-785.000.
- Keuffel & Esser Company: *See—*
Levinos, Steven, 3,852,070.
- Keusch, Andreas. Plastic container for footbath. 3,851,340, Cl. 4-182.000.
- Key Oilfield Supply & Rentals Ltd.: *See—*
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- Keystone Industries, Inc.: *See—*
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- Khegai, Anatoly Sergeevich: *See—*
Maslenok, Boris Arkadievich; Khegai, Anatoly Sergeevich; Zlobin, Viktor Grigorievich; Mednitsky, Viktor Georgievich; Genkin, Lev Isaakovich; Petrichenko, Nikolai Fedorovich; and Mitrofanov, Boris Ivanovich, 3,852,153.
- Khuntia, Natabara: *See—*
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- Kickhaefer Aeromarine Motors, Inc.: *See—*
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- Kickhaefer, Elmer Carl, to Kickhaefer Aeromarine Motors, Inc. Die cast V-type two-cycle engine. 3,851,631, Cl. 123-55.00r.
- Kikkoman Shoyu Co., Ltd.: *See—*
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- Kimball, Jerome Watis; and Kimball, Kenny Harrell, to PermaCraft Corporation. Plastic molding machine. 3,852,014, Cl. 425-388.000.
- Kimball, Kenny Harrell: *See—*
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- Kimberly, Bobby G., to Bomar Manufacturing Company, Inc. Tubeless tire bead seating machine. 3,851,695, Cl. 157-1.100.
- Kimijima, Hiroatsu; Izuka, Shohei; and Fujii, Hironao, to Fujisoku Electric Co., Ltd. Toggle switch. 3,852,552, Cl. 200-153.00g.
- Kimmel, Albert L.; Argabright, Perry A.; and Presley, C. Travis, to Marathon Oil Company. Isocyanurate-based polyelectrolyte detergent compositions. 3,852,220, Cl. 252-524.000.
- Kimura, Seiichi; Suzuki, Talo; and Nakajima, Masahiro, to Taiyo Yuden Kabushiki Kaisha. Tube socket having a plurality of electrical discharge gaps. 3,852,699, Cl. 339-14.00t.
- Kimura, Shiro G., to General Electric Company. Preparation of asymmetric polymer membranes. 3,852,388, Cl. 264-41.000.
- Kimura, Toshio: *See—*
Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio, 3,852,402.
- Kindgren, Lee; and Scott, William B., to Whitney, W. A., Corporation. Material handling apparatus with carriage drive means. 3,852,649, Cl. 318-257.000.
- King, Charles M.: *See—*
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- King, Charles M., to Du Pont de Nemours, E. I., and Company. Selective isomerization of pentenenitriles. 3,852,325, Cl. 260-465.900.
- King, Loyd L.: *See—*
Carlson, Roy C.; King, Loyd L.; and Sofer, George A., 3,852,154.
- Kingsford Company, The: *See—*
Pyle, Owen, 3,852,048.
- Kinslow, William G., Jr. Infant seat rocker. 3,851,343, Cl. 5-109.000.
- Kirton, Kenneth T.; and Southern, Edward M., to Upjohn Company. The. Abortion by myometrial administration of prostaglandins. 3,852,465, Cl. 424-305.000.
- Kitai, Kenzaburo; and Tomita, Mizuho, to Kabushiki Kaisha Komatsu Seisakusho. Self-propelling soil-compactor. 3,851,988, Cl. 404-129.000.
- Kitamura, Yoshiaki: *See—*
Noguchi, Kazuo; Iwai, Shigeru; Sato, Yukihiko; and Kitamura, Yoshiaki, 3,851,769.
- Kitano, Yoshizo. Portable screw cutting machine. 3,851,564, Cl. 90-11.520.
- Kitasato Institute Tokyo, Japan, The: *See—*
Nakase, Yasukiyo; and Kojima, Yasuhiko, 3,852,423.
- Kiyonagi, Tetsuo; Suzuki, Morio; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Process for producing 5-iodo-deoxyuridine. 3,852,266, Cl. 260-211.50r.
- Klabunde, Steven Eldor, to Giddings & Lewis, Inc. Measuring gage for turning machines and the like. 3,851,396, Cl. 33-143.00l.
- Klapproth, William J., Jr.: *See—*
Ryder, Robert C.; Ryan, Robert E.; and Klapproth, William J., Jr., 3,852,308.
- Klebba, Horst, to Volkswagenwerk AG. Latching mechanism for sliding doors in a motor vehicle. 3,851,905, Cl. 292-11.000.
- Klein, Andrew R.; a member of the firm of Synnvest & Lechner: *See—*
Brooks, Ralph J., 3,851,911.
- Klein, Harold T. Cantilever staircase construction. 3,851,431, Cl. 52-189.000.
- Klein, Heinrich: *See—*
Fracke, Aribert; Klein, Heinrich; Pieper, Rudolf; Weber, Eduard; and Wachtler, Hans, 3,851,404.
- Klein, Perry Ian, to Communications Satellite Corporation. Navigation satellite system. 3,852,750, Cl. 343-105.00r.
- Kleitman, David: *See—*
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- Klestern Litho Plate & Supply Co.: *See—*
Parker, Edward H.; Harris, Edward M.; and Meador, Jim D., 3,852,256.
- Klippan GmbH: *See—*
Minolla, Horst, 3,851,360.
- Kloweit, Kenneth R. Sign with inlaid letters. 3,852,145, Cl. 161-18.000.
- Kluge, Reinhard: *See—*
Kluge, Willi; and Kluge, Reinhard, 3,851,773.
- Kluge, Willi; and Kluge, Reinhard. Stacking device, particularly for newspapers. 3,851,773, Cl. 214-6.500.
- Klukdahl, Harris E.: *See—*
Buss, Waldeen C.; and Klukdahl, Harris E., 3,852,190.
- Knapp, Erich, to Ciba-Geigy AG, *mesne*. Polyester-metal laminates. 3,852,151, Cl. 161-162.000.
- Knapp, Furn F., Jr.: *See—*
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- Knorr-Bremse GmbH: *See—*
Gebhardt, Hans; Prah, Franz; and Schorwerth, Mathias, 3,851,738.
- Knoth, Harold Monroe, to Deere & Company. Tractor cab with combined tilt pivot and resilient mounts. 3,851,913, Cl. 296-35.00r.
- Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg. Process and a device for even distribution and alternating supply of liquid and gaseous protective media for the refining gas tuyeres of a converter. 3,851,866, Cl. 266-41.000.
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- Knutsen, Trygve Lund; and Osterman, Sven-Olof, to Astra Nutrition Aktiebolag. Process for preparing fish protein using propanol or butanol. 3,852,260, Cl. 260-112.00r.
- Kobel, Erwin H.: *See—*
Watson, William David; and Kobel, Erwin H., 3,852,160.
- Kober, Frederick P., to Chem-E-Watt Corporation, *mesne*. Self contained electrochemical heat source. 3,851,654, Cl. 132-33.000.
- Koch, Jorgen, to National Rejectors Inc., GmbH. Apparatus for testing the authenticity of paper currency. 3,851,971, Cl. 356-71.000.
- Koch, Wolfgang: *See—*
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- Kodo, Chikashi: *See—*
Furukawa, Kenji; Uyama, Hirofujii; Tsuchiya, Takashi; Kodo, Chikashi; and Torii, Keiichi, 3,851,405.
- Koehler, Carlton L. Combination head and case mounted light. 3,852,587, Cl. 240-60.000.
- Kohl, Carl O., to Mercury Aircraft, Inc. Shelf corner clamp. 3,851,600, Cl. 108-144.000.
- Kohler, Karl, to International Standard Electric Corporation. Radiolocalization system. 3,852,749, Cl. 343-102.000.
- Kohler, Walter: *See—*
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- Kohls, Richard S. Foldable ski cover. 3,851,689, Cl. 150-52.00r.
- Kohn, Gustave K., to Chevron Research Company. Organic pesticide residue removal from aqueous solutions. 3,852,490, Cl. 426-271.000.
- Kojima, Yasuhiko: *See—*
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- Koketsu, Norihisa: *See—*
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- Kokkinis, Nikolaus, to Lindauer Dornier Gesellschaft mbH. Weft thread inserting device for shuttleless looms. 3,851,676, Cl. 139-122.000.
- Kolb, Bruno; and Bischoff, Joachim, to Bodenseewerk Perkin-Elmer & Co. GmbH. Selective ionization detector. 3,852,037, Cl. 23-254.00f.
- Kolbe, Joachim. Vehicle banking arm construction. 3,851,893, Cl. 280-112.00a.
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- Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Oswaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Kolesikova, Nina Ivnovna; Motoviln, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,852,431.
- Kolm, Hubert Ernest: *See—*
Brey, Wilhelm; Hostetter, William; Loeffler, Earl Ferdinand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,852,143.
- Komine, Yoshio, to Canon Kabushiki Kaisha. Photographic overlapping apparatus having safety devices for motion picture cameras. 3,851,956, Cl. 352-91.00c.
- Komiske, Frank Charles, to Sybron Corporation. Toeboard. 3,851,858, Cl. 256-59.000.
- Komor, Joseph A., to GAF Corporation. Surfactant for electrolyte-containing processing solutions. 3,852,030, Cl. 8-111.000.
- Konen, Josef: *See—*
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- Koninklijke Nederlandsche Gis-en Spritus-Fabriek N.V.: *See—*
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- Kononenko, Vadim Grigorievich: *See—*
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- Kononov, Ivan Vasilievich: *See—*
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Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Oswaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Kolesikova, Nina Ivnovna; Motoviln, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,852,431.
- Kooi, Else; De Werd, Reinier; and Nijdam-Paffen, Maria Magdalena Mathilda, to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 3,852,104, Cl. 117-212.000.
- Kooistra, John A., Jr., to Procter & Gamble Company, The. Synergistic mixtures of diphenylbismuth acetate and the zinc salt of 1-hydroxy-2-pyridine thione effect as antibacterial and antifungal agents. 3,852,441, Cl. 424-245.000.
- Koorneef, Jacob, to U.S. Philips Corporation. Method of bonding together moldings of sintered oxidic ferromagnetic material. 3,851,375, Cl. 29-471.900.
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- Koppers Company, Inc.: *See—*
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- Ryder, Robert C.; Ryan, Robert E.; and Klapproth, William J., Jr., 3,852,308.
- Korwitz, Norman H.: *See—*
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- Kousaka, Susumu: *See—*
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- Kovac, Tomislav: *See—*
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- Kovalev, Fedor Lukich: *See—*
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- Kowalcheck, Harry: *See—*
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- Koyama, Mitsuo: *See—*
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- Koyanagi, Shunichi; Ogawa, Kinya; Onda, Yoshiro; and Yamamoto, Akira, to Shinetsu Chemical Company. Excipient and shaped medicaments prepared therewith. 3,852,421, Cl. 424-94.000.
- Kraft, Winfried; Wasmund, Heiko; and Haas, Karl-Heinz, to Leitz, Ernst, GmbH. Microscope having a photometer. 3,851,949, Cl. 350-18.000.
- Kralik, Andrew W.: *See—*
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- Kramer, Norman: *See—*
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- Krapcho, John; and Turk, Chester Frank, to Squibb, E. R., & Sons, Inc. 7-Substituted-3,3a,4,5,6,7-hexahydro-3-substituted-2H-pyrazolo(4,3-c)pyridines. 3,852,279, Cl. 260-240.00f.
- Krapcho, John, to Squibb, E. R., & Sons, Inc. Aminoalkoxyphenylurea derivatives. 3,852,339, Cl. 260-501.120.
- Krapcho, John, to Squibb, E. R., & Sons, Inc. Substituted cycloalkyl ureas. 3,852,347, Cl. 260-553.00a.
- Krauss, Hans Ludwig; and Stach, Hans, to Messer. Griesheim GmbH. Method of removing oxygen from gases. 3,852,406, Cl. 423-219.000.
- Krauss-Maffei Aktiengesellschaft: *See—*
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- Kravitz, Stanley: *See—*
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- Krawczak, Gale F.: *See—*
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- Kreutel, Randall William, Jr.; and Hyde, Geoffrey, to Communications Satellite Corporation. Torus-type antenna having a conical scan capability. 3,852,763, Cl. 343-761.000.
- Kreutze, Gerhard; Moessner, Manfred; Obstfelder, Guenther; Soehring, Gerhard; and Pfirman, Victor. Method and device for controlling a motion picture projector, especially a projector for teaching machines. 3,851,959, Cl. 352-177.000.
- Kreuzer, Karl-Heinz, to Licentia, Patent-Verwaltungs-G.m.b.H. Method of diffusing impurities into semiconductor wafers. 3,852,128, Cl. 148-189.000.
- Krezanoski, Joseph Z., to Flow Pharmaceuticals, Inc. Stable liquid detergent concentrates containing active oxygen. 3,852,210, Cl. 252-95.000.
- Kring, Elbert Victor; and Wolfe, William Ray, Jr., to Du Pont de Nemours, E. I., and Company. Measurement of carbon monoxide in gas mixtures. 3,852,169, Cl. 204-1.00t.
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- Krom, Lynn C., to General Motors Corporation. Adjustable steering column. 3,851,543, Cl. 74-493.000.
- Krueckels, Walter; and Ruescher, Markus, to Maschinenfabrik Zell J. Krueckels KG. Winding apparatus for a web. 3,851,832, Cl. 242-66.000.
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- Krutchin, Charles M., to General Electric Company. Melt extrudable polyacetylene copolymer blends. 3,852,235, Cl. 260-32.400.
- Krylova, Irina Fedorovna: *See—*
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- Ku, San-Mei: *See—*
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- Kubica, Henryk: *See—*
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- Kubo, Masaharu, to Hitachi, Ltd. Semiconductor circuit. 3,852,625, Cl. 307-304.000.
- Kubota, Hiroaki; Nakamura, Yoshithugu; and Hasegawa, Ryoichi, to Teijin Limited. Thermoplastic polycarbonate [polybutadiene-methacrylate-styrene graft polymer] styrene-acrylonitrile copolymer blends. 3,852,394, Cl. 260-873.000.
- Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. Substituted benzyl-thiocarbamic acid esters. 3,852,318, Cl. 260-455.00a.
- Kudo, Seiichi: *See—*
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- Kufner, Walter, to SKF Industrial Trading and Development Company B.V. Journal for rolls. 3,851,934, Cl. 308-15.000.
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- Kuipers, Sytze Arnold. Turnbuckle. 3,851,978, Cl. 403-45.000.
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- Kunak, Anthony F.: *See—*
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- Kunieda, Tatsuya: *See—*
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- Kunii, Daizo: *See—*
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- Kunzel, Hans Egon: *See—*
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- Kuraray Co., Ltd.: *See—*
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- Kurcha Kagaku Kogyo Kabushiki Kaisha: *See—*
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- Kurimoto, Mikishi; Ochiai, Yoshiki; Nomura, Kenji; and Inagaki, Toshio. Machine tool with tool module storage and changing means. 3,851,380, Cl. 29-568,000.
- Kuroda, Kazusuke; Naoi, Keigo; and Minorikawa, Hitoshi, to Hitachi, Ltd. Voltage protection circuit for transistor regulators. 3,852,653, Cl. 320-64,000.
- Kuroiwa, Katumasa: See—
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- Kurzyniec, Stanislaw: See—
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- Kusters, Eduard, Maschinenfabrik: See—
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- Kusters, Edward: See—
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- Kuti, Joseph: See—
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- Kyowa Hakko Kogyo Co., Ltd.: See—
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- Kyowa Hakko Kogyo Kabushiki Kaisha: See—
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- La Costa, Nicholas Joseph, to AAI Corporation. Multiple hardness pointed finned projectile. 3,851,590, Cl. 102-92,100.
- Labbe, Francis Auguste Maurice, to Mollins Limited. Cigarette making machines. 3,851,652, Cl. 131-84,00c.
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- Hanotier, Jacques D. V.; and de Radzitzky d'Ostrowick, Pierre M.J.G., 3,852,343.
- Labotina, S.A.: See—
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- Lacoste, Emile Joseph, III. Structural system employing eight-sided polygonal units constructed of prefabricated elements. 3,851,427, Cl. 52-79,000.
- Laforest, Pierre: See—
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- Lagasse, Guy. Adjustable door buck spreader. 3,851,868, Cl. 269-8,000.
- Lahoud, Joseph A.; and Orphal, Dennis L., to Computer Sciences Corporation. Method and apparatus for preventing thermal pollution. 3,851,495, Cl. 62-260,000.
- Laidig, Jonathan J.; and Boppert, Loren P., to Laidig Silo Unloaders, Inc. Bottom silo unloaders. 3,851,774, Cl. 214-17,00a.
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- L'Air Liquide Societe Anonyme pour l'Etude et Exploitation des Procédes Georges Claude: See—
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- Lalk, James W.; and Crear, Jobie, to Dow Chemical Company, The. Permanent anti snag finish for fabrics. 3,852,102, Cl. 117-139,05a.
- Lambert, Ronald F., to Polaroid Corporation. Preparation of tertiary organophosphine oxides. 3,852,362, Cl. 260-606,50p.
- Lambertsen, Christian J. Buoyant underwater structures. 3,851,487, Cl. 61-69,00r.
- Lanning, Jack Stewart, to U.S. Philips Corporation, mesne. Method of manufacturing double diffused transistor with base region parts of different depths. 3,852,127, Cl. 148-187,000.
- Lamping, Wolfram, to G.A.O. Gesellschaft für Automation und Organisation mbH. Safety box or the like. 3,851,602, Cl. 109-23,000.
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Niederberger, Felix; and Schweizer, Christian, 3,852,738.
- Landry, Floyd J., Jr. Method of and device for coating lengths of linear elements. 3,851,623, Cl. 118-405,000.
- Landskov, Hardy K.: See—
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Bowman, Richard C.; Lang, Edward J.; and Grazen, Frank S., 3,852,232.
- Lang, Roger J., to Spectra-Strip Corporation. Jig apparatus for use in stripping insulation from flat multi-conductor cable. 3,851,425, Cl. 51-217,000.
- Lannert, James W.: See—
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- Lappage, James: See—
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- Lapper, Maurice Noel, to British Steel Corporation. Apparatus for measuring movement of a ferromagnetic member. 3,851,395, Cl. 33-141,00r.
- Larsson, Agne. Scintillation camera with improved resolution. 3,852,598, Cl. 250-327,000.
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Paton, Boris Evgenievich; Thedorvar, Boris Izhailevich; Latash, Jury Vadimovich; Cherkotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivandovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Makhailovich; Artamonov, Viktor Leonidovich; Bodarenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,852,510.
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- Lauben, Robert W., to General Electric Company. Non-metallic load center having housing. 3,852,514, Cl. 174-58,000.
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Hitchcock, David B.; and Laurie, James L., 3,851,883.
- Lay, Ralph B., to Cosco, Inc. Chair backrest reclining assembly. 3,851,918, Cl. 297-357,000.
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- Lazzarini, Louis P.; and Smith, Traner J., to Hanscom, Genevieve I.; formerly Magnuson, Genevieve I., Hanscom, Genevieve I., Magnuson, Robert and Thomson, Lois J.; as trustees of the estate of Magnuson, Roy M.; deceased. Roller claning mechanism. 3,851,753, Cl. 198-229,000.
- Le Maout, Theophile Francois: See—
Camboulives, Andre Alphonse Mederic Leon; Le Maout, Theophile Francois; Marchi, Marc Roger; and Vandenbroucke, Roger Alfred Jules, 3,851,900.
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Jacobus, David P.; Leanza, William J.; and Christensen, Burton G., 3,852,277.
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- Lebail, Patrick, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Multiple sonde of the fourier transformation type. 3,852,745, Cl. 343-17,000.
- Leblond, Jean Rene; and Biet, Jean Armand, to Uniroyal. Apparatus for applying a rubber strip onto a pneumatic tire carcass. 3,852,142, Cl. 156-395,000.
- Lecourt, Michel: See—
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- Lee, Raymond, Organization, Inc., The: See—
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Natsuda, Hisayuki; Mori, Hirohumi; and Matoba, Hajime, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degradable polyolefin resin compositions. 3,852,227, Cl. 260-23.00h.
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Neelen, Gregorius Theodorus Maria, to U.S. Philips Corporation. Hot-gas engine. 3,851,472, Cl. 60-517.000.
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Neitzel, Ulrich E. G.; Flint, Hans Gerhard; and Lukes, Jerome A., to Great Salt Lake Minerals & Chemical Corporation. Recovery of substantially potassium-free hydrated magnesium chloride from contaminated aqueous solutions. 3,852,044, Cl. 23-298.000.
Nelson, Donald F. Balanced steerable power transmission. 3,851,614, Cl. 115-35.000.
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Nelson, John Russell: See—
Smith, Lester C.; Ziffer, Garret F.; and Nelson, John Russell, 3,851,972.
Nelson, Leon Franklin, to Deere & Company. Forage harvester. 3,851,450, Cl. 56-14.400.
Nelson, Robert E.; and Watts, Oran A., III, to General Motors Corporation. Timing circuit. 3,852,623, Cl. 307-293.000.
Neubert, Gerhard: See—
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Neuko, Chester G., to Circle Miling, Inc. Rotary coupling for rotating milking parlors. 3,851,663, Cl. 137-580.000.
Neuville, Calade, to Compteurs Schlumberger. Demodulator. 3,852,677, Cl. 329-109.000.
Neuville, Claude, to Compteurs Schlumberger. Static remote-control relay selection system. 3,852,722, Cl. 340-172.500.
New England Fish Company: See—
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New England Nuclear Corporation: See—
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Newcom, William F.; and Munro, Robert A., to Munro-Newcom, Inc. Vertical baler. 3,851,577, Cl. 100-218.000.
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McAfee, Donald A.; and Newcomb, Thomas P., 3,851,700.
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Ishii, Hiroshi, 3,852,647.
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Nichols, Herbert F.; and Bauman, Joel, mesne. Electronic thermometer. 3,851,528, Cl. 73-362.0ar.
Nichols, John Francis, to Nichols Products, Inc. Apparatus and method for encapsulating eggs. 3,851,571, Cl. 99-450.600.
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Nickstadt, Gerhard A., to General Electric Company. Gear drive reversing mechanism. 3,851,537, Cl. 74-404.000.
Nicolon N.V.: See—
De Winter, Jan Gerrit, 3,851,688.
Nicoud, Jean-Daniel, to Sodec/Saia. Identity card reader. 3,852,572, Cl. 235-61.1e.
Niederberger, Felix; and Schweizer, Christian, to Landis & Gyr AG. Ripple-control receiver responsive to multiple command control. 3,852,738, Cl. 340-310.000.
Nienhaus, Clemens; Pieper, Rudolph; and Eickenbusch, Hubert, to Walterscheid, Jean, GmbH. Coupler for connecting tubular members. 3,851,903, Cl. 285-341.000.
Nihon Denshi Kabushiki Kaisha: See—
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Yanaka, Takashi; and Shirota, Kohei, 3,852,597.
Nii, Takeshi. Collapsible chair. 3,851,914, Cl. 297-45.000.
Niimi, Itaru; Kaneko, Yasuhisa; Noguchi, Masamitsu; Uchida, Tsuneo; and Katori, Youhei, to Toyota Jidosha Kogyo Kabushiki Kaisha. Heat resistant, anti-corrosive alloys for high temperature service. 3,852,063, Cl. 75-124.000.
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Kooi, Else; DeWerd, Reinier; and Nijdam-Paffen, Maria Magdalena Mathilda, 3,852,104.
Nikawitz, Edward J.; Tavares, Robert F.; and Easter, William M., Jr., to Givaudan Corporation. Odorant compositions including 2-butyl-1-alkynylecloalkan-1-ols and derivatives thereof. 3,852,219, Cl. 252-522.000.
Nikitsch, Erhard; Putscher, Johann; and Utschig, Peter, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus. 3,852,792, Cl. 354-213.000.
Nikonova, Tatyana Vladimirovna: See—
Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich; Babkin, Artur

- Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Kolesikova, Nina Ivnovna; Motoviln, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,852,431.
Nims, Jerry Curtis; and Wah Lo, Allen Kwok, to Dimensional Development Corporation. Three dimensional pictures and method of composing them. 3,852,787, Cl. 354-275.000.
Ninomiya, Nobutaka; and Kunii, Daizo, to Takeda Chemical Industries, Ltd. Process for producing coarse particles of active carbon in a fluidized bed with added inert particles. 3,852,216, Cl. 252-421.000.
Nippon Kogaku K.K.: See—
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Nishumura, Hideo; and Haga, Kyosuke, to Toyoda Koki Kabushiki Kaisha. Pitch error compensation system. 3,852,719, Cl. 340-172.500.
Nisper, Kenneth J., to Questor Corporation. Reciprocating system and hydrodynamic piston ring therefor. 3,851,889, Cl. 277-214.000.
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NL Industries, Inc.: See—
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Noa, Fritz; and Mohren, Manfred, to Schiess Aktiengesellschaft. Automatic tool changing arrangement. 3,851,364, Cl. 29-26.00a.
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Noguchi, Kazuo; Iwai, Shigeru; Sato, Yukihiko; and Kitamura, Yoshiaki, to Kabushiki Kaisha Daini Seikosha. Industrial robot. 3,851,769, Cl. 214-1.0bc.
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Northrup, Leonard L., Jr. Electrical switching system. 3,852,695, Cl. 337-102.000.
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Notgrass, James Burl. Automatic tilting safety transmission adapter base. 3,851,857, Cl. 254-134.000.
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Ogura, Isamu; Miyashita, Takaaki; and Aida, Yoshimoto, to Oki Electric Industry Co., Ltd. Magnetic plated wire memory device. 3,852,725, Cl. 340-174.0bc.
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- Paoletti, Jean-Claude, to Societe de Fabrication et de Distribution de Parfumerie et Cosmetique Diparco S.A. Valve for the distribution under pressure of a liquid or paste product. 3,851,799, Cl. 222-145,000.
- Paoli, Stephen A. Machine for processing bone-in meat cuts. 3,851,828, Cl. 241-68,000.
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- Papai, Imre F. Pastry shell filling apparatus. 3,851,554, Cl. 83-165,000.
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- Coffield, Eugene P., Jr.; and Rowe, Richard G., 3,851,619.
- Sculati, Marvin Americo; and Gaynor, John Cornelius, to Uniroyal, Inc. Apparatus for molding rubber. 3,852,005, Cl. 425-119.000.
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- Seaman, Jack L., to General Motors Corporation. Part throttle adjustment. 3,852,383, Cl. 261-69.00r.
- Seaman, Russell L.: See—
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- Searle, G. D., & Co.: See—
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- Seascope Services, Inc.: See—
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- Seidel, William C.: See—
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- Seifert, Edwin A., Jr. Device for metering granular material. 3,851,604, Cl. 111-77.000.
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- Seki, Hideki; Furuya, Sachinori; and Hiroyasu, Mamoru, to Matsushita Electric Industrial Co., Ltd. Printed circuit board assembly and heat sink. 3,852,643, Cl. 317-100.000.
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- Senning, Alexander; Buchholt, Hans Christian; Bierling, Robert; Steinhoff, Dieter; and Trossmann, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Pharmaceutical compositions containing sulfonate derivatives of 1,4-bis(propionyl) piperazine. 3,852,447, Cl. 424-250,000.
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- Settineri, William J.; and Wessling, Ritchie A., to Dow Chemical Company. The. Hydrophobic coatings and synthesis by electrochemical reduction of sulfonium compounds. 3,852,174, Cl. 204-73,000.
- Setzer, William C.; Cheskis, Harvey P.; and Winter, Joseph, to Swiss Aluminium Ltd., mesne. Aluminum alloy can end and body. 3,851,787, Cl. 220-273,000.
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- Shapiro, Harry. Vertical louver type window drape. 3,851,699, Cl. 160-166,000.
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- Shepard, David. Apparatus for etch resist coating of plated holes in printed circuit boards. 3,851,621, Cl. 118-102,000.
- Shepley, Alma H.: See—
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- Shichman, Daniel, to Uniroyal, Inc. Apparatus for cooling tires during post-inflation. 3,852,008, Cl. 425-28,000.
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- Simon, Heinz. Cigarette box. 3,851,506, Cl. 70-271,000.
- Simons, Charles W.; and Holdsworth, Robert S., to Grace, W. R., & Co. Anesthetic trifluoromethylcyclobutanes. 3,852,474, Cl. 424-352,000.
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- Smith, Ruford Bryan. Roll of plastic film aprons. 3,851,760, Cl. 242-55,530.
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- Stephens, James R., to Standard Oil Company. Film forming polyamide composition containing fumaric acid and trimellitic acid residues. 3,852,248, Cl. 260-78.00f.
- Stephenson, Charles V.: See—
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- Stewart, David S., to Zenith Radio Corporation. Carriage assembly for a video disc playback deck. 3,852,816, Cl. 360-86.000.
- Stewart, Edward F., to International Telephone and Telegraph Corporation. Tone detection and switching circuit. 3,852,675, Cl. 328-138.000.
- Stewart, Vernon G.: See—
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- Stewart-Warner Corporation: See—
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- Stoke, Richard C., to Varian Associates. Dither tuned microwave tube. 3,852,638, Cl. 315-39.610.
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- Stone, Thomas G., to Evans Products Company. Air bulkhead assembly. 3,851,597, Cl. 105-492.000.
- Stoneham, Jeffrey Richard, to Eastman Kodak Company. Early metering failure prevention device. 3,852,784, Cl. 354-206.000.
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- Stranahan, John Jacob; and Hollier, John Carroll Lee, to Texaco, Inc. High Capacity smokeless flare having a very low gas flow detector. 3,852,019, Cl. 431-4.000.
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- Stroszynski, Joachim, to Hoechst Aktiengesellschaft. Apparatus for graining surfaces of planographic printing plates. 3,851,421, Cl. 51-11.000.
- Strugar, Daniel: See—
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- Stuart, William R., to Varian Associates. Offset stinger for arc lamp. 3,852,629, Cl. 313-152.000.
- Stubben GmbH: See—
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- Suchkov, Vasily Georgievich: See—
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- Sud-Chemie Aktiengesellschaft: See—
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- Sugahara, Eisuke; Yagi, Yusaku; and Owada, Akihito, to Nippon Piston Ring Co., Ltd. Fluid actuated clutch assembly. 3,851,741, Cl. 192-85.00r.
- Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, to Texaco Inc. Isomerization with fluorinated composite alumina catalysts. 3,852,372, Cl. 260-683.680.
- Suh, John T.; and Schnettler, Richard A. 1-Benzyl-4-(alkylidene)-hexahydro-4H-azepines. 3,852,280, Cl. 260-240.00f.
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- Sun Ventures, Inc.: See—
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- Sunami, Hideo: See—
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- Suzuki, Masaru, said Suzuki assor. to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Direction indicator automatic return device. 3,852,543, Cl. 200-61.270.
- Suzuki, Morio: See—
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- Suzuki, Susumu: See—
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- Suzuki, Talao: See—

- Kimura, Seiichi; Suzuki, Talao; and Nakajima, Masahiro, 3,852,699.
- Svensson, Orvar Anders, to AGA Aktiebolag. Nozzle for plasma welding torch. 3,851,824, Cl. 239-132.300.
- Swain, Allan L.: See—
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- Swain, Stephen C., to Cambridge Research and Development Group. Plural chambered, gravity oriented dispenser. 3,851,800, Cl. 222-145.000.
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- Swanson, Leopold G. Multiple adjustment shear. 3,851,389, Cl. 30-250.000.
- Swenson, Richard E. Touring ski binding. 3,851,892, Cl. 280-11.35y.
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- Swietoslowski, Roman: See—
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- Swoager, Jon R., to Automation Equipment, Inc. Multi-purpose vehicle for use underground. 3,851,481, Cl. 61-45.00d.
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- Symonds, James Arthur; and Jaquith, Howard Randall, 3,851,530.
- Symonds, James Arthur; and Jaquith, Howard Randall, to Sybron Corporation. Volumetric measuring system. 3,851,530, Cl. 73-395.000.
- Syntex Corporation: See—
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- Synthelabo: See—
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- Syva Corporation: See—
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- Szabo, Andras I.; and Tarli, Dan V., to Westinghouse Electric Corporation. Position indicator employing magnetic circuits to monitor the position of a magnetically permeable member movable along an axis having one degree of freedom. 3,852,661, Cl. 324-34.0s.
- Sze, Morgan C.; and Snell, George J., to Lummus Company, The. Coal liquefaction. 3,852,182, Cl. 210-133.000.
- Szpur, Roman, to Vital Research & Development, Inc. Fluid treatment system. 3,852,196, Cl. 210-133.000.
- Tabata, Yasuhiro; and Ukai, Takeshi, to Ricoh Co., Ltd. Electrophotographic copying machine. 3,851,963, Cl. 355-3.00r.
- Tachibana, Kameo: See—
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- Tachibana, Koichi: See—
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- Tadokoro, Takayo, to Tsukishima Kikai Co., Ltd. Driving device for rotary chemical machine. 3,851,819, Cl. 233-24.000.
- Taguchi, Tatsuya; Lura, Yukio; and Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Electric shutter for single lens reflex camera. 3,852,774, Cl. 354-24.000.
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- Takahashi, Yukio, to Ikegai Tekko Kabushiki Kaisha. Apparatus for holding tip of band in strapping machine. 3,851,576, Cl. 100-33.0pb.
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- Takeda Chemical Industries, Ltd.: See—
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- Tanaka, Haruo: See—
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- Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio. Process for the preparation of polyvinyl alcohol fibers. 3,852,402, Cl. 264-185.000.
- Tanner, Chase S., Co.: See—
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- Teahan, Teresa C. Mathematical educational device. 3,851,409, Cl. 35-31.00f.
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- Ted-Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec: See—
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- Tee-Pak, Inc.: See—
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- Telfer, Thomas Andrew, to General Electric Company. Microwave transmission line to ground plane transition. 3,852,690, Cl. 333-84.00m.
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- Thompson, James Gordon, to Key Oilfield Supply & Rentals Ltd. Mud and shale separating apparatus. 3,852,197, Cl. 210-143.000.
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- Turner, John O.; and Norton, Richard V., to Sun Ventures, Inc. Reaction of peroxides with nitriles. 3,852,349, Cl. 260-558.00r.
- Turner, Trevor Stanley; and Whittle, John Edward, to International Nickel Company, Inc., The. Activation of nickel battery plates. 3,852,112, Cl. 136-29.000.
- Turpin, Charles H., to Pillsbury Company. The Dough package containing triple sealed icing cup and method of producing the same. 3,851,757, Cl. 206-223.000.
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- Zimmerer, Arthur L.; Zimmerer, Bernard J.; and Zimmerer, Paul B., to Lindsay Manufacturing Co. Means for rotatably supporting an overhead irrigation pipe. 3,851,659, Cl. 137-344.000.
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 Zurick, Albert T., to Van Vlaanderen Container Machinery, Inc. Can carrier trip mechanism in continuous can printer. 3,851,579, Cl. 101-39.000.
 Zwikel, Dean N.: See—
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LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Carroll, Max L., Jr. Process for preparing extruded cellulosic film and sheeting having excellent optical properties. T929-002, 12-3-74, Cl. 260-224.
 Continental Oil Co.: See—
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 Czarnecki, Ronald F. Straight dough baking process. T929-007, 12-3-74, Cl. 426-24.
 Du Pont de Nemours, E. I., & Co.: See—
 Miller, Conrad E. T929,005.
 Van Cleeff, Albertus. T929,008.
 Foulk, Roy C., and R. L. Smith. Powder coating comprising a cellulose ester and a blocked isocyanate. T929,003, 12-3-74, Cl. 106-169.
 Hopfner, Clemens, and W. Ort. Reel adapter for a cartridge. T929,004, 12-3-74, Cl. 242-71.
 Lee, Louis J. Baking method. T929,006, 12-3-74, Cl. 426-24.
 Madderra, Galen K.: See—
 Ziegenhain, William C., and Madderra. T929,001.
 Miller, Conrad E. to E. I. du Pont de Nemours & Co. Polyethylene terephthalate film masking material. T929,005, 12-3-74, Cl. 260-40.
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 Van Cleeff, Albertus, to E. I. du Pont de Nemours & Co. Fast-draining neoprene-asbestos fiber slurries. T929,008, 12-3-74, Cl. 162-155.
 Ziegenhain, William C., and G. K. Madderra, to Continental Oil Co. Stabilized alpha-alumina monohydrate extrudates. T929-001, 12-3-74, Cl. 423-625.

LIST OF REISSUE PATENTEEES

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- Clark, Mary D.: See—
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 Baughman, Karl T., to Sears, Roebuck & Co. Typewriter housing with tambour cover. 233,858, 12-3-74, Cl. D64-11.
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254E	CLASS 36	3,852,037	152	3,851,419	1R	3,851,477	493	3,851,542	26A	3,851,593	32EA	3,851,629
259.9	CLASS 37	3,852,038	CLASS 42	3,851,420	4	3,851,478	677	3,851,543	88	3,851,594	41.08	3,851,630
277R	CLASS 38	3,852,039	1R	3,852,046	35	3,851,479	751	3,851,544	148MS	3,851,595	44R	3,851,631
284	CLASS 39	3,852,040	CLASS 43	3,851,421	36R	3,851,480	785	3,851,545	119A	3,851,596	55R	3,851,632
288F	CLASS 40	3,852,041	43.13	Re.28,262	45D	3,851,481	869	3,851,546	197DB	3,851,597	119A	3,851,633
293	CLASS 41	3,852,042	121	3,851,417	46.5	3,851,482	CLASS 75	3,852,060	368R	3,851,598	127	3,851,634
298	CLASS 42	3,852,043	CLASS 44	3,852,046	53	3,851,483	5B	3,852,061	409	3,851,598	133	3,851,635
73P	CLASS 43	3,851,357	1R	3,852,047	53.52	3,851,484	10R	3,852,062	492	3,851,597	148E	3,851,636
156R	CLASS 44	3,851,358	24	3,852,047	63.74	3,851,485	60	3,852,063	CLASS 106	3,852,075	169PB	3,851,637
230AL	CLASS 45	3,851,359	120	3,851,418	69R	3,851,487	124	3,852,063	11	3,852,076	CLASS 124	3,851,640
248C	CLASS 46	3,851,360	153	3,851,419	CLASS 46	3,851,488	CLASS 81	3,851,548	26	3,852,077	24R	3,851,641
6	CLASS 47	3,851,361	CLASS 47	3,851,420	120	3,851,489	3.43	3,851,549	39.6	3,852,078	CLASS 126	3,851,642
6.1	CLASS 48	3,851,362	CLASS 48	3,852,048	153	3,851,491	106	3,851,549	43	3,852,079	25R	3,851,643
25.42	CLASS 49	3,851,363	CLASS 49	3,851,420	209	3,852,048	CLASS 82	3,851,550	50	3,852,080	391	3,851,644
26A	CLASS 50	3,851,364	CLASS 50	3,851,421	293	3,852,049	2B	3,851,551	58	3,852,081	CLASS 128	3,851,645
125	CLASS 51	3,851,365	CLASS 51	3,851,421	298	3,852,050	37	3,851,551	89	3,852,082	2.1Z	3,851,646
159R	CLASS 52	3,851,366	CLASS 52	3,851,422	73P	3,851,357	9	3,851,552	99	3,852,083	18	3,851,647
182	CLASS 53	3,852,045	CLASS 53	3,851,423	156R	3,851,358	165	3,851,553	111	3,852,084	66	3,851,648
203R	CLASS 54	3,851,367	CLASS 54	3,851,424	230AL	3,851,359	CLASS 62	3,851,554	118	3,852,085	134	3,851,649
211D	CLASS 55	3,851,368	CLASS 55	3,851,425	248C	3,851,360	CLASS 63	3,851,555	193R	3,852,086	188	3,851,650
211R	CLASS 56	3,851,369	CLASS 56	3,851,426	6	3,851,361	CLASS 64	3,851,556	286	3,852,087	214.4	3,851,651
243.56	CLASS 57	3,851,370	CLASS 57	3,851,427	6.1	3,851,362	CLASS 65	3,851,557	CLASS 83	3,851,552	260	3,851,652
407	CLASS 58	3,851,371	CLASS 58	3,851,428	25.42	3,851,363	CLASS 66	3,851,558	CLASS 84	3,851,553	275	3,851,653
428	CLASS 59	3,851,372	CLASS 59	3,851,429	26A	3,851,364	CLASS 67	3,851,559	CLASS 85	3,851,554	350R	3,851,654
430	CLASS 60	3,851,373	CLASS 60	3,851,430	125	3,851,365	CLASS 68	3,851,560	CLASS 86	3,851,555	381	3,851,655
432.2	CLASS 61	3,851,374	CLASS 61	3,851,431	159R	3,851,366	CLASS 69	3,851,561	CLASS 87	3,851,556	CLASS 130	3,851,656
455	CLASS 62	3,851,375	CLASS 62	3,851,432	248C	3,851,367	CLASS 70	3,851,562	CLASS 88	3,851,557	5A	3,851,657
471.9	CLASS 63	3,851,376	CLASS 63	3,851,433	6	3,851,368	CLASS 71	3,851,563	CLASS 89	3,851,558	2	3,852,108
477.3	CLASS 64	3,851,377	CLASS 64	3,851,434	6.1	3,851,369	CLASS 72	3,851,564	CLASS 90	3,851,559	9	3,852,109
493	CLASS 65	3,851,378	CLASS 65	3,851,435	25.42	3,851,370	CLASS 73	3,851,565	CLASS 91	3,851,560	CLASS 131	3,851,658
523	CLASS 66	3,851,379	CLASS 66	3,851,436	26A	3,851,371	CLASS 74	3,851,566	CLASS 92	3,851,561	46M	3,851,659
568	CLASS 67	3,851,380	CLASS 67	3,851,437	125	3,851,372	CLASS 75	3,851,567	CLASS 93	3,851,562	6R	3,852,110
571	CLASS 68	3,851,381	CLASS 68	3,851,438	159R	3,851,373	CLASS 76	3,851,568	CLASS 94	3,851,563	26	3,852,111
573	CLASS 69	3,851,382	CLASS 69	3,851,439	248C	3,851,374	CLASS 77	3,851,569	CLASS 95	3,851,564	29	3,852,112
591	CLASS 70	3,851,383	CLASS 70	3,851,440	6	3,851,375	CLASS 78	3,851,570	CLASS 96	3,851,565	83R	3,852,113
596	CLASS 71	3,851,384	CLASS 71	3,851,441	6.1	3,851,376	CLASS 79	3,851,571	CLASS 97	3,851,566	83T	3,852,114
	CLASS 72	3,851,385	CLASS 72	3,851,442	25.42	3,851,377	CLASS 80	3,851,572	CLASS 98	3,851,567	111	3,852,115
	CLASS 73	3,851,386	CLASS 73	3,851,443	26A	3,851,378	CLASS 81	3,851,573	CLASS 99	3,851,568	120FC	3,852,116
	CLASS 74	3,851,387	CLASS 74	3,851,444	125	3,851,379	CLASS 82	3,851,574	CLASS 100	3,851,569	133	3,852,117
	CLASS 75	3,851,388	CLASS 75	3,851,445	159R	3,851,380	CLASS 83	3,851,575	CLASS 101	3,851,570		
	CLASS 76	3,851,389	CLASS 76	3,851,446	248C	3,851,381	CLASS 84	3,851,576	CLASS 102	3,851,571		
	CLASS 77	3,851,390	CLASS 77	3,851,447	6	3,851,382	CLASS 85	3,851,577	CLASS 103	3,851,572		
	CLASS 78	3,851,391	CLASS 78	3,851,448	6.1	3,851,383	CLASS 86	3,851,578	CLASS 104	3,851,573		
	CLASS 79	3,851,392	CLASS 79	3,851,449	25.42	3,851,384	CLASS 87	3,851,579	CLASS 105	3,851,574		
	CLASS 80	3,851,393	CLASS 80	3,851,450	26A	3,851,385	CLASS 88	3,851,580	CLASS 106	3,851,575		
	CLASS 81	3,851,394	CLASS 81	3,851,451	125	3,851,386	CLASS 89	3,851,581	CLASS 107	3,851,576		
	CLASS 82	3,851,395	CLASS 82	3,851,452	159R	3,851,387	CLASS 90	3,851,582	CLASS 108	3,851,577		
	CLASS 83	3,851,396	CLASS 83	3,851,453	248C	3,851,388	CLASS 91	3,851,583	CLASS 109	3,851,578		
	CLASS 84	3,851,397	CLASS 84	3,851,454	6	3,851,389	CLASS 92	3,851,584	CLASS 110	3,851,579		
	CLASS 85	3,851,398	CLASS 85	3,851,455	6.1	3,851,390	CLASS 93	3,851,585	CLASS 111	3,851,580		
	CLASS 86	3,851,399	CLASS 86	3,851,456	25.42	3,851,391	CLASS 94	3,851,586	CLASS 112	3,851,581		
	CLASS 87	3,851,400	CLASS 87	3,851,457	26A	3,851,392	CLASS 95					

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238	3,851,118	292	3,851,704	192	3,851,752	344	3,851,784	118.32	3,851,838	75N	3,852,246
102	CLASS 137	308	3,851,709	229	3,851,753	10.49	3,852,558	147R	3,851,839	75R	3,852,247
344	3,851,658	294	CLASS 172	31R	CLASS 200	10.49	3,852,558	198	3,851,840	78TF	3,852,248
484.2	3,851,659	681	3,851,710	61.27	3,852,542	121EB	3,852,560	199	3,851,841	78.5R	3,852,249
558	3,851,660	801	3,851,711	80R	3,852,543	125R	3,852,561		3,851,842	79.5B	3,852,250
563	3,851,662		3,851,712	82R	3,852,544		3,852,562	19	3,851,843	85.1	3,852,251
580	3,851,663	121	3,851,713	83C	3,852,546	216	3,852,563		3,852,252	85.3H	3,852,253
596.15	3,851,664	164	3,851,714	83Y	3,852,547	241	3,852,565		3,852,254	85.5R	3,852,255
614.04	3,851,666	170	3,851,715	144B	3,852,555	311	3,852,566	3.16	3,851,844	88.7R	3,852,256
614.17	3,851,665			148A	3,852,551	365	3,852,567	129D	3,851,845	89.3	3,852,257
624.14	3,851,667	11R	3,852,511	148B	3,852,550	375	3,852,568		3,852,257	89.5AW	3,852,257
625.21	3,851,669	19	3,852,512	148F	3,852,548	522	3,852,564	188.2	3,851,846	93.7	3,852,258
625.3	3,851,668	55	3,852,513	148R	3,852,549	525	3,852,569	231	3,851,847	94.1	3,852,259
814	3,851,670	58	3,852,514	153G	3,852,552	528	3,852,570	273	3,851,848	112R	3,852,260
		68C	3,852,515		3,852,553			503	3,851,849	156	3,852,261
99	3,851,671	71R	3,852,516	156	3,852,554	2.2	3,851,785		3,851,850	205	3,852,262
106	3,851,672	84R	3,852,517	241	3,852,557	3	3,851,786	194	3,851,850	210AB	3,852,263
173	3,851,673	120SR	3,852,518	310	3,852,556	85R	3,851,790		3,852,264	210.5	3,852,265
						89B	3,851,791	202	3,852,265	211.5R	3,852,266
71	3,851,675	45	3,851,716	227	3,852,559	253	3,851,792	211J	3,852,267		3,852,267
122N	3,851,676	297	3,851,717	6	3,852,560	270	3,851,793	221	3,852,268		3,852,268
125	3,851,677	363	3,851,718		3,852,561	273	3,851,787	229	3,852,269	239B	3,852,269
126	3,851,678	406	3,851,719	10	3,852,562	307	3,851,789	278	3,852,270	239.3A	3,852,270
194	3,851,679			47	3,852,563	308	3,851,794	288	3,852,271	239.3D	3,852,271
348	3,851,680	36R	3,852,563	91	3,852,564	319	3,851,788	310	3,852,272		3,852,272
420R	3,851,681	78	3,852,564		3,852,565			311	3,852,273		3,852,273
				1T	3,852,566	1	3,851,795	327	3,852,274		3,852,274
92.1	3,851,682	3	3,851,720	28	3,852,567	39	3,851,796	328	3,852,275	239.9	3,852,275
93.4	3,851,683			38A	3,852,570	129.4	3,851,797	337	3,852,276	240A	3,852,276
109	3,851,684	5	3,852,521	56R	3,852,572	135	3,851,798	360	3,852,277	240F	3,852,277
		5.1	3,852,519	73R	3,852,573	145	3,851,799	366	3,852,278		3,852,278
281B	3,851,685	5.8A	3,852,523	67	3,852,574	146HE	3,851,800	369	3,852,279	240J	3,852,279
309AC	3,851,686	5.8R	3,852,522	73R	3,852,575	146HE	3,851,801	373	3,852,280	240R	3,852,280
		5.8R	3,852,522	98	3,852,576	146HE	3,851,802	385	3,852,281	243C	3,852,281
3.1	3,851,687	6.1	3,852,525	129.46	3,852,577	182	3,851,803	401	3,852,282		3,852,282
		7.1	3,852,526	159.17	3,852,578	182	3,851,804	445	3,852,283		3,852,283
1.5	3,852,119	7.88	3,852,528	256	3,852,579	534	3,851,805	492	3,852,284	244R	3,852,284
	3,852,120			277	3,852,580	555	3,851,806	551	3,852,285	247.1T	3,852,285
2	3,852,121			298	3,852,581	2	3,851,807		3,852,286	247.2R	3,852,286
3	3,852,122								3,852,287	247.7D	3,852,287
6.14	3,852,123	1GO	3,852,530						3,852,288	247.7K	3,852,288
6.15R	3,852,125	1MG	3,852,535	216	3,851,755	48R	3,851,808	214	3,851,853	248AS	3,852,289
6.15	3,852,124	2DP	3,851,756	216	3,851,756	20	3,851,809	8.5A	3,852,201	251R	3,852,290
9R	3,852,126	2R	3,852,532	328	3,851,758				3,852,202	256.4C	3,852,291
187	3,852,127	8A	3,852,533	338	3,851,759				3,852,203	294.8D	3,852,292
189	3,852,128	15BS	3,852,534	411	3,851,761	91	3,851,816	8.55R	3,852,204	295R	3,852,293
	3,852,129	16F	3,852,536	425	3,851,762	121	3,851,810	12	3,852,205	296M	3,852,294
		17B	3,852,537	549	3,851,754	199	3,851,811	35.4	3,852,206	297F	3,852,295
		91R	3,852,538					47.5	3,852,207	299	3,852,297
8	3,851,688	107E	3,852,540					48.8	3,852,208	304	3,852,298
52R	3,851,689	174	3,852,539					62.1	3,852,209	307F	3,852,299
		175.25	3,852,541					95	3,852,210	308R	3,852,300
8	3,851,690								3,852,211	309	3,852,301
									3,852,212	309.5	3,852,302
353	3,851,691	79.2R	3,851,721						3,852,213	309.6	3,852,303
361DM	3,851,693	82R	3,851,722						3,852,214	340.9	3,852,304
361R	3,851,692	103R	3,851,723						3,852,215		3,852,305
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									3,852,284		3,852,374

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247 233,813	230 233,823	D13— 1J 233,832	G 233,842	ID 233,853	D85— 8A 233,863
17 233,814	233,824	D22— 27 233,833	R 233,843	D56— 4B 233,854	D86— 10B 233,864

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PATENTS

1 : 3,851,695	3,851,765	3,852,534	3,851,851	3,852,014	3,851,882
3,851,844	3,851,786	3,852,537	3,851,868	3,852,713	3,851,920
3,851,931	3,851,820	3,852,561	3,851,983	3,852,787	3,851,936
3,852,685	3,851,847	3,852,563	3,851,987	3,851,475	3,851,937
3,852,742	3,851,852	3,852,570	3,851,990	3,851,636	3,851,942
3,852,764	3,851,860	3,852,587	3,852,008	3,851,895	3,851,944
4 : 3,851,394	3,851,863	3,852,595	3,852,068	3,852,050	3,851,957
3,851,428	3,851,874	3,852,610	3,852,121	3,851,341	3,851,980
3,851,933	3,851,880	3,852,617	3,852,130	3,851,342	3,851,982
3,851,938	3,851,886	3,852,629	3,852,144	3,851,354	3,852,036
3,852,035	3,851,893	3,852,633	3,852,148	3,851,355	3,852,038
3,852,528	3,851,896	3,852,638	3,852,162	3,851,371	3,852,042
3,852,577	3,851,901	3,852,655	3,852,289	3,851,413	3,852,057
5 : 3,851,684	3,851,941	3,852,656	3,852,293	3,851,418	3,852,058
3,851,744	3,851,960	3,852,687	3,852,322	3,851,419	3,852,081
6 : 3,851,372	3,851,996	3,852,701	3,852,403	3,851,445	3,852,138
3,851,374	3,852,032	3,852,707	3,852,475	3,851,450	3,852,145
3,851,379	3,852,046	3,852,714	3,852,514	3,851,451	3,852,180
3,851,384	3,852,047	3,852,739	3,852,524	3,851,508	3,852,224
3,851,389	3,852,055	3,852,746	3,852,592	3,851,527	3,852,234
3,851,390	3,852,076	3,852,748	3,852,594	3,851,570	3,852,248
3,851,391	3,852,092	3,852,751	3,851,440	3,851,571	3,852,307
3,851,425	3,852,103	3,852,756	3,851,449	3,851,595	3,852,321
3,851,488	3,852,124	3,852,766	3,852,074	3,851,596	3,852,340
3,851,500	3,852,157	3,852,767	3,852,169	3,851,630	3,852,345
3,851,526	3,852,166	3,852,769	3,852,226	3,851,640	3,852,385
3,851,528	3,852,167	3,852,793	3,852,288	3,851,648	3,852,413
3,851,555	3,852,178	3,852,794	3,852,325	3,851,649	3,852,480
3,851,561	3,852,190	3,852,802	3,852,326	3,851,668	3,852,484
3,851,572	3,852,192	3,852,809	3,852,328	3,851,699	3,852,492
3,851,573	3,852,195	3,852,811	3,852,329	3,851,710	3,852,499
3,851,575	3,852,206	8 : 3,851,479	3,852,365	3,851,711	3,852,501
3,851,580	3,852,207	3,851,854	3,852,750	3,851,712	3,852,529
3,851,587	3,852,210	3,851,859	3,851,409	3,851,721	3,852,538
3,851,591	3,852,257	3,852,100	3,851,631	3,851,725	3,852,542
3,851,601	3,852,258	3,852,220	3,851,871	3,851,727	3,852,590
3,851,614	3,852,267	3,852,619	3,851,916	3,851,731	3,852,599
3,851,616	3,852,320	3,852,758	3,852,436	3,851,739	3,852,603
3,851,617	3,852,330	3,852,758	3,852,652	3,851,759	3,852,624
3,851,621	3,852,348	3,851,345	3,852,710	3,851,760	3,852,649
3,851,634	3,852,363	3,851,353	3,852,716	3,851,777	3,852,670
3,851,641	3,852,371	3,851,361	3,852,734	3,851,781	3,852,693
3,851,642	3,852,389	3,851,392	3,852,737	3,851,791	3,852,721
3,851,651	3,852,486	3,851,411	3,852,740	3,851,795	3,852,790
3,851,660	3,852,490	3,851,462	3,851,484	3,851,798	3,852,807
3,851,661	3,852,507	3,851,513	3,851,485	3,851,804	3,852,814
3,851,665	3,852,513	3,851,763	3,851,619	3,851,806	3,852,816
3,851,687	3,852,517	3,851,787	3,851,755	3,851,828	3,851,363
3,851,690	3,852,519	3,851,800	3,851,807	3,851,855	3,851,410
3,851,715	3,852,521	3,851,809	3,851,843	3,851,875	3,851,463
3,851,753	3,852,533	3,851,810	3,852,005	3,851,879	3,851,464

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,851,465	3,851,867	3,852,183	3,852,205	3,851,946	3,852,237
3,851,466	3,851,889	3,852,184	3,852,231	3,852,017	3,852,264
3,851,467	3,851,890	3,852,189	3,852,232	3,852,025	3,852,278
3,851,544	3,851,907	3,852,209	3,852,235	3,852,075	3,852,292
3,851,618	3,851,908	3,852,212	3,852,242	3,852,077	3,852,308
3,851,682	3,851,909	3,852,214	3,852,276	3,852,095	3,852,323
3,851,774	3,851,979	3,852,219	3,852,334	3,852,139	3,852,349
3,851,782	3,851,999	3,852,277	3,852,372	3,852,140	3,852,351
3,851,918	3,852,041	3,852,279	3,852,382	3,852,143	3,852,364
3,851,947	3,852,043	3,852,282	3,852,383	3,852,147	3,852,366
3,851,998	3,852,102	3,852,283	3,852,388	3,852,175	3,852,369
3,852,021	3,852,116	3,852,301	3,852,404	3,852,196	3,852,387
3,852,238	3,852,125	3,852,303	3,852,419	3,852,211	3,852,398
3,852,522	3,852,160	3,852,309	3,852,427	3,852,228	3,852,462
3,852,585	3,852,161	3,852,312	3,852,454	3,852,229	3,852,473
3,852,623	3,852,174	3,852,313	3,852,459	3,852,250	3,852,512
19 : 3,852,818	3,852,177	3,852,331	3,852,481	3,852,251	3,852,544
3,851,568	3,852,223	3,852,332	3,852,496	3,852,269	3,852,546
3,851,624	3,852,240	3,852,339	3,852,505	3,852,350	3,852,550
3,851,817	3,852,286	3,852,347	3,852,509	3,852,380	3,852,551
3,851,913	3,852,316	3,852,357	3,852,539	3,852,441	3,852,553
3,851,993	3,852,319	3,852,358	3,852,547	3,852,444	3,852,556
20 : 3,851,359	3,852,324	3,852,396	3,852,571	3,852,455	3,852,558
3,852,244	3,852,333	3,852,397	3,852,582	3,852,464	3,852,566
21 : 3,851,504	3,852,359	3,852,412	3,852,588	3,852,494	3,852,581
3,851,943	3,852,377	3,852,415	3,852,645	3,852,515	3,852,600
3,852,048	3,852,381	3,852,417	3,852,648	3,852,531	3,852,612
3,852,410	3,852,386	3,852,425	3,852,658	3,852,536	3,852,621
3,852,768	3,852,456	3,852,434	3,852,663	3,852,575	3,852,628
22 : 3,851,491	3,852,461	3,852,440	3,852,667	3,852,578	3,852,641
3,851,612	3,852,465	3,852,442	3,852,683	3,852,607	3,852,642
3,851,730	3,852,497	3,852,443	3,852,690	3,852,609	3,852,644
3,852,165	3,852,506	3,852,448	3,852,703	3,852,631	3,852,654
3,852,500	3,852,568	3,852,482	3,852,711	3,852,646	3,852,657
23 : 3,852,567	3,852,626	3,852,493	3,852,723	3,852,668	3,852,660
24 : 3,851,388	3,852,627	3,852,516	3,852,731	3,852,692	3,852,661
3,851,531	3,852,651	3,852,518	3,852,744	3,852,694	3,852,691
3,851,586	3,852,709	3,852,541	3,852,757	3,852,697	3,852,696
3,851,590	3,852,712	3,852,591	3,852,762	3,852,698	3,852,702
3,851,989	3,852,736	3,852,614	3,852,765	3,851,386	3,852,730
3,852,060	3,852,743	3,852,662	3,852,775	3,851,516	3,852,732
3,852,310	3,852,810	3,852,669	3,852,782	3,851,625	3,851,655
3,852,432	27 : 3,851,412	3,852,674	3,852,784	3,851,703	3,851,784
3,852,472	3,851,520	3,852,679	3,852,789	3,851,704	3,851,805
3,852,602	3,851,574	3,852,680	3,852,795	3,851,770	3,851,877
3,852,620	3,851,645	3,852,706	3,852,796	3,852,252	3,852,705
3,852,754	3,851,757	3,852,726	3,852,803	3,852,299	3,851,437
3,852,760	3,851,796	3,852,759	3,852,804	3,851,638	3,851,680
3,852,763	3,851,808	3,852,761	3,852,805	3,851,986	3,851,838
25 : Re. 28,261	3,851,892	3,852,771	3,852,806	3,852,579	3,851,924
3,851,356	3,851,950	3,852,799	3,852,812	3,852,678	3,851,925
3,851,357	3,852,093	3,852,808	3,852,820	3,851,470	3,852,090
3,851,367	3,852,094	35 : 3,851,505	3,852,007	3,851,481	3,852,146
3,851,370	3,852,118	3,851,569	3,852,009	3,851,487	3,852,233
3,851,483	3,852,245	3,852,353	3,852,079	3,851,496	3,851,599
3,851,556	3,852,384	3,852,485	3,852,101	3,851,502	3,851,869
3,851,622	3,852,485	Re. 28,260	3,852,141	3,851,509	3,852,213
3,851,724	3,852,574	3,851,393	3,852,336	3,851,522	3,852,407
3,851,958	3,852,606	3,851,407	3,852,675	3,851,524	3,852,508
3,851,962	3,852,615	3,851,417	3,851,536	3,851,536	3,851,347
3,851,972	3,852,770	3,851,420	3,851,538	3,851,538	3,851,482
3,852,066	28 : 3,851,427	3,851,443	3,851,552	3,851,552	3,851,486
3,852,067	3,851,613	3,851,447	Re. 28,259	3,851,577	3,851,492
3,852,072	3,852,467	3,851,493	Re. 28,262	3,851,620	3,851,519
3,852,073	3,852,469	3,851,530	3,851,339	3,851,626	3,851,521
3,852,344	29 : 3,851,343	3,851,584	3,851,350	3,851,626	3,851,521
3,852,362	3,851,435	3,851,600	3,851,358	3,851,653	3,851,589
3,852,392	3,851,813	3,851,605	3,851,366	3,851,656	3,851,623
3,852,414	3,852,256	3,851,606	3,851,453	3,851,674	3,851,705
3,852,474	3,852,306	3,851,607	3,851,476	3,851,733	3,851,706
3,852,502	3,852,311	3,851,498	3,851,489	3,851,734	3,851,707
3,852,548	3,852,346	3,851,654	3,851,498	3,851,735	3,851,708
3,852,549	3,852,420	3,851,662	3,851,514	3,851,736	3,851,709
3,852,584	3,852,483	3,851,670	3,851,515	3,851,752	3,851,714
3,852,664	3,852,491	3,851,756	3,851,546	3,851,768	3,851,717
3,852,671	3,852,503	3,851,758	3,851,554	3,851,802	3,851,719
3,852,728	30 : 3,851,604	3,851,761	3,851,578	3,851,815	3,851,857
3,852,729	31 : 3,851,659	3,851,762	3,851,583	3,851,831	3,851,897
3,852,755	3,851,726	3,851,608	3,851,603	3,851,840	3,851,967
3,852,780	3,852,247	3,851,826	3,851,608	3,851,841	3,851,995
3,852,781	3,851,495	3,851,834	3,851,644	3,851,842	3,851,997
3,852,783	3,851,894	3,851,839	3,851,666	3,851,858	3,852,001
3,852,813	3,852,150	3,851,872	3,851,672	3,851,864	3,852,019
3,852,817	34 : 3,851,426	3,851,881	3,851,694	3,851,865	3,852,085
3,851,349	3,851,441	3,851,884	3,851,700	3,851,904	3,852,119
3,851,351	3,851,442	3,851,891	3,851,701	3,851,906	3,852,155
3,851,401	3,851,501	3,851,910	3,851,716	3,851,911	3,852,163
3,851,432	3,851,503	3,851,955	3,851,718	3,851,935	3,852,164
3,851,517	3,851,507	3,851,966	3,851,720	3,852,011	3,852,179
3,851,523	3,851,537	3,851,973	3,851,732	3,852,028	3,852,201
3,851,529	3,851,579	3,851,985	3,851,751	3,852,030	3,852,202
3,851,543	3,851,647	3,852,049	3,851,764	3,852,034	3,852,221
3,851,549	3,851,814	3,852,086	3,851,766	3,852,051	3,852,327
3,851,567	3,851,825	3,852,089	3,851,772	3,852,052	3,852,368
3,851,597	3,851,853	3,852,091	3,851,779	3,852,080	3,852,370
3,851,633	3,851,922	3,852,099	3,851,792	3,852,084	3,852,390
3,851,637	3,851,948	3,852,114	3,851,793	3,852,087	3,852,405
3,851,646	3,851,951	3,852,120	3,851,797	3,852,105	3,852,408
3,851,673	3,852,059	3,852,131	3,851,812	3,852,123	3,852,409
3,851,729	3,852,070	3,852,132	3,851,846	3,852,137	3,852,411
3,851,737	3,852,083	3,852,133	3,851,861	3,852,159	3,852,416
3,851,742	3,852,088	3,852,134	3,851,876	3,852,173	3,852,418
3,851,771	3,852,096	3,852,135	3,851,883	3,852,185	3,852,498
3,851,836	3,852,117	3,852,158	3,851,919	3,852,186	3,852,562
3,851,837	3,852,149	3,852,176	3,851,932	3,852,187	3,852,593
3,851,849	3,852,182	3,852,194	3,851,939	3,852,200	3,852,695
			3,851,940	3,852,236	3,852,700

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,852,724	3,852,527	3,852,616	3,852,154	55 : 3,851,396	3,852,280
3,852,752	50 : 3,851,525	3,852,720	3,852,243	3,851,609	3,852,378
3,852,772	3,851,968	3,852,015	3,852,460	3,851,650	3,852,554
3,852,800	51 : 3,851,348	3,851,431	3,852,672	3,851,671	3,852,557
49 : 3,851,888	3,851,783	3,851,436	3,852,708	3,851,681	3,852,604
3,852,044	3,852,222	3,851,639	3,852,718	3,851,789	3,852,727
3,852,106	3,852,523	3,851,689	3,851,434	3,851,862	3,852,727
3,852,526	3,852,532	3,852,045	3,851,560		56 : 3,851,848

DESIGN PATENTS

6 : 233,810	233,851	18 : 233,858	27 : 233,823	37 : 233,822	42 : 233,859
233,813	233,853	21 : 233,855	233,824	39 : 233,828	233,820
233,821	233,856	24 : 233,838	29 : 233,860	233,833	233,837
233,825	8 : 233,819	25 : 233,830	30 : 233,850	233,840	233,847
233,835	9 : 233,857	26 : 233,846	34 : 233,849	233,844	51 : 233,864
233,839	233,809	36 : 233,862	233,829	233,848	55 : 233,834
233,842	233,812	233,831	233,843	233,852	233,863
233,845	17 : 233,826				

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : T929,008	40 : T929,001	47 : T929,002	T929,003	T929,006	T929,007
39 : T929,005					

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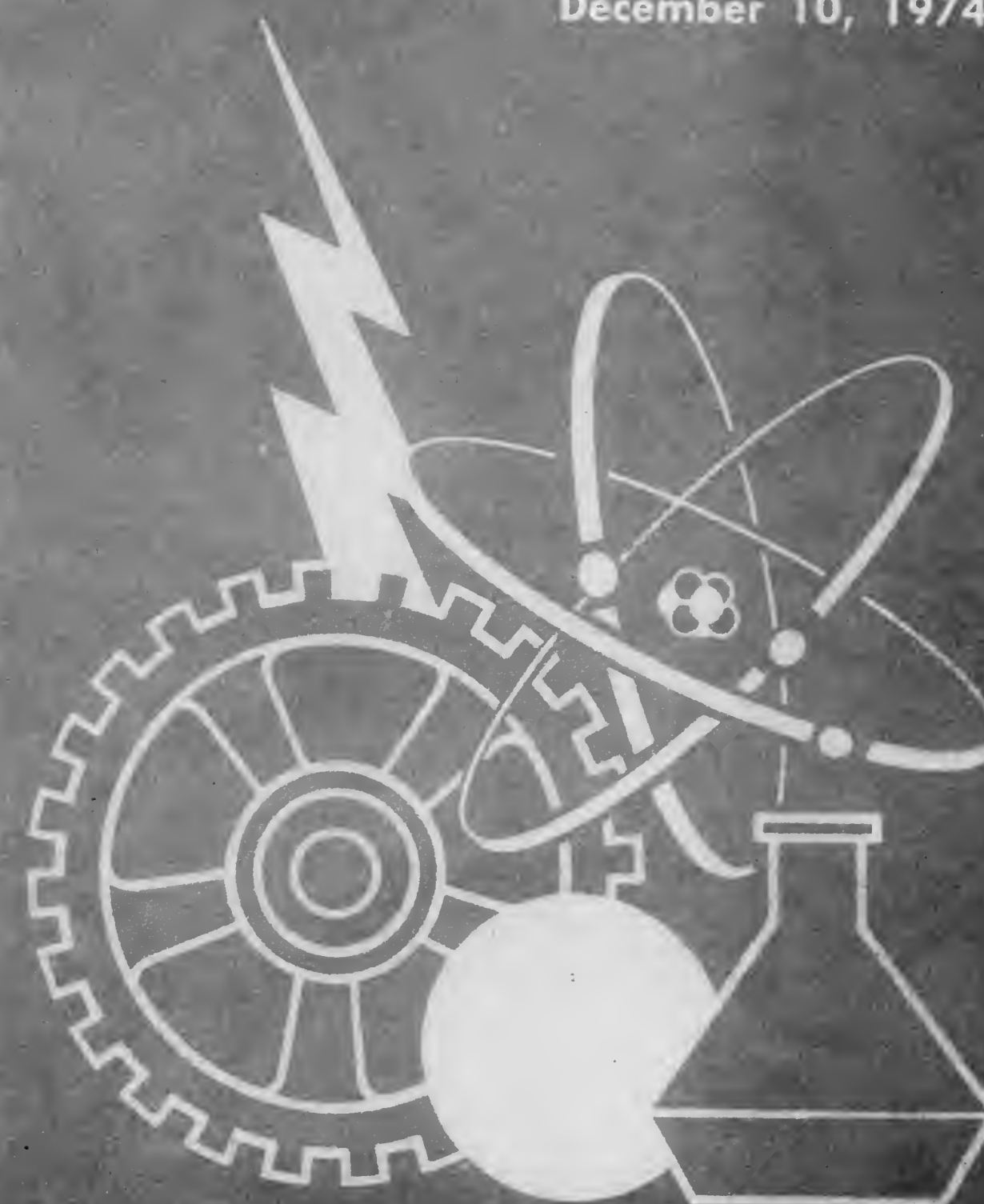
Vol. 929 Number 2

OFFICIAL GAZETTE

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PATENTS

December 10, 1974



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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before December 23, 1974.

Carson, William S., 3754 Valley Drive, Alexandria, Va. 22302
Olsen, Warren E., 2608 Davis Ave., Alexandria, Va. 22302
Tushin, Richard H., 1405C N. Van Dorn St., Alexandria, Va. 22304

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Realignment of Patent Office Handling of Opposition Papers

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.
Nov. 14, 1974.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,542,892, J. R. Bayston, MACHINE FOR MANUFACTURING ICE; 2,612,030, C. E. Ploeger, REFRIGERATION; 2,613,506, D. R. Cook, ICE-MAKING MACHINE; 2,740,365, J. R. Bayston, MACHINE FOR MANUFACTURING ICE CUBES; 2,763,993, same, ICE CUBE MANUFACTURING APPARATUS, filed Sept. 29, 1966, D.C., S.D.N.Y., Doc. 66-C-3140, *Uniflow Manufacturing Company et al. v. Custom Bins, Inc. et al.* Filed final consent judgment; defendants except for Dwyer are hereby enjoined as indicated, entered Jan. 4, 1974.

2,543,681, R. L. Blanchard, EXPLORER'S FOLDING TENT, filed June 6, 1963, D.C., S.D.N.Y., Doc. 63-C-1654, *Robert Blanchard v. Sears, Roebuck & Co., Inc.* Stipulation and order of dismissal with prejudice, June 9, 1969.

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, filed Sept. 15, 1969, D.C., S.D.N.Y., Doc. 69-4020, *George H. Butterfield Sr. v. Optimum Contact Lenses Inc.* Filed letter and order transferring case to the Northern District of Illinois, Feb. 9, 1970.

2,600,951, B. F. Edwards, CARD GAME EQUIPMENT, filed May 20, 1963, D.C., S.D.N.Y., Doc. 63-C-1441, *Magnetic Cards of California, Inc. et al. v. Regal & Wade Mfg. Inc. et al.* Filed stipulation and order of dismissal with prejudice, Mar. 17, 1966.

2,612,030. (See 2,542,892.)

2,613,506. (See 2,542,892.)

2,632,962, Jacobson and Keljikan, EDUCATIONAL DEVICE, filed Dec. 12, 1967, D.C., S.D.N.Y., Doc. 67-C-4867, *John G. Keljikan v. Dyna Ray Corp.* Filed order dismissing action for lack of prosecution, Sept. 17, 1970.

2,728,779, A. Pohland, ESTERS OF SUBSTITUTED AMINO-BUTANES, filed Dec. 2, 1969, D.C., S.D.N.Y., Doc. 69-5329, *Ellencec Pharmaceutical Laboratories Inc. v. Eli Lilly & Co. Inc.* Filed stipulation and order of discontinuance with prejudice, Apr. 2, 1973.

2,738,144, F. Honig, TEXTILE PACKAGE, filed Aug. 15, 1969, D.C., S.D.N.Y., Doc. 69-3608, *Stress Strand Corporation v. Allied Chemical Corporation.* Filed consent order that plaintiff's complaint and defendant's counterclaim are dismissed with prejudice, June 24, 1971.

2,740,265. (See 2,542,892.)

2,763,993. (See 2,542,892.)

2,824,946, Katzman and Block, ELECTRIC VAPORIZERS, filed June 15, 1970, D.C., S.D.N.Y., Doc. 70-C-2498, *Kaz Manufacturing Co., Inc. v. Greatgood Products, Inc.* Filed notice of settlement and order; ordered that plaintiff will grant a nonexclusive non-transferable license to the defendant, Nov. 27, 1970.

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2,987,735, W. P. Nail, CONTROL OF INFLATABLE ARTICLES; 3,029,109, same; 3,110,532, same, INFLATABLE ARTICLES, filed July 23, 1970, D.C., S.D.N.Y., Doc. 70-C-3168, *Walter P. Nail v. Contempo Sales.* Stipulation of dismissal, Nov. 24, 1970.

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DECEMBER 10, 1974

U.S. PATENT OFFICE

477

3,474,451. (See 3,462,688.)

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3,305,189, Butler, Jr. and Pierce, WEB SUPPLY APPARATUS, filed May 22, 1974, D.C., N.D. Ill. (Freeport), Doc. 74-35, *Butler Automatic, Inc. v. Martin Automatic, Inc.* Cause dismissed on notice of plaintiff before answer by defendant, June 7, 1974.

3,372,816, W. G. Atwater, DETECTING DEVICE FOR IMPROPERLY POSITIONED LOADS IN AN AUTOMATIC WAREHOUSING SYSTEM; 3,389,814, J. H. Lemelson, LOAD RESPONSIVE CONTROL MEANS FOR A MATERIAL HANDLING APPARATUS; 3,402,835, S. Saul, CONTROL SYSTEM FOR A ZONED AUTOMATIC WAREHOUSE ARRANGEMENT; 3,486,640, J. H. Lemelson, MULTI-SPEED CONTROL SYSTEM FOR A LOAD CARRIER IN A WAREHOUSE SYSTEM, filed Aug. 6, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73-820, *The Triax Company v. TRW, Inc.*

3,389,814. (See 3,372,816.)

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3,525,457, Hausmann and Hausmann, DEVICE FOR HOLDING AND EMPTYING TUBES, filed Sept. 15, 1971, D.C., S.D.N.Y., Doc. 71-C-4107, *Else Hausmann and Heinrich Hausmann v. Alfred E. Knobler & Company, Inc.* Filed stipulation and consent that action is settled without prejudice, Oct. 2, 1973.

3,581,865, G. C. Adams, INCLINED TRANSFER STATION, filed July 21, 1972, D.C., W.D.N.Y. (Buffalo), Doc. C-1972-386, *Diamond Machinery Co. v. Speedways Conveyors, Inc.* Order action dismissed without prejudice, May 29, 1974.

3,605,178, E. E. Hoffmann, LOIN PULLING KNIFE, filed Nov. 14, 1972, D.C. Minn. (St. Paul), Doc. 3-72-C-313, *Edwin E. Hoffmann v. Swift & Company.* Filed stipulation of dismissal of action with prejudice, May 2, 1974.

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3,619,675, S. M. Baker, CONTROL ROD DRIVE MECHANISM, filed Oct. 23, 1973, D.C. Calif. (Los Angeles), Doc. 73-2475-DWW, *Royal Industries, Inc. v. Babcock & Wilcox Co. and Diamond Power Specialty.* Filed order that the motion of defendant Babcock & Wilcox to dismiss the complaint for lack of venue be granted, and the complaint is dismissed as to all defendants and further order that the motion for consolidation in this action with Civil Action No. 73-2763 is moot and taken off calendar, entered May 31, 1974.

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3,663,233, J. L. Keszler, METHOD OF TENDERIZING, CURING AND COOKING A MEAT PRODUCT, filed Oct. 11, 1972, D.C. Conn. (New Haven), Doc. 15378, *Julius L. Keszler v. K-T Corporation and Keszler Corporation.* Stipulation for dismissal of action filed and ordered May 9, 1974.

3,702,100, T. P. Wharton, MOLDED PALLET, filed Apr. 24, 1973, D.C., W.D. Mich. (Grand Rapids), Doc. G106-73 Cal, *Menasha Corporation v. Jarecki Corporation and Plastics of Grand Rapids.* Case dismissed on May 6, 1974.

3,744,995. (See 3,630,505.)

Re. 24,837. (See 3,128,737.)

Certificates of Correction for the Week of Dec. 10, 1974

Re. 28,154	3,785,881	3,818,973	3,831,478
D. 223,046	3,785,886	3,819,025	3,831,587
3,507,339	3,786,120	3,819,327	3,831,870
3,542,931	3,786,463	3,819,439	3,831,917
3,644,311	3,788,286	3,819,853	3,832,124
3,646,173	3,789,100	3,820,717	3,832,174
3,664,255	3,789,196	3,821,235	3,833,037
3,698,210	3,791,466	3,821,248	3,833,130
3,698,809	3,792,321	3,821,641	3,833,363
3,702,617	3,795,204	3,822,071	3,834,166
3,705,926	3,795,404	3,822,354	3,834,440
3,710,890	3,797,530	3,822,468	3,835,138
3,721,298	3,798,453	3,822,648	3,835,683
3,723,400	3,799,037	3,822,650	3,835,851
3,727,949	3,800,292	3,822,726	3,836,200
3,730,797	3,803,456	3,822,743	3,837,287
3,735,402	3,804,022	3,822,960	3,837,459
3,735,989	3,804,073	3,823,269	3,837,474
3,742,379	3,804,985	3,824,498	3,837,657
3,743,632	3,807,207	3,824,632	3,837,789
3,745,901	3,807,284	3,825,090	3,837,939
3,753,865	3,808,388	3,826,481	3,838,040
3,755,492	3,808,795	3,827,156	3,838,169
3,761,004	3,809,457	3,827,527	3,839,314
3,762,781	3,811,286	3,828,023	3,839,846
3,764,912	3,812,206	3,828,235	3,840,348
3,767,927	3,813,394	3,828,495	3,840,407
3,768,579	3,813,866	3,828,541	3,840,499
3,770,946	3,815,515	3,828,757	3,840,755
3,771,915	3,815,808	3,828,943	3,840,790
3,775,568	3,816,449	3,829,031	3,841,490
3,775,974	3,816,451	3,829,387	3,841,548
3,777,318	3,816,722	3,830,196	3,841,806
3,780,009	3,816,868	3,830,297	3,841,910
3,780,313	3,817,086	3,830,320	3,842,016
3,782,040	3,817,407	3,830,473	3,842,038
3,782,735	3,817,680	3,830,842	3,842,107
3,783,292	3,817,941	3,830,950	3,843,381
3,783,637	3,818,017	3,831,035	3,843,484
3,784,577	3,818,162	3,831,181	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 450,521. Compact Fast Analyzer of Rotary Curvette Type. Filed Mar. 12, 1974. PC \$4/MF \$2.25.

Patent application 459,737. Electrolytic Dissolver. Filed Apr. 10, 1974. PC \$4/MF \$2.25.

Patent application 464,427. Device for Measuring Biaxial Strain. Filed Apr. 26, 1974. PC \$4/MF \$2.25.

Patent 3,769,545. Device for Preparing Elemental Carbon Enriched in Carbon-13. Filed Feb. 23, 1972. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,776,284. Article Removal Device for Glovebox. Filed Jan. 20, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,778,217. Extrusion Die. Filed Oct. 31, 1963. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,782,924. Fine-Grained Zirconium-Base Material. Filed Nov. 26, 1962. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,014. Electroless Coating of Molybdenum on Stainless Steels. Filed Jan. 18, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,785,120. Recovery of Purified Helium or Hydrogen from Gas Mixtures. Filed Oct. 15, 1971. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,786,270. Proportional Counter Radiation Camera. Filed Feb. 1, 1973. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,787,746. Quenching Gas for Detectors of Charged Particles. Filed May 11, 1973. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,764. Solid Dielectric Capacitance Gauge for Measuring Fluid Pressure Having Temperature Compensation and Guard Electrode. Filed Dec. 3, 1971. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,789,227. Environmental Dosimeter of the Thermo Luminescent Type. Filed May 18, 1973. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,319. Hydrogen Rotation-Vibration Oscillator. Filed May 8, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,321. Electron Beam-Pumped Gas Laser System. Filed Sept. 14, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,790,492. Method for Production of Uniform Microspheres. Filed Mar. 11, 1974. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,791,945. Method of Production of Alkali Metals and Their Alloys. Filed Feb. 22, 1973. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,791,953. Self-Sealing Electrochemical Oxygen Meter. Filed Oct. 31, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,136. Method for Preparing Hollow Metal Oxide Microsphere. Filed Nov. 2, 1971. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,154. Removal of Iodine From Nitric Acid Solutions. Filed Mar. 6, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,155. Method for Increasing the Carbon Yield of Indene-Derived Carbon Precursors. Filed Apr. 27, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,156. Dual Pressure-Dual Temperature Isotope Exchange Process. Filed June 21, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,423. Isometric Imaging System. Filed May 24, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,793,435. Separation of Hydrogen From Other Gases. Filed May 10, 1972. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,794,116. Situ Coal Bed Gasification. Filed May 30, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,470. Continuous Plutonium Dissolution Apparatus. Filed June 6, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,527. Thermoelectric Converter. Filed Jan. 15, 1970. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,532. Spherodization of Grain Boundary Precipitates. Filed Mar. 14, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,814. Continuous Dynamic Error Monitoring Device for Numerically Controlled Machines. Filed Feb. 15, 1973. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,927. System for Producing High Energy Positively Charged Particles. Filed Jan. 20, 1970. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,929. Compact Laser Amplifier System. Filed Oct. 13, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,795,874. Apparatus for Pumping a High Pressure Laser System. Filed Nov. 3, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,797,299. Method of Measuring the Tritium Concentration in a High-Temperature Environment. Filed Apr. 23, 1973. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,124. Fuel Subassembly for Nuclear Reactor. Filed May 27, 1969. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,569. High Energy Optical Laser. Filed Mar. 15, 1973. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,799,029. Precision Trimmer for an Encapsulated Specimen. Filed Dec. 19, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,023. Loading a Cation Exchange Resin With Uranyl Ions. Filed May 16, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,161. Portable Dynamic Multistation Photometer-Fluorometer. Filed Dec. 19, 1972. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,
Hyattsville, Md. 20782

Patent application 431,762. Method for Reducing Heating and Brightness Loss in Pulp Chips With Aqueous Solutions of Sodium N-Methyldithiocarbamate. Filed Jan. 8, 1974. PC \$4/MF \$2.25.

Patent application 478,284. Combination Sheathing Support-Member Building Product. Filed June 11, 1974. PC \$4/MF \$2.25.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, Washington, D.C. 20590

Patent application 494,098. Dynamic Railroad Freight Car Monitoring System. Filed Aug. 2, 1974. PC \$4/MF \$2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Bethesda, Md. 20014

Patent application 467,506. Apparatus for Evaluating and Testing the Sharpness of Points. Filed May 6, 1974. PC \$4/MF \$2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

Patent application 420,424. Fluid Control Apparatus and Method. Filed Nov. 30, 1973. PC \$4/MF \$1.45.

Patent application 440,916. Electrolytic Cell Design. Filed Feb. 8, 1974. PC \$4/MF \$1.45.

Patent application 482,105. Ceramic Coating for Silica Insulation. Filed June 24, 1974. PC \$4/MF \$1.45.

Patent application 489,008. Ether-Linked Aryl Tetracarboxylic Dianhydrides. Filed July 16, 1974. PC \$4/MF \$1.45.

Patent application 491,418. Integrated Structure Vacuum Tube. Filed July 24, 1974. PC \$4/MF \$1.45.

Patent application 491,419. Horn Antenna Having V-Shaped Corrugated Slots. Filed July 24, 1974. PC \$4/MF \$1.45.

Patent application 493,359. An Improved System for Imposing Directional Stability on a Rocket-Propelled Vehicle. Filed July 31, 1974. PC \$4/MF \$1.45.

Patent application 493,363. Trielectrode Capacitive Pressure Transducer. Filed July 31, 1974. PC \$4.25/MF \$1.45.

Patent 3,814,645. Method of Repairing Discontinuity in Fiberglass Structures. Patented June 4, 1974. Not available NTIS.

Patent 3,817,622. Measurement of Plasma Temperature and Density Using Radiation Absorption. Patented June 18, 1974. Not available NTIS.

Patent 3,826,964. Digital Servo Controller. Patented July 30, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 9, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-11-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels, Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING AND MEASURING, GROUP 240—N. ANSHER, Director..... Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-21-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-27-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during October 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 10, 1974

ERRATA

For CLASS	See PATENT NO.
116-067.....	28,269
162-343.....	28,271
172-587.....	28,272
222-556.....	28,266
431-190.....	28,270
117-240.....	28,267

REISSUES

DECEMBER 10, 1974

Matter enclosed in heavy brackets **[]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,265

INTRARECORD RESYNCHRONIZATION IN DIGITAL-RECORDING SYSTEMS

John W. Irwin, Loveland, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,641,534, dated Feb. 8, 1972, Ser. No. 888,766, Dec. 29, 1969. Application for reissue Feb. 4, 1974, Ser. No. 439,480

Int. Cl. G11b 5/02

U.S. Cl. 360—50

59 Claims

28,266

SUPPLY SYSTEM FOR A BURNER OF LIGHT HYDROCARBON-WATER EMULSIONS

Claude Delatronchette, Cachan, France, by ELF-Union S.A., Paris, France, assignee

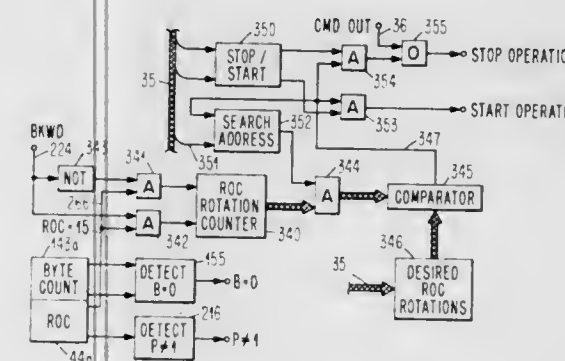
Original No. 3,741,712, dated June 26, 1973, Ser. No. 203,756, Dec. 1, 1971. Application for reissue Sept. 5, 1973, Ser. No. 394,515

Claims priority, application France Dec. 7, 1970, 7043860

Int. Cl. F231 7/00

U.S. Cl. 431—190

3 Claims



1. A multitrack-record system for processing digital data signals with recording circuits and read-back circuits having dead-tracking capabilities and for being in operative association with a record media relatively movable with respect to magnetic transducers in either direction along a given path, a byte being a group of signals having one signal respectively associated with a track, the improvement including in combination:

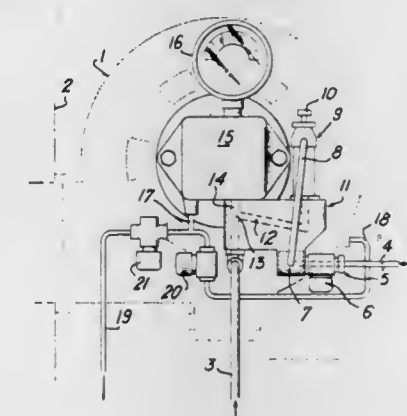
data means for selectively establishing digital data signal-processing operations in said circuits, said operations processing digital signals to and from said record media, said digital signals exhibiting predetermined frequency characteristics,

resync means operatively coupled to said circuits for selectively establishing resync signal processing operations in said circuits for processing resync signals having frequency characteristics within said predetermined frequency characteristics,

control means including cycling means and capable of interrupting said data means operations for interleaving an operation by said resync means,

said resync means being responsive to said interruption to effect processing of said resync signals, said resync signals exhibiting at least one unique signal characteristic not found in said digital signals for indicating position of said resync signals on said media, and

said data means including means for detecting and indicating positional relationships between said tracks by said resync signals and including further means for establishing said predetermined frequency relation between said resync signals and said data means.



1. A supply system for a burner for light hydrocarbons utilizing an emulsion of water and light hydrocarbon comprising a water intake, a light hydrocarbon supply, a mixer of water and light hydrocarbon, a high-pressure pump forcing said emulsion through an injection circuit towards the injector of the burner

a dosing device for the injected water, located in the supply circuit of water to said mixer;

a first normally open electro-valve closed during lighting of the burner and a non-return valve arranged to the input of the water-supply circuit, in front of said dosing device;

a second normally open electro-valve closed during lighting of the burner in the injection circuit;

and a branch circuit connected in the injection circuit between the outlet of said high-pressure pump and said second electro-valve, said branch circuit including a third normally closed electro-valve open during lighting of the burner.

28,267

PROCESS FOR SUPPORTING AND NONUNIFORMLY TREATING ARTICLES

John J. Rackus, Whitehall, John P. Skilbeck, Allentown, and Alfons H. Szkudlapski, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,692,638, dated Sept. 19, 1972, Ser. No. 100,176, Dec. 21, 1970. Application for reissue Feb. 8, 1974, Ser. No. 440,933

Int. Cl. B01k 3/00; C23b 5/48, 5/70

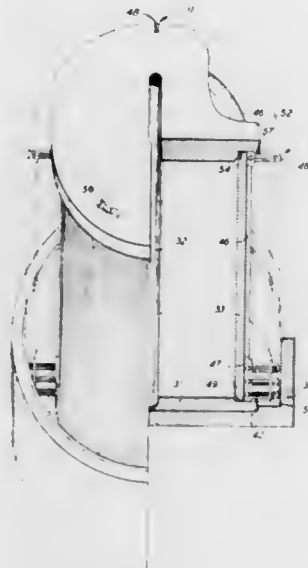
U.S. Cl. 204—15

14 Claims

1. A method of supporting planar articles in a treating medium, which comprises:

inserting the articles **[in]** into a plurality of slots formed in the outer surface of a member to arrange

the articles in a spaced, radial, loose, fan-like manner external to such surface with portions of the articles being free and extending from the slots to partially mask the inner side portions of the articles and



to space the free, outer side portions of the articles a greater distance from each other than the inner side portions; and retaining the articles in said manner.

28,268

DEVICE FOR SIGNALING NEED FOR CLEANING OR REPLACING SUCTION CLEANER DUST BAG
Hubert Marc William Autrand, La Garenne-Colombes, France, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

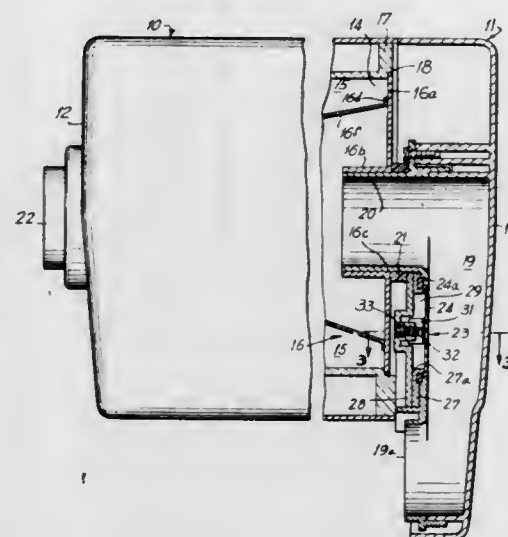
Original No. 3,587,514, dated June 28, 1971, Ser. No. 873,309, Nov. 3, 1969. Application for reissue Nov. 8, 1973, Ser. No. 414,170

Claims priority, application Sweden, Nov. 8, 1968, 15,154/68

Int. Cl. G08b 3/00

U.S. Cl. 116—67 R

4 Claims



11. In a suction cleaner of the class described having a casing provided with an inlet and outlet for air adapted to flow therethrough and a dust bag therein for removing dirt from the air, the pressure differential at opposite sides of said dust bag becoming increasingly greater responsive to dirt trapped at the side thereof initially contacted by the air, the combination of

(a) a device for producing an audible signal with the aid of air to indicate the need for cleaning or replacing the dust bag due to dirt trapped therein,

(b) said device comprising structure including a magnet and an armature member which is adapted to be magnetically attracted by said magnet and movable therefrom, said structure defining a passageway having a valve seat at the inlet end thereof,

(c) valve means which is movable to and from said seat with movement of said armature member to and from said magnet, and

(d) means responsive to a force which is dependent upon the pressure differential at opposite sides of said dust bag and exceeds the force magnetically attracting said armature member to said magnet to move said armature member from said magnet, said valve means moving from said seat with movement of said armature member from said magnet for effecting flow of air through said passageway to render said device operable to produce said audible signal.

28,269

PAPERMAKING MACHINE HEADBOX HAVING TRAILING ELEMENTS IN THE SLICE CHAMBER EXTENDING IN THE STOCK FLOW DIRECTION

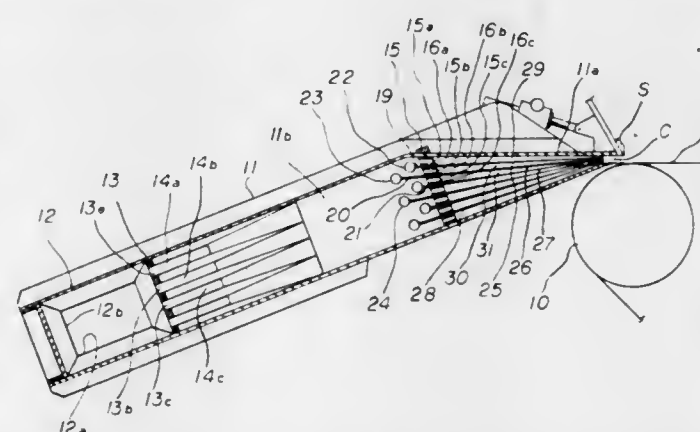
Lester M. Hill, Beloit, Wis. and Joseph D. Parker, deceased, late of Roscoe, Ill., by Dorothy C. Parker, executrix, Roscoe, Ill., and Richard E. Hergert, Roscoe, Ill., assignors to Beloit Corp., Beloit, Wis.

Original No. 3,607,625, dated Sept. 21, 1971, Ser. No. 698,633, Jan. 17, 1968. Application for reissue Apr. 30, 1973, Ser. No. 355,544

Int. Cl. D21f 1/02

U.S. Cl. 162—343

13 Claims



1. In a headbox for delivering stock to a forming surface, the headbox having a slice chamber and a slice opening, the improvement comprising a plurality of trailing elements positioned in the slice chamber, each of said elements extending transversely of said headbox from pondside to pondside, means anchoring said elements only at their upstream ends at locations spaced generally perpendicular to the stock-flow stream with their downstream portions unattached and constructed to be self-positionable so as to be solely responsive to forces exerted thereon by the stock flowing towards the slice.

28,270

PREPARATION OF MANGANESE BISMUTH
Di Chen and Roger W. Honebrink, Minnetonka, Gary N. Otto, Mayer, and Jack A. Sartell, Minnetonka, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

No. Drawing. Original No. 3,539,383, dated Nov. 10, 1970, Ser. No. 690,388, Dec. 14, 1967. Application for reissue May 2, 1973, Ser. No. 356,654

C23c 13/02; H01f 41/14

U.S. Cl. 117—240

8 Claims

9. A process for producing reproducible, large area thin films of manganese bismuth having substantially uniform magnetic properties over the entire area of the thin film with the crystalline C axis oriented normal to the plane of the thin film and having improved magneto-

optic properties, the process comprising:
depositing bismuth on a substrate;
depositing manganese over the bismuth, the amount of manganese being in excess of the 1 to 1 manganese to bismuth atomic ratio in stoichiometric manganese bismuth; and
heating the deposited manganese bismuth to form the intermetallic manganese bismuth compound.

28,271

CULTIVATOR

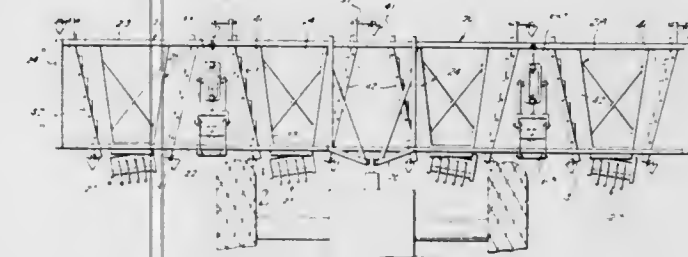
Charles L. Lehman and Alvin H. Lehman, Corpus Christi, Tex., assignors to Lehman Equipment Company, Nueces County, Tex.

Original No. 2,994,387, dated Aug. 1, 1961, Ser. No. 113,993, June 12, 1961, which is a continuation-in-part of application Ser. No. 800,304, Mar. 18, 1959, and Ser. No. 54,468, Sept. 7, 1960. Application Ser. No. 800,304 being a continuation-in-part of applications Ser. Nos. 725,640 and 725,641, both filed Apr. 1, 1958, all now abandoned. Application for reissue Sept. 21, 1973, Ser. No. 396,661

Int. Cl. A01b 5/06

U.S. Cl. 172—587

26 Claims



1. A cultivator, comprising a frame adapted to be moved forwardly over the ground, separate gangs of rotary hoes mounted from the frame for swinging about a transverse axis to rotatably engage spaced-apart rows of crops forwardly of such axis and in a laterally extending row during forward movement of the frame, means for adjusting the angular relation of the path of rotation of the hoes of each gang with respect to the forward movement of the frame, and means carried by the frame for turning the ground intermediate adjacent rows of said crops and rearwardly of the engagement therewith of said gangs onto the crops.

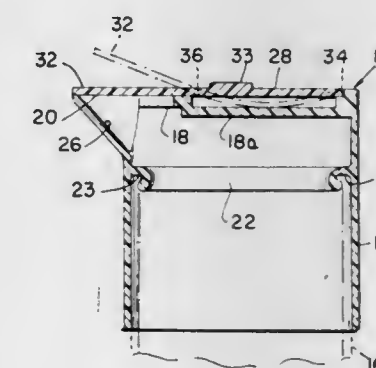
28,272
COVER FOR DECANTER OR THE LIKE LIQUID DISPENSING CONTAINER
Melvin Alpern, 9800 McKnight Road, Pittsburgh, Pa. 15237

Original No. 3,739,957, dated June 19, 1973, Ser. No. 189,454, Oct. 14, 1971. Application for reissue Feb. 4, 1974, Ser. No. 439,012

Int. Cl. B67d 3/00

U.S. Cl. 222—556

25 Claims



1. A cover, as for a decanter or like liquid dispensing container having a neck portion, comprising: a cap including an annular skirt having a lower portion for attachment over the neck portion of the container, an upper closure wall, and a pouring spout extending outwardly from said skirt and having upwardly presented seat means; the closure wall having an opening therein leading to the spout, the closure wall having a depressed portion having a closed bottom and an open top, a valvular plate of flexible material mounted on said cap and closing the open top of the depressed portion, the plate having a valving end normally closing said spout opening, and an opposite end thereof hingedly supported on the cap over the depressed portion; said valvular plate, at a point intermediate said valving end and said opposite end, having a second point of hinged support on the cap, whereby upon application of manual pressure to the plate, intermediate said two points of hinged support, said plate is bowed inwardly of said closure wall into the depressed portion to swing said valving end of the plate away from said spout opening for pouring purposes.

PATENTS

GRANTED DECEMBER 10, 1974

ERRATA

For CLASS	See PATENT NO.
024-134.....	3,852,943
061-001.....	3,852,978
074-063.....	3,852,998
180-079.....	3,853,069
128-145.....	3,853,105
269-035.....	3,853,368
296-062.....	3,853,369
296-097.....	3,853,370
296-137.....	3,853,371
297-045.....	3,853,372
297-341.....	3,853,373
350-096.....	3,853,384
350-164.....	3,853,386
350-183.....	3,853,387
073-141.....	3,853,546
206-045.....	3,853,741
424-270.....	3,854,000
346-116.....	3,854,145

PATENTS

GRANTED DECEMBER 10, 1974

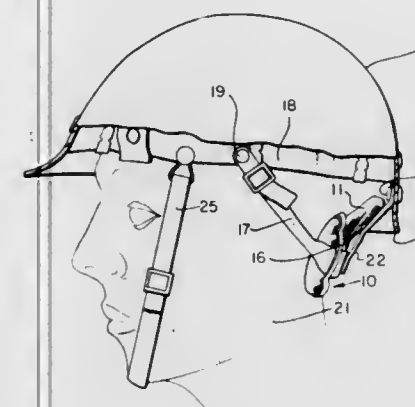
GENERAL AND MECHANICAL

3,852,821

IMPACT ABSORBENT PAD FOR HELMET SHELL
Larry S. Mickel, 309 Austin Loop, Fort Benning, Ga. 31905
Filed June 11, 1973, Ser. No. 368,926
Int. Cl. A63b 71/10

U.S. Cl. 2-3 R

3 Claims



1. In combination, a protective helmet comprising a substantially rigid shell and a webbing type suspension system mounted therein for supporting said helmet on the head of a wearer thereof, an impact absorbing pad comprising a body member having the configuration of an inverted T when said impact absorbing pad is in an operative position, said impact absorbing pad being disposed against the head of the wearer of said helmet over the nape area and the base of the skull when in an operative position, an adjustable neckband adapted to overlie the rear of the crossing portion of the inverted T-shaped body member and to support said impact absorbing pad horizontally, said neckband being adjustably attached at each of the two ends thereof to said webbing type suspension at spaced apart points, a suspension strap attached at one end thereof to said neckband at a point approximately midway between said two ends of said neckband and attached at the other end thereof to the inner surface of the rear portion of said rigid shell, said suspension strap being adapted to support said neckband in a vertical direction and to overlie the rear of the base portion of said inverted T-shaped body member and to support the base portion of said inverted T-shaped body member vertically and to hold said base portion against the nape area and the base of the skull of the wearer when said impact absorbing pad and said suspension strap are in operative positions, and means carried by said body member for detachably mounting said impact absorbing pad on said neckband when said impact absorbing pad is in an operative position, whereby said neckband and said suspension strap maintain said impact absorbing pad disposed against the nape area and the base of the skull of the wearer so that said impact absorbing pad prevents impact of the lower rear rim of said rigid shell against the nape or base of the skull of the wearer when the lower rear rim of said rigid shell is forced in the direction of the nape and base of the skull of the wearer.

3,852,822

HARD HAT CROWN SUPPORT BAND ATTACHMENT
Willis T. Watkins, Kansas City, Mo., and Lester Alan Sankpill, Overland Park, Kans., assignors to Parmelee Industries, Inc., Kansas City, Mo.

Filed May 14, 1973, Ser. No. 360,015

Int. Cl. A42b 1/00

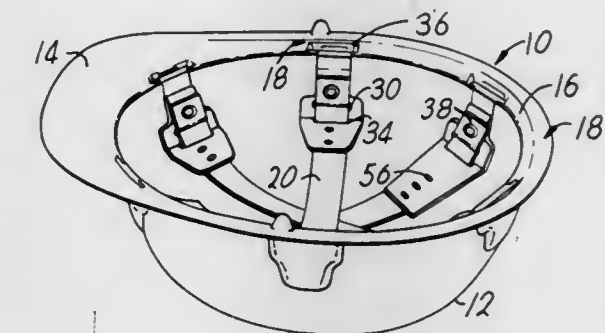
U.S. Cl. 2-3 B

21 Claims

1. In a suspension-type safety helmet having a plurality of elongated webbings attached about the internal periphery of the crown thereof and extending inwardly therefrom to form

a suspension system for keeping the helmet spaced from the head of the wearer, attachment means for each of said webbings comprising:

an attachment plate adapted to be secured to the internal periphery of the crown of said helmet, said plate being provided with a slot dimensioned to permit a loop of said webbing to be drawn therethrough; and



an integral keeper element operable to be inserted within the confines of a loop of webbing drawn through said slot, said keeper having a leading portion of reduced dimensions configured for insertion within said slot to locate the keeper, and an enlarged head portion of greater transverse dimension than that of said slot, said head portion being operable to preclude displacement of said keeper through said slot to thereby firmly retain a webbing wrapped therearound in position.

3,852,823

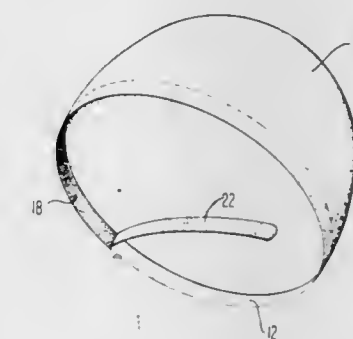
METHOD OF SEALING A BATHING OR SHOWER CAP TO THE HEAD OF THE WEARER

Jane P. Jones, 1316 Fenwick Ln., Apt. 207, Silver Spring, Md. 20910

Continuation of Ser. No. 232,953, March 8, 1972, abandoned, which is a division of Ser. No. 68,893, Sept. 2, 1970, abandoned. This application Nov. 21, 1973, Ser. No. 417,864
Int. Cl. A42b 1/12

U.S. Cl. 2-68

5 Claims



1. A method of sealing a bathing or shower cap against the skin of a user of the cap to prevent entry of water into the cap during use; the steps comprising, employing an adhesive of predetermined length including a base strip and first and second adhesive substances on the opposite sides of said base strip and first and second cover strips overlying the adhesives respectively, removing one of the cover strips to expose the first adhesive, securing the tape to the cap by adhering the exposed adhesive to the inside surface of the cap adjacent the open edge thereof continuously throughout, placing the cap on the head of the user in use position and then removing the other cover strip to expose the second adhesive while the cap is on the user's head in use position, adhering the second adhesive to the skin of the user throughout to seal the interior

of the cap against water, and then after use of the cap removing the base strip including the second adhesive to clear the inside surface of the cap for applying another adhesive prior to subsequent use of the cap.

3,852,824

DROP SEAT CLOSURE FOR OUTERWEAR GARMENT

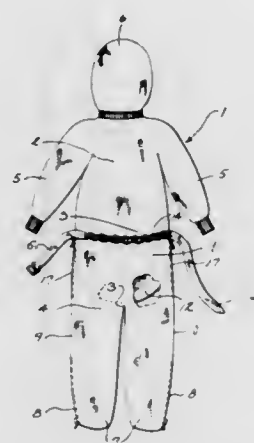
Mary Evelyn Grey, Rt. 2, Ladysmith, Wis. 54848

Filed Oct. 26, 1973, Ser. No. 410,175

Int. Cl. A41d 13/02

U.S. Cl. 2-79

2 Claims



1. In a one-piece cold weather outerwear garment having upper and lower body portions joined in the waist region and the lower body portion having opposed generally vertically extending side seams, a drop seat closure comprising a tail portion on the rear of the upper body portion and extending generally between the opposed side seams and projecting downwardly beneath the waist region to a location approaching the crotch of the garment to thus generally cover the buttock region of the wearer, a seat flap on the lower body portion and extending transversely between the opposed side seams and projecting upwardly into the waist region, said seat flap upon closure overlying said tail portion, an elastic waist band extending substantially over the full width of the seat flap along the free upper edge thereof, complementary belt portions respectively attached to the opposed ends of the elastic waist band of the seat flap, said belt portions being adapted for belt closure at the front of the garment with belt closure stretching the waist band into relatively snug engagement in the waist region and securing the seat flap in closure position, and zipper means to effect closure of the seat flap along the opposed side seams of the garment.

3,852,825
CRAVAT

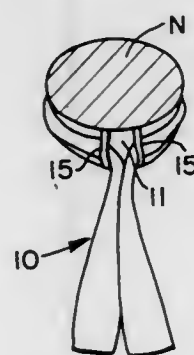
Leon F. Tirsch, Rochester, N.Y., assignor to Superba Cravats, Inc., Rochester, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,751

Int. Cl. A41d 25/06

U.S. Cl. 2-146

9 Claims



1. The method of manufacturing a cravat, comprising stacking a pair of elongate, fabric strips one on top of the other,

providing between said strips a pair of spaced, parallel, narrow loops of fabric, which extend transversely between the longitudinal side edges of said strips approximately medially of the ends thereof, producing a tubular blank from said strips by stitching together said longitudinal side edges of said strips along stitch lines, which extend between opposite ends of the strips and transversely across said loops adjacent opposite ends thereof, and turning said tubular blank inside out to complete the cravat.

3,852,826

SURGICAL GLOVES

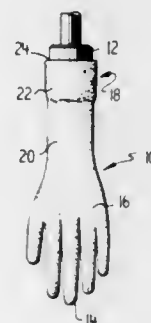
Oswald Schindler, Shaker Heights, Ohio, assignor to Intermarket Corporation, Cleveland, Ohio

Filed Jan. 18, 1974, Ser. No. 434,404

Int. Cl. A41d 19/00

U.S. Cl. 2-168

3 Claims



1. Surgical glove of thin latex construction having a predetermined size comprising a finger stall portion, a central body and a cuff and/or wrist portion, said cuff and/or wrist portion being of thickened construction when compared to the finger stall portion, said thickened cuff and/or wrist portion having an inner base portion formed initially with said finger stalls and central body portion, and an overlying circumferential latex band on said inner base portion, said overlying circumferential latex band being of a substantially uniform contrasting color compared to said finger stall portion and central body portion and merges with the underlying base portion, the color of said circumferential latex band being selected to correspond to the predetermined glove size in accordance with a preselected code, the overlying circumferential latex band and said inner base portion forming a substantially unitary structure when viewed in cross-section.

3,852,827

FORM FITTING LOWER BODY GARMENT AND METHOD OF MAKING SAME

Robert B. Colbert, Jr., Humboldt, Tenn., assignor to Wayne-Gossard Corporation, Humboldt, Tenn.

Filed Apr. 29, 1974, Ser. No. 465,429

Int. Cl. A41b 9/04

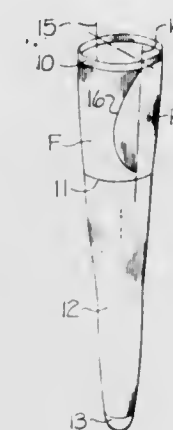
U.S. Cl. 2-224 R

20 Claims

1. A lower body garment, such as panty hose, characterized by increased fullness in a selected area of the panty portion to accommodate lower torsal protuberances of the wearer, said garment comprising

- a pair of knitted tubular legs,
- a panty composed of two halves, each panty half being knit integrally with each of said legs and extending upwardly therefrom, said legs and panty halves each being knit with stitch loops forming courses extending circumferentially and wales extending longitudinally of said legs and said panty halves,
- each leg and panty half including an inside wale and an outside wale positioned 180° apart and defining corresponding front and rear portions therebetween,

- each panty half having a slit extending downwardly from its upper end with at least a portion of the slit in each panty half extending across a plurality of wales adjacent said inside wale to form fullness fabric areas between the respective slits and inside wales, and
- means connecting corresponding edges of the slits in said panty halves to form the panty with said connecting



means extending from the waist opening in the panty in the front downwardly through the crotch and upwardly to the waist opening in the rear of said panty, said fullness fabric areas when connected by said connecting means providing increased fullness in that area of the panty to accommodate lower torsal protuberances of the wearer and thereby providing increased fitting quality and comfort.

3,852,828

LADIES UNDERGARMENT

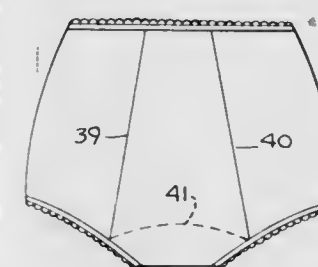
Murray Silverstein, 3 Jordan Dr., Great Neck, L.I., N.Y. 11021

Filed May 7, 1973, Ser. No. 357,689

Int. Cl. A41b 9/04

U.S. Cl. 2-224 A

2 Claims



1. A lady's panty garment made of blanks of material, comprising a main body blank mainly stretchable in a longitudinal direction, a one piece, outer rear and crotch blank, an inner rear reinforcing blank, and an inner absorbent crotch blank, all of said rear, crotch and reinforcing blanks being mainly stretchable in a vertical direction, wherein the top edge of the absorbent crotch blank is stitched to the bottom edge of the rear reinforcing blank and the other edges of the rear reinforcing blank and the absorbent crotch blank are stitched to the same seams which connect the main body blank and the rear and crotch blank whereby a continuous space for circulating air between said inner and outer blanks extends from the rear waist portion of the garment all the way through the crotch portion to the top of the crotch portion at the front of the garment.

3,852,829
COMPOSITION AND METHOD FOR PRODUCING WRINKLE-FREE PERMANENTLY PRESSED CELLULOSIC TEXTILE MATERIALS

Robert J. Cicione, Cranston, R.I.; Edward G. Najjar, Lincoln; Patricia M. Scanlon, Arlington; John L. Ohlson, Bedford, and Joseph F. Finn, Hyde Park, all of Mass., assignors to W. R. Grace & Co., New York, N.Y.

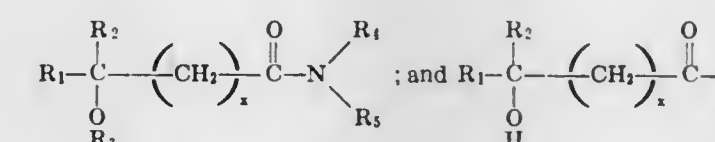
Division of Ser. No. 195,844, Nov. 4, 1971. This application Apr. 20, 1973, Ser. No. 353,161

Int. Cl. A41d

U.S. Cl. 2-243 R

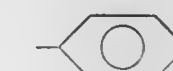
10 Claims

1. In a process for manufacturing a garment from a fabric prepared from a cellulosic textile material comprising impregnating the fabric with a heat curable aqueous aminoplast creaseproofing agent and drying the impregnated fabric at a temperature below the curing temperature of the aminoplast component of the heat curable aminoplast creaseproofing agent and then cutting said dried fabric to the size, shape and style of the desired garment, sewing the fabric to provide garment seams, finishing the cut and sewn fabric to make a completed garment therefrom, imparting creases into the completed garment, and thereafter heating the impregnated, dried, completed, and creased garment to cure the aminoplast and to insolubilize it in situ so that the completed garment is pressfree and the imparted creases therein are unaffected after repeated washing of the garment, said heat curable aminoplast creaseproofing agent consisting essentially of: (a) water; (b) an aminoplast; and (c) an acidic catalyst, the improvement comprising admixing the heat curable aqueous aminoplast creaseproofing agent and an amount of a member selected from a first group consisting of:

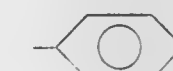


in which:

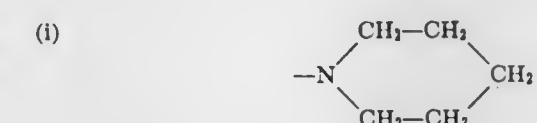
- x is 0 or 1;
- R₁ is hydrogen or an alkyl group having about 1-5 carbon atoms;
- R₂ is hydrogen or an alkyl group having about 1-5 carbon atoms;
- R₃ is hydrogen, an alkyl group having about 1-5 carbon atoms, or -SO₃⁻;
- R₄ is hydrogen, an alkyl group having about 1-8 carbon atoms, -CH₂CH₂OH; or

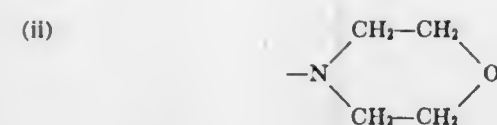


- R₅ is hydrogen, an alkyl group having about 1-8 carbon atoms, -CH₂CH₂OH;

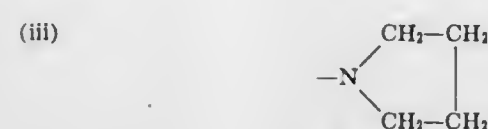
or -CH₂OH; and

- A is a member selected from a second group consisting of:





and



effective for improving hand and increasing crease retention, tensile strength, and dimensional stability of the garment, before impregnating the garment with the heat curable aqueous aminoplast creaseproofing agent.

3,852,830

KNEE PROSTHESIS

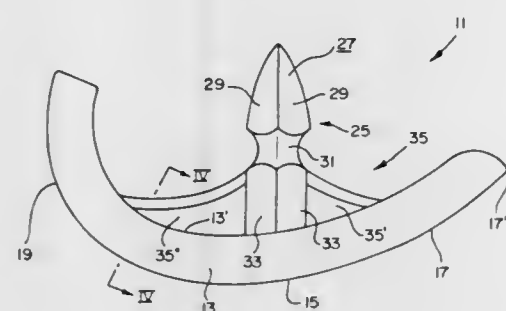
Leonard Marmor, Los Angeles, Calif., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Feb. 15, 1973, Ser. No. 333,127

Int. Cl. A61f 1/24

U.S. Cl. 3-1

9 Claims



8. A knee prosthesis femoral component comprising a curved body portion having a polycentric curved lower face including a posterior section and an anterior section, anchoring means attached to said body portion remote from said lower face for anchoring said body portion to one of the condyles of the knee with which used, said posterior and anterior sections being respectively disposed on imaginary curves with the curve of said posterior section having a predetermined radius substantially smaller than the predetermined radius of the curve of said anterior section, said anchoring means including a single pointed spike attached to said body portion centrally thereof and extending upwardly therefrom, and narrow fin means attached to said body portion and elongated in a direction extending radially of said spike for engaging one of the condyles of the knee with which used for preventing rotation of said body portion relative to the condyle.

3,852,831

ENDOPROSTHETIC ELBOW JOINT

Roger Dee, Norfolk Nor, England, assignor to National Research Development Corporation, London, England

Filed Jan. 29, 1974, Ser. No. 437,663

Claims priority, application Great Britain, Jan. 31, 1973, 4837/73

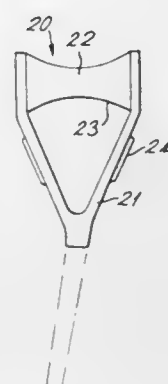
Int. Cl. A61f 1/24

U.S. Cl. 3-1

10 Claims

1. An endoprosthesis elbow joint device comprising a cooperating pair of ulnar and humeral components; the ulnar component including a first bearing member having a first bearing surface of generally saddle shaped formed as a part of a surface of revolution with concave circumferential form and

convex axial form; and the humeral component including a bifurcated member, and a second bearing member bridging the free ends of the arms of said bifurcated member; said second bearing member having a second bearing surface in mutual articulatory generally complementary bearing engage-



ment with said first bearing surface, and shaped as a surface of revolution with its axis of revolution coincident with that of said first bearing surface and extending between said arm free ends, with convex circumferential form of greater angular extent than that of said first bearing surface, and with concave axial form.

3,852,832

PROSTHESIS WITH FIXATION MEANS

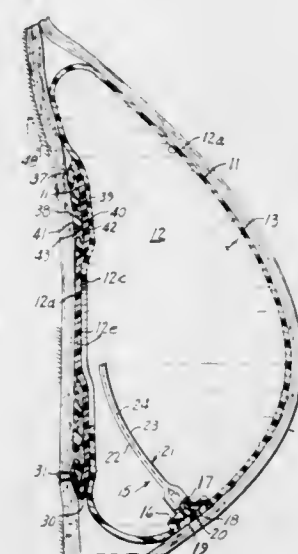
Donald K. McGhan, Santa Barbara, and John E. Williams, Los Angeles, both of Calif., assignors to Heyer-Schulte Corporation, Santa Barbara, Calif., by said McGhan

Filed Oct. 24, 1972, Ser. No. 300,170

Int. Cl. A61f 1/24; A41c 3/10

U.S. Cl. 3-36

8 Claims



1. In combination: a flexible and pliable prosthesis having an exterior wall, and fixation means comprising a flexible sheet-like body attached to the exterior wall at the edge of the body, the area of the body and the area of that portion of the exterior wall it covers being substantially equal, the body having a first surface facing away from the exterior wall, a second surface facing toward the exterior wall, the first and second surfaces being generally parallel and comprising the opposite sides of the body, and a plurality of third surfaces joining the first and second surfaces, there being a plurality of perforations passing through the body and extending between and interconnecting the first and second surfaces, each perforation having a sidewall, each sidewall forming a respective third surface, and spacer means spacing the second surface from the exterior wall, whereby the said three surfaces are contactable by tissue which will thereby embrace portions of the body and hold the prosthesis in place, said surfaces being impervious to ingrowth of tissue.

3,852,833

BREAST PROSTHESIS

Ernst-Wilhelm Koneke, Wettmar, and Wilhelm Mohl, Grossburgwedel, both of Germany, assignors to Firma Otto Thamer Textil- und Kunststoff GmbH & Co KG, Grossburgwedel, Germany

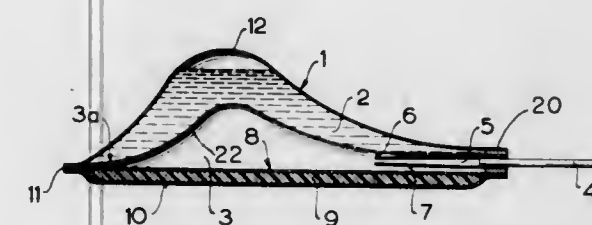
Filed May 8, 1973, Ser. No. 358,316

Claims priority, application Germany, May 23, 1972, 2224963

Int. Cl. A61f 1/24; A41c 3/10

U.S. Cl. 3-36

9 Claims



1. A breast prosthesis comprising an inflatable bag divided into superposed chambers, one of said chambers having liquid therein and the other being inflatable, said bag including a flat bottom adapted to be oriented toward the body, a first inner expandable covering extending over the bottom and defining the inflatable chamber between said first covering and said bottom, said inflation chamber being inflatable to expand said first inner covering outwardly from said bottom and a second outer expandable covering overlying the whole of said first covering and secured around its periphery over said first covering and to said bottom, the space between said first and second expandable covering defining a liquid chamber having liquid therein, said first inner covering portion being expandable upon inflation into the liquid of said liquid chamber to at least partly modify the shape of said liquid chamber and said second outer expandable covering.

3,852,834

MODULAR PLUMBING FIXTURE COMBINATION

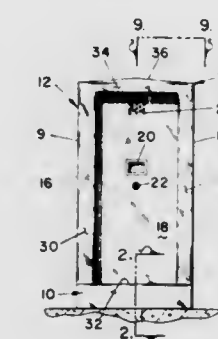
Earl Lavern Morris, Whittier, Calif., assignor to Acorn Engineering Company, City of Industry, Calif.

Filed May 14, 1973, Ser. No. 360,318

Int. Cl. A47k 3/22

U.S. Cl. 4-146

17 Claims



1. A combination plumbing fixture for connection to a source of fluid and to a fluid drain, comprising:

- a shower enclosure having a sidewall thereabout, said sidewall having an entrance therethrough for human access into said shower enclosure, and further comprising a roof capping the top of said sidewall and a receptor, secured about the inside of said sidewall adjacent to the bottom of thereof, for receiving fluid, said receptor having a drain aperture therein for the passage of fluids therethrough;
- a hollow frame member disposed about said shower enclosure entrance, said frame member having at least one perforation through the wall of the frame member facing the inside of said shower enclosure;

- a showerhead means disposed about said perforation in said frame member;
- a first anchoring means for securing said showerhead means to said frame member;
- a first piping means connected in fluid communication with said showerhead means for delivering fluid thereto, said piping means disposed within said hollow frame member and above the bottom of said sidewall and beneath the shower receptor and thereafterwards passed through said sidewall below said shower receptor for connection to a source of fluid such as water; and
- fluid drain means connected in fluid communication to said drain aperture in said shower receptor for draining the fluid which accumulates in said shower receptor from said shower receptor.

3,852,835

BATHTUB HOIST AND TRANSFER DEVICE

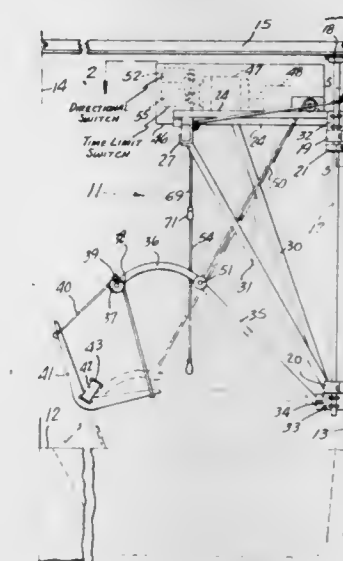
Willard H. Whitaker, 314 W. Tate St., Corinth, Miss. 38834

Filed June 29, 1973, Ser. No. 375,150

Int. Cl. A47k 3/12

U.S. Cl. 4-185 L

9 Claims



1. In combination, a bathtub, a horizontally extending frame structure, means pivotally supporting said frame structure in an elevated position at a fixed height relative to the bathtub for horizontal rotation around a vertical axis located so that said frame structure may be swung from a position projecting laterally from the bathtub to a position overlying the bathtub, and vice versa, a hoist means on the frame structure, a body-supporting member connected to said hoist means, and means for rotating said frame structure in opposite directions comprising respective externally connected control cables extending over opposite side portions of the frame structure and depending from said frame structure adjacent said body supporting member, whereby a person occupying said body-supporting member may be elevated by said hoist means, may be swung over the bathtub, and may be then lowered into the bathtub by said hoist means.

3,852,836

SEWAGE BACKWATER RELIEF VENT

Jene V. Oberholtzer, 10005 Newcombe Dr., Dallas, Tex. 75228

Filed Sept. 18, 1973, Ser. No. 398,408

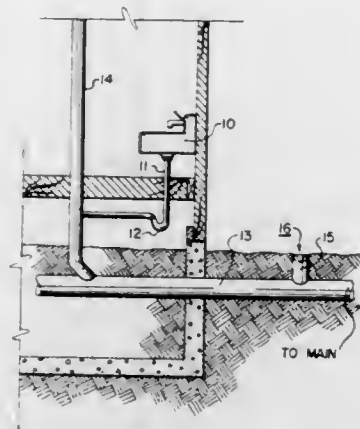
Int. Cl. E03f 5/08

U.S. Cl. 4-219

4 Claims

- A relief vent and plug comprising:
 - a first cylindrical body with male threads on the vertical exterior surface thereof and having a centrally located aperture passing vertically therethrough; and
 - a second cylindrical body removeably positioned within said aperture substantially sealing said aperture and retained therein only by gravitational force exerted on said second cylindrical body;

wherein the bottom portion of said aperture is substantially cylindrical and the top portion thereof is expanded to form a recessed groove in the top face of said first cylindrical body



concentric with said cylindrical portion of said aperture, and the external surface of said second cylindrical body is conformed to mate with the surfaces of said aperture.

3,852,837

FOLD-AWAY BED UNIT

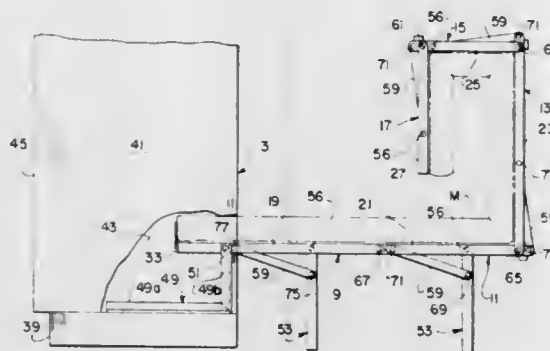
Paul W. Eakins, St. Louis, Mo., assignor to The Foster Brothers Manufacturing Company, St. Louis, Mo.

Filed Apr. 28, 1972, Ser. No. 248,533

Int. Cl. A47c 19/06

U.S. Cl. 5-155

3 Claims



1. A fold-away bed unit comprising an enclosure having an open side, and a folding bed fixture adapted to be folded up with a mattress thereon housed in said enclosure and unfolded and extended outwardly therefrom through the said open side of the enclosure for use as a bed, said fixture comprising a plurality of sections pivotally connected together end-to-end, with one section constituting a head section at one end of the fixture, another section constituting a foot section at the other end of the fixture, and first, second and third intermediate sections between the head section and the foot section, with the length of the second intermediate section corresponding generally to the length of the head section, the length of the third intermediate section being less than the length of the first intermediate section and the length of the foot section being less than the length of the second intermediate section, said sections being adapted to occupy an unfolded extended position wherein they are generally coplanar and extend out from said enclosure, and adapted to be folded by successive folding up of the foot and intermediate sections to a fold-away position forming in conjunction with the head section a folded structure of rectangular outline in cross-section in a vertical plane perpendicular to the pivotal axes of the sections, with the first intermediate section extending up from the outer end of the head section, the second intermediate section extending rearward from the upper end of the first, the third intermediate section extending down from the inner end of the second, and the foot section extending out from the lower end of the third intermediate section, and with the mattress being thereby folded along four fold lines to have a portion between

the head and foot sections, a portion extending up on the inside of the first intermediate section, a portion extending rearward on the inside of the second intermediate section, a portion extending down along the third intermediate section, and a portion extending forward on the foot section, means at the sides of the enclosure pivotally mounting the head section for swinging movement on a horizontal axis extending transversely with respect to the fixture and enclosure at a suitable bed elevation above floor level, whereby said folded structure may be swung as a unit about said horizontal axis into the enclosure to a position wherein the head section extends generally vertically adjacent the front of the enclosure, the first intermediate section extends rearward from the upper end of the head section, the second intermediate section extends down adjacent the rear of the enclosure, the third intermediate section extends forward from the lower end of the second intermediate section adjacent the bottom of the enclosure, and the foot section extends up from the forward end of the third intermediate section, and leg means for supporting said sections in horizontal coplanar position at said bed elevation above floor level when the sections are extended, said bed unit having means interconnecting the foot section to the third intermediate section, the third intermediate section to the second intermediate section, the second intermediate section to the first intermediate section, and the first intermediate section to the head section for locking each of these sections in its fold-away position in response to its being folded up to its fold-away position.

3,852,838

BOX SPRING ASSEMBLY AND IMPROVED SPRINGS THEREFOR

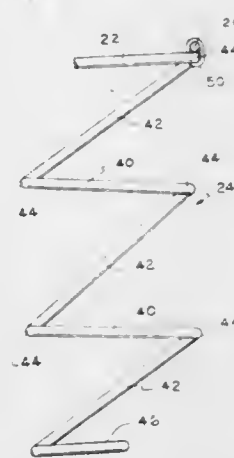
Walter V. Slominski, Ann Arbor, Mich., and Jack C. Mandusky, Lexington, Ky., assignors to Hoover Bell and Bearing Company, Saline, Mich.

Filed May 23, 1973, Ser. No. 362,887

Int. Cl. A47c 23/02

U.S. Cl. 5-247

12 Claims



1. In a box spring assembly which includes a supporting frame, a plurality of spring members mounted on said frame and connected together to form a spring deck disposed above the frame and yieldably movable toward the frame, at least some of said springs comprising substantially horizontal body portions and depending end portions, each of said end portions comprising a plurality of angularly arranged connecting bars and substantially horizontal torsion bars extending between and connecting adjacent connecting bars, alternate ones of said connecting bars being substantially horizontal in the unloaded condition of said spring and other ones of said connecting bars extending obliquely upward from said alternate ones so that when said springs are subjected to downwardly directed loads said alternate connecting bars are bent downwardly and said other connecting bars are also bent downwardly so that they become inclined in the same direction as said alternate bars to thereby achieve resistance to load by both twisting of said torsion bars and bending of said connecting bars.

3,852,839

TIRE TOOL

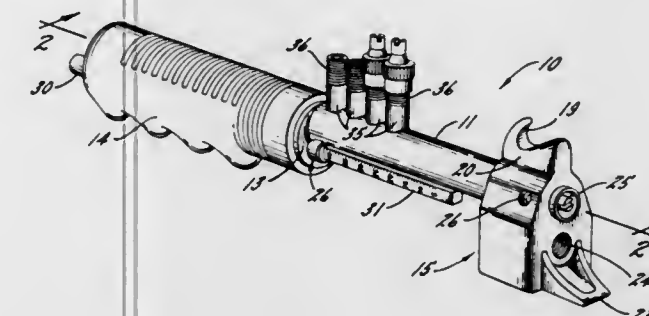
Jerry A. Blessing, DeKalb, Ill., assignor to BLT Industries, Gilberts, Ill.

Continuation-in-part of Ser. No. 279,193, Aug. 9, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,166

Int. Cl. B25f 1/00; B23p 19/04

U.S. Cl. 7-8

11 Claims



1. A tire tool comprising an elongated shank, a handle on one end of said shank, a metal head on the opposite end of said shank, said head having an inner end facing said handle and an oppositely facing outer end and also having upper and lower ends, a wheel weight hook formed integrally with said head and opening upwardly and outwardly from the upper end thereof, a substantially flat surface formed on the lower end of said head and defining a hammer face, a hubcap pry rigid with and projecting outwardly from the outer end of said head adjacent said hammer face, a threaded valve stem hole formed in said head and opening out of the outer end thereof above said pry, and a valve core rotating element coaxial with said shank and located between said hook and said pry, said valve core rotating element being connected to turn with said shank and being located adjacent the outer end of said head.

3,852,840

MACHINE FOR ADHESIVELY SECURING SHEET MATERIAL

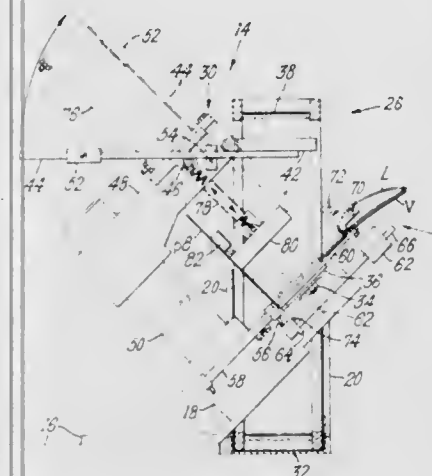
Albert Eugene Newton, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed Feb. 7, 1974, Ser. No. 440,288

Int. Cl. A43d 7/00; B05c 11/00

U.S. Cl. 12-61 A

6 Claims



1. A machine for assembling and securing two plies of flexible sheet material to be stiffened comprising, a work supporting bed for supporting one of the two plies with an adhesive tacky coating thereon exposed when the second ply is at least partly disassociated therefrom, dispenser mechanism for depositing a layer of reinforcing resin granules on the tacky adhesive coating of the one ply except for a margin of said coating, combining mechanism for superimposing the second ply in outspread intimate contact with the first ply, its coated margin, and said layer of granules, and pressure means

thereupon operable to compress the thus combined plies at least in their tacky coating area in secured relation.

3,852,841

SHOE SUPPORT FOR WELT LASTING MACHINE

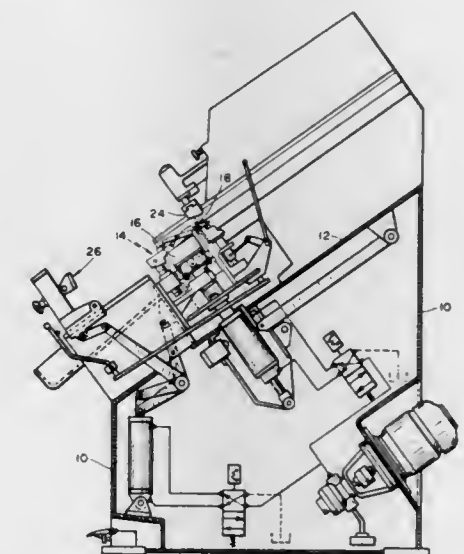
Herbert Schindler, and Tilo Löffler, both of Pirmasens, Germany, assignors to American Shoe Machinery Corporation, Wakefield, Mass.

Filed Aug. 9, 1973, Ser. No. 387,104

Int. Cl. A43d 21/00, 3/00

U.S. Cl. 12-142 R

19 Claims



1. In a machine for pulling over and lasting a welt shoe assembly including a last, an insole at the bottom of the last and an upper draped about the last, the insole having a rib secured to the bottom thereto in generally horseshoe shaped configuration, said machine including a plurality of shoe operating instrumentalities disposed therein about a shoe supporting station, an improved shoe and rib support comprising:

a member supported in said machine at said shoe supporting station to support said shoe assembly in relation to said shoe operating instrumentalities, said member having a peripheral wall of generally horseshoe shape and an upper, insole-supporting surface, said member being of articulated construction in which at least the portions of said peripheral wall disposed heelwardly of said bight may be expanded or contracted in a generally lateral direction thereby to expand or contract the width of the horseshoe shape defined thereby;

means for moving said articulated portions of said member between a contracted idle position in which the width defined by the horseshoe shaped thereof is less than the width of the horseshoe shape defined by said rib and a working, expanded position in which the width of the horseshoe shape defined by said peripheral wall is substantially equal to the width of the horseshoe shape defined by said rib whereby when said shoe assembly is placed on said support with the insole resting on the upper surface of said support and the rib extending down therefrom and surrounding the peripheral wall of said support, the articulated portions of said support may be expanded laterally and outwardly so that the sidewall portions thereof may engage and provide a backing support for said insole rib;

means mounting said horseshoe shaped member for bodily movement from a remote position to said working position;

means maintaining said member in said contracted configuration when said member is in said remote position; and means for effecting said expansion of said articulated portions of said member in response to said bodily movement of said member from said remote to said working position.

3,852,842

STATIONARY WASHING DEVICE FOR MOTOR VEHICLES PASSING THERE THROUGH

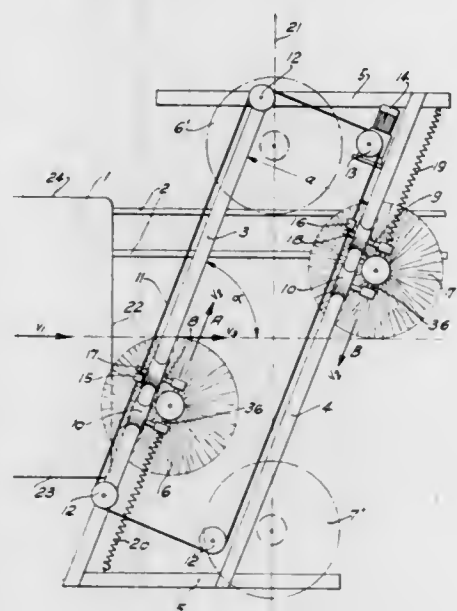
Gebhard Weigle, Am Schonblick 1a, Tafertingen, and Johann Sulzberger, Radegundis 11, Augsburg, both of Germany
Filed June 11, 1973, Ser. No. 368,666

Claims priority, application Germany, June 12, 1972, 2228567

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

6 Claims



1. A stationary washing device for vehicles passing there-through having first and second vertical washing brushes which are each pendently supported on carriages which are in turn movably supported on guide rail means arranged inclined with respect to the direction of travel, said brushes and guide rail means being so arranged that the first brush washes first the front and then one vehicle side and the second brush washes first the other vehicle side and then the rear, comprising the improvement wherein said guide rail means comprises two guide rails parallel with respect to one another and on each rail one of said brushes is supported so that in the beginning position said first and second brushes are located at opposite ends of the rails and wherein oppositely directed movement of said first and second brushes is effected by connecting their respective carriages by a continuous, drivable traction member.

3,852,843

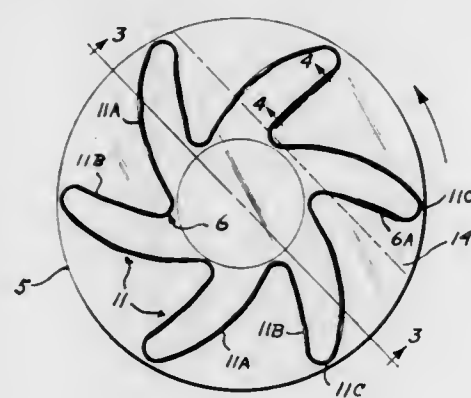
ROTARY DISC CUTTING DEVICE

Anthony B. Metz, 129 Chester Ave., Chelsea, Mass. 02150
Filed May 30, 1973, Ser. No. 365,222

Int. Cl. B44d 3/16

U.S. Cl. 15-93

15 Claims



1. A device for use in removing paint or other surface layers from wood, metal, bricks, and the like and to be rotated by a power driver, said device comprising a resiliently flexible disc of a moldable material, a length of a blade of the band saw

type embedded and anchored in the disc in such a manner that its teeth are exposed on a face thereof, and axial means exposed on the other face for attaching the disc to the driver, said embedded blade length extending completely around said axial means and including a plurality of outwardly disposed loop portions providing leading and trailing courses and closed outer ends, at least the leading course of each loop portion being outwardly inclined in a trailing direction with respect to the direction the device is to be rotated, said loop portions being of substantial and radial extent and uniformly spaced circumferentially.

3,852,844

CARPET FLUFFING DEVICE

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama Chiba-ken, Japan

Filed Jan. 8, 1973, Ser. No. 321,636

Claims priority, application Japan, Jan. 11, 1972, 47-5739

Int. Cl. A47l 13/00

U.S. Cl. 15-142

7 Claims



1. A carpet fluffing device, comprising an elongated substantially horizontal extending axle, and elongated handle fixedly attached to the axle substantial at the center thereof, a pair of wheels rotatably mounted on the axle adjacent the opposite ends thereof, each wheel comprising a hub rotatably mounted on the axle and a plurality of spokes extending outwardly from the periphery of the hub, the spokes being thin in thickness but rather broad in width, a plurality of first pins fixed to said axle and aligned in a first row which is substantially parallel with the longitudinal direction of the axle, a plurality of second pins fixed to the axle and aligned in a second row which is substantially parallel with the longitudinal direction of the axle, the first and second pins each projecting radially outwardly from the axle, the first and second pins each having a length less than the radius of said wheels with the first and second pins being of different lengths, the first row of pins being angularly spaced from the handle to permit the first pins to engage a carpet when the handle is in a first position, and the second row of pins being angularly spaced from both the first row of pins and the handle to enable the second row of pins to engage the carpet when the handle is moved into a second position.

3,852,845

WIPER ARM ADAPTER FOR CONVERTING A SINGLE WIPER ARM TO AN ARTICULATING WIPER ARM

William J. Quinlan, and Laurence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Filed June 13, 1973, Ser. No. 369,485

Int. Cl. B60s 1/40, 1/32

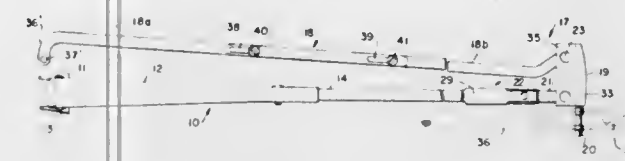
U.S. Cl. 15-250.23

13 Claims

1. A windshield wiper arm adapter for converting a single lever oscillating wiper arm having a driven end and a free end to a compound articulating wiper arm assembly comprising a pivot block, a windshield wiper blade mounting pin anchored in said pivot block, an elongated secondary wiper arm having one end pivotally connected to said pivot block and a second end provided with bearing means for pivotal mounting with respect to a fixed pivot, a detachable connector means for

interlocking engagement with the free end of said single lever wiper arm and for manually actuated disengagement there-

guiding the thread as it is slung around said mandrel and said wadding, said second thread guiding means carried by the sleeve having means to intercept and direct the free end of the draw thread internally of said sleeve while the mandrel is



from, and means for pivotally connecting said detachable connector means to said pivot block.

3,852,846

DOOR HOLD OPEN ATTACHMENT FOR A DOOR CHECK

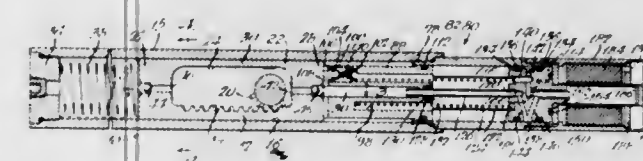
Loren E. Slaybaugh, Arlington Heights, Ill., assignor to Republic Industries, Inc., Chicago, Ill.

Filed July 28, 1972, Ser. No. 276,122

Int. Cl. E05f 15/20

U.S. Cl. 16-48.5

9 Claims



1. In a door check of the type which includes means defining a cylinder, a member slidable within said cylinder, resilient means biasing said member toward one end of said cylinder, means for connecting said door check to a door and frame combination to move said member relative to said cylinder against said biasing means upon opening said door, hydraulic fluid in said cylinder and means for permitting fluid flow counter to the movement of said member to restrain the movement of said door; a door hold-open mechanism comprising means providing an extension of said cylinder on that end thereof toward which said member is biased, a piston resiliently biased within said extension to follow said member and having a one way flow passage therein to admit fluid therethrough upon following movement against said resilient means, means closing said extension, said closing means including a passage having a valve seat therein for delivering fluid from the downstream side of said one way flow passage to the upstream side thereof, a valve for closing against said valve seat, and electrically actuated means for operating said valve.

3,852,847

APPARATUS FOR MANUFACTURING TAMPONS

Herbert Etz, Wuppertal-Langerfeld, Germany, assignor to Dr. Carl Hahn KG, Dusseldorf, Germany

Division of Ser. No. 870,783, Sept. 19, 1969, which is a division of Ser. No. 502,780, Oct. 21, 1965, Pat. No. 3,477,102. This application Apr. 7, 1972, Ser. No. 242,129

Claims priority, application Netherlands, Oct. 22, 1964, 6412326

Int. Cl. A61l 15/00

U.S. Cl. 19-144.5

9 Claims

1. Apparatus for the production of a tampon by rolling up a wadding pad upon a rotary mandrel comprising means for slinging a draw thread with clearance around a wadding pad positioned on a rotary mandrel and means for forming a knotted loop having a free end from said draw thread before the wadding pad is rolled up on the mandrel, means for rotating said mandrel, a sleeve mounted for coaxial movement about the mandrel but non-rotatable with respect to the mandrel, means for axially reciprocating said sleeve, a first thread guide means carried by said mandrel and a second thread guide means carried by the coaxial sleeve, said first guide means for

rotated and while the sleeve is displaced axially by the reciprocating means into one end of the pad being rolled up, whereby the draw thread is wound into a flat spiral spool seated in recess annular recessed formed by said displacement of said sleeve into the end of the rolled up pad.

3,852,848

METHOD OF, AND APPARATUS FOR STANDARDIZING SLIVERS

Peter Feller, Uster, Switzerland, assignor to Zellweger, Inc., Uster, Switzerland

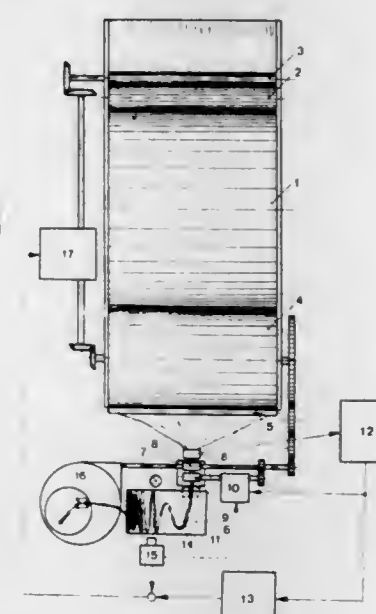
Filed Sept. 7, 1972, Ser. No. 286,865

Claims priority, application Switzerland, Sept. 7, 1971, 13143/71

Int. Cl. D01h 5/38

U.S. Cl. 19-240

10 Claims



1. A method for standardizing the cross section or weight per unit length of a sliver produced by a textile machine, comprising the steps of measuring the supply of material at the outlet of the machine, drafting the material subsequent to the measuring thereof, correcting long-term fluctuations in the supply of material at the inlet of the machine in response to the measured supply of material at the outlet of the machine, correcting short-term fluctuations in the material at the outlet of the machine in response to the measured supply of material by altering the draft thereof, supplying the sliver at the outlet of the machine to a coiling mechanism, and, in order to keep the speed of the coiling mechanism at a constant level, adjusting the difference between the variable rate of the short-term correction operation and the rate of travel of the sliver by supplying said sliver to a sliver reservoir prior to delivery to said coiling mechanism, monitoring the filling level of the sliver reservoir and, as a result of such monitoring, controlling

at least one of said correcting operations in such a way that the average filling level of the sliver reservoir remains constant.

3,852,849

PANEL MOUNTING FASTENER

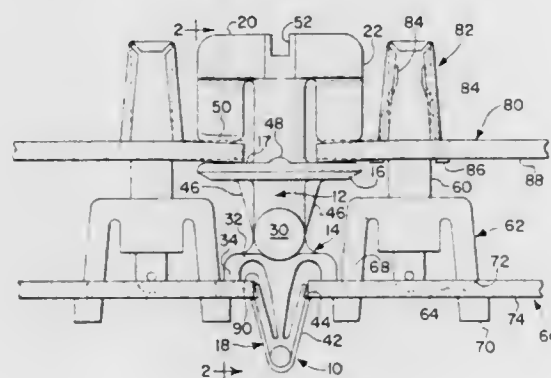
John A. Pestka, Park Ridge, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,509

Int. Cl. F16b 19/00; A44b 21/00

U.S. Cl. 24—73 P

4 Claims



1. A one-piece plastic rotatable fastener for mounting at least one panel in predetermined spaced relation to a support, said support carrying a male contact having a predetermined axial length in relation to one reference surface of said support, said panel including a female contact having a predetermined position relative to said panel whereby when said panel is oriented and maintained at a predetermined distance from said support said female contact will telescopically engage said male contact at a preselected optimum position, said fastener including a central axially extending body portion, flange means extending radially outwardly from predetermined spaced positions on said body portion, resilient stud means extending axially from one end of said body portion and having positive shoulder means spaced from and in opposing relation to one of said flange means and adapted to be snapped into said apertured support means with said shoulder means contacting said predetermined reference surface of said support means, said stud means adapted to be positively axially retained against inadvertent removal but capable of rotation within said aperture of the support means, said body portion extending axially beyond said other flange means at the end opposite said stud and carrying at least one substantially rigid wing element extending radially outwardly in overlying spaced relation to said other flange means, said wing element including a depending resilient arm the free end of which is spaced from said other flange means a distance less than the thickness of said panel, said other flange means having the surface facing said flexible arm acting as a reference plane spaced from said shoulder means said predetermined distance whereby rotation of said fastener results in said flexible arm forcing said panel into intimate engagement with said other flange means reference surface thereby insuring accurate positioning of said male contact within said female contact to obtain the predetermined optimum contact between said male and female contacts.

3,852,850

CABLE GRIPPING UNIT

Ilmar J. Filhaber, Poughkeepsie, N.Y., assignor to Fargo Mfg. Company Inc., Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 150,133, June 4, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,440

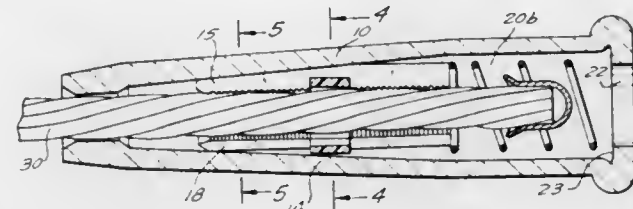
Int. Cl. F16g 11/00

U.S. Cl. 24—136 R

5 Claims

1. In a unit for gripping a helical stranded cable of the type including a shell having a conical shell bore terminating at its outer end in a cable accommodating opening and presenting a tapered shell bore circular in cross section, a gripping mem-

ber within said shell bore and movable longitudinally of said shell, and a helical spring thrusting against said member and said shell, that improvement consisting of said gripping member comprising: an elastic retaining member within said shell bore, a plurality of jaw segments, said retaining member being circular and concentric with said shell bore and provided with a plurality of jaw segment retaining slots within each of which one of said jaw segments is respectively retained whereby said



jaw segments are supported by said retaining member within said shell bore in circular arrangement, a cylindrical jaw bore defined by said jaw segments, said retaining member yieldingly urging said jaw segments to ride on the surface of said shell bore, said helical spring yieldingly urging said gripping member toward the reduced end of said shell bore constricting said jaw segments and a cable gripping portion of each of said jaw segments angled in the direction which is in opposite hand to the helix of said cable disposed therein.

3,852,851

TWIN PULL TAB SLIDER

Yoshitaka Higuchi, Kamiichi-Machi, and Susumu Ishii, Kurobe, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

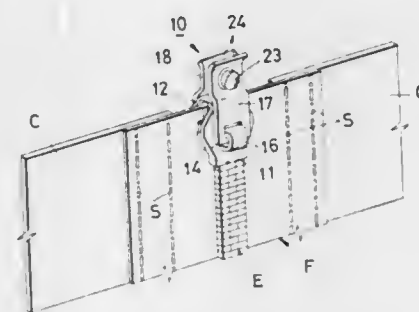
Filed Feb. 11, 1974, Ser. No. 441,336

Claims priority, application Japan, Feb. 13, 1973, 48-19424

Int. Cl. A44b 19/30

U.S. Cl. 24—205.11 L

3 Claims



1. A slider for heavy duty slide fasteners which comprises an upper wing and a lower wing constituting a slider body and connected together at one end, a pair of pull tabs pivotally carried at their one ends on said upper and lower wing respectively and arranged to rotate between a first position in which the slider is unlocked and a second position in which the slider is locked relative to the fastener, a locking means extending at least from one of said pair of pull tabs and adapted to lock the slider against movement relative to the fastener, and engaging means provided at the other ends of said pull tabs for joining the latter together when the slider is held in said second position.

3,852,852

PULL TAB FOR CAM LOCK SLIDERS

Hirokazu Watanabe, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 426,666

Claims priority, application Japan, Dec. 14, 1972, 47-125428

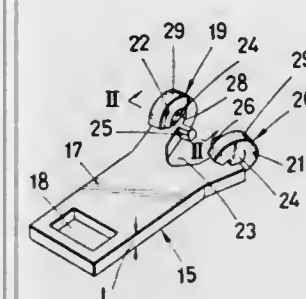
Int. Cl. A44b 19/30

U.S. Cl. 24—205.14 A

1 Claim

1. A pull tab for slide fastener sliders which comprises a tab body having a slot adjacent one end, bifurcated tongues integral with said body and extending on opposite sides of said

slot, an inwardly directed trunnion extending from each of said bifurcated tongues into said slot and adapted to connect the pull tab pivotally to a slider, and a reinforcing core integral with and projecting perpendicularly from a portion of said tongue, said tongue, including said portion, being bent over



backward around said core substantially into the form of a roll serving as a locking cam, said tongue having a thickness as measured diametrically of the roll substantially equal to that of said tab body, and said reinforcing core being held in intimate contact with the inner peripheral surfaces of said tongue.

3,852,853

DEVICE FOR LATCHING OR LOCKING TWO OBJECTS TOGETHER

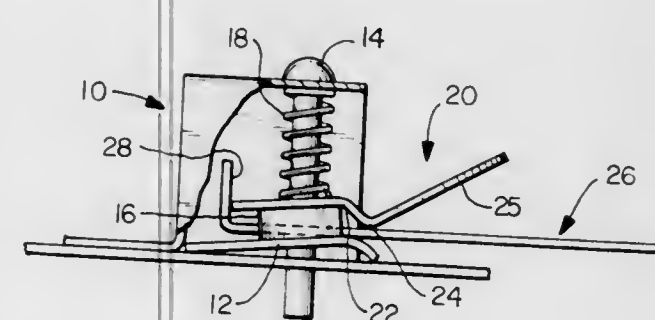
Carson Thomas, 1011 S. 22nd St., Arlington, Va. 22202

Filed Dec. 15, 1972, Ser. No. 315,579

Int. Cl. A44b 19/00

U.S. Cl. 24—230 A

11 Claims



1. A device for latching two objects together comprising: a housing having at least one open end; at least one pin means mounted in said housing at a predetermined distance from said open end; keeper means in said housing having a front edge adjacent said open end and a back edge disposed on the opposite side of said pin means from said open end; tongue means having a protrusion thereon, said tongue means being slidable into said housing under said keeper means from said front edge toward said back edge for locking engagement of said protrusion with said back edge; a fulcrum means in said housing between said front and back edges on the side of said pin means adjacent said open end; each of said front and back edges of said keeper means being pivotally mounted for movement about said fulcrum means in two opposite directions both for the movement of said tongue means into said housing into locking engagement with said keeper and for the movement of said tongue means out of said housing and out of said locking engagement with said keeper means; said keeper means being mounted on said pin means for rectilinear movement thereon as said keeper means pivots about said fulcrum means; and means for biasing said keeper means toward a locking position to hold said protrusion in locking engagement with said back edge.

3,852,854

GIRT BAR LATCHING SYSTEM

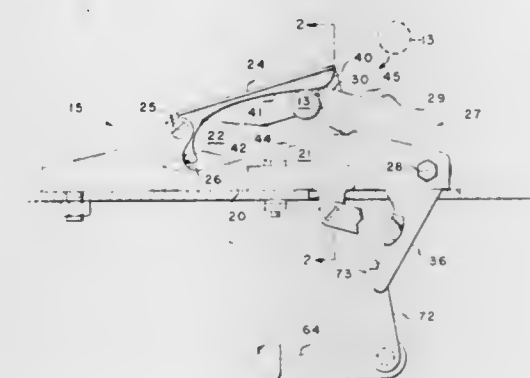
Donald L. Sigrud, Granada Hills; Carleton M. Fields, Canoga Park; Ernest R. Rickel, Northridge, all of Calif., and Joseph A. Cline, Rimón-Kiryat Ono, Israel, assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 5, 1973, Ser. No. 348,234

Int. Cl. A44b 11/25, 13/00

U.S. Cl. 24—230 AT

11 Claims



1. A girt bar latching system for a deployable escape chute assembly utilized under evacuation procedures associated with a closed structure such as an aircraft cabin or the like, comprising:

a girt bar having opposing end portions and having a length adapted to be operatively connected to an escape chute collapsed within a container mounted on the interior side of an exit door for the closed structure or the like, the girt bar generally disposed at the base of the container; at least a pair of latching units adapted to be secured to the floor of the closed structure at a station at which a corresponding one of the end portions of the girt bar can engage and be latched to its corresponding one of said units; each of said units defining a cavity and a notch into each of which a corresponding one of said end portions is introduced upon closing of the door; a member covering the cavity and being pivotally connected to each of said units; a latch member rotatably mounted on each of said units and facing the cavity and towards said covering member, said latch member being biased upwardly to engage and maintain said covering member in a raised position; and means for actuating said latch member against its bias to depress it below said notch for each of said latching units whereby the end portions of said girt bar can be released from said latching units.

3,852,855

FASTENING ELEMENT FOR ONE END OF A BAND

Sigurd Walter Bengtsson, Bruksgratan 17, Gothenburg, Sweden

Filed Nov. 24, 1972, Ser. No. 309,425

Claims priority, application Sweden, Nov. 29, 1971, 15233/71

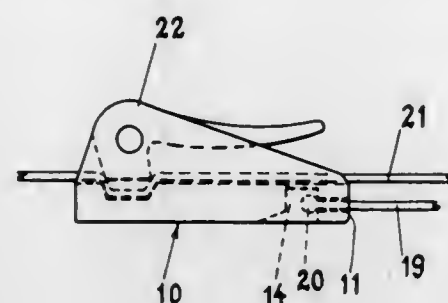
Int. Cl. A44c 5/18; F16g 11/00

U.S. Cl. 24—265 EE

1 Claim

1. A fastening element for receiving the beaded end of a knot-free band of rectangular cross-section, comprising: a one-piece rigid body having a channel of a rectangular cross-sectional size complementary to and receptive of the band, said channel extending from an end surface thereof into said body and terminating therein, there being an enlarged recess in said body at the inner end of said channel, said recess opening otherwise only at an adjacent side surface of said body and being of a size receptive of the beaded end of the band, said recess being defined in part by an internal transverse wall in the body facing the inner end of said channel and disposed in proximity thereto, whereby the structure of the fastening element restrains the beaded end of the band against signifi-

cant movement in either longitudinal direction, and said body having a sloping lead-in surface for the band, said lead-in surface extending from said adjacent side surface and inter-



secting said transverse wall along a line such that said lead-in surface cannot be engaged by the bead for disconnection with deflection of the band with a tool.

3,852,856

CASKET STRUCTURE AND METHOD OF MAKING IT
Francis R. Christian, River Forest, Ill., assignor to The Merit Company, Chicago, Ill.

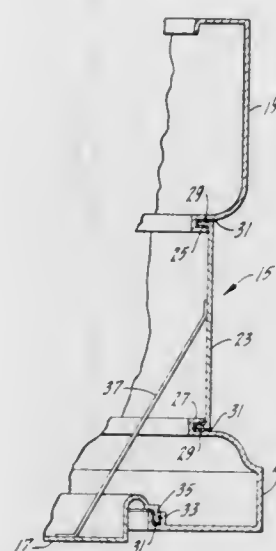
Continuation of Ser. No. 248,659, April 28, 1972, abandoned.

This application Jan. 25, 1974, Ser. No. 436,433

Int. Cl. A61g 17/00

U.S. Cl. 27-6

3 Claims



1. A casket body having side walls, end walls and a bottom wall, each of said side and end walls being formed of three horizontally extending sections which are fastened together, one above the other, the top and bottom sections of the end and side walls being formed as extrusions of an easily extrudable material selected from the group consisting of aluminum and bronze, so that ornamental designs may be formed therein, and the center section being formed of ferrous sheet material, which is stronger and harder than the extrusions of the top and bottom sections.

3,852,857

TEXTILE FLUID CRIMPING APPARATUS

Frederick Allen Ethridge; Michael Paul Taylor, and Scott Winfield Thompson, all of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed May 4, 1972, Ser. No. 250,204

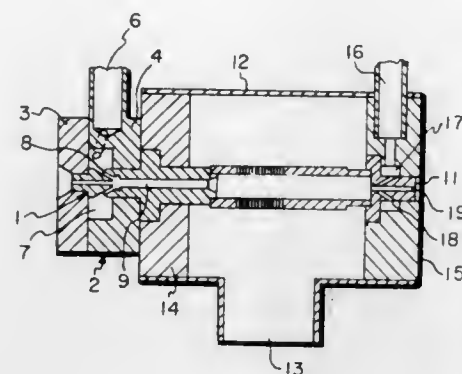
Int. Cl. D02g 1/20, 1/16, 1/12

U.S. Cl. 28-1.3

8 Claims

1. Apparatus for fluid crimping yarn comprising a yarn forwarding jet having a hot fluid supply connected thereto, said yarn forwarding jet having an elongated bore, the length of the bore being sufficient to effect a heat transfer between yarn processing fluid and the yarn, a yarn braking jet having a cold fluid supply connected thereto and a compaction cham-

ber disposed intermediate and in contact with said forwarding jet and said braking jet, said compaction chamber having a means for exhausting said hot gas and said cold gas, whereby



3,852,858

INDEX PIN FOR BRACING AND ORIENTING THE TOOL TURRET OF MACHINE TOOLS

Eberhard Van Der Horst, Erkelenz, Germany, assignor to A. Monforts, Monchengladbach, Germany

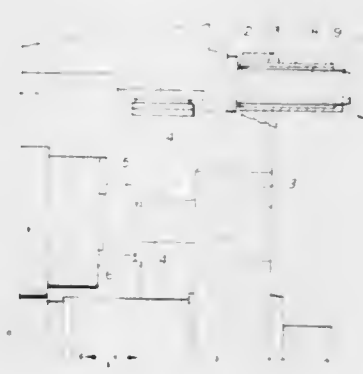
Filed Nov. 12, 1973, Ser. No. 415,019

Claims priority, application Germany, Nov. 14, 1972, 2255647

Int. Cl. B23b 3/16

U.S. Cl. 29-48.5 A

4 Claims



1. In a machine tool having a machine frame and a tool turret rotatably mounted thereon, an index pin for bracing and orienting the tool turret, said index pin being extensible between an arm of the tool turret and a part of the machine frame for holding the tool turret against rotary motion relative to the machine frame, said index pin comprising a core member, and a cylindrical member disposed around and coaxial to said core member at a spaced distance therefrom, said cylindrical member being firmly secured to a free end of said core member.

3,852,859

CUTTING TOOL

Edwin A. Carpenter, Milwaukee, Wis., assignor to Allied Tool Products, Inc., Milwaukee, Wis.

Filed Mar. 22, 1972, Ser. No. 237,157

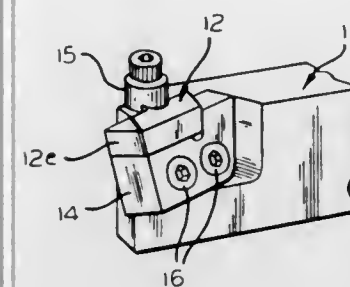
Int. Cl. B26d 1/00

U.S. Cl. 29-96

14 Claims

1. A thread cutting tool including a thread cutting insert and insert holding means, said insert having a cutting tip formed at one end for cutting a thread in a work piece, a component of the force on said insert resulting from the engagement between said insert and said work piece being directed in a first direction, said insert holding means having a first support surface, said insert having a first face on the side thereof away from the direction of said force component and engaging said

first support surface, said insert holding means having a second support surface formed at an acute angle relative to said first support surface, said second support surface engaging



said insert at the end thereof opposite said tip and acting on said opposite end in a direction generally parallel to the direction of said force component.

3,852,860

BENDING COMPENSATED ROLL FOR A CALENDER

Jochen Tewes, Seppenrade, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kloefeld, Germany

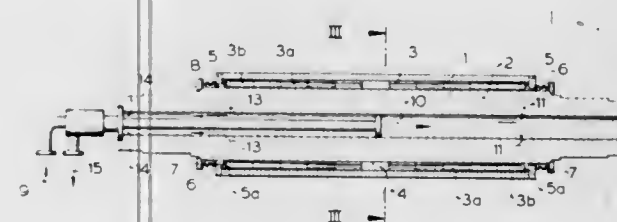
Filed Oct. 23, 1973, Ser. No. 408,302

Claims priority, application Germany, Oct. 21, 1972, 2251763

Int. Cl. B21b 13/02

U.S. Cl. 29-110

2 Claims



1. A roll for rolling out plastics material to form a web of sheeting in a calender, said roll comprising a core, an outer shell surrounding said core and spaced relative thereto, and resilient means interposed between said core and said shell at regular intervals around said core, said resilient means comprising pieces of resilient metal tubes longitudinally arranged and abutting in rows at regular intervals around said core, the internal diameter of the tubes in each row decreasing from the ends of said rolls toward the center of said roll, said metal tubes having a constant external diameter so as to provide linear support of said shell on said core, said rows of tubes thereby providing a spring force which increases from the ends toward the middle of said row commensurately with the bending characteristics of said core.

3,852,861

SURFACES WITH FLUOROCARBON PROCESS FOR MULTIPLE COATING RESINS

John R. Baker, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 187,208, Oct. 6, 1971, Pat. No. 3,776,760.

This application Apr. 26, 1973, Ser. No. 354,719

Int. Cl. B21b 31/08

U.S. Cl. 29-132

2 Claims

1. A fuser roll for use in a xerographic reproducing apparatus for fixing a resin-based powder image onto a support surface to which the powder image is loosely adhering, said fuser roll having a single-fused homogeneous coating of fluorocarbon polymer coating of at least 1.5 mils.

3,852,862

ROLL AND METHOD OF MANUFACTURE

Robert J. Sukenik, Bloomfield Hills, Mich., assignor to New Hudson Corporation, New Hudson, Mich.

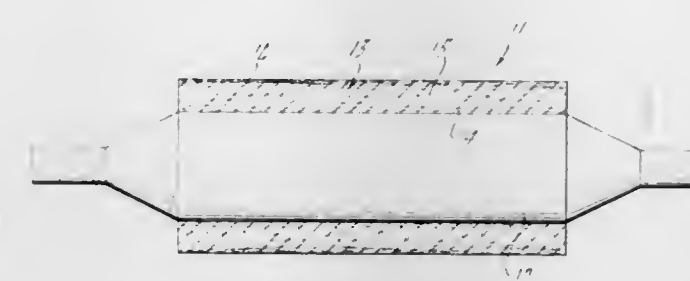
Division of Ser. No. 304,610, Nov. 8, 1972, Pat. No. 3,807,013.

This application Sept. 4, 1973, Ser. No. 393,728

Int. Cl. B21b 31/08

U.S. Cl. 29-132

2 Claims



1. A roll for carrying a markable product through a Lehr, furnace or oven comprising a relatively rigid cylindrical body and a seamless sleeve on said body and secured thereto, all portions of said sleeve between its inner and outer surfaces being fabricated solely of fibrous material selected from the group containing "Kaowool," "Fiberfrax," amorphous silica, mineral wool, glass, quartz and metallic wool, and a binder, the concentration of fibers in said sleeve varying in a radial direction, whereby concentric zones of varying resiliency and strength are created, said zones being radially continuous and uninterrupted between said inner and outer surfaces.

3,852,863

METHOD OF MAKING MULTI-GROOVE PULLEYS

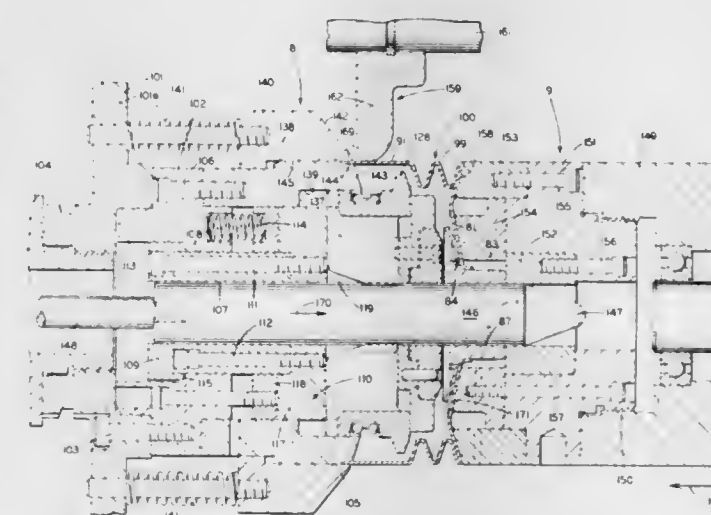
Robert J. Killian, North Canton, and Nolte V. Sproul, Canton, both of Ohio, assignors to Aspro Inc., Canton, Ohio

Filed Oct. 19, 1973, Ser. No. 407,942

Int. Cl. B21k 1/42

U.S. Cl. 29-159 R

12 Claims



1. In a method of making a spun multi-V-groove sheet metal pulley, the steps of forming a cup-shaped sheet metal blank with a cup bottom wall, a cylindrical side wall, a corner between the bottom and side walls, and a side wall open end; then first stage spinning two adjacent and connected V-grooves in the cylindrical cup side wall, adjacent the bottom wall and connected to the corner, and spaced from the open end by a cylindrical wall portion thereby forming an intermediate first stage double-groove spun product; internally cylindrically-supporting said cylindrical wall portion between the open end and the two grooves being spun during the first stage spinning operation; and then second stage spinning at least a third V-groove in the cylindrical side wall portion between the open end of the cup and the first stage formed double-groove to form a multi-V-groove pulley.

3,852,864

CONTACT REMOVAL TOOL FOR ELECTRICAL CONNECTOR

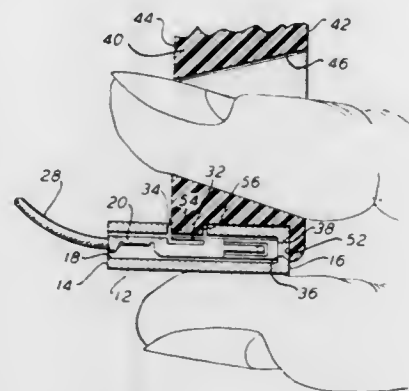
Donald C. Kirk, Jr., Naugatuck, Conn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 11, 1974, Ser. No. 432,748

Int. Cl. B25b 27/02

U.S. Cl. 29-203 H

6 Claims



3. A hand tool for removing electrical contacts from a housing, wherein each contact includes a spring latch which engages a latching shoulder formed by an opening in said housing, the improvement comprising:

said tool having a first reference surface for locating said tool against said housing;

said tool having an extending protrusion located from said first reference surface for extension into said opening to engage and displace said spring latch from said latching shoulder in said housing;

whereby said electrical contact may be removed from said housing upon displacement of said spring latch by said extending protrusion.

3,852,865

SEMI AUTOMATIC ELECTRONIC COMPONENT ASSEMBLER

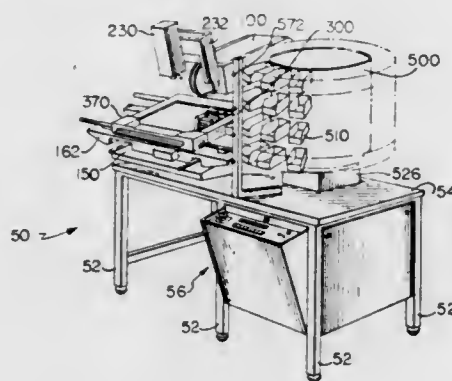
Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,029

Int. Cl. H01r 43/04

U.S. Cl. 29-203 B

22 Claims



1. A device for assembling manually inserted electrical components with leads extending from a single side to a work-piece comprising:

means for positioning said workpiece relative to a fixed point;

means for indicating on said workpiece the location and orientation of the component to be manually inserted;

means for indicating location of a supply of said component to be inserted;

means rotatably mounted below said fixed point for cutting and clinching said leads of said inserted electrical component; and

control means for activating said positioning means, both of said indicating means and said cutting and clinching

means, whereby said cutting and clinching means is rotated for the orientation of said indicated component on the positioned board.

3,852,866

TERMINAL LOADER

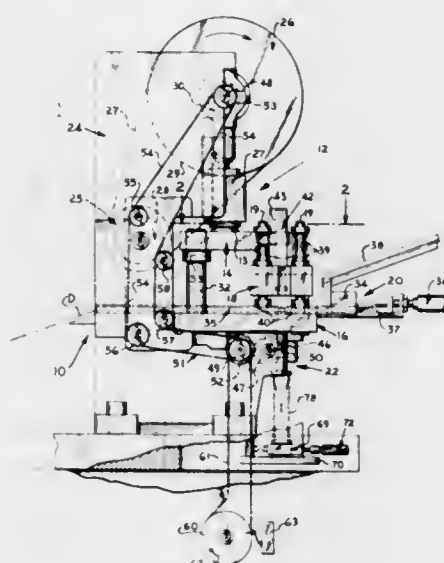
Hardie B. Johnson, Etters, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1973, Ser. No. 417,360

Int. Cl. H05k 13/04

U.S. Cl. 29-203 B

14 Claims



1. Electrical terminal loading apparatus comprising means for feeding a terminal strip in a longitudinal path to a loading station at which one of plurality of terminals thereof is severed therefrom and loaded to one of a number of terminal-receiving cavities of an insulating or other block, means for so severing terminals from said strip and successively loading said terminals, and a block-indexing mechanism for progressively locating the block cavities in a loading position at said station, said mechanism comprising a block-engaging member, and a rotatable cam device to shift said member in a first direction to engage a block and to then index the engaged block in a second direction at an angle to the first direction to said loading position.

3,852,867

BOTTLE DECAPPING SYSTEM

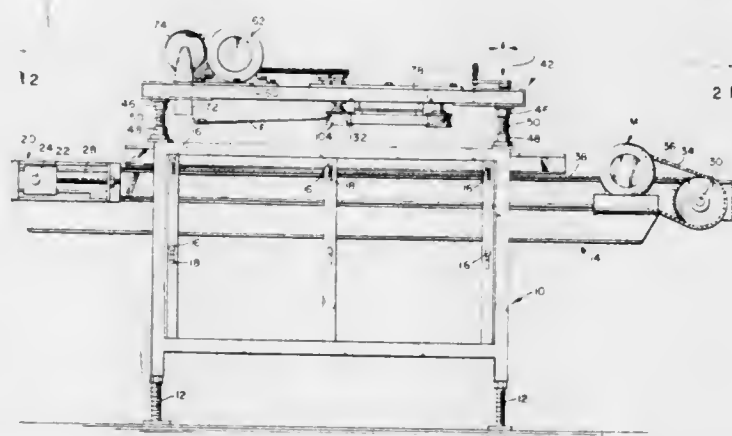
George W. Risener, 4014 Barcelona St., Tampa, Fla. 33609

Filed July 9, 1973, Ser. No. 377,287

Int. Cl. B23p 19/04

U.S. Cl. 29-208 B

20 Claims



1. In a bottle handling system including conveyor means for travelling empty bottles along a predetermined path, which bottles may have screw caps engaged thereon, and decapping means for removing the screw caps from the bottles as they travel along said path, said decapping means comprising:

cap engaging means disposed above said conveyor means for engaging opposite sides of screw caps on the bottles

during a selected length of travel of said bottles along said path, said cap engaging means including an endless belt essentially parallel to said path and means for driving said belt at a linear speed greater than that of said conveyor means whereby to unscrew the caps and cause the bottles to be pressed downwardly against said conveying means as a result of such unscrewing action.

3,852,868

MACHINE FOR THE MANUFACTURE OF GARLANDS
Gerd Rodermund, Inderbreite 24, and Helmut Kappus, both of Lahr, Germany, assignors to said Rodermund, by said Kappus

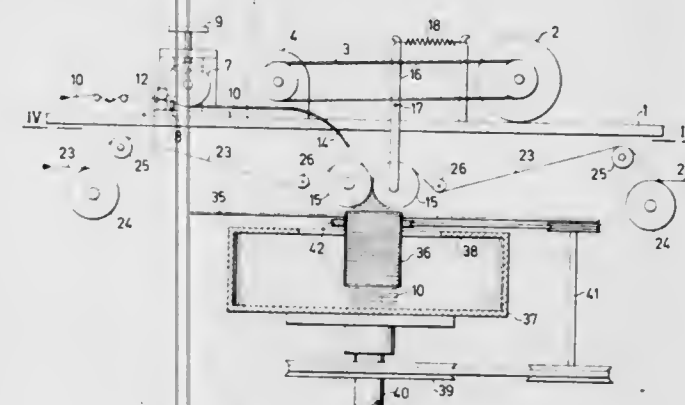
Filed Nov. 7, 1973, Ser. No. 413,508

Claims priority, application Germany, Oct. 4, 1973, 7335892(U)

Int. Cl. B23p 19/04

U.S. Cl. 29-208 D

7 Claims



1. A machine for the manufacture of garlands incorporating a cutting device for spreading out a plastic sheet strip between a cutting roller and a cutting bar at both sides of the longitudinal center line of the strip, so that there remains a narrow uninterrupted web, with a pair of feed rollers for the spread-out strip together with twistable wires or threads introduced at both sides of the strip in parallel to the uninterrupted web, and with a cylindrical drum rotating around its vertical axis, into which the spread-out strip is directed together with the twistable wires centrally from above through a twisting tube, characterized in that the feed rollers are each provided with a central metallic section and two elastic end sections made of rubber, an adjustable braking device is associated with the twistable wires or threads in a way that the forwarding speed of the plastic sheet strips into the pair of feed rollers is between three and 30 times greater than that of the twistable wires or threads, and that the diameter of the drum is such as to provide for a sufficient pull for pulling forward and twisting the garland.

3,852,869

METHOD AND APPARATUS FOR REMOVING INTERLOCKING FASTENER ELEMENTS FROM A SLIDE FASTENER CHAIN

Hideo Shimai, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1973, Ser. No. 417,531

Claims priority, application Japan, Nov. 28, 1972, 47-119131

Int. Cl. B23p 11/00, 19/04

U.S. Cl. 29-408

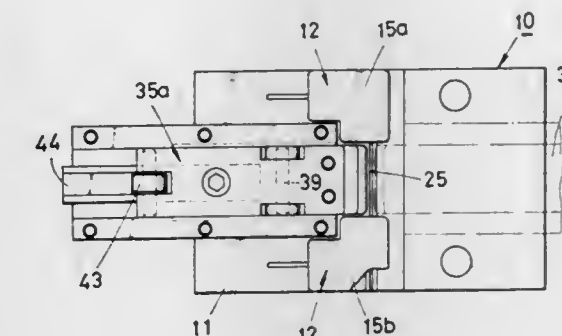
4 Claims

1. A method of removing a length of fastener elements from a slide fastener chain consisting of a pair of opposed stringer tapes carrying thereon uninterrupted rows of continuous fastener elements in interlocked relation, element-securing members affixing said rows of elements to the respective tapes, each of said elements having a coupling head, two arm portions and connecting portions merging into adjoining elements, which method comprises the steps of:

a. anchoring the coupling head portions of a length of interlocked elements into a position registering with the path of a severing means;

b. loosely gripping the connecting portions of said length of elements;

c. biasing the element-securing members inwardly along the arm portions of said length of elements thereby to expose the latter portions;



d. firmly gripping the thus exposed arm portions so as to retain said length of elements in position against displacement;

e. severing the interlocked coupling head portions of said length of elements; and

f. pulling said arm portions, while being gripped, outwardly apart from their respective tapes to remove the remaining element debris.

3,852,870

METHOD OF PRODUCING ARTICLES FROM SHEET-LIKE MATERIAL

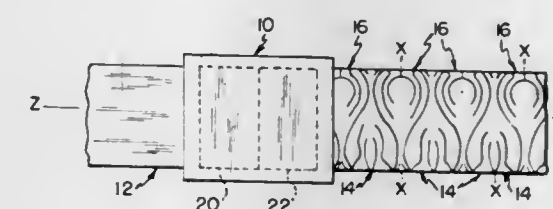
Stanley B. Elliott, 7125 Conelly Blvd., Bedford, Ohio 44146

Filed Mar. 14, 1973, Ser. No. 341,260

Int. Cl. B23p 17/00

U.S. Cl. 29-413

12 Claims



1. In a method of producing figures from sheet-like relatively rigid stock material, comprising, providing a strip of said stock material, cutting blanks from said strip of material of individual items which are substantially symmetrical about the major axis of the respective blank, said axis extending generally transverse of the longitudinal axis of said strip, each said blank being defined at least in part by smoothly curving lines defining the greater part of the exterior configuration of said blank and comprising cuts made in said strip, said cuts being formed generally symmetrically on opposite sides of said major axis of the respective blank, each said blank comprising a body portion, a neck portion and a head portion with said body portion being of larger area as compared to said head portion, making other cuts in said blank body portion, said other cuts defining at least in part sections of the blank which are adapted to be subsequently bent into predetermined configuration to define finalized portions of the figure, reversing alternate blanks end to end during the blank cutting operation thereof and locating the exterior defining peripheries of said blanks in interfitting juxtaposed condition during the blank cutting operation to obtain minimum scrap loss in the stock strip, and including detaching each blank from said strip and bending said neck portion of each said blank into a smoothly curved configuration in the process of producing the finalized figure.

3,852,871

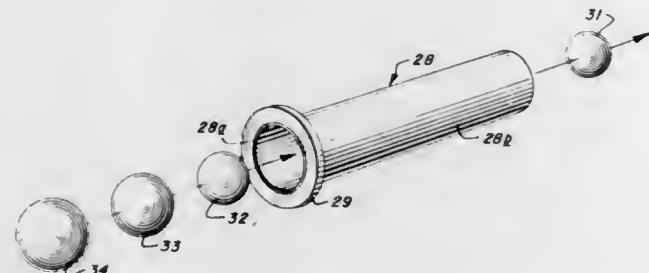
METHOD OF MANUFACTURING A WELL FOR A WASHPOT ASSEMBLY

Reginald A. Read, Jr., Brookfield, Ill., assignor to Regdon Corporation, Brookfield, Ill.

Filed Oct. 1, 1973, Ser. No. 402,477

Int. Cl. B23p 9/00; B21d 39/00; B23p 11/02
U.S. Cl. 29—445

9 Claims



1. A method of manufacturing a well for a dashpot assembly of a damped solenoid wherein a substantially sealed chamber is formed between a reciprocable cylindrical plunger and said well, and such assembly is provided in the field structure of the solenoid, comprising the steps of reducing the diameter of one portion of a seamless tube of a predetermined length and uniform nominal diameter and positioning a support having an inner surface of an accurate predetermined inside diameter around said portion, sizing and contouring said tube with said support therearound to a predetermined accuracy of the size and configuration of the bore within said portion by expanding the tube wall of said portion against said inner surface of said support, whereby said support maintains the size and configuration of said bore within said portion, and closing said tube in an area remote from said portion, for receiving a cylindrical plunger for reciprocation through said portion and toward and away from such closure while maintaining effective fluid-sealing relation with said bore of said portion.

3,852,872

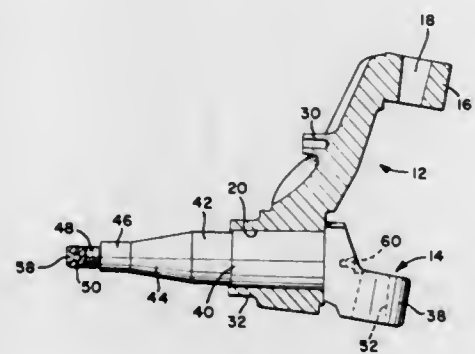
METHOD OF MAKING A KNUCKLE ASSEMBLY

Carlos P. Afanador, Centerville, and Richard L. Jones, West Carrollton, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Division of Ser. No. 297,222, Oct. 13, 1972, Pat. No. 3,801,124. This application Sept. 13, 1973, Ser. No. 396,848
Int. Cl. B23p 11/02

U.S. Cl. 29—447

4 Claims



1. A method of forming a knuckle assembly comprising:
a. casting a one piece base member having a first knuckle projecting outwardly thereof,
b. forming an opening through said first knuckle,
c. forming a spindle opening through said casting with the axis thereof disposed in angular intersecting relationship with said opening through said first knuckle,
d. forging an integral spindle and knuckle, and
e. fixing said spindle in said spindle opening.

3,852,873

METHOD FOR MANUFACTURING AND BRAZING VARIOUS APPARATUSES AND PARTICULARLY HEAT EXCHANGERS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chaussen, Asnieres, France

Filed May 18, 1973, Ser. No. 361,405

Claims priority, application France, May 23, 1972, 72.18338

Int. Cl. B23k 31/02

U.S. Cl. 29—487

19 Claims

1. Method for manufacturing and brazing various apparatuses and particularly heat exchangers, wherein:
the parts of the apparatus are made from thin sheets of a basic aluminium alloy containing silicon and magnesium able to form a magnesium silicide compound Mg_2Si ;
the apparatus is assembled and submitted to action of a cleaning solvent of the greasy products,
the apparatus is heated in presence of an aluminium brazing alloy containing at least 7% and at most 15% of silicon in presence of metals and metal salts causing removal of the oxides covering the basic alloy and wetting thereof by the brazing alloy,

the apparatus is heated to a temperature within the range of 580° to 600°C, whereby at a same time the magnesium silicide is completely set in a supersaturated state solution in the basic alloy keeping a solid state and the brazing alloy is melted and wets said basic alloy,

as soon as wetting of said basic alloy by the brazing alloy is performed, the apparatus is quickly cooled at a speed of at least 1°C per second substantially up to the ambient temperature, whereby the magnesium silicide of said basic alloy is kept in supersaturation state while said brazing alloy is solidified and hardened,

then the apparatus is again heated up to a temperature at least equal to 180°C and at most equal to 250°C up to the point to cause a temper causing the magnesium silicide to precipitate while providing an hardening of said basic alloy, and

the apparatus is lastly cooled back to the ambient temperature, whereby the brazing of the parts constituting it is performed along with the heat treatment hardening the alloy constituting said apparatus.

3,852,874

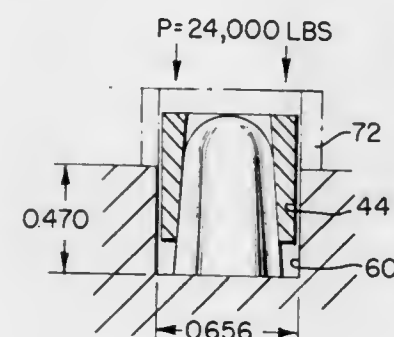
METHOD OF INSERTING BUTTONS IN A DRILLING HEAD

Bernard A. Pearson, Bothell, Wash., assignor to Smith-Williston, Inc., Seattle, Wash.

Division of Ser. No. 303,334, Nov. 3, 1972, which is a continuation-in-part of Ser. No. 232,695, March 8, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,259
Int. Cl. B23p 19/02

U.S. Cl. 29—525

19 Claims



1. A method of installing and holding an externally tapered button in a cylindrical bore in a drilling head by means of an internally tapered metal expansion sleeve, comprising:
forming the sleeve with its outer surface oversized relative to the sidewall surface of the bore and with its inside

surface generally the same shape as the tapered outer surface of the button and undersized relative thereto, axially pressing the sleeve and button together into a normal working relationship and, while in said relationship, shaping the outer surface of the sleeve to generally the same shape as the sidewall surface of the bore and to a size that is oversized relative to said sidewall surface while the sleeve and button are fully pressed together and that is undersized relative to said sidewall surface when the sleeve is in a relaxed state,

less than fully pressed together, moving the button and sleeve relative to one another sufficiently to permit the sleeve to shrink to said undersize whereat its outer surface is small enough to permit the sleeve to enter the bore without interference and

then pressing the button and internally tapered metal sleeve together in the cylindrical bore until the sleeve is elastically expanded by the button tightly between the button and the sidewall surface of the bore.

3,852,875

HIGH SPEED TANDEM WIRE DRAWING AND INSULATION SYSTEM

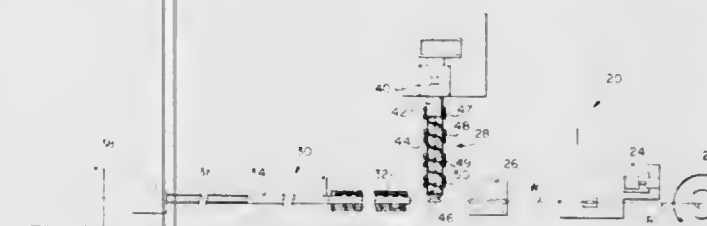
Kenneth Wayne McAmis; Lee K. Brewton, both of Carrollton, and Bobby C. Gentry, Temple, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 5, 1973, Ser. No. 321,128

Int. Cl. B44d 1/44

U.S. Cl. 29—527.4

11 Claims



7. A method of producing insulated wire having a minimum diameter corresponding to number 14 AWG size from rod of up to 3/8-inch diameter at speeds in excess of 2,500 feet per minute in a continuous in-line tandem system comprising the steps of drawing and annealing the rod into wire, extruding a plastic coating onto the wire at 400°F., cooling the insulated wire from 400° to 90°F. including initially contacting the insulated wire with an atomized coolant mist to at least partially set the coating with substantially no deformation thereof, and taking up the cooled insulated wire.

3,852,876

HIGH VOLTAGE POWER TRANSISTOR AND METHOD FOR MAKING

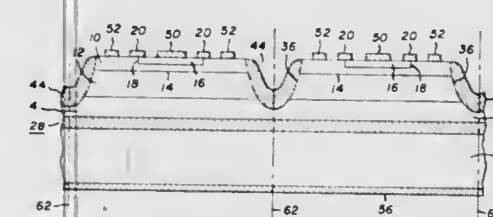
Gary S. Sheldon, Union Springs, and Peter S. Shen, Auburn, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 320,313, Jan. 2, 1973, This application Oct. 5, 1973, Ser. No. 403,949

Int. Cl. B01j 17/00

U.S. Cl. 29—583

6 Claims



1. In a method of making power transistors, to steps of
a. providing a junction wafer of monocrystalline silicon containing in stacked relation an outer collector layer of

relatively low resistivity exposed at the bottom major face of said junction wafer, an inner collector layer of relatively high resistivity surmounting said outer collector layer, a base layer surmounting said inner collector layer and defining therewith a base-collector P/N junction, and an array of spaced emitter regions on said base layer and defining with said base layer the top major face of said junction wafer;

b. stacking said junction wafer on a silicon carrier wafer with the opposed major faces of said wafers separated by a metallic alloy bonding layer, subjecting the resulting stack to a thermal treatment to form a metallic alloy bond uniting the opposed major faces of the junction wafer and carrier wafer;

c. forming, between the emitter regions in the exposed top major face of the junction wafer, a family of grooves having a depth extending part way through said outer collector layer and defining a plurality of mesas in said junction wafer with each of said mesas including a portion of said outer collector layer surmounted by a portion of said inner collector layer topped by a base region and an emitter region; and

d. providing a coating of glass passivating material on the sidewalls and bottoms of said grooves and covering the exposed edges of the interfaces between the base and inner collector region in each mesa and the inner collector and outer collector region in each mesa, whereby said wafer stack may be subdivided into individual transistor bodies at separation faces extending generally normal to the major faces of said wafers along the bottoms of said grooves, said step of providing glass material comprising the substeps of depositing glass frit in said grooves and heating said stack to fuse said glass frit.

3,852,877

MULTILAYER CIRCUITS

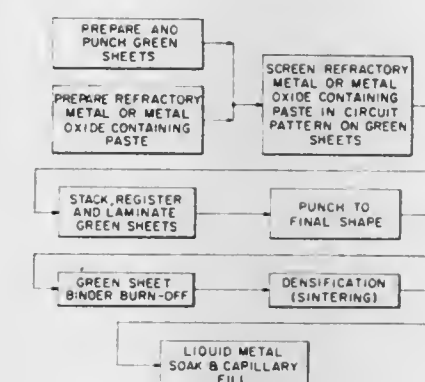
Junghi Ahn, Wappingers Falls; Bernard Schwartz, Poughkeepsie, and David L. Wilcox, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 850,324, Aug. 6, 1969, and a continuation of Ser. No. 538,770, March 30, 1966, abandoned. This application Apr. 2, 1974, Ser. No. 457,302

Int. Cl. H05k 3/10

U.S. Cl. 29—625

7 Claims



1. A method for manufacturing a multilayer ceramic circuit board with interconnected conductors disposed in different layers, said method comprising the steps of:

preparing a plurality of green ceramic sheets of ceramic material dispersed in a heat volatile binder;
forming holes at predetermined locations in said sheets;
preparing a paste composition comprising a metallizing media dispersed in a heat volatile binder, said media being selected from the group consisting of refractory metals and compounds thereof which density when sintered at a temperature higher than the temperature at which said ceramic densifies when sintered;

depositing said paste composition on surface areas of said green sheets including surface areas within said holes; stacking said sheets one upon another in registry such that patterns on and holes in different sheets are superposed in a desired circuit pattern; laminating said sheets; heating said laminate at a temperature high enough to drive off said binders, sinter said ceramic to a dense state and bond said metal to said ceramic but lower than a temperature at which said metal densifies when sintered to form thereby a continuous porous metallic capillary path in coincidence with said circuit pattern; and filling said capillary path with a molten conductor in a reduced pressure atmosphere to complete said circuit pattern.

3,852,878

COIL WOUND ELASTOMER CONNECTOR

Geoffrey Hector James Munro, London, England, assignor to AMP Incorporated, Harrisburg, Pa.

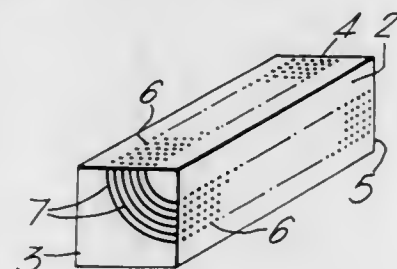
Filed Jan. 2, 1973, Ser. No. 320,030

Claims priority, application Great Britain, Jan. 29, 1972, 4327/72

Int. Cl. H02g 15/00

U.S. Cl. 29-629

5 Claims



1. A method of manufacturing a connector body comprising a multiplicity of spaced resilient conductive springs disposed within a matrix of elastomeric insulating material defining a body having spaced surface parts between which the springs extend in non-rectilinear paths and at which ends of the springs are exposed, said method comprising the steps of winding a plurality of wires into individual coils of flat turns at spaced intervals axially of a cylindrical former, interleaving a sheet of elastomeric material in a manner so as to be common to the plurality of wires, said elastomeric material being wound in a coil disposed between each turn of the individual coils of said wires, bonding adjacent layers of the elastomeric sheet material through the interwire spaces to form a coherent matrix, and cutting through the coil turns to define the connector body with cut portions presenting the spaced surface parts.

3,852,879

ELECTRICAL CONTACT MATERIAL

Richard H. Krock, Peabody, and Edward J. Zdanuk, Lexington, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 762,570, Sept. 25, 1968, abandoned.

This application Apr. 22, 1971, Ser. No. 136,543

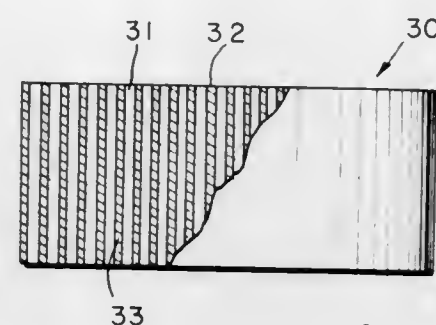
Int. Cl. H01r 9/00

U.S. Cl. 29-630 C

7 Claims

1. A method of making electrical contact material having a low gaseous component content and components which may be converted to gas which consists essentially of 30 to 90 volume percent refractory metal, the remainder of soft metal wherein the refractory metal is an array of refractory metal wires having a diameter of 1 to 50 mils substantially perpendicular to the working surface of the contact material, the method comprising the steps of providing a closely packed bundle of refractory metal wires pretreated in a reducing atmosphere at elevated temperatures to effect at least some cleansing thereof, vacuum degassing the bundle of refractory

metal wires at a temperature above the pretreatment temperature but below the sintering temperature of the refractory metal to reduce the content of gaseous components and components which may be converted to gas to less than 10ppm, and contacting the bundle of refractory metal wires with



molten soft metal in a vacuum to infiltrate void spaces between the refractory metal wires to provide contact material having the adjacent refractory metal wires separated by no more than 0.75 of the diameter of the largest refractory metal wire at the working surface of the electrical contact material.

3,852,880

APPARATUS FOR LIMITING SHAVING GEOMETRY VARIATION IN SAFETY RAZORS

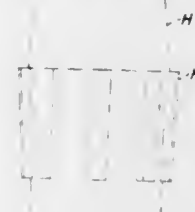
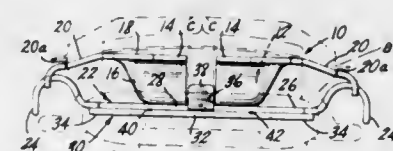
Paul A. Braginetz, Staunton, Va., and Frederick L. Risher, Jackson, Miss., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,546

Int. Cl. B26b 21/18

U.S. Cl. 30-77

7 Claims



5. In combination in a razor having a handle: a blade seat fixedly positioned with respect to said handle; a blade supported by said blade seat; a resilient member having a blade guard integral therewith and yieldingly responsive to shaving forces applied to said blade guard to variably position the same with respect to said handle and relative to said blade seat to vary the cutting angle of said blade; and a rigid member disposed in underlying relation to said resilient member and engageable therewith to limit such blade cutting angle variation.

3,852,881

CUTTING BLADE FOR USE WITH AN OSCILLATING CUTTING DEVICE

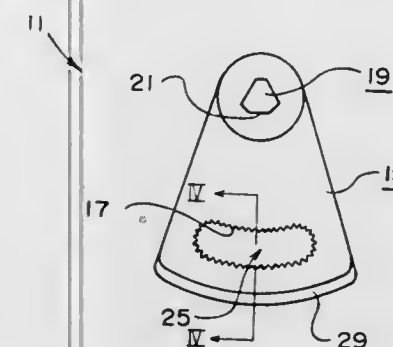
James T. Treace, Santa Monica, Calif., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed June 11, 1973, Ser. No. 368,656

Int. Cl. B23d 45/00; B26b 25/00

U.S. Cl. 30-92

12 Claims



1. A cutting blade for use with an oscillating cutting device in cutting off fracture-fixation pins, said cutting blade comprising:

- a body portion having an attachment member for mounting said body portion onto the oscillating cutting device and having an elongated aperture spaced away from said attachment member; and
- a cutting portion located around the entire periphery of said elongated aperture for allowing said cutting portion to selectively contact all portions of the circumference of the fracture-fixation pin being cut off to smoothly cut off the fracture-fixation pin.

3,852,882

AIR DRIVEN BONING AND TRIMMING KNIVES

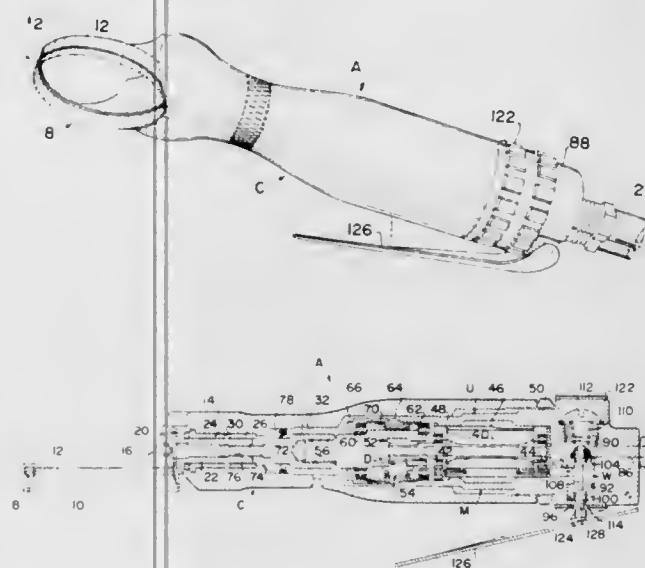
Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Jan. 28, 1974, Ser. No. 437,526

Int. Cl. B26b 15/00

U.S. Cl. 30-276

8 Claims



1. A hand-manipulated knife comprising a blade supporting structure substantially annular in shape and including a tubular handle projecting from one side thereof, a ring-shaped blade of short axial length rotatably supported in said structure with a cutting edge at one end projecting from one side of said structure and gear teeth adjacent its other end, a first gear rotatably supported in one end of said handle and in mesh with said gear teeth on said blade for rotating said blade, a fluid pressure activated rotary motor comprising a rotor rotatably supported in a housing stationary in said handle, external

gear teeth on an extension of said rotor projecting towards said blade, a member rotatably supported in said handle intermediate said motor and said first gear, a tubular member stationary in said handle intermediate said motor and said first gear provided with internal gear teeth, a second gear rotatably supported by said member and in mesh with said external and said internal gear teeth, means connecting said member to said first gear, and valve means in said handle for controlling the flow of fluid to said motor.

3,852,883

SHAVING UNIT FOR SAFETY RAZOR

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

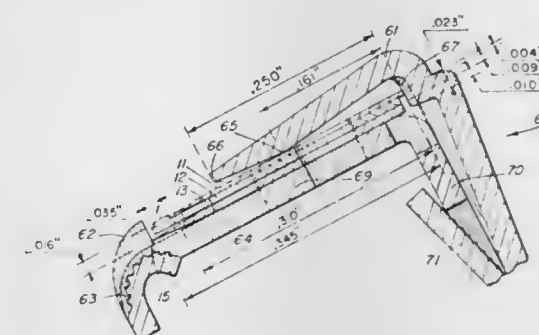
Continuation-in-part of Ser. No. 408,848, Oct. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 398,104, Sept. 17, 1973. This application Dec. 13, 1973, Ser. No. 424,255

Claims priority, application Great Britain, Jan. 23, 1973, 3365/73

Int. Cl. 30 76; B26b 21/54, 21/22

U.S. Cl. 30-346.58

20 Claims



1. A replaceable shaving unit for a safety razor, wherein said razor comprises a transverse guard surface, spaced stop means for locating said shaving unit with respect to said guard surface, a blade seat member, a cap member extending forwardly above said blade seat member, and means for biasing said shaving unit in abutting engagement with said stop means and said blade seat member upwardly to clamp said shaving unit between said cap and said blade seat member, said shaving unit comprising:

- a spacer member including a transversely elongated center portion, a pair of spaced projections extending forwardly from said center portion, a raised portion on each one of said projections, an underside, and an upper side;
- a first razor blade connected to said underside, said first razor blade including a lower surface for abutting engagement with said blade seat member and an elongated cutting edge dimensioned for locating each outer end thereof behind a respective one of said stop means to prevent contact with the ends of the first blade cutting edge during use; and
- a second razor blade connected to said upper side, said second razor blade including an upper surface for abutting engagement with said cap member and an elongated cutting edge positioned above said projections and rearwardly and parallelly with the cutting edge of said bottom razor blade, the cutting edge of said second razor blade having each outer end thereof located behind and spaced rearwardly from a respective one of the raised portions to prevent contact with the ends of the second blade cutting edge during use;
- said second razor blade having a predetermined thickness, and the raised portions extending upwardly from said projections a distance less than said predetermined thickness.

3,852,884

WINDING AND TIGHTENING TOOL AND METHOD FOR MANUFACTURING SAME

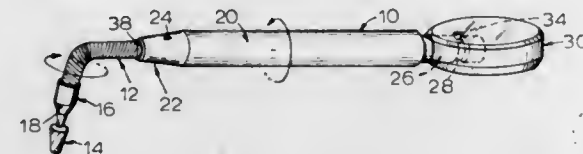
Harry J. Lazarus, 36 Knox Ln., Englishtown, N.J. 07726

Filed Oct. 18, 1973, Ser. No. 407,419

Int. Cl. A61c 5/12

U.S. Cl. 32-63

21 Claims



1. An angle drive manually operable tool to wind and tighten around a tooth a matrix band formed into a loop and having one end spirally wound to form a band-tightening coil provided with a central socket, said tool comprising in combination, an elongated driving member, a palm grip rotatably mounted upon one end of said member for movement about the axis thereof, a coreless rotatable flexible drive sleeve unit with sockets at each end thereof, with said sleeve having an internally pivotable angularly bent guide shaft therein, said shaft being bent prior to assembly and is internally suspended thereafter through the length of the core of the flexible sleeve unit, with said shaft's terminations rotatably engaged with sockets to hold said shaft against axial disposition at each end, and with one such socketed collar being replaceably engageable with said driving member, and with the other socket being part of a chuck, having a winding member adapted for controlled depth insertion in said chuck and with said winding member engageable with the central socket of a matrix band coil for winding and tightening of said coil, and with said driving member being provided with a torque limiting means.

3,852,885

TEAR RESISTANT MATRIX CONFINING BAND AND RETAINER FOR USE THEREWITH

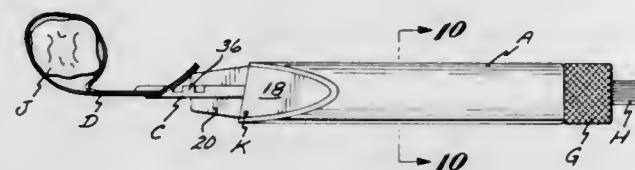
Edward Brenner, 800 W. Ameriga Ave., Fullerton, Calif. 92632

Filed Feb. 20, 1973, Ser. No. 333,989

Int. Cl. A61c 5/12

U.S. Cl. 32-63

8 Claims



1. In combination with an elongate tear-resistant, resilient dental matrix-confining band, which when formed into a loop, defines two sections having portions thereof in abutting contact, in which portions a plurality of longitudinally spaced, transversely aligned openings are formed that are partially defined by first forwardly disposed transverse edges of said band, a retainer for disposing said looped band in a tensioned encircling position on a tooth in a patient's mouth, which retainer includes:

- a rigid elongate barrel of non-circular transverse cross section that has a first forward end portion in which a longitudinal slot is formed that is in communication with a longitudinal bore that extends to a second end of said barrel, said first end portion being defined by a forwardly extending cantilever member on a first side of said slot and an inwardly and forwardly tapered face on a second side of said slot, with said cantilever member being on the side thereof adjacent said tapered face having a longitudinally extending guide groove formed therein that is in alignment with and communicates with said bore;
- a tubular cover of non-circular transverse cross section that slidably and frictionally engages the exterior of said

barrel and envelops at least that portion thereof in which said slot is formed, with said cover on a first forward end thereof terminating at substantially the rear end of said cantilever member, and said cover cooperatively providing a longitudinal confined space open at the forward end thereof;

- an elongate rod having a first end and a second end and threads formed thereon intermediate therebetween, which first end has a first longitudinal recess formed therein and a plurality of longitudinally spaced transverse recesses rearwardly therefrom, with each of said transverse recesses being partially defined by a transverse body shoulder, and with said longitudinal recess and said transverse recesses having rod portions therebetween that engage said openings when said abutting sections extend rearwardly in said confined space in contact with said rod, with said rod when moved rearwardly relative to said barrel and cover applying a force through said body shoulders to said first edges to tension said band in a looped configuration about a tooth, and said band due to the plurality of the areas of said first edges through which said force is exerted, not tearing as a result of said force so applied;
- a nut slidably and rotatably mounted on said rod rearwardly of said threaded portion, with said nut when rotated in engagement with said threaded portion and in abutting contact with said second end of said barrel moving said rod rearwardly relative thereto; and
- a handle on said second end of said rod for moving said rod forward relative to said longitudinal slot in the elongate barrel when said nut is not in engagement with said threaded portion, to the extent said abutting portions of said band sections are moved out of said confined space in which they are held in a non-rotatable position relative to said barrel and are at least partially disengaged from said rod when said barrel is rotated 90° relative to said rod to move said abutting band sections into pressure contact with said cantilever member of said barrel, with said rod when said rotation takes place remaining aligned with said bore due to slidably and rotatably engaging groove in said cantilever member.

3,852,886

ANGLE SOLVER PLOT BOARD

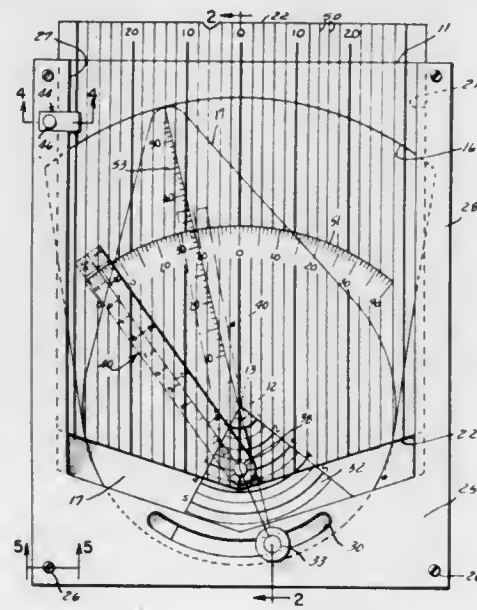
Herbert W. Headle, Jr., Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1970, Ser. No. 82,062

Int. Cl. G06g 7/80

U.S. Cl. 33-76 VA

4 Claims



1. A device for solving relative motion problems comprising: an assembled multilayer framework including a rectangular

base plate, a lower frame member having its center portion cut away, an upper frame member having its center portion cut away and a top frame member having side margins which overlap the adjacent cutaway portion of the upper frame member;

a rotor disposed in the cutaway portion of said lower frame member,

said rotor pivotally mounted on said base plate and having a semicircular base portion and a conical top portion adapted for transverse movement between the margins of said top frame member;

a slide disposed in the cutaway portion of said upper frame member;

an arm rotatably mounted in the lower center of said slide; means for locking said rotor and said slide in position;

a torpedo pre-enable speed scale on the conical top portion of said rotor and a laminar distance offset scale on the semicircular base portion of said rotor;

a target speed across line of sight scale and a torpedo lead angle scale on said slide; and

a torpedo enable range scale and a torpedo post-enable speed scale on said arm,

whereby multispeed torpedo attack problems may be quickly and accurately solved as well as speed, distance and time triangulation problems.

3,852,887

APPARATUS FOR INDICATING ENGINE PISTON POSITION

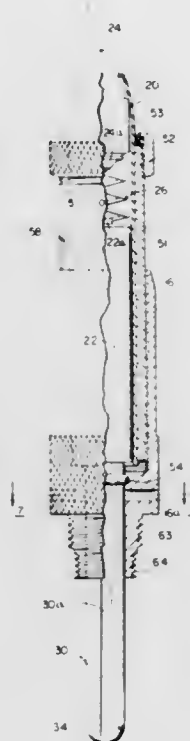
Donald F. Hennrick, Torrance, Calif., assignor to Zed Vickers, Long Beach, Calif.

Continuation-in-part of Ser. No. 206,785, Dec. 10, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,532

Int. Cl. G01b 3/28, 5/14

U.S. Cl. 33-181 AT

9 Claims



1. A device for indicating when a piston of an internal combustion engine has reached a predetermined position within a cylinder having a spark plug aperture comprising: casing means comprising an inner sleeve, a first tube member fixedly attached to said sleeve and a second tube member threadably attached to said first tube member, a dry cell mounted in said inner sleeve, an indicator lamp mounted in said inner sleeve with one of the electrical contacts thereof opposite one of the electrical contacts of said dry cell, means for resiliently urging said dry cell away from said indicator lamp,

actuator means slidably mounted in said second tube member, with one end of said actuator means protruding out from one end of said second tube member and the other end of said actuator means abutting against said dry cell, said one end of said casing means being adapted to fit to the sparkplug aperture of the engine cylinder with said one end of said actuator means extending into the cylinder, and

calibrated means comprising indicia on at least one of said tube members, said tube members being adjustable on their threaded attachment to effect relative longitudinal movement therebetween for adjusting said device to set the position of said actuator means whereat the oppositely positioned contacts of said dry cell and said lamp will contact each other so as to actuate said lamp.

3,852,888

ROLL LEVEL CHECKING DEVICE

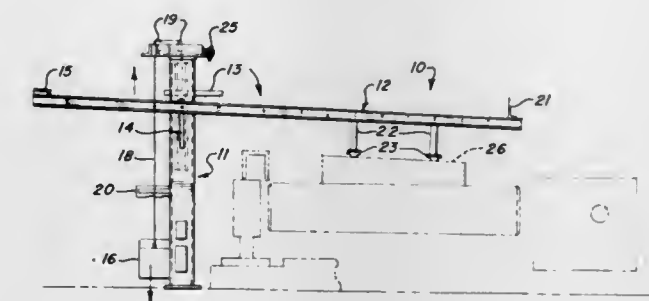
Gerald R. Seifert, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed July 20, 1972, Ser. No. 273,501

Int. Cl. G01b 5/24; G01c 1/00

U.S. Cl. 33-286

7 Claims



1. A slope measuring device comprising: sighting means; means for mounting said sighting means adjacent an object whose slope is to be measured; slope sensing means associated with said sighting means comprising a scale and at least two spaced slope contact points for defining the line whose slope is to be measured; means connecting said spaced contact points and said scale in predetermined spaced relation with respect to each other and to an axis which is orthogonal to the line of sight of said sighting means and fixed with respect thereto; means for moving said slope sensing means to a reference position in which the spaced slope contact points are parallel to a reference plane to obtain a first sight reading on said scale means; and means for moving said slope sensing means vertically together with said sighting means transverse to the line of sight of said sighting means and pivotally independent of said sighting means about the said axis which is orthogonal to said sighting means and fixed with respect thereto, to a second position in which the spaced slope contact points are parallel to the slope of said object to be measured to obtain a second sight reading on said

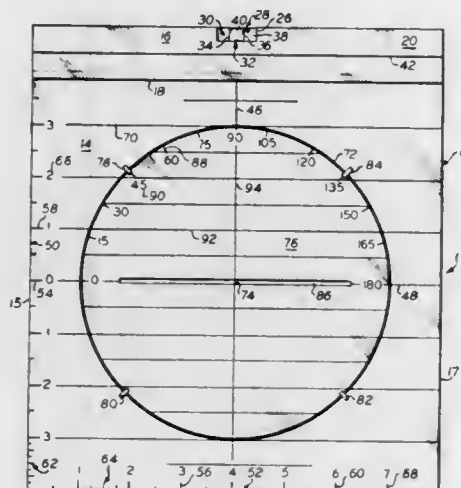
scale, whereby the differential between said first and second sight readings is a measure of the slope of said object.

3,852,889

DEVICE FOR MAKING PERSPECTIVE DRAWINGS
Thomas W. Atkins, 425 E. 75th St., New York, N.Y. 10021
Continuation of Ser. No. 39,005, May 20, 1970, abandoned.
This application Mar. 30, 1972, Ser. No. 239,827
Int. Cl. B43I 13/16

U.S. Cl. 33-277

1 Claim



1. A graphic aid for drawing a perspective drawing of a scene, comprising:

- a transparent planar base member having a vertically extending frame edge, said base member having a pair of horizontal parallel lines thereon, one line being on each of the front and back surface and said lines defining a plane perpendicular to the plane of said base member whereby to provide means for orienting said planar base member normal to the line of sight, said base member having a circular aperture therein;
- a transparent circular member rotatably mounted in said aperture and having an elongated slot along a portion of a diameter thereof to define a straight edge alignable with a perspective line of said scene, said rotatably mounted member including means associated therewith for indicating the relative angle of rotation of said straight edge in the plane of said base member from a reference position;
- a horizontal bubble level fixed to said base member for orienting said parallel lines horizontal;
- said base member further comprising a rectangular framing portion including a pair of orthogonal means for indicating the relative position of said perspective line with respect to a horizon;
- said transparent circular member having a vertical and a horizontal axis and being rotatably mounted with said vertical and horizontal axes substantially disposed along paths which respectively bisect said orthogonal means when said straight edge portion horizontal axis is aligned with one of said paths, said horizontal axis being parallel to the horizon;
- said orthogonal means each including a plurality of equispaced indicia, one of said orthogonal means being disposable parallel to said horizontal axis, the other of said orthogonal means being disposable parallel to said vertical axis, said vertical disposable orthogonal means including a plurality of spaced apart guide lines parallel to said horizontal disposable orthogonal means including a plurality of spaced apart guide lines parallel to said horizontal disposable orthogonal means.

3,852,890

REMOTE READING TILT ENCODER

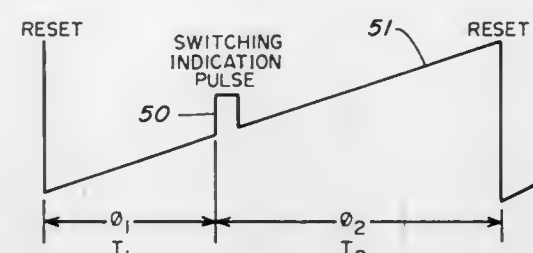
Earl Everett Locklair, Greenville, and Donald James Halsey, Garland, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Mar. 2, 1972, Ser. No. 231,309

Int. Cl. G01c 9/16

U.S. Cl. 33-366

11 Claims



1. A tilt sensing system comprising:
- first means for producing a position signal varying in magnitude with the position of a body with respect to a gravity vector through a pivot thereof;
 - second means connected to said first means for generating a ramp signal, the magnitude of said ramp signal starting at a reference level and having a linear increase with time related to the position signal;
 - third means connected to said second means for generating a pulse signal to be superimposed upon said ramp signal at a pre-established magnitude thereof whereby the time elapsed for the ramp signal to increase from the reference level to the pre-established magnitude is proportional to the value of said position signal; and
 - circuit means responsive to said third means to superimpose the pulse signal on said ramp signal.

3,852,891

FLOWER PRESS

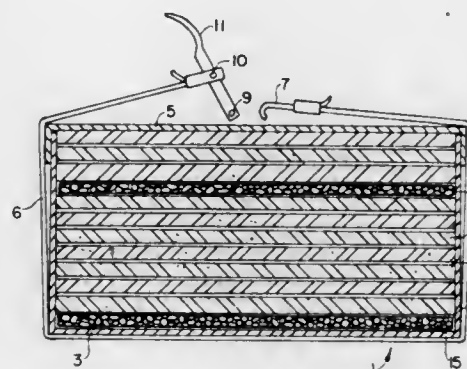
Barbara B. Stephan, 4334 Round Top Dr., Honolulu, Hawaii 96822

Filed Oct. 3, 1973, Ser. No. 403,266

Int. Cl. F26b 13/26

U.S. Cl. 34-95

13 Claims



1. A quick drying flower press comprising a bottom portion with a base and sidewalls, and having a cover portion with a top and complementary sidewalls fitting with the sidewalls of the bottom portion 17 a tight relationship, a plurality of thin, flat, porous material, sponge-like layers stacked in the container and fitting closely within the sidewalls of the bottom portion and superimposed upon each other and extending upward beyond an upper rim of the bottom portion sidewalls, botanical objects disposed between the superimposed thin sponge-like layers, and fastener means mounted on the bottom and cover portions for urging the portions together in compression of the thin sponges whereby the botanical objects are pressed and dried while the container is closed.

3,852,892

ROTARY DRUM DRYER

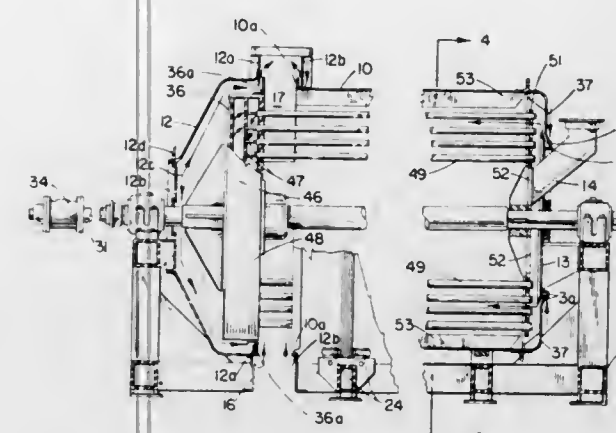
Daniel J. Sheehan, P.O. Box 430, Danville, Ill. 61832

Filed May 6, 1974, Ser. No. 466,958

Int. Cl. F26b 11/02

U.S. Cl. 34-134

3 Claims



1. A rotary drum type dryer for granular material comprising: a rotatably mounted drum and an interior heating element mounted for independent concentric rotation within the drum, means for independently rotating said drum and said heating element, a stationary plate at one end of said drum having a material inlet tube extending therethrough and into the drum interior, annular adjacent flanges on said drum and said plate defining an annular restricted air intake passage from the exterior to the interior of the drum, a stationary housing at the other end of said drum into which said drum extends, adjacent annular flanges on said drum and said stationary housing defining a further annular restricted air intake passage to the interior of said drum and housing, a material discharge opening at the base of said housing and an air discharge opening at the upper end of the housing, and air moving means for drawing air from said drum through said air discharge opening.

3,852,893

TRAINING DUMMY WITH SIMULATED WOUND

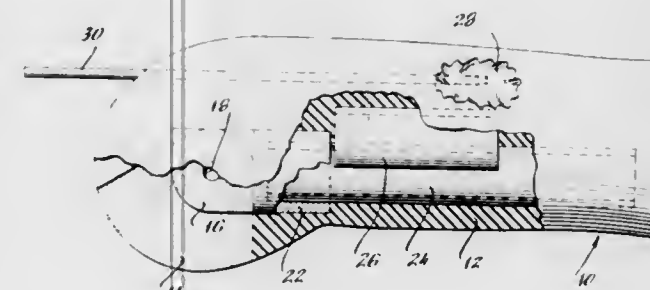
Joseph G. Smrecka, Norwalk, Conn., assignor to Alderson Research Laboratories, Inc., Stamford, Conn.

Filed Nov. 19, 1973, Ser. No. 417,363

Int. Cl. G09b 23/30

U.S. Cl. 35-17

5 Claims



1. The method of forming a simulated wound in a training dummy which comprises: providing a first concave mold member defining on its inner surface a raised, wound defining projection; providing, adjacent said projection, means for temporarily supporting the end of a wire; passing a relatively stiff support wire through a length of resilient tubing with the first and second ends of said wire extending; respectively, from the first and second ends of said tubing; positioning the wire stiffened tubing with the first end of said wire supported by said temporary support means and the second ends of said wire and tubing outside the first mold member; positioning a second concave mold member against said first mold member

to define therewith a mold cavity approximating the shape of a human body member; filling said cavity with a curable molding composition; curing said composition to form a simulated human body member; removing said support wire from said tubing; and removing said simulated body member from said first and second mold members.

3,852,894

PORTABLE ELECTRIC QUIZ ANNUNCIATOR

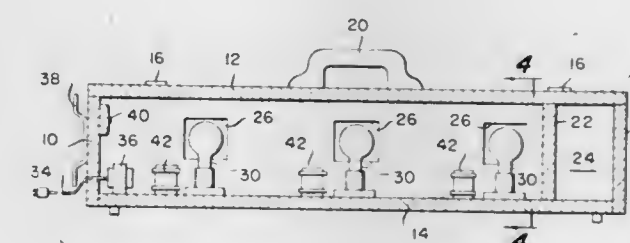
Earvin Ryland, 904 Sherwood Dr., Ruston, La. 71270

Filed Jan. 29, 1973, Ser. No. 327,443

Int. Cl. G09b 5/00

U.S. Cl. 35-48 R

1 Claim



1. A portable, self-contained electric quiz annunciator adapted to be placed on a table or the like comprising:

- a. an elongated housing including a front wall, a rear wall opposite said front wall and a top wall positioned between said front and rear walls,
- b. said rear wall sloping away from said top wall,
- c. said housing being of a size and shape permitting a plurality of competing contestants to be observed from a position in front of said housing when sitting behind same,
- d. said housing including a compartment adapted to store associated paraphernalia,
- e. handle means for carrying said annunciator secured to said top wall,
- f. means associated with one of said walls to permit said last mentioned wall to be opened thereby permitting access to the interior of said housing,
- g. a plurality of longitudinally aligned light means supported within said housing for indicating when each contestant has answered,
- h. said front wall including means for viewing from outside said housing said plurality of light means,
- i. said means for viewing including a plurality of longitudinally aligned apertures in said front wall,
- j. a plurality of longitudinally aligned contestant operated switches mounted externally on said rear wall and arranged to permit a single contestant to be seated behind each of said switches,
- k. said plurality of switches, light means and apertures being aligned from front to rear such that individual ones of said plurality of switches are positioned directly behind individual ones of said plurality of light means and apertures to thereby visually associate each of said plurality of light means with a particular contestant,
- l. circuit means mounted within said housing for interconnecting said plurality of switches, said plurality of light means and a source of power to activate one of said plurality of light means upon the closing of that one of said plurality of switches positioned behind said last mentioned one of said plurality of light means and simultaneously render the others of said plurality of light means inoperable when said last mentioned one of said light means is activated, and

- m. an electrically operated buzzer supported within said housing.
- n. said circuit means including means for activating said buzzer simultaneously with the activation of said one of said light means to emphasize the fact that a contestant has answered.

3,852,895

SHOES OR BOOTS

Herbert Funck, Graefelfing-Lochham, Germany, assignor to Dr. Ingo. Funck KG, Munich-Pasing, Germany

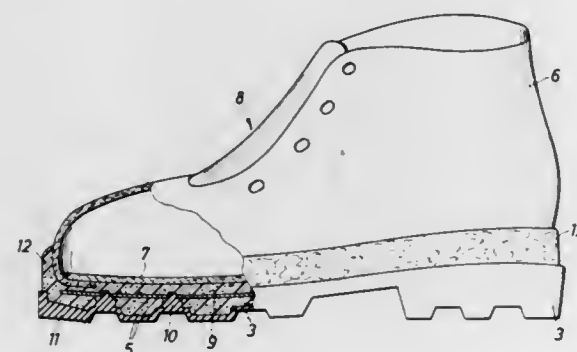
Filed Apr. 5, 1973, Ser. No. 348,072

Claims priority, application Germany, Apr. 5, 1972, 2216439

Int. Cl. A43d 9/00; A43b

U.S. Cl. 36-2.5 R

7 Claims



1. An article of footwear comprising an outsole, a sole shell, an insole and an upper, wherein, the outsole is formed as an internally and externally ridged member having a peripheral wall and defining a cavity on an inner side thereof, the sole shell is formed of reaction foam during a foaming operation and interfits with the outsole inner side, the insole is connected to an inner surface of the sole shell and the upper, lower peripheral edge portions of the upper being connected between the insole and the sole shell, the outsole being connected to the insole and upper via the sole shell during said foaming operation.

3,852,896

SAFETY RELEASE SKI BOOT SYSTEM

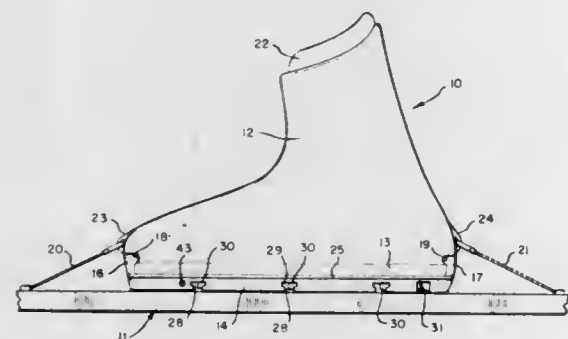
Ewald D. Pyzel, and Harold E. Coddling, both of 3430 Cashill Blvd., Reno, Nev. 89502

Filed Mar. 6, 1974, Ser. No. 448,508

Int. Cl. A43b, A63c 9/00

U.S. Cl. 36-2.5 AL

18 Claims



1. Safety release ski boot system comprising a ski boot assembly having a boot upper body, a fixed upper sole attached to the upper body, a detachable lower sole normally secured to the upper sole and a safety release mechanism contained within the detachable lower sole of the ski boot

assembly, said detachable lower sole being releasably secured to the fixed upper sole of the ski boot assembly by said safety release mechanism, said safety release mechanism comprising: at least two rotatable latch members one of which is pivotally mounted on the lower sole at the forward end thereof and another of which is pivotally mounted on the lower sole at the rearward end thereof, each of said latch members being rotatable about its pivot axis from a lowermost ski boot release position to an uppermost ski boot engaging position and return, and

separately adjustable spring means engaging each rotatable latch member at a pivot point eccentric with respect to the pivot axis of said latch member, each adjustable spring means urging the latch member with which it is associated to its uppermost ski boot engaging position when the latch member is rotated so that the eccentric pivot point is positioned below the pivot axis and said spring means urging said latch member to its lowermost ski boot release position when said latch means is rotated so that the eccentric pivot point is positioned above the pivot axis of the latch member.

3,852,897

FOOTWEAR

Frank Bridge, 529 Church Rd., Bolton, and Tej Kuldip Singh, 1 Wharfsdale Gardens, Baildon, both of England

Continuation of Ser. No. 140,255, May 4, 1971, abandoned.

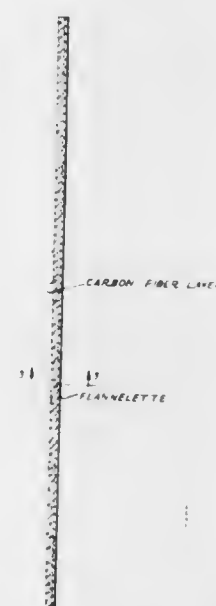
This application Jan. 26, 1973, Ser. No. 326,729

Claims priority, application Great Britain, July 23, 1968, 35075/68

Int. Cl. A43b 13/38

U.S. Cl. 36-44

14 Claims



1. An insock, for insertion into a shoe comprising a fibrous web or mat loaded with active carbon and a binder, the binder being disposed predominantly at and adjacent to the surfaces of the web or mat.

3,852,898

SHOE WEAR ELEMENT

Harry Ernest Rubens, 14 Brookside Ct., East Brunswick, N.J. 08816

Filed July 23, 1973, Ser. No. 381,852

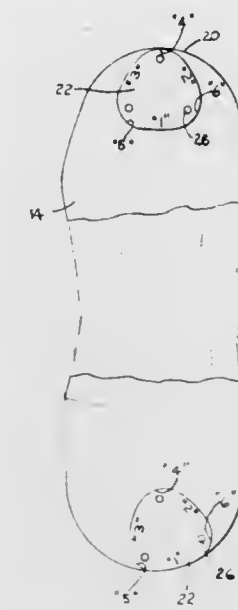
Int. Cl. A43b 13/22

U.S. Cl. 36-73

9 Claims

1. A replaceable, multipositioned less than completely circular thin planar wear heel element for mounting to a wear position over the edge of the rear heel wear portion of a shoe,

each element having a plurality of identical heel edge conforming contours about the periphery of the element so as not to project substantially over the edge of the wear portion of the shoe, and having a thickness to permit comfortable wear on the wear surface of an existing shoe, and fastening means for releasably securing said thin planar element to the wear



surface of the shoe when one of said edge conforming contours are worn, whereby the thin planar element may be moved in the plane of said element and repositioned on the wear portion with another contour of said element conforming to the contour of the edge of the wear portion of the shoe for continued use.

3,852,899

COMMERCIAL STEAM GENERATING HAND IRON

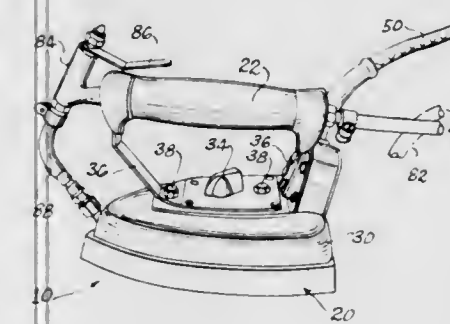
George R. Mackey, Evanston, Ill., assignor to Bishop Freeman Company, Evanston, Ill.

Filed Mar. 29, 1974, Ser. No. 456,043

Int. Cl. D05f 75/05

U.S. Cl. 38-77.6

9 Claims



1. A commercial steam generating hand iron comprising a handle, a soleplate providing an expansive flat ironing surface and defining internal chambering for conveying steam through said soleplate to discharge apertures in said flat ironing surface, means for heating said soleplate to selected elevated temperatures, a water supply line for conveying water from a source remote from said iron to said iron, a water valve mounted on said iron and having a valve operating member adjacent said handle, said member being operable by an operator while said operator is holding said iron by said handle, means defining an enclosed elongate, tortuous vaporizing chamber positioned between said heating means and said soleplate, said vaporizing chamber being in flow communication with said chambering in said soleplate at one end of said

vaporizing chamber and with said water valve at its other end, conduit means for placing said vaporizing chamber and said water valve in flow communication at said other end when said valve operating member is operated, and means for securing said heating means to said iron and for maintaining said vaporizing chamber between said heating means and said soleplate, thereby to position said heating means both to heat said vaporizing chamber and said soleplate to vaporize water introduced into said vaporizing chamber and to heat the steam introduced into said chambering.

3,852,900

DISC TYPE INDICIA RECORDING AND DISPLAY DEVICE

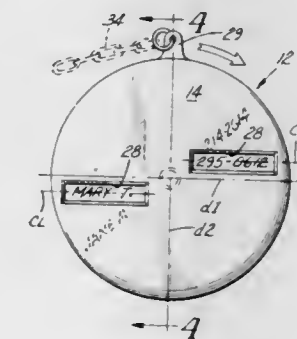
Joseph J. Svec, Box 206, Rome, Ohio 44085

Filed July 18, 1973, Ser. No. 380,331

Int. Cl. G09f 11/04

U.S. Cl. 40-70 R

5 Claims



1. A device for recording information comprising, a flat disc shaped member having surface means on at least one face thereof for erasably receiving pencil-written indicia thereon, a cover member overlying at least said one face of said disc member, means mounting said disc for rotation with respect to the cover member, said cover member having window means extending there-through and exposing a portion of said one face of the disc member to permit access of a writing implement to write on said one face of said disc member, one of said members having a raised annular rim cooperating with the other member for maintaining said cover and face in spaced relationship at the location on the face for receiving indicia, said raised annular rim further cooperating with the other member to provide detent means formed as an integral part of said cover member and said disc member to releasably secure said cover members and said disc member in any one of a plurality of relatively rotative portions, whereby different sets of indicia may be written, erased, and rewritten on said disc member, and the disc member rotated to display each set at the window means, said rotation occurring without contact in the region of the indicia to thereby prevent smearing of the written indicia.

3,852,901

DISPLAY STAND

John C. Woodle, Bloomfield Hills, and Dennis J. Smith, Saint Clair Shores, both of Mich., assignors to Arlington Aluminum Company, Detroit, Mich.

Continuation of Ser. No. 42,309, June 1, 1970, abandoned.

This application June 12, 1972, Ser. No. 261,782

Int. Cl. G09f 7/18

U.S. Cl. 40-125 H

17 Claims

1. In a display stand, a plurality of frames each comprising top, bottom and side frame members

having inner sides and mitered ends disposed in butting relation at the corners of the frame, all of said frame members being provided at the rear thereof with means forming

first channels

opening through the inner sides and extending to the ends thereof,

said side and bottom frame members being provided also at the rear thereof with means forming

second channels

opening through the inner sides and extending through the ends thereof and collectively defining a U-shaped recess for accommodating and confining the side and bottom marginal edge portions of an article to be displayed, said side frame members being further provided at the rear thereof and laterally outwardly of said article receiving channels with means forming

third channels

which open laterally and toward the rear of said frame and through the ends of said side frame members; connecting means



in the first channels of said top, bottom and side frame members of each frame joining and holding said frame members together; and

coupling means

adjustably and removably mounted in the third channels of adjacent frames detachably interconnecting the same, whereby said plurality of frames can be assembled in side-by-side relation or superimposed one upon the other in said display stand and detachably interconnected in said assembly by said coupling means,

the front outer marginal portions of said frame members extending laterally outwardly beyond the portions thereof referred to specifically above,

said front outer marginal portions adapted to be disposed in edgewise butting relation with respect to each other and mutually cooperative to close the spaces between said frames and to conceal the inner sides thereof, the corner connections in said first channels, and the coupling means in said third channels.

3,852,902

PORTABLE SIGN CONSTRUCTION

Alton D. Wheeler, 3940 Fox Meadow, Pasadena, Tex. 77502

Filed Jan. 18, 1973, Ser. No. 324,677

Int. Cl. G09F 21/04

U.S. Cl. 40-129 R

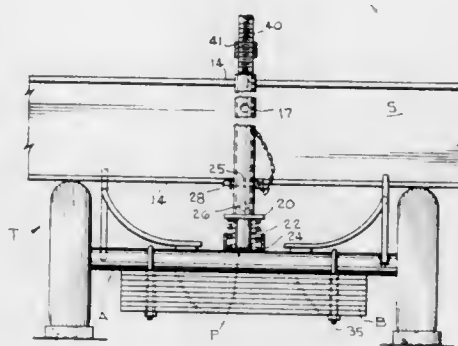
4 Claims

1. A portable trailer sign adapted to be moved from place to place and temporarily set up as a display sign comprising:

a. an axle having a pair of wheels mounted at its opposite ends for rotation with respect thereto whereby said axle is permitted to rotate relative to said wheels when said wheels are stationary;

b. a vertically extending post rigidly secured to said axle between said wheels;

c. a sign board mounted on said vertically extending post and means mounting said sign board on said post for



movement from a first position perpendicular to said axle to a second position parallel to said axle;

d. means for holding said sign board in said first position;

e. means for holding said sign board in said second position, and

f. ballast weight means depending below said axle and between said wheels to resist rotation of said axle relative to said wheels when said sign board is positioned in said second position.

3,852,903

STAMP ALBUM SHEETS

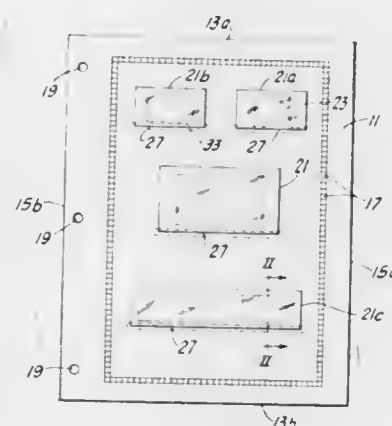
Stephen Nicholas Bucu, 345 E. Burrell St., Blairsville, Pa. 15717

Filed July 19, 1973, Ser. No. 380,729

Int. Cl. G09F 1/10

U.S. Cl. 40-159

1 Claim



1. A device for the display of a postage stamp and for the storage of additional similar stamps comprising:

a. A sheet of stiff backing material having parallel end edges and parallel side edges; said sheet having a plurality of spaced apart slots formed through the sheet; each slot extending from a point near one of the side edges and extending to a point near the other side edge and being parallel to said end edges;

b. films of flexible form-sustaining transparent material being doubled over on themselves forming two leaves meeting at a doubled edge; each film passing through each slot with the doubled edge being coincident with the slot so that one leaf is superimposed over a portion of one face of said sheet to form a pocket and the other leaf is superimposed over a portion of the other face of said sheet to form a pocket; said film being depressed transversely along a line that is parallel to the doubled edge at about one-quarter inch from the doubled edge; and,

c. a strip of adhesive material extending over and beyond said slot and being coextensive with said sheet and film to lock said film with respect to said sheet.

3,852,904

RIFLE BUTT PLATE UNIT

Georges Drevet, 24 rue Francisque Voytier, Saint Etienne, France

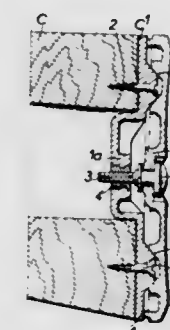
Filed Jan. 8, 1973, Ser. No. 322,007

Claims priority, application France, Jan. 10, 1972, 72.01031

Int. Cl. F41c 23/00

U.S. Cl. 42-74

7 Claims



1. A rifle butt plate unit comprising an intermediate plate, means for attaching the intermediate plate to a rifle butt; at least one butt plate; and fitting means for interchangeably attaching said butt plate to the intermediate plate, said butt plate including a central boss, said fitting means engaging said central boss and securing the butt plate to said intermediate plate, said intermediate plate including a pair of opposed further bosses facing said butt plate, said means for attaching the intermediate plate to the rifle butt comprising fasteners in said further bosses securing the intermediate plate to the butt, said butt plate having recesses corresponding to said further bosses for guidably receiving the same and covering said fasteners.

3,852,905

FISH HOOK EMBEDDING DEVICE

Clay M. Webb, 1005 E. Mariposa St., Phoenix, Ariz. 85014

Filed July 11, 1973, Ser. No. 378,215

Int. Cl. A01k 87/00

U.S. Cl. 43-15

1 Claim

1. A fishhook embedding device comprising:

a. an elongated housing having an inner end and an outer end;

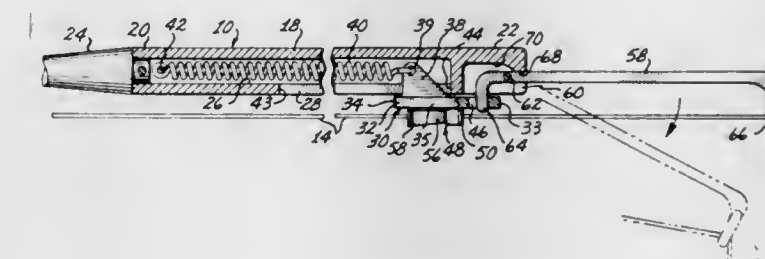
b. a carriage mounted on said housing and longitudinally movable therealong between a retracted position adjacent the inner end of said housing and an extended position adjacent the outer end of said housing; and

c. biasing means connected on one end thereof adjacent the inner end of said housing and on the other end thereof to said carriage for urging said carriage toward its retracted position;

d. line engaging means on said carriage to which a fishing line is detachably engagable, said line engaging means comprising,

a pair of spaced apart pins depending downwardly from said carriage and positioned to align with each other transverse to the centerline extending from the rear to the front of said carriage, and

a spring arm attached to each of said pins and extending angularly inwardly rearwardly therefrom so that said



spring arms converge upon each other at a point substantially intermediate the pins and the rear of said carriage, said arms biased toward each other; and

e. a lever mounted on the outer end of said housing to which the fishing line is attachable, said lever pivotably movable from a set to a tripped position in response to pulling of the fishing line when that line is attached thereto, said lever having means thereon for holding said carriage in the extended position when said lever is set and for releasing said carriage when said lever is tripped.

3,852,906

FISHING SINKER HAVING BUOYANCY

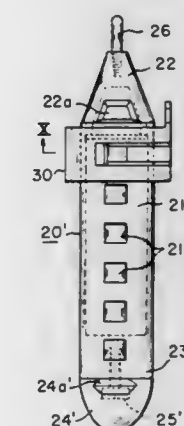
Robert C. LaForce, 514 West View Dr., Beaver, Pa. 15009

Filed Feb. 9, 1973, Ser. No. 331,064

Int. Cl. A01k 95/00

U.S. Cl. 43-43.14

11 Claims



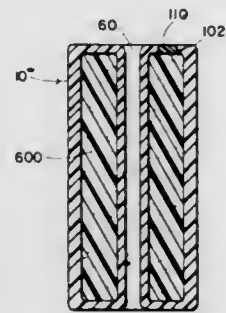
1. In an improved fishing line sinker that is buoyant in water, an elongated cylindrical body having closure means on each end thereof to provide a closed-off air space therein, said body having a longitudinally spaced-apart group of latching means therealong, a slide ring operatively mounted on said body and having connector means for a fishing line, said latching means comprising longitudinally spaced-apart pairs

of transversely aligned opposed offset portions on said body, and said slide ring also having latching finger means for position-retention engagement with a selected pair of said offset portions.

3,852,907 FISHING SINKER

Stephen E. Haught, 4919 N. 62nd St., Omaha, Nebr. 68104
Filed Oct. 1, 1973, Ser. No. 402,109
Int. Cl. A01k 95/00
U.S. Cl. 43-44.9

7 Claims



1. A fishing sinker comprising wolframite material, and means for securing said wolframite material to a fishing line, said sinker having a weight of less than 7 ounces, and further comprising: a jacket means surrounding said wolframite material and said jacket means having an opening therethrough for facilitating attachment to a fishing line, said jacket means defining at least a part of said securing means.

3,852,908 PNEUMATIC APPARATUS FOR SIMULTANEOUSLY RAISING A PLURALITY OF LOBSTER TRAPS FROM THE BOTTOM TO THE SURFACE OF A BODY OF WATER

John P. Christopher, Box 19D, RR A-1, Islamorada, Fla. 33036

Filed Mar. 22, 1973, Ser. No. 343,865
Int. Cl. A01k 69/08

U.S. Cl. 43-102

2 Claims

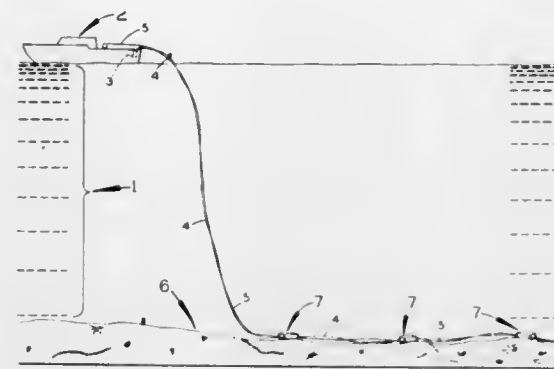
1. A pneumatic apparatus for lobster fishing comprising a plurality of lobster traps having a collapsible float means secured to each said trap,

each of said traps secured in predetermined spaced relation along an outer portion of an air conducting hose which has an air connector secured to each said float means on each of said traps with the hose terminating at the outermost one of said traps,

each of said float means being formed from a collapsible and inflatable elastomer sheet material of uniform thickness and secured in each vertical corner of said trap by removable strap means for providing rapid descent of each of said traps when said float means are collapsed, a source of compressed air in a fishing boat on the surface of the water,

the foremost end portion of said hose having a predetermined length from the first said trap and the input end thereof being connected to a manually controlled said source of compressed air whereby the plurality of pre-baited traps secured along said hose are gravity descended to the bottom surface and following a predeter-

mined trapping interval the traps are substantially raised to the surface of the water by the conduction of compressed air into said input end of said hose and inflating



all of said collapsed float means and whereby all of the said traps will be raised substantially simultaneously to the surface of the water for the convenient extraction of the catch therefrom.

3,852,909 BLOCKS WITH DETACHABLE CAP PLATES HAVING ADDITIONAL MATING CONNECTING MEANS

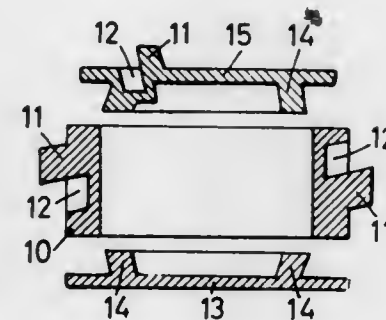
Herbert Viebcke, Wittekindstrasse 7g, Berlin 42, Germany
Filed Dec. 23, 1970, Ser. No. 100,983

Claims priority, application Germany, Dec. 27, 1969, 1965012

Int. Cl. A63h 33/08, 33/10

U.S. Cl. 46-26

5 Claims



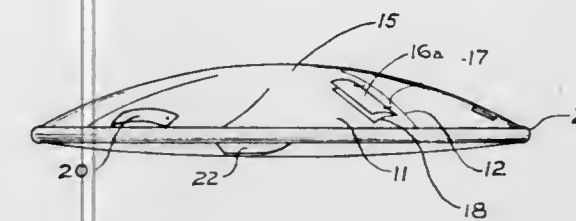
1. An interlocking construction element for use in building vertically and horizontally comprising: a closed frame having a plurality of sides one of which defines a basic length and opposite open ends, at least one said end having its surface lying in a plane; connector means for coacting with similar connector means of a similar element, said connector means including a tongue and groove integrally formed on at least one of the sides of said frame and projecting in planes inclined with respect to said planar surface of said frame; said tongue and groove each having a trapezoidal cross-section, said connector means being arranged in a regular manner on said side to correspond with said basic side length; at least one of the open ends of said frame being covered by a cap plate detachably engageable therewith by means of locking means on one major surface thereof in the form of sloping latch elements frictionally engageable with the interior side surfaces of said open frame, said cap plate having, on its surface opposite said one major surface, connector means for mating with said connector means of said construction element to connect one of said construction elements thereto.

3,852,910 AERIAL TOY

Robert A. Everett, 704 S. 142 East Ave., Tulsa, Okla. 74108
Filed Apr. 21, 1972, Ser. No. 246,238
Int. Cl. A63h 27/00

U.S. Cl. 46-74 D

6 Claims



1. A propelled aerial toy comprising a unitary body having an upper and lower surface, the upper surface comprising a plurality of radially extending and downwardly inclined dihedral airfoils, the airfoils extending at angular intervals and radiating from the center of the upper surface, the lower surface being substantially flat and sealed to the upper surface at the perimeter of the body, with a wing flap attached to the trailing edge of at least one of the airfoils.

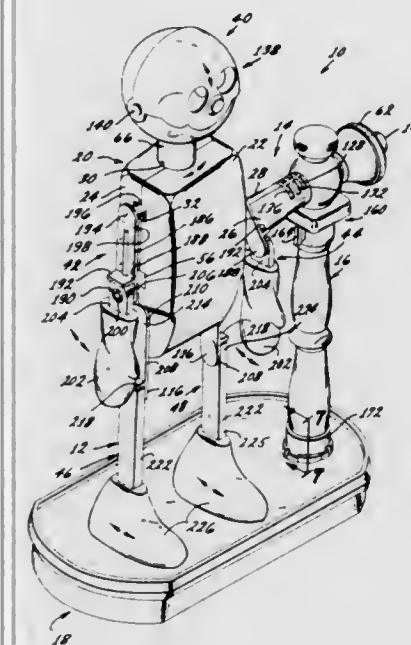
3,852,911 MANUALLY-MANIPULATED ANIMATED FIGURE TOY

Jurgis Sapkus, Manhattan Beach; J. Lewis Lewis, Pacific Palisades; Stephen W. Piurkowsky, Torrance, and Dale P. Cleveland, Inglewood, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 12, 1973, Ser. No. 378,458
Int. Cl. A63h 7/00

U.S. Cl. 46-126

4 Claims



1. A manually-manipulated, animated figure toy comprising:

a puppet assembly including a body, head and limbs; a hollow, rigid tubular member having a first end secured to said puppet and a second, free end;

an operating rod rotatably and reciprocally mounted in said tubular member, said operating rod having a first end extending to a position inside said puppet and a second, free end extending to a position beyond said free end of said tubular member for manipulation by a puppet manipulator; and

means connecting said first end of said rod to said head, legs and arms for manipulation by rotating and reciprocating said rod, said head including a fixed lower jaw and a swingable upper jaw, said connecting means including means connected to said upper jaw for swinging said

upper jaw away from said fixed jaw when said rod is manipulated.

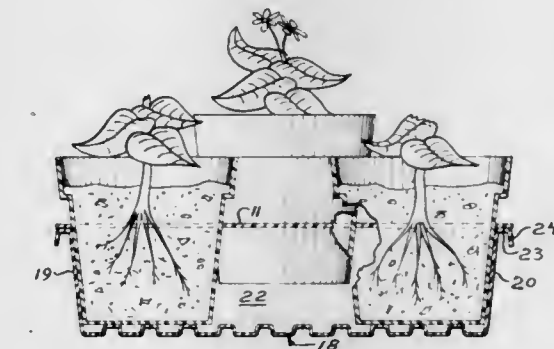
3,852,912 SHIPPING AND CARRYING CONTAINER FOR POTS

Kenneth Diller, P.O. Box 320, Jordan, Mich.
Filed Sept. 1, 1972, Ser. No. 285,879

Int. Cl. A01g 9/02

U.S. Cl. 47-34.11

3 Claims



1. In a shipping and carrying container for potted plants made of sheet plastic having a thickness of about 0.040 inch or less, the combination comprising: a plurality of rigid pots, such having a sidewall of inverted frusto-conical shape; a flat having a bottom and only four generally flat, upright peripheral sidewalls, each terminating in an upper peripheral edge and being slightly outwardly inclined from the vertical, all of said upper edges lying in a common plane; and a spacer plate comprising a flat sheet of plastic defining a plurality of apertures for slidably receiving said pots, each aperture being sized to snugly engage a pot received therein, said apertures being further sized and arranged such that pots received therein engage all four sidewalls of the flat and a plurality of pots engage and partially rest on the bottom of said flat while maintaining snug peripheral engagement with the edge of their associated spacer apertures to thereby fix the spacer plate and the pots relative to said flat, said spacer plate being dimensioned to extend beyond and rest on the upper peripheral edges of said sidewalls of said flat and to partially transmit the weight of pots received therein to said sidewalls of said flat when said flat is distorted to maintain said upper edges of said sidewall of said flat in said common plane; the inclination of said sidewalls of said flat being approximately the same as the inclination of the sidewall portions of said pots which engage them to provide an extended upright engagement location between the outer surface of said pot sidewall portions and the inner surface of said sidewalls of said flat.

3,852,913 SHAPED BIODEGRADABLE CONTAINERS FROM BIODEGRADABLE THERMOPLASTIC OXYALKANOYL POLYMERS

Robert A. Clendinning, New Providence; James E. Potts, Millington, and Walter D. Niegisch, Watchung, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

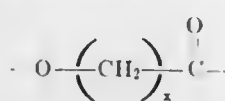
Filed July 28, 1972, Ser. No. 275,972
Int. Cl. A01c 11/000; C08g 17/017

U.S. Cl. 47-37

8 Claims

1. An article of manufacture which comprises: (a) a biodegradable container fabricated from about 10 to about 100 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said

thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



wherein x is an integer having a value of 2 to 7, with the proviso that x does not equal 3; and (b) a medium to germinate and grow seeds or seedlings in said container.

3,852,914

METHOD FOR DETERMINING THE VIABILITY OF SEEDS PRIOR TO GERMINATION

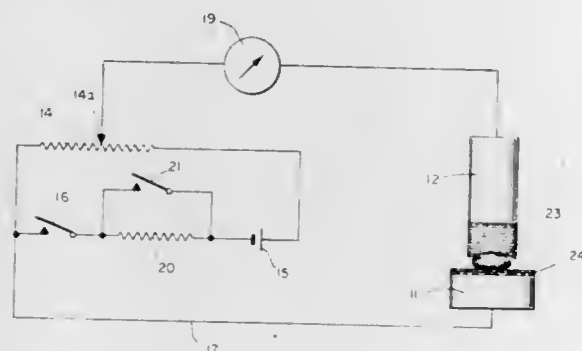
William C. Levengood, Grass Lake, Mich., assignor to Sensors, Incorporated, Grass Lake, Mich.

Filed Sept. 1, 1972, Ser. No. 285,930

Int. Cl. A01b 79/00

U.S. Cl. 47-58

10 Claims



1. A method for determining the viability of seeds prior to germination comprising:

- moistening seeds from a dry state for a period of time and at a temperature sufficient to cause the seeds to pass from the dry state into at least the first phase of their pre-germination cycle but without initiating the last phase of said cycle;
- applying an electrical potential to each of said seeds to cause an electrical current to pass therethrough;
- measuring the electrical current passing through each of said seeds; and
- separating the seeds into groups according to their measured values of electrical current as a measure of their viability wherein the viability decreases with the increase in the measured values of electrical current, and wherein the maximum measured values of electrical current in the steady state do not exceed about 40 microamperes at an applied potential of 1.5 volts.

3,852,915

WINDOW ASSEMBLY

Louis L. Schacht, 205 E. 63rd St., New York, N.Y. 10021
Filed May 24, 1974, Ser. No. 473,011

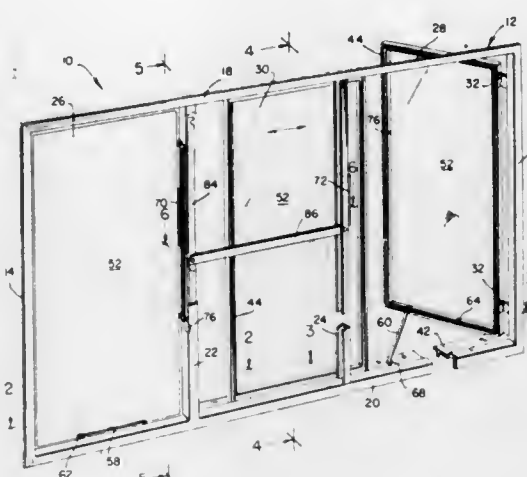
Int. Cl. E06b 3/32

U.S. Cl. 49-143

10 Claims

1. A plural closure window assembly for a wall opening adapted for providing ventilation and access to the weather side of the window assembly, comprising a rectangular frame member securable along a margin of the wall opening and including at least two sash members, a first sash member being mounted for lateral movement within the frame member, a second sash member being pivotally attached along one vertical side of the frame member, sealing means for effecting a vapor and thermal barrier at the interface between the sash members and the frame member, the second sash being swingable from an initially closed position in a substantially coincident vertical plane with the first sash member to an outwardly open position, the first sash member being selectively displaceable within the vertical plane into the space previously occupied by the closed second sash member to thereby define

an open span for providing access exteriorly of the wall and further including safety means for forming a protective barrier



across the open span, said safety means being deployable upon movement of the second sash member.

3,852,916

SLIDING DOOR ASSEMBLY

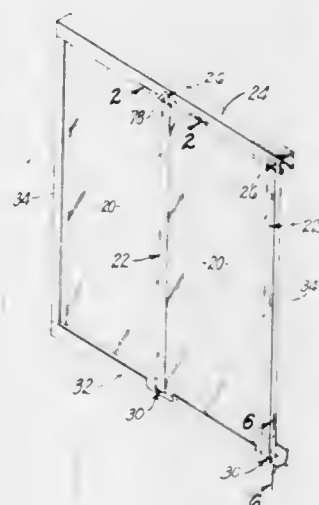
Jordan M. Laby, Sherman Oaks, Calif., assignor to American Shower Door Co., Inc., Hollywood, Calif.

Filed Dec. 11, 1972, Ser. No. 314,226

Int. Cl. E05d 13/02

U.S. Cl. 49-409

12 Claims



1. A sliding door assembly comprising:
an overhead track;

a glass panel having opposed vertical edges the portions of said panel adjacent said edges having opposed flat surfaces;

supporting means for said panel comprising an elongated channel shaped gripping means extending along and resiliently frictionally embracing only each of said vertical edges along the full length thereof, each of said gripping means having a rearward vertical wall and forwardly extending and converging flange portions extending into firm frictional engagement with respective opposed flat surfaces, each of said flange portions having outwardly flared forward edge portions; and

a hanger means at the upper end of each gripping means guiding said door assembly along said track, said flange portions frictionally gripping said opposed flat surfaces with sufficient force to provide the sole support for said glass panel.

3,852,917

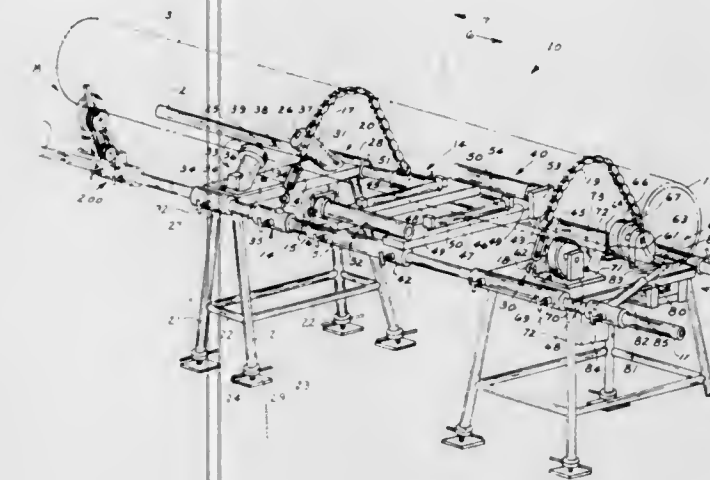
WORK SUPPORT APPARATUS WITH PIPE GROOVING TOOL

Roy P. McKown, 9229 Robin Ln., Indianapolis, Ind. 46240
Division of Ser. No. 174,021, Aug. 23, 1971, Pat. No. 3,756,101, which is a continuation-in-part of Ser. No. 64,530, Aug. 17, 1970, abandoned. This application May 11, 1973, Ser. No. 359,410

Int. Cl. B24b 19/02, 41/06; B23b 3/36

U.S. Cl. 51-5 B

4 Claims



1. A work support apparatus for supporting and rotating different sizes of pipe comprising:

an idler stand including a first main frame and first and second bearings in spaced relationship to each other mounted on top of said main frame, said first and second bearings being adjustable apart to rotatably receive and support said pipe, said main frame further including opposite sides and a first pair of sleeves mounted to said sides and extending parallel with said pipe;

a power stand including a second main frame and first and second wheels in adjustable spaced relationship to each other rotatably mounted on top of said second main frame with at least one wheel being rotatably driven, said wheels being located relative to said bearings to support said pipe in a horizontal position, said second main frame further including opposite sides with a second pair of sleeves mounted to said sides of said second main frame and extending parallel with said pipe;

first and second straight and parallel rods extending through said first pair of sleeves and said second pair of sleeves aligning said idler stand with said power stand;

a third main frame located between said idler stand and said power stand and having sleeves mounted on said third main frame through which said first and second rods extend, said third main frame having at least one roller rotatably mounted on said third main frame with said roller being vertically immovable and located beneath said pipe so as to not contact said pipe when said pipe extends horizontally being supported by said wheels and said bearings, said roller supporting said pipe as said pipe is being placed onto and removed from the work support apparatus.

3,852,918

GAS-ABRASIVE MIXING AND FEEDING DEVICE

Robert B. Black, 2450 Morgan St., Corpus Christi, Tex. 787405

Filed Mar. 29, 1972, Ser. No. 239,211

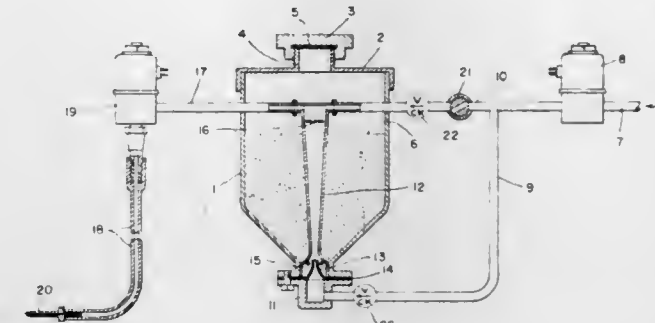
Int. Cl. B24c 7/00

U.S. Cl. 51-12

9 Claims

1. Equipment for use in mixing abrasive particles with a compressed gas, comprising a reservoir for abrasive particles, a venturi tube in the reservoir, the tube having its inlet end portion apertured to provide communication with the interior of the reservoir, an abrasive delivery connection extended from the discharge end of the venturi tube, the discharge end portion of the venturi tube being apertured to provide com-

munication with the interior of the reservoir, and means for causing abrasive particles to circulate through the venturi tube and the reservoir and to deliver abrasive particles through said



3,852,919

CONTINUOUS CLEANING APPARATUS

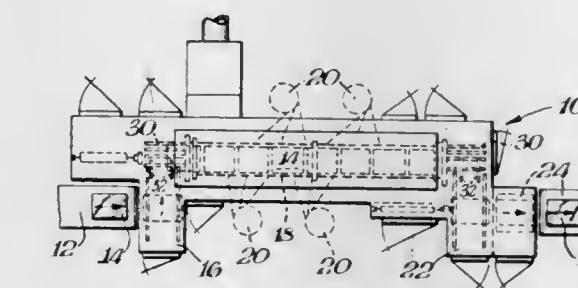
Davis Lee Baughman, and James Hugh Carpenter, Jr., both of Hagerstown, Md., assignors to Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 553,183, May 26, 1966. This application Nov. 8, 1966, Ser. No. 592,799

Int. Cl. B24c 3/30, 3/08, 9/00

U.S. Cl. 51-15

8 Claims



1. A continuous cleaning apparatus comprising an elongated barrel, said barrel having an open feed end and an open discharge end to permit the axial flow of parts therethrough, feed means for delivering parts to said feed end one at a time, discharge means for receiving parts from said discharge end one at a time, cleaning means positioned along said barrel for cleaning the parts flowing therethrough, said barrel being of skeletal form with open portions in its periphery to permit cleaning media from said cleaning means to enter said barrel, rotation means connected to continuously rotate said barrel to cause the parts therein to rotate as they are cleaned, and pickup means on said feed end for removing parts from said feed means and disposing the parts in said barrel.

3,852,920

MACHINE TOOL HAVING REST APPARATUS

Masami Takida, Kariya; Isao Suzuki, Okazaki; Masahisa Osuga, Gamagori, and Takeshi Ota, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 19, 1973, Ser. No. 416,768

Claims priority, application Japan, Nov. 29, 1972, 47-119690

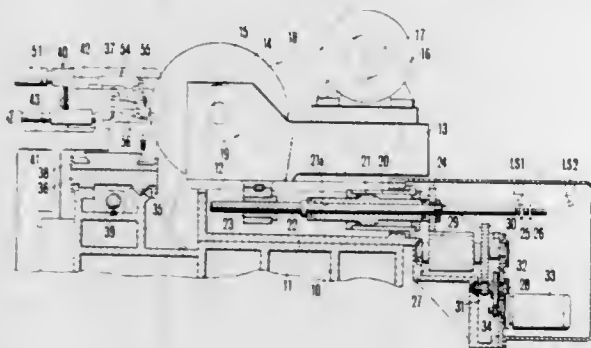
Int. Cl. B24b 49/04

U.S. Cl. 51-105 R

10 Claims

1. A machine tool having rest means comprising a bed; workpiece supporting means mounted on said bed; drive means for rotating a workpiece supported by said workpiece supporting means; tool slide means carrying at least one machining tool serving to machine the workpiece; first feed

means for moving said tool slide means toward and away from the workpiece; rest apparatus located on the opposite side of the workpiece from the tool slide and having an engaging finger operative to support the workpiece during machining thereof; second feed means for moving said rest means toward and away from the workpiece; first control means for controlling said first and second feed means to move said tool slide means and said rest means toward and away from the workpiece; sizing device means for measuring a dimension of the workpiece and generating an output corresponding to the dimension of the workpiece; second control means for effecting a momentary stop of said tool slide means at a given moment in the course of a machining operation on the workpiece; third control means for controlling said second feed



means so as to move said engaging means in a direction to the workpiece during said momentary stop through a predetermined stroke in cooperation with said sizing device means, whereby the workpiece is forcedly shifted toward said machining tool by said rest apparatus, said workpiece continuing to be machined while the tool slide means is at its momentary stop; and fourth control means for controlling a movement of said engaging finger in a direction to the workpiece synchronously with a movement of said tool slide means at a same speed with each other when said forcedly shifting movement of said engaging means and the workpiece has been completed by said third control means, whereby the machining operation on the workpiece can be performed with high accuracy independently of a wear of said engaging finger.

3,852,921

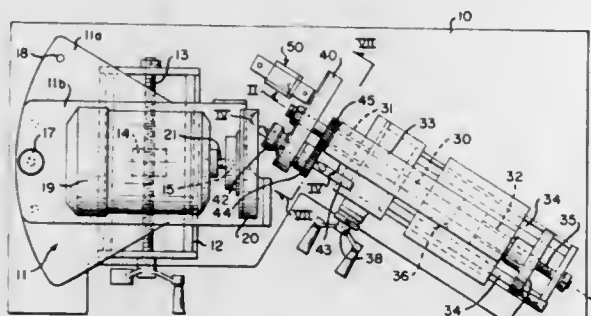
TWIST DRILL SHARPENERS

Jack C. Craig, Wexford, Pa., and Robert B. Henry, Box 188, Wexford, Pa. 15090, assignors to Henry, by said Craig
Filed Nov. 12, 1970, Ser. No. 88,807

Int. Cl. B24b 3/26

U.S. Cl. 51-133

1 Claim



1. A drill sharpening and pointing apparatus comprising a circular grinding disc, means for rotating said disc, a shaft mounted for rotation adjacent said grinding disc on an axis transverse to the axis of said grinding disc, a rotatable chuck means mounted on and radially spaced from said shaft for holding a twist drill for sharpening with the axis of said drill parallel to the axis of said shaft, said chuck means being mounted for rotation in a tool disc mounted on one end of said shaft for rotation with said shaft, indexing means adjacent the tool disc for indexing a twist drill in the chuck for proper sharpening, said index means including a post movable be-

tween a horizontal and vertical position, said post being held by a stop in the vertical position and means acting on said chuck means to rotate said chuck means through a selected angle less than 360° each time the tool disc rotates 360° and means for rotating said shaft.

3,852,922

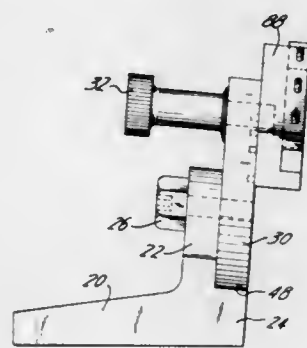
FIXTURES FOR HOLDING A TOOL SUBJECT TO GRINDING

Rocco F. Grieco, 14 Wittkop Pl., Millburn, N.J. 07041
Filed Mar. 14, 1974, Ser. No. 451,062

Int. Cl. B24b 3/34

U.S. Cl. 51-218 A

2 Claims



1. A fixture to support a cutting tool for grinding comprising a base and a carrier block extending upwardly therefrom, a positioning block mounted on said carrier block, said positioning block having a flat tool holder receiving surface with a hole through said tool holder receiving surface for rotatably supporting a tool holder, indexing holes on opposite sides of said tool holder hole, a first zeroing hole positioned at a point spaced from said tool holder hole, said tool holder having a center line being formed perpendicular to a line between said zeroing hole and said tool holder hole, said positioning holes including a pair of holes positioned slightly above the center line to utilize in grinding square thread cutters, tool holder means for holding tool steel subject to grinding rotatably positioned in said tool holder hole and adapted to be removably positioned with one end of said tool holder in one of said positioning holes said base and carrier block being integral with one another, said carrier block tilting slightly from the vertical and said base extending outward under said positioning block and forming a horizontal ledge, said positioning block lowermost portion, when in a vertical position, touching said horizontal ledge, said positioning block having along the bottom thereof, when in said vertical position, a semicircular portion with a measuring scale thereon, the other portion of said positioning block having flat side surfaces, said tool holder hole being in said other portion of said positioning block, said positioning block being rotatably mounted to said carrier block at the center of said semicircular portion to a position wherein one of said flat side surfaces abut said horizontal ledge.

3,852,923

MATERIAL REMOVING BIT

Charles Henry Hess, 347 S. Wake Forest, Ventura, Calif. 93003

Filed Oct. 9, 1973, Ser. No. 404,413

Int. Cl. B24b 5/40

U.S. Cl. 51-352

8 Claims

1. A rotatable material removing bit, comprising:
a. a mounting collar having a neck constructed for connection to a rotating drill rod;
b. at least two elongated and outwardly bowed cutting blades constructed from metal leaf spring material, having a set of inner cutting blade ends secured in cantilevered relationship to the mounting collar and an outer set of cutting blade ends spaced from one another;

3,852,925

METHOD AND MEANS FOR MAINTAINING A DRY BASEMENT

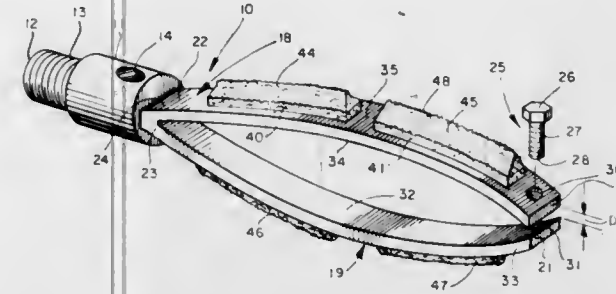
Joseph F. Gazzo, 1303 McKinley Ave., Des Moines, Iowa 50315

Filed June 25, 1973, Ser. No. 373,153

Int. Cl. E02d 31/02

U.S. Cl. 52-169

10 Claims



d. cutting pressure regulating means including a spacing adjustment aperture formed through an outer end of one cutting blade with a set screw positioned in the aperture for engagement with a striking area of the other cutting blade.

3,852,924

HOUSING ASSEMBLY WITH CONVERTIBLE HOUSING UNITS

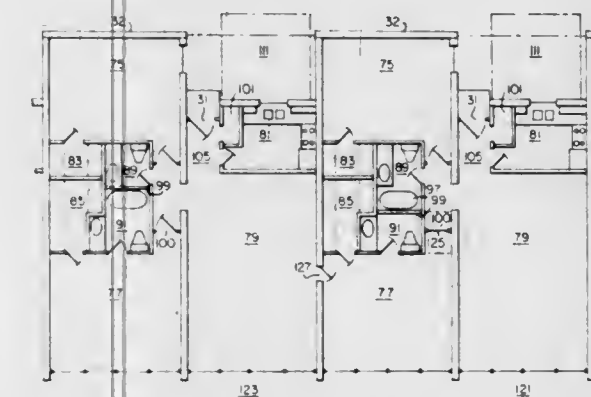
Nathan S. Levenson, 1365 Cordova Rd., Pittsburgh, Pa. 15206
Division of Ser. No. 104,982, Jan. 8, 1971, Pat. No. 3,724,147.

This application Nov. 13, 1972, Ser. No. 305,700

Int. Cl. E04h 1/02

U.S. Cl. 52-79

5 Claims



1. A housing assembly including a plurality of substantially like side-by-side modular housing units, each unit including a living-dining room and kitchen and a pair of bedrooms parallel to said living-dining room and kitchen, the living-dining room and kitchen of a first unit adjacent to a second unit being contiguous to the bedrooms of said second unit, with one bedroom of said second unit juxtaposed to said kitchen of said first unit and the second bedroom of said second unit juxtaposed to the living-dining room of said first unit, there being a wall between the living-dining room and kitchen of said first unit and said bedrooms of said second unit in which a passage may be selectively provided between the living-dining room of said first unit and said second bedroom, the bedrooms of each unit having therebetween an enclosure extending into each bedroom and having back-to-back powder-room facilities, a facility extending into and serving each bedroom and a bathtub between said powder-room facilities, and relocatable wall means within said enclosure selectively relocatable on the side of said bathtub adjacent either of said powder-room facilities, whereby two adjacent modules may be selectively either two two-bedroom apartments or a one one-bedroom apartment, including said one bedroom of said second unit, and one three-bedroom apartment including said second bedroom of said second unit, with said relocatable wall means positioned so that said bathtub is in the bathroom of said one bedroom of said second unit.

3,852,926

MODULAR WALL CONSTRUCTION

William G. Papsco, 145 Willowbrook Dr., Portola Valley, Calif. 94025

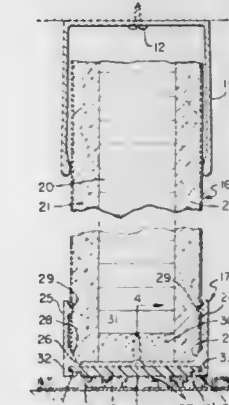
Division of Ser. No. 151,053, June 8, 1971, Pat. No. 3,753,328.

This application Mar. 28, 1973, Ser. No. 345,494

Int. Cl. E04b 2/82

U.S. Cl. 52-241

4 Claims



1. In a modular wall for a room with a floor, a module comprising
a panel having side edges,
a floor rail secured in fixed relationship to the underside of said panel,
a gripper plate disposed under and interlocked with said floor rail and adapted to be frictionally coupled to said floor,
said plate having a longitudinally slidable engagement with said rail and having a length substantially less than the length of said rail whereby the module is movable

longitudinally relative to said plate and floor, and means for limiting relative movement of the plate and rail.

3,852,927

APPARATUS FOR MOUNTING WALLBOARD

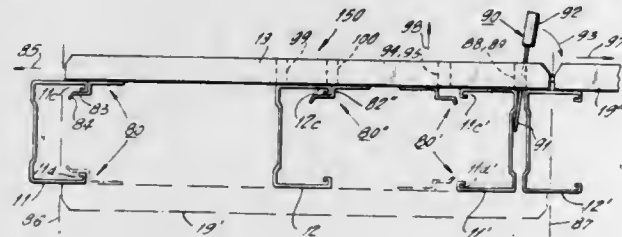
Herbert L. Birum, Jr., Pleasant Valley Rd., Titusville, N.J. 08560

Division of Ser. No. 141,627, May 10, 1971, abandoned. This application Apr. 17, 1973, Ser. No. 351,959

Int. Cl. E04b 2/82

U.S. Cl. 52-241

6 Claims



1. An interior movable partition system for a building structure comprising at least one panel; a plurality of spaced parallel vertically aligned studs of substantially C-shaped cross section defined by a central portion and a pair of outwardly extending arms; clip means being secured to the mounting face of said panel along first and second marginal edges thereof; each of said clip means having a resilient panel mounting portion integrally joined to a stud embracing portion for snap-fittingly engaging the free end of an arm of an associated one of said studs for urging the panel toward said studs.

3,852,928

ELEVATED FLOORING SYSTEM AND PANEL THEREFOR

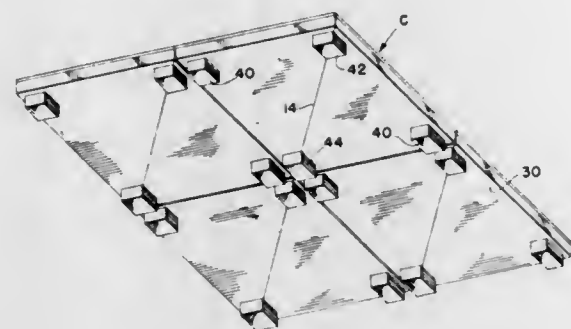
Richard L. Raith, Cleveland, Ohio, assignor to Hauserman, Inc., Cleveland, Ohio

Filed June 13, 1973, Ser. No. 369,473

Int. Cl. E04b 5/48; E04c 2/52

U.S. Cl. 52-263

16 Claims



1. A substantially rectangular panel hinged across diagonally opposite corners, and including as a part thereof elevating supports extending downwardly from said opposite corners and the remaining corners on said panel, said panel being divided into triangular panels along a hinge line, and said elevating supports at said opposite corners being attached to only one of said triangular panels adjacent said hinge line.

3,852,929

SHEET FIXING DEVICE

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England
Filed Oct. 5, 1972, Ser. No. 295,224

Claims priority, application Great Britain, Oct. 8, 1971, 46896/71; Aug. 16, 1972, 38150/72

Int. Cl. E04d 3/36

U.S. Cl. 52-543

4 Claims



1. Fixing device for cladding sheets, each of which has a male rib at one end, a female rib at the other end and at least one intermediate hollow rib with internal pockets, the device being securable to a structural member and having:
 - a. means for locating the device with respect to a male rib of a first one of the sheets, the locating means being engageable with the said male rib so that the fixing device and the said first sheet are restrained from a relative lateral movement;
 - b. a snap-action fastening clip spaced from the locating means including arms having free ends for engagement with the internal pockets of an intermediate rib of a second one of the sheets, which second sheet is to be secured to the structural member adjacent the first sheet;
 - c. a spacing member having the locating means at one end and means for receiving the clip at the other end and maintaining the locating means and clip receiving means at a predetermined distance apart;
 - d. said clip being separate from the remainder of the fixing device and having an aperture, and the clip-receiving means having at least one member to pass through the aperture for subsequent deformation to clamp the clip to the clip-receiving means, whereby the clip is engageable with the clip-receiving means for assembly of the device in situ.

3,852,930

TRIDIMENSIONAL FIBER REINFORCEMENT OF PORTLAND CEMENT CONCRETE MATRICES

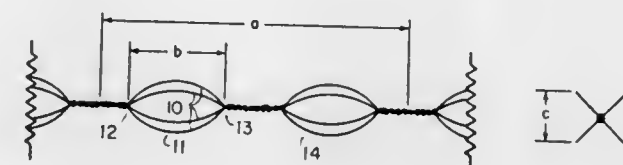
Antoine E. Naaman, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 24, 1972, Ser. No. 283,438

Int. Cl. E04c 5/01

U.S. Cl. 52-664

6 Claims



1. A reinforcing fiber for a concrete matrix comprising a plurality of three or more steel wires, said wires forming a skeletal outline of a volumetric enclosure, said wires being substantially equally spaced from each other on said enclosure, said wires being joined together at opposite ends of the enclosure, an additional steel wire through the center of said volumetric enclosure, joining the other skeletal wires at the ends of the enclosures.

3,852,931

RESILIENT FOUNDATION CONNECTION

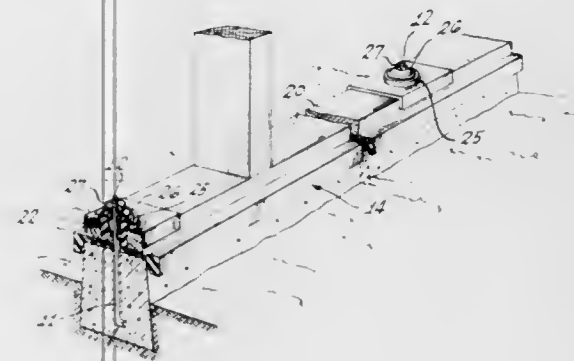
Charles F. Morse, 149 N. Los Palmas, Los Angeles, Calif. 90004, and Donald G. Seal, 1585 S. Coast Highway, Laguna Beach, Calif. 92651

Filed May 1, 1972, Ser. No. 249,306

Int. Cl. E04b 1/98; E02d 31/08

U.S. Cl. 52-293

3 Claims



1. A resilient supporting connection for a structure which includes:
 - a rigid support;
 - a resilient, vibration-insulating cushion on said support;
 - a sill forming a part of said structure, bearing against said cushion and supported thereby;
 - unitary connecting means rigidly attached at one end to said support, said connecting means extending through said resilient vibration insulating cushion and through said sill to hold said sill and support together; and
 - resilient attaching means including resilient annular vibration-insulating means securing said other end of said connecting means to said sill, said annular means surrounding said connecting means, bearing against said sill and spacing said connecting means from said sill, whereby said sill is vibration-insulated from said support and from said connecting means, said annular means comprising a flanged cylindrical grommet means, said flange overlying and being urged by said connecting means against said sill, and spring means between said connecting means and said grommet.

3,852,932

METAL ROOF STRUCTURE

Shigeki Mukoyama, Tokyo, and Shigeru Obara, Yokohama, both of Japan, assignors to Nippon Light Metal Company, Tokyo, Japan

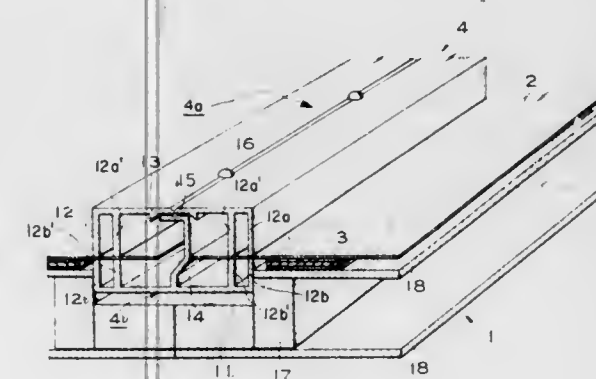
Filed Oct. 12, 1972, Ser. No. 296,835

Claims priority, application Japan, Oct. 14, 1971, 46-81139; Oct. 14, 1971, 46-81140; Mar. 9, 1972, 47-28696; Feb. 7, 1972, 47-15939; Feb. 7, 1972, 47-15940

Int. Cl. E04b 7/00

U.S. Cl. 52-495

2 Claims



1. A metal roofing structure for covering at least a portion of an opening in a building, said structure comprising in combination:

- a roof board layer disposed so as to extend over said opening in a covering relationship therewith;
- a plurality of adhesive strips disposed at spaced intervals along said layer, said strips each including a core portion having adhesive material exposed on at least two opposite sides thereof with one of said sides in adhesive gripping engagement with said layer;
- a metal roofing plate received over said layer and retained in a desired position thereon by the adhesive material on the other of said sides, said cores of said adhesive strips maintaining said layer and said roofing plate in a desired spaced apart relationship from each other with an air layer therebetween;
- a preformed metal member comprised of interfitting upper and lower portions for connecting two of said roofing plates disposed in a generally edge to edge coplanar relationship with each other, said upper and lower portions each including flanges, said preformed metal member lower portion having a pair of flanges disposed at each side thereof, the inside flange of each pair of flanges extending higher than its adjacent outside flange, and said preformed metal member upper portion extending longitudinally along the top of said two roofing plates and overlapping said edge thereof, said edges of said roofing plates being sandwiched between juxtaposed edges of opposed flanges of said upper and lower portions whereby the overlapped edges of said roofing plates are slightly raised.

3,852,933

ROOF PANEL

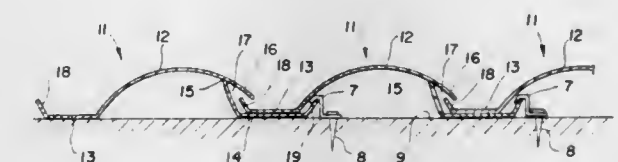
Ralph Guzzo, R.D. No. 1, Amity, Pa. 15311

Filed Jan. 15, 1973, Ser. No. 323,800

Int. Cl. E04d 1/06, 3/365

U.S. Cl. 52-533

1 Claim



1. A plurality of roof panels having interlocked sides, each panel comprising an outwardly projecting, substantially convex, central panel portion terminating in integral, substantially concave, trough shaped, flat bottomed side portions, a clip attaching the extremity of said side portion to a supporting framework, an integral overhanging portion extending at an acute angle from where one of said trough shaped side portions joins said convex, central panel portion so as to overhang, while spaced from and without contacting, the extremity of a trough shaped side portion of an adjoining panel after such adjoining panel is tilted into position, to effect nesting of opposite trough shaped side portions without impairing relative sliding movement therebetween, there being no connection between said nested trough shaped portions or between said extremity and said overhanging portions, the upper trough shaped nested side portion being slightly shorter than the bottom one in order to permit relative movement therebetween as the result of expansion or contraction from ambient temperature changes, and a clip fastening the extremity of the bottom nesting side portion to said framework.

3,852,934

INTERLOCKING SHINGLE ARRANGEMENT

William Joseph Kirkhuff, 18414 S. Wilton Pl., Torrance, Calif. 90504

Filed Jan. 12, 1973, Ser. No. 323,278

Int. Cl. E04d 1/18, 1/28

U.S. Cl. 52-539

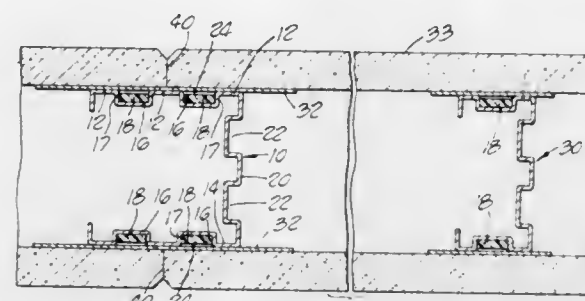
17 Claims

1. An interlocking simulated shingle arrangement for instal-

lation on roofs, walls and other structures and comprising, in combination:

- a body member having an upper surface, a lower surface transversely spaced from said upper surface, a forward surface, a rear surface longitudinally spaced from said forward surface, a pair of side surfaces laterally spaced from each other, and first walls defining a channel, and said first walls having a top portion transversely spaced from said upper surface and extending a first preselected longitudinal distance from said forward surface towards said rear surface, and said first walls having a base portion extending from said lower surface a second preselected transverse distance towards said upper surface;
- a top plate coupled to said upper surface on a rear portion thereof adjacent said rear surface and extending laterally between said pair of side surfaces and extending longitudinally substantially said first preselected longitudinal distance to leave exposed said upper surface of said body member between said forward surface thereof and said top plate, and a combined transverse thickness of said rear portion of said body member at said rear surface

cessed therein from said support surfaces thereby defining air gaps between the magnetic material and said support surfaces, said magnetic material being coupled in flux conducting rela-



tionship to the supporting surfaces of said stud, whereby said magnetically attractive wallboard may be firmly held against said supporting surfaces of said stud.

3,852,936

METHOD OF AND A MACHINE FOR FORMING AND FILLING TRAYS WITH ARTICLES

Ian Mayor Wilson, Old Coulsdon, and Eric William Hamp, Thornton Heath, both of England, assignors to Arcall Limited, Hackbridge, Surrey, England

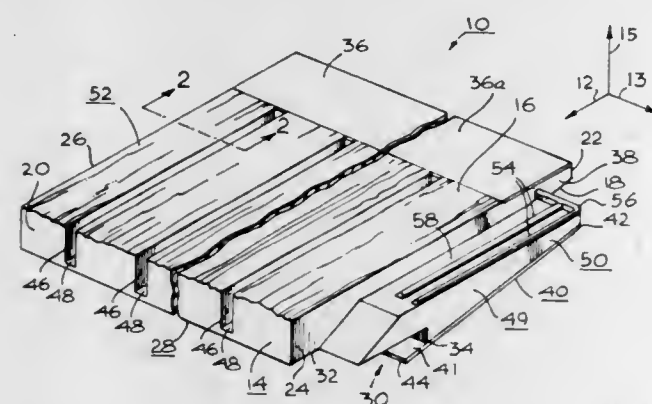
Filed Aug. 21, 1972, Ser. No. 282,387

Claims priority, application Great Britain, Aug. 20, 1971, 39170/71

Int. Cl. B65b 5/02, 21/06

U.S. Cl. 53-26

12 Claims



- thereof and said top plate substantially equal to said second preselected transverse distance;
- a bottom plate coupled to said lower surface of said body member and extending laterally between said pair of side surfaces and having a back edge spaced a third preselected longitudinal distance from said rear surface of said body member and having a front portion extending from said base portion of said first walls of said body member a fourth preselected longitudinal distance therefrom towards said front surface of said body member and said front portion underlying and transversely spaced from said top portion of said first walls;
- whereby said top plate and said rear portion of said body member of a first simulated shingle in a first course of simulated shingles is positionable in said channel of a second simulated shingle in an adjacent course of simulated shingles, and said front portion of said bottom plate of the second simulated shingle underlies the lower surface of the rear portion of the first shingle, and said bottom plate of said first and said second simulated shingles are in substantially continuous contact with the structure upon which the simulated shingles are installed.

3,852,935

MAGNETIC WALL STUD

Harold R. Jones, 1267 Montevideo Ave., Placentia, Calif. 92670

Filed Sept. 22, 1972, Ser. No. 291,332

Int. Cl. E04b 2/30

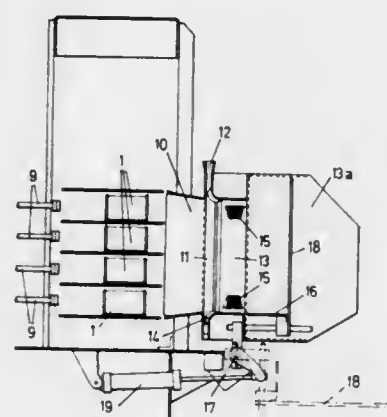
U.S. Cl. 52-730

9 Claims

1. A stud for supporting lengths of wallboard of the type which are magnetically attractive, said stud being composed of a magnetically conductive material and having oppositely disposed elongated support surfaces joined together by a web, each of said support surfaces having a longitudinal channel therein, a quantity of permanent magnetic material positioned in each of said channels, said magnetic material being re-

1. Apparatus for loading articles in a tray of the kind formed from a prepared blank of cardboard or other suitable sheet material having marginal portions which are adapted to be folded to form a confining wall around a base of the tray, in which the apparatus comprises a hollow die of internal dimensions corresponding to the dimensions of a finished loaded tray and having an inlet mouth and an outlet end, means for assembling and positioning articles into sets of articles arranged in a pre-determined pattern outside said die and opposite the mouth of the die, means for receiving and locating a tray blank adjacent the mouth of the die, means for contacting the said articles on their sides remote from the mouth of the die and moving the articles in said pre-determined pattern into contact with the tray blank and continuing said movement with the underside of the tray exposed, through the die to fold the marginal portions of the tray to form said confining wall around said articles and continuing said movement through the die until the tray and articles leave the outlet end of the die; and

a rectangular hollow channel of progressively reduced cross-sectional area with its sides around the mouth of the die, the articles being moved through said channel before contacting the tray blank, to urge the articles into close contact before entering the die.



3,852,937

SHRINK-WRAPPING METHOD AND APPARATUS

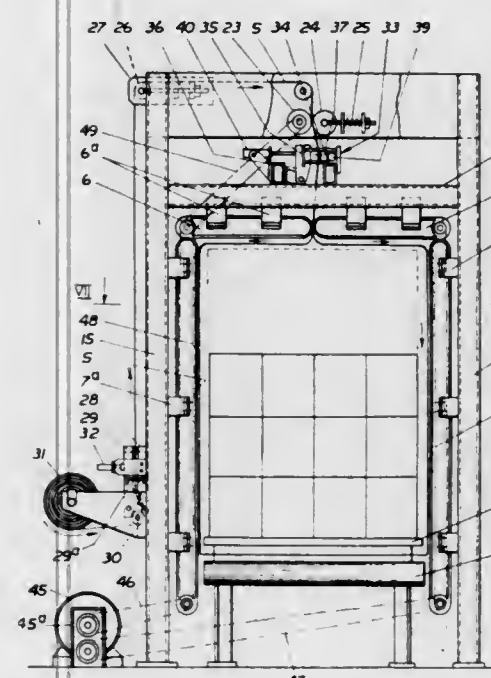
Michael P. Bitsura, Pittsburgh; Robert Brevko, Bridgeville, and Merle A. Palmer, Pittsburgh, all of Pa., assignors to Auburn Engineering, Inc., Clairton, Pa.

Filed Aug. 6, 1968, Ser. No. 750,497

Int. Cl. B65b 43/30, 53/02

U.S. Cl. 53-29

18 Claims



1. The steps in the method of shrink-wrapping a polyethylene film about a bulky load on a supporting base wherein the polyethylene is a roll of tubular film flattened down upon itself, which comprises:

- a. mechanically feeding the flattened tubular sheet from the supply roll downward toward and about a load to be wrapped positioned beneath it;
- b. engaging the two opposed surfaces of the leading end of the flattened tubular sheet at a level above the load to be wrapped and below the level at which the mechanical feeding of the film occurs and opening it horizontally into a four-sided configuration by oppositely moving sheet-gripping means, mechanically feeding the flattened tubular sheet from the supply roll downwardly toward the load while the open end of the tube is so engaged and guiding it downwardly around the load whereby the gripping means is required to apply only sufficient tension to hold the film open and guide it downwardly around the load,
- c. terminating the downward feed of the sheet when the leading edge of the sheet is below the supporting base of the load,
- d. severing the flattened tubular sheet after the leading edge has progressed downwardly a predetermined distance back from the leading edge determined by the height of the load and at such a place so that when the leading edge is below the supporting base the severed edge will be at a level above the top of the load, and
- e. thereafter moving the load about which the film has been so placed through a heated environment to shrink the film about the load.

3,852,938

ARTICLE PACKING APPARATUS AND METHOD

William R. Graff, Lynchburg, Va., assignor to Alliance Industrial Corporation, Lynchburg, Va.

Filed May 18, 1973, Ser. No. 361,768

Int. Cl. B65b 5/08, 35/56

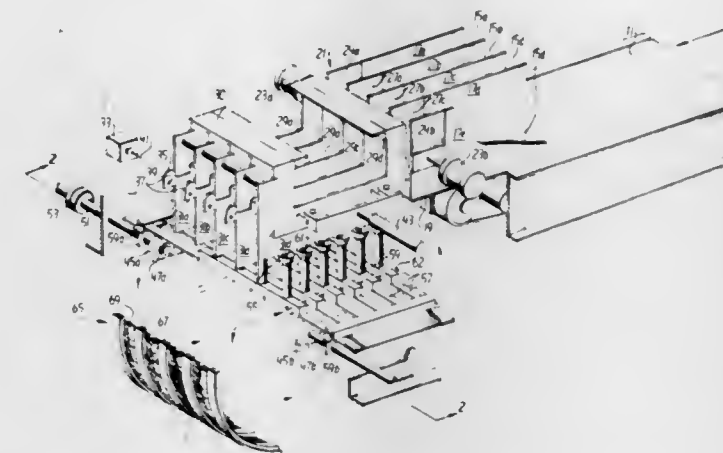
U.S. Cl. 53-35

9 Claims

5. A method of packing containers comprising the steps of: depositing upturned containers on gripping members mounted on a flexible endless transporting means which is, in turn, mounted on at least two wheels;

activating said gripping members so that said gripping members grip said containers;

driving said flexible endless transporting means so that said gripping members gripping said containers travel around one of said wheels and thereby invert said gripped containers to downturned positions;



moving a carton so as to receive said downturned containers; and,

deactivating said gripping members thereby leaving said containers in said cartons in said downturned positions.

3,852,939

APPARATUS FOR AUTOMATICALLY BINDING THE OPENING IN THE AUTOMATIC PACKER

Hirosato Yoshi, Osaka, Japan, assignor to Kabushiki Kaisha Sanwa Jidoki Seisakusho, Osaka, Japan

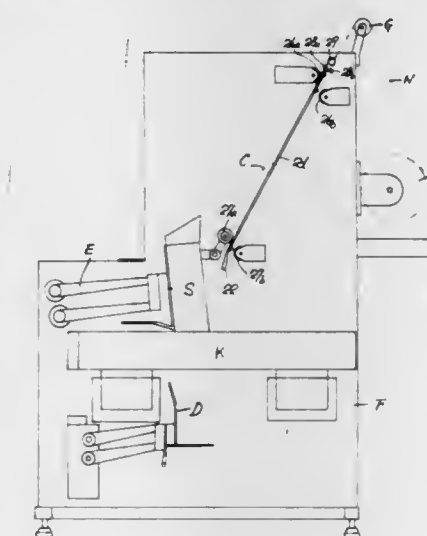
Filed Sept. 14, 1972, Ser. No. 288,982

Claims priority, application Japan, Sept. 17, 1971, 46-85372

Int. Cl. B65b 9/10

U.S. Cl. 53-138 A

5 Claims



1. An apparatus for automatically binding the opening in a net being packed in an automatic packer, said apparatus comprising two main bodies, each having a guide plate projecting therefrom toward the other main body and each guide plate having a V-shaped cut therein on the end toward the other main body, said main bodies being slidably mounted in said apparatus for movement toward and away from each other, one of said main bodies having at least one fixed die thereon having a recess therein for receiving the free ends of a U-shaped length of flat wire for bending the ends to crimp the length of flat wire around the net being packed, and said one main body further having a cutting blade thereon movable toward and away from said other die for cutting the net being packed, flat wire feed means on said apparatus for feeding flat wire from a supply of flat wire, a movable die means on said other main body having a cutting and bending die movably mounted on said other main body and receiving the flat wire, a protruding rod movable through said cutting and bending

die, and stop members engageable with said cutting and bending die for holding it fixed on said other main body, said cutting and bending die moving with said other main body for cutting the flat wire which has been supplied and then bending it in a U-shape, engagement means on said one main body engaging said stop members for disengaging the stop members from said cutting and bending die when said cutting and bending die abuts said fixed die on said one main body for freeing said cutting and bending die from said other main body during further movement of said other main body, said movable protruding rod then moving through said cutting and bending die when said cutting and bending die is freed from said other main body to engage said bent length of flat wire and move it into said fixed die on said one main body as said main bodies move toward each other, and main body drive means coupled to said main bodies for driving them toward and away from each other, whereby when the net is positioned in the space between the V-shaped notches and the main bodies are driven toward each other after a length of flat wire has been fed, the length of flat wire bent into a U-shape is passed over the net and the free ends enter the fixed die and the movable die drives the bent length of flat wire into the fixed die to crimp the flat wire tightly around the net.

3,852,940

AUTOMATIC CAP SEALING DEVICE

Yoshikuni Kinoshita, Tokyo, Japan, assignor to Ryohsei Plastic Industry Co., Ltd., Tokyo, Japan

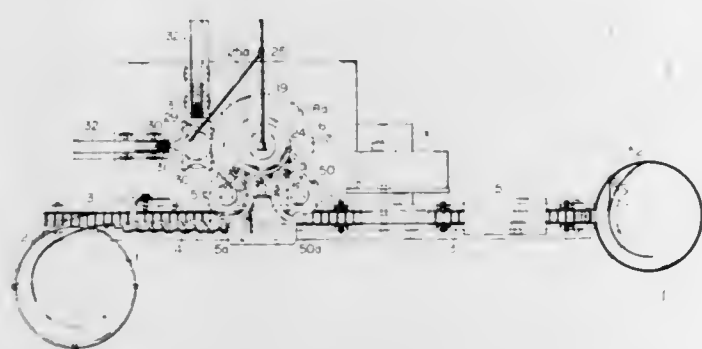
Filed May 17, 1973, Ser. No. 361,441

Claims priority, application Japan, May 30, 1972, 47-053576

Int. Cl. B67b 5/00; B65b 7/28

U.S. Cl. 53-292

2 Claims



1. In an automatic cap sealing device which includes: means for conveying bottles serially along a path which includes an arcuate portion; dispensing means for serially dispensing flattened tubular sealing elements of thermally contractile synthetic resin material; means for applying a tubular sealing element to the mouth portion of each bottle as each bottle passes through said arcuate portion of said path; means for serially withdrawing flattened tubular sealing elements from the dispensing means and for transferring the withdrawn elements to said applying means, the improvement wherein said applying means comprises: a rotary member having a plurality of angularly spaced first vacuum adhesion fingers positioned on said rotary member to be successively carried into contact with flattened tubular sealing elements withdrawn from the dispensing means by said serially withdrawing means; vacuum conduit means successively communicating with each first vacuum adhesion finger to cause that finger to grip one outer side of the flattened tubular sealing element when carried into contact therewith; the first vacuum adhesion members also being positioned to be successively carried by rotation of said rotary member, after each has successively gripped a flattened tubular sealing element, into vertical alignment above a respective bottle in said arcuate portion of said path;

a second vacuum adhesion finger opposingly paired with each first vacuum adhesion finger and carried by said rotary member;

cam means timed with rotation of the rotary member for successively displacing each second vacuum adhesion finger from confronting opposition with the respective first vacuum adhesion member while the respective first vacuum adhesion member is being carried into contact with and gripping one outer side of a flattened tubular sealing element, and for permitting return of the respective second vacuum adhesion member to confronting opposition with the respective first vacuum adhesion member after the respective first vacuum adhesion member has gripped one outer side of a flattened tubular sealing element and is nearing vertical alignment with a respective bottle passing through said arcuate portion of said path; means for then urging each respective second vacuum adhesion member into contact with the opposite outer side of the respective flattened tubular sealing element;

vacuum conduit means for successively communicating with each second vacuum adhesion finger when each finger is urged into contact with the opposite outer side of a respective flattened tubular sealing element;

means for urging the first and second vacuum adhesion fingers of each successive pair relatively away from one another to open the respective flattened tubular sealing element gripped thereby as that tubular sealing element further nears vertical alignment with a respective bottle passing through said arcuate portion of said path;

and downward pushing means positioned to push each respective opened tubular sealing element down onto the mouth portion of the respective bottle when that opened tubular sealing element is in vertical alignment with the respective bottle in said arcuate portion of said path.

3,852,941

VIAL CAPPING APPARATUS

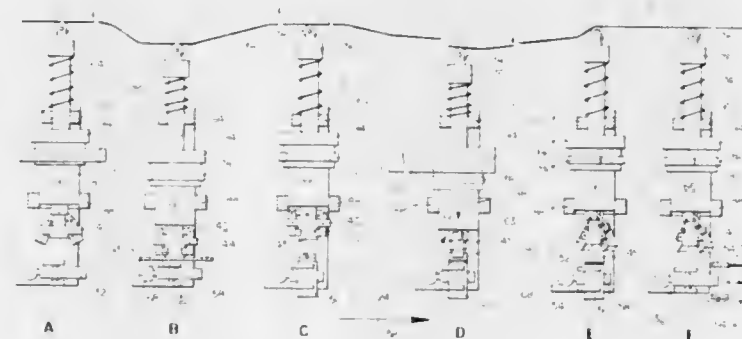
Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 20, 1973, Ser. No. 389,906

Int. Cl. B67b 3/20; B65b 7/28

U.S. Cl. 53-317

6 Claims



1. A capping machine for assembling a cap to a vial with rotation and pressure, said capping machine being adapted for operative association with:

- a first means for delivering caps to a first location;
- a second means for delivering filled vials to a second location; and
- a third means for receiving capped vials at a third location; said capping machine comprising:
- a rotary worktable mounted for rotation about an upright axis;
- at least one capping device mounted on said worktable adjacent its periphery for rotation therewith;
- fourth means for rotating said worktable whereby said capping device moves therewith in an arcuate path through said first, second, and third locations; said capping device including:

g. a vial holder for receiving a vial from said second means, for tightly holding said vial between said second and third locations, and for delivering said vial to said third means;

h. a cap holder comprising a pair of fingers for holding a cap by the rim thereof, a mechanism for moving said fingers toward one another to closed position for holding a cap during movement of said capping device between said first and third locations and for moving said fingers apart to release said cap from said fingers at said third location;

i. an elongated, upright spindle mounted for upward and downward movement in axial direction;

j. a barrel mounted on said spindle for rotation about the longitudinal axis of said spindle and being movable upwardly and downwardly with said spindle, said barrel supporting said cap holder at the lower end thereof;

k. a first cam follower connected to said spindle;

l. a first cam arranged in camming relation to said first cam follower, said first cam having a camming surface contoured for moving said cap holder with said spindle and said barrel downwardly at said first location whereby said cap holder descends on a cap at said first location, the camming surface of said first cam being contoured to effect upward movement of said cap holder with said spindle between said first and second locations, and said camming surface of said first cam being contoured to effect downward movement of said cap holder with said spindle between said second and third locations whereby said cap holder is biased downwardly on said vial during assembly of said cap to said vial;

m. a turning ring formed about said spindle on the surface of said barrel;

n. a turning block engageable with said turning ring between said second and third locations for rotating said cap by said cap holder relative to said vial during assembly of said cap to said vial;

o. an aligning ring on said barrel formed about the axis of said spindle and including a pair of flat spots therein, said flat spots being disposed inwardly of adjacent portions of said aligning ring, and

p. a second turning block engageable with said aligning ring between said third location and said first location for rotating said cap holder until said fingers are spaced apart in the direction of movement between said third location and said first location.

3,852,942

APPARATUS FOR OPENING A CARTON FLAP

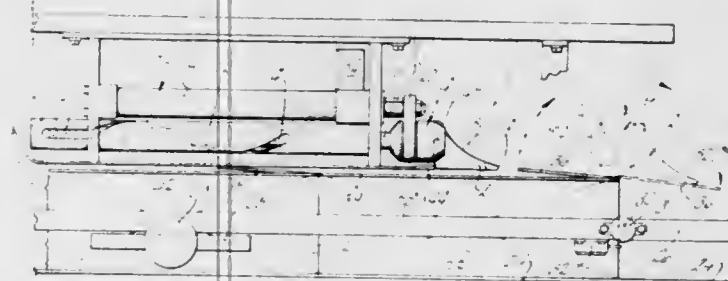
Lloyd D. Johnson, Portland, and John L. Raudat, North Madison, both of Conn., assignors to Emhardt Corporation, Bloomfield, Conn.

Filed Oct. 15, 1973, Ser. No. 406,731

Int. Cl. B65b 43/39

U.S. Cl. 53-382

14 Claims



1. Apparatus for opening a flap of a carton which is folded inwardly at the edge of a panel of the carton, comprising: means for conveying cartons endwise; means for stopping each carton at a predetermined location; flap opener holding means disposed adjacent and spaced from said conveying means a distance sufficient to allow a carton between said conveying means and said flap opener holding means;

a flap opener disposed on said flap opener holding means; means for rotating said flap opener and translating said flap opener from a rest position towards a flap to be opened such that said flap opener moves in a helical-like path to engage and open the flap; and means for returning said flap opener to the rest position.

3,852,943

PORTABLE SAFETY CLAMP

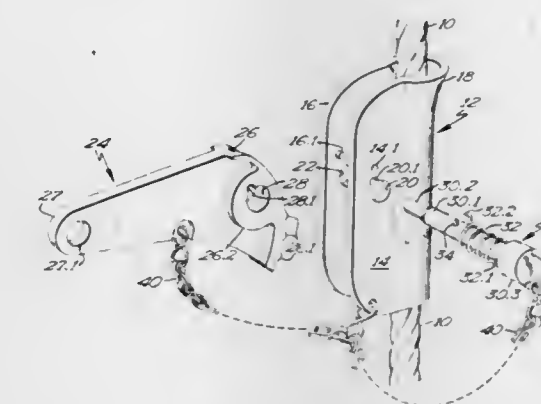
Gerald S. Healy, Red Wing, Minn., assignor to Meyer Industries, Inc., Red Wing, Minn.

Filed Aug. 27, 1973, Ser. No. 391,575

Int. Cl. F16g 11/00; F44b 21/00

U.S. Cl. 24-134 R

9 Claims



1. A portable safety clamp for connection of a workman's safety belt to an upstanding safety rope, the clamp comprising an elongate portable rope housing having a generally U-shaped internal cross section adapted to longitudinally receive a safety rope and having opposed, apertured walls; an elongate brake lever having a bearing orifice intermediate its length and having a brake shoe at one end extending inwardly of the housing for contact with a rope therein, the other end of the brake lever extending outwardly for connection to a workman's safety belt; a removable pivot pin extending through the bearing orifice and the wall apertures; a helical spring mounted about one end of the pivot pin for acting in torsion to urge the brake shoe into contact with a rope in the housing; the pivot pin having a releasable latch at its other end abutting the outer surface of a housing wall aperture and held lockingly thereagainst by the compressive force of the helical spring.

3,852,944

LAWN EDGER

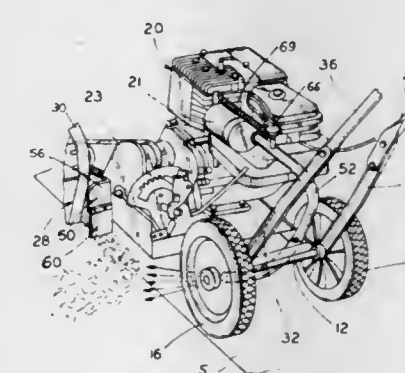
William T. Zuercher, Marshalltown, Iowa, assignor to Copper Manufacturing Company, Marshalltown, Iowa

Filed May 7, 1973, Ser. No. 357,521

Int. Cl. A01d 69/00

U.S. Cl. 56-12.2

6 Claims



1. A lawn edger comprising a wheeled frame movable over a surface in a first direction, drive means on said frame emit-

ting exhaust gas under pressure, blade means rotatably carried on said frame and adapted to be driven by said drive means, said blade means rotatable about a substantially horizontal axis, deflector means on said frame rearwardly of said blade means, and extending transversely of said blade means, said deflector means comprising a bracket secured to the frame and a resilient flap secured to the bracket and extending transversely relative to the frame for intercepting debris hurled rearwardly by the blade means, and conduit means having an inlet portion connected to said drive means and having a frame supported portion within an outlet for conducting exhaust gas from the driver means and discharging same across said surface rearwardly of the deflector means, whereby debris thrown by the blade means will be deflected by the deflector means to said surface and then said debris will be blown away by the exhaust gas.

3,852,945

MOWER ATTACHMENT FOR GRADER BLADE

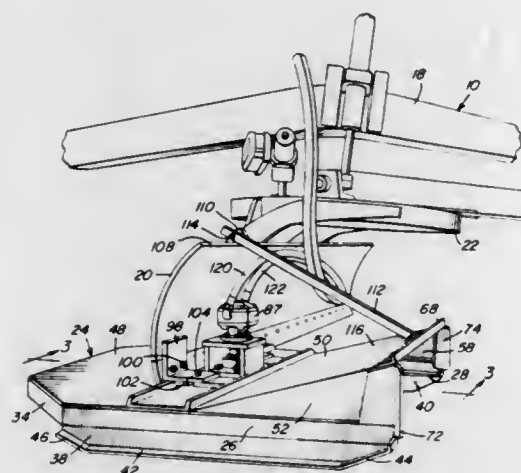
Ray J. Berry, 524 No. 33rd, and Lonzo L. Simons, 2820 Morrow St., both of Waco, Tex. 76707

Filed July 9, 1973, Ser. No. 377,233

Int. Cl. A01d 55/22

U.S. Cl. 56—12.7

10 Claims



1. A heavy duty rotary mower for support from a mobile vehicle, said mower having an elongated frame defining opposite sides and front and rear ends and including longitudinal opposite side members and transverse members extending between said opposite side members and rigidly connecting the latter at points spaced therealong, vertical shaft means journaled from said frame intermediate its opposite sides and front and rear ends, horizontal rotary blade means mounted on said shaft means between said side members, and motor means carried by said frame drivingly connected to said shaft, a road grader of the type having a central transverse grader blade supported therefrom for angular displacement about an upstanding axis and adjustable tilting about an axis extending longitudinally of said grader as well as vertical adjustment relative to the latter, said rotary mower being mounted on one end of said blade and projecting at least slightly outwardly of said one end of said blade, said transverse members including a central transverse member connected to and extending between said side members and from which said means is journaled, said central transverse member comprising an upwardly opening channel member including a lower web portion and opposite side upstanding flanges, said motor means being carried by said channel member centrally intermediate its opposite ends, and mounting brackets carried by said channel member on opposite sides of said motor, said one end of said grader blade including mounting brackets carried

by and spaced along the lower marginal portion of said one end of said grader blade from which the first mentioned mounting brackets are releasably supported.

3,852,946

BULK YARN

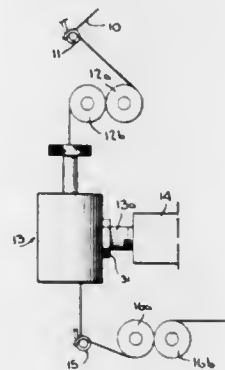
James O. Smith, Winston-Salem, N.C., and Carl R. Delagrang, Ripplemead, Va., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 687,077, July 10, 1967, abandoned, which is a continuation of Ser. No. 425,372, Dec. 24, 1964, abandoned, which is a division of Ser. No. 812,718, May 12, 1959, abandoned. This application Nov. 12, 1970, Ser. No. 89,024

Int. Cl. D02g 1/02, 1/16, 3/24

U.S. Cl. 57—140 R

9 Claims



1. A steam thermally set and steam false twist bulked multi-filament yarn comprising a plurality of false twisted helically crimped filaments, each of said filaments being characterized by varying helical tightness and a plurality of different helix angles along its length, said filaments being out of crimp registry with one another as the yarn issues from the false twister without further processing, said yarn having been false twisted in a venturi type steam jet into which the steam is fed eccentrically of the yarn passageway and the venturi chamber, the steam simultaneously imparting a false twist to the yarn, functioning as the false twist setting fluid in the steam jet and deregistering crimps of adjacent filaments, said yarn being substantially free of loops.

3,852,947

FLAME RETARDANT FIBER BLEND

Michael Dainis Mayer, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,852

Int. Cl. D02g 3/04, 3/44

U.S. Cl. 57—140 BY

8 Claims

1. A flame-retardant fiber-blend comprised of at least 10 weight percent (by weight of blend) of flame-retardant acetate fiber and from about 10 to about 90 weight percent (by weight of blend) of polyester fibers, wherein:

- said flame-retardant acetate fiber is comprised of from about 0.5 to about 25 weight percent of at least one tris(polyhaloaliphatic) phosphate containing from about 3 to about 24 carbon atoms, and
- said polyester fiber comprises at least 90 weight percent of the non-flame-retardant acetate fibers of the blend.

3,852,948

YARNS, TOWS, AND FIBERS HAVING DIFFERENTIAL SHRINKABILITY

James Nelson Ruddell, 19 Glenroy Ave., Portadown, and Herbert Alexander Conway Todd, 25 Coolsara Park, Lisburn, both of Northern Ireland

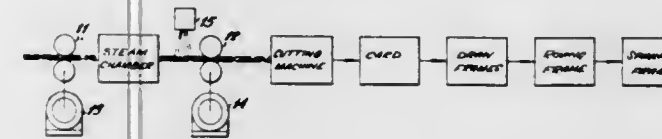
Continuation-in-part of Ser. No. 219,048, Aug. 23, 1962, Pat. No. 3,302,385, Continuation-in-part of Ser. No. 176,455, Feb. 12, 1962, abandoned. This application Feb. 24, 1964, Ser. No. 346,870

Claims priority, application Northern Ireland, Aug. 26, 1961, 30850/61; Jan. 17, 1962, 1796/62; Jan. 17, 1962, 1797/62; May 25, 1962, 20135/62

Int. Cl. D02g 3/24

U.S. Cl. 57—140 R

14 Claims



1. A tow of continuous filamentary textile material adapted to be subdivided into staple fibers of generally predetermined length in which the continuous filaments thereof cyclically vary in gradual and continuous manner in latent shrinkage characteristic longitudinally thereof between predetermined minimum and maximum limits of significantly different values, the length of the cycle of said variation being substantially greater than said predetermined length of said staple fibers.

3,852,949

PLURAL CYCLE DISPLAY DEVICE

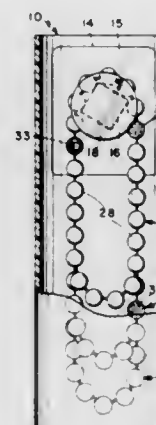
Robert N. Saylor, 2440 Huntleigh, Oklahoma City, Okla. 73120

Filed June 8, 1973, Ser. No. 368,239

Int. Cl. G04b 45/00; A63f 1/00; G04f 1/162

U.S. Cl. 58—2

7 Claims



1. A device for displaying the relative position of plural time-based cyclic parameters comprising:

- a frame,
- a motor mounted on said frame,
- a plurality of continuous elements supported for rotation about an axis transverse to the major plane of said continuous elements,
- each of said continuous elements comprising an elongated member joined at its ends and being divided into a plurality of segments substantially equal in length,
- a drive means driven by said motor for engaging said segments on each of said plurality of continuous elements and moving each of said segments an equal distance,
- said plurality of continuous elements being of a plurality of different lengths, said continuous elements differ in length by increments equal to said segments,
- at least one of said segments on each of said continuous elements being marked as indicia means for indicating the

phase of a time-based cycle represented by said continuous elements.

3,852,950

ELECTRONIC TIMEPIECE

Kazuhiro Yoda, Tokyo, and Kojiro Tanaka, Yachiyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

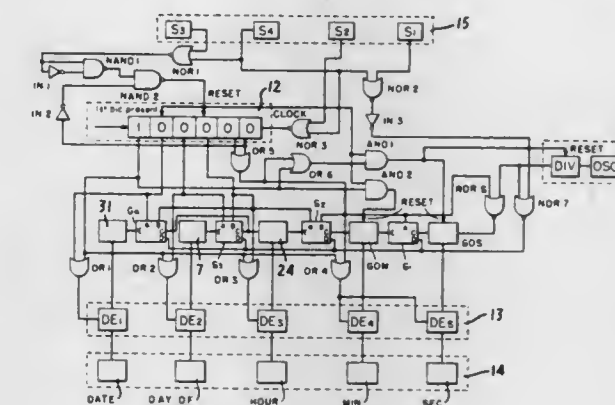
Filed Dec. 4, 1972, Ser. No. 311,945

Claims priority, application Japan, Dec. 7, 1971, 46-98296

Int. Cl. G04b 19/24, 27/00

U.S. Cl. 58—4 A

6 Claims



1. An electronic timepiece comprising, means generating time signal pulses constituting a time base, counting means receptive of said time signal pulses for counting said time signal pulses, means connected to the counting means developing digital outputs representative of time corresponding to at least one of date, day of the week, hour, minute and seconds time indications, display means connected to the means developing digital outputs to display at least one of said time indications, and control means connected to said counting means and said display means for selectively displaying individually said time indications on said display means and including means for selectively setting each of said time indications to a desired value.

3,852,951

ELECTRONIC CORRECTION

Pierre Sauthier, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services S.A., Bienne, Switzerland

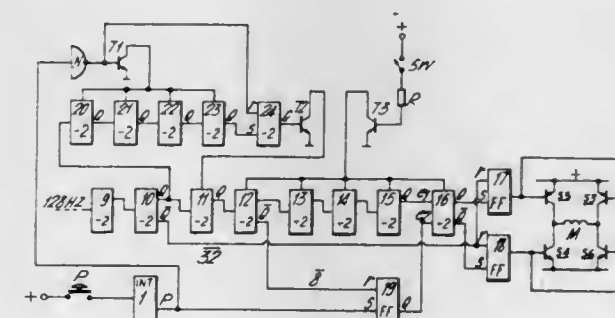
Filed July 12, 1973, Ser. No. 378,627

Claims priority, application Great Britain, July 12, 1972, 32577/72

Int. Cl. G04c 3/00; G04b 27/00

U.S. Cl. 58—23 R

7 Claims



1. Time-piece in which a time standard supplies signals of a predetermined frequency to a first sequence of bistable devices arranged and adapted to provide output signals of a desired frequency to a display arrangement in which at least "seconds" are displayed, wherein means are provided to set the seconds display through the supplying of additional output signals or the withholding of output signals, said means including a complement output terminal on at least one of the bistable devices in the first sequence, a bistable storage device

arranged to be manually switchable to a first stable state and to be automatically restored to a second stable state by signals obtained from the complement output terminal, a display control toggle having an input arrangement which logically combines said output signals from the first sequence of bistable devices with signals from the bistable storage device, a delay circuit having a controllable disabling switch and receiving an input from a predetermined bistable device in the first sequence in order to provide an output adapted to block signal transmission from at least one bistable device in the first sequence; and a manually operable switch coupled to the bistable storage device and the delay circuit disabling switch, whereby actuation of the manually operable switch for a time period less than that of the delay circuit adds one signal to the seconds display and actuation of the manually operable switch for a greater time period adds one signal and thereafter blocks transmission of further signals to the seconds display for as long as the manually operable switch continues to be actuated.

3,852,952

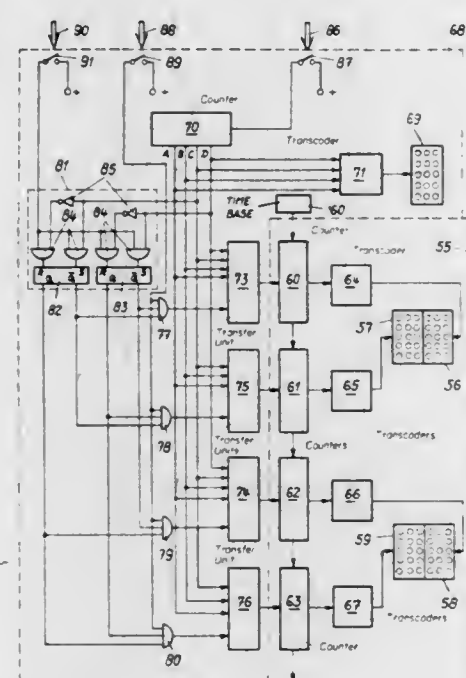
ELECTRONIC WATCH

Eric Andre Vittoz, Cernier-Neuchatel, and Claude Fonjallaz, Cormondreche-Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland Division of Ser. No. 187,961, Oct. 12, 1971, Pat. No. 3,823,545. This application Aug. 2, 1973, Ser. No. 385,041 Claims priority, application Switzerland, Oct. 20, 1970, 15464/70

Int. Cl. G04c 3/00; G04b 19/30; G06f 7/56

U.S. Cl. 58—23 R

3 Claims



1. An electronic watch, comprising:
a time base;
an electronic display means;
a logic circuit having an input coupled to an output of said time base and an output coupled to an input of said display means, said logic circuit including a first counting circuit and transcoding means coupling the output of said first counting circuit to said display means;
data input means coupled to a further input of said logic circuit for selectively transferring data signals to said further input, said data input means comprising a pulse generator,
first manual control means for controlling the output of said pulse generator, and
a second counting circuit coupled to the output of said pulse generator;
second manual control means coupled between the output of said second counting circuit and said further input of said logic circuit for selectively transferring data from said second counting circuit to said logic circuit; and

a selection circuit coupled to said first counting circuit and said transcoding circuit for selectively controlling the display of the outputs of said first and second counting circuits on said display means.

3,852,953

CONTROL AND SYNCHRONISATION OF CLOCKS

Sensino Walter Mischiatti, Via Gilino 9, Milan, Italy

Filed Apr. 9, 1973, Ser. No. 349,662

Claims priority, application Italy, Apr. 12, 1972, 7236/72

Int. Cl. G04c 3/02

U.S. Cl. 58—24 R

11 Claims



1. A system for controlling and synchronising slave clocks, the system comprising a plurality of slave clocks; and a central station for transmitting to each slave clock coded signals, each said signal conveying in coded form complete information as to the time to be displayed by the slave clocks: each slave clock comprising means to display time, a receiver for receiving said signals, means to derive information as to the time displayed by said slave clock, means to compare said derived information with said information conveyed by each said signal, and means to up-date the time displayed by said slave clock when said compared information does not correspond.

3,852,954

MECHANICAL WATCH MOVEMENT

Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Canton of Soleure, Switzerland

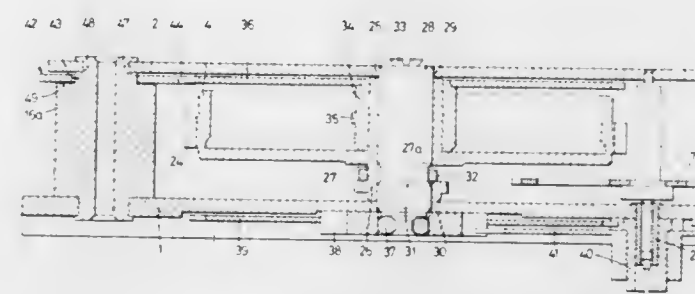
Filed Apr. 30, 1974, Ser. No. 465,580

Claims priority, application Switzerland, May 11, 1973, 6731/73

Int. Cl. G04b 33/00, 1/16

U.S. Cl. 58—59

10 Claims



1. A mechanical watch movement comprising a driving barrel held in place axially between two frame elements, a wheel-train connecting the barrel-drum to an escapement, and a dial-train connecting the barrel-drum to hour- and minute-indicating members, wherein the barrel comprises an arbor passing through at least one of the said frame elements and having one end projecting over the outer side of the movement, a member of the said dial-train is fastened to the said projecting end of the barrel-arbor, and the arbor is connected to the drum by a friction coupling comprising a resilient bolt fixing the arbor axially to the drum.

3,852,955

TORQUE LIMITING CONVERTER STATOR

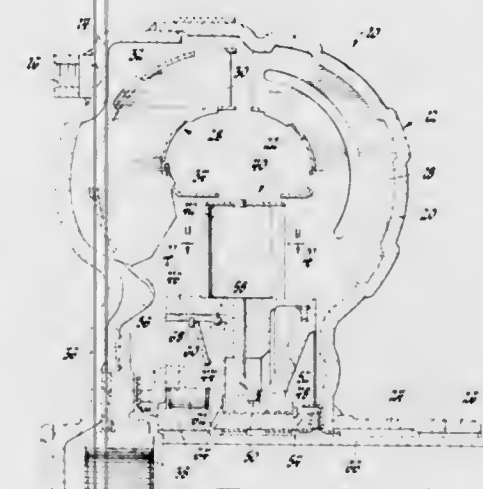
Quinby E. Wonn, Plymouth, and William J. Vukovich, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1974, Ser. No. 440,784

Int. Cl. F16h 41/12

U.S. Cl. 60—354

5 Claims



1. A fluid torque converter comprising, impeller means adapted to be driven by an engine for creating fluid flow in said torque converter; turbine means for delivering torque from said torque converter in response to fluid flow from said impeller; and reactor means for redirecting the fluid flow from said turbine to said impeller including a plurality of vane means angularly disposed in the flow path between said turbine and impeller, annular drum means, and a plurality of pivot means rotatably supported in said annular drum means having one portion secured to the vane means and another portion operatively connected to a relatively stationary member, said vane means and said annular drum means being movable axially relative to said impeller means in response to fluid flow forces on said vane means for changing the angular disposition of said vane means in said flow path for controlling the capacity of said torque converter to limit the maximum output torque of said torque converter.

3,852,956

AIRCRAFT ENGINE PRESSURE RATIO AUTOTRIM SYSTEM

Anthony N. Martin, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 274,123, July 21, 1972, Pat. No. 3,813,063. This application Dec. 3, 1973, Ser. No. 421,015

Int. Cl. F02c 7/02; F02g 1/06

U.S. Cl. 60—39.15

4 Claims



1. In an aircraft having a plurality of turbine engines, an engine autotrim system for maintaining each of said plurality of engines at the same pressure ratio comprising

means for determining the pressure ratio across each of said plurality of engines and producing an engine pressure ratio signal indicative thereof,
means for selecting from said plurality of engine pressure ratio signals the maximum of said signals,
means for comparing each of said plurality of engine pressure ratio signals with said maximum signal to produce for each engine a pressure ratio error signal proportional to the difference therebetween,
a fuel control for each of said plurality of engines for varying the flow of fuel thereto,
fuel trimming means connected with each of said fuel controls and adapted to vary the fuel flow to each said respective engine, said fuel trimming means having a limited fuel adjustment range,
and means for connecting each said pressure ratio error signal with the fuel trimming means for its respective engine to actuate said fuel trimming means and vary the flow of fuel to the engine in an amount and direction to null said pressure ratio error signal.

3,852,957

FUEL VALVE CONTROL AMPLIFIER

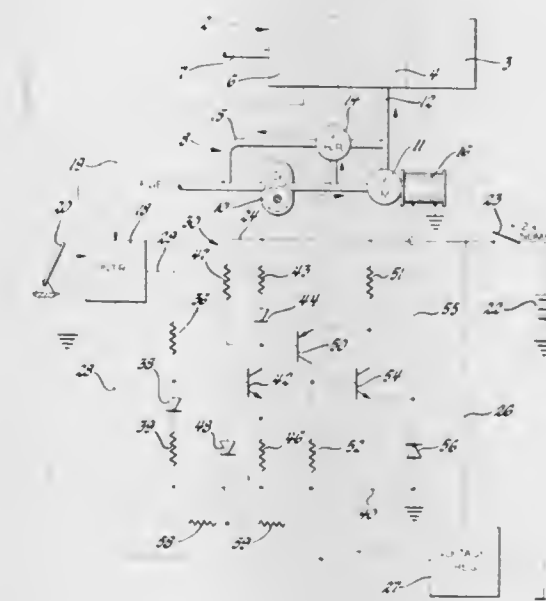
James L. Davis, and Edward L. Lopke, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 385,952

Int. Cl. F02c 9/08

U.S. Cl. 60—39.28 R

4 Claims



1. An amplifier for use in a fuel control system for a gas turbine engine including a control system providing an electric potential signal indicative of requested engine power level and including fuel metering means responsive to the magnitude of an electric current for regulating fuel flow to the engine, the amplifier comprising, in combination, a first amplifier stage having a controlling potential input from the said potential signal and having a first resistor in its output circuit, effective to maintain potential across the resistor and thus current in the output circuit at a first ratio to the potential signal over a first range of operation corresponding to a lower range of requested power level; a voltage divider energized from a source of constant potential; unidirectional conducting means connecting the output circuit to the voltage divider so that the first resistor is shunted by a portion of the voltage divider above a predetermined potential across the first resistor to maintain current in the output circuit at a second and higher ratio to the potential signal over a second range of operation corresponding to a higher range of requested power level; and a second resistor in the output circuit of the first amplifier stage providing an output potential varying with current in the output circuit.

3,852,958

STALL PROTECTOR SYSTEM FOR A GAS TURBINE ENGINE

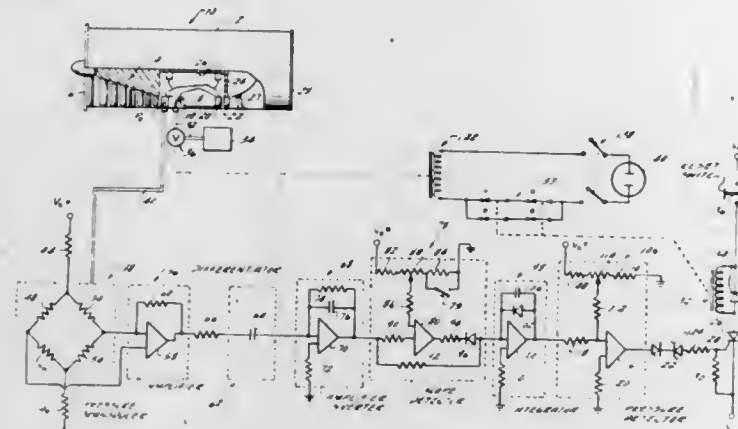
Max Martin*Adams, Cincinnati, Ohio, and Vernon Robert Duncan, Erlanger, Ky., assignors to General Electric Company

Filed Sept. 28, 1973, Ser. No. 401,650

Int. Cl. F02c 3/06; 9/04

U.S. Cl. 60-39.28 R

10 Claims



1. A stall protector system for a gas turbine engine of the type having a compressor, combustor, turbine and exhaust duct in serial flow relation comprises:

- means for measuring compressor pressure and providing an electrical output signal corresponding to the actual compressor pressure measured;
- a differentiator for differentiating the output signal from the measuring means and providing an output signal indicative of the rate of change of compressor pressure;
- a slope detector for comparing the rate of change of compressor pressure with a reference rate signal indicative of the maximum rate at which the compressor pressure may be expected to decrease during normal operation;
- an integrator for providing a time integration of the compressor pressure rate when the actual rate of decrease of compressor pressure exceeds the reference rate;
- a pressure detector for comparing the actual change in compressor pressure from the integrator with a second reference signal corresponding to the minimum change in compressor pressure indicative of a compressor stall;
- and means for regulating the flow of fuel to the combustor when the actual change in compressor pressure exceeds the second reference signal.

3,852,959

SECONDARY AIR INJECTION APPARATUS

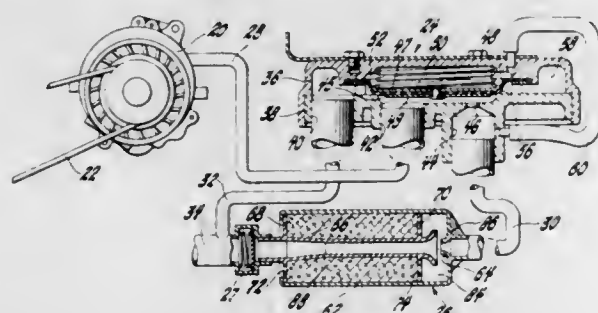
Thomas W. Weisgerber, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 26, 1973, Ser. No. 400,794

Int. Cl. F02b 75/10

U.S. Cl. 60-290

6 Claims



1. Apparatus for injecting secondary air into the exhaust conduit of an internal combustion engine or the like comprising

- a constant displacement air pump having a discharge port, said air pump when driven by an internal combustion engine discharging air under pressure from said discharge port at a flow rate which increases with engine speed,

conduit means fluidly connected to said discharge port at one end and adapted to be connected to an exhaust conduit of said internal combustion engine at another end, said conduit means comprising parallel branches, one of said branches including an aspirator having a motive fluid inlet for receiving air discharged from said air pump, an inlet suction port means located downstream of said motive fluid inlet and exposed to ambient air, a combined fluid outlet downstream of said inlet suction port means and a check valve downstream of said combined fluid outlet, whereby secondary air injected into said exhaust conduit via said one branch is augmented by ambient air sucked into the aspirator by the portion of air from said air pump flowing through said aspirator,

valve means normally closing the other of said branches, and

means for opening said valve means responsive to air flow through said conduit means above a predetermined value whereby at lower engine speeds, the secondary air injected into said exhaust conduit is greater than the volume of air discharged from said air pump, and whereby at higher engine speeds, at least a portion of the air discharged from said air pump bypasses said aspirator and is injected directly into said exhaust conduit.

3,852,960

PORTABLE WASTE DISPOSAL SYSTEM HAVING AUTOMATIC CONTROL MEANS

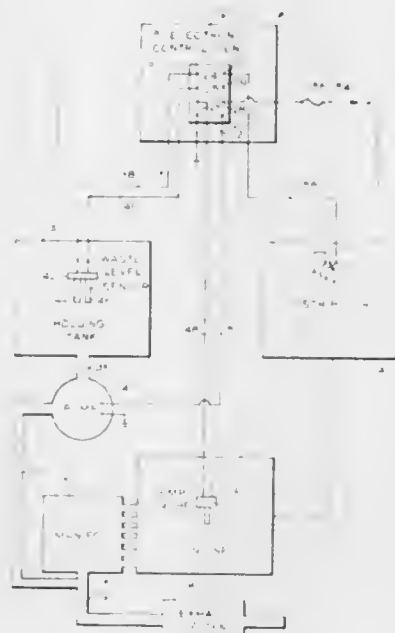
Philip A. Essenpreis, 805 Florida Ave., Cocoa, Fla. 32933, and Wayne Morehouse, Merritt Island, Fla., assignors to said Essenpreis, by said Morehouse

Filed July 11, 1972, Ser. No. 270,602

Int. Cl. F01n 3/02; B01d 3/00; C02c 3/00

U.S. Cl. 60-317

13 Claims



1. A waste disposal system for a vehicle powered by a combustion engine, comprising:

- means for retaining waste;
- means for exhausting hot gases from said engine;
- means for delivering waste from said retaining means into said exhausting means;
- means for sensing the level of waste in said retaining means;
- means for sensing the temperature of said engine;
- means for electronically sensing the speed of said engine;
- means for activating said delivery means only upon coincidence of predetermined inputs thereto from said waste level, temperature and speed sensing means; and wherein said predetermined inputs are representative, respectively, of the presence of waste in said retaining means, and sufficient engine temperature and speed to achieve burning of said waste.

3,852,961

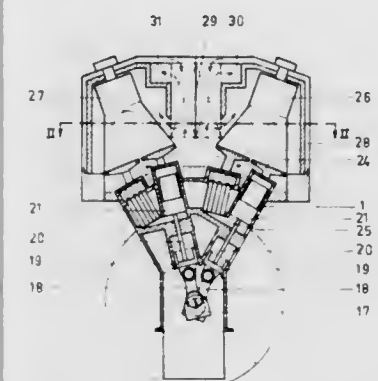
HEAT EXCHANGER PRE-HEATING COMBUSTION AIR IN A STIRLING CYCLE ENGINENils Arvid Salomonsson, Landskrona, and Bo Goran Torsten Torstensson, Bara, both of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmö, Sweden
Filed Feb. 16, 1973, Ser. No. 333,391

Claims priority, application Great Britain, Feb. 19, 1972, 7801/72

Int. Cl. F02g 1/04

U.S. Cl. 60-517

5 Claims



1. A multi-cylinder hot gas Stirling cycle engine having at least two combustion chambers external to the cylinders of the kind affording increasing dimensions in the direction away from the point of fuel injection, said two chambers for corresponding ones of said cylinders located with a common passageway therebetween, a heat exchanger positioned in said passageway, and structure surrounding said cylinders passing combustion air for said external combustion chambers through said heat exchanger and for passing exhaust gases from said two external combustion chambers through said exchanger in a heat-exchanger relationship to pre-heat said combustion air with said exhaust gases.

3,852,962

MASTER CYLINDER PARTIAL SYSTEM DISPLACEMENT MODIFIER

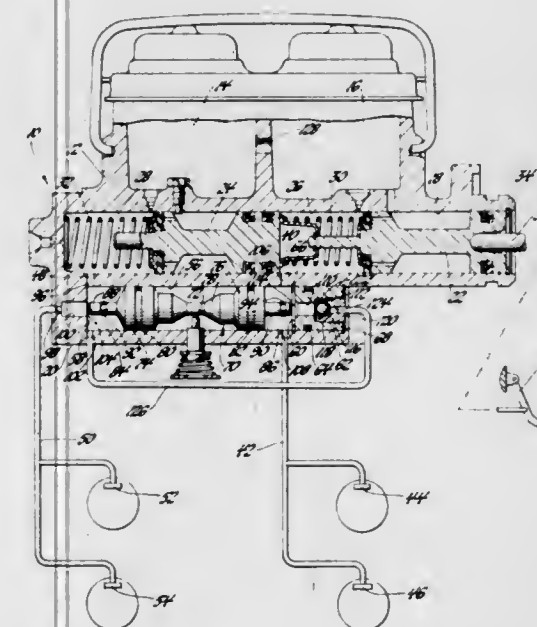
Edward H. Warwick, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1973, Ser. No. 344,719

Int. Cl. F15b 7/00

U.S. Cl. 60-561

3 Claims



1. For use in a brake system having a dual pressurizing chamber master cylinder and dual pressure circuits normally pressurized thereby upon brake actuation, a master cylinder displacement modifier comprising:

3,852,963

CONNECTING AND ACCESSORY DRIVE MEANS FOR SEPARATE INTERNAL COMBUSTION ENGINES

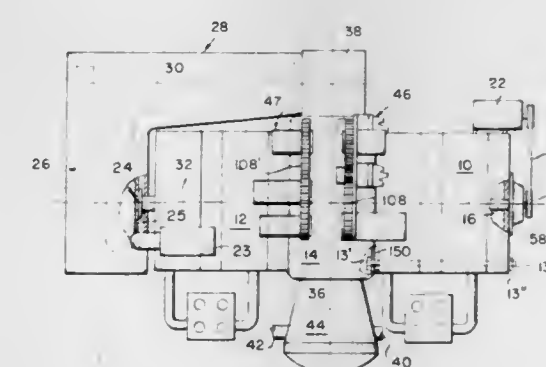
Gibson O. Hufstader, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1973, Ser. No. 401,391

Int. Cl. F01b 21/00; F02b 73/00

U.S. Cl. 60-717

9 Claims



1. An internal combustion engine assembly including two separate engines drivingly connected with their respective crankshafts in axial alignment comprising: a coupling member positioned intermediate the aligned crankshafts and providing a driving connection therebetween; accessory driving means on the exterior surface of said coupling member; a plurality of engine accessories mounted with their respective driven members coplanar with said accessory driving means; means providing a driving connection between said accessory drive

means and said driven means; an intermediate housing member secured to the respective engine housings fastening them together and enclosing said crankshaft coupling member; means extending between said engines and said intermediate housing maintaining the engines in alignment; and an outer end of one engine crankshaft being drivingly connected with a vehicle transmission assembly providing an output from the engine assembly.

3,852,964

FLOATING ANTI-POLLUTION DEVICE

Louis Ballu, Epernay, France, assignor to Kleber-Colombes, Paris, France

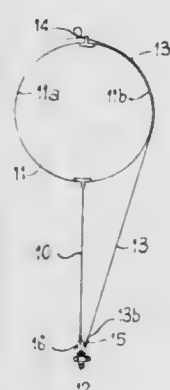
Filed July 14, 1972, Ser. No. 271,825

Claims priority, application France, July 15, 1971, 71.26043

Int. Cl. E02b 15/04, 3/06

U.S. Cl. 61-1 F

18 Claims



1. In a floating anti-pollution device for stopping bodies and materials floating on the surface of water, said device being of the type having a skirt means supported by float means, the improvement comprising means for regulating the draught of the device, characterized in that said means for regulating the draught includes a plurality of connecting means, each of said plurality of connecting means connected to said skirt means and said float means at intervals in the longitudinal direction of said skirt means and said float means individually varying the height of said skirt means at said intervals, thereby regulating the draught of the device at said intervals, and further characterized in that said skirt means is maintained at least partially wound about said float means by said connecting means.

3,852,965

FLOTATION TYPE WATER SWEEP BOOM AND METHODS

Chris H. Rudd, 824 Luton Dr., Glendale, Calif. 91206

Continuation of Ser. No. 207,187, Dec. 13, 1971, abandoned.

This application Oct. 31, 1973, Ser. No. 411,277

Int. Cl. E02b 15/04

U.S. Cl. 61-1 F

20 Claims

1. A floating boom comprising, a horizontally elongated and generally vertically extending floating curtain means having an upper extremity floating at the water surface and extending downwardly a substantial distance to a lower extremity, means for towing said curtain means laterally through the water from beyond the horizontal ends of said curtain means including at least one tow line connected along the lower extremity of said curtain means for towing said curtain means at an angle of attack with said lower extremity in advance of said upper extremity, said curtain means including an impervious upper skirt portion constrained to said angle of attack by said towing and having a lower edge positioned in advance of the rest of the skirt portion, said curtain means being bendable along its length in both the vertical and horizontal directions for assuming the contour of the water surface in response to wave action and currents, and said curtain means having a lower portion

including spaced tension elements for connecting the tow line continuously along the lower extremity of the curtain means



with such lower portion being relatively open for allowing subsurface water to pass freely therethrough.

3,852,966

METHOD FOR CONSOLIDATING IMPERMEABLE SOILS AND PILE PROVIDED THEREBY AS FITTED WITH SPACED APART ENLARGEMENTS

Rosanna Taranto, Corso Vittorio Emanuele 167/c, Napoli, Italy

Filed Apr. 19, 1972, Ser. No. 245,600

Claims priority, application Italy, Dec. 14, 1971, 40450/71

Int. Cl. E02d 3/04, 3/08, 5/34

U.S. Cl. 61-35

3 Claims



1. A method for consolidating impermeable clay or muddy soils which comprises:

1. forming a borehole in the soil extending into the impermeable subsoil;
2. inserting into said borehole a rigid tube formed of alternating solid and apertured wall sections having a plurality of apertures therein, said tube being externally coated with a casing formed of deformable material in the areas of said apertured wall sections;
3. pressure injecting a hardenable binding material into said tube and through said apertured wall sections thereof into said deformable casing, whereby said deformable casing is deformed and laterally presses against the subsoil, thereby providing a plurality of vertically-separated consolidation enlargements along the tube in the areas of said apertured wall sections thereof;
4. permitting said binding material to at least partially harden and washing or scavenging said tube and repeat-

ing said step (3) at least once to further enlarge the consolidation enlargements provided in said step (3); and 5. permitting the binding material in said tube and in said consolidation enlargement to completely harden and leaving said tube in the soil to thereby consolidate the same.

3,852,967

METHOD OF FILLING SUBTERRANEAN VOIDS WITH A PARTICULATE MATERIAL

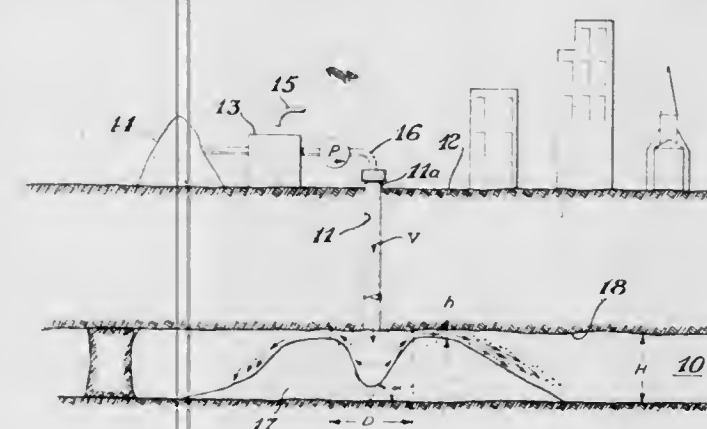
John D. Stewart, Littleton, Colo., and Milton E. Hesler, Casper, Wyo., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 86,755, Nov. 4, 1970, Pat. No. 3,817,039. This application June 14, 1972, Ser. No. 262,696

Int. Cl. E21f 15/08

U.S. Cl. 61-35

1 Claim



1. A method of disposing of solid waste materials and filling underground voids which comprises:

- a. particulating said waste material to form solid particles ranging in size from about minus 3 to about plus 300 mesh;
- b. forming a suspension of said solids in an aqueous liquid;
- c. injecting said suspension through a closed pressurized system into said void in a substantially vertical direction at an injection rate at least equal to that calculated by the formula $V = Xd \pi Dv$, wherein v is the minimum rate of injection in cubic feet per minute, X is a number of 3 or greater, d is the diameter in feet of the largest solid particles in said suspension, D is the diameter of the base of a cone form by said particles when settled in said carrier liquid when motionless, said cone having a height about equal to the height of the void to be filled, and v is the minimum linear velocity of said suspension;
- d. permitting the suspension to flow through said void in a manner such that the suspension seeks its own direction, and
- e. continuing such injection and subsequent flow through the void until an area of the void is filled with solid particles in a pattern determined by the flow of the suspension through the void in the self-seeking direction.

3,852,968

TORSION-MODE BREASTING DOLPHIN

Myle J. Holley, Jr., 1367 Massachusetts Ave., Lexington, Mass. 02173

Filed Nov. 19, 1973, Ser. No. 417,326

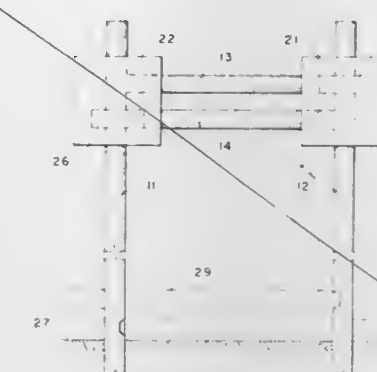
Int. Cl. E02b 3/22

U.S. Cl. 61-46

16 Claims

1. A breasting dolphin comprising: a pair of pipe piles embedded in the bottom a chosen distance apart; means secured to and extending away from individual ones of said piles toward the other of said piles for transmitting to said piles impact forces of a docking ship; and fender means supported from the free ends of said means secured to said piles so that loading forces in a first mode

of operation resulting from a ship impacting said fender means are transferred to and develop stresses by torsion



and bending in either one or both of said piles depending upon the point of application of these loading forces with respect to said piles.

3,852,969

OFFSHORE PLATFORM STRUCTURES

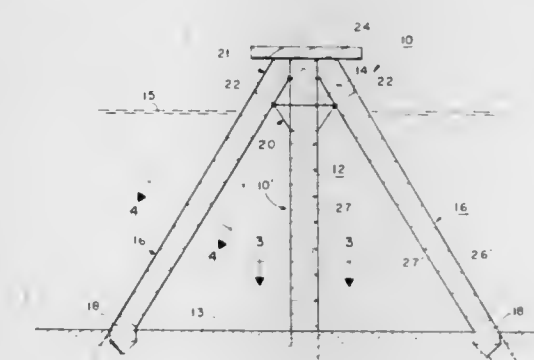
Robert G. Gibson, and Samuel C. Carruba, both of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.

Filed May 4, 1973, Ser. No. 357,446

Int. Cl. E02b 17/00

U.S. Cl. 61-46.5

6 Claims



1. A method of constructing an offshore platform structure on a selected site on the sea floor, comprising:

- transporting to the site at least one center column having a length which is greater than the depth of the body of water at said site;
- transporting to said site at least three batter columns, the central column and each batter column having a multi-legged structure consisting of at least three legs, each leg having an upper end, a lower end, and each batter column having a length which is considerably greater than the length of said center column;
- erecting the center column on a selected area within said site whereby its upper end extends above the water surface;
- securing the lower end of said center column to said floor;
- erecting the batter columns around said center column, welding the upper ends of the batter columns to angularly spaced portions about the upper end of the center column above the water surface and fixedly securing their lower ends to said floor in bracing relation to said center column and to each other thereby forming a support structure;
- driving piles through the entire length of certain ones of the legs in each column to thereby fixedly secure each column to the sea floor, whereby the axial load on each pile resists a substantial portion of the lateral load on said support structure; and
- framing a working platform onto the erected support structure.

3,852,970

BUILDING RAISING AND UNDERPINNING SYSTEM

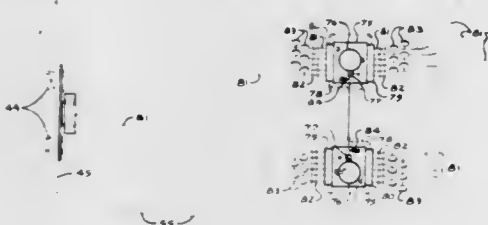
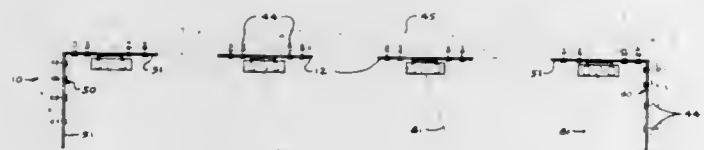
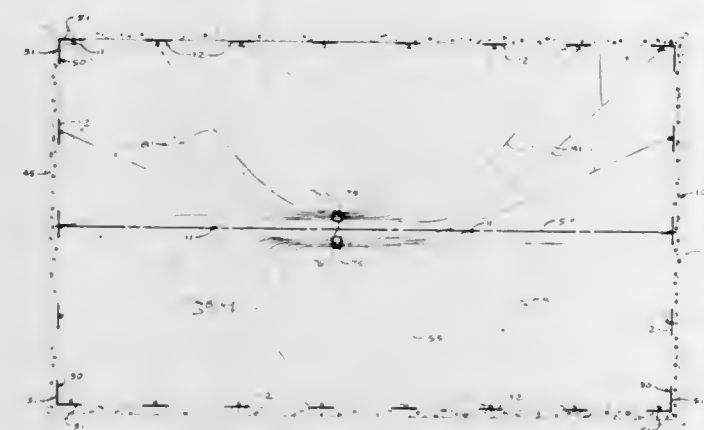
Paul G. Cassidy, Glen Ellyn Rd., Bloomingdale, Ill. 60108

Filed July 13, 1973, Ser. No. 379,116

Int. Cl. E02d 17/02, 3/08

U.S. Cl. 61-51

32 Claims



1. A building raising or underpinning structure comprising a series of attaching wall plates secured to a wall about the perimeter of a building structure, a pile bracket secured to each said wall plate, a series of piles driven into supporting ground and respectively engaged one with each said pile bracket, a series of hydraulic rams operable between the several said pile brackets and the respective piles to drive said piles into the supporting ground, said hydraulic rams being operable simultaneously, hydraulic power means actuating said hydraulic rams, and a hydraulic pressure relief valve controlling a preset maximum pressure developed in each of said hydraulic rams whereby all of said piles are driven into the supporting ground to a point of stability to provide uniform support at all pile locations around the entire perimeter of said building structure.

3,852,971

PILE STRUCTURE

Lindsey J. Phares, Sugar Land, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed July 12, 1973, Ser. No. 378,417

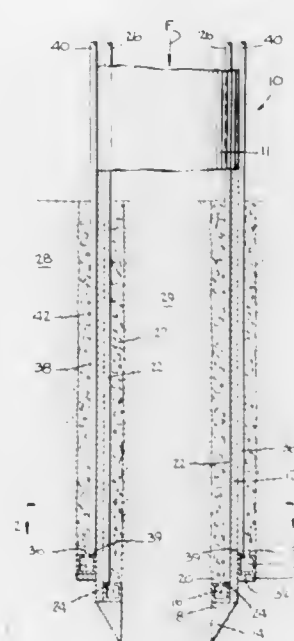
Int. Cl. E02d 5/62

U.S. Cl. 61-53.58

17 Claims

1. A method of forming a pile structure in situ where the earth at particular elevations has negative friction, said pile structure having a pile, annularly shaped band means mounted around said pile at a location corresponding to said particular elevations having negative friction, an annular manifold mounted on the upper surface of said band means, said manifold having a plurality of spaced upwardly directed nozzle openings, tube means extending from near the top end of the pile downwardly to the manifold in fluid flow relationship with respect thereto, said method comprising the steps of driving said pile into the earth until said manifold reaches said particular elevations having negative friction, thence continuing

driving said pile into the earth while simultaneously forcing drilling mud down through said tube means into said manifold and upwardly out through said plurality of nozzle openings to



fill the annular space between the walls of said pile and the adjacent earth at said particular elevation having negative friction.

3,852,972

SUBMERGED PIPELINE BURIAL APPARATUS

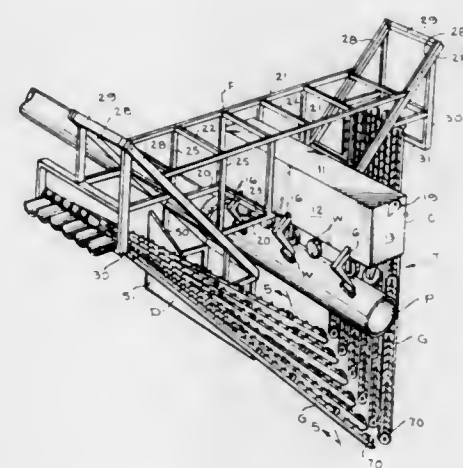
Robert Holberg, 608 W. Bough Ln., Houston, Tex. 77024

Filed May 17, 1973, Ser. No. 361,151

Int. Cl. E02f 5/06

U.S. Cl. 61-72.4

7 Claims



1. A submerged pipeline burying apparatus for digging a trench beneath a pipe positioned on the bottom of a water body comprising:

carriage means adapted to be moved along the pipe;

auger means carried by said carriage with the lower ends of said auger means adapted to be positioned below said pipe for removing bottom material from the bottom below the pipeline, and

tray means associated with said auger means for moving material dug by such auger means from beneath the pipe upwardly from the bottom.

3,852,973

STRUCTURE FOR STORAGE OF LIQUIFIED GAS

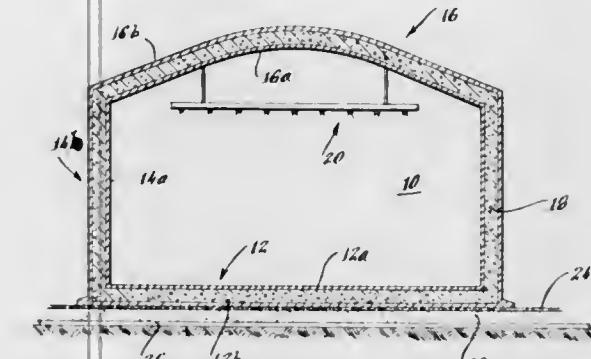
Rudolf Marothy, 447 Mountainview Ave., Valley Cottage, N.Y. 10989

Filed Apr. 12, 1973, Ser. No. 350,378

Int. Cl. F17c 1/08

U.S. Cl. 62-45

11 Claims



1. A structure for the storage of liquefied gas maintained at low temperatures comprising, a structural element forming at least part of said storage structure comprising in combination an inner and an outer concrete facing maintained in spaced-apart relationship, a rigid insulating material positioned between said inner and outer concrete facings, means for saturating said inner facing with moisture, said inner and outer facings and insulating material cooperatively arranged so that loading on the structure is resisted by both the inner and outer concrete facings.

3,852,974

REFRIGERATION SYSTEM WITH SUBCOOLER

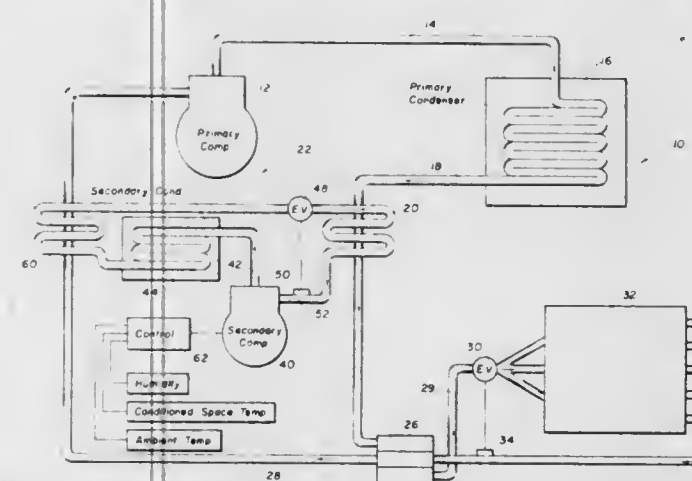
Ted R. Brown, 1212 Princeton Ave., Salt Lake City, Utah 84105

Continuation-in-part of Ser. No. 204,554, Dec. 3, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,982

Int. Cl. F25b 7/00

U.S. Cl. 62-79

11 Claims



1. A method of modifying an existing refrigeration system to increase the refrigeration capacity thereof, the existing system comprising a compressor, condenser, and evaporator, the evaporator comprising an expansion device and acting to cool a conditioned space, comprising the steps of:

providing a secondary refrigeration system;

placing the evaporation coil of the secondary refrigeration circuit in heat exchange relationship with condensed liquid refrigerant of the existing refrigeration system upstream of the existing system evaporator expansion device;

monitoring temperature in at least one of (1) the existing system conditioned space and (2) the existing condenser environment; and

initiating the secondary refrigeration system when the monitored temperature reaches a predetermined upper limit to

boost the capacity of the existing system to reduce the temperature in the conditioned space.

3,852,975

SELF-CHILLING CONTAINER WITH SAFETY DEVICE AND METHOD OF MAKING SAME

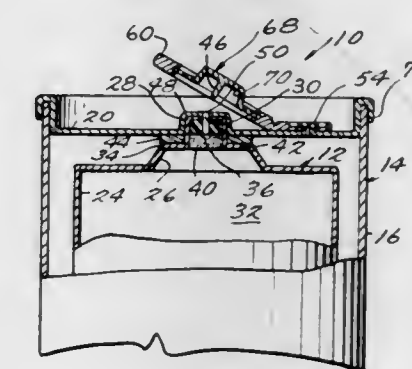
William D. Beck, 851 S. High St., Columbus, Ohio 43206

Filed Apr. 6, 1973, Ser. No. 348,486

Int. Cl. F25d 3/10

U.S. Cl. 62-294

11 Claims



1. A self-chilling container arrangement for effectively chilling material in the container prior to the material being dispensed and for safely preventing exiting unevaporated refrigerant from deleteriously affecting a user of the arrangement comprising:

container means for housing the material that is to be chilled;

closure means connected to the container means for generally vertical movement so as to expose the material to the atmosphere for subsequent dispensing therethrough;

storage means disposed within a portion of the container means for storing refrigerant;

refrigerant means under pressure within the storage means for chilling the material housed in the container upon exposure to the atmosphere;

communication means defining a refrigerant passageway through both the container means and the storage means for permitting the refrigerant means to evaporate and exit therethrough to the atmosphere;

a shield means selectively movable in a generally vertical path between a first position whereat the shield means seals the communication means so as to prevent evaporation of the refrigerant means and a second position whereat during movement of the shield means between said first and second position, the shield means is in a generally inclined position relative to the communication means so as to permit the refrigerant means to evaporate into the atmosphere and thereby chill the material while also deflecting downwardly any unevaporated refrigerant exiting from the communication means so as to prevent any deleterious effects to a user of the arrangement;

lift means connected to both the shield means and the closure means for effecting the generally vertical movement of the shield means and the closure means;

control means cooperating with the lift means for insuring the proper positioning of the shield means over the communication means during movement between said first and second positions and for insuring that said second position of the shield means is reached prior to the generally vertical upward movement of the closure means so as to expose the material to the atmosphere, thereby providing a more efficient chilling of the material by permitting the refrigerant means to evaporate prior to the exposure of the material to the atmosphere for subsequent dispensing.

3,852,976

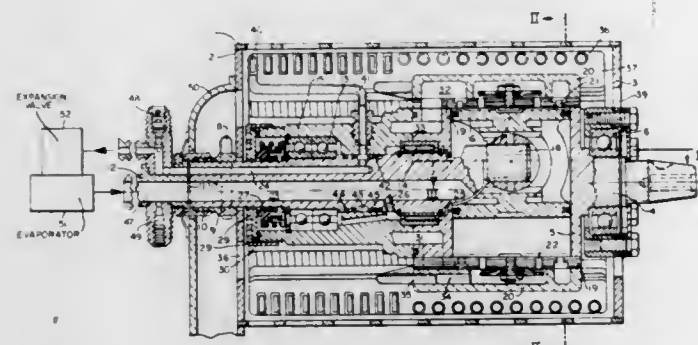
AIR CONDITIONING APPARATUS FOR AUTOMOTIVE VEHICLES OR THE LIKERudolf Hintze, Lessingstrasse 32, Heusenstamm, Germany
Filed Nov. 16, 1972, Ser. No. 307,212

Claims priority, application Germany, Nov. 19, 1971, 2157380

Int. Cl. F25b 3/00

U.S. Cl. 62-499

20 Claims



1. In an air conditioning apparatus, particularly for passenger and/or driver compartments of automotive vehicles, in combination, a unit comprising a rotary compressor device for an evaporable cooling agent, including a cylinder and a double-acting piston reciprocally received in said cylinder; a stationary support mounting said cylinder and piston for rotation and including a crankshaft having a crank pin which is arranged to reciprocate said piston in response to rotation of said cylinder; drive means for rotating said cylinder; a condenser device for compressed cooling agent and arranged to rotate with said compressor device, said support having a passage receiving cooling agent from said condenser device; and an evaporator located exteriorly of and separate from said unit, said evaporator communicating with said passage for receiving said cooling agent from the same.

3,852,977

TORQUE TRANSFER DRIVE

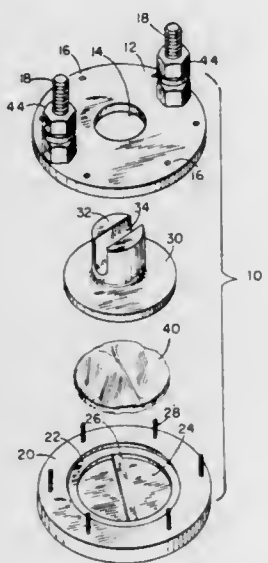
Victor B. Chaput, Nashua, N.H., assignor to Alex Simoneau, Nashua, N.H., a part interest

Filed Jan. 30, 1973, Ser. No. 328,101

Int. Cl. F16d 7/02

U.S. Cl. 64-30 D

1 Claim



1. A torque transfer drive for coupling a drive shaft to a driven wheel, comprising:

first means coupled to a drive shaft for rotation therewith and having a raised paddle thereon;
second means axially disposed from said first means and having a recess therein with a second paddle disposed in said recess, said second paddle being axially displaced from said raised paddle;
a mass of silicone putty disposed intermediate said first and second means and within the recess of said second means; and
third means for coupling said second means to a driven wheel, whereby torque from a drive shaft will be coupled via said paddles to a driven wheel through said silicone putty.

3,852,978

FLEXIBLE OIL BOOM

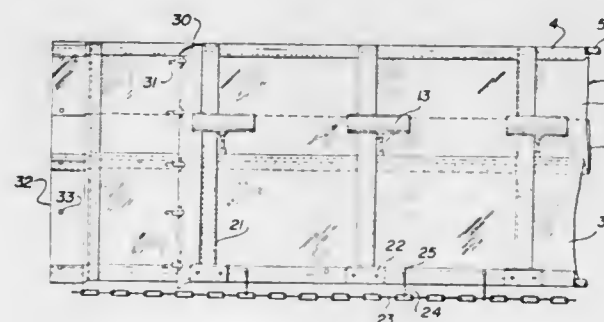
Robert A. Fossberg, 1594 De la Broquerie, Bruno, Quebec, Canada

Continuation-in-part of Ser. No. 70,333, Sept. 8, 1970, abandoned. This application May 23, 1973, Ser. No. 363,040

Int. Cl. E02b 1/8/04

U.S. Cl. 61-1 F

6 Claims



1. A flexible boom for catching and collecting residues from the surface of bodies of water comprising:
a. a barrier wall of flexible sheet material for depolying in a substantially vertical position in the water such that the upper edge thereof is above the water surface and the lower edge thereof is below the water surface, said barrier wall having an upper portion and a lower portion sewn together by an overlapping longitudinal connection at a location below the water surface;
b. a plurality of substantially vertical pockets in spaced relationship along the length of said barrier wall with each pocket containing a stiffening rod;
c. a series of flexible float connecting straps, each being positioned immediately adjacent a vertical stiffener pocket and each surrounding the lower edge of the barrier wall upper portion and passing through the overlapping sewn connection such that the free ends of each strap extend outwardly from each side of the barrier wall for connecting floats thereto, and
d. individual weights connected to the barrier wall at the lower end of each stiffener pocket,
whereby when the boom is deployed in the water with an individual float connected to each strap free end on each side of each vertical stiffener, each combination of vertical stiffeners, opposed pairs of floats and lower edge weights maintains the boom in a substantially vertical position in the water while permitting limited independent movement of each stiffener and adjacent portions of the flexible barrier wall in both vertical and horizontal directions relative to the remainder of the boom under the action of small choppy waves.

3,852,979

NEEDLE BED CONSTRUCTION FOR KNITTING MACHINES

Wolfgang Muhlhauser, Tubingen, Germany, assignor to Fouquet-Werk Frauz & Planck, Rothenburg am Neckar, Germany

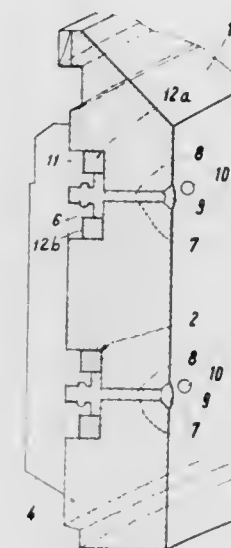
Filed July 31, 1972, Ser. No. 276,415

Claims priority, application Germany, Aug. 11, 1971, 2140180

Int. Cl. D04b 15/100

U.S. Cl. 66-19

16 Claims



1. Machine having a machine element provided with guide ways for lamellae or similar sliding elements (18) comprising at least two locating combs (2) each including a base portion (12) and a comb-like partition element portion (11) secured to the base portion extending from the base portion (12) to leave an unobstructed space beneath the partition element portion (11), the partition element portion (11) defining the direction of movement for the sliding elements;

the machine element (1) being formed with at least two spaced channel-like recesses (3, 13), each shaped to receive the base portion of a locating comb (2), and to secure at least the base portion in said channel-like recesses;

spaced separating liners (4, 14, 19) inserted between the partition element portions (11) adapted to have the sliding elements slide in the spaces between the liners, said liners each having at least two projecting portions (5, 6) extending into the recesses (3, 13) of the machine element (1) alongside the comb-like partition element portions (11) of the combs (2) and being located adjacent the base portions (12) of the combs (2) within the recess; and an adhesive settable compound (8, 25) filling the recesses and securing the base portions (12, 12a, 12b) of the locating combs (2, 11, 20, 22) and the projecting portions (5, 6) of the liners (4, 14, 19) in position in the machine element (1);

and wherein each of the locating combs within the machine are formed in several adjacent sections, the junction lines of adjacent sections being slanted with respect to the orientation of the comb-like partition elements.

3,852,980

APPARATUS FOR PRINTING AND/OR DYEING OF HIGH PILE WEBSPeter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria
Filed Nov. 16, 1972, Ser. No. 307,242

Claims priority, application Austria, Nov. 25, 1971, 10178/71; Jan. 14, 1972, 339/72

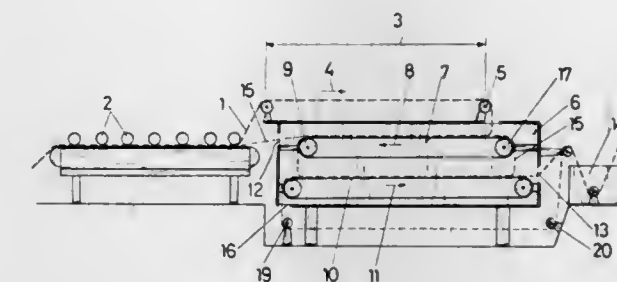
Int. Cl. B05c 9/06, 9/14

U.S. Cl. 68-5 D

19 Claims

1. A device for printing and/or dyeing pile web, in particular high pile web, said device comprising means for applying dye to the pile side only of a carpet, a steamer positioned down-

stream of said dye applying means for treating said carpet after receipt of said dye, means for turning said carpet upside down at the inlet into said steamer, and means provided at



least along a first zone of the passage of said carpet through said steamer for maintaining said carpet in a position with said pile side thereof facing downwardly.

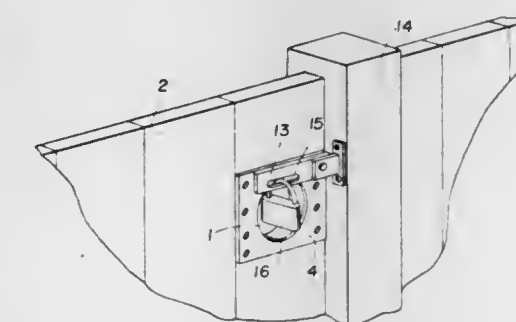
3,852,981

PADLOCK LOCKING DEVICERobert A. Koning, Redding, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 16, 1973, Ser. No. 333,051

Int. Cl. E05b 65/48

U.S. Cl. 70-2

3 Claims



1. A padlock locking device for opening a solid hinged unit from either side via a bore formed through the hinged unit, the hinged unit fully enclosing a gate opening, said locking device comprising

a plate member affixed to the unit around the bore, the plate member having a lock portion covering part of the bore and a padlock accommodating hole formed through the lock portion of the plate member; and

a cooperating plate movably affixed to a frame member adjacent the hinged unit, the cooperating plate having a slot formed therethrough for accommodating a padlock, the slot being positioned to overlap the hole through the lock portion of the plate member when the hinged unit is closed and the cooperating plate is in substantially juxtaposed relation therewith whereby a padlock extending through the slot and the hole hangs in the bore and is accessible from both sides of the hinged unit.

3,852,982

RESILIENT RING FASTENER

Francis D. Faris, Bonita, Calif., assignor to Twisty, Inc., National City, Calif.

Filed Dec. 4, 1972, Ser. No. 311,662

Int. Cl. A47g 29/10

U.S. Cl. 70-457

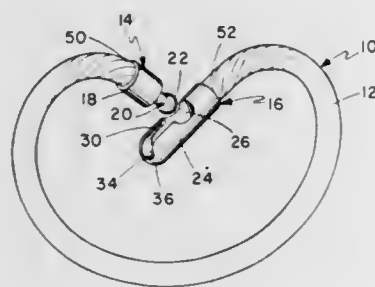
7 Claims

1. A ring and fastener for releasably joining the ends of a resilient cable into a substantially circular continuous member comprising:

a link of longitudinally resilient and flexible cable, a male fastener element having a body portion, a shank portion, and an enlarged head portion,

a female fastener element having a body portion, a shank bore at one end of said body portion, and a head entrance bore in said body portion,

said head entrance bore having a diameter in excess of the diameter of said enlarged head,
a shank slot extending from said head entrance bore into said shaft bore,
a head seat communicating with said head entrance bore and said shank slot,
the first end of said cable having said male fastener element secured thereto,
the second end of said cable having said female fastener element secured thereto,
said male and said female fastener elements secure said ends of said cable into a substantially circular ring,
the unsecured end of said female fastener element is rounded and forms an outer surface concentric with said head seat,



the spacing between said head seat and said outer surface being substantially equal to the length of said shank of said male fastener element,
said body portion of said male fastener is enlarged and extends radially outwardly from said shank portion,
the distance from said head seat to the unsecured end of said female fastener element is substantially equal to the distance from the attachment point of said head to said enlarged body portion of said male fastener element,
said enlarged body portion of said male fastener element being held substantially in contact with the unsecured end of said female fastener element,
said cable exerting a resilient circumferential bias and holding said enlarged head portion of said male fastener element in contact with said head seat of said female fastener element.

3,852,983

WORK STRIP GAUGE CHANGE DURING ROLLING IN A TANDEM ROLLING MILL

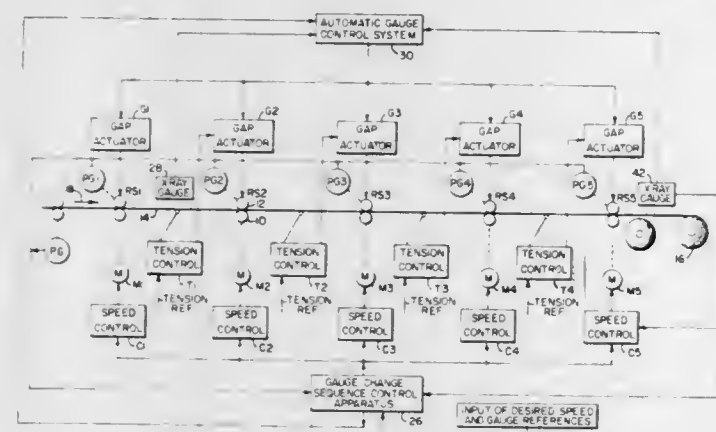
John W. Cook, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1973, Ser. No. 354,288

Int. Cl. B21b 37/00, 37/14

U.S. Cl. 72-12

13 Claims



1. In a gauge control system for a tandem rolling mill having a plurality of roll stands operative to reduce the gauge of a work strip having a gauge change point and being passed through said rolling mill, the combination of means for controlling the operating speed of a first roll stand, and means responsive to the work strip movement for sensing the arrival

of said gauge change point at a second roll stand for providing a predetermined change in the operating speed of said first roll stand while maintaining the present operating speed of the second roll stand, with said predetermined change being in accordance with a relationship including the present operating speed of the second roll stand and the new desired work strip delivery gauge from at least one of said first and second roll stands.

3,852,984

COARSE AND VERNIER ROLL POSITION SYSTEM FOR A ROLLING MILL

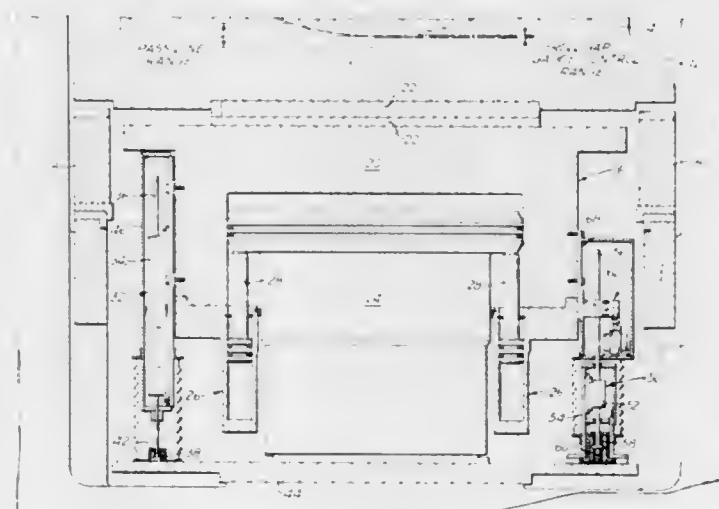
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1974, Ser. No. 448,584

Int. Cl. B21b 37/00, 31/34

U.S. Cl. 72-21

8 Claims



1. In a rolling mill having an hydraulic piston cylinder assembly for positioning a roll of the mill to a coarse working position and then positioning said roll in a vernier manner,
a first means for measuring the relative movement between the piston and cylinder of said piston cylinder assembly when said piston cylinder assembly is employed to position said roll to the coarse working position, and
a second means for measuring the relative movement between the piston and cylinder of said piston cylinder assembly when said piston cylinder assembly is employed to position said roll in the vernier manner.

3,852,985

DEVICE FOR PROCESSING ELONGATED TUBULAR WORKPIECES BY PRESSURE WAVES

Jochen Haeusler; Gunter Marz, and Helmut Seiffert, all of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 14, 1969, Ser. No. 876,773

Claims priority, application Germany, Nov. 15, 1968, 1809098

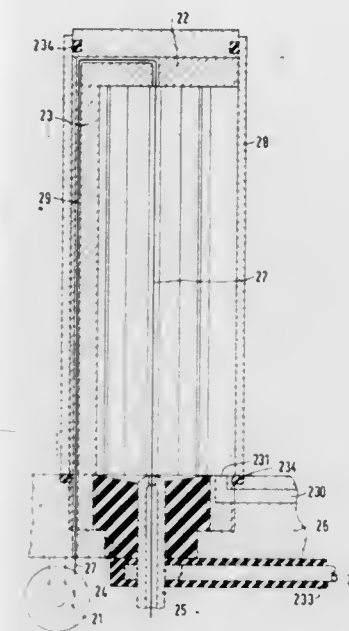
Int. Cl. B21d 26/12

U.S. Cl. 72-56

2 Claims

1. Device for processing elongated tubular workpieces by subjecting them to pressure waves produced in a liquid medium by spark discharge comprising a discharge circuit including condenser means, and a spark gap formed of a pair of spaced electrodes electrically connected to said condenser means, an ignition device disposed in said spark gap between said electrodes thereof, structure means comprising a plurality of bars connected electrically with one another and being disposed parallel to one another in the form of a cage-like structure coaxially surrounding the spark gap and forming part of said discharge circuit, said structure means being encircled by a tubular workpiece so that the workpiece surrounds the spark gap, said structure means being pervious to pressure transmitted through a liquid medium receivable

therein and generated in the medium by an electrical discharge at the spark gap, at least one of said bars being formed



3,852,986

HIGH PRESSURE BILLET EXTRUDER

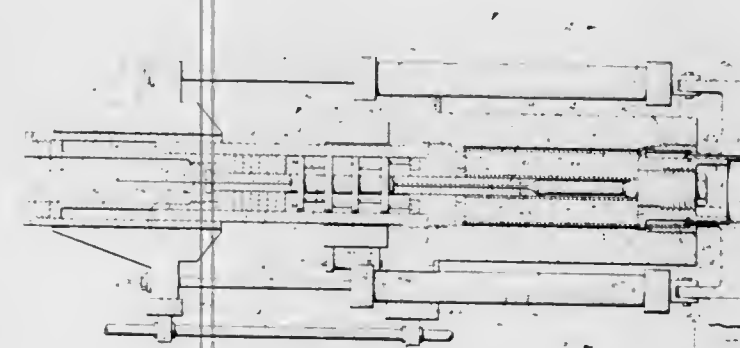
Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 339,457, March 8, 1973, abandoned. This application Mar. 13, 1974, Ser. No. 450,910

Int. Cl. B21c 27/00

U.S. Cl. 72-60

7 Claims



1. Apparatus for extruding a billet, said apparatus comprising:
a. an extrusion chamber adapted to receive said billet and extrusion medium;
b. a jacket chamber surrounding said extrusion chamber and adapted to receive hydraulic fluid to provide external support to said extrusion chamber against internal pressure developed therein;
c. pressurizing means communicating with said jacket chamber and adapted to pressurize the hydraulic fluid therein;
d. first means connected to said pressurizing means and adapted to operate said pressurizing means to pressurize the hydraulic fluid in said jacket chamber to a first level;
e. a die;
f. second means connected to said pressurizing means and adapted to pressurize said extrusion medium and extrude said billet through said die and simultaneously to operate said pressurizing device to increase the pressure of the hydraulic fluid in said jacket chamber from said first level to a second level sufficient to externally support said extrusion chamber against internal pressure developed therein.

3,852,987

FORMING TRANSVERSE CORRUGATIONS IN A TUBULAR BLANK

Samuel Price, Harpenden; Thomas Frederick Plummer, Kenton; Robert James Fowler, Kingsbury; Edward Reuben Hill, Arkley; Cecil Woodwards, Hayes, and Ewart Arthur Harrington, Edware, all of England, assignors to General Motors Corporation, Detroit, Mich.

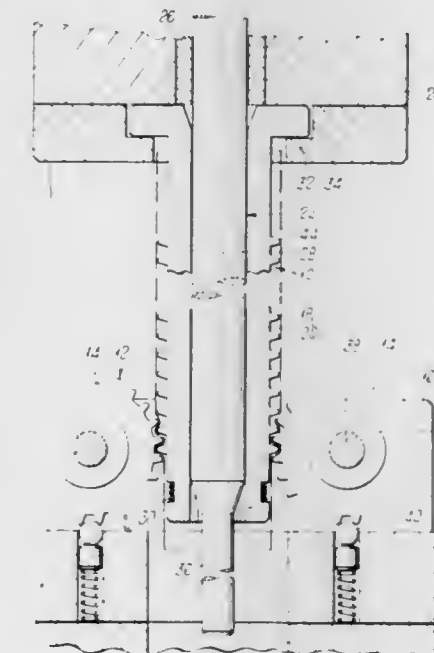
Filed Mar. 8, 1973, Ser. No. 339,198

Claims priority, application Great Britain, Mar. 18, 1972, 12778/72

Int. Cl. B21d 15/06

U.S. Cl. 72-193

6 Claims



1. A method of forming transverse corrugations in a tubular blank, comprising positioning the blank on an externally transversely corrugated portion of an elongate segmental centre mandrel, the transverse corrugations on which substantially correspond to those to be formed in the tubular blank; effecting relative axial displacement of the centre mandrel and blank and a die assembly comprising a ring of toothed wheels which extend radially of the longitudinal axis of the centre mandrel and are rotatably mounted in a common holder with the axes of rotation of the toothed wheels disposed in a common radial plane of the longitudinal axis of the centre mandrel, the circular pitch of the teeth of each wheel being equal to the linear pitch of the corrugations of the centre mandrel, such that the relative axial displacement of the centre mandrel and the die assembly causes progressive formation of transverse corrugations in the interposed tubular blank as successive teeth of each of the wheels index with successive corrugations of the centre mandrel with a rack and pinion action; effecting collapse of the segmental centre mandrel and removing the resulting transversely corrugated tubular member from the collapsed centre mandrel.

3,852,988

MACHINE FOR MARKING IDENTIFICATION MARKS ON BILLETS, BLOOMS AND SLABS

Dinesh Chandra Singhal, 5, North Circuit House Area, Bihar, India

Filed June 5, 1973, Ser. No. 367,247

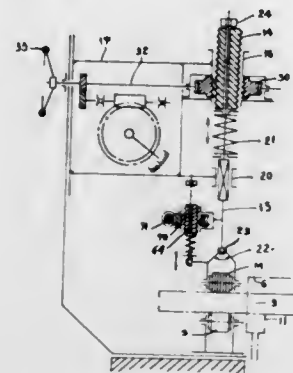
Int. Cl. B21b 45/00

U.S. Cl. 72-197

3 Claims

1. A marking machine for stamping identification mark on a billet, bloom or slab as the billet, bloom or slab advances across a cooling bed, said machine comprising a pre-loaded main vertical spindle, a marking roll rotatably mounted in a swivel head, a swivel pin connecting said swivel head to said vertical spindle, a clevis connected to said head, a vertical swivel bolt mounted at its lower end in said clevis, a block rigidly connected to said main vertical spindle, said swivel bolt

passing freely through said block, an upper tension spring and a lower tension spring around said swivel bolt on either side of the said block so that when the said swivel head is inclined in one direction due to contact of the marking roll with the



inclined surface of the billet to be marked, then one of the said springs is compressed while the other spring is correspondingly relieved thereby enabling the swivel head to incline itself to cause the marking roll to have uniform contact with the billet to be marked.

3,852,989 METHOD OF APPARATUS FOR COOLING HIGH-TEMPERATURE METAL BARS

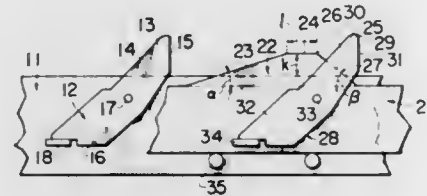
Toshio Harada, Kisarazu; Jinichi Akayama, Kitakushu; Masanori Yokozeki, Kisarazu; Toshihiro Ishimura; Shinji Nagano, both of Kimitsu; Hiroshi Wakuda; Kazuhiko Shimomura, both of Kitakyushu, and Akira Matsunami, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,755

Claims priority, application Japan, May 23, 1972, 47-50884
Int. Cl. B21b 43/10

U.S. Cl. 72-201

11 Claims



1. A method of cooling metal bars heated to a high temperature comprising placing the bars on a cooling bed in groups of bars which are spaced from each other, each group consisting of a plurality of bars with the sides of the bars in each group being in close contact with the adjacent bars in the group, transporting the groups on the cooling bed in a direction transverse to the axes of the bars in intermittent movements while maintaining the spacing between the groups and keeping the bars in the groups in close contact with each other, at the end of each movement turning the bars around their axes while continuing to keep them side by side in the groups in close contact with each other, and subjecting the bars to a cooling medium during such alternate transporting and turning over.

3,852,990 PROCESS FOR REMOVING SURFACE DISTORTION FROM A METAL ARTICLE

Kenneth P. Sparling, Burbank, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 6, 1973, Ser. No. 386,164

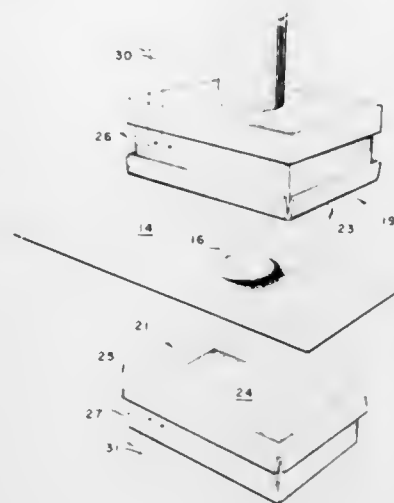
Int. Cl. B21d 1/06

U.S. Cl. 72-342

11 Claims

1. A method for removing surface distortion from a metal article, the method utilizing a pair of opposed clamp members

having a marginal region surrounding a recess between mating surfaces thereof comprising the steps of:
heating the opposed clamp members;
positioning the metal article between the heated clamp members;



closing the clamp members upon the metal article under a clamping pressure and such that, at least a portion of the surface distortion is positioned within the recess and caused to be heated to a pre-set value,
opening the clamp members; and
cooling the metal article.

3,852,991 BENDING PRESS

Sebastiano Poggio, Genova-Borzoli, Italy, assignor to Verrina S.P.A., Genoa-Voltri, Italy

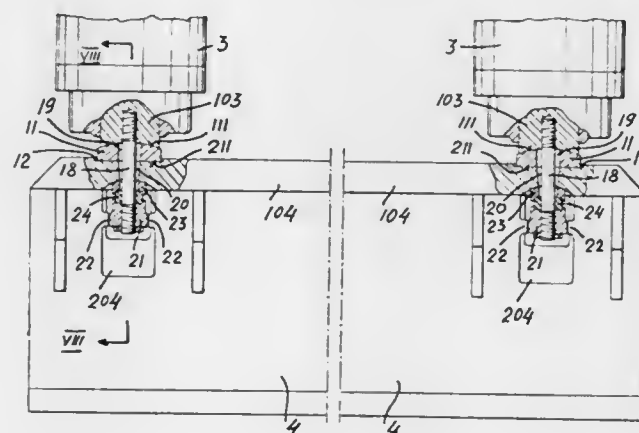
Filed Sept. 13, 1973, Ser. No. 397,024

Claims priority, application Italy, Oct. 6, 1972, 12935/72

Int. Cl. B21d 5/02

U.S. Cl. 72-389

4 Claims



1. A bending press with hydraulic overhead drive, comprising a frame, a stationary lower jaw secured to said frame, an upper jaw slidably mounted on the said machine frame for a vertical reciprocation motion with respect to the said lower jaw, a pair of lateral hydraulic thrust cylinders secured to the said machine frame and means for operatively connecting the piston rods of the said thrust cylinders to the said upper jaw so as to reciprocate said upper jaw to and from said lower jaw, whilst permitting to incline said upper jaw with respect to the lower jaw, said means comprising a tie rod coaxially secured by one end to the end of the piston rod of each thrust cylinder, a thrust element disposed between the said piston rod and a cross bar integral with and laterally projecting from the upper end of the said upper jaw, the said thrust element and the said cross bar being provided with borings through which the said tie rod is passed with lateral play, a spherical articulation head secured to the lower end of the said tie rod, the said articulation head being supported in a rotatable manner by the upper

jaw, and an engaging element coaxial to the said tie rod, disposed above the said articulation head and provided with a curved upper side into abutment with a correspondingly curved surface formed on the lower surface of the cross bar of the upper jaw.

3,852,992

THREAD-FORMING APPARATUS

Yoshio Yamamoto, Kyoto, Japan, assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

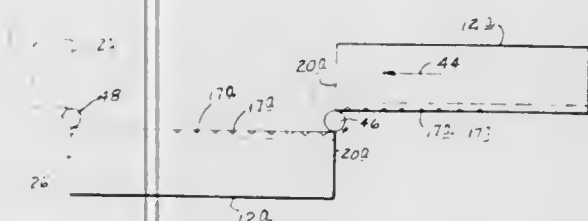
Division of Ser. No. 126,447, March 22, 1971, Pat. No.

3,772,720. This application July 16, 1973, Ser. No. 379,848
Claims priority, application Japan, Apr. 11, 1970, 45-030970

Int. Cl. B21d 17/00

U.S. Cl. 72-469

10 Claims



1. A die for use in cooperating with a companion die for rolling a thread on a screw of arcuate polygonal cross section from a blank of circular cross section, wherein said arcuate polygonal cross section has an odd number of thread-swaging lobes that any circumferentially separated by arcuate sides having longer radii of curvature than that of said lobes, said die having thread-forming projections conjugate to the profile of the thread to be rolled on a blank, said projections being inclined to the direction of travel of the die as it engages the blank by an angle equal to the helix angle of the thread to be rolled, and means on said die cooperable with companion means on said companion die for reshaping said blank of circular cross-section to a screw with said arcuate polygonal cross-section during the rolling operation, said means on said die comprising spaced apart grooves running transversely of said projections and perpendicular to said direction of travel.

3,852,993

METHOD OF DETERMINING THE FRICTIONAL AND MECHANICAL PROPERTIES OF MATERIALS AND A DEVICE FOR THE REALIZATION THEREOF

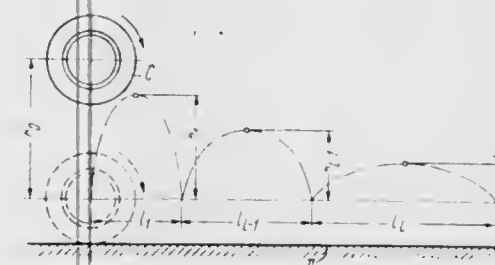
Marat Alexandrovich Bronovets, Lefortovsky val, 7/6, korpus 4, kv. 32; Mikhail Nikolaevich Dobychin, Frunzenakaya nebezchnaya, 48, kv. 6; Igor Viktorovich Kragelsky, ul. Ivanovskaya, 26, kv. 2, all of Moscow, and Nikolai Matveevich Mikhin, Mikroraiion Serebryanka, 6, kv. 34, Pushkino Moskovskoi oblasti, all of U.S.S.R.

Filed Aug. 1, 1972, Ser. No. 277,041

Int. Cl. G01n 3/52, 19/02

U.S. Cl. 73-12

13 Claims



1. A method of studying frictional and mechanical properties of materials comprising the steps of striking the surface of a test specimen being studied against the surface of a refer-

ence specimen at a predetermined relative tangential speed corresponding to a predetermined type of friction; measuring the parameters of collision which are essential for determining the frictional and mechanical properties of the materials; allowing said test specimen and said reference specimen to carry out a number of successive rebounds; and measuring the parameters of rebound collisions to determine the coefficients of adherence, sliding friction and rolling friction as a function of the relative speed between said test specimen and said reference specimen.

3,852,994

SLOT ANTENNA APPARATUS FOR MEASURING THE DETONATION OF AN EXPLOSIVE MATERIAL

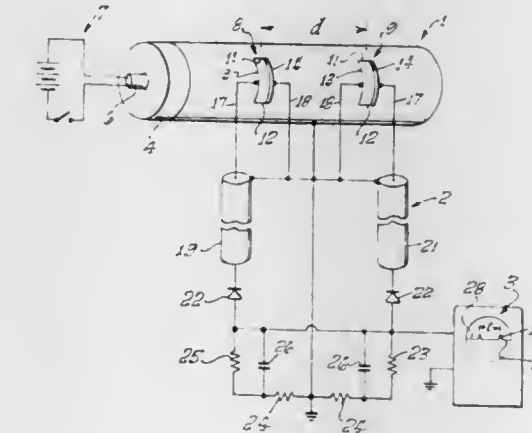
Eugene F. Pereda, 11621 Hughes Ave. N.E., Albuquerque, N. Mex. 87112

Filed Jan. 2, 1974, Ser. No. 430,353

Int. Cl. C011 5/14

U.S. Cl. 73-35

7 Claims



1. Apparatus for measuring the detonation velocity of an explosive material comprising:
an elongate metallic tube closed at one of its ends and open at the other, said tube being provided with at least a pair of transversely-disposed slots spaced a fixed distance longitudinally of the tube,
means provided at said closed end for mounting explosive material,
means for detonating said material to produce a detonation wave travelling lengthwise within the tube,
each slot of said tube being capable of converting electromagnetic radiation present in said travelling detonation wave into an electrical signal output,
means for displaying said signal outputs and,
circuit means conductively coupling each of said slots to said display means,
the time required for said detonation wave to travel the fixed distance between said slots being ascertainable from said display means whereby the velocity of said travelling detonation wave can be determined.

3,852,995

METHOD AND APPARATUS FOR DETECTING LEAKS IN CONTAINERS

Robert H. Duncanson, Hennepin, Minn., assignor to Faberge, Incorporated, New York, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,035

Int. Cl. G01m 3/16

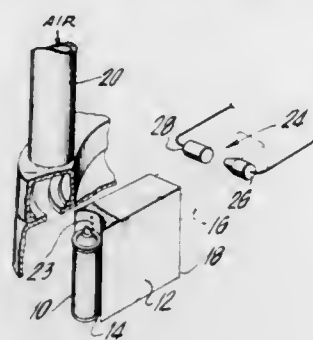
U.S. Cl. 73-40

13 Claims

1. A method of detecting for leaking containers comprising the steps of:

positioning the container adjacent a pair of spaced electrodes;
applying an electric field to the electrodes sufficient to maintain a corona about one electrode with small, erratic current flow between the electrodes;

directing a stream of substantially pure air past the container and between the pair of electrodes, the stream of substantially pure air conveying any organic molecules present on and adjacent the exterior surface of the con-



tainer between the pair of spaced electrodes causing a greater, more constant flow of current between the pair of spaced electrodes; and detecting any resulting greater, more constant current flow to indicate a leaking container.

3,852,996

AUTOMOTIVE EXHAUST SYSTEM LEAK TEST

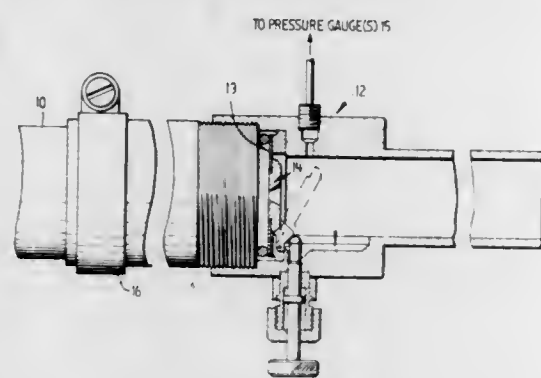
Earl C. Klaubert, Lexington; Adelbert L. Lavery, Natick, and Anthony J. Broderick, Sudbury, all of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed June 22, 1973, Ser. No. 372,749

Int. Cl. G01m 3/28

U.S. Cl. 73-40.5 R

4 Claims



1. In a constant mass input fluid flow system, a method of quantitatively determining leaks in the system with a pair of different sized orifices interchangeably connectible in a flowmeter at the output of the flow system, comprising the steps of:

measuring the pressure drop Δp_L across the larger sized orifice connected in the flowmeter, interchanging the smaller sized orifice with the larger sized orifice and measuring the pressure drop Δp_S across the smaller sized orifice connected in the flowmeter, deriving the ratio R of the pressure drops across the larger and smaller sized orifices, $R = \Delta p_S / \Delta p_L$, and determining from the ratio R and the pressure drop Δp_L across the larger sized orifice the effective total leakage area of the system.

3,852,997

METHOD AND APPARATUS FOR MONITORING POLLUTION OF NATURAL WATERS

Robert Horvath, Plymouth, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 9, 1973, Ser. No. 331,300

Int. Cl. G01n 25/00

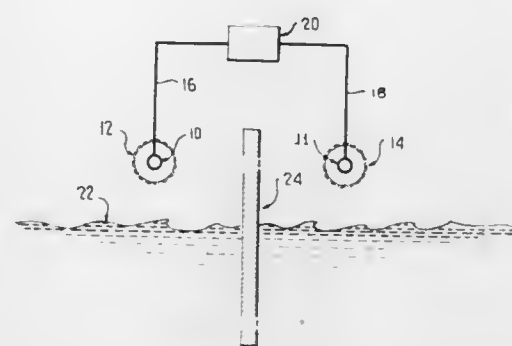
U.S. Cl. 73-61.1 R

14 Claims

9. Apparatus for monitoring natural waters which are subject to sources of pollution in the form of surface slick, comprising in combination:

a first temperature sensor having wettable covering means; a second temperature sensor having wettable covering means;

means for wetting the covering means of said first and second temperature sensors respectively by immersion through the surface of liquid from a portion of natural



water which may become polluted and by immersion through the surface of natural water from a portion of natural water which is not polluted; means for determining the difference, if any, in wet bulb temperatures indicated by said first and second temperature sensors.

3,852,998

SPEED CHANGING MECHANISMS

Patrick George Leeson, 20 Patch Ln., Bramhall, Stockport, England

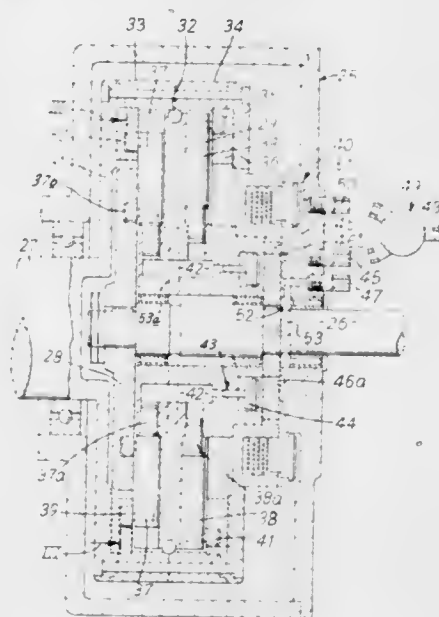
Filed Jan. 17, 1973, Ser. No. 324,406

Claims priority, application Great Britain, Jan. 22, 1972, 3126/72

Int. Cl. F16h 25/14

U.S. Cl. 74-63

5 Claims



1. A speed changing mechanism of the kind comprising three principal members, namely a rotary input member formed with a cam track; a rotary output member formed with a recessed track having an array of identical track sections evenly spaced from one another and each including a recess, and an intermediate rotary member carrying an array of identical units each comprising one or more rolling bodies; and hydraulically operated drive means between the intermediate member and the output member for driving the latter relative to the intermediate member, and wherein the mechanism further comprises, on at least one of the said principal members of the mechanism, control means for rotating the intermediate member in rotation at a controlled rate so as to vary the speed of the output member for a given input speed and hence the transmission ratio between the input and output members of the mechanism, said control means comprising

hydraulic fluid supply means comprising pistons carried by each of said rolling body units, the pistons being slidable in cylinders in the intermediate member as the rolling body units perform their linear motion, whereby a pulsating supply of hydraulic fluid is delivered to the drive means as the rolling body units reciprocate.

3,852,999

IMPEDANCE MEASURING NETWORK

Loren G. Wright, Alameda County, Calif., assignor to Uthe Technology, Inc., Mountain View, Calif.

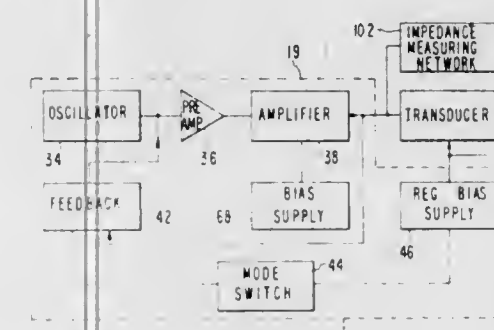
Division of Ser. No. 888,330, Dec. 29, 1969, Pat. No.

3,636,456. This application June 10, 1971, Ser. No. 151,965

Int. Cl. G01m 7/00

U.S. Cl. 73-67.1

3 Claims



1. Apparatus for driving and testing the operation of an ultrasonic transducer comprising a constant current or constant voltage power supply for driving an ultrasonic transducer for application to a load, circuit means for rectifying, integrating and amplifying transducer coil voltage as a signal that is an analog of the transducer and load impedance, and means for displaying said signal.

3,853,000

STRAIN MEASURING TRANSDUCER

John David Barnett, and George Brian Barlow, both of Stockport, England, assignors to Peak Components Limited, Cheshire, England

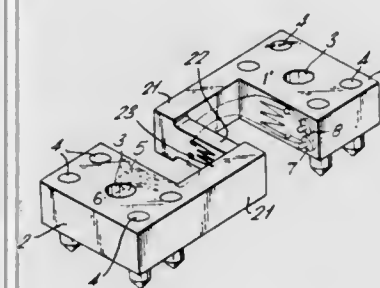
Filed Feb. 18, 1972, Ser. No. 227,529

Claims priority, application Great Britain, Feb. 23, 1971, 5172/71

Int. Cl. G01b 7/18

U.S. Cl. 73-88.5 R

4 Claims



1. A strain measuring apparatus comprising:

1. at least one resistance strain gauge;
2. a resilient neck on which said gauge is mounted;
3. a pair of spaced apart rigid blocks integrally connected to said neck, said neck extending between said rigid blocks in a direction transverse to a line joining the mid points of said rigid blocks;
4. a plurality of pins firmly affixed to each block, whereby said rigid blocks can be fastened securely to the surface of a structure the strain in which is to be measured;

5. a case enclosing said resistance strain gauge, said neck, and said pair of rigid blocks, said case having holes therein through which said pins extend; and

6. a moisture-repelling, resilient insulating material filling the remainder of said case not occupied by said resistance strain gauge, said neck, and said pair of rigid blocks,

whereby a strain between said rigid blocks causes a bending stress in said neck, and, since a strain between said rigid blocks is very much smaller than the length of said neck, the deflection of said neck is substantially linear and can be measured with great accuracy and sensitivity by said resistance strain gauge.

3,853,001

CRANE LOAD MEASURING MEANS

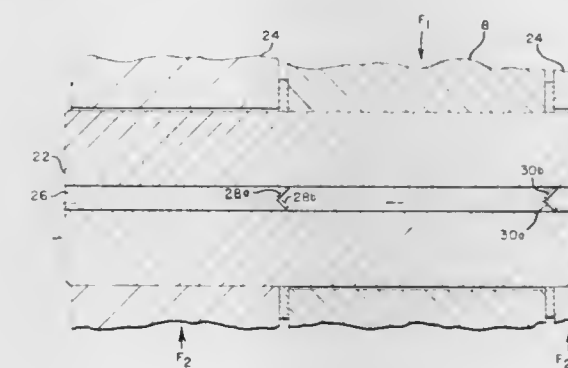
Thomas M. Mock, Tacoma, Wash., assignor to American Hoist & Derrick Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 271,413, July 13, 1972, abandoned. This application June 7, 1973, Ser. No. 367,706

Int. Cl. G01l 5/00

U.S. Cl. 73-133 R

4 Claims



1. In a crane system having a boom pivotably mounted about a horizontal axis to a main frame, a back stay for stabilizing the boom and having a relatively fixed force to counteract any moment generated by a load carried by the boom tending to overturn the crane means for detecting an overturn condition, comprising:

horizontally disposed hinge pin means interconnecting the boom and the framework,

core means secured within the hinge pin and transducer means carried by the core means in the pin between the frame and the boom to respond to the single component of a moment tending to overturn as reflected in the force at the hinge pin to the exclusion of essentially all other forces, whereby the overturn moment is accurately reflected irrespective of the angle of the boom or the actual weight being lifted, relieving the operator from making a plurality of measurements or comparisons.

3,853,002

VEHICULAR PERFORMANCE ANALYZER

Gordon H. Peck, Las Cruces, N. Mex., assignor to Autotronic Controls Corporation, El Paso, Tex.

Filed Aug. 6, 1973, Ser. No. 386,108

Int. Cl. G01m 15/00

U.S. Cl. 73-133 R

5 Claims

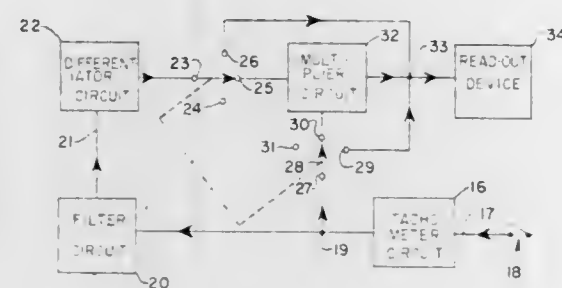
1. Performance analyzer for measurement of the performance characteristics of a vehicle comprising:

- a tachometer circuit means connected to the vehicle which produces a first electrical output signal of a frequency which is proportional to the velocity of the vehicle; said tachometer circuit means includes a signal conditioner and monostable multivibrator; said signal conditioner being connected to provide said monostable multivibrator with trigger pulses of current; a differentiator circuit means connected to said first output signal for providing a second output signal which is representative of the rate of change of said first output signal;

said differentiator circuit means includes a filter circuit, a differentiator, and an amplifier; said filter circuit being connected to said monostable multivibrator which converts the last said signal to a direct current wherein the direct current is proportional to the frequency of said first signal;

said direct current being connected to said differentiator by a source follower means for improving the response rate of said filter and said differentiator;

a multiplying circuit means including a transistor which multiplies said first and second output signals together to



provide a third output signal representative of the net horsepower of the vehicle;

said transistor having a base, an emitter, and a collector; a single source of power, a means for measuring; said transistor having the base thereof connected to said first electrical signal, the emitter connected to said second electrical signal, and the collector connected to said means for measuring; said means for measuring being connected to said single source of power, so that current flow occurs from said power source, through said means for measuring, and to the collector of the transistor.

3,853,003

WIND TUNNEL FLOW GENERATION SECTION

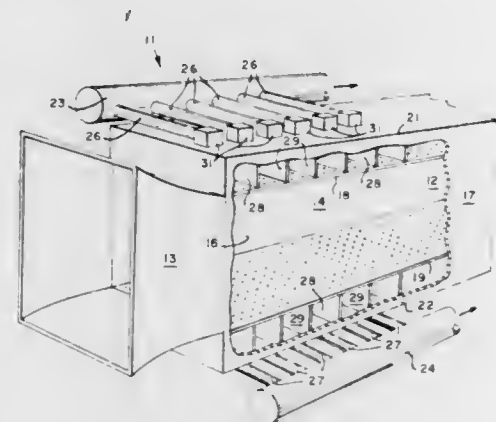
Norman E. Sorensen, Saratoga, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,019

Int. Cl. G01m 9/00

U.S. Cl. 73-147

7 Claims



1. In the flow generation section of a high velocity wind tunnel, apparatus for generating improved flow over a range of flow velocities comprising a pair of generally opposed, porous wall surfaces defining a flow throat of said flow generation system, means for applying a negative pressure to the exterior sides of said porous wall surfaces, means for selectively varying the length of said wall surfaces in the direction of flow thereby to which said negative pressure is applied, and means for selectively varying the amount of said negative pressure.

3,853,004 METHODS AND SYSTEMS FOR MEASURING, DISPLAYING AND RECORDING TIME-RATE OF PENETRATION

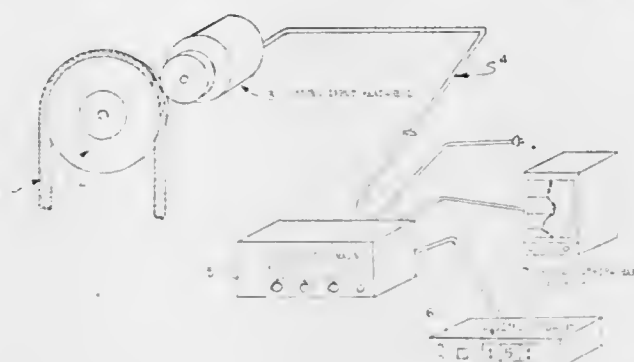
John Henry Westlake; John Wallace Snyder; Clifford Harvey Leach, and Steve Edward Cebuliak, all of Calgary, Alberta, Canada, assignors to Eastman Oil Well Survey Company, Houston, Tex.

Filed Oct. 20, 1971, Ser. No. 190,881

Int. Cl. E21b 45/00

U.S. Cl. 73-151.5

9 Claims



1. A method of determining the magnitude of the linear movement into the earth of a selected element, such as a drill bit, on a drill string which is supported by means vertically movable within a derrick, wherein transient, random linear movement of the drill string does not produce substantial error in the determination, including the steps of:

transducing the linear movement of the drill string into rotary motion;

transducing such rotary motion into a set of electrical signals which cumulatively present binary coded words indicative of the direction and angular displacement of the rotary motion,

the binary coded words being presented in a selected and repetitive sequence so long as the rotary motion is caused by the downward movement of the drill string;

monitoring continuously the binary coded words being presented;

producing a count of the binary coded words so long as such binary coded words are presented in the repetitive, selected sequence and not producing a count of the binary coded words when they are not presented in the repetitive, selected sequence; and

once the binary coded words have ceased to be presented in the repetitive, selected sequence, not producing a count of the binary coded words, even when they are again presented in the repetitive, selected sequence, until the last binary coded word previously counted has again been presented.

3,853,005

INTERFACE MEASURING APPARATUS

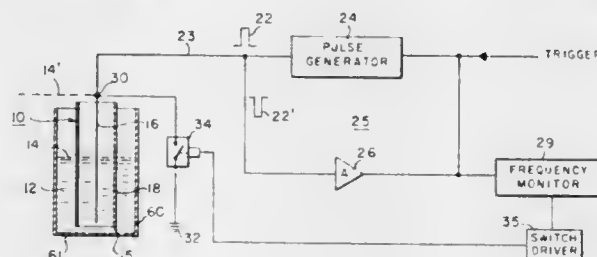
Robert E. Schendel, Houston, Tex., assignor to Measurand Systems, Houston, Tex.

Filed Aug. 29, 1973, Ser. No. 392,849

Int. Cl. G01f 23/28

U.S. Cl. 73-290 R

2 Claims



1. In an apparatus for measuring the location of an unknown interface separating two media having different dielectric

constants, a transmission line positioned across said interface, a switch connected between ground and a reference interface on the center conductor of said transmission line, a signal generator for generating a fast rising output pulse which is reflected from the unknown interface when the switch is open and which is reflected from the reference interface when the switch is closed, the improvement comprising:

a switch driver for closing and opening said switch,

a frequency monitor for measuring the frequency of the pulses reflected from said reference interface and for measuring the frequency of the pulses reflected from said unknown interface, to thereby obtain a measurement of said unknown interface, and

means coupling said frequency monitor to said switch driver to automatically open said switch after measurement of said reference interface.

3,853,006

FLUID SENSING SYSTEMS

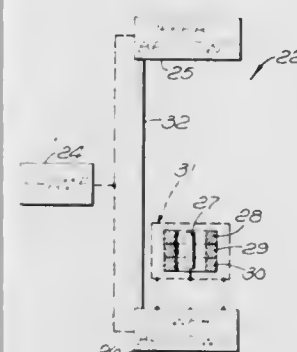
Victor Nicholas Lawford, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,657

Int. Cl. G01f 23/14

U.S. Cl. 73-301

2 Claims



1. A reservoir liquid level system, said system comprising: a tank to hold a fluid; first and second means fixed relative to said tank in positions inside thereof at the top and bottom thereof, respectively, said first and second means including first and second hollow shells, respectively, having first and second movable diaphragms, respectively, each of said first and second shells being sealed but having one opening thereinto; a first conduit having a first end sealed through the opening in said first shell and a second end sealed through the opening in said second shell, said first and second diaphragms being depressible in accordance with the pressure at the respective upper and lower locations thereof; a first incompressible fluid filling said first conduit and both of said first and second shells; third means connected from one of said first and second diaphragms to produce an electrical output signal directly proportional to the difference between the pressures at the respective locations of said first and second diaphragms; fourth and fifth means fixed relative to said tank in positions adjacent the bottom of said tank, said fourth means being located above said fifth means and below said first means, respectively, having fourth and fifth hollow shells, respectively, each of said fourth and fifth shells being sealed but having one opening thereinto; a second conduit having a first end sealed through the opening in said fourth shell and a second end sealed through the opening in said fifth shell, said fourth and fifth diaphragms being depressible in accordance with the pressure at the respective depths thereof; a second incompressible fluid filling said second conduit and both of said fourth and fifth shells; sixth means connected from one of said fourth and fifth diaphragms to produce an electrical output signal directly proportional to the difference between the pressures at the respective depths of said fourth and fifth diaphragms; a divider connected from the outputs of said third

and sixth means for producing an output signal of a magnitude directly proportional to the ratio of the magnitude of the output signal of said third means to the magnitude of the output signal of said sixth means; and utilization means connected from the output of said divider.

3,853,007

VOLUMETRIC MEASURING SYSTEM

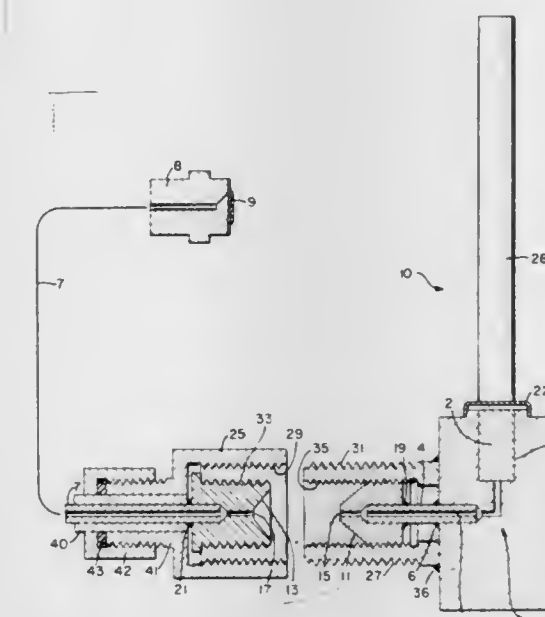
Howard Randall Jaquith, Rushville, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,270

Int. Cl. G01f 7/00

U.S. Cl. 73-395

10 Claims



1. In a volumetric measuring system having a sealed envelope solidly-filled with substantially incompressible liquid, wherein said envelope includes a sensing portion responsive to a condition for causing the internal pressure of said liquid to correspond to said condition,

wherein said envelope includes a signal portion responsive to said internal pressure for producing a signal corresponding to said internal pressure, and

wherein said envelope includes a capillary portion for transmitting internal pressure changes between said sensing and signal portions;

the improvement wherein said capillary portion has a thimble and a socket each forming a part of said capillary portion, and said socket and said thimble being forcibly interengaged for urging said thimble and socket into contact with each with such force as to strain the material thereof continuously throughout a given area of mutual contact, said thimble and socket each having a capillary passage having openings within said area and registering with one another for defining the thimble and socket parts of said capillary portion.

3,853,008

LIQUID SAMPLE SUPPLY APPARATUS

Jack L. Hoffa, Brea, and John J. Brown, Fullerton, both of Calif., assignors to Beckman Instruments Inc., Fullerton, Calif.

Filed Feb. 24, 1972, Ser. No. 228,905

Int. Cl. G01n 1/10

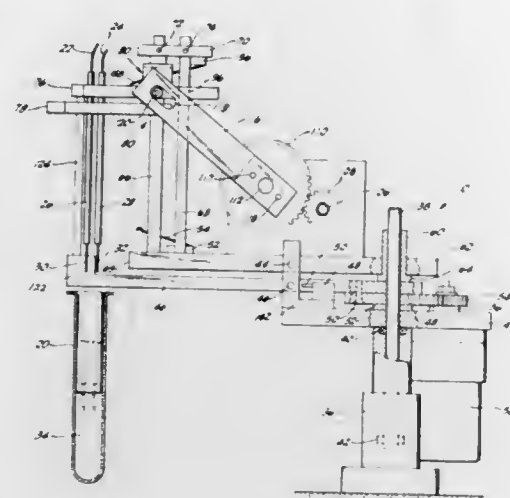
U.S. Cl. 73-423 R

9 Claims

1. A liquid sample supply apparatus for transferring two samples from a single container to two separate reaction cells simultaneously having a pair of vertically extending probes for insertion into the single container, means for lifting them vertically simultaneously, transporting them horizontally thereafter while horizontally separating them and thereafter positioning them over the horizontally separated reaction cells to discharge liquid drawn from the sample supply into said

horizontally separated reaction cells wherein the invention comprises:

two horizontally and vertically movable probe support elements, one pivoted to the other,



a pair of horizontally movable pivoted arms, means connecting one of said arms to one of said probe support elements, the probe support elements each supporting one of said probes at an end of the element space from the pivotal joint between them whereby the probes are capable of horizontal separation and relative horizontal movement.

3,853,009

AUTOMATIC WATER SAMPLER

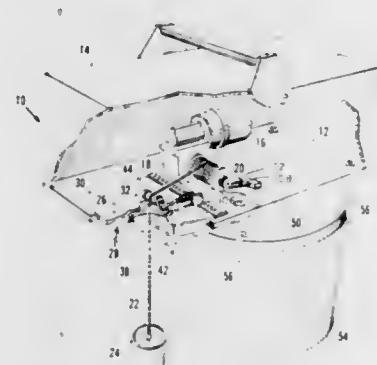
William Sutherland, 145 Monk St., North Bay, Ontario, Canada

Filed Oct. 25, 1972, Ser. No. 300,671

Int. Cl. G01n 1/10

U.S. Cl. 73-423 R

2 Claims



1. Apparatus for automatically collecting fluid samples from an effluent stream or the like and comprising in combination: a housing supportable above the stream; a sampling container having a closed bottom wall and side walls defining an open top; a supporting cable secured at one end thereof to said sampling container; a winch mounted on said housing, said supporting cable being wound at its opposite end about said winch; a reversible electric motor drivingly connected to said winch; a direct current power supply for said electric motor; a pair of vertically spaced electrodes defining liquid level sensing means, one of said electrodes being disposed adjacent the bottom within said sampling container and the other of said electrodes being spaced by a gap thereabove at a predetermined height defining a predetermined liquid level in said container, conductive liquid in said sampling container at or above said predetermined liquid level forming a conductive path across said gap and bridging said electrodes; and electric switching means responsive to said sensing means sensing a liquid level at said predetermined level at least to switch said motor in one direction for raising said sampling container towards said housing responsive to said predetermined level of liquid therein and switching said motor in the opposite direc-

tion lowering said sampling container responsive to a liquid level therein below said predetermined level; said electric switch means comprising a double-poled, double-throw reverse relay having its points connected in series with said motor and said power supply, said reversing relay having a coil energized by bridging of said electrodes by said conductive liquid.

3,853,010

SAMPLE CONTAINER SUPPORT WITH CODING MEANS

Urs Christen, Walnut Creek, and Dwayne Chester Guidinger, Concord, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 5, 1973, Ser. No. 337,801

Int. Cl. G01n 1/00

U.S. Cl. 73-423

2 Claims



1. In a system for transferring a fluid from one of a plurality of containers to a fluid receiving device including a structure defining a station at which a fluid is removed from a container, a plurality of container supporting members each of which defines a plurality of fluid containers supporting locations, said container supporting members each having a lower face, actuation means for moving a selected container location of one of said container supporting members to said station, actuation means comprising a table member supported for rotation about an axis, said locations of said container supporting members being disposed circumferentially about said axis, connecting means detachably connecting said actuating means to respective ones of said container supporting members for enabling removal and replacement of respective container supporting members; and identification means comprising sensing means fixed with respect to said station and unique structure means movable with each said container supporting members and cooperable with said sensing means to determine the identity of each said container, THE IMPROVEMENT COMPRISING said unique structure movable with said container supporting members being defined by a series of permanent cam tracks supported by the lower face of said container supporting members, said cam tracks within a segment defined by the axis and said container location having raised portions corresponding to a number assigned said container supporting member and said container supporting locations, said raised portions being radially aligned with said corresponding container supporting location and said cam tracks being parallel to each other and concentric with the axis of rotation of said table member and said sensing means comprising a plurality of cam operated switches arranged parallel to each other on a radius from said table member axis to said station cooperating with said cam tracks to produce binary information identifying the sample container supporting location at said station, and identifying said container supporting member, said container supporting member being individually removable cylindrical segmental racks.

3,853,011

METHOD AND APPARATUS FOR THE SUCTION REMOVAL OF A LIQUID

Heinrich Baumann, Quellenweg 4, CH-4912 Aarwangen, Switzerland

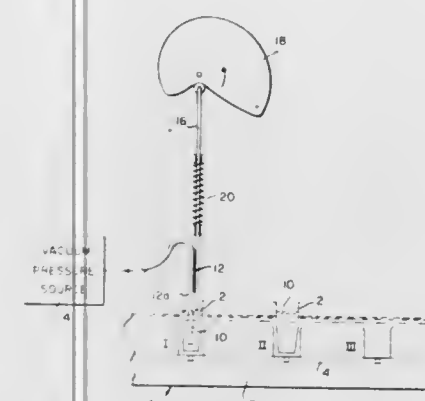
Filed June 12, 1973, Ser. No. 369,195

Claims priority, application Switzerland, June 14, 1972, 8880/72

Int. Cl. G01n 1/14

U.S. Cl. 73-423 A

4 Claims



1. Apparatus for removing a quantity of liquid from a receptacle without contaminating the remaining liquid, comprising
a. a suction conduit having at one end an inlet orifice;
b. means supporting said suction conduit above the liquid contained in said receptacle with the inlet orifice spaced a given distance from the liquid level;
c. a source of suction pressure connected with the other end of said suction conduit, the pressure of said suction source being sufficient to establish a flow of liquid from said receptacle into the suction conduit via said inlet orifice; and
d. means for continuously lowering the inlet orifice end of said suction conduit at the same rate that the level of liquid in the receptacle decreases upon removal of liquid therefrom, thereby to maintain constant the spacing distance between the liquid level and inlet orifice, and the flow of liquid from said receptacle into said suction conduit via said inlet orifice, whereby the lower end and outer surfaces of the suction conduit are maintained free from contact with the liquid in the receptacle.

3,853,012
PIPETTES

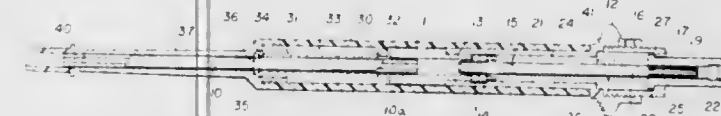
Emil A. Scordato, Bronxville, and William C. Strobel, Bronx, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,023

Int. Cl. B011 3/02

U.S. Cl. 73-425.6

17 Claims



1. A manual pipette adapted to have a disposable tip wedge fitted at one end thereof and in co-axial relationship thereto, the arrangement being such that a disposable tip is secured to the pipette only by the frictional force of the wedge fit, said pipette comprising a de-tipping member for removing a disposable tip that is wedge fitted to the pipette, said member being slideably mounted on said pipette in a direction parallel to the axis of the pipette and movable between a normal position away from a disposable tip and a position where it engages the end of a disposable tip and thereafter pushes the tip in an axial direction to free it from frictional engagement with the pipette.

3,853,013

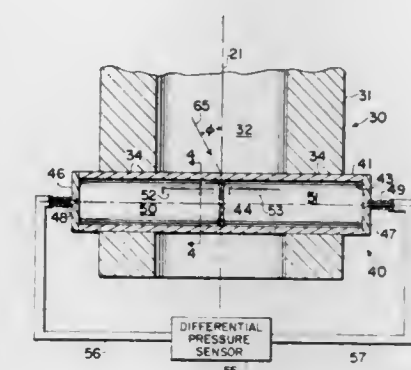
CONTROL APPARATUS

Werner H. Egli, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 2, 1964, Ser. No. 381,292

Int. Cl. G01p 3/26

6 Claims



1. In an apparatus of the class described: a first element having an opening therethrough; a second element; cylindrical porous coupling means positioned between said first and said second element thereby maintaining said first and said second elements in a substantially parallel spaced relationship; an exit element having a passage therethrough positioned within said opening of said first element, the axis of said passage being coaxial with the axis of said coupling means and defining an input axis, the apparatus being adapted to be connected to a fluid source whereby a fluid flows through said coupling means, between said first element and said second element, and exhausts through said passage of said exit element; pickoff means including a cylindrical member symmetrical about a longitudinal axis, said member having a bore therethrough, said bore being partitioned substantially at its axial midpoint to form a first and a second fluid cavity, said member having a first elongated aperture therein substantially parallel to the longitudinal axis, said first aperture being in communication with said first fluid cavity, said member having a second elongated aperture therein substantially parallel to the longitudinal axis and substantially aligned with said first aperture, said second aperture being in communication with said second fluid cavity, said member being positioned within said passage with the longitudinal axis perpendicular to the input axis and the midpoint of said member being positioned upon the input axis, said first aperture and said second aperture being positioned at an angle of 45° with a plane containing the input axis and the longitudinal axis; a differential pressure sensor; and means connecting said first fluid chamber and said second chamber to said differential pressure sensor, the pressure differential between said first fluid chamber and said second chamber being indicative of the component of fluid flow within said passage perpendicular to the input axis of said apparatus.

3,853,014

IMPROVEMENT IN THE TRANSMISSION MECHANISM OF AN OSCILLATING ENGINE

Friedrich Munzinger, Hohenrandstrasse 46, 7 Stuttgart 80, Germany

Filed Mar. 7, 1973, Ser. No. 338,652

Int. Cl. F16h 21/40

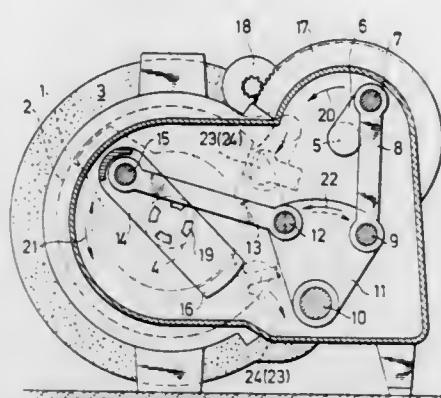
U.S. Cl. 74-70

7 Claims

1. An oscillating engine of the kind having a piston oscillating in a cylinder, the piston being connected to a piston shaft which rocks coaxially with the piston over an angular range of between 180° and 360°, said machine also having a crankshaft mounted with its axis parallel to that of the piston shaft in which are provided:

a piston crank rocking with the piston shaft,

a piston connecting rod hingedly connected to the piston crank,
a lever element to which said piston connecting rod is hinged,
a bearing supporting said lever element on a fulcrum axis spaced from the hinge point of said piston connecting rod,



a crankpin on said crankshaft,
a crankshaft connecting rod hinged at one end to said crankpin and at its other end to said lever element at an axis spaced from the fulcrum axis,
the phase relationship of the piston, the lever element and the crankshaft being such that the mid-point of the piston in its arc of oscillation corresponds with one dead-centre position of the piston crank and also with one dead-centre position of the crankshaft.

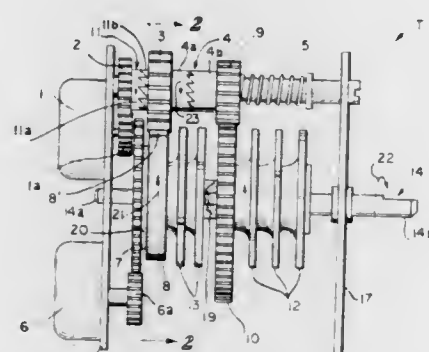
3,853,015

CONTROL DEVICES FOR SLOW AND FAST ADVANCEMENTS FOR ELECTROMECHANICAL TIMERS

Marcello Bertozzi, No. 47, Via Brighindi, and Mario Chioffi, No. 84, Via Marittima 1, both of Frosinone, Italy
Filed Dec. 3, 1973, Ser. No. 420,902
Int. Cl. F16h 27/00

U.S. Cl. 74-112

4 Claims



1. A timing mechanism comprising a housing, a first shaft journaled for rotation in said housing, a first electric motor connected to said housing, a first cam means carried by said first shaft and rotatable by said first electric motor, a second electric motor connected to said housing and coupled for rotation of said first cam means at a faster rate than by said first motor through a first one-way clutch means, a second shaft carried by said housing, a second cam means rotatably carried on said second shaft and rotatable by said first electric motor at a faster rate than said first cam means, and a second one-way clutch means coupled between said first electric motor and said first cam means, whereby said first cam means may be rotated in one direction by manually turning said first shaft and allowing said second one-way clutch means to break coupling of said first cam means with said first and second motors.

3,853,016

CROP GATHERING BELT

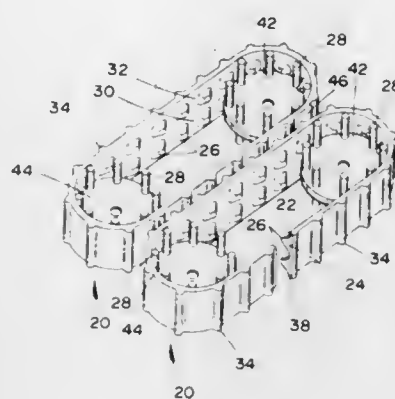
James Murray Lane, III, Denver, and Guy E. Lingenfelter, Broomfield, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 333,934, Feb. 20, 1973. This application May 6, 1974, Ser. No. 467,240

Int. Cl. F16g 1/28; F16h 7/02; A01d 45/02

U.S. Cl. 74-231 C

19 Claims



1. A flexible crop gathering belt used in conjunction with at least one toothed pulley, said belt capable of cooperating with an oppositely facing endless belt to engage and gather crop including that of the cornstalk type, said belt comprising:
a first layer of flexible material extending longitudinally of the belt to define a driving portion thereof including a plurality of longitudinally spaced lugs adapted to mesh with teeth of the pulley, said lugs having a base portion;
a second layer of flexible material spaced from and generally parallel to said first layer to define a crop engaging portion, and;
a tensile section of high modulus material disposed between said first and second layers.

3,853,017

ENDLESS POWER TRANSMISSION BELT

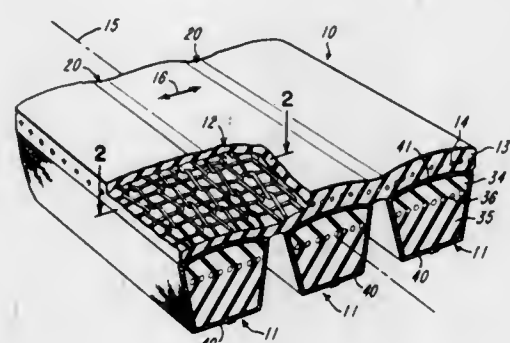
Jack D. White, Jr., Springfield, and Joseph P. Miranti, Jr., Republic, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Nov. 6, 1973, Ser. No. 413,293

Int. Cl. F16g 5/00, 1/22

U.S. Cl. 74-234

14 Claims



1. An endless power transmission belt comprising a plurality of laterally spaced belt elements and a tie band interconnecting said belt elements, said tie band being reinforced by a knitted layer which allows tie band extensibility between said belt elements in an infinite number of directions enabling efficient engagement of each element with opposed surfaces comprising a groove of an associated sheave even under adverse conditions with said knitted layer holding said elements together as a unitary construction substantially free of any tendency for said band to shear between said elements.

3,853,018

BELT DRIVE AND TENSIONING APPARATUS

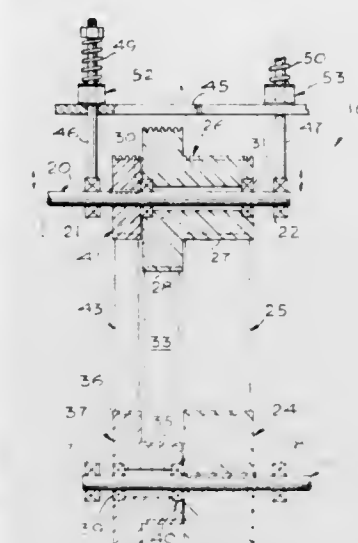
Henry Folkert, Granger, Wash., assignor to Folkert, Inc., Granger, Wash.

Filed Oct. 9, 1973, Ser. No. 404,188

Int. Cl. F16h 7/10, 7/00

U.S. Cl. 74-242.13 A

6 Claims



1. A compact belt drive transmission with automatic belt tensioning comprising:
a first shaft rotatably journaled by first support means affixed to a frame means and adapted to be operatively connected to a source of input power;
a second shaft rotatably journaled by second support means and disposed in a spaced and generally parallel relationship to said first shaft and adapted to provide an output source of rotational power;
a first belt pulley carried by and affixed to said first shaft means;
a second belt pulley carried by and affixed to said second shaft means;
belt means operatively interconnecting said first belt pulley and said second belt pulley whereupon the application of a rotational source of power to said first shaft, said second shaft will rotate at a speed relative to said first shaft and directly proportional to the ratio between said first belt pulley and said second belt pulley;
at least one elongated member attaching said second support means to said frame means, said elongated member being in a generally planar alignment with said belt means and extending in an opposite direction thereto and spring bias means affixed to said elongated member and urging said member upwardly with a force sufficient to maintain proper tension on said belt means irrespective of wear and stretching of said belt means when the transmission is at rest; and
stop means cooperatively engaging said elongated member preventing said member from moving downward when the transmission is operative and a downward force greater than the force of said spring bias means is applied to said second shaft.

3,853,019

TRANSMISSION SHIFTING MECHANISM

Paul F. McAdams, Saint Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 21, 1973, Ser. No. 343,568

Int. Cl. G05g 9/06

U.S. Cl. 74-473 R

18 Claims

1. Shifting mechanism for use with a transmission having
a. forward, neutral and reverse conditions and a shift valve for controlling those conditions, and
b. a plurality of speed ratio conditions and a shift valve for controlling those conditions,

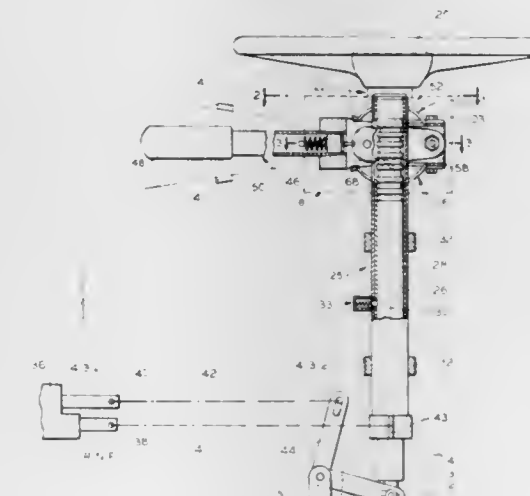
the combination comprising,

a shifting column including an outer sleeve and a center shaft,

means mounting the outer sleeve for oscillation but against axial movement, and linkage operatively connecting it with the (a) shift valve for actuating the latter in response to oscillation of the outer sleeve,

means mounting the center shaft in the outer sleeve for axial reciprocation therein, and linkage operatively connecting it with the (b) shift valve for actuating the latter in response to reciprocation of the center shaft, a shifting lever, and means mounting it on the shifting column,

the shifting lever being swingable in a first sense about the axis of the shifting column and operative, in response to swinging movement in that sense and acting through



its own mounting means, for oscillating the outer sleeve,

the shifting lever also being movable in a second sense in a plane containing the axis of the shifting column, from a center position in actuating direction,

means forming releasable interconnection between the shifting lever and the center shaft for reciprocating the center shaft in response to moving the shifting lever in its said second sense,

means limiting movement of the shifting lever in its said second sense from said center position in actuating direction an amount corresponding to movement of the (b) shift valve between consecutive and adjacent speed ratios, and

means operative for releasing the connection between the shifting lever and the center shaft in moving the shifting lever in return to its center position.

3,853,020

FLEXIBLE MOTORCYCLE GEARSHIFT

Hiram Daniel Clark, III, 1129 Lakeview, Mesquite, Tex. 75149

Filed Jan. 11, 1973, Ser. No. 322,904

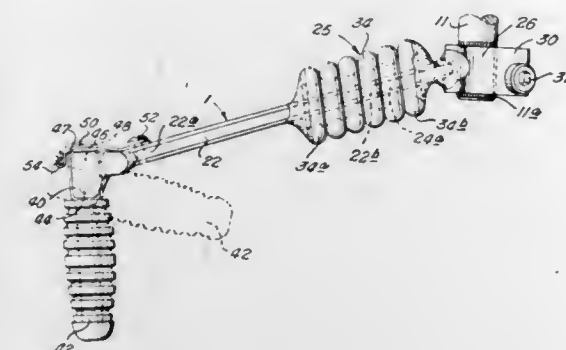
Int. Cl. G05g 1/14

U.S. Cl. 74-560

9 Claims

1. A motorcycle gearshift lever adapted to rotate a shaft comprising: a first member having an inner end and an outer end; connector means to secure the inner end of said first member to the shaft; means to prevent rotation of said connector means relative to said shaft; a second member having an inner end and an outer end; an elastic coupling extending about the outer end of the first member and about the inner end of the second member; means to secure one end of said

elastic coupling to the first member; means to secure the other end of the elastic coupling to the second member; an arm; and



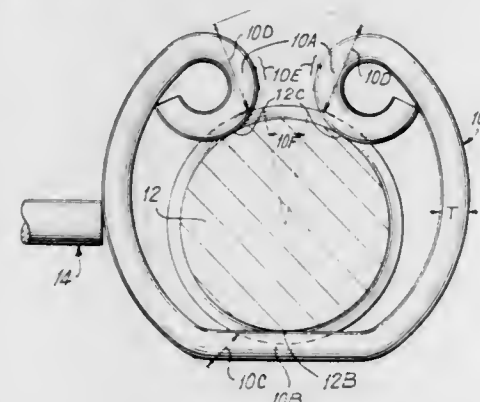
means to secure the arm to the other end of the second member.

3,853,021 GRIPPING CAM

Roger Hayes, 260 Garth Rd., Scarsdale, N.Y. 10583
Filed Dec. 26, 1973, Ser. No. 428,057
Int. Cl. F16h 53/00

U.S. Cl. 74—568 R

8 Claims



1. A ring, formed of spring wire and mounted in a groove around a shaft, adapted for stopping the movement of a member movable towards and away from said ring on said shaft, said ring having a pair of opposed ends defining an opening in the periphery of said ring, and at least three locations for contacting and gripping said shaft in said groove to prevent axial movement of said ring with respect to said shaft and to establish a gripping force around said shaft to prevent free rotation of said ring around said shaft, at least one of said ends having a loop for providing a region to receive rotational force to overcome said gripping force and thereby to rotate said ring, said periphery of said ring defining a variable radial height dimension of said ring above said shaft when said ring is mounted on said shaft, said ring having a plurality of external contacting regions corresponding to said variable radial height dimension for limiting the movement of said movable member towards said periphery of said ring and towards said shaft, the selection of said contacting region of said ring for stopping said movable member being variably determined by the rotational position of said ring with respect to the path of said movable member in said movement towards said periphery of said ring.

3,853,022 DIFFERENTIAL MECHANISM

Morris J. Duer, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1973, Ser. No. 409,333
Int. Cl. F16h 1/40

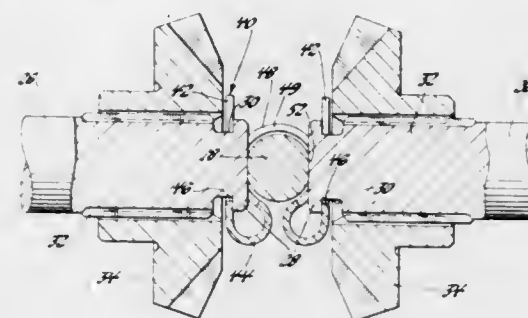
U.S. Cl. 74—713

1 Claim

1. In a differential mechanism including a rotatable casing, a pair of output members rotatably received in said casing and

adapted to be driven thereby, a gear train comprising intermeshing gears rotatably carried in said casing and interconnecting said output members and said casing, said gear train also comprising a pinion shaft fixedly carried in said housing, the improvement comprising:

an output member retaining device in said casing, said device comprising a pair of parallel flat plates and a resilient center plate joining a corresponding side of each said parallel plate, said resilient center plate being curved in a generally omega-shaped configuration to form an unclosed generally cylindrical portion between said paral-



lel plates, said device being located in said casing with said cylindrical portion surrounding said pinion shaft, said cylindrical portion having at least one opening through the wall thereof whereby said output members may be biased against said pinion shaft, each of said parallel plates having a slot extending inward from the side thereof opposite said resilient center plate, said slots being adapted to engage said output members, said resilient center plate being extended to bias said output members inward against said pinion shaft and thus positively retain said output members within said casing and limit lateral movement of said output members.

3,853,023

GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No.

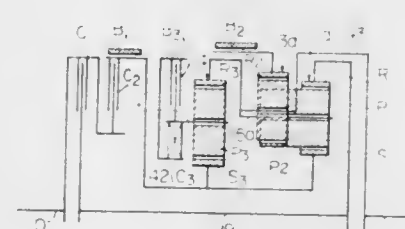
3,701,293. This application Sept. 13, 1972, Ser. No. 288,548

Claims priority, application Japan, Apr. 30, 1969, 44-32684

Int. Cl. F16h 57/10

U.S. Cl. 74—759

1 Claim



1. A gear train comprising:

1. an input shaft (10);
2. an output shaft (11);

3. a first planetary gear set (12a) having a ring gear (R₁), a pinion carrier (15a) carrying planet pinion (P₁) meshing with the ring gear (R₁) and a sun gear (S₁) meshing with the planet pinion (P₁), the pinion carrier (15a) thereof being connected to said output shaft;

4. second planetary gear set (13a) having a ring gear (R₂) and a planet pinion (P₂) carried by the pinion carrier (15a) of said first planetary gear set (12a), said ring gear (R₂) meshing with the planet pinion (P₂) of said second planetary gear set, the planet pinion (P₂) of said second

planetary gear set meshing with the planet pinion (P₁) of said first planetary gear set (12a);

5. A third planetary gear set (14) having a ring gear (R₃) connected to the pinion carrier (15a) of said first planetary gear set, a pinion carrier (17) carrying a planet pinion (P₃) meshing with the ring gear (R₃) thereof and a sun gear (S₃) meshing with the planet pinion (P₃) thereof, the sun gear (S₃) thereof being connected to the sun gear (S₁) of said first planetary gear set;

6. first clutch means (C₁) for engaging said input shaft with the ring gear (R₁) of said first planetary gear set during operation of first, second, third, and fourth forward speeds;

7. second clutch means C₂ for engaging said input shaft (10) with the sun gears (S₁, S₃) of said first and third planetary gear sets during fourth forward speed and reverse speed;

8. first brake means (B₁) for anchoring the sun gears (S₁, S₃) of said first and third planetary gear sets during third forward speed;

9. second brake means (B₂) for anchoring the ring gear (R₂) of said second planetary gear set during second forward speed;

10. third brake means (B₃) for anchoring the pinion carrier (17) of said third planetary gear set during reverse speed; and

11. one-way brake means (42(C₃)) for preventing the pinion carrier (17) of said third planetary gear set from rotating in a direction opposite to the rotation of said input shaft (10).

3,853,024

TWO SPEED DRIVE SYSTEM FOR PRINT MECHANISM OR THE LIKE

Anthony Vesci, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,849

Int. Cl. F16h 5/52

U.S. Cl. 74—812

6 Claims



1. A two-speed unidirectional drive system comprising a single-speed reversible motor with an output shaft, a first drive gear and a first drive pulley concentrically supported on said output shaft,

a first free-wheeling clutch mechanism coupling said first drive pulley in a first rotational direction to said output shaft,

an idler shaft parallel with said output shaft,

a second drive gear and a second drive pulley concentrically supported on said idler shaft in coplanar relation with said first drive gear and said first drive pulley respectively,

said second drive gear having a driving connection with said first drive gear,

a second free-wheeling clutch mechanism coupling said second drive pulley in said first rotational direction to said idler shaft,

said first and second drive gears or said first and second drive pulleys or both being of different size whereby a dual speed unidirectional rotation of various ratios is obtained a driven shaft parallel with said output and said idler shaft,

a driven pulley fixedly coupled to said driven shaft, and a drive belt connecting said first and second drive pulley and said driven pulley.

3,853,025

NUT STARTER

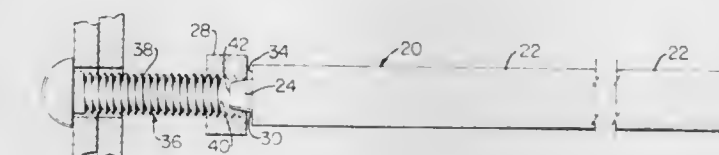
Walter D. Komhyr, 70 Manhattan Dr., Boulder, Colo. 80303

Filed Sept. 25, 1972, Ser. No. 292,081

Int. Cl. B25b 13/48

U.S. Cl. 81—71

18 Claims



1. A nut starter tool adapted for starting a nut onto a threaded member wherein the nut has a threaded inner surface defining a substantially circular central opening extending therethrough between opposite end surfaces, said tool comprising an elongated body portion and a nut-gripping axial extension at a forward end thereof varying in cross-sectional size along its length and of a reduced cross-sectional size throughout with respect to that of said elongated body portion, said axial extension having a rounded leading end, and a shoulder portion between said body portion and said axial extension, said axial extension having a length substantially one-half the means diameter of said axial extension for insertion into the central opening of said nut and being adapted to frictionally engage a portion of the nut when inserted therein whereby the nut is releasably retained on said axial extension in a manner such that the nut can be started onto the threaded member by rotational movement of said body portion of said tool.

3,853,026

OIL FILTER REMOVING TOOL

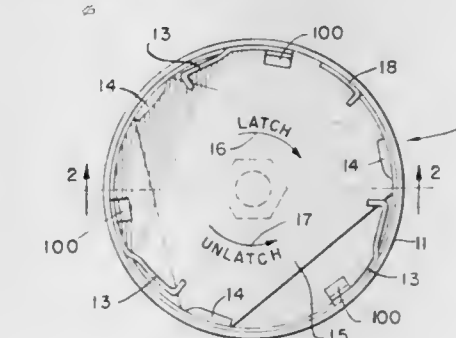
Charles W. Rhodes, Victoria, Tex., assignor to Alfred L. Burden, Victoria, Tex.

Filed Feb. 4, 1974, Ser. No. 439,535

Int. Cl. B25b 13/28

U.S. Cl. 81—91 R

10 Claims



1. A hand tool for removal of oil filters and the like comprising a cup shaped latch carrying housing having an open end adapted to fit over one end of a filter to be removed, said housing including a cylindrical wall portion, latch means carried by the interior of said wall portion including a portion attached to the housing wall and having a resilient free portion extending along the wall and having a filter gripping portion extending inwardly therefrom, and rotatable latch actuating cam means adapted for engagement with the free end portion

of said latch means to force the same into operative engagement with said filter, means rotatably mounting said cam means concentrically with the cylindrical wall of said latch carrying housing, and means for rotating said mounting means in one direction to bring the cam means into operative engagement with the latch means to engage said filter and to rotate said filter for removal from its seat and for rotating said mounting means in the opposite direction to disengage the cam means from the latch means.

3,853,027

APPARATUS FOR CUTTING RESILIENT POROUS MATERIAL

Rolf G. E. Karlstrom, and Leif A. Jansson, both of Eskilstuna, Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

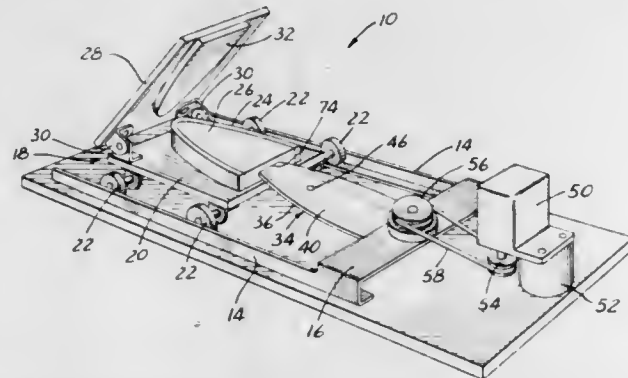
Filed May 25, 1973, Ser. No. 363,882

Claims priority, application Sweden, June 6, 1972, 7376/72

Int. Cl. B26d 3/12, 3/28

U.S. Cl. 83-4

4 Claims



1. Apparatus for cutting a slit in a workpiece of resilient porous material to form a glove-like cover having upper and lower surfaces between which the slit is to be made, said apparatus comprising, in combination, a base plate, track means supported by said base plate, workpiece support means supported by said track means and including a carriage having means thereon to fixedly retain a workpiece of resilient porous material thereon preparatory to cutting a slit in an edge surface thereof, a generally flat cutting knife supported by said base plate, and means for longitudinally reciprocating said cutting knife, said track means and said carriage being cooperable so that said carriage is movable in a direction generally parallel to the longitudinal axis of said cutting knife to effect engagement of said reciprocating cutting knife with said edge surface of said workpiece when supported on said carriage such that a slit is cut in said workpiece intermediate the upper and lower surfaces thereof with the workpiece remaining integral along the peripheral portion of said slit opposite said edge surface, said cutting knife having a cutting edge of sufficient size to cut the desired slit in the resilient porous workpiece when said carriage is moved in said longitudinal direction of said cutting knife a predetermined distance.

3,853,028

MECHANICAL DEVICE FOR COLD-SAWING STEEL-PROFILES, ETC. UTILIZING A VERTICAL DISPLACEABLE SAW BLADE

Leopold Jagers, Rudolf-Diesel-Strasse 1, 5350 Euskirchen, Germany

Filed May 23, 1973, Ser. No. 363,103

Claims priority, application Germany, May 24, 1972, 2225197

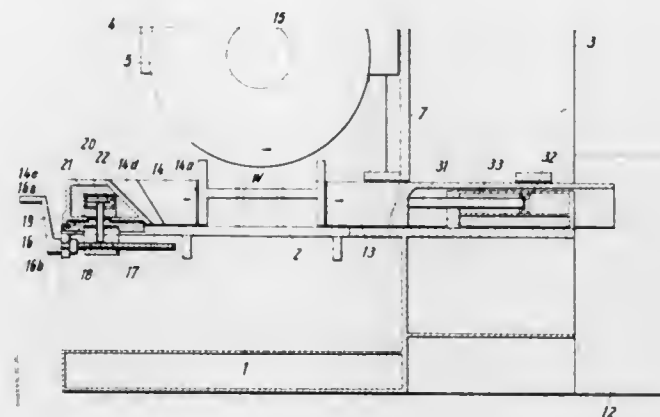
Int. Cl. B26d 7/02, 1/14, 33/45

U.S. Cl. 83-461

8 Claims

1. An apparatus for sawing steel profiles by a vertically displaceable circular saw blade overlying a horizontal work bench, including combined clamp and stop assemblies disposed on opposite sides of the blade for engaging the work piece at the opposite side at the area in which a vertical cut is to be made, the improvement in which one combined clamp

and stop assembly includes a vertical abutment face for engaging one side of the work piece, said blade being rotatable toward said face for urging the work piece thereagainst as a cut is effected, said stop assembly including means for adjustably rotating said vertical abutment face relative to the cutting plane of said saw blade and the cutting plane of the saw blade



3,853,029

TURRET PUNCHING MACHINES

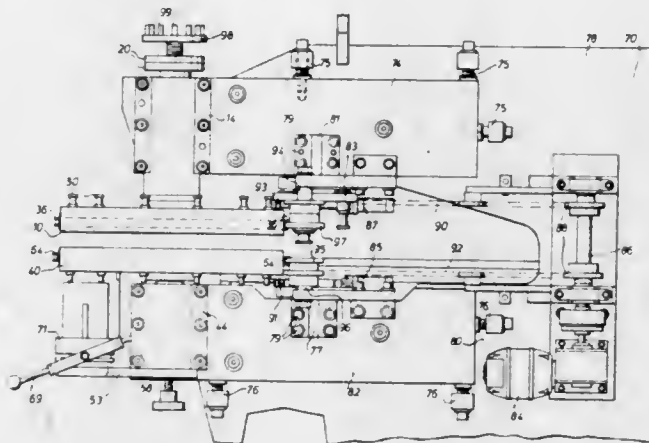
Sidney Clarke Todd, Maidenhead, England, assignor to Pierce-All Manufacturing Limited, Slough, Buckinghamshire, England

Filed Aug. 6, 1973, Ser. No. 386,226

Int. Cl. B26f 1/04

U.S. Cl. 83-552

9 Claims



1. A turret punching machine having a main frame extending substantially at right angles to the front edge of the machine and formed with spaced upper and lower limbs, a spindle carrying a rotatable upper turret supported by the upper limb of the frame and a ram mounted in the frame for axial movement, the said turret and ram being so constructed and mutually disposed that the path of movement of the periphery of the turret lies at or adjacent the front edge of the machine, that the punches carried by the turret move in succession below the ram during rotation of the turret and that the ram is disposed coaxially with and above an extreme laterally disposed punch station of the turret when viewed from the front of the machine.

3,853,030

MODULATION MECHANISM FOR HARPS

Karl Petutschnigg, Messinggasse 14, A-9900 Lienz, Austria

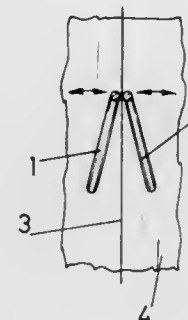
Filed Apr. 24, 1974, Ser. No. 463,839

Claims priority, application Austria, May 11, 1973, 4167/73

Int. Cl. G10d 1/04

U.S. Cl. 84-266

2 Claims



1. In a modulation mechanism disposed in the saddle of a harp and connected through angled hooks and sheet metal plates to lockable pedals, the operation of which shortens the vibrating string length by contact of the angled hooks on the strings according to the laws of tempered tuning, so that the tones of the tuned scale are raised by a semitone or a full tone, the improvement comprising:

each angled hook is pivotally connected to said saddle at apposite with respect to the respective string, a pin fastened to said saddle and defining the shortened string length.

3,853,031

FLAT-TOP GUITAR ANTI-WARPING DEVICE

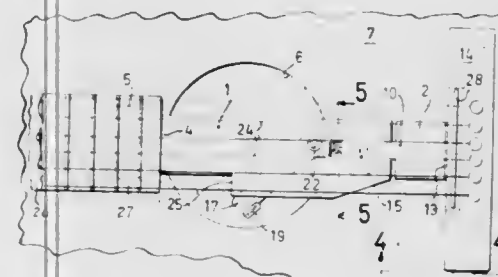
Herman W. DeWitt, 916 Chestnut St., and Connie E. Williams, 1180 Lytle Rd., both of Yuba City, Calif. 95991

Filed May 8, 1974, Ser. No. 467,962

Int. Cl. G10d 1/08

U.S. Cl. 84-267

10 Claims



1. The method of releasing the tension of a set of tuned strings on a flat-top guitar having a sound hole in its top and a bridge at one side of said hole rigidly secured on said top to which one of the ends of said strings are secured, and a fingerboard rigid with said top having a terminal end facing said bridge at the side of said hole opposite the latter with the set of tuned and tensioned strings extending over said hole and supported by said bridge in a position spaced over said top and fingerboard, comprising the steps of:

a. applying an expanding force between said terminal end of said fingerboard and said bridge in the direction of the length of said strings in sufficient strength to relieve the tension transmitted from said set of strings by said bridge to said top and thereby transmitting said tension to said fingerboard;

3,853,032

VIOLIN IN THE FORM OF A BASEBALL BAT

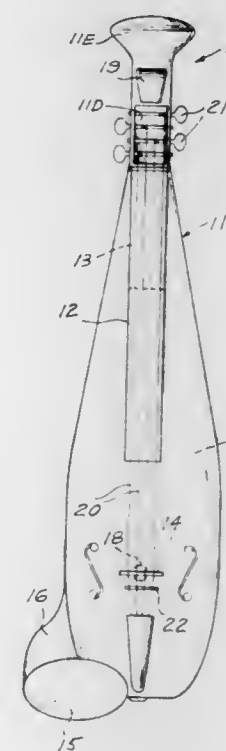
Harold Freeman, 164 Leonard Rd., Rochester, N.Y. 14616

Filed Mar. 11, 1974, Ser. No. 450,179

Int. Cl. G10d 1/02

U.S. Cl. 84-275

7 Claims



1. A violin comprising: a body having the general shape of a baseball bat including an enlarged end, a smaller end, and a tapered section connecting said enlarged and smaller ends; a recessed section in said smaller end; string tensioning keys mounted in said recessed section; a hollow sound chamber in the interior of said enlarged end having a sound bar and a sound post connecting the top and the bottom of said chamber; a bridge mounted on said enlarged end over said sound post; a fingerboard attached to said smaller end, said fingerboard having a nut connected thereto adjacent said recessed section; a tailpiece attached to said enlarged end; and a plurality of strings tensioned between said tailpiece and said keys, said strings resting on said nut and said bridge and overlying said fingerboard.

3,853,033

OBOE FINGERING SYSTEM AND MOUTHPIECE

Dick Paladino, 4221 San Bernadino Ave., Las Vegas, Nev. 89102

Division of Ser. No. 349,625, April 9, 1973, Pat. No. 3,789,721, which is a continuation-in-part of Ser. No. 234,481, May 15, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,165

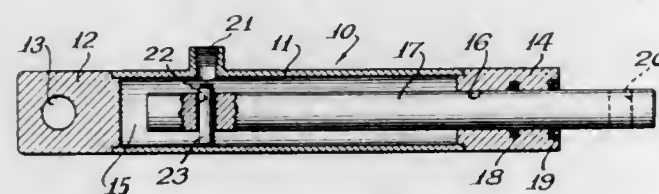
Int. Cl. G10d 7/00

U.S. Cl. 84-380

10 Claims

1. In a lower portion of an oboe or English horn, a key arrangement comprising a cluster of four keys grouped to-

chamber, said cylinder including a fluid inlet-outlet port communicating radially into said chamber;
a piston slidably received in said bore and adapted to reciprocate in said chamber, said piston having a transverse opening defined therethrough in a portion thereof received in said chamber; and
means retained in said opening completely within said chamber for limiting the movement of said piston outwardly from said chamber through said bore, said port



and said opening being in alignment to permit said means to be inserted into and removed from said opening through said port, said piston including a transverse aperture defined therein in a portion thereof outwardly of said chamber and extending parallel to said transverse opening, whereby said piston may be positioned to align said opening with said port by visual reference to the alignment of said aperture with respect to said port enabling insertion and withdrawal of said means with respect to said cylinder and piston.

3,853,039

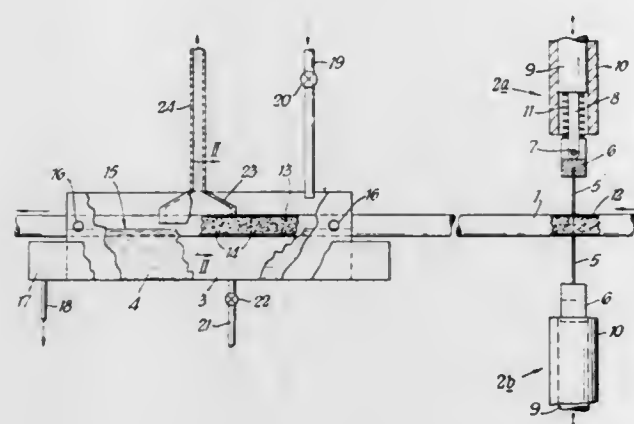
IMPROVEMENTS RELATING TO TOBACCO-SMOKE FILTERS

Fred Haslam, Henry George Horseywell, and Paul Henry Canaway, all of Hampshire, England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Division of Ser. No. 181,353, Sept. 17, 1971, Pat. No. 3,779,787. This application Apr. 20, 1973, Ser. No. 352,929
Claims priority, application Great Britain, Oct. 7, 1970, 47706/70

Int. Cl. A24c 5/50

U.S. Cl. 93-1 C

4 Claims



1. A method of applying an additive to a smoking tobacco product component which comprises:
applying a wrapper to a continuous rod of a smoking tobacco product;
feeding said continuous rod past an additive applying station;
forming a liquid jet of the additive at such station and impelling it against the rod with sufficient force to penetrate the rod and the wrapper, thereby impregnating at least a section of said rod with said additive.

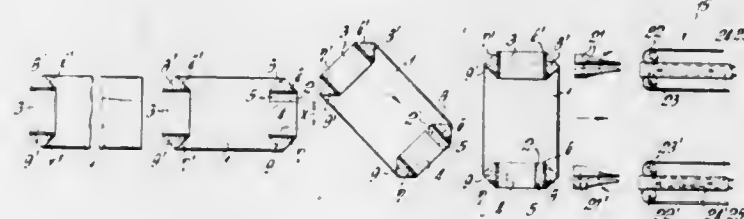
3,853,040
PROCESS AND APPARATUS FOR MAKING
CROSSED-END BAGS FROM WELDABLE MATERIAL
Fritz Achelpohl, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Apr. 24, 1973, Ser. No. 353,973
Claims priority, application Germany, May 2, 1972, 2221376

Int. Cl. B31b 37/02, 1/84

U.S. Cl. 93-35 R

7 Claims



1. A process of making crossed-end bags from weldable material, which bags have an end consisting of open crossed-end folds and an end patch welded to the edges of the open crossed-end folds, characterized by the following process steps:

- advancing a tubing section in its longitudinal direction, and at its leading end pulling the same open and flattening the same to form open crossed-end folds;
- moving the end patch in synchronism with the tubing section and during this movement applying the same to the open crossed-end folds, and joining the end patch by seam welds to those edges of the infolded corner portions which are covered by the patch;
- rotating the tubing section through 90° to its longitudinal direction; and further advancing the tubing section in its rotated orientation, in its original conveying direction; and
- joining the side edges of the end patch by seam welds to the longitudinal edges of the open crossed-end folds.

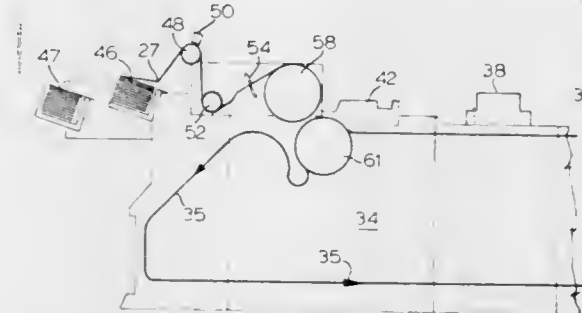
3,853,041

METHOD OF MAKING PRE-ADDRESSED ENVELOPES
Gary Andrew Lynas, Willowdale, Ontario, Canada, assignor to Globe Envelopes Products Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 238,220, March 27, 1972, abandoned. This application May 16, 1974, Ser. No. 470,378
Int. Cl. B31b 1/82, 49/04

U.S. Cl. 93-61 A

8 Claims



1. A method of making a pre-addressed mailing envelope, having an address positioned so as to be visible when the mailing envelope is in its designated use; and where the address positioned on said envelope has been printed on suitable web material at a printer output stage of a data storage device having a memory in which said address is stored and from which said address is read out for printing on said web material at said printer output stage; comprising the steps of:

- reading out and printing a plurality of discrete addresses from said memory at said printer output stage, where each discrete address is printed on said web material at a

- different place than any other such discrete address; and where there are two rows of pinwheel engaging holes in said web material for each column of addresses printed thereon, one row of said holes being at each side of said column of addresses;
- feeding web material having a single column of addresses thereon to web cutting means and to conveying means associated therewith, where said feeding is done by means of pinwheels co-operating with said pinwheel engaging holes, and said conveying means is adapted to convey a cut portion of said web material away from said web cutting means at a linear speed higher than the speed at which said web material is being fed; where said conveying means is adapted to controllably and securely grip a cut portion of said web material from the moment when said web material is cut; and where said cutting means is sufficiently close to said conveying means so that the leading edge of said web material is in contact with said conveying means before said cutting means cuts said web material to form a cut portion thereof;
 - cutting said web material to form a cut portion having a discrete address printed thereon, and conveying said cut portion away from said cutting means by said conveying means, towards a predetermined position;
 - feeding an envelope blank to said predetermined position at the same linear speed as said cut portion is conveyed towards said predetermined position, applying said cut portion of said web material having said discrete address printed thereon to a specific area on said envelope blank when said specific area and said cut portion are both moving past said predetermined position at the same linear speed, so that said discrete address will be applied to said envelope blank at said specific area so as to be visible when an envelope is formed from said envelope blank and is in its designated use; the axis of the direction of feeding of said web material and the axis of the direction of feeding of said envelope blanks being parallel.
 - and forming an envelope from said envelope blank having applied thereto said cut portion of said web material with said discrete address printed thereon.

3,853,042

VENT COVER

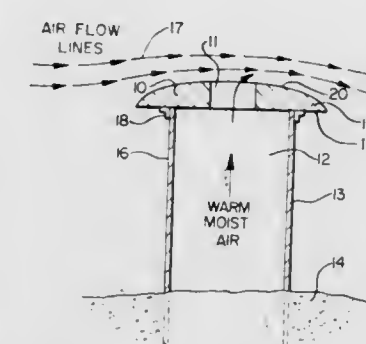
Wayne Tobiasson, Etna, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 25, 1973, Ser. No. 409,499

Int. Cl. F24f 7/02

U.S. Cl. 98-78

4 Claims



1. In combination, a hollow vent pipe defining an air vent, and means for preventing the accumulation of particulate matter within said air vent, said means comprising a vent cover mounted on top of said vent pipe, said vent cover being substantially circular in its horizontal plane and having a diameter from about 1.5 to about 2.0 times that of said vent pipe, said vent cover being of a generally plano-convex form, the lower surface of said vent cover being generally planar, the upper surface of said vent cover being convex, said vent cover having a generally cylindrically shaped opening of lesser diameter than the inside diameter of said vent pipe passing vertically from said lower surface to said upper surface of said vent

cover substantially through the center of said vent cover through which air is conducted upwardly from said vent, said vent cover being adapted to increase the velocity of air flowing above the upper surface of said vent cover regardless of the direction of the compass from which wind blows against the edge of said vent cover and to cause the production of a lower pressure than the atmospheric pressure in the region just above the upper surface of said vent cover, whereby particulate matter falling or being transported by wind or being carried upwardly by eddies of air in the vicinity of said vent pipe, vent and vent cover is prevented from accumulating within said vent.

3,853,043

BEVERAGE MAKER

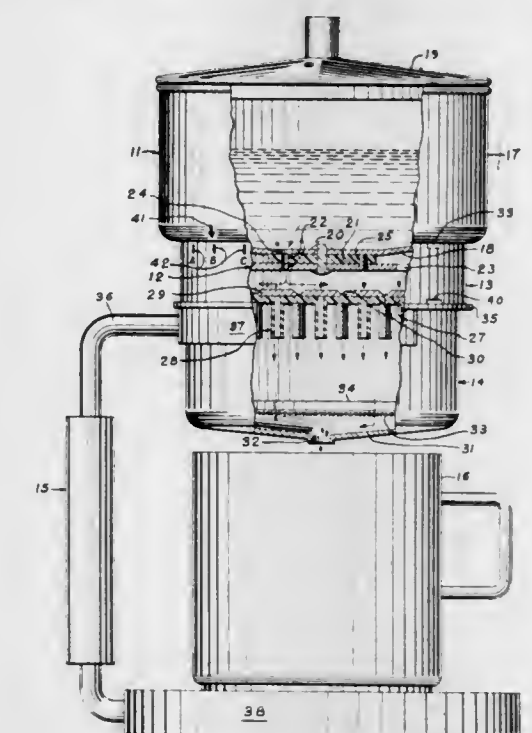
Napoleon Stavropoulos, 3011 Edwin Ave., Fort Lee, N.J. 07024

Filed Apr. 26, 1973, Ser. No. 354,888

Int. Cl. A23f 1/08

U.S. Cl. 99-306

1 Claim



- A beverage maker comprising:
 - a brewing chamber,
 - a conical floor in the brewing chamber,
 - a discharge port in the floor,
 - a generally flat support screen disposed across the brewing chamber in spaced relation to the conical floor,
 - a distributor chamber superposed on the brewing chamber,
 - a generally flat floor in the distributor chamber,
 - a plurality of generally tubular nozzles defining projecting spouts on the bottom floor of the distributor chamber communicating from the interior of the distributor chamber to the interior of the brewing chamber, whereby liquid in the distributor chamber is uniformly and completely discharged from the distributor chamber,
 - a sheet capable of penetration by liquid, attached to the floor of the distributor chamber over the top of the nozzles,
 - lines on the sheet defining separate liquid distribution areas for each nozzle,
 - a liquid reservoir superposed on the distributor chamber,
 - a discharge port in the bottom of the reservoir,
 - a selector plate rotatably attached to the bottom of the reservoir,
 - radial arms on the selector plate,
 - the arms affirmatively engageable with the distribution chamber,
 - a plurality of holes of graduated size in the selector plate,
 - the holes in the selector plate positioned for successive use.

registrations with the discharge port in the floor of the brewing chamber,
q. the selector plate rotatable with the distributor to successively bring a preselected hole in the selector plate into registration with the discharge port.

3,853,044

APPARATUS FOR COOKING FOOD IN HOT NON-AQUEOUS LIQUIDS UNDER PRESSURE

Charles Jere Albright, Chicago, and Clifford E. Fitch, Sr., South Holland, both of Ill., assignors to Chemetron Corporation, Chicago, Ill., by said Albright

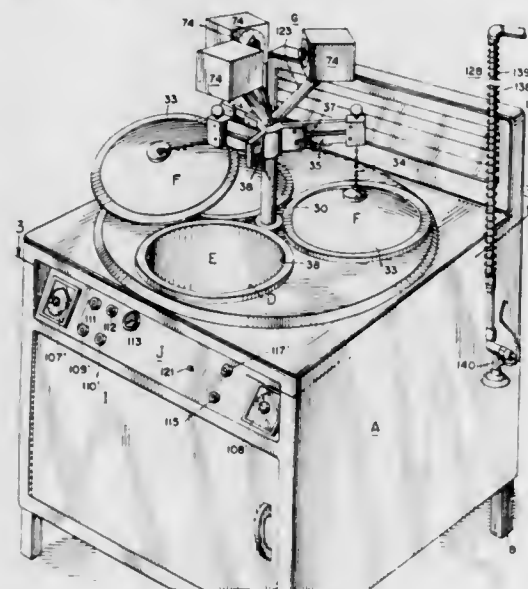
Division of Ser. No. 881,230, Dec. 1, 1969, Pat. No. 3,793,940.

This application June 7, 1973, Ser. No. 367,810

Int. Cl. A47j 37/12

U.S. Cl. 99—330

25 Claims



1. An apparatus for cooking food under pressure in hot, non-aqueous liquid comprising a plurality of receptacles each having an opening for the insertion and removal of food, means for sealing each receptacle after the insertion of food therein, means for introducing hot liquid into one of the receptacles under pressure after the sealing thereof to effect the cooking of the liquid-immersed food, means connected with the receptacles for draining the liquid and pressure from the sealed receptacle containing the cooked food, before retracting the sealing means to permit the withdrawal of the food, and timing means connected with the apparatus for controlling a pre-set timed cooking period for the food-containing receptacle.

3,853,045

PANCAKE MAKING MACHINE

Paul Marrie, Dijon, France, assignor to S.A.R.L. "ETUD", Quetigny, France

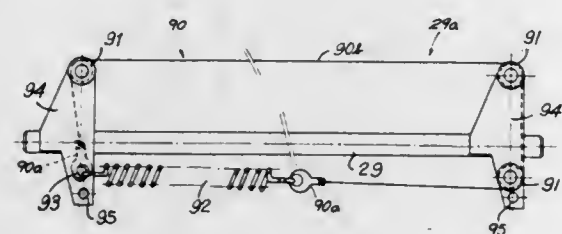
Filed Apr. 5, 1972, Ser. No. 241,309

Claims priority, application France, Apr. 7, 1971, 71.12242; July 5, 1971, 71.24434; Feb. 25, 1972, 72.06409

Int. Cl. A47j 37/06

U.S. Cl. 99—423

2 Claims



1. In a pancake making machine comprising a trough adapted to receive a supply of batter, a drum rotatable adjacent said trough and formed with a continuous cylindrical peripheral surface except for an axially extending recess, a

rotatable transfer roller with access to the batter in said trough closely juxtaposed with said drum, means for rotating said roller and said drum for transferring batter from said trough to said drum, means for heating said drum and baking the batter thereon, and scraper means downstream from said roller in the direction of drum rotation for removing the baked batter from said drum, the improvement wherein said scraper means includes a pivotal support, a wire spanned across said support, spring means for tensioning said wire, and means for urging said wire against said surface.

3,853,046

COOKING DEVICE

Hillius Pretorius, Johannesburg, South Africa, assignor to Super Braai (Proprietary) Limited, Johannesburg, South Africa

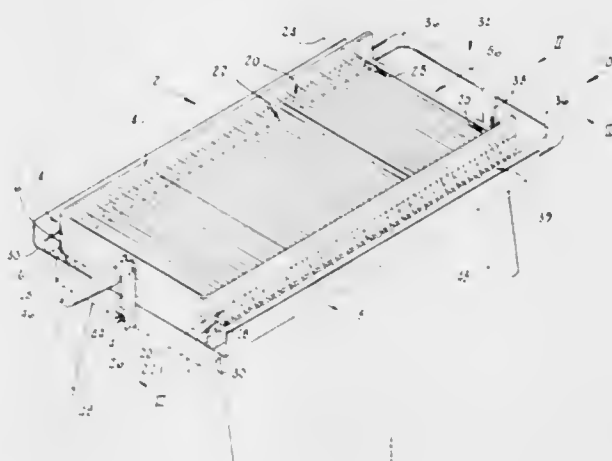
Filed Apr. 23, 1973, Ser. No. 353,801

Claims priority, application South Africa, Apr. 26, 1972, 72/2824

Int. Cl. A47j 37/06

U.S. Cl. 99—449

5 Claims



1. A device for cooking meat, fish or like foodstuff, comprising:
a horizontal grill arrangement having upper and lower heat conductive grill members for receiving foodstuff to be cooked between them, the grill arrangement having a central portion defining a cooking zone for receiving foodstuff to be cooked, and having marginal portions defining heating zones,
gas burner means in the heating zones for directly heating only the marginal portions of the grill arrangement defining the heating zones, and
a collecting tray below the cooking zone for collecting liquids dripping from foodstuff in the cooking zone during use.

3,853,047

CONTINUOUSLY OPERATING WHIRL CHAMBER ARRANGEMENT

Wilhelm Dollbaum, Kaldenhausen, Germany, assignor to Holtz & Willemsen G.m.b.H., Krefeld-Uerdingen, Germany

Continuation-in-part of Ser. No. 116,142, Feb. 17, 1971, Pat. No. 3,782,968. This application Oct. 24, 1972, Ser. No. 299,787

Claims priority, application Germany, Feb. 19, 1970, 2007588

Int. Cl. A23b 9/00; B02b 3/12

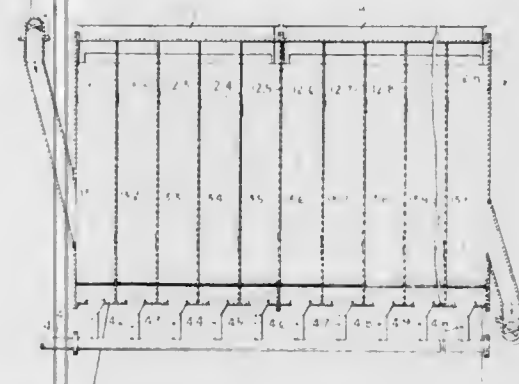
U.S. Cl. 99—473

8 Claims

1. A whirl chamber arrangement for continuous treatment of granular material by a fluid acting upon the particles of the material for a predetermined time comprising in combination a whirl chamber having a bottom portion, an intermediate portion and a top portion;

a series of nozzles disposed at said bottom portion for introducing upward streams of said fluid into the chamber;
an outlet port arranged at said top portion for discharging said fluid;
a feeding opening disposed at one end section of said chamber for introducing said material therein and a discharging opening arranged at the opposite end section of the chamber,
a guiding shield extending within said chamber between said feeding opening and said discharging opening and spaced

portions of said rollers, at least the central portion of the end edge of said other end of said inclined portion being free of attachment to other portions of said housing, said one peripheral side wall of said upper housing section including an opening formed therein in horizontal registry with the adjacent peripheral portions of said rollers, and one of said rollers including an endwise outwardly projecting extension received through the adjacent peripheral side wall of said upper housing section and including means adapting said extension to have a portable kitchen hand mixer drive shaft removably drivingly coupled thereto.



from said bottom and top portions, and separating said intermediate portion,
said nozzles being directed to one side of said shield, and
a continuous spiral-like partition separating said whirl chamber between respective nozzles and extending about said shield, whereby the introduced material is successively lifted by the fluid stream from a nozzle at one side of said shield and returned to the region of a subsequent nozzle at the other side of said shield until discharged through said discharging opening.

3,853,048

SHELLER DEVICE FOR PEAS AND THE LIKE

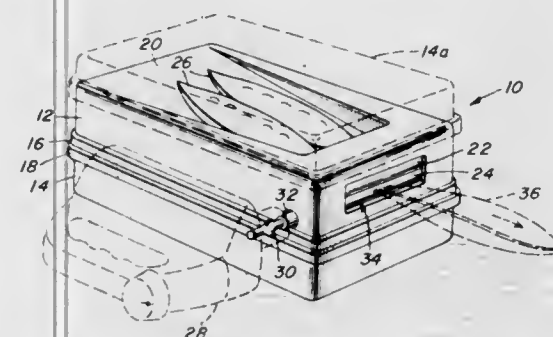
Glendale Collins, P.O. Box 642, Calhoun City, Miss. 38916

Filed Mar. 12, 1973, Ser. No. 340,372

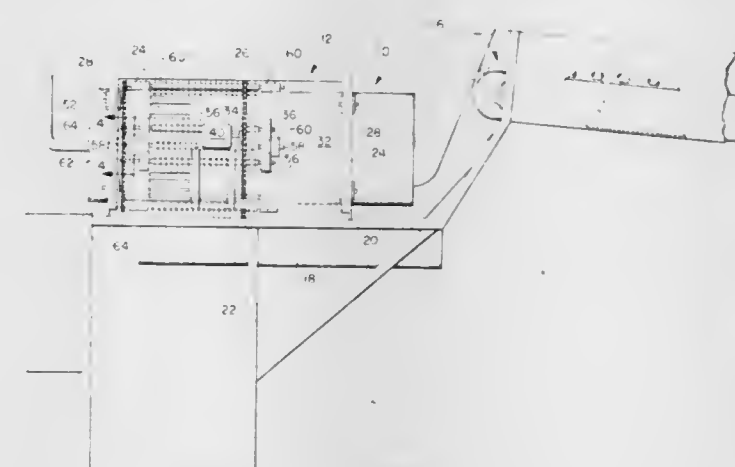
Int. Cl. A47j 17/00, 43/00

U.S. Cl. 99—572

4 Claims



1. A device for driving by a portable food mixer, said device including a housing consisting of upper and lower sections, said upper section including a top wall and depending peripheral side walls and said lower section including a bottom wall and upstanding peripheral side walls, said upper housing section being removably supported from said lower housing section with corresponding lower and upper marginal edges of the side walls of said upper and lower housing sections, respectively, telescopically engaged with each other, a pair of vertically spaced horizontal rollers journaled from said upper housing section immediately inwardly of one peripheral side wall thereof, means drivingly connecting said rollers together for simultaneous rotation in opposite directions, said top wall including a central integral elongated and downwardly inclined portion extending from one end adjacent the peripheral side wall of said upper housing section remote from said one peripheral side wall toward the latter and terminating at the other end thereof at a point spaced slightly inwardly of and generally horizontally aligned with the adjacent peripheral



1. A device for removing the skins of tomatoes and the like comprising:

a drum open at both ends and mounted for rotation about its fixed longitudinal axis in a first direction;
a plurality of discs mounted on at least one shaft for rotation about the longitudinal axis of said shaft in a second direction opposite to said first direction, all of said axes being generally parallel to each other, said discs longitudinally spaced from each other along said shaft and each extending an equal minor distance into the interior of said drum from the circumference thereof;
means for rotating said drum in said first direction and;
separate means for rotating said discs in said second direction including a stationary chain supported by said drum, a sprocket mounted on each said disc shaft, said sprockets in turn mounted on said drum and each of said sprockets in turn engaged with said chain whereby rotation of said drum in said first direction causes rotation of said sprockets and said discs in said second direction.

3,853,050

APPARATUS FOR PEELING FRUIT SUCH AS A LEMON AND SLICING THE RIND

Gustave Schier, 2700 22nd St., San Francisco, Calif. 94110

Filed Apr. 30, 1973, Ser. No. 355,892

Int. Cl. A23n 7/00

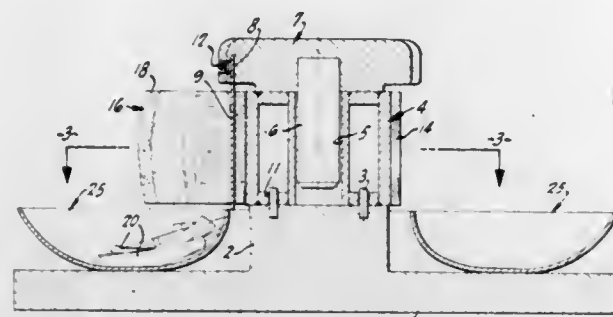
U.S. Cl. 99—590

9 Claims

1. Apparatus for peeling a fruit such as a lemon or the like comprising:

an elongated knife for insertion along a line on the meat and rind interface of said fruit,
a fixed base formed with a generally cylindrical outer surface for engaging the rind of such fruit and flattening that portion of the rind between said surface and said knife;

means supporting said knife for movement along a circular path of travel closely adjacent to said surface and coaxial



therewith, with such rind in rolling engagement with said surface for separating the rind from the meat.

3,853,051

STRAP POSITIONING APPARATUS

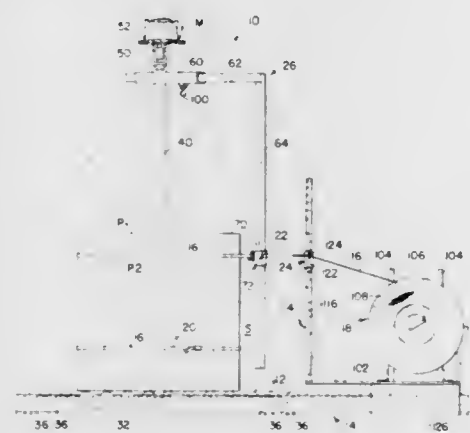
Kenneth R. Tyler, Arlington Heights, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 25, 1973, Ser. No. 409,686

Int. Cl. B65b 13/10

U.S. Cl. 100—27

8 Claims



1. In an apparatus for positioning a loop of strapping about an object disposed at a strapping station preparatory to tensioning the loop about the object, in combination, a shuttle mounted for orbital movement in a closed horizontal arcuate path about said object, gripper means on said shuttle for releasably clamping the free end region of a length of strapping issuing from a strapping source, and means operable at will for effecting orbital movement of the shuttle in such closed path throughout substantially one complete revolution to draw the strapping from said source and wrap the same progressively about the object.

3,853,052

COMPACTOR WITH FIXED COMPACTION CHAMBER AND MOVABLE PLATE MEMBER

Einar O. Engebretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Dec. 29, 1972, Ser. No. 319,919

Int. Cl. B30b 15/32

U.S. Cl. 100—229 A

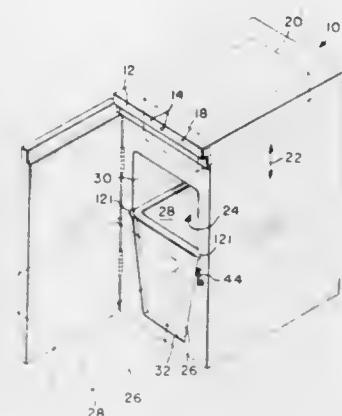
3 Claims

1. A compactor comprising:
 - a. a compactor housing,
 - b. means defining a fixed compactor chamber within said housing,
 - c. a deformable container received within said chamber and movable between a compacting position within said chamber and a noncompacting position displaced from said compacting position,
 - d. a ram mounted within said housing for reciprocating movement into and out of said container when said container is positioned in said compacting position,
 - e. said ram thereby being adapted to compact material deposited in said container causing bulging of said con-

tainer into engagement with opposed portions of said chamber,

f. a movable plate member positioned between said container and said chamber for relieving pressure between said container and said opposed portions of said fixed chamber,

g. tab means on one of said plate members and said chamber and projecting therebetween,



h. means defining openings in the other of said plate member and said chamber disposed to receive said tab means upon shifting movement of said plate member, and

i. means for shifting said plate member between positions wherein said tab means is received in said opening means and displaced therefrom, thereby moving said plate member alternately between positions toward and away from said chamber and said container to facilitate displacement of said container from said compacting position to said noncompacting position.

3,853,053

BASE ASSEMBLY FOR A COMPACTOR

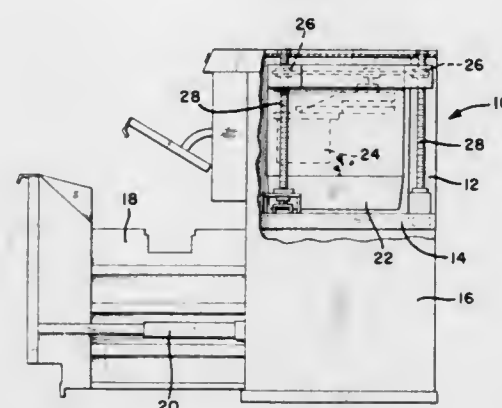
Ernst Grunewald, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Sept. 17, 1973, Ser. No. 398,068

Int. Cl. B30b 15/04

U.S. Cl. 100—229 A

11 Claims



1. In a compactor including a housing, a receptacle received in said housing, and a compacting ram movable to compact material received in said housing, means for resisting compacting forces of said ram comprising:

- a. a base member opposite said ram,
- b. an elongated structural member extending across said base member in reinforcing relationship thereto,
- c. said structural member including web means extending outwardly away from said base member, and
- d. a tension member attached to said base member on one side of said structural member, extending over said structural member in spaced relation to said base member and attached thereto on the opposite side of structural member.

3,853,054

TIN CAN FOLDER

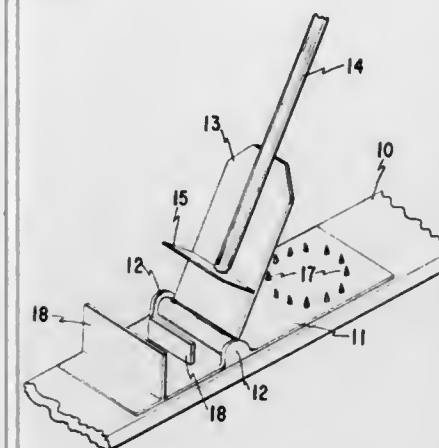
Lawrence E. Jacobsen, Browns Valley, Minn. 56219

Filed May 29, 1973, Ser. No. 364,667

Int. Cl. B30b 7/00, 9/32

U.S. Cl. 100—233

4 Claims



1. A can crushing and folding device comprising a base, a lever pivotally mounted on said base for movement from one side to the other, said base having a crushing face on one side and can folding means on the other side of the pivotal axis of said lever, said lever having a crushing face on the side adapted to meet the crushing face on said base, teeth formed on at least one of said crushing faces to hold a can in place during the crushing operation, and a creasing device on the side of the lever opposite said crushing face on said lever adapted to interact with said can folding means to crease the can placed on the folding means.

3,853,055

EDDY CURRENT PRINTER APPARATUS

Henry H. Kolm, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

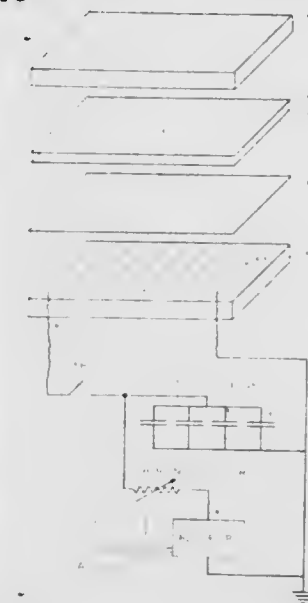
Continuation of Ser. No. 189,618, Oct. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 849,126, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,048, Sept. 20, 1968, Pat. No. 3,567,026. This application

Jan. 25, 1974, Ser. No. 435,929

Int. Cl. B41f 1/06

U.S. Cl. 101—316

17 Claims



1. In an eddy-current printer, a backing plate having an impact absorbing surface against which printing can be effected, a thin homogeneous conductive sheet disposed adjacent to and closely spaced from the impact absorbing surface and having a contour similar to the contour of the impact absorbing surface, electric eddy-current means operable to cause a magnetic eddy-current field to enter the conductive sheet at one major surface thereof, thereby inducing an eddy current in the conductive sheet, which eddy current interacts with the field to provide a force to propel the conductive sheet toward the backing plate, a printing plate positioned between

the conductive sheet and the backing plate, said printing plate being provided with indicia and being operable to move toward the backing plate under the impetus of the conductive sheet thereby to transfer indicia on said printing plate to a paper or the like when located between the printing plate and the impact surface of the backing plate, the electric eddy-current means comprising a driver plate of non-conductive material containing an embedded conductor which meanders over the whole of one surface region thereof so that eddy currents are induced substantially uniformly throughout the conductive sheet, both the driver plate and the backing plate being relatively massive compared to the mass of the conductive sheet so that the recoil energy of the conductive sheet is absorbed mostly by the driver plate and the deceleration energy upon impact thereof is absorbed mostly by the backing plate, the driver plate, the conductive sheet and the backing plate being closely spaced from one another so that the eddy currents provide an impulse distributed substantially uniformly over the conductive sheet thereby forcing the conductive sheet toward the backing plate.

3,853,056

SAFETY AND ARMING DEVICE

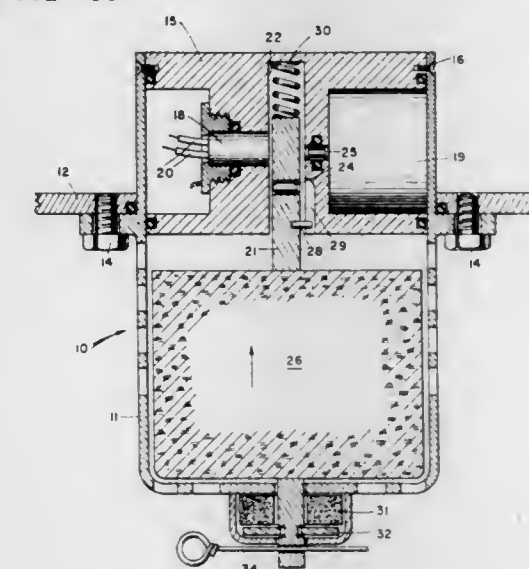
Lyman C. Fisher, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1963, Ser. No. 334,668

Int. Cl. F42b 22/26

U.S. Cl. 102—16

10 Claims



1. A safety and arming device for underwater ordnance items comprising:

- a housing,
- a detonator mounted on said housing,
- a booster mounted on said housing in axial alignment with said detonator,
- a shutter movably mounted on said housing between said detonator and said booster,
- a transmission charge carried by said shutter and operable to complete an explosive train when axially aligned with said detonator and said booster,
- resilient means normally urging said shutter and said transmission charge out of axial alignment with said detonator and said booster whereby the explosive train is interrupted and the ordnance item is disarmed, and
- a float having a specific gravity less than one positioned within a cavity in said housing in fluid communication with the water when the housing is immersed therein and directly connected to said shutter whereby, upon immersion of the ordnance item in water, said shutter is moved by said float against the urging of said resilient means to axially align said transmission charge with said detonator and said booster to complete the explosive train and arm the ordnance item.

3,853,057

PROPELLANT CHARGE FOR SHELLS HAVING HIGH INITIAL VELOCITY

Walter Rickert, Lindemannstrasse 59, Dusseldorf, and Siegfried Justus, An der Juck 76, 507 Berg, Gladbach, both of Germany

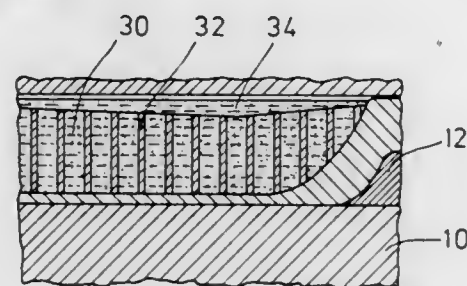
Filed June 13, 1973, Ser. No. 369,442

Claims priority, application Germany, June 15, 1972, 2229192

Int. Cl. F42b 15/10

U.S. Cl. 102-49.2

13 Claims



1. A propellant charge for shells having high initial velocity, said charge comprising a first component, a second component, and a third component, said first component and said second component each comprising a multiplicity of disks alternately arranged to form a column, said disks of said first component having an axial thickness substantially exceeding that of said disks of said second component, said first component being made of an explosive composition, which, under a pressure of about 4,000 atmospheres has a linear burning propagation velocity of less than about 10 meters per second while said second component is made of an explosive composition which, under the same pressure, has a burning propagation velocity of between about 100 and 1,000 meters per second, said third component being a layer covering the surface of said column and consisting of an explosive composition having substantially the properties of the composition of said first component.

3,853,058

IMPROVEMENTS IN OR RELATING TO ROCKETS

Jean Tartault, Garches, and Alain Minot, Combs La Ville, both of France, assignors to Luchaire S.A., Paris, France

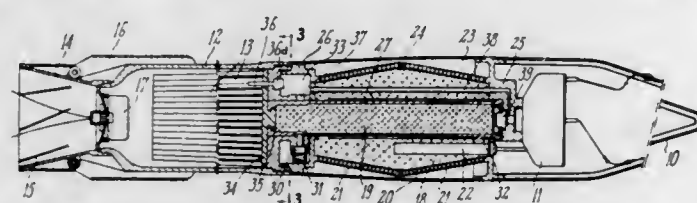
Filed Dec. 7, 1972, Ser. No. 311,717

Claims priority, application France, Jan. 5, 1972, 72.00202

Int. Cl. F42b 15/10

U.S. Cl. 102-49.3

8 Claims



1. A self-propelled missile having a front end and a rear end, first and second chambers, the first chamber being positioned rearwardly of the second chamber, a combustible propellant charge contained in said first chamber, an explosive charge contained in said second chamber, said explosive charge comprising a fixed portion and a movable portion, and means for moving said movable portion of said explosive charge into said first chamber upon completion of combustion of said propellant charge, the means for moving the movable portion of the explosive charge comprising means for transmitting the pressure of the propulsive gases generated by combustion of said propellant charge to said movable portion and further comprising means for delaying movement of the movable portion of the explosive charge until shortly before completion of the combustion of the propellant charge, the delaying means comprising an accumulator chamber, means connecting said accumulator chamber with the first chamber and means connecting said accumulator chamber with that portion of the

second chamber containing the movable portion of the explosive charge.

3,853,059

CONFIGURED BLAST FRAGMENTATION WARHEAD

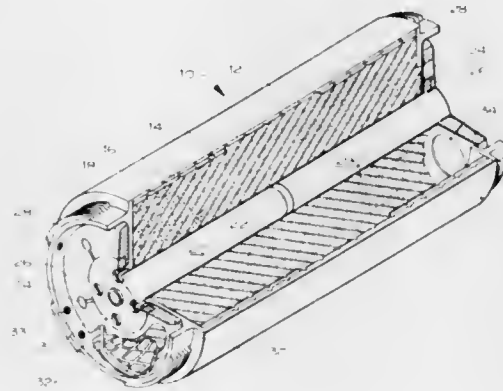
Richard G. Moe, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1971, Ser. No. 105,739

Int. Cl. F42b 13/48

U.S. Cl. 102-67

8 Claims



1. A substantially cylindrical warhead having a fragmentation casing; detonation initiation means centrally located in said warhead a plurality of detonation boosters spaced around each end of said warhead; and detonation transfer means connecting said initiation means and said booster means; whereby the warhead may be selectively detonated at a plurality of points at either end or both ends or detonated centrally.

3,853,060

TWISTED PRISM EXPLOSIVE DEVICE

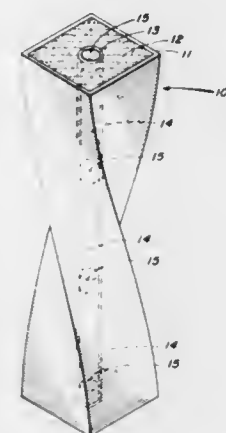
Gale S. Weeding, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 30, 1972, Ser. No. 268,226

Int. Cl. F42b 13/48

U.S. Cl. 102-67

7 Claims



1. A warhead comprising: a warhead casing being substantially the shape of a twisted prism having a longitudinal axis and a straight side between each adjacent corner of the prism; explosive within said casing; and detonator means disposed within said explosive means along said longitudinal axis, said prism being twisted about said longitudinal axis, and said explosive means touching the longitudinal sides of the prism at all points.

3,853,061

FUZE AND SONDE COAXIAL CONNECTOR

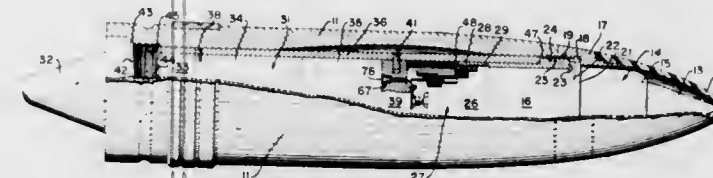
Louis A. Schmidt, 2404 57th Pl., Hyattsville, Md. 20785

Filed Oct. 27, 1961, Ser. No. 148,295

Int. Cl. 339 177 R; F42b 9/08; H01r 17/18

U.S. Cl. 102-70.2 R

5 Claims



1. In combination: an aerodynamically-shaped casing having forward and aft ends, a central bore in said casing extending from said aft to said forward end, a fuze assembly secured in said forward end and having a portion thereof extending into said central bore, a radio sonde assembly secured in said aft end and having a portion thereof extending into said central bore, a coaxial, multichannel connector positioned entirely within said casing and being electrically connected to both of said assemblies, said multichannel connector including a first male portion having an electrically non-conductive base member with oppositely facing surfaces, a central, radially expandable plug-in type jack secured to said base member and extending from one of said surfaces, a set of concentric rings secured to said base member and extending from said one surface, terminal means secured to the other of said base member surfaces, and means for individually connecting said jack and each of said rings to said terminal means, and a second female portion including a non-conductive base member having two oppositely facing surfaces, a centrally located receptacle for receiving said jack opening to one of said surfaces, a set of concentric, axially slotted, annular rings secured to said female base member and extending from said one surface, terminal means secured to the other of said female base member surfaces, and means for individually connecting said receptacle and each of said last-named rings to said last-named terminal means, whereby, upon frictional engagement of said jack with said receptacle and each of said rings of said male set with the rings of said female set, a plurality of electrical paths are established between said male terminal means and said female terminal means thereby allowing communication of signals generated by said fuze assembly to said sonde assembly and telemetered therefrom, and upon rotation of said casing about the longitudinal axis thereof, said expandable jack and said rings of said female set are urged radially outward by the centrifugal force of the rotation and into increased frictional contact with said receptacle and said rings of said male set, respectively.

3,853,062

DEVICE FOR MEASURING DISTANCE OF TRAVEL BY A PROJECTILE

Lewis C. Cole, Chester, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 159,374, July 2, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,663

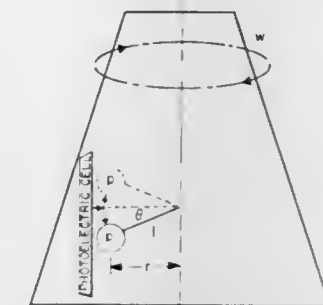
Int. Cl. F42c 9/00, 11/00

U.S. Cl. 102-70.2 R

6 Claims

1. A device for determining the distance traversed by a spin-stabilized projectile having a spinning shell, which device comprises, in combination, a fuze element coaxially mounted in said projectile, pendulum means attached to said fuze element and adapted to oscillate therein in response to the centrifugal force generated by said spinning shell so that the

frequency of cycles of said pendulum means is proportional to the revolutions of said spinning shell of said projectile, and



means for determining the frequency of oscillation of said pendulum means.

3,853,063

ELECTRONIC FIRING DELAY DEVICE, DEMOLITION

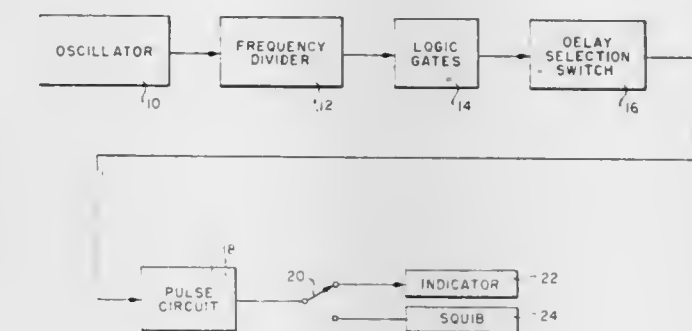
John D. Hoyt, Oxon Hill, and John J. Pennella, Bryans Rd., both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1973, Ser. No. 393,096

Int. Cl. F42c 11/06

U.S. Cl. 102-70.2 R

5 Claims



1. An electronic firing delay circuit for firing an explosive igniting device comprising: means for producing a periodic signal having a predetermined frequency; means for dividing the frequency of said periodic signal to produce a plurality of pulses on a plurality of channels each having a different frequency and each initially delayed by a single cycle of said different frequency; means for selecting one of said plurality of channels; switching means for completing a circuit loop so as to cause a capacitor in said circuit loop to discharge through said explosive igniting device causing said device to fire said explosive upon detecting the presence of one of said pulses on said selected channel.

3,853,064

METHOD OF INDUCING NEGATIVE - IMPEDANCE EFFECT, AND DEVICES BASED THEREON

Robert H. McCracken, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 17, 1967, Ser. No. 609,969

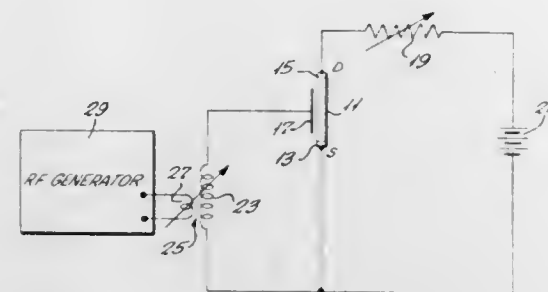
Int. Cl. F42c 11/00, 13/04

U.S. Cl. 102-70.2 R

8 Claims

3. An electronic circuit comprising a semiconductor device of the type which has a capacitance that varies with the value

of potential applied to an electrode thereof, an inductor connected to said semiconductor device to form a resonant circuit with said capacitance, and means to apply to said electrode a



radio frequency signal having a frequency a little below the resonant frequency of said resonant circuit so that said semiconductor device exhibits a negative-impedance effect.

3,853,065

CANOPY PENETRATION FUZE

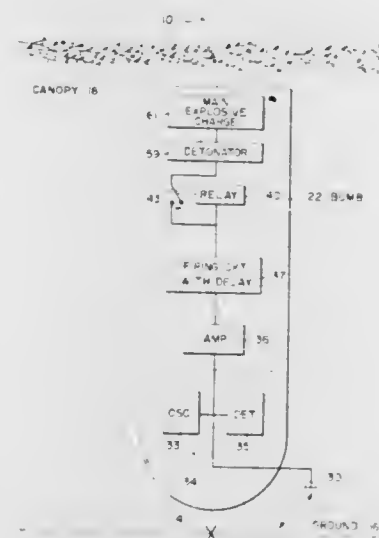
Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1967, Ser. No. 673,249

Int. Cl. F42c 13/04

U.S. Cl. 102-70.2 P

2 Claims



1. A canopy-penetration type of proximity fuze, for use against ground targets, that will descend through a high ground cover of foliage or the like without detonating and that will thereafter detonate in response to the proximity of the ground, said fuze comprising:

- a proximity-response signal means to produce a signal upon approach of said means to the canopy and ground respectively;
- detonator means;
- means responsive to said signal produced upon approach to said canopy to connect a detonator in circuit with said signal means so that the signal produced upon approach to the ground will activate said detonator.

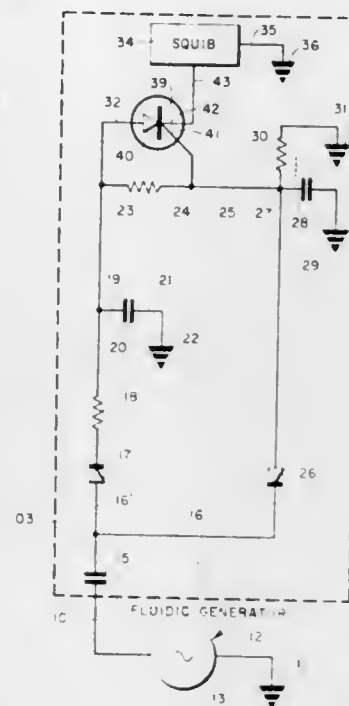
3,853,066
FLUIDIC ARMING SYSTEM
Carl J. Campagnuolo, Chevy Chase; Charles F. Peer, Silver Spring, and David L. Rawlings, North Bellmore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1967, Ser. No. 684,602

Int. Cl. F42c 5/00

U.S. Cl. 102-70.2 G

9 Claims



1. A fluidic arming system for a missile or the like, comprising: a fluidic operated electrical generator operatively coupled to the missile and responsive to missile movement, an electrical circuit including a normally deenergized electrically operated fuse firing element, a capacitor coupled to said generator and charged thereby, and means responsive to cessation in generator operation for causing said capacitor to be discharged through said fuse firing element.

3,853,067

BOAT AMUSEMENT RIDE WITH A SPILLWAY

Karl W. Bacon, Mountain View, Calif., assignor to Arrow Development Company, Mountain View, Calif.

Filed Feb. 25, 1974, Ser. No. 445,456

Int. Cl. A63g 21/18

U.S. Cl. 104-70

4 Claims



1. In a boat amusement ride having a downchute portion with a common boat carrying and water guiding surface that recovers part way in elevation from the bottom of the chute, the improvement comprising:

- a removable barrier at the top of said downchute that is operable between an open position and a position that substantially closes off water flow down said downchute, means operably connected to said barrier for operating it between said open and closed positions in response to a control signal, and
- a water level sensor positioned within said downchute upstream of said barrier but adjacent thereto, said sensor emitting a control signal to said barrier operating means

that causes the barrier to move to its open position when the water level behind the barrier reaches a predetermined level.

steering mechanism whereby steerable wheels of the vehicle are steered, means for automatically centering said steering mechanism, and means operatively connecting the follower means to the steering mechanism such that the lateral movements of the follower means are translated into steering move-

3,853,068

MECHANICALLY LINKED PERSONAL RAPID TRANSIT SYSTEM

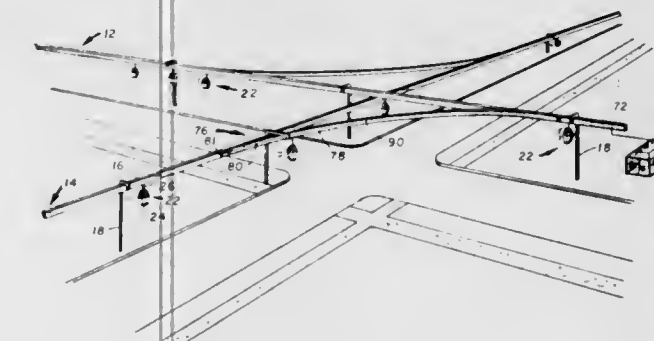
William H. Avery, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 8, 1973, Ser. No. 339,275

Int. Cl. B61b 3/02

U.S. Cl. 104-148 LM

25 Claims



1. Apparatus for mechanically linking and propelling passenger-carrying vehicles comprising:

- a guideway rail;
- a continuously moving mechanical linkage extending along the guideway rail and being movable therealong, said linkage being comprised of electrically conductive material;
- a plurality of carriages joined to one each of the passenger-carrying vehicles and movable along the guideway rail; means releasably engaging the mechanical linkage to each of the carriages at spaced points along the linkage;
- means for establishing an inductive reaction with the conductive mechanical linkage;
- means for electrically energizing the last-mentioned means, thereby causing said means and the linkage to act respectively as the primary and secondary of a linear electric motor, the linkage thus being propelled relative to the rail longitudinally thereto to likewise move the vehicles mechanically linked to said linkage along said rail; and,
- means at a first control location along said guideway rail for bringing together said mechanical linkage and the engaging means of a carriage to be propelled by said linkage.

3,853,069

VEHICLE STEERING MEANS

Laurence Goodwin, Harpenden, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, Hertfordshire, England

Filed Aug. 18, 1972, Ser. No. 281,857

Claims priority, application Great Britain, Aug. 19, 1971, 38880/71

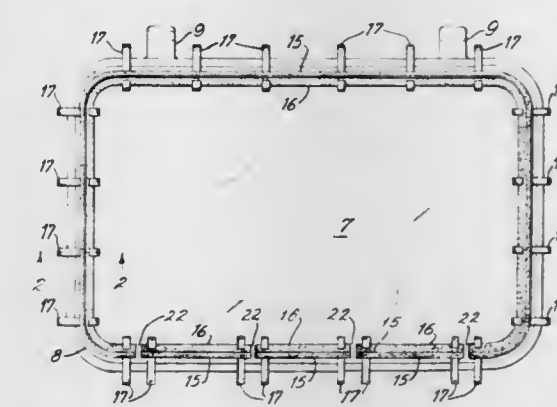
Int. Cl. B62d 3/00

U.S. Cl. 180-79

10 Claims

1. Apparatus for steering a wheeled vehicle, comprising a longitudinally-extending stationary guidance element lying substantially continuously along the length of a track that the vehicle is to follow, follower means mounted on the vehicle and arranged for shifting laterally to and fro relative to the vehicle while following the line of said guidance element, a

1. A gasket structure applicable to a hopper door edge and comprising an elongated flexible body of compressible material of substantial thickness, with an outwardly projecting rib, and a plurality of relatively short narrow strips of thin metal spring material of generally Z shape contour from end to end, each of said strips having a web and a pair of oppositely directed flanges at its respective ends and having a return bend at the outer end of one of said flanges adapted to receive and tightly grip a door edge and having an oppositely facing return bend at the outer end of its other flange receiving and tightly gripping said rib and thereby retaining the body of compressible material between the oppositely facing return bend and the Z web when distorted by the closing of the door.



3,853,070

HOPPER GASKET STRUCTURE

James J. Hennessy, Jr., Chambersburg, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Aug. 23, 1973, Ser. No. 390,873

Int. Cl. B61d 7/18

U.S. Cl. 105-247

5 Claims

3,853,071

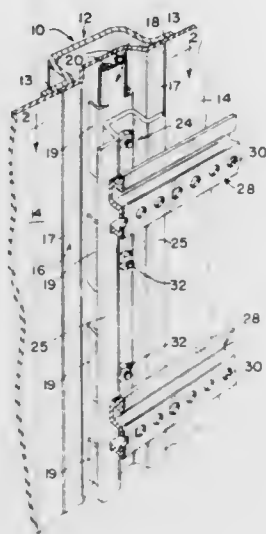
STRAP ANCHOR AND BELT RAIL MOUNTING ARRANGEMENT

Richard C. Snyder, Michigan City, and William D. Mundinger, Highland, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,460
Int. Cl. B61d 17/08

U.S. Cl. 105-409

5 Claims



1. A railway vehicle for transporting cargo restrained by flexible lading straps and rigid bar means and having a side wall unit comprising a plurality of vertically extending side wall posts connected to side wall sheets and each one of said side wall posts having an open portion facing inwardly of the railway vehicle, the improvement of said railway vehicle comprising:

an anchor mounting plate positioned in said open portion of at least one of said side wall posts, having a recessed portion extending outwardly of said vehicle and received within said open portion of its associated side wall post; strap anchor rail means having spaced leg portions being fixedly attached to said recessed portion of the anchor mounting plate and said rail means including a base portion for interconnection said leg portions;

said strap anchor rail means having spaced turned-in flanges connected to said base portion and spaced from said leg portions, said turned-in flanges being held in spaced relation from said anchor mounting plate by said leg portions so as to define a lading strap receiving opening between said anchor mounting plate and said turned-in flanges, and

each one of said turned-in flanges having end portions bent inwardly toward said base portion thereby providing a smooth rounded edge for engaging and restraining a flexible lading strap inserted into the lading strap receiving opening.

3,853,072

PALLET TIERING FRAME INTERLOCK DEVICE

Leroy F. Skubic, La Porte, and Peter P. Blozis, Michigan City, both of Ind., assignors to The Paltier Corporation, Michigan City, Ind.

Filed Jan. 25, 1972, Ser. No. 220,608
Int. Cl. B65d 19/44

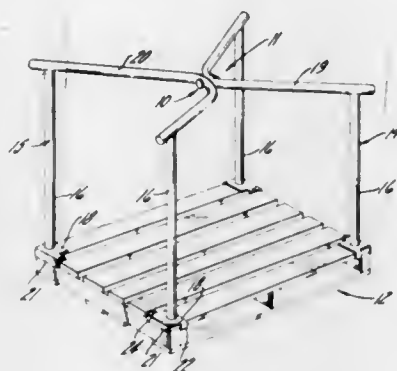
U.S. Cl. 108-55

8 Claims

1. In a pallet tiering frame comprising a pair of non-identical frame sections each defined by a pair of upright posts with pallet engaging feet and an integrally connected generally horizontal top member of substantially V-shaped form, an interlock device comprising, in combination,

a. a locking pin journaled in aligned bearing apertures in one said top member and projecting longitudinally from the apex of said top member in the general plane thereof;

- b. means on said locking pin intermediate the ends thereof said between said top member apertures for holding said locking pin captive in said one top member and restraining said pin against axial withdrawal therefrom;
- c. means defining a screw thread on the projecting end portion of said locking pin;
- d. a turning knob fixed to the opposite end of said locking pin for rotating the same;
- e. means defining a pair of aligned receiving apertures in the other one of said top members at the apex thereof and on



an axis lying in the general plane thereof for receiving the projecting end of said locking pin; and

f. a stamped nut member integral with said other one of said top members adjacent and concentric with the aperture on the concave side of said top member for threadably engaging said locking pin to releasably secure said frame sections together when said frame members are assembled on a pallet and said locking pin has been inserted through said aligned receiving apertures of said other top member.

3,853,073

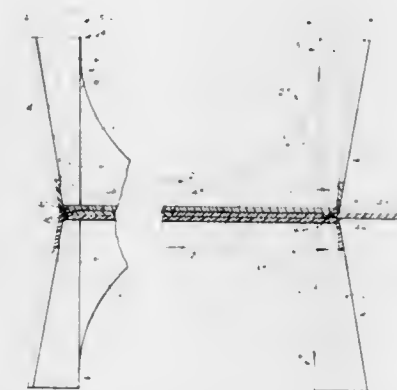
TABLE-LIKE DISPLAY FURNITURE UNIT AND STACKABLE MODULES THEREOF

Paul L. Flum, University City, and Dewalt W. Fowler, Creve Coeur, both of Mo., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Sept. 28, 1973, Ser. No. 401,664
Int. Cl. B65d 19/49, 21/06

U.S. Cl. 108-91

5 Claims



1. For use as display furniture and the like, the base and stackable module comprising

- A. a table-like base unit having
- a table top portion terminating in a downward and somewhat outward slanting apron portion, and
- having an even number of tapering legs whose outer surfaces are downward continuations of the outer surfaces of said apron portion, the legs having vertical inner portions beneath said table top portion, the legs further having hollow lower ends, and
- means formed perpendicular to said table top portion to align with a similar module and to resist transverse displacement therefrom, said means comprising

a plurality of projecting post means and a corresponding plurality of inwardly extending post-accommodating well means positioned along lines adjacent to a first pair of opposite edge portions of said surface, the post and well means along one of said lines being located at spacings from one of the edge portions intermediate thereto which corresponds to the spacings, measured from the same intermediate edge portion, of corresponding post and well means located along the other of said lines, and

B. a plurality of stackable modules located thereon, each comprising two units, each being formed similarly to said table-like base unit, with plug means formed in the lower ends of half of said legs and socket means formed in the lower ends of the other legs,

whereby when one of said units is inverted to present its hollow leg ends upward, the leg ends of a similar unit may be interfitted thereto, thereby to form a module whose sides are windowed by the apron and leg portions, in combination with

C. a planar shelf whose thickness is at least twice the height of said post means,

the shelf having post-accommodating recesses spaced to correspond with the spacings of the post means of the said module,

whereby when the post means projecting downward from one said module is aligned with the upward extending posts means of another of said modules or of said table-like base unit therebeneath, said planar shelf may be interfitted on said post means to extend horizontally outward, for support at the same level by a similar base and stackable module.

3,853,074

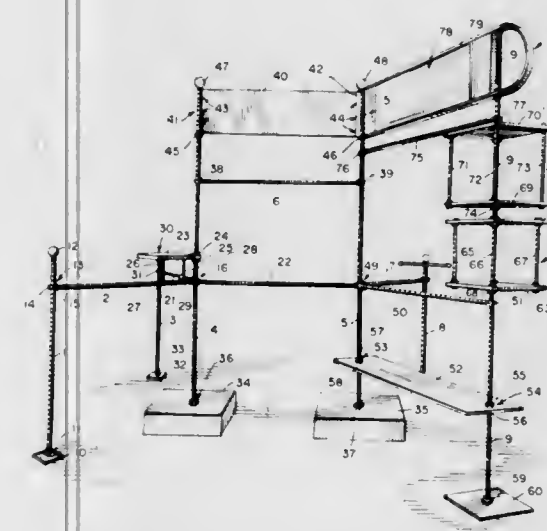
STRUCTURE FOR SUPPORTING ARTICLES FOR DISPLAY PURPOSES

Marion J. Madey, Park Ridge, Ill., assignor to Poster Products, Inc., Chicago, Ill.

Continuation of Ser. No. 127,613, March 24, 1971, abandoned. This application Mar. 7, 1973, Ser. No. 338,929
Int. Cl. A47b 57/06

U.S. Cl. 108-101

3 Claims



1. A structure for supporting articles for display purposes comprising a plurality of vertically disposed continuously externally threaded rods, means at one end of each of said rods for holding said rods in a vertical position, means comprising one or more horizontally disposed continuously externally threaded rods spaced from said ends of said vertical rods, fittings connecting two or more said vertical rods and one or more said last mentioned horizontal rods together intermedi-

ate the ends of said vertical rods, said fittings being internally threaded to receive said external threads of said vertical and horizontal rods, additional internally threaded fittings on one or more of said vertical rods, and one or more article supporting members extending outwardly laterally with respect to said vertically disposed rods, said article supporting members being supported by one or more said additional fittings, and at least one of said article supporting members having a cubical configuration with a top member, a bottom member to receive an article to be displayed, open sides, and vertical rods adjacent the corners connecting said top and bottom members, one of said vertical rods being one of said vertically disposed continuously threaded rods, and the latter containing an internally threaded fitting mounted thereon with the internal threads of said fitting engaging the external threads of said rods, said article supporting member being mounted on said fitting and being rotatable about said vertically disposed continuously threaded rod.

3,853,075

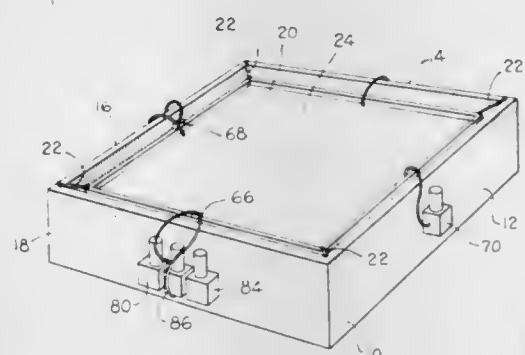
AUTOMATICALLY OPERABLE SELF-LEVELING LOAD TABLE

John L. Burch, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 8, 1973, Ser. No. 386,790
Int. Cl. A47b 9/02

U.S. Cl. 108-136

7 Claims



1. A self-leveling load table comprising:

- a. a tank;
- b. a liquid medium carried in said tank;
- c. a table having a smooth planar top, side walls extending downwardly from said planar top defining a cavity therebetween, and partitions extending between said side walls defining sealed chambers having opened bottoms;
- d. said table being disposed in said liquid medium carried in said tank trapping air in said chambers so as to provide buoyancy thereto;
- e. a plurality of solenoid valves having an air inlet port, an air outlet port, and a control contact;
- f. means for coupling said air outlet ports of said solenoid valves to predetermined chambers;
- g. a level sensing means coupled to said control contacts of said solenoid valves for selectively energizing said solenoid valves responsive to said table being out of level;
- h. a source of pressurized air; and
- i. means for supplying pressurized air from said source through said energized solenoid valves to said chambers connected thereto for maintaining said table level.

3,853,076
FURNACES

John Brian Stribling, Sutton Coldfield, England, assignor to Lucas Furnace Development Limited, Western Way, Wednesbury, Staffordshire, England

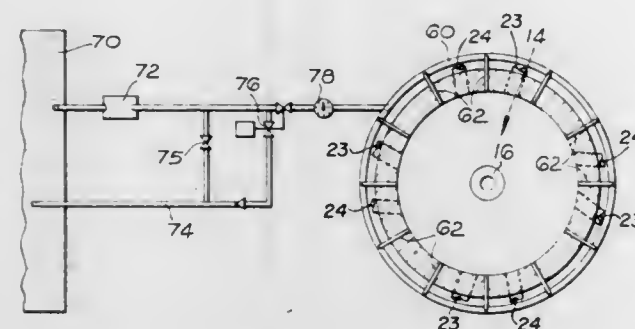
Filed Oct. 18, 1973, Ser. No. 407,612

Claims priority, application Great Britain, Oct. 31, 1972, 50073/72

Int. Cl. F23g 7/00

U.S. Cl. 110-7 R

3 Claims U.S. Cl. 112-211



1. A furnace for burning liquid waste, comprising a cylindrical combustion chamber having a conical upper end terminating in an exhaust outlet, a shallow frusto-conical hearth forming the lower end of the combustion chamber, and a plurality of fuel burners which extend into the combustion chamber and are downwardly and tangentially inclined to direct the flame at the hearth, and to induce cyclonic action of the combustion products so as to produce a vortex of flame in the combustion chamber, wherein the improvement comprises a conduit for conducting the liquid waste having a plurality of outlets distributed around the periphery of the hearth to cause the liquid waste to trickle down the hearth, where it is evaporated and burned to produce vapors which pass through the vortex of flame to complete the combustion, and an ash well at the center of the hearth for removal of incombustible residues.

3,853,077

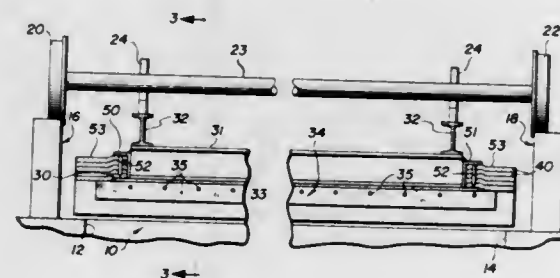
SOAKING PIT COVER APPARATUS AND METHOD
Peter Malovich, Bellwood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,830

Int. Cl. F23m 7/00

U.S. Cl. 110-173 A

9 Claims



1. A soaking pit cover for use with a soaking pit, said cover comprising:
a cover plate having a bottom surface;
spaced holding means connected to and depending from the bottom surface of said plate; and
flexible insulating material connected to and disposed in the spaces between said spaced holding means to form an insulating surface adjacent substantially the entire bottom surface of said cover whereby the bottom surface of said cover plate is substantially lined with said insulating material.

3,853,078

SEWING MACHINE WITH UPPER ROLLER FEEDING DEVICE ADJUSTABLE INDEPENDENTLY FROM THE FEED DOG

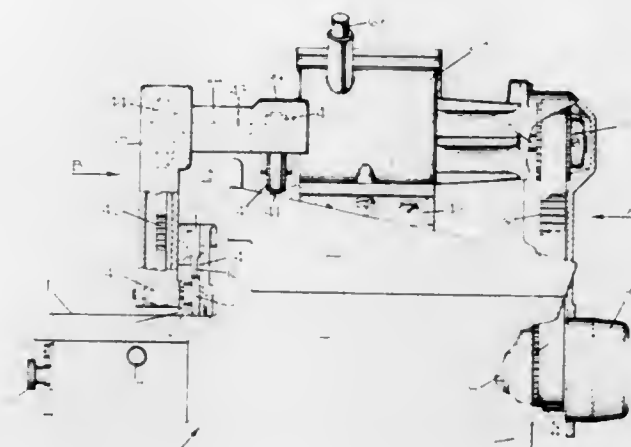
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed Mar. 22, 1973, Ser. No. 343,622

Claims priority, application Italy, Apr. 11, 1972, 23000/72

Int. Cl. D05b 27/00

5 Claims



1. In a sewing machine having a main drive shaft, a work supporting surface having a needle plate, a needle carried in a needle clamp mounted for reciprocating movement and a bifurcated presserfoot with a feed dog operatively associated therewith for advancing a plurality of layers of work along the supporting surface to the needle for the formation of stitches therein, the improvement comprising:

- an upper work feeding device including a feed roller mounted in the bifurcation of the presserfoot at a position located forwardly of the sewing machine needle and in direct line therewith for contact with the upper layer of work in opposed relation to the feed dog;
 - drive means interconnecting the main drive shaft with said feed roller for effecting rotation of the latter;
- said drive means including a first adjustable device for transforming the motion of the main drive shaft into alternating movements, and
 - a second transmission device operably connected to said first adjustable device to receive the alternating movements therefrom and effect unidirectional and intermittent motion of said feed roller during its alternating movement by said first adjustable device.

3,853,079

DOUBLE SUCTION UNIT

Owen F. Dunne, Tiverton, R.I., assignor to Cleopak Corporation, New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 449,082

Int. Cl. D05b 81/00

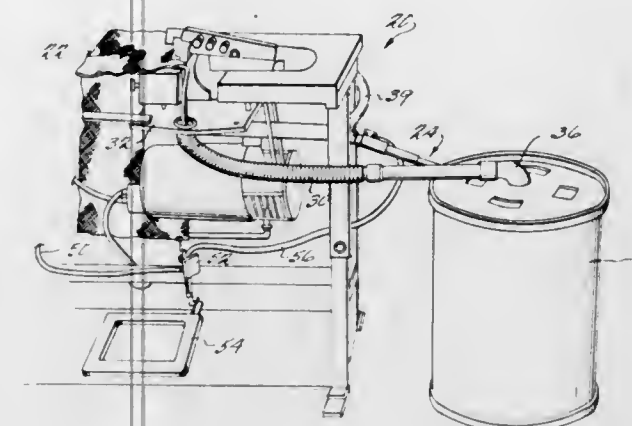
U.S. Cl. 112-218 R

6 Claims

1. Apparatus for removing cut threads and trimmed edges from the working area of a sewing machine comprising:
a dual suction unit having a first air passage from an inlet to an outlet, a second air passage from an inlet to an outlet opening into said first passage between the inlet and outlet thereof, at an acute angle to inject the air stream in said second passage into said first passage to transfer momentum and cause an air stream to flow between the inlet and outlet of said first passage and a third air passage opening into said second passage between the inlet and outlet thereof at an acute angle to inject an air stream at a pressure above atmospheric pressure into said second passage to transfer momentum and cause an air stream to flow between the inlet and outlet of said second passage, first hose means for pneumatically connecting one of said inlets to the region adjacent where edges are being cut,

second hose means for pneumatically connecting the other of said inlets to the region adjacent where threads are being cut,

third means pneumatically coupling said outlet of said first passage to a waste container, and



means for pneumatically connecting said third air passage to a source of air at a pressure above atmospheric pressure.

3,853,080

CONTAINER END AND FORMING METHOD

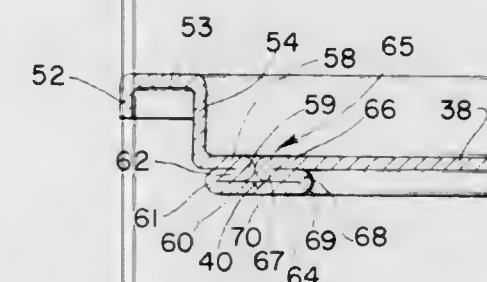
Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 24, 1972, Ser. No. 300,384

Int. Cl. B21d 51/26

U.S. Cl. 113-121 C

3 Claims



1. The method of forming a container having a central removable panel comprising: partially forming a can end blank into a configuration comprising a horizontal curl portion around the periphery thereof, a vertical seaming wall connected to an inner edge of said curl portion, a horizontal first upper run, a first vertical intermediate run connected thereto at a first foldable corner, a horizontal lower run in turn connected at one end thereof to said first intermediate run, a second vertical intermediate run connected to the other end of said lower run, said second intermediate run in turn connected to a horizontal second upper run, at a second foldable corner, forming a weakened line in said lower run intermediate opposite edges thereof and thereafter; deforming said first and second vertical intermediate runs so that said intermediate runs are generally parallel to said horizontal lower run on one side thereof and said first and second foldable corners are located in close proximity to said weakened line on opposite sides thereof.

929 O.G.-22

3,853,081

METHOD AND APPARATUS FOR DESTROYING SUBMARINES

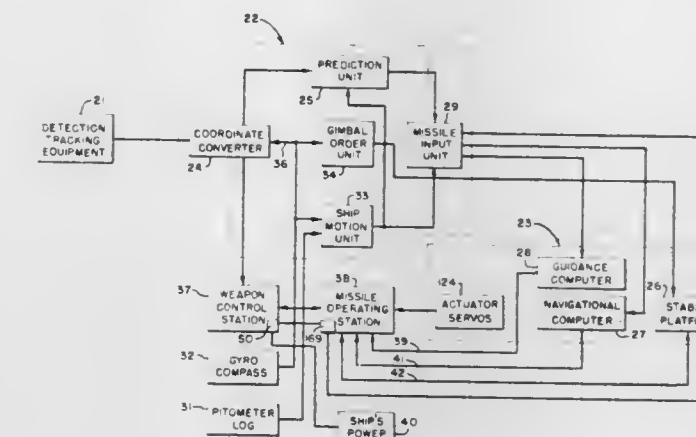
Roland G. Daudelin, Silver Spring, Md.; Robert S. Flum, Sr., Oak Park, Ill.; Bob Norris, and Lionel L. Woolston, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1958, Ser. No. 770,235

Int. Cl. F42h 19/00

U.S. Cl. 114-20 A

8 Claims



1. An anti-submarine missile adapted to be launched from the torpedo tube of a submarine which comprises: a weapon portion including a guidance section, a rocket motor portion secured to said weapon portion, means fixed to said missile for orienting the missile within the torpedo tube, a cover, explosive bolt means disposed about said cover to releasably secure the cover to said rocket motor portion and prevent water entry therein prior to ignition of said rocket motor, means electrically connected to said guidance section for igniting the rocket motor in the water when the missile is at a safe distance from the submarine, said explosive bolt means being electrically connected to said guidance section for initiation by an electric signal therefrom to release the cover from the rocket motor substantially simultaneously with the ignition of said rocket motor to permit exhaust gases from the rocket motor to blow off said cover, a plurality of vanes disposed in the rocket exhaust and electrically connected to said guidance section whereby said vanes are controlled by signals from the guidance section to stabilize the missile and steer it out of the water, means in said rocket motor portion electrically connected to said guidance section for separating said rocket motor portion from said weapon portion upon receipt of a signal from the guidance section, and aerodynamic control means on said weapon portion operatively connected to said guidance section for guiding the missile toward a predetermined water reentry point.

3,853,082

MECHANICAL RETRIEVER

Edgar N. Rosenberg, and Stephen F. Moran, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,884

Int. Cl. B63c 7/20

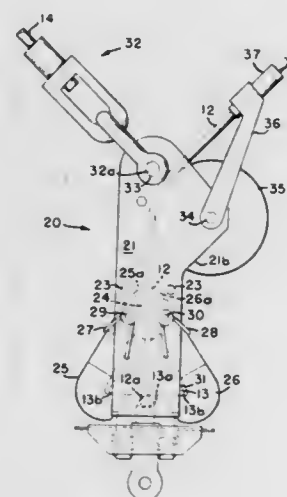
U.S. Cl. 114-51

8 Claims

1. An apparatus guided by a marker buoy line joined to a line anchor on a sunken vessel and a first surface craft for securing a hoisting cable coupled to a second surface craft to the sunken vessel when the first and second surface craft move in diverging directions comprising:
a body member shaped with a longitudinal channel for receiving the marker buoy line and having a connector portion formed to engage the line anchor when a sufficient downward force is created as the first and second surface craft move in diverging directions;

a first member disposed on one side of said body member coupling the hoisting cable thereto; and
a second member journaled in the opposite side of said body member configured to orient the marker buoy line in a direction diverging from the hoisting cable and being further configured to ensure the exertion of said sufficient downward force as the hoisting cable and marker buoy line are pulled in opposite directions by the first and second surface craft to further ensure the securing of the hoisting cable to the sunken vessel.

8. A method of attaching a hoisting cable coupled to a securing apparatus to a sunken vessel comprising:



passing a marker buoy line joined to the sunken vessel through a channel in the securing apparatus;
directing the marker buoy line in a direction diverging from the hoisting cable;
pulling the hoisting cable and marker buoy line in opposite directions to force the securing apparatus down the marker buoy line and toward the sunken vessel; and
engaging a line anchor on the sunken vessel by reason of the pulling in opposite directions to attach the hoisting cable on the sunken vessel.

3,853,083

ANCHOR SILENCER AND BOAT PROTECTOR

Ralph L. Jones, P.O. Box 686, 514 S.W. 4th St., Magee, Miss. 39111

Filed June 6, 1973, Ser. No. 367,409

Int. Cl. B63b 21/22

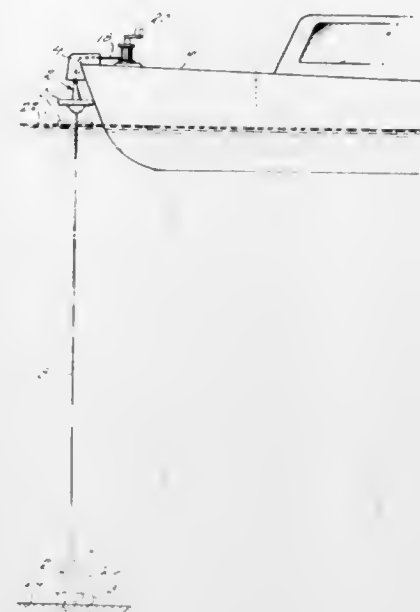
U.S. Cl. 114—210

10 Claims

1. Apparatus for use in conjunction with a boat in water and an anchor attached to the boat for anchoring the boat while in water to a relatively fixed body such as the floor of the body of water by a retractable cable affixed at one end to said anchor and at the other end to said boat, said apparatus comprising:

a floatable body adapted for free movement along and about said cable whereby said body floats on the water when the anchor is lowered below the water surface, and said floatable body comprises a recessed area for engaging said anchor therein and to automatically cooperate

with said anchor when it is raised via the retractable cable by rising with the anchor and shielding the anchor from



other objects thereby minimizing noise and/or damage from anchor contacts with said other objects.

3,853,084

DOCK AND WHARF FENDERS

Mordecai Kedar, 34 Kafrisin St., Tel Baruch, Israel

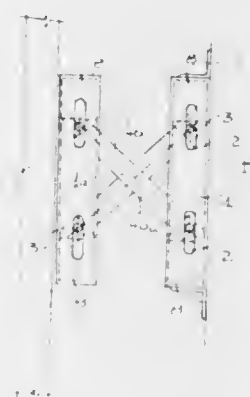
Filed May 25, 1973, Ser. No. 364,118

Claims priority, application Israel, May 26, 1972, 39555

Int. Cl. E02b 3/22

U.S. Cl. 114—219

3 Claims



1. Dock wharf fenders, comprising a first rigid longitudinal member arranged to be affixed to and to extend along a dock or wharf wall, a pair of elongated slots formed in said first member with each of said slots located adjacent an opposite one of the ends of said first member and extending in the longitudinal direction of said first member, a second rigid longitudinal member disposed in generally parallel relation with said first member and being spaced laterally from said first member so that it is located outwardly from the dock or wharf wall, a pair of elongated slots formed in said second member with each of said slots located adjacent an opposite one of the ends of said second member and extending in the longitudinal direction of said second member, a pin associated with each of said slots in said first and second members with each said pin being freely movable through its associated said slot in the direction of said slot and with the axis of said pin extending transversely to the longitudinal axis of said member in which said slot is located, a first lever and a second lever arranged in separated and crossing relationship, said first and second levers each extending between said first and second members and each being connected to a different one of said pins in said first and second members, said first and second

levers crossing at a location intermediate their ends, a rubber buffer located at each of the ends of said first and second levers, each said rubber buffer being positioned along a portion of the path of said slot located at the end of said lever with which said buffer is associated so that a force transmitted against said second member in the direction normal to the longitudinal direction of said second member is transmitted over said first and second levers to said first member and is absorbed as said pins in said slots in said first and second members are forced against said rubber buffers associated therewith.

3,853,085

SNOWMOBILE POWERED WATERCRAFT

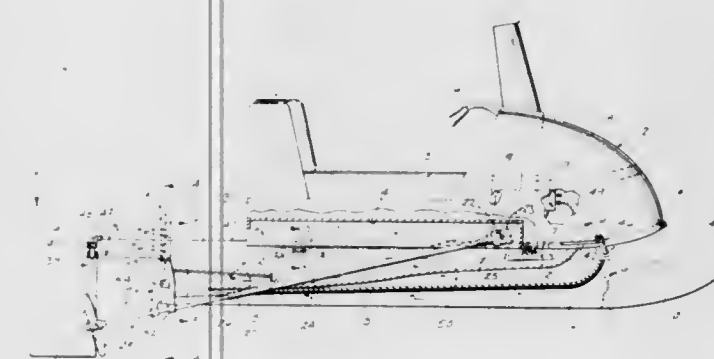
Robert V. Halboth, 2177 S. 35th St., Milwaukee, Wis. 53215

Filed July 26, 1973, Ser. No. 382,725

Int. Cl. B60f 3/00

U.S. Cl. 115—1 R

17 Claims



1. In a watercraft having a hull, a snowmobile to power said watercraft, said snowmobile including a chassis normally supported upon an endless track mechanism driven from a sprocket shaft and forward skis carried by steerable mounting means, said snowmobile sans endless track mechanism and skis being mounted on said hull, said hull comprising a pair of transversely spaced pontoons having facing surfaces connected by a rearwardly and downwardly extending lift plate which terminates in spaced relation from the rear of the pontoons, shaft means including power take-off means to replace the sprocket shaft of the snowmobile, a shaft connected to the power take-off means and extending rearwardly and downwardly above the lift plate and mounting a propeller on the rearward end thereof, and rudder means for steering the watercraft and connected to the steerable mounting means of the snowmobile.

3,853,086

DEVICE FOR SIGNALLING NEED FOR CLEANING OR REPLACING SUCTION CLEANER DUST BAG

Ivar Asplund, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Feb. 9, 1973, Ser. No. 331,116

Claims priority, application Sweden, Feb. 11, 1972, 1636/72

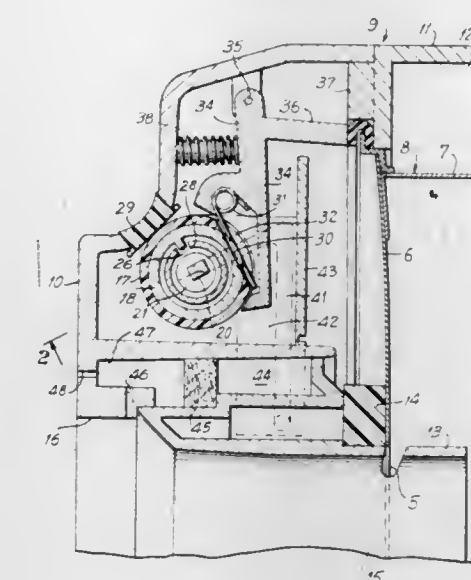
Int. Cl. G01d 21/00

U.S. Cl. 116—114 AD

8 Claims

1. A signal device for a vacuum cleaner having a motor-fan unit, a suction opening and a dust collector adjacent thereto operatively connected to said motor-fan unit comprising: a passageway having a transparent portion, means connecting one end of said passageway to the inlet side of said dust collector and means connecting the other end of said passageway to the outlet side of said dust collector, a piston movable at least in the transparent portion of said passageway in dependence upon the pressure difference between said inlet and outlet sides of said dust collector to indicate the amount of accumulation of material in said dust collector, a blocking device co-acting with said piston to retain the piston in the position

reached after movement in one direction in said passageway, and means connected to said blocking device for automati-



cally releasing the latter from said piston when the dust collector is made accessible for exchange.

3,853,087

BEARING FAILURE INDICATOR

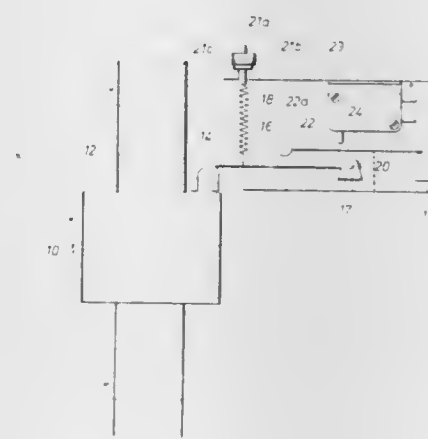
David B. Aldag, Clinton, Okla., assignor to Panhandle Eastern Pipe Line Company, Houston, Tex.

Filed June 29, 1973, Ser. No. 374,987

Int. Cl. G01d 21/00

U.S. Cl. 116—114 R

8 Claims



1. A bearing failure indicator for shafts comprising first and second bodies of magnetizable material at least one of which is magnetized, means attaching the first body to the shaft, means supporting the second body for movement relative to the first body due to the force imposed thereon by the magnetic field, means exerting a resilient force on the second body opposing the force of the magnetic field and holding the second body in a first position relative to the first body when the first body is in the position it occupies when the shaft is properly supported by its bearings and to move the second body to a second position relative to the first body when the first body moves due to the failure of the bearings supporting it and the shaft and means responsive to the movement of the second body to indicate the failure of the shaft support bearings.

3,853,088

ARRANGEMENT FOR SUPPORTING A SYMBOL IN AN ILLUMINATED INSTRUMENT

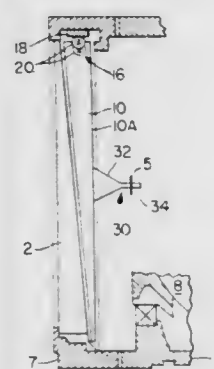
Albert J. Marko, Colts Neck, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 14, 1972, Ser. No. 262,841

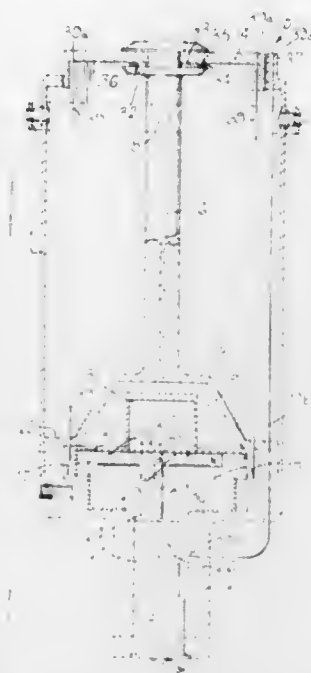
Int. Cl. G09f 9/00

U.S. Cl. 116—129 R

5 Claims



position, and transmitting means positionable with said selector adapted to transmit the energy from said reference posi-



tion to a discrete position on said selector corresponding to the selected course indication when the course is achieved.

3,853,090

TIME MEMORANDUM

Sidney Y. Watson, and George Spector, both of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

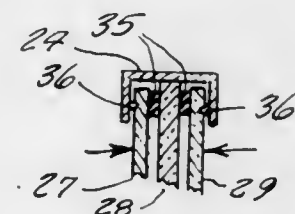
Filed Dec. 12, 1972, Ser. No. 314,452

Int. Cl. G09f 9/00

U.S. Cl. 116—133

3 Claims

1. For use with an instrument of the type having:
an elongated case with a viewing end;
a bezel mounted to the viewing end of the case;
a vertically disposed viewing window supported within the bezel for closing the viewing end; and
indicating means supported within the case for displacement about an axis in response to a condition;
illuminating means comprising:
a light source supported within the bezel and at the top thereof;
a vertically disposed light transmitting member supported within the bezel in back of the viewing window and adjacent the light source, and having a front face adjacent said window and a rear face adjacent the indicator, said member transmitting light from the light source to the indicator means to illuminate said indicator means; and
a horizontally disposed light transmitting member supported on the rear face of the vertically disposed light transmitting member and supporting a marker between said face and the indicator means and transmitting nearby light transmitted by the vertically disposed member so as to be invisible when viewing the indicator and symbol through the viewing window.



1. A time indicating device comprising a circular disc having a clock dial face thereon said disc having a peripheral flange provided with a coaxial retaining groove spaced from said face in combination with an hour indicator disc rotatably mounted in said groove axially spaced from said face, including peripheral resilient means disposed between said discs whereby said means provides frictional resistance against inadvertent rotation, but not prevent necessary manual rotation of said time indicator disc and one of said discs is transparent.

3,853,091

THIN FILM COATING APPARATUS

Richard G. Christensen, Poughquag, and Richard Wahl, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,020

Int. Cl. C23c 13/08

U.S. Cl. 118—49

14 Claims

3,853,089

COURSE SELECTOR AND INDICATOR

Bernard Howard, 73 McKinley Ave., New Haven, Conn. 06515

Continuation-in-part of Ser. Nos. 259,433, June 5, 1972, abandoned, and Ser. No. 312,918, Dec. 7, 1972, abandoned.

This application Feb. 6, 1974, Ser. No. 440,197

Int. Cl. G09f 9/00

U.S. Cl. 116—129 R

32 Claims

1. A course selector and indicator comprising a compass having magnetic means adapted to orient said compass toward magnetic North, a course selector rotatable to select a course adjacent a reference marker, an energy source associated with said compass means adapted to direct energy from a reference

3,853,093

OPTICAL THICKNESS RATE MONITOR

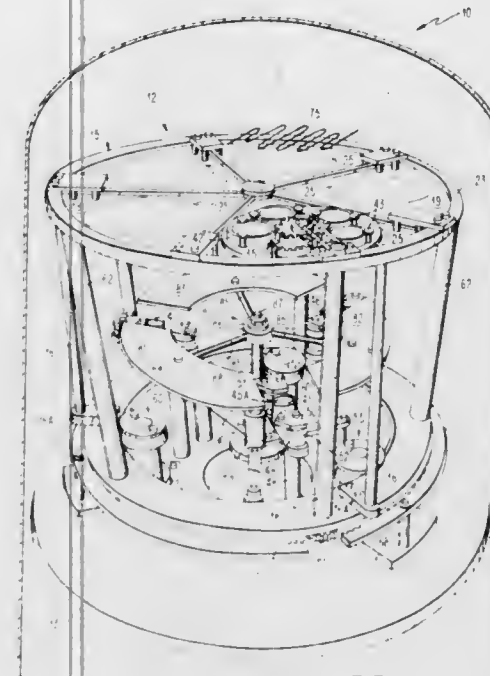
Martin L. Baker, and Eugene A. Eufusia, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 2,789, Jan. 14, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,363

Int. Cl. C23c 13/12

U.S. Cl. 118—8

16 Claims



tain said tang in firm engagement with a wafer held on said lip; a plurality of source material holders radially spaced about an axis perpendicular to said platform and spaced axially therefrom; and means to effect rotation of said platform, said trays and said holders in the same plane wherein said wafers pass through several angles with respect to said sources.

3,853,092

APPARATUS FOR NUTATING AND STAINING A MICROSCOPE SLIDE

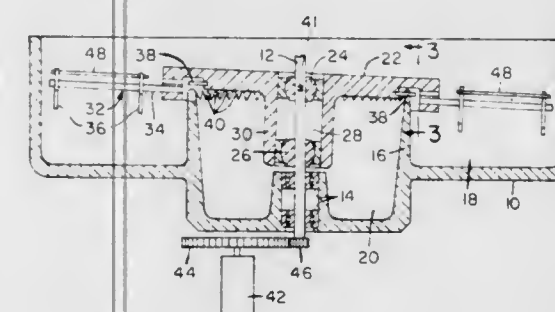
Lynn G. Amos, Raleigh, and William R. Eppes, Cary, both of N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,432

Int. Cl. B05c 11/14

U.S. Cl. 118—56

25 Claims



1. An apparatus for staining a microscope slide comprising microscope slide support means,
means for disposing said microscope slide on said support means in a plane tilted from horizontal,
means for rotating said support and microscope slide approximately horizontally,
means for translating said support means vertically while it is being rotated so as to impart a nutating motion to said microscope slide,
means for dispensing at least one staining reagent to the top surface of said microscope slide, said nutating motion effecting uniform wetting of said top surface of said microscope slide by each said reagent, and
means for removing said microscope slide from said apparatus.

3,853,094

ELECTROLESS PLATING APPARATUS

Theodore P. Christini, Kennett Square, Pa.; William P. Flynn, Wilmington, Del.; John B. Inskeep, Wilmington, Del., and Harry J. McCauley, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 25, 1971, Ser. No. 103,355

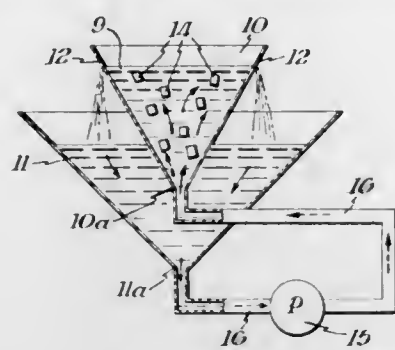
Int. Cl. B05c 3/04

U.S. Cl. 118—417

2 Claims

1. Apparatus for concomitant particulate deposition in electroless plating comprising, in combination, a vertically oriented frusto-conical vessel, an electroless plating solution pump connected with discharge port in communication with

the small diameter end of said frusto-conical vessel, a receiving vessel connected in open fluid communication with the



large end of said frusto-conical vessel, and means connecting said receiving vessel to the intake side of said pump.

3,853,095

ARTIFICIAL CULCH FOR OYSTERS

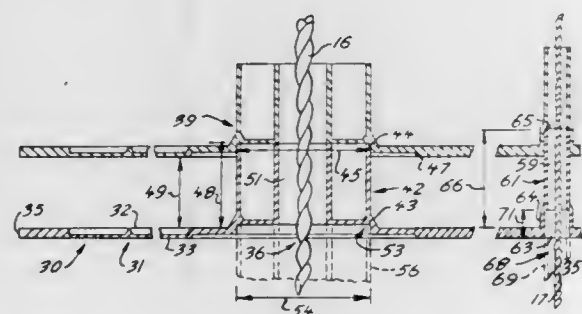
Kenneth George Lawrence, 1734 Harper Dr., Prince George, British Columbia, Canada

Filed June 15, 1973, Ser. No. 370,368

Int. Cl. A01k 61/00

U.S. Cl. 119-4

12 Claims



1. An artificial oyster culch for collecting oyster spat, the culch being adapted for use with similar culches to form a culch assembly, the culch including:

- a generally plane flexible base having: first and second faces, an edge defining a periphery of the base, and a bore,
- a grid of intersecting ridges disposed on both faces of the base, the ridges being disposed so that a ridge extending from one face of the base has a corresponding ridge extending from an opposite face of the base, the ridges on each face defining opposed recesses disposed on either face of the base, the base of each recess having a connecting bore extending therethrough, the ridges extending outwardly from the face of the base a distance defining depth of the recesses.

3,853,096

SMALL ANIMAL FEEDER

Albert J. Whitty, 39055 Lyndon, Livonia, Mich. 48154

Filed Mar. 16, 1973, Ser. No. 341,982

Int. Cl. A01k 05/00

U.S. Cl. 119-18

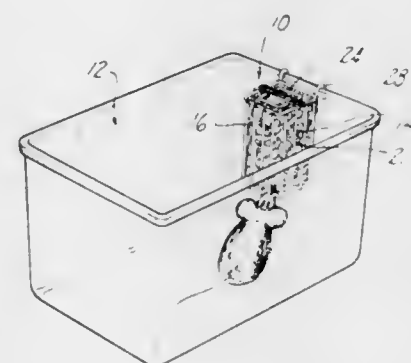
9 Claims

1. An animal feeder for containing pelletized animal food of predetermined dimensions comprising:

- an enclosure having a closed peripheral rim defining a top opening, a front wall of parallel spaced apart elongated members, a back wall of parallel spaced apart elongated members, two side walls of parallel spaced apart members, and a base of two mutually perpendicular groups of parallel spaced apart elongated members forming a gridwork, each of said members of one group of parallel spaced apart elongated members being integral with a different one of said parallel spaced apart members of said first side wall and a different one of said parallel spaced apart members of said second side wall, each of

said members of the other group of parallel spaced apart elongated members being integral with a different one of said parallel spaced apart members of said front wall and said closed peripheral rim being affixed to the ends of said parallel spaced apart elongated members of said front wall, said back wall and said side walls at the opposite end of said enclosure from said base;

- a top structure to close said top opening having a hinge member on one side operatively associated with said closed peripheral rim, and a latch disposed on an opposite side from said hinge to engage said peripheral rim to secure said top structure in place over said opening;
- hook means disposed on said back wall to secure said animal feeder to a structure which confines an animal;



said mutually perpendicular groups of parallel elongated members forming said gridwork base being secured together at their cross-over points;

- said hook means comprising at least two hooks, each of said hooks being integral with a different one of said parallel spaced apart elongated members of said back wall and extending above said top opening; and
- the width of the space defined between adjacent parallel elongated members of said front wall, said back wall, said side walls and said base being approximately 0.375 inches, said elongated members of said front wall, said back wall, said side wall and said base being approximately 13 gauge, and said closed peripheral rim being approximately 9 gauge.

3,853,097

TORCH NOZZLE ORIENTATION FOR INTERNAL COMBUSTION ENGINE

Tadashi Kume, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.), Tokyo, Japan

Continuation-in-part of Ser. No. 292,995, Sept. 28, 1972, abandoned. This application Apr. 23, 1973, Ser. No. 353,785

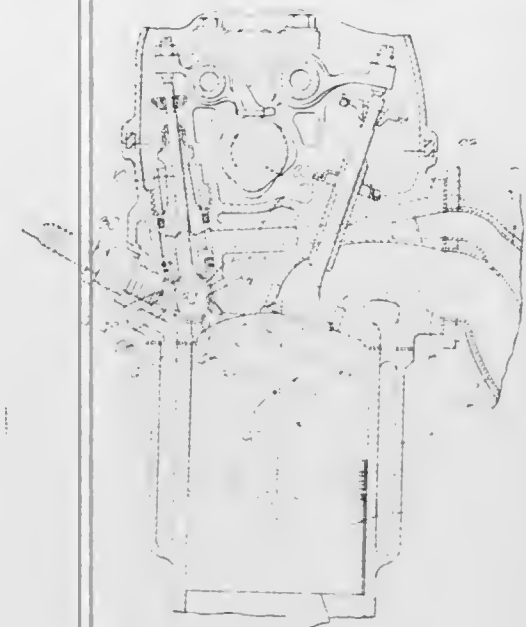
Int. Cl. F02b 19/10, 19/16

U.S. Cl. 123-32 SA

2 Claims

- In a spark-ignition internal combustion engine for minimizing unwanted emissions such as HC and CO, the engine having a crank-connected piston movable in a cylinder bore, the combination of: walls cooperating with the movable piston to form a main combustion chamber, walls forming a cavity laterally offset from the cylinder axis, a thin wall heat resistant cup positioned within the cavity and having a portion exposed to the main combustion chamber, said portion of said cup having an aperture constituting the sole torch nozzle restriction establishing communication between said chambers, a spark plug for igniting a combustible mixture in the auxiliary chamber to project a flame through the torch nozzle restriction, the torch nozzle restriction being positioned to cause the axis of the torch flame to pass near the center of mass of the

air-fuel mixture in the main chamber when the piston is 90° past top dead center, the axis of the torch flame being spaced



from said center of mass by an amount no greater than 16/100 of the diameter of the cylinder bore.

3,853,098

DRIVING SYSTEM FOR AUTOMOBILE ENGINE COOLING FAN

Toshio Ishikawa, Kariya, and Mituzi Ohshima, Oohu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

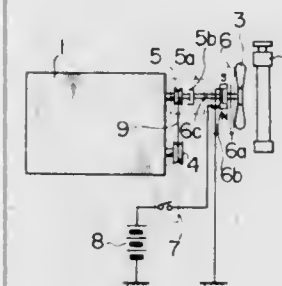
Filed Sept. 21, 1973, Ser. No. 399,497

Claims priority, application Japan, Oct. 5, 1972, 47-100479; Nov. 1, 1972, 47-109725

Int. Cl. F01p 7/02

U.S. Cl. 123-41.11

8 Claims



- In a driving system for an automobile engine cooling fan comprising a radiator, and a cooling fan driven by an engine to draw cooling air through the radiator, the improvement comprising a first one-way clutch provided between said cooling fan and said engine to allow the transmission of driving power in only one direction from said engine to said cooling fan, a motor coupled to drive said cooling fan, a motor control means for controlling a supply of electric power to said motor.

3,853,099

ELASTOMERIC SEALING RING FOR CYLINDER LINERS

Glen N. Feather, Dunlap; Harry M. Kiley, and William A. Nelson, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 21, 1972, Ser. No. 317,416

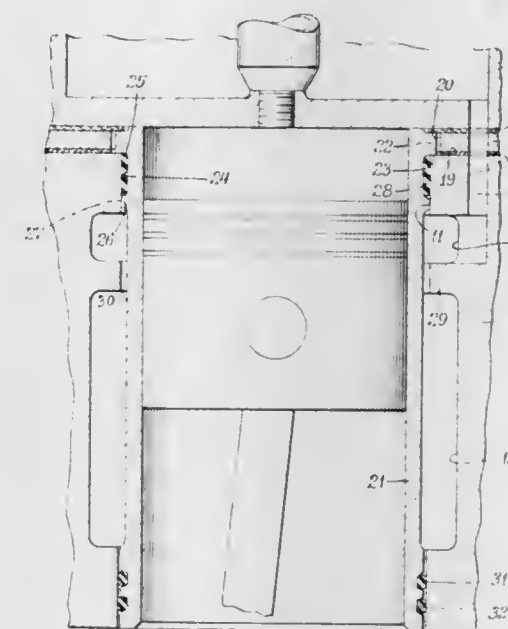
Int. Cl. F02f 1/36

U.S. Cl. 123-41.82

1 Claim

- In an internal combustion engine having a cylinder block, a cylinder head mounted on said block, a cylindrical bore formed in said block, a cylindrical one-piece liner mounted in said bore and having an upper, radial flange seating on a top surface of said block and an axially spaced lower radial flange

defining an annular groove therebetween, said lower flange having a free end closely fitted within said bore, interconnecting passage means defined in said block and said head around said liner for continuously circulating a coolant therethrough during engine operation, said passage means further including a venturi throat means solely defined between said lower radial flange and said liner, closely adjacent to and below said sealing means, to increase the velocity of coolant flow there-through and further including a pair of gaskets and a spacer



- plate sandwiched between said gaskets, said gaskets and spacer plate mounted between said block and head and having aligned openings therein which serve as a continuation of said passage means between said block and head, an elastomeric sealing ring disposed in said annular groove and compressed between said block and said liner, adjacent to said head preventing the passage of coolant between said seating and said free end and said bore.

3,853,100

FREE PISTON ENGINE WITH ANTIKNOCK MEANS

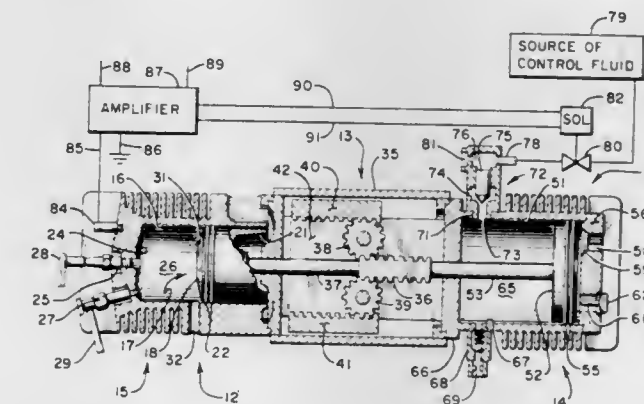
Anton Braun, 6421 Warren Ave., Edina, Minn. 55435

Filed Feb. 16, 1973, Ser. No. 332,988

Int. Cl. F02b 71/00; F02d 39/10

U.S. Cl. 123-46 R

16 Claims



- A free piston engine comprising: a power cylinder having a power piston reciprocally movable in said cylinder and defining an internal combustion chamber with said power cylinder, and means for introducing air and fuel into said power cylinder between said piston and the head of said cylinder to form a mixture therein consisting of fuel and air, said piston being movable toward the head of said cylinder to compress the fuel mixture on a compression stroke and away from said head upon firing of the fuel mixture.

return energy means operatively connected to said piston for applying return energy to said piston, said means being effective to apply sufficient return energy to said piston following the firing stroke of said engine to cause said piston to move towards the head of said power cylinder to compress the fuel mixture to the desired extent, and controlling means for so varying the amount of the return energy applied to said piston as to prevent sustained knocking of the engine, said controlling means comprising a condition responsive means having a condition sensing element located adjacent the engine and responsive to a condition normally followed by sustained knocking of the engine, and adjusting means controlled by said condition responsive means for variably controlling said return energy means to adjust the return energy in a direction and by an amount sufficient that the resulting change in the compression ratio in said cylinder will, without interrupting the operation of said engine, prevent the occurrence of sustained knocking thereof.

3,853,101

INTEGRATED ROCKER ARM RETURN SPRING AND VALVE STEM SHIELD

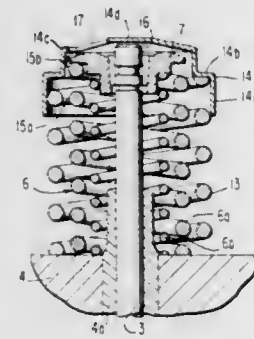
Edward Iskenderian, and Ronald M. Iskenderian, both of 5210 Holt Ave., Los Angeles, Calif. 90056

Filed May 15, 1973, Ser. No. 360,617

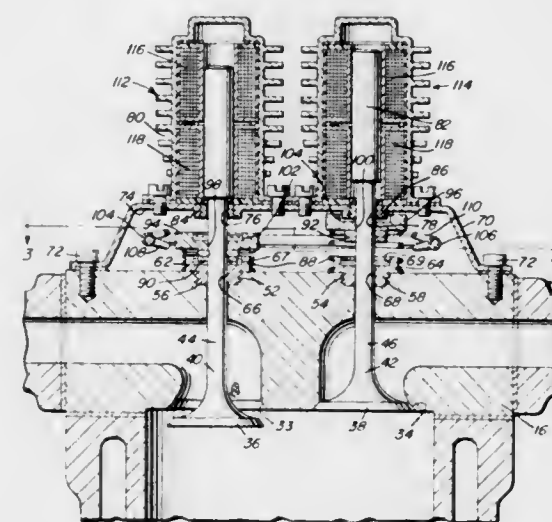
Int. Cl. F011 1/32

U.S. Cl. 123-90.28

5 Claims



1. In an internal combustion engine valve system comprising engine valve means including valve rod means; first spring means, cooperating with said valve rod means, and biasing said engine valve means to a closed condition; rocker arm means operable to move from a valve closing condition to a valve opening condition and in so doing move said engine valve means to an open condition; cam means operable to actuate said rocker arm means to move from said valve closing condition to said valve opening condition; and second spring means, independent of said first spring means, and operable to bias said rocker arm means away from said valve opening condition to said valve closing condition; the improvement comprising: shroud means in said system and including top shield means extending over the top of said valve rod means, and said second spring means being characterized by precompressed coil spring means, said precompressed coil spring means engaging said shroud means and causing said shroud means to continuously engage said rocker arm means and continuously urge said rocker arm means away from said valve opening condition towards said valve closing condition, while said valve means is in each of said closed and open conditions; coil spring action isolating means operable to maintain the biasing action of said coil spring means on said shroud means continuously effective and continuously independent of the position of said valve rod means relative to said coil spring means while said valve means is in both said closed and open conditions; means operable to prevent laterally directed rigid, force transmitting, cooperation between said rocker arm means and said valve stem means; means operable in both said closed and open conditions of said valve means to continuously provide and maintain lateral force absorbing, resilient connection means between said rocker arm means and said valve rod means.



3,853,102

MAGNETIC VALVE TRAIN FOR COMBUSTION ENGINES

Charles W. Myers, Nashville, and Lester E. Harvill, Centerville, both of Tenn., assignors to said Harvill, by said Myers, a part interest

Filed May 31, 1973, Ser. No. 365,750

Int. Cl. F011 1/16

U.S. Cl. 123-90.49

4 Claims

3,853,103

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS

Josef Wahl, Stuttgart, and Wolf Wessel, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

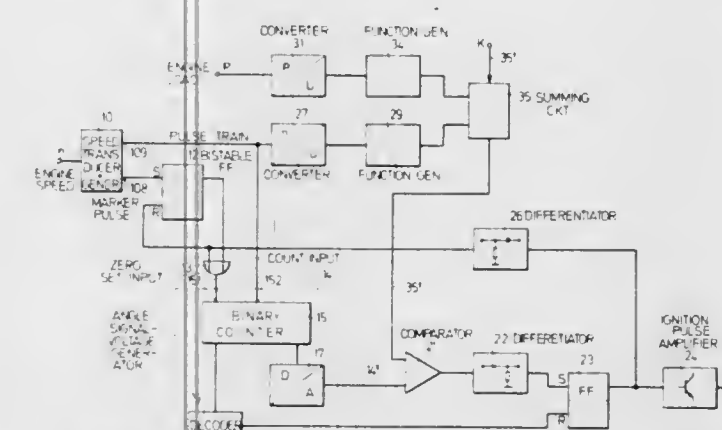
Filed Feb. 28, 1973, Ser. No. 336,823

Claims priority, application Germany, June 10, 1972, 2228387

Int. Cl. F02p 5/08

U.S. Cl. 123-117 R

17 Claims



1. Ignition timing control system for internal combustion engine ignition systems comprising pulse generator means (10) providing output pulses synchronized with engine rotation; a control signal generation means (10, 27, 29, 31, 34, 35) providing a signal representative of engine operation, operating, or environmental parameters; a binary counter (15) connected to the pulse generator means and counting in synchronism with engine rotation; counter start means (108, 12, 13) connected to said pulse generator means (10) and generating a marker pulse representative of a predetermined angular position of the crankshaft, said counter start means being connected to said counter (15) to start a counting cycle thereof; a comparator means (21) having one input connected to the output of the counter (15) and another input connected to the output of the control signal generation means to compare the timed occurrence of a predetermined pulse count with the value of the control signal and providing an output ignition pulse forming a start signal to initiate an ignition pulse in accordance with angular position of the crankshaft as determined by the count of the counter and the value of the control signal representative of said parameter; means (23, 26) connected to said comparator means (21) and sensing occurrence of said start signal, and connected to reset said counter (15) upon sensing said start signal, said counter thereby starting a second count cycle; and preset means connected to said counter and establishing a predetermined count number of said counter, said counter, when reaching said predetermined count number, providing a counter stop pulse forming a stop signal to terminate the ignition pulse.

3,853,104

SYSTEM FOR VAPORIZING AIR-FUEL MIXTURE SUPPLIED TO CYLINDERS OF AN INTERNAL COMBUSTION ENGINE FOR A MOTOR VEHICLE

Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motors Company, Limited, Yokohama, Japan

Filed Feb. 6, 1973, Ser. No. 330,069

Claims priority, application Japan, Feb. 7, 1972, 47-13870

Int. Cl. F02m 31/00

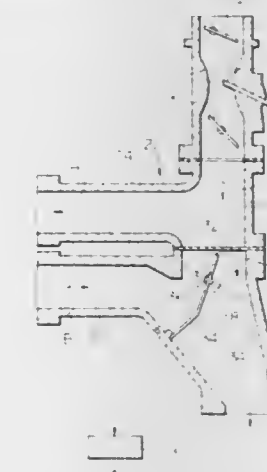
U.S. Cl. 123-122 H

2 Claims

1. A system for vaporizing air-fuel mixtures supplied to cylinders of an internal combustion engine for a motor vehicle, the internal combustion engine having means for supplying the air-fuel mixtures, each of the cylinders being provided

with an intake valve and an exhaust valve, which system comprises,

an intake manifold communicating with said air-fuel mixture supply means and communicable with said cylinders via said intake valves for distributing said mixtures to said cylinders, an exhaust manifold having a first set of exhaust branch passages communicable with predetermined cylinders selected from said cylinders via the exhaust valves thereof and a second set of exhaust branch passages communicable with the remaining cylinders via the exhaust valves thereof, said first and second sets of exhaust branch passages being communicable with the atmospheric air, means for raising the temperature of the exhaust gases flowing through said first set of exhaust branch passages and comprising a first means for providing normal ignition timing to said remaining cylinders and a second means for providing retarded ignition timing to said predetermined cylinders when said engine is running below a predetermined speed,



said first means including a DC power source, a first ignition coil having a primary winding and a secondary winding, said primary winding being connected at one terminal thereof with said DC power source and said secondary winding being connected at one terminal thereof selectively with the ignition plugs of said remaining cylinders and a first ignition distributor having an interruptor connected to the other terminals of said first and secondary windings, said first ignition distributor being arranged to provide normal ignition timing, and said second means including a second ignition coil having a primary winding and a secondary winding, said primary winding of said second ignition coil being connected at one terminal thereof with said DC power source and said secondary winding of said second ignition coil being connected at one terminal thereof selectively with ignition plugs of said predetermined cylinders and a second ignition distributor having an interruptor being connected to the other terminals of said first and secondary windings of said second ignition coil, said second ignition distributor being arranged to provide retarded ignition timing when said engine is running below said predetermined speed and to provide normal ignition timing when said engine is running above said predetermined speed.

3,853,105

INSUFFLATOR GAS FLOW DEVICE

Paul E. Kenagy, 2245 Richey Dr., La Canada, Calif. 91011

Continuation of Ser. No. 208,688, Dec. 16, 1971, which is a

continuation-in-part of Ser. No. 60,524, Aug. 3, 1970,

abandoned. This application Sept. 4, 1973, Ser. No. 393,746

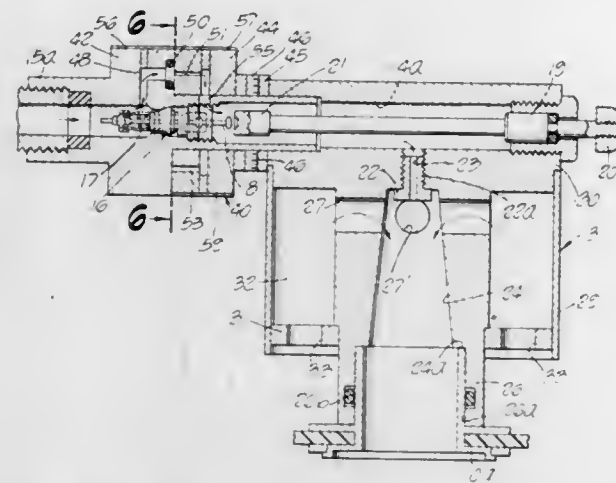
Int. Cl. A62b 7/02

U.S. Cl. 128-145.8

13 Claims

1. In a device to provide a therapeutic gaseous mixture for inhalation by a patient, wherein the device has an inlet port to receive a pressurized therapeutic gaseous fluid and has a breathing port for use by the patient, the combination of:

a venturi throat having its downstream end in communication with the breathing port;
a nozzle at the upstream end of the venturi throat to direct a jet stream of the pressurized therapeutic gaseous fluid into the venturi throat;
at least one vent port to the atmosphere in the wall of the venturi throat near the jet stream from the nozzle to serve three purposes, namely: to induce atmospheric air into



the venturi throat to mix with the gaseous therapeutic fluid when the device functions to fill the lungs of the patient; to vent the therapeutic fluid from the venturi throat to the atmosphere when the filling of the patient's lungs creates a back pressure in the venturi; and to permit the patient to exhale into the atmosphere; and metering means in direct communication with said nozzle to release the pressurized therapeutic fluid to the nozzle at a constant reduced rate.

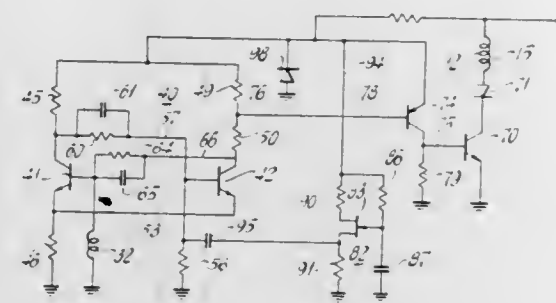
3,853,106

HIGH FREQUENCY CONTINUOUS-WAVE IGNITION ENERGY FOR AN INTERNAL COMBUSTION ENGINE Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,450
Int. Cl. F02p 1/00

U.S. Cl. 123—148 E

9 Claims



1. In a high frequency continuous-wave ignition system for an internal combustion engine, said system employing a control winding for starting and stopping said high frequency continuous-wave energy, and having a shaft for timing said energy relative to said engine,

improved means for controlling current flow through said winding in accordance with a predetermined amount of shaft angle rotation, comprising in combination electromagnetic means associated with said shaft for providing an initial pulse of one polarity and a terminal pulse of the opposite polarity separated by a predetermined degree of shaft angle rotation and both pulses for each cylinder of said engine, and bistable oscillator means actuated by both said pulses for cutting off said current flow when said initial pulse appears and for restoring said current flow when said terminal pulse appears.

3,853,107

CAPACITIVE DISCHARGE IGNITION SYSTEM Norman Francis Sieja, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Jan. 11, 1973, Ser. No. 322,789

Int. Cl. F02p 3/06

U.S. Cl. 123—148 E

4 Claims



1. A capacitive discharge ignition system for use with an internal combustion engine having a power source and means for producing timed pulses for triggering the ignition system comprising, in combination, a storage capacitor, a voltage step-up transformer having primary and secondary windings mounted on a core, a controlled conduction device having input, output and control electrodes, means connecting said primary winding, said input electrode and said output electrode in series, means for connecting said series connected transformer and controlled conduction device to the power source, means connected to said control electrode responsive to each trigger pulse for switching said controlled conduction device to a conducting state whereby current flows from the power source through said primary winding and said controlled conduction device to store energy in said transformer core, first means connected to said control electrode responsive to an increasing current flow through said series primary winding and controlled conduction device for increasing the impedance of said controlled conduction device to limit current flow through said controlled conduction device to a predetermined maximum level whereby the total energy stored in said core is regulated, second means responsive to the voltage across said primary winding dropping to a predetermined minimum as the current through said primary winding increases to said predetermined maximum level for switching said controlled conduction device to a nonconducting state whereby a collapsing magnetic field in said core establishes a predetermined high voltage across said secondary winding, means for charging said capacitor with such secondary voltage, means responsive to each trigger pulse for discharging said capacitor, and means responsive to the discharge of said capacitor for generating a high voltage for firing a spark plug.

3,853,108

SOLID STATE IGNITION

Guy Adams, Monroe, and Joseph Defilippis, Wappingers Falls, both of N.Y., assignors to Solitron Devices, Inc., Tappan, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,015

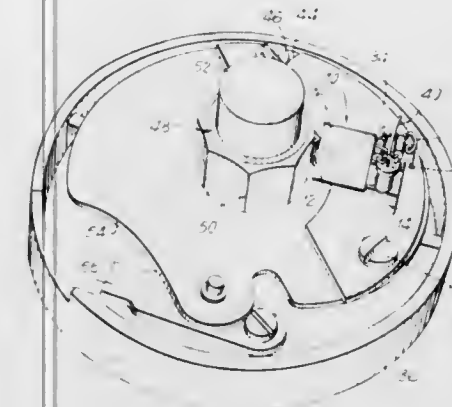
U.S. Cl. 123—148 E

14 Claims

1. An ignition system including a sensor means operatively associated with a circuit including devices to amplify, define and switch current in accordance with a pulse from said sensor means and ignition coil means for delivering a high potential spark from said ignition system as called for by said semiconductor means said ignition system comprising the improvement to said sensor means of:

a permanent magnet;
a pickup arm connected to said magnet at one pole surface thereof having a plurality of plates of progressively lesser

length at one end to form a triangle on said end whose apex is along a centerline for said pickup arm;
a coil around said arm having leads extending therefrom to sense inductance change in said arm and provide an alternating current potential wave form as said inductance rises and falls; and
electronic means (adjacent said arm and connected to each of the leads from said coil and to each other to track together and provide a temperature compensated source



of signals for said circuit) comprising transistors affixed to said pick-up arm having their respective bases connected to each of said leads, their collectors connected to each other by a resistance means and to one side of a power source, a resistor connected between the collector of one transistor and to the lead to the base connection of one of said transistors and having their emitters connected together with a lead therefrom to the other side of said power source.

3,853,109

METHOD AND APPARATUS STARTING AN INTERNAL COMBUSTION ENGINE

James L. Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Apr. 24, 1973, Ser. No. 354,086

Int. Cl. F02n 5/02

U.S. Cl. 123—179 S

5 Claims



1. An apparatus for controlling a starter spring for an internal combustion engine having at least an engine casing and a crankshaft said apparatus including:
an arbor means rotatably mounted on said crankshaft and connected thereto by one-way clutch means;
said arbor means, crankshaft and one-way clutch means being arranged so that torque may be transmitted only from said arbor means to said crankshaft;
spring casing means mounted to rotate freely upon said arbor means;

a first end of the starter spring being connected with said arbor means and a second end of the starter spring being connected with said casing means;
starter spring release means for releasing said arbor means to drive the crankshaft under the bias of said starter spring through said one-way clutch means for starting the internal combustion engine said release means including an arbor arm radially extending from said arbor means; an arbor arm stop means connected to the engine casing and operatively translatable into and out of engagement with said arbor arm;
hydraulic means for automatically translating arbor arm stop means into engagement with said arbor arm to stop rotation of said arbor means and permit said starter spring to be rewound following the starting of the internal combustion engine;
means operatively connected to said spring casing means for permitting unidirectional rotation thereof;
a starter spring rewind drive train for operably connecting said crankshaft with said spring casing means to automatically rewind said starter spring upon starting of the internal combustion engine; and
hydraulic means for automatically disengaging said starter spring rewind drive train from operative engagement with said crankshaft upon rewinding said starter spring to a wound condition wherein the improvement comprises:
a hydraulic cylinder connected to the engine casing;
a piston positioned within said cylinder and connected to said arbor arm stop means; and
hydraulic means connected to a fuel primer system for said internal combustion engine and said hydraulic cylinder for actuating said piston to disengage said arbor arm stop means from said arbor arm thus releasing said arbor means to drive the engine crankshaft for starting the internal combustion engine upon said fuel primer system being primed to a predetermined desired pressure sufficient to insure starting fuel flow.

3,853,110

OIL PRESSURE DETECTOR

Izak Francois van der Merwe, 10, The Eildons 2nd Ave., Kenilworth, Cape Town, South Africa

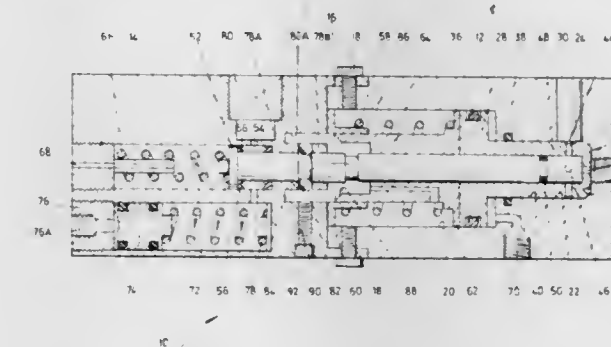
Filed Mar. 12, 1973, Ser. No. 340,012

Claims priority, application South Africa, Mar. 16, 1972, 72/1822

Int. Cl. F02b 77/00

U.S. Cl. 123—198 DB

15 Claims



1. A safety device for a fuel driven engine which is lubricated by liquid lubricant under pressure and comprising a first operating member; a first spring acting on the first operating member to bias the latter into a first position; a pressure sensitive device adapted to be subject to the pressure of the liquid lubricant and being connected to the first operating member to move the latter from its first position to a second position when the pressure of the lubricant is more than a predetermined minimum; a second operating member normally movable freely relative to the first operating member from a first position to a second position; second spring means

for biasing the second operating member into its first position; and detector means for detecting when a predetermined operation has taken place and for moving the second operating member into its second position when such predetermined operation has taken place, further comprising locking means for locking the second operating member in its second position, which locking means is controlled by the first operating member when in its second position.

3,853,111

ADJUSTABLE BOWSTRING RELEASE FOR ARCHERY BOW

Melvorn B. Stanislawski, 7135 S.E. Cora St., Portland, Oreg. 97206, and Daniel F. McKinney, 1427 Coquette St., Medford, Oreg. 97501

Filed Feb. 25, 1974, Ser. No. 445,589

Int. Cl. F41c 19/00; F41b 5/00

U.S. Cl. 124—35

7 Claims



1. A rope release for use with an archery bow comprising a grip adapted for grasping by the bowstring-drawing hand and configured with a pair of recesses for receiving portions of the forefinger and middle finger of the hand, a flexible cord loop whose terminal ends are attached to said grip, and a pin member projecting from said grip having a hook termination at one end adapted to releasably engage the bight portion of said loop and whose other end is attached to said grip between said recess pair, and adjustment means for permitting the angle of projection between said pin member and said grip to be varied to regulate the point at which said loop is freed from said hook termination during the squeezing of a user's finger on the rope release.

3,853,112

VAPOR TRANSFER FOOD PREPARATION AND HEATING APPARATUS

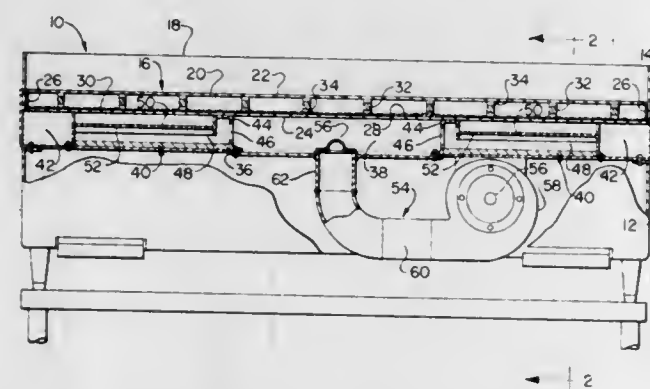
Lazaros J. Lazaridis, Lincoln; Edward F. Searight, Harvard, and Paul K. Shefsiek, Acton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 165,569, July 23, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,236

Int. Cl. A21b 1/28

U.S. Cl. 126—19

14 Claims



1. Food preparation griddle apparatus comprising:
a. means forming a sealed enclosure substantially purged of

fluids which are non-condensable over the working temperature range and having along a portion thereof a food heating zone and a heat receiving zone;

- b. working fluid means, said fluid in the liquid phase partially filling said sealed enclosure through said range;
- c. means forming a combustion chamber;
- d. means for admitting air and fuel to said combustion chamber to provide thereto a combustible mixture;
- e. baffle means external of said enclosure having jet forming perforations therein and extending along said heat receiving zone closely adjacent thereto to form plenum chamber means along the side of said baffle means facing away from said heat receiving zone; and
- f. means for forcing combustion products from said combustion chamber to said plenum chamber, then through said perforations and onto said heat receiving zone as a plurality of discrete jets to thereby heat said heat receiving zone and vaporize working fluid within said sealed enclosure, whereby working fluid vapor substantially fills said sealed enclosure and condenses internal of said sealed enclosure on said food heating zone for heating said food heating zone to a substantially uniform temperature and transmitting heat energy to food material adjacent said food heating zone.

3,853,113

HEIGHT-ADJUSTABLE GRILLER

Bruce Alfred Burford, Fulham, Australia, assignor to Simpson Pope Limited, Dudley Park, Australia

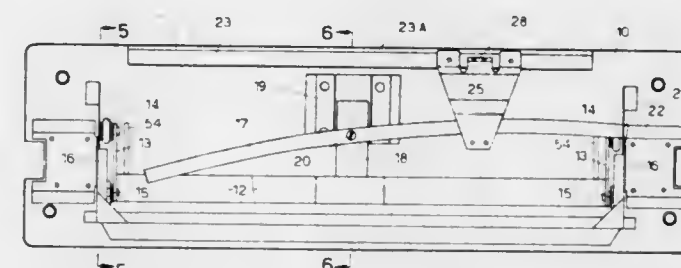
Filed June 28, 1973, Ser. No. 374,755

Claims priority, application Australia, July 4, 1972, 9560/72

Int. Cl. A47j 37/04

U.S. Cl. 126—41 E

4 Claims



1. A food griller of the kind comprising an open-front oven compartment, heating means in said compartment, a fascia panel able to close the open-front of said compartment, a food carrier mounted on the inside of said fascia panel, and guideways enabling drawer-like movement of said fascia panel relative to said compartment; characterised in that said fascia panel is hollow and houses food carrier support means comprising:

- a. a food carrier support member in said fascia panel which has food carrier mounting lugs extending through vertical slots in the rear face of said fascia panel, and is restrained against movement other than vertical movement relative to said panel;
- b. a follower ramp which is pivoted by one end on and within said panel, and upon which said support member is suspended;
- c. a traverser bracket having a camming element engaging said follower ramp;
- d. means to restrain said traverser bracket against movement other than horizontal movement laterally of and within said panel; and
- e. a handpiece on said traverser bracket which extends through a slot formed in the front face of said panel to project outside thereof.

3,853,114

SOLAR HEAT ABSORBER

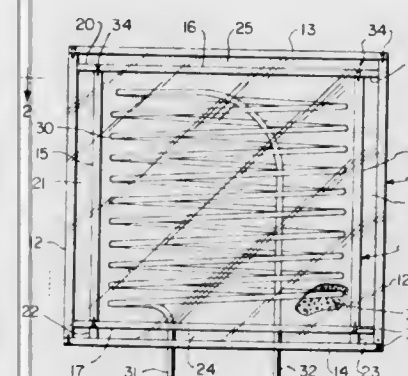
George R. Gaydos, Jr., R.R. Box 3798, Upper Marlboro, Md. 20870

Filed Mar. 11, 1974, Ser. No. 450,208

Int. Cl. F24j 3/02

U.S. Cl. 126—271

3 Claims



1. An apparatus for utilizing solar radiation energy to heat a fluid comprising:
a first internal container having transparent substantially vertical side walls and top and bottom walls defining a closed interior cavity;
a second external container having transparent vertical side walls and top and bottom walls, the walls of said external container being larger than the walls of said first container;
means for supporting said internal container within said external container with the walls of said containers in substantially parallel, spaced relationship defining air-containing spaces therebetween;
fluid conducting means contained within said internal container in heat exchanging relationship with the interior cavity thereof;
conduit means passing through one of said walls and connecting to said fluid conducting means for conducting heated fluid to a remote location; and
particulate radiation and heat absorbing material contained within said internal container, surrounding said fluid conducting means and substantially filling said interior cavity.

3,853,115

DINING ARRANGEMENT

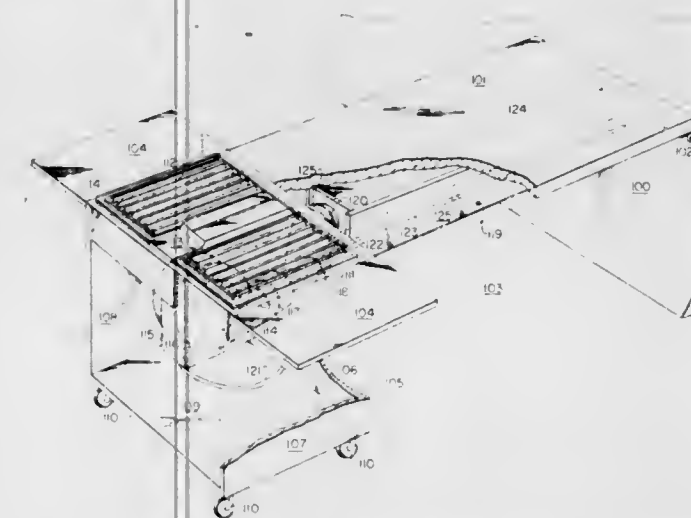
Louis Joseph Jenn, 3035 Shadeland Ave., Indianapolis, Ind. 46226

Filed Sept. 20, 1973, Ser. No. 399,334

Int. Cl. F24c 7/04

U.S. Cl. 126—299 B

15 Claims



1. A dining arrangement such as for a restaurant wherein dining tables are provided for option partial self service by table occupants in the broiling of meats comprising: tables

spaced about a room and having open air broiler means located in their tops; a peripheral portion of each table top about the broiler means defining a dining surface around and under which chairs are adapted to be assembled; a duct common to said dining tables and having an exit opening outside of the room; said broiler means including air conduit means having an air intake at one side of the broiler and an air exit opening into said common duct; power driven fan means fluid associated with the conduit means and common duct for drawing a stream of air laterally across the broiler surface into the intake for collecting smoke and odor laden gases caused by broiling meat on the broiler, moving the air through the conduit means and common duct and exhausting the air through said common duct air exit exteriorly of the room; at least some of said tables being divided into a stationary portion having a dining surface around and under which chairs are adapted to be assembled and a separate portable portion having said open air broiler means; and said portable portion including a base having anti-friction means for supporting it on the floor adjacent said stationary table portion as a portable module for movement between various stationary table portions and having means for fixedly mounting thereon said broiler means.

3,853,116

IMPLANT METHODS AND DEVICES FOR INFLUENCING BODY FLUIDS

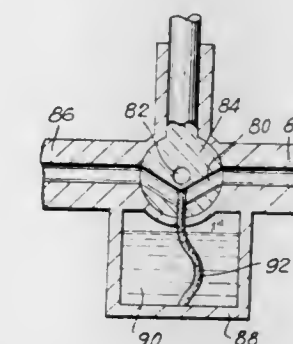
Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 155,141, June 21, 1971, Pat. No. 3,742,933. This application July 2, 1973, Ser. No. 375,359

Int. Cl. A61b 19/00

U.S. Cl. 128—1 R

16 Claims



1. In a method for controlling body fluid in a body cavity of a living being, the steps of situating in the body cavity of the living being an implant which receives the body fluid which is to be controlled and which has in its interior an agent which is contacted by the body fluid and which influences at least a component of the body fluid, and placing in communication with the implant a reservoir containing a relatively large supply of said agent for replenishing the latter, so that the influence of the agent on the component of the body fluid can be maintained effective over a long period of time.

3,853,117

PRESSURE SENSING SYSTEM AND METHOD

William C. Murr, Piedmont, Calif., assignor to Berkeley Bio-Engineering, Inc., Berkeley, Calif.

Filed May 15, 1972, Ser. No. 253,058

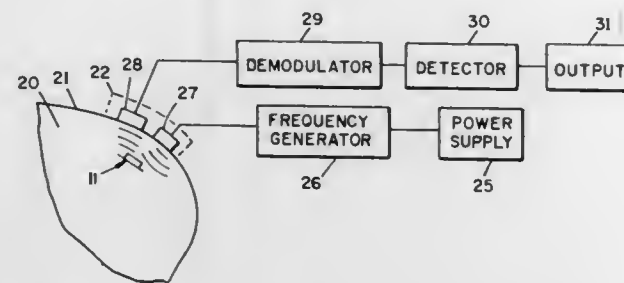
Int. Cl. A61b 10/00

U.S. Cl. 128—2 V

2 Claims

1. A system for determining the pressure within a pressured body comprising transducer means adapted to be placed on the exterior of said body to direct an interrogating sonic signal into said body; passive sonic transponder means adapted to be implanted within said body having a mechanical and sonic resonant frequency varied by said pressure within said body, said transponder means being caused to resonate by receiving said interrogating sonic signal and emitting a different sonic

resonance signal; sonic receiver means adapted to be placed on the exterior of said body to receive said sonic resonance



signal; and output means connected to said sonic receiver means to convert said sonic resonance signal to data related to said pressure within said pressured body.

3,853,118 SWELLING DETECTOR

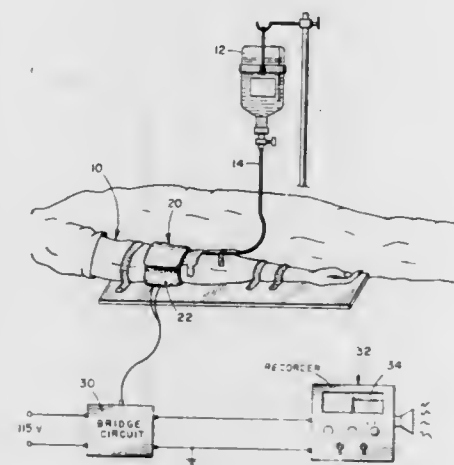
Robert E. Schendel, Houston, Tex., assignor to Measurand Systems, a division of Newpark Resources, Inc., New Orleans, La.

Filed Aug. 29, 1973, Ser. No. 392,848

Int. Cl. A61b 5/10

U.S. Cl. 128-2 S

1 Claim



1. In a method for delivering a liquid through a needle into a blood vessel of a patient's arm whereby under normal conditions the needle remains in the blood vessel and the liquid is fed into the blood circulation system of the patient, and under abnormal conditions, the needle withdraws from the blood vessel thereby causing the supplied liquid to spread into adjacent tissues, the spreading of the liquid resulting in swelling of the arm, said method comprising:

attaching a band around said arm near said needle, the band containing a fluid chamber, the pressure of said fluid in said chamber increasing with the swelling of said arm, coupling a pressure transducer to said chamber for detecting the pressure increase in said chamber, and converting the pressure increase to a warning signal of said abnormal conditions.

3,853,119 METHOD AND SYSTEM FOR DISPLAY OF ELECTROCARDIOGRAPHIC (ECG) SIGNALS

Ronald Thomas Peterson, and Israel Mayer Stein, both of Boston, Mass., assignors to Clinical Data Services, Inc., Brookline, Mass.

Filed Oct. 19, 1973, Ser. No. 407,825

Int. Cl. A61b 5/04

U.S. Cl. 128-2.06 R

11 Claims

1. A method of displaying analog ECG signals with the aid of an oscilloscope which has a time base input and an amplitude input, said method comprising the steps of

a. digitizing said signals to provide a first digital output upon each corresponding recurring portion thereof and a plu-

ality of second digitally coded signals each corresponding to a successive amplitude increment thereof,

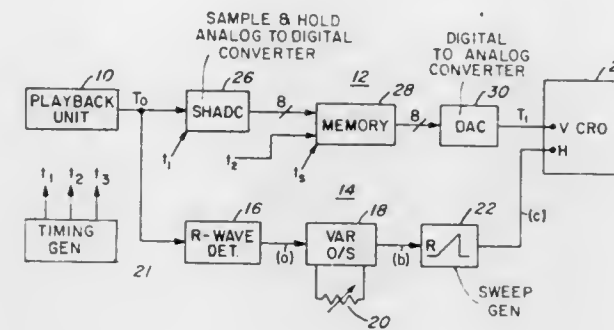
b. storing said second signals each for predetermined periods of time,

c. reconverting said second signals into their analog ECG signal form,

d. applying said reconverted second signal to the amplitude input of said oscilloscope,

e. generating a time base signal synchronous with said first digital output, and

f. applying said time base signal to the time base input of said oscilloscope.



3,853,120

AUXILIARY APPARATUS FOR GYNECOLOGICAL SURGERY

Gilberto Xando Batista, Rua Catucaba 67, Alto da Boa Vista, Sao Paulo, Brazil

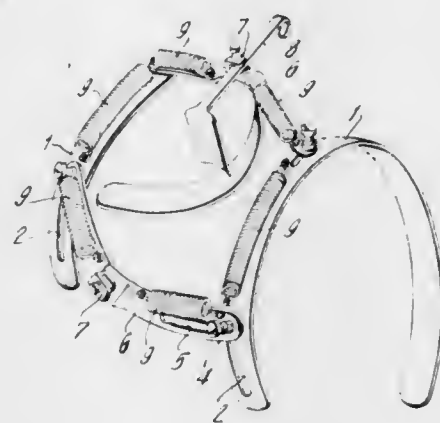
Filed Apr. 18, 1973, Ser. No. 352,448

Claims priority, application Brazil, June 9, 1972, 003698

Int. Cl. A61b 17/02

U.S. Cl. 128-20

7 Claims



1. An auxiliary apparatus for gynecological surgery comprising, in combination, a pair of flexible side bands each curved lengthwise thereof in a plane of curvature extending centrally therealong, and each having one end turned slightly outwardly of the plane of curvature; and a pair of arcuately curved transverse members, having opposite ends adjustably pivotally connected to respective side bands, one transverse member interconnecting the opposite ends of said side bands and the other interconnecting the intermediate portions of said side bands; whereby said side bands and said transverse members form a frame defining a central field having an adjustable opening; each transverse member having a respective clamping means at substantially its midpoint for adjustably receiving and clamping the arm portion of a surgical retractor blade having a blade portion at one end.

3,853,121

METHODS FOR REDUCING THE RISK OF INCURRING VENOUS THROMBOSIS

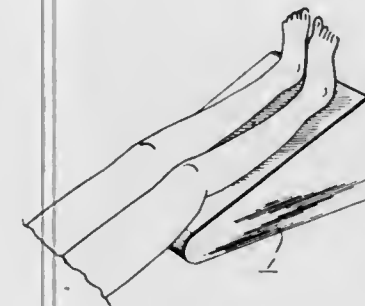
Benjamin Mizrachy, 14 Brewster Dr., Middletown, N.Y. 10940, and Robert Stephen Salzman, 27 Holbrook Dr., Stamford, Conn. 06906

Filed Mar. 7, 1973, Ser. No. 338,813

Int. Cl. A61h 1/00

U.S. Cl. 128-33

12 Claims



1. A method of reducing the risk of incurring venous thrombosis in the legs of operative, bedridden and post-operative patients, comprising the steps of:

A. supporting the legs of the patient so as to allow the legs to receive external stimuli during surgery;

B. anesthetizing the patient for the purpose of performing surgery; and

C. applying external stimulation to at least one leg of said patient while so anesthetized during surgery, so as to aid muscular activity in said leg, thereby reducing the risk of incurring venous thrombosis.

3,853,122

METHOD AND DEVICE FOR ACHIEVING A PENILE ERECTION

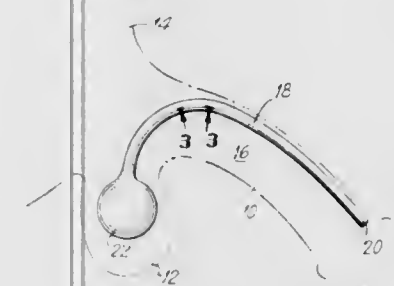
Berish Strauch, 3353 Bainbridge Ave., Bronx, N.Y. 10467; Allan E. Bloomberg, 340 E. 64th St., New York, and Selwyn Z. Freed, 111 E. 210th St., Bronx, both of N.Y. 10021

Filed Oct. 12, 1973, Ser. No. 406,083

Int. Cl. A61f 5/00

U.S. Cl. 128-79

11 Claims



1. In a method for providing a human male adult with the capability of achieving a penile erection, the steps of implanting in the penis of the human male adult in a position extending longitudinally along the penile shaft an elongated flexible hollow tube of stretchable elastomeric material which will assume an elongated substantially straight and substantially rigid condition when supplied at its interior with fluid under pressure and which will assume a shorter more flexible condition when emptied of the fluid under pressure, and simultaneously implanting in the human male at a location where it is accessible for manipulation a flexible container which contains the fluid and which communicates with the tube so that by manipulation the human male can reduce the volume of said container to transfer fluid therefrom into said tube to situate the fluid under pressure in the latter for providing a penile erection.

3,853,123

ORTHOPEDIC KNEE BRACE

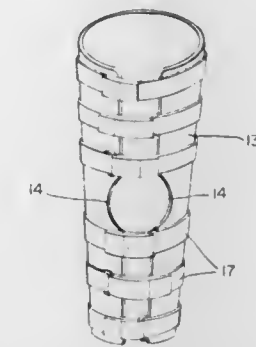
Robert R. Moore, 5401 San Leandro St., Oakland, Calif. 94601

Filed Sept. 17, 1973, Ser. No. 398,241

Int. Cl. A61f 3/00

U.S. Cl. 128-80 C

4 Claims



1. An orthopedic appliance for immobilizing a joint of a human limb, comprising

a semi-rigid resilient support panel adapted to extend above and below the fossa region of the joint and contoured to partially encompass same,

means for altering said contour of said panel to increase the rigidity of said resilient support panel,

said means for altering said contour of said panel including a plurality of lateral straps spaced longitudinally along said panel, and fastening means for adjustably and releasably securing said straps about the limb, and a sheet of padding material secured within said contour of said resilient support panel and extending laterally therefrom, said sheet of padding material being tapered in the lateral dimension from above the fossa region to below the same.

3,853,124

THERMOPLASTIC SPLINT OR CAST

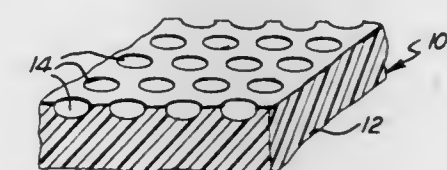
Lester M. Larson, 4619 Bailey Dr., Wilmington, Del. 19808

Continuation-in-part of Ser. No. 3,474, Jan. 16, 1970, Pat. No. 3,809,600, which is a continuation-in-part of Ser. No. 683,016, Nov. 4, 1967, Pat. No. 3,490,444. This application Nov. 13, 1972, Ser. No. 305,914The portion of the term of this patent subsequent to Jan. 20, 1987, has been disclaimed.

Int. Cl. A61f 5/04

U.S. Cl. 128-90

6 Claims



1. A process of forming a body supporting member such as a cast, splint or the like, comprising warming a sheet of crystalline thermoplastic polymer having a thickness in the range of about 2 to 200 mils, to a temperature in the range of about 60°C to 110°C for a heat softening period sufficient to convert the total crystalline substance to a softened, amorphous form, said heat-softened sheet of polymer developing a hysteresis to have a setting time substantially delayed to remain soft and amorphous below the crystalline setting temperature, whereby it may be cooled to a comfortable body temperature without immediately setting, cooling said heat-softened plastic sheet to a comfortable body temperature below about 40°C, whereby the sheet may be formed and shaped for use as a body supporting cast or splint, said sheet having at least its surface adjacent to the body member to be protected deformed to include surface irregularities capable of absorbing and interrupting continuous moisture films that may be developed upon the body member to be protected, said surface irregularities consisting of cup-like depressions, knurled depressions, texturing, foam and close spaced perforations which are evenly distrib-

uted throughout the surface of said plastic and the like, cutting said softened sheet to dimensional size and manually shaping, wrapping and forming said sheet upon the body member to be supported and protected at said comfortable body temperature with the surface irregularities disposed adjacent to the body member enclosed, and maintaining the entire supported assembly substantially immobile until the sheet sets by crystallization to a rigid body support.

3,853,125

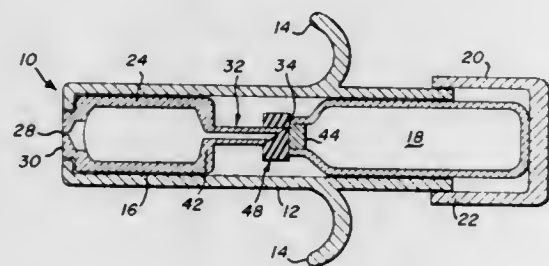
DISPOSABLE NEEDLELESS INJECTOR

Wesley D. Clark, 26870 Taaffe, Los Altos Hills, Calif. 94056, and Keith E. Hollenbeck, 847 Tulane Ct., Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 186,653, Oct. 5, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,508 Int. Cl. A61m 5/30

U.S. Cl. 128—173 H

11 Claims



1. A needleless hypodermic injector, comprising: an ampule filled with a liquid medicant to be injected and including, a pressurizing end portion for receiving a charge of pressurizing gas, and a rigid discharge end portion for placing directly into contact with the skin where the injection is to be made which has a substantially uniform diameter bore extending therethrough which is dimensioned for needleless injection; a container of pressurized gas; and means for pressurizing said medicant directly with a charge of said pressurizing gas to form a medicant-gas mixture which is expelled through said bore for needleless injection.

3,853,126

ARTERY-TO-VEIN SHUNT

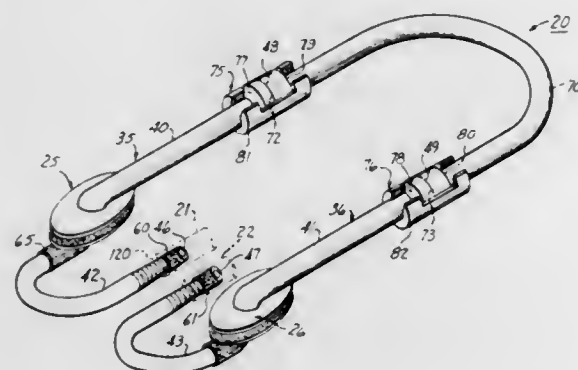
Rudolf R. Schulte, Goleta, Calif., assignor to Heyer-Schulte Corporation, Goleta, Calif.

Filed Nov. 15, 1973, Ser. No. 416,033

Int. Cl. A61m 5/00, 25/00

U.S. Cl. 128—214 R

20 Claims



1. An artery-to-vein shunt for long-term implantation in a human body to give external access to the arterial and venous system, comprising: a first and a second button, each button comprising a body member having a top and a bottom surface, a peripheral wall extending around the body and interconnecting said top and bottom surfaces, a peripheral groove in said peripheral wall, and peripheral button-sealing means in said

peripheral groove; a first and a second shunt tube, respectively attached to and passing through the first and second buttons, each of said first and second shunt tubes having an inner and outer wall, and a flow conduit defined by the respective inner wall, each of said shunt tubes forming a coupler portion adjacent to and extending from the top surface of the button, and a connector portion adjacent to and extending from the bottom surface of the body, each said portion having a free end spaced from the button, the free end of the connector portion being intended for long-term attachment to a respective artery or vein; a fixation cuff on the outer wall of each connector portion adjacent to the respective free end; shunt tube stabilizer means extending peripherally around the outer wall of the connector portions of the first and second shunt tubes, adjacent to the bottom surface of the respective button, the fixation cuff and the shunt tube stabilizer means comprising a material with openings into which tissue can penetrate; a third shunt tube having a flow conduit and a pair of free ends; and a pair of couplings, each detachably joined to a respective free end of the third shunt tube to a respective free end of one of the coupler portions so as to interconnect the flow conduits of the first and second shunt tubes through the flow conduit of the third shunt tube when they are joined by the couplings.

3,853,127

ELASTIC SEALING MEMBER

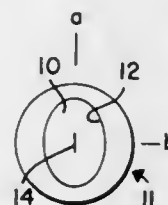
Richard G. Spademan, 933 Addison Ave., Palo Alto, Calif. 94301

Filed Apr. 3, 1973, Ser. No. 347,438

Int. Cl. A61j 1/06; B65d 53/00, 39/00

U.S. Cl. 128—214.4

16 Claims



1. In a method wherein a penetrating instrument is caused to pierce a solid wall of an elastic sealing member and wherein said instrument causes a perforation in said wall, the improvement comprising the steps of: generating a first force of a first magnitude in said sealing member along a first axis of said member and generating a second force of a second magnitude in said sealing member along a second axis of said member, said second axis being angularly displaced from said first axis, said first and said second forces serving to generate in said sealing member a greater stress along said first axis than along said second axis for closing said perforation caused by said penetrating instrument when said instrument is withdrawn from said member.

3,853,128

VALVED UNDERWATER DRAINAGE APPARATUS

Leonard D. Kurtz, Woodmere, and Robert Bidwell, Melville, L.I., both of N.Y., assignors to Deknated Inc., Queens Village, Long Island, N.Y.

Filed July 10, 1972, Ser. No. 269,962

Int. Cl. A61f 5/44

U.S. Cl. 128—275

3 Claims

1. In an underwater drainage device for draining fluid from a pleural cavity comprising a collection chamber having an inlet, a thoracotomy tube interconnecting the pleural cavity and the inlet to said collection chamber whereby the collection chamber receives and collects fluids drained from the pleural cavity, an outlet from the collection chamber, a U-shaped water seal chamber, a U-shaped manometer chamber, the upper end of one arm of the U-shaped water seal chamber being connected to the outlet from the collection chamber, the upper end of the other arm of the U-shaped water seal

chamber being connected to the upper end of one arm of the U-shaped manometer chamber, the other arm of the U-shaped manometer chamber being open to atmosphere, a connection from said device with a source of suction, during normal operation the source of suction maintaining the pleural cavity at a negative pressure determined by the fluid in the manometer chamber, and valve means in said device, said valve means being normally closed and opening only during sudden abnormal conditions when the pressure within the pleural cavity exceeds atmospheric pressure, said valve means being an

being covered on the lower surface of said pressure sensitive fastener with a plastic material having a retiform surface defining a system of hill portions and valley portions, said hill portions covering said adhesively treated lower surface of said middle segment, and said valley portions exposing said adhesively treated lower surface; said fastener when in non-operating position being folded in a manner such that said releasable end segment and said middle segment are superimposed over said fixed end segment with the lower surface of said releasable end segment being in contacting relation and releasably secured to the hill portions of said middle segment.

3,853,130

STERILE HANDLING CATHETER ASSEMBLIES

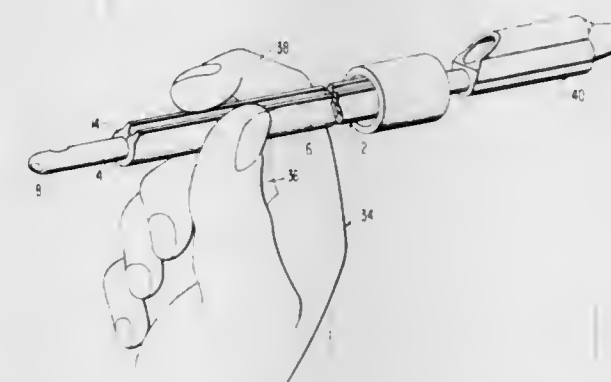
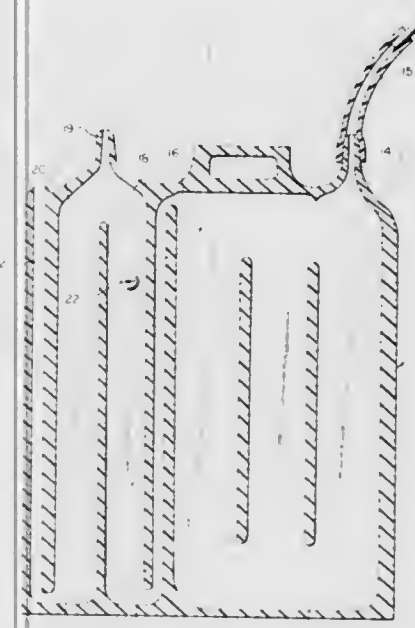
David S. Sheridan, Hood Rd., Argyle, N.Y. 12809

Filed Dec. 4, 1973, Ser. No. 421,726

Int. Cl. A61m 25/00

U.S. Cl. 128—349 R

12 Claims



outlet to atmosphere in addition to the outlet to atmosphere provided by the arm of the U-shaped manometer chamber open to atmosphere, said valve means being positioned in said device to vent to atmosphere sudden positive pressure surges within the pleural cavity occurring even during normal operation of the suction source and to prevent said sudden positive pressure surges from causing fluid within the U-shaped manometer chamber from passing out through the arm open to atmosphere to vary the degree of vacuum imposed by the source of suction.

3,853,129

PRESSURE-SENSITIVE TAPE FASTENER FOR DISPOSABLE DIAPERS

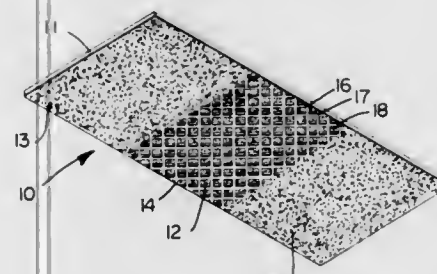
Theodore F. Kozak, Peekskill, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,089

Int. Cl. A61f 13/16

U.S. Cl. 128—287

6 Claims



1. In a disposable diaper having a topsheet, a backing sheet and an absorbent core interposed therebetween, the improvement comprising a pressure-sensitive tape fastener having an upper surface and a lower surface, said lower surface being divided widthwise into two end segments at least one of which is adhesively treated, and an adhesively treated middle segment, one of said end segments being a fixed end segment which is secured to said backsheet, the other of said end segments being a releasable end segment, said middle segment

1. A sterile handling catheter assembly comprising: a catheter having a distal end portion, a proximal end portion and a central body portion integrally connecting the distal end portion to the proximal end portion, a protective sheath formed of flexible plastic material that, throughout the length thereof, substantially completely and closely encircles said catheter, the length of said sheath being sufficient that at least the proximal end and central body portions of said catheter are so encircled, said sheath having a longitudinal slit extending substantially the length thereof, a first rib running substantially the length of said sheath adjacent one side of said slit extending radially outwardly from said sheath, a second rib running substantially the length of said sheath adjacent the other side of said slit extending radially outwardly from said sheath substantially the same distance as said first rib, said ribs creating a pair of parallel barrier members above said slit to preserve the sterility of the edges of the slit during manipulation of said assembly in the installation of said catheter in a patient.

3,853,131

COMBINE HARVESTERS

Sigmund Stokland, 2380 Brumunddal, Norway

Filed Nov. 8, 1972, Ser. No. 304,801

Claims priority, application Austria, Nov. 8, 1971, 9608/71

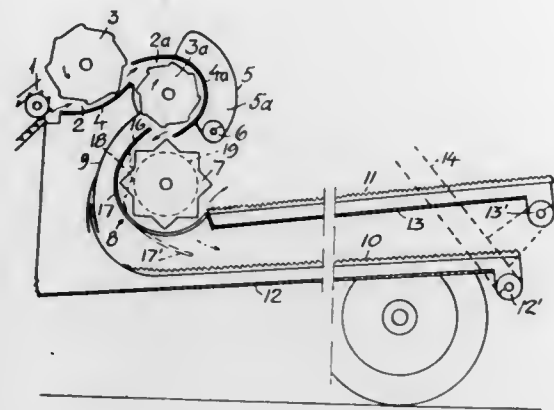
Int. Cl. A01f 12/18

U.S. Cl. 130—27 F

6 Claims

1. A combine harvester comprising a threshing means for receiving cut crop to thresh the same and deliver a stream of threshed material, a first upper straw walker for receiving threshed material from the threshing means, a second lower straw walker disposed below the first straw walker also for receiving threshed material from the threshing means, each of said straw walkers having a respective cooperating shaking table therebeneath for delivering material independently of the other, and separating means disposed between the thresh-

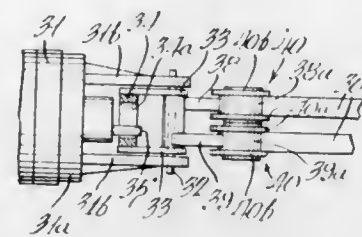
ing means and said first and second straw walkers for receiving the stream of threshed material and directing a portion of said stream of threshed material to said lower straw walker and the remainder of the threshed material to said upper straw walker,



3,853,133
COMBINED HAIR DRYER AND DETANGLER
Ikuro I. Komatsu, Glen Ellyn; Roger A. Rieckman, Elmhurst, and Leon M. Roszyk, Downers Grove, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 13, 1973, Ser. No. 378,927
Int. Cl. A45d 24/00

U.S. Cl. 132—11 A

10 Claims



said separator means comprising a grate-shaped baffle means having openings through which a part of the stream of threshed material is fed to the lower straw walker while the remainder of said stream of the threshed material is passed and fed to the upper straw walker.

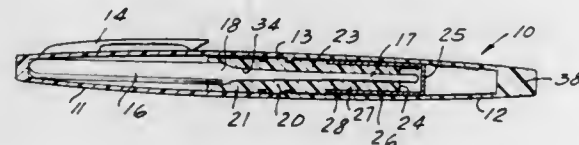
3,853,132
PIPE TOOL

Edward Donald Patton, 611 E. 88th St., Chicago, Ill. 60619
Continuation-in-part of Ser. No. 309,427, Nov. 24, 1972, Pat. No. 3,814,109. This application Mar. 27, 1974, Ser. No. 455,145

Int. Cl. A24f 09/08

U.S. Cl. 131—243

10 Claims



1. A pipe tool comprising: a one-piece member having a scraper portion having a base portion provided on one end thereof and an integral elongated pick extending from the base portion; a body member having a length substantially equal to the length of the elongated pick having a first end portion with a first end surface, a second end portion having means forming a tamping surface, and a passage extending in the body member from the first end surface toward the second end surface; a first removable hollow cap member telescopically received on the first end portion; and a second removable hollow cap member telescopically received on the second end portion of the body member to cover the tamping surface, said one-piece member being removably mounted in the body member with the scraper portion extending from said first end surface and the pick and base portion received in the passage so that the first removable hollow cap member covers the scraper portion and the body member forms a grip while using the scraper portion and so that the one-piece member may be removed from the body portion to provide a pick for use in cleaning a pipe bowl and stem.

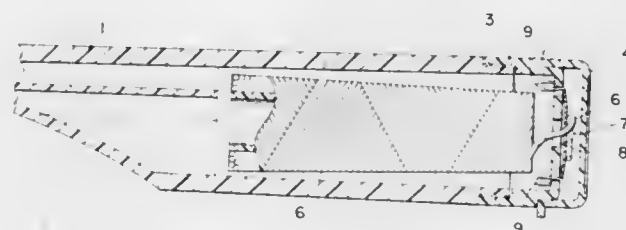
3,853,134
TOOTHBRUSH AND DENTAL-FLOSS DISPENSER
Robert C. McCord, Florence, Mass., assignor to Vistron Corporation, Cleveland, Ohio

Filed Oct. 13, 1972, Ser. No. 297,211

Int. Cl. A61c 15/00

U.S. Cl. 132—92 A

1 Claim



1. In a toothbrush comprising a handle equipped at one end with longitudinally spaced rows of tufts of suitable bristles and at the hollow opposite end with a dental-floss dispenser comprising a roll of dental floss mounted inside the handle and a cutter equipped with an open slot to receive the dental floss before it is cut, said cutter being located at the very end of the handle, the improvement comprising a rotatably mounted end cap adapted to surround the cutter, said end cap being

equipped with a hinged cover which can be opened or closed in a locking position to expose or conceal and protect the dental-floss cutter.

3,853,135
UMBRELLA FRAME

Josef Schafer, Solingen, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada

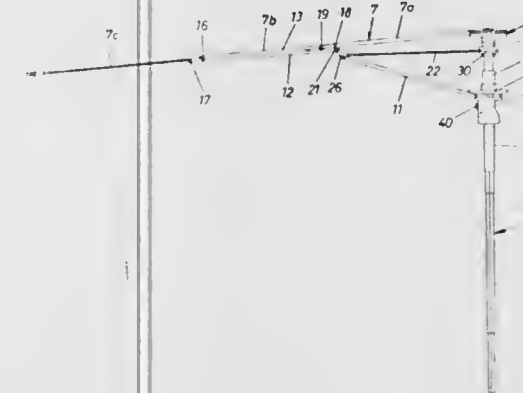
Filed Apr. 16, 1973, Ser. No. 351,369

Claims priority, application Germany, Apr. 22, 1972, 2219765

Int. Cl. A45b 19/00

U.S. Cl. 135—25 R

7 Claims



1. An umbrella frame comprising a stick, a crown at one end of the stick, a main runner slidable on the stick, dome ribs hinged from the crown; each dome rib including a first section hinged to the crown, a median section hinged to the first section and adapted to fold over the first section, and a third section hinged to the outer end of the median section and adapted to fold over on the median section; a first support member hinged to the stick and extending substantially parallel to the first dome rib section, and a second support member hinged to the first support member and to the third dome rib section and extending substantially parallel to the median section, the outer end of the inner dome rib being hinged at its outer end to the second support member at a point spaced from the hinge of the inner section and the median section, and the hinge point of the first support member and the second support member being spaced from the hinge point of the inner dome rib section and the second support member, and strut means hinged to the main runner at one end and to a geats at the other end adapted to slide on the first support section.

3,853,136
SELF-CENTERING FOLDABLE UMBRELLA STRUCTURE
Julius M. Schwartzberg, White Plains, N.Y., assignor to Storm Hero Umbrella Co., Inc., New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,509

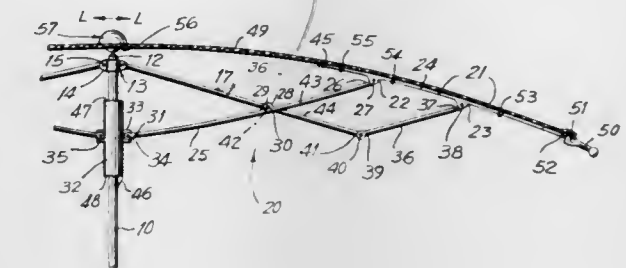
Int. Cl. A45b 19/00

U.S. Cl. 135—25 R

5 Claims

1. A foldable umbrella structure comprising a shaft, a handle at one end of said shaft, a notch assembly at the other end of said shaft, a runner mounted on said shaft for movement toward and away from said notch assembly, a plurality of angularly spaced apart linkage means extending radially relative to the axis of said shaft, said linkage means including a pivotal connection to said notch and to said runner, said

linkage means being shifted between a collapsed position paralleling said shaft and an extended position spaced from said shaft responsive to said movement of said runner away from and toward said notch, respectively, cover supporting rib means operatively connected to said linkage means, said rib means being shifted between collapsed and extended positions relative to said shaft responsive to movements of said linkage means, said rib means having inner and outer end portions, the inner end portions of said rib means, in said extended position,



being spaced from said shaft, a cover member secured to said rib means and overlying said rib means and said shaft, said cover member having an apex portion in registry with said other end of said shaft, and a cap member including portions extending above and below said cover secured to said apex, said cap member and the portions of said cover located inwardly of said inner ends of said rib means being free of connection with said shaft and linkage means and being movable relative to said other end of said shaft in said extended position.

3,853,137
SYSTEM FOR REMOTELY CONSTRUCTING UNDERGROUND STRUCTURES

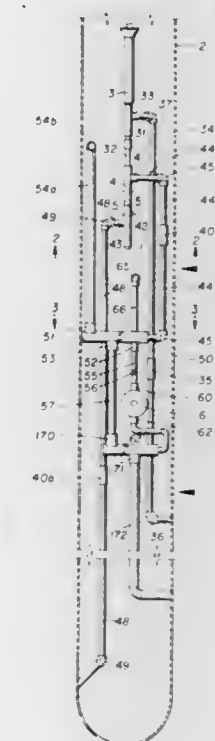
Charles D. Manson, Jr., and Eugene E. Baker, both of Duncan, Okla., assignors to Holliburton Company, Duncan, Okla.

Filed July 17, 1972, Ser. No. 272,538

Int. Cl. B55g 5/00

U.S. Cl. 137—1

37 Claims



1. A fluid control system for selectively flowing one or more fluids into an area having three distinct and separate zones,

comprising: first delivery means for selectively delivering a heavy fluid to a first, lower zone; second delivery means for selectively delivering a second flow of heavy fluid to a second, upper zone, said second delivery means being fluidly connected to said first delivery means; composite-slurry flow means for selectively delivering a first source of composite slurry to a third, intermediate zone; first valve means for preferentially switching heavy-fluid flow from said first, lower zone to said second, upper zone; composite delivery means for preferentially switching from heavy-fluid flow into said first and second zones to composite slurry flow into said intermediate zone; equalizing means for maintaining equal pressure between said first and said second zones during said composite-slurry flow; second valve means for stopping said composite-slurry flow and for diverting excess composite-slurry flow to said first lower zone; third valve means for flowing composite slurry to said first zone to displace the heavy fluid therein; and, means for closing said third valve means after flowing the desired amount of said composite slurry.

3,853,138

METHOD AND APPARATUS FOR CONVEYING LIQUID THROUGH A LONG CONDUIT

Jan Vilhelm Amren, Sollentuna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

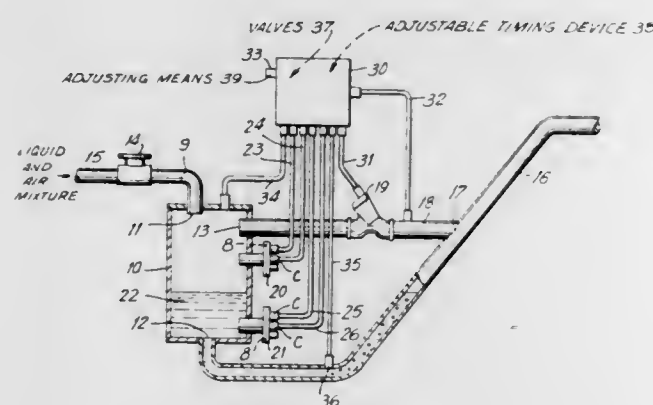
Filed Apr. 25, 1973, Ser. No. 354,337

Claims priority, application Sweden, Apr. 26, 1972, 5530/72

Int. Cl. C02c 1/00

U.S. Cl. 137-1

7 Claims



5. A method for conducting liquid from a collecting receptacle and through a long conduit connected thereto having an upwardly sloping section, supplying a mixture of liquid and air to said collecting receptacle, separating the air from the liquid in the receptacle, passing the separated air through a shunt pipe connecting the upper portion of the receptacle to the upwardly sloping section of the long conduit, collecting the liquid in the receptacle, conveying the liquid through the conduit by closing a valve in the shunt pipe when the liquid has reached a predetermined level in the receptacle, and mixing air into the liquid while said liquid is being conveyed.

3,853,139

Patent Not Issued For This Number

3,853,140

DRAINAGE SYSTEM

John P. Gorman, Woodland, Calif., assignor to Cast Iron Soil Pipe Institute, Washington, D.C.

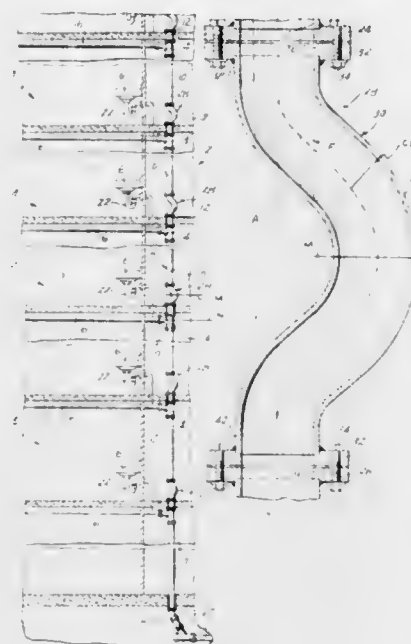
Continuation of Ser. No. 152,562, June 14, 1971, abandoned.

This application Sept. 24, 1973, Ser. No. 399,953

Int. Cl. F16l 5/00

U.S. Cl. 137-357

15 Claims



1. A sanitary drainage system for a multi-floor building, comprising: a substantially vertical sewerage drainage stack extending upwardly within said building, at least one lateral sewerage drainage line connected to said vertical drainage stack, said lateral drainage line being connected to a plumbing fixture through a trap unit for containing a liquid trap seal; and a plurality of fittings installed in said vertical stack and being spaced apart by a distance generally equal to the nominal distance between floor levels of said building, but no greater than 15 feet, the lowermost one of said fittings being within 15 feet of the base of the vertical drainage stack, and said lateral drainage line being associated with the closest one of said fittings, each of said fittings comprising: an upper inlet section connected to said vertical stack and having a single fitting inlet substantially in alignment with the axis of said vertical stack; an intermediate offset section connected to the lower end of said inlet section and offset from said axis, and a lower exit section connecting said offset section to said vertical stack, the lower end of said exit section being in alignment with said axis, each of said fittings having a longitudinal centerline lying in a plane.

3,853,141

TOILET RESERVOIR VALVE

Edward J. Fischer, 630 Queen City, Covington, Ky. 41011

Filed July 9, 1973, Ser. No. 377,756

Int. Cl. F16k 31/26

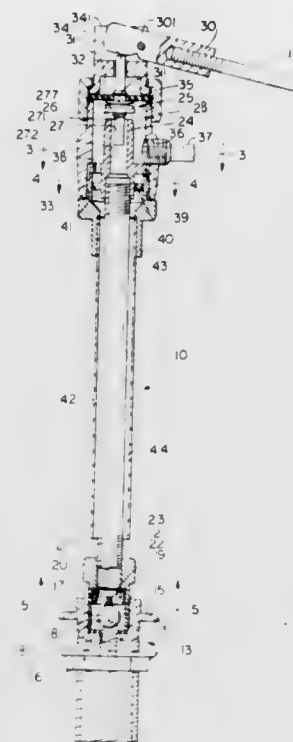
U.S. Cl. 137-436

10 Claims

1. In combination with a toilet reservoir tank, a mounting fixture mounted in a bottom panel of the tank, a water supply pipe connected to the mounting fixture, said mounting fixture incorporating an upright socket in the upper portion thereof, there being a passageway in the mounting fixture in communication with the water supply pipe and with the socket, an upper wall for the socket, there being a central port in the upper wall, a ball valve seat in said upright socket surrounding the passageway, a ball valve in the socket to work against said seat, a ball retaining disc overlying the ball valve, slideably received in the socket and engageable with the upper wall of the socket to limit upward movement of said ball, there being a sloping opening in the disc adapted to connect the port with the interior of the socket when the ball is in a raised position to permit passage of water around the ball, a toilet reservoir

valve assembly, and an upright supply pipe supporting the valve assembly, the lower end of the supply pipe communicating

by pressure between the valves, to close by pressure in the supply line, and to close by biasing means exerting a force increasing with displacement of its valve piston.



3,853,143

FLEXIBLE DIAPHRAGM AIR DAMPER

Guido Amandus De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Sweden

Continuation of Ser. No. 220,107, Jan. 24, 1972, abandoned.

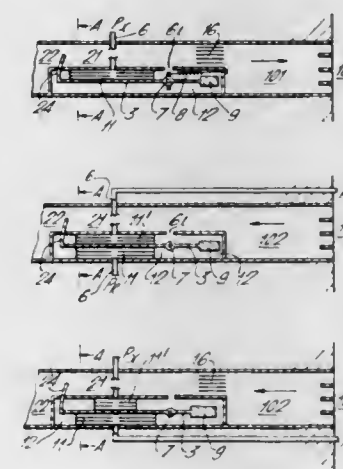
This application May 24, 1973, Ser. No. 363,323

Claims priority, application Luxembourg, Jan. 29, 1971, 62512

Int. Cl. G05d 7/00

U.S. Cl. 137-494

6 Claims



ing with the port so that the upright supply pipe receives water which passes the ball.

3,853,142

FLOW CONTROL SYSTEM

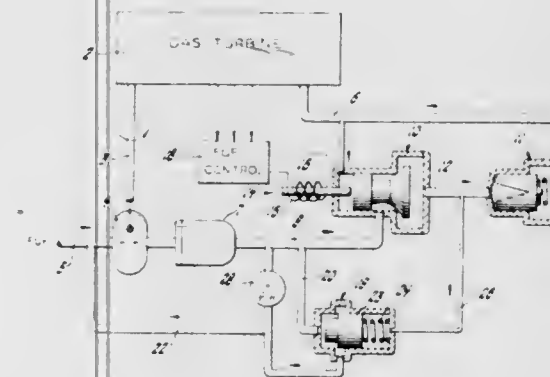
Richard G. Grundman, Coopersville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1973, Ser. No. 356,291

Int. Cl. F16k 21/00

U.S. Cl. 137-487.5

7 Claims



1. Means for supplying fuel to an engine comprising, in combination, a source of fuel under pressure; a fuel supply line for the engine; and a balance valve and a flow sense valve connected in series between the source and the supply line; both the said valves being throttling valves including reciprocally mounted valve pistons oppositely biased by fuel pressures on equal areas; the balance valve being biased to open by supply line pressure, to close by pressure between the valves, and to open by means exerting a variable control force on its valve piston; the flow sense valve being biased to open

1. A pneumatic control assembly for maintaining a constant downstream pressure in a conduit comprising, a conduit having an air flow control passage section, casing means forming a chamber, said casing means including wall means in common with said control passage section, said wall means having a transversely extending slot, moveable plate member mounted in said chamber, guide means for guiding the movement of said plate member, said plate member having a blade portion extending through said slot for controlling the opening of said control passage section pursuant to the position of said blade member plate portion, bag means sandwiched between said plate and said casing means, said bag means having first portions thereof fixedly secured to said plate member and said casing means and second portions thereof extending between said plate member and said casing, said second portions being characterized by the absence of any significant bending resistance, and aperture means in said casing for admitting and exhausting air to and from said bag means to bias said plate member in one direction, and weight means gravitally biasing said plate member in the opposite direction from said one direction, an opening in said wall means on the downstream side from said slot for providing fluid communication between the downstream side of said control passage section and the interior of said chamber.

3,853,144

FLOWMETER

James M. Whelan, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Mar. 9, 1973, Ser. No. 339,893

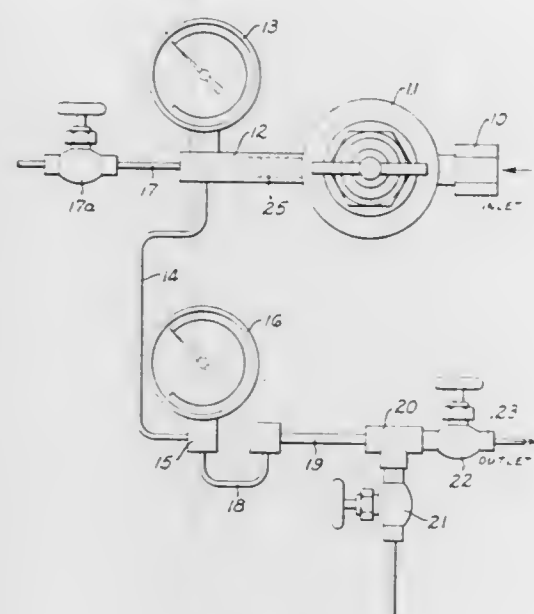
Int. Cl. F16k 11/20

U.S. Cl. 137-608

2 Claims

1. In a meter for regulating the flow of a fluid, the combination of:

pressure regulating means for delivering a desired and uniform mass flow of a fluid to an outlet;
a first conduit connected to said outlet;
a pressure gauge connected to said first conduit;
a capillary tubing one end of which is connected to said first conduit;



a second conduit connected to the other end of said capillary tubing and having an outlet;
an outlet valve connected to the outlet of the second conduit; and
a flushing valve connected to said second conduit upstream of said outlet valve.

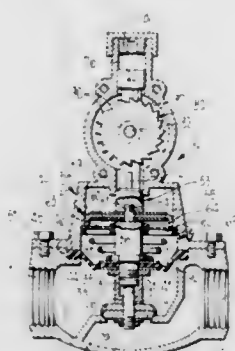
3,853,145

PRESSURE CHANGE ACTUATED SEQUENCING VALVE
Everett W. Judd, Ogden, Utah, assignor to Daniel F. Hammon, Kentfield and Olson LaClead, Unita, both of Calif., a part interest to each

Filed Aug. 7, 1973, Ser. No. 386,467
Int. Cl. A01g 25/02

U.S. Cl. 137-624.18

9 Claims



1. A pressure responsive sequencing valve assembly comprising:

a body member having an inlet, an outlet, a valve seat between said inlet and said outlet, and first and second chambers having a first bore therebetween, said second chamber opening into a second bore generally opposite said first bore;

a valve member for controlling fluid flow through said valve seat, said valve member having a valve disk and a stem with an enlarged head portion; and

damped sequencing means for controlling the actuation of said valve member in response to inlet pressure cycles, said damped sequencing means including:

a flexible, non-rolling diaphragm mounted in said body member in substantially unrestricted fluid communication with said inlet, said diaphragm providing a fluid seal for the end of said first chamber remote from said bore, a piston cup assembly mounted in said first chamber in movable sealing engagement with the walls thereof to define with said diaphragm a sealed enclosure adapted to contain a damping fluid,

a substantially rigid damping plate mounted in said first chamber between said diaphragm and said piston cup assembly, said plate having a central aperture and at least one flow control orifice for controlling the rate of flow of said damping fluid therethrough to prevent operation of said damped sequencing means in response to spurious inlet pressure variations,

spring means coupled between said damping plate and said diaphragm for urging said diaphragm to a normal configuration,

motion translating means coupled to said diaphragm for reciprocal motion therewith and coupled to said valve member, said motion translating means including a first coupling member comprising a body having a hollow interior for slidably receiving the enlarged head portion of said valve stem and a first end wall provided with a bore for slidably receiving said valve stem, said hollow interior and said bore being dimensioned to snugly accommodate the associated valve member portions to provide a lost motion coupling with first major bearing surfaces enabling reciprocation of said motion translating means by a predetermined amount without actuating said valve member,

said motion translating means further including an intermediate coupling member secured at a first end to the other end of said first coupling member body with a central portion of said diaphragm sandwiched therebetween, a central body portion slidably received in said central aperture of said damping plate to provide second major bearing surfaces, and a second end,

said motion translating means further including a cam shaft having a first end secured to said second end of said intermediate coupling member with the central portion of said piston cup assembly sandwiched therebetween, a lower portion slidably received in said first bore to provide third major bearing surfaces, an upper portion slidably received in said second bore to provide fourth major bearing surfaces, and an intermediate portion having a pair of raised facing cam members extending therealong in a direction substantially parallel to the axis of said shaft, one of said facing cam members having a greater dimension in a direction substantially normal to said shaft axis than the other one of said facing cam members; and valve cycle means for controlling the rate of actuation of said valve member, said valve cycle means including a ratchet wheel mounted in said second chamber for rotation about an axis substantially normal to said cam shaft axis, said wheel having a plurality of peripheral teeth adapted to be alternately engaged by said cam members upon reciprocation thereof by said diaphragm to rotate said wheel by incremental amounts, said teeth having means for limiting reciprocation of said cam shaft to said predetermined amount to prevent premature actuation of said valve means, and a plurality of escapement channels formed in a face of said wheel engageable only with said other one of said cam members for permitting said reciprocation to exceed said predetermined amount after a predetermined number of said inlet pressure cycles to actuate said valve member, said major bearing surfaces limiting movement of said motion translating means and said valve member to substantially only axial movement.

3,853,146

THROTTLE VALVE

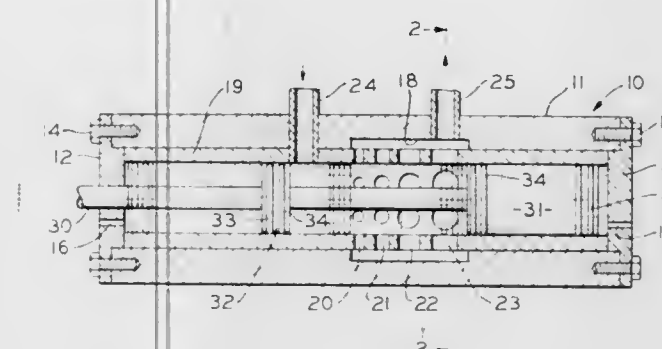
William G. Blair, Ormond Beach, Fla., assignor to Blair Engineering, Inc., Ormond Beach, Fla.

Continuation-in-part of Ser. No. 136,721, April 23, 1971, Pat. No. 3,780,531. This application Sept. 12, 1973, Ser. No. 396,606

Int. Cl. F16k 3/24

U.S. Cl. 137-625.3

7 Claims



1. A throttle valve for controlling a pressurized fluid comprising a housing having a bore; a pair of axially spaced spool members slidably mounted within said bore; means for unitarily moving said spool members in said housing and maintaining their spaced relationship; said housing having an inlet line and an outlet line axially spaced from each other and in fluid communication with said bore; means disposed in said housing providing axially spaced apertures of graduated size located in the path of fluid flowing through said valve from said inlet line to said outlet line; said spool members being axially movable to open and closed positions whereby to respectively uncover or cover all of said apertures; one of said spool members having an axial length at least equal to the distance covered by said apertures adapted to progressively cover said apertures and maintain said apertures covered during movement to closed position to control the flow of fluid through said valve and contain the fluid between said spool members; said spools being spaced apart a sufficient distance to cause said inlet line to be disposed between said spools in any position of said spools whereby pressure fluid trapped between said spools exerts equal pressure in both axial directions at all times to stabilize said valve in any position of said spools.

3,853,147

RESPIRATOR FLOW CURVE MODIFIER

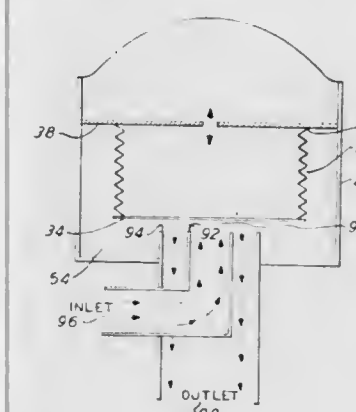
Anthony B. Cibulka, Poyntette, Wis., assignor to Airco, Inc., New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,906

Int. Cl. F16l 55/04

U.S. Cl. 138-30

19 Claims



1. A device for modifying the normal square-pulse characteristic of the flow curve of square-wave respirator systems; to

provide a gradual development to peak flow, comprising in combination:

- a chamber;
- a movable wall mounted for displacement in said chamber;
- a gas flow space between said wall and one side of said chamber;
- an inlet and an outlet to said gas flow space for connection of said device in line with the breathing circuit of said respirator system;
- a relatively rigid first plate mounted across said chamber and spaced from said movable wall, on the side of said wall non-adjacent to said one side, the space between said plate and wall defining a fluid damping reservoir;
- bounding means between said inlet and outlet, defining with at least a portion of said movable wall, a variable cross-section gas passageway varying in accordance with the displacement of said portion of said movable wall;
- an orifice communicating with said fluid damping reservoir;
- a fluid within the said damping reservoir displaceable through said orifice in response to displacement of said movable wall toward said plate by pressure changes introduced at said flow space by the inspiratory portion of said breathing cycle; the bleeding of said fluid through said orifice allowing controlled growth in cross-section of said gas passageway, thereby providing a damping in build-up of the gas flow through said device; and
- means to restore the original position of said movable wall upon completion of a gas flow pulse, and to return fluid to said reservoir.

3,853,148

HOSE ASSEMBLY WITH ROUTING BRACKET

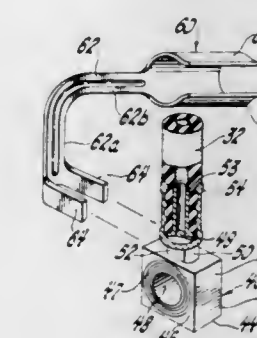
Patsy De Vincent, Dayton, and Bruce E. Kirkham, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1973, Ser. No. 361,782

Int. Cl. F16l 11/12

U.S. Cl. 138-110

4 Claims



1. A hose assembly including a hose fitting having a first end including means to be inserted into and crimped to an end of a flexible hose, a second end having at least one orientation mounting surface thereon and an intermediate portion with at least one guide surface means thereon in a predetermined angular relationship to said mounting surface, a flexible hose connected at one end to said first end of said hose fitting and, a rigid pre-bent hose routing bracket having one end aligned by said guide surface means relative to said orientation mounting surface and secured to said hose fitting at said intermediate portion and having its opposite end secured to said flexible hose, said flexible hose being retained bent adjacent to said end of said hose secured to said fitting by said hose routing bracket.

3,853,149

COMPOSITE TUBING

Clifford R. Stine, Bedford Heights, Ohio, assignor to Samuel Moore & Company, Mantua, Ohio

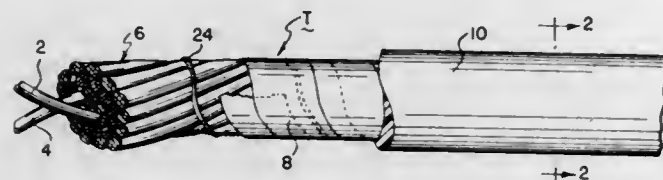
Continuation-in-part of Ser. Nos. 48,774, May 14, 1970, abandoned, and Ser. No. 44,526, June 8, 1970, abandoned.

This application June 14, 1972, Ser. No. 262,513

Int. Cl. F16I 11/12

U.S. Cl. 138-111

23 Claims



1. A composite tubing bundle of indeterminate continuous length of bendable, high strength construction with improved cushion-like, and crush resistant characteristics and controlled low-heat conductance per unit of insulation at service temperatures in excess of 500°F. for maintaining a conveyed fluid sample at constant elevated temperature comprising, at least one tubular sampling line having an O.D. in the range of one-eighth inches to 2 inches for conveying fluid therethrough,

at least one heat transmitting trace line disposed in heat transfer relation along the length of said sampling line, a flexible thermal-barrier of high bulk, low density, and self-supporting material disposed in controlled insulating relation with respect to said lines to provide a thermal temperature control gradient to maximize a uniform heat transfer between the lines and to minimize heat transfer to the exterior of the bundle,

said thermal-barrier having an inner layer including a plurality of individual, continuous rope-like elements cabled together in spiraled relation around said lines with a lay at 360° of 2 inches to 20 inches per length of tubing, said rope-like elements being made from an inorganic, substantially incombustible fibrous material having a density less than 80 pcf. at ambient temperature, at least one other outer layer disposed in encompassing relation around said inner layer,

said outer layer including a plurality of individual, continuous rope-like elements made from a heating insulating material cabled together around said outer layer and disposed in spiraled relation generally opposite to that of rope-like elements of said inner layer in relation to the longitudinal axis of said bundle,

the thermal-barrier having between two and eight of said layers per inch of wall thickness of the composite bundle with the rope-like elements having a diameter, untensioned, approximately 1/8 inch to 1 inch,

a sheath of extruded polymeric material disposed around said outer layer and having a smaller wall thickness as compared to the thickness of said thermal-barrier and coating with the thermal-barrier to provide a cushion-like, self-support for the heating and sampling lines, said tubing bundle, as finished, having an O.D. in the range of 3/4 inches to 6 inches,

the ratio of the O.D. of said bundle to the wall thickness of said thermal-barrier being in the range from 2:1 to 4:1 to provide a cushion-like, yet bendable self-support for the heating and sampling lines, and

said thermal-barrier providing a thermal temperature gradient beneath the sheath sufficient to maintain said sheath substantially at its continuous temperature rating for trace line temperatures in excess of 500°F.

3,853,150

FLUID-OPERATED DEVICE FOR RAISING WARP YARNS IN LOOMS

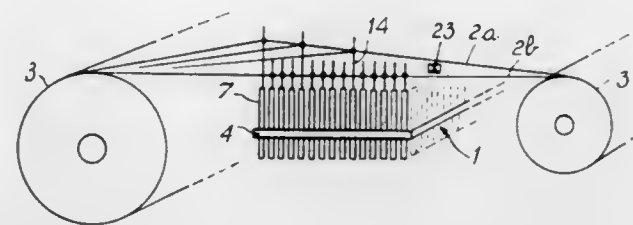
Enrico Romano, Via Betti 31/a, Milan, Italy 20151

Filed Oct. 3, 1972, Ser. No. 294,735

Int. Cl. D03c 13/00

U.S. Cl. 139-55

4 Claims



1. A fluid-operated device for raising warp threads in looms, comprising a pressure chamber containing a pressure fluid and having two opposite parallel flat walls, said flat walls being provided with a plurality of through bores arranged in parallel rows, a plurality of fluid-operated cylinders having pistons slidable therein and actuated by said pressure fluid, and a plurality of rods each rigid with one of said pistons and extending out of said fluid operated cylinders, said rods being each provided with an eyelet for holding a corresponding warp thread, wherein, according to the improvement, the device further comprises a plurality of rod elements extending between said parallel flat walls and having ends slidable inside said through bores, said rod elements having a longitudinal internal blind hole and a transverse through hole communicating therewith, said longitudinal hole extending between said transverse through hole and one end of said rod elements for communication with a corresponding one of said fluid-operated cylinders, said rod elements being selectively movable between a first position in which said transverse hole is positioned out of said chamber, thereby discharging pressure fluid from said fluid-operated cylinders through said longitudinal hole to the atmosphere and lowering the selected warp threads, and a second position in which said transverse through hole is positioned inside said chamber, thereby providing pressure fluid supply to said fluid-operated cylinders and raising of the selected warp threads, means for selectively actuating said rod elements according to the pattern that has to be reproduced on the fabric and resilient means for returning said rod elements from said second position to said first position.

3,853,151

WEAVING MACHINE

Cornelis Van Donk, Mortel, and Vermeulen, Geert Jan, Deurne, both of Netherlands, assignors to Rütite Strake B.V., Deurne, Netherlands

Continuation-in-part of Ser. No. 215,481, Jan. 5, 1972, abandoned. This application Nov. 23, 1973, Ser. No. 418,365
Claims priority, application Netherlands, Jan. 8, 1971, 7100266

Int. Cl. D03d 47/38

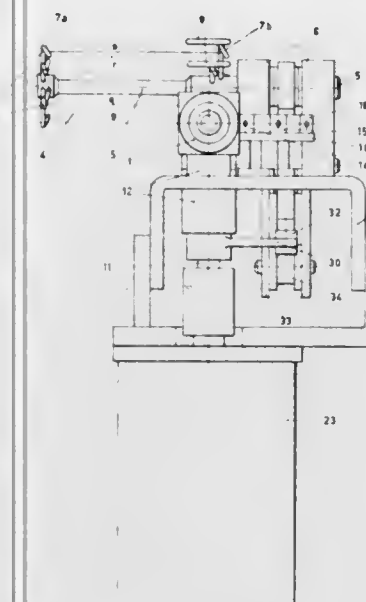
U.S. Cl. 139-122 W

7 Claims

1. In a weaving machine, an apparatus for selectively preparing, storing and presenting to a blowing nozzle any one of a plurality of different weft yarns, comprising a blowing nozzle, a storing device for drawing and temporarily holding an intermediate length of one of the weft yarns, a guiding device having separate means for supporting in a rest position an intermediate portion of each of the weft yarns, which is selectively movable into a plurality of positions in each of which an intermediate portion of one of the weft yarns is presented to the storing device, an auxiliary device for selectively presenting the end of any one of the weft yarns to the blowing nozzle, which has means for receiving the end of each of the weft yarns in a rest position, and which is selectively movable into a plurality of positions in each of which the end of one of the

weft yarns is presented to the blowing nozzle, and mechanism connecting the guiding device to the auxiliary device to cause the auxiliary device to present the end of a weft yarn to the

adapted to receive a plurality of windings of yarn drawn from the yarn package, an electric motor of the quick response type having a driving connection with the measuring roller, a control circuit which is connected to supply current to drive the motor and which is intermittently energized to drive the motor during each weft-insertion period of the weaving machine, a



3,853,152

GRIPPER SHUTTLE FOR WEFT THREADS IN A LOOM

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

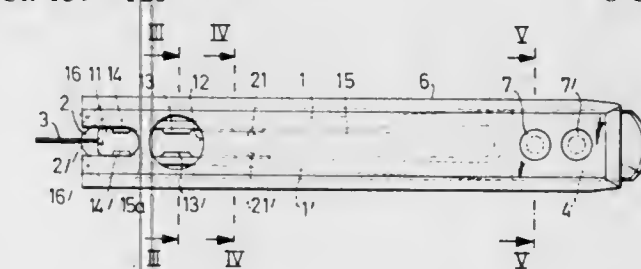
Filed June 27, 1973, Ser. No. 374,239

Claims priority, application Switzerland, July 10, 1972, 10295/72

Int. Cl. D03j 5/06

U.S. Cl. 139-125

8 Claims



1. A gripper shuttle comprising a caselike housing having an opening in a front end thereof; and a thread clamp mounted in said housing, said clamp having a pair of clamp arms within said housing and a yoke connecting said arms together, said yoke having a continuously smooth outer profile and a front end forming a closure for said opening in said front end of said housing, said front end of said yoke being of a cross-section equal to the size of said opening.

3,853,153

DEVICE FOR INTERMITTENTLY SUPPLYING MEASURED WEFT YARN LENGTHS TO THE WEFT INSERTING DEVICE OF A SHUTTLELESS WEAVING MACHINE

Adrianus Henricus Van Duynhoven, Deurne, and Gerardus Hendrikus Kaalverink, Asten, both of Netherlands, assignors to Rütite Strake B.V., Deurne, Netherlands

Filed June 28, 1973, Ser. No. 374,376

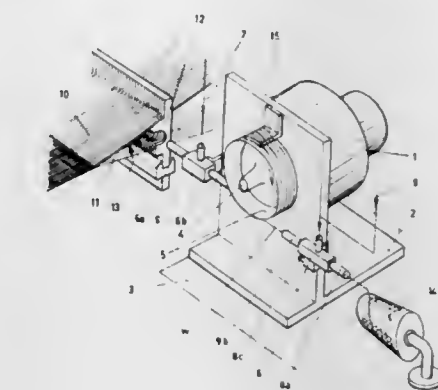
Claims priority, application Netherlands, June 30, 1972, 720978

Int. Cl. D03d 47/34

U.S. Cl. 139-127 P

4 Claims

1. A device for intermittently supplying measured weft yarn lengths from a stationary yarn package in a shuttleless weaving machine, comprising a rotatably mounted measuring roller



3,853,154

CLIP DEVICE ON A SHUTTLE OF A LOOM

Franz Meier, Ruti/Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Casper Honegger, Ruti/Zurich, Switzerland

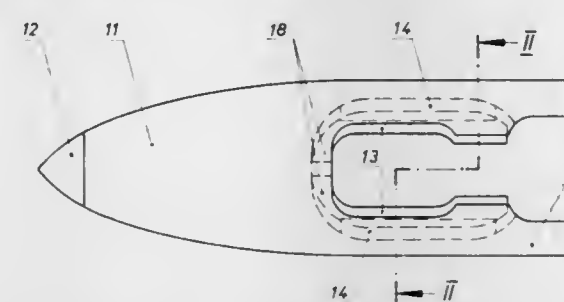
Filed Jan. 22, 1973, Ser. No. 325,138

Claims priority, application Switzerland, Jan. 24, 1972, 969/72

Int. Cl. D03j 5/16

U.S. Cl. 139-207

7 Claims



1. A clamping device on a shuttle for retaining the pirn head of weft pirns, the device having a set of clamping jaws adjacent to lateral walls of the shuttle, said clamping jaws being separate and independent from each other, a resilient supporting material being positioned between each clamping jaw and its adjacent lateral wall for permitting resilient movement of the clamping jaws towards the lateral walls and away therefrom, said resilient supporting material between each clamping jaw and its adjacent lateral wall being secured both to the lateral wall and to the clamping jaw, to support and hold the clamping jaws attached by said resilient supporting material.

3,853,155

TAPE TENSIONING TOOLS

Heinrich Kabel, Quickborn, Germany, assignor to Paul Heller-mann GmbH, Pinneberg, Germany

Filed Jan. 4, 1974, Ser. No. 430,608

Claims priority, application Germany, Jan. 8, 1973, 2300782

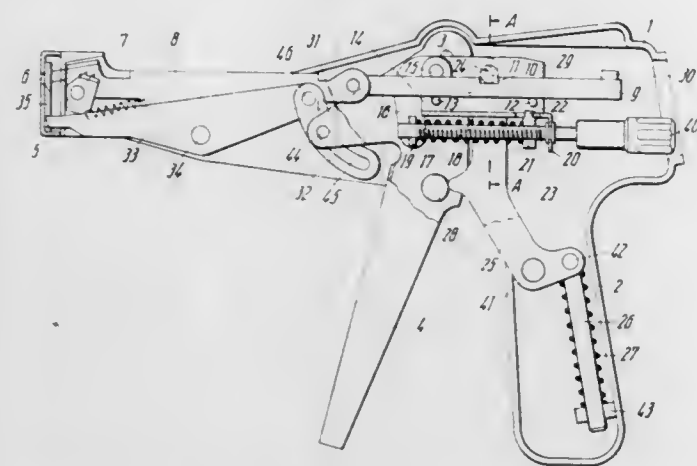
Int. Cl. B21f 9/00

U.S. Cl. 140-123.6

4 Claims

1. A tool for tensioning a tape wrapped around an object and cutting off the surplus when a pre-set tension has been

reached in the tape, said tool comprising a displaceable handle having a given range of travel, means for gripping and tensioning the tape, cutting means operatively associated with the handle for being operated when the tape tension exceeds a predetermined value to cut the tape, coupling means between said handle and the gripping and tensioning means and having an engaged state to cause tensioning of the tape as the handle is displaced, and having a disengaged state at a predetermined tension in the tape, and stop means to limit displacement of the handle to a restricted portion of the range of travel of the handle with the coupling means in



engaged state, said handle being operatively positioned to actuate the cutting means only when the handle is beyond the restricted portion of the range of travel after the coupling means is in disengaged state, said coupling means including a pull rod provided with a recess in one longitudinal edge and, a slide moveable in the longitudinal direction of the pull rod and carrying a runner which is guided to be moveable with respect to the slide transversely of the longitudinal direction of the pull rod and immovable with respect to the slide in the longitudinal direction of the pull rod and which is resiliently urged against that edge of the pull rod provided with the recess.

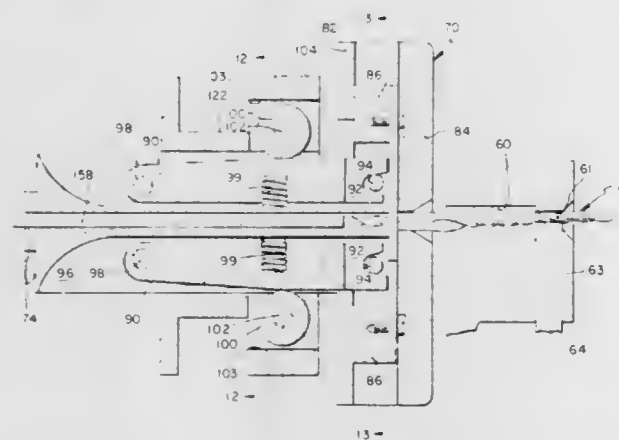
3,853,156

INSULATION STRIPPER AND WIRE SEPARATOR FOR TWISTED WIRE PAIRS

Earl Earnest Folkenroth, and Robert Ullman, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa. Division of Ser. No. 258,334, May 31, 1972. This application Apr. 11, 1974, Ser. No. 459,982
Int. Cl. B21f 21/00

U.S. Cl. 140-149

7 Claims



1. Apparatus for untwisting the two wires of a twisted wire pair and substantially simultaneously stripping insulation from the end portions of said wires, said apparatus comprising: first clamping means for clamping said twisted pair thereon against rotation at a location remote from the end of said pair, second clamping means for clamping said twisted pair thereon at a location adjacent said end of said pair, said second clamping means comprising a pair of opposed

cutting blades which are movable relatively towards each other into surrounding relationship to said pair while cutting at least partially through the insulation of each wire of said pair, and

means for rotating said clamping means relative to each other in opposite directions about the axis of a twisted pair held in said clamping means whereby,

upon clamping of said pair in said first and second clamping means with concomitant cutting of the insulation of said wires of said pair by said second clamping means, and upon relative rotation of said clamping means in the direction of the lay of said pair, said pair will be untwisted between said first and second clamping means, and upon pulling of said pair from said second clamping means, the insulation will be stripped from the end portions of said wires.

3,853,157

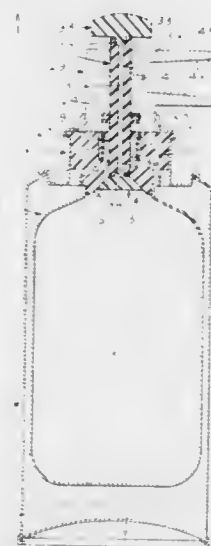
PROCESS AND APPARATUS FOR DISPENSING LIQUID COMPOSITIONS INTENDED FOR PARENTERAL ADMINISTRATION

Anthony J. Madaio, 27 Desmond Ave., Bronxville, N.Y. 10708
Filed Feb. 22, 1973, Ser. No. 334,959

Int. Cl. B65b 3/10

U.S. Cl. 141-2

12 Claims



1. An apparatus for dispensing a liquid composition intended for parenteral administration comprising in combination a rigid container having an opening at one end and adapted to contain under pressure the liquid composition and a gas or liquified gas essentially insoluble in the liquid composition, a closure for the opening having a portion adapted to project into the dispensible liquid composition in the container, a valve within the closure for discharging the liquid composition from the container through the inwardly projecting portion of the closure to an outlet of the container, and a hypodermic syringe comprising a barrel of constant diameter having an opening at one end and terminating at the other end in a hollow filling tip hermetically engaged directly with the outlet of the container to form a fluid-tight conduit for the liquid composition from the outlet to within the barrel of the syringe and a plunger slideably disposed within the barrel and responsive to the pressure exerted by the liquid composition entering the barrel of the syringe.

3,853,158

APPARATUS FOR INSERTING A SYRINGE NEEDLE INTO A VIAL

Albert J. Whitty, Livonia, Mich., assignor to Sinai Hospital of Detroit, Detroit, Mich.

Filed Feb. 5, 1973, Ser. No. 329,501

Int. Cl. B65b 3/32; B67c 3/16

U.S. Cl. 141-27

5 Claims

1. Apparatus for assisting persons to insert the needle of a conventional barrel-and-plunger type syringe into the dia-

3,853,160
ROUTER

Lawrence Posey, 65 Main Parkway, Plainview, L. I., N.Y. 11803

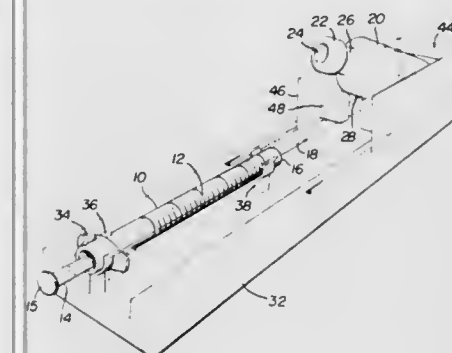
Filed July 20, 1973, Ser. No. 381,064
Int. Cl. B27c 5/10

U.S. Cl. 144-137

4 Claims

phragm of a vial such as a multiple dose injection vial, said apparatus for moving the vial toward the needle, which is stationary, until the needle penetrates the diaphragm, comprising:

a lightweight, inexpensive elongated holder having a first portion for positioning a vial and a second portion for releasably retaining a syringe, said syringe and vial being positioned for storage with the vial diaphragm and the syringe needle in an opposed, spaced apart relationship, said second portion of said holder including a plurality of yokes to engage the barrel of the syringe and releasably retain the syringe against vertical, lateral and endwise movement with the needle disposed inwardly parallel to the longitudinal axis of the holder, and



a carrier slidably mounted on the first portion of said holder,

said carrier for holding the vial, with the diaphragm end toward the needle, against endwise movement relative to the carrier and against lateral and vertical movement relative to the holder,

whereby, upon sliding the carrier on the holder toward the needle end of the syringe, the vial in the carrier moves closer to and ultimately against the needle with the diaphragm being punctured thereby, and upon further sliding of the carrier the needle penetrates the diaphragm and is fully inserted therethrough into the vial.

3,853,159

CATSUP TRANSFER FRAME

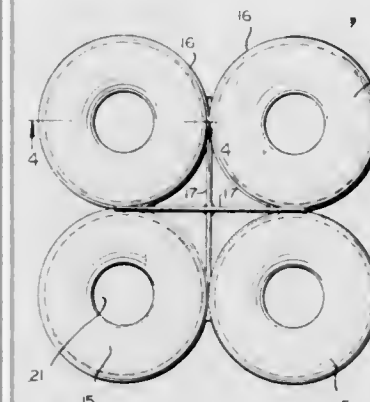
Allen D. Guerard, Staten Island, N.Y., assignor to the Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 13, 1972, Ser. No. 271,280

Int. Cl. B65b 1/04

U.S. Cl. 141-364

3 Claims



1. A device to effect the transfer of catsup from a partially filled bottle to another bottle by means of gravity actuated transfer consisting of:

a frame of several joined plastic rings, with each ring binding a flexible plastic coupling collar that is adaptable to serve as a locking frame for holding an inverted catsup bottle firmly above an upright catsup bottle where the necks of both catsup bottles are fastened into the same plastic collar, in which the flexible plastic collar is of a hollow balloon tire shape.

3,853,161

TRESTLE TEMPLATE FOR POWER TOOLS

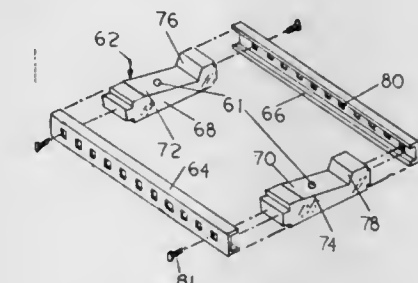
John Welgas, 5819 N. 6th, Philadelphia, Pa. 19106

Filed May 15, 1973, Ser. No. 361,122

Int. Cl. B27c 5/10

U.S. Cl. 144-144.5

5 Claims



1. In a template for cutting angular recesses in a work piece having a plurality of sides and suitable for use with a power tool having a work contacting surface, the combination of

A. a pair of spaced base supports,

1. said supports defining a plane, the supports providing a support surface to receive the work contacting surface of the said power tool;

B. at least one cross brace interconnected between the base supports,

1. said cross brace having a first work holding surface which is angularly oriented relative to the plane;
2. said first work holding surface resting upon a work piece side to position the plane of the base supports in angular relation to the said work piece side;
- B. said cross brace having a second work holding surface angularly intersecting the said first work holding surface.
 1. said second work holding surface intersecting said first work holding surface at an angle of 90°;
 2. the said second work holding surface contacting a second said side of the work piece.

3,853,162

METHOD OF PREFABRICATING A TRUSS

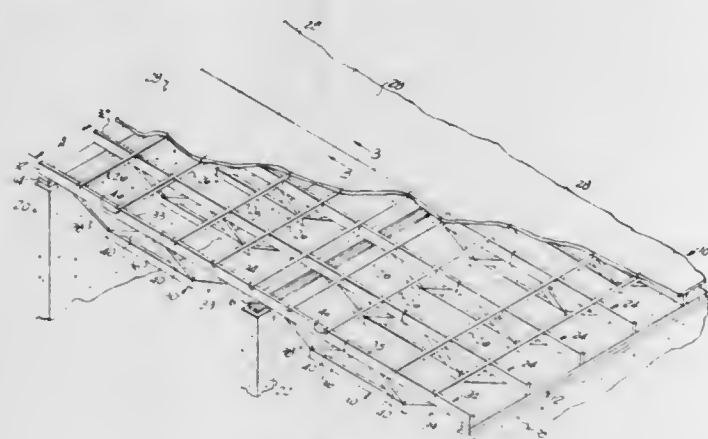
Donald C. Menge, Warren, Mich., assignor to Troy Steel Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 191,347, Oct. 21, 1971, abandoned, which is a division of Ser. No. 853,456, Aug. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 658,193, Oct. 3, 1967, abandoned. This application Mar. 2, 1973, Ser. No. 337,623

Int. Cl. B27c 9/00

U.S. Cl. 144—326 R

4 Claims



I. In the method wherein an upper wooden chord and a lower wooden chord are joined by primary and secondary wooden web members to form a truss, and wherein saw cuts are made to form ends of said members to abut against surfaces of said chords and said members; the improvement which comprises the steps of:

- A. cutting a primary web member such that an end thereof is cut at a predetermined reference pitch;
- B. cutting a plurality of secondary web members with a first cut at each end thereof such that an end of each said secondary web member is made with a cut at said reference pitch and such that said secondary web members, following said first cuts at each end thereof, have established axes of the same axial length; and
- C. making second cuts in a plurality of said ends of said secondary web members to form in each latter end a surface of a pitch which is different from the pitch of said first cut therein, said second cuts passing outside of said axes.

3,853,163

RADIAL TIRES PROVIDED WITH A SIDEWALL STIFFENING CIRCUMFERENTIAL STRUCTURE

Mario Mezzanotte, Milan; Ferdinando Carretta, Monza, and Gianni Turchetti, Bresso, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed May 29, 1973, Ser. No. 364,335

Claims priority, application Italy, May 31, 1972, 25138/72; Dec. 13, 1972, 8774/72

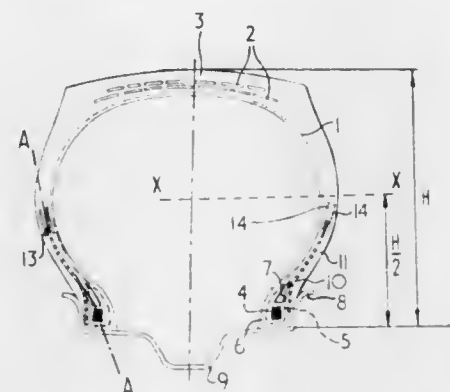
Int. Cl. B60c 9/02, 15/06

U.S. Cl. 152—355

5 Claims

1. In a pneumatic tire for vehicle wheels having a carcass comprising textile cords which extend substantially radially

from one bead to the other and are turned from inside to outside about the cores of the beads and a strip of metal cords disposed in the lower portion of each sidewall of the tire axially outwardly from the bead and the carcass, the improvement wherein the said strip of metal cords extends radially from adjacent the core of the bead substantially on the path of the flexional neutral axis in the lower portion of the sidewall to from about 25 percent to 45 percent of the section height of the tire, the metal cords of the strip being inclined in the



average at an angle ranging from 5° to 15° with respect to the circumferential lines of the tire.

3,853,164

CUSHIONED TREAD TIRE

Henri J. Mirtain, Compiègne, France, assignor to Uniroyal S.A., Clairoux, France

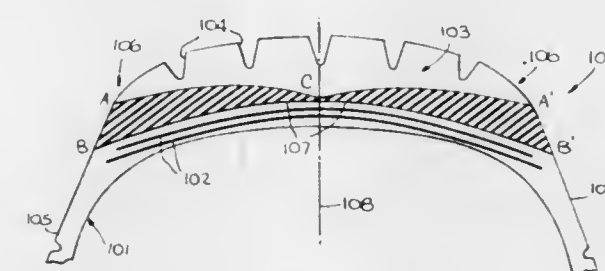
Filed May 14, 1973, Ser. No. 359,935

Claims priority, application France, May 18, 1972, 72.17766

Int. Cl. B60c 9/18

U.S. Cl. 152—361 DM

11 Claims



1. A pneumatic vehicle tire comprising:
 - a radial ply carcass;
 - first and second sidewalls overlying the lateral portions of said carcass;
 - a tread overlying the crown region of said carcass;
 - a breaker interposed between said tread and said crown region of said carcass in circumferentially surrounding relation to the latter; and
 - a cushion constituted by a non-reinforced rubber compound interposed between said breaker and said tread and extending from a point under said tread to the exterior surface of at least one of said sidewalls;
- said cushion having a hardness greater than the hardness of said tread, thereby providing for relatively stiff support of the tread shoulder by said at least one of said sidewalls.

3,853,165

TIRE REMOVAL APPARATUS

Wilhelm Collmann, Moislinger Allee 224, 24 Lubeck, Germany

Filed Apr. 10, 1974, Ser. No. 459,662

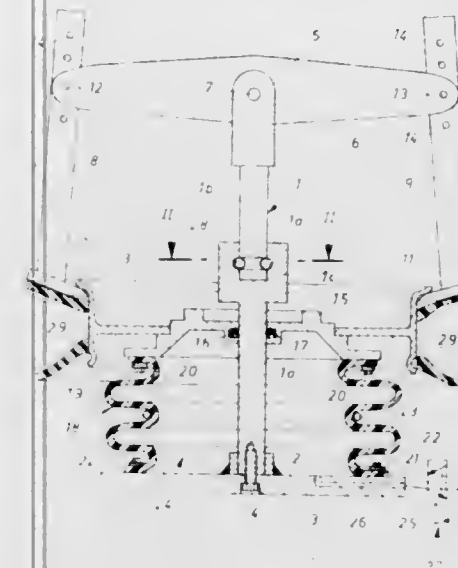
Int. Cl. B60c 25/08

U.S. Cl. 157—1.2

6 Claims

1. In apparatus for removing tires from circumferentially-separable rims, of the kind in which pressure arms, fitted with

shoes to apply pressure to the tire to press the tire off the rim when the latter is resting on a rim support, are hinged in mutually opposed positions to an upper cross-beam, the invention which comprises an upright central pillar including upper and lower parts and which is arranged on a pedestal plate, the upper part of said pillar being attached to the center of the



cross-beam between said pressure arms and said rim support being mounted on the lower part of said pillar so as to be axially displaceable thereon, and a bellows attached to said rim and said pedestal plate and expandable in a direction to move said rim support toward said shoes by supplying compressed air to said bellows.

3,853,166

SLATTED SHADE ASSEMBLY HAVING STORM BAR MEANS

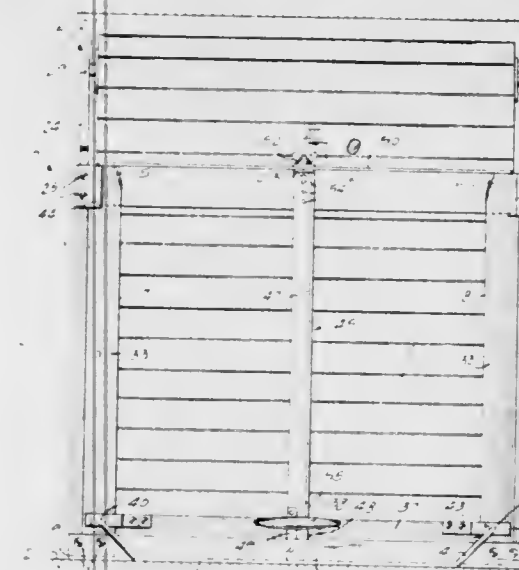
Walter A. Wrono, 829 N. South Dr., Hollywood, Fla. 33020

Continuation-in-part of Ser. No. 147,431, May 27, 1971, Pat. No. 3,732,913. This application Jan. 8, 1973, Ser. No. 321,825

Int. Cl. E06b 9/08

U.S. Cl. 160—133

25 Claims



1. In a roll-up shade assembly including a hingedly slatted curtain having one end secured to a roller:
 - upright bars providing guide tracks within which opposite sides of the curtain are engaged in running relation;
 - means above the tops of said bars rotatably supporting said roller in operative relation to enable running of the curtain vertically in said guide tracks; and
 - a replaceable back-up device engaged with said curtain, said back-up device comprising a vertical bar and a horizontal head bar, and means fixedly connecting said hori-

zontal head bar to said track bars and means for detachably securing the upper end of said vertical bar to said head bar.

3,853,167

ROLLING DOOR OPERATING MECHANISM

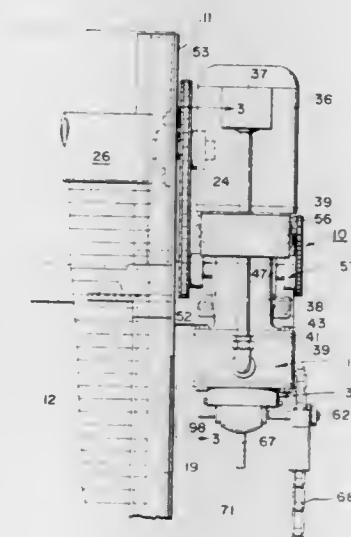
Russel Wardlaw, San Rafael, Calif., assignor to The Cookson Company, San Francisco, Calif.

Filed Aug. 1, 1973, Ser. No. 384,632

Int. Cl. E06b 9/08

U.S. Cl. 160—133

7 Claims



1. In a rolling door operating mechanism for raising and lowering through manual or motor driven means, a rolling door of the type which includes a rotatable axle, a barrel fixed to the axle and a curtain adapted to be rolled onto the barrel, the mechanism comprising an electric motor and having gearbox means operatively coupled to such rotatable axle serving to raise and lower the curtain, manual operator means and including electric clutch means arranged to couple said manual operator means to said motor gearbox means in the manual drive mode when said motor means is operative and to uncouple said manual operator means from said motor gearbox means in the motor drive mode, said manual operator means and electric clutch means including common shaft means, safety brake means arranged about said shaft and operative to halt door travel when said motor is switched to the "off" condition and serving to prevent rotational movement of said shaft means by said motor gearbox means should said electric clutch means fail to uncouple the manual operator means from the motor gearbox means in the motor drive mode.

3,853,168

ROLL-UP SHADE CONSTRUCTION AND METHOD OF ERECTING SAME

Walter A. Wrono, 829 N. Southlake Dr., North Miami Beach, Fla. 33020

Continuation of Ser. No. 218,720, Jan. 18, 1972, abandoned, and a continuation-in-part of Ser. No. 147,431, May 27, 1971, Pat. No. 3,732,913. This application Oct. 4, 1973, Ser. No. 403,410

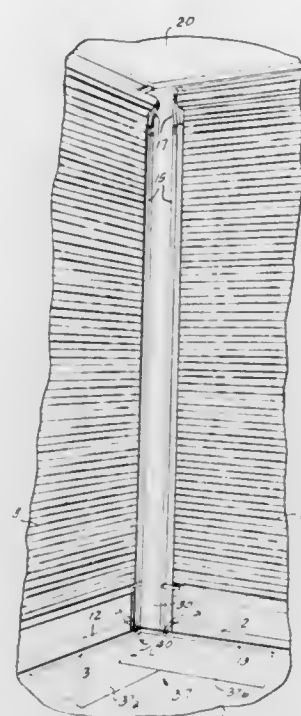
Int. Cl. E06b 3/48

U.S. Cl. 160—133

39 Claims

1. A method of erecting a roll-up shade construction along angularly related supporting surface boundary edges joining at an angle, comprising:
 - making a templet with an edge conforming to said edges and the joining angle of said edges; and
 - utilizing said templet as a guide, trimming and fitting the

ends of a pair of elongated base plate strips in complementary relation to one another to conform to said angle



whereby to enable erecting and supporting respective shade units on said strips parallel to said edges.

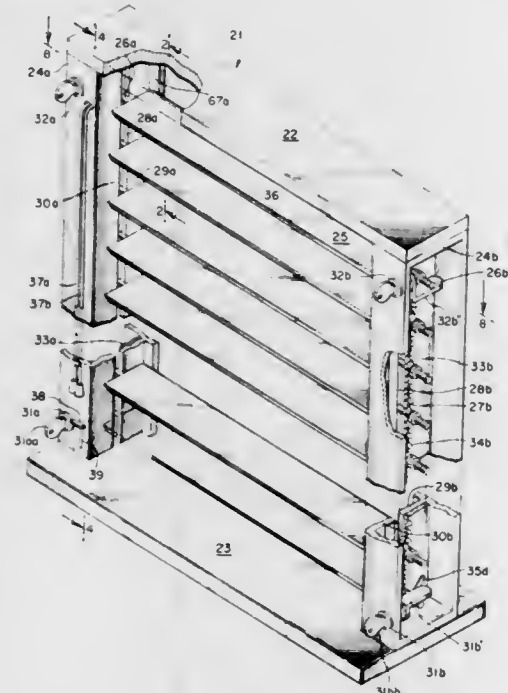
3,853,169

ROTATABLE TRACK-MOUNTED SHUTTER BLINDS
John D. Music, 738 Shore Rd., Somers Point, N.J. 08244, and
Patrick J. Edwards, 11 Park Ave., Mount Vernon, N.Y.
10550

Filed Oct. 29, 1973, Ser. No. 410,426
Int. Cl. E06b 9/30

U.S. Cl. 160—172

12 Claims



1. A shutter device comprising, in combination: a support structure defining two spaced-apart track structures each track structure defining a forward wall and a rearward wall, the forward and rearward walls being spaced-apart a predetermined slot distance defining a slot therebetween, with the slot defined by one of the track structures being spaced laterally from and opposite to the slot of the other of the track structures, each slot extending substantially uprightly; a plurality of side by side shutter means each about horizontally extending in substantially parallel alignment and in substantially series with one-another, the opposite ends of each shutter means being mounted slidably to and from within and along the respective opposite slots, each shutter means including extending

from each of opposite ends thereof an axis structure extending longitudinally the opposite end axes being about coaxial to one-another, and the shutter means further including an elongated slat structure fixedly mounted to and between the coaxial axes at opposite ends of the slat structure; and connector means interconnecting in series, for each of the opposite ends of each shutter means, side by side axes slidably mounted within a common one of the slots, there being a separate connector means interconnecting each two serially arranged axes pivotably attached at one end of the connector means to one of the interconnected two and pivotably attached at an opposite end of the connector means to the other of the two, such that each lower one of the plurality is suspended from an immediately-above shutter means in juxtaposition therewith, each axis of each shutter means including lever structure fixedly extending transversely radially outwardly from the longitudinal axial axis of the axis structure and the respective axis structure being connected at its radially outward end portion to said connector connected thereto such that the each slat structure is rotatable with the axes thereof by movement of the connector means.

3,853,170

SHADE ROLLER APPARATUS

Bernard Baretella, 688 Maple Ave., Ridgefield, N.J. 07657

Filed Oct. 13, 1971, Ser. No. 188,954

Int. Cl. A47h 1/13

U.S. Cl. 160—323

1 Claim



1. In combination with a shade roller having a hollowed recess at one end:

a shade roller apparatus having a hollowed cylindrical elongated-tube type bearing housing fitted firmly within said recess of said shade roller, said bearing housing having at its inner tube end L-shape locking means preformed from said bearing tube wall, the outer end of said housing having

an integral circular holding cover extending laterally of said bearing housing, said cover having a circular recessed inner wall mounted against the face end of said shade roller and said cover inner wall having a central opening for access to the hollow of said bearing housing, said holding cover having an outer circular wall having extending flexible grip press ears being pre cut sections of said outer wall, said press ears being provided with pre punched V-type injecting holding points whereby said grip press ears are pressed inward into said shade roller end.

a circular extractable twist lock having an outer flat side and of the same circumference of said housing tube hollow, and having on the circumference edge thereof protruding square peg keys, and on the inner face side of said twist lock an outstanding box shaped gripping twist handle for interlocking said square peg extending keys into said L-shaped locking channels within the wall of said housing tube.

an extension spring expanding within said tube hollow between the outer flat side of said twist lock and the inner face side of a circular pivot disc, said pivot disc being of sufficient solid thickness and of the same circumference size of said housing tube hollow and being the inner surface of a retractable axle, said axle being retractably mounted within said hollow tube, and retained therein by snap rings and bearing means, whereby the axle may be retracted and extended to mount the shade roller.

3,853,171

**APPARATUS FOR PRODUCING WIRE FROM THE
MELTS OF STEEL ALLOYS**

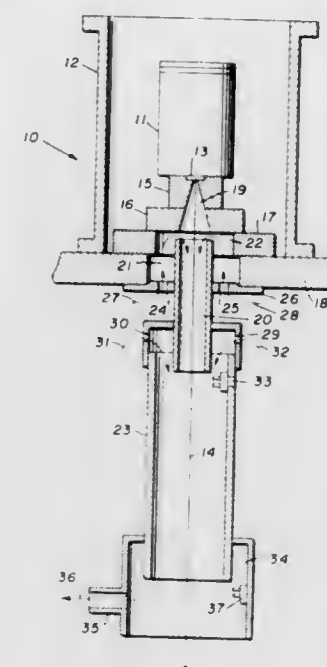
Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto
Company, St. Louis, Mo.

Filed Dec. 28, 1973, Ser. No. 429,330

Int. Cl. B22d 1/12

U.S. Cl. 164—283 S

5 Claims



1. In an apparatus for producing fine diameter wire directly from the melt of an alloy of steel wherein the melt is extruded as a molten metal stream directly into an oxygen-containing gaseous atmosphere where a stabilizing film is formed about the peripheral surface of the stream, and wherein the stabilized molten metal stream descends downwardly through a cooling means where it is solidified to form a solid wire product, the improvement comprising an assembly for effecting said solidification with a cooling medium of gaseous hydrogen, said assembly being comprised of:

- a first and second elongated, vertically disposed and intercommunicating cooling chambers, the upper end of said first cooling chamber being positioned immediately beneath the portion of the apparatus from which the stabilized molten stream issues to provide an entrance for receiving said stream, while the lower end of said first cooling chamber is positioned to extend into the upper end of said second cooling chamber and terminates proximate to the entrance thereof, said second cooling chamber being of greater length and cross-sectional area than said first cooling chamber;
- means for supplying hydrogen gas into the entrance of said first cooling chamber in co-current flow with said downwardly descending molten metal stream;
- means for introducing a flow of air into said second cooling chamber proximate to the entrance thereof to form a combustible gas mixture with said hydrogen gas as it exits from said first cooling chamber into said second cooling chamber;
- means for igniting said combustible gas mixture to cause combustion thereof; and
- means for exhausting the products of said combustion upon exit from said second cooling chamber.

3,853,172

AIR CONDITIONING SYSTEM AND METHOD

Alden Irving McFarlan, 691 Dorian Rd., Westfield, N.J. 07090

Filed Nov. 13, 1972, Ser. No. 305,944

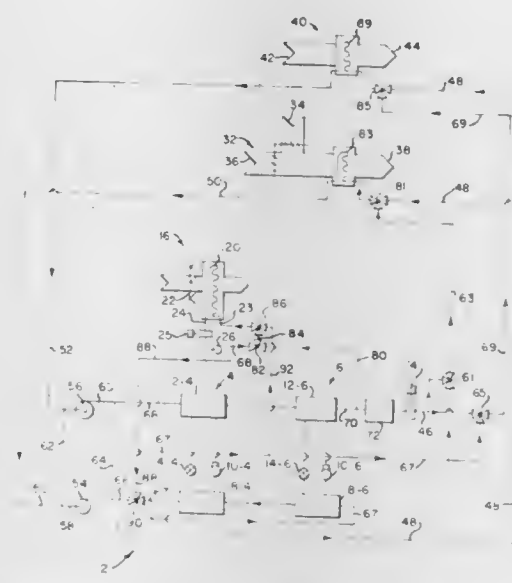
Int. Cl. F24f 3/00

U.S. Cl. 165—22

23 Claims

1. In an air conditioning system having a plurality of zones, the combination of, means to supply a substantially uniform stream of outside air to said system, refrigeration means hav-

ing a chiller in which one stream of heat-exchange liquid is cooled to provide a stream of chilled liquid and also having condenser means in which a stream of the heat-exchange liquid is heated to provide a stream of heated liquid, air-treating means to pass streams of air which includes said stream of outside air to said zones in heat-exchange relationship with controlled portions of said streams of chilled liquid and heated liquid, means to pass the liquid from said air-treating means to said refrigeration means as return liquid,



heat-sink means having a liquid flow path along which liquid flows in heat-exchange relationship with a heat absorbing fluid, means to pass along said liquid-fluid flow path a stream of liquid which comprises all or part of said stream of said heated liquid or part of said return liquid or a mixture of the two, and control means which is responsive to the requirements for heating and cooling in said zones and which acts to regulate the portion of said stream of heated liquid flowing along said liquid flow path of said heat-sink means.

3,853,173

**INDUCTION TERMINAL UNIT FOR AIR-CONDITIONING
SYSTEMS**

Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech
Corporation, Inglewood, Calif.

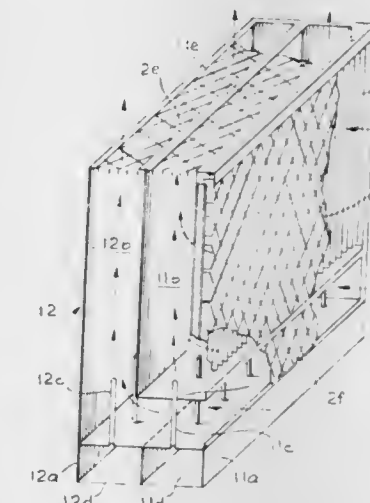
Division of Ser. No. 158,766, July 1, 1971, Pat. No. 3,799,246.

This application Feb. 20, 1973, Ser. No. 334,132

Int. Cl. G05d 23/00

U.S. Cl. 165—35

8 Claims



1. In an air-conditioning system in which conditioned air under pressure and moving at a relatively high velocity is ducted to each of a plurality of rooms, said system having an induction terminal unit for each of said rooms that comprises: coil and bypass plenums through which a mixture of conditioned and room air alternately flows into the room, said coil

plenum including first and second air inlet means to respectively permit entry of conditioned and room air thereto, room air being induced to enter and flow through said coil plenum only when conditioned air flows therethrough, first air outlet means to permit said mixture of conditioned and room air to discharge directly into the room, and a coil for conditioning air mounted in said second air inlet means to condition room air passing therethrough, said bypass plenum including third and fourth air inlet means to respectively permit entry of conditioned and room air thereto, room air being induced to enter and flow through said bypass plenum only when conditioned air flows therethrough, and second air outlet means to permit said mixture of conditioned and room air to discharge directly into the room, said coil and bypass plenums including additional means to isolate one from the other in such a manner that air flowing in one will not mix with and will not affect air in the other prior to discharge into the room.

3,853,174

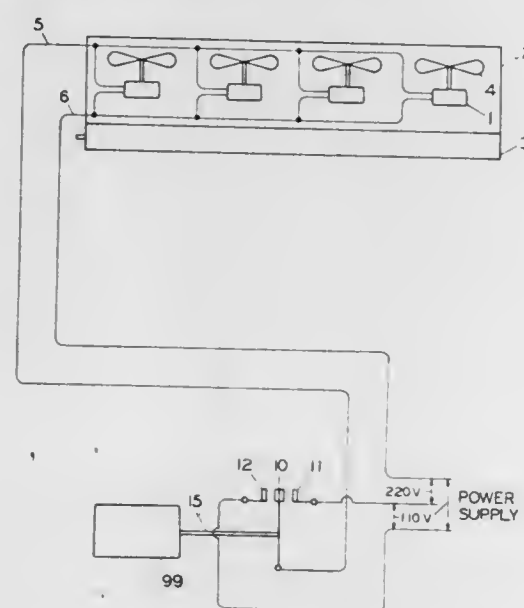
DUAL VOLTAGE SPEED CONTROL FOR FORCED AIR HEAT EXCHANGER

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa. 19067
Filed Dec. 6, 1971, Ser. No. 205,065

Int. Cl. F28f 27/00

U.S. Cl. 165-39

20 Claims



6. In a forced air heat exchanger including a heat exchange element, said exchanger including input power supply conductor means, a fan positioned to drive air over the element, an alternating current motor connected to the conductor means for driving the fan, which motor operates at high speed when connected to a high voltage supply and low speed when connected to a low voltage supply, the improvement comprising a control and automatic switch means actuated by the control which connects the conductor means alternately to the high and the low voltage power supplies.

3,853,175

REMOTELY OPERATED WELL SAFETY VALVES

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Abegg & Reinhold Co., Los Angeles, Calif.

Continuation-in-part of Ser. No. 203,142, Nov. 30, 1971, abandoned. This application May 12, 1972, Ser. No. 252,808

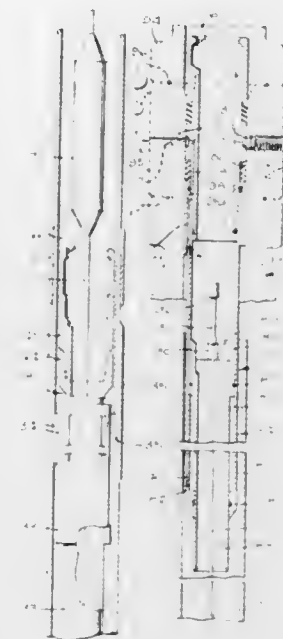
Int. Cl. E21b 43/12

U.S. Cl. 166-72

41 Claims

1. Well safety apparatus comprising an elongated flexible line adapted to extend downwardly into a well to a subsurface zone therein; means for exerting an upward pulling force against an upper portion of said flexible line and thereby moving said line longitudinally upwardly; a safety valve unit adapted to be lowered into the well to said subsurface zone, and adapted to be retained, by upward force exerted through said flexible line, in an open condition permitting upward flow

of production fluid through the well; and interengageable connector parts on a lower portion of said flexible line and said valve unit respectively adapted to be operatively inter-



3,853,176

WELL CLEANING APPARATUS

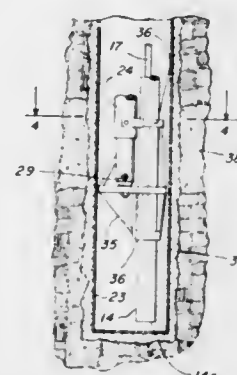
Edward R. Henrich, Mound, Minn., assignor to Bergeson-Caswell, Inc., Minnetonka, Minn.

Filed Mar. 1, 1973, Ser. No. 336,975

Int. Cl. E21b 37/00

U.S. Cl. 166-223

7 Claims



1. Apparatus for cleaning a well and well screen, comprising:

- a. an eduction pipe disposed within said well and having an open end positioned along said well screen length;
- b. a gas pipe disposed within said eduction pipe and having at least one-half its length immersed beneath the normal liquid surface of said well, and having an open submerged end within the eduction pipe and above the open lower end of the latter;
- c. a high pressure fluid pipe disposed within said well and adjacent but outside said eduction pipe, said fluid pipe having a jet nozzle positioned along said well screen length and at an angle to direct a jet stream of fluid against said well screen to dislodge fine particles;
- d. drain means connected to said eduction pipe for conveying fluid away from said well;
- e. means for conveying a high pressure gas into said gas pipe to cause air-lifting of water and entrained fine particles through the eduction pipe; and
- f. means for delivering a high pressure fluid into said fluid pipe.

3,853,177

AUTOMATIC SUBSURFACE BLOWOUT PREVENTION

James D. Mott, Houston, Tex., assignor to Michael P. Breston, Houston, Tex.

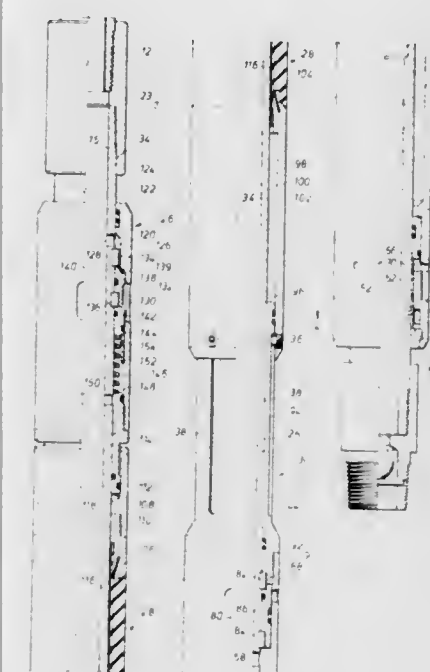
Continuation of Ser. No. 12,823, Feb. 19, 1970, abandoned.

This application Apr. 19, 1973, Ser. No. 352,808

Int. Cl. E21b 23/06, 33/127

U.S. Cl. 166-244

21 Claims



10. An elongated tool connectable to a string of liquid conducting hollow members for insertion into a well bore, said tool comprising:

- a hollow mandrel;
- radially expandable sealing means carried by said mandrel, said sealing means defining a first chamber and a liquid filling said chamber;
- pressure-responsive control means operatively coupled to said sealing means for normally maintaining said sealing means contracted, and
- said control means controlling the pressure of the liquid in said first chamber and including a differential-pressure sensing element responsive to a change in the well bore pressure external to said tool relative to the pressure in said hollow mandrel.

3,853,178

METHOD FOR RECOVERY OF OIL

Chin-Wen Shen, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

Filed June 6, 1973, Ser. No. 367,571

Int. Cl. E21b 43/24

U.S. Cl. 166-272

15 Claims

1. A method of recovering oil from a subterranean formation having therein connate water and at least one injection well and at least one producing well, comprising: providing steam for injecting into said formation; mixing with said steam to form a mixture therein, small amounts of an alkali metal hydroxide, the concentration of the hydroxide in said steam being less than about 0.5 weight percent after such mixing; injecting said steam having hydroxide therein into said reservoir at a pressure not substantially greater than formation pressure, through said injection well; allowing said hydroxide to react in the presence of steam with said connate water in said formation, to form in situ surface active agents,

said surface active agents being effective to reduce the interfacial tension between the oil and water in said formation, and to facilitate removal of the oil; continuing the injection of said hydroxide-containing steam for a period of time sufficient to allow for the formation of a substantial amount of surface active agent; and, producing oil through said producing well.

3,853,179

APPARATUS FOR FORMING WATER GEL

Mats Lindgren, Stockholm, and Hillar Malm, Sundbyberg, both of Sweden, assignors to Incentive Research & Development AB (IRD), Stockholm, Sweden

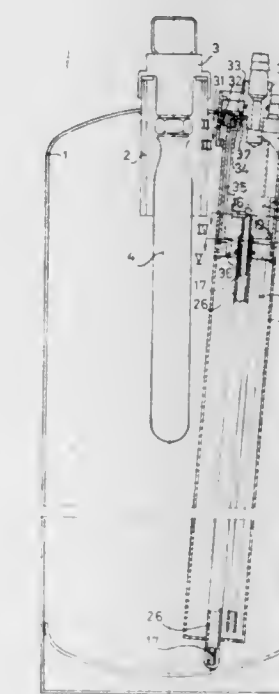
Filed Aug. 30, 1973, Ser. No. 393,080

Claims priority, application Sweden, Sept. 6, 1972, 11513/72

Int. Cl. A62c 37/06

U.S. Cl. 169-15

12 Claims



1. Apparatus for forming water gel, especially for fire fighting purposes, by continuous mixture of water and a liquid gel former, characterized in, that it comprises a mixing chamber provided interiorly with an elongated continuous flow and mixing channel, the upstream end thereof being provided with two inlet ports for water and gel former respectively and along its length is provided at spaced intervals with a number of further inlet ports for water and the downstream end of said channel comprising an outlet for delivery of the ready made water gel, the total length of said channel exceeding the length of said chamber.

3,853,180

OPERATING HEADS FOR FIRE EXTINGUISHERS

Leslie James Harris, Yatley; Eric Trevor Thorpe, Farnborough; John Peter Wellborne, Oxted, and Edward Charles D'Aprix, Camberley, all of England, assignors to Intercontinental Equipment Corporation, Nashville, Tenn.

Filed Oct. 12, 1973, Ser. No. 405,876

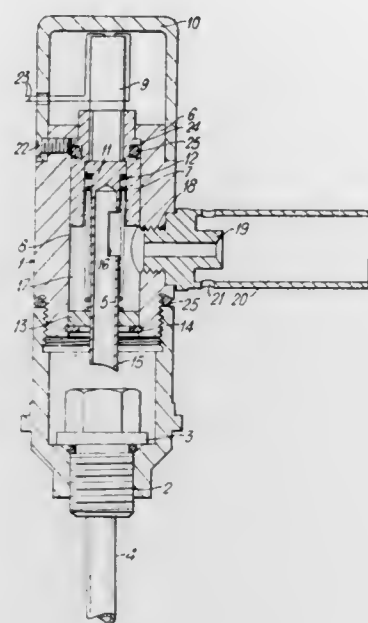
Int. Cl. A62c 35/02

U.S. Cl. 169-28

6 Claims

1. In a fire extinguisher of the kind containing an extinguishing medium under pressure, an operating head comprising a housing, a carriage slidably mounted in said housing, a hollow pin movably mounted on said carriage, an electrically operated detonator mounted on said carriage and disposed on detonation to drive said hollow pin through a seal to provide

a flow path for discharge of the extinguishing medium, and manually operable means for selectively sliding said carriage



to drive the pin manually through said seal to provide said flow path.

3,853,181

TWO-WAY BULLDOZER

Hirohumi Yoshizaki, Sagami-hara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

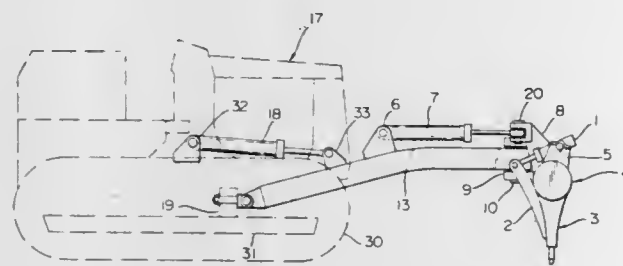
Filed Sept. 4, 1973, Ser. No. 394,123

Claims priority, application Japan, Sept. 8, 1972, 47-89562

Int. Cl. B02f 3/76

U.S. Cl. 172-805

4 Claims



1. A bulldozer having a blade-operating device comprising: a semi-elliptical frame pivotally connected to and extending from the sides of the bulldozer, and having an upwardly extending portion extending from the bulldozer, and a generally horizontal curved portion extending from the upwardly extending portion;

hydraulic cylinder means interconnecting the upwardly extending portion and the front sides of the bulldozer for raising and lowering the frame;

a cylindrical member disposed adjacent the forward end of the curved portion of the frame;

a first bracket fixed to the central upper face of the cylindrical member;

a hinge pin pivotally connecting the forward end of the curved portion of the frame with the first bracket;

second and third brackets fixed to the cylindrical member on either side of the first bracket;

a first pair of hydraulic cylinders, one end of one cylinder being pivotally connected to the second bracket and the other end being pivotally connected relative to the frame, one end of the other cylinder being pivotally connected to the third bracket and the other end being pivotally connected relative to the frame;

first and second pivot pins rotatably associated with the opposite ends of the cylindrical member respectively; a rectangular blade rotatably supported relative to the cylindrical member by means of the first and second pivot pins and adapted to be disposed along the opposite ends and the lower portion of the cylindrical member;

first and second bow-like members, one end of each bow-like member being secured to the back side of the blade; a second pair of hydraulic cylinders, one end of one cylinder being pivotally connected relative to the cylindrical member and the other end being pivotally connected to the extended end of one of the bow-like members, one end of the other cylinder being pivotally connected relative to the cylindrical member and the other end being pivotally connected to the extended end of the other bow-like member.

3,853,182

LAUNCH TUBE FOR A LONG HOLE DRILLING APPARATUS

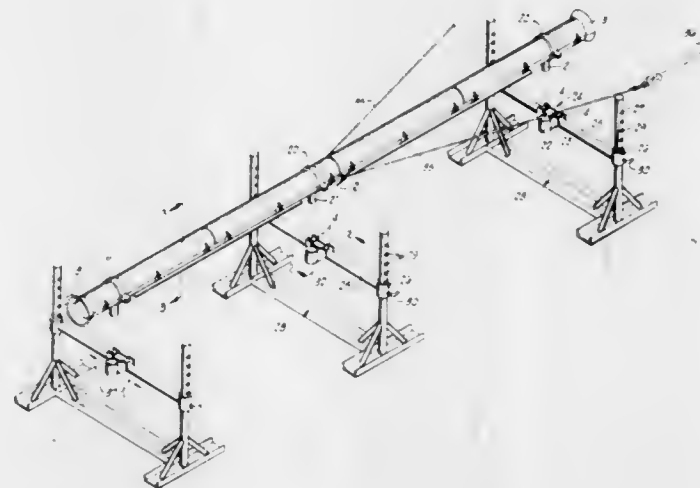
Henry A. Bourne, Jr., Ponca City, Okla., and Rondon L. Schroeder, Shinnston, W. Va., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 26, 1973, Ser. No. 419,158

Int. Cl. E21b 1/06

U.S. Cl. 173-33

5 Claims



1. A launching apparatus for a horizontal drilling apparatus adapted to bore a hole in a vertical face comprising:

a. a cylindrical tube divided longitudinally and substantially diametrically to form an upper and lower cylindrical half-portion, the inside diameter of which is slightly greater than the maximum diameter of said horizontal drilling apparatus;

b. means for releasably securing said upper cylindrical half-portion to said bottom cylindrical half-portion;

c. vertically and horizontally adjustable mounting means attached to said lower cylindrical half-portion; and

d. means for anchoring said cylindrical tube to said vertical face to support said launching apparatus against axial thrust.

3,853,183

METHODS AND APPARATUS FOR UNDERWATER DRILLING OF OIL AND GAS WELLS

Geoffrey Eke Downs, "Lynwood" Stokesley Rd., Yarm, England

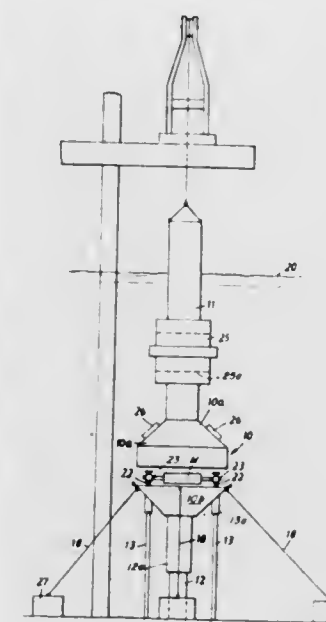
Filed May 8, 1972, Ser. No. 251,195

Claims priority, application Great Britain, May 27, 1971, 17676/71

Int. Cl. E21b 7/12

U.S. Cl. 175-5

1 Claim



1. A method of drilling an underwater oil or gas well comprising the steps of driving a single vertical tubular pile into the water bed, the pile initially extending above the water level from the water bed and being operated on above the water level to drive it into the water bed, the upper portion of the pile being then cut off under water at a selected height above the water bed and removed, securing an apertured guide platform to the top of the remaining portion of the pile under water, which platform has at least one guide aperture therein arranged outwardly of the pile, passing a well conducting casing through said guide aperture and into the bed, drilling the well through the conducting casing, attaching a well head unit to the upper end of the casing just above the platform, permanently attaching an upper portion to the platform to form therewith a chamber below the water surface, which chamber encloses the well head unit, the upper portion having secured thereto an access shaft which extends upwards above the water surface, and pumping the water out of the chamber and access shaft.

3,853,184

MEANS FOR DETECTING WEAR ON WELL DRILL BITS

Doyle W. McCullough, P.O. Box 484, Westfield, Tex. 77377

Continuation-in-part of Ser. No. 69,549, Sept. 4, 1970, abandoned. This application June 26, 1972, Ser. No. 266,502

Int. Cl. E21b 13/00

U.S. Cl. 175-39

15 Claims

1. Wear detecting means for detecting wear in drill bits used with drilling fluid in rotary well drilling operations comprising:

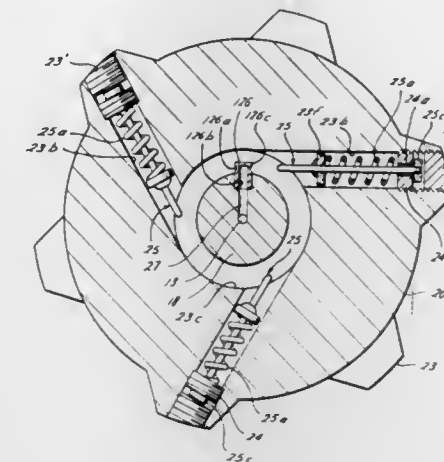
a. wear means in said bit adjacent bit parts normally worn during drilling operations;

b. a closed fluid pressure system isolated from the drilling fluid pressure in the bit with conduit means in said bit for communicating fluid pressure in said closed system to said wear means;

c. fluid pressure means operably connected to said fluid conduit means for supplying fluid pressure to said wear means;

d. pressure responsive means operably connected to said fluid conduit means;

e. means with said pressure responsive means for restricting flow of the drilling fluid flowing through said bit to increase the line pressure of such drilling fluids;



f. means for sensing changes in line pressure of such drilling fluid;

g. means operably connected with said sensing means for signaling changes in said drilling fluid line pressure.

3,853,185

GUIDANCE SYSTEM FOR A HORIZONTAL DRILLING APPARATUS

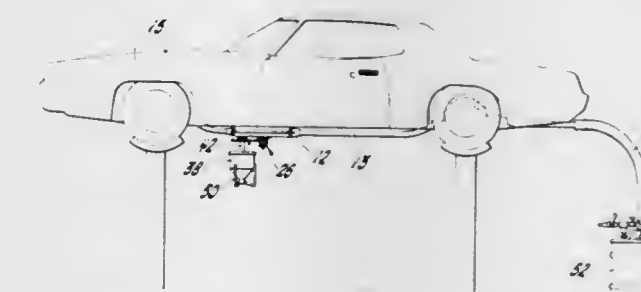
Herbert Douglas Dahl, and Tibor O. Edmond, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 30, 1973, Ser. No. 420,410

Int. Cl. E21b 47/12

U.S. Cl. 175-45

10 Claims



1. A method for drilling a second elongated horizontal borehole substantially parallel to a first drilled horizontal borehole comprising:

a. inserting a horizontal drill into the ground along an axis parallel to a drilled hole and spaced from said first hole;

b. positioning a signal generating means in said first hole a known distance with respect to said horizontal drill;

c. maintaining said known distance along the axis of said first hole as said second hole is drilled;

d. receiving said generated signal on said drill;

e. calculating the distance of said signal generated from said receiver; and

f. controlling said horizontal drill in accordance with said calculation to maintain a predetermined distance between said drill and said signal generating means.

3,853,186

DRILLING ASSEMBLY DEFLECTION APPARATUS

Hilbert D. Dahl, Ponca City, Okla.; Gordon R. Haworth, Glen-coe, Ill., and Tibor O. Edmond, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 12, 1973, Ser. No. 340,639

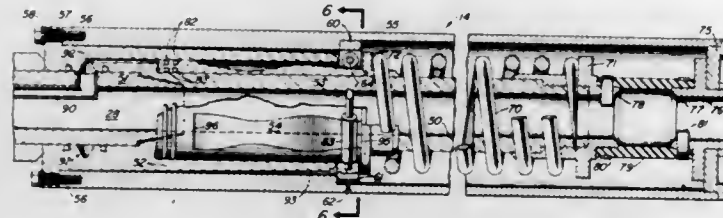
Int. Cl. E21b 7/04

U.S. Cl. 175-73

19 Claims

1. An apparatus for deflecting the axis of a drill assembly comprising:

- a. an outer housing;
- b. a piston means having spaced surfaces contoured into the surface of said piston means;
- c. means for slidably mounting said piston means;
- d. engaging means mounted between said housing and said piston means and in slidable contact with said spaced surfaces;



- e. means for moving said piston means along the length of its axis; and
- f. means for yieldably attaching one end of said housing to said means for slidably mounting said piston means, whereby longitudinal movement of said piston means along its length will communicate the variations in said contoured surfaces to the axial position of said housing with respect to the axis of said piston means.

3,853,187

DUPLEX HYDRAULIC-MECHANICAL JAR TOOL

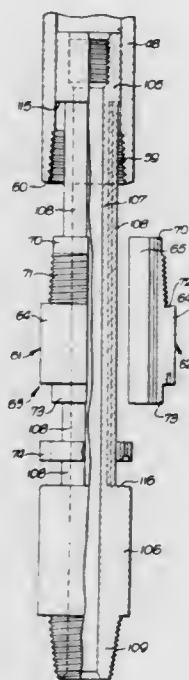
Wayne N. Sutliff, and Jim L. Downen, both of 2931 Pierce Rd., Bakersville, Calif. 93308

Filed Feb. 7, 1974, Ser. No. 440,500

Int. Cl. E21b 1/10

U.S. Cl. 175-297

7 Claims



1. In a duplex hydraulic-mechanical jar tool, the combination of:

- inner and outer telescopically related tubular elements;
- means for connecting one of said elements to a drill string;
- means for connecting the other element to an object to be jarred, referred to herein as a "fish";
- telescopically overlapping portions of said elements providing an annular chamber for confining an operating liquid;
- an annular packer supported on one element and slidably engaging the other element to close one end of said chamber;
- an annular floating packer disposed between and slidably engaging both of said elements to close the other end of said chamber;

a relatively short piston extending radially outwardly from said inner element into said chamber;

a relatively short cylinder provided inwardly on said outer element in which cylinder said piston slidably fits to effect a dash pot retarding action on telescopic movement between said elements when said piston and cylinder are in conjunction;

the inner surface of said outer element being relieved in areas immediately above and below the zone of said cylinder, thereby releasing said elements from said dash pot retarding action when said piston and cylinder are out of conjunction;

said cylinder, when in conjunction with said piston, dividing said chamber into a low pressure section, adjacent to and containing said floating packer and a high pressure section adjacent said first mentioned packer;

two pairs of impact shoulders provided on said elements which come respectively into axial abutting engagement when opposite ends of the entire range of relative telescopic movement between said elements are reached, said tool having an optional operation starting position wherein said cylinder has just passed out of conjunction with said piston and entered said high pressure chamber section; and

annular cam responsive spring resistance means provided on said elements in said low pressure chamber section and operative temporarily to halt further movement of said cylinder into said high pressure chamber section, until a predetermined heavy downward pressure has been applied through said drill string to said spring resistance means to cause the latter to suddenly release and thus produce a snap action downward jar operation, an upward snap action jar operation being optionally automatically accomplished, starting with the tool in said starting position, by imposing and holding an upward strain of a predetermined value on said drill string.

3,853,188

DEVICE FOR BUILDING UP DOWN-PRESSURE ON WELL FACE DURING DRILLING

Jury Sergeevich Vasiliev, Chernomorsky bulvar, 5, korpus 3, kv. 1; Boris Alexandrovich Vasiliev, 5 Taimyrsky pereulok, 2, kv. 1, both of Moscow; Jury Jurievich Nikitin, 1 Pankovsky proezd, 6, kv. 39; Vladimir Alexandrovich Datsenko, Oktyabrsky prospekt, 261, kv. 8, both of Ljubertsy Moskovskoi Oblasti; Vyacheslav Maximovich Popov, Nagornaya ulitsa, 15, korpus 9, kv. 81, Moscow; Jury Dmitrievich Semenov, Bolotnikovskaya ulitsa, 44, korpus 1, kv. 11, Moscow; Valery Askhatovich Kildibekov, ulitsa Dmitria Ulianova, 27/12, korpus 4, kv. 90, Moscow, and Talgat Nazmetdinovich Bikchurin, ulitsa Radischeva, 20, kv. 8, Tatarskaya, all of U.S.S.R.

Continuation of Ser. No. 102,674, Dec. 30, 1970, abandoned.

This application Mar. 14, 1973, Ser. No. 341,298

Claims priority, application U.S.S.R., Jan. 7, 1970, 1391730

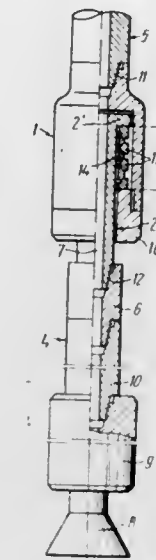
Int. Cl. E21b 17/00

U.S. Cl. 175-321

3 Claims

1. The combination with a drill string constituted by a plurality of interconnected pipes and a bit operably associated with the lower end of the drill string, of a device located in the drill string for building-up a down pressure on the well face during drilling, said device comprising: a cylinder, a rod provided with a piston located in said cylinder, said piston rod being provided with a through axial bore for the passage of a drilling fluid, and said piston being defined by coaxial alternating outer and inner rings, with each of said inner rings constituting a wedge between the two adjacent outer rings whereby under the influence of a compression pulse, the movable rings enter into contact with one another partially passing and partially dissipating the compression pulse while an extension pulse causes the rings to disengage from one another and define a boundary free surface from which the extension pulse is reflected and returns to the bit, subjecting the bit to a dy-

amic load, the drill string including a pipe adjacent the cylinder, said pipe having an extension, said outer and inner rings being installed movably on the extension, said extension having a lower end entering the axial bore of said rod with a



provision for moving therein, said rod having an upper end and an end plate on the upper end of the cylinder, said rings being located between the upper end of said rod and the end plate of said cylinder.

3,853,189

CRUSHING APPARATUS

Abel Cortes, Grenoble, and Elie Gondolios, Le Pecq, both of France, assignors to Compagnie Francaise des Petroles, Paris and Societe Grenobloise d'Etudes et d'applications Hydrauliques, Grenoble, both of, France

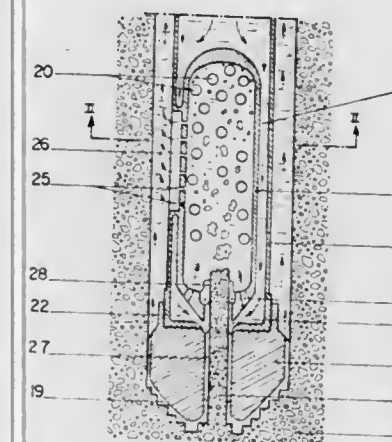
Filed June 1, 1972, Ser. No. 258,729

Claims priority, application France, June 2, 1971, 71.21158

Int. Cl. E21b 7/16

U.S. Cl. 175-404

4 Claims



1. A ball crushing apparatus associated with a drilling device including a body and a drilling tool having a central orifice, comprising in combination,

- a structure defining a crushing chamber of vertical elongated form having an axis, the crushing chamber containing crushing balls, said chamber being located in the lower portion of the drilling device above the tool, fluid inlet channels for feeding drilling fluid to the apparatus being defined between the device and the chamber therein, the lower extremity of the crushing chamber having a central solids inlet orifice, the orifice in direct communication with the central orifice of the tool, whereby matter to be crushed may be introduced into the crushing chamber, the lower extremity of the crushing chamber further defining conduits converging toward the axis of said chamber causing the fluid inlet channels and the chamber to communicate, the vertical elongated portion of the crushing chamber defining evacuation orifices, evacuation channels defined between the device

and the chamber being in communication with the evacuation orifices to permit the evacuation of the chamber, and directing the fluid and the debris of crushed rock thereby evacuated, toward the drilling tool.

3,853,190

APPARATUS FOR WEIGHING DRAUGHTS OF BULK MATERIAL

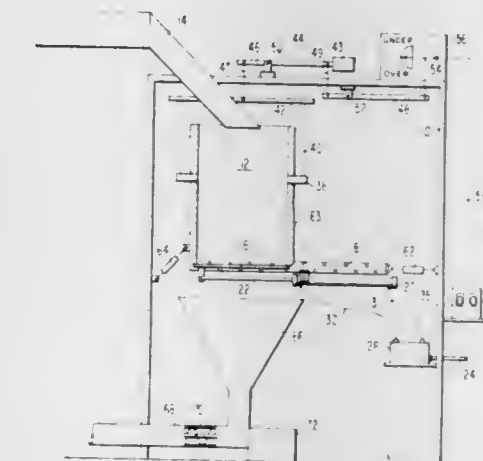
Mark Delesdernier, 3624 Clifford Dr., Metairie, La. 70002

Filed May 4, 1973, Ser. No. 357,180

Int. Cl. G01g 13/18

U.S. Cl. 177-105

4 Claims



1. An apparatus for weighing successive draughts of particulate material comprising a scale means having a fulcrumed weigh beam counterweighted to balance a predetermined weight of particulate material fed to said scale means, said scale means having a hopper vertically supported from the fulcrumed weigh beam to receive said particulate material, said hopper having an opening in its bottom; a horizontally reciprocating gate adapted to close the bottom of the hopper; a means to horizontally move the gate to open or close the bottom of the hopper; and a horizontally-acting dampening means affixed to a fixed member and hopper having an effective action in a horizontal direction parallel to the direction of reciprocation of the gate to provide dampening of horizontal movement of the hopper caused by the reciprocation of the gate.

3,853,191

WEIGHING MACHINE

Masanori Yamagiwa, Ise, Japan, assignor to Ise Electronics Corporation, Ise City, Mie Prefecture, Japan

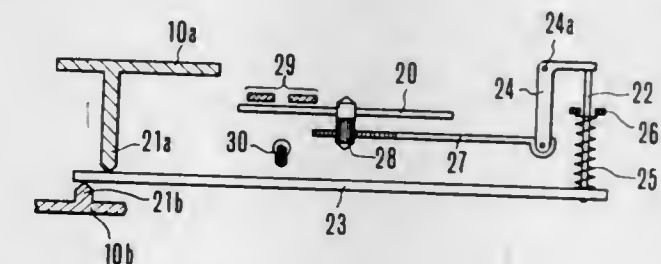
Filed Apr. 5, 1973, Ser. No. 348,153

Claims priority, application Japan, Mar. 31, 1972, 47-32483; Mar. 31, 1972, 47-37928

Int. Cl. G01g 3/14; G01d 5/34

U.S. Cl. 177-210

9 Claims



1. A weighing machine with a digital display comprising: a disc means having a rotation in accordance with the descending movement of a weighing platform, said disc means having a first mark pattern generating digital signal corresponding to the amount of said disc rotation and a second mark pattern generating timing signals in relation to said first mark pattern, those marks being shifted in circumferential position relative

to each other; memory means in which said digital signal is not stored therein until said memory means receives said timing signal; said disc means having at least a first group and a second group, each group comprising said first and second marks, said first group representing the first order while said second group representing the second order; and a display means to display figures representing the weight measured in response to the output from said memory means.

3,853,192

POWER DRIVEN SKI

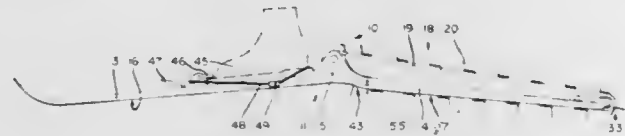
Royce Hill Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.

Filed Oct. 9, 1973, Ser. No. 404,411

Int. Cl. B62m 27/00

U.S. Cl. 180—5 R

9 Claims



1. In a power driven ski for attachment to a skier's foot and for slidingly negotiating snow as with a conventional ski, said power driven ski having in combination;

- a. a ski with an aperture dividing it into an anterior ski portion having a longitudinally smooth anterior undersurface and a posterior ski portion,
- b. a bridge holding said ski portions to each other,
- c. means for attaching said ski to a skier's foot,
- d. an endless tread circulateably supported around said posterior ski portion having at least one tension carrying member and a plurality of cleats attached to said tension carrying member for thrusting against the snow,
- e. means for circulateably supporting said tread around said posterior ski portion, and
- f. motor means coupled to said tread for circulating said tread around said posterior ski portion,

the improvement wherein the posterior ski portion has a longitudinally smooth, snow contacting stationary undersurface and said bridge holds said ski portions in position one relative to the other so that said undersurfaces jointly form a longitudinally smooth skiing undersurface substantially throughout the length of said ski.

3,853,193

VEHICLE DRIVE AND CONTROL SYSTEM

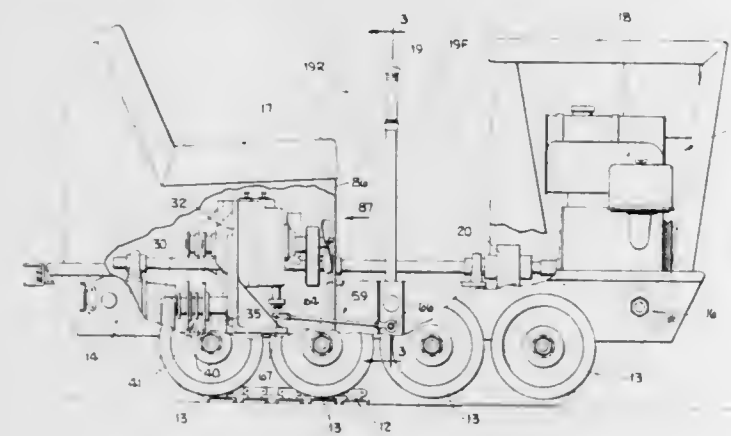
Guy A. Dunn, Martinsville, Ind., assignor to The Mini-Track Tractor Co., Inc., Martinsville, Ind.

Filed May 7, 1973, Ser. No. 358,048

Int. Cl. B62d 11/04

U.S. Cl. 180—6.48

10 Claims



1. A tracked vehicle drive system comprising:

a power input shaft coupled to an engine and receiving energy therefrom;
first and second hydrostatic transmissions on opposite sides of said input shaft, each of said transmissions having an input member and an output member;
pulley and drive belt means in front of said transmissions and coupling said input shaft to said input members to apply power from the engine to said transmissions;
first and second right-angle drive gear boxes, said first gear box being behind said first transmission, and said second gear box being behind said second transmission; each gear box having an input member and an output member; the output members of said hydrostatic transmissions and the input members of said gear boxes being substantially parallel;
first and second vehicle track drive pulleys connected to the output members of said first and second gear boxes, respectively;
and power transmitting pulley and drive belt means between said transmissions and said gear boxes and drivingly coupling the input members of said first and second gear boxes to the output members of said first and second transmissions, respectively, whereby said first transmission is enabled to drive said first track drive pulley, and said second transmission is enabled to drive said second track drive pulley independent of said first track drive pulley.

3,853,194

DUAL SYSTEM CIRCUIT POWER MEANS

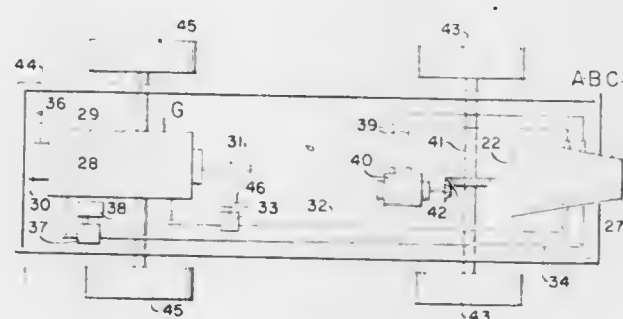
Adolphe C. Peterson, 4623 Bruce Ave., Minneapolis, Minn. 55424

Filed Sept. 11, 1970, Ser. No. 71,580

Int. Cl. B62d 57/00

U.S. Cl. 180—7 J

6 Claims



1. In vehicle propulsion means: pressurized work fluid generator means having work fluid container space within jacket walls and having means supplying work fluid to the container space and having container outlet; (external heat supply to the work fluid jacket walls by supply and flow of combustion fuel and air flow in combustion duct passage in heat transfer relation through the jacket walls with the work container space;) air fuel supply means for supplying combustible air fuel mixture to burner means in said generator, the combustion products flowing to the work fluid jacket walls from combustion duct passage and being in heat transfer relation through the jacket walls within the work fluid container space; air-fan duct having rotary air fan therein to induct air and expel air by jet ejection outlet for propulsion effect; primary engine means receiving pressurized and heated work fluid from the work fluid outlet and having work fluid exhaust; the primary engine means (having work transmission by) including electric generator means for electro-magnetic transmission to vehicle road wheel means; the primary engine means having work transmission by rotatable connection with the rotary air fan for propulsion ejection.

3,853,195

POWERED JUMPING STICK

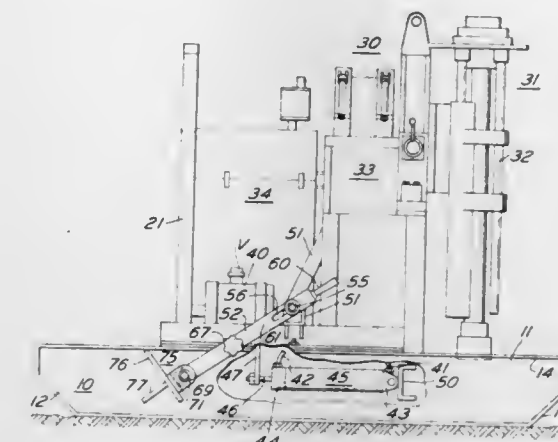
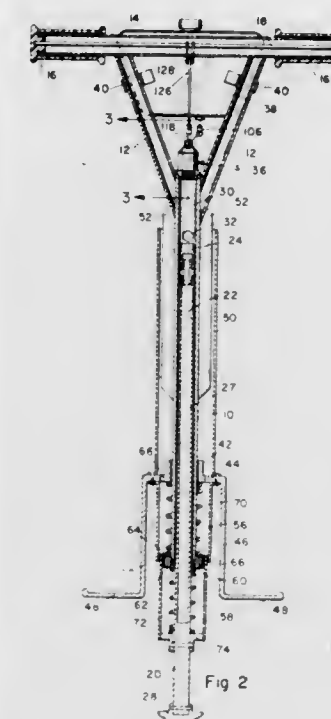
Kaarlo E. Rasanen, 226 S. Isis Ave., Inglewood, Calif. 90301

Filed Jan. 31, 1974, Ser. No. 438,265

Int. Cl. B62d 57/00

U.S. Cl. 180—8 R

10 Claims



of said relative movement advances the skid base relative to ground.

3,853,197

SELF-PROPELLED VEHICLE DRIVE

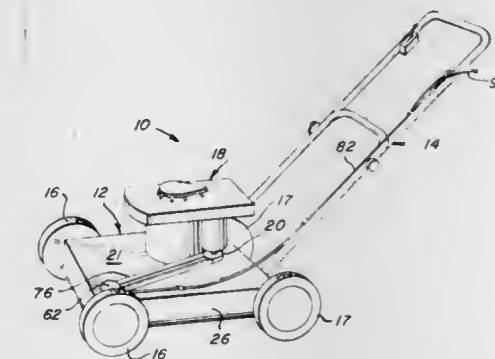
Ronald G. Quiram, Michigan City, Ind., assignor to Polaron Products of Indiana, Inc., Michigan City, Ind.

Filed Sept. 15, 1972, Ser. No. 289,254

Int. Cl. B62d 51/04

U.S. Cl. 180—19 R

15 Claims



1. A powered jumping stick, comprising:
an elongated cylindrical body having an upper end with handlebar means mounted thereon;
a leg axially slidable in said body, the leg having a piston on the upper end, and a ground engaging foot on the lower end thereof;
a fuel injection valve unit in the upper end of said body, with means for connection to a source of fuel;
said body having an air inlet and an exhaust outlet spaced below the upper end thereof;
foot rest means axially slidably mounted on said body and being resiliently supported thereon;
a shroud surrounding and concentrically spaced from said body;
and an air pump connected between said body and said foot rest means, with ports opening into said shroud for pumping cooling air through the shroud.

3,853,196

SELF-PROPELLING MECHANISM

George W. Guest, Benton Twp., County of Lackawanna, Pa., assignor to Sprague & Henwood, Incorporated, Scranton, Pa.

Filed May 29, 1974, Ser. No. 474,233

Int. Cl. B62d 57/02

U.S. Cl. 180—8 C

6 Claims

1. The combination of a core drilling mechanism mounted on a frame slidably carried on a skid base, means for moving said mechanism along said skid base, and means for moving the skid base along the ground, comprising
a pair of arms pivotally mounted to said slide frame on opposite sides thereof and of a length to engage the ground,
fulcrum means carried by said arms for selective positioning in active and inactive engagement with respect to said skid base, and
ground engaging means carried by said arms, said fulcrum means when in active engagement being responsive to movement of the slide frame relative to the skid base to

1. A self-propelled vehicle comprising a frame, first means for supporting and transporting said frame, a worm wheel mounted on said first means, said worm wheel being disposed with its plane of rotation generally vertical and being operably connected with said first means to propel said vehicle when said worm wheel is rotated, an elongated worm screw mounted on said frame for engagement with said worm wheel, said worm screw being oriented with its longitudinal axis in said plane of rotation and extending generally vertically, second means adjustably joining said frame and said first means for effecting relative movement therebetween in either direction generally vertically and parallel to said axis of rotation of said worm screw to vary the height of said frame above a surface on which said vehicle is supported by said first means and thereby effecting corresponding relative movement of said worm wheel along said worm screw, said worm screw being of a length and so positioned as to extend adjacent each of the various relative positions assumed by an opposed mating peripheral segment of said worm wheel within the range of such relative adjustment movement therebetween by said second means, drive means supported on said frame for rotating said worm screw, and means for selectively effecting generally horizontal relative movement between said worm screw and said worm wheel into and out of drive mating engagement with one another in each of such relative vertical adjustment positions, for selectively effecting propelling operation of said support and transport means by said drive means in any of such relative vertical adjustment positions of said frame and said first means.

3,853,198

CENTRAL HYDRAULIC SYSTEM

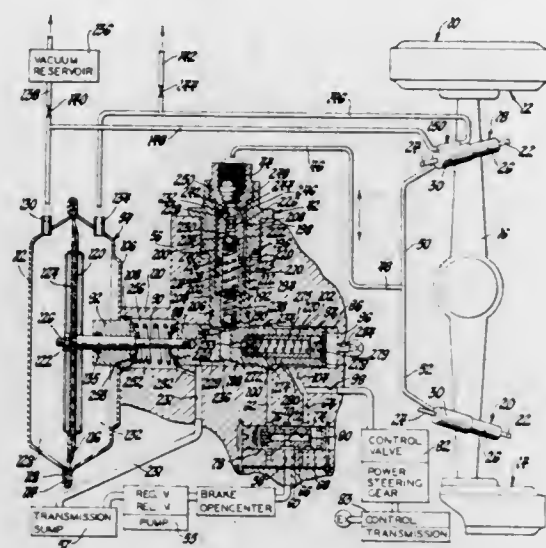
Harold E. Boettger, Pontiac, and Albert R. Tilford, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 358,947

Int. Cl. B60g 17/04

U.S. Cl. 180-41

18 Claims



1. In a central hydraulic system; a sump; source means connected to said sump providing a full flow fluid supply; a first vehicle control actuator means connected to said source to receive, variably restrict and transmit said full flow and provide a variable apply pressure; a second vehicle control actuator means operative to receive, variably restrict and transmit fluid flow and provide a variable apply pressure varying substantially inversely relative to the apply pressure of said first actuator control means during the operation of a vehicle; a vehicle condition changing actuator means operative on receiving a small volume of fluid to provide a normal actuator pressure to actuate the condition changing actuator means and control valve means operatively connected to said first actuator means, said second actuator means and said condition changing actuator means operative to receive full flow from said first actuator means and in one condition supply a low flow to said condition changing actuator means to provide said actuator pressure and a high flow to said second actuator means and in another condition block flow to said condition changing actuator means and connect full flow to said second actuator means.

3,853,199

COLLISION SENSOR FOR FENDER BUMPER OPERATED VEHICLE SAFETY DEVICE

Kenzo Hirashima; Shunji Matsui, both of Yokohama, and Yoshikazu Hayakawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1972, Ser. No. 310,943

Claims priority, application Japan, Nov. 30, 1971, 46-111870; Apr. 28, 1972, 47-49731

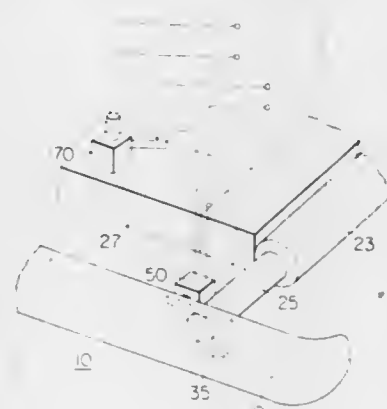
Int. Cl. B60r 21/00; H01h 3/16

U.S. Cl. 180-91

15 Claims

1. In a motor vehicle having a safety device actuable in response to a collision signal, at least one shock absorbing bumper, which bumper includes an impact receiving member extending crosswise horizontally of the vehicle, a cylinder disposed longitudinally of the vehicle and secured to the vehicle's body, a piston axially slidable in a bore of the cylinder, a piston rod extending externally from the piston and having one end secured to the impact receiving member, the piston rod being adapted to be withdrawn into the cylinder when said impact receiving member deforms upon collision against a solid obstacle, and a resilient member disposed between the impact receiving member and the piston rod to partially absorb an impact resulting from a collision,

a collision signal producing apparatus comprising, in combination, a normally closed, vehicle deformation responsive switch forming part of a first electric circuit, said deformation responsive switch including an insulated housing mounted adjacent said resilient member and disposed on said one end of the piston rod, the housing defining a cavity formed therein, means defining aligned niches in said one end of said piston rod and said resilient member and lying adjacent said insulated housing, an elongate actuating member axially slidably mounted in the cavity and extending externally of said housing, said elongated actuating member being arranged to normally extend through said niche in said one end of said piston



rod into said niche formed in said resilient member but to be withdrawn into said housing upon compression of the resilient member resulting from the collision, a fixed contact disposed in said cavity, and a movable contact which is associated with said elongate actuating member, disposed in said cavity and normally held in contact with the fixed contact, the movable contact being movable to disengage from the fixed contact in response to the withdrawal movement of said elongate actuating member to open said first electric circuit; and a normally open, inertia responsive switch forming part of a second electric circuit connected with the safety device for producing the collision signal upon closure thereof, said inertia responsive switch including, an insulated housing mounted on the vehicle body adjacent to said impact receiving member, the housing defining a cavity therein, an inertia-responsive magnetic weight located in said cavity for movement in a longitudinal direction of the vehicle body in response to the inertia applied to the body during the collision, a movable contact disposed on said inertia weight, a fixed contact disposed in said housing adjacent to the movable contact, the fixed contact being positioned in a path of the inertia responsive movement of said inertia weight, means applying a force to usually hold said movable contact apart from said fixed contact, the force being overcome by the inertia force at a predetermined degree, and electromagnetic means mounted in the cavity of said inertia responsive switch housing and situated adjacent to the inertia weight on the side opposite to the position of said fixed contact to exert, upon energization thereof, an attractive force upon said inertia weight to hold the movable contact apart from said fixed contact, said electromagnetic means being connected with the first electric circuit and adapted to be deenergized upon opening of said first electric circuit; whereby said movable contact of the inertia weight is allowed to engage with the fixed contact at a predetermined degree of collision which is enough to open said vehicle deformation responsive switch, only by overcoming

ing the force of said force applying means to close said second electric circuit.

3,853,200

METHOD OF DETERMINING COMPLIANCE POLES IN EXHAUST SYSTEM

Arnold A. Bergson, Ann Arbor, and Paul A. Johns, Grass Lake, both of Mich., assignors to Tenneco Inc., Racine, Wis.

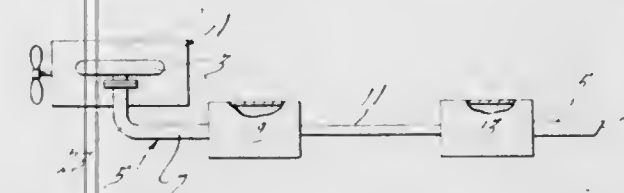
Continuation-in-part of Ser. No. 340,966, March 14, 1973.

This application Apr. 29, 1974, Ser. No. 464,921

Int. Cl. F01n 1/00

U.S. Cl. 181-35 B

5 Claims



1. A method of testing for the points of high and low compliance in the acoustical pulsations of a heated gas flow system having a predetermined length which comprises attaching a uniform diameter conduit of said predetermined length to the source of said acoustical pulsating hot gas flow to provide a uniform diameter passage for gas to flow the length of the system, determining the linear decrease in temperature from the inlet end of the conduit to the outlet end by measuring the temperatures at the inlet end and the outlet end, determining the actual temperature profile of the conduit by measuring the gas temperature at numerous points along the length of the conduit while gas is flowing through the conduit at a desired rate of flow and pressure, and determining thermal anomalies by comparing the actual temperature profile with the linear decrease in temperature, the points where maximum decreases of temperature as compared with the linear slope occur indicating points of maximum compliance and the points of maximum increase in temperature with respect to the linear profile indicating maximum inertance points.

3,853,201

QUIET SNOWMOBILE

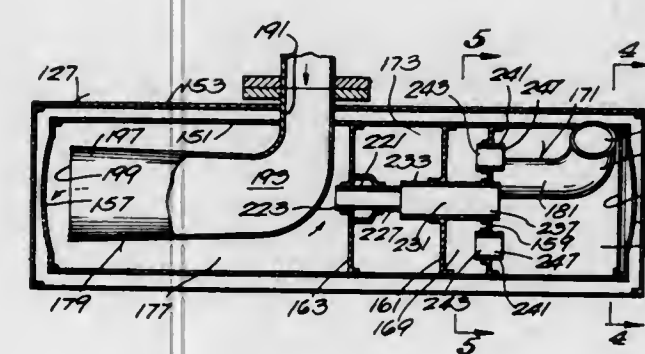
William B. Smale, Cedarbury, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 258,260, May 31, 1972, Pat. No. 3,810,518. This application Mar. 14, 1974, Ser. No. 451,203

Int. Cl. F01n 1/08

U.S. Cl. 181-53

3 Claims



1. A muffler comprising a generally tubular housing having opposed end walls, a first barrier spaced axially from one of said end walls and defining, with said one end wall, an end chamber, a second barrier spaced axially from said first barrier in the direction away from said one end wall and defining, with said first barrier, an outlet chamber, a third barrier spaced axially from said second barrier in the direction away from said one end wall and defining, with said second barrier, a central chamber and defining, with the other of said opposed end walls, a megaphone chamber, a single exhaust megaphone

in said megaphone chamber and including an outlet portion terminating adjacent to said other end wall, a first pipe extending from said megaphone chamber to said central chamber, a second pipe extending from said central chamber to said end chamber, a third pipe extending from said end chamber to said exhaust chamber, and an exhaust discharge pipe having a discharge portion extending from said outlet chamber outwardly of said housing.

3,853,202

LADDER SUPPORTING DEVICE

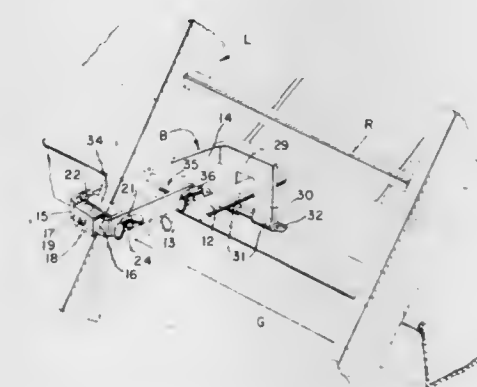
Alfred J. Jarboe, deceased, late of 42 Columbia Ave., Takoma Park, Md. 20012 (by Hilda Jarboe, administratrix)

Filed Feb. 25, 1974, Ser. No. 445,242

Int. Cl. E06c 7/48

U.S. Cl. 182-108

6 Claims



1. A safety device for securing a ladder in leaning position against a vertical surface of the wall of a house or like structure, with the upper end of the ladder reaching above the roof gutter, said device comprising a relatively elongated right-angular bracket having means adjoining one end thereof formed to encompass a side rail of the ladder, means on said bracket for clamping the same to the opposite side faces of said rail, the opposite end of the bracket being disposed in a plane extending substantially at a right angle to the elongated direction of the bracket, said opposite end being bifurcated so as to be capable of straddling one of the spikes normally used for securing the roof gutter to the eave of a roof.

3,853,203

INDEPENDENT TOEBOARD CONSTRUCTION

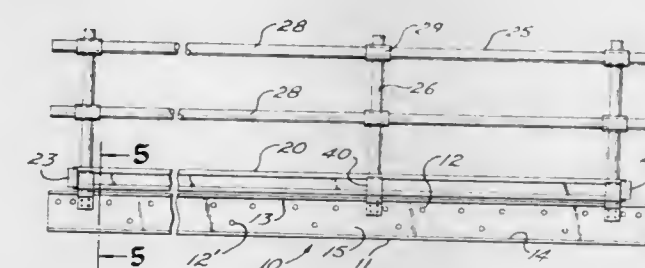
Richard Lawrence Werner, Sharon; Richard Malvern Montgomery, Transfer, and Martin Peter Ridge, Greenville, all of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Filed July 23, 1973, Ser. No. 382,047

Int. Cl. E04g 1/26

U.S. Cl. 182-113

4 Claims



1. In an independent toeboard assembly for a stage, the combination of an elongated structural member defining one side edge of the stage; said elongated structural member being a metallic rail comprising a flat vertical web portion and a horizontally projecting flange portion at the upper edge of said web portion; a bracket comprising a horizontal base; said bracket having upwardly projecting, spaced parallel walls defining an upwardly open slot parallel with said structural member; said base being disposed on said flange and having wall portions forming a horizontally opening slot which re-

ceives said flange, and a downwardly turned mounting portion; means securing said mounting portion flatwise against said web; and an elongated toeboard seated edgewise within said slot of said bracket. web;

3,853,204

APPARATUS FOR AND METHODS OF LINING A FURNACE

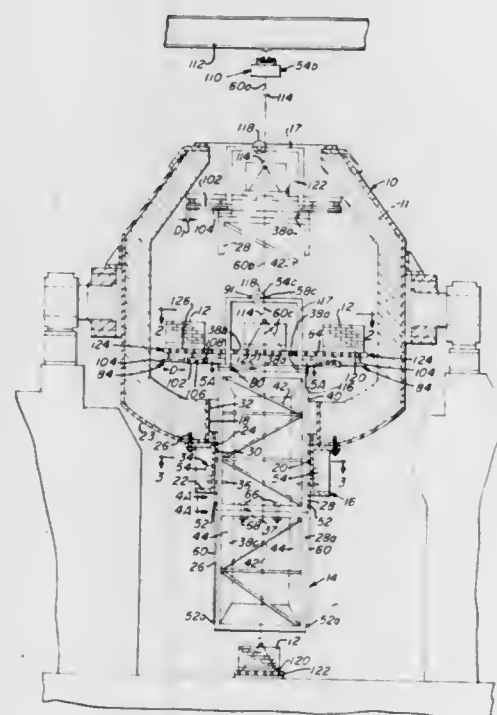
Joe H. Smith, Bluff Park, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 15, 1972, Ser. No. 253,217

Int. Cl. E04g 3/14

U.S. Cl. 182-128

27 Claims



1. Apparatus for lining a furnace, provided with a bottom aperture in its bottom, with an inner lining of a refractory material, said apparatus having:

- a support member secured to said furnace in registry with said bottom aperture for guiding said apparatus through said bottom aperture and provided with a tower aperture;
- a first tower adapted to pass through said tower aperture in said support member and provided with a refractory material aperture;
- tower elevating means on one of said support member and said first tower and connected to the other of said support member and said first tower and operable to raise said first tower through said tower aperture in said support member;
- a turntable rotatable on the top of said first tower and provided with a second refractory material aperture in registry with said refractory material aperture in said first tower;
- a work platform mounted on said turntable, provided with a third refractory material aperture and movable on said turntable from a storage position on said turntable, where said work platform passes through said tower aperture in said support member, to a work position where said work platform extends beyond said turntable to enable a workman to stand on said work platform;
- refractory material elevating means mounted on said work platform, engageable with said refractory material and operable to raise said refractory material through said refractory material aperture in said first tower, said second refractory material aperture in said turntable and said third refractory material aperture in said work platform into alignment with said work platform so that said refractory material can be transferred to said work platform.

3,853,205

LOAD ACCELERATING AND DECELERATING PULLEY MEANS

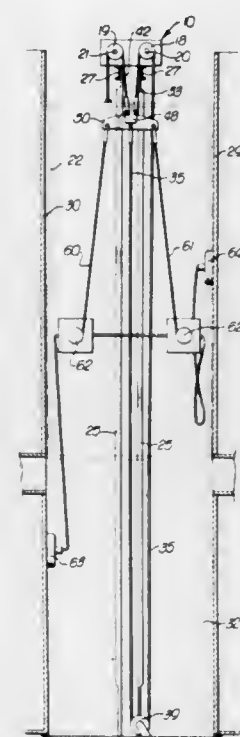
Francis H. Gindroz, Jr., Torrance, Calif., assignor to Task Corporation, Anaheim, Calif.

Continuation of Ser. No. 21,660, March 23, 1970. This application Mar. 16, 1972, Ser. No. 235,448

Int. Cl. B66b 11/06

U.S. Cl. 187-27

9 Claims



- In a lifting system, the combination comprising:
 - a rotary drive having substantially constant output speed,
 - a pulley operatively connected to the drive to be rotated, the pulley having an axis of rotation,
 - load imposing structure to be displaced between spaced rest positions,
 - a first load transmitting line operatively connected to said structure and also wound about the pulley to an extent corresponding to turning thereof by the drive, there being certain loci of line departure points from the pulley and which have radii from the pulley axis that progressively increase as the pulley rotates in correspondence to increased displacement of the structure from a rest position at a first station, and there being other loci of line departure points from the pulley which have radii from the pulley axis that progressively decrease as the pulley rotates in correspondence to structure approach to rest position at a second station, the pulley having its largest diameter line engaging portion between said certain and other loci of line departure points,
 - there being a second load transmitting line operatively connected to said structure and pulley to unwind from the pulley as the first line winds on the pulley, there being certain loci of second line departure points from the pulley, and which have radii from the pulley axis that progressively increase as the pulley rotates in correspondence to increased displacement of the structure from rest position at the first station, and other loci of second line departure points from the pulley which have radii from the pulley axis that progressively decrease as the pulley rotates in correspondence to structure approach to rest position at the second station, the first and second lines extending generally oppositely from the structure and being in tension so that the lines resist uneven acceleration of the structure, and each of the first and second lines wrapping about the pulley over substantially the same axial length thereof including said largest diameter portion, said lines wrapping in interleaved relation in different grooves defined by the pulley.

3,853,206

SPOT BRAKE STRUCTURE INCLUDING A PIVOTED LEVER ACTUATOR

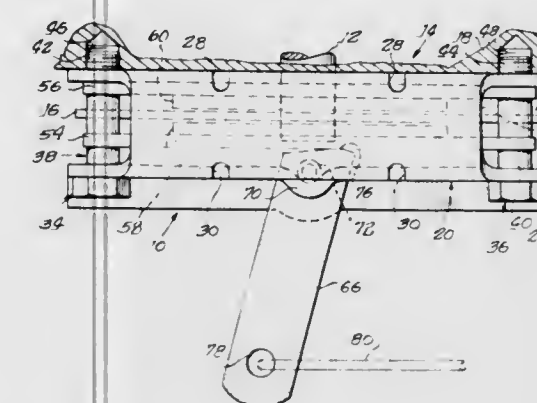
Robert L. Kibler, and Thomas R. Dosmann, Sr., both of St. Joseph, Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Jan. 2, 1973, Ser. No. 320,528

Int. Cl. F16d 55/224

U.S. Cl. 188-72.9

3 Claims



1. A brake structure cooperable with a rotor disc to be controlled comprising an elongated sheet metal channel member of generally U-shaped cross-sectional configuration and including first and second opposite, generally parallel side portions for embracing opposite sides of the rotor disc and a connecting substantially closed bight portion extending between longitudinal outer margins of said side portions for overlying a peripheral section of the rotor disc, said first side portion including a free margin opposite from said bight portion and a generally centrally located opening therethrough between the bight portion and said free margin, stator means movably mounted within said channel member and carrying friction pad means substantially enclosed by said bight portion and said side portions for protection from foreign material, an actuating lever having an inner end portion extending through said opening and engageable with said stator means for energizing the brake upon actuation of the lever, said first side portion comprising an outwardly embossed seat portion providing an inwardly open groove extending transversely of said first side portion, across said opening and with an access opening through said free margin, and an elongated pin bearing element insertable into said groove through the access opening from a position outwardly of said free margin and by force fit through an aperture in the inner end portion of the actuating lever for pivotally connecting the lever with said first side portion with the pin bearing element confined to the groove during movement of the lever.

3,853,207

BRAKE WITH BRAKING MEMBER HAVING A RING, ESPECIALLY FOR AUTOMOBILE VEHICLES

Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 12, 1973, Ser. No. 331,378

Claims priority, application France, Feb. 16, 1972, 72.05123

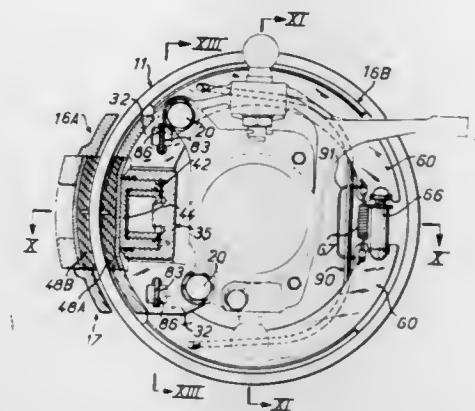
Int. Cl. F16d 53/00, 51/22

U.S. Cl. 188-76

6 Claims

1. A brake comprising a fixed support and a member to be braked, said member having a ring, said brake further comprising two braking plates arranged one on each side of said ring and a stirrup engaged on said plates and on said ring, means slidably and pivotally mounting said stirrup on said fixed support, said stirrup containing operating means that act directly on one of said plates and indirectly on the other of said plates through the intermediary of said stirrup, said fixed support being H-shaped and comprising two first legs in the form of a hook for engagement by said plates, said two first legs having shoulders to retain the braking plates, a spring

supported against said stirrup to urge said plates into contact against said shoulders, said fixed support having a curved central bar and having two second legs having passages therethrough for the fixed securing of said support, two brake jaws bearing against said fixed support, a second operating



means acting on said jaws to apply them against a braking surface formed on said member to be braked, said fixed support having two slots therethrough, said second operating means comprising a pair of levers passing through said slots and bearing pivotally on the edges of said slots and engaging said brake jaws.

3,853,208

VEHICLE WHEEL BRAKE

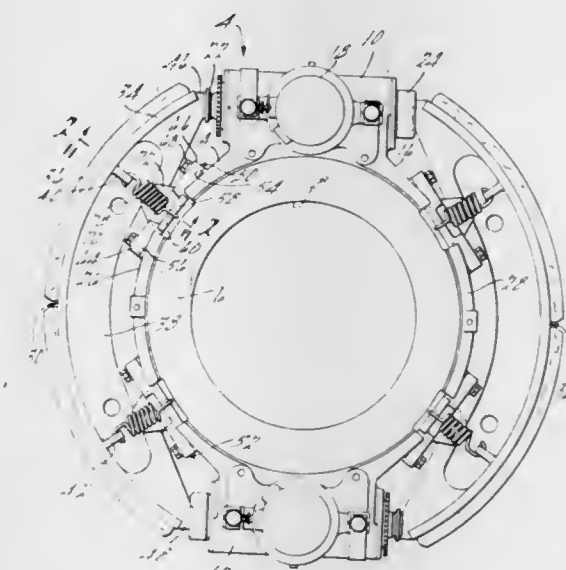
Charles W. Nehr, Bloomfield Hills, and George A. Davis, Madison Heights, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 1, 1973, Ser. No. 366,305

Int. Cl. F16d 65/08

U.S. Cl. 188-335

5 Claims



1. A vehicle brake assembly adapted to be mounted on a vehicle axle, said brake assembly including a main support member adapted to be secured to said axle about the periphery thereof and extend generally radially therefrom, brake shoe actuating means carried by said member, the improvement comprising at least one brake shoe guide element positioned on the outer periphery of said member and removably secured thereto by fastening means accessible from the inboard side of said assembly, said element being formed with a radially extending outwardly open channel, a brake shoe including brake lining and having a radially extending web portion received in said channel to prevent lateral movement of said brake shoe, and a pair of tension springs positioned on opposite sides of said web portion to interconnect said brake shoe and said element while permitting radial outward movement of said brake shoe in response to forces exerted thereon by said actuator means, whereby said springs, said brake shoe,

and said element may be removed as a sub-assembly from said brake assembly upon removal of said fastening means.

3,853,209

TRAVELING BRIDGE WITH POWER-CABLE REEL ROTATED IN RESPONSE TO BRIDGE MOVEMENT, SLIPLESSLY AND WITH UNIFORM TENSION

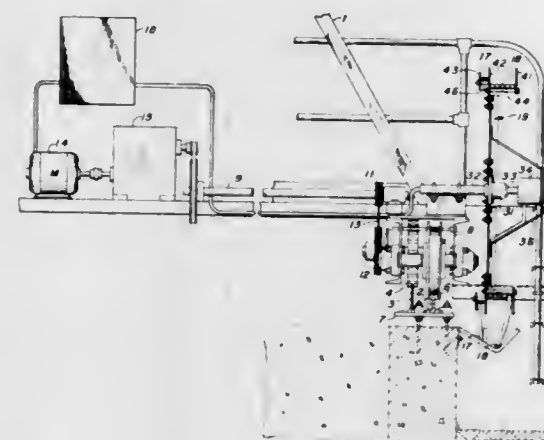
Edwin Marshall Bond, Batavia, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.

Filed Dec. 18, 1970, Ser. No. 99,542

Int. Cl. H02g 11/00

U.S. Cl. 191—12.2 R

9 Claims



1. An electrically powered traveling-bridge for moving a scraper along a tank of great length including an electric motor and drive means moving with the bridge for driving it along the length of the tank, a reel carried by the bridge for rotation about a generally horizontal axis, a power cable connected to a source of power at one point of the run, and windable on the reel and connected through the reel to the motor, and resting on support means as payed out by the reel, and means for turning the reel to wind the cable; said means by its own correlation to the movement of the bridge tending to provide a speed for the reel which makes the linear speed between the cable and the bridge approximately equal to the speed of the bridge.

3,853,210

TRANSMISSION CONTROL SYSTEM FOR VEHICLES

Shin Kitano, Aichi Gun, and Yutaka Momose, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya Aichi Prefecture, Japan

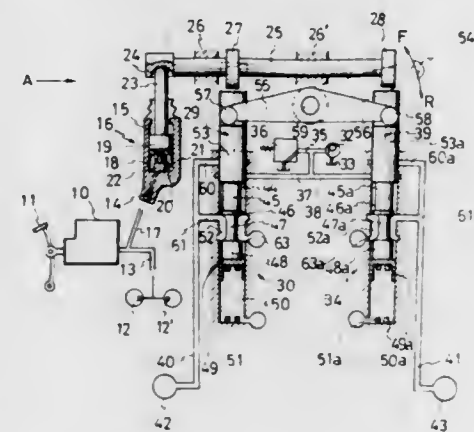
Filed Oct. 31, 1972, Ser. No. 302,428

Claims priority, application Japan, Nov. 16, 1971, 46-91701

Int. Cl. F16d 67/02; F16h 57/10

U.S. Cl. 192—4 C

5 Claims



1. A control apparatus for a vehicle having a transmission with a fluid actuated clutch means and hydraulic brake means, comprising:

a source of fluid pressure;
a fluid conduit connecting said pressure source with said clutch means;
a fluid pressure relief valve disposed within said fluid conduit for automatically controlling said fluid pressure being discharged from said pressure source and for delivering a controlled fluid pressure to said clutch means;
a control valve assembly disposed within said conduit and including a housing provided with a pair of cylindrical bores located parallel to each other and having ports communicating with said conduit, a pair of valve means axially slidably engaged within said bores respectively for controlling said fluid pressure to said clutch means, and spring means for biasing said pair of valve means such that said ports are normally closed;
a shift lever engaged with said pair of valve means for selectively operating said pair of valve means; and
means for selectively operating said pair of valve means in accordance with the operation of said brake means, whereby said clutch means is controlled by said pair of valve means in accordance with the selected operation of said shift lever and said clutch means is returned to its neutral position in accordance with the operation of said brake means.

3,853,211

TYPE LEVER ACTUATION ARRANGEMENT IN SERIAL PRINTERS HAVING ROTATING TYPE LEVER MAGAZINES

Folker Galaske, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 24,156, March 31, 1970, abandoned.

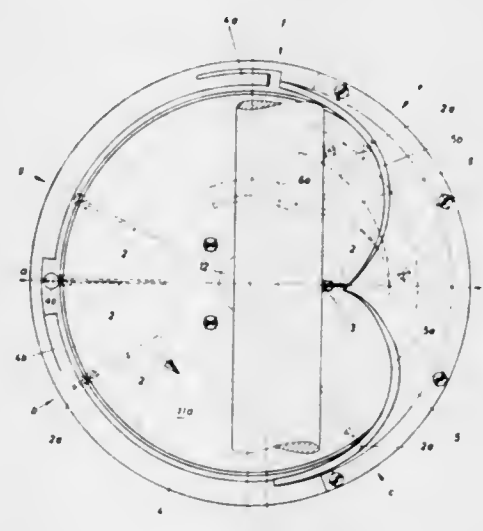
This application May 22, 1972, Ser. No. 255,564

Claims priority, application Germany, Apr. 24, 1969, 1920967

Int. Cl. B41j 23/04

U.S. Cl. 197—18

5 Claims



1. A device for printing on a record medium, the combination comprising:
disc-shaped, horizontally disposed, rotary type carrier means having a plurality of type members each formed of a lever having a free end and an extension end arranged in the plane of the type carrier means and pivotally supported thereon and each movable from a stored position to a print position; means for rotating said type carrier means to urge said type members by centrifugal force and gravity into the stored position; means to select a type member from the stored position and to lift said selected type member to a stationary part located above said type carrier means, said means to select acting on said free end of the lever carrying said selected type member, said stationary part having first means for urging the selected type member by centrifugal force and gravity into a horizontal path;

subsequent second means for accelerating said selected type member in the direction of said record medium and for hitting the record medium after a free flight movement with said lever of said selected type member; third means for returning said selected type member to the stored position by centrifugal force and gravity; and fourth means located below said type carrier means and acting on the extension end of said lever of said selected type member in cooperation with said third means to provide a return path for said lever of said selected type member; said second means being shaped to compensate for bending of the lever free end of said selected type member, caused by a Coriolis force.

3,853,212

CONVEYOR BELT TRANSFER MECHANISM

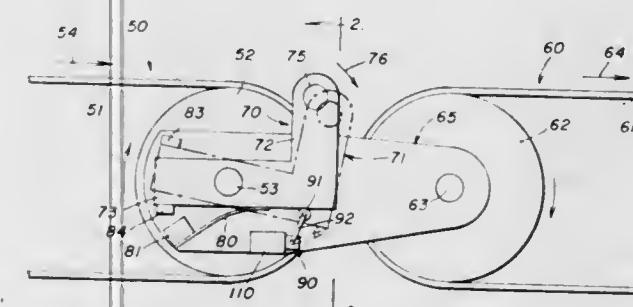
John J. Downes, Chicago, Ill., assignor to Veltin and Pulver, Inc., Chicago, Ill.

Filed Aug. 31, 1973, Ser. No. 393,421

Int. Cl. B41j 25/00

U.S. Cl. 198—27

10 Claims



1. A mechanism for transferring objects from a first conveyor having a first conveying reach to a second conveyor spaced from said first conveyor and having a second conveying reach, said mechanism comprising a pair of arms mounted for movement with respect to one of said conveyors and carrying a transfer roller therewith, said roller being movable with said arms between a conveying position thereof wherein said roller is disposed with the upper surface thereof substantially in alignment with said conveying reaches to provide a support surface for objects being transferred between said conveyors and a stop position there wherein said roller is disposed below said conveying reaches, biasing means continually urging said arms and said roller to the conveying position thereof, said biasing means exerting sufficient force on said roller to maintain said roller in the conveying position thereof during the passage thereof of an object, and control mechanism responsive to movement of said arms and said roller to the stop position thereof for stopping one of said conveyors, whereby said roller provides a support surface between said conveyors when said arms and said roller are in the conveying position thereof and said control mechanism stops at least one of said conveyors when said roller and said arms are in the stop position thereof thereby halting product flow along said conveyor automatically in response to movement of said roller and said arms from the conveying position thereof to the stop position thereof.

3,853,213

LEHR LOADER

James E. Lehman, and John S. Lush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Mar. 22, 1973, Ser. No. 343,907

Int. Cl. B65g 47/26

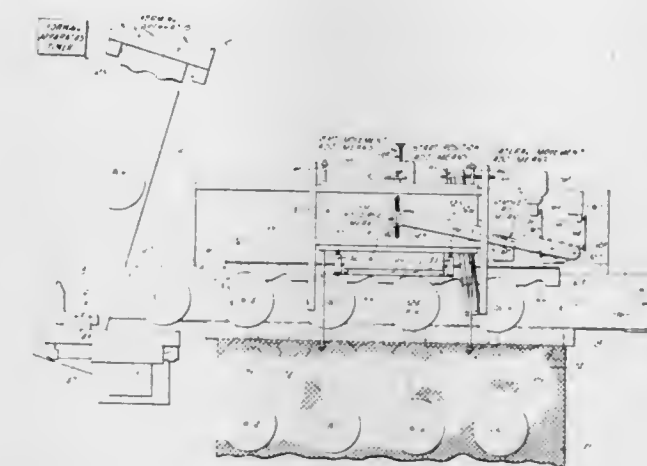
U.S. Cl. 198—31 AB

25 Claims

1. A Lehr loader of the type having a Lehr belt, a cross conveyor at an end of the Lehr belt and moving transversely thereto, a main carriage mounted for movement in first and second directions parallel to the direction of movement of said Lehr belt a second carriage movably mounted on said main

carriage, a pusher mounted on said second carriage for transferring articles from said cross conveyor to said Lehr belt, and means for driving said main carriage, said driving means comprising:

a lever pivoted at a first end to said loader and means releasably connecting said lever at a second end to said main carriage,



a slot in said lever between said first and second ends, a crank mounted at one end on a driven shaft, and a drive pin mounted on another end of said crank, said drive pin extending into said slot and rotating said lever about its pivoted first end, when said shaft drives said crank, so as to drive said main carriage in said first and second directions, said releasably connecting means disconnecting said lever from said main carriage in response to a predetermined maximum load applied to said main carriage by said lever.

3,853,214

CONVEYOR ROLLER STRUCTURE

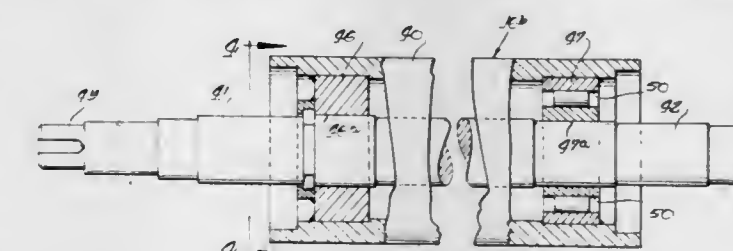
Joseph E. Vinarsik, Homewood, and John A. Jachim, Chicago, both of Ill., assignors to Hi-Hard Rolls, Inc., Harvey, Ill.

Filed Apr. 23, 1973, Ser. No. 353,292

Int. Cl. B65g 13/04

U.S. Cl. 198—127 R

5 Claims



1. A conveyor roller structure comprising: drive shaft means having one end thereof arranged to be journaled and the other end thereof arranged to be driven by drive means, roller sleeve means having end wall portions directed radially inwardly toward said drive shaft means, said end wall portions having apertures formed therein for receiving said drive shaft means, a non-circular rotational-restricting surface means formed on said drive shaft means to be positioned adjacent the axially outwardly located wall surface of one of said end wall portions, said non-circular rotational-restricting surface extending radially outwardly of said drive shaft means, a collar positioned over said drive shaft means to circumscribe said non-circular rotational-restricting surface means, said collar having an internal configuration firmly to engage said non-circular rotational-restricting surface means and a radially inwardly circular flange and means for securing said collar to said one of said wall portions to capture said noncircular rotational-restricting surface between said one end of said wall portion and said radially inwardly circular flange, whereby relative rotational and axial movement between said drive shaft means and said roller sleeve means is prevented,

and replacement of said roller sleeve means is accomplished by removing said collar.

3,853,215

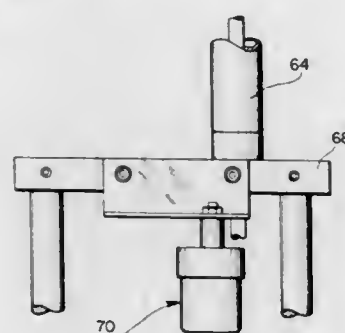
BOBBIN LIFTING AND ORIENTING MECHANISM
Manuel S. Paiva, Swansea, Mass., assignor to Leeson Corporation, Warwick, R.I.

Filed Sept. 19, 1973, Ser. No. 398,701

Int. Cl. B65g 47/24

U.S. Cl. 198—236

7 Claims



1. An apparatus for lifting and orienting a bobbin having apical and butt ends comprising, bobbin gripping means pivotally mounted and movable from a first bobbin gripping position to a second position, first bobbin guide means and second bobbin guide means positioned intermediate said first bobbin gripping position and said second position and in the path of travel of said bobbin gripping means, one of said guide means being positioned in the path of travel of one of the ends of said bobbin and the other of said guide means being positioned in the path of travel of the other of said ends of said bobbin, each one of said first and second guide means having an aperture of greater width than the diameter of the apical end of said bobbin and of lesser width than the diameter of the butt end of said bobbin to permit passage of the apical end of the bobbin therethrough but to restrict passage of the butt end of said bobbin to thereby pivot said gripping means and said bobbin and, moving means connected to said bobbin gripping means to move said bobbin gripping means between said first bobbin gripping position and said second position.

3,853,216

DISPLAY CARTON

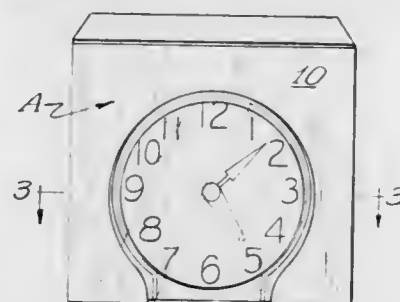
Harold R. Jaeschke, Milwaukee, Wis., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Dec. 12, 1972, Ser. No. 314,383

Int. Cl. B65d 5/50, 25/54, 85/40

U.S. Cl. 206—45.14

1 Claim



1. A clock package including:
a clock having a generally rectangular base, the clock including a body portion extending upwardly and rearwardly from the forward portion of said base and having a dial on the forward side of said base,
a carton enclosing the major portion of the clock, said carton including a front panel, a bottom panel, a back panel, and a top panel secured in tubular relation, side walls closing the sides of said carton,
an aperture in the front wall of said carton to accommodate said dial; and extending to the bottom wall of the carton,

a sheet of transparent shrink film secured to the inner surface of said front panel outwardly of said aperture, and secured to the inner surface of said bottom panel, said bottom panel being narrower in width than said rectangular base of said clock, whereby said base of said clock and said dial of said clock extend through said aperture, said base of said clock resting upon said bottom panel of said carton, and
said shrink film overlying said portion of said clock base and said dial projecting through said aperture and shrunk into intimate contact with this portion of the clock to protect the surface thereof.

3,853,217

PIPETTE TIP PACKAGE

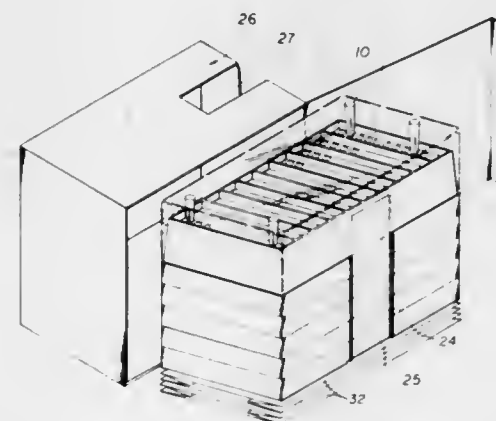
Emil A. Scordato, Bronxville, and Jules Barry Cohen, Brooklyn, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mt. Vernon, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,259

Int. Cl. B65d 85/30, 21/00

U.S. Cl. 206—223

9 Claims



1. A package of pipette tips comprising a first tray having a planar tip supporting surface provided with a plurality of apertures through which pipette tips can project, a first group of tapered pipette tips projecting through the apertures of the tip supporting surface of said first tray, each of said tips having abutment means on the outside periphery of the tip for supporting the tip on the tip supporting surface of said first tray so that the lower part of said tip projects loosely through an aperture thereof, a second tray having a planar tip supporting surface provided with a plurality of apertures through which pipette tips can project, each of said trays being provided with walls depending from the tip supporting surface of the tray a distance at least equal to the length of that portion of a pipette tip projecting through the tip supporting surface of the tray, each of said depending walls being provided with a shoulder below which the wall lies in a substantially vertical plane and above which the wall is inclined inwardly towards the tip supporting surface of the tray, said second tray being supported by the shoulders provided on the walls of said first tray, and a second group of tapered pipette tips projecting through the apertures of the tip supporting surface of said second tray, each of said tips having abutment means on the outside periphery of the tip for supporting the tip on the tip supporting surface of said second tray so that the lower part of said tip projects loosely through an aperture thereof, the position of the abutment means on said second group of pipette tips and the taper and the thickness of the wall of the pipette tips included in said first and said second groups of pipette tips being such that when said second tray of pipette tips is supported on said first tray of pipette tips the pipette tips supported by said second tray nest loosely in the pipette tips supported by said first tray.

3,853,218

LOAD OF GOODS COMPRISING A PLURALITY OF LAYERS, AND A METHOD AND A MACHINE FOR PRODUCING SAID LOAD

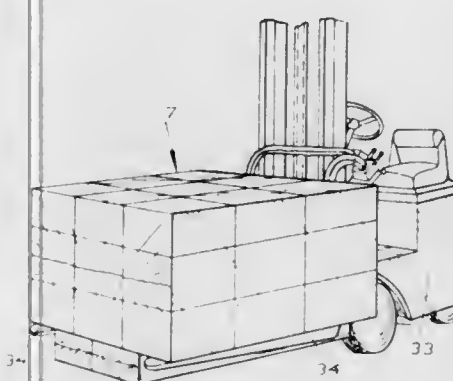
Halvor Grasvoll, Goteborg, Sweden, assignor to Gustav Magnusson Gilbert, Vastrå Frotunda and Karl Ingvar Weiner, Goteborg, both of, Sweden

Filed Jan. 30, 1973, Ser. No. 328,002

Int. Cl. B65d 75/25

U.S. Cl. 206—386

3 Claims



3. An improved load comprising several superimposed layer of goods, a first lowermost portion, a first plastic film enclosing said lowermost portion, a second uppermost portion of goods supported upon said lowermost portion, the side edges of said lowermost portion terminating a considerable distance inwardly from the side edges of said uppermost portion to define two longitudinal spaces at either side of said lowermost portion to accommodate the tines of a fork lift truck, and a second plastic film enclosing said uppermost portion and having at least parts extending along and affixed to the parts of said first plastic film adjacent to said side edges of said lowermost portion for affixing said load portions together.

3,853,219

PACKAGING DEVICE

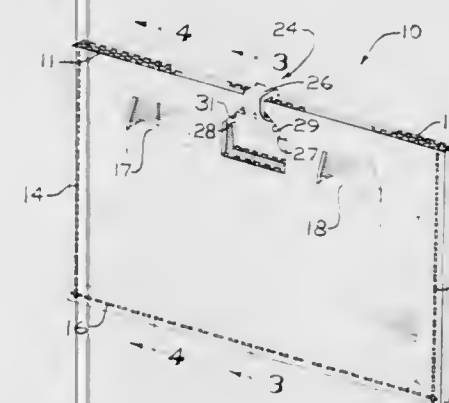
William A. Castine, Jr., Jeannette, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 356,256

Int. Cl. B65d 85/48

U.S. Cl. 206—448

15 Claims



1. A packaging device for a fragile plate-like article which comprises:
a first generally rectangular panel member having a foldable lock-tab member, at least one foldable hold-down flap and a cut-out surrounding said lock-tab member;
a second generally rectangular panel member corresponding substantially in size to said first panel member and having an opening corresponding in location to said lock-tab member;
means fastening said first and second panel members along their side and bottom marginal edges such that the space

between the respective panel members defines an envelope-like receptacle for the plate-like article;

said lock-tab member having a generally vertically extending stem portion and two laterally extending side portions so as to define a generally inverted T-shaped configuration;

said cut-out portion having side marginal edges and a top edge, said top edge forming an integral connection with the end of said stem portion of said lock-tab member that is remote from said side portions thereof, the distance between said side marginal edges of said cut-out being smaller than the distance between the opposed ends of said laterally extending side portions of said lock-tab member so as to enable said side marginal edges to overlap said side portions when the packaging device is assembled and locked;

said hold-down flap being defined by a generally horizontally disposed slit and a pair of slits depending generally downwardly therefrom, such that when a plate-like article is placed in said envelope-like receptacle said hold-down flap can be folded over the top edge of the article and down between the article and said second panel member; and

said opening being sufficiently large such that when an article is placed in said envelope-like receptacle, said lock-tab member can be pushed through said opening and folded through a complete turn of 360°, whereafter said side portions of said lock-tab member can be inserted under said side marginal edges of said cut-out, and thus between said first and second panel members so as to lock the article within the packaging device.

3,853,220

HAMMOCK PACKAGE

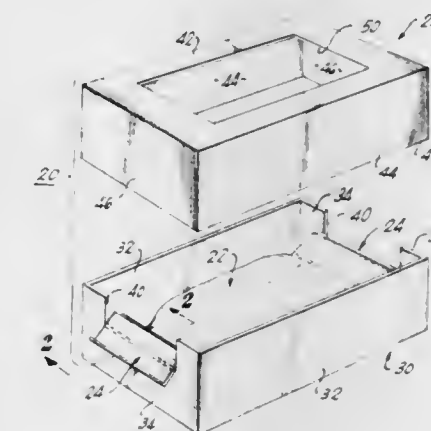
Howard L. Luray, 948 Birmingham Rd., Burbank, Calif. 91504

Filed Feb. 22, 1972, Ser. No. 228,011

Int. Cl. B65d 85/30

U.S. Cl. 206—466

6 Claims

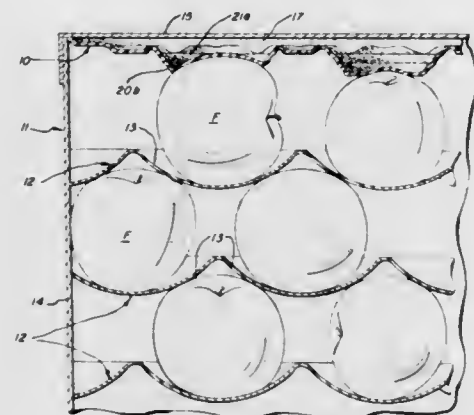


1. A package comprising:
a flexible but substantially non-elastic hammock member adapted to enclose a product to be packaged, said hammock member being of a size to extend beyond both ends of said product;
angularly shaped support means each having an inner leg adapted to be attached to an end of said hammock member, and an outer leg at an angle thereto; and
an external structure surrounding said hammock and said support means and supporting the same, said structure engaging said outer legs of said support means to rotate the same to a position to tension said hammock member between them.

3,853,221

PAD FOR CUSHION PACKING FRAGILE ARTICLES
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Continuation-in-part of Ser. No. 125,186, March 17, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,649
Int. Cl. B65d 25/12, 81/16, 85/34
U.S. Cl. 206—521

11 Claims



1. A pad of soft, resiliently compressible material for use in cushion packing fragile articles disposed within a container wherein the articles form a top layer within the container and are arranged in laterally spaced relation; said pad being positionable within the container and interposed the top layer of articles and a closure for the container, the peripheral shape of said pad approximating the area delimited by the container side walls, said pad comprising a plurality of laterally spaced, hollow projections depending a like amount from a predetermined plane of the pad and resiliently engaging each of the articles forming the top layer, each projection including a base portion having the undersurface thereof adapted to engage an article disposed therebeneath and forming the top layer, and an inwardly tapered wall interconnecting the periphery of the base portion with the predetermined plane of the pad, said wall having an exterior surface provided with a first line of flexure arranged in substantially encompassing relation with respect to said base portion and spaced therefrom, and an interior surface provided with a second line of flexure arranged in substantially encompassing relation with respect to said base portion and spaced a different amount therefrom than said first line of flexure whereby controlled flexure of said wall occurs about said lines of flexure upon said base portion being distorted by an article engaging said base portion; the portions of said projection wall adjacent said lines of flexure being resiliently compressed when controlled flexure of the projection wall occurs.

3,853,222

PRESSURIZATION APPARATUS

John D. Helms, Dallas, Tex., assignor to Matchpoint Industries, Inc., Dallas, Tex.
Filed June 21, 1973, Ser. No. 372,332
Int. Cl. B65d 85/16

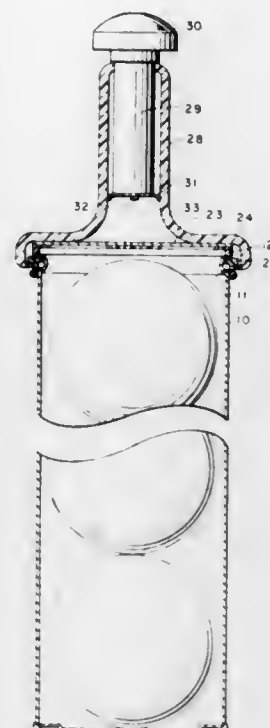
U.S. Cl. 206—315

8 Claims

1. Apparatus for enclosing and sealing the open end of a cylindrical container having an outwardly radially extending flange near the open end comprising

a. collar means adapted to surround the outer surface of

said container and having an internal dimension less than the external dimension of said flange.
b. cap means adapted to removeably mate with said collar



means and form a seal with the top surface of said flange, and
c. means for injecting gas through said cap means into the interior of said container.

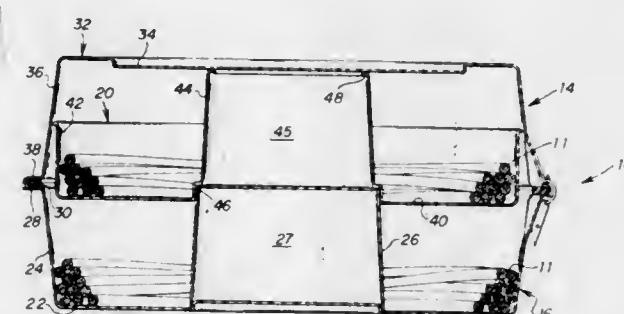
3,853,223

ROPE CONTAINER

F. Caroline Nowlain, 4314 Thunder Rd., Dallas, Tex. 75234
Filed June 14, 1973, Ser. No. 370,008
Int. Cl. B65d 85/04; B65h 75/02

U.S. Cl. 206—403

11 Claims



1. A container for carrying a plurality of lengths of rope which comprises:

a bottom pan section having a bottom wall, first upstanding side walls and a center wall extending upwardly from said bottom wall;

a top section having a top wall and downwardly extending second side walls of a size to mate with said first walls; fastener means for removably coupling said pan and top sections to form a sealed volume; and

a tray mounted in said sealed volume, said tray having a bottom wall, a side wall of a size to fit with clearance inside said top section, seating structure on said tray for mating with the top of said center wall releasably supporting said tray in position above said bottom wall, and a center wall on said tray of a length to contact said top wall to hold said tray in position and transfer stacking forces from said top wall through said center walls to said bottom wall.

3,853,224

INFORMATION RETRIEVAL SYSTEM

Masaru Furuoka; Hisao Ohki; Koichi Tominaga; Tuguhiro Hara, and Tetsuya Ikeda, all of Tokyo, Japan, assignors to Gakken Co., Ltd., Tokyo, Japan

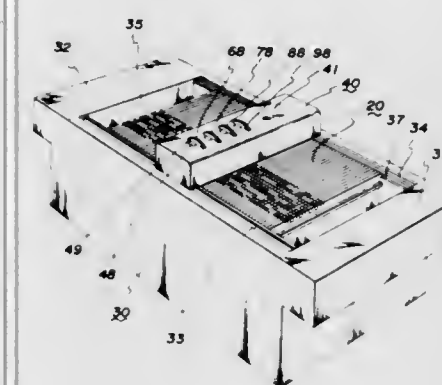
Filed July 18, 1973, Ser. No. 380,286

Claims priority, application Japan, Aug. 19, 1972, 47-83225; Sept. 25, 1972, 47-95094; Sept. 16, 1972, 47-107817

Int. Cl. B07c 3/20

U.S. Cl. 209—80.5

15 Claims



1. An information retrieval system comprising, in combination:

a number of sheetlike objects each having indentations and non-indentations formed on one edge thereof in accordance with one of a set of code characters assigned thereto, each of said code characters consisting of a particular arrangement of code elements not more than half of which correspond to the binary digit 1 while the other code elements correspond to the binary digit 0, each of said code elements which correspond to the binary digit 1 being represented by each of said indentations of prescribed unit width, and each of said other code elements which correspond to the binary digit 0 being represented by each of said non-indentations of the prescribed unit width;

an open-top enclosure for accommodating said sheetlike objects in such a manner that said sheetlike objects are disposed vertically each with said one edge thereof directed upwardly;

selector means mounted on the open top of said enclosure for linear motion transversely of said sheetlike objects accommodated therein, said selector means comprising:

probing means including a plurality of probing elements arranged in register respectively with said indentations and non-indentations formed on said one edge of each of said sheetlike objects, said probing elements being individually movable between an upper and lower position and being normally held in said upper position, and

actuating means for selectively moving said probing elements to said lower position in accordance with the code character assigned to a desired one of said sheetlike objects, said actuating means comprising a plurality of disks rotatably supported above said probing elements respectively, each of said disks having a plurality of circumferentially spaced radial projections thereon, and means for manually turning said disks for selectively moving said probing elements to said lower position by said radial projections formed on said disks; and

means for causing said sheetlike objects to tend to move upwardly against the selected probing elements in said lower position in relation with the linear motion of said selector means, whereby only the desired sheetlike object is raised from among the other sheetlike objects as said selected probing elements are all received in the indentations of the desired sheetlike object.

3,853,225

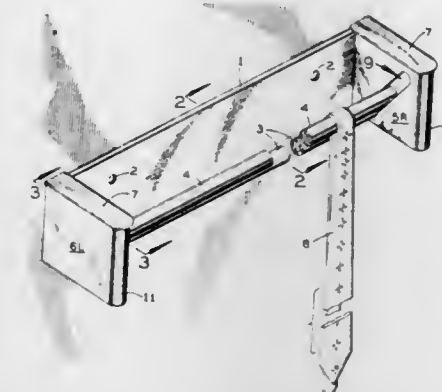
NECKTIE HOLDER

Gustav Gegauff, 5502 Washington St., Apt. 210, Gables, Fla. 33021

Filed Sept. 17, 1973, Ser. No. 397,845

Int. Cl. A47b 97/00

5 Claims



1. A necktie holding rack comprising an elongated rectangular panel of uniform thickness of predetermined width and length with predetermined finish thereon with the inner side thereof adapted to be secured in a horizontal position on a substantially vertical surface,

a left and a right end member with each one thereof formed from rectangular sheet metal of uniform thickness and rectangular shape and formed into a U shape with the opposite sides of each in predetermined parallel spaced relation and the front end of each substantially cylindrical with the rear marginal ends thereof formed into right angles of predetermined width with each said end member secured by fastener means in vertical parallel relation transverse the outer end portions of one side of said panel,

the facing inner side of each said support member having a like located slot of predetermined width and length positioned at a predetermined upward divergent angle with respect to the outer surface of said panel and at a like predetermined distance therefrom,

a straight lower cylindrical stationary rod having at least one coplanar marginal flat portion at each opposite end thereof and each said flat portion engaged in the lowermost side portion of each opposite said slot in each said support member for retaining said rod a predetermined distance parallel said panel and for preventing axial rotation thereof,

a straight cylindrical upper holding rod having at least one coplanar marginal flat portion at each opposite end thereof and each said flat portion slidably engaged in each opposite slot for limited lateral movement and positioned for gravity movement downward transversely against said lower rod for manual movement spaced above said lower bar for draping one or more neckties over said upper bar and permitting same to gravitate downward and urge said neckties against said lower bar for holding each of said neckties in flat transverse form without creased deformation.

3,853,226

WALL DISPLAY DEVICE

Harry E. Hine, and Noreen E. Hine, both of 230 N.E. 105th, Portland, Oreg. 97220

Filed May 21, 1973, Ser. No. 361,865

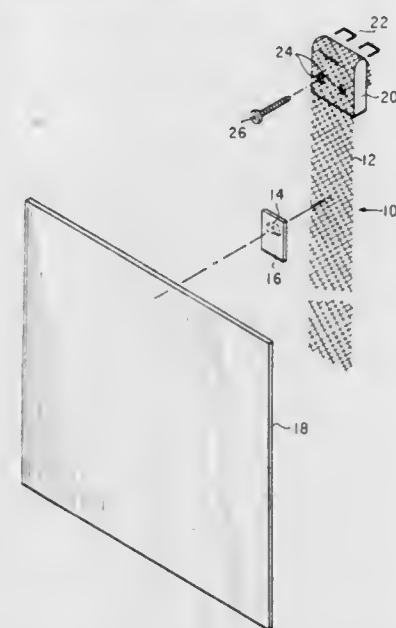
Int. Cl. A47g 1/16

U.S. Cl. 211—104

5 Claims

1. A hanger device for mounting and displaying multiple articles of appreciable weight such as phonograph record albums, mirrors, pictures and the like on a wall comprising, in combination, an elongate strip of latticed hanger material having front and rear surfaces and an array of uniformly sized, regularly arranged apertures formed therein along its length

extending through said material between said front and rear surfaces, said material being sufficiently resistant to tension to support, without deformation of said apertures, a plurality of said articles when said articles are mounted thereon, and being sufficiently flexible to enable said material to be rolled or folded into a compact configuration for packaging purposes and thereafter extended into a flat elongate configuration with



no permanent deformity therein and no tendency thereof to reassume said compact configurations, a hook adaptable for insertion through said apertures, said hook including mounting means for attaching said hook to one of said articles to be displayed on said wall, and mounting means attached to one end of said strip of hanger material for fastening said strip to a wall.

3,853,227

HANGING FILE ASSEMBLY

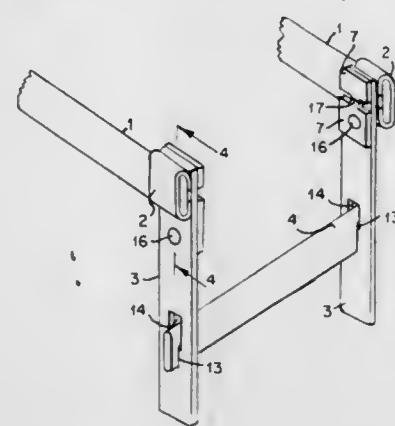
George H. Filipowski, 445 E. 65th St., Apt. 5C, New York, N.Y. 10021

Filed Nov. 15, 1972, Ser. No. 306,832

Int. Cl. B42f 15/00

U.S. Cl. 211-162

11 Claims



1. A hanging file assembly comprising a plurality of juxtapositioned horizontally disposed cooperative members positionable to form a secure upright structure including: rail means; locking rod means; unitary locking means in communication with said rail means and said locking rod means; said locking rod means having channel means defined by wall surfaces adapted to engage said unitary locking means; said unitary locking means being an integrally formed structure having a first portion disposed about said rail means and a second portion contiguous with said first portion, being offset therefrom by projection means extending from said first portion; said second portion being pivotally connected to said locking rod means, whereby rotation of said locking rod means into a vertical position causes engagement between said projection means and said wall surfaces within said channel means, forming

ing a secure joint between said locking rod means and said rail means; and cross support bar means adapted to engage slot means provided in said locking rod means.

3,853,228

RAILWAY COUPLING

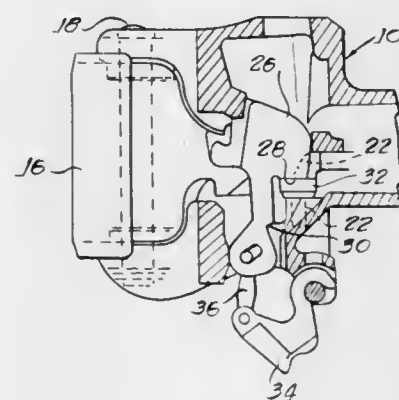
Nelson D. Metzger, Alliance, Ohio, assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 14, 1973, Ser. No. 359,713

Int. Cl. B61g 3/08

U.S. Cl. 213-146

3 Claims



1. In a railway coupler comprising a head member, a knuckle and a knuckle thrower member supported by said head member for movement between thrown and locked positions, said knuckle thrower member being engageable by and movable with said knuckle toward said locked position, and a lock movable within said head member between thrown, lockset and locked positions, said lock being movable toward its locked position due to gravity; the improvement wherein means on at least one of said members is engageable with the other of said members to limit pivoting of said knuckle thrower member into a locked position wherein said knuckle thrower is maintained out of engagement with said lock as said lock moves from said thrown position into said lockset position toward said locked position.

3,853,229

BALE ACCUMULATOR

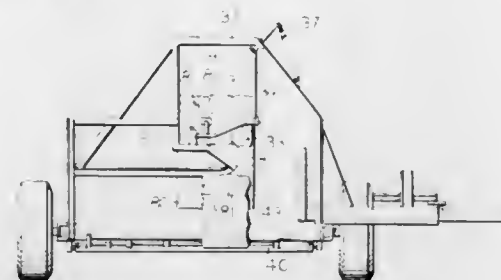
Gary J. Dougherty, deceased, late of Rt. 2, Deer Park, Wash. 99006 (Othilia Dougherty, executrix), and George O. Prufer, Rt. 2, Deer Park, Wash. 99006

Filed July 19, 1971, Ser. No. 163,913

Int. Cl. B65g 57/32

U.S. Cl. 214-6 B

3 Claims



1. A bale accumulator adapted to be pulled by and receive from a baler successive bales of hay of predetermined dimensions bound by at least one tie encircling each bale in a vertical plane, said accumulator adapted to turn and assemble a predetermined number of said bales into a cluster and discharge the cluster onto the surface of a field with said ties disposed in horizontal planes, comprising:

a mobile frame adapted to be pivotally connected to and towed by a baler with an articulated bale guide having a relatively short trough like element pivotally supported about a vertical axis by the baler to attenuate the abrupt-

ness of the angle between the baler and bale accumulator to aid bale passage therebetween;

a generally horizontal bale bed mounted on said frame for tilting about an axis generally transverse to the direction of travel of said accumulator and adapted to receive plural bales thereon and discharge the bales received rearwardly thereof in a prearranged cluster wherein an inclined trough is adapted to receive successive bales each bound by a tie encircling its bale in a vertical plane, direct movement of said bales to a point above said bed, and deposit the said bales in reoriented contiguous side by side relationship on said bed with their ties in horizontal planes and their longitudinal axes substantially parallel with the direction of travel of said bale accumulator, whereby to form a stable cluster of plural bales;

said articulated bale guide extending across the point of interconnection between the baler and the mobile frame and to within one bale length of the inclined trough;

means for advancing on said bed transversely of the direction of movement each oriented bale received from said bale orienting means one bale width to permit receipt of subsequent bales; and

means adapted to tilt said bed and discharge the cluster with the bales in substantially the same orientation onto the surface of the field traversed by said accumulator; wherein the inclined trough further includes

an elevated ledge more narrow than one-half the width of a bale and disposed above said bed and adapted to support the bottom edge only of a bale,

a vertical side frame rigidly joined to one lateral edge of said elevated ledge to support a bale on a first vertical edge, a gate swingable on an axis parallel to the longitudinal axis of said bale and releasably secured to confine a second vertical edge of a bale against removal laterally from said ledge, and means adapted to open said gate releasing the second edge of the bale to allow the bale to fall by gravity onto said bed and traverse a 90 degree rotation effected by said first bale edge being momentarily supported by said ledge during the initial falling movement of said bale.

3,853,230

LOADER/UNLOADER CONVEYOR SYSTEM

Gerhard L. Schultz, 7271 Natal Dr., Westminster, Calif. 92683

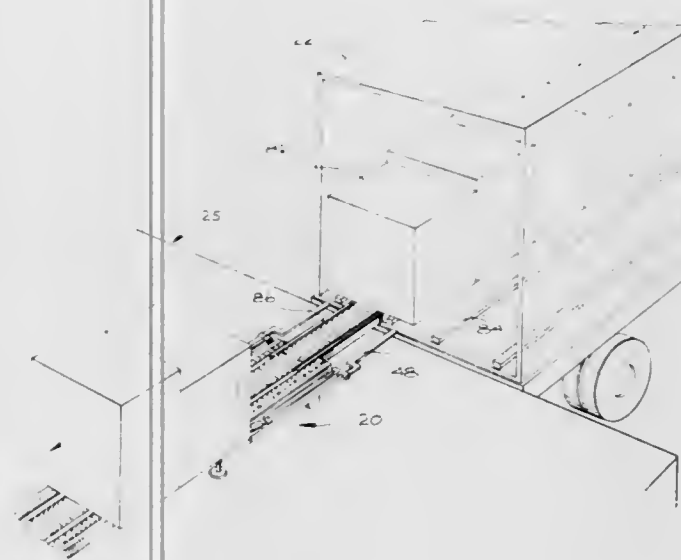
Continuation of Ser. No. 167,229, July 29, 1971, abandoned.

This application Aug. 1, 1973, Ser. No. 384,455

Int. Cl. B65g 67/02

U.S. Cl. 214-89

23 Claims



1. In a dock located conveyor system for loading and unloading cargo in a cargo shipping device by slidably engaging the underside of the cargo, the combination comprising:

- an elongate horizontal main frame assembly with front and rear ends;
- conveyor means with a horizontal top plane mounted on and extending longitudinally of said frame assembly;
- fork-type lift means mounted at the front end portion of said frame assembly means mounting said lift means on said frame assembly for vertical and longitudinal movement relative to said frame assembly;
- first drive means to move the lift means longitudinally relative to the frame assembly and the conveyor means between an extended position where it projects forward from the front end of the frame assembly and conveyor means and a retracted position where it occurs coextensive with the front end portion of the frame assembly and conveyor means; and
- second drive means to move the lift means vertically relative to said frame assembly and conveyor means from a down position where said lift means occurs below the top plane of the conveyor means to elevated positions where it occurs above the top plane of the conveyor means.

3,853,231

VEHICLE COUNTERWEIGHT APPARATUS

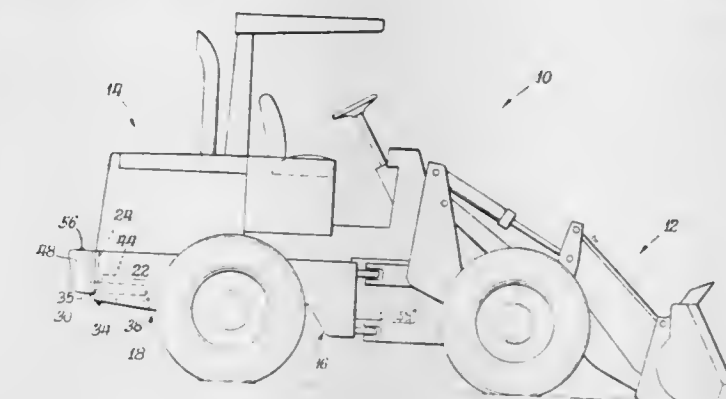
Richard W. Luttrell, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 21, 1972, Ser. No. 282,139

Int. Cl. E02f 3/00

U.S. Cl. 214-142

4 Claims



1. In a vehicle incorporating a frame, a counterweight sized to be shifted in a generally horizontal direction into an opening in a portion of the frame so as to be positioned at least partially disposed within the frame and be removable from said frame portion through said opening in a generally horizontal direction; support means fixed to the frame and in contact with the bottom portion of the counterweight to thereby support the counterweight when the counterweight is so positioned; and, means for selectively securing the counterweight relative to the frame when said counterweight is so positioned, and further comprising a second counterweight adapted to be fixed to the frame portion and removable therefrom, wherein the second counterweight is adapted to be fixed to the frame portion over the opening to limit removal of the positioned first-mentioned counterweight from said frame portion, the second counterweight being removable therefrom to allow said removal of the first counterweight from the frame portion through the opening, wherein the first counterweight is sized to fit into said opening to be positioned fully disposed within the frame, and further including means for limiting the downward movement of the first counterweight under its own weight when said first counterweight is being fitted into said opening and into position within the frame and is being only partially supported by said support means, wherein said means for limiting downward movement of the counterweight comprise first and second upper members respectively fixed to the first and second sidewalls inwardly thereof and above the first and second support members respectively.

3,853,232

BUCKET REINFORCEMENT STRUCTURE

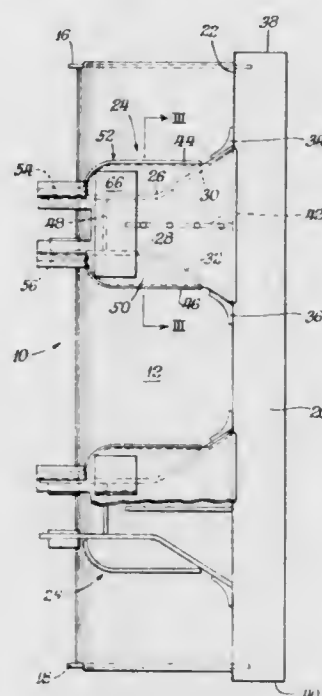
Stanley A. E. Oke, Sugar Grove, and Robert F. Shankwitz, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 11, 1972, Ser. No. 287,671

Int. Cl. E02f 3/70

U.S. Cl. 214—145

11 Claims



1. In a bucket construction having a bottom wall portion, a rear wall portion extending therefrom, a pair of end wall portions between which the rear wall and bottom wall portions extend, and a cutting edge fixed to and running along the forward edge of the bottom wall portion, reinforcement means comprising: first and second rib members spaced apart and fixed externally to the bottom wall portion and running continuously from the cutting edge, and fixed relative thereto, to the rear of the bottom wall portion; and, a plate fixed to the extending edges of the first and second rib members and running therealong, the rib members and plates together forming a box section running transversely of the cutting edge, wherein the plate is fixed to the cutting edge, wherein the reinforcement means further comprise a third rib member fixed to the bottom wall portion externally thereof intermediate the first and second rib members and running transversely of the cutting edge, the plate being fixed to the extending edge of the third rib member, and, wherein the first and second rib members flare apart in the direction of the cutting edge when proximate to the cutting edge.

3,853,233

METHOD OF MANIPULATING POLYGONAL CROSS-SECTION CAST COPPER BARS

Otto Kreuz, Duisburg, and Stefan Raab, Essen, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Division of Ser. No. 152,867, June 14, 1971, Pat. No. 3,759,401. This application Dec. 21, 1972, Ser. No. 317,234 Claims priority, application Germany, June 18, 1970, 2029999

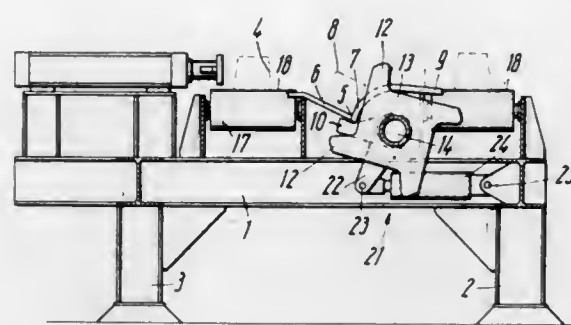
Int. Cl. B65g 7/00

U.S. Cl. 214—152

4 Claims

1. A method of manipulating polygonal cross-section cast copper bars having, at their ends, tapered projecting tips flush with a reference base surface thereof, said method comprising the steps of transporting a bar lengthwise to a position adjacent and parallel to a tipping trough; responsive to arrival of the bar at such position, utilizing the leading projecting tip of the bar to determine whether the bar, at such position, is resting on its reference base; displacing the bar sidewise into the tipping trough; and, responsive to a determination that the

bar is not resting on its reference base, initiating a number of tilting movements of the bar, about its corner edges, in the



tipping trough, sufficient to cause the bar to rest on its reference base in the tripping trough.

3,853,234

SHEET STACK HANDLING APPARATUS

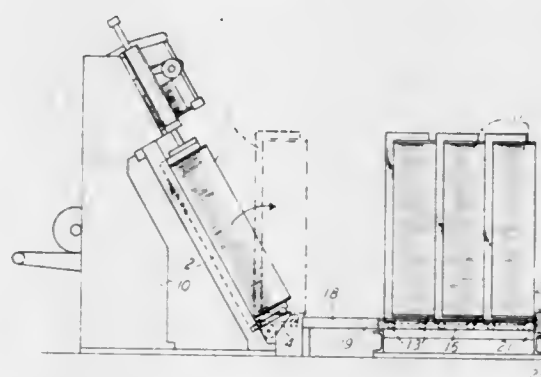
Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Oct. 25, 1973, Ser. No. 409,733

Int. Cl. B65g 57/28

U.S. Cl. 214—300

23 Claims



1. Apparatus for handling discrete stacks of sheets, comprising a set of wheels for independently movably supporting each stack of sheets, a pallet having a plurality of parallel trackways for receiving and guiding said wheels and with each of said trackways being disposed at an angle relative to the horizontal and oriented longitudinally of said trackways for wheeled movement of said stacks along said trackways in the direction of decline of the angle of said trackways and under only the force of gravity, and means operatively associated with said pallet for the control of said pallet to permit the shifting of said pallet in the direction transverse to the longitudinal direction, of said trackways for separately longitudinally aligning each of said trackways with a station location which accommodates movement of said stacks relative to said pallet.

3,853,235

APPARATUS FOR OPENING AND EMPTYING A CONTAINER

Gerard L. Lambert, and Charles A. Greenlay, both of Asbestos, Quebec, Canada, assignors to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Division of Ser. No. 228,001, Feb. 22, 1972, Pat. No. 3,757,973. This application Apr. 20, 1973, Ser. No. 353,041

Int. Cl. B65g 65/00

U.S. Cl. 214—305

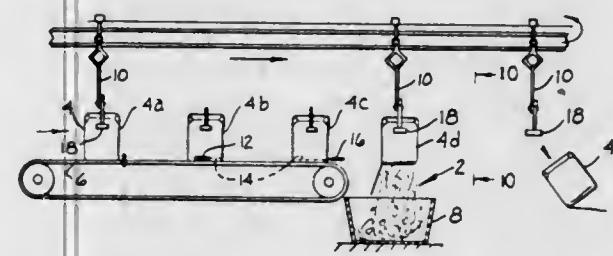
13 Claims

1. A device for emptying the contents of a closed, flexible container, which comprises:

- a support;
- a hopper adjacent said support;
- means for moving said container on said support toward said hopper;
- means for perforating said container along a plurality of generally parallel lines each substantially aligned with the

direction of travel of said container on said support, with at least one pair of said plurality of generally parallel lines being disposed with one line, respectively, proximate to each of the transverse extremity portions of said container, said transverse extremity portions being determined with reference to said direction of said container on said support;

- means for perforating said container along at least one line extending transversely across said container from a point adjacent one of said pair of generally parallel lines proximate to one of said transverse extremity portions to a point adjacent the other of said pair of generally parallel lines proximate to the other of said transverse extremity portions of said container;
- means for releasably gripping the perforated container above the lines of perforations;
- a conveyor means for moving said releasable gripping means, said means for releasably gripping the perforated container extending beneath said conveyor means and into engagement with said container,



h. said conveyor means and releasable gripping means adapted to move the gripped container from said support to a position overlying said hopper, whereby the motion progressively deprives the bottom of said container of support, and the weight of said contents causes said container to open along said lines of perforation and leaving the opened portion of the container attached to the remaining portion of the container, thereupon releasing said contents from said container and depositing said contents in said hopper;

- said conveyor means adapted to move the empty container away from said hopper and further including means for releasing the grip on said container, and
- wherein all of said means for releasably gripping and for moving said gripped container are located above said generally parallel lines whereby the contents released from said container do not contact said gripping and moving means.

3,853,236

SAFETY CLOSURE UNIT

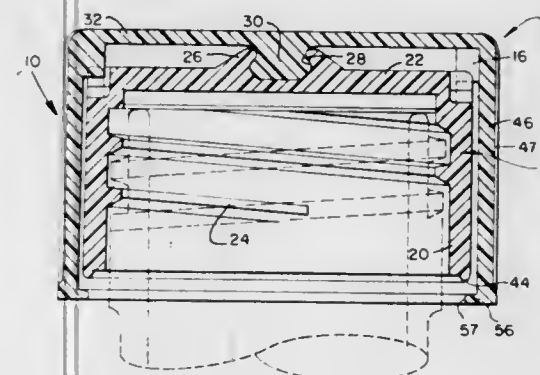
Efrem M. Ostrowsky, Highland Park, Ill., assignor to Federal Tool & Plastics, a division of VAC Corporation, Chicago, Ill.

Filed Dec. 6, 1973, Ser. No. 422,264

Int. Cl. B65d 55/02; A61j 1/00

U.S. Cl. 215—220

14 Claims



1. A safety closure unit including, an inner or closure cap for application to a container, an outer or actuator cap super-

imposed on said inner cap, means on the top wall of each of said caps securing said caps against unauthorized axial separation, said outer and inner caps having complementary engaging surfaces on the underside of the top wall of the outer cap adjacent the skirt of said outer cap and on the upper portion of said inner cap adjacent the top wall of the inner cap to cause interengagement therebetween so that in the normal position of the outer cap, rotation of the outer cap will simultaneously rotate the inner cap to secure the inner cap on the container, the top wall of one of said caps being sufficiently yieldable to permit axial deflection relative to the top wall of the outer cap in one direction to permit the outer cap to be rotated in the opposite direction with respect to the inner cap without effecting an unsealing of said inner cap from the container, said yieldable top wall also being axially deflectable when a downward manual pressure is applied against the outer cap causing interengagement of said engaging surfaces and locking said outer cap with respect to said inner cap to rotate said caps simultaneously to cause unsealing of said inner cap relative to the container.

3,853,237

VIAL OR CONTAINER WITH SAFETY CLOSURE

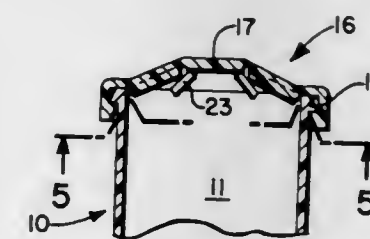
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed Nov. 16, 1972, Ser. No. 307,075

Int. Cl. B65d 55/02; 85/56; A61j 1/00

U.S. Cl. 215—224

6 Claims



1. In a container and safety closure cap therefor, the combination comprising:

- a container having a generally cylindrical, open neck portion, the outer end of said neck being provided on its outer surface with an annular, outwardly projecting shoulder; and
- a one-piece, flexible, thermoplastic safety closure cap having a circular central section, a downwardly sloping conical section attached to said central section, an annular flat section attached to the lower end of said conical section, and a generally cylindrical, solid, integral skirt portion attached at its upper end and depending from said annular flat section, the interior sidewall of said skirt providing a continuous, annular, inwardly projecting shoulder adjacent its lower end, which shoulder is adapted to be snapped over said outer end of said neck and to be in abutment with the underside of said shoulder provided on said neck.

3,853,238

SMOOTH OPERATING CARGO BOX

August G. Luisada, Waymart, Pa., and Leonard P. Frieder, Sr., deceased, late of Waverly, Pa. (by Leonard P. Frieder, Jr., executor), assignors to Gentex Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,462

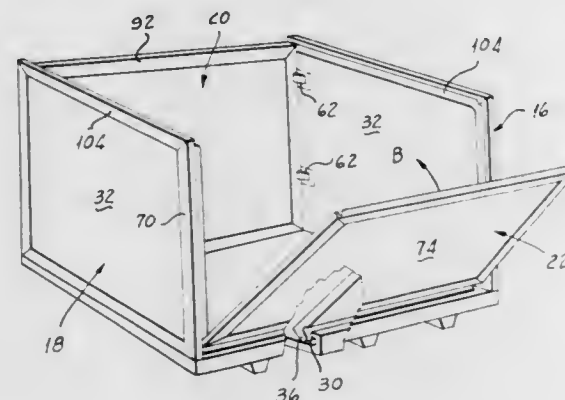
Int. Cl. B65j 1/02

U.S. Cl. 220—1.5

8 Claims

1. A smooth operating cargo box including in combination a base, side panels, a back panel, a front panel and a top panel, first interengageable means running along the side edges of said base and along the bottom edges of the side panels for connecting said side panels to said base, second interengageable means along the bottom and side edges of the back panel

and along the back edge of the base and back edges of the side panels, said second interengageable means comprising respective inwardly opening side hooks running along the back edges of said side panels and outwardly opening end hooks running along the side edges of the back panel, said second interengageable means being responsive to sliding movement of the back panel from the inside toward the outside of said box in a direction perpendicular to the plane of the back panel to bring said end hooks into engagement with said side hooks to connect the back panel to the base and side panels, third interengageable means along the bottom and side edges of the



front panel and along the front of the base and front edges of the side panels responsive to pivotal movement of the front panel around its bottom edge in a direction from outside toward the inside of said box for connecting said front panel to said base and interengaging the front panel with the side panels, and fourth interengageable means along the back and side edges of the top panel and along the top edge of the back panel and top edges of the side panels responsive to sliding movement of said top panel in the direction of the plane thereof from back to front of said box for connecting said top panel to said back and side panels.

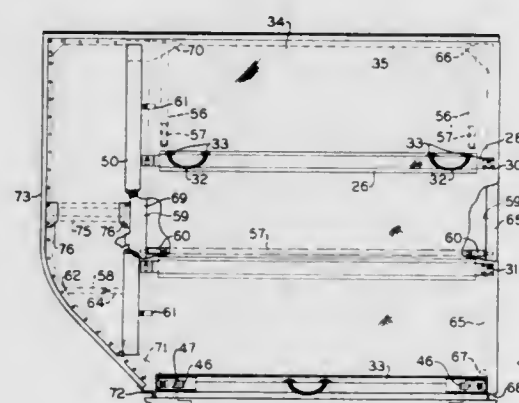
3,853,239

CARGO CONTAINER HAVING ADJUSTABLE SHELVES
Oscar W. Meller; John W. Lovich, and Frank C. Morse, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 29, 1973, Ser. No. 346,211
Int. Cl. B65d 87/00

U.S. Cl. 220-1.5

9 Claims



1. A baggage cargo container, comprising:
a substantially cubicle framework connecting a top, base, end panels, and trapezoidal end section;
at least one fabric door connected in a sealed manner along one edge thereof to the cubicle framework;
sealing means about the remaining edges of the fabric door for effectuating seals between the fabric door and the cubicle framework;
adjustable securing means within the container for securing cargo container therein between the securing means and a portion of the cargo container; and

a floor leveling means within the trapezoidal section for providing a level base within that section for storing luggage or baggage.

3,853,240

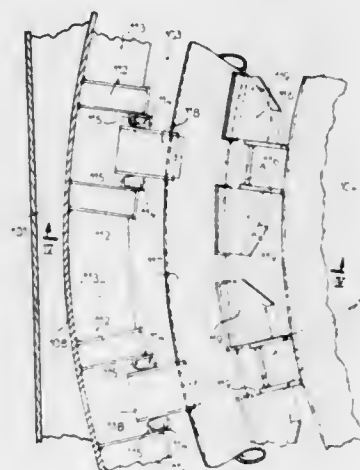
ANTIROLLING AND ANTIPITCHING SUPPORTING METHOD AND DEVICE FOR A TANK DURING TRANSPORTATION

Jean Alleaume, Saint-Cloud, France, assignor to Technigaz, Paris, France

Filed Nov. 2, 1972, Ser. No. 303,012
Claims priority, application France, June 6, 1972, 72.20337
Int. Cl. B63b 25/08

U.S. Cl. 220-15

16 Claims



1. In a construction including: a self-supporting structure undergoing roll and pitch rocking motions about two structure-bound orthogonal geometrical axes of swing, respectively; a rigid tank supported mainly in weight-bearing relationship and at least partially encompassed by said structure; and an auxiliary device for bodily constraining said tank against roll and pitch with respect to said structure while allowing substantially free thermal expansion and contraction thereof; the improvement consisting in that said device comprises: at least one ring externally surrounding said tank and interposed in spaced relationship between the later and said structure; said ring being substantially parallel to the plane defined by the respective directions of said axes of swing; movably co-operating discrete keying means integral with said ring, structure and tank, respectively and providing slidable engagement of said ring with said structure and tank, respectively, to hold said ring against body motion parallel to said plane at least relative to said structure while allowing substantially free thermal expansion and contraction of said ring as well as substantially free body displacements thereof in parallel relation perpendicular to said plane; and weight-bearing means for unilaterally supporting said ring against its own weight while allowing its thermal expansion and contraction and body displacements therefrom.

3,853,241

CHEESE MAKING APPARATUS

Norman J. Peters, Fon du Lac, Wis., assignor to DEC International, Inc., Madison, Wis.

Division of Ser. No. 871,441, Feb. 10, 1970, Pat. No. 3,696,950, which is a continuation-in-part of Ser. No. 669,572, Sept. 21, 1967, abandoned. This application July 17, 1972, Ser. No. 272,349

Int. Cl. B65d 53/00; E06b 7/16
U.S. Cl. 220-344

4 Claims

1. In a cheese making apparatus, a vat structure to contain cheese curd and having an open end and having an end surface bordering the open end, a door structure to enclose the open end of the vat and having a surface facing said end surface, said surface having a joint therebetween, hinge means for hinging the door structure to the vat structure, a seal

3,853,243

TOOTHPASTE DISPENSER

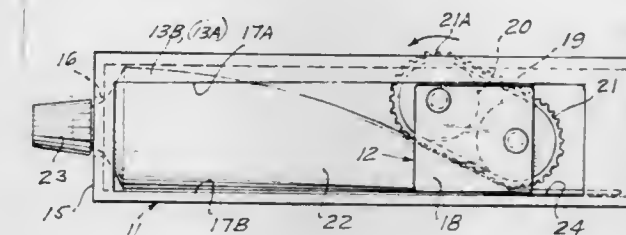
Andrew Forman, 45-11 220 Pl., Bayside, N.Y. 11061

Filed Aug. 27, 1973, Ser. No. 392,032

Int. Cl. B65d 35/28

U.S. Cl. 222-101

1 Claim



1. A toothpaste dispenser comprising in combination, a box like frame that includes a rear wall, opposite end walls, and opposite longitudinal side walls, a carriage comprised of a pair of rectangular side plates each one of which is slideable within an elongated slot formed in each one of said frame side walls and extending between said end walls, each of said carriage side plates having bearing means for the ends of a pair of transversely extending rollers rotatably supported between said side plates, the axes of said rollers being parallel to each other, an endless belt being supported around the outer sides of said rollers, said rollers being spaced apart so as to keep the sides of the belt straight, one of said axes being closer than the other axis to said frame rear wall, the other of said axes being closer to one of said end walls, a top wall of said frame having an enlarged opening extending longitudinally between said end walls to permit placement of a toothpaste tube into the central interior of said frame, said one of said end walls having a central circular opening to receive there through a toothpaste dispensing neck formed on one end of said toothpaste tube, the protruding outward end of said neck adaptable to receive a toothpaste tube cap, the opposite end of said toothpaste tube being inserted into a wedge shaped space formed between said rear wall and one side of said endless belt, said belt side being angularly disposed relative to said rear wall, said wedge shaped space formed between said rear wall and said belt side converging in a direction which is away from said one of said end walls, and the outer surface of said endless belt having treads whereby manual rotation of said endless belt causes said carriage to advance slideably along said frame side wall slots to squeeze said toothpaste tube within said wedge shaped space.

3,853,242

EASY OPEN END

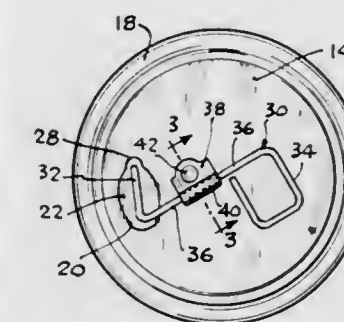
Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Jan. 24, 1973, Ser. No. 326,238

Int. Cl. B65d 17/20

U.S. Cl. 220-267

12 Claims



1. An easy open end for containers and the like comprising, an end panel having a substantially planar top surface, an opening through said planar surface, said opening defined by a weakened line portion in said end panel, a lever member having first and second end portions and an elongated central portion connecting said ends, said first end overlying said weakened line portion, said second end distal therefrom, said lever member rotatable about the axis of its central connecting portion from an initial first end position overlying said weakened line portion to a second position through said opening and beneath said end panel planar top surface, and permanent connecting means for positioning said lever member in relation to said end panel, said connecting means holding said lever member elongated central portion in fixed relation to said end panel, said connecting means being positioned to have said first and second end portions extend generally parallel to said planar surface in a stored position after said weakened line has been severed.

3,853,244

REMOTE DRINK DISPENSER

Charles G. Neumann, Palatine, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Sept. 13, 1971, Ser. No. 180,006

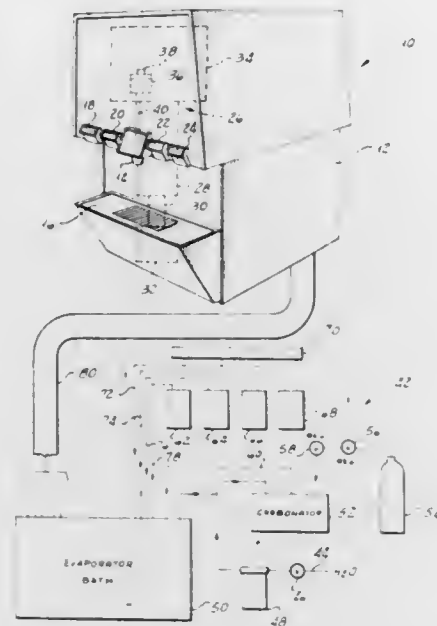
Int. Cl. B67d 5/56

U.S. Cl. 222-129.1

5 Claims

1. A beverage dispenser for selectively delivering one of a plurality of drinks at a dispensing location including in combination, a plurality of beverage supply means, means including a plurality of respective normally closed valves adapted to be opened to connect said supply means to said delivery location, a container for holding a supply of ice, said container holding a supply of ice, said container having an exit opening, motor-driven means inside said container for moving ice through said exit opening, a delivery element mounted adjacent to said exit opening and adapted to be driven to deliver ice from said exit opening to said dispensing location at a predetermined rate, a motor adapted to be energized to drive said delivery element, a plurality of manually actuatable members, means mounting said members adjacent to said delivery location for movement between home positions and actuated positions, respective means responsive to the presence of said members in their actuated positions for selectively holding said valves open for the time during which a member is in its actuated position and

respective means responsive to the presence of said members in their actuated positions for energizing said motor for the time during which any member is in its actuated position, the



3,853,245

BEVERAGE DISPENSER

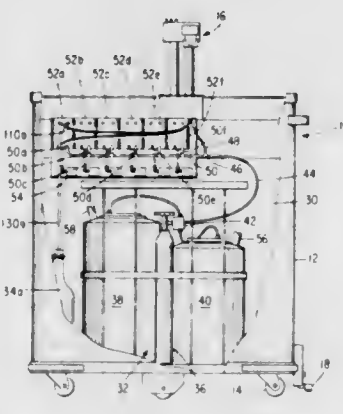
William C. Branch, and Jack J. Booth, both of P.O. Box 507, Carrollton, Tex. 75006

Filed July 16, 1973, Ser. No. 379,641

Int. Cl. B67d 5/54

U.S. Cl. 222-144.5

6 Claims



1. A fluid dispenser which comprises:
 - a piston mounted in a cylinder with a piston rod extending through a closed end thereof,
 - a supply line adapted to lead from a fluid storage vessel into a first chamber of said cylinder,
 - a discharge line terminating in a dispensing nozzle and connected into the first chamber of said cylinder,
 - a first gas pressure line leading to a second chamber of said cylinder through a normally closed valve which is opened by a movement of said piston in the chamber,
 - a second gas pressure line leading to the second chamber of said cylinder through a manual control valve to initiate the movement of said piston thereby opening said normally closed valve upon an opening of said manual valve, a stop on said piston rod below said closed end for venting the second chamber of said cylinder to atmosphere, and resilient means in said cylinder to return said piston to an initial position to close said normally closed valve.

3,853,246

DISPOSABLE DISPENSER

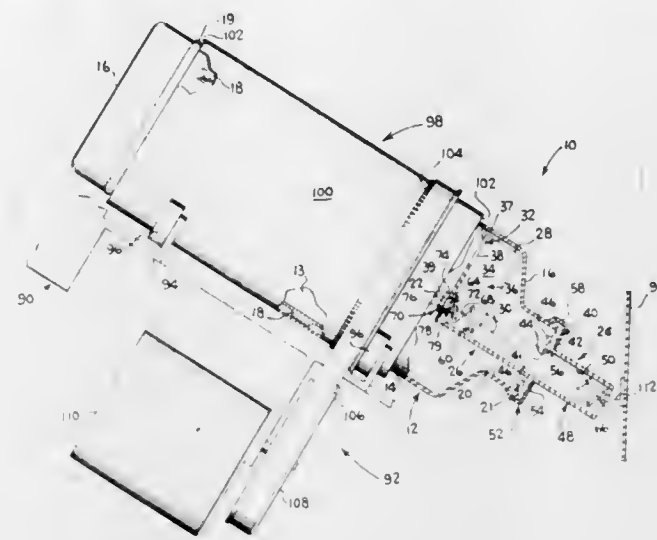
Robert Clark Dubois, Fairfield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 15, 1974, Ser. No. 443,124

Int. Cl. G01F 11/24

U.S. Cl. 222-168

7 Claims



1. A disposable dispenser adapted to carry a replenishing supply of developer material in a copier having means for actuating the dispenser to discharge developer material from the dispenser, said dispenser comprising:
 - a. a receptacle having an axis of rotation and an outlet orifice; means adapting the receptacle for cooperation with the actuating means for angular disposition of the receptacle and for rotation of the receptacle about said axis to permit the developer material to flow under the influence of gravity to the outlet orifice;

- b. means for assisting the flow of developer material to and through the outlet orifice for discharge from the dispenser, said flow assisting means including a transporting member and a metering member, said transporting and metering members respectively being elongated members extending through the outlet orifice;
 - c. means for fixedly securing the transporting member to the receptacle for rotation therewith, the metering member adapted to be held stationary against rotation thereof by the actuating means as the actuating means rotates the receptacle; and
 - d. means for interlocking the metering member to the transporting member to permit relative rotation therebetween, said interlocking means including a button-like member having a flange portion and a channel portion, the flange portion engaging the transporting member, and the channel portion engaging the stationary metering member to maintain the flange portion in engagement with the rotating transporting member.

3,853,247

VIBRATORY BIN ACTIVATOR

Eugene A. Wahl, 460 Ridgewood Ave., Glen Ridge, N.J. 07028

Filed Mar. 8, 1972, Ser. No. 232,787

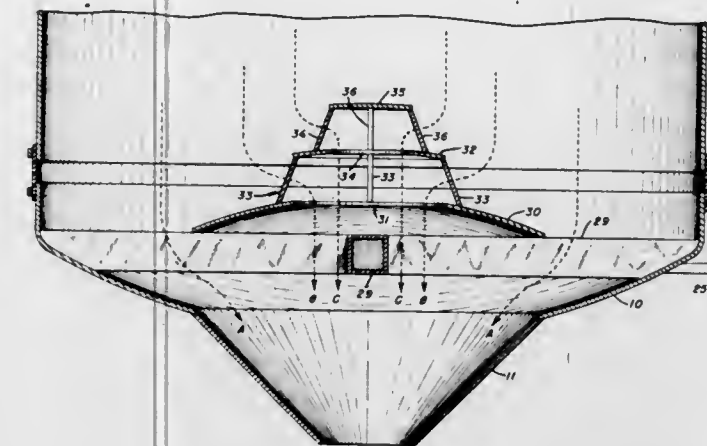
Int. Cl. B65g 3/12

U.S. Cl. 222-199

5 Claims

1. Apparatus for promoting the flow of material from a bin having a bottom opening, said apparatus comprising,
 - a. a concave material-receiving member terminating in a discharge opening and positioned to receive material from the bin, said member having an inlet opening corresponding to the bottom opening of the bin,
 - b. a first inverted conical baffle secured to the material-receiving member and having a central opening formed therein, the peripheral surface of said baffle being spaced from the inner wall of the material-receiving member,

- c. a second inverted conical baffle secured to and axially spaced from the said first baffle, said second baffle having a diameter smaller than that of said first baffle and being positioned above the inlet opening of the material receiving member,



- d. means for vibrating the material-receiving member, and means suspending the material-receiving member from the bin.

3,853,248

GUARD FOR SPRAY VALVES

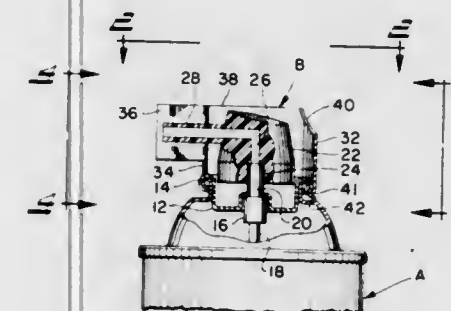
Hugh C. Williamson, Willoughby, Ohio, assignor to Universal Metal Products, Inc., Wickliffe, Ohio

Filed Apr. 8, 1974, Ser. No. 458,784

Int. Cl. B65d 83/14

U.S. Cl. 222-402.12

13 Claims



6. A guard for spray valves comprising: a longitudinally-split substantially cylindrical resilient guard member having top and bottom edges and projections extending outwardly therefrom at said split, a recess in said top edge opposite said split, and a plurality of circumferentially-spaced inwardly extending detents adjacent said bottom edge.

3,853,249

POURING SPOUT FOR CANS

Casper J. Weir, Jr., Rt. 3, Box 215-B, San Luis Obispo, Calif. 93401, and Fred Keyes, 22693 Woodridge, Hayward, Calif. 94541

Filed Apr. 2, 1973, Ser. No. 347,227

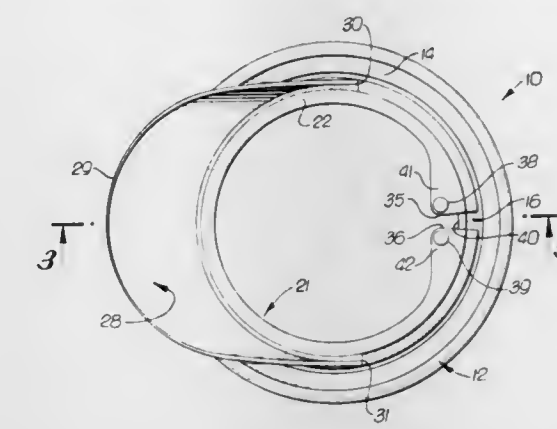
Int. Cl. B65d 5/74

U.S. Cl. 222-570

3 Claims

1. A pouring spout for cans which embody a rim area structure comprising an annular channel of generally U-shaped section open at the top, formed of radially spaced outer and inner vertical walls joined by a bottom wall, the pouring spout comprising a base element of a generally C ring plan and of a generally U-shaped cross section opening horizontally outward, embodying generally parallel upper and lower flanges joined by an inner vertical annular wall, the upper and lower flanges being of sufficient radial dimensions and spaced apart a distance adapting them to engage the top of the inner vertical wall of the can channel and the bottom wall of the latter respectively, the base element being formed of a resilient material and the annular wall thereof having a diameter when in repose greater than the diameter of the inner wall of the can

channel and contractable to provide clearance for the base element to be inserted and positioned for engagement with the can channel whereby upon release and expansion the base element will engage the can channel at the top of the inner wall and the bottom thereof, thereby sealing off the interior of



3,853,250

COVER FOR DECANTER OR LIKE DISPENSING CONTAINER

Melvin Alpern, 9800 McKnight Rd., Pittsburgh, Pa. 15237

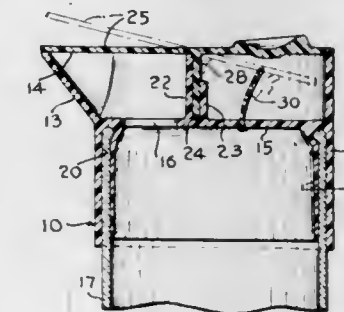
Continuation of Ser. No. 291,874, Oct. 16, 1972, abandoned.

This application Feb. 4, 1974, Ser. No. 439,013

Int. Cl. B67d 3/00

U.S. Cl. 222-517

8 Claims



2. A handle free dispensing cap adapted for use on a decanter or like liquid dispensing container having a straight neck comprising:
 - a. a tubular side wall of grasping length having spaced lower and upper ends including:
 1. a lower portion extending downwardly from an intermediate level to said lower end adapted to fit over a neck of such container and having means to make fluid tight engagement therewith, and
 2. an upper portion extending upwardly from said intermediate level to said upper end having an upwardly opening pouring spout;
 - b. a cover of size and shape to fit entirely within said side wall and close the upper portion of said cap mounted thereon adjacent to said upper end for movement around an intermediate axis behind said pouring spout and between said side wall having:
 1. a portion in front of said axis adapted for swinging movement from one position closing said pouring spout to a second position opening it, and
 2. a portion at the rear of said axis that can be depressed within said side wall to swing the front portion upwardly from the closed position to the open position; and

c. means within said side wall resiliently biasing said cover to close position.

3,853,251

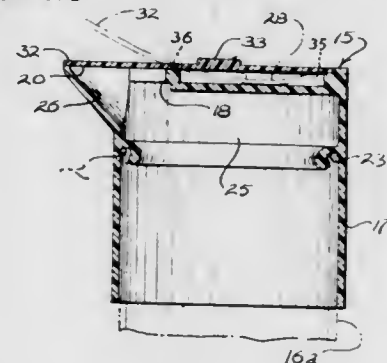
COVER FOR DECANTER OR LIKE LIQUID DISPENSING CONTAINER

Melvin Alpern, 9800 McKnight Rd., Pittsburgh, Pa. 15237

Continuation of Ser. No. 342,232, March 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 189,454, Oct. 14, 1971, Pat. No. 3,739,957. This application Nov. 1, 1973, Ser. No. 411,858
Int. Cl. A47g 19/14

U.S. Cl. 222-475

14 Claims



1. A removable cover of plastic material, as for a decanter or like liquid dispensing container having a neck terminating in an upper portion having a peripheral upper edge, said cover comprising: a handle free cap having a tubular outer skirt of grasping length adapted to be supportively gripped between the upper and lower ends thereof by a user's fingers; an integral closure wall at the upper end of said skirt; an annular lip integrally connected to said skirt at an intermediate level having a portion extending radially inwardly and a portion extending axially downwardly of the same inwardly of said closure wall, thereby defining an annular groove adapted to receive and make fluid-sealing engagement of said annular lip with the upper portion of the neck of a container; and a pouring spout provided on the upper portion of said skirt above said annular lip having a passage therethrough for dispensing liquid from the container past said lip, said closure wall leaving said passage in the pouring spout open for discharging liquid therethrough.

3,853,252

ORTHOPEDIC DEVICE

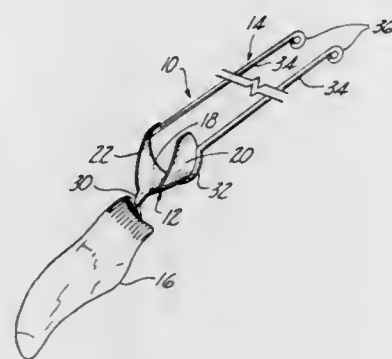
Giuseppe M. Scianimanico, 25401 Firwood, Warren, Mich.

Filed May 1, 1973, Ser. No. 356,111

Int. Cl. A47j 51/06

U.S. Cl. 223-111

2 Claims



1. A device for facilitating the putting on and the removal of stockings, said device comprising an elongated U-shaped slide member having rounded side walls extending upwardly from the base of said slide member, the front edges of said rounded side walls being inclined with respect to said base; a handle comprising a pair of parallel rod members terminating in an integrally formed rounded connecting portion having a shape complimentary to the rear end of said

slide member and attached to said rear end of said slide member on an exterior surface thereof, said handle for grasping by a user whereby a stocking engaged over the front end of said slide member is placed on the user's foot by withdrawal of said slide member to pass the foot through the front end of said slide member said rounded connecting portion being of sufficient thickness to prevent said stocking from passing thereover when said slide member is reinserted into said stocking for the purpose of removing said stocking from said foot.

3,853,253

BAG CARRIER FOR BICYCLES

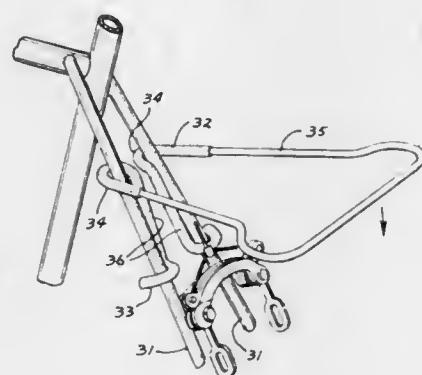
Howard C. Hawkins, and Arthur B. Engstrom, both of St. Paul, Minn., assignors to Hazel Park Schwinn Cycle Center, Inc., St. Paul, Minn.

Filed Nov. 16, 1972, Ser. No. 307,126

Int. Cl. B62j 7/04

U.S. Cl. 224-39

2 Claims



1. A carrying apparatus for quick and easy attachment to and detachment from the rigid uprights of the rear fork of a bicycle frame and above the crossbar which interconnects the uprights, comprising a single length of semirigid wire having a middle portion defining a rearwardly extending, substantially horizontal load-carrying loop and the semirigid wire also having forward end portions defining attachment legs for securing to the fork uprights, each leg being free of the other leg and having spaced upper and lower substantially semicircular and oppositely oriented load-carrying bends to lie against and receive a respective fork upright therein, the lower bend bearing forwardly against the rear face of the fork upright and downwardly on the crossbar, and the upper load-carrying bend bearing rearwardly against the forward face of the fork upright and preventing downward tipping of the horizontal loop, each leg also having an upright spacer section extending between the upper and lower bends and extending along and in closely spaced relation to the spacer section of the other leg to lie between the fork uprights and to bear outwardly against the respective fork uprights in a direction transversely of the bicycle frame, and the upper and lower extremities of the legs adjacent the bends facing inwardly in confronting relation with the spacer sections to bear inwardly against the fork upright in a direction transversely of the bicycle frame, the upper extremities of the legs extending substantially horizontally rearwardly to the load-carrying loop and extending forwardly and thence transversely inwardly toward each other and into said upper bends to bear rearwardly against and to embrace and confine the uprights of the rear fork and position the load-carrying loop well above the lower bends of the legs which bear downwardly on the fork crossbar.

3,853,254

AUTOMOBILE TOP LUGGAGE RACK

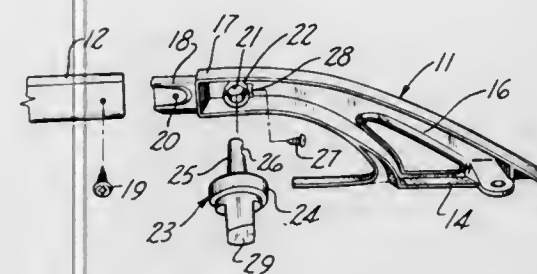
Frederick A. Helm, 2900 E. Jefferson, Detroit, Mich. 48207

Filed Mar. 14, 1973, Ser. No. 341,128

Int. Cl. B60r 9/04

U.S. Cl. 224-42.1 D

10 Claims



1. In a car top carrier, the combination comprising a pair of stanchions, a side rail, means for fixing the side rail to one of the stanchions, each said stanchion having a laterally extending opening therein, an insert having a portion projecting into said opening, means for locking the insert in angularly adjustable position with respect to the stanchion, and a cross rail, said cross rail and said inserts having telescoping portions forming a connection therebetween, said cross rail having the major portion thereof of non-circular cross section, whereby the angular position of said cross section with respect to said stanchions can be adjusted to various positions by adjusting the angular position of each insert with respect to the stanchion, wherein said means for angularly adjusting said insert with respect to said stanchion comprises a groove having angularly related surface portions in the periphery of said projection of said insert, a screw threaded into a portion of said stanchion extending into said groove, wherein said projecting portion of said insert is frusto-conical in cross section and said opening has a complementary cross section.

3,853,255

MOTORCYCLE CARRIER

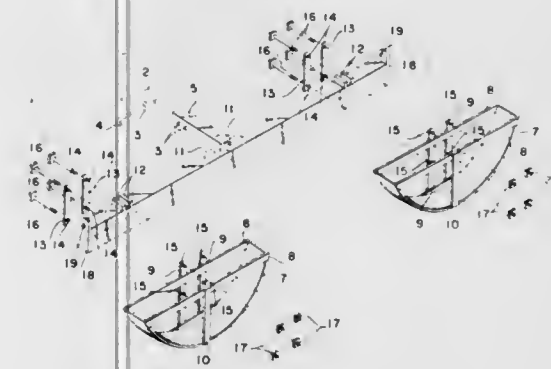
Jimmy J. Spencer, 348 Clearfield Ave., Chesapeake, Va. 23320

Filed Aug. 1, 1973, Ser. No. 384,404

Int. Cl. B60r 9/06

U.S. Cl. 224-42.03 B

2 Claims



1. A motorcycle carrier adapted to be detachably mounted to a trailer hitch affixed to the frame of an automobile or a

truck and comprising a rectangular shaped connecting bar mounting sleeve, adapted for telescoping into a fixed rectangular sleeve hitch by telescoping therein with connecting pin and pin holes for attachment, integrally affixed to a rectangular-shaped main structural support member having arc-shaped carrier wheel wells detachably mounted on said structural support member at predetermined positions to receive the wheels of a motorcycle, said wheel wells being mounted by front and rear vertical connecting brackets with bolts there-through and said wheel wells being formed of arc-shaped wells reinforced with horizontal and vertical carrier supports for attaching the same to the main support member, with an L-shaped protective means on each end of the main support member.

3,853,256

TAPE FEEDING APPARATUS

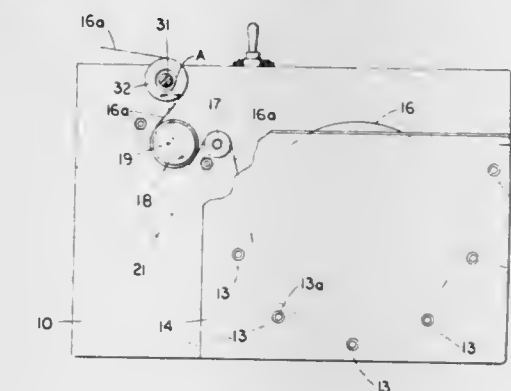
Everett G. Shaffstall, Indianapolis, Ind., assignor to Shaffstall Equipment Inc., Indianapolis, Ind.

Filed Aug. 13, 1973, Ser. No. 388,113

Int. Cl. B65h 23/04

U.S. Cl. 226-34

2 Claims



1. A tape feeding apparatus for holding a roll of information-storing tape and supplying tape from the roll upon demand to a photo composing machine or the like, said tape feeding apparatus including a vertical plate, means extending from the front face of said plate for supporting a tape roll for free rotation on a horizontal axis, a first idler roller mounted on said vertical plate for rotation about a horizontal axis displaced upwardly and laterally of said tape roll, a drive roller supported for rotation on an axis adjacent to and horizontally aligned with said first idler roller axis, an electric motor for driving said drive roller mounted on the rear face of said vertical plate, said drive roller carrying a plurality toroidal elastomeric rings encircling its curved outer surface, a final idler roller mounted on said plate for rotation on a horizontal axis parallel to and spaced above said drive roller axis, a line joining the axes of rotation of said final idler roller and said drive roller being inclined a small angle off the vertical in a direction away from said first idler roller, tape from a tape roll supported on said plate being threaded over said first idler roller, under said drive roller and over said final idler roller, whereby as long as tape leaving said final idler roller is under tension said drive roller strips tape from the tape roll and delivers it to said final idler roller, said drive roller releasing said tape to halt the tape movement when the tape is not tensioned as it leaves said final idler roller.

3,853,257

SELF-CLEARING NOSE SECTION FOR A POWERED FASTENER-DRIVING TOOL

Garry R. Perkins, Palatime, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Filed June 18, 1973, Ser. No. 370,770

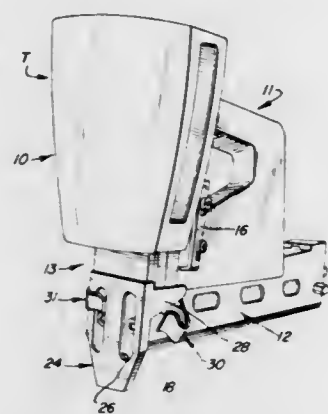
Int. Cl. B25c 5/06

U.S. Cl. 227-123

3 Claims

1. In a powered fastener-driving tool having a housing, a fastener-magazine and feed assembly associated with said

housing and having a discharge end thereof disposed adjacent the underside of the housing, a reciprocating driver element mounted within the housing and having an end portion thereof protruding from the underside of the housing; a nose section mountable on the underside of the housing for accommodating the protruding end portion of the driver element and the discharge end of the fastener-magazine and feed assembly, said nose section comprising an inner plate fixedly mountable on the discharge end of the fastener-magazine and feed assembly, said inner plate having a passageway through which fasteners intermittently pass from the fastener-magazine and feed assembly, an outer plate disposed in face-to-face relation with said inner plate and cooperating therewith to form an elongated



gated guideway for the protruding end portion of the driver element, a guard piece carried by said outer plate and substantially overlying the exterior of said outer plate and being slidably movable relative thereto between extended and retracted positions with respect to the underside of the housing, and resilient means adjustably carried on a fixed part of the tool and adapted to be manually manipulated between first and second positions and, when in the first position, having a portion thereof overlying the exterior of said guard piece, and resiliently engaging and retaining said outer plate in face-to-face relation with said inner plate, and, when in the second position, being disengaged from said outer plate whereby said guard piece and outer plate are disassembled relative to said inner plate.

3,853,258

FLASH REMOVAL APPARATUS FOR A FRICTION WELDING OPERATION

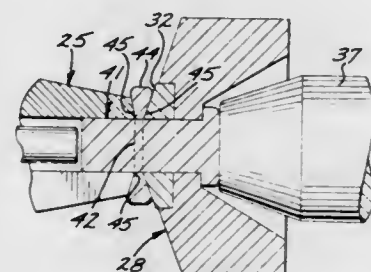
Johan August Louw, Orange, and Robert Earle Ghiselin, Newport Beach, both of Calif., assignors to Textron, Inc., Santa Ana, Calif.

Filed July 17, 1972, Ser. No. 272,520

Int. Cl. B23k 27/00

U.S. Cl. 228-2

6 Claims



1. In a friction welding apparatus for friction welding a first workpiece to a second workpiece to form a unitary structure: a first workpiece holder formed to receive a first workpiece; said first workpiece holder having a flash controlling surface and a shearing edge adjacent to said first workpiece; means forming a shoulder on said first workpiece holder; a holding member adapted to hold a portion of said first workpiece against said shoulder;

a second workpiece holder adapted to receive a second workpiece; said second workpiece holder having a second flash controlling surface for cooperation with said first flash controlling surface to form a cavity for the flash resulting from said frictional welding operation; and means including an ejection plunger for ejecting said unitary structure from said workpiece holders; said ejection plunger being adapted to move said structure and said flash in such a direction as to cause said shearing edge to shear off said flash as said structure is ejected from said first workpiece holder.

3,853,259

DISPLAY AND STORAGE CONTAINER

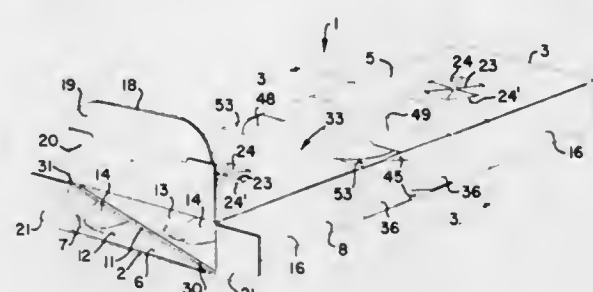
Thomas J. Tupper, 2201 Grand Ave., Kansas City, Mo. 64108

Filed Feb. 4, 1974, Ser. No. 439,556

Int. Cl. B65d 1/36

U.S. Cl. 229-15

10 Claims



1. A storage and display container comprising:
a. walls defining a hollow container;
b. first means on one of said walls for forming a plurality of spaced apart openings therethrough;
c. a partition in said container and having certain of said walls on opposite sides thereof and separating said container into a plurality of separate storage areas for separating objects stored in said container said partition having apertures therethrough spaced from and in axial alignment with a respective said opening formed by said first means; and
d. second means on certain of said walls for facilitating separating said container into a plurality of separate body members each having first means and respective aperture.

3,853,260

BELLOWS FOLD END CLOSURE

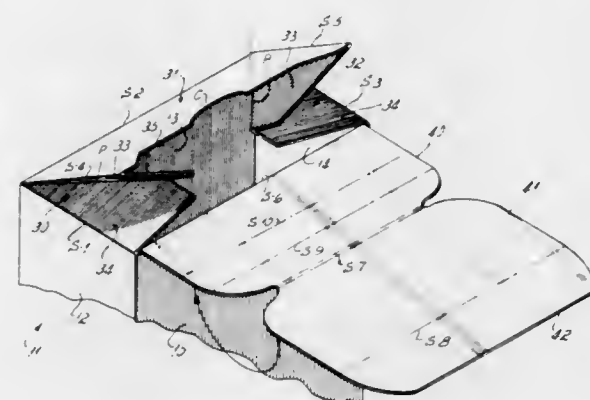
Charles M. Wood, 4976 Shirley Place, Cincinnati, Ohio

Filed Oct. 29, 1973, Ser. No. 410,780

Int. Cl. B65d 5/02, 5/10

U.S. Cl. 229-37 R

13 Claims



1. An improved bellows fold end closure for a folding box having two opposite side panels, a top panel and an opposite bottom panel, the improved closure comprising:
a bellows fold end panel hinged to ends of each side panel, a hinged end panel hinged to said bottom panel along one edge thereof and to respective bellows fold end panels on

other opposite edges thereof, said hinged end panel being folded inwardly toward said bellows fold end panels to form a bellows fold in conjunction therewith, a tuck tab hinged to said top panel along one edge thereof, a first pull tab hingedly connected to an opposite edge of said tuck tab, said tuck tab being insertable into said bellows fold between said hinged end panel and said bellows fold end panels to form said closure, said first pull tab also being insertable into said bellows fold adjacent said tuck tab, and said first pull tab having an end, opposite its connection with said tuck tab, extending outwardly from said bellows fold and providing means for pulling said tuck tab out of said bellows fold when said closure is to be opened.

3,853,261

CARTON WITH EASY OPENING FEATURE AND BLANK THEREFOR

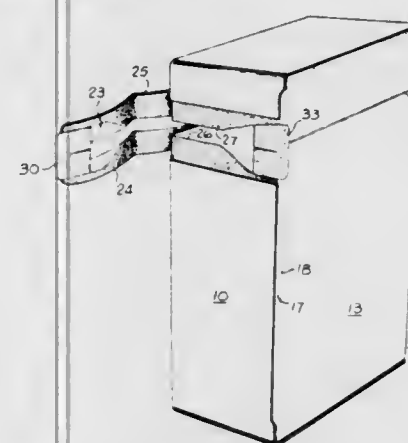
Norman H. Moore, Palo Alto, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Filed Mar. 15, 1973, Ser. No. 341,330

Int. Cl. B65d 17/20, 5/74

U.S. Cl. 229-51 AS

6 Claims



1. A paperboard carton comprising a first side panel, a front panel, a second side panel and a back panel hingedly connected along parallel scorelines, a manufacturer's flap hinged along a scoreline to said back panel and sealed to said first side panel to form a tubular carton body, end closure flaps hinged to said panels and adapted to form end closures for said carton,

a tear strip formed across at least three of said panels, said tear strip having an end at which tear is initiated, said end lying at an edge of said first side panel and sealed to said manufacturer's flap therewith, and

limited depth transverse cuts formed in the area of said manufacturer's flap which underlies said end of said tear strip, said transverse cuts extending across said manufacturer's flap and beyond the scorelines joining said manufacturer's flap to said back panel, and a longitudinal limited depth cut in said back panel joining the ends of said transverse cuts,

said cuts forming tab means which protrude from the carton body when the carton is in erected condition, so that said tab means may be grasped and pulled to initiate removal of said tear strip.

3,853,262

QUICK OPENING ENVELOPE

Carl L. Tucker, Robert M. Schaible, and Frank B. Cooper, all of Denver, Colo., assignors to Pak-Well Corporation, Denver, Colo.

Filed Feb. 23, 1973, Ser. No. 335,370

Int. Cl. B65d 27/36

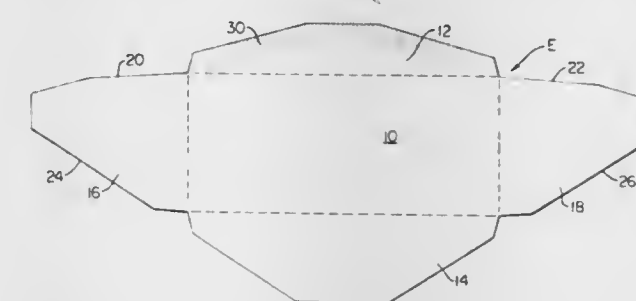
U.S. Cl. 229-80

4 Claims

1. A quick opening envelope which can be opened easily so that all of the contents thereof are visible, said envelope comprising:

a front panel having upper, lower and side edges and a center line intermediate of and parallel to said side edges; a pair of side flaps folded inwardly, respectively, front each of said side edges, each of said side flaps having an upper edge adjacent said upper edge of said front panel and a lower edge extending angularly from adjacent said lower edge of said front panel to a point along the center line of said front panel and spaced from the lower edge thereof, the lower edge of said respective side flaps forming a configuration to permit viewing of the contents of the envelope;

an upper sealing flap folded down along the upper edge of said front panel and overlying a portion of said side flaps and having adhesive means at least extending across said



center line for permanently sealing said upper flap to said side flaps;

a bottom flap folded upwardly along said lower edge of said front panel and having edges which overlie said lower edges of said side flaps and having a top edge lying in the same plane as the remainder of said bottom flap which is spaced from said upper flap, said top edge being unattached to said side flaps; and

adhesive spots spaced along said lower edges of said flaps attaching said edges of said bottom flap to said lower edges of said side flaps, said top edge of said bottom flap being free from said side flaps so that said envelope can be opened quickly by inserting a finger between said upper edge of said bottom flap and said side flaps to grasp said bottom flap and tearing said bottom flap away from said side flaps at said adhesive spots to expose the contents of said envelope for removal thereof.

3,853,263

CIGARETTE BUTT RECEPTACLE

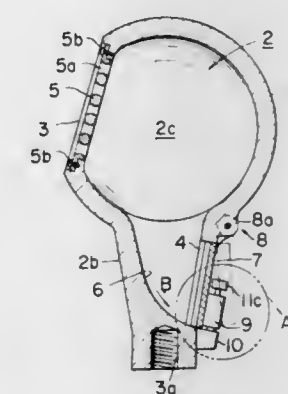
Jiro Otsuka, 1323-247 Hisagi, Zushi, Japan

Filed Aug. 8, 1973, Ser. No. 386,743

Int. Cl. B65d 91/00

U.S. Cl. 232-43.1

5 Claims



1. In a cigarette butt receptacle comprising a stand, a main body supported by said stand and including a hollow spherical upper portion and a hollow lower portion integrally connected to said upper portion and internally communicating with the interior of said upper portion, means forming in said upper portion an inlet opening for receiving cigarette butts and the like to be retained in said main body, means forming in said

lower portion an outlet opening for removing the cigarette butts therethrough from within said main body, and a door normally closing said outlet opening;

the improvement wherein said lower portion comprises a downwardly converging conical body with a wall inclining inwardly in the downward direction, hinge means pivotally supporting said door around a horizontal hinge axis along the upper edge of said outlet opening and in a suspended manner allowing the door to be hung under gravity in a vertical attitude, when the door is opened, with the lower end of the door spaced apart horizontally from the lower edge of said outlet opening, latching means for holding said door in closed position in which the door forms part of the conical wall of said lower portion and means forming a bottom surface of said lower portion, downwardly sloping toward the lower edge of said outlet opening.

3,853,264

FOOTBALL STATISTIC CALCULATING AND RECORDING RULE

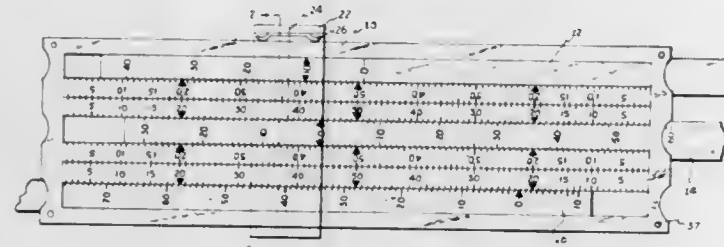
J. Warren Hovorka, 10102 Verde Lomar Dr., Villa Park, Calif. 92667

Continuation-in-part of Ser. No. 168,291, Aug. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 854,458, Sept. 2, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,035

Int. Cl. G06g 1/02

U.S. Cl. 235—70 A

14 Claims



1. A calculating device of the slide rule type useful for calculating and recording statistics during a football game, the combination comprising: a body, a graduated grid on said body corresponding to the yardlines of a football field, first, second and third parallel slides carried by and freely extendible to either side of said body, a yards to go scale for a first down along a portion of the first slide bearing a zero index with yardline calibration marks in arithmetic progression therefrom, a first down line index at the tenth yardline calibration from the zero index; a yards gained or lost scale on the second slide bearing a line of play index intermediate the length of said slide with yardline calibration marks in arithmetic progression extending to either side thereof; a yards returned scale on the third slide bearing a change in possession index and yardline calibration marks in arithmetic progression extending therefrom.

3,853,265

NOMOGRAM TYPE CALCULATOR SLIDABLE RULE

Heinz Kunert, Belvederestrasse 155, Cologne, Germany

Filed Aug. 8, 1973, Ser. No. 386,501

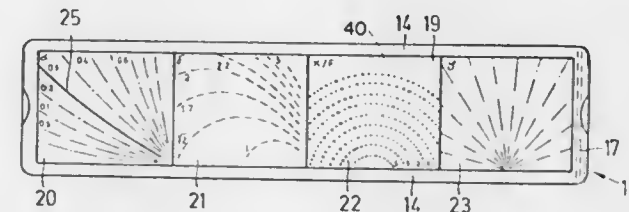
Int. Cl. G06c 3/00

U.S. Cl. 235—89 R

4 Claims

1. In a nomogram calculating device of the type wherein a stylus point is pressed onto a transparent sheet and the pressure of the stylus point is transmitted through the transparent sheet onto a tacky, waxy surface layer of paraffin touching and immediately below said sheet to thereby form an image on the paraffin of the path taken by the stylus point, and wherein the image may be removed from the waxy surface layer by separation of said transparent sheet from said waxy surface layer, for the formation of subsequent images on different as well as the same areas of the waxy paraffin layer, the improvement comprising,

- a plurality of spaced data fields carried by a frame and stored on a plate above, parallel, and contiguous to said transparent sheet,
- means for mounting said waxy paraffin layer and said transparent sheet in said frame for sliding movement relative to said data fields, so that at least one zone of said paraffin layer is capable of being sequentially superposed beneath and with respect to each of said data fields,



- whereby a tracing on the waxy paraffin layer corresponding to the tracing of one data field may be superposed with respect to another data field,
- an erasing bar positioned between the transparent sheet and the waxy paraffin layer, said erasing bar carried by and mounted on said frame, the erasing bar and the waxy paraffin layer being relatively movable, to thereby separate the transparent sheet from the waxy paraffin layer upon relative movement of the erasing bar and paraffin layer and thereby erase any images thereon.

3,853,266

COUNTING SYSTEM FOR PRINTED MATERIAL

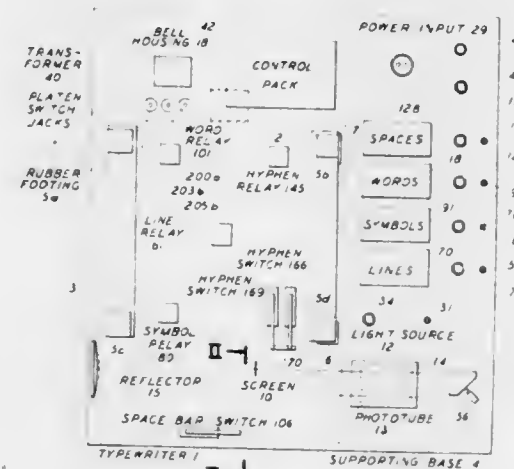
Harold Chaskin, 131 Bennett Ave., New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,357

Int. Cl. B41j 9/24

U.S. Cl. 235—102

12 Claims



1. A counting system for determining the quantity of printed material produced by a printing machine having a plurality of keys for printing characters, a spacer bar for providing spaces between words, a platen and a hyphen key, said counting system comprising

- a primary source of electrical power;
- a secondary source of electrical power;
- a symbol meter for registering symbols printed by the keys;
- a symbol meter control circuit comprising an energizing circuit for the symbol meter and control means including photoelectric means controlled by the keys for printing characters for controlling the operation of the symbol meter energizing circuit, the energizing circuit of the symbol meter control circuit comprising an input relay connected to the secondary source of power and including relay armatures and contacts controlled thereby and a symbol relay having relay armatures and contacts controlled thereby, the symbol relay being connected to the primary source of power via a relay armature and contact of the input relay and the symbol meter being connected

- to the primary source of power via a relay armature and contact of the symbol relay;
- a word meter for registering words formed by symbols printed by the keys;
- a word meter control circuit comprising an energizing circuit for the word meter and control means including photoelectric means controlled by the keys for controlling the operation of the word meter energizing circuit;
- a line meter for registering the lines of words printed by the keys;
- a line meter control circuit comprising an energizing circuit for the line meter and control means including a starting switch and means controlled by the starting switch at the start of a line only and controlled by the platen after the start of a line for controlling the operation of the line meter energizing circuit;
- a space meter for registering the spaces between the words printed by the keys; and
- a space meter control circuit comprising an energizing circuit for the space meter.

3,853,267

DIGITAL SUBTRACTION SYSTEM AND METHOD FOR DETERMINING NET WEIGHT

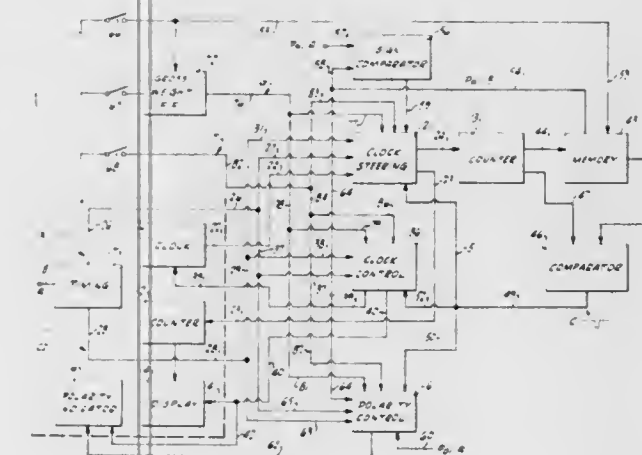
Robert M. Cadwell, San Jose, and Frank C. Rock, Santa Rosa, both of Calif., assigns to National Controls, Inc., Santa Rosa, Calif., by said Rock

Filed Feb. 1, 1974, Ser. No. 438,936

Int. Cl. G06f 15/20, 7/50

U.S. Cl. 235—151.33

9 Claims



1. In apparatus for determining the net weight of a load on a scale from signals representing gross weight and tare weight:

- A. first and second digital counters;
- B. a source of clock pulses;
- C. means for providing a timing signal defining a counting period having a duration corresponding to the gross weight signal;
- D. means for comparing the signs of the gross weight and tare weight signals;
- E. means for storing the sign of the tare weight signal at the outset of the counting period;
- F. means for

- applying the clock pulses initially to the first counter if the signs compared are the same,
 - if the count in the first counter reaches a level corresponding to the tare signal prior to the end of the counting period, applying the clock pulses to the second counter for the remainder of the counting period;
 - if the count in the first counter does not reach the level corresponding to the tare signal by the end of the counting period, changing the polarity of the stored sign and applying the clock pulses to the first and second counters until the count in the first counter reaches the level corresponding to the tare signal;

3,853,268

TEMPERATURE RESPONSIVE VALVES

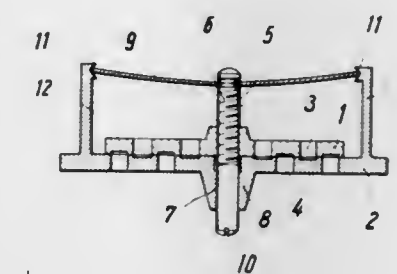
Friedrich Schneider, Pforzheim, Germany, assignor to G. Rau, Pforzheim, Germany

Division of Ser. No. 231,146, March 2, 1972, Pat. No. 3,799,432. This application Sept. 10, 1973, Ser. No. 395,453 Claims priority, application Germany, Mar. 11, 1971, 2111667

Int. Cl. G05d 23/10

U.S. Cl. 236—48 R

3 Claims



1. A temperature responsive valve for the regulation of the coolant flow in an internal combustion engine comprising a valve part movable between an open position to allow passage of the coolant through the valve and a closed position to prevent passage of the coolant through the valve, and a plate-like bimetal snap-action element responsive to the temperature of the coolant to effect the opening and closing movement of the valve part, said bimetal element being rigidly supported at its periphery and being substantially uniformly domed or dished, and said movable valve part and a fixed valve part associated with an associated valve casing forming a ring valve in which openings are provided in the movable valve part and the fixed valve part, the opening in the movable valve part being offset with respect to the openings provided in the fixed valve part.

3,853,269

TEMPERATURE ACTUATED VALVE

Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Nov. 8, 1973, Ser. No. 414,111

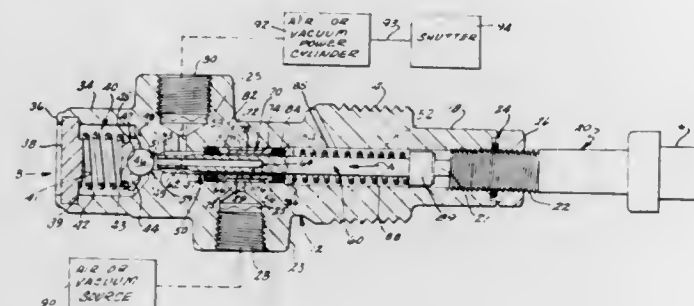
Int. Cl. G05d 23/02

U.S. Cl. 236—86

12 Claims

1. A temperature responsive valve coupled between a supply and an actuable element for selectively coupling said element to said supply and venting the actuable element in response to temperature variations, said valve including: a body including a passageway extending within said body and inlet and outlet ports extending outwardly from said passageway; an exhaust port formed in said body; a ball valve coupling said exhaust port to said passageway; a thermally responsive element extending into and secured within said passageway remote from said ball valve, said thermally responsive element including a pin movable in response to temperature changes;

a movable rod valve slidably fitted in said passageway and extending from said pin toward said ball valve and including an axially extending aperture formed therein and extending from an open end thereof facing said ball valve, said rod valve including a radial port communicating with said axially extending aperture, said rod valve movable in response to movement of said pin to engage said ball valve to seal said open end when a first predetermined temperature is sensed by said thermally responsive element and open said ball valve to couple said exhaust port to said passageway when a second predetermined temperature is sensed;



spool-shaped spacer means having an inner diameter greater than the outer diameter of said rod valve and an outer diameter at its mid-portion less than the inner diameter of said passageway and including a port formed through the wall of said spacer, said spacer positioned within said body to surround said rod valve; and means at opposite ends of said spacer means for sealing said spacer and rod valve to define an inner chamber between said rod valve and said spacer communicating with said radial port of said rod valve throughout the range of motion of said rod valve and an outer chamber between said spacer and said body and communicating with one of said inlet or outlet ports.

3,853,270

MOTOR RAPID WARMING DEVICE

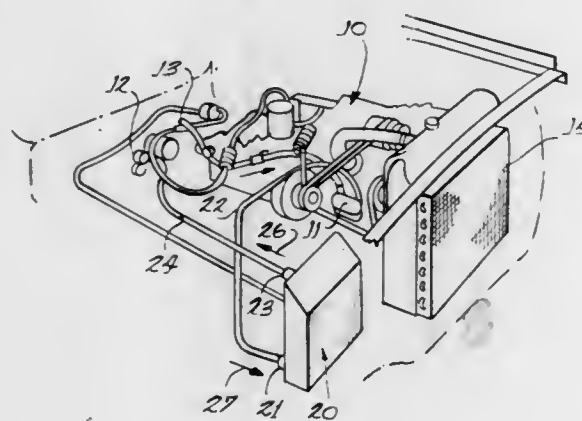
Stanley Prebil, 2800 Gabriel Ave., Zion, Ill. 60099

Filed July 30, 1973, Ser. No. 383,724

Int. Cl. B60h 1/04

U.S. Cl. 237-12.3 B

1 Claim



1. Motor rapid warming device for use in vehicles having a motor, a vacuum source operable when the motor is running, a coolant pump operably driven by the motor, a coolant heated heater for supplying heat to the vehicle passenger compartment, coolant passages throughout the motor block of

the motor for cooling the same, a fluid cooling system interconnecting the passageways in the motor block to the coolant pump and heater for delivering motor coolant to the heater and motor, the motor rapid warming device comprising:

a unitarily formed thermally insulated coolant storage tank for holding a supply of hot motor coolant therein and for maintaining the coolant therein at a relatively high temperature for an extended period of time when the motor is not running, the storage tank having a volume at least equal in capacity to the capacity of the coolant system of the motor;

the storage tank having a flat front vertical wall, a flat bottom horizontal wall, a pair of opposed parallel spaced apart flat vertical side walls, a flat back wall affixed along its bottom edge to the bottom wall and tapering upward and outwardly therefrom at an angle thereto and terminating at a position less than the vertical height of the front wall and spaced rearwardly therefrom, and a flat top wall extending from a top edge of the front wall in a downward slanted manner therefrom to be joined to the back wall;

a coolant containing chamber defined interiorly of the tank walls for holding the motor coolant therein;

an outlet port formed in the top portion of the front wall of the tank in communication with the interior chamber thereof;

an inlet port formed in the bottom portion of the front wall in communication with the chamber interiorly thereof;

a vacuum operated inlet valve connected to the inlet port; a vacuum operated outlet valve connected to the outlet port;

suitable lengths of tubing connecting the storage tank in fluid series communication with the motor cooling system, the inlet valve adapted to be connected to the coolant pump of the motor, the outlet valve adapted to be connected to the heater of the vehicle with the hot coolant in the storage tank thus being firstly delivered to the heater and thence to the motor passageways when the motor is started; and

the running of the motor applying a vacuum to each of the vacuum operated inlet and outlet valves to maintain the valves in an open position, the shutting-off of the motor effecting discontinuance of the vacuum source to the valves thus effecting the automatic closing of the valves upon the stopping of the motor in a manner to trap a quantity of hot motor coolant in the storage tank, the re-starting of the motor effecting the automatic opening of the vacuum valves to provide the hot motor coolant from the storage tank to the heater and motor block passageways promptly upon the starting of the motor so as to provide heat to the passenger compartment of the vehicle along with assisting in raising the operating temperature of motor lubricants to desired temperatures for proper functioning and lubrication thereby.

3,853,271

FLUID DISCHARGE SYSTEM

Kenneth D. Freshour, Norman, Okla., and John C. Van Dyk, deceased, late of Oklahoma City, Okla. (by Liberty National Bank & Trust Co., trustee), assignors to Woods Research & Development Corp., Oklahoma City, Okla.

Division of Ser. No. 113,608, Feb. 8, 1971, Pat. No. 3,724,762, which is a continuation of Ser. No. 814,716, Oct. 23, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,775

Int. Cl. B05b 17/04

U.S. Cl. 239-8

10 Claims

1. A liquid-gas contacting process comprising:

forcing a stream of liquid of predetermined cross-section through a series of convergent sections each open to a predetermined gaseous atmosphere and convergent sections having convergent ends equal in cross-section thereby entraining the gas in the liquid stream, and spraying the liquid and the gas entrained therein out of the

last convergent section in the series into the same predetermined atmosphere whereby the liquid and the gas will

3,853,273

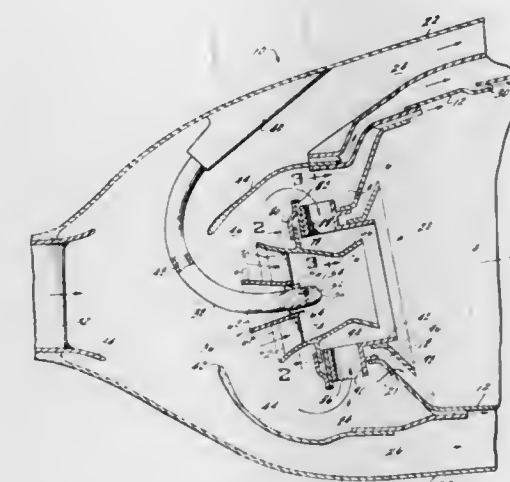
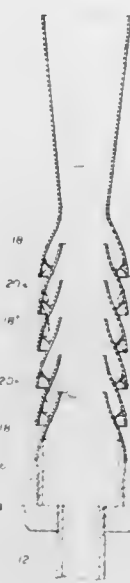
AXIAL SWIRLER CENTRAL INJECTION CARBURETOR
Donald W. Bahr; Jack R. Taylor, and Paul E. Sabla, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 1, 1973, Ser. No. 402,041

Int. Cl. B05b 7/00; F02c 3/00

U.S. Cl. 239-402

9 Claims



free-fall to reduce separation due to gravity and thus tend to increase the time of liquid-gas contact.

3,853,272

VEHICLE-MOUNTED SPRAY APPARATUS

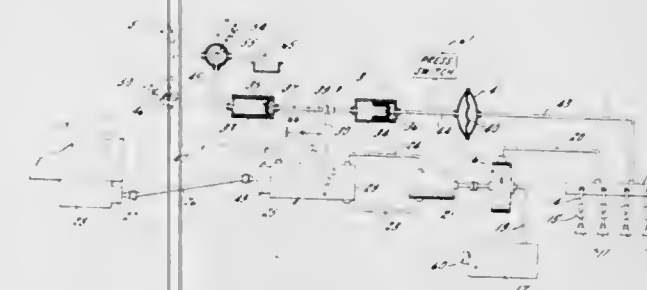
Jackson Decker, Oregon, and Harding M. Russell, Rockford, both of Ill., assignors to E. D. Etnyre & Co., Oregon, Ill.

Filed Sept. 27, 1973, Ser. No. 401,425

Int. Cl. B05b 9/06

U.S. Cl. 239-155

3 Claims



1. Apparatus comprising a hydraulic pump, a variable speed input drive connected to said pump, control means associated with said pump and adjustable to different positions, the delivery rate of said pump changing when the speed of said input drive changes and said control means are in a fixed position and also changing when the speed of said input drive is constant and said control means are adjusted in first and second directions, a hydraulic motor connected to be driven by the delivery of said pump, a second pump connected to be driven by said motor and operable when driven to discharge liquid under pressure, and a series of spray nozzles connected to receive the liquid discharged from said second pump and adapted to be selectively opened or closed, the discharge pressure of said second pump changing when the delivery rate of said hydraulic pump changes and a certain number of said nozzles are open and also changing when the delivery rate of said hydraulic pump is constant and a different number of nozzles are open, the improvement in said apparatus comprising, a reversible fluid-operated actuator connected to adjust said control means, a source of pressure fluid at constant pressure and acting on said actuator to bias said control means in said first direction, the discharge pressure of said second pump acting on said actuator to bias said control means in said second direction whereby said control means seek a position in which said actuator is balanced by said constant pressure and said discharge pressure and in which the discharge pressure is at a substantially constant magnitude determined by the magnitude of said constant pressure, and means selectively operable to adjust the magnitude of said constant pressure.

1. A fuel carbureting device for a gas turbine engine comprising:

a support cup having an inlet and an outlet; a venturi shroud surrounding said support cup and cooperating therewith to define an annular flow path therebetween, said shroud having an upstream end, a downstream end, and a throat section located therebetween; a plurality of axial swirl vanes positioned between said support cup and said venturi shroud and adapted to swirl air flowing through said flow path in a first direction; a fuel tube having a first end adapted to receive fuel and a second end positioned within said support cup, a fuel passage extending from said first end to said second end, a plurality of fuel injection holes located near said second end adapted to deliver fuel to the swirled air flow from said axial vanes; and means for generating a countercurrent flow of air at the downstream end of said venturi shroud.

3,853,274

IMPACT CRUSHER

Harold Wright, Stockton, and Keith Thomas Jones, Normanby, both of England, assignors to The British Iron and Steel Research Association, London, England

Continuation of Ser. No. 146,062, May 24, 1971, abandoned.

This application Apr. 18, 1973, Ser. No. 352,207

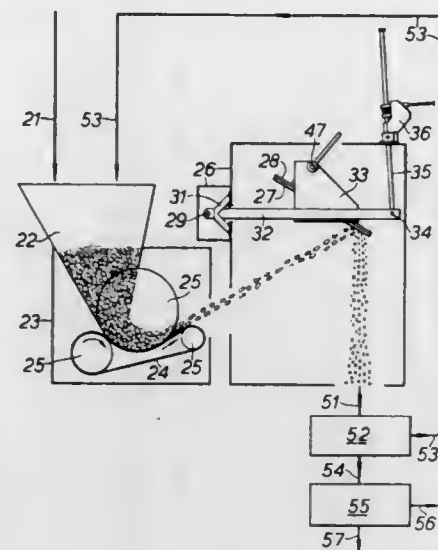
Int. Cl. B02c 19/00

U.S. Cl. 241-40

4 Claims

1. Apparatus for fragmenting pieces of inelastic brittle, fragmentable material into smaller pieces of a desired size comprising: a conveyor belt adapted for throwing a continuous jet of pieces of said fragmentable material; means for continuously feeding pieces of said fragmentable material onto said conveyor belt; a stationary target plate inclined to the direction of the jet and spaced in a generally horizontal direction from the closest end of the conveyor belt, means for changing the angle of inclination of the target plate with respect to the direction of the jet of pieces of fragmentable material; means for adjusting the orientation of the target plate with respect to the jet of said pieces; and means for driving said conveyor belt at a speed required to maintain a speed at the surface of the conveyor belt of between 20 and 100 feet per second, the arrangement being such that all of the pieces to be fragmented are thrown from the conveyor belt and against said target plate as a continuous jet at a speed of

between 20 and 100 feet per second and are fragmented solely by the impact of the particles on the target plate, the pieces



of material being continuously removed from the area of the target plate by gravity.

3,853,275

FILM THREADING DEVICE FOR A MOTION PICTURE PROJECTOR

Heinz Peschel, Stgt. Zuffenhausen, and Manfred Radtke, Korb, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

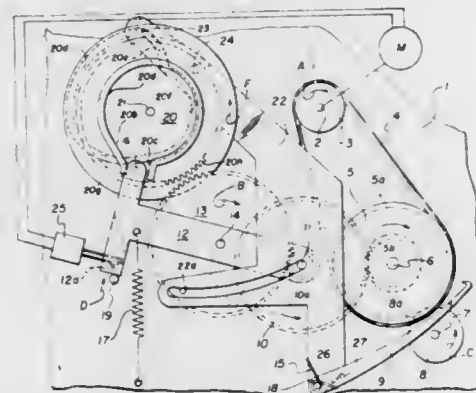
Filed Mar. 15, 1973, Ser. No. 341,435

Claims priority, application Germany, July 26, 1972, 2231130

Int. Cl. G03b 1/58

U.S. Cl. 242-195

4 Claims



1. In an apparatus having supporting means and advancing means for receiving and advancing an elongate strip material having an opening in the leading end thereof, said apparatus having threading means which includes a hook member movably supported by said apparatus and having drive means for moving said hook member between, (1) a withdrawn position wherein said hook member is remote from said strip, (2) an engaging position wherein said hook member is closely adjacent to said opening in said leading end of a received strip to engage said leading end through said opening, and (3) a threading position wherein said hook member releases said leading end to said advancing means, the improvement comprising:

- a cam rotatably supported by said apparatus;
- switch means movable between, (1) a first condition wherein said switch means is effective to cause said drive means to move said hook member, and (2) a second condition wherein said switch means is ineffective to cause said drive means to move said hook member; and
- means connecting said cam and said switch means to cause said switch means to be moved between said second condition, and said first condition and to hold said switch means in said first condition at least during one revolution of said cam.

3,853,276

REVERSIBLE REFINER FEEDER

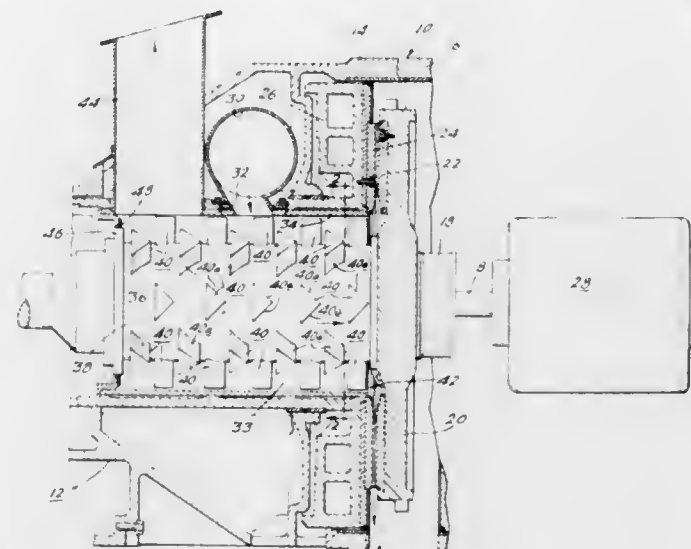
Chester Donald Fisher, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed Oct. 11, 1972, Ser. No. 296,564

Int. Cl. B02c 23/02

U.S. Cl. 241-247

14 Claims



1. In a disc type refiner for high consistency stock comprising a frame, a refiner shaft rotatably supported on said frame, a rotor mounted on said shaft for rotation therewith, a non-rotating head mounted on said frame, and refining plates mounted in juxtaposed relation on said rotor and said non-rotating head to produce a refining action on stock introduced therebetween upon rotation of said drive shaft, the improvement comprising reversible conveyor means for introducing stock into the space between said refining plates, said conveying means comprising a substantially cylindrical conveying chamber surrounding said drive shaft adjacent said rotor in coaxial relation thereto, a plurality of conveying lugs fixed to said drive shaft and extending into said conveying chamber, said conveying lugs each having a pair of intersecting faces oppositely angularly inclined with respect to the drive shaft axis, the lug edge formed by said intersecting faces being directed toward said rotor, and conduit means for introducing stock into said conveying chamber, said lugs upon rotation of said drive shaft serving to advance stock introduced into said conveying chamber toward said rotor for passage between said plates regardless of the direction of the shaft rotation.

3,853,277

SCAFFOLD AND WINDING APPARATUS

Billy Ross Bush, West Babylon, N.Y., assignor to The Preload Company, Inc., Garden City, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,201

Int. Cl. B21f 17/00

U.S. Cl. 242-7.21

2 Claims

1. An apparatus for wrapping prestressing steel wire around the outer surface of a concrete tank having a continuous vertical wall including the elements of:

- a plurality of vertical steel bracing beams attached to the upper part of the inside surface of said concrete wall and extending above said wall, said beams having an I beam guide rail attached to the outer faces thereof and positioned essentially parallel to the course of said wall;
- a steel scaffold comprised of frame members, movable along the top of said wall and including
 1. steel rollers, attached to a said frame member, movable retained on the flanges of said I beam guide rail,
 2. a rubber wheel, vertically mounted on an axle mounting in said scaffold, positioned to roll along the top of said wall and including a motor to drive said wheel and scaffold along the top of said wall,

- a second wheel mounted horizontally in an axle mounting in said scaffold positioned to roll along the upper outer surface of said wall, and
- a support platform having a winch thereupon for raising and lowering an apparatus for winding prestressing wire, under tension, around said walls; and

said yarn guide is positionable by said motor to any point along a linear path adjacent said takeup reel.

3,853,279

METHOD AND APPARATUS FOR FORMING LIGHTWEIGHT WEB MATERIAL INTO A CORELESS ROLL

David E. Gerstein, 63-33 98th Pl., Forest Hills, N.Y. 11374

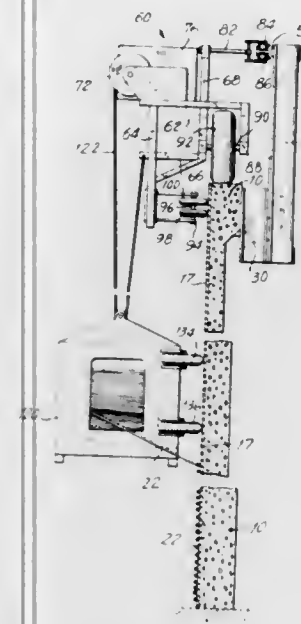
Continuation-in-part of Ser. No. 211,319, Dec. 23, 1971. This

application Feb. 22, 1973, Ser. No. 334,844

Int. Cl. B65h 35/02

U.S. Cl. 242-56.2

13 Claims



- an apparatus for winding prestressing wire, under tension, around said wall, said apparatus being supported from said support platform by a cable associated with said winch.

3,853,278

YARN GUIDE DRIVING DEVICE

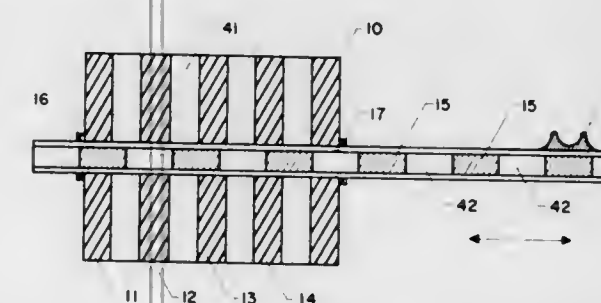
Endre L. Berecz, 1701 S.W. 22nd Ave., Fort Lauderdale, Fla. 33315, and Peter B. Schweitzer, 8957 S.W. 52nd Pl., Cooper City, Fla. 33314

Filed Aug. 10, 1972, Ser. No. 279,303

Int. Cl. B65h 54/28

U.S. Cl. 242-43

2 Claims



- A yarn guide driving mechanism for positioning a yarn guide relative to a yarn takeup reel comprising:

linearly actuating magnetic yarn guide motor, said yarn guide motor including a plurality of magnetic disks parallelly disposed adjacent each other forming a cylinder, each disk having a central aperture; a shaft partially disposed and moveable within said disk apertures, said shaft having a plurality of separated magnetic segments disposed along its length in a pole-to-pole relationship; and inductive circuit means coupled to each magnetic disk, for energizing each disk individually;

yarn guide rigidly connected to said shaft moveable back and forth along a straight line path by said motor;

signal means coupled to said yarn takeup reel for sensing and generating a signal representing the diameter of said yarn on said takeup reel;

power source;

motor control means connected to said motor, said power source and said yarn takeup reel diameter signal generating means for energizing said motor for driving said yarn guide to particular positions relative to said takeup reel in synchronization with said yarn takeup diameter whereby

1. An apparatus for forming coreless rolls of tissue sheets connected in end to end relationship along a frangible tear line comprising: means for supporting a plurality of supply rolls of continuous web of tissue material, means for guiding each of said webs through a feed path, means for directing each of said webs into overlying juxtaposition relationship through a portion of said feed paths, perforating means and slitting means disposed adjacent the portion of said feed path through which said webs are fed in juxtaposition relationship, said perforating means engaging said juxtapositioned web to simultaneously perforate said juxtapositioned webs transversely thereof along longitudinally spaced intervals, and said slitting means engaging said juxtapositioned webs to simultaneously slit said webs into a plurality of longitudinal lengths, means disposed in said feed path to effect separation of said juxtapositioned webs subsequent to said webs being perforated and slit, a mandril rotatably journaled for receiving the slit lengths of the respective webs, means for securing the respective slit lengths to said mandril, means for effecting the rotation of said mandrils for winding said slit lengths into distinct coreless rolls on said mandril, and clamping means to secure said slit lengths of the respective webs adjacent said mandril to facilitate the severance of said coreless rolls from the remaining respective continuous web.

3,853,280

TAPE WINDING MANDREL AND APPARATUS

Joseph V. Pennisi, North Greenbush, and Arthur W. Connery, Green Island, both of N.Y., assignors to Nashua Corporation, Nashua, N.H.

Filed Oct. 1, 1971, Ser. No. 185,730

Int. Cl. B65h 19/04

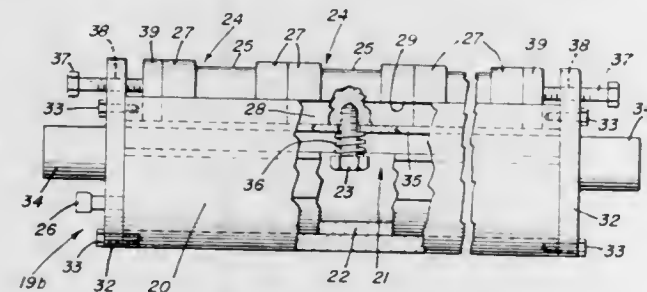
U.S. Cl. 242-56.9

10 Claims

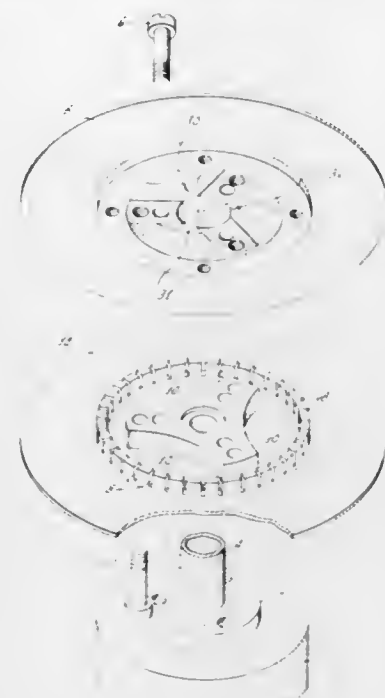
1. Mandrel of generally cylindrical shape for the simultaneous winding of a plurality of rolls of strip material onto individual cores spaced axially along the mandrel whereby the tension in each roll is maintained substantially uniform, said mandrel comprising:

- an elongated tubular shaped body member being in cross-section in the shape of an incomplete circle formed by an arc, a compartment located inwardly hereof, and a support surface at each end of the arc along the length of the body member and integral therewith;

b. a plurality of core engaging members located axially along and in operative engagement with said body member, each said core engaging member having a base surface of planar shape and an arcuate shaped core engaging surface, and having bearing surfaces interconnecting said base surface and said arcuate shaped core engaging surface, each said core engaging member being individually mounted for movement radially outwardly from and into retractable engagement with said body member, said core engaging members on said outward movement each engaging the inner peripheral surface of an associated core whereby each core is frictionally gripped by the core engaging member with some desired force; the bearing surfaces on each said core engaging member in its retracted location contacting the opposed support surface on the body member thereby completing the circular cross-section and cylindrical shape of the mandrel;



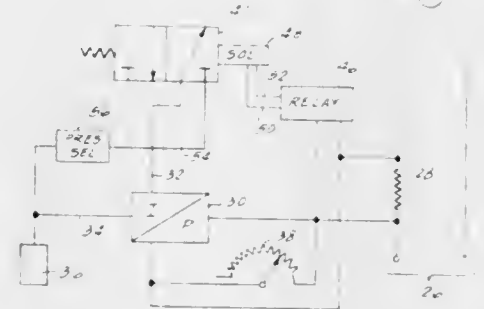
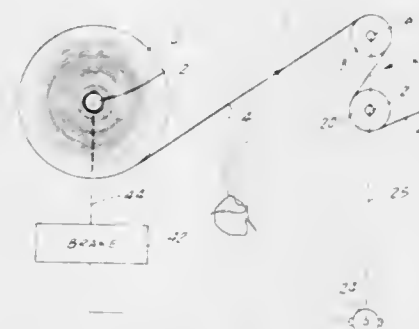
a resilient washer having a hole larger than the outside diameter of said hollow shaft, said washer to be positioned to have its hole axially aligned with said hollow



shaft;
a hollow elbow shaped tube member;
means for securing one opening of said elbow shaped tube member against the surface of said washer.

3,853,282 TENSIONING DEVICE

William P. Wentworth, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 6, 1972, Ser. No. 312,506
Int. Cl. B65h 25/22, 23/10
U.S. Cl. 242—75.44 10 Claims



1. A tensioning device for use with a process employing a quantity of web material drawn from a supply roll comprising, in combination, a roller mounted on a shaft, said web contacting the surface of said roller between said supply roll and said processing apparatus, a motor connected to said shaft, means for sensing the armature current of said motor and for regulating the pneumatic pressure on an output line in response thereto, brake means connected with said output line and adapted for impeding the rotating of said supply roll to control the tension on said web, and a source of potential connected to the motor to urge said motor to rotate in a direction opposite to the direction of travel of the web.

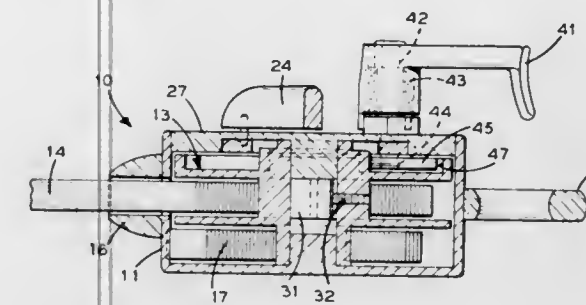
3,853,281
VACUUM TAPE REEL
Robert Ralph Elliott, Santa Ana, Calif., assignor to Century Data Systems, Inc., Anaheim, Calif.
Filed Oct. 19, 1972, Ser. No. 299,035
Int. Cl. B65h 75/28

U.S. Cl. 242—74

2 Claims

1. a vacuum take up reel system comprising:
a motor having a hollow output power shaft;
means for sealing the rear bearing of said motor output shaft to produce an airtight seal between said motor and output shaft;
means for connecting a source of pressure different than atmospheric pressure to the rear of said motor so as to communicate with the hollow shaft, said means for connecting the source of pressure comprising:

3,853,283
RETRACTABLE LEASH DEVICE
Joseph Croce, 742 Deer Park Ave., Babylon, N.Y. 11703, and
Kurt Bayer, 6708 182nd St., Flushing, N.Y. 11365
Filed June 4, 1973, Ser. No. 366,776
Int. Cl. B65h 75/48
U.S. Cl. 242—107.4 6 Claims

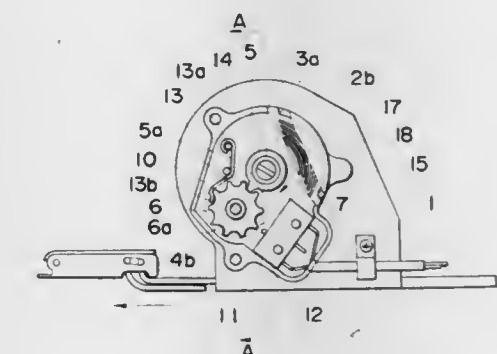


1. A retractable leash device which comprises a housing; a reel supported by said housing for rotation relative thereto and disposed to receive a leash which is paid out when the reel rotates in one direction and which is retracted when the reel rotates in the opposite direction; means defining a toothed wheel connected to said reel for rotation therewith; a pair of pawls mounted on said housing and moveable relative thereto into respective positions of engagement with said toothed wheel to control the rotation of said wheel and reel; an annular cam having multiple camming surfaces and supported by said housing for limited rotary movement relative thereto; means resiliently biasing said pawls into engagement with said cam; said cam having a first set of camming surfaces which when in engagement with said pawls positions both pawls into locking engagement with the toothed wheel to lock the wheel and reel for both directions of rotation such that the leash can be neither paid out or retracted, said cam having a second set of camming surfaces which when in engagement with said pawls positions both pawls out of engagement with the toothed wheel to allow the wheel and reel to rotate in either direction such that the leash can be freely paid out and retracted upon slackening, said cam having a third set of camming surfaces which when in engagement with said pawls positions one pawl into engagement with the toothed wheel to lock the wheel and reel against rotation in the direction corresponding to leash payout such that the leash can be freely retracted upon slackening but is locked against further payout; means operable to rotatably move said cam to selectively position any one of said first, second and third sets of camming surfaces into engagement with said pawls; and drive means connected to said reel and operable to urge same in the direction for retracting the leash.

3,853,284
PASSENGER VEHICLE SAFETY BELT WINDING DEVICE
WITH MEANS FOR DETECTING THE PULLED-OUT
LENGTH OF A BELT
Tsukio Hasegawa, and Masahiro Iwatsuki, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan
Filed July 14, 1972, Ser. No. 271,792
Claims priority, application Japan, July 17, 1971, 46-63015
Int. Cl. B65h 75/38
U.S. Cl. 242—107.4 6 Claims

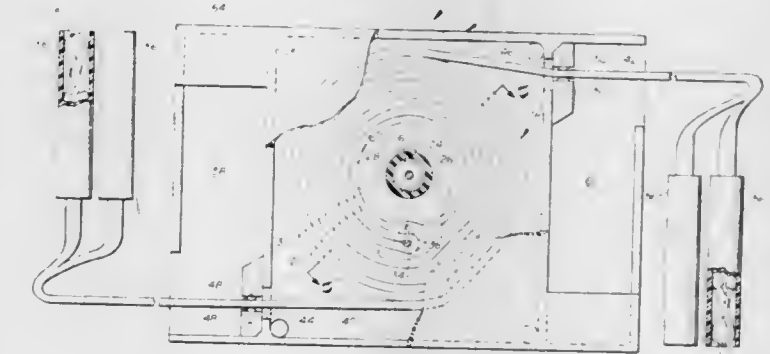
1. A passenger vehicle safety belt winding device comprising a frame, a shaft rotatably mounted on the frame and fixedly securing one end of a belt adapted to be wound thereon, a spring constantly urging the shaft in one direction of rotation to wind the belt onto the shaft, and means for detecting the pulled-out length of the belt, the detecting means including a kick gear rigidly mounted on the shaft and having a single transfer tooth at the periphery thereof, a pinion gear rotatably mounted on the frame and having at least the number of teeth corresponding to the number of rotations of

the shaft required to pull out the full length of the belt from the shaft, the pinion gear being positioned to engage the transfer tooth of the kick gear once during each revolution of the kick gear for rotation one tooth position by the kick gear such that the rotational position of the pinion gear corresponds to the number of revolutions of the shaft, means for permitting rotation of the pinion gear upon engagement and rotation thereof by the kick gear and for maintaining the pinion gear in a stationary condition when the pinion gear is out of engagement with the kick gear, a cam rigidly mounted on the



pinion gear and having large and small diameter portions, the large diameter portion having a circumferential length corresponding to a predetermined number of teeth of the pinion gear, and a switch having a push button positioned for engagement with the large diameter portion of the cam for controlling the operation of a warning means connected with the switch, the large diameter portion of the cam engaging the push button when a predetermined number of revolutions of the shaft corresponding to a predetermined pulled-out length of the belt has been attained.

3,853,285
RETRACTABLE CABLE DEVICE
Horace Leo Woodring, 2419 W. Oklahoma Pl., Tulsa, Okla. 74127
Filed Mar. 3, 1973, Ser. No. 346,446
Int. Cl. B65h 75/48
U.S. Cl. 242—107.11 4 Claims



1. A retractable cable device comprising:
a cable container having two cable exits on opposite sides of the container,
a spool for a cable mounted in said container,
a cable looped around a clip attached to said spool in a manner that said cable is doubly wound upon itself around said spool with each of the two ends of the cable exiting from the container through a separate one of the exits,
spring means mounted within the container biasing the spool to a wound condition of the cable, and

stop means to operate cooperatively with the spool to hold the spool selectively at any chosen position between a fully wound condition of the cable and an unwound condition of the cable.

3,853,286

REEL CONSTRUCTION

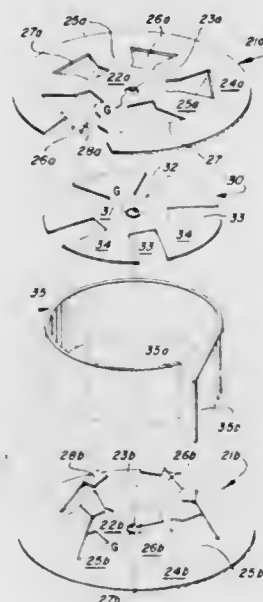
Samuel Lewis Beder, Bronx, N.Y.; Alexander Toth, Clifton, and Warren Richard Persak, Fair Lawn, both of N.J., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Nov. 6, 1972, Ser. No. 304,131

Int. Cl. B65h 75/22, 75/14

U.S. Cl. 242—115

3 Claims



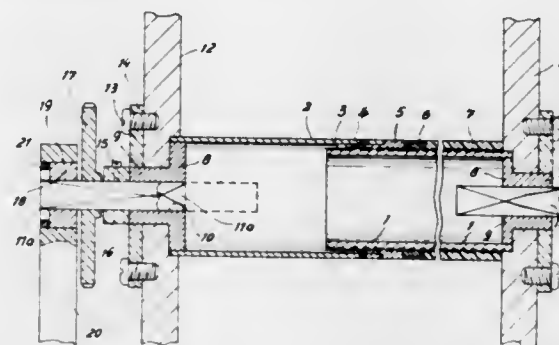
1. A collapsible reel assembly comprising a pair of blanks interconnected to one another and arranged in substantially superposed relation, an intermediate member interposed between said blanks, and a web of material removably disposed between said blanks and encompassing said intermediate member when said assembly is in a non-collapsed state; each blank including a hub portion, a rim portion spaced from and encompassing said hub portion, a plurality of annularly spaced first struts interconnecting said hub and rim portions, said first struts and said hub and rim portions of a blank defining an end wall of the reel assembly, and a plurality of annularly spaced second struts disposed intermediate said first struts and separated therefrom, each second strut being one end thereof foldably connected to a portion of the blank defining the end wall, and a second end thereof foldably connected to the second end of a corresponding second strut of the other blank of the assembly, corresponding second struts, when in a first position of adjustment, being in substantial endwise relation and forming a core section disposed intermediate said end walls and aligned with the hub portions thereof whereby said end walls are in substantially spaced, parallel relation and said assembly is in a non-collapsed state, and when in a second position of adjustment and said web has been removed from between said blanks, said second struts being disposed in proximate substantially parallel relation whereby said end walls and said intermediate member are in proximate substantially parallel relation and said reel assembly is in a collapsed state; and intermediate member including a central portion aligned with the hub portions of said blanks, and peripheral portions projecting from the central portion and extending between the adjacent second struts of said blanks, the outer periphery of said intermediate member supportingly engaging the encompassing web of material when said second struts are in said first position of adjustment and said reel assembly is in a non-collapsed state.

3,853,287
WARP BEAM SECTION FOR A LOOM
Gottfried Scholze, Bergstr. 15; Dietrich Scholze, Blumenstr. 8, and Johannes Maier, Bergstrasse 17, all of 3559 Schreufa, Germany
Continuation of Ser. No. 182,816, Sept. 22, 1971, abandoned.
This application Apr. 20, 1973, Ser. No. 352,940
Claims priority, application Germany, Sept. 24, 1970, 2046995

Int. Cl. B65h 75/14

U.S. Cl. 242—118.5

1 Claim



1. A warp beam section for a loom, comprising two telescoping barrels combined to form the beam section, each of the barrels having an inner end and an outer end, the inner end of one of the barrels extending into the inner end of the other barrel, the inner end of the one barrel having an external thread and a fixed bushing on the inner end of the other barrel having an internal thread, the external thread meshing with the internal thread for adjustably interconnecting the inner barrel ends upon rotation of the barrels in respect of each other for selecting different axial positions of the barrels resulting in correspondingly different lengths of the beam section, a nut threadedly mounted on the external thread for abutting engagement with the fixed bushing for fixedly maintaining a selected one of the axial positions, a flange rigidly connected to the outer ends of the barrels, and a removably sleeve arranged to cover the one barrel, the sleeve having an outer diameter substantially identical with the outer diameter of the one barrel.

3,853,288

ENCASEMENT FOR THE TAIL SECTION OF A ROCKET WITH A CENTRAL NOZZLE AND EXTENDIBLE CONTROL VANES

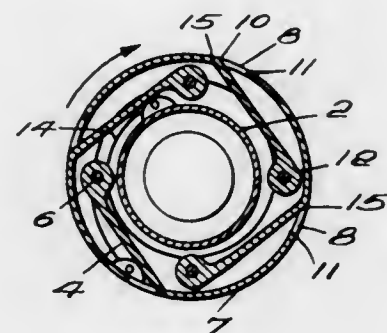
Helmut Bode, Falladastrasse 1a, Celle, Germany

Continuation-in-part of Ser. No. 654,022, July 17, 1967, abandoned. This application Sept. 18, 1969, Ser. No. 863,412

Int. Cl. F42b 13/32

U.S. Cl. 244—3.29

22 Claims



1. In a rocket having a generally cylindrical casing and a central nozzle extending from the rear end portion of said casing and of smaller cross-section than such rear end portion, vane means including at least one rigid control vane, means on said rocket on the outside of the nozzle and within a space concentric with and of the same diameter as the rear end portion of the casing pivoting said vane for swinging movement between an inoperative retracted position substantially entirely within said space and an operative position in which

the vane extends outside the space, and means carried by said rocket to form a substantially cylindrical cover enclosing at least the greater part of the periphery of said space, one of said vane mounting means and said cover forming means being movable with respect to the rocket during movement of the vane to operative position.

3,853,289

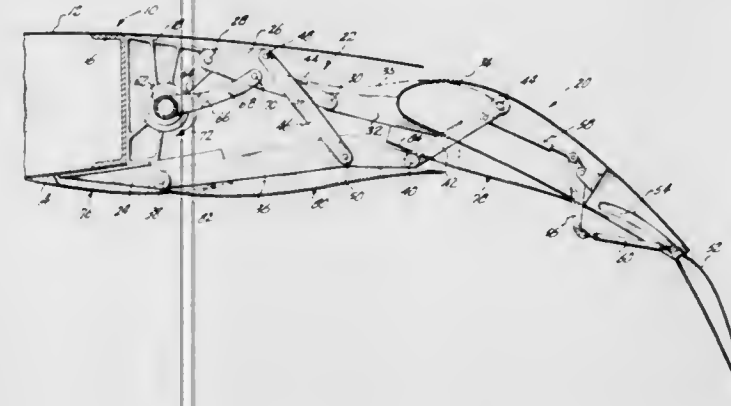
TRAILING EDGE FLAP AND ACTUATING MECHANISM THEREFOR

Carroll H. Nevermann, and Ellis J. Roscow, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Feb. 15, 1973, Ser. No. 332,555

Int. Cl. B64c 3/50

U.S. Cl. 244—42 DA

7 Claims



1. An extending and retracting mechanism for a trailing edge flap system attached to a wing, said wing having a rear main spar and fixed structure affixed thereto, said flap system including at least a main flap segment having a rearward portion, the mechanism comprising:

first link means pivotally connected at a first location thereon to said fixed structure adjacent the rear main spar of said wing and pivotally connected at a second location thereon to said main flap segment;
second link means pivotally connected at a first location thereon to said fixed structure below said first link means adjacent the rear main spar of said wing, the major portion of said main flap segment being located rearwardly of the pivotal connections of said first and second link means to said fixed structure;
third link means pivotally connected at a first location thereon to said main flap segment and pivotally connected at a second location thereon to a second location on said second link means, the pivotal connections of said first and third link means to said main flap segment being spaced from each other;

programming link means pivotally connected at a first location thereon to a third location on said first link means and pivotally connected at a second location thereon to a third location on said second link means, said third location on said first link means being positioned between said first and second locations on said first link means, said third location on said second link means being positioned between said first and second locations on said second link means, said first, second and third link means and said programming link means being arranged so that the second location of said first link means prescribes a retraction path relative to said wing which includes a downwardly and forwardly curved portion preceding an upwardly and forwardly curved portion, said main flap segment being oriented downwardly and rearwardly relative to said wing in an extended position, the rearward portion of said main flap segment being rotated upwardly about said second location on said first link means as said second location on said first link means follows said retraction path, and power means for actuating said link means.

3,853,290

DRIVE GEARING FOR FOLDING AIRCRAFT WINGS

Friedrich Bremm, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

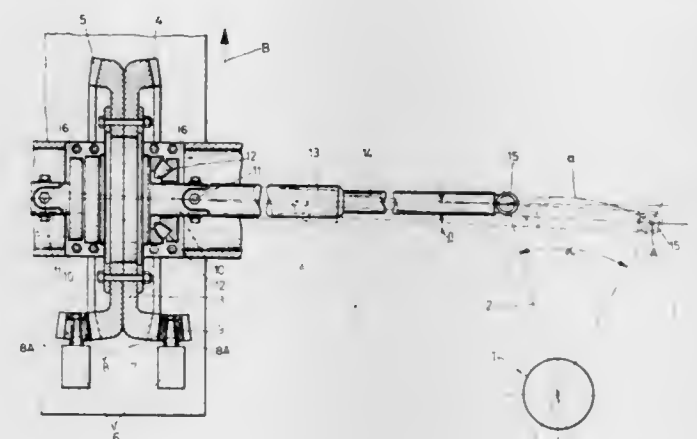
Filed Mar. 6, 1973, Ser. No. 338,585

Claims priority, application Germany, Mar. 16, 1972, 2212648

Int. Cl. B64c 3/38

U.S. Cl. 244—46

4 Claims



1. A drive arrangement for moving the folding wings of an aircraft having a variable sweepback characteristic, said folding wings being movable through pivoted lever means, said drive arrangement including motor driven gear means for transmitting its rotary sides through two jointed couplings which are arranged on both sides thereof onto two shafts means, the rotary movement of which is used for operating said pivoted lever means, comprising the improvement wherein said motor driven gear means comprises a pair of back-to-back bevel gears and a pair of fixedly mounted motors each having a rotatable output shaft parallel to the other and a single bevel pinion mounted on each output shaft of said motors fixedly engaging the teeth of the respective one of said bevel gears, said bevel pinions and the axes of rotation of said output shafts on said motors being positioned on opposite axial sides of said back-to-back bevel gears, said axes of rotation of said output shafts extending in a plane generally parallel to the axis of rotation of said back-to-back bevel gears, said motors and pinions being adapted to support at least a portion of the axial thrust applied to said back-to-back bevel gears.

3,853,291

EXPLOSION-PROOF POLE BASE MEANS

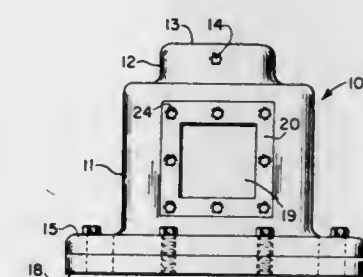
Errol J. Burke, 409 Fillmore Ave., New Orleans, La. 70124

Filed Aug. 27, 1973, Ser. No. 392,067

Int. Cl. F16m 13/00

U.S. Cl. 248—158

2 Claims



1. An explosion-proof pole base comprising:
a. housing means comprising an elongated hollow base portion having one of its ends provided with a female threaded portion adapted to receive pole means provided with a male threaded portion whereby an explosion-proof connection is realized between said housing means and the pole means when operably connected thereto;

and its other end defining an outwardly extending flanged portion machined along its outer peripheral bottom surface, which flanged portion is provided with a number of spaced apart mounting holes and drilled holes for connection to base plate means as hereinafter defined; and

b. base plate means of a configuration and having an upper machined surface adapted to operably mate with the machined bottom surface of the flanged portion of said housing means for connection thereto by suitable bolting means via the drilled holes provided in the flanged portion of said housing and the threaded holes in said base plate whereby said means when operably bolted together form an explosion-proof joint;

said base plate means also being provided with mounting holes along its peripheral surface which mate with the mounting holes provided in the flanged portion of said housing means;

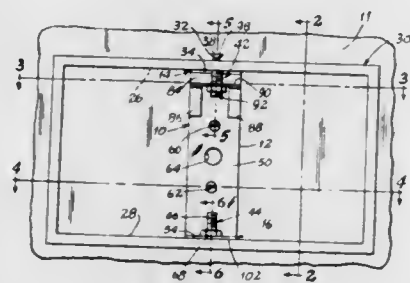
said base plate means also being further defined in that threaded female conduit openings are provided in its center portion in open communication with said hollow base portion.

3,853,292

MOUNTING BRACKET

Heinrich J. Junk, Maplewood, Mo., assignor to Chamois Electronic Manufacturing Company, Inc., Chamois, Mich.
Filed Feb. 1, 1973, Ser. No. 328,873
Int. Cl. A47b 77/08, 67/00; A47f 5/08
U.S. Cl. 248—203

15 Claims



1. A bracket for securely mounting to a wall or the like a device having sides with opposed inner surfaces, said bracket comprising an elongated support member adapted to be mounted to said wall or the like and having opposed, outwardly extending arms positioned to fit within said opposed inner surfaces of said device, said arms including opposed outwardly-extending projections adapted to engage orifices in said opposed inner surfaces of the device, at least one such arm including bias means urging the projection thereof outwardly, at least one of the projections being adjustable substantially into the plane of the cooperating inner surface and in a close supporting relationship thereto.

3,853,293

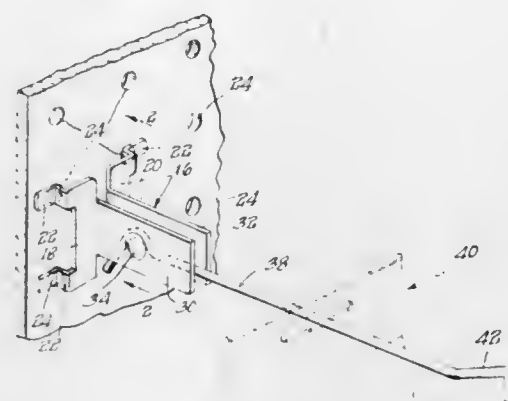
ARTICLE SUPPORT BRACKET

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.
Filed Feb. 15, 1973, Ser. No. 332,902
Int. Cl. A47g 23/02; A47f 5/00; F16m 13/00
U.S. Cl. 248—223

8 Claims

1. An article support device for use with apertured panels such as pegboards and the like including a plate bracket member for engagement with the outer surface of a vertically disposed apertured panel, means associated with said plate member for interlocking with an aperture of said panel for securing said plate in flush engagement therewith, elongate article support means adapted to engage said plate bracket outwardly of said outer surface and to project outwardly from said plate member when said plate member is secured to said

apertured panel, and means formed on said plate bracket for clampingly engaging said elongate article support means to



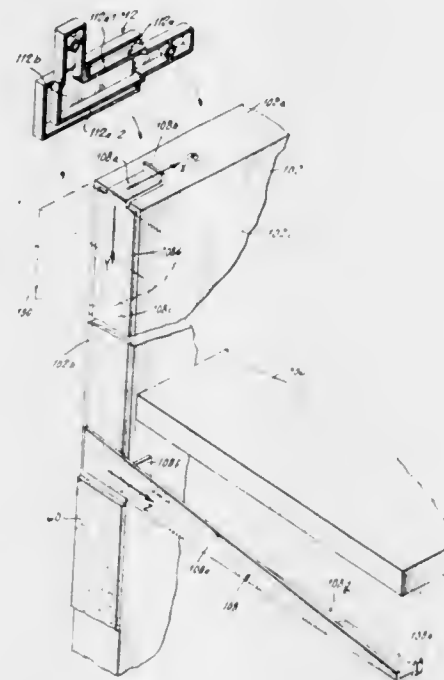
secure said support means in a predetermined article accommodating position.

3,853,294

SUPPORT BRACKET

Don C. Albinson, Coopersburg; William I. Stephens, Telford; Charles R. Cawley, Jr., Barto, and Richard Baier Hopkins, Pennsburg, all of Pa., assignors to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 119,457, March 1, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,426
Int. Cl. E04g 3/10; A47b 9/00; A47f 5/10
U.S. Cl. 248—235

4 Claims



1. A support bracket for supporting a shelf or the like and which in turn is adapted to be supported by a panel, comprising a first leg in a horizontal XZ plane, a second leg joined to the first leg and extending downwardly therefrom in a vertical YZ plane, and a third leg spaced substantially below the first leg and joined to the second leg and extending outwardly for a substantial distance in the Z direction, in which the directions X, Y and Z are substantially perpendicular to each other and the first leg terminates in an upwardly extending lip.

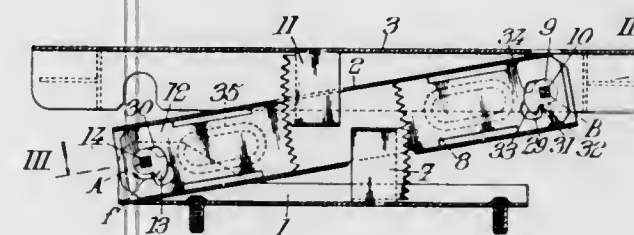
3,853,295

VERTICALLY ADJUSTABLE SUPPORTS FOR VEHICLE SEATS

Georges Etienne Christin, Marnes-la-Coquette, France, assignor to Etablissements Bertrand Faure, Putreaux, France
Filed Oct. 3, 1972, Ser. No. 294,559
Claims priority, application France, Oct. 6, 1971, 71.36038
Int. Cl. F16m 13/00

U.S. Cl. 248—396

5 Claims



1. Vehicle seat support, comprising a first rigid lower frame fastenable to the floor of the vehicle, a second rigid frame mounted at one end thereof in pivoting fashion around a horizontal first axis linked to the first frame and extending along the width of the seat, a third rigid frame mounted in pivoting fashion around a second horizontal axis parallel to the first axis and linked to the other end of the second frame, first locking means easily operated by a person occupying the seat to block or unblock the second frame in one or another of a plurality of its different angular positions of pivoting with respect to the first frame around the first axis, second locking means easily operable by said person to block or unblock the third frame in one or another of a plurality of its different angular positions of pivoting with respect to the second frame around the second axis, a control means easily accessible to the seated person, said first and second locking means being arranged so as to be controllable alternately by said control means, the first locking means comprising two toothed sectors centered on the first axis and adapted to coact between themselves on locking, of which one sector is fast to the first frame and of which the other is mounted in radially sliding manner upon the second frame under the control of a rotating cam fast to a camshaft centered on the second axis, the second locking means also comprising two toothed sectors centered on the second axis and adapted to coact between themselves on locking, of which one sector is fast to the third frame and of which the other is mounted in radially sliding fashion upon the second frame under the control of a rotating cam fast to a camshaft centered upon the first axis and the two cams being permanently elastically urged towards their angular position corresponding to locking.

3,853,296

VEHICLE SEAT WITH SUSPENSION DEVICE

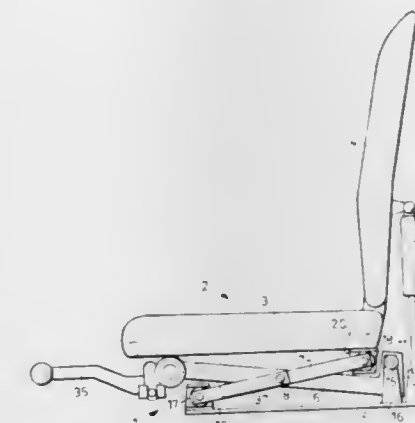
Carl Fredrik Johan Sigvard Forssell, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden
Filed Mar. 2, 1973, Ser. No. 337,364
Claims priority, application Sweden, Mar. 3, 1972, 2741/72
Int. Cl. F16m 13/00

U.S. Cl. 248—399

2 Claims

1. In a vehicle seat with a suspension device comprising two pairs of link arms, at least one of said link arms in one of said pairs of link arms being rigidly joined to the corresponding link arm of the other pair of link arms, said two pairs of link arms being arranged on opposite sides of said seat, a portion of the vehicle supporting said seat, said seat being movable toward and away from said supporting portion in a direction substantially perpendicular to said supporting portion, each of said link arms having three places of connection, namely at said point of intersection, the bottom of said seat and said supporting portion, a first link arm of each of said pairs of link arms being joined pivotally at said three places of connection, the second link arm of each of said pairs of link arms being pivotally joined at one of said places of connection and sub-

stantially horizontally displaceable at said two other places of connection, and spring means to counteract said movement of said seat bottom in said direction towards said supporting portion; the improvement in which the points of pivotal connection of said first arm to said seat bottom and to said sup-



porting portion are at substantially the same horizontal level, said first link arm in each of said pairs of link arms being longer than said second link arm in each of said pairs of link arms, said ends of said first link arm being situated outside said ends of said second link arm seen sideways of said seat.

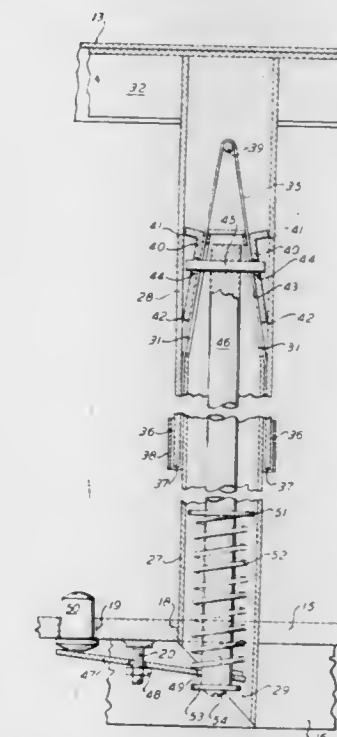
3,853,297

SUPPORTING STAND

J. Guy Drolet, Laval, Quebec, Canada, assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed May 15, 1973, Ser. No. 361,095
Int. Cl. E04g 25/08

U.S. Cl. 248—412

9 Claims



1. A stand comprising a base assembly, a work-supporting surface, a post extending between the base assembly and the work-supporting surface and means for controlling the height adjustment of said surface, said means including inner and outer post sections, the inner section being mounted on the base, the outer section being telescopically fitted over the inner section, the inner section having at least one upper side surface slanted away from an adjacent surface of the outer section to form a wedging space, a vertically movable locking wedge in said space, an actuating rod connected to said wedge and extending downwardly therefrom to a point adjacent the base, a release means in the base, a compression spring effectively interposed between the release means and the actuating rod, the spring being compressible by operation of the release means to bias the actuating rod and wedge toward unlocking

position with a force insufficient to move the wedge until the outer section is lifted.

3,853,298

ENERGY ABSORBING SEAT ADJUSTER

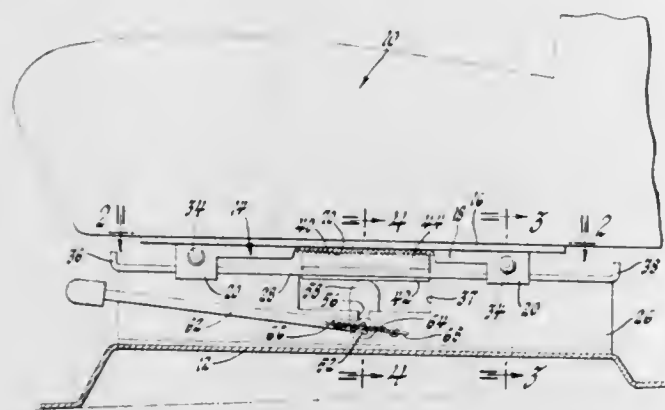
Herbert A. Libbie, Marlette, and Norbert T. Okoniewski, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,606

Int. Cl. B60r 21/10

U.S. Cl. 248-429

1 Claim



1. An energy absorbing device for adjustably mounting a seat in a vehicle body comprising: a first track member attached to the vehicle seat, a second track member attached to the vehicle body, the first and second track members being slidably interengaged to permit longitudinal fore and aft movement of the seat relative to the vehicle body, means limiting vertical movement between the first and second track members, a friction shoe including a backing plate and a shearable friction lining mounted on the backing plate, means mounting the friction shoe on one of the track members to permit vertical movement of the friction shoe to frictionally engage the friction lining with the other track member while preventing longitudinal movement of the friction shoe relative to the one track member, teeth means on the other track member being engaged by the friction lining, occupant actuatable cam means effective to forcibly move the friction shoe vertically to frictionally engage the friction lining with the teeth means of the other track member to selectively lock the track members from movement relative one another and unlock the track member to permit fore and aft adjusting movement of the seat relative to the vehicle body, the frictional engagement of the friction lining of the friction shoe against the teeth means of the other track member being overcome by kinetic impact energy to permit longitudinal movement between the track members and forced sliding of the friction lining against the other track member and shearing of the friction lining by the teeth means to absorb the kinetic impact energy.

3,853,299

APPARATUS FOR PRODUCING TUBING, ESPECIALLY FROM MATERIAL SUITABLE FOR INJECTION MOLDING

Bernhardt Kessel, Ingolstaedter Str. 20, 8073 Koeschling, Germany

Filed Sept. 25, 1972, Ser. No. 292,147

Claims priority, application Germany, Sept. 25, 1971, 2147922

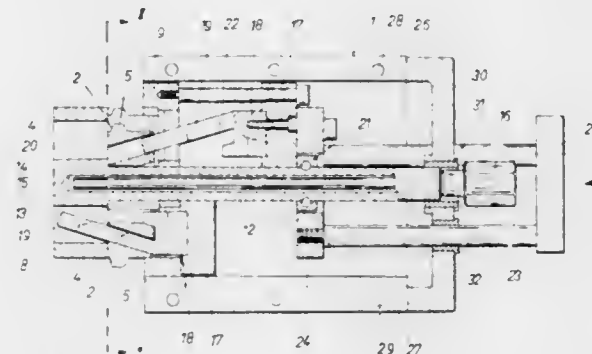
Int. Cl. B28b 7/30

U.S. Cl. 249-178

10 Claims

1. In an apparatus for producing tubing from injection molding material which tubing is provided in its wall with an outwardly directed corrugation produced simultaneously with the injection molding step by means of a forming ring having alternating large and small radially displaceable individual segments which are withdrawn upon the completion of the injection molding steps inwardly toward the longitudinal axis of the apparatus, radially outer surfaces of said segments

defining the inner diameter of the tubing to be molded; the improvement comprising guide means along all the flanks of the large and small segments facing each other and intercoupling said small and large segments whereby radial displacement of said small segments effects radial displacement of said large segments in the same direction and positive drive means operatively connected to said small segments, said drive means extending at an angle relative to said longitudinal axis of the apparatus, and comprising outrigger arms for radially moving said small segments, said outrigger arms extending at an angle relative to the longitudinal axis of the apparatus, said small segments having outwardly extending flanks forming an acute angle (β), said guide means comprising tapered slide guide means on said outwardly extending flanks, said large segments also having flanks with tapered slide guide means for cooperation with said guide means of the small segments, said flanks of the large segment having an included angle (α)



which is larger than the respective angle (β) of the small segments whereby all segments are included in a positive guide for their simultaneous movement radially inwardly and outwardly, a first and second disk, said segments being arranged between said disks, one of said disks having an outer diameter corresponding to the inner diameter of the tubing to be molded, collar bolts for interconnecting said disks and shoulder means for assuring a definite spacing between said disks for assuring a gliding movement of said segments between the disks, said large segments having longitudinal, radially extending apertures through which said collar bolts extend to permit a gliding movement of the segments relative to the respective collar bolt, and relative to said disks, whereby a positive driving force in the radial direction is applied to said small segment prior to the radial withdrawal of said outer surfaces which define the inner diameter of the tubing to be molded.

3,853,300

VALVES FOR THE PRESSURE MEDIUM IN HYDRAULIC OR PNEUMATIC LIFTING DEVICES

Anders Ivar Bryntse, Mjølby, and Karl-Erik Berkestad, Linköping, both of Sweden, assignors to AB Bygg- Och Transportekonomi (BT), Mjølby, Sweden

Filed Sept. 25, 1973, Ser. No. 400,630

Claims priority, application Sweden, Oct. 3, 1972, 12734/72

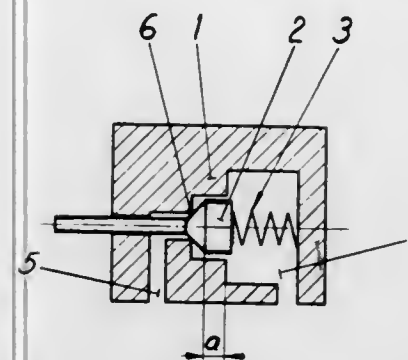
Int. Cl. F16k 47/04

U.S. Cl. 251-120

4 Claims

1. A valve comprising a housing having an inlet and an outlet and a passage between said inlet and outlet, a valve seat formed on said housing and surrounding said passage, a first cylindrical chamber of relatively small diameter on the inlet side of said valve seat, a second cylindrical chamber of relatively large diameter coaxial with said first chamber and on the inlet side of said first chamber, and a valve member recip-

rocable in said passage coaxially of said chambers, said valve member comprising a cone that bears against said seat in the closed position of said valve member, a valve stem reciprocable in said housing on the outlet side of said cone, said cone on the inlet side thereof terminating in a cylinder coaxial with



3,853,301

ROLL JACKS

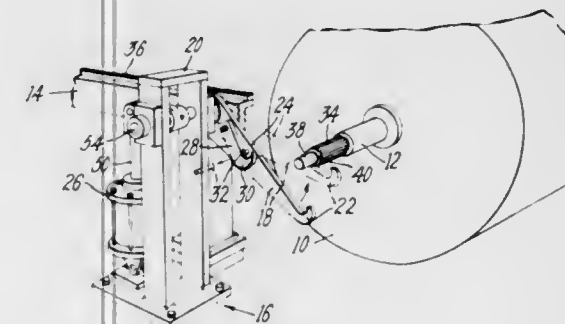
Barney E. Kuonis, 135 McKay St., Beverly, Mass. 01915

Filed May 14, 1973, Ser. No. 359,869

Int. Cl. B66f 3/00

U.S. Cl. 254-124

4 Claims



1. A jack, comprising: a first arm pivoted at one end on a support and having a load retaining hook at the other, free end; means for pivoting the first arm relative to the support; a second arm having a load retaining hook at a free end positioned intermediate ends of the first arm and connected to the first arm at the other end for pivotal movement of the hook of the second arm above a load lifting side of the first arm, which side of the first arm ends in the hook of the first arm; and means operable for retaining the hooked end of the second arm above the lifting side of the first arm.

3,853,302

JACK SUPPORT EXTENDER

Francis D. Voss, P.O. Box 212, Emerson, Nebr. 68733

Filed June 28, 1973, Ser. No. 374,577

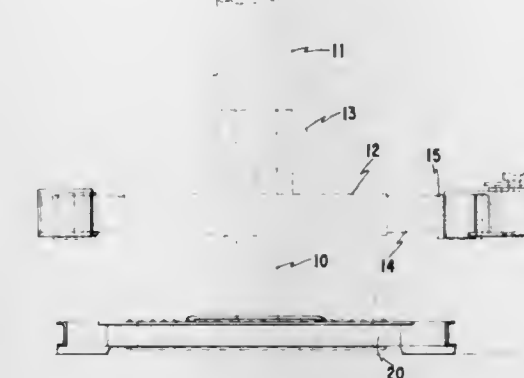
Int. Cl. B66f 13/00

U.S. Cl. 254-133 R

2 Claims

1. In combination a jack having a load engaging arm and a device for extending the arm of said jack, said arm having original cup means forming sockets at the extremities thereof, said device comprising tongue means adapted to be placed in said sockets, said socket is of square cross section and said tongue is of circular cross section having a diameter such that said tongue fits smoothly into said socket and is pivotally engaged therein, said device further comprising auxiliary cup means spaced apart from said tongue means, and support means for said cup means including upper web means attached rigidly to both said auxiliary cup means and said tongue means and bracing web means extending from said

auxiliary cup means toward said tongue means but terminating in spaced relation thereto such that such bracing web means



is adapted to engage said original cup means when said tongue means is placed into said original cup means.

3,853,303

WINCH BRAKE ASSEMBLY

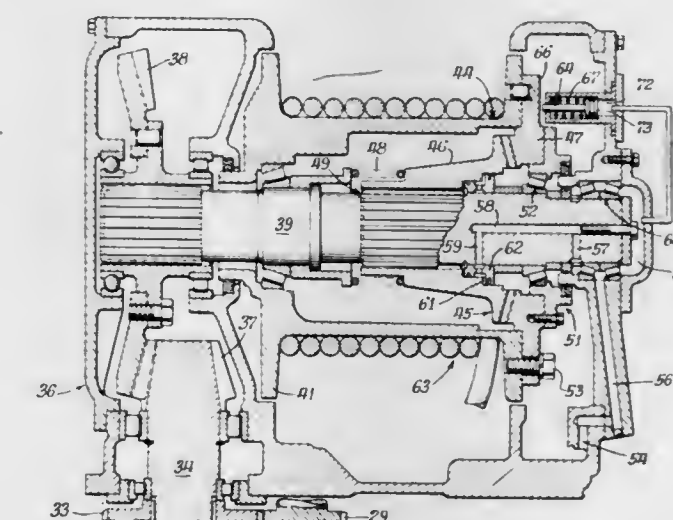
Ronald E. Wineburner, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 8, 1973, Ser. No. 368,232

Int. Cl. C11d 7/00

U.S. Cl. 254-150 R

3 Claims



1. A winch unit comprising a power input member, a power train including at least one clutch coupled to the input member, the power train including an output shaft, a cable drum, a normally engaged gear clutch arranged between the output shaft and the cable drum, the normally engaged clutch being disengageable to permit free-wheeling rotation of the cable drum, and brake means simultaneously actuatable along with the normally engaged clutch to produce limited drag on the cable drum and prevent excessive rotation of the cable drum during free-wheeling operation, the normally engaged clutch and the brake means being hydraulically operable by fluid pressure introduced into the respective actuating chambers in communication with each other.

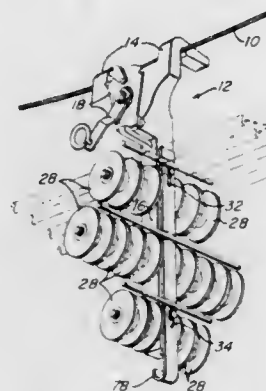
3,853,304

MULTI-SHEAVE AERIAL BLOCK

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Brookville, Ohio
Filed Dec. 4, 1972, Ser. No. 311,804
Int. Cl. B66d 1/36

U.S. Cl. 254-193

15 Claims



1. An aerial block comprising:
 - a. strand engaging hook means,
 - b. an elongated base frame extending from said hook means substantially vertically downwardly during normal use of said block,
 - c. a plurality of axles projecting outwardly from said elongated base frame in vertically spaced, parallel relationship to each other and substantially perpendicular with respect to a strand engaged by said hook means,
 - d. a plurality of grooved sheaves rotatably mounted on said axles for simultaneously receiving a plurality of cables with each of the cables being separately received in a groove of a sheave,
 - e. a single keeper means associated with a plurality of said sheaves received on vertically spaced axles for retaining cables in the grooves of the vertically spaced sheaves when said keeper means is positioned in cable retaining relationship thereto, and
 - f. means mounting said keeper means on said aerial block for moving said keeper means simultaneously from said cable retaining relationship to said vertically spaced sheaves with which it is associated to a second position spaced therefrom and permitting access thereto for the placement or removal of cables in the grooves thereof.

3,853,305

MIXING APPARATUS WITH DROPOUT LOWER PORTION

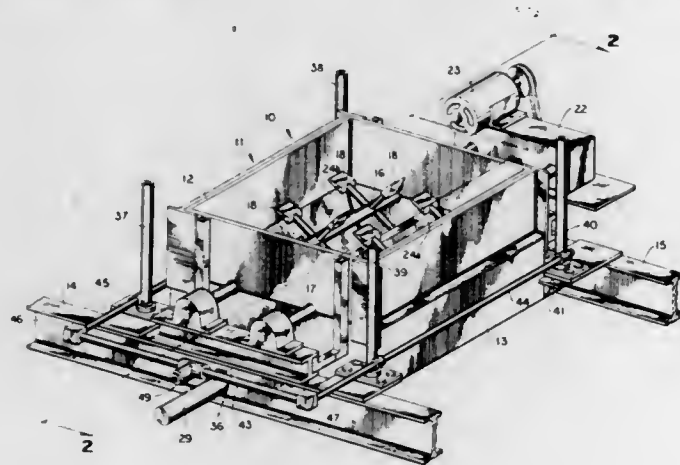
Erbie Gail Mize, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Ind.

Filed Apr. 16, 1973, Ser. No. 351,413

Int. Cl. B01f 7/04

U.S. Cl. 259-179

9 Claims



1. Pugmill mixing apparatus comprising:
 - a. a mixing box for receiving a quantity of material to be

mixed, said mixing box including an upper box portion and a lower box portion;
support means mounting said upper and lower box portions for selective relative positioning in an operational position, whereat said upper and lower box portions are proximal to each other, and to a nonoperational position, whereat said upper and lower portions are separated from said proximal relative position;
at least one rotatable shaft extending through and in fixed position relative to said upper box portion;
motive means operatively connected to rotate said shaft;
a plurality of mixing elements connected to said shaft for mixing movement within said mixing box when said shaft is rotated by said motive means;
said lower box portion having a bottom portion with a material discharge opening disposed therein; and
gate means on said lower box portion and selectively positionable to block or to unblock said discharge opening.

3,853,306

APPARATUS FOR QUENCHING MOLTEN COATINGS

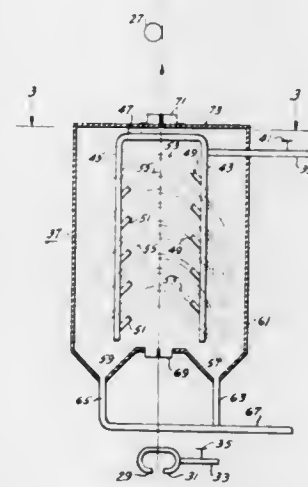
George Padjen, and Joseph A. Brugger, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 213,143, Dec. 28, 1971, Pat. No. 3,743,535. This application Feb. 28, 1973, Ser. No. 336,653

Int. Cl. C21d 1/64

U.S. Cl. 266-3 R

6 Claims



1. Apparatus for cooling moving molten material coated wire-like material comprising:
 - a. a cooling chamber defining a vertical path for said wire-like material,
 - b. means to form at least one liquid cooling jet within said cooling chamber, said means being arranged to direct said cooling jet as a discrete free stream of liquid upwardly at an angle other than vertically with the path of said stream intersecting the path of said wire-like material at the apex of the path of said discrete stream of cooling liquid where substantially all vertical components of the movement of said stream is dissipated,
 - c. said means for forming said liquid cooling jet comprising header means for conveying cooling liquid from an external source into the vicinity of the cooling chamber and nozzle means connected to the header means and inclined upwardly at an angle such that a stream of cooling liquid ejected from the nozzle means is projected upwardly at an angle such that the stream of coolant intersects the path of the wire-like material at the apex of the stream of coolant just prior to beginning to fall in a descending arc downwardly from the said apex, and
 - d. means to collect said descending coolant.

3,853,307

CONDUIT SYSTEM FOR THE TRANSPORT OF HOT GASES, ESPECIALLY HOT-BLAST AIR FOR A BLAST FURNACE, WHICH CONDUIT SYSTEM INCLUDES A CONNECTOR PLUG

Hendrik Gustaaf Otto Weber, Heiloo, Netherlands, assignor to Hoogovens IJmuiden BV, IJmuiden, Netherlands

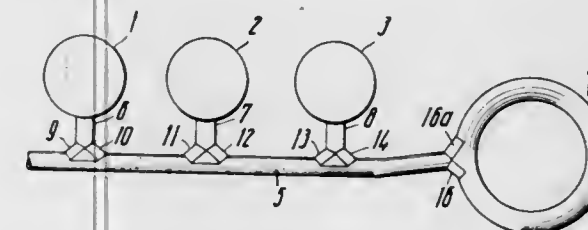
Filed July 18, 1973, Ser. No. 380,237

Claims priority, application Germany, July 19, 1972, 2235416

Int. Cl. F27b 1/10

U.S. Cl. 266-30

7 Claims



1. A conduit system for the transport of hot gases such as hot air blasts from a blast furnace, said system comprising:
 - a. a substantially horizontal metal pipeline having a refractory brickwork lining,
 - b. a pipe section having substantially the same inner diameter as said horizontal pipeline,
 - c. a connection between said pipeline and said pipe section,
 - d. means for bevelling said connection, said means including members comprising portions of a cylindrical surface between said pipeline and said pipe section,
 - e. means for joining said pipe section, pipeline, and bevelling members so that the common transitions of said pipe section, pipeline, and bevelling members at the upper and lower sides of said connection are formed as upper and lower planar surfaces, and
 - f. means for providing a flat suspended brick construction as a refractory lining of said upper planar surface.

3,853,308

APPARATUS FOR LADLE ADDITIONS

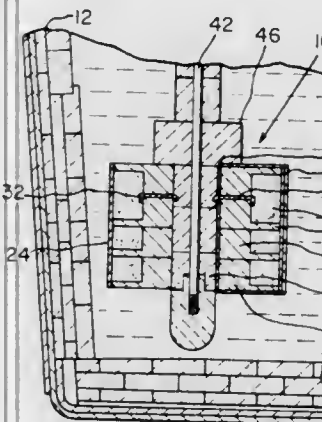
George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Continuation-in-part of Ser. No. 428,764, Dec. 27, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,290

Int. Cl. C21c 7/00

U.S. Cl. 266-34 T

13 Claims



1. A ladle addition assembly suitable for installation on a refractory lined rod extending substantially vertically in a ladle comprising:
 - A. a plurality of stacked container means each having an aligned central opening for positioning on the rod;
 - B. apertured locking plate means positioned adjacent at least one container means, said aperture in registry with the aligned central opening, said plate means slidably accommodating relative movement with the refractory lined rod in a first direction and lockably engaging the rod

to prevent relative movement in an opposite direction; and
C. securement means cooperating with the container means and plate means to maintain the container means and plate means in assembled relationship.

3,853,309

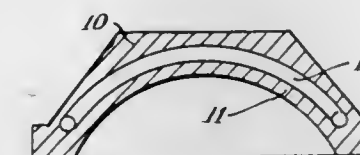
COMPONENTS USING CAST-IN COOLING TUBES
Colin Frederick Widmer, 67 Levenside, Stokesley, Middlesbrough, Teesside, England

Continuation-in-part of Ser. No. 342,486, March 19, 1973, abandoned. This application Feb. 28, 1974, Ser. No. 446,602
Claims priority, application Great Britain, Mar. 20, 1972, 12993/72

Int. Cl. C21b 7/16

U.S. Cl. 266-41

13 Claims



1. A casting intended for heat transference between the body of the casting and a fluid passing through a tube embedded therein during casting, the said tube being a thin walled flexible corrugated tube with an internal surface area between 1.75 and 5 times that of a cylindrical surface of the same diameter as the minimum diameter of the tube.

3,853,310

TAPER LEAF SPRING BLANK

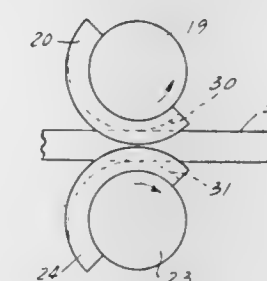
Gus L. Poulos, Winamac, Ind., assignor to Spectra McIntosh Corporation, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,705

Int. Cl. F16f 1/18; B60g 11/02

U.S. Cl. 267-47

1 Claim



1. A tapered leaf spring blank generally rectangular in cross section and having upper and lower high stress surfaces and side edges between said high stress surfaces defining low stress areas of the blank having flash located between the upper and lower high stress surfaces of the blank along the low stress areas along the sides of the blank.

3,853,311

SHOCK ABSORBER FOR AUTOMOBILE BUMPER

Dieter Kreuzer, and Dieter Lutz, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Feb. 20, 1973, Ser. No. 333,978

Claims priority, application Germany, Feb. 26, 1972, 2209158

Int. Cl. F16f 9/346; B60r 19/06

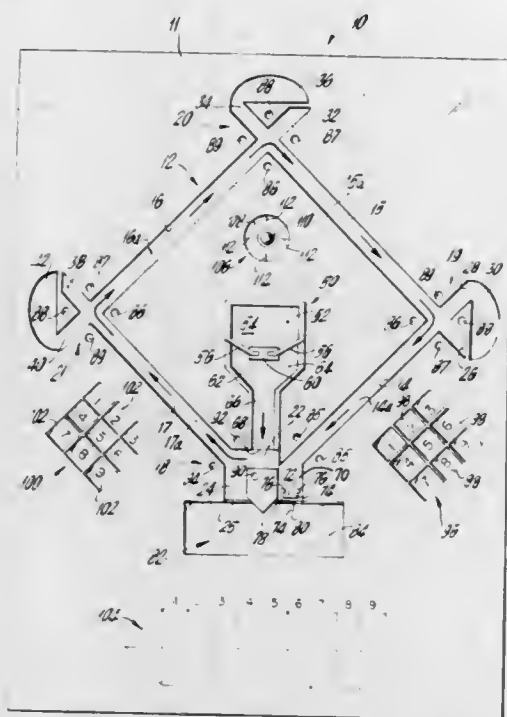
U.S. Cl. 267-64 R

9 Claims

1. An elongated shock absorber comprising, in combination:

out zones provided in proximity to each of the corners in fluid-flow communication with said channel, movement into one or the other of said zones in proximity to any of said corners respectively representing an out or a safe play; and circulating means for circulating a stream of water through

said target and a coil spring extending rearwardly from the center of said target, said spring normally holding said target in forward ball holding position, said target upon being struck being movable rearwardly against the pressure of said coil spring to operate said ball release means.



said diamond-shaped channel, said stream of water having a direction of flow which is opposite to the desired direction of movement of the aquatic animals, wherein the reverse flow of a stream of water through the channel induces an aquatic animal to move around the bases to simulate running of the bases by a baseball player.

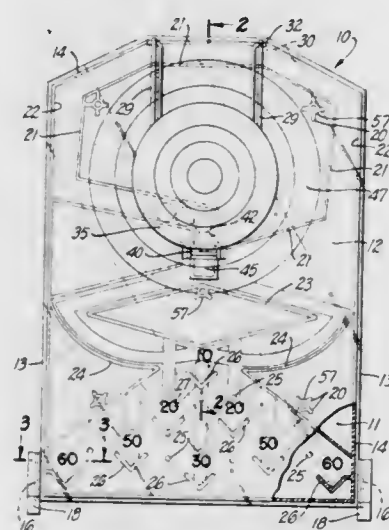
3,853,318

COMBINATION DART AND PINBALL APPARATUS
Bernard J. Cagan, Torrance, Calif., assignor to Placo Products Company, Torrance, Calif.

Filed Apr. 24, 1973, Ser. No. 354,017
Int. Cl. F41j 7/16

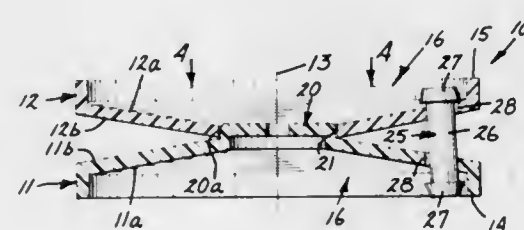
U.S. Cl. 273-102.1 G

5 Claims



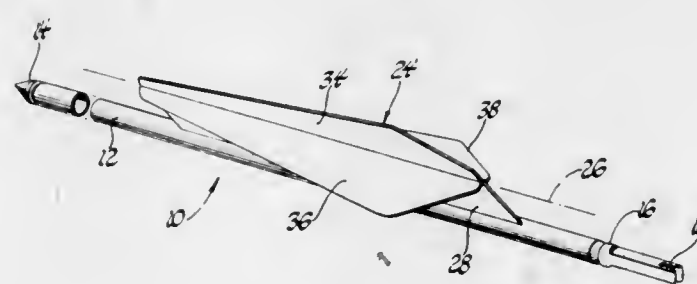
1. A game board for a combination dart and pinball game comprising a substantially vertical game board, a movable target mounted on said board for horizontal movement rearwardly toward and forwardly from said game board, a pinball game area on said board beneath said target, a ball movable along said pinball area, ball release means operable upon rearward movement of said movable target to release said ball for downward movement by gravity along the pinball area of said board, ball holding means disposed behind said movable target, a parallelogram linkage extending between, said movable target and said game board, said parallelogram linkage being connected adjacent to the upper and lower portions of

3,853,319
REUSABLE TARGET PIGEON
Bernard H. Swanson, Champlin, Minn., assignor to Super Pigeon Corporation, Princeton, Minn.
Filed Sept. 19, 1973, Ser. No. 398,570
Int. Cl. F41j 9/00
U.S. Cl. 273-105.4 7 Claims



1. A reusable target pigeon comprising:
 - a. first and second cooperating generally circular body members each having an annular axially inner surface and an axially outer surface;
 - b. connecting means releasably connecting said body members together at their central portion in axial alignment and disposing said inner surfaces thereof in opposed radially outwardly diverging relationship;
 - c. and tie means connected to said body members for limiting movements of said body members away from each other beyond a closely spaced apart relationship when said body members are disconnected from each other at said central portions thereof.

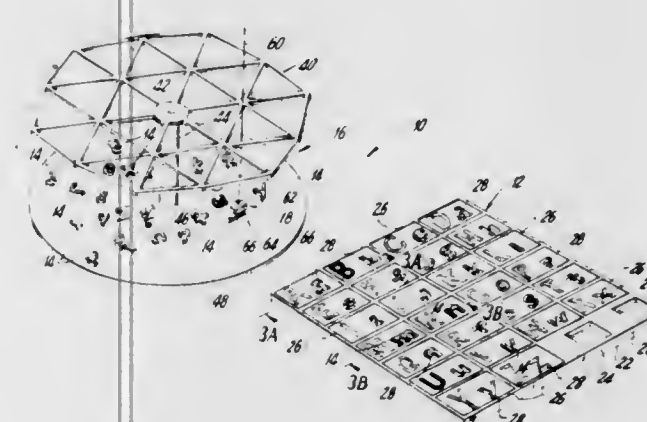
3,853,320
ARROW
Richard F. Carella, 35572 Strathcoma, Mount Clemens, Mich. 48043
Continuation-in-part of Ser. No. 67,365, Aug. 27, 1970, abandoned. This application Dec. 14, 1970, Ser. No. 97,824
Int. Cl. F41b 5/02
U.S. Cl. 273-106.5 C 16 Claims



1. An arrow comprising: a shaft with a forward end and a rearward end, a plurality of vanes extending radially from a common axis, said vanes each being substantially planar, support means having an inward end secured to said shaft

adjacent said rearward end and extending outwardly from said shaft to said common axis to support said vanes in a position where said common axis is spaced outwardly from said shaft at a second end of said support means, said vanes being the sole vanes and disposed on one side of said shaft.

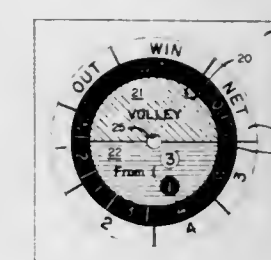
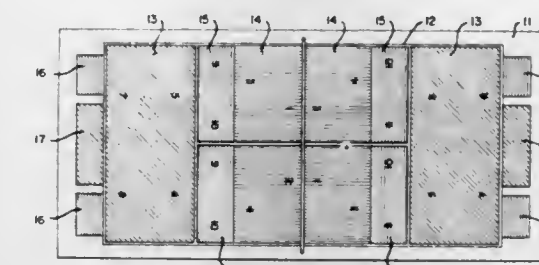
3,853,321
LETTER-NAME PERCEPTION AND DISCRIMINATION GAME APPARATUS
Bruce A. Claffie, 8 Hemlock Dr., Miller Place, N.Y. 11764
Filed Mar. 29, 1974, Ser. No. 456,228
Int. Cl. A63f 3/00
U.S. Cl. 273-130 A 12 Claims



1. A game apparatus for improving the letter-name perception and discrimination capabilities of a player comprising the combination of:
 - a game board having a plurality of cut-outs corresponding in configuration to the letters of the alphabet;
 - a plurality of letter pieces corresponding in configuration and size to said cut-outs in said board, each letter piece being at least in part made of a magnetically metallic material;
 - a grid structure means including a grid spaced from a platform by a post, with the letter pieces being initially placed on said platform; and
 - a magnetic pick-up device which is used by the player for engaging a letter-piece disposed on the platform and lifting same through the grid, after which the player inserts the letter piece in the corresponding cut-out in the game board.

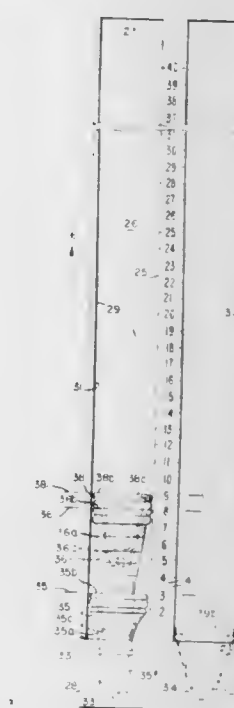
3,853,322
BOARD GAME
Donald W. Mercer, Pittsburgh, Pa., assignor to Donbee Corporation, Pittsburgh, Pa.
Filed June 29, 1972, Ser. No. 267,399
Int. Cl. A63f 3/00
U.S. Cl. 273-134 ES 8 Claims

1. In a board game simulating an athletic contest played on a playing field and including a board representing that playing field and spinner means for determining by chance the outcome of plays selected by a player of the game, the improvement comprising indicia and color on the board designating zones of the playing field occupied by the contestants during the course of the contest and a plurality of spinner cards each adapted to receive and releasably hold the spinner means and each having first indicia determining by chance with said spinner means the outcome of a play and each carrying second indicia independent of the first indicia the indicia and color of the second indicia on a given spinner board indentially corre-



field, which associate that card with a pair of designated zones, one for each of the contestants.

3,853,323
CHESS SET WITH VISUAL MEANS FOR KEEPING A RUNNING SCORE
Henry Gifford, 184-51 Hovenden Rd., Jamaica, N.Y. 11432
Filed Dec. 10, 1973, Ser. No. 424,338
Int. Cl. A63f 3/02
U.S. Cl. 273-137 R 9 Claims



1. In a chess set, the improvement comprising visual means for keeping a running score in a chess game, said means including chess pieces having an engageable portion and a body portion,
 - said engageable portion including one end of a piece and having an engageable surface whose shape and size are the same from piece to piece, said body portion being of variable height from piece to piece,
 - an elongated member having a scale of unit values marked thereon the unit of which is equal to the body portion height of a pawn, said member receiving on each side thereof captured pieces in stacked form with the pieces

on one side being distinguishable from those on the other side, a support adjacent the bottom of the member having engageable means on either side of the member, the first captured piece of one side in a chess game being engageable in one of said engageable means so that a plane passing through said end of said engageable portion of the piece is at a level opposite said scale to permit a reading of the scale to be made, said first piece thus having its engageable portion exposed for engagement by another captured piece, thereby permitting another scale reading to be made, and each additional captured piece of the same side being added in engaging relation to a previously captured piece in the manner described to provide additional scale readings, each stacked piece having a height extending from the said end of the engageable portion thereof to the end of the engageable portion of the next engaging piece below the same which height is directly proportional to the point value of the piece in accordance with the following point value — body portion height relationship: the point value of a pawn being one and the body portion height thereof being a unit distance, the point value of the queen, rook, bishop, and knight being a multiple of that of a pawn in accordance with any conventional point value system and the body portion heights of said queen, rook, bishop, and knight also being multiples of the pawn body portion height, and said last-mentioned multiples being the same as said first multiple, and said scale readings providing a running score of either captured pieces or on-board pieces as said chess game proceeds.

3,853,324

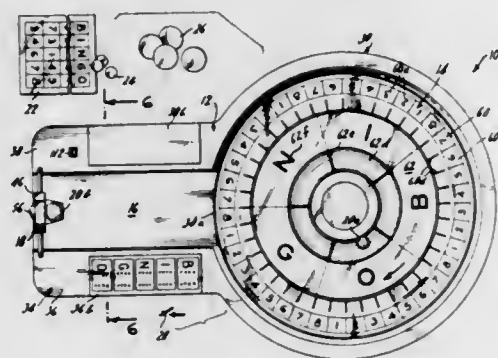
COMBINED GAME OF CHANCE AND SKILL

Lawrence L. Reiner, Hickory Ln., Woodbury, L.I., N.Y. 11797, and William A. Brady, 201 Cross St., Fort Lee, N.J. 07024

Filed Oct. 11, 1973, Ser. No. 405,469
Int. Cl. A63f 5/02

U.S. Cl. 273—142 E

18 Claims



1. A combined game of chance and skill comprising a circular playing field, first and second indicating balls, means for propelling said first and second indicating balls onto said playing field, said playing field including a first rotatable member having first ball-receiving means adapted to receive a first indicating ball, a second rotatable member located between said first rotatable member and said means for propelling said balls, said second rotatable member having second ball-receiving means adapted to receive said second indicating ball, means located on one of said rotatable members for preventing passage of said second indicating ball and permitting passage of said first indicating ball into said first ball-receiving means and means for driving said first and second rotatable members.

3,853,325

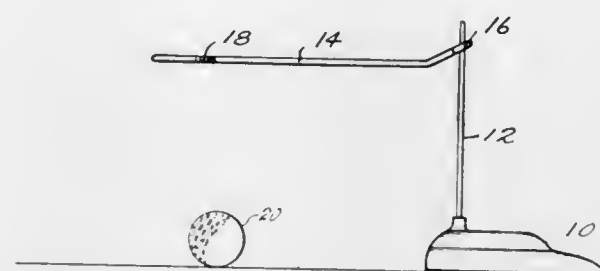
GOLFER'S PRACTICE AID

Norman John Easterbrook, 94 Warrimoo Ave., Sydney, Australia (2075)

Filed June 5, 1973, Ser. No. 367,228
Int. Cl. A63b 69/36

U.S. Cl. 273—183 E

3 Claims



1. A golf practice aid comprising:
a. an upright post secured at one end thereof to a base; and
b. a horizontal sight piece having a collar at one end and a circular golf ball sighting member at the other end thereof, said collar being directly disposed over and contacting said post so as to be releasably located thereon and slideable along said post,
a bend provided intermediate said sighting member and said collar so that interior portions of said collar frictionally engage said post, thereby causing said sighting member to lie in a plane at substantially a right angle to said post, and the height of said post being such that said sighting member may be moved to a position above a golf ball during the execution of a golf club swing for sighting on said golf ball.

3,853,326

TURNTABLE ARRANGEMENT WITH AUTOMATIC RECORD CHANGER SPINDLE

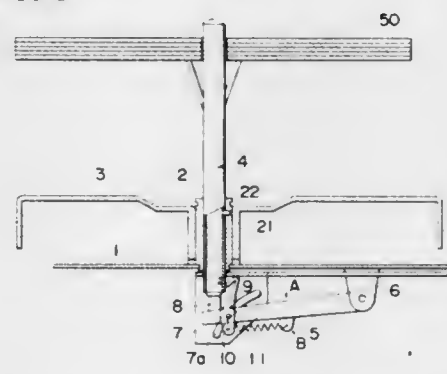
Tomoo Atsumi, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka-fu, Japan

Filed Oct. 17, 1972, Ser. No. 300,420
Claims priority, application Japan, Oct. 21, 1971, 46-83812; Oct. 21, 1971, 46-83813; Oct. 25, 1971, 46-84827; Oct. 21, 1971, 46-97830

U.S. Cl. 274—10 S

Int. Cl. G11b 17/04

4 Claims



1. A record changer spindle, comprising:
a spindle housing of tubular shape and having a plurality of apertures therein;
an inner hollow shaft;
means positioned within said spindle housing and operable in response to the sliding movement of said inner hollow shaft for alternately clamping and releasing a stack of records mounted on said spindle, said inner hollow shaft positioned within said housing and slidable between upper and lower positions, said shaft being coupled to said clamping and releasing means and having an engagement hole formed adjacent a lower end portion thereof, the position of the engagement hole being selected for being withdrawn into said housing when said inner shaft assumes its upper position and extending below said housing when said shaft assumes an intermediate position; and means positioned adjacent the lower portion of said spindle housing, said means comprised of a lever member,

one end thereof being pivotally mounted and the other end being positioned beneath said spindle housing and adapted to move between upper and lower positions, said lever member normally assuming said upper position, an upwardly projecting support member positioned on said lever member adjacent the free end thereof and adapted to contact said inner hollow shaft for support thereof when said lever member is in the upper position, a hook member pivotally mounted on said lever member adjacent said support member, said hook member extending upwardly from said lever member, and a spring member operatively coupled to said hook member for biasing said hook member toward said support member, said hook member thereby contacting the lower portion of said housing when said lever assumes its upper position, whereby downwardly pivoting said lever member terminates support of said inner shaft by said support member and said shaft moves downwardly and, when records are being supported, said shaft moves downwardly to said intermediate position such that said engagement hole extends from said housing, said hook member thereby engages said engagement hole and further downwardly moves said shaft and consequently operates said clamping and releasing means, whereby the lowermost record may be released from the stack.

3,853,327

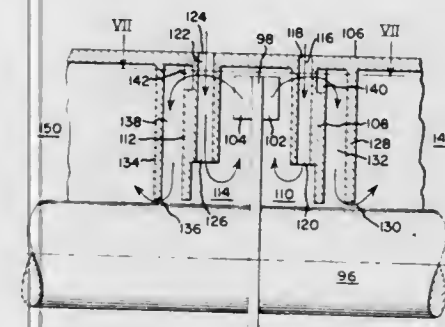
SELF-PRESSURIZING SHAFT SEAL

Veeder C. Nellis, Swampscott, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,164
Int. Cl. F16j 15/00

U.S. Cl. 277—63

11 Claims



1. A self-pressurizing shaft seal for retarding the flow of lubricant through an annular passage defined by a lubricant deflector and a shaft wherein:
a. said shaft includes:
i. flange means mounted on said shaft, and
ii. blade means mounted on said flange means; and
b. said self-pressurizing shaft seal includes:
i. a stationary baffle wherein:
A. said stationary baffle and said shaft define an annular space, and
B. said blade means is disposed in said annular space, and
ii. conduit means for providing a fluid flow path into said annular space, said conduit means having:
A. a first end opening to the environment outside said stationary baffle, and
B. a second end opening inside said annular space and communicating with said annular space at a location radially inward of said blade means, and
iii. duct means for providing a fluid flow path out of said annular space, said duct means having:
A. a first end opening inside said annular space and communicating with said annular space at a location radially outward of said second end of said conduit means, and
B. a second end opening to the environment outside said stationary baffle at a location proximate to said annular passage.

3,853,328

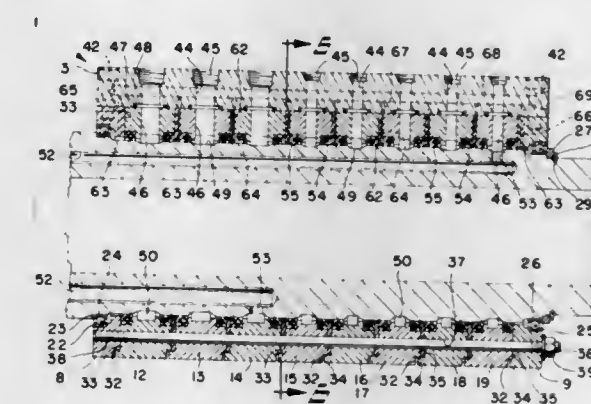
ROTARY SEAL

Ronald F. Pierce, Poland, Ohio, assignor to NRN Corporation, Akron, Ohio

Filed Aug. 27, 1973, Ser. No. 391,579
Int. Cl. F16j 15/32, 15/40

U.S. Cl. 277—72 R

14 Claims



1. A rotary seal for transmitting fluid from a stationary manifold to a rotatable shaft comprising an annular section member with radially extending sides having a fluid passage extending from said manifold to said shaft, a pair of annular seals at opposite sides of said fluid passage for sealing the space between said annular section member and said shaft, backing members at the sides of said annular section member overlapping said seals and said backing members having lubricating passages extending from said manifold to said seals for communicating lubricant to said seals.

3,853,329

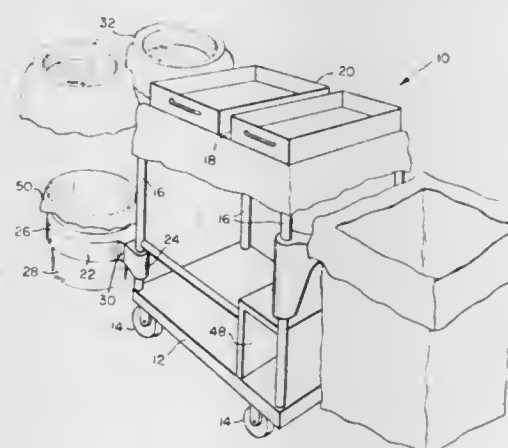
SURGICAL SUPPLY CART

Robert Louis McDonald, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 23, 1973, Ser. No. 391,003
Int. Cl. B62b 3/00

U.S. Cl. 280—47.35

4 Claims



1. A surgical supply cart capable of being loaded with supplies for use during a surgical procedure and then steam sterilized to sterilize both the cart and supplies, including a mobile base, a plurality of spaced upright support members on said base, and a top supported on said upright members, the improvement comprising:
a. a container support bracket including
i. a first portion pivoted to one of said upright members for movement in a horizontal plane; and
ii. a second, container supporting portion pivotally attached to said first portion for movement about a horizontal axis extending axially of said first portion, said bracket capable of moving a container supported thereby on said first portion between a first position located outwardly from under said top and a second, inverted position located wholly beneath said top;

- b. basin support means having one end pivotally attached to said cart beneath said top for movement in a vertical plane to move a basin supported thereby between a first position extending outwardly of said top to a second inverted stored position located wholly beneath said top; and
- c. a linen bag support frame pivoted to another of said upright members for movement in a horizontal plane from a first position extending outwardly from said top to a second stored position located wholly beneath said top.

3,853,330

DEVICE FOR LOCKING A TOW BAR TOGETHER WITH A STEERING MEMBER

Hiroshi Hanaoka, Tokyo, Japan, assignor to Hanaoka Sharyo Company Limited, Tokyo, Japan

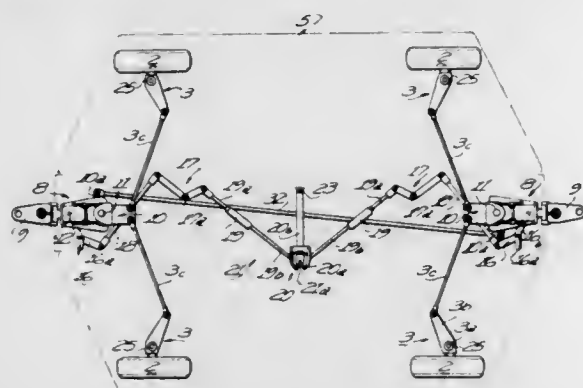
Filed Apr. 28, 1972, Ser. No. 248,578

Claims priority, application Japan, May 1, 1971, 46-29301; Oct. 30, 1971, 46-86582; Oct. 30, 1971, 46-101394; Oct. 30, 1971, 46-101395

Int. Cl. B62d 13/06

U.S. Cl. 280—99

6 Claims



1. A device for locking a tow bar together with a steering member of running wheels in a trailer which is adapted to be incorporated with other trailers to form a train, characterized in that said locking device comprises a vertical set pin secured to the end portion of a trailer body, a steering member rotatably supported by said set pin and having a longitudinal slit, an engaging member rotatably supported by said set pin and rigidly connected with one end of a tow bar, said engaging member having a slit which involves a locking portion and a releasing portion, a slide member inserted into said slits so as to be engaged with said engaging member at said locking portion and disengaged from said engaging member at said releasing portion in connection with a circular direction in which said engaging member is rotated about said set pin, and means for automatically shifting said slide member from said locking portion to said releasing portion and vice versa, said shifting means having a caster supported under said trailer body rotatably around a vertical axis when said trailer body is on the ground by traction power applied to the train of trailers.

3,853,331

INFLATABLE OCCUPANT RESTRAINT SYSTEM

Trevor O. Jones, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1973, Ser. No. 427,341

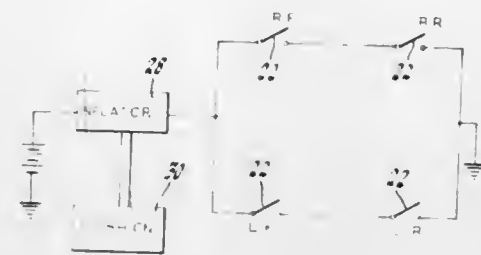
Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

3 Claims

1. In combination with a vehicle including a sprung body, an unsprung mass supporting the body, a plurality of extendible and retractable shock absorbers connected between the sprung body and unsprung mass and arranged in pairs along the respective sides of the sprung body, an occupant restraint system comprising, an inflatable occupant restraint cushion, means for inflating the cushion, means on each shock absorber sensing substantially full extension thereof, and control

means responsive to the sensing means of one of the pairs of shock absorbers sensing substantially full extension of their



respective shock absorbers occurring upon roll-over separation of the sprung body and unsprung mass for actuating the inflating means to inflate the cushion.

3,853,332

POROUS DIFFUSER FOR GAS SUPPLY TO PASSENGER RESTRAINT

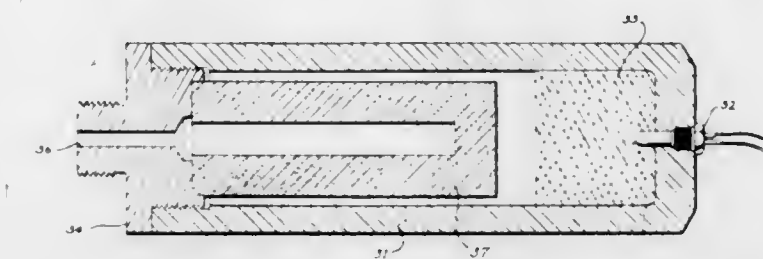
Robert W. Lynch, Fountain Valley, Calif., assignor to Specialty Products Development Corporation, Oak Creek, Wis.

Filed Mar. 31, 1972, Ser. No. 240,035

Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

4 Claims



1. In an improved inflatable bag passenger restraint system comprising a gas pyrotechnic generating composition, an inflatable passenger restraint bag, a flow limiting orifice through which gas from the pyrotechnic composition passes before entering the inflatable bag, the improvement comprising a porous diffuser through which substantially all of the gas passes between the pyrotechnic composition and the flow limiting orifice in the form of a hollow cylinder having its exterior in fluid communication with the pyrotechnic composition and its inside in fluid communication with the flow limiting orifice, and having a sufficient mass to reduce the temperature of the gases from the pyrotechnic composition to less than about 200°F at a point where the gases enter the bag.

3,853,333

AUXILIARY SAFETY WHEEL

Joseph Sancho, and Willie Elliott, both of Newark, N.J., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 12, 1972, Ser. No. 288,272

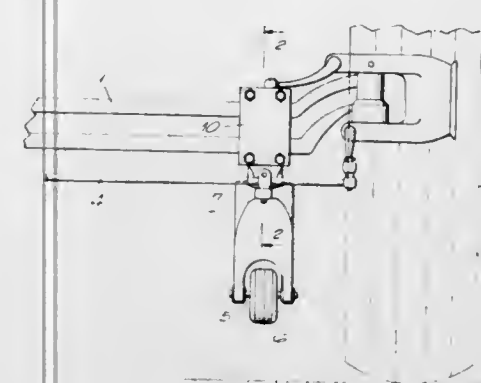
Int. Cl. B60r 27/00

U.S. Cl. 280—150 A

3 Claims

1. An auxiliary safety wheel device for a motor vehicle having an axle comprising substantially an I beam having spaced parallel flanges, a primary wheel having a specific diameter on the axle and an inflated tire on the primary wheel, said safety wheel device comprising an auxiliary wheel of smaller diameter than the primary wheel; and mounting means removably clamping the auxiliary wheel to the axle in proximity with the primary wheel in a manner whereby the auxiliary wheel is normally free from contact with the ground but comes into contact with the ground when the tire on the primary wheel is deflated, the mounting means comprising a pair of substantially E-shaped clamping members gripping the axle between them and a

pair of bolts securing the clamping members to the axle substantially astride the flanges of the axle, each of the clamping members having three projections spaced from



each other and clamping the axle in a manner whereby the flanges of the axle extend into the spaces between the projections.

3,853,334

OCCUPANT RESTRAINT SYSTEM

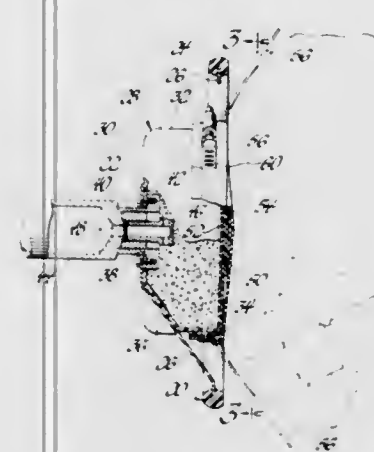
John T. Auman, Washington, and Robert L. Hodgson, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 314,120

Int. Cl. B60n 21/08

U.S. Cl. 280—150 AB

3 Claims



1. An occupant restraint system for a vehicle comprising, in combination, encapsulating means mounted on the vehicle and including a rupturable outlet, a compressed mass of foam material within the encapsulating means, an expandable occupant restraint communicable with the encapsulating means through the rupturable outlet, a source of fluid for interacting with the mass of foam material to expand the foam material to substantially the uncompressed volume thereof by absorption of the fluid when the mass of foam material is released from the encapsulating means, means communicating the source with the encapsulating means, and means for rupturing the rupturable outlet upon communication of the source with the encapsulating means to release the mass of foam material for expansion by absorption of the fluid and for flow with the fluid to the restraint, the fluid and the expanded foam material within the restraint cooperatively absorbing the energy of impact forces upon occupant engagement with the restraint.

3,853,335

DRAFT ARM LATCH ASSEMBLY

Edward B. Heckenkamp, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 29, 1973, Ser. No. 410,907

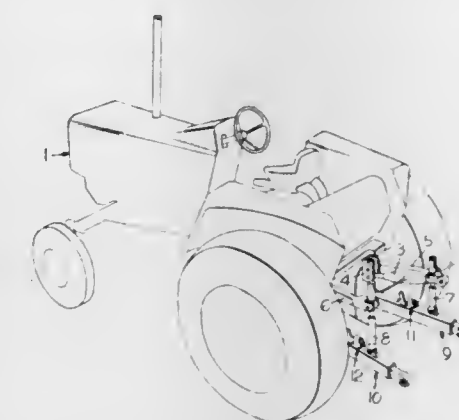
Int. Cl. B60d 1/00

U.S. Cl. 280—478 R

10 Claims

1. In an extensible draft arm assembly of a tractor three-point hitch comprising, a lower draft arm assembly including

a draft arm adapted for connection to a tractor and an extension link telescoping within the draft arm, the improvement comprising hook means on the end of said extension link defining a latch engaging surface, a latch on said draft arm for latching said extension link in a contracted position on said draft arm including a latch housing connected to said draft



3,853,336

TELESCOPING EXPANSION JOINT FOR TUBULAR ELEMENT

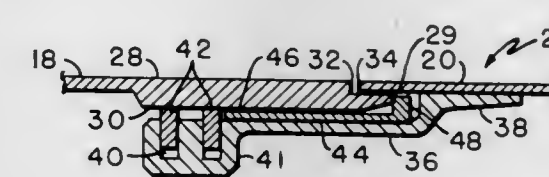
Wayne C. Shank, Tucson, Ariz., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 3, 1973, Ser. No. 385,540

Int. Cl. F16l 55/00

U.S. Cl. 285—18

5 Claims



1. An expansion joint for sealing the connection between first and second tubular sections, said sections having equal inner diameters and being directly adjacent each other in assembled form, said expansion joint comprising:

- a sleeve surrounding said sections at the junction thereof, said sleeve having an inner diameter greater than the outer diameter of said sections to form an annular chamber between said sections and said sleeve, one end of said sleeve being peripherally secured to one of said sections; an inwardly facing circumferential groove in said sleeve adjacent its other end;
- a piston-type flexible ring received in said inwardly facing groove, said piston ring having an inner diameter less than the outer diameter of said other section so that the inner diameter of said piston ring sealingly engages the periphery of said other section when said sections are connected;
- an annular assembly ring telescoped into said sleeve at said groove for expanding said piston ring into said groove, said assembly ring having an inner diameter greater than the outer diameter of said other section to permit said other section to be telescoped into said assembly ring; and
- means defining an interference clearance between the end of said inner section and said assembly ring so that when said other section is telescoped into said sleeve, said section displaces said assembly ring axially clear of said

piston ring and into said annular chamber, thus permitting said piston ring to contract and sealingly engage said other section.

3,853,337

FLEXIBLE ELBOW JOINT FOR PIPES

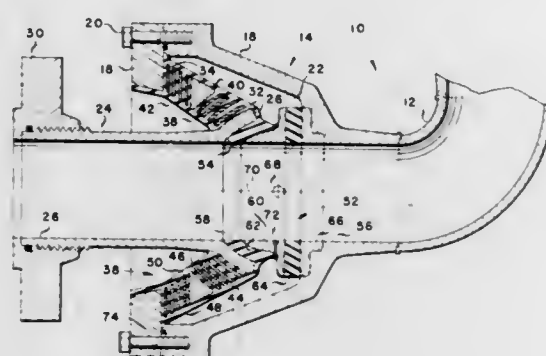
John T. Herbert; Paul E. Sullivan, and Stanley P. Vitt, Jr., all of Redlands, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 25, 1974, Ser. No. 445,149

Int. Cl. F16l 27/10

U.S. Cl. 285-49

4 Claims



1. A flexible elbow joint for pipes comprising:
 - a 90° elbow subtended by identical flexure units, each unit comprising:
 - an annular housing with a central cavity and a centrally perforated end flange;
 - a nipple partially submerged in said cavity;
 - a spherically flared end on the submerged portion of the nipple;
 - a first annular, elastomeric seal assembly being disposed in said cavity and extending between the nipple end and the housing end flange and closing said cavity;
 - said first seal assembly being comprised of a first reinforced elastomeric element bonded to the exterior surface of the nipple end, a second reinforced elastomeric element bonded to the interior surface of the end flange, and an annular, rigid transition element between said first and second elastomeric elements, said transition element being bonded to said elastomeric elements;
 - a second annular, elastomeric seal assembly being disposed interiorly of said nipple end and bridging said nipple and said housing to provide a constant inside diameter for said flexure unit;
 - said second seal assembly being comprised of a first ring member resting against the housing, a ball member having a spherical surface complementary to the interior surface of the nipple end, a first elastomeric element bonded to said surfaces of the nipple and said ball member, and a second elastomeric element bonded to the ball member and the ring member;
 - said ball member having an opening to provide for fluid communication between the joint interior and the closed portion of the housing cavity;
 - said first elastomeric elements of the first and second seal assemblies having a common center of rotation in the central axis of the joint to provide omnidirectional flexure movement of said nipple with respect to said housing;
 - and said second elastomeric elements of the first and second seal assemblies being configured to provide for lateral movement of the nipple with respect to said housing.

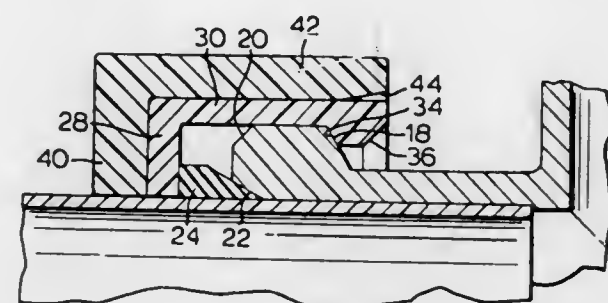
3,853,338
COUPLING

William W. Wilson, Mississauga, Ontario, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa. Division of Ser. No. 276,553, July 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 210,283, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 35,636, May 8, 1970, abandoned. This application Jan. 7, 1974, Ser. No. 431,260

Int. Cl. F16l 21/04

U.S. Cl. 285-86

1 Claim



1. A coupling for connecting a first member telescoped within a second member comprising,
 - a connector slidably mounted on said first member and having a continuous skirt portion spaced from said member and extending from an end closure through which said first member passes in sliding relation towards an open end of said connector, a resiliently deformable first flange depending from said skirt portion inwardly towards said first member,
 - a second flange integral with said second member and depending outwardly from said second member, the relative depths of said flanges being such that they overlap each other,
 - said second flange including an inclined surface which forms with said first member a wedge-shaped channel, said first flange having a face inclined in a direction outwardly from said skirt portion towards said open end, said second flange having a face correspondingly inclined, said inclined faces registering with each other when said second flange is disposed inwardly of said first flange relative to said open end, in which position said flanges overlap one another thereby inhibiting removal of said connector from engagement with said second flange, said inclined faces allowing the face on said first flange to ride up the inclined face on said second flange as said first flange resiliently deforms to aid removal of said connector from engagement with said second flange if sufficient opposed force is applied between the connector and the second member,
 - said first flange including a second inclined face whereby said first flange tapers towards said first member, and said second flange has a further inclined face inclined correspondingly to said second face on said first flange whereby said second flange tapers away from said second member,
 - a rigid cover member slidably mounted on said first member, said cover member including a skirt portion extending from an end closure through which said first member passes in sliding relation towards an open end of said cover member,
 - said cover member overlying and engaging said connector, the inner surface of said skirt and end closure of said cover member engaging the outer surface of said skirt and end closure of said connector respectively, thereby inhibiting removal of said connector from engagement with said second flange without removal of said cover member, and
 - wedge-shaped sealing material wedged in said wedge-shaped channel between said first and second members and held in position by engagement with the inner wall of

the end closure of said connector and through the connector holding the flanges in engagement.

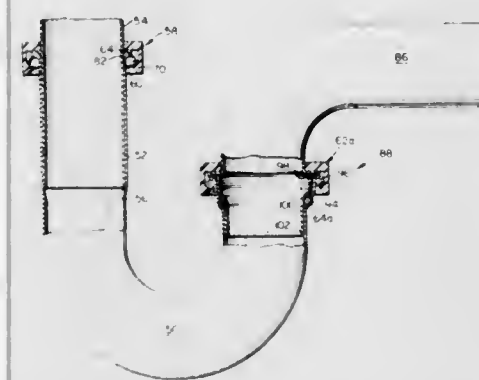
3,853,339
COUPLING

William W. Wilson, Mississauga, Ontario, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa. Division of Ser. No. 276,553, July 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 210,283, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 35,636, May 8, 1970, abandoned. This application Jan. 23, 1974, Ser. No. 435,819

Int. Cl. F16l 21/04

U.S. Cl. 285-157

3 Claims



1. A coupling assembly for connecting first and second tubular members together comprising a first shaped end section formed integrally on said first member and including a first annular wall flange and a wall portion axially spaced from said wall flange and extending axially and radially inwardly from said wall flange and terminating in a tubular open end of said first member, a second shaped end section formed integrally on said second member and including an enlarged wall portion extending radially outwardly from the normal flow passage of said second member and terminating in a second flange at the open end of said second member, said enlarged wall portion of said second member telescopically receiving said wall portion of said first member with said tubular end of said first member slidably received within the normal flow passage of said second member, said first and second flanges being sized to axially abut each other and a circumferential portion of said first shaped end section between said wall flange and said tubular end sized to abut an annular interior portion of said second shaped end section, a flexible sealing ring provided exteriorly of said tubular end of said first shaped end section, and a connector having an end closure axially slidably movable along said first member into abutment with the rear side of said first flange to move said first flange and said circumferential portion of said first shaped end section into abutment with said second flange and said annular interior portion of said second shaped end section respectively, and to move said sealing ring into a channel defined between said axially and radially extending wall portion and said enlarged wall portion, said connector having an axial skirt portion extending from said end closure axially beyond said first flange towards an open end of said connector, said skirt portion having a locking flange extending radially inwardly towards said end section of said first member, the relative radial depths of said locking flange and said second flange being such that they overlap each other, said connector being an integral annulus of relatively stiff plastic material which is capable of sufficient radial flexure to enable said locking flange to expand and pass over said second flange under a manually applied axial force and then relax into an interlocking position in which said locking and second flanges inhibit relative axial displacement of said connector away from said second flange and maintain said first and second members connected together with said sealing ring compressed between said wall portion of said first member and said enlarged wall portion of said second member.

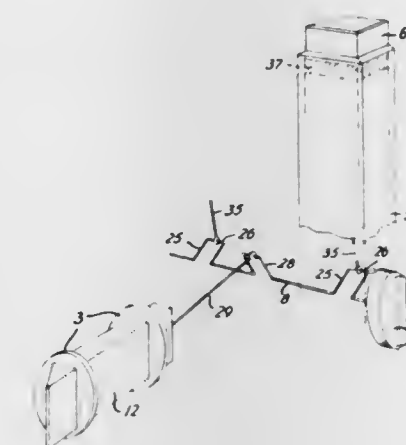
3,853,340
DOOR LOCK

Soren Christian Schoubye Arfelt, Ebberup; Ib Christian Clausen, Alsted; Johannes Jensen, Odense; Knud Hansen Fynbo, and Jean Arnold Fischer, both of Hjallesø, all of Denmark, assignors to Daempa A/S, Knarreborg, Denmark. Continuation of Ser. No. 340,583, March 12, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,601. Claims priority, application Denmark, Mar. 20, 1972, 1300/72

Int. Cl. E05b 55/00; E05c 1/16

U.S. Cl. 292-165

9 Claims



1. A lock for a door or the like, comprising in combination a bolt urged against an engaged position, gripping means adapted to be mounted on a side of the door and including an elongated housing adapted to be secured to and in spaced relation to the door, press means operatively connected to said bolt and being carried by said housing for movement relative thereto, and separate operating means having first and second positions, said first position permitting normal movement of said press means and said second position causing said press means to be located in a displaced condition relative to said housing.

3,853,341
DOOR LATCH SET

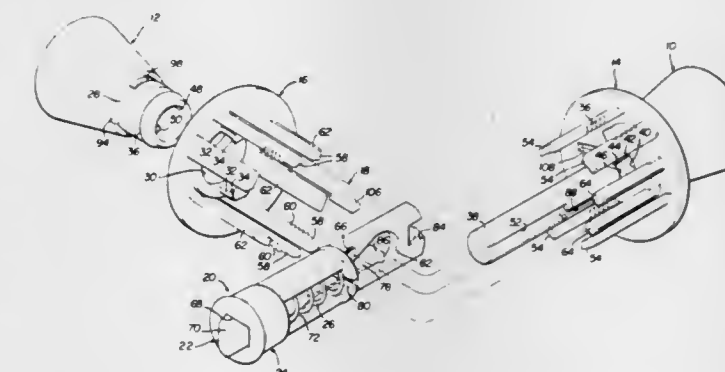
Robert D. MacDonald, Metamora, Mich., assignor to Cardinal of Adrian, Inc., Dryden, Mich.

Continuation-in-part of Ser. No. 227,407, Feb. 18, 1972, This application Jan. 18, 1973, Ser. No. 324,604

Int. Cl. E05c 1/12

U.S. Cl. 292-171

9 Claims



1. In a door latch set for use in a door having a face-to-face rotor receiving through hole and an edge-opening latch bolt receiving blind hole perpendicularly intersecting said rotor hole, and wherein a latching element reciprocates within the latch hole between latched and unlatched positions upon

rotation of either of two rotors rotably mounted in and at opposite ends of the rotor hole;

the improved means for keying said two rotors for simultaneous rotation and for interlockingly coupling said latching element to said rotors so that it will respond to such rotation; comprising:

an elongated shaft extending coaxially from a first of said rotors for rotation therewith and adapted to extend at least halfway through the rotor hole, said shaft being provided with an elongated exposed open ended side slot extending longitudinally from its inner end towards said rotor, at least a portion of the length of said slot being undercut so that the side opening of said slot is narrower than the base thereof;

the second rotor having a coaxial bore at its inner end adapted to receive said shaft when the latch set is assembled, said second rotor further having a longitudinally extending key-like rib projecting into said bore and adapted to enter and fit snugly in said shaft slot on axial assembly movement of the shaft and second rotor relatively;

the innermost tip of said latching element being enlarged and shaped so as to enter and be received in said undercut portion of said shaft slot when the shaft is slid axially in a relative longitudinal direction towards said second rotor, the enlarged tip of said latching element within the undercut slot preventing its withdrawal from said undercut portion of said shaft slot when the shaft is rotated; said interconnection of said rib and said shaft causing said rotors to be keyed and to rotate together upon rotation of either one, and such rotation causing longitudinal movement of said latching element within the latch hole of the door.

3,853,342

DOOR RETAINER LATCH

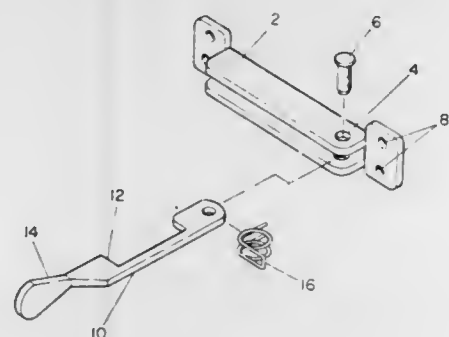
Robert Alfred Merrick, 743 S. Bryant St., Denver, Colo.

Filed May 14, 1973, Ser. No. 359,797

Int. Cl. E05c 17/04

U.S. Cl. 292-262

1 Claim



1. A door retainer latch device intended for use on a trailer, mobile home, recreational vehicle, and the like having an entryway providing access to the interior thereof, the entryway having an outer entryway door, such as a storm door, panel type protective travel door, or the like, and an inner entryway door provided for permitting the selective entrance into the trailer or the like, the latch device adapted for selectively engaging a top edge, bottom edge, or side edge of the outer door furthest from the hinged side edge thereof in a manner to latch the outer door in a fully opened position relative to the entryway with the outer door lying in spaced parallel juxtaposition to a side wall of the trailer or the like on which the latch device is mounted, the latch device comprising:

a longitudinally elongated channel shaped body portion having a U-shaped cross-section, the body portion including parallel vertically spaced apart horizontally extending side walls, each side wall having a back side edge, a front side edge, and opposed end edges;

a pair of flat rectangularly shaped mounting members, each mounting member affixed to one end of the side walls

normal to the plane thereof and extending outwardly from its associated end in a wing-like manner, each mounting member being substantially co-planar with the plane defined by the bottom edges of the side walls;

a pair of mounting holes disposed in each mounting member and extending completely therethrough adapted to receive mounting means for affixing the mounting members and interconnecting channel shaped body portion to a side wall of the trailer or the like;

a hole disposed in one end of each body portion side wall and extending completely therethrough, the holes being in axial alignment with each other;

a pivot pin member including a cylindrical shank of a diameter to be axially inserted through the aligned holes in the body portion side walls bridging the slot gap therebetween;

a latch arm formed of flat substantially rectangular stock material having opposed longitudinally extending side edges, a back end, and a front end, the latch arm being of a thickness less than the width of the slot formed between the body portion side walls to permit free receipt of the latch arm therebetween;

an opening extending through the latch arm adjacent the back end thereof for receiving the pivot pin therethrough to pivotally mount the latch arm to the body portion between the side walls with the latch arm being pivotally movable between a closed position received between the side walls and an open position projecting outwardly of the front edge of the side walls;

a handle member formed integrally with the front end of the latch arm and projecting outwardly therefrom, the handle disposed in a plane extending normal to the plane of the latch arm and adapted to be readily gripped by an individual's hand when the latch arm is completely received between the side walls in its closed position with the handle portion projecting longitudinally outwardly of the adjacentmost end edge of the side walls in a manner parallel to the wing-like mounting members;

a rectangularly shaped recess provided in the latch arm along the side edge thereof adjacentmost the back edge of the body portion side walls when the latch arm is in the closed position, the recess being of a size and configuration adapted to engage therein an edge of the outer door; and

a coiled spring disposed concentrically about the pivot pin and having one end affixed to the body portion side walls and having its opposite end in engagement with the latch arm for resiliently biasing the latch arm into the closed position, the opening of the latch arm serving to tension the spring such that upon release of the latch arm the spring tends to bias the latch arm into the direction of its closed position.

3,853,343

BURGLARPROOF CHAIN GUARD

Robert E. Hunter, Spokane, Wash., assignor to Continental Lektroniks Corp., Spokane, Wash.

Filed Apr. 16, 1973, Ser. No. 352,050

Int. Cl. E05c 17/36

U.S. Cl. 292-264

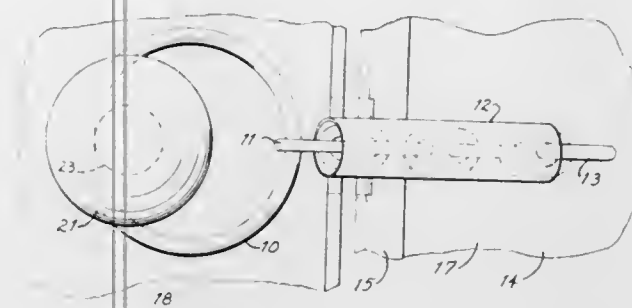
1 Claim

1. A burglarproof chain guard for a door mounted within a building wall for hinged movement into a room and having an enlarged doorknob on a reduced support stem facing toward the room, comprising:

a stationary anchor embedded into the framework around the door opening within the room and adjacent to the doorknob when the door is closed;

a metal ring having an inside diameter slightly greater than the doorknob diameter to enable the ring to be passed over the doorknob and rest upon the stem thereof;

a chain interconnecting the anchor and ring, the length of the chain being just adequate to permit the ring to pass over the doorknob when the door is closed; and



a straight cylindrical steel sleeve enclosing substantially the entire length of the chain within the sleeve and freely rotatable on the chain.

3,853,344

IMPACT ABSORBING BUMPER SYSTEM

Hideo Shimoe, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

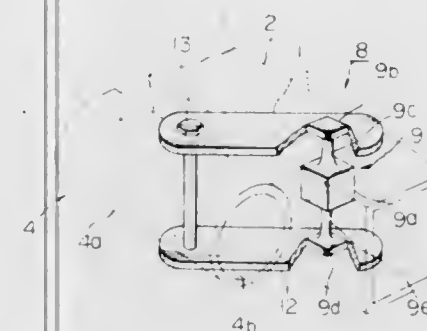
Filed Nov. 16, 1972, Ser. No. 307,233

Claims priority, application Japan, Nov. 16, 1971, 46-107173

Int. Cl. B60r 19/04; F16f 1/16

U.S. Cl. 293-84

1 Claim



1. An impact absorbing bumper system for a wheeled vehicle which has an end cross member, and at least one side frame extending from the end cross member inwards and substantially longitudinally of the vehicle comprising:

a bumper outside the end cross member; a retractable strut integrated with said bumper and extending from said bumper through the end cross member inwards and substantially longitudinally of the vehicle; and mounting means, which comprises a torsion bar embedded in the side frame, for mounting said retractable strut on said side frame, resisting an impact force transmitted from said retractable strut upon a collision of the vehicle with a solid barrier at low-intermediate speed and converting a portion of an impact transmitted from said retractable strut to a torsion energy of said torsion bar upon a collision of the vehicle with a solid barrier at high speed, said mounting means further comprising two arms integrated with said torsion bar and extending from upper and lower ends of said torsion bar to said retractable strut for holding said retractable strut therebetween; and fastening means for fastening said two arms to said retractable strut, said mounting means further comprising a block built in said side frame, in which block said torsion bar is embedded, and said torsion bar still further comprising a central portion having a square cross-section; an upper end having a square cross-section; a rod portion interconnecting said central portion and said upper end; a lower end having a square cross-section; and a second rod portion interconnecting said central portion and said lower end, and wherein said torsion bar is embedded at the central portion thereof in said block built in said side frame.

3,853,345

SUCTION GRIPPING DEVICE

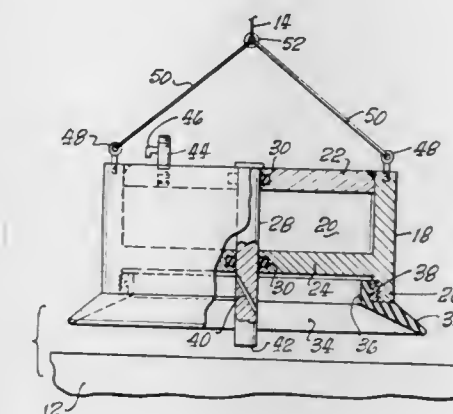
Donald Miller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1973, Ser. No. 420,404

Int. Cl. B66c 1/02

U.S. Cl. 294-64 R

9 Claims



1. A suction device for gripping an object comprising: a container which has a compartment which is capable of withstanding a vacuum relative to ambient pressure; a plunger slidably and sealably extending through the wall of said container; elastomeric means mounted to the exterior of the container about said plunger for forming a chamber about the plunger; the elastomeric means having a periphery which lies in a plane and is capable of making sealing engagement with said object; said elastomeric means being resilient so that after the periphery of the elastomeric means makes engagement with the object the container can be pushed toward the object a distance during which the periphery of the elastomeric means maintains sealing engagement with the object; said plunger extending beyond the container so as to be capable of engaging the object and sliding toward the vacuum compartment when the elastomeric means is pushed against the object; and said plunger having a passageway for communicating the chamber with the vacuum compartment when the plunger is slid toward the compartment; said passageway communicating the chamber with the vacuum compartment only after the periphery of the elastomeric means makes sealing engagement with the object; whereby upon pushing the elastomeric means against the object a vacuum is established in the chamber and the object is gripped by said device.

3,853,346

CRANE BUCKET EQUIPMENT

Raymond O. Jobst, 1476 Trotwood Ave., Mississauga, and William A. Perry, 28 Lewin Cres., Ajax, Ontario, both of Canada

Division of Ser. No. 178,005, Sept. 7, 1971, Pat. No. 3,780,880. This application Nov. 7, 1973, Ser. No. 413,668

Int. Cl. B67c 3/34

U.S. Cl. 294-72

5 Claims

1. Hydraulic opening means for a container normally suspended comprising:

an actuating hydraulic cylinder; an actuatable reversible hydraulic device connected to control the opening and closing of said container, a pair of hydraulic lines connecting the hydraulic cylinder on opposite sides of the piston therein to a control valve and a pair of hydraulic lines connecting the control valve to the hydraulically actuatable device,

said control valve being designed to connect said hydraulic cylinder to said device in one sense or in the reverse sense, or to disconnect said hydraulic cylinder from said device.

said container opening control being designed so that flow to said actuable device in one sense causes opening of said container and flow to said actuable device in the other sense causes closing of said container.

said actuating hydraulic cylinder being connected to form part of the mechanical connection between said container and the suspension means therefor, said connection being designed and constructed so that the weight of

to the winch and the fastening means and having a hook adapted to fit into an elongated hole in the plate at a time when the flexible member and its fastening means are not attached to a vehicle, and to be held crosswise of that elongated hole without capability of turning from that crosswise position at a time when the fastening means is attached to a vehicle and the flexible member has been drawn tight by the winch.

3,853,348

BOOT FOR CAMPER-TRUCK COMBINATION

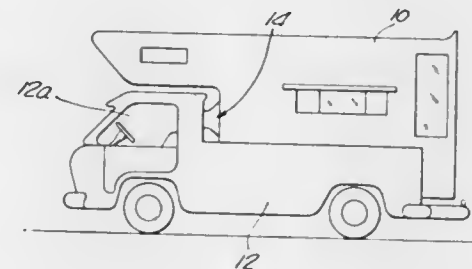
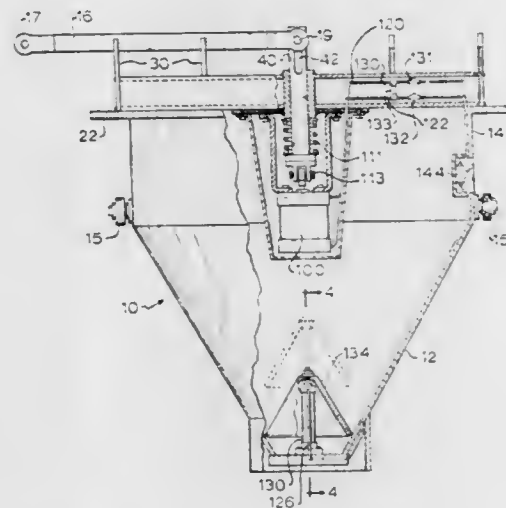
Robert M. Bjork, and Steven Robert Bjork, both of 10901 Topeka Dr., Northridge, Calif. 91324

Filed June 12, 1973, Ser. No. 369,300

Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC

3 Claims



1. A boot assembly intercoupling the forward end of the camper to the rear end of a truck cab, and having a forward end extending into a window aperture in the rear wall of the cab and supported in a peripheral channel extending around said aperture, and having a rear end extending into a window aperture in the forward wall of the camper, said boot assembly comprising: a flexible tubular member having a first open end and a second open end; and a two-piece frame member formed of a pair of rigid U-shaped wires encased in said first open end of said flexible tubular member, each of said rigid wires extending half-way around the open end of the said tubular member so that the ends of the two wires are adjacent to one another, said wires being contoured to fit into the peripheral channel of the window aperture in the rear wall of the cab with the adjacent ends of the wires forming diametrically opposite hinge joints for the first open end so that said frame member may be snapped into the annular channel.

the suspended container tends to move the actuating piston and cylinder relative to one another to tend to move hydraulic fluid in said lines.

whereby: with the control means disconnecting the actuating and the actuable devices, the container may, while suspended, be maintained in its closed or open states; with the control means connecting the actuating and actuable device in one sense, and the device suspended by the suspension means, the actuable device opens the container; with the control means connecting the actuating and actuable device in the other sense the actuable device closes the container.

3,853,347

VEHICLE FOR CARRYING OTHER VEHICLES AND ITS TIE-DOWN SETUP

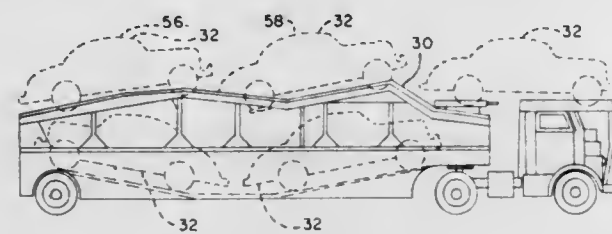
Billy E. Harold, Bethlehem, Pa., assignor to Bethlehem Fabrications, Incorporated, Bethlehem, Pa.

Filed Aug. 3, 1972, Ser. No. 277,496

Int. Cl. B62d 39/00

U.S. Cl. 296—1 A

1 Claim



1. A motor-vehicle-carrying trailer having a frame and a track mounted on the frame and a portion of the track toward the rear of the trailer at a higher level than the rest of the track, a plate mounted on this higher portion of the track and extending slopingly downward in an inward direction from that mounting, walls forming elongated holes in the plate, a winch mounted on the trailer, a flexible member adapted to be pulled by the winch and having a fastening means to fasten it to a motor vehicle being carried by the trailer at the other end of the flexible member, and means riding on the flexible member at a point intermediate between the point of attachment

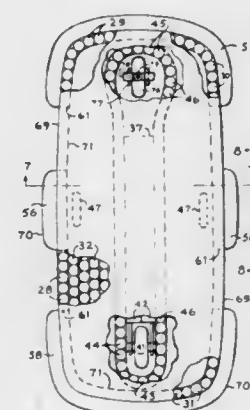
3,853,349
LIGHT-WEIGHT, WRECK-RESISTANT VEHICLE
Alvin Edward Moore, Manini Way, Diamondhead, Rt. One., Bay St. Louis, Miss. 39520

Filed Sept. 15, 1972, Ser. No. 289,478

Int. Cl. B62k 11/00

U.S. Cl. 296—28 R

25 Claims



1. A vehicle, adapted to travel over land, including: body structure comprising: at least four elongated, fastened-together, body-sidewall can-rows, each of which includes a plurality of aligned cans having substantially parallel

axes that extend across the length of the row, each pair of said cans being in contact with each other at contiguous side portions and free of contact with sides of cans of other sidewall rows, and means for fastening the cans of each row together comprising at least one elongated, apertured strip of row-strength-providing material, lying on and across ends of the parallel-axes cans of the row, and means extending thru holes in said strip for fastening the strip and said can-ends together, at least one of the said strips being located between each adjacent pair of the can-rows, the said body structure further including: means, fixed to said strips, for fastening the can-rows together in sidewall framework on each side of the vehicle; forward and rearward end-wall frameworks, comprising tubular members; means fastening said end-wall tubular members to said sidewall rows; top framework, comprising tubular members; means fastening said top framework to portions of said sidewall rows; deck framework, comprising tubular members; means fastening said deck framework to portions of said sidewall rows; skin means, sheathing the said sidewall, top and deck frameworks; and gaseous material within each of said cans and tubular members.

front wheel-supporting means on said body structure, pivotal for steering, comprising bearings and bearing-support means connected to portions of said frameworks; rear wheel-supporting means on said body structure, comprising rotary wheel bearings and bearing-support means; and wheels supported by said front and rear wheel-supporting means.

3,853,350

ADJUSTABLE HEADREST AND BACKREST FOR A CHAIR

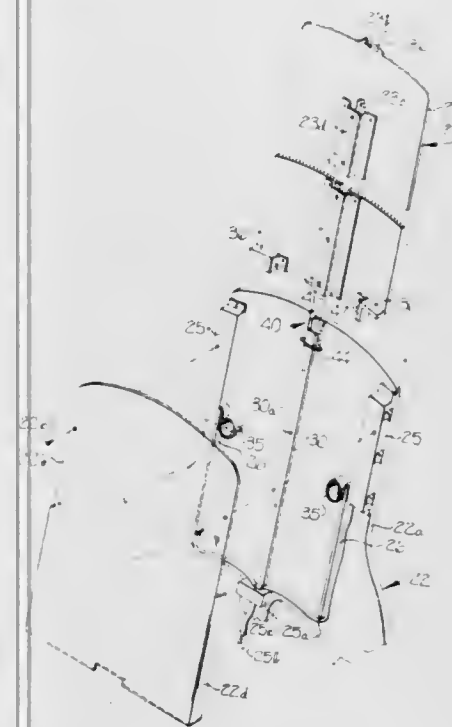
Dennis Frank Leffler, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed May 17, 1973, Ser. No. 361,241

Int. Cl. A47c 1/10, 7/12, 7/36

U.S. Cl. 297—404

10 Claims



1. In a treatment chair including a seat portion and a tiltable, upwardly-extending backrest for reception and positioning of a patient in a variety of positions for treatment by an operator; the improvement of a headrest assembly telescopically carried by said backrest for adjustment to desired positions for different size patients and characterized by providing support to the shoulder area of a patient and counterbalanced adjustment mechanisms for ease in adjustment thereof to any desired position; said headrest assembly comprising:

a continuous, generally rectangular, relatively thin, body portion of substantial width at least one-half but less than the width of said backrest for providing a continuous support for the shoulder and head areas of a seated patient while allowing easy access to the head of the patient by an operator;

means contained within said backrest defining a longitudinally-extending, open-topped, relatively wide passageway for telescoping reception of said headrest body portion through the top of said backrest for longitudinal adjustment of said headrest body portion therein and outwardly thereof to desired positions;

counterbalance means positioned within said passageway in engagement with said headrest body portion biasing said body portion generally upwardly and outwardly of said backrest and counterbalancing the weight of the said body portion for ease in adjustment thereof to any desired position; and

friction locking means carried by said backrest for frictional engagement with said headrest body portion when said body portion is placed in any desired position for locking said headrest assembly in such position and being releasable for unlocking said headrest assembly when adjustment thereof is desired.

3,853,351

MOTORCYCLE BACKREST

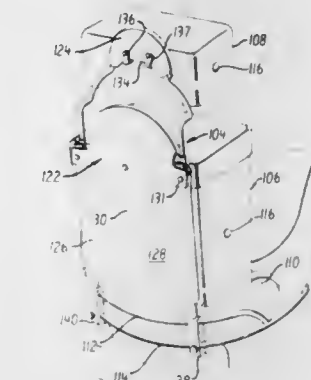
Wilbert A. Lassiter, 835 S. Frederick St., Apt. 632B, Arlington, Va. 22204

Filed Mar. 29, 1974, Ser. No. 456,249

Int. Cl. A47c 7/02; B62j 1/28

U.S. Cl. 297—452

3 Claims



1. An operator backrest for a motorcycle saddle comprising:

A. an elongated rigid backrest frame;
B. means for attaching one end of said frame to a motorcycle saddle in an essentially vertical orientation relative to the saddle;

C. a backrest cushion sized to conform to the back of a rider;

D. said cushion including:
i. an inner block of resilient material; and
ii. an outer cover over said inner block;

E. attachment means for flexibly and reversibly attaching said cushion on said frame including:

i. a downwardly open frame pocket on the rear surface of said cover engageable over the top of said frame and mounting said cushion on said frame;

ii. inwardly extending flaps attached to vertical rear side edges of said cover on said inner block engageable around vertically disposed portions of said frame; and
iii. means securing the inner edges of said flaps one to another for taut and laterally moveable engagement of said cover on said frame; Whereby said back cushion is moveable laterally of said frame to accommodate leaning of a rider on said cushion and said cushion being reversible from front to rear on said frame by reversing the mounting of said attachment means on said frame.

3,853,352

SEAT BUN FASTENING STRIP

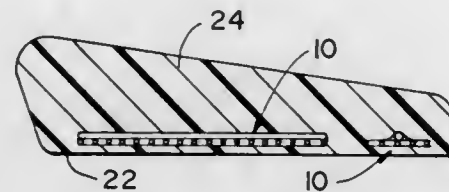
Jere B. Ambrose, West Bloomfield, Mich., assignor to Northern Fibre Products Corp., Birmingham, Mich.

Filed Oct. 23, 1973, Ser. No. 408,546

Int. Cl. A47c 7/02

U.S. Cl. 297-452

2 Claims



1. A fastening strip for resilient, molded plastic cushions, such as molded foam-plastic seat buns and the like, for fastening such cushions to other objects, such as to a seat spring-type support structure or a cloth-like upholstery covering material applied upon said cushion, comprising:

a long, narrow strip, formed of an open lattice-like, wide mesh made of thin, transversely arranged, coplanar strands joined together at their points of intersection; each joint formed by the intersections of crossing strands being slightly enlarged transversely out of the plane of the strip for thereby interlocking with the plastic material forming the cushion;

a relatively stiff, wire-like rod extending along the lengthwise direction of the strip at about the center of the strip roughly perpendicular to some of and parallel to the remaining of said mesh strands; and

means securing said rod upon a face of the strip; said securing means comprising a narrow cloth-like tape extending the length of the strip and overlapping the rod and a portion of the strip at opposite sides of the rod, with the tape secured to the strip along opposite sides of the rod by means of a row of stitches arranged at each side of and adjacent to the rod and extending through the tape and engaging the strands which are roughly perpendicularly arranged relative to the tape, so that the rod is held in place between the face of the strip and the tape;

said rod being in the form of a thin, relatively stiff wire, covered with a protective wrapper frictionally gripped against the strip strands which are overlapped by the rod and also the adjacent surface of the tape, with the rod being otherwise substantially free of securement to the strip and tape;

whereby the strip may be completely embedded within and at a short distance beneath an exposed surface of a cushion during the molding of such cushion, with the rod being inwardly of the strip relative to the cushion exposed surface, so that ring-like fasteners may be partially extended into the cushion to engage around the rod for anchoring thereto, with fasteners extending outwardly of said cushion surface for fastening to an object to be secured to said cushion.

3,853,353

METHOD OF EXTRACTING A METAL FROM A MATERIAL CONTAINING THE METAL IN ELEMENTAL FORM

Robert E. Cech, Scotia, N.Y., assignor to Copper Range Company, New York, N.Y.

Division of Ser. No. 134,412, April 15, 1971, Pat. No.

3,775,097. This application Apr. 30, 1973, Ser. No. 355,569

Int. Cl. E21c 41/14

U.S. Cl. 299-2

3 Claims

1. A method of recovering a copper metal in a substantially closed environment from a material selected from the class consisting of copper ore tailings and copper scrap, said material containing said copper metal coated with a film including a copper compound selected from the class consisting of the

oxide and the carbonates, said process comprising the steps of heating said material to a temperature in the range of 50°C to 100°C, reacting said film with an ammonia containing fluid to develop a film of an ammine complex of said copper metal on the surface of said copper metal, contacting said material with chlorine vapor, said film of ammine complex acting to transport the chlorine to the surface of said copper metal to provide a rapid chlorination of said copper metal and to form chloride salts of said copper metal, removing said chloride salts from said material, and recovering said copper metal from said salts, said material being located beneath ground within a mine, said mine being initially sealed off to provide a substantially air-tight enclosure, said ammine complex being developed by contacting the material with an ammonia-containing vapor; said ammonia-containing vapor being selected from the group consisting of ammonia gas, vaporized ammonium hydroxide and vaporized ammoniated ammonium carbonate liquor, said chloride salts being removed from said material by leaching with an aqueous leaching solution, said leaching solution being selected from the group consisting of ammoniated ammonium chloride, ammoniated sodium chloride, ammoniated ammonium carbonate, and mixtures thereof, said leaching solution being provided in part by steam.

3,853,354

DUST SUPPRESSION SPRAY VALVE CONTROL FOR LONGWALL MINING

Walter Weirich, Dortmund; Wolfgang Schwandt, Altlunen, and Willy Heyer, Bochum-Gerthe, all of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Wethmar bei Lunen, Westfalen, Germany

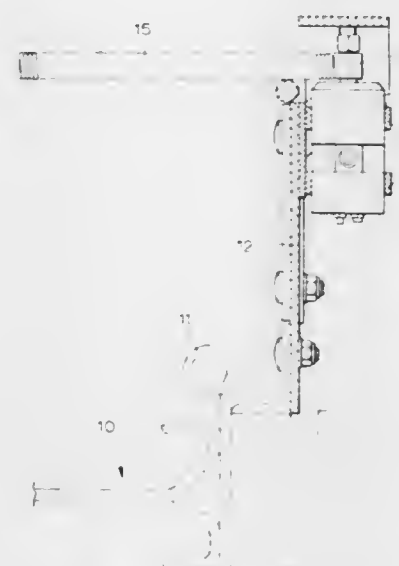
Filed Apr. 30, 1973, Ser. No. 355,369

Claims priority, application Germany, Apr. 29, 1972, 2221272; Nov. 16, 1972, 2256232

Int. Cl. E21c 35/22

U.S. Cl. 299-43

23 Claims



1. A spray control unit for use in connection with a mining machine travelling along a face, said control unit comprising a housing having inlet and outlet ports; a rotary valve mounted in said housing for angular movement about an axis from a neutral position into second positions disposed one on each side of the neutral position, said valve blocking fluid flow between said inlet and outlet ports when said valve is in its neutral position and permitting such flow when said valve is in either of its second positions; means biasing the valve towards its neutral position; means for delaying the movement of the valve under the action of the biasing means; and an elongate feeler operatively connected with the valve and being swingable about the valve axis, the feeler being adapted to project into the path of the mining machine for deflection thereby in one or other direction depending upon the direction of movement of the mining machine along the face, and to displace the valve during such deflection into one of said second positions.

3,853,355

METHOD AND DEVICE FOR DISCHARGING RUBBISH AND WASTE THROUGH PNEUMATIC DUCTS

Marcel Buisson, Chartres, France, assignor to Societe d'Etudes et Realisations de Complexes Industriels Divers Impasse des Ventes Marsaueux, Dreux, France

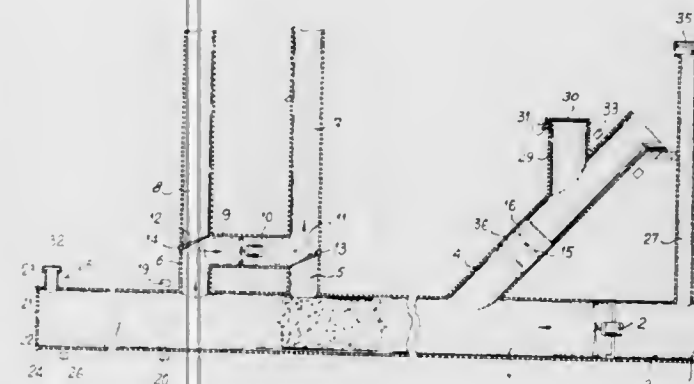
Filed Feb. 22, 1973, Ser. No. 334,890

Claims priority, application France, Feb. 24, 1972, 72.06208; Oct. 19, 1972, 72.37013

Int. Cl. B65g 51/08

U.S. Cl. 302-2 R

15 Claims



1. Apparatus for disposing of materials packed in bags and the like, said apparatus comprising a main duct having opposite ends, a fan in said main duct, at least one infeed duct opening into the main duct downstream of said fan, a single gate located at one of said ends of the duct and serving as an outlet, said duct being completely open and non-obtured between said fan and said gate, said gate opening outwards and being constantly urged to a closed position, a non-return valve coupled to said main duct to connect said main duct to the atmosphere, said nonreturn valve being disposed in the immediate vicinity upstream of said outlet of the main duct, and at least one propulsive means coupled to said main duct at a location between said infeed duct and said outlet for producing suction in said main duct to promote advance of the material in said main duct until the material reaches said propulsive means whereupon said propulsive means produces pressure in said main duct to urge the material further downstream towards said outlet concurrently with the pressure of said fan.

3,853,356

METHOD OF PUMPING WAXY CRUDE OIL

LaVaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Aug. 23, 1973, Ser. No. 390,837

Int. Cl. F17d 1/00; B65g 53/04

U.S. Cl. 302-66

14 Claims

1. An improved process of transporting a hydrocarbon mixture that contains at least about 25 percent wax (this wax is defined as the precipitate which forms after 1 part of the hydrocarbon mixture is dissolved in 10 parts of methylethyl ketone at 80°C. and the mixture chilled to -25°C.), the improved process comprising fractionating the hydrocarbon mixture into at least a low pour point fraction, a medium pour point fraction, and a high pour point fraction, substantially congealing at least a portion of the medium pour point fraction and optionally a portion of the high pour point fraction, admixing at least a portion of the high pour point fraction with the low pour point fraction and thereafter slurring the congealed particles with the low pour point fraction to obtain a hydrocarbon slurry suitable for transport at predetermined temperatures.

3,853,357

VEHICLE PILOT PRESSURE CONTROLLED BRAKE SYSTEM WITH WHEEL LOCK CONTROL MODULATING MEANS

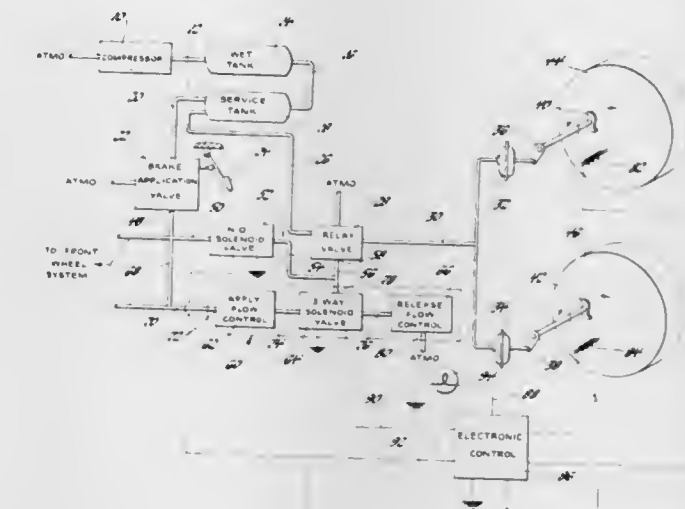
Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 393,734

Int. Cl. B60t 8/12

U.S. Cl. 303-21 F

4 Claims



1. In a fluid pressure actuated brake system for a vehicle, said system having:

a fluid pressure source, brake means for wheels of the vehicle selectively actuated and released by fluid pressure from said source, brake application valve means receiving fluid pressure from said source and controlled by the vehicle operator to generate pilot pressures in accordance with the amount of braking desired,

relay valve means receiving said pilot pressures and connecting the pressure source and the brake means and controlling the application and release of fluid pressures to and from the brake means in accordance with the pilot pressures received,

and wheel acceleration and deceleration sensing and signal generating means sensing brake effectiveness and specifically incipient wheel lock, said sensing and generating means generating wheel lock control signals accordingly, the improvement comprising:

a normally open valve fluidly intermediate said brake application valve means and said relay valve means to transmit pilot pressures therebetween,

first means receiving signals from said sensing and generating means and closing said normally open valve when the signals indicate incipient wheel lock,

an apply flow control valve and a three-way valve connected in fluid series relationship and in parallel fluid relationship with said normally open valve, said three-way valve being also connected to exhaust,

and second means receiving signals from said sensing and generating means and acting on said three-way valve closing the fluid connection between said apply flow control valve and said relay valve means concurrently with the initial closing of said normally open valve, and also opening a fluid connection through said three-way valve from said relay valve means to exhaust to cause the pilot pressure acting on said relay valve to decrease independently of said brake application valve means,

said second receiving means receiving further signals from said sensing and generating means upon sufficient wheel acceleration and acting to reverse the action of said three-way valve so that said relay valve means receive pilot pressures through said apply flow control valve which controls the rate of pilot pressure increase to the pilot pressure generated by the brake application valve means to increase the fluid pressure to the brake means accordingly, the action of said second receiving means on

said three-way valve being repeated as signals again indicate incipient wheel lock.

3,853,358 SLIDE RAIL

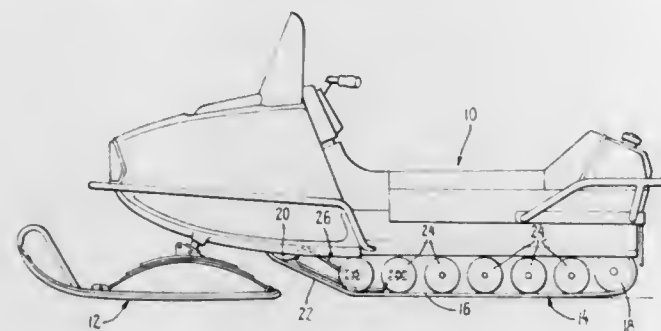
Jack H. Rose, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,551

Int. Cl. B62d 55/08

U.S. Cl. 305—24

11 Claims



1. In a vehicle driven by a continuous track passing over spaced apart front and rear track wheels and having suspension means intermediate the track wheels for maintaining the track in engagement with the terrain, where the front track wheel is positioned to form a section of track inclined upwardly between the front track wheel and the suspension means in the direction of the front track wheel, at least one slide rail comprising: a forward part and rearward part connected to the suspension means, said forward part generally parallel to and extending over substantially the entire length of the inclined section of track and extending longitudinally from the suspension means toward the front track wheel and said rearward part extending toward said rear track wheel, said slide rail normally spaced apart from the track but providing support to the track by urging the inclined section to compact terrain contacted thereby providing a packed surface for the remainder of the track.

3,853,359 VEHICLE TRACK

Allen A. Pusch, Calgary, Alberta, Canada, assignor to Foremost International Industries, Ltd., Calgary, Alberta, Canada

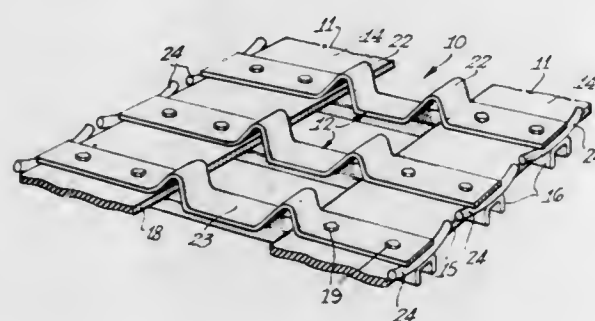
Filed Oct. 1, 1973, Ser. No. 402,652

Claims priority, application Canada, Oct. 24, 1972, 154718

Int. Cl. B62d 55/00

U.S. Cl. 305—35 EB

6 Claims



1. A vehicle track comprising a pair of spaced, parallel, flexible belts defining outer ground engaging surfaces, inner surfaces and opposed longitudinally extending outside edges of said track, a plurality of transverse grouser bar assemblies at spaced intervals along said belts and each including an outer grouser bar member engaging said ground engaging surfaces of said belts, a track guide member engaging said inner surfaces of said belts and connecting means securing said members together with said belts clamped therebetween, at least one of said members extending the full width of the track.

track and having opposite end portions terminating adjacent said outside edges of the track, and a pair of rigid members associated with each grouser bar assembly, the pair of rigid members being fixed one each to said opposite end portions and extending substantially perpendicular to the grouser bar assembly immediately outside of said outside edges, the rigid members of adjacent grouser bar assemblies being closely spaced in the longitudinal direction of the track along each side of the track so as to provide a substantially continuous edge protector for the belts.

3,853,360 MASTER COUPLING LINK

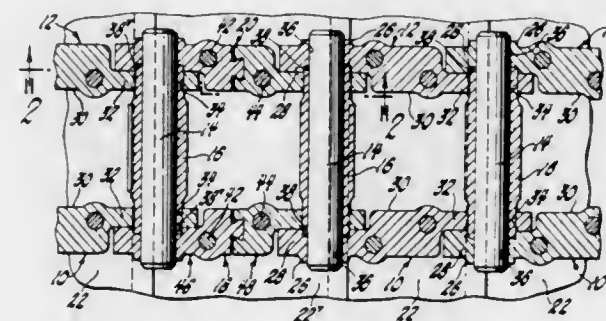
Natabara Khuntia, Hudson, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,507

Int. Cl. B62d 55/20

U.S. Cl. 305—58

1 Claim



1. In a crawler tractor track; a master coupling link for detachably connecting the ends of said track comprising a pair of transversely spaced link members, a track shoe including a flat plate portion extending between said link members and fastened thereto by a plurality of cap screws, each of said link members having two longitudinally extending separable sections each of which has an outer end portion defining a bore hingedly connected with an end of said track and an inner end portion, said inner end portion of one of said sections being formed with vertically spaced upper and lower parts separated by a cut-out portion, said upper and lower parts and said cut-out portion being of equal longitudinal length, said parts each having a slot formed therein the full length thereof and the inner end portion of the other of said sections being formed with vertically spaced upper and lower projections which correspond in length and spacing to said upper and lower parts and are adapted to be located within said slots in said upper and lower parts so as to form an aperture between said sections, each of said projections having a cross section that progressively increases in width as it extends from said inner end portion and each of said slots having a configuration which is complementary to the configuration of the projections so as to interlock said sections when the projections are located in said slots and form a juncture that is located in a plane which is perpendicular to the flat plate portion of the track shoe so as to prevent separation of the sections along the longitudinal axis of the link member and along an axis parallel to the axis of said bore, and said upper and lower parts and projections being so arranged that upon removal of said cap screws said sections can be separated by relative movement thereof along an axis parallel to the plane of said juncture a distance equal to the longitudinal length of said cut-out portion.

3,853,361 FLUID BEARING SUPPORT FOR TILTABLE METALLURGICAL VESSELS

Judson W. Martr, Amsterdam, Ohio, assignor to National Steel Corporation, Pittsburgh, Pa.

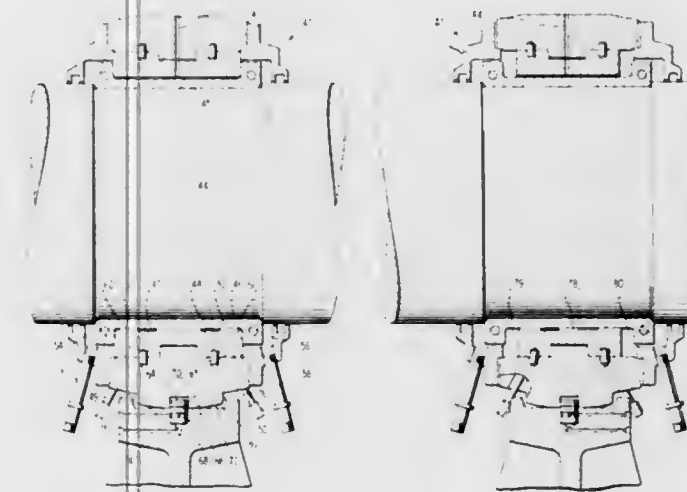
Division of Ser. No. 184,560, Sept. 28, 1971, Pat. No.

3,746,328. This application Mar. 14, 1973, Ser. No. 340,947

Int. Cl. F16c 13/02

U.S. Cl. 308—122

36 Claims



1. A bearing structure for use with a heavy tonnage tilttable metallurgical vessel for molten metal comprising

- a pair of rigidly mounted spaced apart supporting members for supporting the metallurgical vessel therebetween,
- bearing support means carried by each supporting member,
- trunnion support structure for embracing and rigidly holding the metallurgical vessel,
- a pair of trunnion shafts carried at 180° from each other on opposite sides of the trunnion support structure, each shaft having its longitudinal axis of symmetry disposed initially along a designed axis of rotation,
- a rotatable bearing member fixedly carried by and extending entirely around each shaft,
- each rotatable bearing member having an outwardly facing bearing surface of circular configuration in planes normal to the longitudinal axis of the shaft,
- a nonrotating bearing member fixedly carried by each bearing support means, each nonrotating bearing member rotatably receiving and supporting a rotatable bearing member of a shaft,
- each nonrotating bearing member having an inwardly facing bearing surface with arcuate portions of circular configuration in planes normal to the designed axis of rotation of the associated shaft, one such arcuate portion extending around the minor lowermost portion of the bearing surface of the rotatable bearing member, the one arcuate portion of the bearing surface of the nonrotatable bearing member being complementary in shape to the contiguous surface of the associated rotatable bearing member and having a diameter not substantially greater than the diameter of the associated rotatable bearing member in planes normal to the longitudinal axis of the associated shaft,
- means associated with the portion of the bearing surface of each nonrotating bearing member above the one arcuate portion accommodating limited upward movement of the associated shaft away from the one arcuate portion of the bearing surface of such nonrotating bearing member while restraining the associated shaft against unlimited upward movement, and
- fluid pressure support means for utilizing fluid under pressure between the one arcuate portion of the bearing surface of each nonrotatable bearing member and the contiguous bearing surface of the associated rotatable bearing member to support on fluid under pressure during rotation of the associated shaft the rotatable bearing

member surface solely on but out of physical contact with the one arcuate portion of the bearing surface of the nonrotating bearing member.

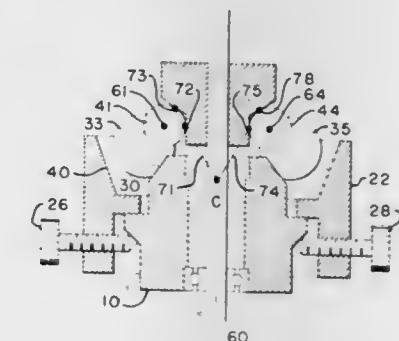
3,853,362
KINEMATIC BALL THRUST BEARING
Bradford Howland, 77 Massachusetts Ave., Cambridge, Mass. 02139; Howard C. Howland, 205 Winghn Dr., Ithaca, N.Y. 14850, and Arthur T. Proll, 2 Avon Ave., Newburgport, Mass. 01950

Filed Apr. 5, 1972, Ser. No. 241,148

Int. Cl. F16c 19/20

U.S. Cl. 308—230

15 Claims



1. A kinematic thrust bearing comprising

- an upper race,
- a lower race,
- a first set, of number greater than three, of balls for said upper race, said balls being all of substantially the size measured by a first radius r_{44} , and
- a second set of said number of balls for said lower race, said second set of balls being all of substantially the size measured by a second radius r_{34} ,
- said upper race, lower race, and ball sets being so proportioned that each of the balls of said first set contacts two balls of said second set and said upper race on two tracks of contact, an inner upper track, measured by a third radius R_{72} , and an outer upper track measured by a fourth radius R_{73} , each of the balls of said second set contacts two balls of said first set and said lower race on two tracks of contact, an inner lower track measured by a fifth radius R_{95} , and an outer lower track measured by a sixth radius R_{96} , and so that the cone which contains both said upper tracks has its apex at substantially the same point C as the apex of the cone which contains both said lower tracks, and further proportioned so that
- the cone which is the locus of the center of all said balls, has an apex angle less than 150°, the special case wherein the locus of said centers is a cylinder being included as for an apex angle of 0°.

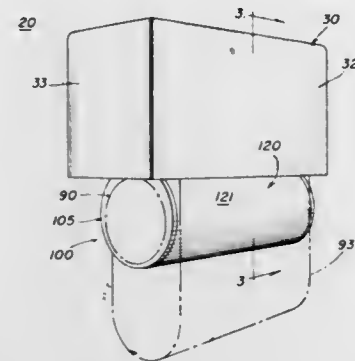
3,853,363
TOWEL DISPENSER
Ole Frederiksen, Frederikssund, Denmark, assignor to Steiner Company Lausanne S.A., Lausanne, Switzerland
Continuation of Ser. No. 223,444, Feb. 4, 1972, abandoned.
This application Sept. 21, 1973, Ser. No. 399,750
Int. Cl. B65h 19/00

U.S. Cl. 312—38

16 Claims

1. A towel dispenser of the continuous loop type comprising a housing having associated therewith a loop of towel that extends along an exit path out of said housing to an exposed position accessible to a user and thence along a return path into said housing, towel dispensing apparatus mounted in said housing for dispensing clean towel from a supply thereof into said housing and from said housing into the loop along the exit path when the accessible portion of the loop is pulled by a user, loop take-up means mounted in said housing and coupled to said towel dispensing apparatus for retracting and

storing in said housing soiled towel from the return path when the accessible portion of the loop is pulled by a user, a receptacle suspended exteriorly of and beneath said housing for accommodating therein a supply of clean towel exteriorly of said housing, and cooperating guide members on said housing



and said receptacle suspending said receptacle from said housing for accommodating transverse sliding movement of said receptacle between a towel dispensing position disposed immediately below said housing and a towel servicing position spaced forwardly of said housing and from said towel dispensing position.

3,853,364

FILING CABINET CONTAINING STORING FRAMES FOR SUSPENDED SHEETS

Kurt Bonnie Karl Axel Lundberg, Malarvagen 1, 141 71 Hud-dinge, Sweden

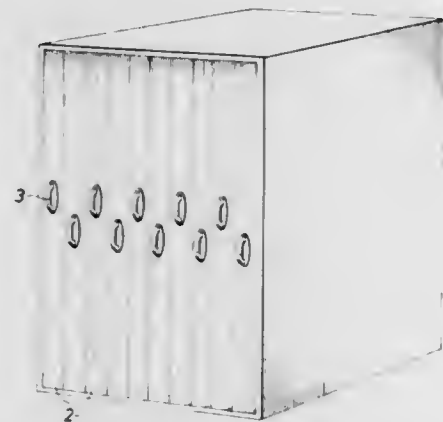
Continuation-in-part of Ser. No. 183,152, Sept. 23, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,056

Claims priority, application Sweden, Dec. 22, 1970, 17473/70; Great Britain, Sept. 24, 1971, 44551/71; Australia, Dec. 12, 1971, 36893/71

Int. Cl. B42f 17/00

U.S. Cl. 312—184

24 Claims



1. A filing cabinet for storing sheet-like articles in a suspended position, said cabinet comprising:

- a housing;
- a plurality of frame means movable relative to said housing having a first position within said housing and a second position outside of said housing;
- a plurality of receiving means, each receiving means receiving a plurality of holding means secured to the upper portion of said articles, wherein each receiving means corresponds to one of said plurality of frame means; and
- pivot means for coupling said receiving means to a corresponding one of said frame means, wherein said receiving means pivot between a perpendicular and parallel position with respect to said frame means, such that when said receiving means is in said perpendicular position said articles are suspended a first predetermined distance apart parallel to said frame means, said holding means all lying in a single plane perpendicular to said frame means

and when said receiving means is in said parallel position said articles are suspended a second predetermined distance apart said second predetermined distance being substantially negligible, said holding means all lying in the plane of said frame means.

3,853,365

TOOTHBRUSH HOLDER

Chris E. Nielsen, 22 Almaden Ct., San Francisco, Calif. 94118

Filed Jan. 14, 1974, Ser. No. 431,131

Int. Cl. A47b 81/02; A46b 17/02

U.S. Cl. 312—206

9 Claims



1. A holder for a toothbrush or the like comprising a wall mounted enclosure having a bottom opening, a carriage means movable within the enclosure between a lower stop means and an upper stop and retaining means, said carriage means having a bottom opening comprising a first slot, a spring attached interiorly of the carriage means and having spaced portions providing a resilient second slot comprising a holding means parallel to and above the said first slot, and means to release the retaining means to permit the carriage to fall to the lower stop means.

3,853,366

INTEGRAL HINGE PUSH BUTTON FOR APPLIANCE CONTROL PANEL

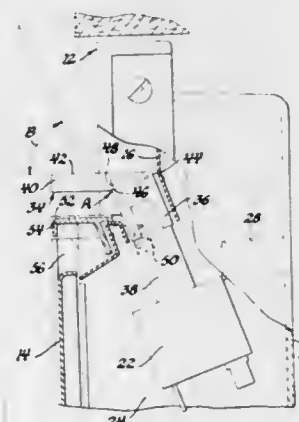
Keith K. Kesling, Utica, Mich., and Paul D. Bailey, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1973, Ser. No. 410,919

Int. Cl. A47b 96/00

U.S. Cl. 312—223

1 Claim



1. An improved wall structure and control arrangement for a domestic appliance comprising an exposed front panel, a rear panel spaced from said front panel to form a compartment, track means slidably supporting said front panel for linear movement in the plane of said front panel between an installed position closing said compartment during normal operation of said appliance and a removed position exposing said compartment for servicing said appliance or changing said front panel, a control switch affixed in said compartment and having a shaft extending toward the outside of said com-

partment, a plastic switch button having a socket portion affixed to said shaft and a finger push portion exposed on the outside of said wall structure for manual manipulation of said switch from outside said compartment, said finger push portion extending into the path of linear movement of said front panel sufficiently to provide a surface expansive enough to carry control indicia for said switch during said normal operation, whereby an interfering relationship occurs between said front panel and said finger push portion during removal of said front panel, and means interconnecting said finger push portion and said socket portion to eliminate said interfering relationship when said front panel is to be removed, said interconnecting means including as additional integral portions of said switch button a flexible hinge permanently connecting said finger push portion to said socket portion and a pair of shoulders respectively on said finger push portion and said socket portion and snap-fastened together when said finger push portion is exposed for manual manipulation and in interfering relationship with said front panel, the snap-fastened shoulders being manually releasable from outside said compartment to eliminate the interfering relationship between front panel and switch button so the front panel can be removed for changing thereof or servicing said switch.

3,853,367

CABINET

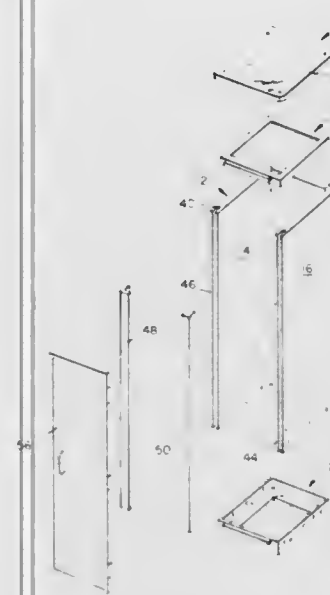
John W. Jamison, Costa Mesa; Dan R. Veronda, Fullerton, and Roy E. Denner, Placentia, all of Calif., assignors to Hughes Aircraft Corporation, Culver City, Calif.

Filed Feb. 9, 1972, Ser. No. 224,839

Int. Cl. A47b 43/00, 47/00

U.S. Cl. 312—259

4 Claims



1. A cabinet for the enclosure of equipment, said cabinet comprising:

- a base frame defining the lateral dimensions of said cabinet;
- a top frame further defining the lateral dimensions of said cabinet;
- a unitary housing defining left and right sides and back of said cabinet, with
- a forward-facing edge on each of said left side and said right side, said housing being formed of a single panel of laminated material having a metal inner skin, a metal outer skin, and a honeycomb core therebetween attached to and rigidizing said metal skins with the honeycomb core cells being normal to said skins, said panel being bent at the cabinet corners so that said panel defines the sides and back of said housing, said honeycomb core being crushed at said corners and said panel skins extending continuously around said corners, said panel being secured to said top frame and said base frame so that said top frame and said base frame retain said panel in a lateral position, said laminated honeycomb panel carrying the principal physical loads on the cabinet;

a closeout bar positioned between the panel skins at each of said edges, said closeout bars each having means for interengaging thereon;

front closure frames, said front closure frames each having means for interengaging thereon, said means for interengaging on said front closure frames being interengaged with said means for interengaging on said closeout bars.

3,853,368

HYDRAULIC PISTON-CYLINDER DEVICE HAVING MEANS FOR PERMITTING LIMITED RECIPROCATING MOTION

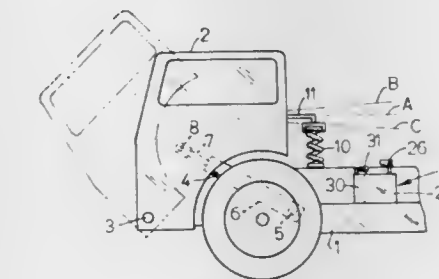
Alexander Victor Eichelsheim, Oldenzaal, Netherlands, assignor to Allied Power Inc., Milwaukee, Wis.

Filed Apr. 4, 1973, Ser. No. 347,926

Int. Cl. B62d 27/06, 33/06

U.S. Cl. 296—35 R

34 Claims



1. In combination: a pair of pivotally interconnected parts movable angularly with respect to each other and having an at-rest position, a hydraulic piston-cylinder device connected to and between said parts for moving them relative to each other and comprising a cylinder having a bore wherein a piston is slidably movable, said piston and cylinder having at least one at-rest position relative to each other corresponding to the at-rest position of said parts; hydraulic means including a pump for supplying hydraulic fluid to said bore on either side of said piston to effect relative movement between said pair of parts, said hydraulic means further comprising a reservoir; and means for permitting limited reciprocating movement between said piston and cylinder in response to relative movement of said parts about their at-rest position, said means comprising passage means affording communication between opposite sides of said piston in a zone which includes said at-rest position of said piston and cylinder, said zone being of a length greater than the axial length of said piston to allow for lost motion movement of said piston in opposite directions, said passage means permitting fluid flow in opposite directions therethrough and said passage means being connected to said reservoir.

3,853,369

FOLDING TAILGATE STEP

Patrick E. Holden, 10835 Cassandra Way, Dallas, Tex. 75228

Filed Mar. 22, 1973, Ser. No. 343,791

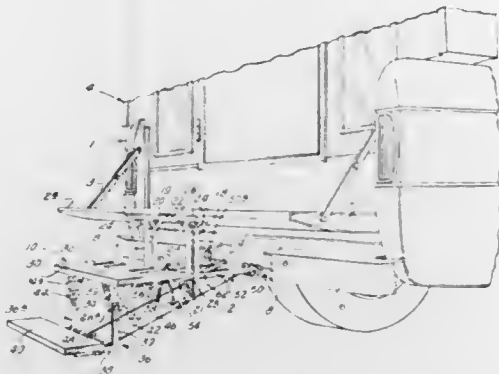
Int. Cl. B60r 3/02

U.S. Cl. 296—62

8 Claims

1. Steps connectable to a vehicle tailgate comprising: spaced arms; means to pivotally secure first ends of said arms to a vehicle; link means; means slidably securing intermediate portions of said arms to said link means; means to pivotally secure said link means to a tailgate; a first step; means securing the first step between said spaced arms; a rigid angle member; means pivotally securing said angle member adjacent second ends of said arms; brace means positioned to limit rotation of said angle member relative to said arms in one direction; means securing a first end of said brace means to said angle member; means to secure a second end of brace

means to a vehicle; means to permit limited axial movement of said brace means from a first position to a second position;



a second step; and means to secure said second step to the angle member.

3,853,370

SUN VISOR EXTENSION FOR VEHICLE

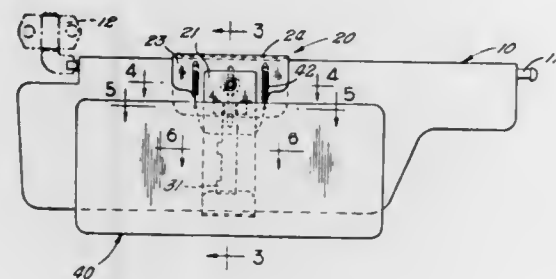
Nelle S. Barnhart, 3525 Turtle Creek Blvd., Apt. 2D, Dallas, Tex. 75219

Filed Aug. 27, 1973, Ser. No. 391,126

Int. Cl. B60j 3/02

U.S. Cl. 296—97 C

5 Claims



1. A visor extension comprising
 - a clamping base assembly consisting of at least two members adjustably coupled together, said base assembly being dimensioned to span the width of a vehicle sun visor and having confronting upper and lower flanges for engaging opposite edges thereof;
 - said base assembly having elongated guide track means extending between said clamping flanges, and latching means adjacent to the lower end of said guide track means;
 - a flat generally rectangular sheet having a guide member mounted therein intermediate the ends and adjacent to one edge defining its upper edge; said guide member coacting with said guide track means for guiding reciprocating movement of said sheet between an upper retracted position, generally overlying the vehicle sun visor, and a lower extended position, projecting beyond the lower edge of said sun visor;
 - resilient means connected between said base assembly and said sheet for urging said sheet to said retracted position; and said guide member and said latch means coacting to selectively latch said guide member at the lower end of said guide track means to maintain said sheet in said extended position.

3,853,371
PIVOT SUPPORT FOR WIND DEFLECTORS ON
AUTOMOBILE ROOFS

Horst Bienert, Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf/Munich, Germany

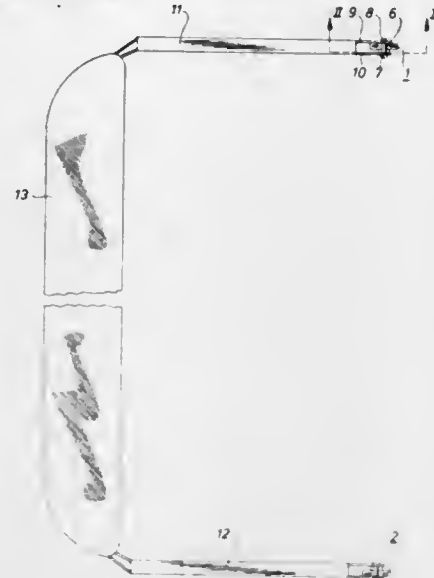
Filed May 21, 1973, Ser. No. 362,281

Claims priority, application Germany, May 20, 1972, 2224879

Int. Cl. B60j 7/00

U.S. Cl. 296—137 R

5 Claims



1. A pivot support for an articulated assembly such as a pivotable wind deflector on an automobile roof comprising in combination:

- a pivot block of moderately resilient material, including means for attaching it to a portion of the roof structure;
- a transverse bore in the pivot block;
- a pivot pin adapted for engagement in the bore of the pivot block, the diameter of the pivot pin defining an interference fit with the diameter of said transverse bore; and
- a transverse slot opening into the bore of the pivot block over its entire length; the slot having such a width in relation to the diameter of the pivot pin that the latter can be forcibly snapped into the bore of the pivot pin in a radial direction and is then retained therein, as a result of the resiliency of the block, said pivot pin having at least one end portion protruding axially from the pivot block and serving as a bearing support for a cooperating part of the articulated assembly.

3,853,372

WHEELCHAIR

Wilhelm Meyer, Vlotho/Weser, Germany, assignor to Wilhelm Meyer, Vlotho/Weser, Germany

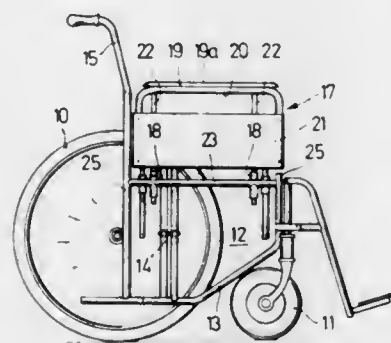
Filed Feb. 23, 1973, Ser. No. 335,014

Claims priority, application Germany, Mar. 4, 1972, 2210492

Int. Cl. A47c 7/00

U.S. Cl. 297—45

9 Claims



1. A mobile invalid chair, containing:
 - a foldable chassis formed by two side frames held at an adjustable distance from each other by a universal joint, said chassis carrying a seating surface and a back;

an arm support provided in both side frames, each arm support having a side wall and arranged to be vertically displaceable as a unit, the arm support unit being lowerable with its upper resting surface to such an extent that it is in one plane with the seating surface, each arm support unit having vertical guide bars adapted to be lowered within vertical guide sleeves of said chassis, said guide sleeves being disposed with a clearance below said seat surface and secured to said chassis, said arm support unit comprising a U-shaped supporting stirrup with its shanks pointing downwardly, said stirrup supporting said arm support on the cross-piece of said stirrup, said side wall being secured to the outside of said supporting stirrup by securing means on the U-shanks, said arm support being formed by a ledge which is rectangular in plan and is provided in the front part of the chair with an outwardly extended enlargement projecting into the region exterior of said chassis; and

spring-loaded locking pins mounted on said guide sleeves and engaging in recess of said guide bars, said pins being displaceable transversely to the direction of displacement of the guide bars and are pivotably connected by connecting levers to actuating levers mounted to pivot on the chassis.

3,853,373

EASY-ENTER VEHICLE SEAT

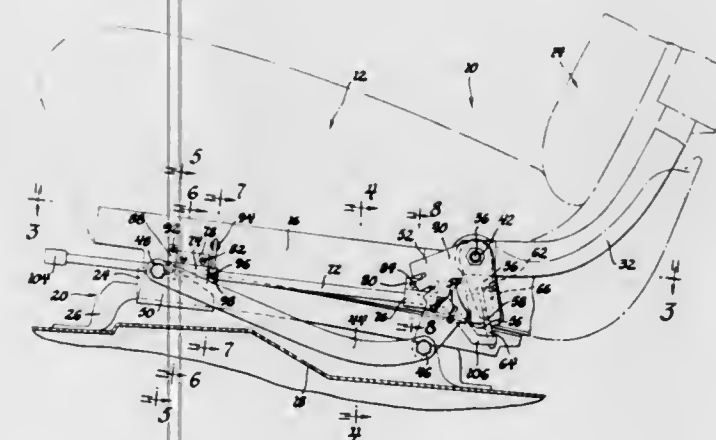
Thomas J. Corbett, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,390

Int. Cl. B60n 1/04

U.S. Cl. 297—341

3 Claims



1. In combination with a vehicle, a vehicle seat comprising:
 - a seat cushion assembly, means mounting the cushion assembly on the vehicle and permitting fore and aft adjustment of the vehicle seat, a seat back assembly, pivot means mounting the seat back assembly on the seat cushion assembly to permit movement of the seat back assembly between a seating position and a forwardly tilted easy-enter position, first and second links pivotally connected together at one end, means pivotally connecting the other end of the first link to the pivot means, means pivotally connecting the other end of the second link to the vehicle, the second link rotating the first link about the pivot means when the vehicle seat is adjusted fore and aft, and latch means acting between the first link and the seat back assembly to rotate the first link about the pivot means and move the vehicle seat forwardly when the seat back assembly is moved forwardly to easy-enter position, the latch means being unlatchable to permit rotary movement of the first link relative the seat back to permit fore and aft adjustment of the vehicle seat while the seat back assembly remains in seating position.

3,853,374

METHOD FOR THE MANUFACTURE OF PHOTOELECTRON MULTIPLIERS

Gunter Flasche, Darmstadt, and Werner Tretnar, Weiterstadt, both of Germany, assignors to Robert Bosch Fernsehantlagen GmbH, Darmstadt, Germany

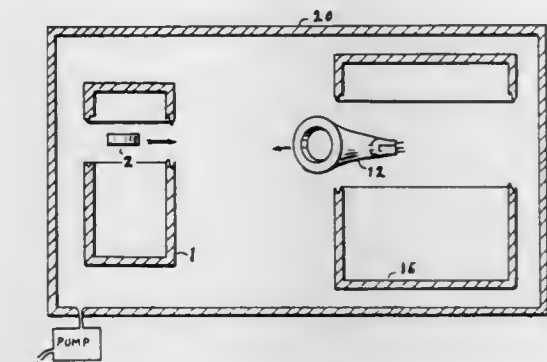
Filed Sept. 22, 1972, Ser. No. 291,281

Claims priority, application Germany, Sept. 30, 1971, 2148809

Int. Cl. H01j 9/18

U.S. Cl. 316—19

9 Claims



1. Method for manufacturing an electron discharge tube comprising a bulb which includes a photosensitive layer for detecting radiation in a certain band, which radiation enters the tube through a window, which window is permeable to radiation of that band, and which bulb further includes other electrode structure functioning in cooperation with the photosensitive layer for operation as an electron discharge tube, comprising the steps of:

- A. assembling said other electron structure in the bulb, leaving a prepared opening,
- B. placing the bulb and the electrode structure contained therein in a first evacuated vessel provided with a crack-off groove,
- C. performing a polishing pretreatment on the edge surface of the window and on the edge surface of the bulb which surrounds the prepared opening,
- D. constructing the photosensitive layer in connection with the window within a second evacuated vessel provided with a crack-off groove,
- E. preheating the photosensitive layer and the electrode structure to degas the preheated elements for vacuum preservation,
- F. placing the first and second vessels and their respective contents inside a third evacuated vessel,
- G. opening the first and second vessels inside the third vessel by cracking open their respective crack-off grooves,
- H. operating a mechanical gripping device which removes the photosensitive layer from the second vessel and places it close to the bulb,
- I. inserting the photosensitive layer and the window in the prepared opening while inside the third vessel,
- J. sealing the window to the bulb to preserve a vacuum within the bulb, while inside the third vessel, and
- K. removing the bulb and contents, forming the discharge tube, from the third vessel.

3,853,375

ELECTRICAL CONNECTOR APPARATUS DISCONNECTABLE LINK ASSEMBLY

James E. McClain, Greenville, Tex., assignor to Esco Manufacturing Company, Greenville, Tex.

Filed Dec. 15, 1972, Ser. No. 315,636

Int. Cl. H01r 31/08

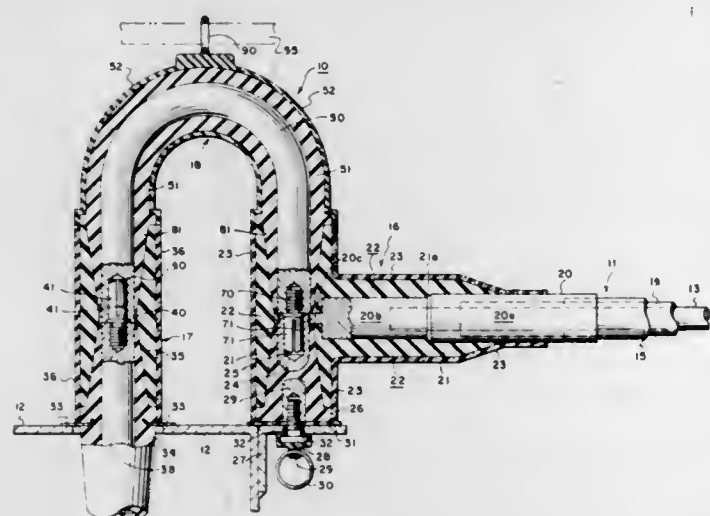
U.S. Cl. 339—19

12 Claims

1. Electrical connecting apparatus for disconnectably electrically coupling and uncoupling a stationary high voltage electrical cable with electrical apparatus disposed in a housing

while maintaining said cable in a stationary position, comprising:

- a. cable connecting means rigidly secured to the electrical apparatus housing, said cable connecting means including a first insulating jacket portion extending from said housing, an elongated central conductor axially extending through a second insulating jacket portion transverse to said first insulating jacket and having one end adapted for coaxial termination with said cable,
- b. bushing assembly means rigidly secured to the electrical apparatus housing and including an elongated central conductor axially extending through an insulating jacket portion extending from said housing parallel to said first insulating jacket portion for electrical connection with said electrical apparatus,



- c. conductive link means including a central conductor axially extending through an integrally joined insulating jacket, the central conductor and the insulating jacket of said conductive link means having end portions adapted for respective disconnectable coupling with the elongated central conductor and the extending jacket portion of the cable connecting means and the bushing assembly means,
- d. means provided on both ends of the central conductor of the said conductive link for respectively mateably engaging with means provided at one end of the elongated central conductors of the cable connecting means and the bushing assembly means, and
- e. means coupled to the insulating jacket of said conductive link means for enabling the simultaneous coupling or uncoupling of the cable connecting means with the bushing assembly means by way of the conductive link means.

3,853,376

ELECTRIC CONNECTION DEVICES

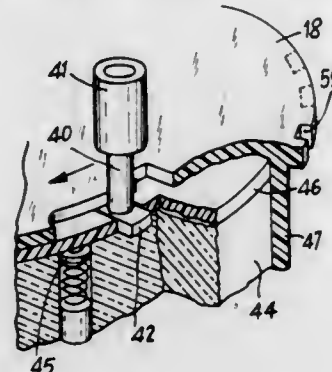
Gilles Adrien Georges Marechal, 36 Quai de Bethune, Paris, France

Filed Mar. 30, 1972, Ser. No. 239,523

Int. Cl. H01r 13/54

U.S. Cl. 339-41

8 Claims



1. An electric connection device of the type comprising, in combination: a plug and a receptacle each having contacts and constituted by an insulating contact support housed within a casing, said plug and said receptacle carrying associated relatively rotational locking means and associated guiding means arranged to couple these said means in a single

relative angular position, locations for said contacts on each of said two supports being uniformly spaced over a circumference with exception of one contact which occupies a displaced position with respect to this spaced arrangement, and a safety disc of insulating material provided with openings adapted to be traversed by said contacts of said plug being pivotally mounted on said receptacle coaxially with said circumference defining said contact locations, said safety disc being rotationally displaced by said plug at the time of locking of said plug to said receptacle from an initial angular position corresponding to a given combination of contacts to be uncovered at finish of locking rotation movement, wherein said contact support of each said plug and said receptacle is adjustable in steps of ϕ degrees in relative angular position with respect to a respective one of said guiding means associated respectively with said plug and said receptacle, the angular displacement of that contact which is displaced with respect to the uniform spaced arrangement is $k\phi$ degrees, k being a whole number and retractable locking means provided for maintaining said safety disc in its initial position at a time of disconnection of said plug from said receptacle.

3,853,377

TIGHT FITTING PLUG CONNECTION AND METHOD FOR MAKING SAME

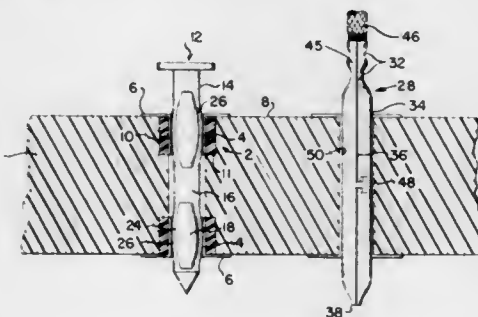
Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309

Filed Dec. 27, 1971, Ser. No. 212,091

Int. Cl. H01r 13/40; H05k 1/04

U.S. Cl. 339-59 R

13 Claims



1. A removable, reusable electrical connector element for mating connector components and the like comprising:
 - a. a conductor sheath having a substantially regularly shaped surface and a resilient, compressible, flexible and expandable spring wall portion
 - b. a core of resilient elastic material in contact with said conductive sheath and at all times under compression and at all times exerting a force on said spring wall portion
 - c. said spring wall portion being slightly and non-abruptly deformed by said core material and at all times under stress
 - d. said sheath including means for permitting flexing of said spring wall portion inwardly and outwardly, and
 - e. said sheath being substantially less compressible than said core material.

3,853,378

LOCKING DEVICES FOR MOVABLE PIN-SHAPED ELECTRICAL CONTACTS

Armel Louis, 4, rue de l'Eglise, Vitry, France

Filed June 27, 1972, Ser. No. 266,677

Claims priority, application France, June 6, 1972, 72.20257

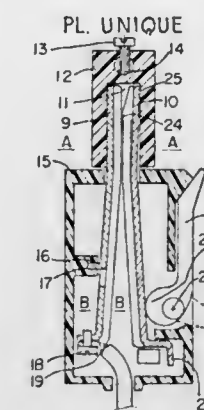
Int. Cl. H01r 13/54

U.S. Cl. 339-75 P

4 Claims

1. A plug device for engaging a cooperating receptacle for transferring electrical current, said plug device comprising a housing, at least one pair of pins supported by said housing, with end portions of both pins in each pair projecting from said housing and being adapted to extend in the same opening in said receptacle, one pin of each pair being fixed relative to said housing, a cam rotatably mounted relative to said housing and engaging said other pin, and lever means for rotating said

cam and urging said end portion of said other pin about a fulcrum point in a direction away from said end portion of said



one pin to increase the contact pressure with the walls defining said opening in said receptacle.

3,853,379

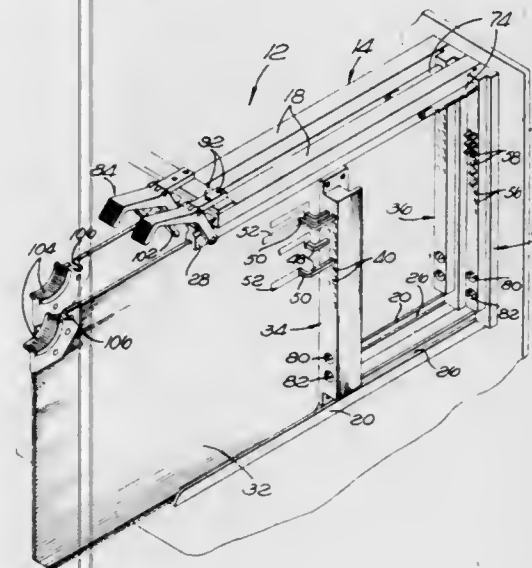
PRINTED CIRCUIT BOARD CONNECTOR ASSEMBLY
David S. Goodman, Orange, and Jack E. Langenbach, Newport Beach, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,266

Int. Cl. H01r 13/54

U.S. Cl. 339-75 MP

26 Claims



7. In printed circuit board connector assembly, at least one printed circuit board, a frame for supporting said board, means on said frame defining a slot for guiding said board, said board having conductive layers thereon and a first set of contacts associated with said layers, and a second set of contacts fixedly mounted adjacent one end of said frame in juxtaposition with said first set of contacts when said printed circuit board is mounted in said frame, the improvement which comprises:

a card guide member slidably mounted on said frame, said slot being formed in said card guide member; said first and second sets of contacts being spaced from one another when said board is mounted in said frame; means for moving one of said sets of contacts in tandem causing said two sets of contacts to engage; and means carried by said slidable card guide for actuating said moving means.

3,853,380

ANGULARLY POSITIONABLE ELECTRICAL CONTACT HOUSING

Steven Clark Baker, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 15, 1973, Ser. No. 360,499

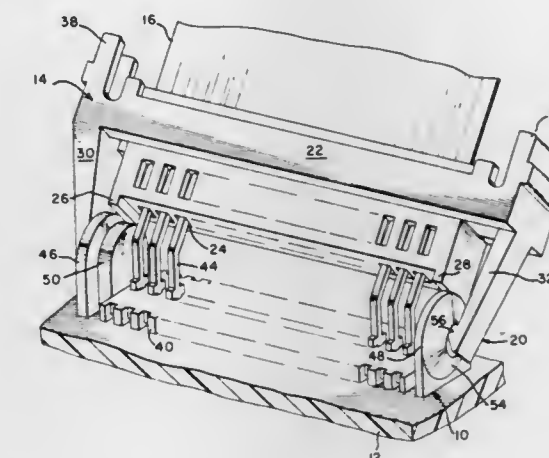
Int. Cl. H01r 13/54

U.S. Cl. 339-91 R

6 Claims

1. A electrical contact housing assembly comprising: first and second housing members of electrically insulating

material, a plurality of female receptacles fixedly mounted in one of said members and a like plurality of male pins fixedly mounted in the other of said members arranged to be linearly slidably received in a corresponding female receptacle, complementary locking means on said housing members



releasably connecting the housing members together such that one housing member can be engaged at different angular positions relative to the other housing member so that the receptacles are aligned with the pins, and said pins being bent prior to engagement to a predetermined fixed angle of engagement about an axis defined by said locking means.

3,853,381

JACKSCREW RETAINER

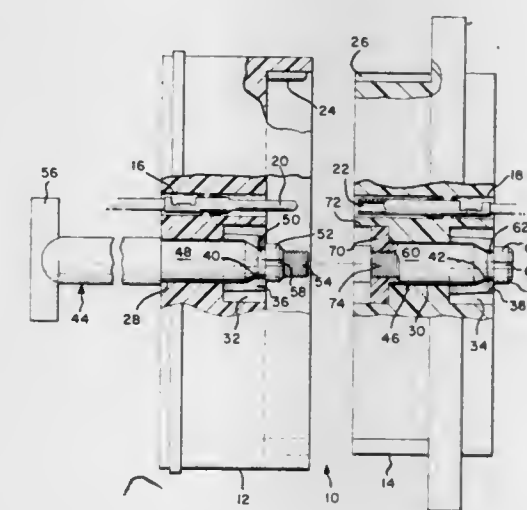
Leroy Jack Morningstar, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1973, Ser. No. 370,112

Int. Cl. H01r 13/54

U.S. Cl. 339-92 M

6 Claims



1. In combination with a pair of mating connector blocks, each block carrying a plurality of pins or receptacles and having a bore, a coaxial counterbore, and a plurality of cantilever locking tines in said counterbore resiliently integral with said block and disposed about said bore, each said tine having a radially inwardly directed detent on the free end thereof, a jack screw retaining means for securing said blocks in an assembled condition, said jack screw retaining means comprising:

first and second shafts each having an annular recess and an annular shoulder adjacent one end thereof, said recesses being engaged by said detents of said tines and gripping means on the other end of said first shaft for effecting rotation thereof.

3,853,382

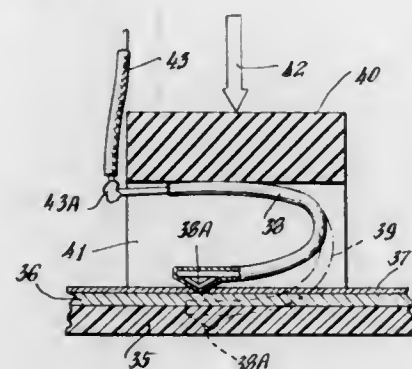
HIGH PRESSURE ELECTRICAL CONTACTS

Michael Lazar, White Plains, N.Y., assignor to Burndy Corporation, Norwalk, Conn.

Filed Apr. 28, 1972, Ser. No. 248,624

Int. Cl. H01r 9/12

U.S. Cl. 339-95 R



1. In combination in an electrical connector for effecting multiple, readily separable low energy, signal level connections, comprising a plug contact connector characterized by a plurality of extending spring elements, each having a male contact point, said elements and said contact points being made of an electrically conductive metal coated with a layer of a deformable white metal, and a receiving member comprising a substrate having thereon a plurality of electrically conductive elements made of an electrically conductive metal, said elements being also coated with a deformable ductile white metal, said plug connector with said coated male contact points being adapted to effect a separable spring-loaded contact connection with said coated elements of said receiving member, such that when the said plurality of male contact points is in spring-loaded penetrating contact against the coated elements of said receiving member, the white metal coatings at the area of contact are mutually plastically deformed at the point of contact, to provide a low resistance contact between the coated male contact points and the said coated electrically conductive elements.

3,853,383

ELECTRICAL CONNECTOR FOR THERMOCOUPLE SYSTEMS

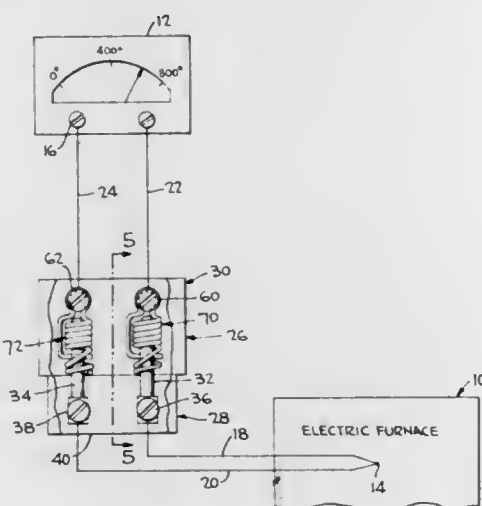
Edward K. Shabet, 4 Truro Rd., Butler, N.J. 07405

Filed June 7, 1973, Ser. No. 367,900

Int. Cl. H01r 13/12

U.S. Cl. 339-95 R

20 Claims



1. A jack terminal for use in a jack assembly wherein a plug is received in the jack terminal comprising:
a continuous length of wire coiled to define a receptacle portion having a plurality of coils and having a portion thereof bent to form a wiper arm which extends through said receptacle and between said coils to provide wiping

contact with the plug member when the plug member is inserted in said receptacle.

3,853,384

OPTICAL TRANSMISSION LINE

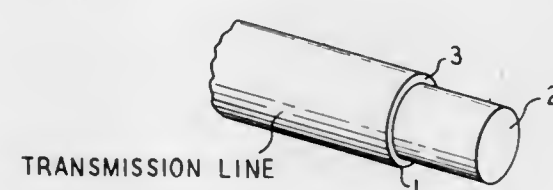
Douglas Arthur Pinnow, Berkeley Heights, and LeGrand Gerard Van Uiter, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1973, Ser. No. 351,168

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

16 Claims



1. Glass transmission line for the transmission of electromagnetic radiation within the wavelength range of from 0.5 to 2.0 μm , said line consisting essentially of a core member manifesting a first refractive index for said wave energy and a cladding about said core, said cladding including at least one layer having a second refractive index for said wave energy which is lower than the said first index, said second index being of a value at least 0.1 percent lower than said first index at least within a region in the neighborhood of a periphery of the said cladding, in which said core and said cladding are both primarily a mixed composition of B_2O_3 and SiO_2 with the $\text{SiO}_2/\text{B}_2\text{O}_3$ ratio being within the mole fraction range of from 30:1 to 2:1 and in which at least the innermost portion of the core contains sufficient additive material to result in a refractive index-increase for a wavelength within the said range of at least 0.1 percent, said additive being completely dissolved in the said mixture and having an index which is a maximum of 30 percent greater than that of the said mixture as unmodified by the said additive.

3,853,385

SEALED CONNECTOR FOR INSULATED CONDUCTORS

Mario Palazzetti, Avigliana, and Franco Grisotto, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

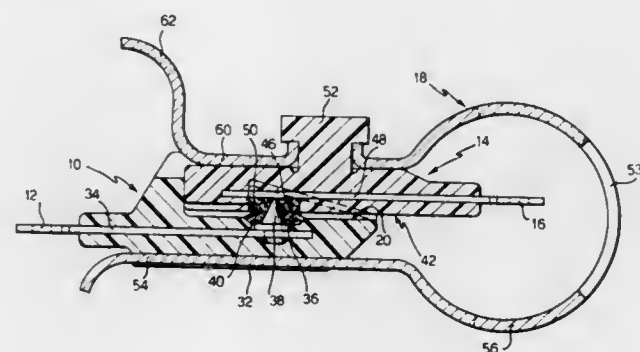
Filed Nov. 16, 1973, Ser. No. 416,547

Claims priority, application Italy, Nov. 21, 1972, 70649/72

Int. Cl. H01r 11/20

U.S. Cl. 339-96

7 Claims



1. A connector adapted to effect a sealed and releasable connection between insulated conductors, said connector comprising, in combination:

- a first rigid insulating impermeable body having a working face formed with a depression;
- a first metal plate embedded in said first body and extending from the depression through the first body, said plate having a first external terminal on the outside of the first body;

- a contact pin electrically connected to said first plate and housed in the depression of the first body, said pin projecting beyond the plane of the said working face;
- a layer of gelatinous resin filling the depression in the working face of the first body and entirely covering the contact pin;
- a second rigid insulating impermeable body having a working face formed with a depression;
- a second metal plate extending from the depression and through said second body, said second plate having a second external terminal on the outside of the second body;
- a layer of gelatinous resin filling the depression in the second body; and
- pressure means for pressing the two bodies against each other with their working faces facing each other, so that the contact pin carried by the first body perforates the layers of gelatinous resin in the two depressions to make contact with the plate in the depression of the second body.

3,853,386

LOW-LOSS, HIGHLY REFLECTIVE MULTILAYER COATING SYSTEM FORMED OF ALTERNATE HIGHLY REFRACTIVE AND LOW-REFRACTIVE OXIDE LAYERS

Elmar Ritter, Vaduz, and Hans K. Pulker, Triesen, both of Liechtenstein, assignors to Balzers Patent-und Beteiligungs-AG, Balzers, Furstentum, Liechtenstein

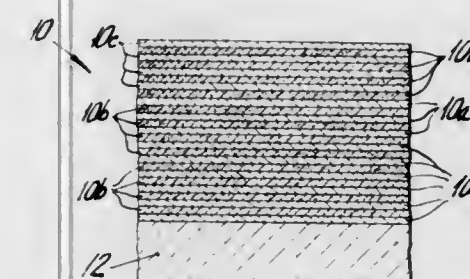
Filed Sept. 6, 1973, Ser. No. 394,574

Claims priority, application Switzerland, Sept. 19, 1972, 13713/72

Int. Cl. G02b 5/28

U.S. Cl. 350-164

4 Claims



1. A low-loss, highly reflective multilayer system for coating a substrate comprising alternate layers of high refraction and low-refraction oxide layers whose low-refraction layers comprise a low-absorption oxide of silicon and said high refraction layers comprise titanium oxide, and wherein at least the three last high refraction layers located on the side of the system which is opposite to the substrate side comprises zirconium oxide.

3,853,387

VARIABLE MAGNIFICATION LENS ASSEMBLY HAVING TWO ODD-LENSES

David G. A. Demaine, and John M. Palmer, both of Leeds, England, assignors to Rank Xerox Limited, London, England

Filed June 19, 1973, Ser. No. 371,458

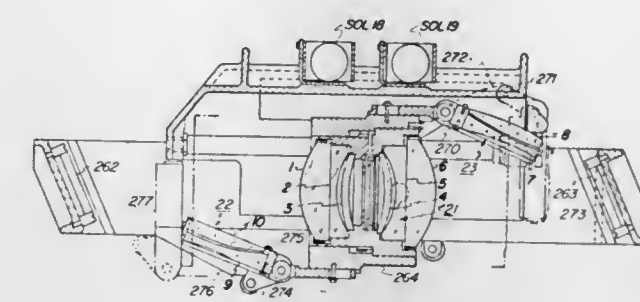
Int. Cl. G02b 15/10

U.S. Cl. 350-183

4 Claims

1. A lens assembly comprising six elements disposed along an optical axis and arranged in a substantially symmetrical arrangement of two groups of three elements, the outermost pair of elements of each group of three being a cemented doublet with the outermost element of each doublet being bi-convex and the innermost element of each doublet being bi-concave, the innermost element of each group of three

being concavo-convex with its convex surface outermost, the lens assembly being according to the following structural data:



ITEM	RADIUS (inches)	AXIAL THICKNESS (inches)	REFRACTIVE INDEX
OBJECT PLATEN	PLANE	0.47240	N(404.7) = 1.53735 N(435.8) = 1.53338 N(486.1) = 1.52860
AIR		28.41036	1.0
LENS 1	3.4665 -2.6772	1.20078	N(404.7) = 1.64185 N(435.8) = 1.63698 N(486.1) = 1.63113
LENS 2	-216.772 2.570	0.27108	N(404.7) = 1.56931 N(435.8) = 1.56355 N(486.1) = 1.55679
AIR		0.18611	1.0
LENS 3	4.2202 6.5586	0.30986	N(404.7) = 1.64185 N(435.8) = 1.63698 N(486.1) = 1.63113
AIR		0.68583	1.0
STOP			
AIR		0.70228	1.0
LENS 4	-6.5586 -4.1322	0.31430	N(404.7) = 1.64120 N(435.8) = 1.63634 N(486.1) = 1.63050
AIR		0.22659	1.0
LENS 5	-2.5575 216.772	0.38078	N(404.7) = 1.56931 N(435.8) = 1.56355 N(486.1) = 1.55679
LENS 6	216.772 -3.4834	1.14532	N(404.7) = 1.64185 N(435.8) = 1.63698 N(486.1) = 1.63113
AIR		19.6750	1.0
IMAGE SURFACE			

3,853,388

CLUSTER ASSEMBLY AND CONNECTOR CLIP THEREFOR

Henry H. Heimbrock, Cincinnati, Ohio, assignor to Van Products Incorporated, Cincinnati, Ohio

Filed Oct. 17, 1972, Ser. No. 298,455

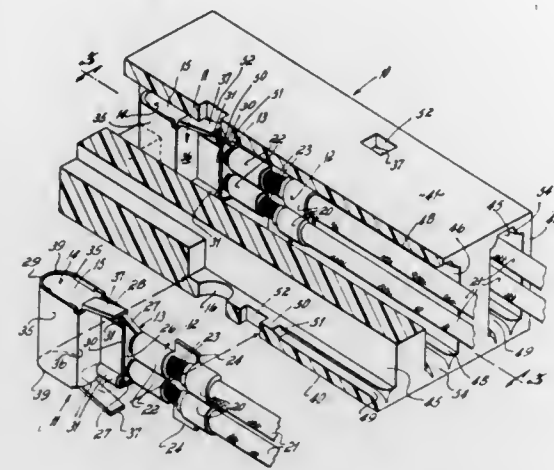
Int. Cl. H01r 33/72

U.S. Cl. 339-192 RL

5 Claims

1. A connector clip consisting of a one piece sheet metal element for making electrical connection between a lead wire and a pin comprising:
a ferrule means for gripping a lead wire,
a pair of wings projecting in opposite directions from said ferrule means,
a shank projecting from said ferrule means,
a strip projecting from said shank, said strip being looped upon itself to form a receptacle for the receipt of said pin, the dimension between the extremities of said wings being

substantially the same as the width of said strip,



and means tightly clamping the end of said strip against said shank, thereby forming two low resistance current paths from said receptacle to said shank.

3,853,389

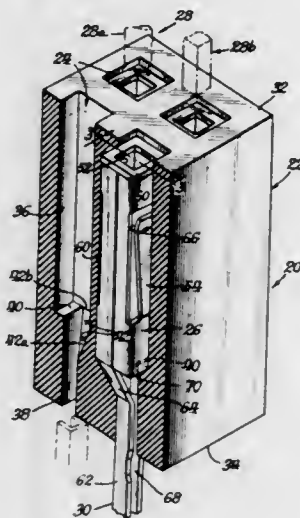
ELECTRICAL CONNECTOR AND CONTACT

Carl Occhipinti, Melrose Pk., Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 261,698, June 12, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,400
Int. Cl. H01r 9/08

U.S. Cl. 339—217 S

27 Claims



1. An electrical connector comprising a body of insulating material having a front face and a cavity extending longitudinally therefrom in a rearward direction, and

a contact at least partially disposed in said cavity and including a front elongated socket section for front engagement with a mating contact and a rear tail section for engagement with an external conductor, said socket section including at least one pair of opposite outer sidewalls and at least one pair of contact fingers outwardly supported by said sidewalls, said fingers including longitudinally offset contact engagement surfaces inwardly disposed within said socket section and beam sections inclined outwardly from said surfaces toward said sidewalls in opposite longitudinal directions, each of said beam sections being integral with one of said side walls and supporting one of said engagement surfaces, one of said contact engagement surfaces being frontwardly disposed so that said mating contact will initially engage only one of said surfaces with the other of said contact engagement surfaces being rearwardly disposed and the beam section with said rearwardly disposed surface being inclined rearwardly and disposed laterally opposite said frontwardly disposed surface to guide said mating contact to

a center position in said socket section and into engagement with said frontwardly disposed surface.

3,853,390

HERMETICALLY SEALED ELECTRICAL CONNECTOR

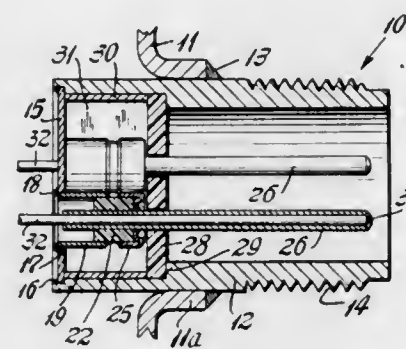
Robert E. De Koeper, and Marion T. Mikita, both of Milford, Conn., assignors to Westport Development & Manufacturing Company, Inc., Milford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,129

Int. Cl. H01r 5/04

U.S. Cl. 339—275 R

2 Claims



1. An electrical connector for providing a hermetically sealed leakproof electrical connection through a wall over a wide temperature range comprising a tubular shell secured to the wall to have an interior end portion located on one side of the wall and an open exterior end portion on the other side of the wall, a base closing the interior end portion of the shell and having at least one hole, a terminal secured to the base at the hole to project into the shell, said terminal including an electrically insulating ceramic annulus having a through hole, means securing one end portion of the annulus to the base, a cap welded to the other end portion of the annulus to form a sealed securement, a tube extending through the through hole of the annulus and the cap, means welding said tube only to the cap and the through hole of the annulus to form a sealed securement, means for securing a conducting wire in the tube, and in which the means securing the annulus to the base and the cap are formed of electrical conducting material and in which they are spaced apart on the annulus to provide an electrically insulating gap therebetween on the periphery of the annulus.

3,853,391

FABRICATION OF LIQUID CRYSTAL DEVICES

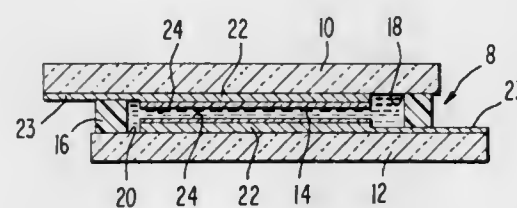
Howard Sorkin, Berkeley Heights, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,347

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC

2 Claims



1. A liquid crystal device comprising: an enclosure and a liquid crystal material therewithin, a surface of said enclosure having an electrode thereon, and a layer of magnesium fluoride on said electrode providing an oriented microstructure along with molecules of said liquid crystal material sympathetically align.

3,853,392

GASKET FOR LIQUID CRYSTAL LIGHT SHUTTERS

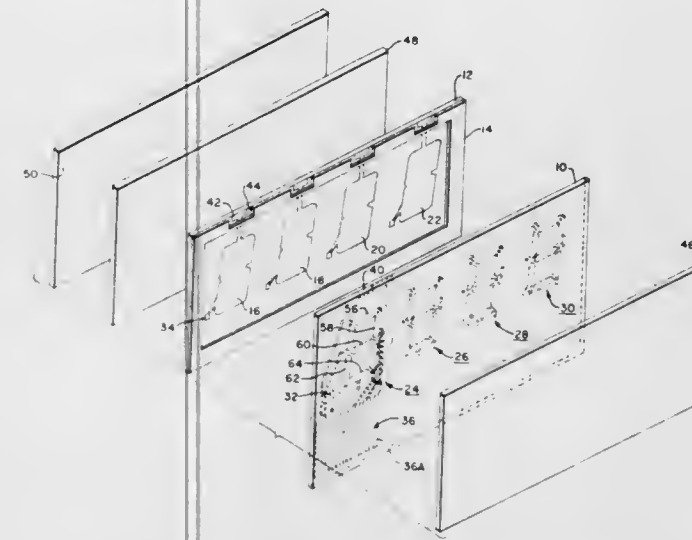
James L. Ferguson, Kent, Ohio, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Sept. 13, 1973, Ser. No. 396,789

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC

8 Claims



1. In a field effect liquid crystal light shutter, the combination of a layer of liquid crystal material sandwiched between transparent parallel plates, films of transparent conductive material on the plates and in contact with the liquid crystal material, means for applying a potential between said films of transparent material to thereby effect a light shutter action, a gasket surrounding said layer of liquid crystal material to confine it between said plates, said gasket being in contact with said films of conductive material and being formed from an insulator containing a material which will reduce the effective resistance of the liquid crystal layer between the films to decrease the capacitive storage time of said light shutter.

3,853,393

TUBE MEANS WITHIN AN INJECTION-MOLDED TEMPLE FOR ACCOMMODATING ELECTRIC CONDUCTORS THEREIN

Jurgen Fila, and Joachim Kwiatkowski, both of Berlin, Germany, assignors to Robert Bosch Elektronik GmbH, Berlin, Germany

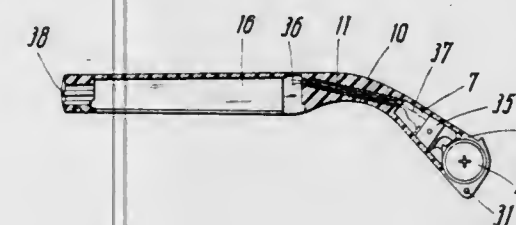
Filed Aug. 28, 1973, Ser. No. 392,175

Claims priority, application Germany, Sept. 22, 1972, 2246737

Int. Cl. G02c 5/14; H04r 25/00

U.S. Cl. 351—111

7 Claims



4. An eyeglass temple as defined in claim 3, wherein said material is a metal.

3,853,394

VIDEO FILM PROJECTOR

Earl Chamberlin, 1804 Mission, Santa Cruz, Calif. 95060

Filed June 6, 1973, Ser. No. 367,641

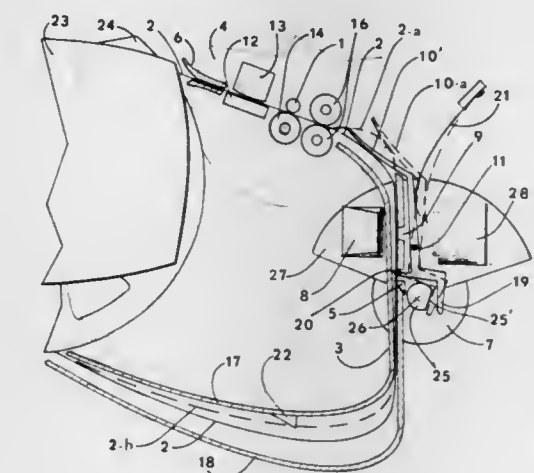
Int. Cl. G03b 1/00

U.S. Cl. 352—184

8 Claims

1. A film projector comprising a gate, means forming an aperture in the gate, means having a light path through the aperture, drive means for driving a film strip through the gate,

registration pin means for engaging perforations in a film strip driven through the gate to hold the strip motionless with respect to the aperture, shutter means for interdicting the light path, and synchronizing means movable in response to rotation of said shutter member through the light path to engage the film strip in the gate and disengage it from the registration pin for positively synchronizing the shutter means with transport of the film strip past the aperture, wherein said shutter means comprises a shutter member mounted on a rotating shaft for rotation through said light path, and wherein said synchronizing means comprises a cam mounted on said shaft for rotation therewith, and a cam



follower member pivotally mounted on the projector frame, and having a finger arranged to intermittently engage a film strip in the gate adjacent the registration pin and disengage it from the registration pin as the cam rotates.

said cam follower member further comprising a distal end adapted to engage a film strip in the projector upstream of the gate and spring means for biasing said distal end against a film strip in the projector whereby film upstream of the gate will inherently bias the follower against the cam end and, upon disengagement of the film strip from the registration pin, the follower will urge the film strip through the gate under the force of said spring means.

3,853,395

MICRO OPTIC STORAGE AND RETRIEVAL SYSTEM

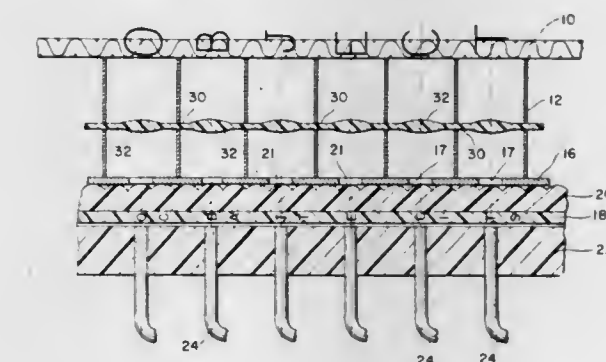
George J. Yevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed Mar. 9, 1973, Ser. No. 339,905

Int. Cl. G03b 21/11, 23/08

U.S. Cl. 353—27

6 Claims



1. A microfiche and reader for projecting and viewing micro optic information carried by a microfiche having a plurality of

lensettes, the reader including a viewing surface against which information is adapted to be projected, the microfiche carrying a plurality of images each defined by a set of sub-images spaced over the microfiche, the sub-images being each adapted to be projected over the multiplicity of parallel, spaced optical axes to the viewing surface, and an apertured mask positioned between the microfiche and the viewing surface, the improvement which comprises:

- an intermediate projection lens positioned between each mask aperture and said viewing surface and having its optic axis coincident with the normal axis of each said mask aperture,
- each mask aperture being aligned with one of said lensettes, the number of lensettes being greater than both the number of projection lenses and mask apertures,
- a plurality of vertical, opaque septa extending from adjacent said surface to adjacent said apertured mask, said septa dividing the space between said surface and said apertured mask into a plurality of cells, there being one such cell for each of said apertures in the mask.

3,853,396

CONTINUOUS PHOTOGRAPHING CAMERA WHICH CAN BE DRIVEN WITH HIGH SPEED BY AN AUXILIARY POWER SOURCE

Mitsutoshi Ogiso, Kawasaki; Hiroshi Aizawa, Tokyo, and Susumu Kozuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

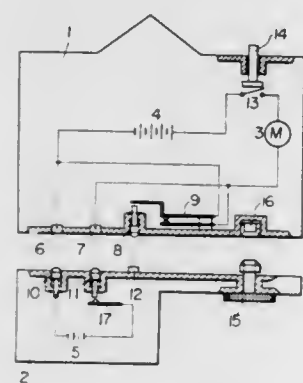
Filed Sept. 6, 1973, Ser. No. 394,573

Claims priority, application Japan, Sept. 6, 1972, 47-103738

Int. Cl. G03b 1/12, 19/04

U.S. Cl. 354-173

5 Claims



1. An electric driving system, for a still camera including walls forming a camera main body, comprising, in combination, a main electric power source mounted in said main body; motor operated driving means in said body operable, when connected to said source, to perform functions of the camera including film wind-up and shutter charging and release; a normally closed switch means in said main body in series in a supply circuit connecting said driving means to said source; a pair of first terminals, on a wall of said body, connected to respective opposite ends of said switch means; and an auxiliary power source device including a casing constructed for disengageable coupling to said body wall carrying said first terminals, an auxiliary power source in said casing and a pair of second terminals on said casing connected to respective opposite terminals of said auxiliary power source and each engageable with a respective first terminal upon coupling of said casing to said body; said normally closed switch means being opened responsive to coupling of said casing to said body whereby said main and auxiliary power sources are connected in series with each other responsive to such coupling.

3,853,397 DEVICES FOR REPRODUCING BY PHOTOELECTRIC METHOD

Marcus Cantarano, 47, av. F. Roosevelt, Thiais 94320, France

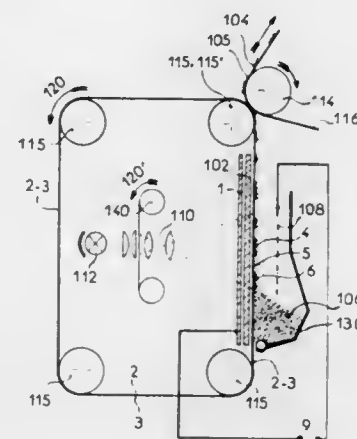
Division of Ser. No. 152,962, June 14, 1971, Pat. No.

3,776,723, which is a continuation-in-part of Ser. No. 715,313, March 22, 1968, abandoned. This application Sept. 6, 1973, Ser. No. 394,648

Int. Cl. G03g 15/00

U.S. Cl. 355-3 R

18 Claims



1. An electrographic device comprising a photoconductive layer, means for placing a layer of electrically chargeable particles against said photoconductive layer, means for exposing said photoconductive layer to a pattern of radiation forming a conductivity pattern in said photoconductive layer, and means for generating across said layer of electrically chargeable particles an alternatively modulated electric field of sufficient strength to transfer alternating electric charges from said conductivity pattern to said layer of electrically chargeable particles whereby said layer of particles receives a pattern of greater and lesser alternating charges, said greater alternating charges removing a part of said particles while said lesser alternating charges maintain the remaining particles in said layer of particles thereby developing a stable electrographic image.

3,853,398

MASK PATTERN PRINTING DEVICE

Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

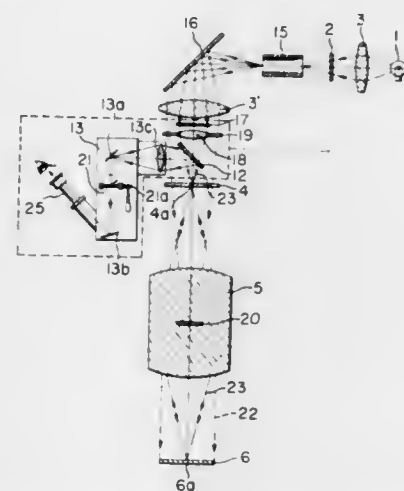
Filed June 4, 1973, Ser. No. 366,576

Claims priority, application Japan, July 5, 1972, 47-67399; July 5, 1972, 47-67401

Int. Cl. G03b 27/70

U.S. Cl. 355-43

11 Claims



1. A mask pattern printing device for a mask having a prescribed pattern, a photo-sensitive plate on which the pattern of the mask is photographed and printed, optical means for passing an illuminating beam of light along a path through the

mask and onto the plate and a reflected beam from the plate, and a mask pattern observation means, being characterized by a means to polarize the illuminating light through the mask at the time of observation, said observation means including means in the optical path between the mask and the photo-sensitive plate to virtually delay the polarization state of the polarized luminous beam by a quarter wavelength, and said observation means including analyzer means in the reflected path, for eliminating the harmful reflected light from the mask and observing the reflected light from the photo-sensitive plate only.

3,853,399

METHOD OF STORING AND RETRIEVING INFORMATION

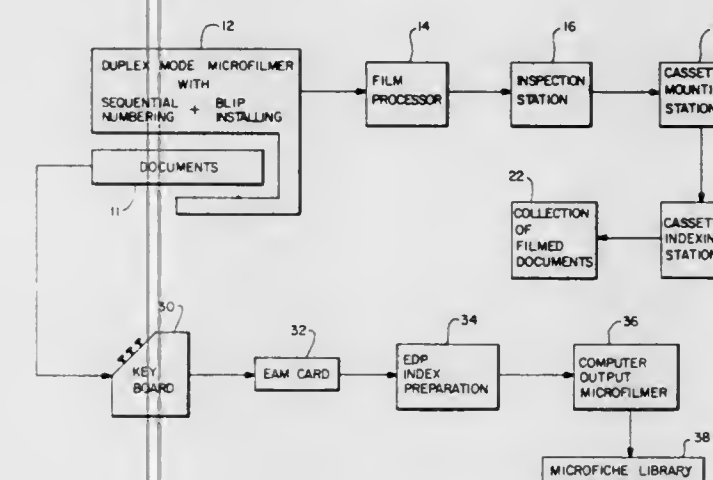
Robert J. Walsh, Cardova, Tenn., assignor to Plough, Inc., Bloomfield, N.J.

Filed Oct. 17, 1973, Ser. No. 407,315

Int. Cl. G03b 27/64

U.S. Cl. 355-64

6 Claims



1. A method of storing and retrieving information which has been gathered from a plurality of documents comprising:

- randomly filming a document on a roll of film while simultaneously imprinting a film index number on the document;
- encoding the film index number, a library access number and a document number onto a storage means to form input data;
- sorting the input data by means of electronic data processing equipment to place the input data in order by library access number and generate a magnetic tape containing the input data in order by library access number;
- converting the ordered magnetic tape into a strip of film containing the input data in order by library access number; and
- cutting the ordered strip of film into a plurality of microfiche forms so that a library of microfiche forms arranged by library access number has been created.

3,853,400

LIQUID APPLICATOR FOR A PHOTOGRAPHIC PRINTER

Hideo Hosaka, Tokyo, Japan, assignor to Bell & Howell Company, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,515

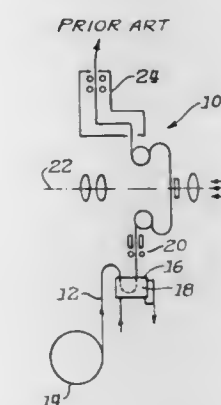
Int. Cl. G03d 5/06

U.S. Cl. 355-103

11 Claims

1. In a photographic film printer having a printing axis and having means for moving a first image bearing film and a second photosensitive film through respective first and second film paths, for coating the first and second surfaces of said first film with a liquid and for guiding said first and second films across said printing axis thereby exposing said image from said first film onto said second film, the improvement comprising:

a liquid applicator means through which said first film path traverses, said liquid applicator means including a first liquid supply means and a second liquid supply means, a first roller means adjacent to said first film path and to said first liquid supply means wherein said first roller means rotates through at least a portion of said liquid in said first liquid supply means and wherein said first roller means transfers said liquid to said first surface of said first film and a second roller means adjacent to said first film path and to said second liquid supply means wherein said second roller means rotates through at least a portion of said liquid in said second liquid supply means and wherein said second roller means transfers said liquid to said second surface of said first film, and means for selectively



varying the speed of rotation of said first and said second roller means whereby a preselectable quantity of liquid is applied to the surfaces of said film regardless of the speed of which said film passes through said liquid applicator means; a printing means adjacent to said liquid applicator means through which said printing axis traverses and through which said first and second film paths traverse, wherein said first and second film paths traverse said printing axis whereby said image on said first film is exposed onto said second film; and a drying means adjacent to said printing means through which said first film path traverses wherein said drying means dries said first film.

3,853,401

ROLL DUPLICATOR FOR CONTINUOUSLY COPYING IMAGES OF AN ORIGINAL FILM ONTO A COPY FILM

Mutsuhiro Inoue, Sagami, and Shunzo Inoue, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

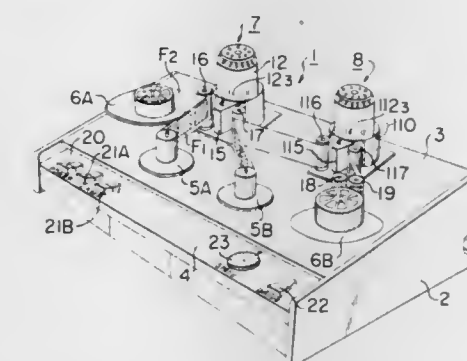
Filed June 23, 1971, Ser. No. 155,754

Claims priority, application Japan, June 26, 1970, 45-55814

Int. Cl. G03b 27/30

U.S. Cl. 355-106

7 Claims



1. A roll duplicator for continuously copying images of an original film onto a copy film, comprising: supply reel means for carrying thereon a roll of copy film, said copy film being able to form color by light of a first wavelength range and losing its color forming property by light of a second wavelength range different from said first wavelength range;

first exposure means including a first light source for producing light of said first wavelength range, and first guide means for guiding said copy and original films in overlapped relationship through an area illuminated by a flux of light produced by said first light source;

second exposure means provided downstream of said first exposure means in the direction of movement of said copy film, said second exposure means including a second light source for producing light of said second wavelength range, and second guide means for guiding at least said copy film through an area illuminated by a flux of light produced by said second light source;

take-up reel means for winding thereon said copy film; and copy film driving means including a member for driving said take-up reel means and said copy film so as to continuously transport said copy film from said supply reel means to said take-up reel means;

whereby said copy film and said original film may be guided while overlapped through said first exposure means, whereafter either said copy film may be singly guided through said second exposure means or both of said copy film and said original film may be guided while overlapped through said second exposure means, so that positive or negative images corresponding to the images on said original film may be continuously formed and fixed on said copy film through exposure processes provided by said first and second exposure means.

3,853,402

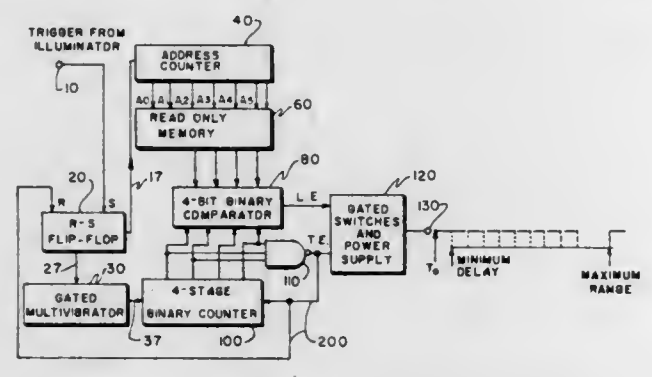
DIGITAL GATED DEPTH OF FIELD INTENSITY EQUALIZER

Donald Nichols, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1974, Ser. No. 438,920
Int. Cl. G01c 3/08

U.S. Cl. 356—5

7 Claims



1. A digital gating system for an image intensifier in which the image intensifier is gated on in accordance with the inverse square law in range, the system comprising:

- a pulsed illuminator source producing output trigger pulses therefrom;
- a switching circuit having a first and a second input and a first and a second output therefrom with first of said inputs being connected to and operating simultaneously with said pulsed illuminator;
- a pulsing circuit having an input connected to said first output from said switching circuit;
- a four stage binary counter having a first and a second input and four outputs therefrom;
- an address counter having an input connected to said second output from said switching circuit and having multiple outputs therefrom;
- a read only memory having multiple inputs that are connected to said multiple outputs from said address counter and having four outputs therefrom, said read only memory having stored therein an assigned number of switching pulses in a total cycle of sixty four switching pulses at each delay on said multiple outputs from said address counter to the input of said read only memory;

a four bit binary comparator having four inputs from said read only memory and four inputs from said four stage binary counter and two outputs therefrom;

a logic circuit having three inputs from three of said four outputs from said four stage binary counter and having an output therefrom; and

gates switches and power supply having a first and a second input and an output therefrom wherein said output from said logic circuit produce a trailing edge pulse when said four stage binary counter has cycled through all four outputs wherein said trailing edge pulse is simultaneously applied to said first input of said gated switches and power supply and to said second input of said switching circuit for stopping said switching circuit and to said four stage binary counter for resetting said four stage binary to receive the next output trigger pulse from said pulsed illuminator source for triggering said switching and pulsing circuits and wherein said output from said four bit binary comparator produces a leading edge that is applied to said second input to said gated switches and power supply whereby said leading edge is varied in time commensurate with the inverse square law of returned illumination and said leading edge activates switches within said gated switches and power supply that applies said power supply to an image intensifier tube and said trailing edge deactivates said switches to remove said power supply from said image intensifier.

3,853,403

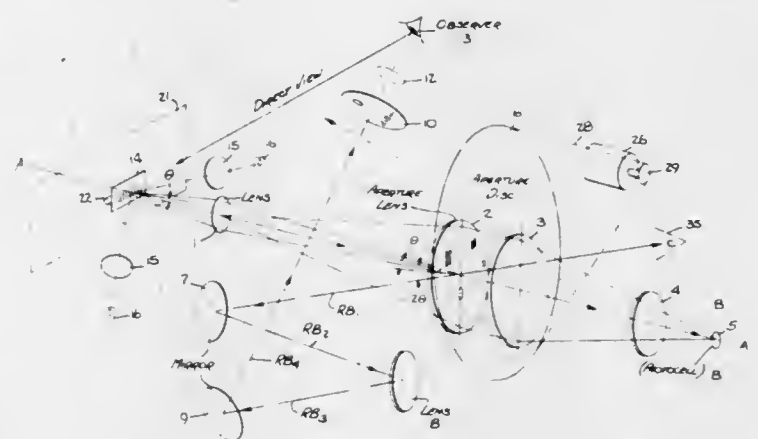
COMPOUND OPTICAL-SENSOR SYSTEM FOR VISUALLY OBSERVING AND PHOTOELECTRICALLY SENSING CODED INDICIA

George P. Bentley, 168 Cherry Ln., Amherst, Mass. 01002
Filed Nov. 12, 1973, Ser. No. 414,819

Int. Cl. G06k 9/08; G01n 21/48

U.S. Cl. 356—71

22 Claims



1. An optical device for measuring optical reflectance characteristics of characters and other like indicia arranged upon a substrate, the reflectivity of said substrate and the reflectivity of the indicia being substantially different, said device comprising:

- a first mask having a window behind which the indicia bearing region of the substrate is adjustably positioned;
- means for illuminating the region of the substrate behind said window with substantially uniform flux;
- a first lens arranged a spaced distance from said window and having a front surface facing said window and a rear surface remote from said window;
- a second lens positioned between said window and said first lens for imaging at least a portion of the illuminated indicia in said window on the rear surface of said first lens;
- reflective means along the rear surface of said first lens for reflecting rays impinging on the surface of said reflecting means, said reflective means having at least one aperture for passing rays impinging upon said aperture through said aperture;

sensing means positioned in a sensing plane located a spaced distance from the rear surface of said first lens for sensing radiation passing through said aperture;

a third lens positioned between said first lens and said sensing means for imaging the aperture stop of said second lens in said sensing plane.

3,853,404

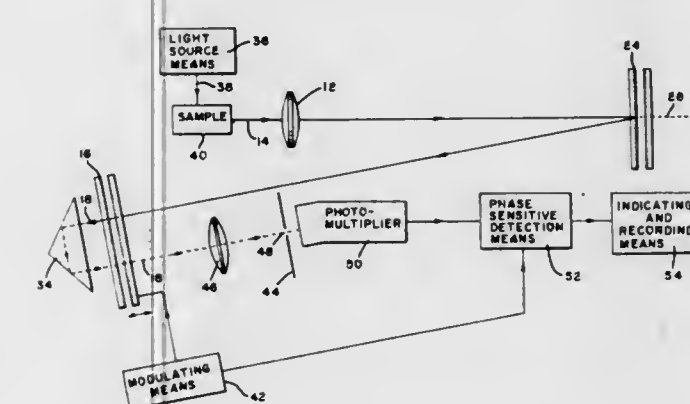
SIMULTANEOUS INTERFEROMETRIC TRANSMISSION OF PERIODIC SPECTRAL COMPONENTS

Joseph J. Barrett, Morris Plains, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 280,378, Aug. 14, 1972, abandoned. This application June 25, 1973, Ser. No. 373,576
Int. Cl. G01j 3/44; G01b 9/02

U.S. Cl. 356—75

29 Claims



1. Apparatus for analyzing light having spectral components periodic in frequency comprising:

- a. light conditioning means for collecting, collimating and transmitting said light; and
- b. primary interferometric means adapted to receive said light for selectively separating periodic spectra therefrom and transmitting said spectra in the form of a detectable signal, said primary interferometric means having interference producing means for providing a plurality of transmission windows regularly spaced in frequency, the frequency spacing between adjacent windows being adjusted to equal substantially the frequency difference between adjacent spectral components of the same periodic spectrum, and scanning means for causing the transmission peaks for adjacent orders to coincide with the spectral lines of the components, whereby said detectable signal is a fringe derived from a plurality of periodic spectral lines and has an intensity substantially equal to their sum.

3,853,405

HEAT OR LIGHT SOURCE TRACKING DEVICE

Fred P. Adler, Los Angeles, and William A. Craven, Jr., Culver City, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

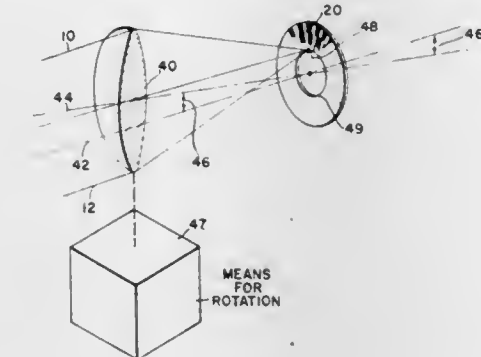
Filed Sept. 4, 1956, Ser. No. 608,649
Int. Cl. G01s 3/78

U.S. Cl. 356—152

7 Claims

1. A radiant energy device for indicating when a predetermined axis is in line with a source of radiant energy and comprising in combination, a rotatable optical system having an axis of rotation and an optical axis for focusing an image of said source upon a plane disposed substantially perpendicular thereto, said optical system being disposed with said axis of rotation passing through a predetermined point in said plane perpendicular thereto and with said optical axis nonparallel to said axis of rotation and passing through said plane, means for rotation of said optical system coupled thereto for causing said image to traverse a circular path, a reticle disposed substantially in said plane and having a center point coincident with said axis of rotation, said reticle including means for amplitude modulating the radiant energy passing therethrough as

said image traverses said circular path, the amplitude of modulation being in proportion to the displacement of the center of said circular path from the center point of said reticle, and a radiant energy detector axially aligned with said reticle and



being responsive to the amplitude modulated radiant energy passing through said reticle to develop an output signal indicative of the concentricity of said circular path with respect to said axis of rotation.

3,853,406

DIFFERENTIAL OPTICAL NONCONTACTING DIAMETER GAUGE UTILIZING A PAIR OF LINEARLY SCANNING LIGHT BEAMS SEQUENTIALLY SCANNING THE TEST PIECE

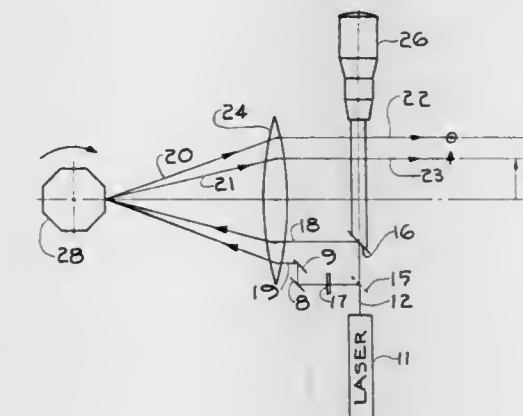
Carl A. Zanon, Middletown, Conn., assignor to Zygo Corporation, Middletown, Conn.

Continuation-in-part of Ser. Nos. 368,441, June 8, 1973, abandoned, and Ser. No. 388,267, Aug. 14, 1973, and Ser. No. 394,562, Sept. 6, 1973. This application Dec. 3, 1973, Ser. No. 421,247

Int. Cl. G01b 11/02

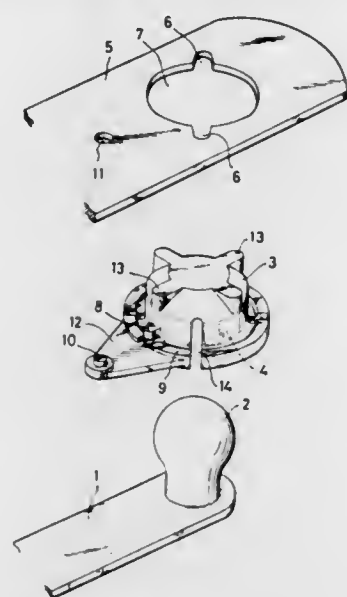
U.S. Cl. 356—167

8 Claims



1. An electrooptical device for measuring the cross-sectional width of an opaque test object which comprises (1) a source of radiant energy which produces a narrow beam; (2) means for splitting said beam into two parallel beams of nearly equal intensity and of such different polarization that the two beams can be readily separated; (3) means for adjusting the distance between the two parallel beams; (4) means for focusing said two beams onto a reflecting uniformly rotating surface which reflects the beams onto (5) means for collimating said reflected beams to provide a pair of linearly-scanned light beams which are separated by a uniform preset distance and which can be interrupted by the object; (6) means for collecting, separating, and separately photosensing the two linearly-scanned beams to produce two pulses corresponding to the interruption and noninterruption of the beams by the opaque test object; and (7) means for processing said pulses to produce a pulse whose width is proportional to the difference between the width of the test object and the distance between the two parallel-scanned beams.

link having an opening through which said socket member is insertable with the ball stem engaged in said socket member, such that said second link can be brought to a position between the projecting member and receiving flange, and coupling means on said socket member and second link for holding the same together and preventing relative rotation therebetween, said coupling means being operatively engaged by turning the socket member and link relative to one another



after insertion of the socket member in said opening, said coupling means including a resilient arm member extending radially from said flange and including a portion remote from said flange facing the second link, and a projection extending between said second link and resilient arm member at said facing location resiliently bearing between these elements when the socket member is inserted in said opening in said second link.

3,853,415

COUPLING ASSEMBLY FOR CARRIAGE AND ACTUATOR

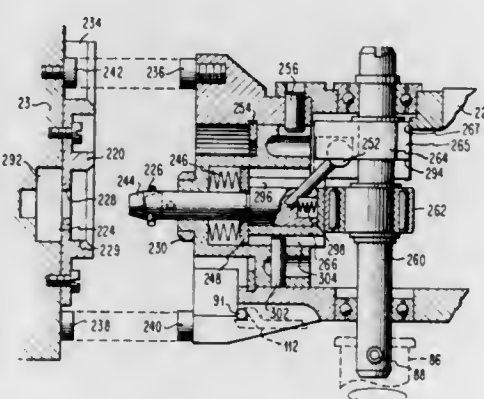
Cecil Percy Barnard, Los Gatos; Richard Burke Mulvany, and Albert Daniel Rizzi, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,748

Int. Cl. A44b 17/00

U.S. Cl. 403-322

9 Claims



1. An assembly for coupling a linear drive actuator assembly and a carriage assembly for conjoint linear travel, said actuator assembly comprising:

- a key pin assembly having a crosspin formed at one end;
- a pilot element disposed closely to said key pin assembly and facing said carriage assembly;
- a first set of mating pins projecting from said actuator assembly towards said carriage assembly;
- said carriage assembly comprising: a latch plate connected to one end of said carriage assembly, the latch plate having a mating surface including a pilot hole for engag-

ing and initially locating said key pin assembly, and a guide formed with a clearance slot and a top guide slot for engaging said pilot element and for providing final alignment and engagement of said key pin assembly;

a second set of mating pins projecting from said carriage assembly for engaging said first set of mating pins to provide parallel alignment of said carriage assembly and said actuator assembly;

eccentric cam shaft means coupled to said actuator including a rotatable shaft, a cam formation on said shaft for linearly reciprocating said pin assembly relative to said carriage, a coupling pin coupled to and movable with said shaft and engaging said key pin assembly for rotating said pin assembly, so that said pin assembly and said latch plate may be joined in a stiff and fixed relationship;

spring means joined to said actuator assembly for biasing said pin assembly in a direction away from said latch plate and toward said actuator when said latch plate and pin assembly are joined, the bias force of said spring means being greater than the acceleration forces experienced by said actuator and carriage when joined for linear travel; and

means connected to said eccentric shaft for unloading the spring bias force during rotation of said pin assembly relative to said latch plate.

3,853,416

JOINT ASSEMBLY FOR A LOCK STRUCTURE

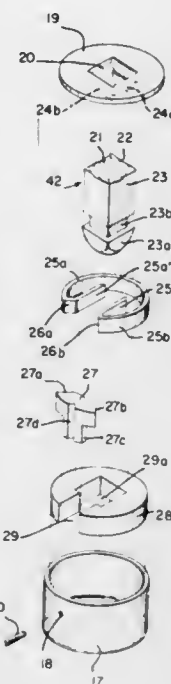
Abraham Hanan, P.O. Box No. 119, Brooklyn, N.Y. 11223

Filed May 14, 1973, Ser. No. 360,103

Int. Cl. F16d 1/06

U.S. Cl. 403-322

7 Claims



1. A lock device comprising in combination: an elongated squared shaft of substantially square cross-section defining along an elongated axis thereof an indentation slot defined by recessed substantially flat-faced upright recessed walls outwardly facing from one-another located adjacent and above a substantially horizontal substantially flat-faced step-wall preventing withdrawal of the shaft; a shaft-receiving hole-structure means defining a receptacle, said hole-structure means being substantially square in cross-section and surrounding a terminal end of the squared shaft and a pair of opposing downwardly-turned upright sidewardly inwardly-facing flat-faced channel-defining spaced-apart walls, said hole-structure means further defining an enclosure space; and key means including a unitary spring-annulus having at a first location substantially parallel radially inwardly extending spring-biasing locking-legs extending substantially horizontally and having substantially upright leg flat faces positioned on opposite sides of and substantially perpendicular to said

pair of downwardly-turned upright flat faced walls such that the flat faces of the locking-legs extend substantially parallel to and snap against the opposite edges of said flat-faced channel-defining spaced-apart walls when the elongated squared shaft is inserted into the hole-structure means' receptacle, said enclosure space being defined by containing and substantially circumscribing walls of the hole-structure means, the unitary spring-annulus being loosely mounted within the enclosure space, the circumscribing wall having in a side wall thereof a key-aperture extending therethrough of small predetermined size having a key inserted therein, and a movably mounted slide-element mounted within the enclosure space mounted adjacent said spring annulus at said first location, one end of the slide element being substantially wedge-shaped and an opposite end thereof facing radially outwardly adjacent and opposite to an inner end of said key-aperture, the wedge-shaped end being positioned between a first predetermined part of the flat-faces of the locking-legs at said first location such that said key when inserted and pressed through said key-aperture causes said wedge-shaped end to press-apart the locking-legs from one-another as the slide-element is slid radially inwardly in a direction between the locking-legs whereby the shaft when already inserted may be removed.

3,853,417

APPARATUS FOR ANCHORING A CEMENT CONCRETE BODY SUCH AS A ROADWAY ONTO A BASE OF SAND, GRAVEL, SOIL OR SIMILAR MATERIAL

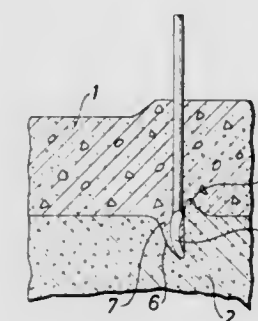
Gunnar Otto Hugo Olsson, Vibblabyvagen 16, Jakobsberg, Sweden

Division of Ser. No. 231,297, March 2, 1972, Pat. No. 3,810,708. This application Feb. 22, 1974, Ser. No. 445,034 Claims priority, application Sweden, Mar. 4, 1971, 2804/71

Int. Cl. E01c 21/00

U.S. Cl. 404-90

4 Claims



1. An apparatus for anchoring a cement concrete body in a base of sand, gravel, soil, or similar material to bring about a uniform distribution of cracks of contraction coming to existence in the body in connection with the hardening of the cement concrete, said apparatus including at least one rod-shaped hole forming device (3), characterized in that the hole forming device is articulately fixed to an apparatus (10) adapted to travel on the cement concrete layer (1), that driving means (22, 15, 19) are devised to adjust the hole forming device (3) with the longitudinal axis thereof inclined to the upper surface of the cement concrete layer and to impart to the hole forming device an axial, downwards directed movement and to drive said device through the cement concrete layer (1) into the base (2) to the depth corresponding to the density of the base and then to impart to the device a turning movement about the lower end of said device and after that the longitudinal axis of said hole forming device has been turned to a predetermined extent to retract said device out of the base and the cement concrete layer.

3,853,418

SAFETY SUPPORT FOR USE ADJACENT A VEHICULAR TRAFFICWAY

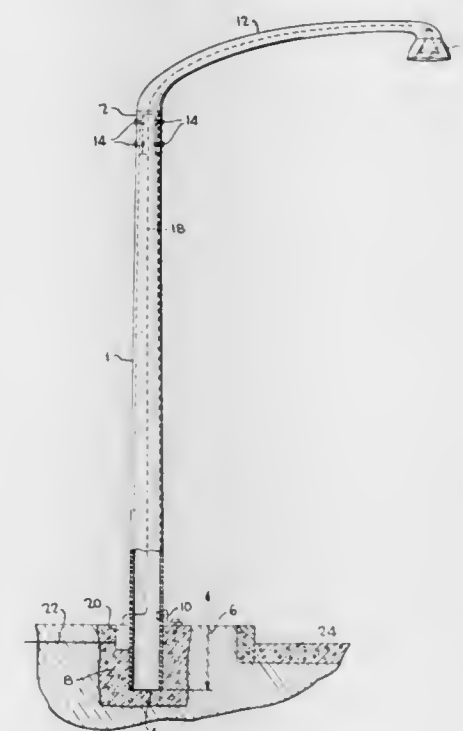
Melvin L. Druin, West Orange, and Paul E. McMahon, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,674

Int. Cl. E04c 3/06, 12/12

U.S. Cl. 404-1

11 Claims



1. A vehicular traffic system exhibiting improved safety characteristics comprising:

- a. substantially vertical article bearing means for the support of lighting fixtures, traffic control indicia, utility lines, and the like, comprising a high strength elongated tubular member having an upper end and a lower end, a thin wall thickness, and the ability to undergo catastrophic rupture when struck laterally by a moving vehicle, wherein the wall of said tubular member comprises (a) about 35 to 70 per cent by volume of a resinous matrix, and (b) about 30 to 65 per cent by volume of pyrolyzed carbonaceous fibers containing at least 90 per cent carbon by weight incorporated within said resinous matrix,
- b. a vehicular trafficway, and
- c. mounting means positioned adjacent said trafficway in engagement with the lower end of said substantially vertical article bearing means, with said mounting means exhibiting no substantial impediment to the movement of a vehicle.

3,853,419

COMPACTOR WHEEL CONFIGURATION

August H. Bertram, Aurora, and Andrew J. Gorski, Naperville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1973, Ser. No. 372,412

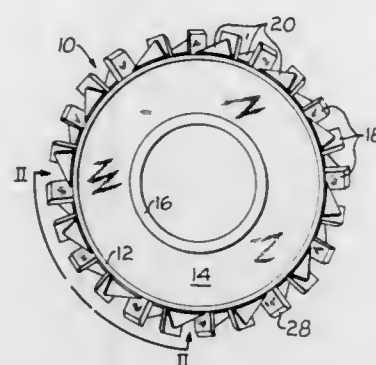
Int. Cl. E01c 19/26

U.S. Cl. 404-121

8 Claims

1. A compactor wheel comprising a cylinder defining an axis of rotation and a diameter, a plurality of chopper blades successively mounted around the periphery of said cylinder, each of said blades being oriented at an angle to said cylinder axis and extending only part way across said cylinder, each of said chopper blades being in the form of a rectangularly shaped plate member having dimensions of height, length, and thickness, each of said blades defining a pair of parallel planar side surfaces intersecting a radially outermost length edge defining an edge surface perpendicular to said side surface, each of said chopper blades being secured to the cylinder

periphery along a radially innermost length edge so that the blade extends radially outwardly from said cylinder, the radially outermost length edge having a beveled surface thereon intersecting with only one of said side surfaces and said edge surface to produce a cutting edge thereon so as to ensure



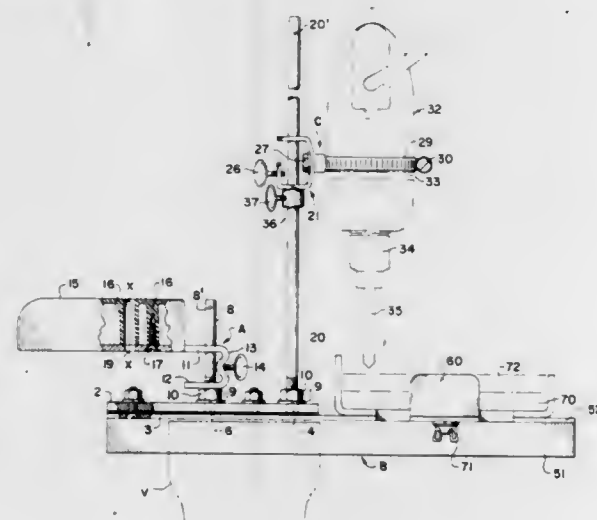
3,853,420

PORTABLE ELECTRIC HAND DRILL ACCESSORY
Andrew T. Abell, 21 Gateway Rd., New Wilmington, Pa. 16142

Filed June 6, 1973, Ser. No. 367,328
Int. Cl. B23b 45/14

U.S. Cl. 408-14

15 Claims



1. An electric hand drill-holding and guiding accessory comprising:
- a base panel;
 - a post on the base panel;
 - means for slidably supporting an electric drill on the post comprising an adjustable band arranged to be clamped about an electric hand drill;
 - an internally-threaded element secured to the band;
 - a slide member slidably and rotatably fitted on the post comprising a yoke having opposite end portions through which the post extends joined by a longitudinally-slotted curved connecting portion at one side of the post which passes through the said end portions, and
 - a bolt passing through the slot in said connecting portion and screwed into said internally-threaded element on the band whereby the drill-holding clamp is adjustably fixed on said curved connecting portion for movement in an arc such that the lower end of a drill bit in the electric

hand drill may be adjusted toward or away from the post and the electric hand drill also adjusted in an arc about said bolt as a pivot.

3,853,421

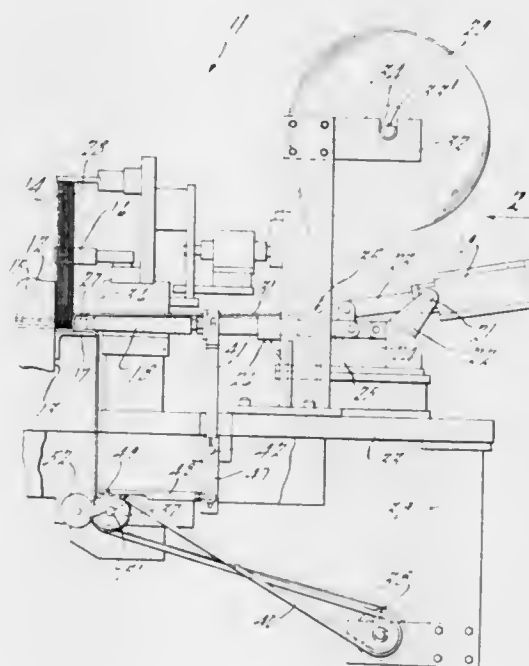
PAPER DRILLING MACHINE

Albert E. Sickinger, Bloomfield Hills, Mich., assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Feb. 16, 1973, Ser. No. 333,065
Int. Cl. B23b 39/16, 47/00

U.S. Cl. 408-52

3 Claims



1. In a drilling machine for forming a row of holes in the edges of paper stacks, said row having a predetermined length, a stationary member having an elongated surface against which an edge portion of the stack is to be directly clamped, a row of drills guided in said stationary member for movement between a retracted position and a position passing through said elongated surface and penetrating all the sheets, a movable member carrying an elongated wooden backup block and reciprocable between a retracted position and a position in which said block is forced against said edge portion of the stack and said edge portion directly engages said stationary member, said drills entering backup holes in said block after it has passed through the sheets, and means for preventing the formation of a ragged hole edge on the last sheet of the stack engaging said block due to undue enlargement of said backup holes, said means comprising a supply of paper having a width greater than said predetermined row length, mounting means for said paper supply adjacent said members and spaced therefrom in a direction perpendicular to the extent of said row of holes, a paper-storing takeup roll mounted adjacent said members on the opposite side thereof from said paper supply mounting means, means guiding said paper in said perpendicular direction through the space between said block and said last sheet and thence to said takeup roll, means for indexing said paper in increments in response to retraction of said movable member so that an undrilled portion of the paper will overlap said backup holes, whereby any ragged edges will be formed in said indexable paper rather than in said last sheet, said indexing means comprising a one-way clutch connected to a guide roll for said paper past the location of said drills, a lever interconnecting said one-way clutch with said movable member, and driving means interconnecting said guide roll and take-up roll, whereby retraction of said movable member will advance said paper.

3,853,422

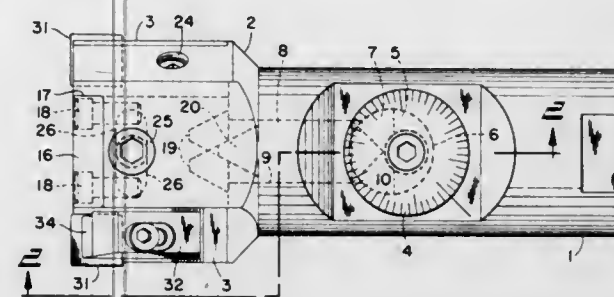
ADJUSTABLE BORING BAR

Milton L. Benjamin, and Wilbur N. Miles, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Nov. 2, 1973, Ser. No. 412,204
Int. Cl. B23b 29/034

U.S. Cl. 408-161

3 Claims



1. An adjustable boring bar comprising a bar having a longitudinal bore intersected by a transverse slot of rectangular cross-section and by a transverse bore; a pair of cutter elements having rectangular shank portions slidable in said slot and having cutting edges at their radially outer extremities; screw actuated cam means in said transverse bore; a cam plunger movable lengthwise in said longitudinal bore and having engagement with said cam means and with said cutter elements to move the latter in said transverse slot responsive to actuation of said cam means; clamp screw means in said bar operative to flex the slotted portion of said bar to firmly clamp said shank portions together in predetermined adjusted relation; said transverse slot comprising a groove in the end portion of said bar which defines the opposite side walls and one end wall of said slot; a cap member secured on the end of said bar to close said groove to form the other end wall of said slot; and screw means eccentrically disposed with respect to said clamp screw means for securing said cap member to said bar whereby tightening of said clamp screw means flexes the opposite side walls of said slot toward each other into clamping relation with the overlapped shank portions of said cutter elements therebetween.

3,853,423

HORIZONTAL DRILLING AND MILLING MACHINE WITH A HEADSTOCK MOVABLE UPWARDLY AND DOWNWARDLY ON GUIDING MEANS

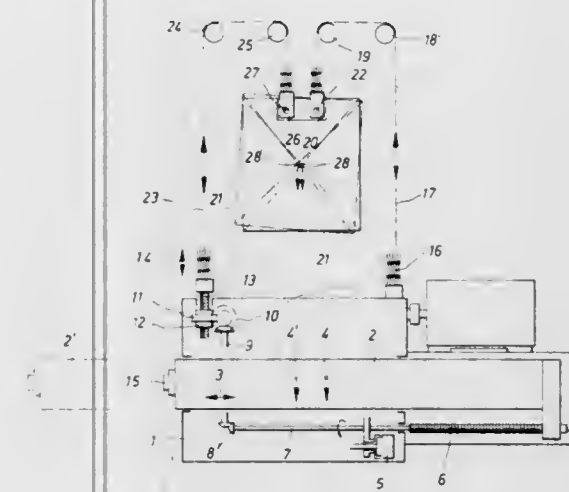
Paul Quack, Rheydt, Germany, assignor to Scharmann & Co., Rheydt, Germany

Filed Sept. 25, 1972, Ser. No. 292,261
Claims priority, application Germany, Sept. 25, 1971, 2147985

Int. Cl. B23b 47/26

U.S. Cl. 408-235

4 Claims



1. In a horizontal drilling and milling machine, a vertical support, a headstock assembly comprising a saddle member

guided for vertical movement on said support, and a tool holding sleeve means horizontally displaceable in said saddle member, a counterweight, at least two flexible means on said support for connecting the counterweight to said saddle member for vertically balancing said assembly in a substantially transverse vertical plane containing the center of gravity of said assembly, actuating means to move said sleeve means of said headstock assembly horizontally in said saddle member, and transmission means including at least one rotatable means connected to at least one flexible means for interconnecting said actuating means and at least one of said flexible means to effect a variation in length of said at least one flexible means in response to the movement of said supporting sleeve relative to said headstock assembly to maintain said supporting sleeve in a predetermined horizontal orientation.

3,853,424

LABYRINTH AIR VALVE FOR ROTOR HUB

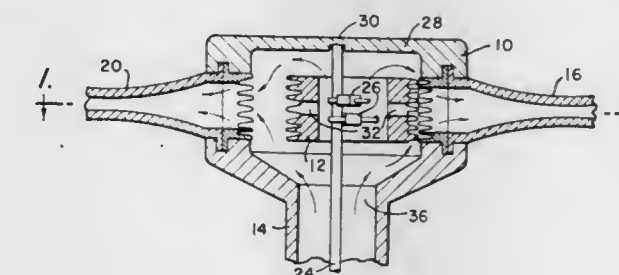
Henry J. Bernaerts, R. F. D. 10, Box 1610, Annapolis, Md. 21401

Filed July 18, 1973, Ser. No. 380,322

Int. Cl. B64c 27/18

U.S. Cl. 416-20

14 Claims



1. A rotor hub for a circulation control helicopter rotor comprising:
- an inner member;
 - a rotating outer member surrounding said inner member and spaced therefrom to form a fluid flow passage;
 - fluid receiving means in said rotating member; and
 - sealing means between said inner member and said fluid receiving means, said sealing means comprising a labyrinth seal.

3,853,425

TURBINE ROTOR BLADE COOLING AND SEALING SYSTEM

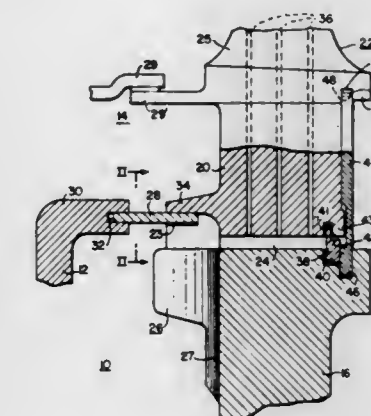
Augustine J. Scalzo, Philadelphia, and Leroy McLaurin, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,316

Int. Cl. F01d 5/18

U.S. Cl. 416-95

5 Claims



1. A rotor assembly for an axial flow gas turbine comprising: a plurality of rotor blades, each blade having an airfoil portion, a root portion, and a platform therebetween, at least one rotatable turbine rotor or disc having a plurality of side entry

channels spaced on the periphery thereof for receiving the root portions of blades, a chamber axially disposed radially inwardly of and adjacent the root portions of the blades, a plurality of radially directed cooling fluid flow passageways extending from the root portion through the airfoil portion of the blade, said passageways being in fluid communication with said axially disposed chamber, a generally radially directed groove disposed on the upstream side of the rotor, said groove being in fluid communication with said axially disposed chamber, said groove comprising a pumping means during rotor rotation to draw cooling fluid from a source, forcing said fluid through said axially disposed chamber and into said radially directed passageways, said fluid being discharged from the radially outermost end of said passageways in the airfoil portions of the blade, plate means for sealing the chamber downstream, said plate means being notched to interlock with a mating tab on the downstream end of the blade root, said plate means being disposed in a peripheral groove near the downstream side of said disc, exhaust sealing and locking plate means disposed on the downstream side of the blade root, said exhaust sealing and locking plate means being supported inwardly by a peripheral groove on the downstream edge of the disc and supported outwardly by an inwardly facing groove in an extension of the blade platform, said sealing and locking plate means being in restraining contact with said chamber sealing plate means, said locking plate means preventing axial movement of said blade and said chamber sealing plate means, said exhaust sealing and locking plate means sealing the downstream portion of said side entry channels.

3,853,426

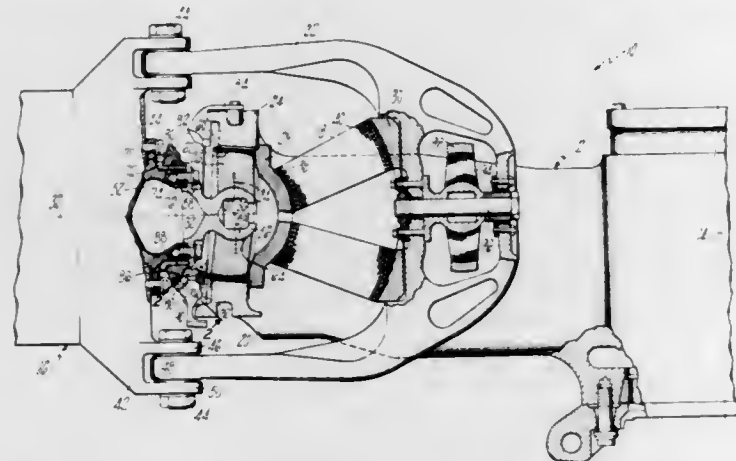
ELASTOMERIC HELICOPTER ROTOR HEAD WITH DYNAMIC AND STATIC BLADE CONING AND DROOP STOPS

Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 286,508, Sept. 5, 1972, abandoned. This application Aug. 29, 1973, Ser. No. 392,825 Int. Cl. B64c 27/38

U.S. Cl. 416-140

30 Claims



1. An articulated helicopter rotor including:

- A. a rotor hub adapted to be mounted for rotation,
- B. at least one helicopter blade projecting substantially radially from said hub and having a pitch change axis, a lead-lag axis and a flapping axis intersecting at a common point,
- C. means supporting said blade from said hub for universal motion about the intersection of said axes,
- D. a ring member mounted on said blade for rotation relative thereto about said pitch change axis and at a station radially outward of said point of intersection and having:
 1. a conically shaped surface positioned to move toward said hub as said blade droops downwardly,
- E. a droop stop member including:
 1. a frame means connected to said hub,
 2. dynamic droop stop means supported by said frame means and having a barrel shaped surface concentric with respect to the lead-lag axis and positioned and

shaped to matingly engage said conically shaped surface of said ring member when said blade droops downwardly to a selected first angle, and so that said matingly engaged surfaces will continue in mating engagement without affecting blade pitch or downward droop angle as the blade moves in lead-lag motion about the lead-lag axis, due to the continuous rolling contact between said matingly engaged surfaces of said rotatable ring member and said dynamic droop stop means, 3. static droop stop means loosely pivotable on and supported from said frame means or dynamic droop stop means for movement with respect thereto and including:

- a. a cam member having a conically shaped surface and positionable to matingly engage said conically shaped surface of said ring member when said blade droops downwardly to a second selected angle, and being concentric with respect to the lead-lag axis so that said matingly engaged surfaces of said rotatable ring member and said cam surface remain in mating engagement without affecting blade pitch, blade downward flap or droop angle, and without preventing independent blade pitch change as said blade moves in lead-lag motion about said lead-lag axis, due to the continuous rolling contact established between said matingly engaged surfaces of said ring member and said cam surface,
- b. a barrel shaped surface corresponding in shape to said barrel shaped surface of said dynamic droop stop means,
- c. counterweight means connected to said cam member so that when said blade is operating at low rotational speed or is stopped, said conically shaped surface of said cam member matingly engages the conically shaped surface of said rotatable ring member when said blade and rotatable ring member flap downwardly to said selected first angle so as to, due to the loose pivot connection between said static droop stop means and said frame means, or dynamic droop stop means to thereby cause said barrel shaped surface of said cam member to engage said barrel shaped surface of said dynamic droop stop means in mating engagement so that blade loading is imparted through said static droop stop means and said dynamic droop stop means and said frame means to said hub, and so that when rotor speed increases, said counterweight means will cause said cam member to move in response to centrifugal force from between said conically shaped surfaces of said ring member and said dynamic droop stop means to permit a greater degree of downward blade droop motion to a second selected angle before said conically shaped surfaces of said ring member and said dynamic droop stop means barrel shaped surface matingly engage to impart blade loads through said dynamic droop stop means and said frame means to said hub.

3,853,427

MANUALLY CONTROLLED VARIABLE PITCH PROPELLER

Frank G. Holt, 6652 Moore St., Arvada, Colo. 80002

Filed June 26, 1972, Ser. No. 266,435

Int. Cl. B63h 3/04

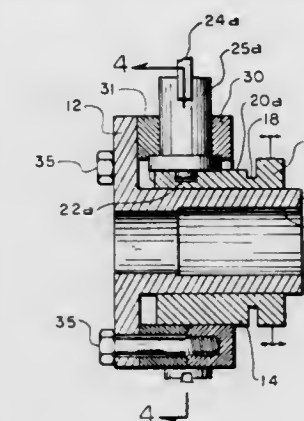
U.S. Cl. 416-167

4 Claims

1. A variable pitch propeller assembly for mounting on the drive shaft of a marine engine comprising:

- a. a tubular hub means arranged for securing on the drive shaft for rotation therewith,
- b. said hub means having a radially depending flange at one end thereof,
- c. a plurality of propeller blades, each blade having a mounting shaft and a flange at the end of said shaft opposite said blade,

- d. the outer surface of said flange having a stud extending outwardly therefrom which is arranged eccentric to the rotative axis of said blade shaft,
- e. a pair of blade mounting rings having a common interface and arranged to be fixedly attached to the outer edge of said hub radial depending flange,
- f. a plurality of radial bores for said propeller blades disposed at the interface of said pair of rings, said radial bores being equi-angularly spaced around the circumference of said rings and sized to rotatively mount the blade shafts therein,
- g. a cylindrical sleeve arranged to be slidably mounted on the outer surface of said hub means and arranged to have a flat outer surface corresponding to the flange of each of the propeller blades, a laterally extending groove being



- provided in each of the flat surfaces of said sleeve having the eccentric stud on the flange of said blades engaged therein whereby as the sleeve is moved longitudinally with respect to said hub the angular pitch of said blades can be simultaneously adjusted to any position between a forward drive position and a reverse drive position,
- h. one end of said sleeve including an exposed circumferential groove therein spaced from the edge of said sleeve, and
- i. a manual control lever having a yoke at one end disposed so that said yoke is positioned in said sleeve groove for longitudinally shifting said sleeve and varying the pitch of said propeller blades while the assembly is being rotated by said drive shaft.

3,853,428

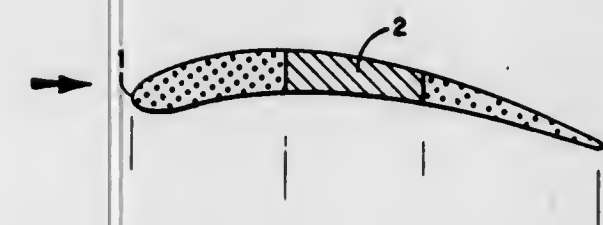
FOIL STRUCTURES WITH REDUCED SOUND GENERATION

Richard Earle Hayden, Arlington, Mass., and Robert Charles Chanaud, Boulder, Colo., assignors to Inc. Bolt Beranek and Newman, Cambridge, Mass.

Division of Ser. No. 221,223, Jan. 27, 1972, Pat. No. 3,779,338. This application Sept. 21, 1973, Ser. No. 399,453 Int. Cl. F01d 5/14

U.S. Cl. 416-231

7 Claims



1. For use as rotors, stators, flaps and the like in a fluid-flow medium, a foil structure having means for reducing the flow impedance of at least one of leading and trailing edge portions of the foil surfaces to a value substantially closer to the characteristic impedance of the medium and at which the flow impedance and the characteristic impedance are substantially matched.

3,853,429
MOTOR PUMP COMBINATION

Walter Wiedenmann, Kongen, Germany, assignor to Gunther Eheim, Esslingen, Germany

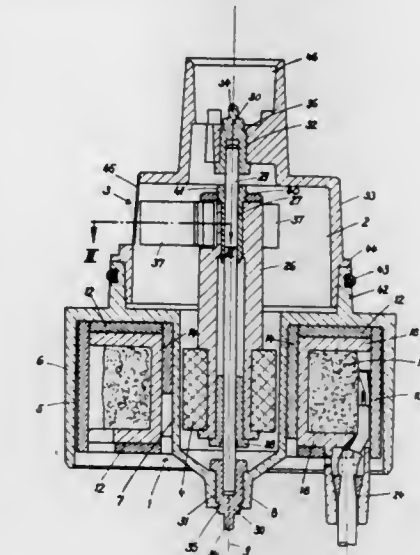
Filed June 28, 1973, Ser. No. 374,750

Claims priority, application Germany, Sept. 14, 1972, 2245009

Int. Cl. F04b 17/00

U.S. Cl. 417-356

18 Claims



1. Motor-pump combination comprising a plastic housing having one portion (6) in which the motor is located and another portion (33) in which the pump is located;
- a pump impeller (3) in the pump portion coupled to the rotor (4) of the motor (1), wherein said motor is a self-starting synchronous motor, and the rotor (4) is a permanent magnet rotor;
- the motor portion of the housing being formed in cup-shaped configuration having an inner sleeve (7) closely surrounding the rotor and leaving an air gap therebetween;
- bearing means (8, 30, 29, 28; 27, 32) jouralling the rotor in the sleeve to permit rotation of the rotor relative to the sleeve;
- a stator (5) having a stator winding (19) therein, a pair of disks (12) of magnetizable material located at the end faces of the winding, an outer sleeve (10) of magnetic material surrounding the winding and being in magnetic flux transfer with said disks;
- and inner pole shoes (14) of asymmetrically shaped cylindrically bowed strips, alternately connected in flux transfer to one and the other of said disks (12) and facing the outer wall of said inner cylindrical sleeve (7) of plastic material to permit interaction of the permanent magnet rotor, through the plastic material, with the rotational field generated by the asymmetric pole shoes, alternately connected to one and the other of said end disks (12), and to provide for self-starting operation of the motor and synchronous operation after synchronous speed has been reached.

3,853,430

CABLE-SUSPENDED, LINER-SUPPORTED SUBMERSIBLE PUMP INSTALLATION WITH LOCKING DISCHARGE HEAD

John C. O'Rourke, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 8, 1972, Ser. No. 278,741

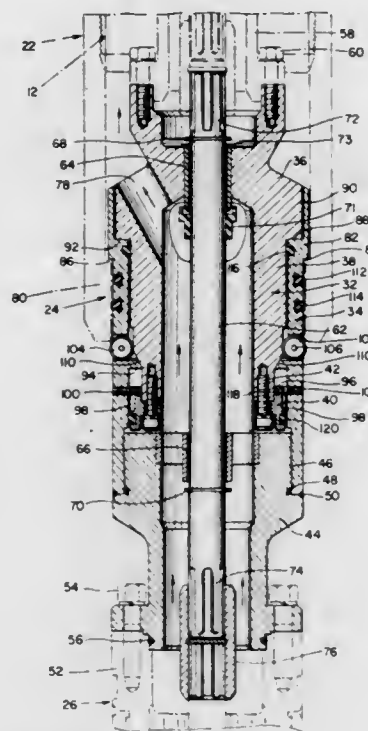
Int. Cl. F04d 29/60, 29/62; E21b 23/00

U.S. Cl. 417-360

14 Claims

1. Apparatus for providing a suspended pump installation in a well casing, comprising a submersible pump having a discharge head, means for suspending the pump in the well casing, said discharge head having means for automatically locking the head within the well casing when the head is lowered

to its operative position and having means for sealing the head within the well casing at said position to provide a high pressure region above the sealing means and a low pressure region below the sealing means, said discharge head having a discharge port at the high pressure region and said pump having an intake at the low pressure region, said discharge head having an outer member and an inner member coupled to the outer member for limited reciprocative movement, said outer member having means for supporting it in said well casing at



said operative position, said locking means comprising locking elements and means for projecting said locking elements from said discharge head toward said well casing in response to downward movement of said inner member relative to said outer member when said outer member is supported at said operative position, said discharge head having additional sealing means between said outer and inner members for isolating said locking elements from the high pressure discharge of said pump while permitting relative reciprocation between said outer and inner members.

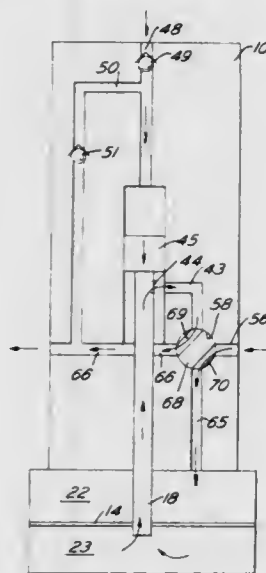
3,853,431 MIXING PUMP

Steven E. Goodhart, 4 Windy Rd., Brandywood, Wilmington, Del. 19810

Filed Aug. 8, 1973, Ser. No. 386,784
Int. Cl. F04b 17/00, 35/00

U.S. Cl. 417-403

8 Claims



1. A mixing pump for fluids comprising a body,
a supply connection to a primary fluid under pressure connected to said body,

a supply connection to a secondary fluid connected to said body,
a delivery connection,
a pressure fluid responsive diaphragm carried by said body,
a secondary fluid pump piston in said body and having a predetermined stroke,
an operating member comprising a tube between said diaphragm and said pump piston and in communication with one side of the diaphragm for supply of fluid to and delivery of fluid therefrom for moving said piston upon movement of said diaphragm,
a valve member controlling the supply of primary fluid alternately against each side of said diaphragm and delivery of primary fluid from the opposite side of said diaphragm to said delivery connection,
valve operating mechanism controlled by the positioning of said operating member for shifting said valve member,
said body having a chamber in which said piston is movable, said chamber having said secondary fluid supply connection connected thereto through a non-return valve and being connected to said delivery connection through a non-return valve.

3,853,432

DIFFERENTIAL GAS TURBINE ENGINE

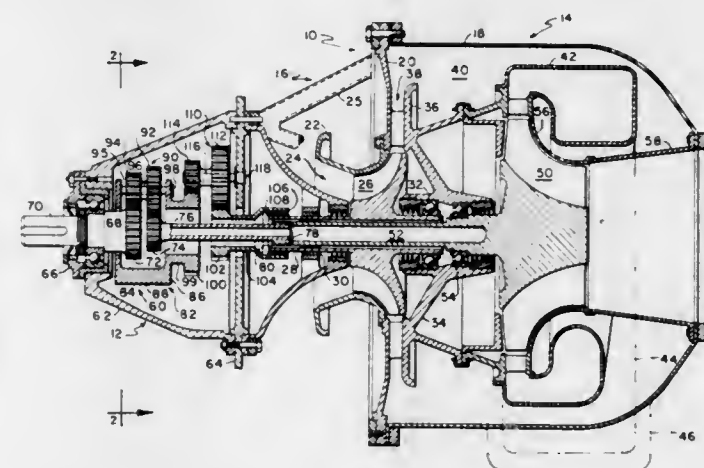
Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 29, 1973, Ser. No. 392,566

Int. Cl. F04b 17/00

U.S. Cl. 417-405

9 Claims



1. A gas turbine engine comprising:
a generally annular housing;
independent rotatable and coaxial compressor and turbine rotors journaled in said housing;
an input sun gear connected to said turbine shaft;
a power output shaft journaled in said housing and having an output sun gear having external teeth secured thereto, said output gear being adjacent said input sun gear;
a generally annular planet carrier positioned around said sun gear;
a first gear train consisting of a set of planet gear assemblies having external teeth rotatably mounted in said carrier, each planet gear assembly comprising a first gear engaging said sun input gear and a second gear engaging said output sun gear, both gears connected to permit the transfer of torque from one to the other;
a ring gear on said planet carrier, said ring gear having external teeth;
a drive input sun gear mounted on said compressor shaft and having external teeth, said compressor shaft being adjacent said ring gear; and
a second gear train consisting of a set of gear assemblies having external teeth and journaled about axes fixed relative to said housing, each assembly having a first gear engaging said compressor drive sun gear and a second gear engaging said ring gear, both gears connected to permit the transfer of torque from one to the other.

3,853,433

REFRIGERATION COMPRESSOR DEFINING OIL SUMP CONTAINING AN ELECTRIC LUBRICANT PUMP

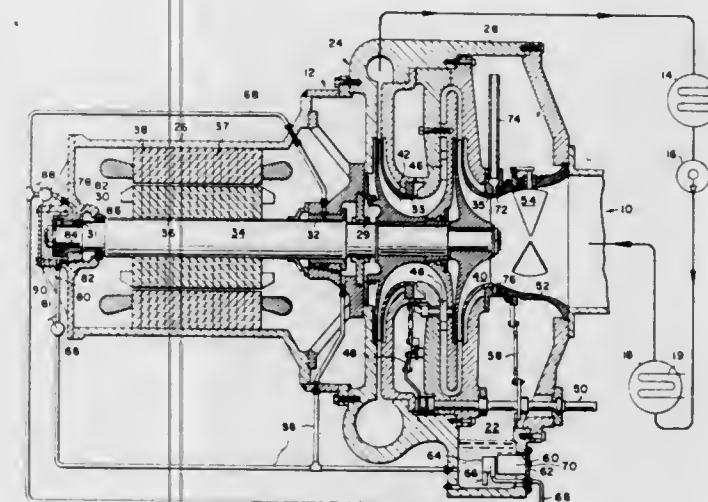
John H. Roberts, and Gordon L. Temp, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.
Continuation of Ser. No. 286,806, Sept. 6, 1972, abandoned.

This application Mar. 25, 1974, Ser. No. 454,304

Int. Cl. F04b 17/00

U.S. Cl. 417-423

4 Claims



1. A refrigerant centrifugal compressor comprising: a compressor housing; a shaft disposed within said housing; bearing means for rotatably supporting said shaft in said housing; a centrifugal type fluid impeller disposed within said housing and mounted for rotation with said shaft; an annular inlet member disposed within said housing to conduct fluid to the inlet of said impeller and coaxially arranged with respect to said shaft; a plurality of inlet control vanes disposed in said inlet member; portions of said inlet member being radially inwardly spaced from said housing thereby defining a substantially annular cavity between and axially coextensive with said compressor housing and said inlet member; a lubrication system for said compressor including first conduit means for conducting lubricant to said bearing means; and second conduit means for draining lubricant from said bearing means to said annular cavity whereby said annular cavity defines as a lubricant sump; means for mechanically adjusting said control vanes disposed within said cavity; passage means for venting the upper portion of said cavity to the inlet of said compressor; and pressurizing means for pressurizing lubricant from said sump and returning pressurized lubricant to said bearing means via said first conduit means.

3,853,434

POSITIVE DISPLACEMENT ROTARY MACHINE

Frederick L. Parsons, 759 Morningside Rd., Ridgewood, N.J. 07067

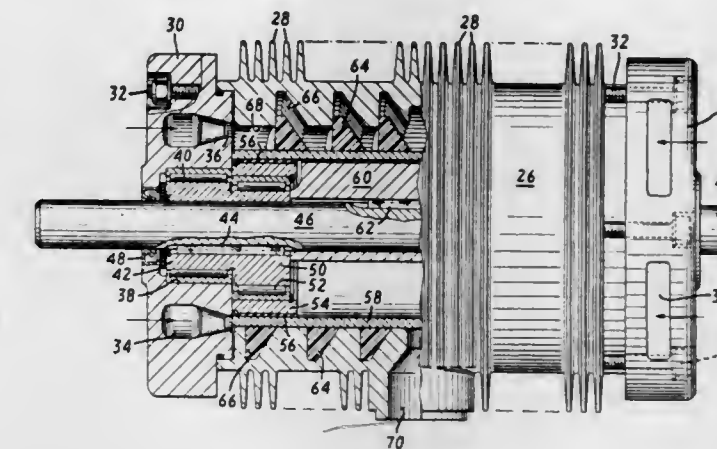
Division of Ser. No. 132,140, April 7, 1971, Pat. No. 3,741,694. This application May 17, 1973, Ser. No. 361,254
Int. Cl. F01c 1/02

U.S. Cl. 418-55

2 Claims

1. A compressor comprising:
a housing having a generally cylindrical internal wall,
a fluid inlet and a fluid outlet in the housing spaced along the length thereof,
a generally helical cavity in the internal housing wall extending between the inlet and the outlet, the cavity having an outwardly converging generally V-shaped cross section;
a generally helical vane received in the cavity throughout substantially the full length thereof, the vane having an outwardly converging generally V-shaped cross section of an external diameter greater than the internal diameter of

the internal housing wall but less than the external diameter of the cavity and of a width in radial dimension at least as great as the cavity is deep,
means restraining rotational movement of the vane relative to the cavity while permitting nutating movement therebetween,
a generally cylindrical sleeve positioned within the vane for engagement with the inner surface thereof,



a drive shaft generally concentric with the housing internal wall, and
an eccentric mounted on the drive shaft for rotation therewith, the sleeve being supported on the external wall of the eccentric in concentric relation therewith, whereby upon rotation of the shaft the sleeve is caused to impart nutating motion to the vane within the cavity so as to displace fluid spirally from the inlet to the outlet.

3,853,435

GEROTOR DEVICE WITH GEAR DRIVE FOR COMMUTATOR VALVE

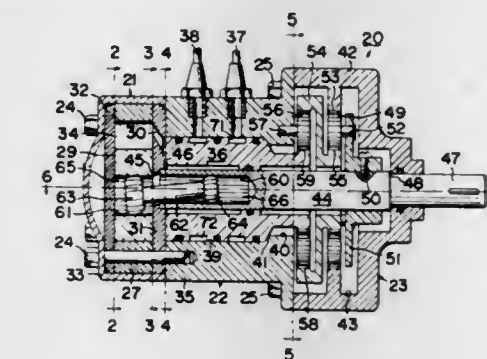
Fumio Ogasahara, Matsudo; Seiji Komamura, and Katsukuni Kabuto, both of Tokyo, all of Japan, assignors to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,506

Int. Cl. F01c 1/02; F04c 1/02; B62d 5/00

U.S. Cl. 418-61 B

4 Claims



1. In a hydraulic apparatus, a combination comprising a housing having a fluid supply port and a fluid discharge port; a gerotor in said housing and including a stator, and a rotor which is rotatable relative to said stator and has a low-pressure zone and a high-pressure zone;
a commutator valve rotatably received in said housing and having two cavities indexed to face said high-pressure and low-pressure zone and being in communication with said fluid supply port and said fluid discharge port, respectively;
a main shaft extending through and defining an axis of rotation for said commutator valve;
an intermediate shaft having one end connected with said main shaft and another end connected with said rotor for rotation with the same in a first direction and at a first speed; and

gear means connected with said main shaft and said commutator valve and operative for rotating the latter in a direction opposite to said one direction and at a second speed which is greater than said first speed by a fixed ratio.

3,853,436

ROTARY PISTON MACHINE WITH INTERNAL SPLINED SHAFT

Carl Verner Ohrberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

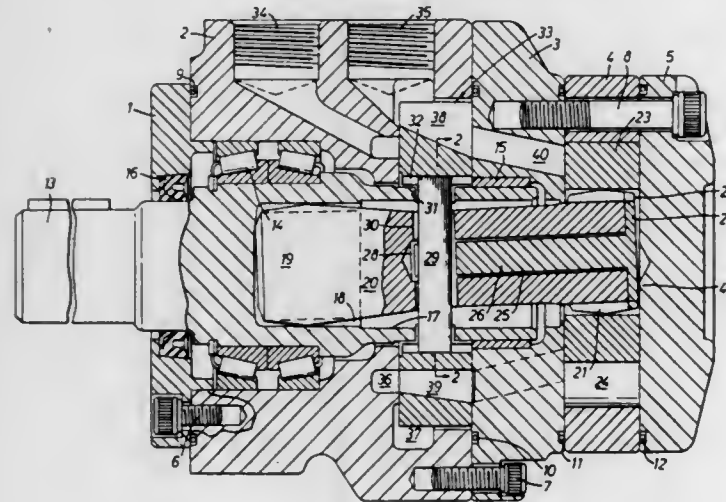
Filed May 31, 1973, Ser. No. 365,435

Claims priority, application Germany, June 19, 1972, 2229629

Int. Cl. F04c 1/16

U.S. Cl. 418—61 B

6 Claims



1. A gerotor type rotary piston machine comprising a casing having a main axis, a gerotor gear set having an externally toothed wheel which is rotatable about its own axis and orbitable about said main axis, said wheel being internally splined, an internally splined main shaft rotatable about said axis, a wobble shaft having externally splined front and rear heads at opposite ends thereof in respective splined engagement with said wheel and said main shaft, an annularly shaped valve mounted in said casing for rotation about said main axis, said valve being in surrounding relation to said main shaft and said wobble shaft between the opposite ends thereof, said main shaft and said wobble shaft having aligned and transversely extending cross bores, a diametrically extending drive member attached to said valve and extending through said main and wobble shaft bores, said wobble shaft having a longitudinal bore extending from said cross bore thereof to and through said front head of said wobble shaft, and drive connection means including a keying shaft having a stem mounted in said wobble longitudinal bore which engages said drive member.

3,853,437

SPLIT CYCLE CRYOGENIC COOLER WITH ROTARY COMPRESSOR

Stuart B. Horn, Fairfax, and Buford T. Walters, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 18, 1973, Ser. No. 407,764

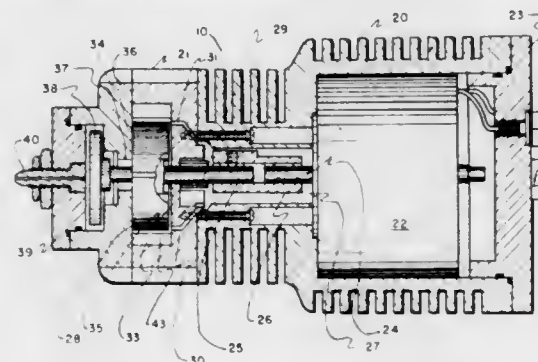
Int. Cl. F01c 1/02

U.S. Cl. 418—61

2 Claims

1. A rotary compressor for generating pressure pulses comprising:

a two-lobed chamber;
a rotor positioned in said chamber and coupled to a drive means for rotating said rotor in said chamber in an epitrochoidal path, said rotor having three arcuate sides and dividing said chamber into three volume regions as it revolves;
three ports located in said chamber;
one of said ports, utilize as an output port for said pressure pulses, being located substantially at a perigee of the two-lobed chamber in a region in which said pressure pulses are developed; and with one of each of the other two remaining ports being located respectively in each lobe of the chamber; and



the two remaining ports being angularly spaced about said one of said ports with one of each of the remaining ports being located respectively in each lobe of the chamber and being shorted to a common volume means to prevent pressure increase in the regions of these two remaining ports.

3,853,438

ROTOR AND APEX SEAL ARRANGEMENT FOR A LOBED ROTOR AND HOUSING

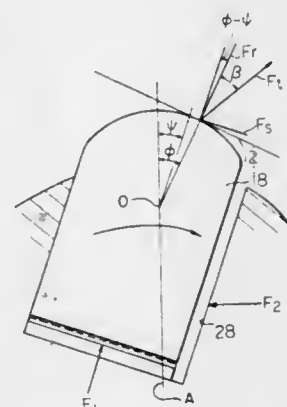
Munefumi Sato, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 17, 1973, Ser. No. 361,267

Int. Cl. F01c 19/04

U.S. Cl. 418—113

1 Claim



1. In a lobed rotor and lobe apex seal arrangement of a rotary motion device, wherein the rotor is arranged to rotate in an enclosure with apex seals in continuous contact with a trochoidally formed inner wall of the enclosure, the improvement comprising a rounded top surface formed on each apex seal, said each apex seal being inclined in the direction of rotor rotation from a radial center plane in which a radial center line of a respective rotor lobe lies, and the center of curvature of said rounded top surface lying in said radial plane.

3,853,439

APEX SEAL ASSEMBLY FOR ROTARY MECHANISMS

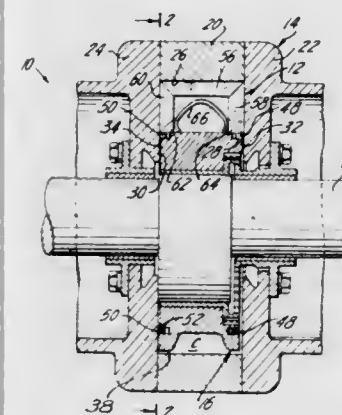
Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Woodridge, N.J.

Continuation-in-part of Ser. No. 181,084, Sept. 16, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,336

Int. Cl. F01c 19/02

U.S. Cl. 418—121

7 Claims



1. An apex seal assembly for a rotary mechanism having a housing with axially spaced end walls and a peripheral wall interconnecting the end walls to form a multi-lobed cavity therebetween and a rotor mounted within said cavity for rotation on an axis eccentric to the housing, the rotor having axially spaced side faces and a peripheral surface consisting of a plurality of circumferential spaced apex portions for forming with the housing walls a plurality of working chambers which vary in volumetric size as the rotor rotates within the housing cavity, the apex seal assembly for each apex portion of the rotor comprises in combination with a side seal ring carried in a circular groove in each end face of the rotor:

- an apex groove at the apex portion of the rotor extending axially from one side face of the rotor to the other and radially inward to communicate with the circular groove for the side seal ring;
- a first blade means disposed to extend axially within the apex groove and projecting radially therefrom adjacent said peripheral wall;
- a second blade means disposed to extend radially within the apex groove and project axially therefrom beyond one of the side faces of the rotor;
- a third blade means disposed in the apex groove radially inward of said second blade means, and in abutment against the side seal ring in said one of the side faces of the rotor;
- said second blade means having radially spaced opposite end edge portions which extend axially inward of said one of the side faces of the rotor in a converging direction;
- the first and third blade means each having an inclined edge portion which is complementary to and in abutment against the converging end edge portions of said second blade means; and
- a spring for exerting an axially directed force on the third blade means so that the reaction forces between the first, second and third blade means at their abutting edge portions simultaneously urge the third blade means in a radial direction into sealing contact with the side seal ring, the second blade means in axial and radial directions into sealing engagement with the adjacent housing side wall and against the first blade means, and said first blade means in radial and axial directions into sealing contact with the peripheral wall and away from said adjacent housing side wall.

3,853,440

ROTARY ENGINE ANTI-SPIN OIL SEAL ARRANGEMENT

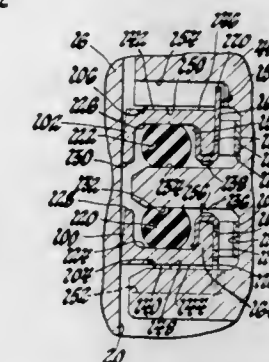
Raymond J. Green, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1974, Ser. No. 443,216

Int. Cl. F01c 19/00; F04c 15/00, 27/00

U.S. Cl. 418—142

2 Claims



1. A rotary engine having a housing with an inwardly facing peripheral wall and oppositely facing inner side walls cooperatively defining a cavity, a crankshaft rotatably supported in said housing, said crankshaft having an eccentric located in said cavity, a rotor rotatably mounted on said eccentric in said cavity, said rotor having sides facing said side walls and peripheral faces facing said peripheral wall defining a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor rotates, a circular oil seal groove in each side of said rotor with its center on the rotor axis, a circular oil seal in each said oil seal groove axially movable to sealingly engage the opposing side wall, said oil seal having a backside and oppositely radially facing sides, said oil seal groove having a bottom and oppositely radially facing walls, a wave spring mounted in said oil seal groove engaging said groove bottom and said oil seal backside for biasing said oil seal to normally move axially in said oil seal groove to sealingly engage the opposite housing side wall, an elastomeric seal groove in one of said radially facing sides of said oil seal, said elastomeric seal groove having a radially facing bottom opposite one of the walls of said oil seal groove and radially extending oppositely facing sides, an elastomeric seal mounted in said elastomeric seal groove in said oil seal and engaging the bottom of said elastomeric seal groove and the oppositely radially facing said one wall of said oil seal groove to provide sealing between said oil seal and said rotor while said oil seal sealingly engages the housing side wall, said oil seal having a backside wall between said elastomeric seal groove and said backside, said backside wall having a notch in the sealed radially facing side of said oil seal, an anti-spin clip further having a lock tab depending from the leg on said backside of said oil seal and projecting radially past the unsealed other radially facing side of said oil seal, and a lock groove in the unsealed wall of said oil seal groove in said rotor aligned with the normal direction of oil seal movement for receiving said lock tab to prevent said oil seal from spinning in said oil seal groove while permitting said anti-spin clip to move with said oil seal in the normal direction in said oil seal groove so that said oil seal remains free to move axially to maintain sealing engagement with the opposite housing side wall.

3,853,441

ROTATABLE ABUTMENT VALVE ROTARY PISTON DEVICE

Cyrus E. Small, Jr., 541 7th Ave., Laurel, Miss. 39440

Filed Apr. 2, 1973, Ser. No. 347,157

Int. Cl. F04c 17/00

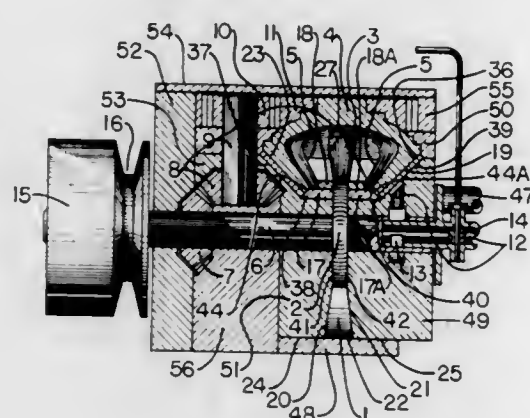
U.S. Cl. 418—226

12 Claims

1. A rotary piston device comprising:

- A casing;
- means defining an annular chamber within said casing wherein said annular chamber has a pair of spaced open-

- ings, which are formed by the intersection of an abutment valve guide cavity with the entire cross sectional area of said annular chamber, facing each other, said pair of openings being the ends of said annular chamber;
- c. means defining an abutment valve guide cavity within said casing wherein said pair of spaced openings are positioned on opposite sides of said abutment valve guide cavity, said openings communicating with said abutment valve guide cavity and said cavity having a plurality of spaced abutment valve mating inner bottom surfaces which are outward facing convex spherical in shape with the centers of said convex spherical surfaces being common with the axial center of said annular chamber;
- d. a rotatable shaft mounted in said casing, axially aligned with said annular chamber and having a flywheel affixed thereto;
- e. a rotor fixedly attached to said shaft, the periphery of said rotor being convex spherical in shape wherein said periphery is concentrically aligned with the abutment valve mating inner bottom outward facing surfaces of said abutment valve guide cavity and wherein said rotor pe-



- riphery forms the inner surface of said annular chamber;
- f. a piston fixedly attached to said rotor having a configuration substantially the same as and sealingly fitted in said annular chamber and being aligned to rotate within said annular chamber;
- g. an abutment valve having a plurality of concave spherical inner surfaces which slidably mate with the plurality of spaced abutment valve mating inner bottom surfaces of said abutment valve guide cavity is rotatably mounted in said casing between said spaced openings in said annular chamber and within said abutment valve guide cavity wherein the exterior of said abutment valve is shaped to fit into said abutment valve guide cavity to intermittently and simultaneously seal both of said spaced openings with each mean one half revolution of said abutment valve wherein said abutment valve has an aperture there-through to permit passage of said piston through said abutment valve with each revolution of said piston;
- h. means for timing the rotation of said abutment valve such that it revolves at mean one half the speed of said piston;
- i. means for the intake of fluid to said annular chamber; and
- j. means for, simultaneously with said fluid intake, exhausting fluid from said annular chamber.

3,853,442

APPARATUS FOR PREPARING SHEET MATERIAL
Peter John Stemp, Surrey, England, assignor to Redland Bricks Limited, Surrey, England

Filed Dec. 29, 1972, Ser. No. 319,642

Claims priority, application Great Britain, Jan. 3, 1972, 000159/72

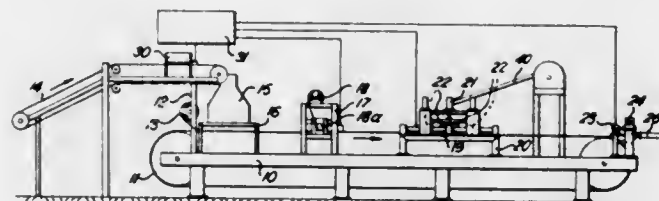
Int. Cl. B29d 7/14

U.S. Cl. 425-112

14 Claims

1. An apparatus for preparing a sheet material from a homogeneous mass of resin, fibrous and particulate material, which apparatus comprises, in combination,

- a. an endless conveyor belt having means to drive the conveyor belt past the following stations in succession;
- b. a depositing station to supply the material evenly onto the conveyor belt;
- c. a compression station comprising at least one nip roller to compact the material on the belt surface;
- d. a compacting station comprising
- i. a movable carriage which is reciprocable relative to the conveyor belt in a direction longitudinal to the movement of the conveyor belt;



- ii. a support plate beneath the conveyor belt;
- iii. a plurality of rollers mounted on the carriage for rotation about an axis transverse to the direction of movement of the belt; and
- iv. pressure means to move the roller towards the support plate to compress the material as the carriage is reciprocated; and
- e. a station from which compacted material is removed from the conveyor belt.

3,853,443

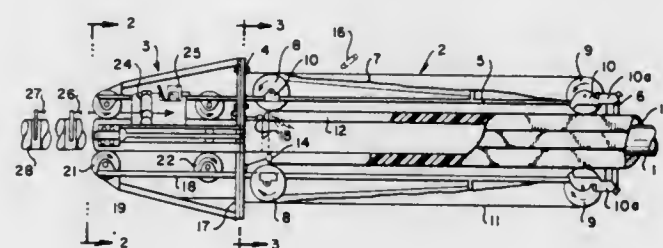
APPARATUS FOR THE EXTERNAL COATING OF A PIPELINE WITH FOAMED PLASTIC

William J. Grillos, Midland, Tex., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 604,256, Dec. 23, 1966, abandoned. This application Dec. 31, 1968, Ser. No. 803,511
Int. Cl. B29f 3/10

U.S. Cl. 425-115

1 Claim



1. An apparatus for externally coating a pipeline with plastic comprising:

- a travelling frame positioned around said pipeline and adapted to travel longitudinally therealong by means of pairs of wheels uniformly distributed circumferentially about said pipeline and rotatably mounted in said travelling frame and in rolling contact with said pipeline, each wheel of each pair of wheels being axially separated to center said travelling frame about said pipeline and to counteract tilting moments of an overhanging sleeve portion extending from said frame and spaced from said pipeline to thereby define a chamber around said pipeline, said sleeve portion including a series of longitudinally-extending endless belts peripherally disposed about and spaced from said pipeline to form a closed sleeve whereby the inner surface of said belts and the exterior of said pipeline define said chamber and further whereby said belts move to prevent sliding contact of said belts

with said plastic when said travelling frame is moved along said pipeline, the inner surface of said belts being supported by transversely curved supports so that said belts provide a chamber of substantially circular cross section, the length of said sleeve portion being sufficiently great so as to support and retain said plastic for a time sufficient for said plastic to acquire a substantially rigid foamed state while in said chamber;

fluid discharge means attached to said frame at the leading end of said sleeve to inject a foamable plastic into said chamber as said frame moves along said pipeline;

a flexible sealing ring carried by said sleeve portion and positioned between the inner surface of said sleeve portion and the exterior of said pipeline, said sealing element pressing elastically against said pipeline and including opening means to permit access for said fluid discharge means to said chamber;

prime mover means carried by the leading end of said travelling frame and operatively connected to said pipeline to move said frame along said pipeline, said prime mover means including at least one driven wheel in driving contact with said pipeline, at least one winch and one winch cable, and attaching means for fastening the free end of said winch cable to said pipeline.

3,853,444

AUTOMATIC RE-BAR INSTALLER

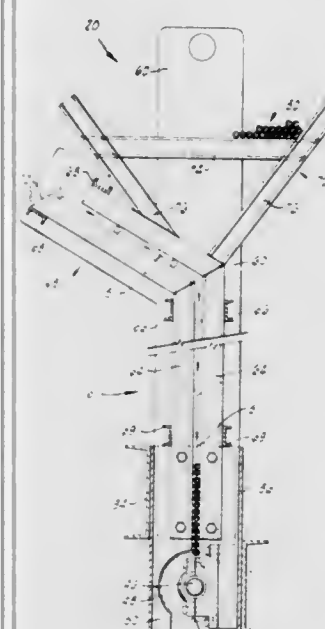
Cordis W. Jones, Salina, Kans., assignor to Hastings Dynameld Corporation, Hastings, Nebr.

Continuation of Ser. No. 31,967, April 27, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,209

Int. Cl. B28h 21/56

U.S. Cl. 425-126

4 Claims



1. In a movable machine for the placing of concrete and form pouring thereof having a supporting structure movably mounted in operation and in communication with a concrete form having rails therebeside supporting said machine, in combination therein and therewith an automatic re-bar installer for placing reinforcement bars in the concrete comprising:

- a. a frame means mounted on said machine transverse said supporting structure and communicate with said concrete forms,
- b. a bar supply means mounted on said frame means and having a slotted means to hold a quantity of said bars, and having a vertical portion in alignment with a guide means and a disc member and an upper, outwardly inclined top section to receive and direct reinforcement bars therewith,

c. a bar holding and releasing means operably connected to said bar supply means and having said disc member rotatable and mounted on a shaft and having a notch in the periphery thereof to receive one of the bars from said slotted means, said disc member mounted between vertically disposed and spaced guide members of said guide means forming a slot in communication with the slot in said slotted means, one of said guide members having an arcuate edge portion adjacent said disc member to in combination with said disc member hold and guide a bar as said disc member rotates to deliver said bar, and the other of said guide members having a portion to in combination with said disc member and said notch therein upon rotation of said disc in the other direction prevent a bar from entering and remaining in said notch by forcing the bar from said notch against the bar guide, and

d. a powering means operably connected to said bar holding and releasing means and having rotatable a wheel member operably connectable with one of said rails and having a primary driving means operable with a secondary driving means to rotate said shaft and disc member at a predetermined certain rate relative to said wheel member, and said primary driving means including a second shaft, at least one first sprocket means and at least one second sprocket means with said first sprocket means connected to said wheel member, and said second sprocket means connected to said second shaft, a chain member engaging said first and said second sprocket means in order that said first sprocket means can drive said second sprocket means, said second driving means including at least two sprockets, one of said two sprockets connected to said second shaft, and the two of said two sprockets connected to said first-named shaft, and a second chain member engaging said first and said second sprocket so that said first sprocket can drive said second sprocket,

said re-bar installer in operation depositing re-bars into said forms from said bar supply means as same are released therefrom by said bar holding and releasing means upon the movement of said machine along said form on said rails.

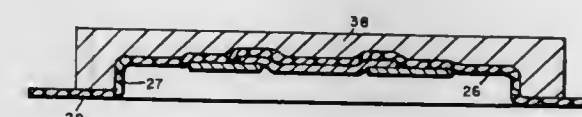
3,853,445

APPARATUS FOR MAKING A MOLD FOR REPRODUCING PARTS OF SHOES AND THE LIKE
Frederick A. Prah, Jr., Carlisle, and Robert B. Dunlap, Medway, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass.

Division of Ser. No. 173,072, Aug. 19, 1971, Pat. No. 3,751,540. This application Apr. 4, 1973, Ser. No. 347,850
Int. Cl. B29c 1/02

U.S. Cl. 425-175

4 Claims



1. An intermediate mold for molding making a portion of a master mold which, in turn, is used to reproduce from a master pattern a part comprised of thermoplastic material simulating the master pattern, comprising a flexible sheet which is of impervious material and set in a layer of quick-setting material which forms a rigid backing for the flexible sheet, said impervious material and quick-setting material being united to provide a rigid mat into which also is embedded the master pattern to a depth such that the portion of the master pattern projecting from the mat corresponds substantially to the thickness of the thermoplastic sheet material to be molded and a surrounding wall defining a cavity corresponding in depth from the surface of the master pattern to the thickness of the bottom of the mold to be made therefrom.

3,853,446

LIQUID INJECTION MOLDING APPARATUS

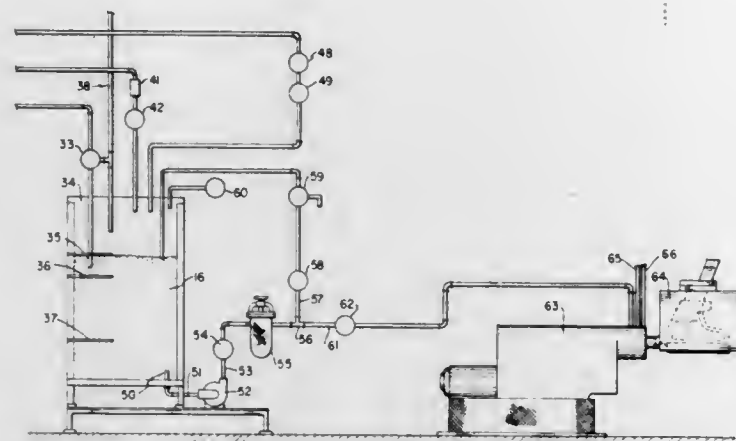
Fritz Hostettler, Freehold, and Peter U. Graefe, Bricktown, both of N.J., assignors to Inter Polymer Research Corporation, Farmingdale, N.J.

Filed Apr. 17, 1973, Ser. No. 352,076

Int. Cl. B29c 29/00; B29f 1/00

U.S. Cl. 425-217

6 Claims



1. An apparatus for the liquid injection molding of multi-component thermosetting reaction mixtures having holding tanks for storing each component of the reaction mixture under vacuum, recirculating and metering pumps for recirculating each component to its respective holding vessel between injection cycles and alternately delivering metered amounts of each component to a mixing and injecting unit during the injection cycle and a mold having an internal configuration or cavity conforming to the surfaces of the article to be molded, a movable bottom plate and an injection port and short injection channel terminating in a gate positioned within the mold cavity at a point relatively remote from the geometric center or point of balance of the bottom plate from molding the reacting mixture to the desired configuration, wherein the improvement comprises:

- means for continuously recirculating one part of each reaction component to its respective holding tank while simultaneously delivering the other part of the reaction component to a metering, mixing and injecting unit for injecting a predetermined amount of homogeneous reaction mixture into the injection port of a mold under substantially constant pressure only for the duration of the injection cycle;
- means for permitting discharge of the reaction mixture from the metering, mixing, and injecting unit into the injection port of the mold only for the duration of the injection cycle;
- means for maintaining substantially constant pressure for that part of the reaction component being recirculated to its respective holding tank regardless of the state of operation of means (b); and
- means for intercepting and deflecting the flow path of the reaction mixture injected into the mold, said means being positioned upon the upper surface of the bottom plate a short distance from the gate.

3,853,447

APPARATUS FOR QUENCHING POLYMER FILMS

Neil Ira Steinberg, Somerset, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 88,911, Nov. 12, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,684

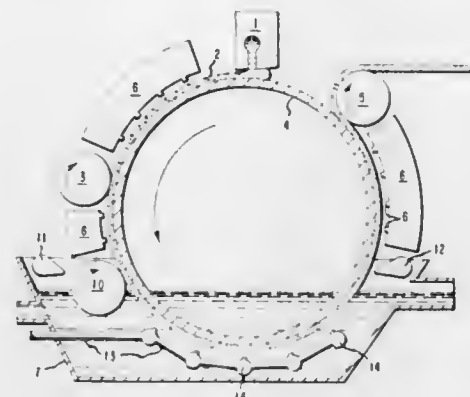
Int. Cl. B29c 13/04

U.S. Cl. 425-223

6 Claims

1. In an apparatus for quenching a film of liquefied organic polymer to form a solid film of the type comprising: a movable

casting surface; means for casting a film of molten polymer onto said casting surface; a trough for a liquid coolant into which the lower segment of said casting surface and the film attached to it is immersed; and means for removing the film from said casting surface; the improvement wherein said apparatus further comprises a chilling roll adjacent to said casting surface, disposed relative to said trough so that it is immersed



in the cooling liquid to a depth not exceeding its radius, means adjacent to said chilling roll to dry the surface of said chilling roll before it contacts the film, said chilling roll being further adapted to press the film against said casting surface, at a point just prior to the point where the film enters the liquid coolant, to momentarily harden the exposed surface of the film and form a hardened skin which will resist deformation due to the quenching process.

3,853,448

APPARATUS FOR SHAPING AN ORIENTED TUBULAR FILM BY WET PROCESS

Masahide Yazawa, Higashi, Japan, assignor to Polymer Processing Research Institute Ltd., Tokyo, Japan

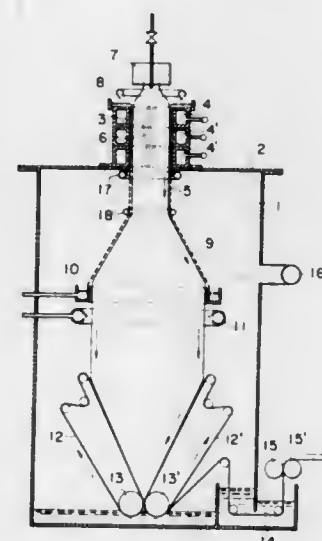
Filed Aug. 22, 1972, Ser. No. 282,798

Claims priority, application Japan, Sept. 23, 1971, 46-74426

Int. Cl. B29d 7/20, 7/24

U.S. Cl. 425-326 R

8 Claims



1. An apparatus for shaping an oriented tubular film by downwards blowing wet process, which comprises: a hollow cylinder having an annular feed vessel for coagulation liquid at the top thereof, provided sufficiently below and concentrically to an annular die from which a tubular polymer mass is extruded penetratingly and vertically through the top wall of a sufficiently spacious negative pressure chamber capable of accommodating therein hereinafter-mentioned successive means down to a flattening and withdrawing pinching means, the upper part of the hollow cylinder, projecting out from the negative pressure chamber, having heating means from outside thereof and grooved inner wall surface, and the lower part

3,853,450

DEVICE FOR SHAPING A BELL END TO A TUBE

Petrus Marinus Acda, Enkhuizen, Netherlands, assignor to Pulra-Nederland N.V. Enkhuizen, Netherlands

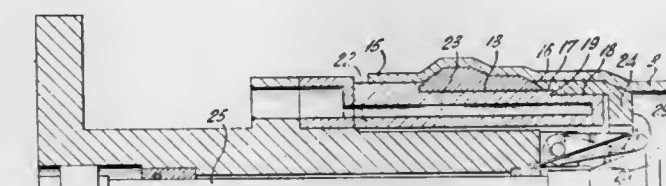
Filed Dec. 21, 1970, Ser. No. 100,296

Claims priority, application Netherlands, Dec. 24, 1969, 6919424

Int. Cl. B29c 17/02

U.S. Cl. 425-393

9 Claims



of said hollow cylinder, extending into the negative pressure chamber, consisting of a perforated wall through which negative pressure outside the wall and in the negative pressure chamber can suck and press the film thereto, to support the film while passing therethrough; a downwardly spread, conical umbrella-like guide wall for the inflating tubular film, attached to the lower end of the perforated hollow cylinder; supply means for supplemental heated liquid to the perforated wall and the umbrella-like guide wall; an annular trough with drainage means to collect the flowing down liquid and separate the heating liquid from the inflated tubular film at the lower end of said guide wall; an annular coagulating liquid tube provided below the trough to inject a coagulation liquid to the tubular film; a flattening and withdrawing means of the tubular film provided at the bottom of the negative pressure chamber; and a negative pressure sealing means provided at the side bottom of the negative pressure chamber together with outside withdrawing means to withdraw the flattened tubular film into the atmosphere.

3,853,449

APPARATUS FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

Norman F. Houghton, Connorsville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

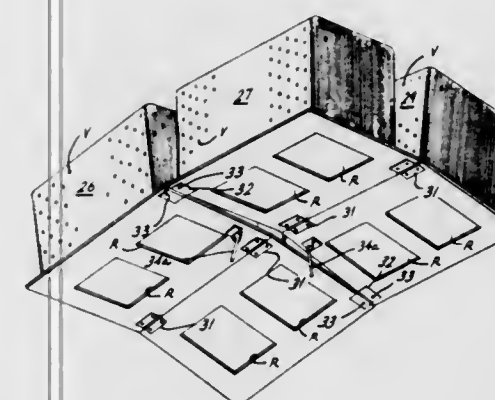
Division of Ser. No. 408,108, Oct. 19, 1973. This application

May 6, 1974, Ser. No. 466,956

Int. Cl. B29c 17/04

U.S. Cl. 425-388

6 Claims



1. In apparatus for forming a deep drawn unitary plastic article comprising at least a pair of adjacent walled structures having unidirectionally presented openings, said apparatus being of the type including at least a pair of spaced, unidirectionally presented molds having outer surface portions corresponding to the shape of the article to be formed, an assist-plug structure including portions insertable into the spaces between said unidirectionally presented molds, means for supporting a heat-softened unitary sheet of thermoplastic material between said molds and said assist plug structure, means for effecting relative movement between said molds and said assist-plug structure to cause them to bear against said sheet, and means for producing a pressure differential across opposite surface portions of said sheet to cause it to conform to surfaces of said molds, the improvement comprising: means for pivotally mounting said molds for movements about a pair of transversely extending axes so that in one position thereof confronting mold wall sections are closely spaced, and in another position thereof said wall sections are further spaced; means for maintaining said molds in said other, further spaced position as said molds and said assist-plug are moved together against said sheet; and means for pivoting said molds to said one, closely spaced position prior to operation of said means for producing the recited pressure differential.

3,853,451

STRIPPER DEVICE FOR MOLDED ARTICLES

Marvin F. Bendzick, Pittsburgh, Pa., assignor to Cities Service Company, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,353

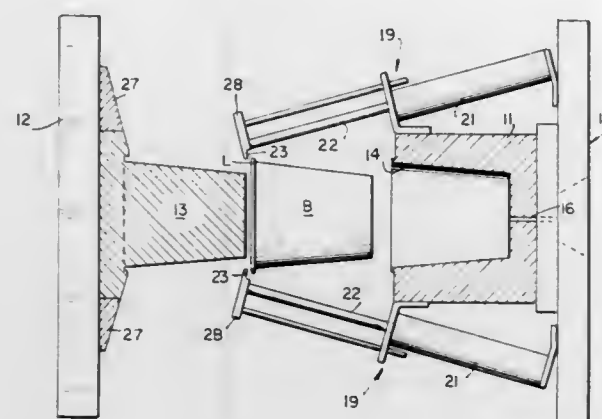
Int. Cl. B29c 7/00

U.S. Cl. 425-438

6 Claims

1. A device for stripping a piece-part from a die set comprising a first fixed die member, a second cooperating die member moveable relative to the first member along a predetermined path, said die set in the operative position defining a mold cavity including a lip configuration, means for introducing moldable material into the mold cavity to form an article matching said cavity including said lip, a piston and cylinder assembly mounted upon said fixed die and disposed externally

of the die set, said assembly having a center line disposed at an angle relative to said predetermined path and means for



moving the second die member and the piston in unison whereby the piston approaches the mold cavity in the region of said lip by virtue of the angular disposition of the assembly.

3,853,452

MOLDING MACHINE

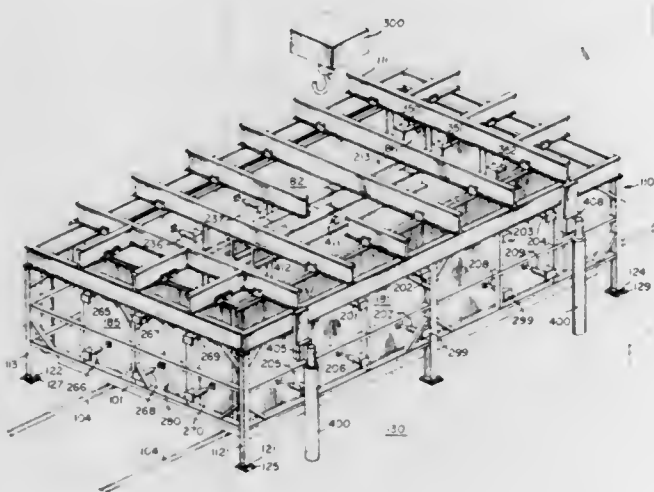
Ernest J. Delmonte, 46 Harwood Ln., East Rochester, N.Y. 14445

Filed May 22, 1972, Ser. No. 255,386

Int. Cl. B28b 1/00

U.S. Cl. 425-450 R

8 Claims



1. A molding machine for molding a formable material on a precast floor into a room module having monolithic vertical intersecting walls joined perpendicularly to said floor and having corners at the intersection of said walls, said machine comprising:

- a. a hoistable frame having a superstructure including panel supporting rail means,
- b. interior wall forming panels movably suspended from said rail means of said superstructure,
- i. said interior wall forming panels being movable normal to said floor into a wall molding position within said room module,
- c. corner forming means including corner forming panels movably suspended from said rail means of said superstructure within said room module for movement normal to said floor into the intersections of said interior wall panels to define the interior corners of said room module when disposed in a molding position,

- d. exterior wall forming panels movably suspended from said rail means of said superstructure,
- i. said exterior panels being movable normal to said floor and disposed in spaced cooperative relationship to said interior wall forming panels and said corner panels when disposed in a molding position to derive a wall cavity of a predetermined width for receiving said formable material therebetween to mold said monolithic walls,
- e. signal responsive interlocking means connected to said frame for sequentially controlling said movement of said corner forming panels, said interior wall forming panels and said exterior forming panels, in a predetermined order into and out of said molding position,
- i. said signal responsive interlocking means includes interlocking means connected to said frame for interlocking said corner panels, said interior panels and said exterior panels in said molding position independently of said rail means, and
- f. hoisting means for raising and lowering said frame relative to said floor only when said interior panels, exterior panels and corner panels are disposed out of said molding position.

3,853,453

LOBATE COMBUSTION CHAMBER

Karl Borje Olsson, S-270 57, Kivik, Sweden

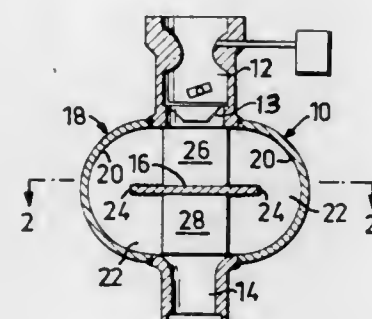
Filed Apr. 2, 1973, Ser. No. 346,790

Claims priority, application Sweden, Apr. 4, 1972, 4294/72

Int. Cl. F23c 3/02

U.S. Cl. 431-1

4 Claims



1. A combustion chamber particularly for pulsating combustion of fuel air mixture having at one end an inlet for fuel mixture and at an opposite end an outlet for exhaust gases, wherein the cross section of the chamber between the inlet and the outlet has a configuration which deviates from the cross section of the inlet, the chamber having a number of side chambers, wherein a transverse shield partitions the combustion chamber into first and second compartments so that a fuel mixture flowing through the inlet into the first compartment will be caused to flow around the shield through its side chambers into the second compartment and thereupon to the outlet.

3,853,454

METHOD AND APPARATUS FOR COMBUSTING FLAMMABLE LIQUID WASTES

Vladimir Ivanovich Filippov, ulitsa 8 Marta, 2/10, kv. 93, Moscow, and Mikhail Vasilievich Sumarokov, ulitsa 116, korpus 26, kv. 38, Ljubertsy Moskovskoi oblasti, both of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,382

Claims priority, application U.S.S.R., Mar. 3, 1974, 1754724

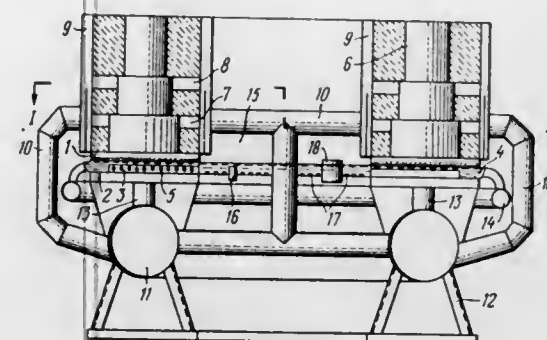
Int. Cl. F23d 5/02

U.S. Cl. 431-7

5 Claims

1. A method of combusting flammable liquid wastes, comprising setting a layer of flammable liquid wastes into rotation

in a circular space by way of a directional and dispersed air flow through this layer, while the gasification products of the flammable liquid wastes arise and are set into rotation in a



combustion chamber by supplying air thereto on, at least one plane perpendicular to the vertical axis of the combustion chamber, and along the entire perimeter of the chamber.

3,853,455

BURNER CONTROL APPARATUS

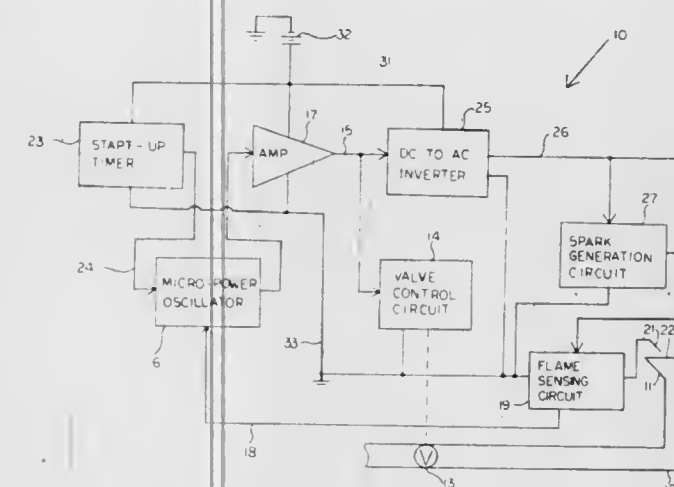
William J. Riordan, Shrewsbury, and George B. Foster, Hyde Park, both of Mass., assignors to Walter Kidde Company, Inc., Clifton, N.J.

Filed Sept. 24, 1973, Ser. No. 399,853

Int. Cl. F23n 5/12

U.S. Cl. 431-80

17 Claims



1. Burner control circuit apparatus comprising: valve means for controlling the flow of fuel to a burner; flame sensor means for providing a source of power in response to the presence of flame at the burner; oscillator means connected to receive power from said flame sensor means and to produce an oscillating signal in response thereto; and valve control means for opening said valve in response to said oscillating signal.

3,853,456

FUEL BURNING APPARATUS

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 29, 1973, Ser. No. 364,353

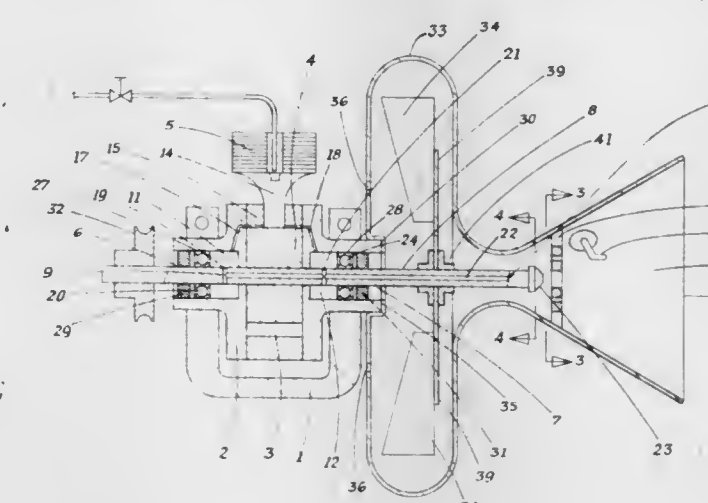
Int. Cl. F23d 11/04

U.S. Cl. 431-168

8 Claims

1. A fuel burning apparatus comprising: a housing having inlet means and spaced outlet means and an opening for re-

ceiving a shaft end rotatively mounted within said housing, said shaft having a fluid passageway disposed therein, said fluid passageway having at least one inlet and an outlet; a rotor drivably connected to said shaft, said rotor having an inlet in communicative relation with a fluid adding means and an outlet in communicative relation with said fluid passageway inlet; said fluid adding means being disposed to provide a mixture of fluid fuel and primary combustion air to said rotor; air moving means drivably connected to said shaft, the low pressure side of said air moving means being in spaced relation



from and in communication with said inlet means of said housing whereby secondary combustion air is brought into the housing through said inlet means; a nozzle on said shaft end adapted to communicate with said fluid passageway outlet whereby fluid discharging from said nozzle is mixed with said secondary combustion air being moved through said housing, said housing outlet being spaced from said nozzle and in alignment therewith to provide a combustion chamber disposed therebetween; ignition means disposed within said combustion chamber for igniting said fluid discharging from said nozzle; and, driving means for said shaft.

3,853,457

FLARE

Denis Henry Desty, Weybridge, and Christopher John Young, Horton, both of England, assignors to The British Petroleum Company Limited, London, England

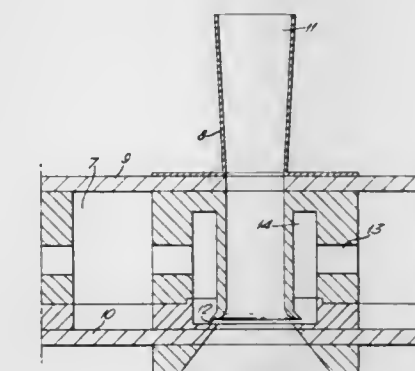
Filed May 25, 1973, Ser. No. 363,857

Claims priority, application Great Britain, June 1, 1972, 25701/72

Int. Cl. F23d 13/12

U.S. Cl. 431-328

4 Claims



1. A burner element, comprising: a fuel chamber through which pass a plurality of first tubes, the shape of said first tubes being cylindrical and being arranged with their axes parallel to one another; means for reducing gas velocity comprising second tubes of increasing cross-sectional area attached to the exit of each of said plurality of first tubes; said

3,853,463

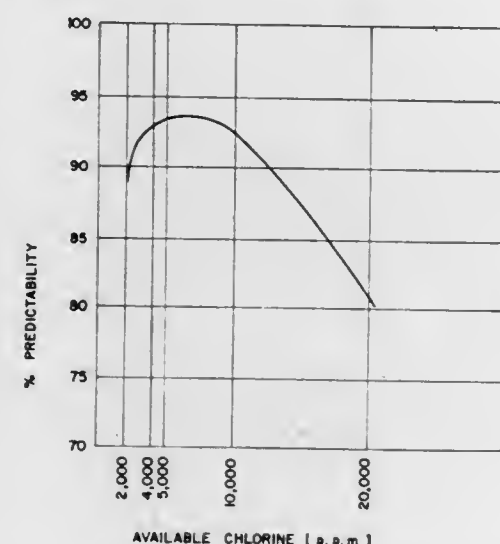
BLEACHABILITY TEST FOR COLORED FABRICS
Peter K. Woodward, San Rafael, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed June 26, 1972, Ser. No. 266,049

Int. Cl. D061 3/06, 3/16; G01n 33/36

U.S. Cl. 8—137

6 Claims



1. In a method of washing colored fabrics by subjecting them to oxidation conditions in an aqueous wash solution including detergent and bleach, the wash solution having an available chlorine concentration of up to approximately 200 ppm and a temperature of up to approximately 150°F, the steps comprising:

- preparing a test solution having an available chlorine concentration of above 4000 and below 10,000 ppm
- treating a small area of the fabric with the test solution, by saturating the small area of the fabric with the test solution, then drying the fabric,
- comparing the treated fabric when substantially dry with similar untreated fabric for color differences, and excluding only those fabrics exhibiting said color difference from said wash solution and subjecting the remaining fabrics to said wash solution in a subsequent washing step.

3,853,464

HUMAN HAIR DYEING COMPOSITIONS CONTAINING DIPHENYLAMINES

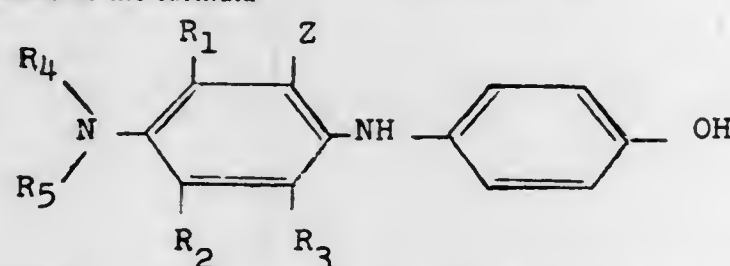
Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Continuation-in-part of Ser. No. 61,833, Aug. 6, 1970, Pat. No. 3,792,090. This application July 11, 1972, Ser. No. 270,633
Claims priority, application Luxembourg, Aug. 11, 1969, 59265

Int. Cl. D06p 1/32

U.S. Cl. 8—11

15 Claims

1. A dye composition for human hair, comprising a solution in a solvent selected from the group consisting of water and an aqueous lower alkanol solution of 0.002 to 2% by weight of a member selected from the group consisting of (a) a diphenylamine of the formula



wherein Z represents a member selected from the group consisting of amino and acylamino R₁, R₂ and R₃, each independently represent a member selected from the group consisting of hydrogen and lower alkyl containing 1-4 carbon atoms; R₄ represents a member selected from the group consisting of hydrogen, lower alkyl containing 1-4 carbon atoms and

together with R₁ and the nitrogen atom to which R₄ is attached form a heterocycle selected from the group consisting of dihydro-oxazine and pyrroline; and R₅ represents a member selected from the group consisting of hydrogen, lower alkyl containing 1-4 carbon atoms and together with R₂ and the nitrogen atom to which R₅ is attached from a heterocycle selected from the group consisting of dihydro-oxazine and pyrroline; and (b) an acid salt of said diphenylamine.

3,853,465

TURBIDITY REDUCTION IN SERUM AND PLASMA SAMPLES USING POLYOXYETHYLATED LAURIC ACID COMPOUNDS

Robert L. Rush, Spring Valley, and Daniel L. Vlastelica, Pomona, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

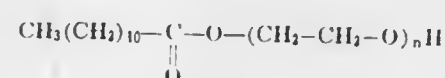
Filed June 9, 1972, Ser. No. 261,499

Int. Cl. G01n 33/16; B01f 17/00; C09k 3/00

U.S. Cl. 23—230 B

9 Claims

1. A method of reducing turbidity in a serum or plasma sample for analysis which comprises admixing said sample with a polyoxyethylated lauric acid compound having the formula:



wherein *n* is an integer from 9 to 20 until it becomes optically clear.

3,853,466

DIAGNOSTIC COMPOSITION FOR THE DETECTION OF UROBILINOGENS

Walter Rittersdorf, Mannheim-Waldhof; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany

Filed June 14, 1972, Ser. No. 262,923

Claims priority, application Germany, June 19, 1971, 2130559

Int. Cl. G01n 21/06, 31/22, 33/16

U.S. Cl. 23—230 B

34 Claims

1. Diagnostic agent for the detection of urobilinogen in body fluids which agent comprises an acid and at least one stable benzene diazonium salt wherein the phenyl radical contains at least one polyatomic electron donor group substituent with at least one mesomeric electron pair, in the o- or p-position and wherein the phenyl ring may contain additional substituents, the sum of the Hammett sigma values for all the substituents not exceeding the value of +0.4.

3,853,467

METHOD AND APPARATUS FOR IMMUNOLOGICAL DETECTION OF BIOLOGICAL PARTICLES

Ivar Gjaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,406

Int. Cl. G01n 21/04, 31/06, 33/16

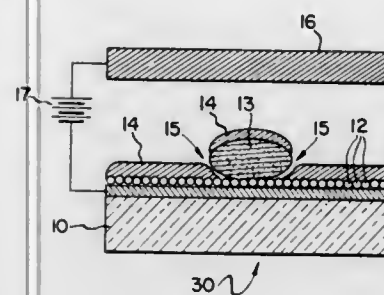
U.S. Cl. 23—230 B

18 Claims

8. A method for detecting biological particles of a particular species in a fluid comprising the steps of:

- immersing a substrate having a metal surface into a solution of antibodies to said species of biological particle to adhere a layer of said antibodies thereon;
- immersing said substrate having said antibodies thereon into said fluid whereby a plurality of said biological particles, if present in said fluid, immunologically bond to said antibodies;
- applying a second metal layer over said layer of antibodies

and any of said biological particles;
immersing said substrate in an etchant solution; and



examining said substrate to determine whether any of said biological particles had bonded to said substrate.

3,853,468

METHOD AND APPARATUS FOR CLINICAL TESTING OF BIOLOGICAL FLUIDS

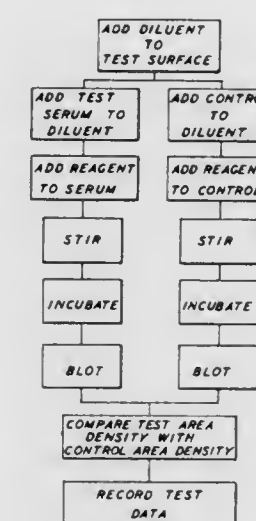
Herman Ralph Haymond, 1931 San Pasqual St., Pasadena, Calif. 91107

Filed May 8, 1972, Ser. No. 251,015

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

8 Claims



1. A process for clinical testing of biological fluids by means of a buffered reagent tending to agglutinate with biological fluid components under certain known conditions and including the steps of adding a sample of the fluid to be tested to a test surface having an affinity for nonagglutinated particles, adding a sample of control fluid of known content to another area of the test surface, adding a reagent to each of the test and control fluids on the test surface, stirring each of the resulting mixtures, leaving the mixtures undisturbed for a reactant period, applying an absorbent second surface to the areas on the test surface, and removing the second surface in order to compare the test and control areas on one of the surfaces.

3,853,469

REAGENT AND METHOD FOR PHOSPHORUS DETERMINATION

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,885

Int. Cl. G01n 31/22, 33/16

U.S. Cl. 23—230 B

30 Claims

1. A reagent for determining inorganic phosphate in biological fluid which comprises an aqueous solution containing 0.5 to 30 percent of an acid, 0.1 to 2 gram percent of a molybdate salt, and o-phenylenediamine or a salt thereof.

3,853,470

REAGENT AND METHOD FOR GLUCOSE DETERMINATION

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,888

Int. Cl. G01n 31/22, 33/16

U.S. Cl. 23—230 B

18 Claims

1. A reagent for glucose determination in biological fluids consisting of glucose oxidase, peroxidase, a member selected from the group consisting of a sulfonated phenylamine redox indicator and a sulfonated benzidine redox indicator, water and a buffer, the pH being between 4 and 5.9 and the ratio of glucose oxidase based on the EU units thereof present, to peroxidase, based on the purpurogallin units thereof present, being between 250:3 and 50:1.

3,853,471

DIAGNOSTIC COMPOSITION FOR THE DETECTION OF PEROXIDATIVELY ACTIVE SUBSTANCES IN BODY FLUIDS

Walter Rittersdorf; Hans-Georg Rey, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 3, 1973, Ser. No. 376,249

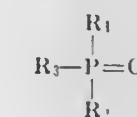
Claims priority, application Germany, July 18, 1972, 2235127

Int. Cl. G01n 31/22, 33/16; B01j 1/16

U.S. Cl. 23—230 B

23 Claims

1. Test strip for the detection of peroxidatively active substances in body fluids, comprising a carrier containing a hydroperoxide, at least one chromogen and, as a stabilizer, at least one phosphoric or phosphonic acid amide of the formula



wherein

R₁ is dimethylamino, alkoxy, aryloxy, alkyl, aryl or N-morpholino and contains not more than 10 carbon atoms; R₂ and R₃ are individually selected from dimethylamino and N-morpholino.

3,853,472

DIAGNOSTIC TEST STRIP FOR THE DETECTION OF COMPONENTS OF BODY FLUIDS

Walter Rittersdorf; Hans-Georg Rey, both of Mannheim-Waldhof; Werner Guthlein, Mannheim-Neckarau, and Peter Rieckmann, Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 3, 1973, Ser. No. 376,248

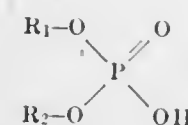
Claims priority, application Germany, July 18, 1972, 2235152

Int. Cl. G01n 31/22, 33/16; C07d 33/00

U.S. Cl. 23—230 B

29 Claims

1. Test strip for the detection of peroxidatively-active substances in body fluids, comprising a carrier containing a hydroperoxide, at least one chromogen and, as an activator, a compound of the formula



wherein

R_1 is hydrogen or methyl; and benzene and/or pyridine rings are fused on at least one of the positions indicated with $c, (d, e), f$ and g , provided that two adjacent rings must not simultaneously contain a cyclic nitrogen atom, and

wherein

said compound can be substituted, other than in the positions indicated by H and R_1 , by lower alkyl radicals, which radicals together can also form a hydroaromatic ring.

3,853,473

REAGENT AND METHOD FOR UREA DETERMINATION

Leo G. Morin, and Jeromè R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,887

Int. Cl. G01n 31/22, 33/16

U.S. Cl. 23-230 B

18 Claims

1. A reagent for the determination of urea in biological fluids comprised of an acidified solution of p -dimethylaminobenzaldehyde in a dipolar aprotic solvent, said p -dimethylaminobenzaldehyde being present at a level between 0.1 to 10 gram percent, and the solution being acidified by an acidifying agent which is present in an amount between 1 to 30 percent.

3,853,474

METHOD OF BURNING COMBUSTIBLE FLUIDS FOR FURTHER ANALYSIS

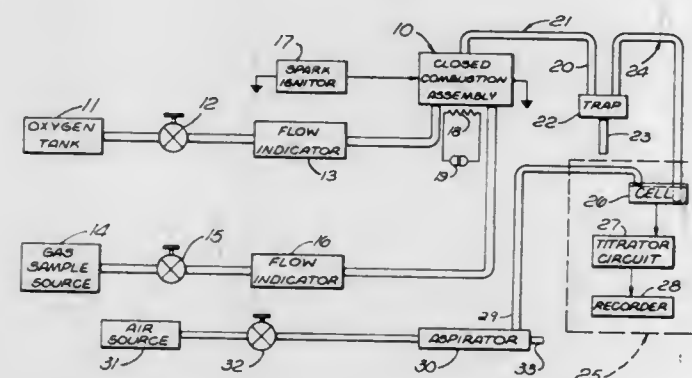
Robert R. Austin, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,342

Int. Cl. G01n 27/42, 25/00

U.S. Cl. 23-232 E

1 Claim



1. The method of monitoring the total elemental sulfur and combustible compounds thereof in a gas, said method comprising the steps of: supplying oxygen and the gas to the inlets of a combustion chamber at respective predetermined rates, said chamber having an outlet conduit sealed thereto, said chamber being everywhere sealed to prevent any air from entering thereinto; igniting the fluid in said chamber to form products of combustion; and analyzing said combustion products with a coulometric titrator, said oxygen being supplied at a rate between about 80 to 85 percent of the stoichiometric rate to oxidize the gas.

3,853,475 ELECTRICAL-EQUIPMENT CASINGS WITH CLAMP-ON DESALINATION UNIT

(1) Alfred Kenneth Gordon, Churchdown, and Kenneth Eardley Willmott, Cheltenham, both of England, assignors to Smiths Industries Limited, London, England

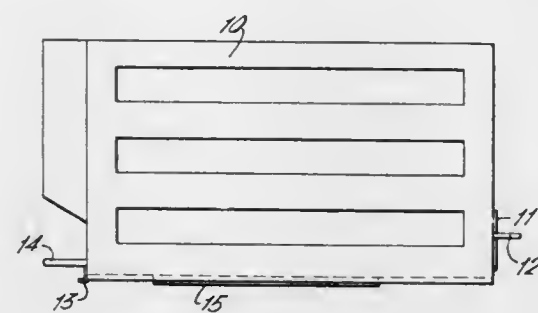
Filed May 22, 1972, Ser. No. 255,329

Claims priority, application Great Britain, May 26, 1971, 17249/71

U.S. Cl. 23-252 R

Int. Cl. B01j 1/08

3 Claims



1. A case comprising a casing providing an elongate enclosure for containing electrical equipment, said casing being of rectangular cross-section to have four elongate external side-walls, one of said side-walls being apertured to facilitate air flow into the casing, an elongate ventilator unit for communicating air to the enclosure from the ambient atmosphere, said ventilator unit being of rectangular cross section to have four elongate external side-walls, and means clamping the ventilator unit and casing to one another with one of said side-walls of the ventilator unit in face-to-face relationship with said apertured side-wall of the casing, the said ventilator unit comprising inlet-duct means for ducting air from said ambient atmosphere, a body of desalinating material for receiving air from the inlet-duct means to remove salt therefrom, means retaining said body in said inlet-duct means, outlet-duct means for communicating desalinated air from the said body into the casing, said outlet-duct means including an aperture through said one side-wall of the ventilator unit to provide communication of air into said casing through the said apertured side-wall of the casing, and means coupled to said outlet-duct means for removing water from said air communicated into the casing, said means coupled to said outlet-duct means comprising means defining a cavity opening into said outlet-duct means, said cavity being spaced from said body of desalinating material, and a body of desiccant material retained in said cavity for absorbing moisture from the desalinated air.

3,853,476 DIAGNOSTIC AGENT FOR THE DETECTION OF BILIRUBIN

Walter Rittersdorf, Mannheim-Waldhof; Werner Guthlein, Mannheim-Neckarau; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 24, 1973, Ser. No. 382,242

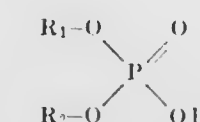
Claims priority, application Germany, Aug. 17, 1972, 2240357

Int. Cl. G01n 29/02, 31/02, 33/16

U.S. Cl. 23-253 TP

33 Claims

1. Test paper for the detection of bilirubin in body fluids, comprising an absorbent carrier and, impregnated thereinto a diazonium salt capable of coupling with bilirubin, an amount of an acid which is sufficient for the coupling reaction, and at least one phosphoric acid diester of the general formula:



wherein R_1 and R_2 are individually selected from unsubstituted or substituted aliphatic, cycloaliphatic, araliphatic or aromatic radicals, and contain not more than 18 carbon atoms each.

3,853,477 BREATH ANALYZER

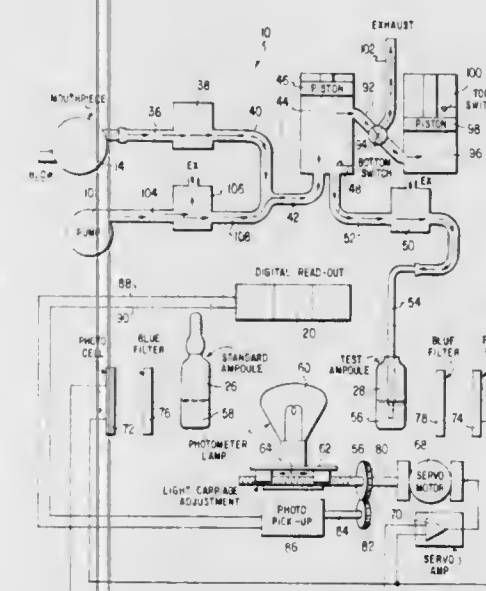
Lawrence Allan Block, Point Pleasant; Robert N. De Wilde, Ocean Township, and Gavino A. Spampinato, Bricktown, all of N.J., assignors to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Dec. 27, 1972, Ser. No. 318,788

Int. Cl. G01n 21/24, 33/18

U.S. Cl. 23-254 R

29 Claims



1. A breath tester for quantitatively measuring the alcoholic content of the human breath comprising a sample chamber, an inlet tube for receiving a breath sample, a blow solenoid valve coupling said inlet tube to said sample chamber, an air pump, a pump solenoid valve coupling said pump to said sample chamber, an outlet tube connected to said sample chamber, a bubble solenoid valve coupled to said output tube for supplying gas from said sample chamber to a bubbler tube, means including a photodetector for sensing the amount of alcohol in a charge of gas from said bubble valve, a first switch coupled to said chamber for producing an electrical signal when said sample chamber is empty, a second switch coupled to said sample chamber for producing an electrical signal when said sample chamber is full, a clock for producing timing signals,

a solid-state program counter having inputs coupled to said switches and said clock, and a solid-state program decoder coupling said program counter to said solenoid valves.

3,853,478

SOLUTE METERING APPARATUS

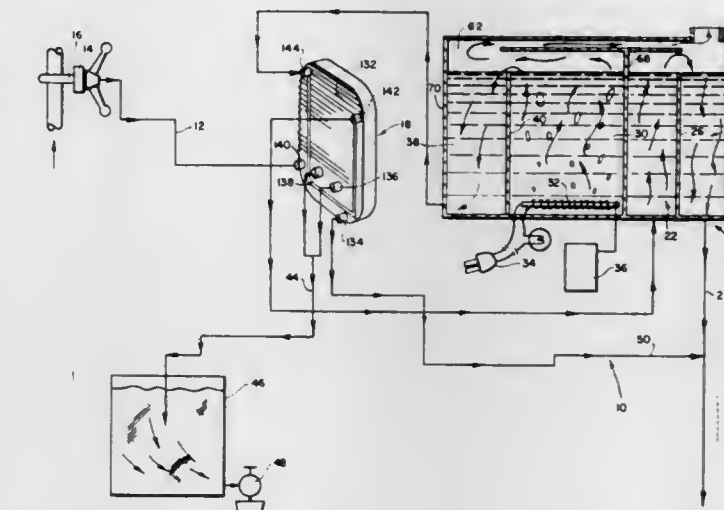
Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Dover, Del.

Filed Dec. 22, 1972, Ser. No. 317,653

Int. Cl. B01d 11/02, 13/00; B01f 1/00

U.S. Cl. 23-267 R

10 Claims



1. Apparatus for feeding a solute into a solvent, including: solvent holding means; solute holding means; means for communicating liquid between said holding means; membrane means having microscopic through pores disposed in closing relation across said communicating means such that it may contact said solvent on one side and a solution of said solute on the opposite side; said membrane pores being filled with a liquid including said solvent for permitting said solvent and said solute solution to diffuse through said membrane; and means for varying the area of said membrane means that may be brought in contact with at least one of said solute solution and solvent to vary the rate of diffusion of a solution of said solute through said membrane means; said area varying means includes frangible means for shielding a predetermined area of membrane surface from said solvent, whereby said frangible shielding means may be broken open to provide a predetermined change in the rate at which said solute solution may be fed to said solvent holding means, said frangible means for shielding including a plurality of nipple-like structures each having a sealed end communicating with said solvent and in communication with the solution of said solute via said membrane means, whereby said solvent and said solute solution may diffuse through said membrane means at a controlled rate as a function of the number of sealed nipple-like ends which are opened

3,853,479

BLOOD OXYGENATING DEVICE WITH HEAT EXCHANGER

Daniel A. Talonn, University City, Mo., and Denton A. Cooley, Houston, Tex., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed June 23, 1972, Ser. No. 265,864

Int. Cl. A61m 1/03

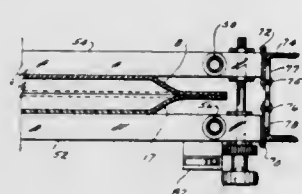
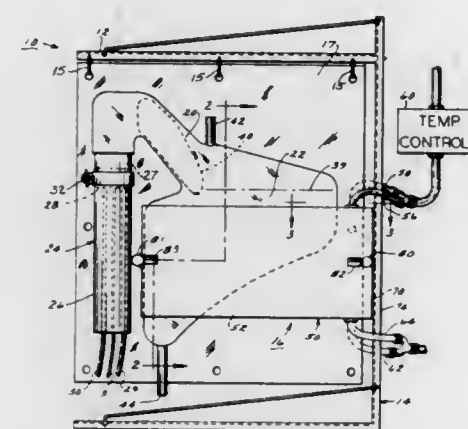
U.S. Cl. 23-258.5

9 Claims

1. In combination, a blood oxygenation device including an oxygenator chamber, means for introducing venous blood and oxygenation gas to said oxygenator chamber for producing gas bubbles in the blood to oxygenate the blood, a defoaming chamber connected to receive blood from said oxygenator

chamber and having anti-foam means therein for assisting in the removal of excess gas and vent means for venting excess gas to atmosphere, and a supply plastic blood settling reservoir chamber connected to receive blood from said defoaming chamber, said reservoir chamber having an outlet for discharging oxygenated blood, and blood temperature control means including a heat exchanger having a pair of relatively

spaced relation along the circumference and at the outside of said container in vertically spaced groups at different respective levels, with each group of suction boxes being aligned, transversely of said container, with a respective group of gas



discharge openings to further define the associated individual aeration zone; each suction box communicating with the interior of said container through a respective opening, in the container wall, covered by a respective grate.

3,853,481

BALANCE BEAM FEEDER

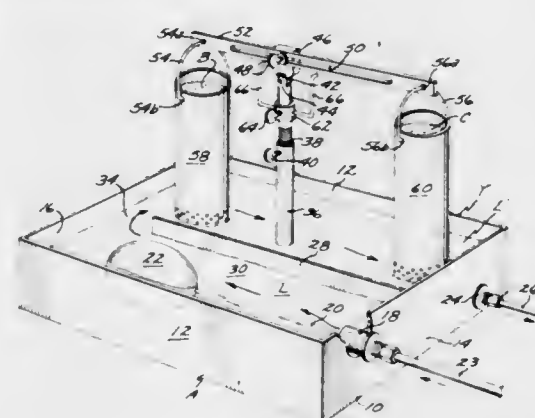
William Bruce Murray, 12022 Montecito Dr., Los Alamitos, Calif. 90720

Filed Nov. 16, 1973, Ser. No. 416,384

Int. Cl. B01d 11/02; B01f 5/10

U.S. Cl. 23-267 A

8 Claims



1. An apparatus for use in automatically dissolving first and second compounds in a first moving stream of a liquid in which they are soluble to provide a second moving stream of a solution in which said first and second compounds are dissolved in a weight ratio that is proportional to first and second weights of said first and second compounds, said apparatus including:

- first means for defining a first moving stream of said liquid of substantially constant velocity; and
- elongate balance beam means pivotally supported by a fulcrum means intermediate the ends thereof and having first and second ends that initially support first and second containers having perforate lower ends holding first and second weights of said first and second compounds respectively in said first stream in such relative vertical positions that said first stream contacts equal surfaces of said first and second compounds thereof, with said bal-

3,853,480

APPARATUS FOR THE CONVERSION OF PREPARED REFUSE SEWAGE SLUDGE MIXTURES INTO EARTH SUBSTANCE BY BIOLOGICAL DECOMPOSITION

Joseph Richard Kaelin, Villa Seeburg, Buochs, Switzerland
Filed Jan. 13, 1972, Ser. No. 217,581

Claims priority, application Switzerland, Jan. 21, 1971, 916/71

Int. Cl. C05f 9/02

U.S. Cl. 23-259.1

7 Claims

1. An apparatus for the continuous conversion of prepared refuse-sewage sludge mixtures by biological decomposition, into earth substances, comprising, in combination, a substantially vertical container closed at all sides; means at the top of said container for automatically infeding the material destined to be converted; means at the bottom of said container for automatically removing the material upon completion of the decomposition process; gas infeed means for an oxygen-containing gas required for the conversion process, said gas infeed means comprising a central tube extending along the central axis of said container and provided with gas discharge openings spaced therealong to discharge transversely of said container toward the sides thereof, and arranged in vertically spaced groups each extending vertically of, and vertically defining, a respective individual aeration zone within said container; said tube being mounted for rotation about its axis; and means for drawing off said oxygen-containing gas, said drawing off means comprising suction boxes arranged in

ance beam means moving the one of said containers holding the weight of said one compound that dissolves most rapidly upwardly to expose less of said surface thereof to said first stream and lowering the other of said containers that holds the weight of said other compound further into said first stream to expose more of said surface thereof to said first stream until said weight of said other compound has been so decreased by dissolving in said first stream that it is lighter than the weight of the said one compound in said upwardly moved container, whereupon the movement of said first and second containers is reversed, with the cycle of upward and downward movement of said first and second containers continuing and transforming said first stream into said second stream of solution.

3,853,482

RECUPERATIVE THERMAL RECOMBINING SYSTEM FOR HANDLING LOSS OF COOLANT

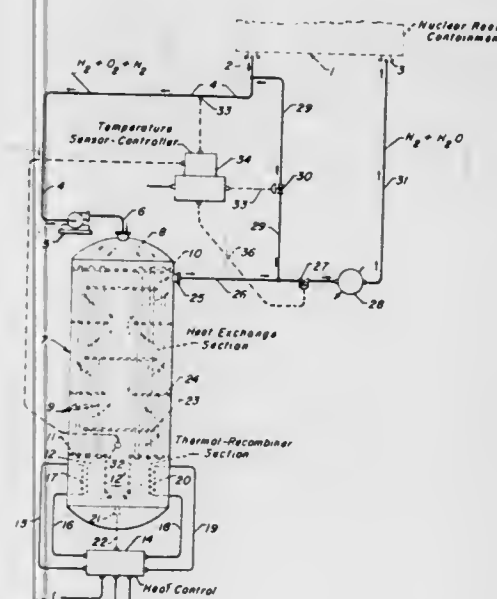
Andrew Tej Bhan, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 216,714, Jan. 10, 1972, Pat. No. 3,791,924. This application Nov. 21, 1972, Ser. No. 308,354

Int. Cl. C01b 5/00; B01j 1/14

U.S. Cl. 23-284

6 Claims



1. A thermal system for recombining dissociated hydrogen and oxygen in a waste gas stream, which comprises in combination, a recombiner chamber having gas stream inlet means and a combined gaseous stream outlet means connective thereto, non-flame heating means connected to said chamber for heating gas stream supplied thereto, a recycle conduit means with control valve means therein connective between said gas stream inlet means and said combined gaseous stream outlet means, temperature sensing means connective with said recombiner chamber providing a temperature rise measurement therefrom, and controller means connecting to said temperature sensing means and to said control valve means in said recycle conduit means, with said controller means thereby operative to regulate and proportion the amount of recycle combined stream flow from the outlet means to the gas inlet means responsive to temperature as a measure of oxygen content in the hydrogen and oxygen containing gas inlet stream to the recombiner chamber.

3,853,483

EXHAUST GAS CATALYTIC TREATMENT SYSTEM

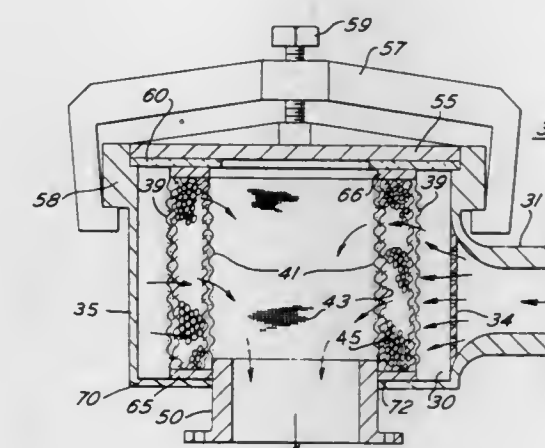
Willis J. Cross, Jr., Media, Pa., assignor to Air Products and Chemicals, Inc., Wayne, Pa.

Filed Oct. 18, 1972, Ser. No. 298,582

Int. Cl. B01j 9/04; F01n 3/14, 3/16

U.S. Cl. 23-288 F

7 Claims



1. A converter containing a bed of particulate catalyst for catalytic treatment of engine exhaust gases comprising a catalyst chamber having a substantially vertical sidewall and an opening to receive said catalyst; a removable cover plate mounted over the opening in said chamber; closure clamp clamped to said sidewall of said converter; means attached between said closure clamp and said cover plate for tightening said plate over said opening; and elongated, perforated annular cartridge mounted within said chamber having an inlet perforate wall, an outlet perforate wall and an opening at one end thereof in alignment with the opening in said chamber; a thermally destructible, porous sock containing said catalyst bed in the same geometric configuration as said annular cartridge so that said sock is insertable through the opening in said chamber and into the annulus of said cartridge; inlet means for placing a source of engine exhaust gases in fluid communication with said inlet perforate wall; treated gas outlet means from said chamber in fluid communication with said outlet perforate wall; and seal means removably disposed at the extremities of said cartridge with said sock positioned therebetween for preventing channeling of the exhaust gases at the extremities of said cartridge.

3,853,484

COMPACT MUFFLER SCRUBBER

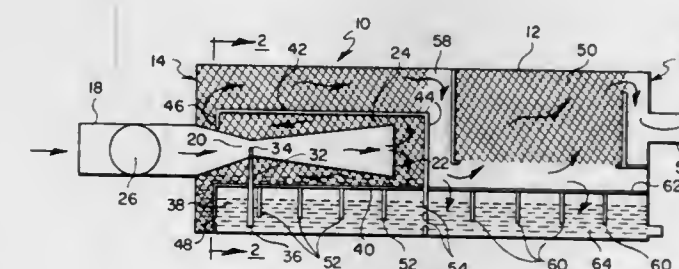
Seymour Sudar, Malibu, and Frederick W. Poucher, Jr., Camarillo, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 22, 1973, Ser. No. 325,974

Int. Cl. F01n 3/16; B01j 9/04

U.S. Cl. 23-288 F

8 Claims



1. A compact muffler for treating the exhaust gas of an internal combustion engine to remove impurities therefrom comprising:

an enclosed unitary housing adapted for connection in the exhaust system of the engine, said housing including shallow reactant and demister compartments serially connected in a horizontal arrangement, a sump region in the bottom of said housing containing a body of an absorbent material which is solid at room temperature and which forms a molten pool for absorbing and reacting with said impurities upon increasing the temperature of said body above its melting point, heating means to maintain said absorbent material in the form of a molten pool, said heating means including means for the transfer of thermal energy from the exhaust gas to said absorbent material,

an inlet line disposed in the reactant compartment of said housing and including an inlet port of one end thereof adapted to receive the impurity-containing exhaust gas from an exhaust gas manifold of said engine and including outlet means at the other end thereof for directing said exhaust gas within said reactant compartment,

venturi means including a constricted throat portion disposed in said inlet line between said inlet port and said outlet means and located in the forward end of the reactant compartment so as to establish a pressure gradient in said inlet line during operation thereby promoting the return of absorbent material to the forward end of said reactant compartment,

means for aspirating the molten absorbent material into said exhaust gas including a line having one end disposed in said molten pool and the other end disposed in said constricted throat portion and including spray means for producing a dispersion of liquid droplets in said throat portion to provide exhaust gas-molten material contact area,

bypass conduit means communicating with said inlet line prior to said venturi means for conducting exhaust gas from said engine to bypass said venturi means and to regulate the pressure thereacross and to conduct the bypassed portion of said exhaust gas to another region of said reactant compartment to intermix with the exhaust gas exiting from said venturi means,

said bypass conduit means including valve means at least responsive to the pressure of the exhaust gas stream entering said venturi means,

contacting means including a packing disposed in said reactant compartment, said packing being in horizontal axial alignment with and circumferentially surrounding said outlet means of said inlet line whereby the exhaust gas upon leaving said outlet means impinges on said packing providing for further exhaust gas-molten material contact area,

wall members partially enclosing said outlet means of said inlet line, whereby the exhaust gas enters said packing in a downstream direction and then is directed back through said packing in an upstream direction by said wall members,

drainage control means including an orifice of selected size in the forward bottom end of the reactant compartment so as to permit drainage of molten absorbent material into the molten pool under said pressure gradient while at the same time providing a liquid trap which blocks passage of the exhaust gas into the molten pool thereby causing said exhaust gas to be directed through said packing,

a passageway serially connecting said reactant and demister compartments and directing the hot exhaust gas containing entrained molten material upwardly through said demister compartment,

demisting means including a packing disposed in said demister compartment for separation of entrained molten material from said exhaust gas to provide a resultant dry exhaust gas, and

an outlet port disposed in said demister compartment and positioned downstream from said demister packing for discharging the dry purified exhaust gas from said housing.

3,853,485 CORE MEMBER FOR CATALYTIC OXIDATION CONVERTER

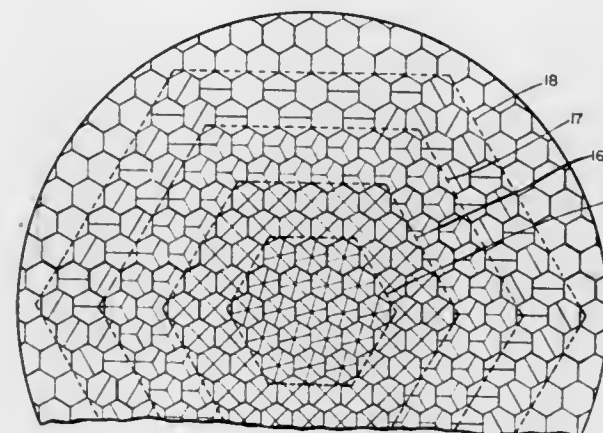
Robert G. Hogan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,694

Int. Cl. B01j 9/04; B32b 3/20; F01n 3/14

U.S. Cl. 23—288 F

10 Claims



1. A core member for use in a catalytic oxidation converter for internal combustion engine exhaust gases, such member comprising a cylindrical body of a refractory material and embodying a multitude of passages of relatively minute cross-sectional areas extending axially through said body longitudinally parallel with the peripheral wall of such body, such multitude of passages being cross-sectionally defined by networks of relatively thin walls and such multitude including a plurality of patterns of said passages concentrically surrounding the longitudinal axis of said cylindrical body between such axis and said peripheral wall, said passages increasing in cross-sectional area progressively from a central one of said plurality of patterns of passages radially towards the next pattern of passages.

3,853,486 PROCESS FOR THE MANUFACTURE OF PYROPHOSPHORIC ACID BY CRYSTALLIZATION

Gero Heymer, Hurth-Knapsack, and Horst-Dieter Wasel-Nielsen, Erftstadt-Lechenich, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Feb. 23, 1972, Ser. No. 228,772

Claims priority, application Germany, Feb. 25, 1971, 2108857

Int. Cl. B01d 9/00; C01b 25/24

U.S. Cl. 23—301 R

1 Claim

1. A process for the manufacture of pure, crystallized pyrophosphoric acid with a strength of at least 95 percent from polyphosphoric acid with a P_2O_5 -concentration between 79 and 81 weight percent and crystallized pyrophosphoric acid as seeding agent, which comprises adding to the polyphosphoric acid between 1 and 5 weight percent of crystallized pyrophosphoric acid, heating the resulting mixture for a period of about 2 hours, while continuously kneading it and with the exclusion of moisture, to temperatures between 40° and 55°C, cooling the mixture once upon the start of crystallization down to temperatures between 20° and 35°C, and further kneading the mixture for a period between 0.5 and 3 hours from the start of crystallization, the said mixture being maintained at temperatures of at most 50°C by dissipating the heat of crystallization.

3,853,487 METHOD OF FORMING CRYSTALS BY THE CONTROL OF VOLATILE CONSTITUENT DIFFUSION PATH DISTANCES THROUGH A MELT

Johannes Meuleman, Caen, and Guy Michel Jacob, Rosel, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

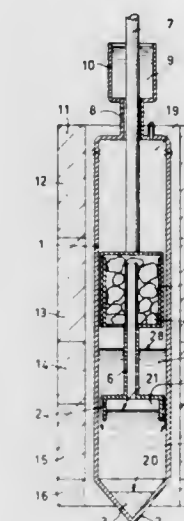
Filed Mar. 9, 1973, Ser. No. 339,541

Claims priority, application France, Mar. 15, 1972, 72.09009

Int. Cl. B01j 17/00

U.S. Cl. 23—301 SP

12 Claims



1. A method of manufacturing in a space crystalline rods of a compound from a liquid solution of the said compound in at least one of the constituents thereof, which solution is constantly supplied with at least one constituent which is more volatile than the solvent, said more volatile constituent diffusing, through the solution which shows a concentration gradient of the more volatile constituent, to a crystallization interface present in a steep temperature gradient, said temperature gradient being gradually traversed by said space, characterized in that the distance in the liquid between said crystallization interface on the one hand and another face present between the said liquid with the concentration gradient and a portion of the liquid face where said concentration gradient terminates of constant concentration which is constantly supplied with the more volatile constituent on the other hand, is maintained constant during the whole crystal growth by the addition of the constituent serving as a solvent.

3,853,488 PROCESSING OF CALCIUM CARBONATES

Martin Taylor, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed May 1, 1972, Ser. No. 249,004

Claims priority, application Great Britain, May 7, 1971, 13835/71

Int. Cl. C01f 11/18

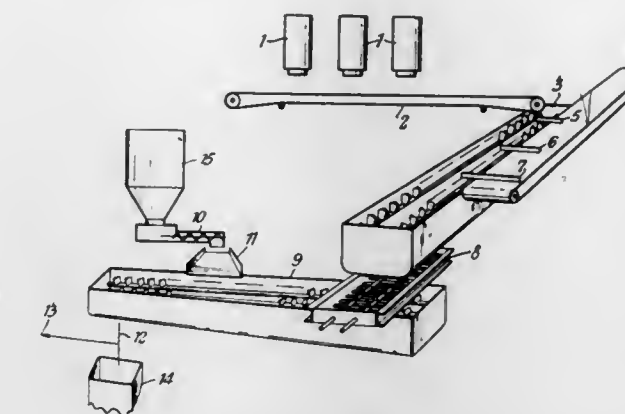
U.S. Cl. 23—293 A

10 Claims

1. A method of treating a wet processed natural calcium carbonate to produce a bulk-handleable material which method comprises the steps of:

- partially dewatering the wet processed natural calcium carbonate to obtain a superficially dry particulate material containing from 17 to 25% by weight of water; and
- thereafter subjecting the partially dewatered calcium carbonate to mechanical working in a mixer so that water is expressed from within the body of the particles to the surface thereof and mixing additional powdered calcium carbonate containing not more than 5% by weight of water with the partially dewatered calcium carbonate in an amount

sufficient to absorb the free surface water liberated from within the particles of calcium carbonate by said



mechanical working to produce a bulk-handleable material containing 10 to 16% by weight of water.

3,853,489 NON-WETTING AID FOR GROWING CRYSTALLINE BODIES

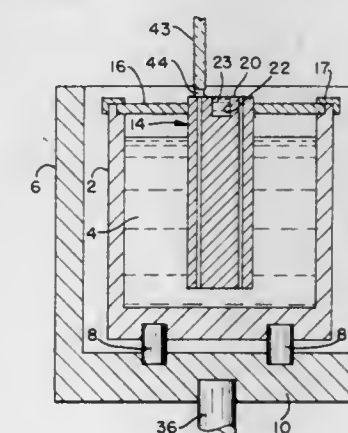
John S. Bailey, Charlestown, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,446

Int. Cl. B01j 17/18

U.S. Cl. 23—301 SP

12 Claims



1. A method of producing an elongate substantially monocrystalline body of a first selected material having a substantially constant cross-section of predetermined shape, said method comprising establishing a liquid film of said first selected material on a substantially horizontally extending surface of a second solid material that is wettable by said first selected material and has a predetermined configuration at least partly defined by a third liquid or solid material that is not wetted by said film so that said film terminates at the boundary of said third material, growing a substantially monocrystalline body of said first material from said film and pulling said body vertically away from said film as it grows, and replenishing said film by feeding an additional quantity of said first material in liquid form to said surface via at least one opening in said surface.

3,853,490 GRANULATION OF POTASSIUM SULFATE

Albert F. Boeglin, Edward A. Chowning, and Sam E. Tschapler, all of Carlsbad, N. Mex., assignors to International Minerals & Chemicals Corporation, Libertyville, Ill.

Filed Jan. 22, 1973, Ser. No. 325,504

Int. Cl. C01d 5/00, 5/18

U.S. Cl. 23—313

6 Claims

1. A method of granulating potassium sulfate comprising establishing a mass of potassium sulfate crystals characterized by (1) crystal size distribution of at least 50 percent by weight -6 +65 mesh, about 10 to about 30 percent by weight -200 mesh, with the remainder being essentially -65 +200 mesh; (2) a moisture content in the range of about 7 to about 12

percent by weight of the crystals; and (3) the presence of a surface active agent capable of substantially enhancing potassium sulfate crystal growth in the amount of about 0.025 to about 0.075 percent by weight of the crystals, rolling said mass in a confined bed on a substantially smooth moving surface to form granules, and drying said granules to a moisture content of less than about 1/2 of 1 percent by heat exchange between said granules and hot combustion gases, the maximum temperature of gases in contact with said granules being maintained at less than about 1,200°F., and the maximum temperature reached by said granules in the drying step being maintained below about 550°F.

3,853,491

TUNGSTEN FILAMENT HAVING UNIFORM CONCENTRATION GRADIENT OF THORIA PARTICLES
Thomas E. Dunham, Cleveland Heights, Ohio, assignor to General Electric Company, New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,939 The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.

Int. Cl. C22c 1/05, 19/00

U.S. Cl. 29—182.5

6 Claims

1. A thermally and mechanically worked dispersion alloy member consisting essentially of a recrystallized tungsten grain structure wherein the tungsten grains are small size equiaxed crystals and which further contains an average 1–2 percent by weight thoria particles of smaller size than the tungsten grains distributed in a uniformly diminishing concentration gradient having the maximum concentration located at the exterior surface of said member with no sharp compositional variation of thoria particles along said concentration gradient.

3,853,492

TUNGSTEN INCANDESCENT BODY CONTAINING FOREIGN SUBSTANCES AND PROCEDURE FOR ITS PREPARATION

Tivadar Millner, 108 Mikszat Kalman u, Budapest IV; Laszlo Bartha, 76-78 Toldy F. u, Budapest I, and Jeno Neugebauer, 131, Bocskay u, Budapest XV, all of Hungary
Filed June 27, 1972, Ser. No. 266,578

Claims priority, application Hungary, Mar. 16, 1972, OE 2339

Int. Cl. C22c 1/05, 22/00

U.S. Cl. 29—182

2 Claims

1. A sintered tungsten incandescent body containing 0.01–100 ppm beryllium, at least one member selected from the group consisting of 10–100 ppm potassium and 0.1–10 ppm thallium, and at least one member selected from the group consisting of 0.5–2 ppm of aluminum and 0.01–5 ppm gallium, containing less than half as much silicon as beryllium by weight, balance essentially tungsten.

3,853,493

HIGH-FRICTION CERMET MATERIAL

Olga Evgenievna Kestner, ulitsa Baumana 43/1, kv. 12; Vasily Ivanovich Vinokurov, ulitsa Spartakovskaya, 20/34, kv. 39; Irina Petrovna Axenova, ulitsa Garibaldi 8, korpus 2, kv. 63; Galina Tadeushevna Ozemblovskaya, 2 Novopodmoskovny pereulok 5, kv. 72; Amayak Pogosovich Shakhpendarian, Frunzenskaya Naberezhnaya 28, kv. 114; Anatoly Alexeevich Shagurin, Izmailovsky bulvar, 51/14, kv. 48; Larisa Nikolaevna Popova, Bratskaya ulitsa 23, korpus 1, kv. 107, all of Moscow; Ivan Ivanovich Zverev, ulitsa Sovetskaya 7/9, kv. 23, Balashikha Moskovskoi oblasti; Sergei Sergeevich Kokonin, prospekt Lenina 27, kv. 12, Balashikha Moskovskoi oblasti; Anatoly Alexandrovich Matveer, prospekt Lenina 47a, kv. 40, Balashikha Moskovskoi oblasti; Alexander Mikhailovich Petrunin, prospekt Lenina 53, kv. 14, Balashikha Moskovskoi oblasti; Evgeny Sergeevich Sherstnev, ulitsa Sovetskaya, 16a, kv. 59, Balashikha Moskovskoi oblasti; Anatoly Alexeevich Akimtsev, prospekt Lenina 8, kv. 35, Balashikha Moskovskoi oblasti, and Nikolai Mitrofanovich Sklyarov, ploschad Vosstania 1, kv. 396, Moscow, all of U.S.S.R.

Filed Mar. 1, 1974, Ser. No. 447,246

Int. Cl. C22c 29/00

U.S. Cl. 29—182.5

1 Claim

1. A sintered high-friction cermet material consisting essentially of
boron nitride, 2 to 10 wt.%;
copper, 6 to 15 wt.%;
graphite, 3 to 11 wt.%;
boron oxide, 4 to 10 wt.%;
silicon carbide, 4 to 10 wt.%; and
iron, the balance.

3,853,494

CARD CLOTHING

Werner Graf, Freinenbach, Switzerland, assignor to Graf & Cie. A.G., Rapperswil, Switzerland

Filed May 8, 1972, Ser. No. 252,516

Claims priority, application Switzerland, May 12, 1971, 7037/71

Int. Cl. B21f 45/10

U.S. Cl. 29—193.5

11 Claims

1. A card clothing containing at least one wire-shaped structure having a sawtooth profile formed of alloyed steel wherein the alloy contains 0.3 to 2.0 percent by weight carbon, 0.05 to 2.5 percent by weight silicon, 0.05 to 2.0 percent by weight manganese and 0.01 to 2.0 percent by weight vanadium, said alloyed steel having a hardness substantially higher than that of the corresponding non-alloyed steel and up to about 1,200 based on the Vickers hardness test.

3,853,495

FITMENT OF HANDLES TO BLADED HAND TOOLS

George Cecil Derby Shire, Sheffield, England, assignor to The Jacobs Manufacturing Company Limited, Sheffield, England
Filed Feb. 27, 1974, Ser. No. 446,225

Claims priority, application Great Britain, Mar. 5, 1973, 10635/73

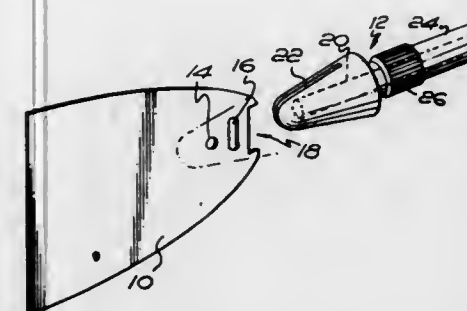
Int. Cl. B23p 3/00

U.S. Cl. 29—460

6 Claims

1. In a method of making a bladed hand tool, the steps of forming a bolster having a hole extending axially from one end to within a short distance of its other end; slotting said other end to a depth sufficient to intersect said axial hole, the width of the slot being less than the diameter of the hole extending axially of the bolster; forming a blade with a root end having at least one recess; inserting said root end of the blade into the

slot in the bolster so that the recessed portion of said blade is hidden by the bolster; and injecting a filler material along the



axial hole of the bolster so that it flows into the recessed portion of the blade to firmly unite the bolster and blade.

3,853,496

METHOD OF MAKING A METAL INSULATOR SILICON FIELD EFFECT TRANSISTOR (MIS-FET) MEMORY DEVICE AND THE PRODUCT

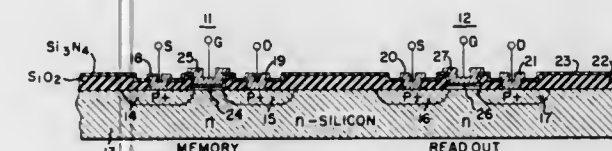
Manjin J. Kim, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 2, 1973, Ser. No. 319,991

Int. Cl. H01l 1/14

U.S. Cl. 29—571

6 Claims



1. The method of making a metal insulation silicon field effect transistor (MIS-FET) memory device, comprising the steps of:

- forming an insulating SiO_2 layer over a low resistivity substrate;
- etching openings in said SiO_2 layer and diffusing in source and drain regions;
- sealing said source and drain regions with SiO_2 and opening an intermediate channel region;
- immersing the substrate in concentrated nitric acid to form a low temperature chemical oxide of silicon over said channel region under self-limiting conditions in order to produce a first insulating layer about 20A in thickness;
- forming a second insulation layer over said chemical oxide to provide a region of deep traps at their interface;
- opening said source and drain contact regions; and
- metallizing said source and drain regions and said second insulating layer over said channel region.

3,853,497

LOW POUR VACUUM GAS OIL COMPOSITIONS

Kenneth D. Miller, Nederland, and Levi C. Parker, Port Arthur, both of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,676

Int. Cl. C10l 1/14

U.S. Cl. 44—62

2 Claims

1. A vacuum gas oil fuel oil composition comprising a major amount of vacuum gas oil boiling between about 450° and 1,050°F. and having a wax content between about 0.5 and 20 wt. % containing 1). between about 1 and 20 wt. % of an asphaltene petroleum residuum having an asphaltene content of between about 4 and 15 wt. % and an API Gravity of between about 5° and 20° and a carbon residue of between about 5 and 25 wt. % and 2). between about 0.002 and 3 wt. % of an interpolymeric poly(n-alkylacrylate) of a molecular weight between about 3,000 and 100,000 wherein said n-alkyl is at least 18 carbons and where at least 70 wt. % of said n-alkyl is of 20 to 24 carbons consisting of between about 2 and 65 wt. % C_{20} alkyl, between about 18 and 65 wt. % C_{22} alkyl, and

between about 8 and 35 wt. % C_{24} alkyl, said poly(n-alkylacrylate) incorporated in said base stock at a temperature above the solution point of said wax.

3,853,498

PRODUCTION OF HIGH ENERGY FUEL GAS FROM MUNICIPAL WASTES

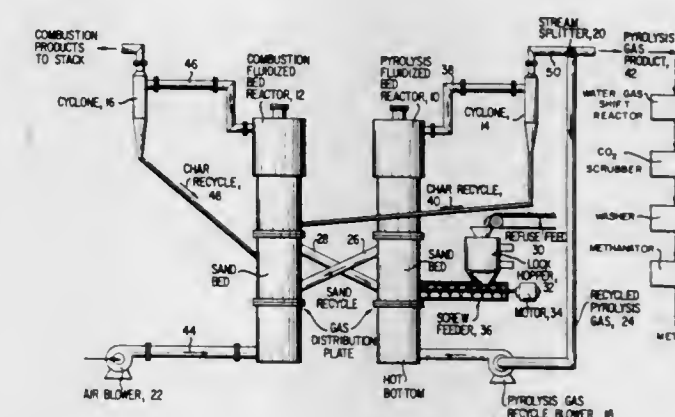
Richard C. Bailie, 1323 Cherry Ln., Morgantown, W. Va. 26505

Filed June 28, 1972, Ser. No. 267,233

Int. Cl. C10j 3/12

U.S. Cl. 48—209

15 Claims



1. A method for the gasification of municipal waste to produce high energy fuel gas, which method comprises:

- pyrolyzing a municipal waste feed, in an inert, oxygen-free atmosphere, in an endothermic pyrolysis reaction zone to thus gasify the same in the absence of substantial by-production of liquid reaction products;
- the said pyrolysis reaction zone comprising a dense bed of fluidized, inert particulate solids;
- said pyrolysis reaction operating under essentially isothermal conditions;
- the heat energy required for said pyrolysis reaction being generated by exothermic combustion reaction in a distinct, exothermic combustion reaction zone;
- said exothermic combustion reaction zone also comprising a bed of inert particulate solids;
- the fluidized, inert particulate solids in said endothermic pyrolysis reaction zone being in communicating relationship with the inert particulate solids in said exothermic combustion reaction zone;
- said generated heat of exothermic combustion reaction being transferred to said endothermic pyrolysis reaction zone to provide the said heat energy requirements thereof, without substantial transference of either reactants for or reaction products of said exothermic combustion reaction, by circulating the respective inert particulate solids between the said exothermic combustion reaction zone and the said endothermic pyrolysis reaction zone; and
- whereby the pyrolysis gas product comprises the high energy fuel gas.

3,853,499

APPARATUS FOR FORMING PROGRESSIVE POWER LENS BLANKS

Lawrence H. Larson, 1612 Don San Geroge Ct., Orlando, Fla. 32806, and Don J. Tindall, Box 1101, Orlando, Fla. 32802

Continuation-in-part of Ser. No. 284,098, Aug. 28, 1972, abandoned. This application Feb. 23, 1973, Ser. No. 335,256

Int. Cl. B24b 13/04

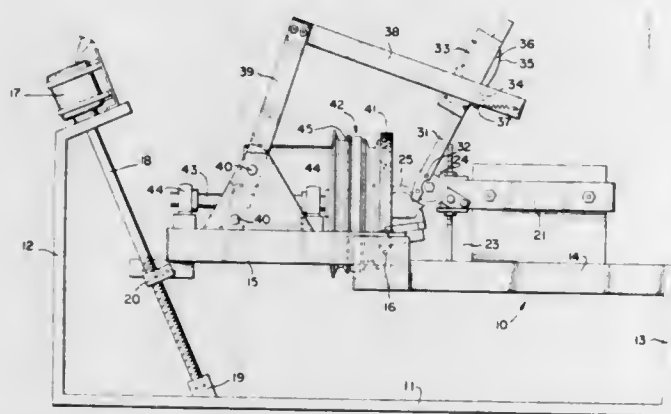
U.S. Cl. 51—33 R

6 Claims

1. A progressive power lens blank forming machine comprising:

- a static frame,

- b. a movable frame pivoted for movement relative to said static frame,
- c. lens grinding abrasive means mounted for rotation upon said movable frame,
- d. a first control means connected between said static and movable frame for regulating the amount of pivotal movement between said frames,
- e. lens holding means having a base, a pair of arms one end of each of which is pivoted to said base, one of said arms being a short arm and the other of said arms being a long arm, said long arm being connected at its upper end to be gear driven from said static support and a complementary



gear in mesh therewith and connected to be rotated by said movable frame at a rate proportional to the rocking movement of said movable frame relative to said static frame to cause wiping of said lens holder across said lens grinding abrasive to grind a lens blank of progressive thickness

- f. a second control means connected between said movable frame and said lens holding means regulating the rate of movement of said lens holding means across said abrasive means as said movable frame is moved by said first control means relative to said static frame to cut a lens blank of progressive thickness from one extremity to the other.

3,853,500

METHOD AND APPARATUS FOR DEGASSING VISCOUS LIQUIDS AND REMOVING GAS BUBBLES SUSPENDED THEREIN

Hans-Ulrich Gassmann; Ching-Muh Chen, both of Fribourg, Switzerland, and Michel Vermot, Sao Paulo, Brazil, assignors to Ciba-Geigy AG, Basle, Switzerland

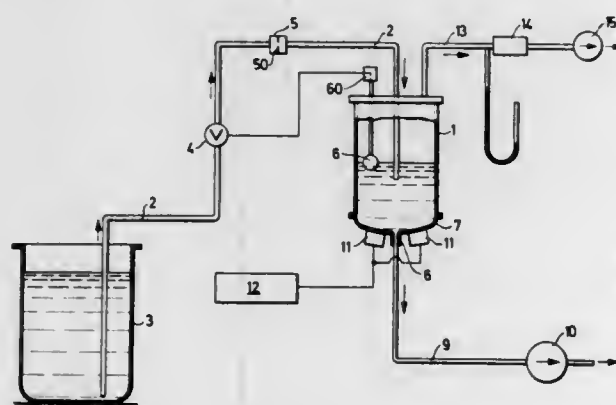
Filed Jan. 22, 1973, Ser. No. 325,439

Claims priority, application Switzerland, Jan. 25, 1972, 01074/72

Int. Cl. B01d 51/08

U.S. Cl. 55-15

11 Claims



1. A method of degassing viscous liquids and for removing gas bubbles suspended therein, said method comprising: passing the liquid through an apertured partition to degas and form bubbles in the liquid, the area of the aperture being a maximum of one-fifth the cross-sectional area of the stream of

liquid introduced to said partition; passing the liquid, without removing gas bubbles therefrom, from the partition into a gas tight vessel; reducing the pressure inside the vessel such that the liquid flow through the aperture due to such pressure reduction, averaged over the cross-section thereof, is between 3 and 10 metres per second; and agitating the liquid by subjecting it to ultrasonic vibrations.

3,853,501

REMOVAL OF RADIOACTIVE RADON DAUGHTERS FROM AIR

Carl W. Stringer, Sugarland, Tex., assignor to Radon Development Corporation, Houston, Tex.

Filed July 16, 1973, Ser. No. 379,606

Int. Cl. B01d 19/00, 27/00, 47/00

U.S. Cl. 55-37

25 Claims

1. In the method for removing radioactive radon daughters from air which comprises filtering air contaminated with radon daughters through a water-wetted filter to capture the radon daughters in the water, the improvement which comprises:

circulating the water contaminated with the captured radon daughters through filter medium comprising a water-insoluble granular substrate wherein the surface of the substrate has been dried of water and then wetted with a normally liquid hydrocarbon; and returning the filtered water to again wet the air filter and capture additional radon daughters.

3,853,502

METHOD OF REMOVING SO₂ AND H₂SO₄ MIST FROM A GAS STREAM

Karl-Heinz Dorr, Maimz; Hugo Grimm, Frankfurt am Main; Michael Tacke, Offenbach, and Robert Peichl, Kelheim, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Sud-Chemie AG, Munich, both of Germany

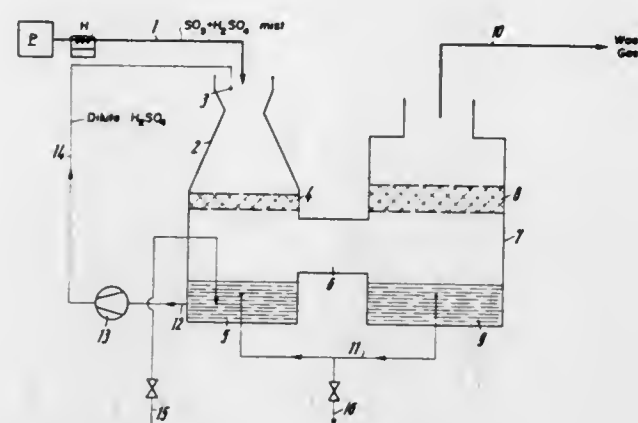
Filed Sept. 7, 1972, Ser. No. 287,104

Claims priority, application Germany, Sept. 11, 1971, 2145546

Int. Cl. B01d 53/14

U.S. Cl. 55-48

4 Claims



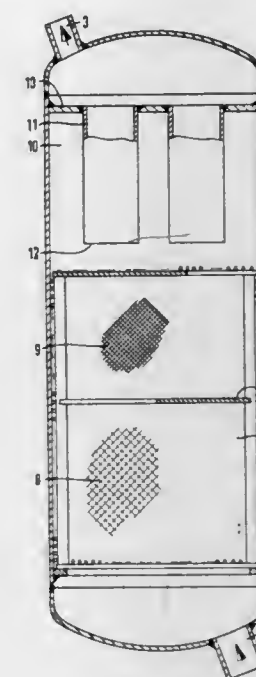
1. In the production of sulfuric acid wherein: a gas stream containing sulfur dioxide is subjected to contact catalysis to form sulfur trioxide therein, the sulfur trioxide is at least in part removed from the gas stream by absorption in at least one absorber stage by effecting contact of the gas stream with sulfuric acid therein, and a dry contact-process end gas containing sulfur trioxide and/or sulfuric acid mist emerges from the final absorber stage, the improvement which consists of a method of removing sulfur trioxide and/or sulfuric acid mist from said dry contact-process end gas, said improvement comprising the steps of: a. intimately contacting said dry-process end gas subsequent to the final absorber stage with a water-diluted sulfuric

acid treating solution having a sulfuric acid concentration of 40 to 90 percent by weight to increase the water-vapor content of said end gas, to convert sulfur trioxide therein to sulfuric acid and to convert sulfuric acid mist therein to separable sulfuric acid droplets, and

to form a mixture of sulfuric acid liquid phase and a gas phase, said water-diluted sulfuric acid treating solution being injected into said end gas in a downwardly directed Venturi tube to produce a downwardly flow of said mixture of said phases, and further passing said downwardly flowing mixture through a packing layer downstream of said Venturi tube;

- b. separating the liquid and gas phases formed in step (a) subsequent to the contact of said drying contact-process end gas with said sulfuric acid treating solution having said sulfuric acid concentration of 40 to 90 percent by weight to recover sulfuric acid as the liquid phase, said liquid and gas phases being separated by collecting part of said liquid phase below said packing layer, deflecting said gas phase at right angles downstream of said packing layer, and passing said deflected gas stream through a further packing layer for removal of additional quantities of said liquid phase therefrom;
- c. discharging the gas phase after separation of the liquid phase therefrom in step (b) as an exhaust gas substantially free from sulfuric acid; and

heating said end gas prior to contact of said treating solution therewith in step (a) and subsequent to said final absorber stage.



still exceeding the solidification temperature of the liquid metal.

3,853,503

REMOVAL OF HAZE-FORMING CONSTITUENTS FROM WOOD DRYER EFFLUENT

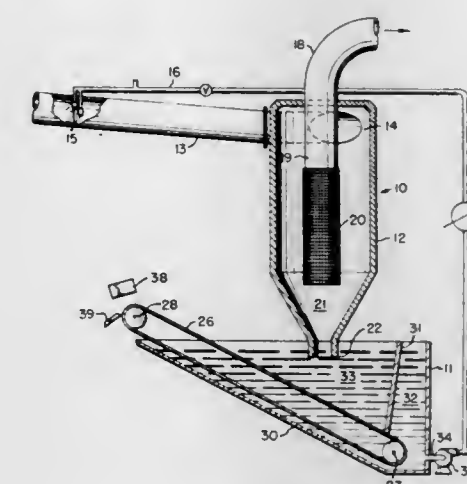
Vincent J. Tretter, Jr., Vancouver, Wash.; Leslie M. Stefensen, Springfield, and Robert A. Rydell, Corvallis, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed July 16, 1973, Ser. No. 379,325

Int. Cl. B01d 53/14; F26b 21/06

U.S. Cl. 55-85

12 Claims



3,853,503

ENERGY ABSORBER FOR LASER PYROLYSIS

Orville F. Folmer, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 4, 1973, Ser. No. 366,810

Int. Cl. B01d 15/08

U.S. Cl. 55-67

2 Claims

1. In a method for preparing a material for gas-liquid chromatographic analysis by pyrolyzing a portion thereof with a laser beam, the improvement comprises pyrolyzing said material while in intimate contact with a powdered metal selected from the group consisting of iron, copper, gold and tantalum.

3,853,504

APPARATUS FOR CONTINUOUSLY PRECIPITATING LIQUID METALS FROM GASES

Enno Buscher, Bergisch-Gladbach; Friedrich Eils, Bremen; Walter Jansing, Bensberg-Moitzfeld; George Kirchner, Bensberg-Frankenforst, and Dieter Markfort, Forsbach, all of Germany, assignors to Interatom Internationale Atomreaktorbau GmbH, Bensberg/Köln, Germany

Filed July 22, 1971, Ser. No. 165,002

Claims priority, application Germany, July 23, 1970, 2036568; Mar. 17, 1971, 2112891

Int. Cl. B01d 51/00

U.S. Cl. 55-80

12 Claims

1. Method of continuously precipitating liquid metal from gas in which the liquid metal is finely distributed which comprises the steps of heating the gas bearing the liquid metal to

1. A process for the removal of haze-forming constituents from wood veneer dryer effluent which comprises, passing the effluent through a conduit, spraying water into the effluent in sufficient amount to cool the effluent to a temperature in the range of 120° to 180° F to condense the haze-forming constituents and to disperse water in the effluent in an amount of at least 10 grains per cubic foot of effluent, passing the cooled effluent containing the water spray in the conduit under turbulent flow for a distance to obtain a pressure drop of at least 1/2 inch of water to agglomerate the condensed haze-forming constituents in presence of the dispersed water, and removing the condensed, agglomerated particles of the haze-forming constituents from the effluent.

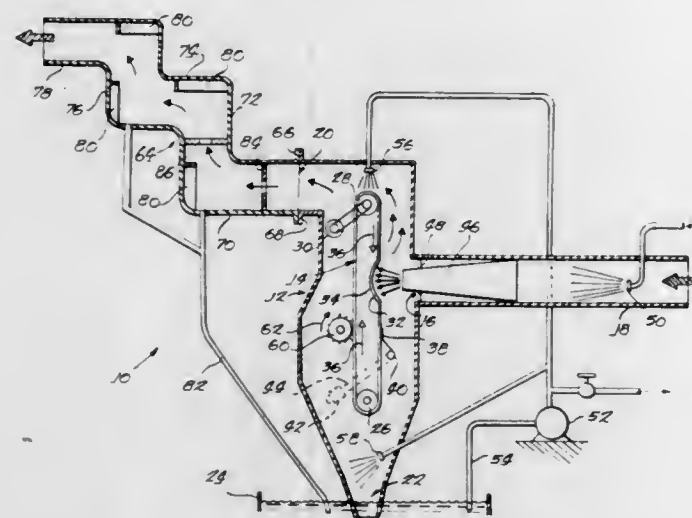
3,853,506

POLLUTION CONTROL APPARATUS AND METHOD
Ladislav J. Pircon, Emlhurst, Ill., assignor to The Purity Corporation, Elk Grove Village, Ill.

Filed Oct. 18, 1971, Ser. No. 190,248
Int. Cl. B01d 45/10

U.S. Cl. 55—91

14 Claims



1. The method of removing pollutants from a gas stream comprising the steps of:

- directing a moving pollutant-containing gas stream through a gas stream inlet confronting the concave portion of an endless traveling belt of substantially impermeable material disposed within a chamber with an impingement portion thereof confronting said gas stream inlet;
- driving said belt trained over an idler roller which is spaced from a driving means and includes an adjustment means to provide said concavity;
- removing the pollutant impinged on said traveling belt, and;
- separately removing the clean gas stream.

3,853,507

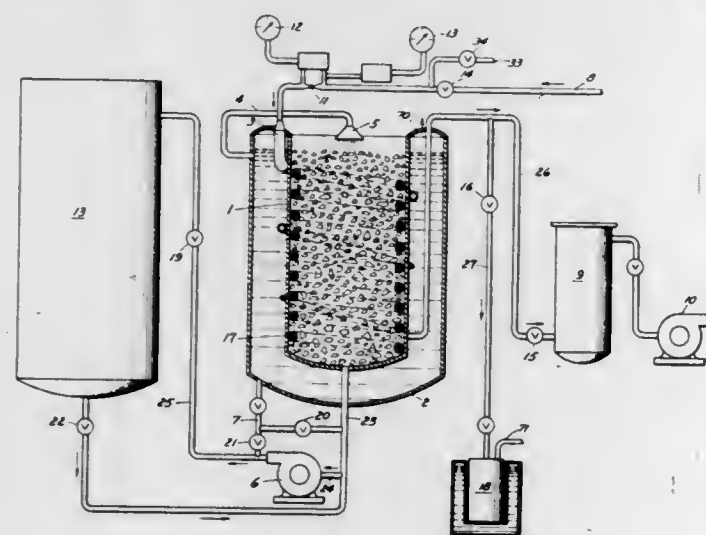
COLD TRAP UNIT

Paul S. Monroe, Elyria, Ohio, and Michael C. Chervenak, III, Portage, Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 31, 1947, Ser. No. 795,036
Int. Cl. B01d 53/00

U.S. Cl. 55—269

8 Claims



1. A gas recovery system of the character described comprising a casing, a length of tubing disposed within the casing for the passage of gases, means for feeding gases to the length of tubing, means in said casing for cooling the tubing for solidifying said gases on the walls thereof, means for applying heat to the tubing for converting the solids to liquid form, and means for removing the liquid from the tubing and storing it.

3,853,508

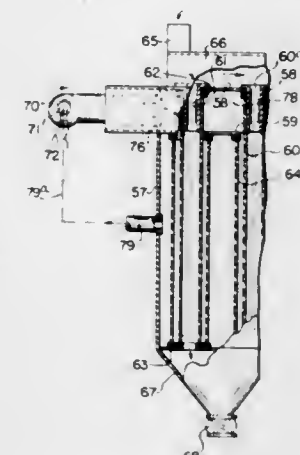
APPARATUS FOR BAG COLLECTION OF DIRT

Mack Gordon, Medina, and John F. Phillippi, Mentor, both of Ohio, assignors to Aerodyne Development Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 186,373, Oct. 4, 1971. This application June 14, 1972, Ser. No. 262,660
Int. Cl. B01d 46/04

U.S. Cl. 55—302

3 Claims



1. Bag apparatus for use in a bag collector for dirt entrained in a fluid stream wherein an upstream inner bag and a downstream outer bag are concentric and closely adjacent; said apparatus comprising a housing, vertically supported in said housing, spaced inner and outer generally cylindrical fluid permeable bags, there being an inlet for dirty fluid stream in said housing and means connected with said inlet and an open end of an upstream bag communicating with the open end of said upstream bag, there being an outlet in said housing for clean fluid communicating with said housing and spaced downstream of said outer bag, means in said housing and connected in flow communication with the space between said bags for intermittently creating a fluid pressure between said bags sufficient to partially collapse said inner bag upstream whereby said dirt is collected from the inner surface of said inner bag; bag support means secured to said inner bag holding relatively fixed at all times substantially linear longitudinally extending narrow zones of said inner bag; said zones being spaced around said inner bag circumferentially at a small number of points greater than two, whereby blow-down fluid may be intermittently introduced between said inner and outer bags to cause said inner bag to flex inwardly to release dirt from the inner surface of said inner bag at which time said bag support means is so constructed and arranged that said pressurized fluid cannot cause opposite sides of said inner bag to touch each other during said flexing.

3,853,509

BAG TYPE FILTER DEVICE

Raymond M. Leliaert, 3612 Brentwood Dr., South Bend, Ind. 46628

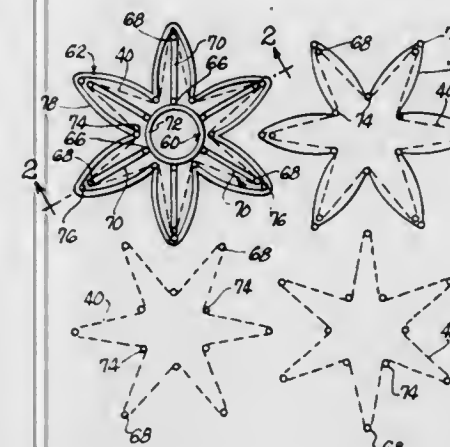
Filed May 4, 1973, Ser. No. 357,247
Int. Cl. B01d 46/08

U.S. Cl. 55—341

7 Claims

1. In a bag type filter device having a filter housing with an inlet for passage of dirty gas to be cleaned into the housing and an outlet for passage of clean gas from the housing, a cell plate subdividing the housing into a clean gas plenum chamber in communication with the outlet and a dirty gas plenum chamber in communication with the inlet, with openings through the cell plate communicating the dirty gas plenum chamber and the clean gas plenum chamber, filter tubes extending into the dirty gas plenum chamber with an open end in communication with openings in the cell plate and closed at the other end, the improvement in which the filter tube comprises a

filter bag, an inner wire cage and an outer wire cage with the filter bag disposed in between, with the inner wire cage having a plurality of circumferentially spaced rigid outer wires extending in the longitudinal direction and with the outer cage having a plurality of circumferentially spaced inner and outer wires also extending in the longitudinal direction, with outer wires of the inner cage positioned a greater distance from the center of the filter tube than inner wires of the outer cage but



less than the outer wires of the outer cage with the outer wires of the outer cage being substantially radially aligned with the outer wires of the inner cage, with the said outer wires of the inner cage and the inner wires of the outer cage being circumferentially offset one from the other, the filter extending sequentially outwardly about the outer wires of the inner cage and inwardly about the inner wires of the outer cage to support the filter bag therebetween in a corrugated arrangement.

3,853,510

TWO STAGE HIGH EFFICIENCY AIR FILTER

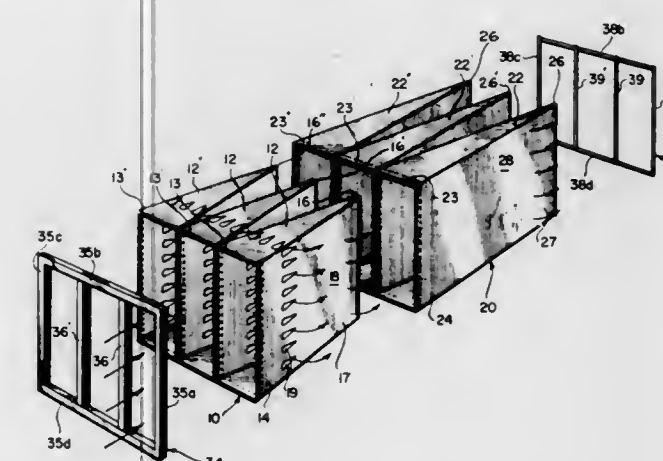
Richard R. Meyer, Glen Ellyn; John M. Kearney, Wauconda, and Philip J. Burnstein, Skokie, all of Ill., assignors to Systems Discipline, Inc., Des Plaines, Ill.

Continuation of Ser. No. 289,575, Sept. 15, 1972, abandoned.
This application Mar. 4, 1974, Ser. No. 447,518

Int. Cl. B01d 46/04

U.S. Cl. 55—368

1 Claim



1. An apparatus for filtering particulate matter containing relatively fine and relatively coarse particles from an air stream, said apparatus comprising:

at least one wedge-shaped filter unit having a first wedge-shaped filter comprising filter walls disposed inside a second wedge-shaped filter, the outside surface of said first wedge-shaped filter and the inside surface of said second wedge-shaped filter defining a cavity therebetween;

said first wedge-shaped filter and said second wedge-shaped filter having a common open upstream end;

a plurality of perforations in said filter walls near the upstream end of said first wedge-shaped filter the size of said perforations being greater than the porosity of said filter walls;

so that said perforations direct a substantial portion of said relatively fine particles to said cavity while at the same time permitting said relatively coarse particles to be filtered by the filter walls of said first wedge-shaped filter when the first wedge-shaped filter is less than completely occluded with particulate matter; and, means for maintaining said common upstream end in an open position.

3,853,511

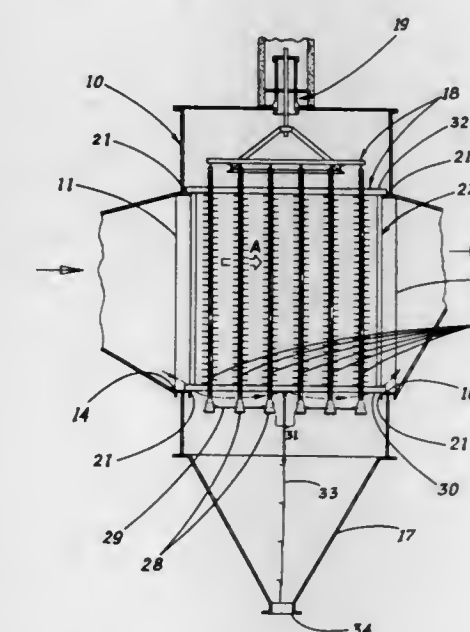
ELECTRICAL PRECIPITATING APPARATUS

Xaver Johann Huppi, Zurich, Switzerland, assignor to Elex Limited AG, Zurich, Switzerland

Filed Feb. 16, 1972, Ser. No. 226,856
Int. Cl. B03c 3/76

U.S. Cl. 55—112

1 Claim



1. An electrical precipitating apparatus for removing suspended particles from a gas comprising: a housing having an opposed gas inlet and a gas outlet and defining a passageway for a stream of gas; the lower portion of said housing defining a hopper below said passageway with the lower edges of the gas inlet and gas outlet lying substantially in a common horizontal plane; an electrode system in said passageway including grounded collecting electrodes supported by rapping bars at both the top and bottom thereof said top supporting rapping bars resting on electrode ledge support means attached to said housing and said bottom supporting rapping bars also attached to said housing and extending to the plane defined by said lower edge of said gas inlet and outlet, said collecting electrodes extending longitudinally in spaced planes parallel to the direction of gas flow through said passageway, said electrode system further including high voltage discharge electrodes extending longitudinally in said passageway parallel with and transversely spaced from said collecting electrodes in successive relationship to provide spaced rows of discharge electrodes between the spaced rows of collecting electrodes, said discharge electrodes being spaced longitudinally of said gas passageway and creating charging fields extending transversely of the gas passageway in longitudinally spaced vertical planes, said discharge electrodes being further defined in that they are suspended from the upper portion of said housing by suspension means and maintained in their relative positions by weights secured to their lower ends said weights being separated and positively positioned with respect to one another by a spacing frame having a dividing slot therein; baffle means comprising a single flat sheet of material located equidistant from said gas inlet and said gas outlet supported within said housing transverse to said gas passageway and extending upwardly through said dividing slot in said discharge electrode spacing frame at least to the horizontal plane defined by the lower edges of the gas inlet and gas outlet, said apparatus being further defined in that the distance between said baffle

means and said discharge electrode weights, and spacing frame is such that there is no arcing therebetween.

3,853,512 AIR PURIFIER

Kazuo Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

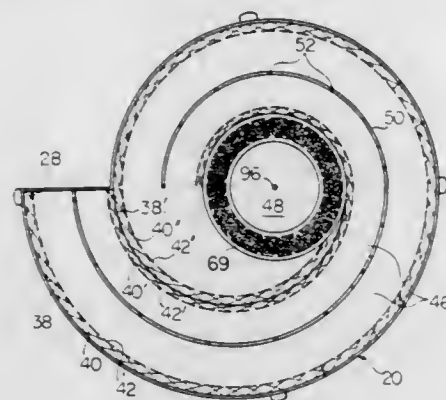
Filed June 1, 1973, Ser. No. 365,851

Claims priority, application Japan, Nov. 29, 1972, 47-137325; Nov. 29, 1972, 47-137328; Nov. 29, 1972, 47-137326

Int. Cl. B03c 3/12, 3/14

U.S. Cl. 55-124

7 Claims



1. An air purifier comprising a generally cylindrical casing having an air inlet opening and an air outlet opening located substantially centrally of the casing, dust collecting wall means positioned within said casing and providing a continuous passageway extending spirally between the air inlet and outlet openings in said casing, said wall means including at least one dust collecting electrode for connection to a first electric terminal, and at least one charging electrode extending spirally in and along said passageway and electrically isolated from said collecting electrode, said charging electrode being for connection to a second electric terminal having a polarity opposite to the polarity of the first electric terminal for thereby establishing an electric field between the charging and collecting electrodes so that particles of dust entrained in air directed into said passageway through said air inlet opening become ionized and are attracted to said dust collecting wall means as the air is circulated through said passageway from said air inlet opening to said air outlet opening, said dust collecting wall means further including a dust collecting filter attached to the surface of said dust collecting electrode facing said passageway and an additional dust collecting electrode of a wire mesh form, said additional dust collecting electrode being attached to the surface of said dust collecting filter facing said passageway and electrically connected to the first named dust collecting electrode.

3,853,513

VAPOR-LIQUID SEPARATION APPARATUS

Don B. Carson, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 2, 1973, Ser. No. 375,967

Int. Cl. B01d 19/00, 50/00

U.S. Cl. 55-185

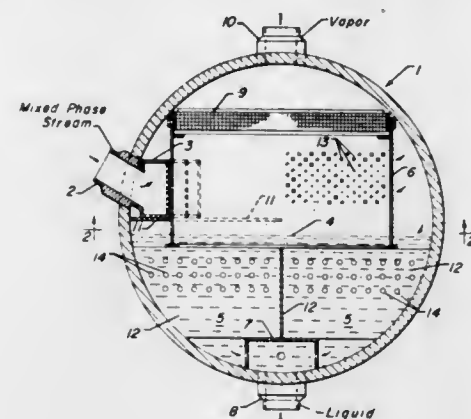
1 Claim

1. An apparatus for the separation of a mixed-phase fluid stream, in which apparatus a quantity of liquid is maintained, and which comprises:

- a. an outer spherical vessel having an enclosed inner volume and hereinafter described fluid transfer means communicating with said inner volume;
- b. a central vapor conduit having walls extending downward from the upper surface of the internal volume of said conduit into the lower portion of the vessel to a point below the normal liquid level maintained in the vessel and in open communication with this liquid, said normal

liquid level being at about the horizontal centerline of said vessel, said walls having perforations which allow the passage of material horizontally into the central vapor conduit, the perforations being above said normal liquid level;

- c. a mixed-phase fluid inlet means positioned above the bottom of said central vapor conduit and passing through a wall of said outer vessel, said inlet means communicating with the internal volume of the outer vessel which is located outside of said central vapor conduit, said inlet means having means to discharge incoming material substantially tangentially and in only one angular direction to the inner surface of said vessel;



- d. a demister means located within said central vapor conduit above said inlet means and extending across the horizontal cross-sectional area of said vapor conduit at a point above said perforations in the conduit wall, said demister means comprising a circular pad of woven wire fabric;
- e. a vapor outlet means passing through a wall of the outer vessel and communicating with the internal volume of said vapor conduit above said demister means; and,
- f. a liquid outlet means passing through a wall of the outer vessel and communicating with the internal volume of the outer vessel at a point located within the lower portion of the vessel below the normal liquid level maintained in the vessel.

3,853,514

MOVABLE DEMISTER SYSTEM

Willem Post, Redding, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 30, 1973, Ser. No. 383,752

Int. Cl. B01d 45/08

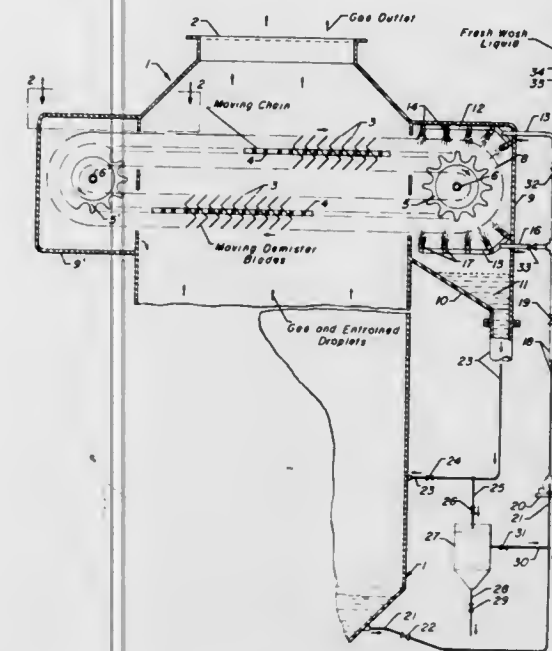
U.S. Cl. 55-242

7 Claims

1. A movable demister system, including cleaning means for the continuous removal of any deposition of solid materials on the individual demister members following their movement across the gas stream outlet portion of a gas contacting chamber, said system comprising in combination,

- a. a movable carrier means, a multiplicity of spaced apart and elongated demister members of chevron type comprising parallelly positioned, spaced apart zig-zag-form plate-like members to provide impingement surfaces and tortuous paths for the gas stream passing through said chamber, said demister members being connected to said movable carrier means to thereby form a movable arrangement of gas contacting demister members,
- b. said carrier means being positioned within and across a demister portion of said chamber in a manner to carry said demister members transversely across said chamber and across the path of the gas flow therethrough,
- c. drive means connective to said carrier means, whereby the latter and said connecting demister members can be caused to be moved across said chamber, and
- d. a demister member cleaning section connected to said chamber and pressurized liquid spray means therein positioned to encompass the full lengths of a portion of the

demisting members connecting with said carrier means, said cleaning section including a plurality of nozzle means as said liquid spray means to direct spray streams positioned both above and below said demisting members as said demisting members pass around sprocket wheel means of the drive means effecting a change in direction for said demisting members, said nozzle means being



- b. means for injecting a liquid into the housing and washing gases passing through the housing from the inlet to the outlet; and
- c. means arranged in the housing beneath the injecting means for distributing into the washing liquid gases passing through the housing, the distributing means being a hollow member in the form of a truncated cone having a base of largest area forming an open side arranged adjacent the housing inlet for receiving gases therefrom, a closed side arranged opposite the open side, and a wall arranged extending between the open and closed sides and provided with a plurality of perforations through which gases pass from the hollow member into the housing, and a plurality of annular ledges mounted on an outer surface of the perforated wall and arranged for deflecting washing liquid away from the perforations, each ledge having a wedge-shaped cross section.

3,853,516

GAS DILUTION APPARATUS

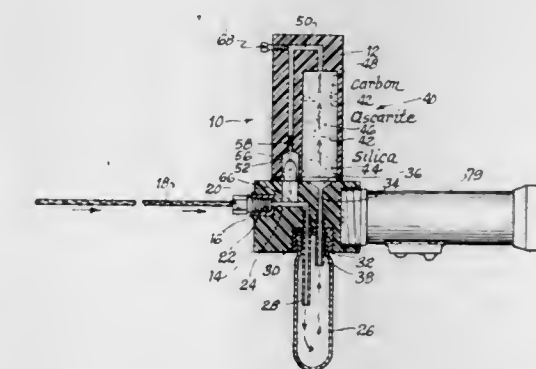
Norman A. Lyshkow, 722 W. Fullerton Ave., Chicago, Ill. 60614

Filed Feb. 11, 1974, Ser. No. 441,170

Int. Cl. B01d 53/34

U.S. Cl. 55-270

11 Claims



positioned to impinge upon the demister member surfaces as they effect a change in direction to again traverse the gas flow path through said chamber, whereby a cleaning liquid will spray over the surfaces of each member after it has moved across the gas stream flow path in said chamber so as to preclude a solids buildup on said members.

3,853,515

CLEAN AIR SMOKE SCRUBBER

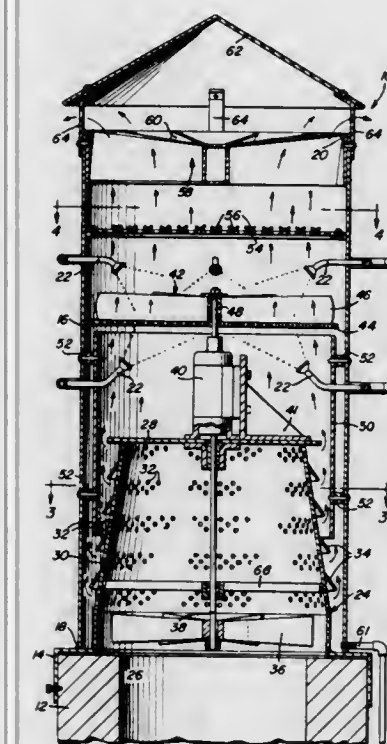
Woodrow W. Davis, Tabb, Va., assignor to Bryan B. Palmer, Newport News, Va., a part interest

Filed Jan. 5, 1973, Ser. No. 321,263

Int. Cl. B01d 47/06

U.S. Cl. 55-257

14 Claims



1. Apparatus for cleaning gases, comprising, in combination:

- a. a housing having an inlet and outlet;

1. Apparatus for diluting fluids comprising a body, gas inlet means for receiving a gas stream containing a pollutant gas, first passage means in the body communicating with the gas inlet means, trap means mounted on the body and communicating with the first passage means to receive the gas stream flowing therethrough, gas scrubbing means adapted to remove the pollutant gas from the gas stream flowing therethrough, via second passage means which communicate with the trap means and the scrubbing means, gas discharge means adapted to be connected to a zone of reduced pressure, scrubbed gas passage means communicating with the scrubbing means and the discharge means and restricted flow passage means extending into the scrubbed gas passage means and extending into the first passage means whereby reduced pressure applied at the discharge means draws the gas stream through the inlet means and through the first passage means to provide flow of the bulk of the gas stream through the first passage means to the trap means and then through the gas scrubbing means for removal of pollutant gas therefrom and to form an inert diluent gas and to provide flow of a small amount of the gas stream containing pollutant gas through the restricted flow passage means to permit admixture of the small amount of the gas stream containing pollutant gas.

3,853,517

DUST COLLECTOR

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammeo Tools, Inc., North Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 340,324

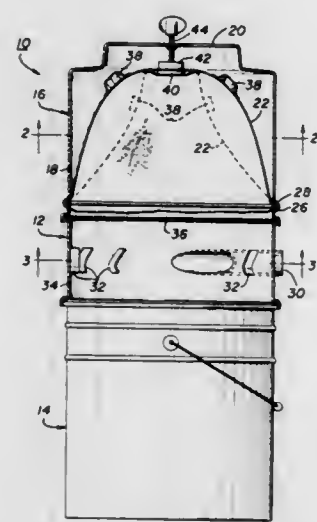
Int. Cl. B01d 41/00

U.S. Cl. 55-288

2 Claims

1. A dust collector, comprising

a container having an inlet opening at the top, an air inlet section mounted to said container over said opening, and
 a filter bag mounted above said air inlet section, means sealably securing said bag to said air inlet section, a first magnetic member affixed to said bag, a second magnetic member,
 at least one of said magnetic members being a magnet, means adjustably mounting said second magnetic member externally of said bag such that said first magnetic member is carried by said bag into proximity with said second magnetic member when said dust laden air flows into and inflates said bag,



one or more weights affixed to said bag in spaced apart relationship with said first member to be held by said bag in an elevated position when said bag is inflated, the magnetic force of attraction between said first and second magnetic members being sufficient upon cessation of said air flow into said bag to hold said first member in proximity with said second member until said one or more weights falls by gravity to wrinkle said bag and then to permit said first member and said one or more weights to fall, whereby interruption of the air flow into said bag dislodges dust particles deposited on the inner surface of said bag.

3,853,518

AIR FILTER SURROUNDING SEPARATOR

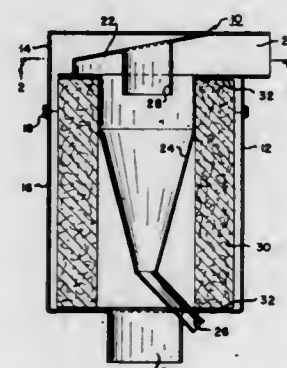
Peter K. C. Tu; Alan H. Brooke, and Frank S. Miller, all of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 126,046, March 19, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,523

Int. Cl. B01d 50/00

U.S. Cl. 55-337

2 Claims



1. An air filter for removing particulate matter and other impurities from an airstream comprising a casing, said casing have an upper part and a lower part, said upper part and said lower part being connected together at an airtight joint by clamping means, said upper part of said casing being provided

with an inlet passage which forms a spiral path for said uncleaned inlet air and is in communication with an inlet ducting, said inlet ducting being tangentially directed adapted to impart a preswirling motion to said inlet air passing there-through, said inlet ducting being connected in communication with the cylindrical portion of a cyclone separator, said air entering said cyclone separator as a swirling mass, said air moving from said cylindrical portion of said cyclone separator toward the conical section of said separator and then back toward said cylindrical portion of said separator, the relatively heavier particles entrained within said air being removed by said separator and collected by a collecting means operatively connected to said separator, said cyclone separator being provided with air outlet ducting at its cylindrical portion in communication with the outside surface of a filter adapted to direct the partially cleansed air from said separator to the outside surface of the filter media of a filter, said filter enclosed within said casing and surrounding said cyclone separator, said filter media removing substantially all of the remaining particulate matter and impurities from said airstream, a third air guide means in communication with the inside surface of the filter media of the filter for effectively directing the now cleansed air out of said air filter.

3,853,519
GAS FILTER

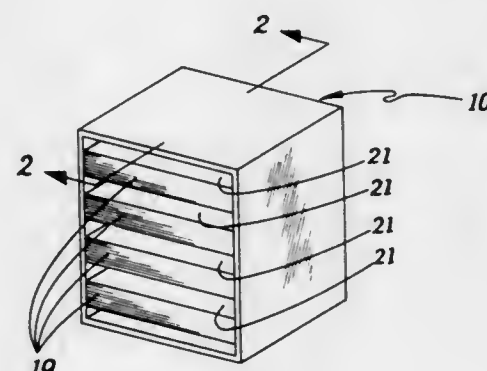
Jimmie D. York, Jr., Louisville, Ky., assignor to American Air Filter Company Inc., Louisville, Ky.

Filed Oct. 3, 1972, Ser. No. 294,552

Int. Cl. B01d 39/02

U.S. Cl. 55-387

2 Claims



1. A gas filter comprising: a flow-through housing having a dirty gas inlet and a clean gas outlet; a plurality of removable gas filter elements each including a peripheral frame and two attached opposed flow-through faces, at least one of said faces being detachably mounted to said frame, said faces having planar surfaces of texturized expansible-contractable sheet material in a cross-section of peaks and valleys with a bi-axially oriented coefficient of restitution whereby the coefficient of restitution in either direction is greater than the coefficient of restitution for untexturized sheet material; mounting means for disposing said gas filter elements within said housing in spaced relationship;

granular carbon filter material contained in said removable gas filter elements and held under compression by said expansible-contractable texturized sheet material faces to prevent settling thereof and insure that all gas passing therethrough passes a minimum preselected distance through said filter material whereby said gas filter elements eliminate the need for additional support means in order to maintain a constant pressure on said carbon filter material.

3,853,520

METHOD FOR MAKING HOLLOW CYLINDERS OF VITREOUS SILICA BY VACUUM HEATING

Karlheinz Rau, Richard-Wagner-Strabe, Hanau (Main), Germany

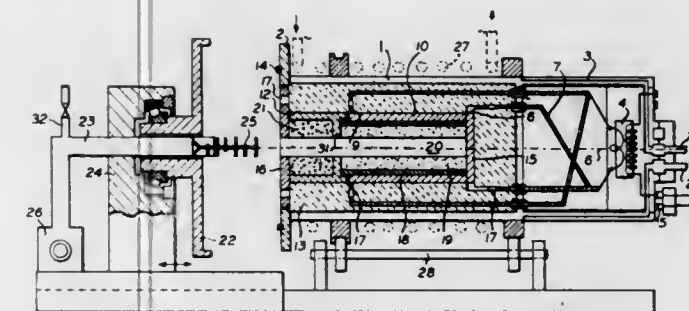
Filed Dec. 12, 1973, Ser. No. 424,240

Claims priority, application Germany, Dec. 27, 1972, 2263589

Int. Cl. C03b 23/20, 5/16

U.S. Cl. 65-18

8 Claims U.S. Cl. 65-87



1. Method for making hollow cylinders from vitreous silica which comprises placing granular or powdered quartz or SiO₂ starting material on a granular bedding layer in a hollow form revolving about its axis and, as the rotation of the hollow form continues, melting, by means of an electrical power source, and solidifying said starting material, an electrically heatable hollow cylinder of carbonaceous material being disposed in the hollow form, the apertures of the hollow form being hermetically closed with covers after the starting material has been put in, then slowly evacuating the sealed inner chamber thus formed with a vacuum pump to a pressure ranging from 10 to 0.0001 mm Hg, slowly heating the starting material to the melting point while sustaining this pressure, shutting off the electric power source after complete melting, cooling the fused article as rotation continues, shutting off the vacuum pump off and airing the inner chamber before removal of the cover, and then removing the vitreous silica hollow cylinder which still is at a temperature between room temperature and 1,400°C., from the hollow form.

3,853,521

METHOD FOR MAKING GLASS OPTICAL FIBRE PREFORM

John Christopher Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,020

Int. Cl. C03b 19/04

U.S. Cl. 65-71

5 Claims

1. A method of making an optical fibre preform for later drawing down into an optical fibre, including the steps of introducing molten cladding glass into a cylindrical mold, forming a tube of cladding glass by spinning the mold about its axis held horizontal while the glass is molten, cooling the glass below its softening point, introducing sufficient core glass into the bore of the tube of cladding glass to fill it, the core glass having a smaller specific gravity and larger refractive index than the cladding glass, and spinning the mold about its axis held horizontal while taking it through a thermal cycle to melt both the glasses and then cool them below their softening points.

3,853,522
METHOD AND APPARATUS OF CALIBRATING DRAWN GLASS TUBES

Franz Guenther, Mainz-Mombach, Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Germany

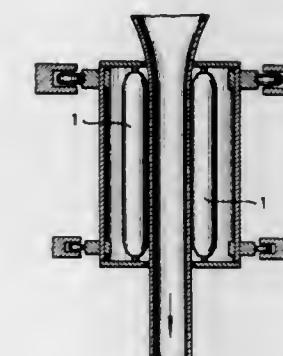
Filed June 15, 1973, Ser. No. 370,540

Claims priority, application Germany, June 15, 1972, 2229164

Int. Cl. C03b 17/04, 23/08

U.S. Cl. 65-87

10 Claims



1. A method of calibrating a length of tube comprising the steps of

- a. drawing a continuous length of tube along its axis,
- b. positioning forming elements around the length of tube with their axes parallel to the axis of the length of tube,
- c. revolving the forming elements together around the axis of the length of tube,
- d. adjusting the forming elements cooperatively, toward or away from the length of tube,
- e. arranging the forming elements to define the required outer diameter of the length of tube.

3,853,523

MANUFACTURE OF FLAT GLASS

George Alfred Dickinson, St. Helens, and Frank Nixon, Billinge, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

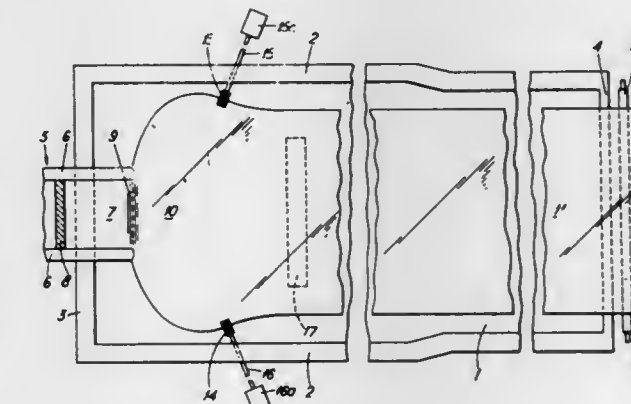
Filed June 15, 1972, Ser. No. 263,214

Claims priority, application Great Britain, July 9, 1971, 32454/71

Int. Cl. C03b 18/02

U.S. Cl. 65-99 A

5 Claims



1. In a method of manufacturing flat glass in ribbon form comprising the steps of delivering molten glass onto a bath of

aliphatic hydrocarbon amine, lower alkanol amine and aniline.

3,853,531

PLANT REGULATION WITH 2-HALO-2',6'-DIALKYL-N-CYL-OXYMETHYL-ACETANILIDES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

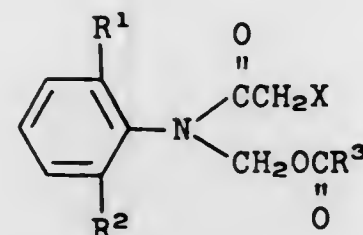
Filed June 21, 1972, Ser. No. 265,072

Int. Cl. A01n 5/00

U.S. Cl. 71-76

8 Claims

1. A method of retarding the natural growth of desirable plants which comprises applying to said plants an effective, nonlethal, amount of a compound selected from those having the formula



wherein:

R¹ and R² are independently methyl or ethyl;
R³ is methyl, ethyl or cyclopropyl; and
X is bromo or chloro.

3,853,532

ALIPHATIC MONOKETONES AS TOBACCO PLANT SUCKER GROWTH CONTROL AGENTS

Burton Maxwell Rein, East Brunswick, and Benjamin Weinstein, Morganville, both of N.J., assignors to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 133,366, April 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 95,322, Dec. 4, 1970, abandoned. This application July 21, 1972, Ser. No. 273,901

Int. Cl. A01n 9/24

U.S. Cl. 71-78

10 Claims

1. A method for controlling the axillary growth known as suckers between a tobacco plant leaf and stalk which comprises contacting said plant with an amount, sufficient to inhibit sucker development, of a composition comprising a substantially non-volatile C₄ - C₁₈ saturated aliphatic hydrocarbon monoketone.

3,853,533

METHOD FOR FACILITATING THE HARVEST OF FRUIT

Milton C. Archer, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1973, Ser. No. 417,340

Int. Cl. A01n 9/18

U.S. Cl. 71-104

10 Claims

1. A method for facilitating the harvest of fruit which comprises applying an effective concentration of *p*-isothiocyanatophenylacetic acid to fruit bearing trees within 2 weeks of the date of harvest.

3,853,534

METHOD FOR FACILITATING THE HARVEST OF FRUIT

Milton C. Archer, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1973, Ser. No. 427,179

Int. Cl. A01n 9/18

U.S. Cl. 71-104

10 Claims

1. A method for facilitating the harvest of fruit which comprises applying an effective concentration of *p*-cyanophenylisothiocyanate to fruit bearing trees within about 2 weeks of the date of harvest.

3,853,535

PROCESS FOR THE COMMINUTION OF PARTICULATE ALLUMINACEOUS MATERIALS

Katalin Szabo nee Mogyrosi, Tatabanya; Janos Banhid, Budapest; Ferenc Lazar, Tatabanya, and Miklos Ormosy, Budapest, all of Hungary, assignors to Tatabanyai Szembanyak, Tatabanya, Hungary

Continuation-in-part of Ser. No. 143,973, May 17, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,643

Int. Cl. C22b 1/14

U.S. Cl. 75-1

7 Claims

1. A process for comminution of particulate aluminaceous starting materials, which comprises before or after coarse crushing soaking said starting material in an alkaline or acidic electrolyte for a period of from about 0.2 to about 24 hours thereby to loosen the structure of the particles, and completing the comminution by subjecting the particulate material to predominantly shearing forces until the average particle size of the material is reduced to under 1 mm.

3,853,536

PROCESS FOR THE PRODUCTION OF IRON-CONTAINING TITANIFEROUS PARTICLES

Jozef Kazimierz Tylko, Faringdon, England, assignor to British Titan Limited, Billingham, Teesside, England

Filed Oct. 19, 1973, Ser. No. 407,810

Claims priority, application Great Britain, Nov. 29, 1972, 55049/72

Int. Cl. C22b 1/24, 5/10

U.S. Cl. 75-3

25 Claims

1. A process for the treatment of an iron-containing titaniferous material comprising coating the material in particulate form with a reducing substance in such a manner as to provide a free-flowing coated particulate material having an average particle size not greater than 500μ feeding the coated particles through a hot gaseous plasma forming an inert or reducing atmosphere and thereafter recovering from the product a material containing an increased proportion of titanium.

3,853,537

SINTERING ALLOY

Fritz Thummler, Kaiserstrasse 12, Karlsruhe, and Mahmoud Ahmed, Masr el Gadid, Pforzheim, both of Germany

Filed Dec. 16, 1971, Ser. No. 98,965

Claims priority, application Germany, Dec. 20, 1970, 1963860

Int. Cl. B22f 9/00; C22c 33/02

U.S. Cl. 75-5 R

3 Claims

1. A sintering alloy powder consisting essentially of about 2 to 13 percent of chromium and about 0.5 to 5 percent of copper, with the balance iron and impurities.

3,853,538

USE OF REDUCING GAS BY COAL GASIFICATION FOR DIRECT IRON ORE REDUCTION

Edward J. Nemeth, Mount Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,103

Int. Cl. C21b 13/00

U.S. Cl. 75-35

7 Claims

1. Process for reducing iron ore comprising:
a. gasifying solid fossil fuel at a temperature of at least 2,000° F to obtain a reducing gas containing at least about 80 percent hydrogen and carbon monoxide, and a molten slag,
b. mixing said reducing gas with a CO₂-lean tail gas from a reducing furnace in a volume ratio of from 40:60 to 60:40 to reduce the temperature of the mixture to less than 2,000° F,

3,853,540

DESULFURIZATION OF VACUUM-INDUCTION-FURNACE-MELTED ALLOYS

Rene Schlatter, Derry Township; James P. Stroup, Ligonier Township, both of Westernmoreland County, Pa., assignors to Latrobe Steel Company, Latrobe, Pa.

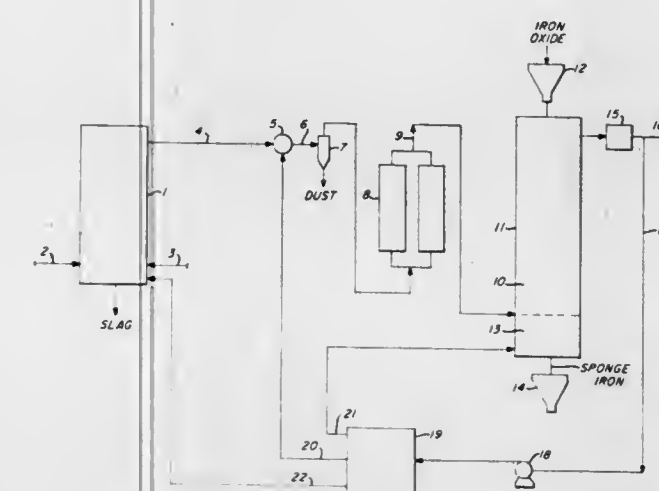
Filed Apr. 11, 1973, Ser. No. 349,999

Int. Cl. C21c 7/02; C22b 9/10

U.S. Cl. 75-53

10 Claims

1. The method of desulfurizing an alloy of the group consisting of nickel-base, cobalt-base and iron-base alloys in a basic-lined vacuum vessel under reduced pressure comprising bringing the molten alloy into contact under reducing conditions with a basic slag having a temperature no higher than that of the alloy, the slag being formed by adding to the alloy a slag-forming mixture comprising lime having a calcium oxide content greater than about 98 percent and a neutral fluxing agent capable of rendering slag fluid and reactive at relatively low slag temperatures, in amount between about 5 percent and about 25 percent of the mixture by weight.



e. removing CO₂ from at least a portion of the tail gas from said reducing furnace, and

f. passing at least a portion of the CO₂-lean tail gas thus produced to be mixed with said reducing gas, prior to removing the sulfur therefrom.

3,853,539

METHOD FOR CONTROLLING THE BLAST FURNACE CONDITION

Michiyasu Yoshiki; Masanobu Ogata; Takashi Yokoi, and Yoichi Murakami, all of Kitakyushu, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

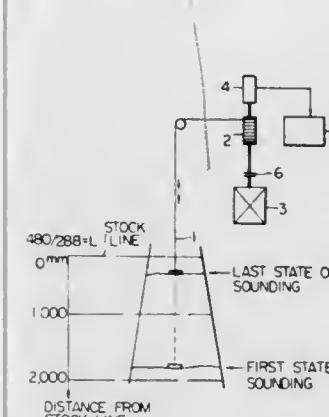
Filed Mar. 2, 1973, Ser. No. 337,690

Claims priority, application Japan, Mar. 15, 1972, 47-27016; Oct. 14, 1972, 47-103011

Int. Cl. C21b 5/00

U.S. Cl. 75-41

3 Claims



1. A method for measuring information during operation of a blast furnace, which comprises detecting blast pressure at a desired position in the blast furnace, recording the detected blast furnace pressure continuously on a strip chart, measuring fluctuation length of recorded blast pressure from the strip chart within a predetermined period of time thereby digitally expressing fluctuation of said blast pressure, determining a first furnace condition index by dividing said fluctuation length by the length of measured strip chart corresponding thereto, and applying said furnace condition index to judge the condition of the blast furnace and promote highly stabilized operation.

3,853,542

PROCESS FOR PROMOTING REACTIVITY OF ALUMINUM

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 8, 1973, Ser. No. 321,688

Int. Cl. C22b 21/00

U.S. Cl. 75-68

2 Claims

1. A process for promoting reactivity of particulate aluminum which comprises milling particulate aluminum in the presence of a reaction promoter selected from the group consisting of titanium glycolate and zirconium octoate.

3,853,543

PROCESS FOR PRODUCING ELEMENTAL COPPER BY REACTING MOLTEN CUPROUS CHLORIDE WITH ZINC

Harold K. Thomas, 3445 N. Valencia Ln., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 322,868, Jan. 11, 1973, abandoned. This application Jan. 4, 1974, Ser. No. 430,619

Int. Cl. C22b 15/00

U.S. Cl. 75-72

2 Claims

1. A method for processing a copper-bearing material, such as copper scraps and copper concentrates, to produce elemental copper, said process comprising:

- a. reacting said copper-bearing material with a ferric chloride leach reagent solution to convert the copper values therein to cuprous chloride, yielding a pregnant leach liquor comprising a solution of said cuprous chloride and spent-leach-reagent ferrous chloride;
- b. separating said cuprous chloride and ferrous chloride from said pregnant leach liquor by evaporation thereof, yielding a solid residue comprising said cuprous chloride and said ferrous chloride;
- c. separating said ferrous chloride from said solid residue by washing with water to solubilize said ferrous chloride, leaving a solid residue comprising said cuprous chloride;
- d. regenerating said spent-leach-reagent ferrous chloride by oxidation thereof to form regenerated-leach-reagent ferric chloride;
- e. recycling said regenerated-leach-reagent ferric chloride to the leaching step of step (a);
- f. melting said solid cuprous chloride;
- g. reducing the molten cuprous chloride of step (f) by reacting it with zinc while maintaining the temperature of the reaction mixture above about 1,100°C. to produce vaporized zinc chloride and molten elemental copper;
- h. separating said zinc chloride vapors from said molten elemental copper product;
- i. reacting said zinc chloride with elemental aluminum to yield elemental zinc and a vaporized aluminum chloride reaction product;
- j. separating said vaporized aluminum chloride from said elemental zinc;
- k. recycling said elemental zinc to the cuprous chloride reduction step of step (g); and
- l. treating the aluminum chloride reaction product of step (i) to recover an aluminum product therefrom.

3,853,544

CORROSION RESISTANT STEELS HAVING IMPROVED WELDABILITY

Tadashi Nishi; Tuneyasu Watanabe; Haruo Shimada; Hiroki Masumoto; Takeshi Fujimoto; Kazuhiro Miida, and Takashi Okazaki, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. Nos. 2,695, Jan. 14, 1970, Pat. No. 3,733,195, and Ser. No. 2,37,215, March 22, 1972, abandoned, which is a division of Ser. No. 2,695. This application July 5, 1972, Ser. No. 269,084

Int. Cl. C22c 39/54, 39/20

U.S. Cl. 75—125

1 Claim

1. A corrosion resistant steel having improved weldability consisting of 0.001 - 0.25 percent by weight of carbon, 0.70 - 1.1 percent by weight of silicon, 0.3 - 2.0 percent by weight of manganese, 0.5 - 2.0 percent by weight of chromium, 0.1 - 1.5 percent by weight of molybdenum, 0.1 - 0.29 percent by weight of copper, less than 0.04 percent by weight of phosphorus, and two or more elements selected from the group consisting of arsenic, tin, beryllium, bismuth, lead, germanium, antimony, selenium and tellurium in an amount of 0.02 - 0.20 percent by weight each, the balance being iron and unavoidable impurities.

3,853,545

CAST ALLOY FOR VALVE SEAT INSERT

Kunio Kusaka, Yokohama; Tomio Sekine, Kawasaki; Makoto Osawa, Tokyo; Yoshitoshi Hagiwara, Niiza, and Yoshiaki Takagi, Kawagoe, all of Japan, assignors to Tokushu Seiko Co., Ltd., Kawasaki and Honda R&D Co., Ltd., both of Wako, Japan

Filed Mar. 26, 1973, Ser. No. 344,583

Claims priority, application Japan, May 29, 1972, 47-064493

Int. Cl. C22c 39/20

U.S. Cl. 75—128 A

2 Claims

1. A high-efficiency alloy for a valve seat insert of excellent durability, consisting essentially of in weight ratio 0.80 to 2.50

% of C, 0.20 to 3.0 % of Si, 0.10 to 5.0 % of Mn, 0.03 to 0.50 % of P, 0.02 to 0.30 % of S, 13.0 to 28.0 % of Ni, 10.0 to 30.0 % of Cr, 0.1 to 5.0 % of Mo, 0.02 to 0.20 % of N, 5.0 to 15.0 % of W, 5.0 to 15.0 % of Co, and the remaining part consisting of iron and a slight amount of impurities.

3,853,546

FORCE GAGE

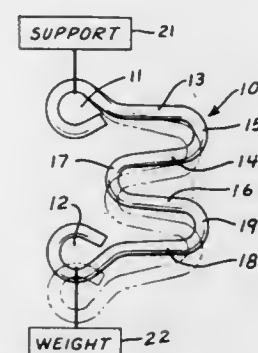
Frank D. Werner, and Roger D. Bloomfield, both of Jackson, Wyo., assignors to said Werner, by said Bloomfield

Filed Aug. 9, 1972, Ser. No. 279,189

Int. Cl. G011 1/06

U.S. Cl. 73—141 R

6 Claims



1. A gage combination for determining the amount of force applied to the gage, comprising a first leg member and a second leg member which are spaced apart, third and fourth leg members connecting said first and second leg members and positioned between said first and second leg members, said third and fourth leg members being joined together adjacent first ends thereof, and opposite ends of said third and fourth leg members being joined to the first and second leg members, respectively, means to apply force to said first and second leg members at locations spaced from the junctions of said first and second leg members to said third and fourth leg members, respectively, to tend to cause separation of said first and second leg members, said force being in a range which causes permanent deformation of at least portions of said leg members whereby the deformation of said portions of said leg members indicates the amount of force applied to said gage, and means providing indicia calibrated to directly indicate the force applied to said gage in relation to the amount of separation of said leg members.

3,853,547

BRAZING MATERIALS

Ogle R. Singleton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 25, 1973, Ser. No. 363,910

Int. Cl. C22c 21/00

U.S. Cl. 75—147

7 Claims

1. An improved brazing composition effective for joining aluminum alloy components by vacuum brazing consisting essentially of aluminum, about 7 to 14% silicon, about 0.2 to 2% magnesium and about .02 to 0.20% bismuth, by weight, with minor elements and impurities in amounts up to about 1% iron, 0.2% copper, 0.25% manganese, 0.6% each in the case of zinc and titanium, others not exceeding 0.05% each and 0.15% total.

3,853,548

NI-AU BASE BRAZING ALLOY

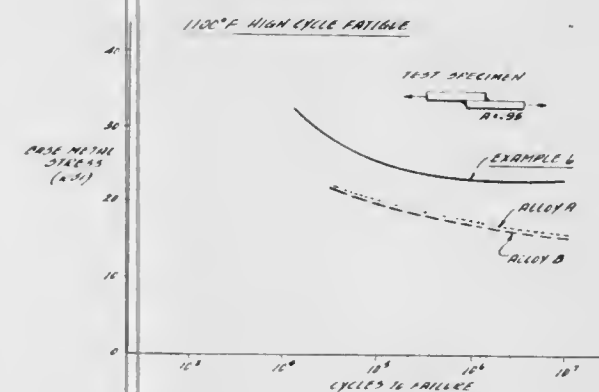
Norman P. Fairbanks, Cincinnati, Ohio; Raymond P. Barb, Saugus, and William Sutar, Boston, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1974, Ser. No. 445,120

Int. Cl. C22c 19/00

U.S. Cl. 75—171

4 Claims



1. An improved nickel-base brazing alloy consisting essentially of, by weight, 14-25% Au, 1-5% Si, 1-4% B, 2-12% Cr, 1-5% Fe, up to about 17% Pd, with the balance Ni and incidental impurities with up to about 50% of the Ni replaceable by Co.

3,853,549

HIGH ENERGY ABSORPTION-POROUS BERYLLIUM MADE BY PLASMA CONSOLIDATION

Robert J. Baird, and Thomas A. Taylor, both of Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,652

Int. Cl. B22f 3/10; C22c 1/08; B22f 3/24; C23c 7/00; C22c 25/00

U.S. Cl. 75—208 R

11 Claims

3,853,550

METHOD FOR FABRICATING BIMETALLIC MEMBERS OF THERMOELEMENTS BY SINTERING POWDERED COMACTS IN THE PRESENCE OF GRAPHITE

Jury Diomidovich Nikolaev, Nova-Basmanaya ulitsa, 31, kv. 22; Sergei Nikolaevich Ljuskin, prospekt Mira, 179, kv. 43; Vladimir Ivanovich Koletvinov, Argunovskaya ulitsa, 4, kv. 61, and Alexandra Semenovna Pavlenko, ulitsa Bakuninskaya, 18, kv. 8, all of Moscow, U.S.S.R.

Filed Jan. 4, 1973, Ser. No. 320,936

Int. Cl. B22f 1/00

U.S. Cl. 75—213

2 Claims

1. A method for fabricating bimetallic members of thermoelements from ingots of alloys based on a solid solution of Bi_2Te_3 - Sb_2Te_3 , comprising crushing said ingots to fines, pressing said fines in briquettes similar in shape to the bimetallic members of the thermoelements, and annealing said briquettes in air in a thick-walled metal vessel with a powdered graphite medium.

3,853,551

METHOD OF SINTERING IRON, COPPER TIN ALLOYS FOLLOWED BY SLOW COOLING

Friedrich J. Esper, Leonberg, and Robert Zeller, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 26, 1972, Ser. No. 266,443

Claims priority, application Germany, Aug. 26, 1971, 2142708

Int. Cl. B22f 1/00

U.S. Cl. 75—227

3 Claims

1. The process of making a sintered shaped body comprising forming a pulverulent mixture of 0.5 to 3% tin, 2 to 14% copper, balance iron, the ratio of tin to copper being between 1:2 and 1:9; subjecting the said mixture to sintering in the desired shape; and immediately after said sintering, cooling the shaped body at a speed of 15°C/min to a temperature between about 520 and 750°C followed by chilling.

3,853,552

METHOD OF FIXING A TONER BY HEATING IN ELECTROPHOTOGRAPHIC DUPLICATION

Ryochi Namika, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,155

Claims priority, application Japan, Dec. 3, 1971, 46-98059

Int. Cl. G03g 13/20

U.S. Cl. 96—1 R

10 Claims

1. A method of fixing a toner by heating in electrophotographic duplication comprising the steps of passing a sheet of recording paper between a pair of heating rollers, said sheet of recording paper having a toner adhering to one surface thereof and coming into contact with one of said rollers, while heating the toner to a temperature in a range from its secondary transition point to its melting point so as to fix the toner on the recording paper, the temperature of said toner not being raised to the fluid zone, said one roller having a surface subject to pick-up of toner by offset.

3,853,553

METHOD FOR IMAGE TRANSFER USING PERSISTENT INTERNAL POLARIZATION

Tsuyoshi Yasuie, Izumiotsu-shi, Osaka-fu, and Kuniki Seino, Amagasaki-shi, Hyogo-ken, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1969, Ser. No. 879,407

Claims priority, application Japan, Dec. 14, 1968, 43-91330

Int. Cl. G03g 13/22

U.S. Cl. 96—1 R

5 Claims

1. An electronic photographing method for a photosensitive plate of the type wherein a photoconductive layer having a persistent internal polarization characteristic is interposed between an electrically insulating layer and an electrically conductive layer, comprising the steps of:

1. exposing an original image onto said photoconductive layer and simultaneously charging said electrically insulating layer by a DC. corona discharge to form an image by persistent internal polarization of said photoconductive layer according to the light portion of said original image and an electrostatic image on said electrically insulating layer by the difference of surface electric potential produced in accordance with the light and dark patterns of said original image,
2. applying an AC. corona discharge to the dark pattern of said electrically insulating layer thereby leaving an electric charge only on said electrically insulating layer corresponding to the light portion of the light image, and
3. uniformly irradiating said photosensitive plate to reduce the surface electric potential of the dark pattern of electrically insulating layer to zero potential and the surface electric potential of said light pattern of said electrically insulating layer to a high potential.

3,853,554

PROCESS FOR LIQUID DEVELOPMENT OF ELECTRONIC PHOTOGRAPHY

Isamu Maki, and Masashi Kiuchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 19, 1972, Ser. No. 273,167

Claims priority, application Japan, July 24, 1971, 46-55463; July 24, 1971, 46-55464; July 30, 1971, 46-57305; July 30, 1971, 46-57306

Int. Cl. G03g 13/10

U.S. Cl. 96-1 LY

8 Claims

1. In a method for developing electrical latent images wherein an electrical image is produced on a photoelectroconductive or an insulating layer, a liquid developer is applied to the layer to visualize the image, and then the visualized image is transferred to a transfer material, the improvement wherein the liquid developer comprises a coloring agent, a cyclic rubber and polyethylene having a molecular weight from about 1,000 to 5,000, said components being dispersed in an electrically insulating liquid having an electrical resistance of more than 10^{10} ohm-cm and a specific dielectric constant of less than 3.

3,853,555

METHOD OF COLOR IMAGING A LAYER OF ELECTRICALLY PHOTSENSITIVE AGGLOMERATES

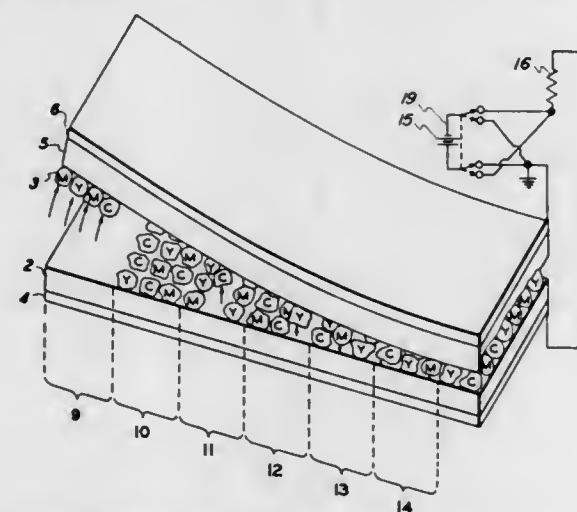
Gedeminas J. Reinis, Penfield, and Kyler F. Nelson, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 28, 1972, Ser. No. 310,040

Int. Cl. G03g 5/00, 13/00, 17/00

U.S. Cl. 96-1.2

15 Claims



1. A method of imaging comprising:
- providing an imaging mono-layer sandwiched between a donor and a receiver member, at least one of said donor and receiver members being at least partially transparent to electromagnetic radiation to which said imaging layer is sensitive, said mono-layer comprising a plurality of randomly mixed electrically photosensitive agglomerates of at least two different colors with correspondingly different spectral sensitivities to electromagnetic radiation, each individual agglomerate of said plurality being removable from said mono-layer independently of the other monolayer agglomerates;
 - maintaining first electrical field across said imaging layer;
 - modifying said first electrical field wherein said modification involves reducing, grounding or reversing the potential across said imaging layer;
 - substantially restoring said first electrical field to a constant potential;
 - exposing said mono-layer to a pattern of electromagnetic radiation to which at least one of said agglomerates are sensitive while applying said restored electric field across said imaging mono-layer, said electric field being held at a substantially constant potential during said exposure; and
 - during the application of said restores field, separating said receiver member from said donor member whereby

exposed individual agglomerates are removed from said mono-layer in imagewise configuration by selective adhesion to at least one of said donor and receiver members while the non-exposed individual agglomerates adhere to the other forming a colored image.

3,853,556

METHOD FOR ELIMINATING ELECTRICAL ARCING DURING PHOTOELECTROPHORETIC IMAGING

Gerard T. Severynse, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

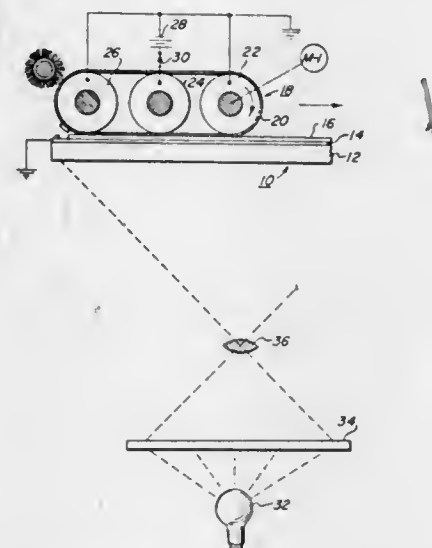
Division of Ser. No. 821,255, May 2, 1969, Pat. No. 3,697,408.

This application Apr. 13, 1972, Ser. No. 243,880

Int. Cl. G03g 13/00, 17/00

U.S. Cl. 96-1.3

2 Claims



1. A method for eliminating electrical arcing during imaging of an photoelectrophoretic imaging suspension in an apparatus comprising a first transparent conductive electrode for supporting a layer of an imaging suspension; a flexible electrically insulating web formed of a material having a resistivity greater than about 10^7 ohm-cm; contacting support means for contacting said web and the imaging suspension; separation support means for guiding said web away from the imaging suspension, said support means being positioned to cause said web to remain in contact with the layer of imaging suspension from said contacting support means to said separation support means; a second electrode for applying an electrical field across said web and the imaging suspension in a contact zone; exposure means for exposing the imaging suspension to an image through said first transparent conductive electrode; and means for coupling said first and second electrodes to an electrical potential source, comprising the steps of:

- moving said web in rolling contact over said first transparent conductive electrode thereby causing said contact zone to move across said first transparent conductive electrode;
- positioning said second electrode between said contacting and separation support means;
- maintaining said contacting and said separation support means at approximately the same potential and polarity as said first transparent conductive electrode; and
- applying an electrical field limitedly across said web and the imaging suspension in said contact zone between said contacting and separation support means such that electrical arcing at the line of contact and separation of said web and the imaging suspension is eliminated.

3,853,557

PHOTOGRAPHIC DIFFUSION TRANSFER ELEMENT

Henry J. Fassbender, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,565

Int. Cl. G03c 5/54

U.S. Cl. 96-29 R

10 Claims

1. A light-sensitive photographic element comprising a support, a first silver precipitating agent on the support, a

water soluble light-sensitive silver halide emulsion layer provided over said precipitating agent and being capable of being removed from said element by aqueous washing without removing said first precipitating agent, and a temporary, removable second silver precipitating agent which is water premeable and coated over said emulsion layer, said first silver precipitating agent, said silver halide emulsion layer, and said second precipitating agent all being on the same support.

3,853,558

PRODUCTION OF COPPERIZED ETCHED ALUMINUM PRINTING PLATES

Lowell Koenig, Evanston, and Albert Presco, Berkeley, both of Ill., assignors to Alden Press, Inc., Elk Grove Village, Ill.

Filed Feb. 9, 1973, Ser. No. 330,966

Int. Cl. G03f 7/02

U.S. Cl. 96-33

10 Claims

1. In a method for making copperized, deep-etched aluminum printing plates for use in offset printing, wherein grained aluminum plates are coated with a light-sensitive compound, exposed to light, developed, etched, and copperized with a copperizing solution, the improvement which comprises effecting said copperizing by initially rubbing an essentially fresh copperizing solution at generally ambient temperature on said aforesaid treated aluminum plates, draining off and recovering excess copperizing solution, providing a previously used or drained off and recovered copperizing solution at a temperature in the range of not substantially below 85°F but below the flash point of organic solvent present in said copperizing solution, and rubbing said initially copperized plate at least one or more times with such drained off and recovered heated copperizing solution until said plate has been copperized to the desired extent.

3,853,559

PHOTOGRAPHIC MATERIAL UTILIZING AN AROMATIC HYDROXY COMPOUND AND A 2-NITRO-PHENYL-ALDEHYDE

Steven Levinos, Summit, and William Neithardt, Jr., Ridgefield, both of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 20, 1973, Ser. No. 390,149

Int. Cl. G03c 1/68

U.S. Cl. 96-35

9 Claims

1. Imaging material comprising a support and a coating thereon of a composition comprising:
- a tannable hydrophilic colloid;
 - an aromatic hydroxy compound; and
 - a light-sensitive 2'-nitro-phenyl-aldehyde.

3,853,560

METHOD OF MAKING AN ELECTRON SENSITIVE MOSAIC COLOR SCREEN

Akio Ohgoshi, Tokyo, and Takuji Inoue, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 9, 1971, Ser. No. 161,085

Claims priority, application Japan, July 11, 1970, 45-60737

Int. Cl. G03c 5/00

U.S. Cl. 96-36.1

4 Claims

1. In the manufacture of a color screen for a color picture tube having a shadow mask with apertures therein, the method which includes:

depositing a layer of photoresist material of the positive type over the face of the tube;

mounting a shadow mask having apertures of the same diameter as the shadow mask of the finished tube in spaced relation in front of said face of said tube;

irradiating light on said layer through said apertures of said mask, successively rotating the source of said light about the different apparent color centers of the tube, the radius of gyration being such as to form an annulus of light, and

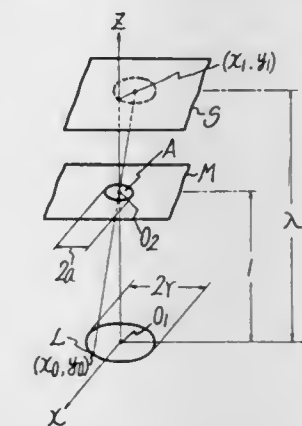
wherein the radius r of gyration is selected as $r > \lambda/\lambda - 1$ a;

wherein λ is the ratio of the light source-to-face plate spacing to the light source-to-mask spacing and a is the radius of said apertures,

thereafter developing the photoresist layer to remove the portions thereof where the annulus of light fell;

coating a graphite solution over the entire area of the face of said tube including the remaining portions of the photoresist layer;

irradiating the opposite face of the face plate of said tube by light to sensitize the said remaining portions of said photoresist layer and the portions of the graphite layer over-



lying the said remaining portions of the photoresist layer, thereafter developing said remaining portions of said photoresist to remove it with the graphite layer overlying thereof; and

coating the regions of the face plate not now covered by the graphite layer with phosphor slurry of desired colors to form a mosaic of multi-colored groupings on the face of said tube.

3,853,561

PROCESS FOR THE PREPARATION OF SCREEN PRINTING STENCILS USING INTERMEDIATE SUPPORT FOR LIGHT SENSITIVE LAYER

Maximilian Karl Reichel, Wiesbaden-Biebrich; Hans Ruckert, Wiesbaden-Schierstein, and Walter Urban, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt Main, Germany

Continuation of Ser. No. 201,539, Nov. 23, 1971, abandoned.

This application Aug. 29, 1973, Ser. No. 393,233

Claims priority, application Germany, Nov. 26, 1970, 2058178

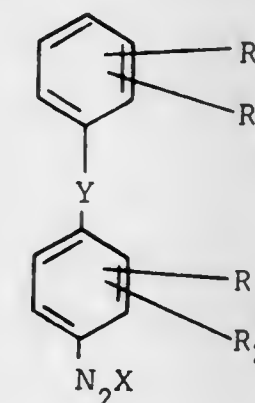
Int. Cl. G03f 7/12

U.S. Cl. 96-36.4

11 Claims

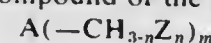
1. A process for the preparation of screen printing stencils which comprises the following steps in the following order

- providing a sheet-like intermediate support with a layer comprising at least one cross-linkable binder capable of swelling in water or soluble in water and at least one condensable aromatic diazonium salt of the general formula



wherein R_1 , R_2 , R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, halogen, alkyl groups with 1 or 2 carbon atoms, and alkoxy groups with 1 to 4 carbon atoms,

Y is selected from the group consisting of a single bond and the groups —O—, —S—, —NH—, and —CONH—, and X is the anion of the diazonium salt, or a diazo amino compound derived from said diazonium salt, b. drying said layer, c. pressing the layer side of the light-sensitive material thus produced upon a screen-printing support and moistening said light-sensitive layer, before or after pressing on said screen material, with a solution of at least one aldehyde or at least one compound of the general formula



wherein

- A is a m-valent radical of a primary or secondary acid amide, the free valences being at the amide N atom, or of a phenol, Z is selected from the group consisting of a halogen atom or an OH group, n is an integer from 1 to 3, and m is an integer from 1 to 5 and wherein Z is a halogen atom when n is greater than 1, d. drying the laminated element, e. imagewise exposing said light-sensitive layer under a master, and f. developing the exposed light-sensitive layer with water, wherein the unexposed areas of the layer are removed, said intermediate support being stripped from said light-sensitive layer before development.

3,853,562

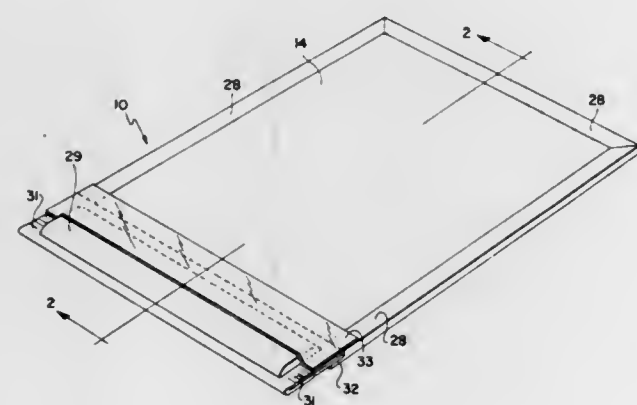
CONTAINER FOR DIFFUSION TRANSFER FILMS WITH WHITENING AGENT CONTAINING PROCESSING SOLUTION

Edwin H. Land, Cambridge, and Stanley M. Bloom, Waban, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 247,048, April 24, 1974, Pat. No. 3,802,881. This application Sept. 24, 1973, Ser. No. 400,134 Int. Cl. G03c 1/48, 5/30

U.S. Cl. 96—76 C

9 Claims



1. A rupturable container for use in diffusion transfer film units adapted to provide color transfer images viewable by reflected light, said rupturable container releasably holding an aqueous alkaline processing composition comprising a viscosity-increasing reagent, a light-reflecting agent and a non-fluorescent optical whitening reagent capable of absorbing visible light within a predetermined wavelength range, said whitening reagent being substantially uniformly dispersed in said composition in a concentration such that a layer of the composition approximately 0.0025 inch thick has an optical reflection density not exceeding about 0.04 density units.

3,853,563 PHOTOGRAPHIC WATER-INSOLUBLE ANTIHALATION COATING

Henri Depoorter, Morsel, and Felix Jan Moelants, Wilrijk, both of Belgium, assignors to AGFA-Gevaert, Morsel, Belgium

Filed May 29, 1973, Ser. No. 364,326

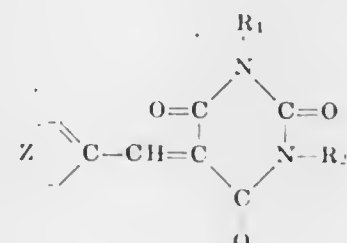
Claims priority, application Great Britain, June 22, 1972, 29388/72

Int. Cl. G03c 1/84

U.S. Cl. 96—84 R

4 Claims

1. A light-sensitive photographic element comprising a support and at least one light-sensitive silver halide emulsion layer wherein the side of the support, opposite to that carrying the said silver halide emulsion layer(s) is provided with an antihalation layer of a water-insoluble, alkali-soluble polymeric binder and a dye corresponding to the formula:



wherein the dyestuff molecule contains at least one carboxyl group and is free from sulpho group in acid or salt form, and wherein

each of R₁ and R₂ stands for hydrogen, and alkyl group, an allyl group, a cycloalkyl group or an aryl group, and Z represents the atoms necessary to close a pyrrole nucleus.

3,853,564

GRAPHIC AID AND METHODS RELATED THERETO

Elton N. Baker, Elgin, Ill., assignor to Fotel Inc., Villa Park, Ill.

Division of Ser. No. 36,979, May 13, 1970, Pat. No. 3,657,983.

This application Mar. 1, 1972, Ser. No. 230,866

Int. Cl. G03c 5/04

U.S. Cl. 96—41

12 Claims

1. A method of producing master grid layout sheets on a light sensitive material having a known gamma up to a predetermined light saturation level, said sheets including a pattern of gray monotone effects comprising the steps of

- exposing said light sensitive material through a desired pattern to represent said pattern of gray monotone effects, said material being exposed to light such that said pattern is substantially uniformly exposed to an amount of light substantially less than said saturation level,
- placing said light sensitive material in a developing fluid to develop said exposed areas,
- terminating said developing step when said gray monotone areas have a predetermined optical density,
- fixing said sensitive material to prevent any further development thereof, and
- said predetermined optical density being sufficient to be visible in the sheet but having a sufficiently low optical density that said pattern will not be present when said sheet is subsequently photographically reproduced.

3,853,565

SILVER HALIDE PHOTOGRAPHIC SUPERSENSITISING DYE COMBINATION

Elvin Frederick William Thurston, and John Gabriel Valentine Scott, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

Filed Apr. 18, 1973, Ser. No. 352,483

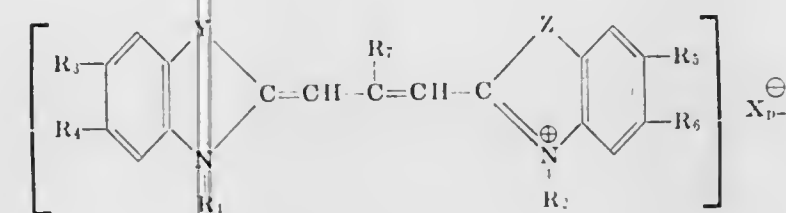
Claims priority, application Great Britain, Apr. 26, 1972, 19409/72

Int. Cl. G03c 1/14

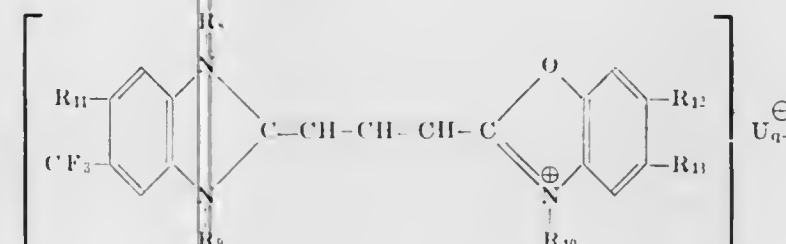
U.S. Cl. 96—124

6 Claims

1. A photographic silver halide material which comprises a super-sensitising combination which consists essentially of a sensitising dye of the formula



wherein R₁ and R₂ are each alkyl groups, or a group A-Q where A is a straight or branched alkylene chain containing 1-6 carbon atoms and Q is an amide, carboxylic acid or sulphonic acid group. R₃, R₄, R₅ and R₆ are the same or different and each represents a hydrogen or halogen atom, or an alkyl, aryl, hydroxy or alkoxy group, R₇ is a lower alkyl group, Y and Z are each sulphur or selenium atoms or one of Y and Z is an oxygen atom the other being a sulphur or selenium atom, X is an anion and p is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonic acid in either or both R₁ and R₂ or by the presence of a carboxylic acid in both R₁ and R₂ and p is 2 in the case of a non-betaine-like molecular structure, together with a sensitising dye of the formula



wherein R₈ is an alkyl group, R₉ and R₁₀ are each an alkyl group or one is an alkyl group and the other is a group A-Q where A is a straight or branched alkylene chain containing 1-6 carbon atoms and Q is an amide carboxylic acid or sulphonic acid group, R₁₁ is a hydrogen or halogen atom, or an alkyl or cyano group, R₁₂ is a hydrogen atom or a lower alkyl group, R₁₃ is a hydrogen atom or is a lower alkyl group or an aryl group which optionally is substituted, U is an anion and q is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonic acid group in Q and q is 2 in the case of a non-betaine-like molecular structure.

3,853,566

HOT PRESSED SILICON CARBIDE

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,426

Int. Cl. C04b 35/14

U.S. Cl. 106—44

3 Claims

1. A dense hot pressed silicon carbide ceramic body consisting essentially of β-silicon carbide and a boron containing

additive selected from the group consisting of boron and boron carbide wherein the amount of the boron additive is equivalent to 0.5-3.0 parts by weight of boron per 100 parts of silicon carbide, said boron additive being in solid solution with the silicon carbide, the ceramic being substantially pore free and having a density of at least 98% of the theoretical density for silicon carbide and a fine-grained microstructure.

3,853,567

PRODUCTION OF SHAPED ARTICLES OF HOMOGENEOUS MIXTURES OF SILICON CARBIDE AND NITRIDE

Wolfgang Verbeek, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 2, 1973, Ser. No. 347,585

Claims priority, application Germany, Apr. 19, 1972, 2218960

Int. Cl. C04b 35/56, 35/58

U.S. Cl. 106—44

9 Claims

1. A process for producing shaped forms comprising homogeneous mixtures of silicon carbide and silicon nitride, which comprises pyrolyzing at a temperature of about 200° to 800°C a silazane to produce a fusible carbosilazane resin, shaping said carbosilazane resin into predetermined form, and heating said shaped form of carbosilazane resin to about 800° to 2,000°C in an inert atmosphere, thereby to convert the carbosilazane to silicon carbide and silicon nitride.

3,853,568

GLASSES WITH HIGH CONTENT OF SILVER OXIDE

Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 142,336, May 11, 1971, Pat. No. 3,798,114. This application Aug. 3, 1972, Ser. No. 277,803

Int. Cl. C03c 3/12, 3/14, 13/00

U.S. Cl. 106—47 R

19 Claims

1. A glass composition consisting essentially of the following components, expressed in weight percent of the total oxides in the compositions, selected from the group consisting of:

- silver oxide 20-70%, 10 to 70% of an oxide of a transitional metal selected from the group consisting of tungsten, uranium and manganese and 10 to 70% of an oxide of a metalloid selected from the group consisting of boron, phosphorous, germanium, arsenic, antimony, bismuth and tellurium;
- silver oxide 20-70% and 30 to 80% of a two-component mixture of oxides of a metalloid selected from the group consisting of boron, phosphorous, germanium, arsenic, antimony, bismuth and tellurium, and
- silver oxide 20-70%, to 10 to 70% of molybdenum oxide or vanadium oxide and 10 to 70% of an oxide of a metalloid selected from the group consisting of boron, germanium, arsenic, antimony, bismuth and tellurium.

3,853,569

SILICATE GLASS FIBER COMPOSITIONS

Bernard Laurent, Paris, and Claude Haslay, Creil, both of France, assignors to Compagnie de Saint-Gobain, Neuilly sur Seine, France

Continuation-in-part of Ser. No. 341,417, Jan. 30, 1964, abandoned. This application July 1, 1970, Ser. No. 51,672

Claims priority, application France, Feb. 7, 1963, 63.924011

Int. Cl. C03c 3/08, 3/30, 13/00

U.S. Cl. 106—50

2 Claims

1. A glass having the composition by weight percent:

SiO ₂	63.90
Fe ₂ O ₃	0.30
Al ₂ O ₃	2.95
CaO	7.35
MgO	3.10
BaO	2.50
Na ₂ O	14.10
K ₂ O	0.80
B ₂ O ₃	5.00

3,853,570

CEMENT COMPOSITION

Victor Nonis, Roundtree Mills Rd., and Italo Nonis, 4 Tothill Rd., both of Etobicoke, Ontario, Canada

Filed Nov. 27, 1972, Ser. No. 309,743

Int. Cl. C04b 7/02

U.S. Cl. 106—97

4 Claims

1. A dry cement composition which comprises 15 to 35 percent by volume of marble dust fines, 25 to 45 percent by volume of dolomite aggregate, the remainder being white Portland cement.

3,853,571

FIRE RESISTANT COMPOSITION CONTAINING GYPSUM AND SILICATE-BASED MATERIAL AND PROCESS FOR MAKING SAME

Lawrence F. Gelbman, 86 Hamilton Ave., Yonkers, N.Y. 10705

Filed Oct. 5, 1972, Ser. No. 295,170

Int. Cl. C04b 7/00, 11/00

U.S. Cl. 106—105

4 Claims

1. A fire-resistant composition suitable for use in construction materials such as wallboard, insulation, soundproofing, fireproofing, furnace lining and building products or the like and exhibiting increased strength and structural integrity when subjected to temperatures in excess of 400° F. up to 2,000° F. consisting essentially of 1 part, by volume, gypsum, and 1 to 22 parts, by volume, of a silicate-based synthetic lightweight aggregate material having a bulk density of 1.4 to 6 pounds per cubic foot and comprising a heat-expanded mixture of anhydrous sodium silicate, liquid sodium silicate and a heat-triggered neutralizer material.

3,853,572

POWDER METAL MIX CONTAINING CARBONACEOUS BINDER AND GREEN COMPACTS MADE THEREFROM
Robert H. Herron, and William J. Smothers, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 28, 1972, Ser. No. 229,987

Int. Cl. C08h 13/00, 17/12, 17/08

U.S. Cl. 106—284

23 Claims

1. A powder metal mix suitable for processing into both a green compact characterized by improved green strength and a sintered powder metal compact, said powder metal mix consisting of about 99.5 percent to about 90 percent of an iron powder metal mix, said iron powder mix consisting of about 70 percent to about 95 percent iron powder and the remainder at least one addition agent taken from the group consisting of silicon carbide, mullite, carbon black, graphite, nickel, molybdenum and titanium, and about 0.5 percent to about 10 percent of at least one carbonaceous addition agent taken from the group consisting of coal tar pitch and petroleum tar pitch, which carbonaceous addition agent has a softening temperature between about 55° C. to about 120° C., a quinoline insoluble percent of about 2 to about 20 and a coking value-Conradson percent of about 30 to about 60, said carbonaceous addition agent being a fugitive binder in the green compact when present in amounts of about 0.5 percent to about 4 percent and a precursor of carbon remaining in the sintered powder metal compact made therefrom when present in amounts of about 4 percent to about 10 percent.

3,853,573

FLUXING AGENT MODIFIED PIGMENTARY COMPOSITIONS

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,936, Nov. 15, 1972. This application July 5, 1973, Ser. No. 376,460

Int. Cl. C09c 1/28

U.S. Cl. 106—288 B

19 Claims

1. A pigmentary composition comprising calcined agglomerates consisting essentially of the following constituents in parts by weight:

Anhydrous Silicate Mineral	from 30	to 98.5
Hydrous Silicate Mineral	from 0	to 40.0
Inorganic Colorant	from 0	to 5.0
White Opacity Modifier	from 0	to 20.0
Inorganic Binder	from 1	to 10.0
Fluxing Agent	from 0.5	to 10.0

said anhydrous silicate mineral being in the form of particles having an average size of from about 2 to 100 microns and selected from the group consisting of silica, the silicates of beryllium, magnesium and calcium, aluminosilicates, the aluminosilicates of lithium, beryllium, magnesium, barium, sodium, potassium and calcium and mixtures thereof;

said hydrous silicates being in the form of particles having an average size of from about 0.5 to 100 microns and selected from the group consisting of phyllosilicates, sorosilicates, opal, the zeolite group of tectosilicates, the amphibole group of inosilicates, perlite, non-swelling montmorillonites and mixtures thereof;

said inorganic colorant is selected from the group consisting of iron oxide, manganese oxide, lead chromate, ultramarine and ceramic colorants;

said white opacity modifier is selected from the group consisting of titanium dioxide, zirconium oxide, zirconium silicate, zirconium double silicates, zinc oxide, antimony oxide and tin oxide;

said inorganic binder is selected from the group consisting of water soluble silicates, sodium polyphosphates, expanding lattice montmorillonites and mixtures thereof;

said fluxing agent is selected from the group consisting of metal oxides and glassy metal oxide complexes which melt at a temperature below the melting point of the anhydrous silicate mineral;

said agglomerates ranging in size from about 20 microns to 1 centimeter and having a specific gravity at least 5 percent lower than that of the minerals contained in the composition.

3,853,574

PROCESSING MODIFIED PIGMENTARY COMPOSITIONS

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,926, Nov. 15, 1972. This application July 5, 1973, Ser. No. 376,461

Int. Cl. C09c 1/28

U.S. Cl. 106—288 B

13 Claims

1. A pigmentary composition comprising calcined agglomerates consisting essentially of the following in parts by weight

Anhydrous Silicate Mineral	from 40 to 89
Hydrous Silicate Mineral	from 10 to 50
Inorganic Binder	from 1 to 10

said inorganic binder being selected from the group consisting of sodium polyphosphates, expanding lattice montmorillonite and soluble silicates of sodium, potassium and lithium, said anhydrous silicate minerals being in the form of particles having an average size in the range of from 2 to 20 microns and said hydrous silicate minerals being in the form of particles having an average size in the range of from 1.5 to 20 microns, said agglomerates ranging in size from about 20

microns to one centimeter and having a specific gravity at least 5 percent below that of the minerals contained therein.

3,853,575

SUBSTANTIALLY NON-GREYING TITANIUM DIOXIDE PIGMENTS FOR USE IN RESIN COMPOSITIONS

Bernd Holle, and Gerhard Winter, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 24, 1973, Ser. No. 326,204

Claims priority, application Germany, Feb. 12, 1972, 2206776; Feb. 12, 1972, 2206775; Feb. 12, 1972, 2206772

Int. Cl. C09c 1/36

U.S. Cl. 106—300

11 Claims

1. A process for the production of a substantially non-greying titanium dioxide pigment coated with a layer of aluminum oxide aquate, comprising drying at about 25° to 200°C a suspension of a titanium dioxide pigment in a solution of a basic aluminum salt, said solution being selected from the group consisting of (a) a solution of basic aluminum chloride containing an oxidizing salt, (b) a solution of basic aluminum nitrate, and (c) mixtures thereof, the basic aluminum salt being present in said solution in such amount that the dried titanium dioxide pigment contains about 0.5 to about 10% by weight of aluminum oxide aquate (calculated as Al₂O₃), and the nitrate and oxidizing salts being present in such amount in the solution that their anions are present in the titanium dioxide pigment to the extent of about 0.05 to 3% by weight.

3,853,576

PRODUCTION OF WINDOWED FACE PLATES

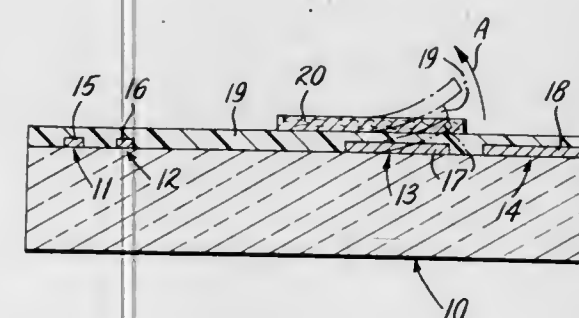
Raymond G. Netznik, c/o Suburban Screen Print, Inc., 3535 Commercial Ave., Northbrook, Ill. 60062

Filed Apr. 20, 1973, Ser. No. 352,957

Int. Cl. B44d 1/52

U.S. Cl. 117—5.5

9 Claims



1. A method for the production of a windowed face plate comprising applying to selected portions of the surface on one side of a transparent face plate a poorly adherent coating and drying the same to provide easily strippable film portions lightly adhered to said plate, overcoating the same side of said plate with a heavily pigmented organic solvent-based paint and drying the same to form an opaque brittle film of paint which adheres strongly to the exposed surface of said face plate and said strippable film portions to provide an opaque plate, applying an adhesive tape to the portion of said paint which overlies a film portion which it is desired to remove and then peeling off said adhesive tape to lift off the paint overlying said film portion together with the strippable film portion attached thereto to thereby provide one or more windows in said opaque plate.

3,853,577

METHOD FOR PREPARING DECORATIVE LAYER

Hiroshi Nishida, Kashiba-machi; Satoshi Tanaka, Nishino-miya; Akiyoshi Hatanaka, Ibaragi; Akira Yoneyama, Amagasaki, and Masafumi Yamanishi, Takarazuka, all of Japan, assignors to The Bonntile Co., Ltd., Tokyo and Dai Nippon Torio Co., Ltd., Osaka-shi, Osaka-fu, both of Japan, part interest to each

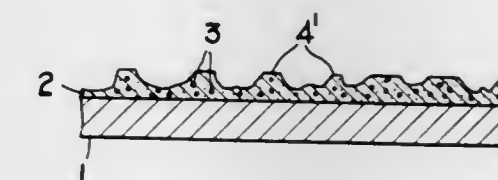
Filed Jan. 5, 1973, Ser. No. 321,340

Claims priority, application Japan, Jan. 13, 1972, 47-6051

Int. Cl. B44c 1/20; E04c 1/00

U.S. Cl. 117—8

7 Claims



1. A method of preparing a decorative layer, which comprises:

spray-coating a first coating under a pressure of 5 – 8 kg/cm² of a mortar composition containing 3 – 50 weight percent of an epoxy resin and an epoxy hardener, 5 – 70 weight percent cement, 5 – 70 weight percent of an aggregate powder and 5 – 30 weight percent water and having a viscosity in the range of 100 – 500 poise at 25°C onto the surface of a base;

spray coating a second coating of said mortar composition under a pressure of 2 – 5 kg/cm² so as to form a concavo-convex surface pattern;

pressing the top of the convex portions of the surface while in a semi-hardened condition which occurs from 0.5 – 6 hours after the application of said second coating, to form flat areas on the tops of the convex portions; and finish-coating the surface with a synthetic resin, enamel or lacquer.

3,853,578

METHOD OF MANUFACTURING DECORATIVE BOARDS WITH DEPRESSION PATTERNS

Masaru Suzuki, Yashio, and Kenichi Yamazaki, Tokyo, both of Japan, assignors to Senri Kikaku Sogo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,532

Int. Cl. B44d 1/50, 1/52; C08f 3/50

U.S. Cl. 117—8.5

17 Claims

1. A method of manufacturing a depression patterned decorative board comprising applying an ultraviolet-curable unsaturated polyester resin to a surface of a printed or colored base board, covering the coated surface with a shading film formed of a phototransmissible material and having thereon a shading pattern corresponding to a depression pattern to be formed in the coating layer of the aforesaid resin, said film being adhesive to the resin in its incured state but strippable from the cured resin irradiating the coating layer by ultraviolet rays through the said film thereby to cure the resin in the exposed areas and peeling off the said film from the coated layer whereby at least a portion but not all of the unexposed resin is removed with the film thereby providing a depression-patterned decorative board having a depression pattern in the polyester surface coating thereof corresponding to the pattern of the shading film.

3,853,579

COATINGS CONTAINING PLASTIC POLYMERIC PIGMENTS

Edward J. Heiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 732,100, May 27, 1968, Pat. No. 3,779,800. This application July 3, 1972, Ser. No. 268,897. The portion of the term of this patent subsequent to Sept. 27, 1983, has been disclaimed.

Int. Cl. D21h 1/32, 1/10

U.S. Cl. 117-15

21 Claims

1. A coated paper having printing applied to a surface thereof comprising

A. a paper substrate having intimately adhered thereto;
 B. an improved coating comprising a binding amount of a binder and an opacifying amount of a pigment, provided that (1) the ratio of binder to pigment is in the range from about 1.3 to about 12 volume parts of binder to about 38.8 volume parts of pigment; and (2) at least a portion of said pigment is in the form of discrete, substantially spheroidal, water- and binder-insoluble, non-film forming, polymeric plastic particles of an organic polymer, said particles having an average diameter of from about 0.3 to about 0.8 micron, said portion of plastic particles constituting at least about 1 volume percent based on total pigment and being sufficient to impart improved coating properties as compared to a coating containing only inorganic pigment, said organic polymer being a polymer of

a. monovinylidene aromatic monomer;
 b. less than about 45 weight percent of copolymerizable monomer selected from the group consisting of conjugated aliphatic diene, alkyl acrylates, unsaturated esters of saturated carboxylic acids, esters and half esters of α,β -ethylenically unsaturated polycarboxylic acids, aliphatic monoolefins, vinyl fluoride, vinylidene chloride and vinylidene fluoride and
 c. not greater than 25 weight percent of α,β -ethylenically unsaturated carboxylic acid; and
 C. printing applied to said coating.

3,853,580

METHODS FOR ELECTROGASDYNAMIC COATING

Meredith C. Gourdine, East Orange, N.J., assignor to The National State Bank, Elizabeth, N.J.

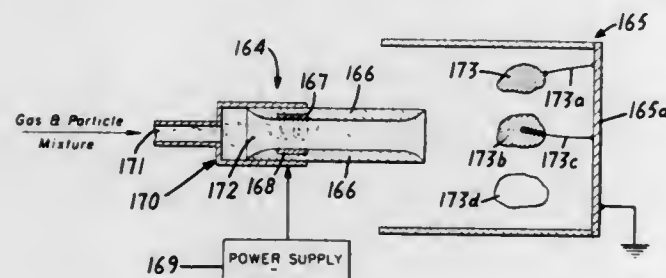
Division of Ser. No. 837,562, June 30, 1969, Pat. No. 3,673,463, which is a division of Ser. No. 601,270, Nov. 15, 1966, abandoned, which is a continuation-in-part of Ser. No. 512,083, Dec. 7, 1965, abandoned. This application Apr. 18, 1972, Ser. No. 245,132

Claims priority, application Japan, Apr. 21, 1971, 46-25242

Int. Cl. B05b 5/02

U.S. Cl. 117-17

14 Claims



1. A method of applying a fixed coating to a substrate, including the steps of:

flowing a gas in a bounded flow path, including in the gas a coating substance, establishing an ionizing field between at least two electrodes at an upstream location in said bounded flow path, thereby subjecting the gas to said ionizing field to provide charged particles of the coating substance, forcing the gas and entrained charged particles of the coating substance downstream through a portion of the bounded flow path to an exit from the bounded flow path,

emitting the charged particles out of the bounded flow path by said exit to a location less constricted than the bounded flow path, thereby creating, in the vicinity of the exit, a space charge field at an electrostatically increased potential and separated from the charging electrodes by said portion of flow path,

continuing to force gas entrained charged particles through the bounded flow path portion and out of said exit in opposition to said space charge field, and disposing the surface of the substrate to be coated beyond said exit so as to be contacted by said particles, said step of forcing the gas and entrained charged particles through a bounded flow path portion comprising flowing the gas and charged particles along a path portion sufficiently long to permit an electrostatic potential increase to a very high potential without incurring dielectric breakdown.

3,853,581

METHOD OF COATING ARTICLES WITH ELECTROSTATICALLY CHARGED PARTICLES

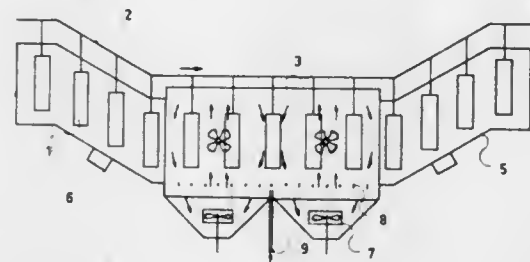
Pierre Fabre, Grenoble, France, assignor to Air Industrie, S.A., Courbevoie, France

Filed June 2, 1972, Ser. No. 259,000

Int. Cl. B05b 5/02; B44d 1/095

U.S. Cl. 117-17

4 Claims



1. A method of coating articles with electrostatically charged particles comprising the steps of maintaining an inert gaseous atmosphere within a chamber, said atmosphere being under a pressure at least as great as the ambient atmospheric pressure, introducing solid organic particles into said chamber, forming a suspension of said particles within said chamber by continuously circulating and agitating said gaseous atmosphere and said particles, electrostatically charging said particles in said suspension, passing articles through said chamber, depositing said charged particles upon said articles to form a layer of charged particles on said articles, withdrawing said particle-coated articles from said chamber while supplying additional solid organic particles to said chamber at a rate equal to that at which the coated articles leave said chamber, and heating the particle-coated articles to melt said particle layer to form a thin continuous coating on said articles.

3,853,582

METALLIZED ISOTROPIC BORON NITRIDE BODY AND METHOD FOR MAKING SAME

William H. Labossier, Billerica, and Hartmut Schilling, Watertown, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 8,053, Feb. 2, 1970, abandoned. This application Jan. 13, 1972, Ser. No. 217,656

Int. Cl. B44d 1/00

U.S. Cl. 117-22

3 Claims

1. A method for metallizing the surface of an isotropic boron nitride body comprising the steps of: removing the surface contaminants from the boron nitride body by vaporizing said contaminants; coating a surface of the clean boron nitride body with a composition comprising powders selected from at least one of the group consisting of zirconium hydride, tita-

3,853,586

TAPERED CARBON/PYROLYTIC GRAPHITE COMPOSITE MATERIAL

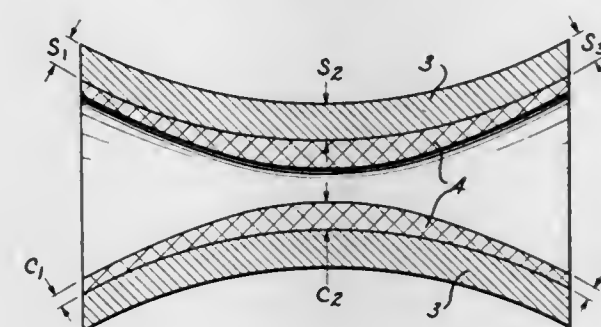
Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Oct. 4, 1968, Ser. No. 765,200

Int. Cl. B64d 33/04

U.S. Cl. 117-37 R

6 Claims



1. In a composite material of reduced residual stress an annular carbon substrate having an inner surface and a pyrolytic graphite coating vapor deposited onto said inner surface of said substrate, said composite carbon/pyrolytic graphite material having a center portion and two end portions arranged along a longitudinal axis, the improvement wherein the center portion of said composite material has a thickness normal to its inner surface which is greater than the thickness at at least one of said end portions, resulting in a taper from its center portion towards said at least one end.

3,853,587

FERRIC PHOSPHATE COATED POLYMERIC SHAPED OBJECTS

Vernon C. Haskell, Jr., and James L. Hecht, both of Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,301, July 19, 1972, which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,271

Int. Cl. B44d 1/092; B41m 1/18; B05c 5/00; B23b 27/00; C04b ; C08h ; B32b 9/04

U.S. Cl. 117-46 FC

12 Claims



1. An organic, polymeric shaped article having a substantially continuous, gas-impermeable coating on at least one surface thereof, the coating comprising ferric orthophosphate wherein the atom ratio of iron to phosphorus is about from 2.3 to 0.5.

3,853,585

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC MATERIALS

Sumitaka Tatsuta, and Wataru Ueno, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1973, Ser. No. 334,549

Claims priority, application Japan, Feb. 24, 1973, 48-19212

Int. Cl. G03c 1/78

U.S. Cl. 117-34

14 Claims

1. A process for the production of a photographic material comprising a photographic layer coated on a polyolefin resin layer, which process comprises firstly roughening the surface of the polyolefin resin and then subjecting the thus roughened surface to a surface activation treatment to thereby render the surface of the polyolefin resin hydrophilic, thereafter coating the thus activated surface with a photographic layer comprising gelatin.

consists in said coating having a topcoating of a vinylidene chloride polymer containing from about 2 to 30 weight percent of a polymeric epoxy resin.

3,853,589

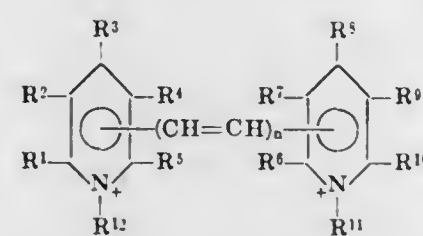
METAL DEPOSITION PROCESS

Timothy Douglas Andrews, Manningtree, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 88,173, Nov. 9, 1970, abandoned. This application Feb. 2, 1972, Ser. No. 222,991
Int. Cl. C23b 5/60, 3/02; C23c 3/02

U.S. Cl. 117-47 A

21 Claims

1. A process for the deposition of metal in or on substrate characterized in that the substrate contains or consists of, as active component, an organic compound derived from a cation of the general formula



where R^{1-12} are hydrogen, halogen or organic substituents and $n = 0$ or an integer, comprising contacting the substrate with an electroless plating solution.

3,853,590

ELECTROLESS PLATING SOLUTION AND PROCESS
Leon A. Kadison, Pasadena, and Eileen Maguire, San Gabriel, both of Calif., assignors to Crown City Plating Co., El Monte, Calif.

Filed Aug. 20, 1969, Ser. No. 851,762

Int. Cl. B44d 1/092; C23c 3/02

U.S. Cl. 117-47 A

12 Claims

1. In an electroless plating process, the steps of immersing an article having a catalytic noble metal on its surface in a first electroless plating solution to initiate deposition of the plating metal on the article, removing the article when a thin coating of plating metal has been deposited on the surface of the article, and immersing the article in a second electroless plating solution containing a plating metal electrolessly platable with respect to the plating metal deposited by said first electroless plating solution and having a concentration of an inhibitor which is sufficient to prevent deposition of said plating metal on an article having the catalytic noble metallic surface but does not prevent deposition of said plating metal on an article having the thin coating of plating metal.

3,853,591

PHOSPHATE COATED POLYMERIC SHAPED OBJECTS
Vernon C. Haskell, Richmond, Va.; Larry L. Hench, Gainesville, Fla., and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 273,301, July 19, 1972, which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Feb. 7, 1973, Ser. No. 330,389

Int. Cl. C01b 25/36; B32b 27/06

U.S. Cl. 117-47 A

6 Claims

1. In an organic, polymeric shaped article having a substantially continuous, gas-impermeable coating on at least one surface thereof, comprising metal orthophosphate wherein the metal is aluminum or iron and the atom ratio of metal to phosphorus is about from 2.3 to 0.5, the improvement wherein up to about 50 percent of the metal ions is replaced by tin, titanium, or zirconium ions.

3,853,592

HIGHLY STABLE RESIN COATED PAPER PRODUCTS AND METHOD FOR MAKING SAME

Irvin H. Crawford, Hamlin; Roger E. Democh, and Robert J. Baron, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 98,055, Dec. 14, 1970, Pat. No. 3,755,069.

This application Apr. 4, 1973, Ser. No. 347,750

Int. Cl. B32b 27/10; C08f 45/58

U.S. Cl. 117-60

8 Claims

1. A high stability resin coated paper product comprising a paper substrate, an organic stabilizer additive layer applied to at least one surface of said substrate, and a polyolefin resin coated over said additive layer, said organic stabilizer additive being capable of migrating into said polyolefin resin to stabilize the latter under ambient conditions of normal use.

3,853,593

PROCESS FOR IMPROVING THE PROTECTIVE PROPERTIES OF CHROMIUM-OXIDE BASED COMPOUND COATINGS, BY MEANS OF STABILIZATION OF THE CHROMIUM ION

Giuseppe Baudo, Vicenza, and Giuseppe Bombara, Rome, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed July 10, 1972, Ser. No. 270,291

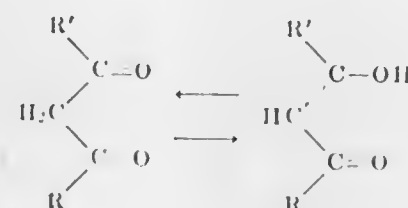
Claims priority, application Italy, July 31, 1971, 52042/71

Int. Cl. B44d 1/44

U.S. Cl. 117-62

7 Claims

1. A process for improving the protecting properties of chromium oxide based coatings, comprising immersing a metal substrate having thereon a chromium oxide based coating, in an aqueous solution of 0.1 to 10 grams per liter of a beta-diketone of the formula



in which

R is a monovalent aromatic ring-containing radical and
R' is a monovalent radical able to impoverish the electronic density of the enolic group



by inductive effect, at a temperature from 30° to 90°C., for 1 second to 15 minutes, with constant stirring, then rinsing the coated substrate in water and drying the surface of the coating.

3,853,594

METHOD FOR TREATING PAPER WITH MIXED THERMOPLASTIC AND THERMOSETTING ACRYLIC RESINS AND PRODUCTS THEREOF

Helmut Moroff, Trautheim near Darmstadt, and Helmut Neumann, Darmstadt-Eberstadt, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed July 7, 1972, Ser. No. 269,615

Claims priority, application Germany, July 14, 1971, 2135072

Int. Cl. B44d 1/44

U.S. Cl. 117-64 R

9 Claims

1. A method for making a glossy resin-filled paper which comprises contacting the paper to be treated with a filler-free

resin dispersion consisting essentially of (1) a thermoplastic acrylic resin and (2) a self-cross-linking acrylic resin, both dispersed in water, the ratio by weight of thermoplastic resin to self-linking resin in said dispersion being between about 1:1 and about 1:10, drying the treated paper, and then calendering the dried paper with a highly polished calender roll at a temperature between about 120°C. and about 180°C.

3,853,595

SEWING TAPE

James J. Pedginski, West St. Paul, and William A. Peper, Maplewood Village, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 7, 1972, Ser. No. 286,992

Int. Cl. C09j 7/02

U.S. Cl. 117-68.5

3 Claims

1. A colored, matte-finished normally tacky and pressure-sensitive adhesive tape provided with repeating printed indicia at predetermined intervals and having particular utility in sewing procedures, comprising in combination:

- a self-supporting medium to high density polyethylene film backing, having, at 7% elongation in the cross direction,
 - a tensile stress in the range of about 75 to 250 kg/cm² and
 - a thickness in the range of about 40 to 80 microns, such that the tensile force is in the range of about 400-2,000 gms/cm width;
- coated on one surface of said backing a layer of normally tacky and pressure-sensitive adhesive which
 - is in the range of about 12 to 15 microns thick and
 - has a loss shear modulus of more than 10⁸ dynes/cm², whereby the tape can be adhered firmly to fabric, stitched through rapidly using an electric sewing machine without gumming the needle, and completely and easily removed from a line of stitching which extends therethrough without loosening the stitches.

3,853,596

METHOD OF GROWING A SINGLE-CRYSTAL ON A SINGLE-CRYSTAL SEED

Grigory Issakovitch Distler, ulitsa Vavilova, 48, kv. 211; Anatoly Nikolaevich Lobachev, ulitsa Fersmana, 3, kv. 68; Vasily Platonovich Vlasov, Flotskaya ulitsa, 13 korpus 1, kv. 214; Oleg Konstantinovich Melnikov, Leninsky prospekt, 92/2, kv. 64, and Nina Sergeevna Triodina, Universitetsky prospekt, 4, kv. 501, all of Moscow, U.S.S.R.

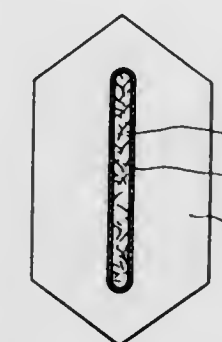
Filed July 7, 1972, Ser. No. 269,884

Claims priority, application U.S.S.R., July 7, 1971, 1670901

Int. Cl. B44d 1/16

U.S. Cl. 117-69

12 Claims



1. A method of growing a single-crystal on a single-crystal seed comprising the steps of: depositing prior to the beginning of crystallization onto the surface to be overgrown, which constitutes at least one portion of said single-crystal seed, a layer of a material, said material having at least one of the characteristics of chemical composition or structure which differs from that of the material of said single-crystal seed, said layer on the one hand being capable of acquiring polarization

properties under the influence of the material of the single-crystal seed which are retained during crystallization, and on the other hand being of a thickness such as to eliminate the defects of the surface of said single-crystal seed and to retain polarization properties acquired from said single-crystal seed; placing said single-crystal seed with said layer deposited thereon into a crystallization medium under conditions required for growing said single-crystal, and growing a single-crystal on the layer of the material covering said single-crystal seed.

3,853,597

PROCESS FOR FORMATION OF SHOCK ALLEVIATING COATING

Shozo Shimizu, Okazaki; Hiroshi Shinohara; Junichi Asai, both of Toyota; Takashi Aiki, Yokohama; Kuniomi Hirota, Kamakura, and Toashi Kishi, Yokohama, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi Prefecture and Mitsui Toatsu Chemicals, Inc., Tokyo, both of Japan

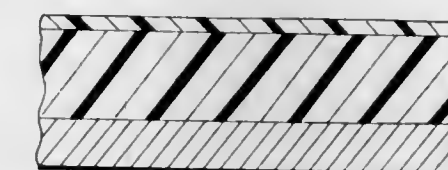
Filed July 20, 1972, Ser. No. 273,463

Claims priority, application Japan, Aug. 9, 1971, 46-59596

Int. Cl. B44d 1/14; B32b 15/08

U.S. Cl. 117-75

2 Claims



1. A process for the formation of a shock alleviating protective coating on a shaped article of metal or synthetic resin material which comprises preparing a two-part paint consisting of a first constituent consisting essentially of a urethane resin containing an excess of isocyanate groups and a second constituent consisting essentially of at least one diamine compound selected from the group consisting of hexamethylene diamine, phenylenediamine, 4,4'-diamino-diphenylmethane, 4,4'-diamino-diphenylsulfone, 4,4'-diamino-diphenylether, 4,4'-diamino-dicyclohexylmethane, 4,4'-diamino-dicyclohexylsulfone, and 4,4'-diamino-dicyclohexylether, and, with or without one or more resins other than the urethane resin, with the proviso that at least one of said constituents further contains an amount of an epoxy resin therein effective to promote formation of a shock alleviating protective coating, spraying said two-part paint directly on the surface of said article with a spraying means adapted for the spraying of such paint thereby providing a first layer on said surface, and then applying a weather-proof paint on said first layer thereby providing a second or a finishing layer on said first layer.

3,853,598

ADHESIVE TAPE

Roger C. Raguse, La Porte, Ind., assignor to Scholl, Inc., Chicago, Ill.

Continuation of Ser. No. 29,566, April 17, 1970, abandoned.

This application Feb. 9, 1972, Ser. No. 224,920

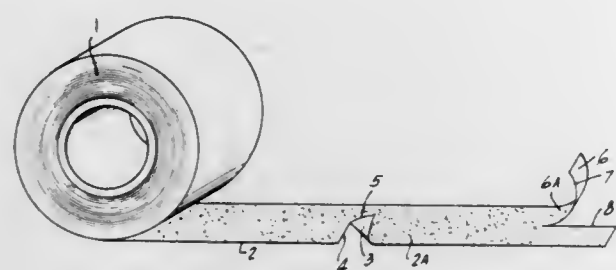
Int. Cl. C09j 7/04

U.S. Cl. 117-76 A

10 Claims

10. A non-porous pressure-sensitive adhesive tape for general and surgical uses consisting of a high thread count woven cellulosic synthetic fiber backing in which the warp threads are parallel to each other, the weft threads are parallel to each other and perpendicular to the warp threads, the thread count being in the neighborhood of 180 warp threads and 54 weft threads per square inch, an acrylic polymer primer on one face of said backing, and a pressure-sensitive adhesive layer containing both natural and synthetic rubber applied directly over said primer, the primer fully covering the face of the

backing so as to prevent the adhesive layer contacting the backing when applied to the primer and to prevent moisture from passing from the backing to the adhesive, said tape being



easily hand tearable in a straight line in both transverse and longitudinal directions leaving clean and smooth unfayed edges along the tear line.

3,853,599

PROCESS FOR ADHERING REINFORCING FIBERS AND RUBBER

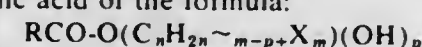
Muraji Kamichika, Kawanishi; Yasuhiro Miyake, Takarazuka, and Fumihiro Doura, Kawachinagano, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 81,603, Oct. 16, 1970, abandoned.
This application Dec. 4, 1972, Ser. No. 311,480
Int. Cl. B32b 25/10

U.S. Cl. 117-76 T

33 Claims

1. A process for adhering reinforcing fibers and rubber which comprises:

1. coating the fibers with an adhesive composition which consists essentially of an aqueous dispersion of a solid polymer containing (a) from 1.0 to 45 mole %, based on the total solids content in said aqueous dispersion, of monomer units of a haloxyalkylester of an unsaturated carboxylic acid of the formula:



wherein RCO represents the acid residual group of a polymerizable unsaturated carboxylic acid, X represents a halogen atom, p and m represent positive integers of 1 to 3 and n is a positive integer of 3 to 12, and (b) at least 40 mole %, based on the total solids content in said aqueous dispersion, of monomer units of a conjugated diolefin;

2. heating the coated fibers of step (1);
(3) treating the fibers of step (2) by contacting said fibers of step (2) with a second composition comprising (a) a phenolformaldehyde primary condensate and (b) a second dispersion of a copolymer of vinyl pyridine, styrene and butadiene;
4. heating the treated fibers of step (3);
5. applying said rubber to the heated fibers of step (4); and
6. vulcanizing said rubber.

3,853,600

IMPROVED CARBON FIBER REINFORCED COMPOSITE ARTICLE

Kenneth C. Hou, Whippany, N.J., assignor to Celanese Corporation, New York, N.Y.

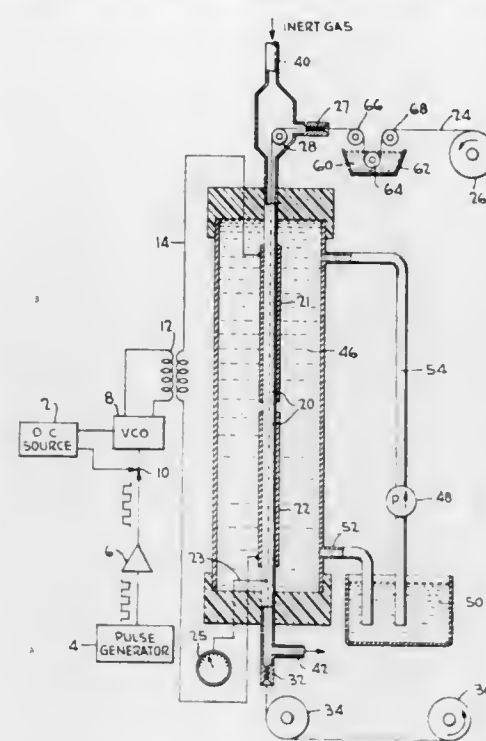
Division of Ser. No. 142,656, May 12, 1971, Pat. No. 3,762,941. This application Feb. 28, 1973, Ser. No. 336,868
Int. Cl. D06m 15/30; B44d 1/14

U.S. Cl. 117-76 T

9 Claims

1. A composite article exhibiting enhanced interlaminar shear strength comprising a resinous matrix material derived from a thermosetting resin having incorporated therein a

carbonaceous fibrous material containing at least 90 per cent carbon by weight which bears upon the surface of said carbonaceous fibrous material a compact coating of polyphenylene polymer having a thickness of about 25 to 800 angstrom units.



3,853,601

HYDROPHILIC MICROPOROUS FILM

Henry T. Taskier, Englewood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,260
Int. Cl. B32b 27/16

U.S. Cl. 117-98

8 Claims

1. A hydrophilic microporous film comprising a hydrophobic microporous polymeric film characterized by having a reduced bulk density as compared to the bulk density of the corresponding precursor film, a crystallinity of about 30 percent, an average pore size of about 100 to 12,000 Angstroms and a surface area of about 2 to about 200 square meters per gram coated with a surfactant comprising a silicon glycol copolymer which renders said hydrophobic film hydrophilic.

3,853,602

SLIDING MEMBER

Yoshikatsu Nakamura, Yokohama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 311,619

Claims priority, application Japan, Dec. 3, 1971, 46-97181

Int. Cl. F16c 33/12; C23c 7/00

U.S. Cl. 117-105

2 Claims

1. A sliding member comprising a scuff resistant and abrasion resistant sprayed layer composed of a ferrous alloy containing more than two per cent by weight but less than the stoichiometric amount based on FeS_2 of sulfur laminated on at least its sliding surface.

3,853,603

METHOD FOR THE CHROMIZING OF IRON OR FERROUS ALLOY ARTICLES

Mikio Obayashi, and Junji Endo, both of Nagoyashi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoyashi, Japan

Filed Nov. 14, 1972, Ser. No. 306,197

Claims priority, application Japan, Nov. 16, 1971, 46-91151

Int. Cl. C23c 9/02

U.S. Cl. 117-107.2 P

8 Claims

1. A method for the chromizing of an iron or ferrous alloy article in powdery treating material, comprising the steps of

packing said article in the powdery treating material consisting essentially of 0.5 to 80 percent by weight of one member selected from the group consisting of potassium tetrafluoroborate, sodium tetrafluoroborate, ammonium tetrafluoroborate and the mixture thereof and 20 to 99.5 percent by weight of one member selected from the group consisting of metallic



chromium, ferrochromium and the mixture thereof, heating said ferrous metal article within said powdery treating material at a temperature between 550° and 1,200°C for 1 to 30 hours, and taking said article out of said powdery treating material, thereby forming a chromized layer on the surface of said article.

3,853,604

METHOD FOR THE CONTINUOUS HIGH-GRADE FINISHING OF TEXTILE MATERIALS

Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Yepa AG, Basel, Switzerland

Continuation of Ser. No. 651,849, July 7, 1967, abandoned.

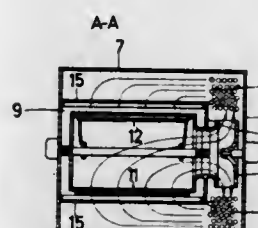
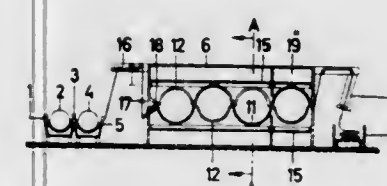
This application Mar. 20, 1972, Ser. No. 235,924

Claims priority, application Germany, July 9, 1966, 31472

Int. Cl. B44d 1/48

U.S. Cl. 117-119.8

23 Claims



1. A method for effecting continuous high-grade finishing of textile material which comprises:

1. impregnating a textile material with a liquid finishing preparation containing a heat-curable synthetic resin,
2. removing excess liquid finishing preparation from the textile material without the application of heat to provide a liquid content of less than 100 percent bone dry weight,
3. passing the impregnated textile material over and in contact with a perforated surface of a sieve drum means subjected to a suction draft, and
4. drawing a gas heated to a temperature of about 140°C. to 190°C. through the perforated surface and through the material at a rate of about 0.5-5m./sec. to dry the textile material and to cure the resin rapidly within said material,

said resin being cured in about 20 to 90 seconds to thereby prevent migration of the resin to the surface of the material during said drying.

3,853,605

PROCESS FOR APPLYING A COATING COMPOSITION TO GLASS FIBERS AND THE RESULTING COATED FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

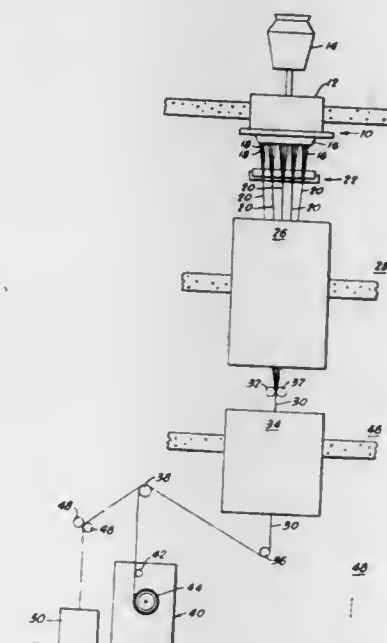
Continuation of Ser. No. 93,939, Dec. 1, 1970, abandoned.

This application Jan. 26, 1973, Ser. No. 326,650

Int. Cl. B32b 17/06; B32d 17/10; C03c 25/02

U.S. Cl. 117-126 GB

3 Claims



1. In the method of coating glass fibers for use in reinforcing elastomeric products comprising: attenuating glass fibers from cones of molten glass; applying to the fibers as they are being attenuated a combined aqueous size and coating composition comprising 3 to 15 percent by weight of a resorcinol-formaldehyde resin; 20 to 70 percent by weight of a styrene-butadiene-vinyl pyridine terpolymer latex; 0.01 to 3 percent by weight of an amino-functional silane coupling agent and ammonia the improvement which comprises: stabilizing said combined sizing and coating composition by the addition of 0.1 to 6 percent by weight of an ammonia soluble carboxyl containing polymer, said carboxyl containing polymer being carboxylated polyvinyl acetate, carboxylated styrene, carboxylated polyethylene, carboxylated elastomers, or carboxylated acrylic polymers.

3,853,606

COATED METAL FASTENERS

Robert E. Parkinson, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 107,864, Jan. 19, 1971, abandoned. This application Oct. 4, 1972, Ser. No. 295,076

Int. Cl. B44d 1/42; F16b 15/00

U.S. Cl. 117-128.4

9 Claims

1. A process for coating a metal fastener useful for frictional insertion in wood or the like comprising:

dissolving in an organic solvent from about 50 to about 80 percent by weight of resin solids of rosin or a rosin-like resin which melts at a temperature of from about 60°C to about 150°C;
dispersing in a hot volatile aqueous alkali solution about 20 to about 50 percent by weight of resin solids of an ethylene copolymer or terpolymer comprising from about 75 to about 90 percent by weight ethylene and from about 10 to about 40 percent by weight of an ethylenically unsaturated carboxylic acid or an ester thereof free of

groups which are reactive with said rosin or rosin-like resin;
adding said rosin or rosin-like resin solution to said ethylene copolymer or terpolymer dispersion to form a mixture;
emulsifying said mixture;
dipping said metal fastener in said mixture; and
drying said coated metal fastener.

3,853,607

SYNTHETIC FILAMENTS COATED WITH A LUBRICATING FINISH

Yathiraja Iyengar, Newark, Del., and James Dean Lemley, Kinston, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1973, Ser. No. 407,573

Int. Cl. D06m 13/16, 15/66

U.S. Cl. 117—138.8 F

10 Claims

1. A synthetic filament coated with a lubricating finish composition consisting essentially of a linear polydimethylsiloxane oil and microcrystalline or polyalkylene wax dispersed in dialkyl phthalate oil carrier having from 8 to 14 carbon atoms in each of said alkyl groups, the proportions of the specified ingredients being from 0.1 to 25 weight percent of the polydimethylsiloxane oil, from 0.1 to 10 weight percent of the wax and at least 65 weight percent of the dialkyl phthalate oil carrier.

3,853,608

MANUFACTURE OF A REINFORCED, NON-WOVEN TEXTILE FIBER SHEET MATERIAL

Klaus-Dieter Hammer, Mainz, and Ludwig Klenk, Hallgarten, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 22, 1972, Ser. No. 291,323

Claims priority, application Germany, Sept. 24, 1971, 2147757

Int. Cl. C08c 17/16

U.S. Cl. 117—140

9 Claims

1. A process for the manufacture of chemically bonded non-woven textile fiber sheet material which comprises
a. treating a non-woven textile fiber sheet material with a binder liquid composed of an aqueous dispersion of a synthetic elastomer containing chemically reactive groups and a solution of silicone oil in toluene,
b. eliminating excessive binder liquid from the material,
c. subjecting the resulting material to heat,
d. treating the resulting material with an impregnating liquid,
e. eliminating excess impregnating liquid from the material,
f. heating the material resulting from step (e),
g. treating the resulting material with a liquid containing a synthetic elastomer,
h. eliminating excessive elastomer liquid from the material,
i. coagulating elastomer remaining in the material, and
j. heating the resulting material.

3,853,609

SIZING PROCESS AND MATERIAL

Earle E. Allen, Jr., Chicago; James A. Smit, Country Club Hills; Robert R. Walter, Westmont, and Roger H. Jansma, Park Forest, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 3, 1972, Ser. No. 277,643

Int. Cl. D21h 1/38

U.S. Cl. 117—155 UA

3 Claims

1. A cellulose material sized with at least one pound per ton of a half amide-half ammonium salt of an alpha olefine-maleic anhydride copolymer having 4 to 6 carbon atoms in the alpha olefine group and having an average molecular weight of at least 2,000.

3,853,610

COMPOSITE MATERIALS COMPRISING EPOXY RESIN MATRIX AND CARBON FIBERS

Joseph B. Byrne, Antioch, Calif., and Harvey D. Ledbetter, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1972, Ser. No. 233,751

Int. Cl. B44d 1/09

U.S. Cl. 117—161 ZB

2 Claims

1. Carbon fiber having improved bonding to an epoxy resin matrix said fiber having a Young's modulus parallel to the fiber axis of at least about 12×10^8 pounds per square inch and the surface of said fiber being coated with an essentially continuous coating of amorphous carbon, said coating having a thickness of from about 20 Å to about 200 Å and being obtained by deposition of a thermally carbonizable organic precursor onto the carbon fiber said organic precursor being thermally carbonized to amorphous form at temperatures less than 1,200°C.

3,853,611

WELDING MATERIAL FOR SUPER LOW TEMPERATURE STEELS

Tomokazu Godai; Tohoru Sugiyama, and Katsushi Nishimura, all of Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Apr. 7, 1972, Ser. No. 242,202

Claims priority, application Japan, Apr. 10, 1971, 46-22530

Int. Cl. B23k 35/30, 35/36

U.S. Cl. 117—205

2 Claims

1. An arc welding electrode which is applicable for low temperature steels, which comprises:

a core wire consisting essentially of no more than 0.2% carbon, 5-12% manganese, no more than 30% chromium, 4-8% niobium, no more than 22% iron and no more than 1.5% silicon, the balance being substantially nickel and extraneous impurities, covered with a flux consisting essentially of 10-50% calcium carbonate, 16-50% fluor-spar, 2-20% magnesia clinker and no more than 10% rutile, wherein the ratio of fluorspar to calcium carbonate is in the range of 1-1.5.

3,853,612

METHOD FOR MAKING COATED RECEPTACLE FOR MICROWAVE COOKING OF FOOD

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 10, 1973, Ser. No. 395,974

Int. Cl. B44d 1/18

U.S. Cl. 117—212

9 Claims

1. In the process for depositing a semiconductive tin oxide coating on a glass-ceramic receptacle for microwave cooking where a pyrolyzable tin compound is contacted with said glass-ceramic receptacle at a temperature sufficient to pyrolyze semiconductive tin oxide thereon, the improvement comprising selectively applying heat to predetermined portions of said glass-ceramic receptacle to raise the temperature of said predetermined portions have the pyrolysis temperature of said tin compound while maintaining the temperature of other portions of said receptacle below the pyrolysis temperature of said tin compound and then contacting the resulting heated glass-ceramic receptacle with said tin compound for a time sufficient to pyrolyze a semiconductive tin oxide coating on said predetermined portions.

3,853,613

METHOD OF MANUFACTURING AN ARTICLE AND ARTICLE MANUFACTURED BY MEANS OF THE METHOD

Hermanus Josephus Wilting, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,847

Claims priority, application Netherlands, Dec. 18, 1971, 7117429

Int. Cl. B44d 1/18; B21b 45/00

U.S. Cl. 117—212

6 Claims

1. A method of providing a platinum pattern on a substrate said method comprising providing, in a pattern complementary to the desired platinum pattern, a layer of a material reactive with platinum on a substrate providing a layer of platinum on said material and on the exposed portions of the substrate, forming a reaction product of platinum and the material of the complementary pattern and selectively removing the reaction product of the platinum and the material from the body relative to the platinum thereby leaving the desired platinum pattern on the body.

3,853,614

CYCLIC RECORDING SYSTEM BY THE USE OF AN ELASTOMER IN AN ELECTRIC FIELD

Nicholas X. Sheridan, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

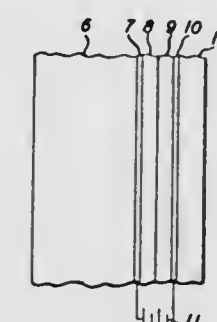
Division of Ser. No. 101,729, Dec. 28, 1970, Pat. No.

3,716,359, which is a continuation of Ser. No. 23,649, March 30, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,558

Int. Cl. B44d 1/18

U.S. Cl. 117—217

13 Claims



1. The method of forming a flexible conductive metallic layer on the surface of an electric field deformable elastomer layer comprising the steps of:

- a. vacuum evaporating a high melting point metal material and condensing it over the surface of said elastomer layer and,
- b. vacuum evaporating a low melting point metal material and condensing it on said condensed high melting point metal material before mud-cracking is observed in said condensed high melting point material thereby forming a flexible conductive metal layer on said elastomer layer.

3,853,615

DEVICE FOR EXTRACTION OF PLANTS CONTAINING SUGAR

Hans-Dieter Backofen, Braunschweig, and Dietrich Dittmann, Salzgitter-Lebenstedt, both of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Dec. 21, 1972, Ser. No. 317,169

Claims priority, application Germany, Jan. 8, 1972, 2200795

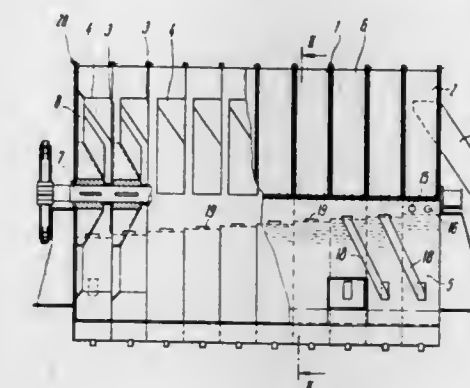
Int. Cl. C13d 1/12

U.S. Cl. 127—5

11 Claims

1. In a device for the extraction of sugar from plant products containing sugar, having a horizontal container, an intake

opening for feeding plant products and an outlet for the extraction liquid disposed at one end of the container, an intake opening for receiving extraction liquid and an outlet opening for discharging plant products at the other end of the container, and conveying means in said container for directing the plant products and the extraction liquid in counterflow; the improvement wherein said container is a stationary cylindrical container, comprising a plurality of stationary vertical partitions in said container dividing said container into a plurality of chambers extending along the axis of the container, drive shaft means extending through said chambers substantially



concentrically with the axis of the container, a separate lifting wheel mounted on said shaft in each chamber for rotation therewith, stationary delivery chute means in the upper portion of the container between each pair of adjacent partitions for delivering plant products from each chamber to the next adjacent chamber towards the outlet opening for discharging plant products, and tube means interconnecting each chamber with the adjacent chambers outside of said container, each tube extending from a liquid outlet opening in the bottom section of one chamber to a liquid intake opening at a determined level in the adjacent chamber toward the outlet opening for the extraction liquid.

3,853,616

SEPARATION OF SUSPENDED SOLIDS FROM LIQUIDS

John Trethowan Rundell, Keston, and Paul Richmond Pottage, Stockton, both of England, assignors to Tate & Lyle Limited, London, England

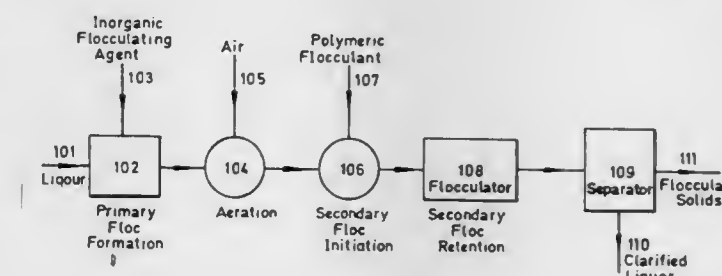
Filed June 19, 1972, Ser. No. 263,784

Claims priority, application Great Britain, June 22, 1971, 29223/71

Int. Cl. C13d 3/00

U.S. Cl. 127—48

18 Claims



1. A process for separating suspended solids from an aqueous liquor selected from sugar syrups, sugar liquors and sugar juices which comprises: forming a primary floc in the liquor containing suspended solids; aerating the liquor containing the primary floc, with agitation; distributing an organic polymeric flocculant uniformly throughout the liquid phase of the aerated liquor, to initiate the formation of a secondary floc therein; retaining the resultant mixture in a flocculator vessel with non-turbulent agitation preventing the segregation of the secondary floc from the liquor and allowing the secondary floc to grow for a period of from 15 seconds to 5 minutes; transferring the liquor, with minimal agitation and shear from the flocculator vessel to a separator vessel; allowing the secondary floc to segregate by flotation from the liquor in the separator

vessel; and separately removing clarified liquor and flocculated solids from the separator vessel.

3,853,617

FLUIDIC LOAD REGULATOR

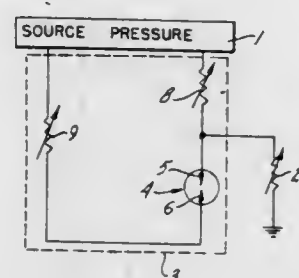
Thomas J. Lechner, Jr., Menomonee Falls, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Sept. 29, 1971, Ser. No. 184,686

Int. Cl. F15c 1/20

U.S. Cl. 137-824

11 Claims



1. A fluidic regulated pressure supply system for supplying a regulated pressure to a variable flow load comprising, a first stream forming means including an outlet and a flow resistance means for calibrating a first stream pressure at said outlet for a minimal flow condition of said load, said load being connected to and supplied from a point between said flow resistance means and said first stream forming means outlet and upstream of said outlet, a second stream forming means mounted in opposed spaced relation to said first stream forming means for establishing a second stream, and said first and second forming means providing streams of relative strength, one to the other, causing impacting of said streams between said stream forming means and defining an impacting flow in proximity to the outlet of said first stream forming means wherein varying load flow conditions causes movement of the impacting flow of said streams relative to said first stream forming means outlet to vary the impedance of said first stream forming means to maintain the desired regulated pressure to the load with said varying load flow with respect to said point.

3,853,618

PROCESS FOR REMOVING COPPER DEPOSITS FROM SURFACES

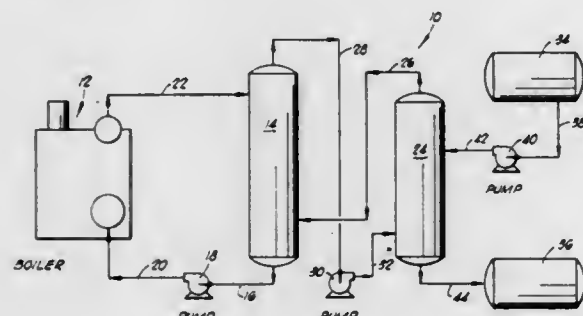
John A. Smith, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 29, 1973, Ser. No. 327,281

Int. Cl. C23g 1/02

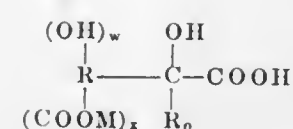
U.S. Cl. 134-3

16 Claims



1. A process for removing copper and iron oxide deposits from steel surfaces which consists essentially of:

circulating an aqueous acid solution having a pH in the range of about 1.5 to about 5 and containing an hydroxy carboxylic acid, an acidic salt of said hydroxy carboxylic acid or a mixture of said acids and salts into contact with said surfaces so that the copper and iron oxide deposits are dissolved therein, said hydroxy carboxylic acid or acidic salt thereof having the general formula:



wherein R is hydrogen or an alkyl radical having in the range of from 1 to 5 carbon atoms, R₀ is hydrogen or a -CH₂COOH radical, M is hydrogen, sodium, potassium or ammonium, W is an integer having a value in the range of from 0 to 5, and X is an integer having a value in the range of from 0 to 5;

contacting the resultant spent aqueous acid solution containing dissolved iron and copper with a substantially immiscible liquid having the property of preferentially extracting at least a portion of dissolved copper from the acid solution;

separating the resultant extract liquid containing copper from the extracted aqueous acid solution; and recirculating the extracted aqueous acid solution into contact with said surfaces.

3,853,619

METHOD FOR CLEANING AWAY PET STOOLS

Agnes P. Ged, 268 67th St., Brooklyn, N.Y. 11220

Filed Aug. 14, 1973, Ser. No. 388,194

Int. Cl. B08b 7/00

U.S. Cl. 134-4

3 Claims

1. Method of cleaning away pet stools, comprising applying to the pet stools a cleaning composition comprising a solution of a film-forming acrylic polymer in a mixture of about 45 to about 65 parts methyl ethyl ketone, about 30 to about 50 parts toluol and about 1 to about 5 parts tricresyl phosphate, all by weight, and a bactericide, the solution containing about 1 to about 30 parts by weight of the acrylic polymer per 100 parts by weight of the mixture of methyl ethyl ketone, toluol and tricresyl phosphate, permitting the composition to harden the stools, and physically removing the stools.

3,853,620

METHOD FOR AUTOMATICALLY OPENING AND EMPTYING CONTAINERS INTO A BLENDING TANK

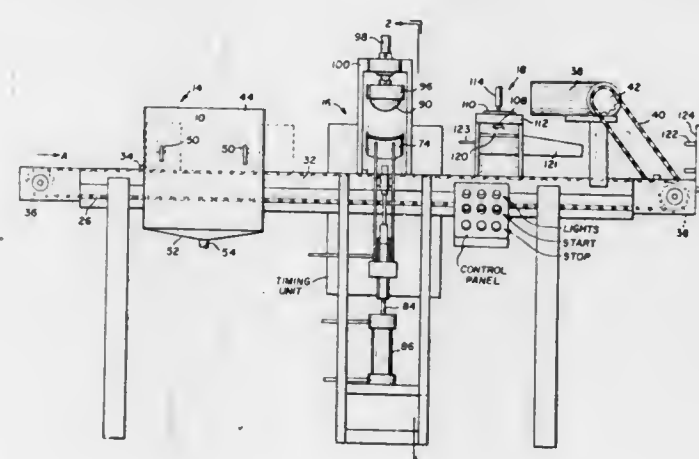
Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronic Machinery, Inc., Rochester, N.Y.

Division of Ser. No. 153,942, June 17, 1971, Pat. No. 3,739,471. This application May 25, 1973, Ser. No. 364,056

Int. Cl. B08b 1/02, 9/00

U.S. Cl. 134-6

3 Claims



1. A method of sequentially and automatically and mechanically opening each one of a continuous array of transported, upright cylindrical metal containers and removing the product contained therein, comprising the steps of:

transporting said array of said containers in succession; cleaning the outside of each of said containers of said array during said transport;

momentarily stopping said transport of each of said containers and forcing a cutting tool into the circular top of each of said containers for severing off said top of each of said upright containers while stopped and then resuming said transport;

successively removing said severed top from each of said upright containers and depositing said tops successively in a top receptacle;

orienting each of said opened containers as said transport proceeds so that the open end of each of said containers is turned down as each of said containers advances for emptying substantially all of the product within each of said containers into a product receptacle;

directing a spray into said open ends of each of said turned down containers for rinsing out the remaining product within each emptied container into said product receptacle; and

successively depositing each of said emptied containers in a container receptacle.

3,853,621

METHOD FOR CLEANING SURFACES

Soren Sollerud, Norrkoping, Sweden, assignor to Svenska Utvecklingsaktiebolaget, Stockholm, Sweden

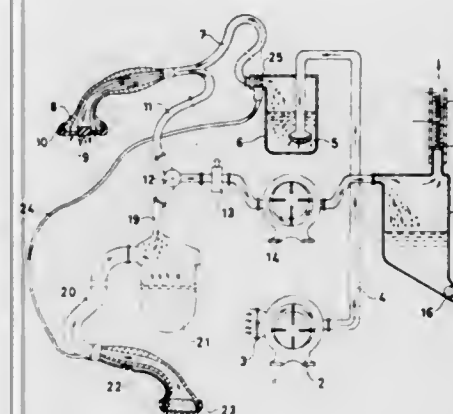
Continuation of Ser. No. 99,293, Dec. 17, 1970, abandoned, which is a division of Ser. No. 786,988, Dec. 26, 1968, Pat. No. 3,574,239. This application Nov. 24, 1972, Ser. No. 308,956

Claims priority, application Sweden, Jan. 12, 1968, 448/68

Int. Cl. A47k 7/00; B08b 3/08, 5/04

U.S. Cl. 134-21

8 Claims



1. A method for the hygienic washing of bedridden patients comprising forming a foam of a hygienic washing material, applying the foam under pressure to a selected area of the patient's body to be washed and substantially immediately thereafter withdrawing said foam under suction from the selected area to remove impurities from and to disinfect the selected area.

3,853,622

STERILIZER FOR RUBBER PARTS

Werner Rutten, Erkrath, Germany, assignor to Anton Huber GmbH & Co. KG, Freising, Germany

Filed May 19, 1972, Ser. No. 255,089

Claims priority, application Germany, May 19, 1971, 2125102

Int. Cl. B08b 3/06; B67c 1/00; A61l 1/00

U.S. Cl. 134-25 R

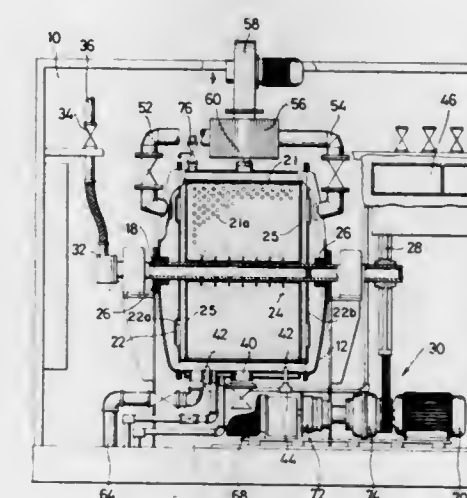
13 Claims

1. A sterilizer for obtaining rubber parts for pharmaceutical purposes and the like, which rubber parts are free of fretted portions thereof comprising, in combination:

a. a sterilizing drum for receiving the rubber parts, said drum having a perforated circumferential wall and a charging door;

b. a closable outer container, said outer container being provided with at least one charging opening and at least one emptying opening arranged on opposite sides of said outer container, said outer container being adapted to resist pressure differential which may exist between its outer and inner surfaces during operation and said drum being arranged in said outer container;

c. a shaft which passes through a passage out of said outer container, said drum being mounted on said shaft for rotary movement by said shaft and said passage being



adapted to resist pressure differential which may exist between its outer and inner surfaces during operation; d. a drive unit, said drive unit being connected to said shaft for rotary driving of said shaft;

e. operational means for affecting speed of said drive unit to provide at least one speed of rotation which is sufficiently high that rubber parts within said sterilizing drum may be held by centrifugal force against said inner wall of said drum;

f. a liquid supply line and an outlet line, said supply line and said outlet line being in communication with said outer container; and

g. means for introducing pressurized steam into said drum.

3,853,623

ADDITIVE FOR AN ALKALINE BATTERY EMPLOYING DIVALENT SILVER OXIDE POSITIVE ACTIVE MATERIAL

Stuart M. Davis, Madison, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Continuation-in-part of Ser. No. 174,526, Aug. 24, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,752

Int. Cl. H01m 35/02

U.S. Cl. 136-20

10 Claims

1. An alkaline battery having a negative electrode, an alkaline electrolyte, a divalent silver oxide positive electrode having a divalent silver oxide (AgO) content of at least 50% by weight, and a semi-permeable barrier separator between said negative and positive electrodes, the improvement comprising said alkaline electrolyte containing gold ions in the amount ranging from about 0.1 to about 10% by weight of silver in the positive electrode active material, said gold ions being present in the electrolyte only on the positive electrode side of said barrier separator, whereby the stability of the divalent silver oxide material in alkaline electrolyte is improved so as to yield less than about 65 microliters of gas per gram per hour when measured at 165°F. in a battery having an electrolyte of 18% by weight of sodium hydroxide.

3,853,624

HIGH ENERGY DENSITY IRON-NICKEL BATTERY

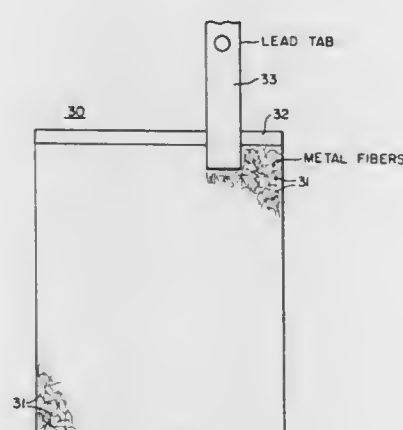
Jack T. Brown, Pittsburgh; William Feduska, Sewickley; Carl C. Hardman, and William Pollack, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 55,824, July 17, 1970. This application Apr. 20, 1972, Ser. No. 246,088

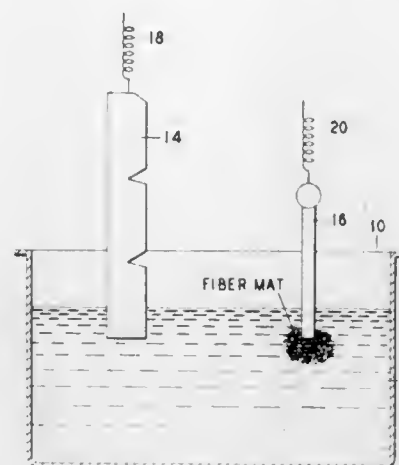
Int. Cl. H01m 43/04

U.S. Cl. 136—25

12 Claims



said filaments, said filaments having a length of from about 1/4 to about 4 inches, an average diameter of about 0.006 inch,



and a specific surface area of between about 0.4 and 0.6 square meter per gram.

3,853,626

METHOD AND APPARATUS FOR MAKING EXPANDED METAL LEAD-ACID BATTERY GRIDS

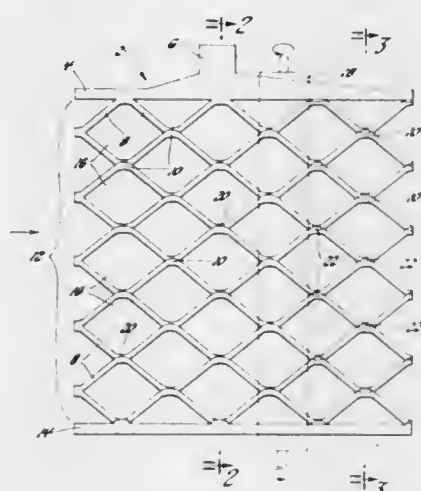
Elon Daniels, Jr., Frankton, and Richard H. Kline, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1973, Ser. No. 398,974

Int. Cl. H01m 35/04

U.S. Cl. 136—36

5 Claims



1. an iron nickel storage battery comprising a case and a cover within which is disposed:

1. at least one positive electrode plate comprising:
 - a. a flexible, expansible, 75 to 95 percent porous plaque made of fine, contacting, metal fibers having unmelted metal to metal bonds of the fibers at their contact points by an interdiffusion of metal fiber atoms across the fiber interface, the bonded fibers being free of melt protuberances, and an active electrode material comprising nickel hydroxide distributed upon and disposed within the pore volume of the plaque
 - b. an electrical lead tab attached to the plaque
2. at least one negative electrode plate comprising:
 - a. a flexible, expansible, 75 to 95 percent porous plaque made of fine, contacting, metal fibers having unmelted metal to metal bonds of the fibers at their contact points by an interdiffusion of metal fiber atoms across the fiber interface, the bonded fibers being free of melt protuberances, and an active electrode material comprising iron oxide particles having a fused coating of a sulfur additive said additive being present up to about 20 percent of the weight of the iron particles, said active material distributed upon and disposed within the pore volume of the plaque
 - b. an electrical lead tab attached to the plaque
3. a separator between the plates
4. an alkaline electrolyte, and
5. means for making electrical connections to the respective plates.

3,853,625

ZINC FIBERS AND NEEDLES AND GALVANIC CELL ANODES MADE THEREFROM

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 25,490, April 3, 1970, abandoned.

This application July 12, 1972, Ser. No. 271,034

Int. Cl. H01m 43/00

U.S. Cl. 136—30

7 Claims

1. Stable, nonpyrophoric, high surface area, virtually pure zinc filaments having a thin elongated central spine portion with at least a few poly-directional side growths of granular, dendritic or platelet form the thin elongated central spine portion consisting essentially of one or more single crystals preferentially orientated with an a axis parallel to the axis of

1. A method of making lead-acid storage battery plates comprising:

advancing a narrow lead strip, having a predetermined thickness, longitudinally between two rows of progressive dies and cutters, said strip having a central, longitudinal lug-forming portion and two expandable grid-forming portions flanking the lug-forming portion and extending to both longitudinal edges of the strip, and said rows comprising a plurality of dies and cutters which converge in incremental steps on the central lug-forming portion of the strip passing between them;

expanding the grid-forming portions along the longitudinal edges thereof by periodically shearing rectangular wire-like segments from said edges into a plurality of tiers of undulatory skeletal elements extending at acute angles to the plane of said lug-forming portions and such that successive tiers are offset one from the other and joined one to the other by a plurality of nodes which join the ends of successive segments in one tier to the centers of like segments in successive tiers, said nodes having rectangular, vertically transverse cross-sections and widths significantly greater than said predetermined thickness and equal to the sum of the widths of the adjoining skeletal elements, whereby two reticulated portions comprising a

plurality of polygonal paste-retaining cells bounded by said skeletal elements and nodes are formed and extend at acute angles from the central portion in gull-wing fashion when viewed head-on;

leveling the thusly expanded strip by folding said reticulated portions down into nearly the same plane as said central portion;

uniformly stretching the reticulated portions in directions substantially perpendicular to the direction the strip is fed through the dies by urging each tier of skeletal elements in those directions independently of the other tiers to uniformly size the cells, stretch the reticulated portions to a predetermined width and slightly rotate the rectangular nodes such that diagonally opposing edges of the nodes become salient in the principal planes of the reticulated portions;

flattening the reticulated portions by further rotating said nodes and compressing said salient edges into plateaus and thereby convert the rectangular cross-sections of said nodes to polygonal cross-sections having two opposing sides thereof laying in planes substantially parallel to the faces of the pasted plate and spaced one from the other by a distance greater than said predetermined thickness but substantially less than twice said predetermined thickness;

substantially engulfing the reticulated portions in a leady active material paste and sandwiching same between strips of paper which are substantially coextensive with said reticulated portions;

drying the paper-bound pasted strip; and finally segmenting the pasted strip into individual battery plates.

3,853,627

LITHIUM ELECTRIC CELLS WITH NOVEL POSITIVE ACTIVE MATERIALS AND NON-AQUEOUS ELECTROLYTE

Gerard Lehmann, and Jean-Paul Gabano, both of Poitiers, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

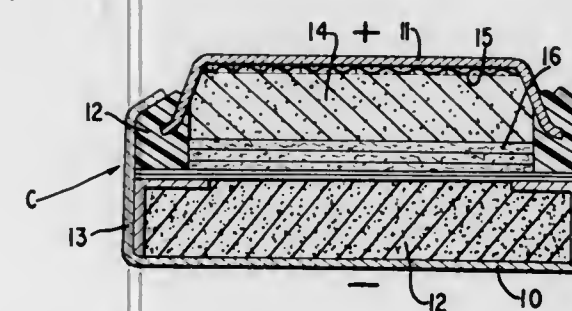
Filed Apr. 27, 1971, Ser. No. 137,845

Claims priority, application France, Jan. 14, 1971, 71.01175

Int. Cl. H01m 17/02

U.S. Cl. 136—83

11 Claims



1. Miniature electric cell with a nonaqueous electrolyte, said cell being of the type comprising a lithium negative electrode and a positive electrode whose active material consists of about 1 percent by weight of carbon black as conductive material and about 99 percent by weight of argentous chromate.

3,853,628

FUEL CELL

John B. Fox, Rt. 2, Box 567, Elmira, Oreg. 97437

Filed July 26, 1973, Ser. No. 382,756

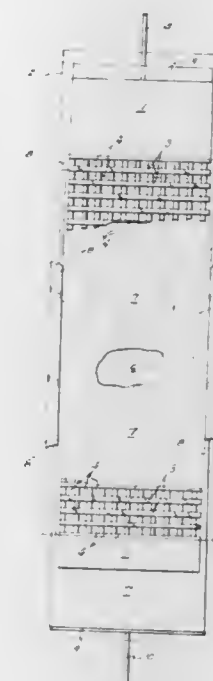
Int. Cl. H01m 27/04

U.S. Cl. 136—86 D

6 Claims

1. A fuel cell including,

an anode having a magnetic core acting on a metallic fuel, an electrolyte solution of iron II and iron III chlorides, and



a solid cathode having irregular wall surfaces increasing the wall surface area contactable by the electrolyte, said cathode being of perforate construction additionally defining openings through the cathode permitting circulation of the electrolyte therethrough and efficient electron transfer intermediate the anode and cathode.

3,853,629

BATTERY HAVING LAMINATED WRAPPER MEMBER WHICH INCLUDES GAS VENTING PASSAGEWAY

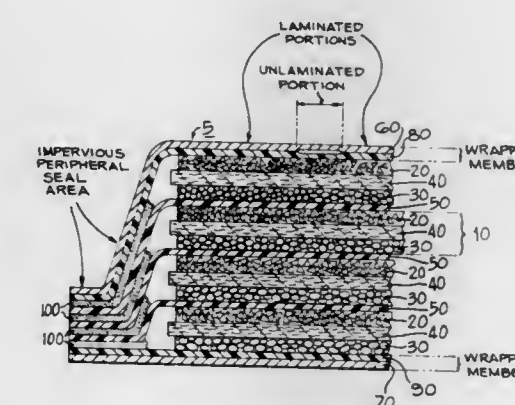
Ronald C. Elliott, Appleton, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Dec. 3, 1973, Ser. No. 421,155

Int. Cl. H01m 1/06

U.S. Cl. 136—111

6 Claims



1. An improvement in a battery comprising

- a. at least one cell, the cell comprising a positive electrode separated from a negative electrode by an electrolyte-containing layer, the cell being sealed at its periphery by a liquid and moisture impervious seal, and
- b. at least one wrapper member secured to the cell and extending over at least some of the area enclosed by the peripheral seal, the wrapper member comprising the combination of
 - i. an inner layer which faces the cell and which is pervious to gases generated by the cell, and
 - ii. an outer layer which is impervious to liquids and which is less pervious than the inner layer to the gases generated by the cell,
 wherein the improvement provides a gas-venting passageway, the improvement comprising the lamination of some

but not all of the coextensive surfaces of the inner and outer layers, the unlaminated portions of the two layers providing a passageway between the two layers for the venting of gases generated by the cell, the passageway being situated beyond the inside face of the inner layer so that gases generated by the cell must first pass through the first layer before reaching the passageway, the passageway communicating with the exterior of the battery.

3,853,630

BATTERY FROM STORAGE CELLS

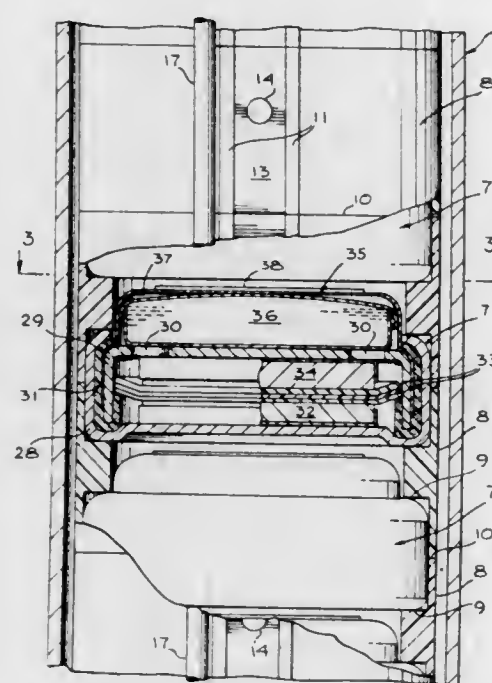
Ernst Hausler; Manfred Stommel, and Otto Werner, all of Duisburg, Germany, assignors to Yardney International Corporation, Los Angeles, Calif.

Filed Apr. 2, 1973, Ser. No. 347,108

Int. Cl. H01m 21/00

U.S. Cl. 136-114

12 Claims



1. A battery comprising a plurality of gasproof button storage cells, each with precharged, dry electrodes disposed within a cell housing, said cells being stacked in a battery housing and activatable by introduction of an electrolyte thereinto, each cell being sealed and having its own electrolyte container within said cell housing, each said container being connected via a pressure duct with a central pressure generator having a pressure inducer, whereby pressure exerted from said generator forces electrolyte in said container from the same and into contact with said electrodes in said cell, each said cell having a curved deformable membrane lid with said electrolyte container arranged underneath said lid, said battery including spacers defining said pressure duct from which leads a cross duct to each said lid.

3,853,631

METHOD FOR INCREASING ACTIVITY OF CARBON ELECTRODES FOR ELECTROCHEMICAL CELLS WITH ACID ELECTROLYTE AND PRODUCT THEREOF

Harald Bohm, Glashutten, Germany, assignor to Licentia Patent Verwaltungen GmbH, Frankfurt, Germany

Filed Jan. 22, 1973, Ser. No. 325,636

Claims priority, application Germany, Jan. 21, 1972, 2202898

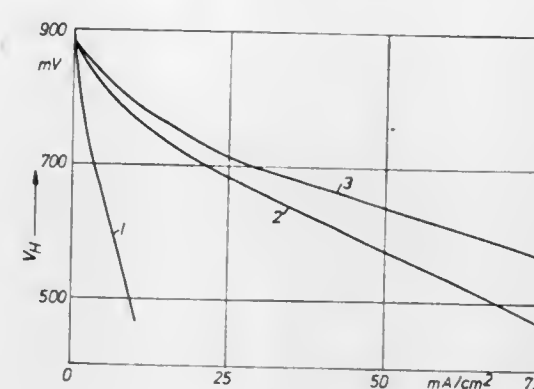
Int. Cl. H01m 13/02

U.S. Cl. 136-121

6 Claims

1. In a method for producing an activated carbon oxygen electrode for electrochemical cells with acid electrolytes, wherein carbon powder is activated by treatment with a reactant gas prior to being formed into the electrode, the improvement which comprises: forming a mixture of carbon powder

and a catalytic metal salt by mixing the carbon powder with a solution of the metal salt; activating said mixture with an inert gas at a temperature between 800° and 1,000°C; and



thereafter further activating the mixture at a temperature between 800° and 1,000°C with ammonia or a mixture of ammonia and inert gas.

3,853,632

THERMOELECTRIC COMPOSITION

Edward F. Hampl, Jr., Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 635,948, April 20, 1967, abandoned, which is a continuation-in-part of Ser. No. 463,148, June 11, 1965, abandoned. This application Jan. 5, 1973, Ser. No. 321,222

Int. Cl. H01v 1/15

U.S. Cl. 136-238

19 Claims

1. In a thermoelectric generator, at least one P-type thermoelectric leg or P-type thermoelectric leg segment that consists essentially of copper, silver, and one member of the group tellurium and selenium in proportions defined by one of the two following tables:

- | | | | |
|--------------------------------|---------------------|-----------|---------------------|
| 1. for tellurium compositions, | | | |
| a. | 32.5 atomic percent | tellurium | 33.7 atomic percent |
| b. | 27 atomic percent | copper | 66.5 atomic percent |
| c. | 1 atomic percent | silver | 40 atomic percent; |
| 2. for selenium compositions, | | | |
| a. | 32.5 atomic percent | selenium | 33.7 atomic percent |
| b. | 60 atomic percent | copper | 66.5 atomic percent |
| c. | 1 atomic percent | silver | 7 atomic percent. |

3,853,633

METHOD OF MAKING A SEMI PLANAR INSULATED GATE FIELD-EFFECT TRANSISTOR DEVICE WITH IMPLANTED FIELD

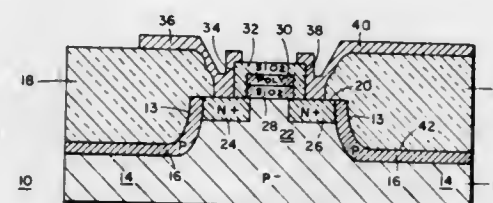
William Eddie Armstrong, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 4, 1972, Ser. No. 312,013

Int. Cl. H01l 7/54

U.S. Cl. 148-1.5

14 Claims



1. A method for treating a semiconductor body for forming a device region within said body suitable for manufacturing at least one MOS structure therewithin including a gate oxide element, and for forming a field region surrounding said device region having a high field inversion voltage characteristic comprising the steps of:

providing a body of semiconductor material of one type conductivity and said body having an upper surface; forming a first oxide layer on said upper surface of said body of semiconductor material, and said layer is formed by thermal oxidation resulting in the formation of a layer suitable for use as the gate oxide element of the MOS structure;

depositing a first masking layer on said first oxide layer, and said layer is suitable for use both as a mask against implanting ions into said body of semiconductor material and for use as a mask against thermal oxidation of the underlying portion of the upper surface of said body of semiconductor material;

forming a second oxide layer on said first masking layer; patterning said second oxide layer for retaining a portion of said second oxide layer overlying a corresponding portion of said first oxide layer suitable as the gate element and also overlying the device portion of said upper surface of said semiconductor body in which the MOS structure is to be formed, and said patterning also being operative for exposing the remaining portions of said masking layer;

etchably removing said exposed portion of said first masking layer for exposing the underlying portions of said first oxide layer;

implanting impurity ions of said one conductivity type through said exposed portion of said first oxide layer into said body of semiconductor material to form an implanted field region under said exposed portion of said first oxide layer, and said impurity ions forming a field region of said one type conductivity and said field region being positioned to surround a portion of said semiconductor body;

heating said resulting body of semiconductor material in an inert atmosphere for redistributing said impurity ions deeper into said body;

further heating said body of semiconductor material in an oxidizing atmosphere for oxidizing the upper surface of said body underlying the exposed portion of said first oxide layer resulting in such an increase in the thickness of said exposed oxide layer as to be suitable as a field oxide layer over said upper surface of said body of semiconductor material not masked by said masking layer whereby the masked portion of said first oxide layer is suitable for use as the gate oxide element of the MOS structure and the implanted field region increases the field surface inversion voltage characteristic of the semiconductor structure and the field oxide layer provides a more even surface for the resulting semiconductor body.

3,853,634

SELF-ALIGNED IMPLANTED BARRIER TWO-PHASE CHARGE COUPLED DEVICES

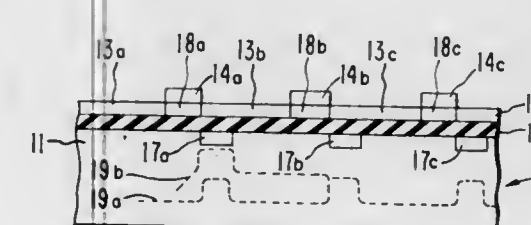
Gilbert F. Amelio, Saratoga; Choong-Ki Kim, and Phillip J. Salisbury, both of Sunnyvale, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 21, 1973, Ser. No. 362,132

Int. Cl. H01l 7/54

U.S. Cl. 148-1.5

9 Claims



1. The method of forming ion-implanted regions in semiconductor material overlaid by insulation and a layer of polycrystalline silicon, which comprises the steps of:

forming strips of ion-absorbing and impurity-masking material on the surface of said polycrystalline silicon; forming photoresist over the surface of said polycrystalline silicon and said strips of ion-absorbing and impurity-masking material; removing selected portions of said photoresist to expose portions of said polycrystalline silicon and portions of said strips of ion-absorbing and impurity-masking material; and implanting ions in the semiconductor material underlying the exposed polycrystalline silicon thereby to form in said semiconductor material a plurality of ion-implanted regions.

3,853,635

PROCESS FOR MAKING CARBON-ALUMINUM COMPOSITES

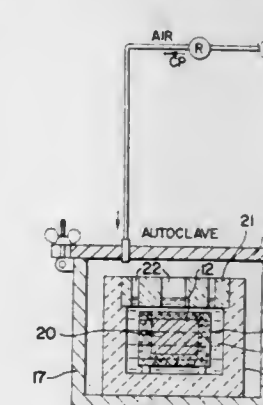
Joseph F. Demendi, St. Marys, Pa., assignor to Pure Carbon Company, Inc., St. Marys, Pa.

Filed Oct. 19, 1972, Ser. No. 299,048

Int. Cl. C22f 1/04

U.S. Cl. 148-3

4 Claims



1. A process for impregnating a mass of carbon particles with an alloy of aluminum, silicon and at least one other metal comprising the steps of:

- melting a quantity of said alloy,
- placing a mass of carbon particles in a porous crucible formed from a refractory material, said particles being smaller than 40 microns and having a porosity range of 30 to 60 percent by volume, the porosity of the porous crucible being at least 20 percent by volume,
- placing the porous crucible in an impermeable crucible, pouring the molten alloy over said porous crucible and into said impermeable crucible,
- equalizing the temperature between said molten alloy and said crucibles,
- subjecting said crucibles, carbon particles and molten alloy to a gas pressure of between 2,000 psi and 4,500 psi for from one to five minutes to force said molten alloy to penetrate the porous crucible and impregnate the carbon particles,
- rapidly cooling the porous crucible to room temperature, and then
- removing the thus formed billet of alloy-impregnated carbon particles.

3,853,636

METHOD FOR MANUFACTURING COLD ROLLED STEEL EXCELLENT IN PRESS-FORMABILITY

Gennosuke Tenmyo, Nippon, and Kozo Yamada, Kawasaki shi, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 876,347, Nov. 13, 1969, abandoned.

This application May 30, 1972, Ser. No. 257,982

Claims priority, application Japan, Nov. 14, 1968, 43-82864

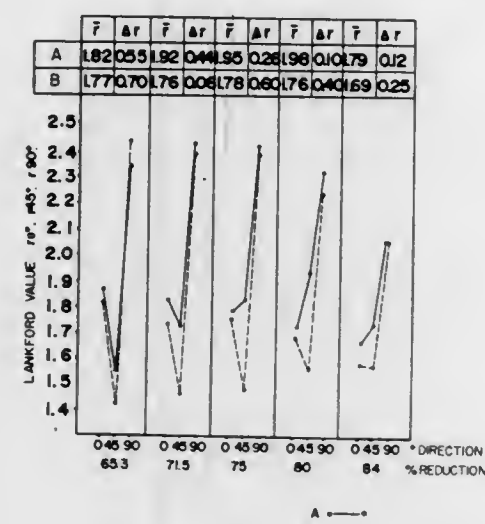
Int. Cl. C21d 9/48

U.S. Cl. 148-12.1

5 Claims

1. A method of producing a cold rolled low carbon rimmed or capped steel having a low planar anisotropy (Δr) and a high

normal anisotropy and having a manganese content in the range of 0.03 to 0.25 percent, comprising: cold reducing with



a reduction rate of from 75 to 84 percent, and then annealing at a temperature within the range of 630°C to 850°C and in a decarburizing or decarburizing-denitrifying atmosphere.

3,853,637

METHOD OF TREATING ARTICLES UNDER DIFFERENTIAL VACUUM CONDITIONS WITH EXTERNAL GAS FLOW

Robert A. Gray, Cleveland, and George M. Prochko, Middleburg Heights, both of Ohio, assignors to R. A. Gray and Co., Inc., Cleveland, Ohio

Filed June 25, 1973, Ser. No. 372,950
Int. Cl. C21d 1/00

U.S. Cl. 148—13

6 Claims

1. The process of treating articles of manufacture comprising the steps of placing the articles within a first enclosure which is fluidly connected to a second enclosure through an orifice, continuously drawing a vacuum in said second enclosure from a vacuum source to produce a pressure of between 10 microns and 6,700 microns in said second enclosure, continuously introducing a gas under pressure from an exterior source into said first enclosure which gas may be inert, or functional so as to always maintain a higher gas pressure in said first enclosure than in said second enclosure and cause continuous gas flow from said first enclosure to said second enclosure through said orifice, said pressure in said first enclosure being between 100 microns and 10,000 microns, said continuous gas introduction into said first enclosure being at such a volumetric flow rate as to maintain said aforementioned pressures in said first and second enclosures.

3,853,638

QUENCHING OIL COMPOSITION

Dale J. Wilpers, Godfrey, Ill., assignor to Shell Oil Company, Houston, Tex.

Filed June 25, 1973, Ser. No. 373,065
Int. Cl. B23k 35/24

U.S. Cl. 148—29

6 Claims

1. A quenching oil composition consisting essentially of a mineral oil, having a viscosity of from about 15 to about 200 SUS at 100°F and an aromatic content of from 8 to 60 percent, and from about 0.01 to about 0.03 percent by weight of a vicinal dehydrocarbyl-substituted 2-mercaptiothiazole, each hydrocarbyl substituent having from one to six carbon atoms.

3,853,639

COLD ROLLED STEEL STRIP WITH IMPROVED DRAWING PROPERTIES AND METHOD FOR PRODUCING SAME

Ian F. Hughes, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 130,496, April 1, 1971, abandoned.
This application Feb. 15, 1973, Ser. No. 332,659
Int. Cl. C21d 9/48; C22c 39/54

U.S. Cl. 148—12 C

16 Claims

1. A method for producing a finished steel strip with improved deep drawing properties, said method comprising the steps of:

providing a solidified killed steel consisting essentially of 0.04–0.06 wt. percent carbon, 0.02–0.50 wt. percent manganese, less than 0.015 wt. percent nitrogen, titanium in an amount by weight at least six times the combined carbon and nitrogen content, and a balance consisting essentially of iron;

hot rolling said steel into hot rolled strip, with a hot roll finishing temperature greater than 1,645°F.;

cold rolling said hot rolled strip into cold rolled strip with a cold reduction of at least 60 percent;

annealing said cold rolled strip, at a temperature exceeding 1,285°F. and below the temperature at which austenite begins to form in said steel, without decarburizing, for a time sufficient to completely recrystallize the cold rolled strip and produce a crystallographic orientation in which there is a relatively high incidence, in the plane of the strip, of cube on corner crystal planes and a relatively low incidence, in the plane of the strip, of cube on face crystal planes;

said strip having a grain size, after annealing, at least as fine as 8.0 and a carbon content, after annealing, essentially the same as the carbon content before annealing;

and temper rolling after annealing;
said finished steel strip having an average plastic strain ratio (r) of at least 1.9 and a strength, expressed as 0.2 percent proof stress, in the range 15,000–25,000 psi.

3,853,640

LUBRICANTS FOR PRESSING TRANSITION METAL-RARE EARTH POWDER TO BE SINTERED

John G. Smeggil, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 22, 1973, Ser. No. 372,689
Int. Cl. H01f 1/02

U.S. Cl. 148—105

3 Claims

1. A process for producing a sintered product of compacted particulate cobalt-rare earth alloy with improved magnetic stability which comprises providing particles of cobalt-rare earth alloy having an average size of up to about 10 microns, providing a lubricating organometallic compound which is inert to said alloy particles and which at room temperature is air-stable and a solid or liquid and which at a temperature below 500°C completely decomposes and yields only products of decomposition consisting of gaseous non-metallic product and a metal vapor, admixing said particles of cobalt-rare earth alloy and an amount of said organometallic compound ranging from about 0.5 percent to about 10 percent by weight of said alloy particles, diepressing the resulting mixture to form a green body, heating said green body at a temperature below 500°C completely decomposing said compound and producing said gaseous product of decomposition and said metal vapor, said gaseous product of decomposition completely diffusing out of said body and said metal vapor condensing metal on said body, and then sintering said body at a temperature of at least 900°C to a density of at least about 87 percent of theoretical, said condensed metal having no significant deteriorating effect on the magnetic properties of said sintered product, said decomposition and sintering being carried out in an inert atmosphere.

3,853,641

METHOD FOR PRODUCING SINGLE-ORIENTED SILICON STEEL SHEETS HAVING HIGH MAGNETIC INDUCTION

Akira Sakakura, Satoru Taguchi, Toshiya Wada, Kiyoshi Ueno, and Takaaki Yamamoto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 812,147, April 1, 1969, abandoned. This application Sept. 24, 1971, Ser. No. 183,686
Claims priority, application Japan, Apr. 24, 1968, 43-21686
Int. Cl. H01f 1/04

U.S. Cl. 148—111

2 Claims

1. A process for producing a single-oriented silicon steel sheet having a magnetic induction value above 19,100 gauss consisting essentially of:

a. hot-rolling a silicon steel ingot consisting essentially of 0.015% to 0.085% C, 1–3.5% Si, with the proviso that when Si is present in an amount of 1–2.5%, C is present between 0.015% and 0.085% and when Si is present in an amount of 2.5–3.5%, C is present in an amount between 0.025% and 0.085%; S in an amount up to 0.060%, 0.02 to 0.045% acid soluble Al, and at least one element selected from the group consisting of 0.007 to 0.30% Se and 0.007 to 0.20% Te, more than about 0.004% N and the rest being Fe to produce a hot-rolled steel sheet;

b. annealing the hot-rolled steel sheet to precipitate AlN at a temperature range of 850° to 1,200°C when Si is present in an amount of from 1 to 2.5%, and at a temperature range of 960° to 1,200°C when Si is present in an amount of from 2.5 to 3.5%, the annealing being carried out for a time of 30 seconds to 30 minutes and

c. cold-rolling the thus-annealed steel sheet to obtain a steel sheet of final thickness, the cold-rolling being effected at a reduction rate of 60% to 95% when there is a single cold-rolling step and when there is a plurality of cold-rolling steps, the final cold-rolling step being carried out at a reduction rate of 60 to 95%.

3,853,642

PROCESS FOR MAKING SINTERED IRON BASE SHAPED BODIES CONTAINING COPPER AND TIN WITH A TEMPERING STEP FOLLOWED BY SLOW COOLING

Friedrich Josef Esper, Léonberg, and Robert Zeller, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 29, 1972, Ser. No. 293,374

Claims priority, application Germany, Oct. 1, 1971, 2149147

Int. Cl. B22f 3/24

U.S. Cl. 148—126

6 Claims

1. The process of making a sintered shaped body comprising liquid phase sintering of a body consisting of a compacted pulverulent mixture of 0.5 to 4.5% tin, 0.3 to 7% copper, balance iron, the ratio of tin to copper being between 1 : 0.7 and 1 : 1.5, so as to form a sintered body, tempering said sintered body at a tempering temperature between substantially 600° and 750°C; and cooling said body from said tempering temperature to room temperature, said step of cooling being carried out at a rate of at most about 15°C/min at least in the temperature range between said tempering temperature and approximately 300°C.

3,853,643

EPITAXIAL GROWTH OF GROUP III-V SEMICONDUCTORS FROM SOLUTION

Hans Willem Verleur, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 18, 1973, Ser. No. 370,947

Int. Cl. H01f 7/38

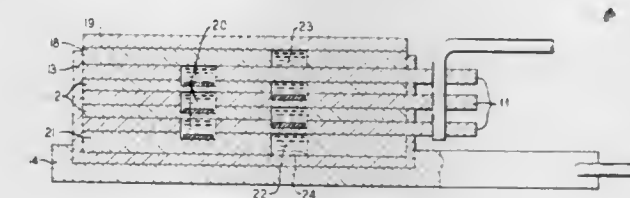
U.S. Cl. 148—171

14 Claims

1. A method for the simultaneous epitaxial growth of crystalline layers of Group III-V compound semiconductor on a

plurality of crystalline substrate wafers from a plurality of solution portions comprising:

1. placing the wafers in an apparatus together with but out of contact with a body of constituents which, when heated, results in a solution mass of a nutrient solution,
2. raising the temperature of the apparatus to a first temperature at which the nutrient solution is saturated with the Group III-V compound semiconductor, Serial No. 370,947
3. separating each solution portion from the solution mass,
4. contacting each solution portion with a broad face of one substrate wafer,



5. constraining each solution portion in a direction perpendicular to the broad face to be less than 3 millimeters in thickness,

6. reducing the temperature of the solution portions and substrates in order to produce epitaxial growth and

7. terminating epitaxial growth characterized in that the solution portions are simultaneously separated from the solution mass, simultaneously brought into contact with the substrate wafers and simultaneously constrained in the growth direction, each operation being accomplished by displacing a first set of carrier plates relative to a second set of carrier plates which second set is interleaved with the first set and in that the solution portions include neither the uppermost nor the lowermost quantity of the solution mass.

3,853,644

TRANSISTOR FOR SUPER-HIGH FREQUENCY AND METHOD OF MANUFACTURING IT

Yasuo Tarui, Tokyo; Toshihiro Sekigawa, Yokohama, and Yutaka Hayashi, Tokyo, all of Japan, assignors to Kogyo Gijutsuin, Tokyo-to, Japan

Continuation of Ser. No. 36,608, May 12, 1970, abandoned.

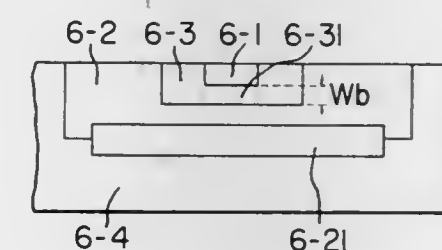
This application Sept. 7, 1972, Ser. No. 286,880

Claims priority, application Japan, Sept. 18, 1969, 44-73846; Sept. 18, 1969, 44-73850

Int. Cl. H01f 7/44, 29/78

U.S. Cl. 148—175

5 Claims



1. A method of manufacturing an insulated gate field effect transistor, which comprises the steps of:

providing as a source region a semiconductor body of a first conductivity type containing two kinds of impurities which are opposite in conductivity type and different in concentration and in diffusivity, the impurity lower in concentration having greater diffusivity and a second conductivity type opposite the first conductivity type, removing a portion of said source region to form a recess therein, filling said recess by successive epitaxial growth to form a lightly doped drain region of the first conductivity type and a heavily doped drain contact region of the same conductivity type as said drain region, diffusing by

heat treatment said impurity contained in said source region and lower in concentration and higher in diffusivity into a part of said drain region adjacent to said source region to form a base region between said source and drain regions, applying a gate insulator over said semiconductor body and applying a gate electrode over said insulator, a channel being induced in the surface of said base region by field applied from said gate electrode through said insulator, the length of said channel being determined only by the diffusion length of said diffused impurity.

3,853,645

COMPOSITE PROPELLANT CONTAINING POLYTETRAFLUOROETHYLENE POWDER AND BUTYL OR ETHYLENE-PROPYLENE RUBBER

Martin H. Kaufman, and Edward M. Roy, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1970, Ser. No. 90,210
Int. Cl. C06d 5/06

U.S. Cl. 149—19.3

7 Claims

1. A propellant molding powder comprising: from about 70 to 90 percent by weight inorganic oxidizer; up to about 20 percent by weight polytetrafluoroethylene; and from about 5 to about 15 percent by weight of a synthetic rubber selected from the group consisting of butyl rubber, ethylene propylene rubber and mixtures thereof.

3,853,646

SMOKELESS COMPOSITE PROPELLANTS CONTAINING CARBOXY-OR-HYDROXY-TERMINATED POLYMERS AND A NITRO-ORGANIC OXIDIZER

Milton B. Frankel, Tarzana; David R. V. Golding, Malibu; Basil H. Minnich, Semi, and Vernon E. Haury, Santa Susana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 5, 1967, Ser. No. 629,866
Int. Cl. C06d 5/06

U.S. Cl. 149—19.4

3 Claims

1. Smokeless rocket propellant compositions comprising: from 5 to 40 percent cured matrix polymers having an oxygen to carbon atom ratio from about 0 to 0.5 selected from the group consisting of: hydroxy terminated polyesters that have been cured by isocyanates; hydroxy terminated polybutadienes that have been cured by isocyanates; hydroxy terminated polyethers that have been cured by isocyanates; carboxy terminated polyesters that have been cured by epoxides; and carboxy terminated polybutadienes that have been cured by epoxides; from 0.3 to 5 percent of a compound selected from the group consisting of triols, tricarboxylic acids, triepoxides and triisocyanates; and from 60 to 90 percent of an oxidizer selected from the group consisting of bis-trinitroethyl urea, tetrakis-trinitroethyl orthocarbonate, and combinations thereof.

3,853,647

PROCESS FOR CREATING DESIGNS ON MARBLE

David W. Donoho, Baltimore, Md., assignor to Hilgartner Natural Stone Company, Inc., Baltimore, Md.

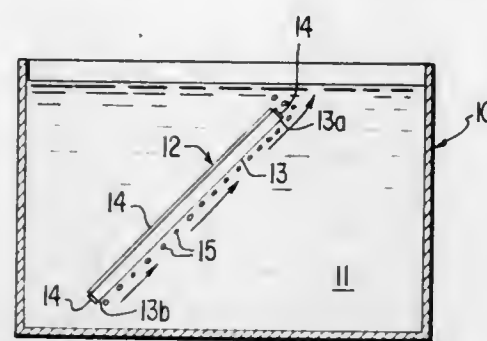
Filed Oct. 2, 1972, Ser. No. 294,191
Int. Cl. B44c 1/22

U.S. Cl. 156—2

10 Claims

1. A process for creating a design on a piece of limestone which comprises positioning said piece of limestone in an

acidic solution so that the exposed surface of the piece faces downwardly and the gas bubbles which are evolved due to the



reaction of the acid with the slab remain in controlled contact with the exposed surface of said slab.

3,853,648

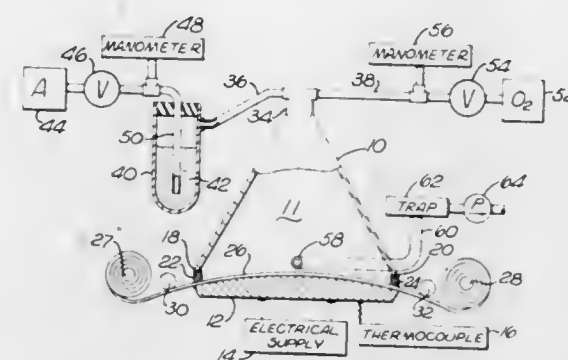
PROCESS FOR FORMING A METAL OXIDE PATTERN

Alan R. Janus, Pasadena; Peter C. Fletcher, Monrovia; Michael H. Ridosh, Jr., Simi Valley, and Walter P. Freihube, Sepulveda, all of Calif., assignors to Material Sciences Corporation

Filed Aug. 14, 1972, Ser. No. 280,606
Int. Cl. C23c 11/08

U.S. Cl. 156—7

7 Claims



1. A process for forming an optical mask defined by a selected pattern of ferric oxide on a substrate, comprising: depositing on said substrate, a uniform layer of amorphous ferric oxide; heating selected regions only of said layer to a temperature of at least 160°C to convert said selected regions of ferric oxide to a crystalline form while leaving remaining regions in an amorphous form to obtain a desired pattern defined by said crystalline ferric oxide and amorphous ferric oxide regions; and then selectively removing only said remaining regions of amorphous ferric oxide.

3,853,649

Patent Not Issued For This Number

3,853,650

STRESS SENSOR DIAPHRAGMS OVER RECESSED SUBSTRATES

Jerome T. Hartlaub, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

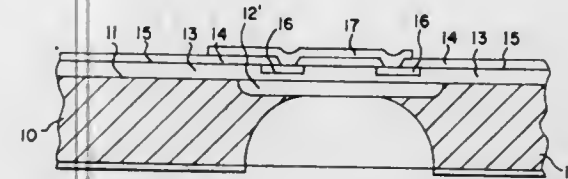
Filed Feb. 12, 1973, Ser. No. 331,934
Int. Cl. H011 7/00

U.S. Cl. 156—13

23 Claims

1. A method for providing a semiconductor material diaphragm constrained by a base, the method comprising: providing a rapid etch region in a substrate of a first material; providing a first layer of a second material to bound in part said rapid etch region, said first layer having an exposed outer major surface opposite said rapid etch region with said second material being a semiconductor of a first conductivity type, said rapid etch region being capable of being etched away at a substantially greater rate than

both said first layer and remaining portions of said substrate adjoining said rapid etch region; providing an access to said rapid etch region from a first major surface of said substrate opposite said first layer; and



etching within said access differentially, whereby said rapid etch region as present is removed while both said first layer and remaining portions of said substrate adjoining said rapid etch region substantially remain.

3,853,651

PROCESS FOR THE MANUFACTURE OF CONTINUOUS FILAMENT NONWOVEN WEB

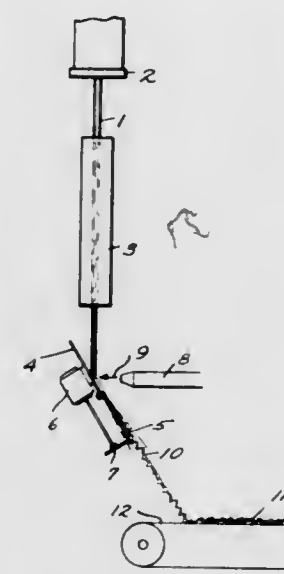
Pierre Porte, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jan. 4, 1973, Ser. No. 320,843

Claims priority, application France, Jan. 4, 1972, 72.00264
Int. Cl. B32b 31/16

U.S. Cl. 156—73.6

13 Claims



1. In a process for manufacturing spunbonded nonwoven textile fabrics, said process comprising extruding a plurality of filaments of a fiber forming polymer, orienting the extruded filaments by stretching same about 200 to about 400 percent of their original length, and thereafter distributing the filaments on a receiving surface by impinging the filaments on a smooth deflector surface, the improvement comprising vibrating in a substantially vertical plane at least that portion of the deflector surface where the plurality of filaments have their greatest width at a vibration frequency of about 1.67 to 1,000 vibrations per second, and at an amplitude of about 5 to 30 percent of the length of the vibrating deflector surface.

3,853,652

PROCESS FOR PREPARATION OF SLATES OF SANDWICH ARRANGEMENT

Tamio Ishiai; Koji Aigami; Tasako Nishii, and Masahiro Salto, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,585

Claims priority, application Japan, Feb. 16, 1972, 47-16297
Int. Cl. B32b 5/18

U.S. Cl. 156—79

10 Claims

1. In a process for preparing a sandwich arrangement of slates, the steps which comprise:

coating a polyurethane prepolymer compound solution formed by incorporating a water-conductive agent and catalyst into a polyurethane prepolymer having terminal isocyanate groups, on a first unhardened raw slate containing from 15 to 45 percent by weight of water; placing another unhardened raw slate containing from 15 to 45 percent by weight of water on top of the solution coated onto the first slate; and then effecting the foaming of the polyurethane prepolymer by conducting water from said slates into said solution by means of said water-conductive agent to react with said isocyanate groups to form a polyurethane foam layer sandwiched between said slates, and hardening the foam layer.

3,853,653

MANUFACTURE OF TIRES

Alois Olbert, Gelnhausen, and Gerhard Mertens, Hanau am Main, both of Germany, assignors to Dunlop Limited, London, England

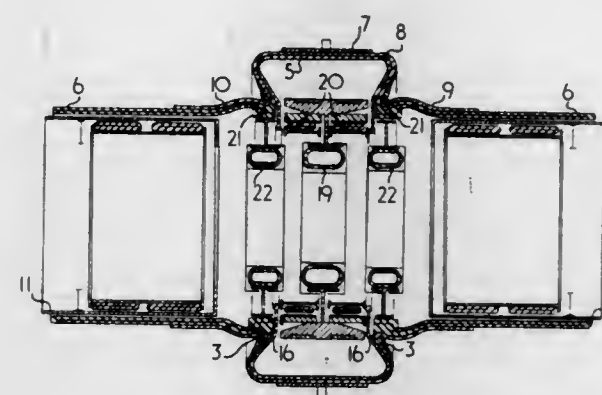
Filed Feb. 18, 1972, Ser. No. 227,573

Claims priority, application Germany, Feb. 24, 1971, 2108781

Int. Cl. B29h 17/16, 17/26

U.S. Cl. 156—128 R

14 Claims



1. A method for building up a radial-ply tire comprising the steps of arranging a radial carcass ply pocket in a hollow cylindrical disposition, positioning a pair of bead cores in a mutually spaced relation radially outward of said carcass ply pocket, shaping the carcass ply region situated between the spaced bead cores into a toroid while simultaneously reducing said mutual spacing between said beads, limiting the radial expansion of the carcass to a smaller diameter compared to its final diameter thereby providing lateral bulges in the carcass sidewalls, turning-over the carcass ply ends about the bead cores, and fastening the carcass ply ends which are turned over the bead cores to the bulged-out carcass sidewalls, and subsequently releasing the diameter limitation on the carcass.

3,853,654

METHOD FOR SPLICING WEB END PORTIONS WITH PLASTIC RIVETS

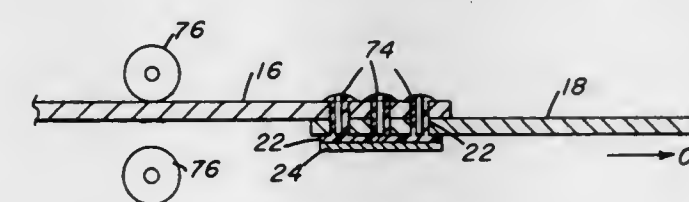
David L. Patton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,582

Int. Cl. B31f 5/00

U.S. Cl. 156—157

8 Claims



1. A method of forming a rivet splice comprising the steps of:

placing a patch of compressible material on a base in which said material has the property when heated of becoming viscous and forming gas causing the material to expand; placing two web ends over said patch to form an unheated patch and web sandwich; pressing said unheated patch and web sandwich together along surface portions thereof surrounding an unpressed portion causing the material in said patch between said surface portions to flow into said unpressed portion to form a bubble of unheated material in said unpressed portion; and piercing said bubble of unheated material with a hot pin whereby said web is ruptured and the combination of heat, pressure and gas applied to the unheated material causes the material to melt and to expand around the pin and through said web to form a rivet, when cooled on the opposite side of said web from said patch.

3,853,655

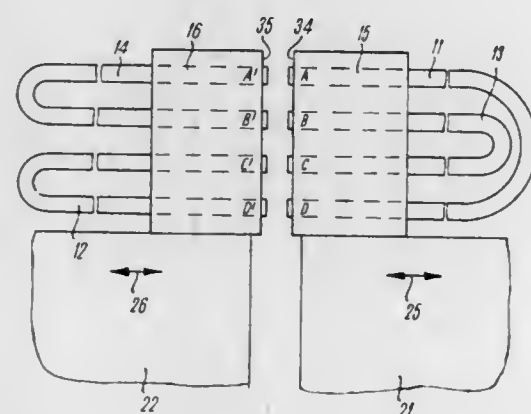
METHOD OF AND FIXTURE FOR WELDING FLEXIBLE MEMBERS INTO A FRAME

Ernst Pecha, Grosbottlingen, Germany, assignor to Bielomatik Leuze & Co., Neuffen, Württemberg, Germany
Filed June 9, 1972, Ser. No. 261,241
Claims priority, application Germany, June 11, 1971, 2128922

Int. Cl. G03d 15/04

U.S. Cl. 156-159

9 Claims



1. A method of welding together flexible, elongated members at their respective end points to form a frame comprising:
 - a. placing one-half of the flexible members in a first holder and the remaining flexible members in a second holder adjacent said first holder, each of the flexible members being placed in the holders in a generally U-shaped configuration such that the first holder contains at least two of the flexible members in side-by-side relationship whereas the second holder contains at least one flexible member lying, at least in part, within the U-shaped mouth of one other flexible member and such that the respective end portions of the members which are to be welded to one another to form the frame lie adjacent each other;
 - b. moving at least one of said holders towards the other holder to bring pairs of each of the respective end points of the flexible members into a position which allows them to be welded to one another; and
 - c. simultaneously welding the respective end portions to one another to form the frame.

3,853,656 DRY LAY-UP METHOD AND APPARATUS FOR PRODUCING CONTINUOUS LENGTH COMPOSITE MEMBERS

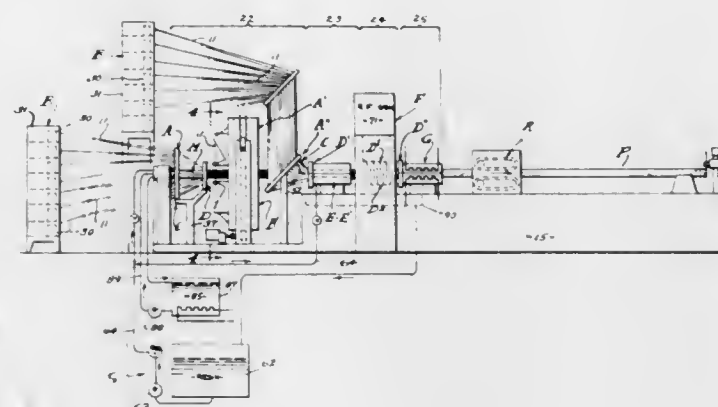
Arthur O. McNeely, Redondo Beach, and Wiley T. Kennedy, Santa Ana, both of Calif., assignors to Mackenhuis Corporation, Santa Ana, Calif.

Filed July 17, 1972, Ser. No. 272,378

Int. Cl. B65h 81/02, 81/06

U.S. Cl. 156-172

75 Claims



1. The method of forming a lamina of impregnated and cured continuous unlimited length composite, and including: anchoring the one rear end of an elongated mandrel having a cross section including a configuration to establish the inner profile of the composite, distributing dry substantially parallel filaments into supported engagement upon said mandrel configuration, carding the filaments in a uniform layer contiguously combed upon the said mandrel configuration, then impregnating the layer of parallel filaments placed contiguously upon the said mandrel configuration with liquid material, drawing the liquid impregnated and placed layer of filaments through a die configuration opposed to said mandrel configuration to establish the outer profile of the composite and simultaneously curing the same into a finished article comprising the said composite, and advancing the finished article comprising the said composite and thereby drawing the dry lay-up of filaments through said aforesaid distributing, combing, impregnating, and subsequent sizing and curing steps.

3,853,657

BONDING OF POLY(ETHYLENE TEREPHTHALATE) INDUCED BY LOW-TEMPERATURE PLASMAS

Ernest L. Lawton, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 14, 1972, Ser. No. 225,764

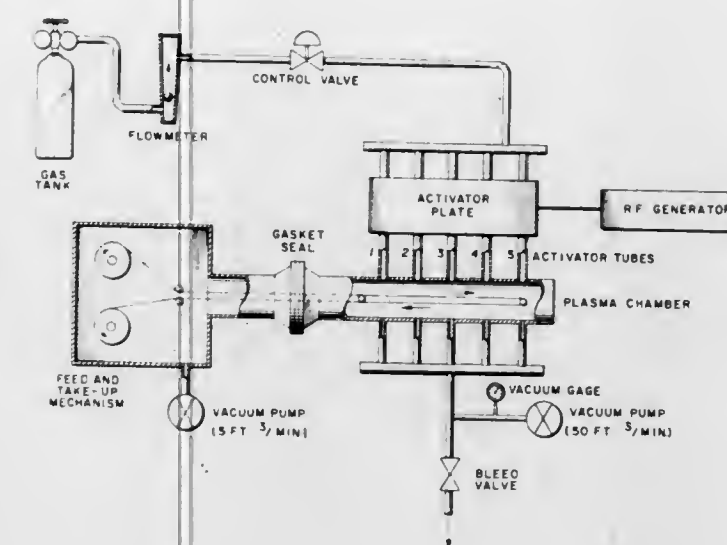
Int. Cl. B29h 9/02; B01k 1/00

U.S. Cl. 156-180

6 Claims

1. A treatment for filaments derived from a long chain synthetic polymer composed of at least 85 percent by weight of an ester of dihydric alcohol and terephthalic acid comprising exposing the surface of a fiber for a period of at least about 1 second to a more low temperature gas plasma at a pressure of not more than about 2 torr and a concentration of electrons

of about 10^{10} - 10^{13} per cubic centimeter, whereby bondability of the filament to rubber with resin-latex adhesives is substan-



tially improved without alteration of bulk properties of said filament.

3,853,658

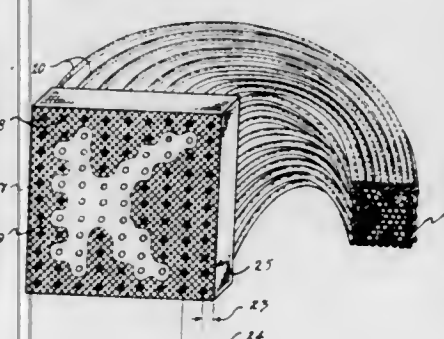
FIBER OPTICAL IMAGE MAGNIFIER PANEL AND METHOD OF MANUFACTURE

Robert Johan Ney, 484 Braves Trail Ln., Media, Pa. 19063
Continuation-in-part of Ser. No. 161,765, July 12, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,406

Int. Cl. G02b 5/16

U.S. Cl. 156-180

7 Claims



1. A method of fabricating a fiber optical image transfer and magnifier device comprising: threading a plurality of light conducting fibers through an orderly array of holes in an aperture plate forming the bottom of a mould cavity; casting an interstitial matrix by pouring a liquid matrix material into said cavity and solidifying the liquid; removing said matrix from the mould while maintaining the plurality of attached fibers intact and lifting the matrix to a position to obtain a desired fiber length while feeding the plurality of fibers through the holes of the aperture plate; casting a second metal matrix in the mould cavity while the plurality of fibers are located in the array of holes of the aperture plate and affixed to the previous casting; inserting movable fiber guides into the spaces between adjacent rows of optical fibers, two intersecting sets of said guides being inserted between fiber rows at a position located between said castings; placing compression die jaws around the plurality of fibers between the fiber guides and the previous casting in close proximity to the fiber guides; compressing the plurality of fibers in the die jaws to a close packed configuration; cutting the plurality of fibers near the guides; placing and setting a binder on the close packed fiber configuration and then grinding and polishing both fiber end surface arrays.

3,853,659

METHOD FOR IMPROVING THE BONDING OF NYLON FILAMENTS BY THE USE OF A HYDROGEN HALIDE GAS

Jerome H. Rhodes, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1972, Ser. No. 319,132

Int. Cl. D04h 3/12; C09j 5/02

U.S. Cl. 156-181

4 Claims



1. A process for transforming an unbonded fibrous mat of nylon fibers into a high-strength bonded non-woven web comprising the steps of:

- A. preparing the fibers for bonding by
 1. increasing the moisture regain of said nylon fibers to at least 2% based on the weight of said nylon fibers;
 2. subjecting said mat to a gaseous atmosphere having a temperature of from 50° to 120°F. and containing less than about 2% by volume of a hydrogen halide gas and greater than about 0.5% by volume of water vapor, but lower than the dew point of said water vapor-hydrogen halide gas mixture at any given gaseous atmosphere temperature, said nylon fibers increasing said moisture regain to at least 3% based on weight of said fibers and absorbing at least 2% of said hydrogen halide gas based on the weight of said fibers; and
- B. completing the bonding of said fibers by
 1. pressing said fibers together while said fibers contain said water and hydrogen halide gas; and
 2. removing said hydrogen halide gas from said fibers.

3,853,660

PROCESSES RELATING TO SENSIBLE COATINGS AND TRANSFER RIBBONS FOR PLASTIC CARDS THERETO

Gary J. Peters, Xenia, and Stanley R. Hermann, Dayton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio
Division of Ser. No. 176,739, Aug. 31, 1971, Pat. No. 3,754,959. This application Apr. 2, 1973, Ser. No. 347,119

Int. Cl. H01f 10/00

U.S. Cl. 156-230

5 Claims

1. A process for producing a plastic card comprising sequentially:
 - a. providing a polyvinyl chloride or polyvinyl chloride-polyvinyl acetate plastic card base empaneled with a coating of TiO_2 pigment in a binder of aminotriazine resin and polyester or ethylene vinyl acetate copolymer latex and providing a transfer medium comprising a flexible carrier substrate with a thin colored sensible coating thereon wherein the colored sensible coating comprises a dry mixture of 10 to 25 weight percent of a polymeric material, 60 to 85 weight percent of aminotriazine resin and 5 to 25 weight percent of colored sensible material;
 - b. placing the transfer medium in contact with the empaneled plastic card base with the colored sensible coating in contact with a surface of panel; and subjecting the flexible carrier substrate to a pressure ranging from 20 to 15,000 psi for a time ranging from 5 milliseconds to 1.0 second to transfer the colored sensible coating to the empaneled card base;
 - c. removing the flexible carrier substrate from the colored sensible coating transfer and empaneled plastic card base; and
 - d. subjecting the colored sensible coating and plastic card base to additional pressure ranging up to 100 psi at a temperature ranging from 225° to 300° F. for a time ranging from 0.1 to 1.0 seconds.

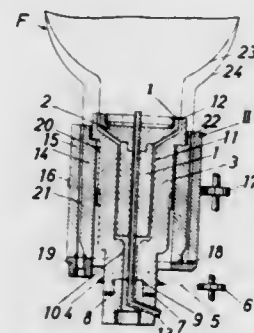
3,853,661

METHOD OF PRODUCING PLASTIC BAGS

Michio Sudo, Tokyo, Japan, assignor to Mitsubishi Yuka Kabushiki Kaisha, Tokyo, Japan, a part interest
Filed Apr. 24, 1972, Ser. No. 247,146

Claims priority, application Japan, May 10, 1971, 46-29241; May 10, 1971, 46-30490; May 13, 1971, 46-31587
Int. Cl. B29c 17/00

U.S. Cl. 156-244



1. A method of forming plastic bags comprising the steps of extruding plastic material in molten condition through at least two concentric annular gaps formed in concentric cylindrical dies to form at least one pair of bubbles of plastic material in which one is located within the other; rotating during such extrusion at least one of said dies relative to the other; and blowing air only into said one bubble so that the whole outer surface thereof is in full contact with the inner surface of the other bubble.

3,853,662

METHOD FOR LAMINATING UNIAXIALLY STRETCHED THIN LAYERS OF FILM AS WARPS AND WEFTS

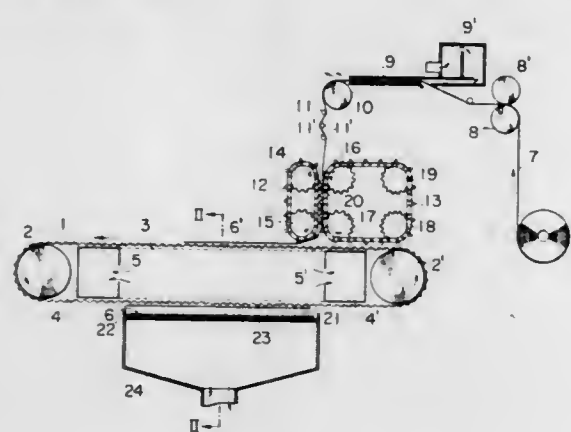
Masahide Yazawa, Tokyo, and Kimio Inoue, Kobeshi, both of Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo and Kobe Steel Co., Ltd., Kobeshi, Hyogoken, Japan

Continuation-in-part of Ser. No. 214,571, Jan. 3, 1972, abandoned. This application Aug. 1, 1973, Ser. No. 384,546
Claims priority, application Japan, Jan. 19, 1971, 46-1273

Int. Cl. B32b 31/00; B29c 17/00

U.S. Cl. 156-265

4 Claims



1. A process for laminating uniaxially stretched layers of film as warps and wefts, which comprises supplying a uniaxially stretched thin layer of film, cut to a desired length, continuously at a constant speed over a belt circulating at a speed higher than the layer-supplying speed through a pinching-and-forwarding means provided in proximity to the circulating belt, while sucking the layer onto the belt by a negative pressure exerted below from the belt, subjecting the layer to frictional rubbing by sliding over the belt owing to a difference between the layer-supplying speed and the belt-circulating speed, placing the thin layer upon the belt by suction at the time when the rear end of the thin layer has passed through the pinching-and-forwarding means thereby to make the thin layer move at a speed equal to that of the belt, allowing successive thin layers, cut to the desired length, to be transferred

onto the belt by suction at a distance corresponding to the difference between the layer-supplying speed and the belt-circulating speed one by one, bringing the thin layer as wefts over a warped thin air-permeable layer of uniaxially stretched materials of film having cleavages as warps, the thin layer wefts being crossed over the thin layer warps, allowing the thin layer wefts to be placed upon the continuously running warps by drawing force exerting between the warps and wefts immediately when the wefts are brought in a position where the length of wefts is overlapped entirely with the width of warps, and placing the successive wefts upon the successive warps continuously without any substantial gaps by repetition of said steps.

10 Claims

3,853,663

APPLICATION OF LIQUID COATINGS

James N. McGlashen, Winstanley, near Wigan, England, assignor to Dunlop Holdings Limited, London, England

Division of Ser. No. 204,262, Dec. 2, 1971, Pat. No. 3,823,687.

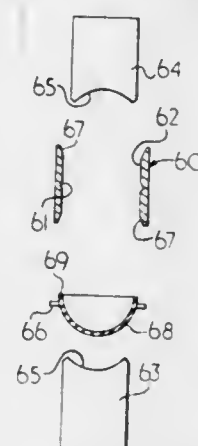
This application Apr. 24, 1974, Ser. No. 463,504

Claims priority, application Great Britain, Dec. 16, 1970, 59827/70

Int. Cl. B29c 27/10

U.S. Cl. 156-304

9 Claims



1. A method of coating selected areas of an article with a liquid, which comprises the steps of positioning said article above the surface of said liquid, positioning a tool beneath the surface of said liquid, in correspondence with said article, said tool being shaped to correspond with the selected areas of said article, raising said tool so that it does not break through the surface of said liquid but causes the liquid above it to rise and thereby contact the selected areas of the article.

3,853,664

BAG MAKING MACHINE AND METHOD

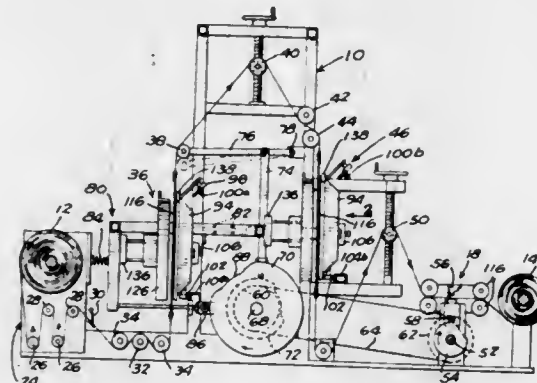
Arthur E. LaFleur, Manistee, Mich., assignor to Square Bag-It Corp., Manistee, Mich.

Filed Aug. 1, 1973, Ser. No. 384,611

Int. Cl. C09j 5/00; B32b 31/00; B30b 15/34

U.S. Cl. 156-306

26 Claims



1. In a machine for performing an auxiliary operation, such as sealing, slitting, printing or the like, on a continuous length of a flexible plastic web having a longitudinally extending fold

therein the combination comprising, a frame, means on said frame for feeding said web in a lengthwise direction, means on said frame at one zone in the path of travel of the web for maintaining the web in a lengthwise tensioned condition so that the line of folding follows a generally straight path, carriage means on said frame at said zone mounted for relatively free movement in a direction transversely to the path of travel of the web and in a plane generally parallel to the plane of the web, guide means on said carriage means adapted to extend into and between the folded plies of the web and engage the web at the fold line for causing the carriage to shift laterally on said frame in response to lateral weaving of the fold line of the web as the web travels through said zone, and means carried by and movable with said carriage means for performing said operation on the portion of the web travelling through said zone, said operation performing means being disposed adjacent said guide means so that the operation performing means acts on said web adjacent the portion thereof engaged by the guide means.

3,853,665

METHOD OF BONDING USING POLYESTER-WAX FUSION ADHESIVES

Arno Gardziella, Witten-Rudinghausen, Germany, assignor to Dynamit Nobel AG, Troisdorf bez. Cologne, Germany

Filed Mar. 7, 1972, Ser. No. 232,511

Claims priority, application Germany, Mar. 18, 1971, 2113207

Int. Cl. C09j 5/00; B32b 31/00

U.S. Cl. 156-332

16 Claims

1. A method for securing surfaces together which comprises contacting a first surface with a composition comprising a polyester and a wax, said wax present in the said composition in an amount between about 0.01 and 5 percent by weight, based on the weight of said composition in molten form, applying a second surface to said molten form of said composition, applying pressure to the surfaces till said composition sets, and recovering a material in which the surfaces are secured together.

3,853,666

METHOD AND APPARATUS FOR RETREADING TIRES

Carlton Keith Barefoot, Muncie, Ind.

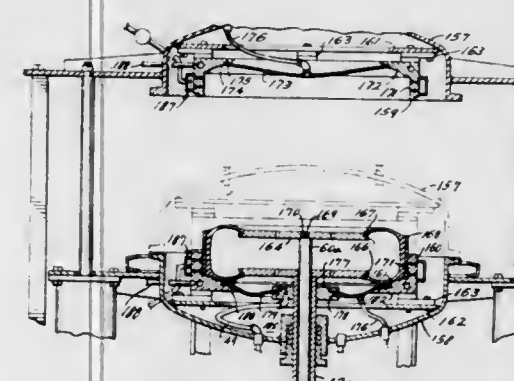
Division of Ser. No. 52,534, July 6, 1970, Pat. No. 3,729,358.

This application Dec. 18, 1972, Ser. No. 316,353

Int. Cl. B29h 5/02, 17/36

U.S. Cl. 156-394

11 Claims



1. Apparatus for retreading tires comprising, in combination, a pair of mating shell members, a mold element mounted in each of said mating shell members, each of said mold elements comprising a rigid matrix and a flexible diaphragm supported by said rigid matrix, said mold elements being adapted to receive a tire to be retreaded, a tire engaging and centering means positioned within said mating shell members,

said tire engaging and centering means and the tire defining an inner pressure chamber, means for pressurizing said inner pressure chamber, said mating shell members defining at least one exterior pressure chamber in opposed relationship to said inner pressure chamber and the interior of the tire, means for pressurizing said exterior pressure chamber, and heating means for raising the temperature within said mating shell members.

3,853,667

MACHINE FOR WRAPPING CONTINUOUS CORES IN TAPE MATERIAL

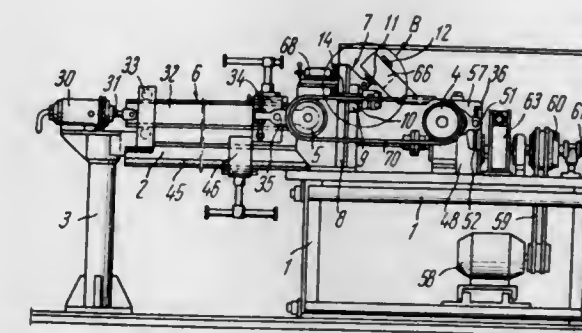
Ivan Vasilievich Polshikov, ulitsa Parkovaya, 10, kv. 5, Kursk; Lev Nikolaevich Kurdin, ulitsa Pervomaiskaya, 90, kv. 57, and Alexandr Timofeevich Titarenko, Poselok NIIRP, 2, kv. 77, both of Moskovskaya Oblast, all of U.S.S.R.

Filed Oct. 26, 1972, Ser. No. 301,257

Int. Cl. B29h 17/32

U.S. Cl. 156-422

4 Claims



1. A machine for wrapping continuous cores in tape material, said machine comprising:

- a bedframe;
- a driving pulley mounted on said bedframe and a driven pulley mounted on said bedframe, said pulleys adapted to move a core;
- a mechanism adapted to move said driven pulley for tensioning said core; and
- a mechanism for spiral-pattern wrapping of said core in tape material comprising a rotatable gear having a radial slot; a holder for a reel of the tape material being secured to the end face of said gear at an angle to the axis of rotation of said gear; a carriage mounted on said bedframe; means for setting displacements of said carriage along said bedframe in relation to the said driving pulley so as to allow continuous cores of different cross-sectional shapes and lengths to be wrapped; a hollow axle affixed to said carriage for mounting said rotatable gear thereon, the interior of said axle accommodating one of the branches of said core tensioned on said pulleys, said hollow axle having longitudinal cut for coinciding with said radial slot of said gear when one of the branches of said core is inserted through both said slot and said cut into said hollow axle; a mechanism for centering said core about the axis of rotation of said gear during wrapping said core which is mounted on said hollow axle of said carriage and is disposed between said driving pulley and said carriage; at least one pair of idle gears adapted to drive said rotatable gear and disposed so that the distance between the points of tangency of their pitch circles exceeds the length of arc of said slot of said rotatable gear; and a flexible arm cantilever-mounted on said holder and adapted to be in permanent contact with the tape material unwinding off said reel.

3,853,668

FILM SPLICING APPARATUS

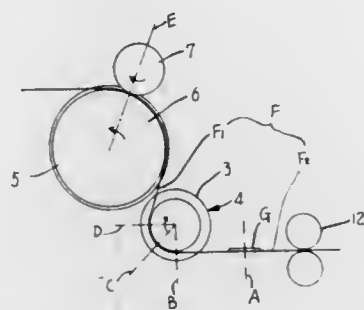
Tetsuo Onishi, Wakayama-ken, and Hiroo Ikeura, Osaka, both of Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Apr. 10, 1973, Ser. No. 349,761

Claims priority, application Japan, Apr. 13, 1972, 47-43835
Int. Cl. B31f 1/00

U.S. Cl. 156-461

4 Claims



4. Apparatus for splicing photographic film by means of applying a tape section having an adhesive surface, which tape is adhered to the film at a joint formed by abutting the ends of two film sections together, the tape section being of a length longer than the width of the photographic film so that each end of the tape protrudes beyond a longitudinal edge of the film, said apparatus comprising:

means to impart tension to film, and a spool member having a pair of spaced flanges, said flanges defining a flat-bottom-groove and being spaced apart a distance corresponding to the sum of the width of the film being processed plus twice the thickness of the adhesive splicing tape so that the tension in the film causes the ends of the splicing tape protruding beyond the longitudinal edges of the film to be forced into a position at right angles to said film and inwardly together as the film joint passes around said spool.

3,853,669

WELDING TIP FOR PLASTIC WELDING GUN

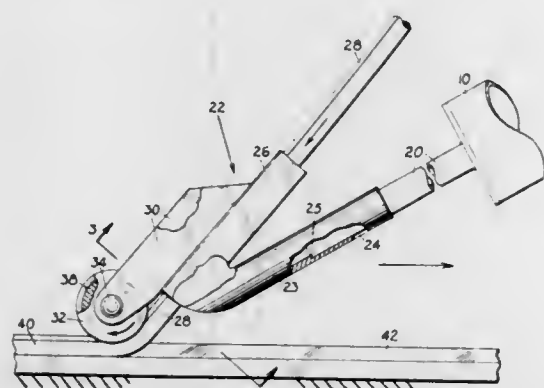
Peter F. Werstlein, 4620 N.E. Glison St., Portland, Oreg. 97213

Filed Aug. 28, 1972, Ser. No. 284,232

Int. Cl. B29c 27/02

U.S. Cl. 156-497

1 Claim



1. A welding tip for plastic welding guns of the type having an outlet of heated gas for melting thermoplastic material to be used in a weld seam, comprising a hollow body member arranged to receive heated gas from the welding gun, said hollow body member having a lower open end for discharging the heated gas, a guide tube integral with said hollow body member at a forward portion thereof, said guide tube being integral with said hollow body member only at a lower portion thereof in a common wall structure, said guide tube leading upwardly from said body member above said common wall portion at an acute angle so as to be spaced forwardly of said body member through a greater portion of its length, said guide tube having open ends and being arranged to slidably

guide a welding rod therethrough for presenting a portion thereof at the bottom to a weld seam at less than an acute angle under the influence of heated air from said body member, a portion of said common wall being cut away from the bottom between said body member and said guide tube to expose a lower portion of a welding rod above the lower end of the latter in said guide tube directly to heat from the hollow body member while still in the guide tube to preheat the rod, roller support means integral with said guide tube at a forward portion thereof, a pressure roller mounted on said roller support means in longitudinal alignment with said hollow body member and said guide tube and arranged to smoothen and press weld material softened by heated air from said hollow body member in a weld seam by drawing the roller thereover, said roller support means, said guide tube, and said hollow body member all being formed from a heat conducting material.

3,853,670

PALLET MANUFACTURING MACHINE

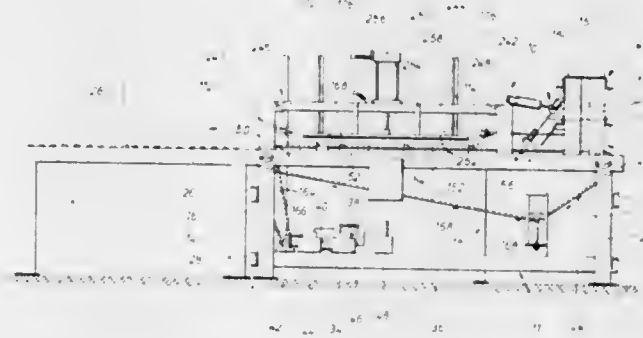
Thomas L. Cox, Beaumont, and David G. Rodriguez, Vidor, both of Tex., assignors to J & J Manufacturing Company, Beaumont, Tex.

Filed Nov. 17, 1972, Ser. No. 307,491

Int. Cl. B32b 31/00

U.S. Cl. 156-562

19 Claims



1. A machine for manufacturing disposable, recyclable pallets comprising:

a pallet sheet feed section adapted to retain a generally vertically oriented stack of pallet sheets disposed therein; a pallet assembly section being provided in said machine; a pair of spaced pallet sheet support rails being pivotally disposed at said pallet assembly section and being adapted to receive single pallet sheets from said pallet sheet feed section and to support said sheets in oriented spaced relation to the position of a plurality of spaced and oriented pallet blocks;

means urging said pallet sheet support rails to a first position for support for said single pallet sheet and being pivotally yieldable to allow downward movement of said single pallet sheet;

means for moving said single pallet sheet downward from said first position to a position in contact with said oriented pallet blocks;

means passing beneath said pallet sheet feed section for conveying single pallet sheets from said pallet sheet feed section to said pallet sheet support rails;

a pallet block magazine being provided on said machine and being adapted to receive a plurality of pallet blocks oriented in generally vertically stacked relation;

conveyor means for transporting a plurality of pallet blocks from said pallet block magazine, said conveyor means passing adjacent said pallet block magazine and carrying spaced flight pusher means, said flight pusher means extracting blocks from said magazine and positioning the same in spaced relation relative to one another and in spaced and oriented relation to the position of a single pallet sheet on said pallet sheet rails;

means for applying adhesive material to one surface of each of said pallet blocks as said pallet blocks are conveyed from said pallet block magazine;

means at said pallet assembly section for moving said single pallet sheet from said pallet sheet support rails and said one surface of each of said pallet blocks into engagement and for applying mechanical pressure therebetween to cause adhesive material to adhere said pallet blocks to said pallet sheet and retracting from the completed pallet after said pallet blocks have been adhered to said pallet sheets; and

means for conveying completed pallets from said pallet assembly section.

3,853,671

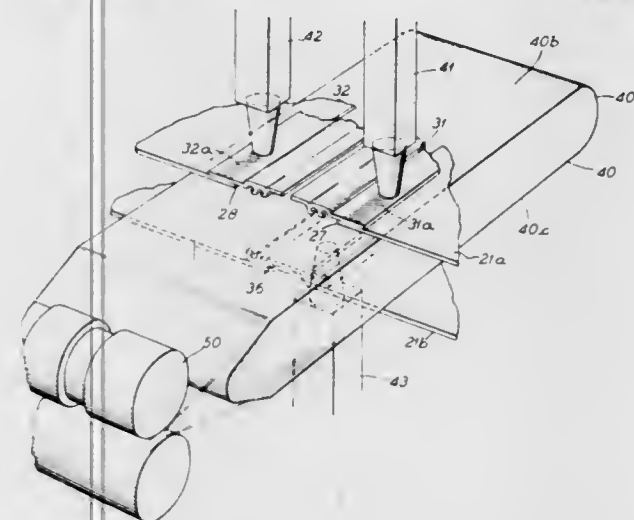
APPARATUS FOR MAKING MULTIPLE PLASTIC BAGS WITH RECLOSABLE FASTENER THEREON

Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021

Filed July 25, 1972, Ser. No. 275,063

Int. Cl. A44b 17/00; B32b 7/08; B29c 27/08; B23k 29/00
U.S. Cl. 156-580

14 Claims



1. A mechanism for making multiple plastic bags with reclosable fasteners thereon comprising:

means for continuously supplying flat tubular plastic film; means for forming a continuous opening in the upper layer of the film with the edges of the opening forming the upper edges of front walls of bags to be made from the film, the portion beneath the upper bag edges forming the rear wall of the bags;

means for feeding a rear continuous fastener strip having a web portion between the edges through the opening and against the rear wall of the film;

means for accurately positioning web portions of first and second front fastener strips against said upper bag edges of the film portion;

first and second continuous high speed heat sealing means attaching said web portions of said first and second strips to the film;

and third continuous high speed heat sealing means attaching the web portion of the rear strip to the rear wall of the film.

3,853,672

FALLING STRAND DEVOLATILIZER USING ONE PREHEATER WITH TWO FLASH CHAMBERS

Robert E. Gordon, Monson, and George A. McNeill, West Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1973, Ser. No. 322,242

Int. Cl. B01d 1/28, 1/16, 1/06, 1/26

U.S. Cl. 159-2 MS

5 Claims

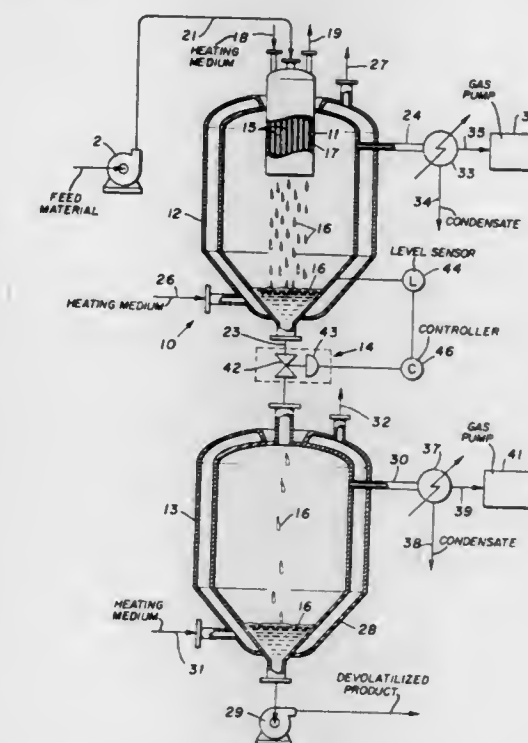
1. Improved falling strand devolatilizer apparatus comprising:

A. a shell and tube heat exchanger means adapted for input, passage through, and discharge from, the tubes thereof of a process fluid and further adapted for receipt, passage

through, and discharge from, the shell interior thereof of a heat exchange fluid whereby for heat transfer from said heat exchange fluid to said process fluid occurs during operation thereof,

B. a first and a second vessel, each vessel having:

1. a generally tapered lower region terminating in a discharge port,
2. a vapor take-off port in an upper portion thereof,
3. an input port means adapted to discharge process fluid therein at a point between said discharge port and said vapor take-off port,
4. jacket means with heat exchange fluid entrance and exit ports and adapted to heat said vessel, and first vessel being adapted to be positioned spatially above said second vessel,



C. interconnection means joining the discharge port of said first vessel with the input port means of said second vessel,

D. said heat exchanger means being interconnected with said first vessel and adapted to have the discharge end portions of said tubes thereof pass into and be in communication with the interior of said first vessel,

E. first gas pump means interconnected with said vapor take-off port of said first vessel and adapted to maintain desired pressures in said first vessel,

F. second gas pump means interconnected with said vapor take-off port of said second vessel and adapted to maintain desired pressures in said second vessel but below the desired pressures maintained in said first vessel,

G. liquid pump means interconnected with the discharge port of said second vessel and adapted to remove process fluid therefrom without loss of desired pressure in said second vessel,

H. variable fluid transfer plug valve means axially connected to said interconnection means and adapted to vary the rate of process fluid flow from the discharge port of said first vessel through said interconnection means and into the input port means of said second vessel,

I. actuator means engaged with said fluid transfer valve means and adapted in response to control signals applied thereto to operate said fluid transfer valve means,

J. level sensing means associated with said first vessel and adapted to measure fluid level in said lower region thereof and to generate a signal representative of fluid level when said first vessel is generally oriented so as to have its tapered lower region directed downwardly,

K. controller means functionally interconnecting said level sensing means with said actuator means and responsive to a predetermined set signal and to signals from said level sensing means, said controller means being adapted to

apply control signals to said actuator means after comparing said level sensing means signal to said set signal whereby a predetermined rate of process fluid flow from the discharge port of said first vessel through the input port means of said second vessel is maintainable when said devolatilizer apparatus is operating with first and said second vessels generally vertically oriented.

3,853,673

STRENGTHENED GLASS ARTICLES AND METHODS USING GLASS PRECURSOR ION EXCHANGE MEDIUM

Leon Levene, Toledo, Ohio, and Ian M. Thomas, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 30, 1973, Ser. No. 356,071

Int. Cl. B44f 1/00; C03c 15/00, 13/00

U.S. Cl. 161-1

20 Claims

1. In a method of strengthening a silicate glass article containing alkali metal ions in which the alkali metal ions in the surfacelayer of the glass are replaced by different alkali metal ions from an external source at elevated temperatures, the improvement comprising the steps of:

1. applying to the surface of the glass article a glass precursor that is (A) a clear solution of a soluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the soluble, further hydrolyzable metallosiloxane being formed from a silicon alkoxide and a precursor of an alkali metal oxide, the alkali metal ion of the alkali metal oxide being larger than the alkali metal ion in the glass; and

2. maintaining the glass article and the glass precursor at an elevated temperature sufficiently high to convert the metallosiloxane as defined in part (A) to a cross-linked polymetallosiloxane gel structure and a glass structure containing the alkali metal ion that is larger than the alkali metal ion in the glass, the maintaining of the glass article at the elevated temperature being for a period of time sufficient to form a compressive stress layer in the glass article from the glass precursor formed from the cross-linked polymetallosiloxane to thereby produce a strengthened glass article.

3,853,674

MULTIPLE ION EXCHANGE STEPS FOR STRENGTHENING GLASS AND METHODS OF MAKING SAME

Leon Levene, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Apr. 30, 1973, Ser. No. 356,072

Int. Cl. B44f 1/00; C03c 15/00, 13/00

U.S. Cl. 161-1

11 Claims

1. In a method of strengthening a silicate glass article containing alkali metal ions in which the alkali metal ions in the surface layer of the glass are replaced by different alkali metal ions from an external source at elevated temperatures not substantially above the strain point of the glass of the article, in which the silicate glass article is coated with a glass precursor that forms a homogenous mixture of metal oxides as the ion exchange medium by:

1. applying to the surface of the glass article a first glass precursor that is (A) a clear solution of a soluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the soluble, further hydrolyzable metallosiloxane being formed from a silicon alkoxide and a precursor of an alkali metal oxide, the alkali metal ion thereof being larger than the alkali metal ion in the glass; and

2. maintaining the glass article and the glass precursor coating at an elevated temperature sufficiently high to convert the metallosiloxane to a homogenous mixture of metal oxides and maintaining the glass article with the coating thereon at an elevated temperature not substantially above the strain point of the glass article for a period of time sufficient to provide a compressive stress layer in the glass article; the improvement comprising the steps of:

a. applying to the surface of the glass article having the stress layer, a second glass precursor, the second glass precursor having an alkali metal ion that is larger than the alkali metal ion that was in the first glass precursor, the second glass precursor being a clear solution of insoluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the further hydrolyzable metallosiloxane being formed from a silicon oxide in a precursor of an alkali metal ion, the alkali metal ion thereof being larger than the alkali metal ion in the first glass precursor and the glass; and

b. maintaining the glass article and the second glass precursor coating at an elevated temperature sufficiently high to convert the metallosiloxane to a cross-linked polymetallosiloxane that is converted to a homogenous mixture of metal oxides, the maintaining of the glass article with the second precursor coating thereon being at an elevated temperature not substantially above the strain point of the glass article for a period of time sufficient to form a second compressive stress layer in the glass article to thereby produce a strengthened glass article.

3,853,675

MATERIALS ADAPTED TO EXHIBIT VARYING VISUAL APPEARANCES

Christopher John Edwards, Marlow, England, assignor to Thomas de la Rue International Limited, London, England

Filed Dec. 29, 1971, Ser. No. 213,706

Claims priority, application Great Britain, Dec. 30, 1970, 61710/70

Int. Cl. B44f 1/12

U.S. Cl. 161-3

25 Claims



1. Sheet material comprising at least two superimposed colored light-transmitting non-fibrous organic polymer film-forming layers, each layer of a pair of layers being differently colored, and between each adjacent pair of said layers and in substantially intimate contact therewith a single substantially planar layer which is partially light-reflecting and partially light-transmitting with the ratio of the intensity of transmitted light to the intensity of reflected light being dependent upon the angle of incidence of the light and being a maximum when the angle of incidence is normal to said layer, the colors of the light-transmitting layers being so selected that when either face of the composite material is viewed by transmitted light from a source of substantially white light the color observed is different from that observed when any light-transmitting layer alone is viewed in like manner.

3,853,676

REFERENCE POINTS ON FILMS CONTAINING CURVED CONFIGURATIONS OF MAGNETICALLY ORIENTED PIGMENT

Irving S. Graves, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 59,679, July 30, 1970, This

application Dec. 29, 1972, Ser. No. 319,757

Int. Cl. B44c 3/02

U.S. Cl. 161-5

10 Claims

1. A decorative film comprising a pigmented film of film-forming material containing magnetically orientable pigment that is oriented in curved configurations, such pigmented film produced by (i) providing a soft film of film-forming material containing 0.1 percent to 95 percent (by weight of the film) of magnetically orientable pigment, (ii) subjecting the soft film to curved magnetic fields, thereby orientating the pigment in curved configurations, and (iii) hardening the film, and reference points on the surface of the film, such reference points being printing on the top surface of the film, writing on the top surface of the film, splattering of paint or dusting of paint on the top surface of the film, topcoat containing visible particles on the top surface of the film, visible particles in the film, visible particles on the film or combinations of the foregoing.

3,853,677

ROLL MADE OF NON-WOVEN CLOTH

Motoshi Kai, Kyoto, Japan, assignor to Toho Yogyo Co., Ltd., Kyoto-shi, Japan

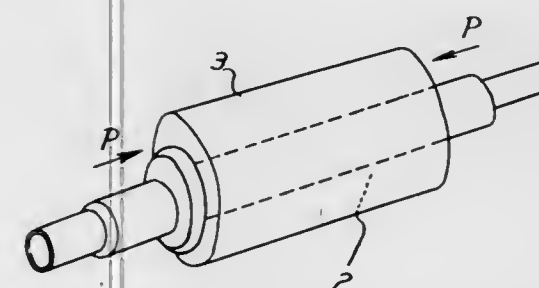
Filed Jan. 2, 1973, Ser. No. 320,305

Claims priority, application Japan, Jan. 24, 1972, 47-009288

Int. Cl. B21b 31/08

U.S. Cl. 161-36

2 Claims



1. In a roll comprising a shaft having an axis and a plurality of annular disc elements of a non-woven fabric, the fabric consisting of yarns of fibers of a high molecular synthetic resin material and of natural fibers, and a resinous material binding the yarns together, the elements being stacked on the shaft and axially pressed together to form the roll, the improvement comprising the elements being heat treated and axially pressed together so that the roll has a Poisson's ratio of about 0.5 and a shearing stress of about 1,200 kg/cm².

3,853,678

Patent Not Issued For This Number

3,853,679

PLANAR WOODEN BODY ADAPTED TO SHRINK ABOUT ITS CIRCUMFERENCE

Amerigo Ierenzoni, 4733 Windermere Ct., Apt. 101, Virginia Beach, Va. 23455

Filed Apr. 1, 1974, Ser. No. 456,758

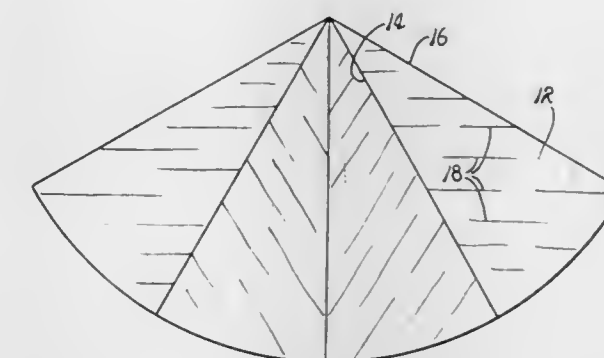
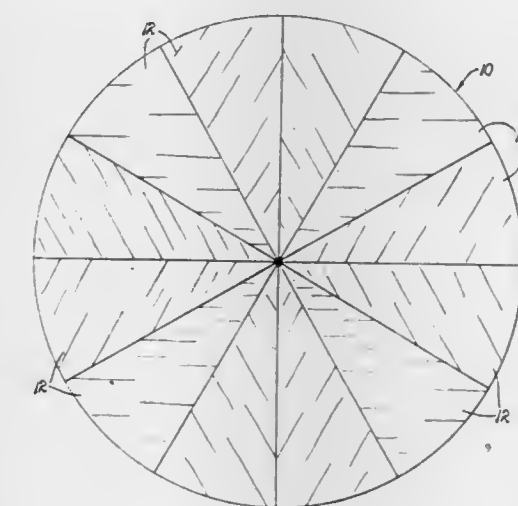
Int. Cl. B32b 5/12, 21/13; B27m 3/18

U.S. Cl. 161-56

2 Claims

1. A planar wooden body adapted to shrink about its circumference comprising:
a plurality of contiguous blocks of wood having congruent geometric configurations, each block being provided with

a planar face and characterized by at least a pair of side edge surfaces coincident with a pair of intersecting planes normally related to the plane of the face and a longitudinal axis of symmetry extended from the intersection of



said pair of planes at an angle of substantially 45 degrees with respect to the direction of the grain of the wood, said plurality of blocks being adhered together by films of adhesive disposed between said side edge surfaces.

3,853,680

PILE FACED UPHOLSTERY FABRIC

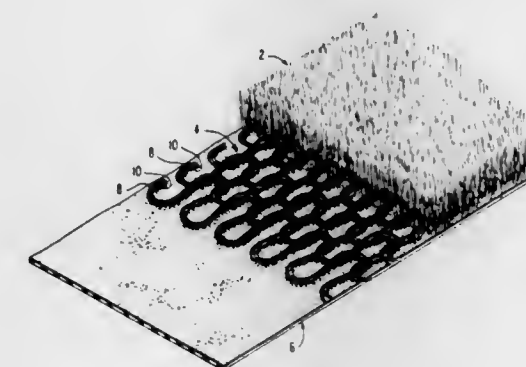
William C. Daniel, Elkhorn, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 29, 1971, Ser. No. 193,958

Int. Cl. D03d 27/00

U.S. Cl. 161-67

9 Claims



1. A pile faced upholstery material for molded furniture having curves about which the material must be drawn, said material comprising a sliver knit pile fabric having in each stitch both stretch and inelastic body yarns.

3,853,681

LAMINATED HONEYCOMB STRUCTURE AND METHOD OF MAKING SAME

Clifton L. Kehr, Silver Spring; Walter R. Wszolek, Sykesville, and Christian B. Lundsager, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. Nos. 94,535, Oct. 13, 1971, abandoned, and Ser. No. 800,923, Feb. 20, 1969, Pat. No. 3,660,217. This application Dec. 2, 1970, Ser. No. 372,702

Int. Cl. B32b 3/12, 3/128; B01j 1/10; B31d 3/02; C08g 23/00
U.S. Cl. 161—68 3 Claims

1. The process of making a honeycomb structure from a laminated stack of web material which comprises

A. applying to sections of the web material, lines of an adhesive composition consisting essentially of a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule, said polyene being the triacrylate of the reaction product of trimethylol propane and ethylene oxide, and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than 4;

B. forming a plurality of said sections in a stack with said lines of adhesive between adjacent sections arranged in staggered relationship;

C. subjecting said stack to ionizing radiation at a dose rate in the range of 0.00001 to 10.0 megarads/second to cure the adhesive and bond said sections and

D. expanding said stack to form a honeycomb structure having a plurality of hollow cells.

3,853,682

WATERPROOFED CONCRETE STRUCTURE

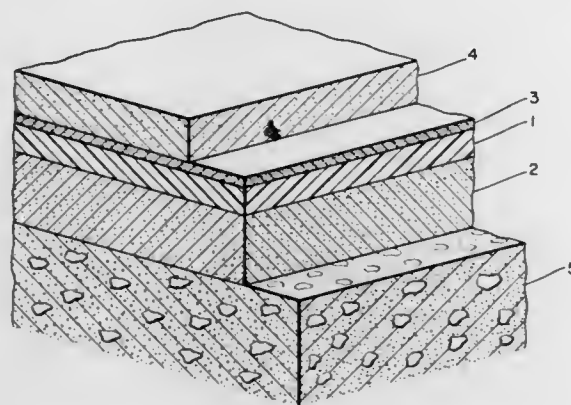
John Hurst, London, England, assignor to Grace, W. R. & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 803,438, Feb. 28, 1969, Pat. No. 3,741,856, which is a continuation-in-part of Ser. No. 676,652, Oct. 19, 1967, abandoned. This application Sept. 22, 1972, Ser. No. 291,491. The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.

Int. Cl. B32b 1/102

U.S. Cl. 161—92

11 Claims



1. In combination (a) a structure comprising a flexible sheet-like support, on one side of the support a layer of bituminous composition comprising a mixture of a bitumen and wax, wherein the ratio by weight of bitumen to wax is from about 1 to 10 parts bitumen per part of wax, and on the other side of the support a waterproof pressure-sensitive adhesive membrane formed of a bituminous rubber composition at

least 0.025 cm thick which is a blend of a rubber selected from the grouping consisting of a natural rubber, synthetic rubber, or combinations thereof, with a bitumen, the ratio by weight of said bitumen to said rubber being greater than 80:20; (b) a concrete surface to which the face of said pressure-sensitive membrane is adherent; and (c) a layer of load bearing, hot poured asphaltic concrete deposited over the adherent to the bitumen-wax layer.

3,853,683

ROOFING BOARD OF FIBROUS GLASS

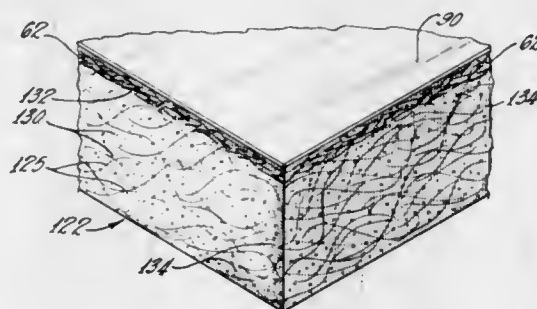
Stuart H. Stapleford, Atlanta, Ga., and Charles E. Nutter, Hebron, Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Apr. 1, 1969, Ser. No. 812,170

Int. Cl. B32b 3/00

U.S. Cl. 161—141

5 Claims



1. A porous, generally highly air permeated, thermal insulating, bonded glass roofing board at least one inch in thickness having a preformed, comparatively solid and rigid surfacing sheet attached thereto, said sheet being composed of a blend of asphalt and a polymeric elastomer and being reinforced with fibrous glass embedded therein, and said roofing board having randomly positioned, individual, non-continuous glass fibers extending in spaced and resinously bonded relation throughout the full area of the board beneath the surfacing sheet.

3,853,684

FOAM COMPOSITES FOR FILLING ENCLOSED SPACES

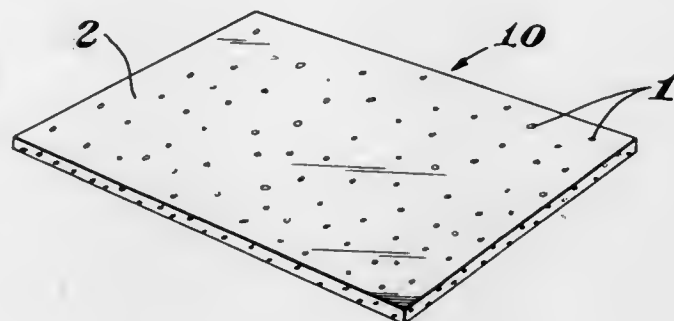
Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 75,758, Sept. 25, 1970, Pat. No. 3,806,566. This application May 21, 1973, Ser. No. 362,559

Int. Cl. B32b 5/16; B29d 27/00

U.S. Cl. 161—160

5 Claims



1. A cellular adherent composite comprising no more than 50 percent by weight of particles of an expanded synthetic resinous material substantially uniformly dispersed in a solid or semi-solid mastic binder, said binder capable of flowing uniformly upon the application of between 75°C. and 200°C. heat, said resinous material being resistant to thermocollapse after expansion when heated, at least during the time and temperature range required to flow said binder.

3,853,685

OPEN-CELL RIGID FOAM PLASTIC

Edmund Friedrich, Rheinheim, Germany; Josef Mosele, Biberist, Switzerland; Rolf Schaumann, Wurenlos, Switzerland, and Manfred Vogelmann, Villigen, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed July 9, 1973, Ser. No. 377,222

Claims priority, application Switzerland, July 24, 1972, 10990/72

Int. Cl. B32b 3/26

U.S. Cl. 161—161

15 Claims

1. The method of manufacturing an open-cell rigid foam which comprises the steps of evacuating the foamed structure in an autoclave, filling the evacuated foamed structure under pressure with a dielectric in gaseous or liquid form and sealing said dielectric filled foamed structure by means of thermosetting polymers.

3,853,686

POLYVINYL ACETATE RESIN IMPREGNATED PLASTIC LAMINATE AND PROCESS THEREFOR

William H. Clendenin, Cochocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,577

Int. Cl. C09j 7/02

U.S. Cl. 161—167

3 Claims

1. A resin impregnated plastic laminate which is readily adherable to a substrate without sanding, the adhering surface of said laminate being a paper sheet which during its preparation and before layup and consolidation into the laminate is treated immediately after resin impregnation and before drying with essentially a mixture of by weight, about 65 to 80 percent polyvinyl acetate-ethylene copolymer emulsion and about 35 to 20 percent of a dispersion of vinyl acetate homopolymer, said treated paper sheet being also non-blocking.

3. The process of making the resin impregnated laminate which is non-blocking and readily adherable without sanding to a substrate which process comprises treating the adhering paper sheet before layup and consolidation into a laminate and immediately after resin impregnation and before drying with essentially a mixture of by weight about 65 to 80 percent polyvinyl acetate ethylene copolymer emulsion and about 35 to 20 percent of a dispersion of vinyl acetate homopolymer.

3,853,687

MODIFIED SYNTHETIC FIBERS AND A PROCESS FOR THE MANUFACTURE OF SAME

Tatsuo Ishikawa; Keiji Yamashita; Norio Okubo; Masahira Sakashita; Arimichi Okamoto, and Tetsuhiro Kusunose, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

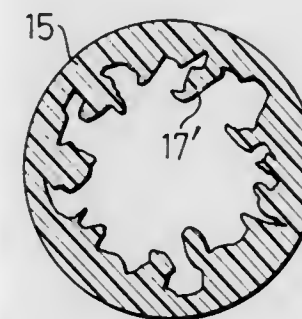
Filed Dec. 27, 1971, Ser. No. 212,044

Claims priority, application Japan, Dec. 24, 1970, 45-116657; Dec. 24, 1970, 45-116658

Int. Cl. D02g 3/36

U.S. Cl. 161—178

4 Claims



1. A synthetic fiber comprising a core portion and a sheath portion with an interface between said core and said sheath which is characterized by extruded extreme irregular undulations which vary in cross-section along the entire length of the fiber, wherein said core has been removed, leaving a hollow sheath with said extreme irregular undulations on the internal surface thereof.

3,853,688

CONTINUOUS FILAMENTS AND YARNS

Birino D'Ambrosio, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 156,111, June 23, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 332,028

Int. Cl. D02g 3/00, 3/22

U.S. Cl. 161—178

9 Claims

1. A continuous polycrystalline alumina filament having a diameter less than about 0.0008 inch which contains randomly oriented grains having a size less than 2 microns, at least about 90% of said grains having a size less than 0.5 micron; said filament having a porosity of between about 2 and about 10% and containing pores having an average volume each of less than 600,000 cubic angstroms, with at least 60% of the pores each having a volume of less than 500,000 cubic angstroms; said filament being at least 80% by weight Al_2O_3 with the predominant crystalline phase, as detected by X-ray diffraction, being alpha alumina.

3,853,689

SAG RESISTANT GYPSUM BOARD AND METHOD

Nicholas Francis Morrone, Flemington, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,685

Int. Cl. B32b 9/06

U.S. Cl. 161—182

3 Claims

1. A gypsum board comprising a core of set gypsum having incorporated therein polyvinyl alcohol in an amount of from approximately 0.15 to about 0.40 percent by weight of the gypsum in the core whereby to improve the sag resistance of the board, and a pair of paper cover sheets with one cover sheet adhered to each face of the core of set gypsum.

3,853,690

METAL SUBSTRATES BONDED WITH THERMOSETTING RESIN COMPOSITIONS CONTAINING FIBRILLATED POLYTETRAFLUOROETHYLENE

Frederick Jerome McGarry, Weston, Mass., and Tzeng Jueq Suen, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 23, 1972, Ser. No. 265,848

Int. Cl. B32b 27/06; C09j 3/14

U.S. Cl. 161—189

8 Claims

1. A structural article of manufacture comprising at least two metal substrates bonded together with an adhesive consisting essentially of a mixture of (1) a thermosetting resin and (2) from about 1% to about 40%, by weight, based on the weight of (1), of fibrillated polytetrafluoroethylene.

3,853,691

COPPER-PLASTIC LAMINATE

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 147,673, May 27, 1971. This application Aug. 28, 1972, Ser. No. 284,433

Int. Cl. B32b 9/04, 15/04, 15/20

U.S. Cl. 161—191

5 Claims

1. A tarnish resistant copper-plastic laminate having high bond strength, said copper being selected from the group consisting of copper and copper alloys and having on the surface thereof a uniform glassy like and substantially pore free coating consisting essentially of copper phosphate ranging in thickness from 20 to 1,000 Angstrom Units, wherein said copper has adhesively bonded thereto a plastic material

selected from the group consisting of a polyimide and a polyester, and wherein the surface bonded to said plastic is in the roughened condition.

3,853,692

RUBBER BONDED TO SILICEOUS SURFACES

Robert E. Clayton, Westfield, and Byron M. Vanderbilt, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

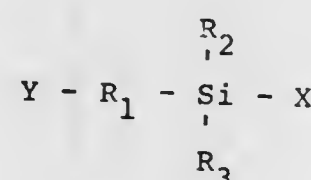
Continuation-in-part of Ser. No. 392,027, Aug. 25, 1964, which is a continuation-in-part of Ser. No. 120,911, June 30, 1961, abandoned, and Ser. No. 138,420, Sept. 15, 1961, abandoned, which is a continuation-in-part of Ser. No. 30,089, May 19, 1960, abandoned. This application Aug. 26, 1968, Ser. No. 755,425

Int. Cl. B32b 17/10

U.S. Cl. 161—193

21 Claims

1. A process for preparing a rubber-reinforcing article which comprises, in combination, the steps of:
 - a. treating the surface of glass fibers with a liquid composition containing a silane selected from the group consisting of a saturated silane, its corresponding silanol, its corresponding siloxane, and mixtures thereof, said silane having the general formula:



wherein Y is selected from the group consisting of mercapto and epoxy; R₁ is selected from the group consisting of C₂ to C₁₆ alkylene, isoalkylene, and cycloalkylene, each of from 2 to 16 carbon atoms; X is selected from the group consisting of halogen, hydroxyl, alkoxy, and acyloxy; and R₂ and R₃ are independently selected from the group consisting of Y-R₁—, X—, and methyl;

- b. contacting the treated surface of the reinforcing agent obtained in step (a) with a liquid composition containing an elastomer in an uncured stage; and
- c. drying the resultant product from step (b) until it is substantially free of any diluent or solvent thereby obtaining a reinforcing agent whose surfaces have been substantially coated with about 10 to 60 wt. %, based on the total weight of the elastomer-coated reinforcing agent, of said elastomer.

3,853,693

METHOD FOR QUENCHING GLASS LAMINATES

John Edward Priddle, Welwyn, and Ronald William Richardson, Bishops Cleeve, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 14, 1972, Ser. No. 280,199

Claims priority, application Great Britain, Aug. 31, 1971, 40533/71

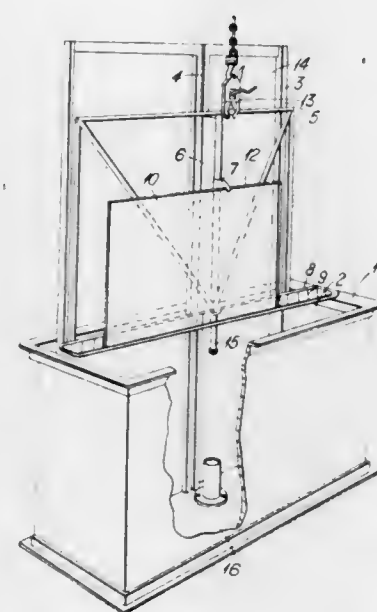
Int. Cl. B32b 17/10

U.S. Cl. 161—203

6 Claims

1. In a method of making a bonded glass laminate wherein one or more layers of crystallisable thermoplastic adhesive are sandwiched between sheets of glass and the resulting laminate is heated to a temperature above the melting point of the adhesive and the laminate is thereafter quenched by immer-

ing it in a volume of water, the improvement which comprises: a. immersing the laminate in the volume of cooling liquid by allowing the laminate to fall edgewise into the water main-



- tained at a temperature of from about 30° to 60°C, and
- b. subsequently subjecting the falling laminate to a retarding force so as to prevent the laminate from sustaining damage by impact.

3,853,694

PAPER MACHINE FLOW CHANNEL WITH A FLEXIBLE PLATE PROJECTING INTO THE FLOW STREAM TO ACT AS AN OSCILLATOR

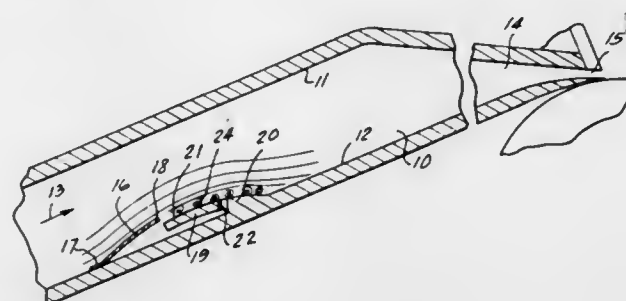
Joseph D. Parker, deceased, late of Roscoe, Ill. (by Dorothy C. Parker, executrix), assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 24, 1973, Ser. No. 354,110

Int. Cl. D21f 1/02

U.S. Cl. 162—216

10 Claims



1. A mechanism for generating turbulence in a fiber stock flow stream for improved dispersion comprising in combination:
 - a flow chamber through which a stream of fiber containing stock flows having a wall member and extending in the direction of flow;
 - a flexible plate extending away from the wall member in a downstream direction and cantileverly mounted on the wall at the upstream edge of the plate with the downstream edge spaced from the wall member in an unstressed position so that its downstream edge will flex and vibrate with flow of stock along said wall member.

3,853,695

ENTRAINING A LIQUID INTO A FIBER SLURRY TO ACCELERATE IT PRIOR TO DISCHARGE FROM A FLOW PATH ONTO A FORMING WIRE

Sangho E. Back, 9811 S.E. 12th St., Vancouver, Wash. 98664; Imants Reba, 6502 Montana Ln., Vancouver, Wash. 98661, and Darrel L. Wilhoit, Rt. 2, Box 265, Washougal, Wash. 98671

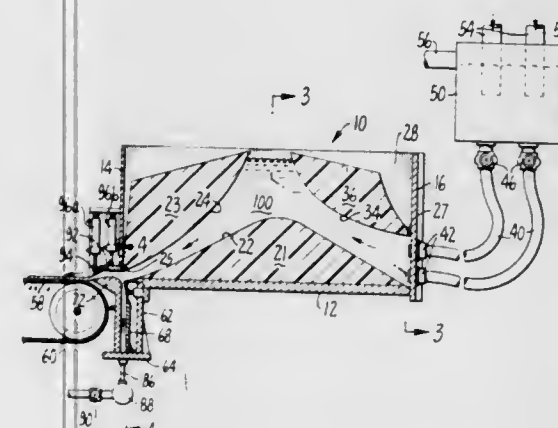
Continuation of Ser. No. 297,094, Oct. 12, 1972, abandoned.

This application Jan. 28, 1974, Ser. No. 437,112

Int. Cl. D21f 1/02, 1/06

U.S. Cl. 162—216

24 Claims



23. A method for delivering a slurry to the forming surface of a sheet- or web-forming machine, comprising the steps of: introducing a slurry mixture into a predetermined flow path leading toward an exit aperture disposed adjacent to said forming surface;

introducing an entraining fluid into said flow path under pressure in the form of a thin, elongated stream; and directing the flow of said fluid toward said exit aperture by attaching said thin, elongated stream of fluid due to the Coanda effect to a convex, generally curved fluid-flow attachment surface leading from the location of introduction of said slurry toward said exit aperture whereby said slurry is pulled toward said exit aperture by a substantial pulling force exerted by said fluid to provide a high percentage of all energy required to accelerate said slurry.

3,853,696

VERTICAL TYPE PAPER MACHINE

Hatsuo Uchiyama, Shizuoka, Japan, assignor to Maruishi Iron Works Co., Ltd., Shizuoka, Japan

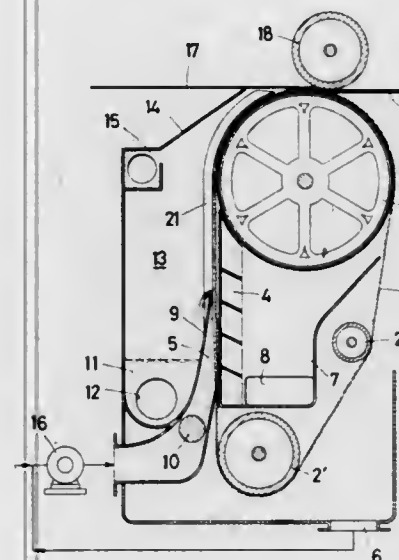
Filed June 4, 1973, Ser. No. 366,860

Claims priority, application Japan, June 26, 1972, 47-63869

Int. Cl. D21f 1/00

U.S. Cl. 162—315

1 Claim



1. A vertical type papermaking machine comprising in combination, a pair of rolls rotatably disposed axially parallel

and one vertically above the other, a wire cloth supported under tension about said rolls, a portion of said wire cloth being disposed vertically for movement from the lower roll upwardly to the upper roll, a paper layer forming chamber defined by said vertically disposed wire cloth portion and surrounding enclosing walls, said paper layer forming chamber being continuously maintained at higher than atmospheric pressure by compressed air supplied thereto, said surrounding enclosing walls being substantially air-tight by sealing means disposed along edges of said wire cloth, means for supplying paper slurry onto a lower portion of the vertically disposed portion of wire cloth, said paper slurry forming a paper layer by means of higher than atmospheric air in the paper layer forming chamber passing through the vertically disposed wire cloth above said lower portion, and means for removing the paper layer from the wire cloth at said upper roll.

3,853,697

PAPERMAKING MACHINE HEADBOX WITH AN UPWARDLY INCLINED SLICE CHAMBER PORTION, AN ARCuate PORTION, AND A DOWNWARDLY INCLINED PORTION AND CONTAINING FLEXIBLE TRAILING MEMBERS

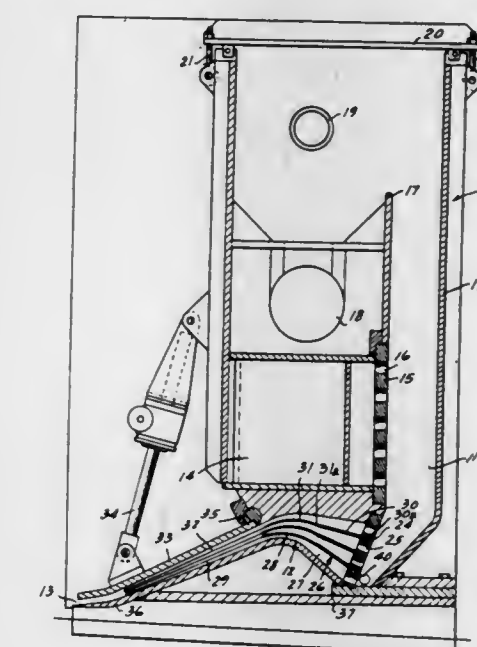
Joseph D. Parker, deceased, late of Roscoe, Ill. (by Dorothy C. Parker, executrix); Richard E. Hergert, Rockton, Ill., and Richard W. Eggen, Orfordville, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 8, 1973, Ser. No. 339,219

Int. Cl. D21f 1/02

U.S. Cl. 162—343

11 Claims



1. In a headbox for delivering stock to a forming surface, the headbox having a chamber leading to a slice chamber with a slice opening, the improvement comprising:

top and bottom slice walls defining a slice chamber therebetween with the slice chamber having a first upwardly inclined portion, a second arcuate portion leading upwardly and then downwardly, and a third tapered portion leading to the opening;

thin planar continuous cross-machine extending trailing elements having a rigid planar portion anchored at their upstream ends in said first portion of the slice chamber, a nonflexible portion curved in the direction of said second portion and located therein, and a third portion in the tapered chamber being flexible with the downstream ends unattached and constructed to be self-positionable as to be solely responsive to forces exerted thereon by the stock flowing toward the slice opening;

and support means in said first portion of the headbox with the upstream ends of the trailing elements anchored thereto.

3,853,698

LARGE ROLL HYDRAULIC PRESS WITH PRESSURIZED FLUID SUPPORTS

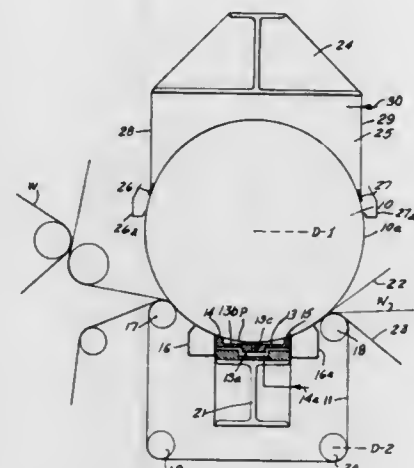
William C. Mohr, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 17, 1972, Ser. No. 244,638

Int. Cl. D21f 3/06

U.S. Cl. 162—358

7 Claims



1. A press structure for performing a dewatering operation on a traveling web in the steps of the formation of the web comprising in combination,

a rotatable roll having a cylindrical outer pressing surface, a fluid impervious belt wrapping a portion of the circumferential surface of the roll forming an arcuate elongate pressing zone with the roll,

a first deflection preventing support having a chamber positioned outside of and coextensive with said roll and supporting said roll on pressurized fluid opposite the pressing zone so that said roll is supported by uniform pressure along its length preventing said roll from bending from forces in the pressing zone,

means defining a confined fluid pressure chamber facing the belt and opposite said pressing zone so that a web traveling through said pressing zone is subjected to a pressing force normal to the surface, said first support and said pressure chamber being on different sides of said pressing zone,

a second deflection preventing support supporting said pressure chamber having a chamber coextensive with said pressure chamber supporting said pressure chamber on pressurized fluid opposite the pressing zone so that said pressure chamber is supported by uniform pressure along its length for preventing said pressure chamber from bending from forces in the pressing zone,

means in advance of said pressing zone for guiding said belt and web onto said roll surface,

means positioned after said pressing zone for guiding the web and belt away from said roll surface,

and means in said pressing zone receiving the water pressed from said web.

3,853,699

NUCLEAR REACTOR HAVING CONTROL-ROD RETAINING MEANS

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 53,201, July 8, 1970. This application Sept. 13, 1971, Ser. No. 180,050

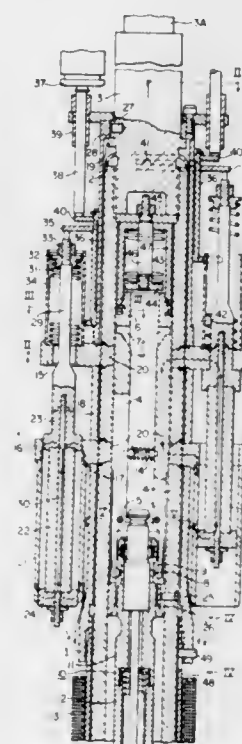
Int. Cl. G21c 7/12, 7/18

U.S. Cl. 176—36 R

10 Claims

1. In a nuclear reactor of the type designed for rapid refueling comprising: a closed pressure vessel, a plurality of up-standing elongated fuel assemblies containing nuclear fuel located in said vessel, at least some of said fuel assemblies including elongated openings extending longitudinally there-

through, a plurality of elongated movable neutron-absorbing control rod means positioned in said openings respectively for movement into and out of said some fuel assemblies, a plurality of control rod drive mechanisms supported on said vessel and each including drive means secured to each of said control rods, respectively, each of said mechanisms including operating means for individually and incrementally moving said associated drive means and associated control rod means to a plurality of holding positions between first and second extreme positions, said first extreme position being with said associated control rod means fully inserted in its associated fuel assembly, said second extreme position being with said associated control rod means being fully withdrawn from said associated fuel assembly, latching means in each of said mech-



anisms which mechanically engages the drive means only when said associated control rod means is in said second extreme position to hold said control rod means in said withdrawn position, actuating means mounted on each mechanism, one for each of said latching means for selectively actuating each of said latching means into engagement with said associated drive means; and selectively operable movable means mounted on each of said mechanisms, said movable means being coupled with said actuating means to permit movement of said actuating means longitudinally of said mechanism and into a position to actuate said latching means into engagement with said drive means, thereby holding said drive means and attached control rod means in said withdrawn position during the time the reactor is being refueled.

3,853,700

CARBON-TRAP ALLOYS FOR LIQUID SODIUM

Joseph S. Armijo, 19310 Portos Ct., Saratoga, Calif. 95070

Filed Nov. 2, 1973, Ser. No. 412,395

Int. Cl. G21c 15/02

U.S. Cl. 176—38

4 Claims

1. In a sodium cooled nuclear reactor containing austenitic stainless steel components subject to damage due to carburization during sodium circulation, a material for trapping carbon and thereby preventing damage to components due to carburization comprising a binary alloy in which carbon diffusion is faster than in austenitic steels and which contains an active carbide former, said binary alloy consisting essentially of Fe and a second element selected from the group consisting of 0.5 to 30 wt.% Ti, 0.5 to 25 wt.% V, and 0.5 to 5 wt.% Mn.

3,853,701

NUCLEAR REACTOR CORE ASSEMBLY

Yeuichi Sasaki, and Hisao Tomita, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Company Ltd., Kanagawa-ken, Japan

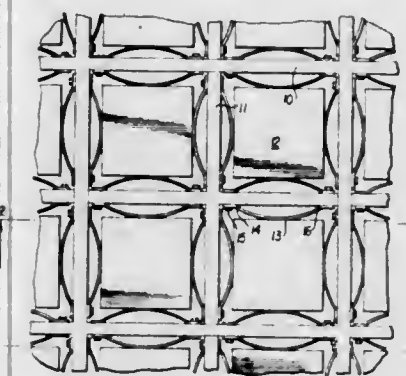
Filed Dec. 28, 1971, Ser. No. 213,049

Claims priority, application Japan, Dec. 28, 1970, 45-120353; Feb. 23, 1970, 45-132802

Int. Cl. G21c 3/30, 3/34

U.S. Cl. 176—50

3 Claims



1. A fluid cooled nuclear reactor core structure, comprising:

a plurality of substantially parallel, elongated fuel bundles each having a plurality of substantially parallel, elongated fuel rods encased therein;

a bottom grid structure positioned transverse to said fuel bundles having supporting means for engaging the bottom ends of each of said fuel bundles and means for inserting control rods therethrough;

a top grid structure positioned transverse to said fuel bundles formed by a plurality of intersecting frames members which form a plurality of framework openings each having a plurality of substantially flat side surfaces which face and support the upper portion of said fuel bundles, each one of said fuel bundles extending through and being supported within a separate one of said openings; and

a plurality of leaf springs, each one of which is secured to each of said side surfaces of said framework openings which faces said upper portion of said fuel bundles for resiliently supporting said fuel bundles in a transverse direction.

3,853,702

PRESSURE VESSEL PENETRATION TECHNIQUE

Frank Bevilacqua, Windsor, and Malcolm D. Groves, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,286

Int. Cl. G21c

U.S. Cl. 176—87

8 Claims

1. Apparatus for transmitting a plurality of fluidic signals through the nuclear reactor removable head of a pressure vessel, said removable head having an aperture therein said transmitting apparatus comprising:

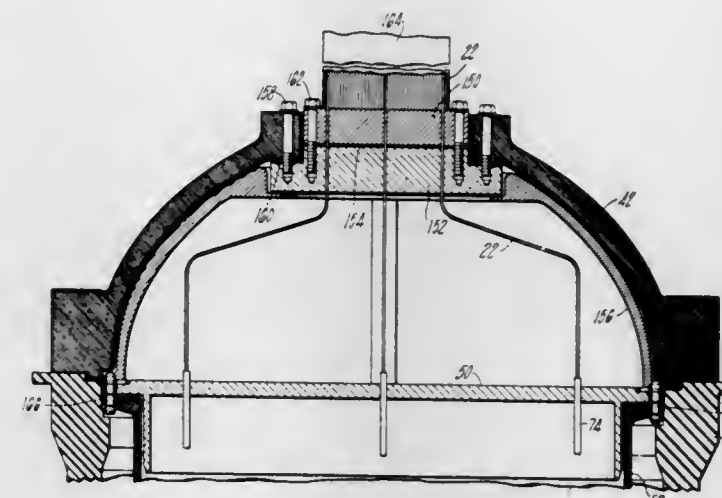
inner flange means, said inner flange means having a plurality of passages therethrough, said inner flange means having a shape commensurate with and a maximum size in excess of the respective shape and size of the pressure head aperture;

means mounting said inner flange means to the interior of the vessel head whereby said inner flange means cover the head aperture;

apertured support means mounted internally of the pressure vessel, said support means having a shoulder about the aperture therein, said shoulder engaging said inner flange means about its periphery and supporting said inner flange means when said mounting means are removed;

outer flange means, said outer flange means having a plurality of passages therethrough, the passages in said outer

flange means defining a pattern commensurate with the pattern of passages in the inner flange means, said outer flange means having a size and shape complementary to the size and shape of the pressure vessel head aperture whereby said outer flange means will be received in said aperture; and



means attaching said outer flange means to said inner flange means with the passages in said flange means aligned whereby communication between the interior and exterior of the pressure vessel is provided by said aligned passages.

3,853,703

FUEL ASSEMBLY HOLD-UP DEVICE

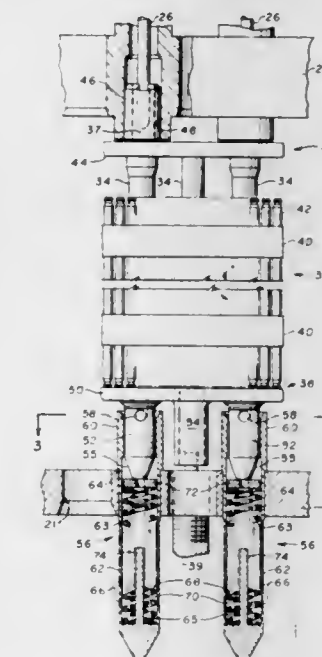
Andrew James Anthony, Tariffville; John Jefferson Hutchinson, Windsor, and Ralph Howard Klumb, Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 3, 1972, Ser. No. 268,347

Int. Cl. G21c 3/00

U.S. Cl. 176—87

4 Claims



1. In a nuclear reactor core, means defining lower core support structure; means defining upper core alignment structure; a plurality of fuel assemblies vertically disposed between said lower core support structure and said upper core alignment structure, each of said assemblies comprising an upper end fitting, a lower end fitting, structural means attached to each of said end fittings and supporting said fittings in parallel spaced relationship, a plurality of elongated fuel elements disposed in a generally parallel array, and support structures connected to said structural means

and receiving therein said fuel elements to maintain them in a vertically extending position between said end fittings;

means associated with said upper core alignment structure and said upper end fittings for laterally restraining each of said fuel assemblies while allowing limited axial movement thereof;

a plurality of alignment posts affixed to each of said lower end fittings and extending downwardly therefrom;

a post engaging means, associated with each of said alignment posts, affixed to and extending upwardly from said lower core support structure for slidably receiving and laterally restraining said alignment posts, said post engaging means including a spring containment section having spring retaining means at its lower end and means for transmitting downward force on said spring retaining means to said lower core support structure; and

coil spring means in partial compression disposed within said spring receiving section, reacting downwardly against said lower core support structure and reacting upwardly through said lower end fittings to urge said fuel assemblies in engagement with said upper core alignment structure.

3,853,704

CULTIVATION OF MICRO-ORGANISMS ON A FEEDSTOCK CONSISTING AT LEAST IN PART OF STRAIGHT CHAIN HYDROCARBONS

Alfred Champagnat, Courbevoie, and Bernard Maurice Laine, Lavern, both of France, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 69,473, Sept. 3, 1970, abandoned.

This application May 21, 1973, Ser. No. 362,050

Int. Cl. C12b 1/00; C12d 13/06

U.S. Cl. 195—28 R

19 Claims

1. A process which comprises cultivating a straight chain paraffinic hydrocarbon consuming yeast in the presence of a feedstock consisting at least in part of a straight chain hydrocarbon, recovering a fraction comprising the yeast and at least some aqueous medium and residual hydrocarbon, mixing said fraction with surface active agent and treating the mixture to recover.

a. a washed fraction comprising the yeast together with an aqueous phase and some residual hydrocarbon fraction and

b. a hydrocarbon fraction of reduced content of straight chain paraffins or which is free of straight chain paraffins and thereafter, subjecting said washed fraction to drying, recovering a dry impure yeast and subjecting said dry impure yeast to solvent extraction for at least partial removal of lipids from the yeast together with hydrocarbons associated with said yeast.

3,853,705

ENZYMATIC PRODUCTION OF CEPHALOTHIN

Tadashiro Fujii, and Yuzo Shibuya, both of Shizuoka-ken, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Yoshida Shizuoka-ken, Japan

Filed Aug. 14, 1973, Ser. No. 388,150

Claims priority, application Japan, Aug. 22, 1972, 47-84280

Int. Cl. C12d 9/00

U.S. Cl. 195—30

6 Claims

1. A process for the production of cephalothin, which comprises reacting 7-amino cephalosporanic acid with 2-thienyl acetic acid ester in an aqueous medium in the presence of an amino group acylating enzyme for 7-ACA derived from *Bacillus megaterium* NRRL B-5385.

3,853,706

PROCESS FOR PRODUCING NON-WAXY STARCH HYDROLYSATES

Frederick Carl Armbruster, Lagrange, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 626,952, March 30, 1967, abandoned. This application Jan. 18, 1971, Ser. No. 107,436

Int. Cl. C12b 1/00

U.S. Cl. 195—31 R

17 Claims

1. A process for producing a non-waxy starch hydrolysate which comprises treating an aqueous slurry of a non-waxy cereal starch with bacterial alpha-amylase at a temperature below 95°C to liquefy the starch and to provide a starch hydrolysate having a D.E. within the range of about from 2 to about 15, heating the liquefied starch hydrolysate to a temperature of at least about 95°C and treating the liquefied starch hydrolysate with bacterial alpha-amylase at a temperature below 85°C to produce a starch hydrolysate having a D.E. within the range of about 5 to about 20.

3,853,707

METHOD FOR PRODUCING

HEXANOR-5,9-SECO-PREGNAN-5-OIC ACID

Elisabeth Becher, Basel; Arno Johannes Schocher, Benken, and Erich Widmer, Arlesheim, all of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Aug. 16, 1973, Ser. No. 389,041

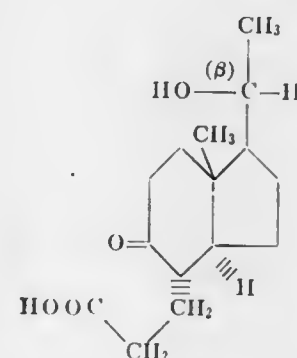
Claims priority, application Switzerland, Aug. 31, 1972, 12838/72

Int. Cl. C12d 1/02

U.S. Cl. 195—51 R

4 Claims

1. A process for the manufacture of 20beta-hydroxy-9-oxo-1,2,3,4,10,19-hexanor-5,9-seco-pregnan-5-oic acid of the formula:



which process comprises fermenting 3beta,20beta-dihydroxypregn-5-ene or 20beta-hydroxy-pregn-4-en-3-one with *Mycobacterium phlei* ATCC 19249 adapted to aliphatic hydrocarbons in a nutrient medium containing an assimilable nitrogen and an assimilable carbon source.

3,853,708

COUPLING BIOLOGICALLY ACTIVE SUBSTANCES TO OXIRANE-CONTAINING POLYMERS

Jerker Olof Porath; Nermin Fornstedt; Lars Sundberg; Conny Eklund, all of Uppsala, and Rolf Axen, Upplands Balinge, all of Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation-in-part of Ser. No. 106,548, Jan. 14, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,245

Claims priority, application Sweden, Jan. 23, 1970, 843/70

Int. Cl. C07g 7/02

U.S. Cl. 195—68

9 Claims

1. A method for coupling with covalent bonds a water-insoluble polysaccharide gel and an enzyme or a proteinaceous enzyme inhibitor, comprising the steps of introducing an eponide group-containing bifunctional compound selected from the class consisting of epihalohydrin and bisoxirane in

the insoluble polysaccharide gel in an alkaline medium by reacting said compound with hydroxy groups of said polysaccharide gel, separating excess said bifunctional compound from said insoluble polysaccharide gel, and contacting the latter with said enzyme or enzyme inhibitor to chemically couple said enzyme or enzyme inhibitor to said polysaccharide gel by reacting a functional group of the enzyme or enzyme inhibitor with epoxide groups of said polysaccharide gel whereby said enzyme or enzyme inhibitor retains its ability to form complexes with natural substances having affinity for said enzyme or enzyme inhibitor in its free form and retains its activity almost completely.

3,853,709

PROCESS FOR PREPARING NEBRAMYCIN FACTORS II AND VII

William Max Stark, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 83,834, Oct. 26, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,222

Int. Cl. C12d 9/00

U.S. Cl. 195—80 R

3 Claims

1. The process for producing nebramycin II and nebramycin VII which comprises cultivating *Streptomyces tenebrarius* NRRL 3816, mutant strain ex *Streptomyces tenebrarius* ATCC 17920 in an aqueous nutrient culture medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced by said organism in said culture medium.

3,853,710

SERUM DIAGNOSTIC TEST FOR MALADIES CAUSING CHANGE IN FIBRINOLYTIC ACTIVITY IN THE BLOOD

Irving Innerfield, Tenafly, N.J., assignor to Association For Pharmacologic Research, Inc., New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,485

Int. Cl. G01n 31/14, 31/16

U.S. Cl. 195—99

11 Claims

1. A method of detecting an abnormal concentration of fibrinolytic enzymes and FDP in the blood of an individual, comprising the steps of determining the range of clotting times of standardized saline solutions of buffered thrombin, fibrinogen and mixed serum from healthy subjects combined in suitable proportions at a selected temperature, and determining the individual clotting time at the same selected temperature of the same standardized saline solutions of buffered thrombin and fibrinogen with a serum specimen from said individual combined in said suitable proportions, an individual clotting time outside said range being taken as indicative of an abnormal concentration of fibrinolytic enzymes and fibrinogen decomposition products in the blood and certain characteristic pathologic states.

3,853,711

INSTALLATION FOR AUTOMATION OF MICROBIOLOGICAL WORK TECHNIQUES

Carl Goran Heden, Solna, Sweden, assignor to Ab Biotec, Stockholm, Sweden

Filed June 15, 1971, Ser. No. 153,286

Claims priority, application Sweden, June 22, 1970, 8592/70; June 4, 1971, 7264/71

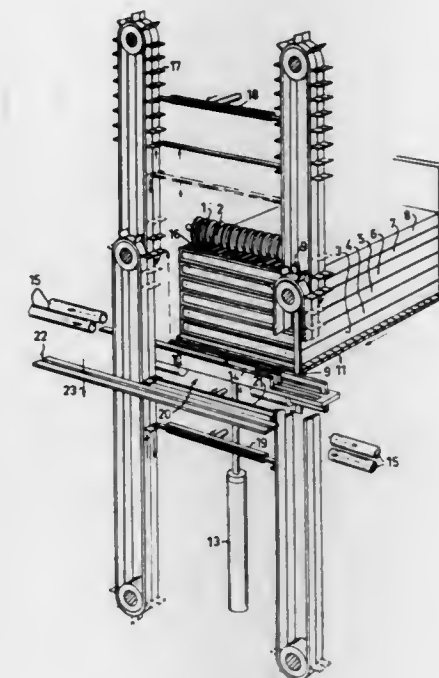
Int. Cl. C12b 1/24

U.S. Cl. 195—127

25 Claims

1. Apparatus for automatic performance of microbiological analyses of samples applied to a gel substrate layer, comprising a gel substrate preparation station, an inoculating station, an incubating station, a reading station capable of detecting microbial growth, and conveyor means, said gel substrate preparation station comprising a solid block of said gel having a generally uniform elongated rectangular transverse cross-section with respect to at least one axis, cutter means for

slicing successive transverse thin strips of gel from said block, a supply of similar glass strips, each having an area sufficient to provide a support for at least one of said thin sliced strips of gel, said conveyor means including means to relatively



position glass strips with respect to sliced strips of gel for deposit of the slices of gel on successive glass strips at a first position and to move said glass strips in a sequential manner to other said stations after receiving a slice of gel.

3,853,712

CELL CULTURE SYSTEMS

William Cullingford House, Southborough, and Nicholas George Maroudas, London, both of England, assignors to National Research Development Corporation, London, England

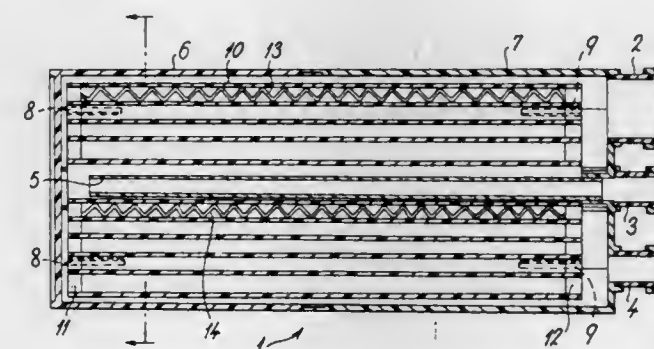
Filed Feb. 8, 1972, Ser. No. 224,527

Claims priority, application Great Britain, Feb. 9, 1971, 4266/71; Nov. 4, 1971, 51343/71

Int. Cl. C12b 1/00

U.S. Cl. 195—127

14 Claims



1. Cell culture apparatus comprising a container for culture medium which encloses a compact cell support of a flexible strip material formed into turns which are spaced one from another to provide a continuous passageway through which cells and medium can travel progressively and continuously on rotary movement of the support during inoculation.

3,853,713

METHOD AND APPARATUS FOR PROCESSING GRANULAR AND OTHER MATERIALS

Graham Richard Colclough, Balwyn, Australia, assignor to Phildon Engineering Co. Pty. Ltd., Fitzroy, Victoria, Australia

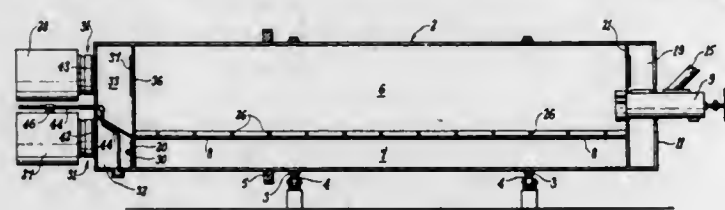
Filed Oct. 2, 1972, Ser. No. 293,798

Claims priority, application Australia, Oct. 5, 1971, 6571/71

Int. Cl. C12c 1/14; C12b 1/00

U.S. Cl. 195-131

10 Claims



1. Grain treating apparatus including: a cylindrical drum located with its axis substantially horizontal and being mounted for rotation about that axis, said drum having a first end and a second end; a perforated floor member extending the length of at least a portion of said drum and dividing said portion into a grain compartment and a fluid compartment; an end wall at said first end of said drum; an intratransverse wall adjacent said first end of said drum defining a grain transfer chamber between said end wall and said internal transverse wall; conveyor means extending through said end wall and said internal transverse wall; drive means connected to said conveyor means and operable to move said conveyor means in either a grain feeding or a grain discharging direction; a feed opening associated with said grain compartment whereby grain is fed to said grain compartment from said conveyor means during movement thereof in said grain feeding direction; a controllable opening in said transverse wall section whereby grain is passed to said conveyor means through said grain transfer compartment during movement of said conveyor means and said grain discharge direction; separate air inlet and outlet openings associated with said second end of said drum, located remote from said grain transfer member; inlet duct means and outlet duct means connectable to said inlet and outlet openings respectively; and means for connecting said inlet and outlet openings with said fluid and grain compartments respectively.

3,853,714

PROCESS FOR ELECTROFORMING MICROPARTS HAVING HOLLOW INTERIORS

Kazumi Shimada, Tokyo; Hideo Hotoda, Noda; Shizuo Funayama, Tokyo, and Takeshi Yamamoto, Higashi, all of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

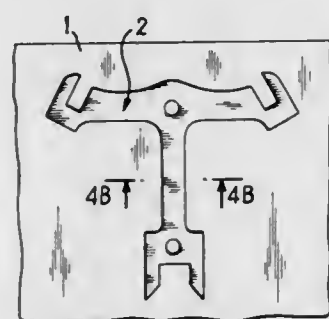
Filed June 15, 1972, Ser. No. 263,094

Claims priority, application Japan, June 15, 1971, 46-42689

Int. Cl. C23b 7/00, 7/02

U.S. Cl. 204-4

10 Claims



1. A process for electroforming articles such as watch pallet forks and the like having hollow deep-bottomed interiors

comprising: forming in a plate of electrically nonconductive material a plurality of mold cavities each having steep side walls terminating at their base in a bottom wall and having a depth to width ratio no greater than 3:1 and having a configuration complementary to that of the exterior of an article to be formed; lining each said mold cavity with a layer of electrically conductive material while leaving the intervening spaces which remain on the plate between the cavities free of electrically conductive material; electrically connecting together each layer of electrically conductive material with a common lead wire which comprises a first electrode; then immersing the plate in an electrolytic solution containing dissolved salts of the metal to be deposited; placing a second electrode in said electrolytic solution; and applying dc electrical energy to said first and second electrodes to obtain a current density less than 5A/dm² for a time period sufficient to effect substantially uniform electrodeposition of metallic ions from within said electrolytic solution onto each said layer of electrically conductive material to electroform thereon a hollow article having steep side walls terminating at their base in a bottom wall and having a substantially hollow interior and an external configuration complementary to that of its corresponding mold cavity.

3,853,715

ELIMINATION OF UNDERCUT IN AN ANODICALLY ACTIVE METAL DURING CHEMICAL ETCHING

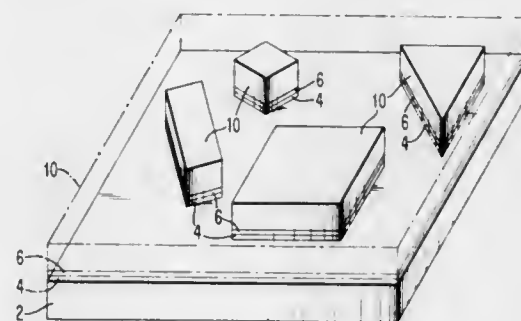
Lubomyr Taras Romankiw, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,862

Int. Cl. C23b 5/48

U.S. Cl. 204-15

8 Claims



1. A method for fabricating a metallic pattern on a substrate comprising the steps of

- depositing a first thin metallic layer on an inert substrate,
- placing a very narrow self-supporting border of a given height of photoresist material on such metallic layer, said border outlining the configuration of subsequent second metal to be deposited on said thin metallic layer, said subsequent second metal becoming anodic with said first metallic layer during its etching,
- depositing said second metal on said first metal,
- depositing a photoresist layer only over said anodic material that forms the pattern of interest, and
- chemically etching away all the anodic material not encapsulated.

3,853,716

ELECTROLYTIC COPPER STAINPROOFING PROCESS

Charles B. Yates, and Adam M. Wolski, both of Edgewater Park, N.J., assignors to Yates Industries, Inc., Bordentown, N.J.

Filed Sept. 8, 1972, Ser. No. 287,437

Int. Cl. C23b 11/00

U.S. Cl. 204-28

6 Claims

1. An electrolytic process for imparting stain resistance to sheet copper comprising:

- immersing said copper sheet in an electrolyte comprising an aqueous solution containing hexavalent chromium ion-containing anions, said electrolyte being sufficiently alkaline to cause precipitation of copper and chrome cations; and
- rendering said copper sheet cathodic to cause reduction of said anions at the surface of said copper sheet.

3,853,717

PLATED WIRE MEMORY

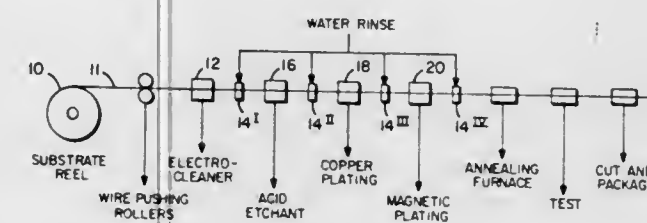
Guy Digiulio, Philadelphia, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,266

Int. Cl. C23b 5/58, 5/32

U.S. Cl. 204-28

6 Claims



- The method of manufacturing an improved plated wire memory device having a smooth wire substrate and a caviar intermediate layer, the improvement comprising the steps of:
 - moving said smooth wire with a caviar intermediate layer continuously through a plating cell;
 - moving an electrolyte through said cell in order to plate a magnetic coating on said caviar layer wherein said electrolyte consists essentially of an aqueous solution of nickel sulfamate, iron sulfamate, cobalt sulfate, boric acid and trisodium salt of naphthalene tri-sulfonic acid, and sodium hypophosphite, the nickel to iron weight ratio in said electrolyte being in the range of 50/1 to 70/1.

3,853,718

METHOD TO IMPROVE ZINC DEPOSITION EMPLOYING MULTI-NITROGEN QUATERNARIES

Hans-Gerhard Creutz, Westland, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Jan. 5, 1973, Ser. No. 321,429

Int. Cl. C23b 5/10, 5/46

U.S. Cl. 204-55 R

42 Claims

- An aqueous alkaline zinc electroplating bath comprising alkali metal zincate, and about 0.5 to about 50 grams per liter of a zinc brightening agent in the form of a bath soluble multiple quaternary compound which is the reaction product of a polyalkylene imine having a molecular weight from about 300 to 1,000,000, and an organic quaternary ammonium halide which contains a halogen which will quaternize a nitrogen of the polyalkylene imine in a ratio of one mole of organic ammonium halide to two mole-units of the polyalkylene imine.

3,853,719

PRODUCTION OF AQUEOUS FORMALDEHYDE SOLUTIONS OF LOW METHANOL CONTENT BY DISTILLATION WITH A BINARY SYSTEM

Guenther Matthias, Ludwigshafen; Hans Diem, Mannheim, and Gunter Lehmann, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 9, 1973, Ser. No. 322,205

Claims priority, application Germany, Jan. 15, 1972, 2201865

Int. Cl. B01d 3/34; C07c 47/04

U.S. Cl. 203-56

12 Claims

- A process for the production of aqueous formaldehyde solutions having a low content of methanol by distillation which comprises distilling an aqueous solution of formalde-

hyde containing methanol in a distillation column in the presence in said column of (a) at least one alkanol of more than seven carbon atoms and (b) at least one dialkyl ether in which each of the two alkyl groups contains more than seven carbon atoms, withdrawing as the overhead distillate fraction a methanol-rich distillate, and withdrawing as the bottoms distillate fraction aqueous formaldehyde solution having low methanol content.

3,853,720

ELECTROLYSIS OF BRINE USING PERMEABLE MEMBRANES COMPRISING FLUOROCARBON COPOLYMERS

Malcolm Korach, and Robbie T. Foster, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

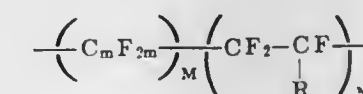
Filed Oct. 24, 1972, Ser. No. 300,040

Int. Cl. C01d 1/06; C01b 7/06

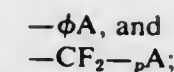
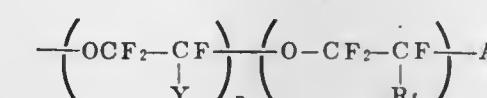
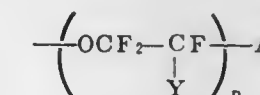
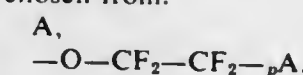
U.S. Cl. 204-98

4 Claims

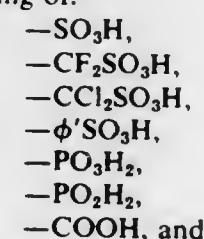
1. In a process for electrolyzing alkali metal chloride brines in an electrolytic cell having an anolyte compartment and a catholyte compartment separated therefrom by an alkali metal chloride brine permeable, fluorocarbon resin containing, chrysotile asbestos diaphragm, wherein alkali metal chloride brine is fed to said cell and catholyte liquor containing alkali metal chloride and alkali metal hydroxide is recovered from said cell, the improvement wherein said diaphragm contains from about 1.0 to about 50.0 weight percent of a second fibrous material having a mean fiber diameter of from 2 to about 1,000 times the mean fiber diameter of chrysotile asbestos, and wherein said diaphragm further contains from about 0.01 to about 22 weight percent of fluorocarbon resin, the fluorocarbon resin being dispersed into the diaphragm to a depth of at least 0.08 inch from one surface thereof, said fluorocarbon resin providing a coating on individual asbestos fiber bundles, and said fluorocarbon resin having the empirical formula:



where m is from 2 to 10, the ratio of M to N is sufficient to provide an equivalent weight of from 600 to 2,000, R is chosen from:



where p is from 1 to 3, Y is chosen from the group consisting of ---F and perfluoroalkyls having from one to 10 carbon atoms, R_1 is chosen from the group consisting of ---F and perfluoroalkyls having from one to 10 carbon atoms, and ϕ is an aryl group; and where A is an acid group chosen from the group consisting of:



$\phi'\text{OH}$ where ϕ' is an aryl group.

3,853,733

APPARATUS FOR ELECTROLYTICALLY TREATING ARTICLES

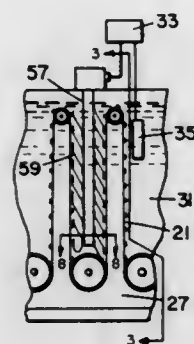
John J. Jacobs, 40 Wenona St., Depew, N.Y. 14043

Filed Feb. 20, 1973, Ser. No. 334,008

Int. Cl. B65g 49/04

U.S. Cl. 204-203

17 Claims



1. An apparatus for electrolytically treating metal articles comprising:
 - a. a tank for holding a liquid electrolyte;
 - b. an endless conveyor comprising a resilient belt of non-electrically conducting material having a plurality of strips of chemically resistant and electrically conductive material extending laterally across the belt, said strips being longitudinally spaced along one side of the belt, a portion of said belt being mounted to pass through said tank and liquid therein;
 - c. a voltage source; and
 - d. means for maintaining electrical contact with a plurality of the strips over a predetermined distance of travel of said belt within said tank with said voltage source, said contact means adapted to maintain electrical contact when said strips are immersed in the liquid.

3,853,734

FLUID SYSTEM FOR HONING AND PLATING APPARATUS

Myron P. Ellis, Royal Oak, and Albin S. Czubak, Detroit, both of Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

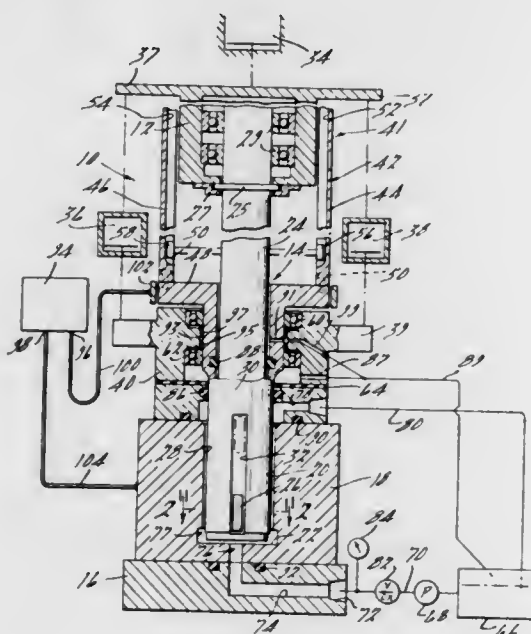
Continuation of Ser. No. 172,007, Aug. 16, 1971, abandoned.

This application Apr. 27, 1973, Ser. No. 355,216

Int. Cl. C23b 5/68

U.S. Cl. 204-212

7 Claims



1. In plating and honing apparatus for plating metal on and removing metal from the surface defining a bore in an electri-

cally conductive workpiece, the combination comprising first means adapted to hold a workpiece in a stationary position, a plating and honing tool including a tool support and a sleeve surrounding said tool support, said tool support and said sleeve being adapted to be inserted in the bore defined by said surface, sealing means between said tool support and said sleeve means mounting said plating and honing tool for reciprocation and rotation relative to said surface, a reservoir for electrolytic fluid, fluid pressure generating means, and fluid conduit means for moving electrolytic fluid under pressure from said reservoir through said bore and to and from said first means and said sealing means and back to said reservoir through a closed passage defined by said surface and said tool.

3,853,735

ELECTROLYTIC APPARATUS FOR PREPARATION OF ORGANOMETALLIC COMPOUNDS

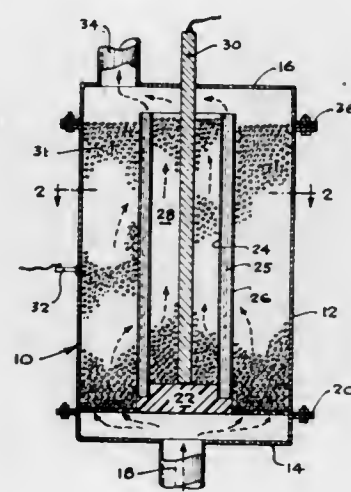
John C. Shepard, Jr., Lake Jackson; Edward E. Johnson, Sweeny, and Robert W. Bearman, Lake Jackson, all of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 185,005, Sept. 30, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,041

Int. Cl. B01k 3/10

U.S. Cl. 204-260

3 Claims



1. An electrolytic cell for producing organometallic compounds comprising a substantially upstanding cylindrical metal vessel having side, top and bottom walls, a perforate support within the vessel extending thereacross and spaced above the bottom wall, a plug of insulating material supported centrally of said perforate support, a tubular perforate member of insulating material vertically extending upwardly from the plug and defining with the plug a first chamber within the member and a second chamber with the perforate support and the vessel side walls, said tubular perforate member including a semi-rigid open large mesh haircurler member, inner and outer layers of fine mesh nylon screen along the inner and outer sides of said haircurler member and supported thereby, the mesh of the screen layers being substantially finer than the mesh of the haircurler member and such as to prevent the movement therethrough of the shot, a first lead electrode in the form of shot within said first chamber, a second lead electrode in the form of shot within said second chamber, means connecting said first and second lead electrodes to a source of low frequency alternating current potential, an opening in the bottom wall, and an opening in the top wall for permitting a Grignard reagent solution to flow through the vessel to be electrolysed, whereby said perforate member provides a flow path through the cell for the solution.

3,853,736

ELECTROFLOTATION APPARATUS

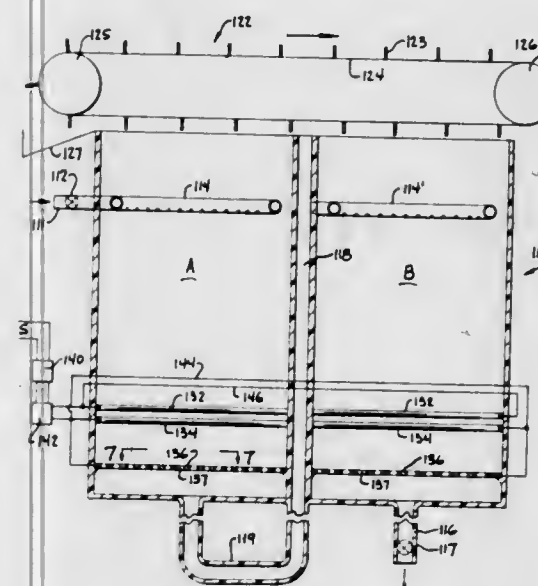
Warren B. Harnden, Rockford, Ill., and Eugene H. Morrill, Marathon, Fla., assignors to Illinois National Bank & Trust Co., trustee under trust, Rockford, Ill.

Continuation-in-part of Ser. No. 143,305, May 14, 1971, Pat. No. 3,726,780. This application Mar. 23, 1973, Ser. No. 344,195. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.

Int. Cl. B01k 3/00

U.S. Cl. 204-269

20 Claims



1. An electroflotation apparatus for purification of liquids, comprising
 - a. a first compartment having a bottom end and a top end;
 - b. supply means adjacent the top end of the first compartment for the introduction of liquid and for distributing said liquid over the cross-sectional area of the first compartment;
 - c. outlet means adjacent the bottom of the first compartment for the withdrawal of liquid therefrom;
 - d. a second compartment having bottom and top ends at about the same levels as the respective ends of the first compartment;
 - e. conduit means connected to the outlet means of the first compartment for directing the liquid therefrom to the second compartment and for distributing said liquid over the cross-sectional area of the second compartment;
 - f. discharge means adjacent the bottom end of the second compartment for the withdrawal of liquid from the compartment;
 - g. a plurality of electrodes disposed substantially horizontally one above the other in each compartment and connected to a source of electricity to produce an upwardly flow of gas bubbles by electrolysis of the liquid flowing downwardly through the compartments;
 - h. the total negative electrode area being greater than the total positive electrode area in each compartment, and there being a concentration of negative electrode area adjacent the bottom end of at least the second compartment to thereby provide a negatively charged zone adjacent said discharge means; and
 - i. means associated with the supply and discharge means for controlling the flow of liquid downwardly through the compartments in a non-turbulent manner, counter to the upwardly flow of gas bubbles, and at a velocity less than that of the rising bubbles.

3,853,737

SHALLOW-BED ELECTROCHEMICAL CELL

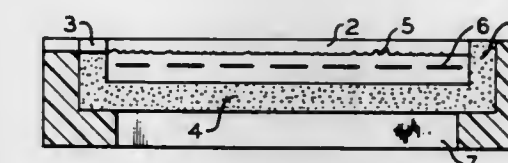
William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 6, 1972, Ser. No. 286,685

Int. Cl. B01k 1/00, 3/04; C07b 29/06

U.S. Cl. 204-270

7 Claims



1. An electrolysis cell comprising:
 - a. an impervious jacket provided with openings for inlet and egress of electrolyte, feed and product,
 - b. a porous electrode plate of dished configuration to hold a level of electrolyte not exceeding 6 inches in depth, said porous electrode plate being positioned within said jacket, means defining a feed inlet passageway at the bottom surface of said porous electrode to pass the feed into the pores of said porous electrode,
 - c. an electrode plate situated within the dished configuration of the dished electrode plate removed from said dished electrode plate a distance not exceeding 3 inches so as to be submerged in the electrolyte contained by the dished configuration of said porous electrode plate, and
 - d. terminals for connecting said electrode plates with an electrical source.

3,853,738

DIMENSIONALLY STABLE ANODE CONSTRUCTION

Richard E. Loftfield, Chardon, and Ramesh C. Jhaveri, Mayfield Heights, both of Ohio, assignors to Electron Corporation, Panama City, Panama

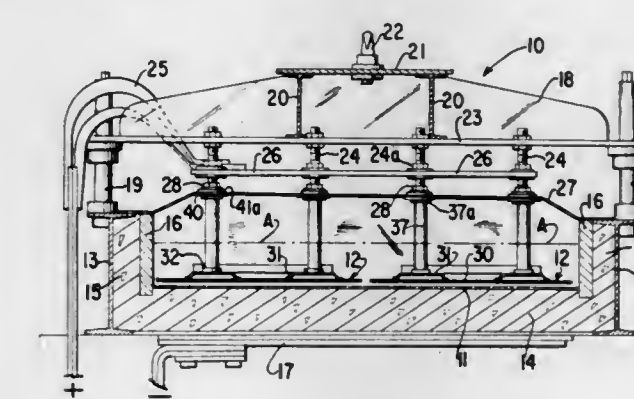
Continuation of Ser. No. 880,797, Nov. 28, 1969, abandoned.

This application Oct. 2, 1972, Ser. No. 294,241

Int. Cl. B01k 3/04; C01b 7/06; B01k 3/06

U.S. Cl. 204-286

16 Claims



1. A dimensionally stable anode for use in a flowing mercury cathode electrolysis cell comprising a planar mesh anode made of a valve metal provided with an electrically conductive, electrocatalytic coating on the working anode face, at least one laterally inverted, U-shaped conducting bar open at both ends connected by the integral legs of the bar to the mesh anode and extending substantially from end to end of the working face, the legs of the conductor bar being equally spaced laterally along the anode face in the other direction so the distance between the center line and each leg is equal and the distance between laterally parallel bars is twice the distance between the center line and each leg to provide uniform longitudinal distribution of current on the anode face, and means on said conductor bar for a detachable connection to electrical lead-ins.

3,853,739 PLATINUM GROUP METAL OXIDE COATED ELECTRODES

James M. Kolb, Mentor, and Kevin J. O'Leary, Cleveland Heights, both of Ohio, assignors to Electronor Corporation, Panama City, Panama

Filed June 23, 1972, Ser. No. 265,690

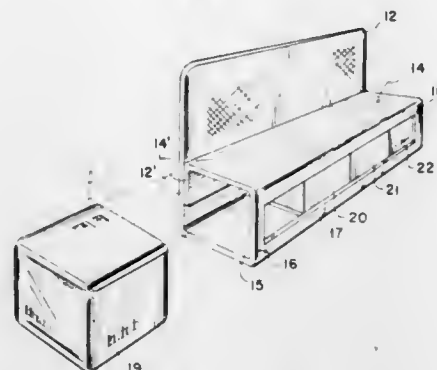
Int. Cl. B01k 3/06; C01b 7/06

U.S. Cl. 204—290 F

7 Claims

1. An electrode consisting essentially of an electrically conductive substrate, an electrocatalytically active material and an amorphous valve metal oxide binder for adhering said material to at least a portion of the surface of said substrate, the material being a particulate solid solution of iridium and ruthenium oxides having a particle size of less than 0.1 micron, iridium oxide being present within the range of 1.0–99 mole percent, the balance being ruthenium oxide.

portions having adhesive on one side thereof and securing said portion to the opposite side of one of said equal side portions, said equal side portions of each partially assembled cube



blank having indicia thereon relating to calendar year dates thereon, said cube blanks, when fully assembled, adapted to fit within said receiving member to illustrate a predetermined calendar date through said window means.

3,853,740 TARGET CHANGER FOR SPUTTERING BY IONIC BOMBARDMENT

Anton Kunz, Triesenberg, Liechtenstein, assignor to Balzer Patent-Und Betieiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

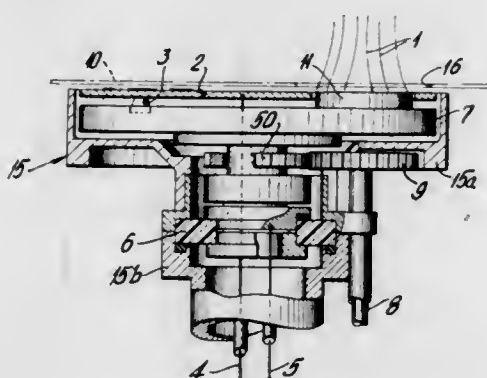
Filed Apr. 5, 1973, Ser. No. 348,018

Claims priority, application Switzerland, Nov. 23, 1972, 17202/72

Int. Cl. C23c 15/00

U.S. Cl. 204—298

7 Claims



1. A target changer for positioning targets which are to be subjected to cathode sputtering by ions, comprising a movable support for carrying a target, a cover comprising an ion shielding electrode, means adapted to supply a positive potential to said cover relative to the target said cover overlying said support but exposing at least a portion of the target thereon, electrical insulation means supporting said cover on said support, and mounting means for supporting said support for movement.

3,853,741 CALENDAR

Carle D. Klupt, Baltimore, Md., assignor to Scorecard Promotions, Inc., Baltimore, Md.

Division of Ser. No. 146,632, May 25, 1971, abandoned. This application June 11, 1973, Ser. No. 369,274

Int. Cl. B65d 25/54; G09d 3/02

U.S. Cl. 206—45.31

5 Claims

1. A kit for an eternal calendar assembly comprising a package means, a receiving member within said package means, said receiving member having four fold lines thereon designating five separate portions, one end portion side having adhesive thereon and being secured to a portion of the opposite side of said other end portion adjacent its corresponding fold line, the middle portion of said receiving member having a window means therein, a plurality of partially assembled cube blanks in said package means, each cube blank having six equal side portions and seven tab portions, one of said tab

3,853,742 SELECTIVE MIDBARREL HYDROCRACKING

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 244,947, April 17, 1972, abandoned, and a continuation-in-part of Ser. No. 191,123, Oct. 20, 1971, abandoned, and a continuation-in-part of Ser. No. 209,439, Dec. 17, 1971. This application July 20, 1973, Ser. No. 381,220

Int. Cl. C10g 13/02; C01b 33/28

U.S. Cl. 208—111

8 Claims

1. The method of selectivity converting hydrocarbons boiling above about 700°F to midbarrel fuel products boiling between about 300° and 700°F including the steps of reacting said hydrocarbons with hydrogen under hydrocracking conditions including a temperature of at least about 500°F, a pressure of at least about 200 psig and a hydrogen addition rate of at least about 400 SCF/bbl of said hydrocarbons sufficient to convert at least about 40 volume percent of said hydrocarbons per pass to products boiling below about 700°F with at least about 50 percent midbarrel selectivity in the presence of a catalytic combination of a crystalline aluminosilicate zeolite, an amorphous refractory inorganic oxide, and a hydrogenation component selected from nickel, tungsten, cobalt and molybdenum metals, oxides and sulfides, wherein said zeolite constitutes less than about 50 weight percent of said combination based on the combined weight of said zeolite and refractory oxide and is characterized by a crystal structure corresponding to faujasite or zeolite L, a silica-to-alumina mole ratio of at least about 3, a sodium content corresponding to less than about 2 weight percent Na₂O, and a non-uniform pore size distribution in which at least 25 percent of the pore volume is contained in pores having diameters greater than about 20 angstroms and at least about 17 percent in pores having diameters greater than about 40 angstroms.

3,853,743 REMOVAL OF ORGANIC CATIONS FROM CRYSTALLINE ALUMINOSILICATES

Schwartz, Albert B., Philadelphia, Pa., assignor to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 27,182, April 9, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,970

Int. Cl. C10g 13/02, 11/02; B01j 11/40

U.S. Cl. 208—111

13 Claims

1. A process for effecting removal of organic cations which have been introduced into an aluminosilicate zeolite during its crystallization by heating said zeolite at a temperature between about 500°F. and about 1,000°F. in an atmosphere

consisting essentially of ammonia or mixtures thereof with nitrogen.

3,853,744 SOUR WATER DISPOSAL IN FLUID SOLIDS SYSTEMS

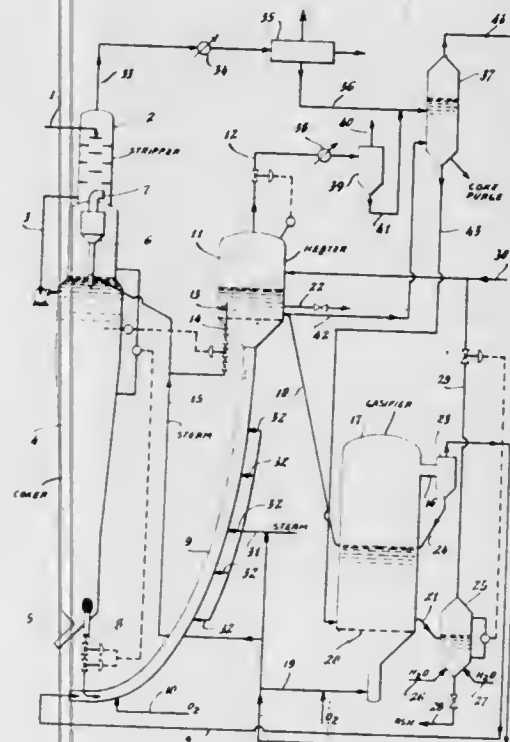
Gerard C. Lahn, Parsippany, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed May 14, 1973, Ser. No. 360,082

Int. Cl. C10g 9/32; C01g 11/18; B01d 11/00

U.S. Cl. 208—127

11 Claims



1. In a hydrocarbon conversion process wherein a stream of fluidized solid particles is circulated between a conversion zone and a heating zone, the improvement which comprises: a. passing a stream of hot fluidized particles from said heating zone to a steam generation zone;

b. introducing a refinery waste water stream into said steam generation zone and contacting the same with said hot fluidized particles thereby vaporizing said refinery waste water stream to steam, and
c. utilizing at least a portion of the resulting steam, without further treatment, in said hydrocarbon conversion process.

3,853,745 LOW TEMPERATURE-LOW PRESSURE NAPHTHA REFORMING PROCESS

Albert B. Welty, Jr., Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 7, 1973, Ser. No. 338,992

Int. Cl. C10g 35/06, 25/00

U.S. Cl. 208—139

21 Claims

1. A process for reforming a hydrocarbon feedstock comprising naphthenes and paraffins in which the naphthenes are converted to aromatic hydrocarbons, which process comprises contacting said feedstock in a reforming zone with a dehydrogenation and isomerization catalyst at a temperature of between about 600° and 700°F., maintaining a hydrogen pressure of 4 atmospheres or less, and providing in the reforming zone a solid adsorbent mixed with the catalyst for adsorbing the aromatic hydrocarbons as they are produced.

3,853,746 PROCESS FOR SWEETENING HYDROCARBON PRODUCTS WITH SULFENAMIDES

Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 1, 1973, Ser. No. 411,979

Int. Cl. C10g 27/06

U.S. Cl. 208—206

13 Claims

1. A process for the sweetening of a hydrocarbon product which comprises treating a mercaptan-containing hydrocarbon product with a sulfenamide activated by a carbonyl or sulfonyl group adjacent to sulfenamide nitrogen whereby said mercaptans are converted to disulfides, and recovering the resultant sweetened hydrocarbon product.

3,853,747 HYDROCRACKING PROCESS

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 209,440, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 869,389, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,288, Sept. 20, 1967, abandoned. This application Feb. 20, 1973, Ser. No. 334,162

Int. Cl. C10g 13/02

U.S. Cl. 208—111

18 Claims

1. A process for hydrocracking a hydrocarbon feedstock which comprises contacting said feedstock plus added hydrogen, and under hydrocracking conditions with a catalyst comprising a crystalline aluminosilicate zeolite cracking base intimately composited with a finely divided Group VIB metal hydrogenating component, said hydrogenating component or a precursor thereof having been composited with said zeolite base in a substantially undissolved form by intimately admixing the two components in an aqueous medium having a pH below 6, but sufficiently high to avoid acid destruction of the zeolite crystal structure.

3,853,748 HYDROGENATION OF CYCLOPENTADIENE

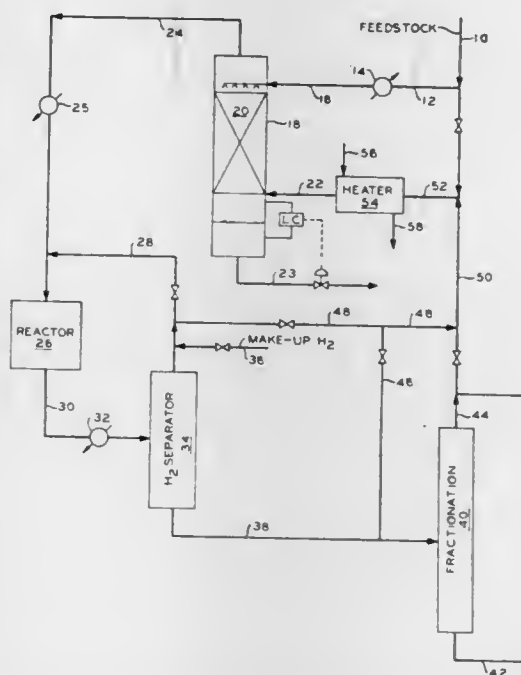
Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 5, 1969, Ser. No. 874,207

Int. Cl. C10g 23/06, 31/14, 37/10

U.S. Cl. 208—255

9 Claims



1. In a process for the selective hydrogenation of a mixture comprising cyclopentadiene and dicyclopentadiene wherein said mixture is preheated in a heating zone in the absence of a catalyst to a given temperature within the range of about 400° to about 650° F. which is sufficient to carry out said

selective hydrogenation, and at which said given temperature there is a substantial formation of a high boiling resin or resin-like residue which fouls said heating zone, the improvement comprising:

- minimizing the formation of said residue during said heating step by heating said mixture in said heating zone in the absence of a catalyst to a greater temperature which is greater than said given temperature and substantially reducing the volume and viscosity of said residue;
- separating said heated mixture into (a) a high boiling liquid residue having less volume and a lower viscosity than if said mixture had been heated only to said given temperature, and (b) a vaporous stream comprising cyclopentadiene; and
- cooling said vaporous stream to a temperature within the range of about 350° to about 600°F. prior to carrying out said selective hydrogenation.

3,853,749

STABILIZATION OF HYDROCRACKED LUBE OIL BY CONTACTING SAID OIL WITH A CATALYST OF THE ZSM-5 TYPE

Wilton F. Espenscheid, Princeton, and Tsoung Y. Yan, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 6, 1973, Ser. No. 377,003
Int. Cl. C10g 23/04

U.S. Cl. 208—307

7 Claims

1. A process for stabilizing a hydrocracked lube oil against deterioration attributable to exposure to light and/or air which comprises contacting a hydrocracked lube oil with a catalyst of the ZSM-5 type, in the presence of a small amount, generally at least about 1 weight percent of paraffins, which are normal paraffins or those having slightly branched chains, capable of entering the pore structure of said catalyst, said contacting taking place at a temperature in the approximate range of 400° to 650°F., a liquid hourly space velocity of 0.1 to 10 and a pressure from about atmospheric to 2,000 psig and recovering a lubricating oil of improved stability characteristics.

3,853,750

METHOD AND DEVICE FOR THE COLLECTION OF PARTICLES IN A GAS WITH PARTICLE-SIZE SEPARATION

Robert Volsy, Brignoud, France, assignor to Commissariat a L'Energie Atomique, Paris, France

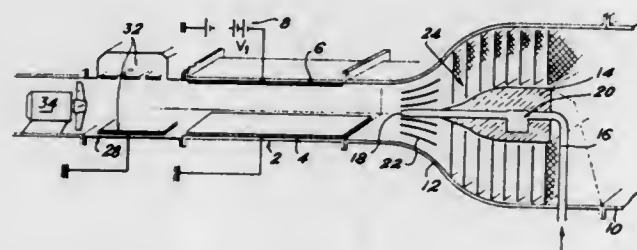
Filed Dec. 19, 1972, Ser. No. 316,523

Claims priority, application France, Dec. 31, 1971, 71.47800

Int. Cl. B03c 3/12, 3/43, 3/08

U.S. Cl. 209—127 R

12 Claims



1. A method for the collection of particles in a polluted gas with particular-size separation comprising the steps of charging the suspended particles of polluted gas in an ionizer, injecting into a gas stream in non-turbulent regime a flow of said charged polluted gas and collecting said charged particles by passing said gas stream between two substantially parallel conductive plates parallel to the axis of propagation of the gas stream and applying a direct-current potential difference between said plates.

3,853,751

FLOTATION OF SULFIDE ORES USING DITHIOCARBAMATES

Guy H. Harris, Concord, and David J. Collins, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

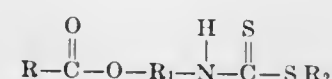
Filed Feb. 8, 1972, Ser. No. 224,616

Int. Cl. B03d 1/02

U.S. Cl. 209—166

10 Claims

1. A process of concentrating sulfide ores by flotation, which comprises subjecting a sulfide ore of copper, nickel or molybdenum, in the form of a pulp, to a flotation process in the presence of a flotation collector for said sulfides comprising a compound corresponding to the formula



wherein R represents a member selected from the group consisting of H, a hydrocarbyl or a heterohydrocarbyl group; R₁ represents a member selected from the group consisting of an alkylene or heteroalkylene group having the hetero atom substituted in the carbon chain and R₂ represents a hydrocarbyl radical other than an aryl group.

3,853,752

PROCESS AND APPARATUS FOR TREATING WASTES BY A COMBINED ACTIVATED SLUDGE AND BIOLOGICAL FILTER BED

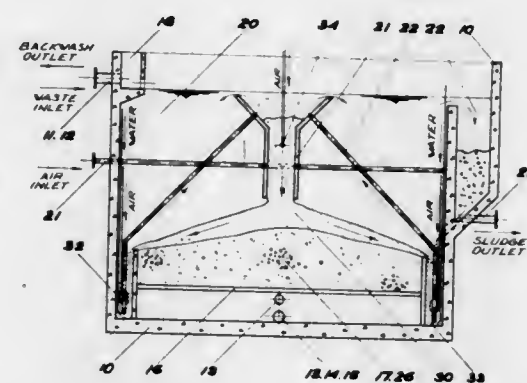
Jerzy Tymoszczuk, 3615 Prud'homme Ave., Apt. 11, Quebec, Canada

Filed Dec. 21, 1970, Ser. No. 100,220

Int. Cl. C02c 1/04

U.S. Cl. 210—17

18 Claims



1. A process for the treatment of sewage and the like, said process comprising: maintaining a submerged biological filter bed zone containing finely divided, particulate filter media; maintaining an activated sludge zone in upstream fluid flow relationship to said biological filter bed zone; feeding sewage or the like to be treated to said activated sludge zone; aerating both said biological filter bed zone and said activated sludge zone; withdrawing treated effluent from said biological filter bed zone; and backwashing said biological filter bed zone as often as required to maintain the operating effectiveness of said biological filter bed zone and an acceptable head at the point of withdrawal of the treated effluent, an upper layer of said filter media being transported to a conduit positioned in said activated sludge zone, said conduit having an upper inlet end for the transported filter media and a lower outlet end through which said transported filter media is returned to said upper layer of said filter media, the said transported filter media being aerated during the passage thereof through said conduit.

3,853,753

REMOVING OIL FROM WASTE WATER WITH SULFUR

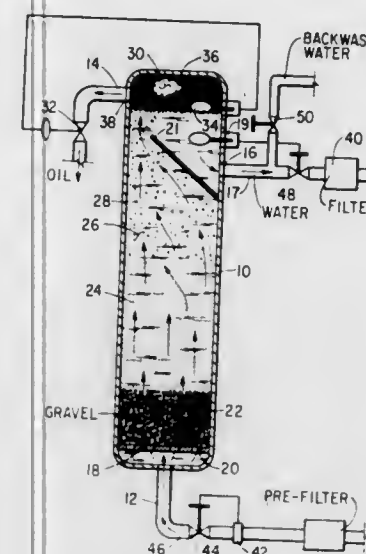
Lloyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Oct. 13, 1970, Ser. No. 80,424

Int. Cl. B01d 17/04; C02b 9/02

U.S. Cl. 210—23

13 Claims



1. A method of removing dispersed oil from oily water which comprises: contacting elemental sulfur in the solid phase with said oily water to agglomerate the oil; and separating the agglomerated oil from the water.

3,853,754

MEMBRANE SEPARATION OF HOMOGENEOUS CATALYSTS FROM NITRILE SOLUTIONS

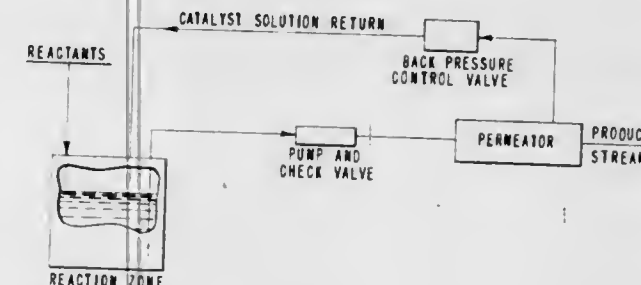
Lawrence Wayne Gosser, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 20, 1972, Ser. No. 273,803

Int. Cl. B01d 13/00

U.S. Cl. 210—23

12 Claims



1. A process for the permselective separation of an organic solution containing
 - a. a metal-organic complex selected from the group consisting of
 - A. MA¹A²A³A⁴ in which M is Ni, Pd or Pt, and the A's alike or different, are neutral ligands
 - B. (Z¹M¹)₂M²X¹, in which M² is Co or Rh, X¹ is H, Cl, Br, I or CN, Z¹M¹ is a neutral ligand in which M¹ is P, As or Sb, and Z¹ is R or OR;
 - C. RuX²₂L₂ in which X is Cl, Br, I or a carboxylate, L is a saturated mononitrile, a monounsaturated mononitrile, an amine, water, an alcohol of two to eight carbon atoms or an aromatic mononitrile, m is 2 or 3, n is 0 to 4;

D. HNi(PY¹Z²)₂X³, in which

Z² is R' or OR', in which

R' is hydrocarbyl of up to 18 carbon atoms or such hydrocarbyl substituted with —Cl, —O—, or —CN,

Y¹ is 2Z²'s or —R²—, or —O—R²—O—,

R² being a hydrocarbylene radical of up to 18 carbon atoms,

X³ is the anion of a protonic acid, and

n is 3 or 4;

E. PdX³, in which

X³ is the anion of a protonic acid; and

F. BR³, in which

R³ is a hydrocarbyl of six or more carbon atoms,

- b. at least 3 percent of at least one organic hydrocarbon derivative having at least one nitrile group and up to 12 carbon atoms, which consists essentially in contacting one surface of an asymmetric permselective membrane consisting essentially of an aromatic polyimide prepared from pyromellitic dianhydride and 4,4'-diaminodiphenyl ether with said organic solution under pressure and recovering from the other side of the membrane fluid which has passed through the membrane.

3,853,755

OSMOSIS EFFICIENCY FROM TANNIN TREATMENT OF NON-POROUS SEMIPERMEABLE MEMBRANES HAVING HYDROUS HEAVY METAL COATINGS

James Barry Ganci, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,779

Int. Cl. B01d 13/00

U.S. Cl. 210—23

9 Claims

1. A process for separating solvent from an aqueous solution of inorganic salts, comprising contacting a permselective structure with said solution under a pressure greater than the osmotic pressure of the solution, said permselective structure comprising a non-porous semipermeable membrane selected from cellulosic derivative membranes and nitrogen-linked aromatic polymer membranes and a coating of hydrous heavy metal compositions and said structure having been treated with a solution of a hydrolyzable tannin in an amount and under conditions which result in a significant reduction in salt passage through the structure under reverse osmosis conditions.

3,853,756

REVERSE PRESSURE CLEANING OF SUPPORTED SEMIPERMEABLE MEMBRANES

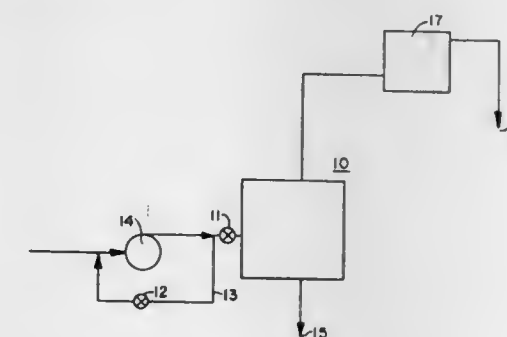
Regis R. Stana, Murrsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1973, Ser. No. 331,458

Int. Cl. B01d 13/00

U.S. Cl. 210—23

9 Claims



1. A method of cleaning foulants from the surface of a supported semipermeable membrane having a feed side and a support side, comprising the steps of:
 - a. contacting the feed side of a porous semipermeable membrane, supported by and integrally bonded to the wall of a module comprising resin bonded filler particles, for a

period of time, with a continuous stream of liquid feed solution containing foulants under a pressure of up to about 1000 psi, wherein said foulants concentrate at the membrane feed side surface;

- b. releasing the pressure on the feed side of the membrane, for a period of time of between about 5 to about 30 seconds, and activating a means to cause a back pressure on the support side of the membrane of between about 2 to 50 psi to cause a backflow of liquid through the membrane of between about 3-60 gal/sq. ft./day from the support side to the feed side of the membrane, without altering the membrane pore structure, said backflow being effective to remove foulants concentrated at the membrane feed side surface;
- c. applying a driving pressure of up to about 1,000 psi to the feed solution to flush the foulants from the feed side of the membrane wherein the time cycle ratio of driving pressure time: back pressure time is over 2:1; and
- d. repeating step (b) and then step (c) at least twice.

3,853,757

SUPPORT ELEMENTS FOR TUBULAR MEMBRANES AND PROCESS FOR MANUFACTURING THEM

Michel Pages, Ardeche, France, assignor to Rhone-Poulenc S.A., Paris, France

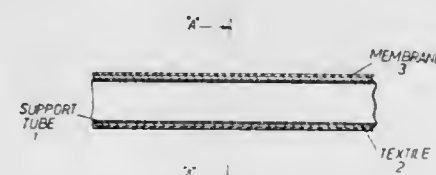
Filed Apr. 13, 1973, Ser. No. 351,039

Claims priority, application France, Apr. 19, 1972, 72.13829

Int. Cl. B01d 31/00, 13/00

U.S. Cl. 210-23

8 Claims



1. A support element for a tubular membrane comprising a support tube and a shrunk textile sheath in gripping contact with the outer surface of the support tube wherein the textile sheath is heat-shrinkable along its diameter and is made of a woven material in which the warp yarns, arranged longitudinally, are yarns which are stable to heat and the weft yarns, arranged transversely, are heat-shrinkable yarns.

3,853,758

SEPARATION OF WASTE DYESTUFFS BY ADSORPTION PROCESS

Marvin J. Hurwitz, Elkins Park; David C. Kennedy, Malvern, both of Pa., and Carl J. Kollman, Cherry Hill, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 304,756, Nov. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,046, Sept. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,259, Sept. 16, 1971, abandoned. This application July 2, 1973, Ser. No. 375,413

Int. Cl. B01d 15/04

U.S. Cl. 210-27

14 Claims

1. A sequential process for separating a dyestuff from an aqueous medium containing at least one dissolved dyestuff comprising:

- a. Contacting the aqueous medium with particles of an essentially non-ionogenic, macroreticular, water-insoluble, polymeric adsorbent in the form of beads having an overall bead size in the range of about 0.1 to 3

millimeters average diameter, a porosity of at least 30 percent, a surface area of at least 100 up to 1,000 square meters per gram, and pores with an average pore diameter of 20 to 200 A. units; and

- b. Treating the effluent from the foregoing step with particles selected from a class consisting of the salt forms of a weak acid ion exchange resin, an aliphatic weak base ion exchange resin and a combination of a weak acid and an aliphatic weak base ion exchange resin, and
- c. Eluting the adsorbed dyestuffs from the non-ionogenic adsorbent with a polar, volatile, water-miscible organic solvent selected from the group consisting of one or more volatile ketones of 3 to 10 carbons, linear and branched alkanols having 1 to 10 carbons, dimethyl formamide and dimethyl acetamide and;
- d. Eluting and regenerating the ion exchange resin by treating the resin with
 - i. an aqueous solution of an appropriate base or acid which will convert the resin to the hydroxide or hydrogen form;
 - ii. eluting the adsorbed dye-stuffs with a polar, water-miscible organic solvent regenerant selected from one or more volatile ketones of 3 to 10 carbons, linear and branched alkanols having 1 to 10 carbon, alkyl esters of aliphatic acids from 1 to 10 carbons, and dimethyl formamide, and
 - iii. reconvert the regenerated resin to its salt form by treating with an aqueous solution of one of a mineral acid or an alkali metal hydroxide.

3,853,759

DYNAMIC HYDRAULIC COLUMN ACTIVATION METHOD

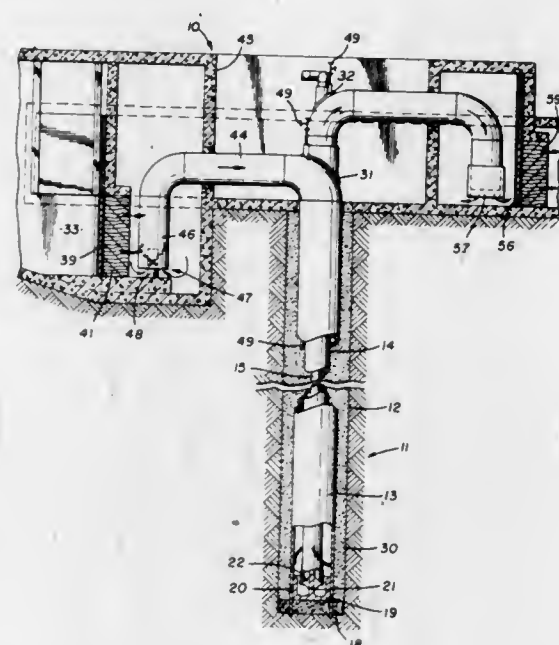
James A. Titmas, 3615 Yellow Creek Rd., Akron, Ohio 44313

Continuation-in-part of Ser. No. 735,066, June 6, 1968, abandoned. This application Nov. 19, 1970, Ser. No. 91,151

Int. Cl. C02b 3/04; C02c 1/00

U.S. Cl. 210-63

5 Claims



1. A method for treating a continuously flowing sewage material comprising the steps of, feeding the sewage material into the top of a hydraulic influent column, conducting said material from the bottom of said influent column into the bottom of a separate hydraulic effluent column, continuously supplying heat energy to the material near the bottom of one of said columns at the reaction zone to promote chemical reactions and decrease the specific gravity of the material, limiting combustion of the material by restricting the process to oxygen present in the material, whereby the pressure at the bottom of said influent column causes the heated material to rise in said effluent column, and removing the material from the top of said effluent column.

3,853,760

SEWAGE OZONIZING UNIT

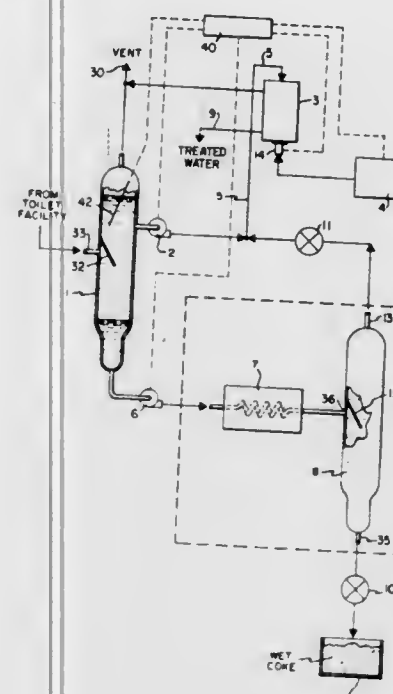
Byron V. Klock, and Rudolph C. White, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,636

Int. Cl. C02b 1/34, 3/08

U.S. Cl. 210-63

4 Claims



1. In combination in a sewage treatment unit for the disposal of waste sewage from a small installation, an ozonizer; a primary settling zone for receiving liquid sewage and separating liquid from solid wastes communicating with a water treating and storage zone; a gas diffuser communicating with said ozonizer and with said water treating and storage zone for introducing ozone therein in finely dispersed form; said diffuser including a gas inlet in fluid communication with said ozonizer and a plurality of baffles disposed therein each having a recess in their lower extremity; a driven shaft having a plurality of wires extending radially therefrom into said recesses and positioned adjacent said inlet so as to contact ozone issuing from said inlet and disperse same in the form of very small bubbles in the water contained in said water treating zone; synchronous means for pumping liquid from the settling zone to the water treating zone and for supplying ozone from said ozonizer to said water treating and storage zone, a liquid phase coking device, means for bringing solid waste from said primary settling zone to said coking device, a separating coke from coking effluent and conduit means for recycling aqueous coking effluent to said water treating zone.

3,853,761

FILTER

Robert M. McClory, Los Angeles, Calif., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed May 25, 1973, Ser. No. 364,099

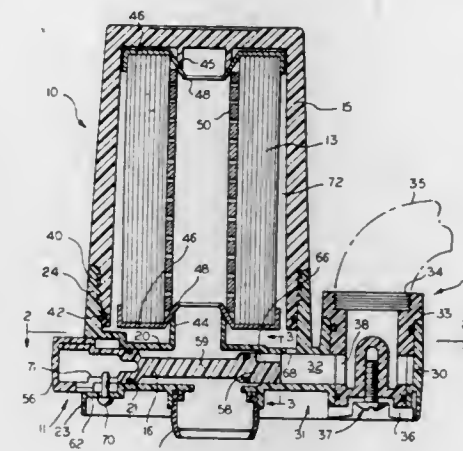
Int. Cl. B01d 35/02

U.S. Cl. 210-100

19 Claims

1. A device for filtering impure liquids comprising: liquid flow control means having an inlet and an outlet, hollow housing means releasably secured to said liquid flow control means, filter disposed in said housing and having a first side in communication with said inlet and a second side communicating with said outlet, means within said liquid flow control means defining a liquid flow passage between said inlet and said outlet other than through said filter means, and selectively operable valve means associated with said flow passage defining means and having a first position for permitting liquid flow between said inlet and said outlet through said flow passage defining means by passing said

filter means and a second position for preventing liquid flow through said flow passage defining means whereby liquid flow is directed from said inlet through said filter



means to said outlet, said valve means being adapted to be manually moved to said second position and being constructed and arranged so that normal liquid pressure is effective to move said valve means to its first position.

3,853,762

SELF-CLEANING FILTER

Georges Moatti, 17 Rue Gutenberg, 92100 Boulogne, France

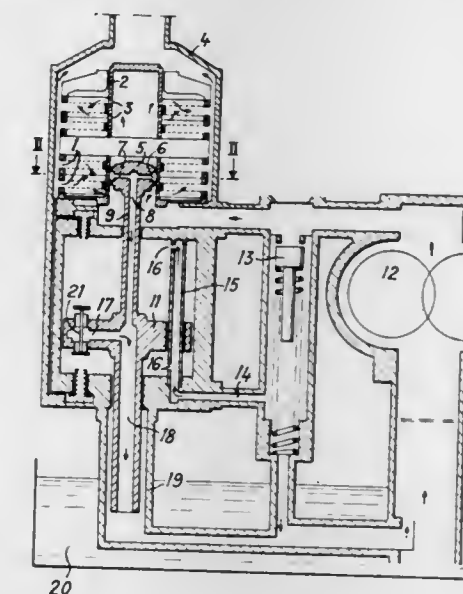
Filed June 7, 1973, Ser. No. 367,748

Claims priority, application France, July 19, 1972, 72.26048

Int. Cl. B01d 29/38

U.S. Cl. 210-108

8 Claims



1. A self-cleaning filter comprising a plurality of stacked filtering elements forming filtration chambers in tiers, a central tube extending through said filtration chambers defining a central feed passage; said tube having liquid feed orifices formed therein communicating with said filtration chambers; obturating distributor means located in said passage for supplying liquid to be treated to said filtration chambers while successively isolating the feed orifices of the tiered filtration chambers from the liquid to be treated to permit countercurrent washing; and means for reciprocating the obturator in the central passage with respect to said orifices to successively isolate the feed orifices; said reciprocating means including a housing defining a piston chamber, a piston slidably mounted in said piston chamber for movement between two extreme stroke positions and operatively connected to said obturator, and means for simultaneously supplying liquid to both sides of the piston in said piston chamber, said piston having a liquid discharge port formed therein providing communication between the piston chamber on both sides of the piston and the exterior of the piston housing and valve means mounted in the piston for alternately opening and closing said liquid discharge

port to said piston chamber at alternate sides of the piston at the end of each stroke of the piston whereby alternate sides of the piston are subjected to the liquid supplied to said piston chamber thereby causing reciprocation of the piston and successive isolation of said filtration chambers by said obturator.

3,853,763

IN-TANK FILTER AND MOUNTING ARRANGEMENT THEREFOR

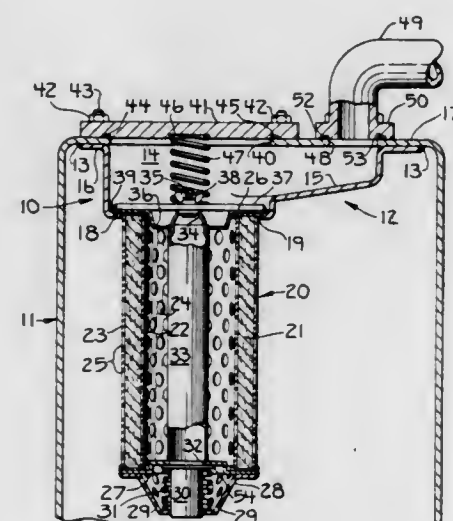
Lowell R. Hall, Manhattan, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 2, 1973, Ser. No. 375,354

Int. Cl. B01d 35/02, 27/10

U.S. Cl. 210-130

6 Claims



1. A filter assembly comprising,
 - a generally cylindrical outer case member,
 - a generally cylindrical inner case member concentrically disposed within and spaced from said outer case member,
 - filter material intermediate said inner and outer case members,
 - a plurality of perforations in said inner and outer case members for passage of fluid therethrough,
 - upper and lower end plates on upper and lower ends of said case members, respectively,
 - said upper end plate defining a flange portion radially outward of said outer case member for use in mounting the filter assembly,
 - means defining an opening in said upper end plate for admission of fluid to the filter assembly,
 - a tube concentrically disposed within and spaced from said inner case member and defining upper and lower open ends thereof, the upper end of said tube being located adjacent said means defining an opening, and the lower end thereof being fixed to said lower plate,
 - means defining an opening through said lower plate so as to give communication between the interior of said tube and the exterior of said filter assembly, and further including bypass valve means normally obturating said means defining an opening through said lower plate, said bypass valve means operating to open communication between said tube interior and filter assembly exterior when a predetermined level of fluid pressure in said tube interior is reached and further operating to close off communication and again obturate said lower plate opening defining means when said fluid pressure drops below said predetermined level,
 - said filter assembly further in combination with a tank,
 - a bracket within said tank defining a basin,

means defining an opening in said bracket through which said filter assembly extends, said flange portion of said upper end plate being dimensioned so as to prevent the filter assembly from passing through said bracket, an inlet opening located in the top wall of said tank and being offset from said filter assembly, a chute formed in said mounting bracket in line with said top wall inlet opening for dissipating fluid velocity and directing fluid to said filter assembly, and further including means for holding said filter assembly in position within said means defining an opening in said bracket.

3,853,764

WASTE WATER TREATMENT SYSTEM

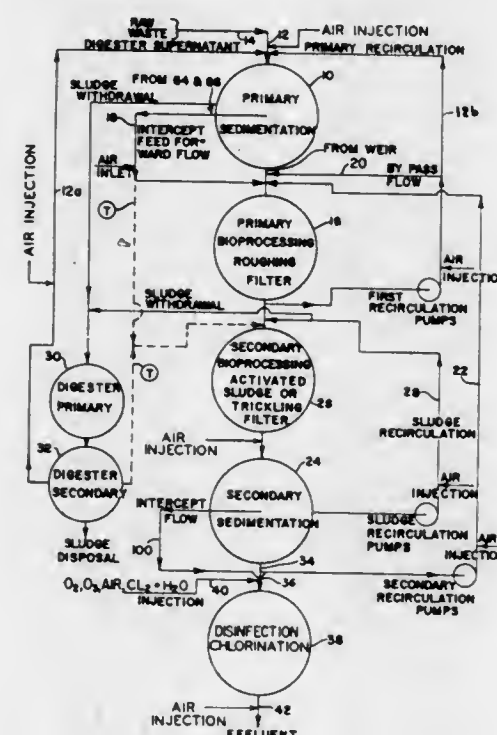
Edward T. Armstrong, 490 Pepperidge Tree Ter., Butler, N.J. 07405

Continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 362,118, April 23, 1964, abandoned. This application Apr. 30, 1973, Ser. No. 355,738. The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.

Int. Cl. C02c 1/08

U.S. Cl. 210-195

46 Claims



1. A system for pollution suppression which comprises
 - a primary sedimentation tank, means to inject raw waste effluent into the tank for settling action,
 - a digester, means to withdraw sludge from the primary sedimentation tank and feed it to the digester,
 - a primary bioprocessing tank, means to feed the effluent from the primary sedimentation tank to the primary bioprocessing tank,
 - a secondary sedimentation tank, means to deliver the effluent from the primary bioprocessing tank to said secondary sedimentation tank,
 - a disinfection tank, means to add a disinfectant to the disinfection tank, and means for delivery of the effluent from the secondary sedimentation tank to said disinfection tank and discharging fully processed effluent therefrom,
 - first injection means for selectively injecting an oxygen containing fluid under high momentum exchange conditions into the effluent at any point in the pollution suppression system prior to said disinfection tank, and
 - means to selectively inject an oxygen containing gas into effluent from said disinfection tank to maintain a high dissolved oxygen content in said disinfected effluent.

3,853,765

DROPLET COUNTER CURRENT CHROMATOGRAPHY

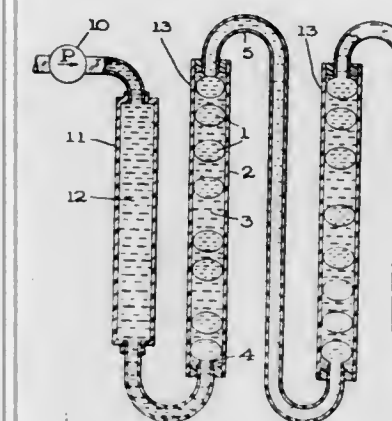
Takenori Tanimura, Tokyo, Japan, and Yoichiro Ito, Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Continuation of Ser. No. 147,133, May 26, 1971, Pat. No. 3,784,467. This application July 2, 1973, Ser. No. 375,883

Int. Cl. B01d 15/08

U.S. Cl. 210-198 C

4 Claims



1. Droplet counter-current chromatographic apparatus for use in all liquid separation comprising:
 - a plurality of substantially vertical columns of cylindrical shape;
 - tubing of narrower bore than said columns connecting one end of each column with the opposite end of the succeeding column; and
 - tip means at the end of said tubing extending into each succeeding column of a size sufficient for forming a steady stream of droplets of moving phase liquid having a diameter approximately equal to that of said columns when said columns are filled with a stationary phase liquid and a moving phase liquid is being forced through said columns.

3,853,766

LIQUID SEPARATOR WITH COMMON BULKHEAD WALL SUPPORT FOR END-TO-END COALESCING UNITS

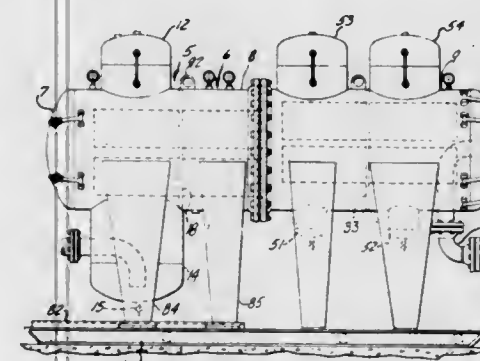
Bernard G. Gentry, Timberlake, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,662

Int. Cl. B01d 23/06

U.S. Cl. 210-236

13 Claims



1. A separator for treating dispersions of immiscible liquids to separate one liquid from another comprising:
 - a shell having inlet and outlet means defining a direction from one end portion of the shell to its opposite end portion;
 - a bulkhead wall supported in said shell separating a first region from a second region within the shell;
 - a plurality of cylindrical coalescing units, each comprising a tubular perforated support fixed to said wall and defin-

ing a central cavity, a liquid-permeable cylindrical coalescing medium removably supported on the exterior surface of said support, said units being supported by said wall in longitudinally aligned end-to-end pairs in cantilever relation with opposite sides of the wall with their cavities in alignment with an opening through the bulkhead wall;

said units being closed at distal ends to form the cavities of an aligned pair of units into a single liquid conducting chamber closed at both ends, said media being removable from respective supports over the ends thereof in an endwise direction;

said bulkhead wall joining the inner periphery of the shell in substantially sealed relationship;

said shell being constructed in sections including end sections separable along planes generally parallel to said bulkhead wall adjacent the distal ends of said units; said shell defining vertically extending space-enclosing means for collecting coalesced dispersed liquid in contiguous vertical relation with any of said regions containing said units.

3,853,767

PUMPING APPARATUS FOR SKIMMING AND RECOVERING AN OIL LAYER FROM A BODY OF WATER

Frank Mohn, Fana, Norway, assignor to Patents and Developments A/S, Nesttun, Norway

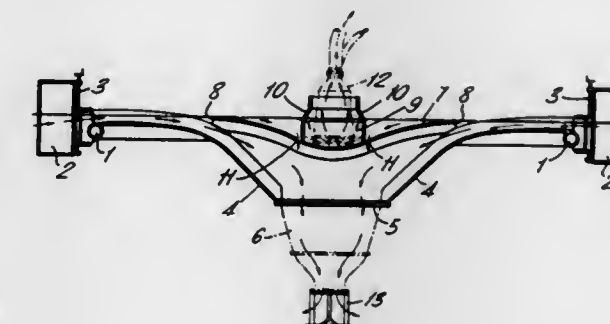
Filed Apr. 14, 1972, Ser. No. 244,010

Claims priority, application Norway, Apr. 23, 1971, 1522/71

Int. Cl. E02b 15/04

U.S. Cl. 210-242

5 Claims



1. Apparatus for recovering oil floating on the surface of a body of water comprising a bowl for skimming and collecting oil from the surface of the water means for supporting the bowl with its peripheral edge surface located at the surface of the water while its body portion therebelow extends downwardly below the level of the body of water, said bowl having a central downwardly and inwardly inclined upper surface, a pump and a pump inlet for pumping recovered oil from the central lower portion of the bowl, a plate below and spaced from the under surface of said bowl, said plate having an outer peripheral surface for directing water and oil toward the peripheral edge of the bowl where oil is separated from water, said plate having a central downwardly and inwardly inclined portion below the bowl, said central downwardly and inwardly inclined portion having a bottom outlet passageway, means for drawing water and oil over the peripheral surface of said plate toward and over the peripheral edge of said bowl, said means also drawing water through the space between said plate and said bowl and out the said passageway, said means including a water pump connected into said water outlet passageway, and the lower portion of said bowl being provided with a channel for the flow of water to the plate below.

3,853,768

SKIMMING APPARATUS

Luigi Bagnulo, Via A. Volta, 18, Milan, Italy

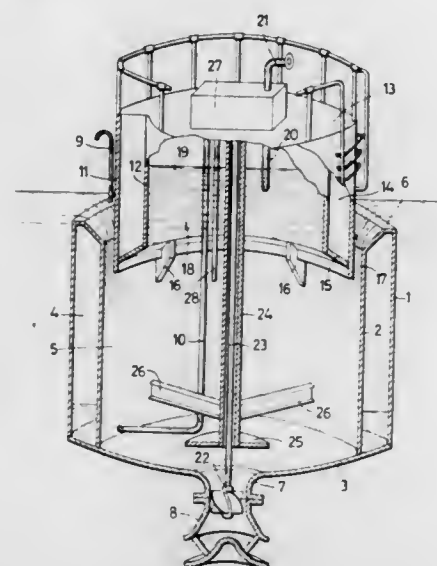
Filed Jan. 10, 1973, Ser. No. 322,503

Claims priority, application Italy, Jan. 19, 1972, 19526/72

Int. Cl. E02b 15/04

U.S. Cl. 210-242

12 Claims



1. A skimming apparatus for skimming off surface-floating substances from liquids, comprising means defining a chamber adapted to be at least partially submerged in a body of liquid, said chamber-defining means including a lower wall portion which defines a lower zone of said chamber for accommodating liquid to be skimmed, and an upper wall portion which defines an upper zone of said chamber for accommodating substances floating on the liquid in said lower zone, said lower and upper wall portions overlapping one another, and said upper wall portion being located within the confines of said lower wall portion in the region of overlap and defining with said lower wall portion a gap in said region; admitting means for admitting liquid to be skimmed into said lower zone and being at least in part constituted by said gap; flotation and ballast means for regulating the extent to which said wall portions are submerged in the surrounding body of liquid and thereby the level of said gap with respect to the surface of the surrounding body of liquid, said flotation and ballast means comprising a liquid-tight compartment in said lower wall portion; discharging means for discharging skimmed liquid from said lower zone; and conveying means for conveying floating substances from said upper zone.

3,853,769

RIGID CASING FOR DIALYZER COIL

Frederick W. Miller, III, Glenmore, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Apr. 5, 1973, Ser. No. 348,010

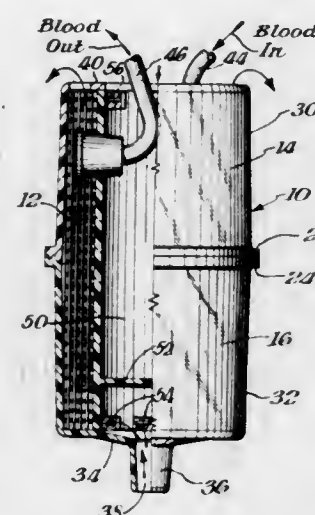
Int. Cl. B01d 31/00

U.S. Cl. 210-321

1 Claim

1. A dialyzer of the type useful in artificial kidney machines comprising a generally cylindrical inner core member, a dialyzer coil positioned therearound, and a rigid outer casing enclosing the dialyzer coil, the inner core member including dialysis inflow castellations around its lower end and dialysis outflow castellations around its upper end, and a lateral baffle wall to prevent dialysing fluid from flowing through the core and direct the fluid to flow through the inflow castellations to the dialyzer coil, the rigid casing consisting essentially of two pieces including an upper end cap and a lower end cap, each end cap being generally cup-shaped and proportioned for mating engagement with each other at their rim portions and sealed together therearound, the conical sidewall portion of each end cap tapering inwardly from its rim portion to its base portion at an angle so slight as to give the appearance of generally cylindrical walls and to properly control the lateral

dimensional features of the dialyzer coil during operation, the base portion of the lower end cap having a downwardly extending central flange adapted for engagement with a dialysis inflow opening of an artificial kidney machine to position the



dialyzer thereon and provide for flow of dialyzing fluid into the dialyzer, the base portion of the upper end cap having aperture means to provide for flow of dialyzing fluid out of the dialyzer in cooperation with the outflow castellations around the upper end of the inner core member.

3,853,770

FABRIC SOFTENER COMPOSITIONS

Lili W. Altschuler, Wynnewood, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 53,312, July 8, 1970,

abandoned, which is a continuation-in-part of Ser. No.

846,615, July 31, 1969, abandoned. This application July 22,

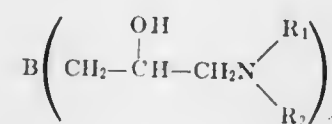
1971, Ser. No. 165,363

Int. Cl. D06m 13/38; C11d 1/00

U.S. Cl. 252-8.8

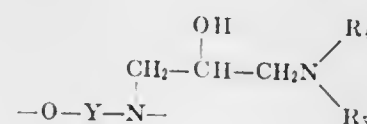
2 Claims

1. A composition for the simultaneous washing and softening of fabrics, consisting essentially of
(A) at least one compound of the formula



where

B is an alkylene radical of 10-20 carbon atoms, an aryl radical of 1-10 benzene rings; an —O—Y—O— radical or a

radical
where

Y is an alkylene radical of 10-20 carbon atoms or an aryl radical of 1-10 benzene rings, and

R₁ and R₂ are alkyl or alkenyl radicals of 13-40 carbon atoms; and

R₃ and R₄ are alkyl or alkenyl radicals of 13-40 carbon atoms; and

B, 10-38%, by weight of (A), of an amphoteric, anionic or non-ionic surfactant.

3,853,771

PROCESS FOR DISPERSING CELLULAR MICRO-ORGANISMS WITH CHELATING AQUEOUS ALKALINE SURFACTANT SYSTEMS

Ted S. Felmann, Phoenix, Ariz.; Hollis B. Carlile, Jr., Hacienda Heights, and Charles F. Blankenhorn, La Habra, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 224,932, Feb. 2, 1972, Pat. No. 3,782,471, which is a continuation-in-part of Ser. No. 144,275, May 17, 1971, abandoned. This application Mar. 29, 1973, Ser. No.

346,236

Int. Cl. E21b 21/00, 21/04

U.S. Cl. 252-8.55 B

2 Claims

1. A process for dissolving or dispersing cellular micro-organism materials, comprising, contacting said materials with an aqueous solution containing at least one surfactant effective for dispersing outer wall layers of micro-organism cells, at least one chelating agent effective for dispersing the inner all layers of micro-organism cells, and at least one alkali metal hydroxide effective for enhancing said dispersing actions.

3,853,772

LUBRICANT CONTAINING ALKALI METAL BORATE DISPERSED WITH A MIXTURE OF DISPERSANTS

John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 9, 1973, Ser. No. 358,749

Claims priority, application Belgium, May 12, 1972, 117452; May 29, 1972, 3434; Canada, May 9, 1972, 141712; France, May 25, 1972, 72.18677; Germany, May 29, 1972, 2225985; Great Britain, June 1, 1972, 25699/72; Italy, May 30, 1972, 25047/72; Japan, May 31, 1972, 47-54233

Int. Cl. C10m 1/40, 1/32, 1/10

U.S. Cl. 252-18

11 Claims

1. A lubricant comprising an oil of lubricating viscosity having dispersed therein from 1 to 60 weight percent, based on the entire composition, of amorphous particles of less than one micron in size of a hydrated alkali metal borate having 0.5 to 4 waters of hydration, said borate being dispersed in said oil by means of a dispersant mixture consisting of 40 to 99 weight percent of a lipophilic anionic surface-active agent which is an alkaline earth metal sulfonate and from 0.1 to 60 weight percent of a lipophilic nonionic surface-active agent which is a succinimide derived from alkenyl succinic acid or anhydride and alkylene polyamines.

3,853,773

ANTI-GUM AND SOLVATING LUBRICANT

Jerry Thomas Martin, Plainview, and Carl Thomas Patros, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,965

Int. Cl. C10m 1/48

U.S. Cl. 252-32.7 E

4 Claims

1. In a lubricating oil comprising a highly compounded mineral oil containing: as an anti-oxidant and corrosion inhibitor, a calcium petroleum sulfonate; as an anti-wear agent, zinc dithiophosphate; as a detergent-dispersant, a polypolar polymer consisting of a nitrogen containing monomer linked to a long chain methacrylate; and as a viscosity index improver, polyisobutylene, the improvement comprising adding to the base oil 25 to 75 percent by volume of a highly refined white mineral oil not exceeding a viscosity of 180 SUS.

3,853,774

PROCESS FOR PREPARING OIL-SOLUBLE BASIC MAGNESIUM SALTS

Richard E. Crocker, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1972, Ser. No. 316,939

Int. Cl. C10m 1/40

U.S. Cl. 252-33.4

12 Claims

1. The process for preparing oil-soluble basic magnesium salts having a metal ratio of from 5 to 25 comprising contacting, at a temperature from about 10°C to about the decomposition temperature of the reaction mixture, at least one acidic material selected from the group consisting of B₂O₃, CO₂, H₂S, SO₂, HCl, NO₂, PCl₃, ClO₂, SOCl₂, BF₃, CS₂, COS, formic acid, oxalic acid, acetic acid, and propionic acid, with a mixture comprising:

1. At least one oil-soluble sulfonic acid or salt thereof susceptible to overbasing;
2. From 5 to 25 equivalents of a basically reacting magnesium oxide per equivalent of said oil-soluble sulfonic acid and salts thereof;
3. Water in an amount from about 0.5 mols to about 10 mols per mol of said magnesium oxide;
4. At least one lower alkanol containing one to six carbon atoms in an amount from about 0.1 mols to about 10 mols per mol of said magnesium oxide;
5. Naphthenic acids having an average molecular weight from about 150 to about 600 in an amount from about 0.1 equivalents to about 5.0 equivalents per equivalent of said sulfonic acid and salts thereof; and
6. At least one substantially inert organic liquid diluent comprising from about 25 to about 80% by weight of said mixture;

until reaction between the said acidic material and said mixture substantially ceases.

3,853,775

LUBRICANTS

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 123,111, March 10, 1971,

abandoned. This application Feb. 15, 1973, Ser. No. 332,566

Int. Cl. C10m 1/36, 1/38

U.S. Cl. 252-42.1

10 Claims

1. An improved lubricating composition comprising a mineral lubricating oil having incorporated therein a small quantity of an alkyl sulfonyl dialkyl dithiocarbamate having the formula R—S—S—C(S)—N(R')₂ wherein R is an alkyl radical having 1-10, inclusive, carbon atoms and R' is an alkyl radical having 1-5, inclusive, carbon atoms and R and R' are the same or different, sufficient to improve the high pressure properties and to increase the stability of the so-treated lubricating oil against oxidation and rust.

3,853,776

LOW POUR POINT FLUIDS AND BLENDS CONTAINING SAME

Frank S. Clark, St. Louis, Mo., and Walter Fink, Ruschlikon, Switzerland, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 293,662, Sept. 29, 1972, Pat. No.

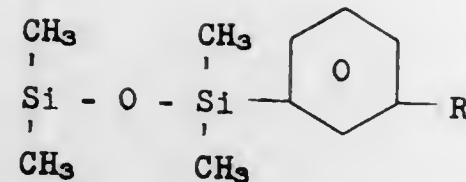
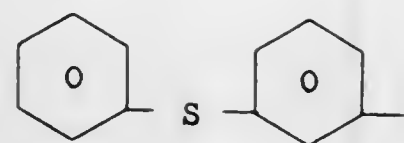
3,767,691. This application June 14, 1973, Ser. No. 370,116

Int. Cl. C10m 3/48

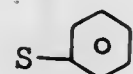
U.S. Cl. 252-46.3

6 Claims

1. A low pour point lubricant composition comprising a polyphenyl thioether, a polyphenyl ether-thioether and mixtures thereof and at least one compound of the formula



wherein R represents hydrogen or



3,853,777 OIL COMPOSITIONS

Hans R. Gersmann, and Geert Van Bruggen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,631

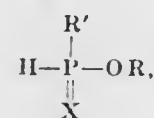
Claims priority, application Great Britain, June 2, 1971, 18591/71

Int. Cl. C10m 1/48

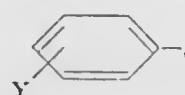
U.S. Cl. 252-46.7

5 Claims

1. A lubricant composition consisting essentially of a major amount of a mineral lubricating oil and from about 0.1 to about 10 percent by weight of a compound having the formula



wherein X is oxygen or sulfur, R' is



Y is hydrogen, chloro, C₁₋₄ alkyl or lower alkyl amino, and R is a phenyl group with at least one tert-butyl substituent ortho to the connecting oxygen atom and containing 10 to 30 carbon atoms.

3,853,778

TONER COMPOSITION EMPLOYING POLYMER WITH SIDE-CHAIN CRYSTALLINITY

David A. Buckley, Rochester, N.Y.; Burton B. Jacknow, Monte Sereno, Calif.; Robert Mermelstein, Rochester, N.Y.; Thomas R. Hoffend, Webster, N.Y., and Joseph H. Moriconi, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1972, Ser. No. 215,936

Int. Cl. C03g 9/00

U.S. Cl. 252-62.1

6 Claims

1. An electrostatographic developer composition comprising about 0.5 to 10 wt. percent of toner particles, said toner particles comprising a polymer selected from the group consisting of a crystalline homopolymer or copolymer having an amorphous backbone and side-chain crystallinity derived by the polymerization of a polymerizable mixture containing at least about 2 wt. percent of a polymerizable monomer having a crystalline alkyl group of at least about 14 carbon atoms and about 90 to 99.5 wt. percent of carrier particles.

3,853,779 LOW FOAMING DETERGENT COMPOSITIONS

Jack T. Inamorato, Westfield, N.J., and Robert T. Hunter, Grand Rapids, Mich., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 260,319, June 6, 1972, abandoned.

This application Oct. 29, 1973, Ser. No. 410,502

Int. Cl. C11d 9/10

U.S. Cl. 252-110

7 Claims

1. A low foaming detergent composition comprising
1. about 2 to about 30 percent of a water soluble nonionic or anionic synthetic organic detergent,
2. from about 10 to about 90 percent of a water soluble alkaline phosphate builder salt, and
3. from about 0.5 to about 15 percent of a C₁₀ to C₁₈ dialkyl or dialkenyl amine.

3,853,780 GRANULAR NON-DUSTING ENZYME PRODUCT FOR DETERGENT USE

John Hinckley Mostow, Metuchen, and Joseph Frank Stima, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 864,176, Oct. 6, 1969, abandoned.

This application Jan. 7, 1972, Ser. No. 216,311

Int. Cl. C11d 3/22, 7/42, 9/40

U.S. Cl. 252-132

3 Claims

1. A process for making an enzyme concentrate, for use as an additive to detergent compositions to make them enzyme active, in which, on an enzyme preparation-soap-sugar product basis, from 50 to about 90% by weight of a powdered enzyme preparation, of particles of diameters less than 0.15 millimeter, is dry blended with a mixture of a water-soluble granular soap and a water soluble granular sugar in a soap-sugar ratio of about 1:5 to 5:1, the soap being in finely divided powder form and the sugar being micropulverized, and said blended mixture is compacted under pressure between opposed solid surfaces by roll milling or pressing to form a coherent mass which is then size-reduced to granular form, the granules of which are of particle sizes of up to 40 mesh and contain proteolytic enzyme preparation in an amount sufficient to provide a final washing product having 0.15 to 6 Anson units of activity per hundred grams when incorporated therein in a proportion containing from 0.1 to 4% of powdered enzyme preparation.

3,853,781 WASHING AND CLEANSING COMPOSITION

Heinz Haschke; Peter Kuzel, both of Grossauheim; Erich Bader, Hanau; Horst Kruger, Darmstadt; Emil Kerschner, Freigericht, and Arnold Hufnagel, Bischofsheim, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 97,482, Dec. 10, 1970, abandoned, and a continuation-in-part of Ser. No. 145,974, May 24, 1971, abandoned. This application Jan. 17, 1973, Ser. No. 324,422

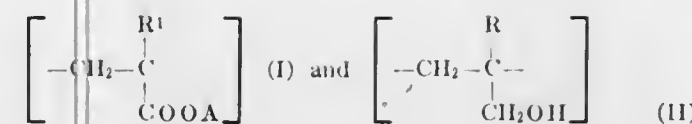
Claims priority, application Germany, Dec. 11, 1969, 1962125; May 23, 1970, 2025238

Int. Cl. C11d 9/26

U.S. Cl. 252-132

14 Claims

1. In a wash or cleaning composition which includes a surface active agent and at least one builder compound, the improvement in which the builder compound comprises a linear or cross-linked polymer or salt thereof which polymer in the main chain has predominantly carbon-to-carbon bonds and wherein the units predominantly have the formula



and wherein a minor amount, relative to the amount of units (I) and (II), of units of the type



may be present and wherein R and R' are the same or different and are alkyl having 1 to 6 carbon atoms or hydrogen and wherein R' may also be chlorine and wherein A is hydrogen or one valence of a monovalent or polyvalent metal or is ammonium, the said units I, II and IV being arranged in random sequence and the average frequency of the units being such as to provide for a ratio of carboxyl or carboxylate groups to hydroxyl groups between 1.1 and 1.6 and the minimum degree of polymerization being 3, the said polymers being obtained by oxidative polymerization of acrolein or oxidative copolymerization of (a) acrolein with (b) acrylic acid, an alkyl acrylic acid, a halogenoacrylic acid or an unsaturated polycarboxylic acid.

3,853,782 SILK SCREEN CLEANER COMPOSITION

Edward H. Chang, Burnsville, Minn., assignor to Fremont Industries, Inc., Shakopee, Minn.

Filed Dec. 7, 1972, Ser. No. 312,936

Int. Cl. C11d 3/065

U.S. Cl. 252-139

7 Claims

1. An alkaline aqueous cleaning solution for removing residue from silk screen stencils and having the following formulation:

Component	Percent by Weight
An alkaline earth hydroxide selected from the group consisting of sodium and potassium hydroxides	.3 to 2
Tetrapotassium pyrophosphate	.7 to 4
Sodium silicate solids (Na ₂ O/SiO ₂ = 1:1.6 to 1:3.22)	.5 to 3
Sodium gluconate	.15 to 1
Sodium ligno sulfonate	.05 to .3
Diethylene glycol monobutyl ether	.25 to 2.5
Diethylene glycol monoethyl ether	2 to 20
Surface active agent selected from the group consisting of nonionic and anionic surface active agents	.04 to .4
Balance water	

3,853,783 VANADYL PHTHALOCYANINE SULFONAMIDES AND LASER PROTECTIVE PLASTIC FILTERS CONTAINING THE SAME

Robert Jerome Tucker, Hackettstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

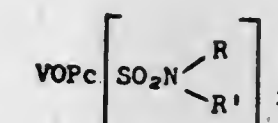
Division of Ser. No. 165,384, July 22, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,509

Int. Cl. F21v 9/00; G02b 5/20; G02c 7/10

U.S. Cl. 252-300

6 Claims

1. An optical filter comprising a thermoplastic polymer substantially transparent to visible light having incorporated therein from 0.001 to 1.0 percent, by weight, of a vanadyl phthalocyanine sulfonamide having the formula:



wherein Pc is the phthalocyanine moiety; R and R' are lower alkyl and x is an integer from 1 to 4; said filter having an optical density of at least 3.

3,853,784 FLOW CONTROL DEVICE

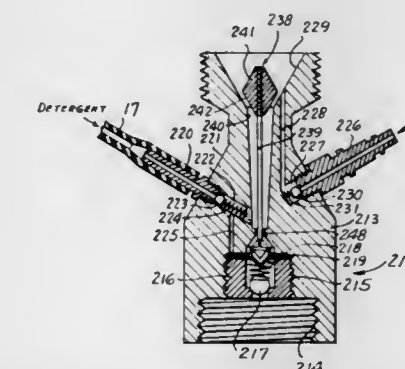
Eugene D. Rogers, 3318 Kennelworth Ln., Bonita, Calif. 92002

Division of Ser. No. 331,261, Feb. 9, 1973, Pat. No. 3,822,217, which is a continuation-in-part of Ser. No. 203,174, Nov. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 73,324, Sept. 18, 1970, abandoned. This application Apr. 30, 1974, Ser. No. 465,563

Int. Cl. A62c 5/04; B01d 1/00

U.S. Cl. 252-359 E

5 Claims



1. A fluid flow-control device comprising a conduit member having an inlet and an outlet end, means to connect said inlet end to a main liquid supply source, said inlet end having a liquid receiving cavity, said conduit member being formed with axial passage means extending from said liquid-receiving cavity toward said outlet end, means in said inlet end defining a relatively small diameter, axial, first venturi passage flaring in size from said cavity, said conduit member being further formed with a relatively wide-flare passage merging with said axial passage means at said outlet end of the conduit member, and flow-regulating means located in said passage means and in said first venturi passage, comprising a free-floating stem member provided with opposite enlarged end portions, one enlarged end portion being located within the inlet end of said first venturi passage, and the other enlarged end portion being located within said wideflare passage.

3,853,785

STABLE LIQUID CRYSTAL MIXTURES INCLUDING ANIL-TYPE NEMATIC COMPOUNDS

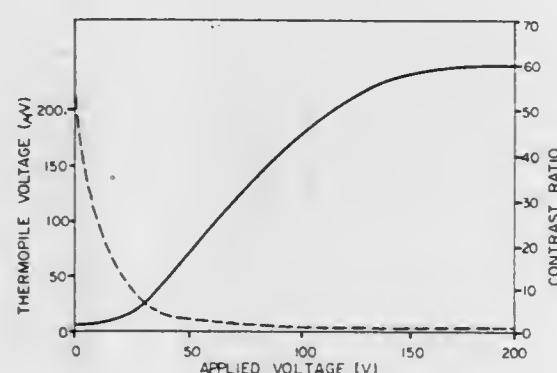
Mortimer M. Labes, Rosemont, Pa., assignor to Temple University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 189,315, Oct. 14, 1971, Pat. No. 3,827,780. This application Nov. 6, 1972, Ser. No. 303,962

Int. Cl. C09k 3/00

U.S. Cl. 252-408

6 Claims



1. A nematic liquid crystal composition useful in electro-optical devices consisting of a miscible mixture of
- a first nematic liquid crystal material consisting of the compound N-(o-hydroxy-p-methoxybenzylidene)-p-n-butylaniline, and
 - a second nematic liquid crystal material consisting of the compound N-(p-ethoxy-benzylidene)-p-n-butylaniline wherein each nematic liquid crystal material is present in an amount sufficient to stabilize and/or broaden the active temperature range of the composition.

3,853,786

SUPPORTED CATALYSTS FOR THE PRODUCTION OF 4-METHYL-PENTENE FROM PROPYLENE

Lucio Forni, and Renzo Invernizzi, both of Milan, Italy, assignors to Societa' Italiana Resin S.I.R. S.p.A., Milan, Italy

Filed Aug. 6, 1973, Ser. No. 385,769

Claims priority, application Italy, Sept. 20, 1972, 29423/72

Int. Cl. B01j 11/82

U.S. Cl. 252-440

10 Claims

1. Process for the production of a supported catalyst containing alkali metal for dimerization of propylene to 4-methyl-pentene, characterized in that

- previously dried support particles are heated in an inert gas atmosphere for at least about 30 minutes to a temperature of at least about 150°C,
- the support particles obtained in accordance with a) are mixed with a compound of a transition metal that is thermally decomposable at below about 400°C, said compound being one of gold, nickel, chromium, palladium, cobalt or tungsten, and an alkali metal in a quantity such that the total weight of alkali metal and of the transition metal compound, both calculated as the weight of metal, is about 1 to 80 wt. percent based on the weight of the support, the atomic ratio of alkali metal to transition metal being in the range between about 50 : 1 and 1 : 1, and
- the mixture obtained in accordance with b) is heated for about 1 to 120 minutes to about 150 to 500°C in an inert gas stream with stirring to decompose the transition metal compound.

3,853,787

PROCESS FOR PREPARING METAL ZEOLITE CATALYST COMPOSITIONS

John D. Potts, Springfield, and Francis William Kirsch, Wayne, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Aug. 23, 1972, Ser. No. 283,254

Int. Cl. B01j 11/40

U.S. Cl. 252-455 Z

7 Claims

1. A process for preparing catalysts which comprises contacting a crystalline zeolite base, containing cation replaceable by ammonium ion, with an aqueous solution consisting essentially of an ammonium metal compound containing catalytic metal in the anion thereof, and a non-metallic soluble ammonium salt.

3,853,788

PROCESS FOR HYDROTREATING CATALYST AND PRODUCT THEREBY

Irvin Ralph Feins, Westport, and John Francis Lindsley, Stamford, both of Conn., assignors to Cyanamid Company, Stamford, Conn.

Int. Cl. B01j 11/40, 11/32

U.S. Cl. 252-455 R

10 Claims

1. A process for preparing a hydrotreating catalyst which comprises: preparing a washed alumina hydrogel; slurring said hydrogel in an aqueous solution of a molybdenum source so as to form a spray-dryer feed; spray-drying the feed thus formed to provide a powder; mix-mulling said powder to provide an extrudable paste, extruding the thus-formed paste; drying and calcining the extrudates; treating the calcined extrudates so as to furnish thereon a cobalt source and urea, said furnish providing an aqueous solution stable with respect to precipitation; dehydrating the thus-treated extrudates; and activating the dehydrated extrudates, the molybdenum source providing from about 8 to 20 weight percent molybdenum expressed as its oxide and the cobalt source providing from about 1 to 8 weight percent cobalt expressed as its oxide, said metal contents being based on the weight of the activated extrudates and said urea being present in said furnish in an amount providing at least about 0.5 mole of urea per mole of cobalt therein.

3,853,789

PREPARATION OF MACROPOROUS ALUMINA EXTRUDATES

John Lawrence Warthen, 306 Chalfonte Dr., Baltimore, Md. 21228; Warren Stanley Briggs, 704 Brantford Ave., Silver Spring, Md. 20904, and Frank George Ciapetta, deceased, late of 1628 Oaklawn Ct., Silver Springs, Md. 20903 (by Carolina Ciapetta, executrix)

Continuation-in-part of Ser. No. 128,422, May 26, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,875

Int. Cl. B01j 11/06

U.S. Cl. 252-463

4 Claims

1. A method for preparing mechanically strong macroporous alumina extrudates having a mercury pore volume of about 0.3 to about 0.7 cc/g wherein 40 to 100 percent of the pore volume is contained in pores having a size above 3500A in diameter, and a surface area of about 200 to 400 m²/g which comprises:

- preparing a mixture which comprises:
 - 40 to 90 percent by weight gamma alumina powder having a particle size range of about 100 to 200 microns, and
 - 10 to 60 percent by weight alumina monohydrate particles having a size range of about 5 to 65 microns;
- combining said mixture with water to form an extrudable paste;
- extruding said paste to form cohesive extrudates; and
- drying and calcining the extrudate to form hard mechanically strong particles.

3,853,790

CATALYSTS FOR THE OXIDATION OF AMMONIA TO NITROGEN OXIDE

Jan Vosolsobe; Rudolf Dohnalek; Bohumil Kadlec; Jiri Michalek; Antonin Simecek; Miroslav Cap, all of Praha, and Miroslav Novak, Ricany, all of Czechoslovakia, assignors to Trust Ceskoslovenskeho prumyslu dusikarenskeho, Praha, Czechoslovakia

Continuation-in-part of Ser. No. 242,216, April 7, 1972, abandoned. This application Aug. 7, 1972, Ser. No. 278,261 Claims priority, application Czechoslovakia, Apr. 7, 1971, 2486-71

Int. Cl. B01j 11/06, 11/22

U.S. Cl. 252-464

2 Claims

1. A granular catalyst which consists essentially of an alumina body in solid form having particles at least the surfaces of which consist of a spinel in which the metal component of the spinel is selected from the group consisting of cobalt, cobalt-nickel, nickel-manganese, nickel-magnesium and nickel-bismuth, said particles additionally having thereon a film of catalytically active metal oxides selected from the group consisting of cobalt oxide, and combination of nickel oxide with either cobalt oxide, manganese oxide, magnesium oxide, or bismuth oxide, said catalyst having been prepared by heating an alumina body impregnated with metal or metals forming said spinel to a sintering temperature of 1,000°-1,700°C until said alumina body has reached a stable condition and the surfaces of the alumina in the outer periphery of the body have been converted to said spinel, and thereafter impregnating said body with metal salt or salts selected from the metals forming said group of metal oxides and thermally decomposing said metal salt or salts to provide on said spinel a film of catalytically active material of said metal oxides.

3,853,791

OXIDE AND MOLYBDENUM OXIDE ON AN ALUMINA SUPPORT AND CATALYST OBTAINED

Irvin Ralph Feins, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 6, 1973, Ser. No. 330,169

Int. Cl. B01j 11/22

U.S. Cl. 252-465

10 Claims

1. A process for preparing a hydrosulfurization catalyst which comprises: preparing a calcined formed alumina support; treating said support so as to furnish thereon an aqueous solution of (a) a cobalt compound, (b) a molybdenum compound, and (c) urea in an amount at least 0.5 molar with respect to the molar quantity of cobalt furnished, said compounds upon subsequent activation providing the corresponding metal oxides, said furnish providing an aqueous solution stable with respect to precipitation; dehydrating the thus-treated support; and activating the dehydrated support so as to provide a composite containing from about 1 percent to 8 percent cobalt and from about 8 percent to 20 percent molybdenum, said percentages being by weight based on the weight of the activated composite and expressed as the metal oxides.

3,853,792

CATALYTIC METAL OXIDE

Takashi Ohara; Nishinomiya; Michikazu Ninomiya, Kobe; Isao Yanagisawa, Ikeda, and Masahiro Wada, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 245,758, April 20, 1972, Pat. No. 3,775,474. This application July 16, 1973, Ser. No. 379,233

Claims priority, application Japan, Apr. 27, 1971, 46-27203

Int. Cl. B01j 11/06, 11/22

U.S. Cl. 252-467

3 Claims

1. A catalytic oxide consisting essentially of a complex oxide in which the atomic ratio of the metal elements is within the following range:



wherein

$$14 < a \leq 24, a = 12, 4 \quad c < 20, 1 \quad d < 10 \text{ and } 0 < e < 12.$$

3,853,793

PRODUCTION OF CARBON ELECTRODES

John Alexander Brown, and Paul Rhedey, both of Arvida, Quebec, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 7, 1972, Ser. No. 216,286

Int. Cl. H01b 1/06; H01c

U.S. Cl. 252-510

12 Claims

1. Procedure for preparing a carbon electrode paste which comprises an aggregate of coke fines and larger coke bodies in mixture with a pitch binder, said procedure comprising
- grinding coke dust entrained in and collected from gases discharged from a kiln incident to calcination of coke in the kiln, for breaking up the particles thereof; and
 - mixing the ground coke dust with fully calcined coke fines and larger bodies with said binder to form a paste wherein said ground dust constitutes a portion of the fines fraction of the aggregate, said fully calcined coke comprising coke material calcined in a kiln and removed therefrom, after calcining, separately from gases discharged from the kiln.

3,853,794

ALKYLARYLOXYPHOSPHAZENE POLYMERS

Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

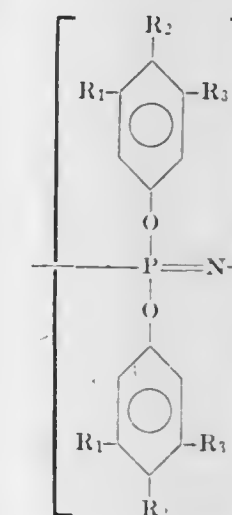
Filed June 11, 1973, Ser. No. 368,847

Int. Cl. C08g 33/16, 33/02

U.S. Cl. 260-2 P

9 Claims

1. Poly(alkylaryloxyphosphazenes) characterized by the repeating structure:



where R₁, R₂ and R₃ are each selected from hydrogen and alkyl radicals containing 1 to 12 carbon atoms, with at least one of R₁, R₂, and R₃ being alkyl, and n is from 20 to 50,000.

3,853,795

QUASC-PREPOLYMERIZATION TECHNIQUE FOR PREPARATION OF POLYURETHANE FOAMS

Victor Frederick Jenkins, St. Albans, and Stephen Arthur Lee, Dunstable, both of England, assignors to Laporte Industries Limited, London, England

Continuation-in-part of Ser. No. 253,589, May 15, 1972, abandoned. This application July 13, 1973, Ser. No. 378,834

Claims priority, application Great Britain, May 27, 1971, 17609/71

Int. Cl. C08g 22/48

U.S. Cl. 260-2.5 AC

10 Claims

1. A process for the preparation of a substantially closed cell high density polyurethane foam which comprises the steps of:

- a. preparing a prepolymer from an organic polyol and an organic polyisocyanate.
 b. adding to said prepolymer after the formation thereof from 0.02 to 1% by weight of an organo-tin catalyst based on the weight of the prepolymer thereby to obtain a stable liquid prepolymer composition
 c. preparing a reactant mixture containing an organic polyol, a polyfunctional cross-linking agent and a blowing agent,
 d. incorporating in said reactant mixture from 0.01 to 4% by weight of a tertiary amine catalyst thereby to obtain a stable liquid reactant mixture, and
 e. reacting said prepolymer composition with said reactant mixture to form a polyurethane foam.

3,853,796

HIGH STRESS-LOW ELONGATION RUBBER COMPOSITION

Richard C. Oldack, Jackson Township; Charles C. Raines, Canton, and Richard L. Montgomery, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 7, 1972, Ser. No. 287,191

Int. Cl. C08g 41/04

U.S. Cl. 260—5 19 Claims

1. A high stress-low elongation polymeric composition, comprising: a block copolymer having a nylon polymer constituent blocked to at least one end capped polymer constituent to form the block copolymer, said end capped polymer constituent containing a base polymer constituent connected to a single compound selected from the group consisting of a polyisocyanate and a polyisothiocyanate through one of the isocyanate groups or the isothiocyanate groups, said base polymer made by the anionic polymerization of conjugated diene monomers, said nylon polymer constituent connected to said end capped polymer through another isocyanate group of said polyisocyanate or another isothiocyanate group of said polyisothiocyanate and produced by the anionic polymerizations of lactams, said weight range of said nylon polymer constituent to said block copolymer ranging from about 25 to about 90% and including from about 15 to about 120% by weight based on the block copolymer of short nylon fibers so as to produce a polymeric composition having a high stress at a very low elongation.

3,853,797

POLYVINYL ACETATE/DEXTRIN/ C TO C POLYHYDRIC ALCOHOLS MATERIAL FOR NOVELTY ITEMS AND ARTS AND CRAFTS APPLICATIONS

Josef Pelzig, 6233 Bluebell Ave., North Hollywood, Calif.

Continuation-in-part of Ser. No. 877,021, Nov. 14, 1969, abandoned, and a continuation-in-part of Ser. No. 194,693, Nov. 1, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 345,214

Int. Cl. C08d 9/06

U.S. Cl. 260—17.4 ST 32 Claims

1. A solid plastic composition which is highly elastic and pliable having a pH of about 6 to 8 consisting essentially of:
 a. about 3 to 8% dextrin;
 b. about 90 to 93.5% dextrin incompatible polyvinyl acetate emulsion being composed of 35 to 55% solids and 65 to 45% water; and
 c. about 0.5 to 2% of an alcohol selected from the group consisting of polyhydric alcohols in the series C₃ to C₈.

3,853,798

BITUMINOUS COMPOSITION

Manfred Wolfgang Oelsner, Hamburg, and Erich Gunther Zenke, Halstenbek, both of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 22, 1972, Ser. No. 236,984

Claims priority, application Germany, Mar. 31, 1971, 2115475

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 AS 10 Claims

1. A process for the production of an asphaltic composition which comprises:
 1. forming a mixture of:
 10–85% wt., based on the total mixture, of an asphalt
 5–25% wt., based on the total mixture, of an elastomer which is a copolymer of ethylene, propylene and a cyclic unsaturated hydrocarbon having more than one olefinic double bond and having also an endocyclic bridge containing at least one methylene group, and
 10–85% wt., based on the total mixture, of a flux oil for extending the elastomer, and
 2. blowing the mixture at 180°–260°C with a gas which contains elemental oxygen, the elastomer being in latex form when added to the asphalt.

3,853,799

BITUMINOUS COMPOSITIONS PREPARED BY BLOWING BLENDS OF BITUMEN, AROMATIC EXTRACT AND EPT RUBBER

Rolf-Dieter Behling; Manfred Oelsner, both of Hamburg, and Gunther Zenke, Halstenbek, all of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,196

Claims priority, application Germany, Sept. 17, 1969, 1946999

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 AS 10 Claims

1. A method of preparing an asphaltic composition suitable for use as a roof surfacing material, which comprises:
 1 forming a mixture of:
 23–85% wt, based on the total mixture, of an asphalt which is a distillation residue derived from crude petroleum,
 2–25% wt, based on the total mixture, of a rubber which is a copolymer of (a) monolefines and (b) cyclic hydrocarbons with an endocyclic bridge and at least two olefinic double bonds,
 10–75% wt, based on the total mixture, of a flux oil which is an aromatic extract for extending the rubber,
 0–4 parts by weight sulphur per 100 parts by weight of the rubber, and
 0–3% wt, based on the total mixture, of a polyolefine selected from the group consisting of polyethylene and polypropylene, and
 2. blowing the mixture with a gas which contains elemental oxygen, at a temperature of 150°–300°C.

3,853,800

PROCESS FOR PREPARING A MIXTURE CONTAINING A BINDER MATERIAL AND POLYOLEFIN

Paul Haberl, A-2821 Klein Wolkersdorf Nr. 129, Niederosterreich, Austria

Filed Mar. 20, 1973, Ser. No. 342,942

Claims priority, application Austria, Jan. 5, 1973, 93/73

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 AS 22 Claims

1. A process for preparing a mixture for constructional purposes, comprising the steps of mixing a composition consisting essentially of a binder material selected from the group consisting of bitumen and asphalt, with 1 to 10 percent by weight, based on the weight of the binder material of a polyolefin selected from the group consisting of polyethylene and polypropylene, wherein the binder material is heated to a liquid state and the polyolefin is finely dispersed therein, and

wherein said polyolefin is a reclaimed polyolefin having various molecular weights, which is added to the binder material in the form of small particles which have a maximum dimension of more than 0.3mm and are provided with finely particulated contaminating material adhering to said small particles.

3,853,801

ELECTROPHORETIC COATING COMPOSITIONS

Akira Tominaga, and Norio Nikaido, both of Hiratsuka, Japan, assignors to Kansai Paint Company Limited, Hyogo-ken, Japan

Filed July 31, 1972, Ser. No. 276,295

Claims priority, application Japan, Aug. 5, 1971, 46-59443

Int. Cl. C08g 51/24

U.S. Cl. 260—29.3

11 Claims

1. An electrophoretic coating composition which comprises a resinous binder dispersed in an aqueous medium; said resinous binder being a mixture of a modified butadiene polymer neutralized with a base and a methylolated phenol resin which is water-dispersible resole type phenol resin containing 1 to 3 phenol nuclei and at least one methylol group in an amount of 3 to 50 weight parts based on 100 weight parts of modified butadiene polymer; said modified butadiene polymer being the reaction product of a starting mixture of 1,2-polybutadiene, 1,4-polybutadiene in a weight ratio of 3 to 9:7 to 1 and unsaturated oil compound having an iodine value of at least 100 in an amount of 10 to 60 weight percent based on the total weight of the polybutadiene mixture and the unsaturated oil compound with at least one α,β -unsaturated dicarboxylic acid and anhydrides thereof selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, itaconic acid and itaconic anhydride, in an amount of 7 to 40 weight parts based on 100 parts of the starting mixture; said 1,2-polybutadiene containing at least 70 percent of vinyl bond and having a number average molecular weight of 500 to 5,000 and an iodine value of at least 350; said 1,4-polybutadiene containing at least 90 percent of 1,4-bond and having a number average molecular weight of 500 to 10,000 and an iodine value of at least 400; said unsaturated oil compound being at least one species selected from the group consisting of (1) a natural oil, (2) a natural oil fatty acid, (3) an ester of a natural oil fatty acid with a polyhydric alcohol having 2 to 6 hydroxyl groups in the molecule, (4) an ester of a natural oil fatty acid with an epoxy resin having a number average molecular weight of 200 to 2,000, (5) an ester of a natural oil fatty acid with a polyol resin having a number average molecular weight of 200 to 2,000, (6) a modified oil prepared by treating the above oil (1) thermally or chemically and (7) a dimer of natural oil fatty acid.

3,853,802

UNHYDROLYZED POLYACRYLAMIDE AND PARTIALLY HYDROLYZED POLYACRYLAMIDE MOBILITY CONTROL AGENT

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 163,642, July 19, 1971, Pat. No. 3,743,018. This application Feb. 26, 1973, Ser. No. 335,969

Int. Cl. C02b 9/00; C08f 29/00

U.S. Cl. 260—29.6 WB

5 Claims

1. Compositions comprising aqueous solutions of about 10 to about 10,000 parts per million of partially hydrolyzed polyacrylamide and about 10 to about 10,000 parts per million of unhydrolyzed polyacrylamide, wherein the partially hydrolyzed polyacrylamide polymer is hydrolyzed from about 0.5 to about 75 percent.

3,853,803

METHOD OF PREPARING A CATIONIC ACRYLIC ELECTRODEPOSITABLE INTERPOLYMER

Carl C. Anderson, Hartland, Wis., and Lance C. Sturni, McKeesport, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 110,268, Jan. 27, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,021

Int. Cl. C08f 11/13, 45/24

U.S. Cl. 260—29.6 TA

12 Claims

1. A method of preparing a cationic electrodepositable, non-gelled, carboxyl-containing, thermosetting acrylic interpolymer comprising interpolymerizing the following monomers:

- A. from about 40 to about 94 percent by weight of an alkyl ester of acrylic or methacrylic acid;
 B. from about 5 to about 25 percent by weight of an alpha, beta-ethylenically unsaturated amino-alkyl monomer, wherein said amino group is selected from the class consisting of a secondary amine and a tertiary amine;
 C. from about 1 to about 15 percent of a monoethylenically unsaturated carboxylic acid; and
 D. from 0 to about 30 percent by weight of a copolymerizable ethylenically unsaturated monomer,
 wherein said percents by weight are based on the solids content of the interpolymer, and wherein the interpolymerization is carried out in the presence of an acid solubilizing agent, wherein said acid has an ionization constant greater than the ionization constant of said unsaturated carboxylic acid, and is present in an amount sufficient to protonate from about 25 to about 200 percent of the amine groups of said interpolymer.

3,853,804

IONIC BLOCK ELASTOMERIC POLYMERS

Shiao-Ping S. Yen, and Alan Rembaum, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 63,722, Aug. 14, 1970, Pat. No. 3,755,218.

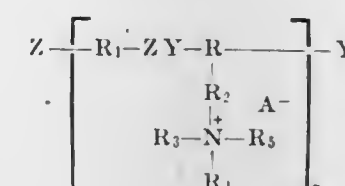
This application July 16, 1973, Ser. No. 368,475

Int. Cl. B44d 1/09; C08g 51/44; C08k 1/40

U.S. Cl. 260—32.6 N

10 Claims

1. A polymeric solution consisting essentially of a polymer of the formula:



where R and R₂ are lower alkylene, R₁ is a liquid prepolymer having a molecular weight from 400 to 6,000 selected from the group consisting of polyether, polyester, silicone, polyurethane and polyamide, R₃, R₄ and R₅ are hydrogen, lower alkyl, aryl, aralkyl or lower alkenyl;

Z and Y are coreactive condensation groups;
 ZY is the residue of the condensation of Z and Y; and
 n is an integer greater than 2 and A⁻ is an anion selected from the group consisting of halogen, polystyrene sulfonate and polyacrylates;
 dissolved in a solvent system of a mixture of primary or secondary alkylamine and a member selected from the group consisting of dioxane, acetone, tetrahydrofuran and dimethylformamide.

3,853,805

SILICONE ELASTOMERIC MATERIAL

Darrow L. Miller, Los Angeles, and David H. Kaelble, Thousand Oaks, both of Calif., assignors to North American Rockwell Corporation, Los Angeles, Calif.

Filed Nov. 10, 1972, Ser. No. 305,409

Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB

29 Claims

1. A strong, highly flexible and compliant cured silicone elastomer having wettability characteristics with respect to the surface of a substrate, comprising a cured mixture of (a) a first siloxane polymer selected from the group consisting essentially of a curable dimethyl polysiloxane and a curable methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said first siloxane polymer having a molecular weight ranging from about 6,000 to about 10,000, (b) a second siloxane polymer selected from the group consisting essentially of a curable dimethyl polysiloxane and a curable methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said second siloxane polymer having a molecular weight ranging from about 170,000 to about 300,000, and (c) a third siloxane polymer selected from the group consisting essentially of a nonreactive linear dimethyl polysiloxane and a nonreactive linear methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said third siloxane polymer having a molecular weight ranging from about 1,500 to about 5,000; said mixture containing about 30 to about 60% of said first siloxane polymer, about 30 to about 60% of said second siloxane polymer and about 4 to about 20% of said third siloxane polymer, by weight.

3,853,806

HETEROGENEOUS MELT HYDROLYSIS OF OXYMETHYLENE COPOLYMERS

Michael D. Golder, 2441 Webb Ave., Bronx, N.Y. 10468

Continuation-in-part of Ser. No. 247,625, April 26, 1972.

This application Apr. 12, 1973, Ser. No. 350,427

Int. Cl. C08g 51/04

U.S. Cl. 260—37 AL

13 Claims

1. In an extruder process for the stabilization of a normally solid oxymethylene copolymer having a melting point above about 150°C., the molecules of said copolymer containing from 60 to 99.6 mol percent of comparatively unstable monomeric oxymethylene units interspersed with comparatively stable monomeric —OR— units wherein R is a divalent radical containing at least two carbon atoms directly linked to each other and positioned in the polymer chain between the two valences, with any substituents on said R radical being inert, at least part of the terminal portions of said molecules comprising said unstable monomeric units, whereby said copolymer is introduced into a reaction zone with from about 2 to about 25 weight percent, based on the copolymer, of a reactant selected from the class consisting of water, alcohols, and mixtures thereof, the improvement which comprises:

- forming a system comprising molten copolymer and vaporous reactant in said zone by maintaining the reaction zone at a temperature above melting point of the copolymer and at a pressure sufficient to maintain the copolymer in a molten state and the reactant in a vaporous state, and
- reacting the molten copolymer with the reactant under the above conditions of temperature and pressure for a period of time in the range of from about 0.1 to about 15 minutes to remove unstable monomeric oxymethylene units from the terminal portion of the copolymer molecules so that at least 90 percent of the resulting polymeric chains of the molecules are terminated by the stable monomeric units.

3,853,807

HEAT RESISTANT DYES FOR POLYESTER FILM PRODUCTS

C. Shelburn Hunter, 1669 Lake Ave., Rochester, N.Y. 14650

Division of Ser. No. 146,501, May 24, 1971, Pat. No.

3,822,132, which is a continuation-in-part of Ser. No. 822,032, May 5, 1969, abandoned. This application Apr. 9, 1973, Ser.

No. 349,603

Int. Cl. C08g 51/14

U.S. Cl. 260—40 R

18 Claims

1. A colored polyester film article having a thickness of from about 0.5 to about 30 mils, an optical density of at most about 0.5, and a uniform, approximately neutral color; said film article containing a blend of dyes, which blend consists essentially of the red dye 2,3-dihydro-3-methyl-2-oxo-6-p-toluidino-3-azabenzanthrone and the green dye 1,4-dihydroxy-5,8-di-p-toluidino anthraquinone.

3,853,808

REINFORCED POLYPROPYLENE COMPOSITION

Hiroshi Kishikawa; Hiroshi Katsuki, and Takayuki Terazawa, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 20, 1972, Ser. No. 246,020

Claims priority, application Japan, Apr. 21, 1971, 46-26261

Int. Cl. C08f 45/10

U.S. Cl. 260—42.18

7 Claims

1. A peroxide free-reinforced polypropylene composition comprising polypropylene, glass fibers and a bismaleimide, the proportion of the said glass fibers ranging from about 10 to 40 percent by weight of said composition and the proportion of said bismaleimide ranging from about 0.01 to 3 percent by weight of said composition.

3,853,809

MIXTURES OF PARTICULATE FLUORINATED POLYMERS AND RUBBERS

Jon W. Martin; Jeffrey L. Bell, and John F. Jones, all of Orange, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 230,086, Feb. 28, 1972, abandoned.

This application July 16, 1973, Ser. No. 379,894

Int. Cl. C08c 11/14; C08f 29/16

U.S. Cl. 260—42.37

4 Claims

1. A peroxide-cured, elastomeric, organic rubber base composition comprising:

A liquid derived 1, 2-polybutadiene having a number average molecular weight range from about 500–10,000 and >80% butadiene groups in the vinyl configuration; 2–35% by volume of the total composition;

Particulate fluorinated polymer selected from the class consisting of: polytetrafluoroethylene, polychlorotrifluoroethylene, polyvinylfluoride, polyperfluorobutadiene, polyvinylidene fluoride and copolymers of vinylidene fluoride and hexafluoropropylene: 5%–80% by weight in the polybutadiene polymer;

The said composition formed by predispersing the fluorinated polymer into the liquid polybutadiene to form a paste;

mixing the paste in the organic rubber base; and curing the mixture with a peroxide catalyst.

3,853,810

NICKEL SALTS OF ARYLSULFONIC ACIDS AS ULTRAVIOLET STABILIZERS FOR LIGHT SENSITIVE POLYMERS

Don A. Plank, Baytown, Tex., assignor to Exxon Research & Engineering Company, Linden, N.J.

Filed Oct. 16, 1972, Ser. No. 298,060

Int. Cl. C08f 45/62; C08g 51/62

U.S. Cl. 260—45.75 N

13 Claims

1. A substantially white polymer composition exhibiting outstanding resistance to ultraviolet degradation which comprises in combination:

- a major portion of an ultraviolet-sensitive polymer;
- at least one antioxidant stabilizer system for said polymer; and
- sufficient colorless, light green or pale yellow nickel aryl sulfonate, to measurably retard the ultraviolet sensitivity of said polymer wherein said sulfonate has from one to ten aryl groups, one to ten aliphatic substituents on said aryls, said aliphatic substituents having a total of from one to one hundred carbon atoms.

3,853,811

FLAME RESISTANT ETHYLENE-CHLOROTRIFLUOROETHYLENE COPOLYMER COMPOSITIONS

Swayambu Chandrasekaran, East Orange, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 358,210

Int. Cl. C08f 45/56, 45/62

U.S. Cl. 260—45.75 K

9 Claims

1. A composition comprising a copolymer of ethylene and chlorotrifluoroethylene, said copolymer containing between about 40 to about 60 mol percent ethylene units and correspondingly between about 60 and about 40 mol percent of chlorotrifluoroethylene units, and an effective amount of a flame retardant additive selected from the group consisting of tin oxides, tin phosphates, stannous oxalate and mixtures thereof.

3,853,812

MIXED AMINE-PHENOL HARDENERS FOR EPOXY RESINS

Deitrich Helm, Unna, Germany, assignor to Schering AG, Berlin & Bergkamen, Germany

Filed Dec. 26, 1972, Ser. No. 318,109

Claims priority, application Germany, Jan. 7, 1972, 2200717

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EC

3 Claims

- An adduct formed by the admixture of
 - an association product comprising, in admixture,
 - a liquid polyamine having 3–5 amino hydrogen atoms, selected from the group consisting of N-aminoalkyl piperazines and amines of aliphatic, cycloaliphatic, and araliphatic hydrocarbons and ether-hydrocarbons;
 - a liquid primary monoamine of an aliphatic, cycloaliphatic, or araliphatic hydrocarbon; and
 - a liquid alkylmonophenol, said mixture comprising from 0.3 to 3 equivalents of monoamine amino hydrogen per equivalent of polyamine amino hydrogen and 0.25 to 1 equivalent of alkylmonophenol per equivalent of total amino nitrogen; with
 - from 10 to 30 equivalent percent, based on the total amino hydrogen in said association product, of a member selected from the group consisting of liquid polyglycidyl ethers and liquid polyglycidyl esters.

3,853,813

POLYIMIDE PRECURSOR AND METHOD AND COMPOSITION FOR PREPARING IT

Leonard E. Edelman, and William M. Alvino, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,771

Int. Cl. C08g 20/32

U.S. Cl. 260—47 CB

27 Claims

1. A method of making a soluble polyimide precursor comprising:

- preparing a composition which comprises:
 - a dianhydride and a tetracarboxylic acid in the proportions of about 50 to about 70 mole percent dianhydride and about 30 to about 50 mole percent tetracarboxylic acid;
 - a stoichiometric amount of an aromatic diisocyanate; and
 - a solvent for said dianhydride, said tetracarboxylic acid, said aromatic diisocyanate, and said polyimide precursor in an amount sufficient to make a solution having a solids content of about 12 to about 25 percent;
- heating said composition at about 30 to about 70°C until the evolution of carbon dioxide substantially ceases; and
- heating said composition at about 30 to about 100°C until its viscosity is about Z to about Z6 on the Gardner-Holdt viscosity scale at 18 percent solids.

3,853,814

PHOTODEGRADABLE POLYMERS OF METHYL METHACRYLATE AND UNSATURATED KETONES

James Edwin Guillet, 31 Sagebrush Ln., Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 135,424, April 19, 1971, Pat. No. 3,753,952, which is a continuation-in-part of Ser. No. 763,980, Sept. 30, 1968, abandoned. This application Apr. 23, 1973, Ser. No. 353,415

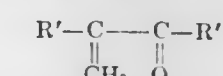
Int. Cl. C08g 15/00

U.S. Cl. 260—63 R

5 Claims

1. Copolymers of methyl methacrylate and an unsaturated ketone selected from the group consisting of methylvinyl ketone, ethylvinyl ketone, propylvinyl ketone, isopropyl vinyl ketone, butylvinyl ketone, methyl isopropenyl ketone, ethyl isopropenyl ketone and phenyl vinyl ketone, and containing from 0.02 to 2 weight per cent of ketone groups, said copolymers being photodegradable upon exposure to ultra violet radiation.

5. Copolymers of methyl methacrylate or methyl acrylate, and an unsaturated ketone of formula



where R' represents a hydrogen atom or an alkyl group having from 1–6 carbon atoms, and R'' represents an alkyl group, an alkenyl group or an aryl group, having from 1–9 carbon atoms, said copolymer containing from 0–02 to 2 weight per cent of ketone groups, said copolymers being photodegradable upon exposure to ultraviolet radiation.

3,853,815

THERMOSETTING CYCLIZED POLYDIENE RESINS

Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 64,611, Aug. 7, 1970, abandoned. This application May 2, 1973, Ser. No. 356,705

Int. Cl. C08g 17/003, 17/10

U.S. Cl. 260—63 R

15 Claims

1. A hard thermoset resin which is a reaction product of the ratio of (1) one equivalent of a polydiene having (i) polyfunctional groups selected from the group consisting of hydroxyl,

amino, and mercapto, and (ii) a predominant amount of pendant vinyl groups on alternate carbon atoms of the polydiene backbone; (2) one gram mole of a carboxylic acid adduct forming aliphatic or aromatic acid anhydride capable of reacting with the polyfunctional groups of the polydiene; (3) one equivalent of a polyfunctional aliphatic or aromatic chain extender capable of reacting with the carboxylic acid adduct; and (4) a peroxide free radical initiator.

3,853,816

WATER-SOLUBLE THERMOSETTING GLYOXALATED CARBAMOYLALKYL ALKYLENEAMINO POLYMERS AND PAPER HAVING A CONTENT THEREOF

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

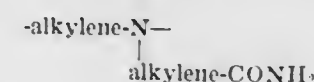
Continuation-in-part of Ser. Nos. 471,463, July 12, 1965, abandoned, and Ser. No. 745,486, July 17, 1968, Pat. No. 3,556,932, and a continuation of Ser. No. 107,457, Jan. 18, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,831

Int. Cl. C08g 9/04, 9/20

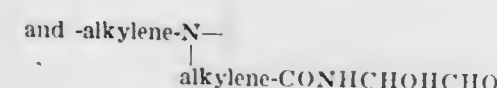
U.S. Cl. 260—72 R

5 Claims

1. A water-soluble cationic polymer consisting essentially of N-carbamoylalkyl alkyleneamino linkages and glyoxalated N-carbamoylalkyl alkyleneamino linkages, said latter linkages being sufficiently numerous that the polymer is thermosetting, said linkages having the respective theoretical formulae



and



3,853,817

TIN CONTAINING ESTERIMIDE POLYMER RESINS AND METHOD OF FORMING

Richard Francis Weddleton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 154,184, June 17, 1971, abandoned. This application June 8, 1973, Ser. No. 368,178

Int. Cl. C08g 20/32, 17/04

U.S. Cl. 260—75 N

11 Claims

1. A method of forming branched thermosetting esterimide polymer resin powder suitable for deposition atop an electrical conductor comprising preparing a polyester by reacting at least one di- or trifunctional polyhydric alcohol and at least one polycarboxylic acid or dialkyl ester thereof selected from the group consisting of isophthalic, terephthalic, benzophenone dicarboxylic and mixtures of the foregoing with up to 50% by weight of an acid or alkyl ester thereof selected from the group consisting of succinic, trimelic, hemimellitic, trimellitic, orthophthalic, tetrachlorophthalic, sebacic, hexachloroendomethylene tetrahydrophthalic in the presence of a difunctional ester forming organotin compound to produce a hydroxy terminated polyester containing between 0.4 and 2% by weight tin atoms in the polymer backbone, forming a polyimide by reacting a diamine and an aromatic carboxylic anhydride containing at least one additional carboxylic group, preparing an esterimide polymer by reacting said polyimide with said tin containing hydroxy terminated polyester to obtain a branched thermosetting esterimide resin containing tin atoms in the polymer backbone, said resin containing by weight 70-60% polyester and 30-40% polyimide and grinding said branched esterimide resin to a particle size between approximately 10 and 150 micrometers for powder deposition atop a conductor.

3,853,818

AMINOBORATE ESTERS AS POLYURETHANE CATALYSTS

Ibrahim S. Bechara, Boothwyn, and Dewey G. Holland, Chadds Ford, both of Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

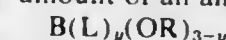
Filed Jan. 22, 1973, Ser. No. 325,912

Int. Cl. C08g 22/38, 22/46

U.S. Cl. 260—75 NC

8 Claims

1. In the method of preparing polyurethane compositions from formulations comprising a precursor of at least one polyol having a minimum of two active hydrogen atoms per molecule, a reactive isocyanate, and a catalyst, the improvement in which the catalyst comprises an effective activating amount of an aminoborate orthoester of the formula:



where

L is $(OCHR'CH_2)_nN(R'')_2$

y is an integer from 1 to 3.

n is an integer from 1 to 2.

R is an independently selected alkyl radical of 1 to 4 carbon atoms.

R' is a radical independently selected from the group consisting of hydrogen.

CH₃ and CH₃N(CH₃)₂, and

R'' is a radical independently selected from the group consisting of an alkyl group of 1 to 2 carbon atoms and an aryl radical.

3,853,819

FLAME RESISTANT THERMOPLASTIC POLYESTERS

Walter Herwig, Neuenhain/Taunus, and Hans-Jerg Kleiner, Bad Soden, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 19, 1973, Ser. No. 380,746

Claims priority, application Germany, July 22, 1972, 2236038; July 22, 1972, 2236039

Int. Cl. C08g 17/133

U.S. Cl. 260—75 P

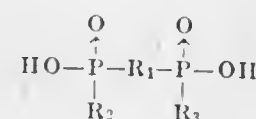
3 Claims

1. A polycondensation product, consisting essentially of the reaction product of

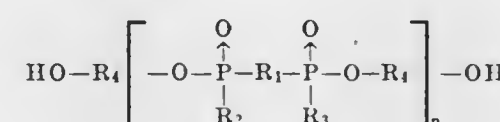
a. 55 to 65 percent by weight of terephthalic acid or the ester forming derivatives thereof, optionally in admixture with up to 5 percent by weight of other aliphatic or aromatic dicarboxylic acids,

b. 20 to 33 percent by weight of ethylene glycol or 1,4-butane-diol optionally in admixture with up to 5 percent by weight of other diols, and

c. 3 to 20 percent by weight of bifunctional diposphinic acids of the formula



and/or monomeric or oligomeric bifunctional diposphinic acid esters of the formula



in which R₁ is saturated straight chain, branched chain, or cyclic alkylene having of from 1 to 15 carbon atoms, phenylene, biphenylene, or phenylalkylene having up to 6 carbon atoms in the alkyl group, R₂ and R₃ are identical or different alkyl or cycloalkyl groups having up to 6 carbon atoms, phenyl, or benzyl, R₄ represents a saturated straight chain,

branched chain, or cyclic alkylene having of from 2 to 15 carbon atoms and n is a whole number of from 1 to 30.

3,853,820

BLENDS OF LINEAR WATER-DISSIPABLE POLYESTERS AND ALIPHATIC OR CYCLOALIPHATIC DICARBOXYLIC ACIDS

Raymond N. Vachon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1973, Ser. No. 381,815

Int. Cl. C08g 17/06; D06m 15/00

U.S. Cl. 260—75 T

6 Claims

1. Composition comprising, based on the weight of the composition, a blend of components I and II as follows:

I. from about 60 to about 95 weight percent of a linear, water-dissipable polyester derived essentially from components (A), (B) and (C) as follows:

A. at least one aliphatic, cycloaliphatic or aromatic dicarboxylic acid,

B. at least one diol, at least 20 mole percent of said diol component being a poly(ethylene glycol) having the formula $H-OCH_2CH_2-n-OH$ wherein n is an integer of from 2 to about 14, and

C. at least one difunctional dicarboxylic acid sulfonamer containing a $-SO_3M$ group attached to an aromatic nucleus, wherein M is hydrogen, or Na⁺, Li⁺, K⁺, or a combination thereof, said sulfonamer component constituting at least about 8 mole percent to about 45 mole percent of the sum of the moles of said components (A) and (C), and

II. from about 40 to about 5 weight percent of a saturated aliphatic or cycloaliphatic dicarboxylic acid having from 6 to 12 carbon atoms.

3,853,821

SOLID STATE POLYMERIZATION OF POLYESTERS IN THE PRESENCE OF A DIISOCYANATE

Abdel-Hadi Sid-Ahmed, Akron, and William C. Tung, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

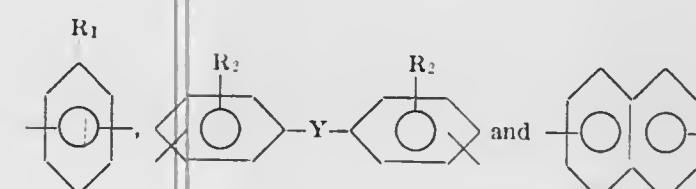
Filed May 1, 1974, Ser. No. 465,984

Int. Cl. C08g 22/10, 22/26

U.S. Cl. 260—75 NE

5 Claims

1. In a process for preparing polyester resin having an intrinsic viscosity of at least 1.0 by solid state polymerization of melt polymerized polyester resin prepared by esterification or transesterification of a dicarboxylic acid or C₁ to C₄ alkyl ester thereof with a glycol of the series $HO(CH_2)_nOH$ where n is an integer ranging from 2 to 10 and polymerization of the esterification or transesterification product, the improvement which comprises adding to said melt polymerized polyester resin prior to carrying out the solid state polymerization thereof from 0.1 to 2.0 percent by weight of an organic aromatic diisocyanate corresponding to the formula $O=C=N-R-N=C=O$ where R is a divalent aromatic radical selected from the group consisting of radicals of the formulae



where R₁ is selected from the group consisting of hydrogen atom and alkyl radicals containing from 1 to 10 carbon atoms, R₂ is selected from the group consisting of hydrogen atom, alkyl radicals containing from 1 to 10 carbon atoms and alk-

oxy radicals containing from 1 to 10 carbon atoms and Y is selected from the group consisting of a direct bond and methylene radical, said percent by weight of the organic aromatic diisocyanate being based on the weight of the melt polymerized polyester resin.

3,853,822

POWDERED STOVING LACQUER

Gerd Brod, Grossauheim; Wilfried Felber, Grossauheim; Horst Leistner, Bruchköbel-Oberissigheim, and Gerhard Morlock, Grossauheim, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed July 24, 1973, Ser. No. 382,226

Claims priority, application Germany, July 26, 1972, 2236513

Int. Cl. C08g 22/06

U.S. Cl. 260—77.5 CR

26 Claims

1. A powdered stoving lacquer comprising:

A. an acrylic resin reaction product from the free radical substance polymerization of a monomer mixture comprising:

a. about 35 - 60 percent by weight, based on the weight of the monomer mixture, of at least one ester of methacrylic acid, the homopolymerization product of which has a glass transition temperature of at least about 80°C,

b. about 5 - 40 percent by weight, based on the weight of the monomer mixture, of at least one ester of acrylic acid or methacrylic acid, the homopolymerization product of which has a glass transition temperature below about 40°C,

c. about 20 - 40 percent by weight, based on the weight of the monomer mixture, of at least one hydroxyalkyl ester of acrylic acid or methacrylic acid, and

d. about 0 - 10 percent by weight, based on the weight of the monomer mixture, of at least one copolymerizable monomer selected from the group consisting of styrene, acrylonitrile, acrylamide, diacetone acrylamide, methacrylic acid and acrylic acid, and

e. about 0.5 - 2.5 percent by weight, based on the total weight of the monomer mixture, of at least one thioglycolic acid ester of a bi-, tri- or tetravalent alcohol;

and

B. at least one aliphatic, cycloaliphatic or araliphatic diisocyanate or a monoadduct of such diisocyanate with a multivalent alcohol, the isocyanate groups in each case being blocked with a lactam having about 4 - 12 carbon atoms in the ring, in an amount of about 0.2 - 0.6 equivalents of isocyanate groups based on the content of hydroxyl groups in the acrylic resin.

3,853,823

PREPARATION OF

AMINOBENZENESULFONATE-MODIFIED POLYAMIDES

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 177,426, Sept. 2, 1971, abandoned.

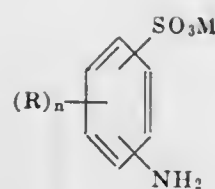
This application June 14, 1973, Ser. No. 370,155

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

3 Claims

1. A process for preparing a fiber forming modified aliphatic polycarbonamide wherein amide linkages and terminal sulfonate groups are integral parts of a polymer chain consisting essentially of reacting under polymerization conditions at a temperature of 360°F to 620°F (a) a dicarboxylic acid and a diamine or a salt of a dicarboxylic acid and a diamine and (b) 0.05 to 4 mole per cent based on the moles of recurring amide linkages in said polycarbonamide of at least one basic dyeability modifier having the formula



wherein M is an alkali metal, R is an alkyl group having 1 to 4 carbon atoms and n is an integer having a value within the range of 0 to 2, in the presence of (c) 50-300 mole per cent of an alkali metal hydroxide per mole of said alkali metal salt.

3,853,824

POLY(ARYLENE SULFIDE) POLYMERS

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

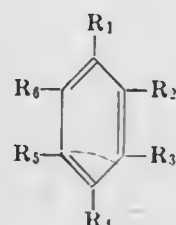
Filed Sept. 19, 1973, Ser. No. 398,573

Int. Cl. C08g 25/00

U.S. Cl. 260-79

9 Claims

1. A method of coating which comprises applying to an article to be coated a composition comprising a poly(arylene sulfide) polymer and from about 3 to 10 percent by weight of said polymer, a sulfur-containing compound of the formula



in which not more than four of the positions occupied by R₁-R₄ contain hydrogen, from 1 to 3 of the positions occupied by R₁-R₄ have a substituent R'SH group in which R' is an alkylene radical of 1 to 3 carbon atoms and from 0 to 5 of the positions occupied by R₁-R₄ are filled by alkyl groups having 1 to 12 carbon atoms.

3,853,825

CYANOISOTHIAZOLYL BIS(THIOBENZOTHAZOLES)

John Joseph D'Amico, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

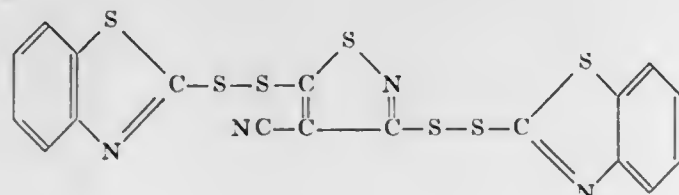
Filed Apr. 16, 1973, Ser. No. 351,143

Int. Cl. C08c 1/162; C08f 27/06

U.S. Cl. 260-79.5 R

4 Claims

1. A composition comprising sulfur vulcanizable diene rubber and a vulcanizing amount of a compound of the formula



3,853,826

HIGH PIPERYLENE RESIN WITH BORON CATALYST

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 192,651, Oct. 26, 1971, abandoned.

This application Sept. 14, 1973, Ser. No. 397,469

Int. Cl. C08f 3/16, 15/04, 15/40

U.S. Cl. 260-80.7

5 Claims

1. A hydrocarbon derived resin having the structure characterized by softening point in the range of about 10°C to about

40°C and comprising from about 95 to about 100 weight percent units derived from piperylene and correspondingly up to about 5 weight percent units derived from 2-methyl-2-butene prepared by the method which comprises polymerizing a mixture which comprises from about 90 to about 100 weight percent of piperylene and up to about 10 weight percent of 2-methyl-2-butene at a temperature in the range of about 0°C to about 50°C in the presence of an anhydrous catalyst selected from the group consisting of boron trifluoride and a boron trifluoride etherate derived from boron trifluoride and an ether selected from dimethyl ether, diethyl ether, methyl ethyl ether, di-n-propyl ether, diisopropyl ether, di-n-butyl ether, diisobutyl ether, di-t-butyl ether, di-n-ether, diisoamyl ether, di-t-amyl ether, diisohexyl ether, di-n-hexyl ether, di-t-hexyl ether and butyl (2-ethyl hexyl) ether.

3,853,827

SELF CURING ACRYLATE TYPE COMPOSITION FOR CEMENTING METAL PARTS

Karel Klatil, Decin; Tomas Vogel, Kresin; Milos Moc, and Premysl Jarolimek, both of Usti nad Labem, all of Czechoslovakia, assignors to Spolek Pro Chemickou a Hutni Vyrobu, Usti nad Labem, Czechoslovakia

Filed Jan. 25, 1972, Ser. No. 220,693

Int. Cl. C08f 3/64, 3/66, 15/18

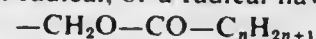
U.S. Cl. 260-86.1 E

10 Claims

1. A composition for cementing together metal parts which cures in the absence of air but the curing of which is inhibited by the presence of air, the said composition comprising a mixture of (a) between 34.0 and 99.4 percent by weight of at least one acrylic acid or methacrylic acid ester of an alcohol having the formula



in which formula R is an alkyl radical having up to 4 carbon atoms, a methylol radical, or a radical having the formula



n being an integer up to 18, (b) between 0 and 65.4 percent by weight of at least one acrylic acid or methacrylic acid ester of an aliphatic alcohol having between 4 and 10 carbon atoms, or an acrylic acid or methacrylic acid ester of glycol or a polyglycol, (c) between 0.5 and 10 percent by weight of at least one organic hydroperoxide, and (d) between 0.1 and 5% by weight of a tertiary amine or an alkylated amide of formic acid or acetic acid.

3,853,828

PROCESS FOR CROSSLINKING FLUOROCARBON POLYMERS

Leo A. Wall, deceased, late of McLean, Va. (by Leola Grace Wall, administratrix); Daniel W. Brown, Bethesda, and Roland E. Florin, Takoma Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 21, 1973, Ser. No. 418,000

Int. Cl. C08f 27/00

U.S. Cl. 260-87.5 A

13 Claims

1. A process for crosslinking fluorocarbon polymers without requiring the use of solid or liquid additives selected from the group consisting of

3,3,3-trifluoropropene homopolymers
α,β,β-trifluorostyrene homopolymers
1,2,3,4,5-pentafluorostyrene homopolymers
vinylidene fluoride-hexafluoropropene copolymers
vinylidene fluoride-chlorotrifluoroethylene copolymers
3,3,3-trifluoropropene-tetrafluoroethylene copolymers
5,5,5,4,4,3,3-heptafluoropentene-1-tetrafluoroethylene copolymers

which comprises contacting the polymer with gaseous fluorine diluted with at least about 5 times its volume of an inert gas so that crosslinking of the polymer is accomplished with substantially no introduction of fluorine into the polymer.

3,853,829

COPOLYMERS OF VINYL ETHERS AND CYCLIC POLYENES CONTAINING A SYSTEM OF CONJUGATED DOUBLE BONDS AND PROCESS FOR THE PREPARATION THEREOF

Aldo Priola; Sebastiano Cesca, and Giuseppe Ferraris, all of San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato, Milanese, Italy

Filed July 28, 1972, Ser. No. 275,935

Claims priority, application Italy, July 31, 1971, 27015/71

Int. Cl. C08f 15/02

U.S. Cl. 260-88.1 R

7 Claims

1. A copolymer of vinyl-ethers wherein said vinyl-ethers are alkylvinyl-ethers containing hydrocarbon radicals of from 1 to 20 carbon atoms which are selected from the group consisting of aliphatic and the halogen derivatives thereof and a cyclic polyene selected from the group consisting of cyclopentadiene, methyl-cyclopentadiene, 1-isopropylidene-tetrahydroindene, dehydro-dicyclopentadiene and 1-isopropylidene-3a, 4, 7, 7a-tetrahydroindene having a vinyl-ethers content higher than 80% and a molecular weight higher than 50,000, said copolymer having been prepared in the presence of a Friedel-Crafts catalyst.

3,853,830

PROCESS FOR PREPARING POLYMERS OF CYCLOPENTENE

Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,392

Int. Cl. C08f 7/02, 15/04

U.S. Cl. 260-88.2

9 Claims

1. A process for polymerizing cyclopentene with a catalyst comprising (A) at least one organoaluminum compound of the formula AlR₃ wherein R is an alkyl radical containing 1 to 12 carbon atoms, (B) iodine, and (C) at least one tungsten or molybdenum salt or mixture thereof wherein the amount of said salt is from about 0.01 to about 10 millimoles per mole of cyclopentene monomer, the molar ratio of B/A is from about 0.1/1 to about 10/1, and the molar ratio of A/C is from about 0.2/1 to about 20/1.

3,853,831

PERCHLOROFULVALENE HOMOPOLYMER

Raymond R. Hindersinn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 182,177, Sept. 20, 1971, Pat. No. 3,775,516, which is a continuation-in-part of Ser. No. 762,146, Sept. 24, 1968, Pat. No. 3,717,608, which is a

continuation-in-part of Ser. No. 597,890, Nov. 30, 1966, abandoned, which is a continuation-in-part of Ser. No. 184,671, April 3, 1962, Pat. No. 3,475,502. This application July 30, 1973, Ser. No. 383,748

Int. Cl. C08f 3/00

U.S. Cl. 260-91.5

1 Claim

1. A homopolymer prepared by heating perchlorofulvalene at temperature in the range of about 100° to 300° centigrade, said homopolymer having a molecular weight of about 2,000 to 10,000 when measured in benzene, wherein said perchlorofulvalene is a chlorocarbon of the empirical formula C₁₀Cl₈ characterized by the property of being a crystalline material with a violet reflectance and having an ultraviolet absorption maximum at 389 millimicrons and 603 millimicrons in hexane.

3,853,832

SYNTHETIC HUMAN PITUITARY GROWTH HORMONE AND METHOD OF PRODUCING IT

Choh H. Li, Berkeley, Calif., assignor to Hormone Research Foundation, Berkeley, Calif.

Filed Apr. 27, 1971, Ser. No. 137,811

Int. Cl. C07c 103/52

U.S. Cl. 260-112.5

20 Claims



1. A method of producing a synthetic human growth - promoting substance which comprises:

- forming an unbridged polypeptide chain of 188 amino acid residues in the sequence shown in the accompanying drawing;
- generating sulfhydryl groups on the cysteine residues in said polypeptide chain;
- oxidizing said sulfhydryl groups under conditions effective to form disulfide bridges between said cysteine residues, thereby forming two intra-molecular rings in the polypeptide chain.

3,853,833

SYNTHETIC HUMAN GROWTH-PROMOTING AND LACTOGENIC HORMONES AND METHOD OF PRODUCING SAME

Choh Hao Li, Berkeley, Calif., assignor to Hormone Research Foundation, Berkeley, Calif.

Continuation-in-part of Ser. No. 137,811, April 27, 1971.

This application July 15, 1971, Ser. No. 162,946

Int. Cl. C07c 103/52; C07g 7/00; C08h 1/00

U.S. Cl. 260-112.5

30 Claims

1. A method of producing synthetic human pituitary growth hormone which comprises:

- forming an unbridged polypeptide chain of amino acid residues in the sequence of natural human pituitary growth hormone;
- generating sulfhydryl groups on the cysteine residues in said polypeptide chain;
- oxidizing said sulfhydryl groups under conditions effective to form disulfide bridges between said cysteine residues, thereby forming two intra-molecular rings in the polypeptide chain.

3,853,834

4-ALANINE LH-RH ANALOG

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

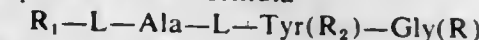
Filed Oct. 19, 1972, Ser. No. 298,967

Int. Cl. C07c 103/52; A61k 27/00

U.S. Cl. 260-112.5

6 Claims

1. A compound of the formula



in which R is methyl, ethyl, p-nitrobenzyl, or benzyl; R₂ is t-butyl, benzyl, or 2,6-dichlorobenzyl; and, when R₂ is t-butyl, R₁ is H- or CBz-; and, when R₂ is benzyl or 2,6-dichlorobenzyl, R₁ is H-, Cbz-, AdOC-, BOC-, or

AOC—; or an acid addition salt of those compounds in which R_1 is H—.

3,853,835

ALKYL ESTERS OF ASPARTYL ALIPHATIC AMINO ACID DIPEPTIDES

Robert H. Mazur, Deerfield, and James M. Schlatter, Glenview, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

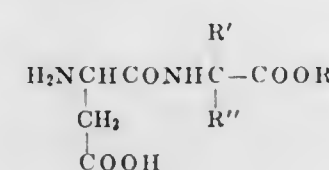
Continuation-in-part of Ser. No. 89,115, Nov. 12, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,040
Claims priority, application Australia, Nov. 11, 1971, 35358/71

Int. Cl. C07c 103/52; A231 1/26

U.S. Cl. 260—112.5

12 Claims

1. A compound of the formula



wherein R and R' are lower alkyl radicals containing less than four carbon atoms and R'' is hydrogen or a lower alkyl radical containing less than four carbon atoms, with the provision that, when R' and R'' are dissimilar, the carbon atom to which R' and R'' are attached possesses the (R) stereochemical configuration.

3,853,836

PSYCHOPHARMACOLOGICALLY ACTIVE PEPTIDES RELATED TO ACTH

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 12, 1973, Ser. No. 331,945

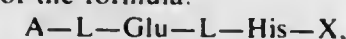
Claims priority, application Netherlands, Feb. 22, 1972, 7202278

Int. Cl. C07c 103/52; A61k 27/00, 17/06

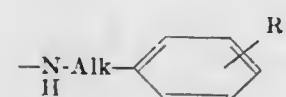
U.S. Cl. 260—112.5

7 Claims

1. A peptide of the formula:



in which A is a member of the group consisting of H—D—met, H—L—Met (→O), H—D—Met (→O), H—L—Met (→O₂), H—D—Met (→O₂), desamino—Met, desamino—Met (→O), desamino—Met (→O₂), and the moiety H₂N—B—CO—, in which B is alkylene having 1–6 carbon atoms, and in which X is selected from the group consisting of hydroxy, (N-phenylalkyl)-amino of the formula



in which R₁ is selected from the group consisting of hydrogen and hydroxy and Alk is alkylene with 1–6 carbon atoms, and the group L—Phe—Y in which Y is selected from the group consisting of hydroxy and (N-aminoalkyl)-amino selected from the group consisting of descaboxyl-lysyl and descaboxyl-arginyl, the groups L—Lys—Z and L—Arg—Z, in which Z is selected from the group consisting of hydroxy, the group L—Trp—OH, the group L—Trp—Gly—OH, and a (N-3-indolylethyl) amino group, and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6C) substituted amides of those peptides having a free carboxyl group, esters

derived from aliphatic or phenylaliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.

3,853,837

NOVEL NONAPEPTIDE AMIDE ANALOGS OF LUTEINIZING HORMONE RELEASING FACTOR

Masahiko Fujino, Takarazuka; Shigeru Kobayashi, Osaka; Mikihiro Obayashi, Osaka; Susumu Shinagawa, Osaka, and Tsunehiko Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 25, 1973, Ser. No. 354,381

Claims priority, application Japan, Apr. 29, 1972, 47-42686; Nov. 24, 1972, 47-118452

Int. Cl. C07c 103/52; A61k 27/00

U.S. Cl. 260—112.5

13 Claims

1. A nonapeptide amide derivative shown by the general formula:

L-pyroglutamyl-L-histidyl-L-tryptophyl-L-seryl-A₁-glycyl-A₂-L-arginyl-L-proyl-Y

wherein A₁ is L-tyrosyl or L-phenylalanyl; A₂ is L-leucyl, L-isoleucyl, L-norleucyl, L-valyl, L-norvalyl, L-methionyl or L-phenylalanyl, Y represents NHR in which R is a straight or branched alkyl group of one to three carbon atoms which may be substituted by hydroxy or alternatively Y represents pyrrolidino, and pharmaceutically acceptable salt thereof.

3,853,838

SEDATIVE PEPTIDES RELATED TO ACTH CONTAINING A D-PHE MOIETY

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed July 10, 1973, Ser. No. 377,978

Claims priority, application Netherlands, July 15, 1972, 7209839

Int. Cl. C07c 103/52; A61k 27/00, 17/06

U.S. Cl. 260—112.5

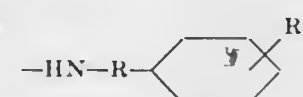
7 Claims

1. A peptide of the formula: A—L—Glu(Q)—L—His—D—X in which L and D indicate the configuration of the relative residue and

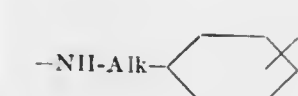
A is selected from the group consisting of H—L—Met, H—L—Met (→O), H—L—Met (→O₂), desamino-methionyl, desaminodesamino-methionyl (→O), desaminomethionyl (→O₂), and the moiety: H₂N—B—CO—, in which B is alkylene having 1–6 carbon atoms;

Q is selected from the group consisting of hydroxy and amino;

X is selected from a (N-phenyl branched alkyl) amino group of the formula

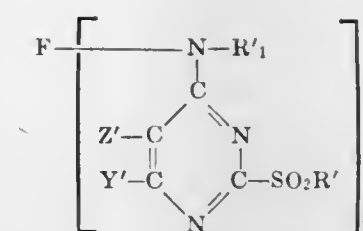


in which R is a branched alkylene group with 2–6 carbon atoms and R₁ is selected from the group consisting of hydrogen and hydroxy; and the group —Phe—Y in which Y is selected from the group consisting of hydroxy, descaboxyl-lysyl, descaboxyl-arginyl, —L—Lys—Z and —L—Arg—Z, in which Z is selected from the group consisting of hydroxy, —L—Phe—OH, β-indolyl-ethylamino, and a phenylalkylamino moiety of the formula

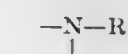


in which Alk is alkylene with 1–6 carbon atoms and R₁ is selected from the group consisting of hydrogen and hydroxy;

and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6 C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or araliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.



wherein F is the radical of an organic dyestuff in which



is bonded directly to an aromatic nuclear carbon atom of F; R₁ is hydrogen or lower alkyl of 1–5 carbon atoms; R' is lower alkyl of 1–5 carbon atoms; Z' is chlorine or bromine; Y' is hydrogen or methyl; and m' is a number from 1 to 2.

3,853,839

METHOD OF FORMING PROTEIN FOOD PRODUCT

Pete J. Magnino, St. Louis; Ralph A. Hoer, Ballwin, and Robert E. Hahn, Edwardsville, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 19, 1972, Ser. No. 219,156

Int. Cl. A23j 1/14, 3/00

U.S. Cl. 260—123.5

10 Claims

1. A process of treating soy protein to form an isolated soy protein material which is useful in the low acid pH range of about 2.0 to 4.2 comprising the steps of: (a) preparing an isolated soy protein material consisting of the steps of extracting protein and sugars from solvent extracted soybean flake material, separating the extracted liquor from the solid soybean flake material, adjusting the pH of the liquor to about the isoelectric point of the protein to precipitate the protein, separating the precipitated protein from the residue to obtain the isolated soy protein material; and (b) thereafter forming an aqueous slurry of the isolated soy protein having a pH of about 2.0 to about 4.2 and a solids content within the range of 10–15%; practically instantly heating successive portions of the slurry to a temperature of about 250°–320° F., on a continuous basis, subsequently retaining the slurry in the heated condition under positive pressure for a period of time at least sufficient to destroy the trypsin inhibitors therein and then suddenly releasing the pressure on successively advanced portions thereof, such sudden pressure release causing flash off volatilization and removal of water vapor therefrom and separating the vapors from the slurry to thereby produce the isolated soy protein product.

3,853,840

REACTIVE DYESTUFFS CONTAINING A FIBER-REACTIVE ALKYL SULFONYLPYRIMIDYL GROUP

Karl-Heinz Schundehutte, and Kersten Trautner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

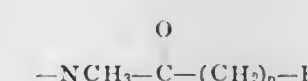
Continuation of Ser. No. 512,542, Dec. 8, 1965, abandoned. This application Mar. 24, 1970, Ser. No. 22,365

Int. Cl. C09b 62/22, 62/24, 62/26

U.S. Cl. 260—146 D

14 Claims

1. A reactive dyestuff of the formula



or —NHCO—(CH₂)_n—H wherein n is an integer from 1–3, C₁–C₄–alkyl–sulfonyl amino, phenylsulfonyl amino, toluenesulfonyl amino, phenoxy carbonyl amino, C₁–C₄–alkoxycarbonyl amino, C₁–C₄–alkylaminocarbonyl amino or aminocarbonyl amino, R₁' and R₂' are each hydrogen, C₁–C₄–alkyl unsubstituted or substituted by phenyl, cyano, chlorine, C₁–C₄–alkoxy, C₁–C₅–alkyl-carbonylamino, C₁–C₅–alkylcarbonyloxy, benzoyloxy, C₁–C₄–alkylcarbamyloxy, phenylcarbamyloxy, C₁–C₄–alkyloxycarbonyloxy, phenoxy carbonyloxy, and phenoxy.

3,853,842

ESTERS OF ANTIBIOTICS B-5050 AND TETRAHYDRO-5050

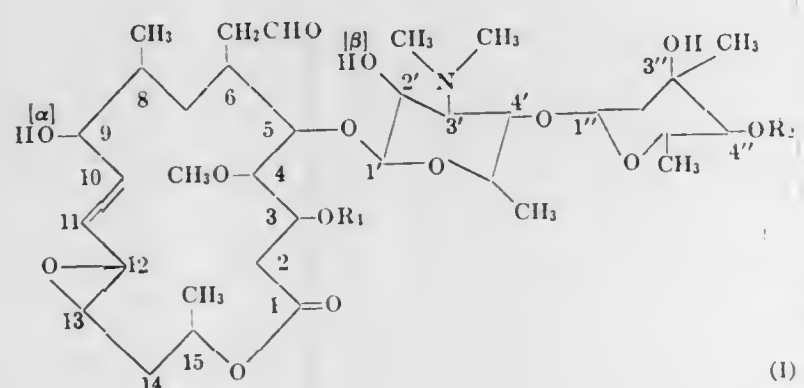
Toyokazu Kishi, Nara; Setsuo Harada, Osaka; Masayuki Muroi, Osaka, and Motoo Izawa, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed June 30, 1971, Ser. No. 158,556

Claims priority, application Japan, July 2, 1970, 45-58230; Nov. 16, 1970, 45-101329; Dec. 1, 1970, 45-106488
Int. Cl. C07c 129/18

U.S. Cl. 260—210 AB

17 Claims

1. An ester of a carboxylic acid of 1 to 10 carbon atoms, which is selected from the group consisting of 9-, 2'- and 9, 2'-ester of



wherein R₁ is propionyl or acetyl and R₂ is i-valeryl, propionyl or acetyl.

3,853,843

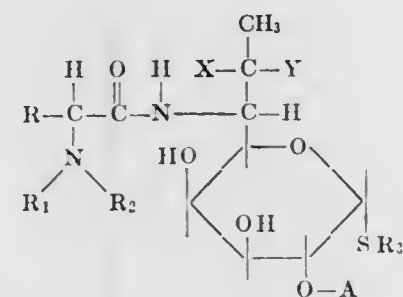
DERIVATIVES OF THIOLINCOSAMINIDE COMPOUNDS
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 314,729, Dec. 13, 1972, abandoned. This application Feb. 22, 1973, Ser. No. 334,723
Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

20 Claims

1. A compound selected from the group consisting of those of formula:



wherein R, R₁ and R₂ are each selected from hydrogen and alkyl of from 1 to 20 carbon atoms, inclusive, provided that the total number of carbon atoms in R, R₁ and R₂ together does not exceed 20; R₃ is alkyl of 1 to 2 carbon atoms, inclusive; X is selected from hydrogen and hydroxy; Y is hydrogen when X is hydroxy and when X is hydroxy, Y is selected from hydrogen, chlorine, bromine, iodine, alkylthio and monohydroxy-substituted alkylthio, said alkylthio in each of instance having from 1 to 18 carbon atoms, inclusive; A is selected from hydrogen and an acyl radical of a hydrocarbon carboxylic acid containing from 2 to 18 carbon atoms, inclusive; and the acid addition salts thereof.

3,853,844

NUCLEOSIDE 3',5'-CYCLIC PHOSPHOROTHIOATES

Dennis A. Shuman, 26702 Estanciero, Mission Viejo, Calif. 92675, and Roland K. Robins, 10050 Highcliff Rd., Santa Ana, Calif. 92705

Filed Aug. 4, 1972, Ser. No. 277,971
Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

2 Claims

1. 5'-deoxy-5'-thioinosine 3',5'-cyclic phosphorothioate.

3,853,845

5-N-AMINOACYL-5-AMINOURIDINES

Robert J. Rousseau, Laguna Niguel; Roland K. Robins, Santa Ana, and George A. Ivanovics, Costa Mesa, all of Calif., assignors to ICN Pharmaceutical, Inc., Irving, Calif.

Filed Aug. 18, 1971, Ser. No. 172,922
Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R

10 Claims

1. 5-N-α-(L-aminoacyl)-5-aminouridine.

3,853,846

INOSINE-5-CARBOXYLATES

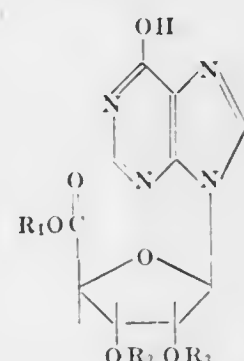
Raj Nandan Prasad, Pierrefonds, Quebec, Canada, and Herman Hal Stein, Skokie, Ill., assignors to Abbott Laboratories, Chicago, Ill.

Filed Feb. 12, 1973, Ser. No. 331,398
Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

6 Claims

1. A compound of the formula



wherein R₁ is loweralkyl, lowerhaloalkyl, or lowerhydroxyalkyl and R₂ and R₃ each are hydrogen or loweralkanoyl, or R₂ and R₃ when taken together form an isopropylidene or benzylidene moiety, and the pharmaceutically acceptable salts thereof.

3,853,847

PURIFICATION OF CYCLOTETRAMETHYLENE TETRANITRAMINE

Paul L. Lee; Sam B. Wright, and Glenn E. Sims, all of Kingsport, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1961, Ser. No. 143,273
Int. Cl. C07d 55/16, 55/60

U.S. Cl. 260—239 HM

7 Claims

1. A process for the purification of cyclotetramethylene tetranitramine which comprises heating a portion of crude cyclotetramethylene tetranitramine in the presence of linear nitramines in acetic acid, the acid concentration being at least 98 percent, to a temperature of from about 50 to 98°C., maintaining the resulting slurry for a period of about 15-45 minutes at said temperature from about 50 to 98°C., cooling the slurry to a temperature of about 30 to 40°C., adding to said slurry a new increment of said crude cyclotetramethylene tetranitramine, repeating the same cycle for a series of from 5 to 10 increment additions, and recovering a cyclotetramethylene tetranitramine product of high purity.

3,853,848

PENICILLANIC ACID DERIVATIVES

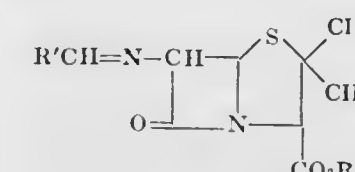
Richard John Stoodley, Newcastle-Upon-Tyne, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

Filed Jan. 17, 1972, Ser. No. 218,529
Claims priority, application Great Britain, Jan. 20, 1971, 2736/71

U.S. Cl. 260—239.1

10 Claims

1. A process for the preparation of the 6-β-epimer of a compound of the formula:



wherein

R is selected from sodium, potassium, benzyl, p-methoxybenzyl, methoxymethyl, phenacyl, trimethylsilyl and tributyltin, and

R' is selected from alkyl of 1-12 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, cycloheptyl, phenyl, naphthyl, furyl, pyridyl, thienyl, indanyl and pyranlyl and each of said group substituted by dimethylamino, nitro, hydroxy, chloro, bromo or fluoro.

which comprises adding to a solution of a compound of the above formula an epimerizing non-B-lactam rupturing base selected from tertiary amines, alkali carbonates and alkali alkoxides, and separating the 6-β-epimer from the resulting mixture of 6-α- and 6-β-epimers.

3,853,849

ALPHA(ARYLOXYCARBONYL)-AND ALPHA(ALKOXY-ARBONYL)-ARALKYL PENICILLINS

Kenneth David Hardy, Sussex; John Herbert Charles Naylor, and Edward Raymond Stove, both of Surrey, all of England, assignors to Beecham Group Limited, Brentford Middlesex, England

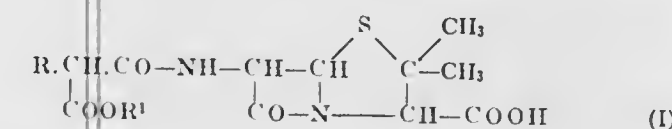
Continuation of Ser. 833,848, May 29, 1969, abandoned, which is a continuation of Ser. No. 679,995, Nov. 2, 1967, which application Feb. 8, 1971, Ser. No. 113,740

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

4 Claims

1. A penicillin monoester of the formula:



or a non-toxic pharmaceutically acceptable salt thereof, wherein R is phenyl, or 3-thienyl and R' is phenyl or methylphenyl.

3,853,850

CRYSTALLINE COMPLEX OF PENICILLIN G 1(S)-OXIDE AND PROCESS FOR PREPARING SAME
Edward McKenzie Wilson, Wayside Birkett Hill, Westmorland, and Alfred Bartley Taylor, The Pantiles, Jordans Way, Jordans, Beaconsfield, both of England

Filed Jan. 16, 1973, Ser. No. 324,169
Claims priority, application Great Britain, Jan. 20, 1972, 2794/72

U.S. Cl. 260—239.1

10 Claims

1. The 1:1 molar crystalline complex of penicillin G 1(S)-oxide with acetone.

3,853,851

DIAZEPINOISOQUINOLINES

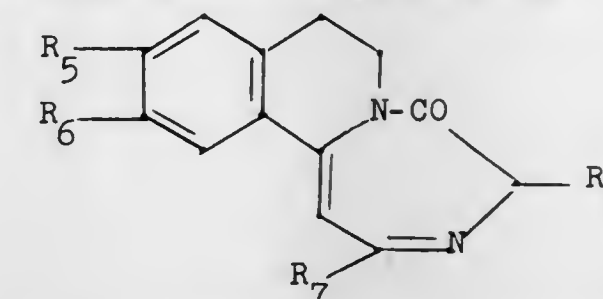
Heinz Werner Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 26, 1972, Ser. No. 221,053
Int. Cl. C07d 57/04

U.S. Cl. 260—239.3 T

4 Claims

1. A compound corresponding to the formula



wherein each of R₅ and R₆ is hydrogen, methyl, methoxy, or both R₅ and R₆ are methylenedioxy, R₇ is phenyl, (methyl)-phenyl, (methoxy)-phenyl, (methylenedioxy)-phenyl, (fluoro or chloro)-phenyl, (trifluoromethyl)-phenyl, thienyl or (methyl)-thienyl, n is an integer from 1 to 3, and R₈ is hydrogen or alkyl with up to four carbon atoms, or pharmaceutically useful acid addition salts thereof.

3,853,852

NEW NITROFURAN DERIVATIVES, THEIR PRODUCTION AND USE

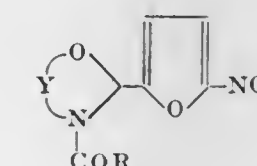
Karl Eiter; Klaus-Friedrich Hebenbrock, both of Koeln, and Manfred Plempel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 162,003, July 12, 1971, abandoned. This application July 24, 1973, Ser. No. 382,212
Claims priority, application Germany, July 18, 1970, 2035797

Int. Cl. C07d 85/44, 87/20

U.S. Cl. 260—239.3 R

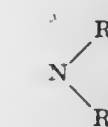
21 Claims

1. A compound of the formula:

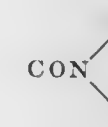


in which

R is lower alkyl, mono- or dihalo(lower alkyl),



OR³,



or COOR³ in which:

each of R¹ and R², when taken independently of the other is hydrogen, lower alkyl, hydroxy(lower alkyl), phenyl or monohalophenyl, or R¹ and R², when taken together with the nitrogen atom to which they are attached, together are phthalimido or azacycloheptan-2-on-1-yl; R³ is hydrogen, lower alkyl, monohalo(lower alkyl), 1-methyl or phenyl(lower alkyl); and Y is ethylene, 1,2-propylene or 1,3-propylene.

3,853,853

1,5-DITHIA-2,4,6,8-TETRAZACYCLOOCTANE-3,7-DIONES

Philip S. Magee, Ignacio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

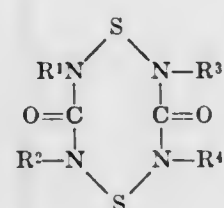
Filed Mar. 14, 1973, Ser. No. 341,005

Int. Cl. C07d 93/36

U.S. Cl. 260-239.3 R

2 Claims

1. A compound of the formula



wherein R^1 , R^2 , R^3 and R^4 individually are hydrogen, lower alkyl of 1 to 6 carbon atoms, cycloalkyl of five to eight carbon atoms, phenyl, naphthyl, alkaryl of seven to 10 carbon atoms or alkaryl of seven to 10 carbon atoms, each of said phenyl, naphthyl, alkaryl or alkaryl groups being unsubstituted or substituted with from 1-4 substituents selected from the group consisting of fluorine, chlorine, bromine, trichloromethyl, trifluoromethyl, alkoxy of one to four carbon atoms or nitro.

3,853,854

NOVEL 5',6'-DIHYDRO-2H-PYRAN-4'-YL PROSTAGLANDIN ETHERS

Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Andersen, Seattle, Wash., assignors to Alza Corporation, Palo Alto, Calif.

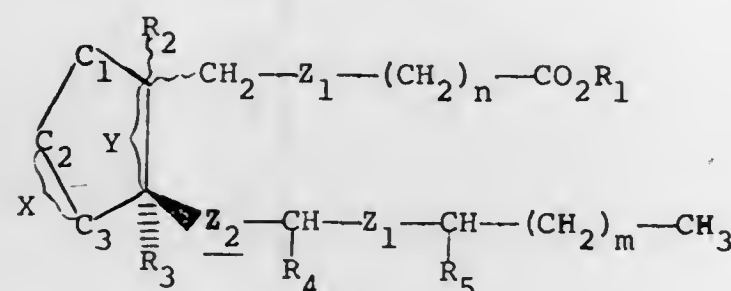
Filed June 24, 1971, Ser. No. 156,510

Int. Cl. C07d 7/10

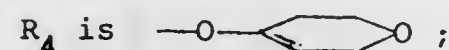
U.S. Cl. 260-240 R

21 Claims

1. Novel compounds of the formula:



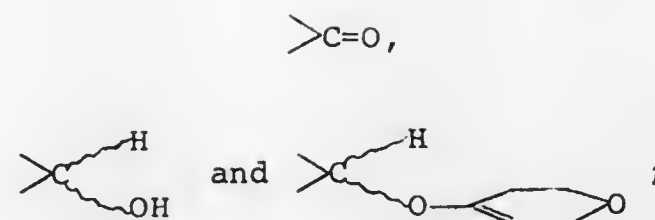
wherein R_1 is selected from the group consisting of hydrogen and lower alkyl; R_2 and R_3 are both hydrogen when Y is a single bond and R_2 and R_3 are both absent when Y is a double bond;



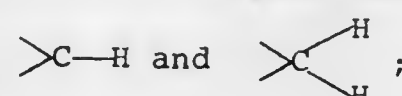
R_5 is a member selected from the group consisting of hydrogen and



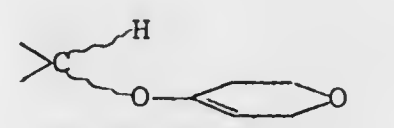
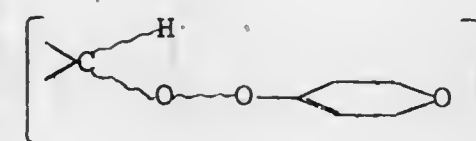
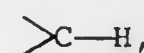
C_1 is a member selected from the group consisting of



C_2 is a member selected from the group consisting of



C_3 is a member selected from the group consisting of



Z_1 is a member selected from the group consisting of cis and trans $-\text{CH}=\text{CH}-$ and $-\text{CH}_2\text{CH}_2-$; Z_2 is a member selected from the group consisting of trans $-\text{CH}=\text{CH}-$ and $-\text{CH}_2\text{CH}_2-$; X is selected from the group consisting of a single bond and double bond and X is a double bond when C_2 and C_3 are substituted with hydrogen; and wherein n is 1 to 5 and m is 0 to 5; the diastereomers and non-toxic salts thereof.

3,853,855

2-AZACYCLOALKYLMETHYL SUBSTITUTED VINYLENE CARBINOLS AND KETONES

J. Martin Grisar, and George P. Claxton, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

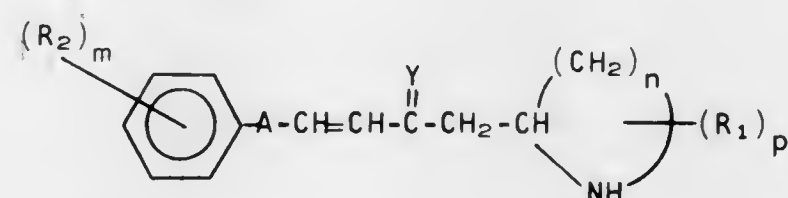
Filed Apr. 25, 1973, Ser. No. 354,205

Int. Cl. C07b 29/20, 29/16

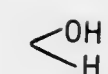
U.S. Cl. 260-240 R

5 Claims

1. A 2-azacycloalkylmethyl substituted vinylene carbinol and ketone having the formula:



wherein m is an integer of from 1 to 3; n is an integer of from 3 to 5; p is an integer of from 1 to 2; R_1 is hydrogen or a lower alkyl having from 1 to 4 carbon atoms; R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkoxy having from 1 to 6 carbon atoms, lower alkythio having from 1 to 6 carbon atoms, halogen, trifluoromethyl and phenyl; Y is the radical $=\text{O}$ or



A is selected from the group consisting of a sigma bond, vinylene and methylvinylene; and the pharmaceutically acceptable acid addition salts thereof.

3,853,856

HETEROCYCLIC AZOMETHINES OF N-THIAZOLINYL AND N-THIAZINYL INDOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

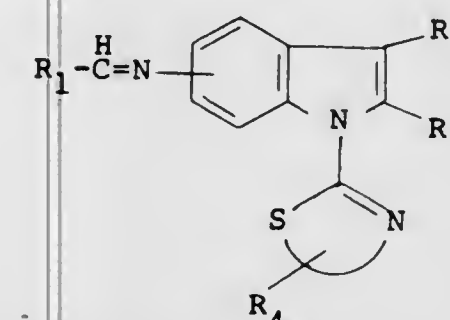
Filed Apr. 30, 1973, Ser. No. 355,853

Int. Cl. C09b 23/00

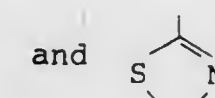
U.S. Cl. 260-240.1

1. An indole having the formula

6 Claims



wherein the azomethine group is attached to the indole in the 5- or the 6-position; R_1 is a monocyclic heterocycle selected from the group consisting of furan, imidazole, isoxazole, oxazole, pyridine, pyrimidine, pyrrole, thiazole, and thiophene or one of said monocyclic heterocycles substituted with a lower alkyl group; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl $-(\text{CH}_2)_n \text{COOR}_5$, cyano, halo, and di(lower alkyl)amino lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl and $-(\text{CH}_2)_n \text{COOR}_5$; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl, and phenyl; n_1 is 0, 1, 2, 3, 4 or 5;



is a 5- or 6-membered ring containing 3 or 4 carbon atoms respectively.

3,853,857

AROMATIC AZOMETHINES OF N-THIAZOLINYL AND N-THIAZINYL INDOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

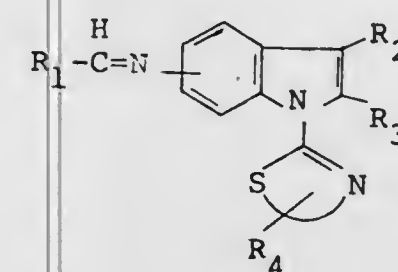
Filed Apr. 30, 1973, Ser. No. 356,009

Int. Cl. C09b 23/00

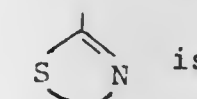
U.S. Cl. 260-240 G

1. An indole having the formula

5 Claims



wherein the azomethine group is attached to the indole in the 5- or the 6-position; R_1 is phenyl or phenyl substituted in 1, 2, or 3 positions with one or more groups selected from the group consisting of halo, nitro, lower alkyl, lower alkoxy, hydroxy, mono- or di(lower alkyl)amino, amido, acetamido, cyano, carboxy, benzyloxy; and trifluoromethyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, $-(\text{CH}_2)_n \text{COOR}_5$, cyano, halo, and di(lower alkyl)amino lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl, and $-(\text{CH}_2)_n \text{COOR}_5$; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl, and phenyl; n_1 is 0, 1, 2, 3, 4 or 5; and



a 5- or 6-membered ring containing 3 or 4 carbon atoms respectively.

3,853,858

PYRROLOQUINAZOLINE DERIVATIVES

Richard P. Ryan, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

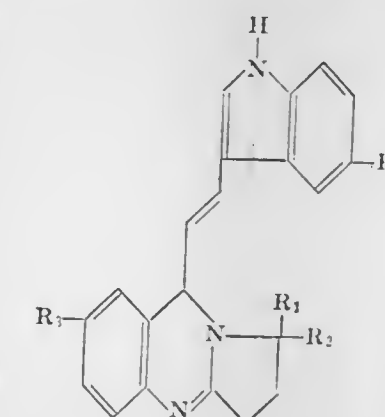
Filed June 21, 1973, Ser. No. 372,131

Int. Cl. C07d 51/48

U.S. Cl. 260-240 E

9 Claims

1. A pyrroloquinazoline derivative selected from the group consisting of compounds of the formula



wherein

R_1 and R_2 are independently selected from hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive; and R_3 and R_4 are independently selected from hydrogen or lower alkoxy of from 1 to 4 carbon atoms inclusive.

3,853,859

NONFLUORESCENT, GREEN-YELLOW CATIONIC DYE

Frank Ray Hunter, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

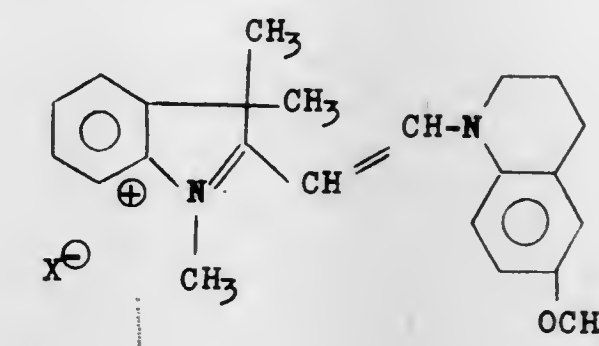
Continuation-in-part of Ser. No. 792,781, Jan. 21, 1969, abandoned. This application May 14, 1973, Ser. No. 359,682

Int. Cl. C09b 23/00

U.S. Cl. 260-240.8

2 Claims

1. A nonfluorescent green-yellow cationic dye of the formula



where X⁻ is an anion selected from the group consisting of chloride, bromide, iodide, sulfate, chlorate, phosphate, fluoroborate, picrate, acetate and arylsulfonate.

3,853,860

3-PHOSPHORANYLIDENE ETHYL CEPHALOSPORINS
Niall Galbraith Weir, London, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England
Filed July 30, 1971, Ser. No. 167,870

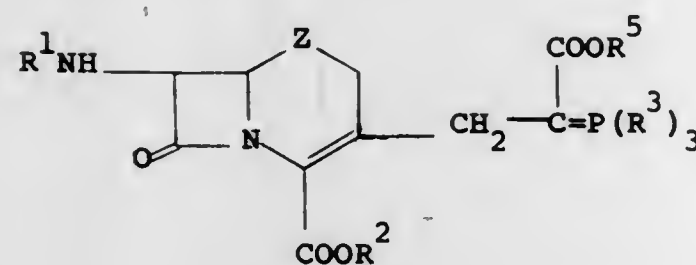
Claims priority, application Great Britain, Aug. 6, 1970, 38020/70

Int. Cl. C07d 99/24, 99/16

U.S. Cl. 260—243 C

6 Claims

1. A compound of the formula



wherein R¹ is thienylacetyl, phenylacetyl, fluorophenylacetyl, nitrophenylacetyl, aminophenylacetyl, acetoxyphenylacetyl, methoxyphenylacetyl, methylphenylacetyl, hydroxyphenylacetyl, or phenoxyacetyl; R² is H or t-butyl; R³ is phenyl; R³ is lower alkyl or benzyl and Z is >S or >S O; or an acid addition salt thereof.

3,853,861

CEPHALEXIN INTERMEDIATE

William L. Garbrecht, Indianapolis, Md., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 808,313, March 18, 1969, Pat. No. 3,632,850. This application Dec. 8, 1971, Ser. No. 206,152

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

1 Claim

1. p-Nitrobenzyl 7-aminodesacetoxycephalosporinate hydrochloride.

3,853,862

PRODUCTION OF 4-HYDROXY-1,2-BENZOTHAZINE-3-CARBOXAMIDES

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

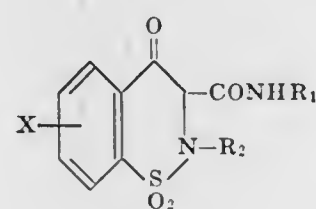
Filed Apr. 23, 1973, Ser. No. 353,607

Int. Cl. C07d 93/02

U.S. Cl. 260—243 R

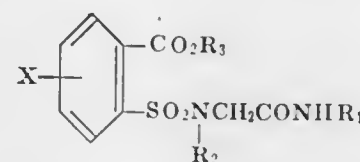
8 Claims

1. A process for the preparation of a compound of the formula:



wherein R₁ is selected from the group consisting of phenyl; monosubstituted phenyl wherein said substituent is selected from the group consisting of fluoro, chloro, methyl and methoxy; 2-thiazolyl; 4,5-dimethyl-2-thiazolyl; 2-pyridyl; 6-methyl-2-pyridyl, and 5-methyl-3-isoxazolyl;

R₂ is alkyl containing from 1 to 3 carbon atoms; and X is a substituent selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro and bromo, which comprises contacting a compound of the formula:



wherein R₃ is alkyl containing from 1 to 3 carbon atoms, with a metal hydride selected from the group consisting of alkali and alkaline earth metal hydrides, in a reaction-inert solvent at 50°–150° C.

3,853,863

CEPHALOSPORIN C ISOLATION PROCESS

Billy G. Jackson; Martha C. Stamper, and Edmond M. Bottorff, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

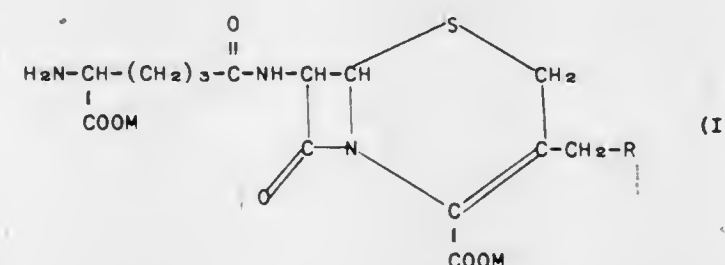
Continuation-in-part of Ser. No. 306,130, Nov. 13, 1972. This application Sept. 19, 1973, Ser. No. 398,725

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

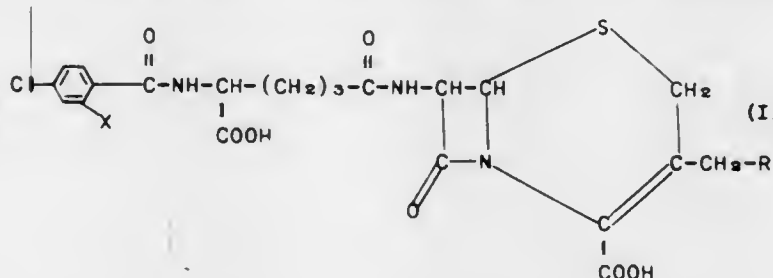
10 Claims

1. An improved process for separating a fermentation-derived cephalosporin C value of the formula



in which each M is hydrogen or an alkali metal, and R is hydrogen, acetoxy, hydroxy, or methylthio, from polysaccharide and proteinaceous impurities, which comprises

A. reacting the crude cephalosporin C value of formula (I) in an aqueous liquid medium containing a miscible, inert organic solvent and containing said impurities with a 2,4-dichlorobenzoyl halide or a 4-chlorobenzoyl halide to form an N-acyl cephalosporin C value of the formula (II)



in which X is hydrogen or chlorine and R is as defined above, which compound is soluble in the aqueous-organic liquid medium; and

B. separating polysaccharide and proteinaceous impurities from said N-acyl cephalosporin C value.

3,853,864

1,7-DIALKYL-1,2-DIHYDRO-4-HYDROXY-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACID ALKYL ESTERS

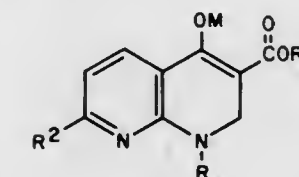
Arthur A. Santilli, Havertown, and Anthony C. Scotese, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,048

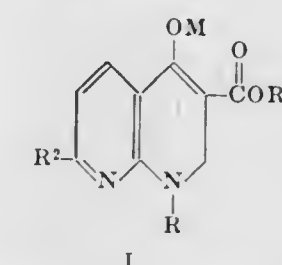
Int. Cl. C07c 31/36

U.S. Cl. 260—295.5 B

8 Claims



1. A compound of the formula



wherein R is a straight-chain lower alkyl group, R¹ and R² are each a straight-chain or branched lower alkyl group, and M is hydrogen or an alkali metal, and, when M is hydrogen, the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,853,865

N-AMINOMETHYL-2-AMINO(AND 2-AMINO-METHYL)-HETEROCYCLIC-THIOACETAMIDES

L. Martin Brenner, Upper Darby, and Bernard Loev, Brookm, both of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

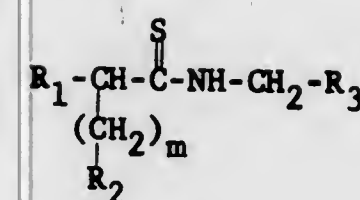
Filed June 26, 1972, Ser. No. 266,024

Int. Cl. C07d 87/46

U.S. Cl. 260—246 B

4 Claims

1. A compound of the formula:



in which:

m is 0 or 1;
R₁ is 2-pyridyl; and
R₂ and R₃ are di-lower alkylamino, N-lower alkyl-N-phenylamino, piperidino, pyrrolidino or morpholino or a pharmaceutically acceptable acid addition salt thereof.

3,853,866

3-AMINO-2,4,6-TRIODOBENZOIC ACID DERIVATIVES
Werner Obendorf; Irmgard Lindner; Josef Krieger, and Ernst Schwarzing, all of Linz/Donau, Austria, assignors to Österreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria

Filed July 9, 1968, Ser. No. 743,299

Claims priority, application Austria, July 13, 1967, 6539/67; July 13, 1967, 6538/67

Int. Cl. C07d 87/42

U.S. Cl. 260—247.2 A

5 Claims

1. A 3-amino-2,4,6-triodobenzoic acid derivative, namely, β-[N-(3N',N'-diethylcarbonyl)-2,4,6-triodophenyl]-N-methylcarbonyl-propionic acid.

3,853,867
METHOD OF STABILIZING DICHLOROCYANURIC ACID SALTS

Sidney Berkowitz, Highland Park, and Edwin S. Roth, East Brunswick, both of N.J., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 239,769, March 30, 1972, abandoned, and Ser. No. 243,420, April 12, 1972, abandoned.

This application May 4, 1973, Ser. No. 357,481

Int. Cl. C07d 55/40

U.S. Cl. 260—248 C

4 Claims

1. A composition of matter containing as its essential components (1) from about 35–65 percent of an alkali metal dichlorocyanurate; (2) from about 30–50 percent of cyanuric acid or the alkali metal salt thereof; and (3) from about 5–15 percent of an inorganic salt the pH of which is at least 9 in aqueous media, the percentages of said components being by weight and together totaling 100.

3,853,868

AZIDO-S-TRIAZINES

Alexis Herzog, and Hans Ulrich Brechbuehler, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 12, 1972, Ser. No. 252,729

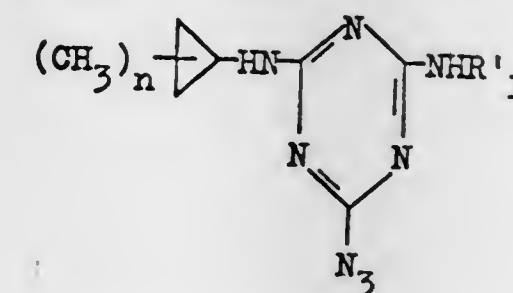
Claims priority, application Switzerland, June 1, 1971, 7925/71; Apr. 10, 1972, 5214/72

Int. Cl. C07d 55/22

U.S. Cl. 260—249.6

3 Claims

1. A compound of the formula



wherein R₁ represents hydrogen, C₃–C₄ alkenyl or C₃–C₄ alkynyl and n represents 0 or 1

3,853,869

7-(1-ETHYL-2-METHYLINDOL-3-YL) 7-(SUBSTITUTED)-5,7-DIHYDROFURO (3,4-B) PYRAZIN-5-ONE

Sheldon Farber, Appleton, Wis., assignor to The National Cash Register Company, Dayton, Ohio

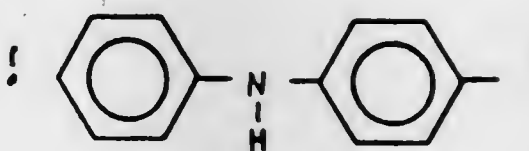
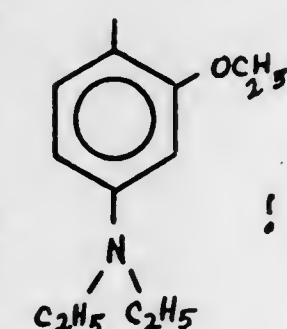
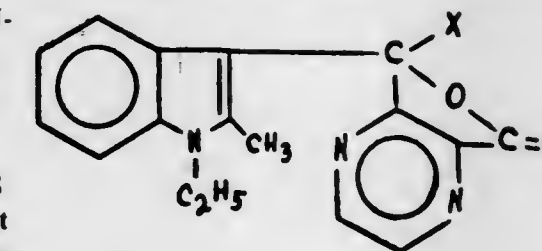
Division of Ser. No. 205,325, Dec. 6, 1971, Pat. No. 3,775,424. This application Apr. 19, 1973, Ser. No. 352,832

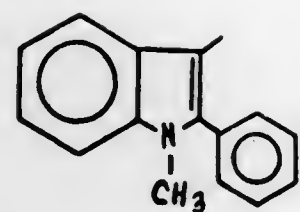
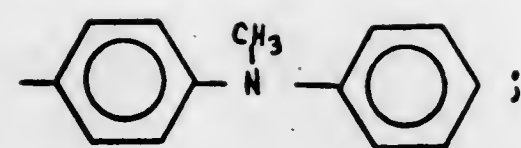
Int. Cl. C07d 51/76

U.S. Cl. 260—250 BC

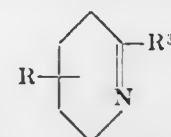
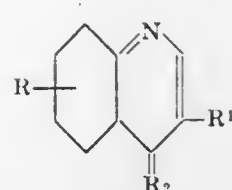
1 Claim

1. A chromogenic compound represented by the formula:

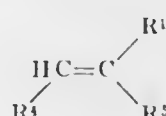




wherein R^1 is CN or alkoxy, R^2 is NH or oxo, and R is lower alkyl, which comprises reacting a compound of the formula



wherein R^3 is alkoxy and R is as defined above, with a compound of the formula



wherein R^4 is alkoxy, R^5 is CN or alkoxy, and R^1 is as defined above with the provisos that

- when R^1 and R^5 are CN, R^2 is NH
- when R^1 and R^5 are both alkoxy, R^2 is oxo, and
- when R^1 and R^5 are different groups from one another, R^1 is CN, R^5 is alkoxy, and R^2 is oxo, in the presence of ammonia or an ammonia-producing substance.

3,853,872

2,3,4,5-SUBSTITUTED THIAZOLES

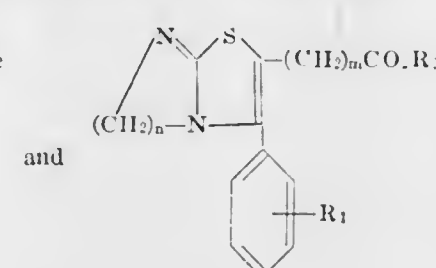
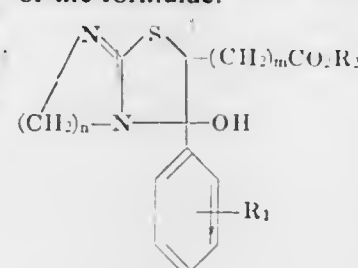
Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 125,412, March 17, 1971, abandoned. This application May 24, 1973, Ser. No. 363,455 Int. Cl. C07d 51/46

U.S. Cl. 260-251 A

10 Claims

1. A compound selected from the group consisting of those of the formulae:



wherein R_1 is selected from the group consisting of hydrogen, (lower)alkyl, halogen and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and (lower)alkyl;

n is an integer of from two to four, inclusive;

m is the integer one or two; and the pharmaceutically acceptable acid salts thereof.

3,853,873

2,4-DIAMINO QUINAZOLINE DERIVATIVES

Edward F. Elslager, and Leslie M. Werbel, both of Ann Arbor, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 17, 1973, Ser. No. 324,276
Claims priority, application Great Britain, Apr. 7, 1972, 16230/72

Int. Cl. C07d 51/48

U.S. Cl. 260-256.5 R

6 Claims

1. A compound having the structural formula

3,853,871

PROCESS FOR PRODUCING PYRIMIDINE DERIVATIVES

Isao Agata; Shunsaku Noguchi, and Kunihiro Tanaka, all of Osaka, Japan, assignors to Chino Pharmaceutical and Chemical Works Ltd., Budapest, Hungary

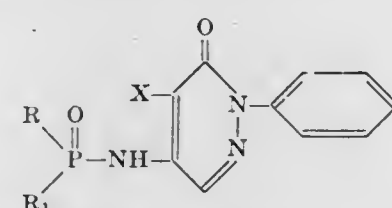
Filed Sept. 7, 1972, Ser. No. 287,026
Claims priority, application Japan, Sept. 10, 1971, 46-70682

Int. Cl. C07d 51/46

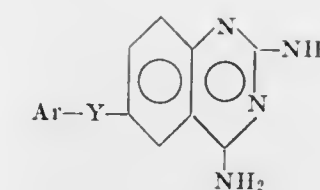
U.S. Cl. 260-251 A

4 Claims

1. A process for producing a compound of the formula



wherein each of R and R_1 independently represents alkoxy of from 1 to 4 carbon atoms, alkylthio of from 1 to 4 carbon atoms, halogenoalkoxy of from 1 to 4 carbon atoms or alkenyloxy of 3 or 4 carbon atoms, or both together represent an oxyethyleneoxy bridge; and X represents chlorine or bromine.



3,853,875

ESTERS OF 2-ALKYL THIAZOLE 5-CARBOXYLIC ACID
Francois Clemence, Rosny-Sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France

Filed June 14, 1972, Ser. No. 262,785

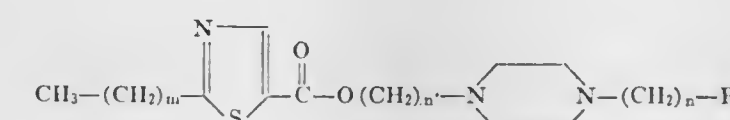
Claims priority, application France, June 14, 1971, 71.21466

Int. Cl. C07d 91/32

U.S. Cl. 260-268 PH

15 Claims

1. A compound of the formula



wherein n represents the whole numbers 0, 1, 2, 3, 4, 5, n' represents the whole numbers 1, 2, 3, 4, 5, m represents the whole numbers 0, 1, 2, 3, 4, 5, and R is a member of the group consisting of a phenyl of the formula



wherein X_1 and X_2 , identical or different, represent a member of the group consisting of a hydrogen atom, a chlorine atom, a bromine atom, an iodine atom, an alkyl containing from 1 to 6 carbon atoms, an alkoxy containing from 1 to 6 carbon atoms, trifluoro methyl and pyridyl; and their non-toxic, pharmaceutically acceptable acid addition salts.

3,853,874
CERTAIN β -HYDROXY- β -PHENYLETHYL-SUBSTITUTED CYCLIC ACYLUREAS

Juergen Habermeyer, Allschwil; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 82,071, Oct. 19, 1970, Pat. No. 3,686,174. This application June 13, 1972, Ser. No. 262,421

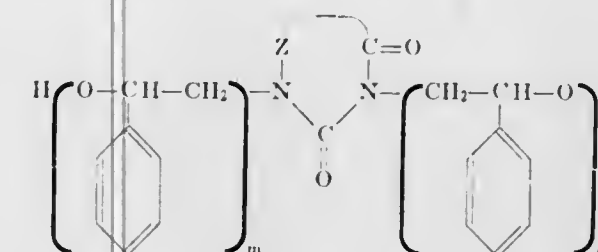
Claims priority, application Switzerland, Nov. 27, 1969, 17672/69

Int. Cl. C07d 51/20, 51/30, 49/32

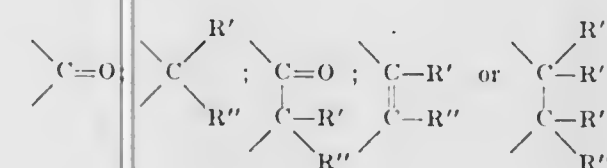
U.S. Cl. 260-257

8 Claims

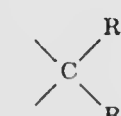
1. A monoalcohol or dialcohol of the formula



wherein Z represents a member selected from the group consisting of a divalent group of formulae



wherein R' , R'' , R''' and R'''' each represents a member selected from the group consisting of alkyl with 1 to 4 carbon atoms, alkenyl with 2 to 4 carbon atoms, cyclohexyl, cyclohexenyl and phenyl, or when the residue Z represents the formulae



R' and R'' together can also form a member selected from the group consisting of divalent tetramethylene and pentamethylene ring, and m and n each represents an integer having a value of 0 to 3 with the sum of m and n having to be at least 1.

3,853,876
ORTHO-MERCAPTOAROYLAMIDES AND SALTS
THEREOF ABSTRACT OF THE DISCLOSURE

Milton Wolf, West Chester; John H. Sellstedt, Prussia, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

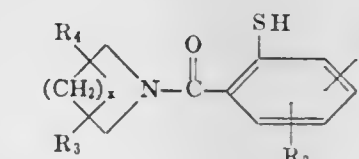
Filed Mar. 6, 1972, Ser. No. 232,250

Int. Cl. C07d 27/04, 29/10

U.S. Cl. 260-268 R

10 Claims

1. The compounds of the formula



in which R_1 and R_2 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, —F, —Cl, —Br, —I, dialkylamino in which each alkyl group has from 1 to 6 carbon atoms, —OH, —SH, —NO₂ and alkylthio having from 1 to 6 carbon atoms; R_3 and R_4 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, —F, —Cl, —Br, —I, and dialkylamino in which each alkyl group is from 1 to 6 carbon atoms; X is the integer 2 or 3 and pharmaceutically acceptable amine, alkali metal, alkaline earth metal and zinc salts thereof.

3,853,877

[4-(W-HYDROXYALKYL)-1-PIPERAZINE]-FURO(3,2-C)PYRIDINES

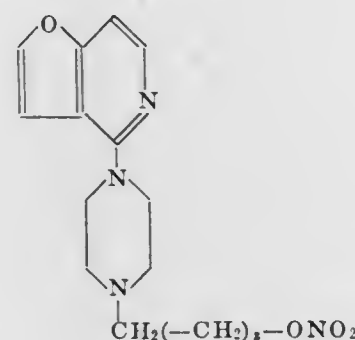
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 10, 1972, Ser. No. 296,442

Int. Cl. C07d 51/70

U.S. Cl. 260-268 FT

1. A compound of the formula:



wherein z is 1 to 4, or a pharmaceutically acceptable acid addition salt thereof.

3,853,878

1,2,3,4,10,10A-HEXAHYDROPIRAZINO[1,2:A]INDOLE-2-CARBOXAMIDINES

Rochus Jonas; Richard Unger; Hans-Jochen Schliep, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

Filed Dec. 14, 1972, Ser. No. 314,934

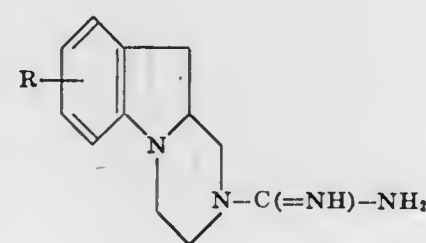
Claims priority, application Germany, Dec. 16, 1971, 2162422; Oct. 14, 1972, 2250493

Int. Cl. 260 250 R; C07d 51/70

U.S. Cl. 260-268 TR

7 Claims

1. A 1,2,3,4,10,10a-hexahydropyrazino[1,2:a]indole-2-carboxamide of the formula



wherein R is H or CH3O, or a physiologically acceptable acid addition salt thereof.

3,853,879

TETRAHYDROPIR-AZINOINDOLE-2-CARBOXAMIDES

Meler E. Freed, and Elisabeth Hertz Freed, both of 137 Hollow Rd., Paoli, Pa. 19301

Continuation-in-part of Ser. No. 130,523, April 1, 1971, Pat. No. 3,736,324, which is a continuation-in-part of Ser. No. 769,388, Oct. 21, 1968, Pat. No. 3,641,030. This application

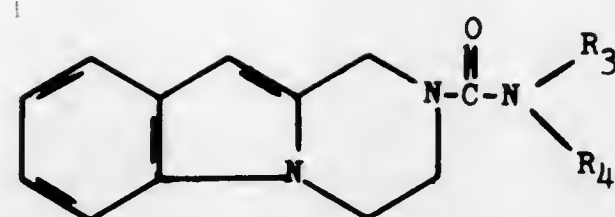
Feb. 7, 1973, Ser. No. 330,349

Int. Cl. C07d 51/70

U.S. Cl. 260-268 TR

4 Claims

1. A compound selected from the group consisting of those having the formula:



wherein R3 and R4 when taken separately are selected from the group consisting of hydrogen, di(lower)alkylamino(lower)alkyl in which each of the lower alkyl moieties has from one to three carbons; R3 and R4 when taken together with the nitrogen atom to which they are attached form phenylpiperaziny.

3,853,880

PYRROLO (3,4-B) PYRIDINE DERIVATIVES

Jean-Louis Challier, Thiais; Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Oct. 19, 1972, Ser. No. 299,167

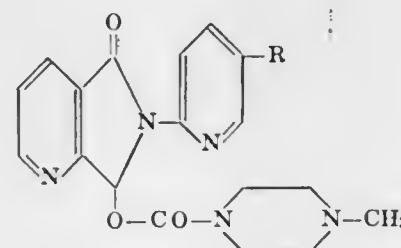
Claims priority, application France, Oct. 22, 1971, 71.38045

Int. Cl. C07d 51/70

U.S. Cl. 260-268 BC

4 Claims

1. A pyrrolo[3,4-b]pyridine of the formula:



wherein R represents halogen, alkyl of one through four carbon atoms, or cyano, and non-toxic acid addition salts thereof.

3,853,881

DIBENZO [B,F]-S-TRIAZOLO [4,3-D] [1,4] THIAZEPINES-3-ONES AND DIOXO DERIVATIVES THEREOF

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No.

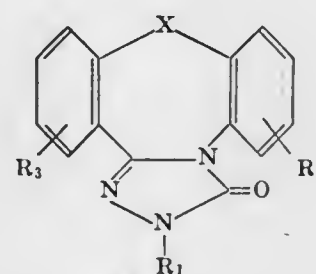
220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,279

Int. Cl. C07d 99/10

U.S. Cl. 260-268 PC

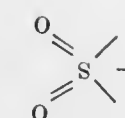
14 Claims

1. A compound of the formula VI

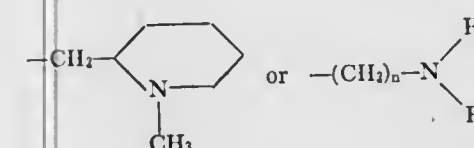


wherein X is sulfur or

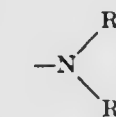
IV



wherein R1 is hydrogen, alkyl of one to three carbon atoms, inclusive,



in which n is 2 or 3, and R7 and R8 are hydrogen or alkyl defined as above, or together



is pyrrolidino, piperidino, or N-methylpiperazino; wherein R3 and R4 are selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl, defined as above, or alkoxy of one to three carbon atoms, inclusive; and the pharmacologically acceptable acid addition salts thereof.

3,853,882

2,9-DIHYDRO-[C,F]-S-TRIAZOLO[4,3-A]AZEPIN-3-ONES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No.

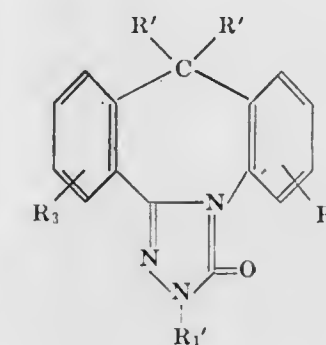
220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,277

Int. Cl. C07d 57/02, 99/02

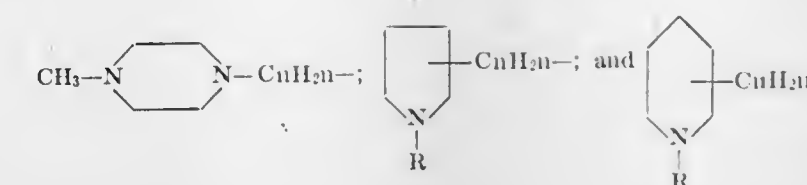
U.S. Cl. 260-268 PC

26 Claims

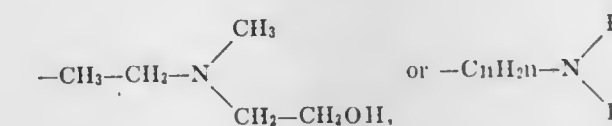
1. A compound selected from the group consisting of 2,9-dihydro[c,f]-s-triazolo[4,3-a]azepin-3-ones of the formula III:



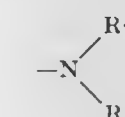
wherein R' is hydrogen or methyl; wherein R1 is hydrogen, alkyl of one to three carbon atoms, inclusive,



in which n is 2 or 3, inclusive, and R is alkyl defined as above, or R1 is



in which R7 and R8 are hydrogen or alkyl defined as above and n is defined as above, or together



is pyrrolidino or piperidino; and wherein R3 and R4 are each selected from the group consisting of hydrogen, fluoro, chloro, bromo, nitro, alkyl defined as above, trifluoromethyl, and alkoxy, of one to three carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts thereof.

3,853,883

PROCESS FOR THE PRODUCTION OF DIHYDROCODEINE

Edward Leon Grew, and Alastair Agnew Robertson, both of Edinburgh, Scotland, assignors to MacFarlan Smith Limited, Edinburgh, Scotland

Filed Feb. 22, 1972, Ser. No. 228,357

Claims priority, application Great Britain, Aug. 27, 1971, 40245/71

Int. Cl. C07d 43/28

U.S. Cl. 260-285

8 Claims

1. In a process for the preparation of 1-dihydrocodeine wherein 1-dihydrocodeinone is catalytically hydrogenated in a liquid medium with a catalyst selected from the group consisting of platinum oxide and supported platinum metal, the improvement which comprises the steps of:

a. catalytically hydrogenating the 1-dihydrocodeinone in the presence of a base selected from the group consisting of alkali metal hydroxide, soluble alkali metal alkoxide and soluble quaternary ammonium hydroxide.

3,853,884

BENZOXANTHENE AND BENZOTHIAXANTHENE DYESTUFFS

Helmut Troster, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 2, 1973, Ser. No. 384,785

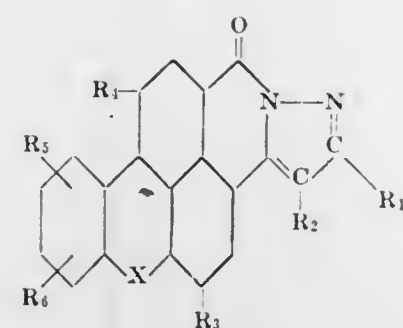
Claims priority, application Germany, Aug. 4, 1972, 2238330

Int. Cl. C07d 35/32

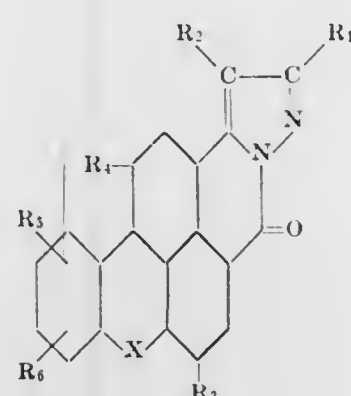
U.S. Cl. 260-287 R

8 Claims

1. Benzoxanthene or benzothioxanthene dyestuffs consisting of a mixture of the compound of the formula



and its corresponding isomer of the formula



in which formulas X is oxygen or sulfur, R₁ is hydrogen, alkyl with 1 to 20 carbon atoms, methoxy carbonylmethyl, ethoxycarbonylmethyl, alkoxy carbonyl with 1 to 4 carbon atoms or phenyl, R₂ is alkoxy carbonyl with 1 to 20 carbon atoms, alkanoyl with 1 to 4 carbon atoms, benzoyl, cyano, carbamoyl or phenylcarbamoyl, R₃ and R₄ are simultaneously hydrogen or alkoxy with 1 to 4 carbon atoms, or R₃ is alkoxy with 1 to 4 carbon atoms and R₄ is hydrogen and R₅ and R₆ are hydrogen, chlorine, bromine, alkyl, alkoxy or alkoxy carbonyl each with 1 to 4 carbon atoms.

3,853,885

HEPTACHLORO-5H-1-PYRIDINE AND A METHOD FOR THE PREPARATION THEREOF

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1973, Ser. No. 357,043

Int. Cl. C07d 39/00

U.S. Cl. 260—290 R

1. Heptachloro-5H-1-pyridine.

4 Claims

3,853,886

CERTAIN N-SUBSTITUTED SCOPOLAMMONIUM COMPOUNDS

Silvano Casadio, and Arturo Donetti, both of Milan, Italy, assignors to Instituto De Angeli S.p.A., Milan, Italy

Filed Apr. 13, 1973, Ser. No. 350,927

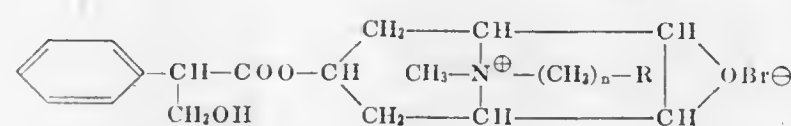
Claims priority, application Great Britain, Apr. 18, 1972, 17920/72

Int. Cl. C07d 43/06

U.S. Cl. 260—292

1. A scopolamine derivative having the following general formula:

7 Claims



wherein R represents a cycloalkyl group containing up to five carbon atoms, a lower alkyl-substituted cycloalkyl group containing up to six carbon atoms or an epoxyethyl group and n is 1 or 2.

3,853,887

CYCLIALKYLATION OF AMINES

Paul A. Pinke, Des Plaines, and Stephen N. Massie, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

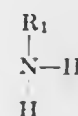
Filed Mar. 9, 1973, Ser. No. 339,818

Int. Cl. C07d 29/28

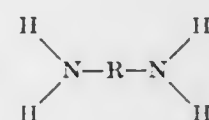
U.S. Cl. 260—293.64

9 Claims

1. A process for the preparation of an N-substituted pyrrolidine or piperidine which comprises reacting a primary amine of one of the structures:



where R₁ is selected from the group consisting of C₁ to C₆ alkyl, phenyl, loweralkylphenyl and loweralkoxyphenyl; or,



where R is selected from the group C₂—C₆ alkylene, phenylene, loweralkylphenylene, 4, 4'-diphenyl methyl diradical and 4,4'-dicyclohexyl methyl diradical, with tetrahydrofuran, tetrahydropyran, lower alkyl-substituted tetrahydrofuran or lower alkyl-substituted tetrahydropyran at a temperature in the range of from about 125°C. to about 250°C. and a superatmospheric pressure sufficient to maintain a major portion of the reactants in the liquid phase, said reaction being effected in the presence of an acid-acting catalyst selected from the group consisting of (1) a metal selected from Group VIII of the Periodic Table on a heterogenous inorganic support of alumina, silica or mixtures thereof and (2) a hydrogen halide, and recovering said N-substituted pyrrolidine or piperidine.

3,853,888

PIPERIDINE INSECT CONTROL AGENTS

Steven A. Roman, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

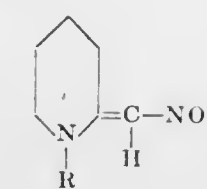
Continuation-in-part of Ser. No. 250,305, May 4, 1972, abandoned. This application Feb. 9, 1973, Ser. No. 331,155

Int. Cl. C07d 29/26

U.S. Cl. 260—293.51

2 Claims

1. A compound of the formula



wherein R is straight-chain alkyl of 2 to 5 carbon atoms or is allyl.

3,853,889

3,14-SUBSTITUTED-8-OXAMORPHINANS

Ivo Monkovic, Candiac, Quebec, and Yvon Lambert, Brossard, Quebec, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

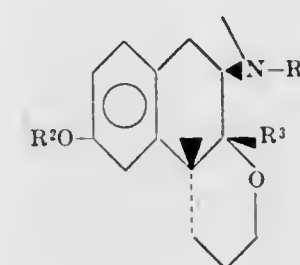
Filed July 18, 1973, Ser. No. 380,515

Int. Cl. C07d 99/04

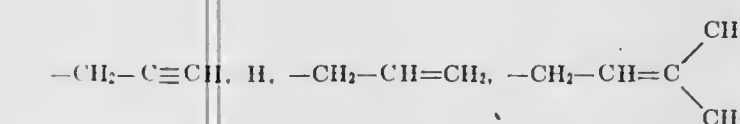
U.S. Cl. 260—293.55

1. A compound having the formula

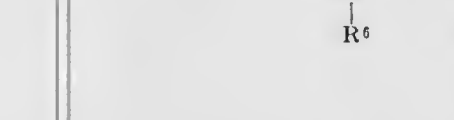
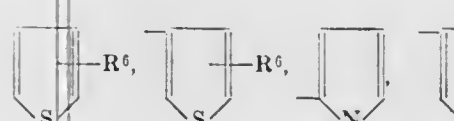
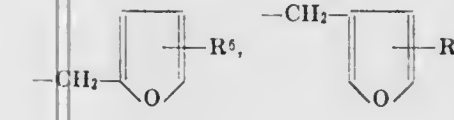
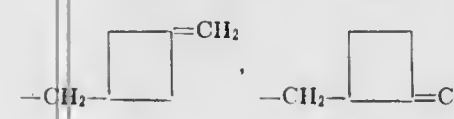
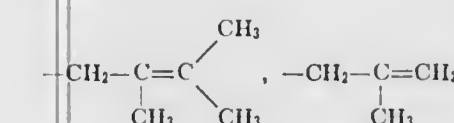
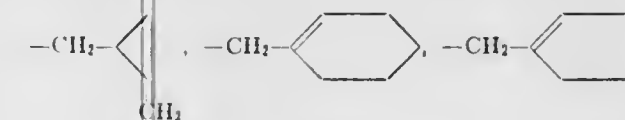
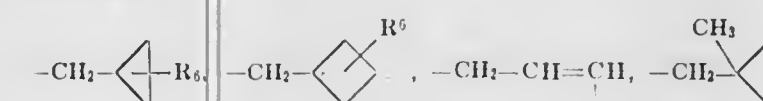
30 Claims



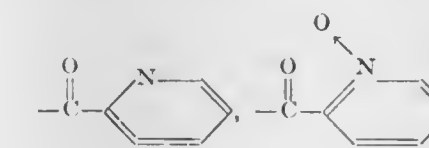
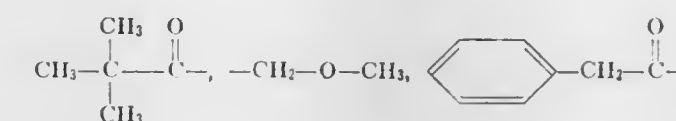
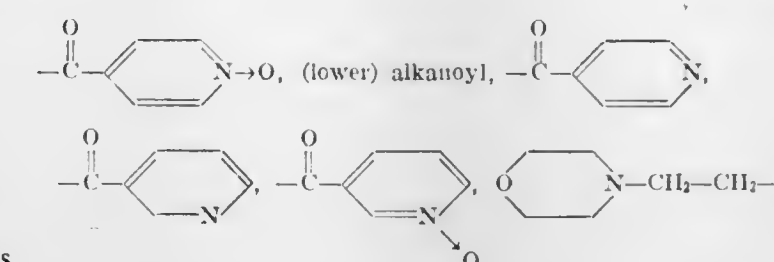
wherein R¹ is selected from the group comprising



(lower) alkyl,



and (lower)alkenyl in which R⁶ is H or CH₃, R² is selected from the group comprising H, (lower)alkyl,



and cinnamoyl, and R³ is H or (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,853,890

AZINE DERIVATIVES OF PIPERIDINE

Brian Holt, Royton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,568

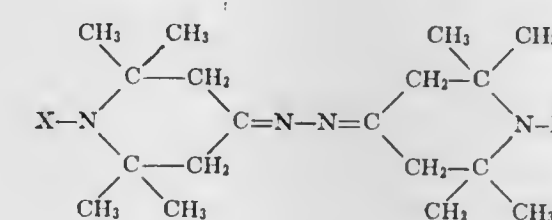
Claims priority, application Great Britain, Sept. 19, 1970, 44759/70

Int. Cl. C07d 29/26

U.S. Cl. 260—293.63

4 Claims

1. A compound of the formula



wherein X and X¹ are the same or different and represent NO, formyl, acetyl or propionyl.

3,853,891

N-(N-(CYANOALKYL)-N-NITROSO)AMINO-AMINOALCOHOL

William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

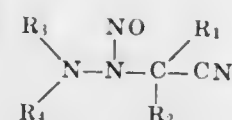
Division of Ser. No. 153,883, June 16, 1971, Pat. No. 3,766,185, which is a continuation-in-part of Ser. No. 131,431, April 5, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 51,338, June 30, 1970, abandoned, and Ser. No. 67,994, Aug. 28, 1970, abandoned. This application June 20, 1973, Ser. No. 371,932

Int. Cl. C07d 29/32

U.S. Cl. 260—293.87

1. A compound of the formula

5 Claims



where

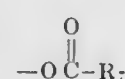
R₁ and R₂ each independently represents hydrogen or lower alkyl;

R₃ represents —(R₅)—CH₂—X;

R₄ represents —(R₆)—CH₃ or —(R₆)—CH₂X;

where

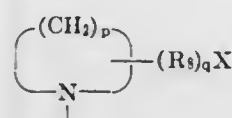
X represents



or —ONO₂;

R₅ and R₆ each independently represents straight or branched chain alkylene having 1 to 7 carbon atoms and R₇ represents lower alkyl or lower alkyl substituted with 1 to 3 halo atoms having an atomic weight between about 19 to 36, or

R₃ and R₄ together with N represent



where

p is 4, 5 or 6;

q is 0 or 1;

R₈ is lower alkylene, and X is as defined above, provided that —(R₈)—X is not attached to a carbon adjacent to the nitrogen atom when q is 0.

3,853,892

4-[PARA-(1-HYDROXYETHYL)-PHENYL]PIPERIDINES
Alberto Rossi, Oberwil/Bi, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

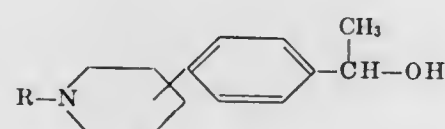
Continuation-in-part of Ser. No. 41,107, May 27, 1970, Pat. No. 3,801,581. This application Mar. 7, 1973, Ser. No. 338,698

Claims priority, application Switzerland, June 5, 1969, 8650/69; Dec. 11, 1969, 18441/69; Apr. 24, 1970, 6221/70
Int. Cl. C07d 29/30

U.S. Cl. 260—293.76

1. A compound of the formula

7 Claims



wherein R represents a hydrogen atom or a methyl or acetyl group, and wherein the piperidine ring may optionally contain one oxo group directly attached to the 2-position of the ring, or a therapeutically useful acid addition salt thereof.

3,853,893
ANTHELMINTIC
5-(PYRIDYL)-3-(ISOTHIOCYANOPHENYL)
OXADIAZOLES

Venkatachala Lakshmi Narayanan, Hightstown, and Rudiger Dieter Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

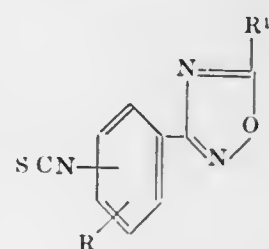
Filed Apr. 2, 1973, Ser. No. 347,312

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 E

1. A compound of the formula:

7 Claims



wherein R is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, phenyl, trifluoromethyl, di(lower alkyl)amino, and lower acetamido; R¹ is pyridyl; and pharmaceutically acceptable salts thereof.

3,853,894

ISOTHIOCYANOBENZIMIDAZOLES

Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

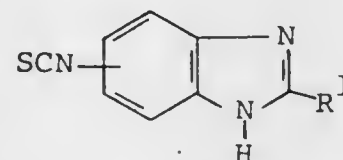
Continuation-in-part of Ser. No. 259,058, June 2, 1972. This application June 22, 1973, Ser. No. 372,870

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 C

1. A compound having the formula

10 Claims



wherein R¹ is selected from the group consisting of pyridine, pyridine substituted with an alkyl group of 1 to 4 carbon atoms, and pyridine substituted with halogen, or a physiologically acceptable acid-addition salt thereof.

3,853,895

CERTAIN SUBSTITUTED
2,6-DIAMINO-4-METHYL-NICOTINONITRILES THE
CORRESPONDING NICOTINAMIDES AND
DERIVATIVES THEREOF

Gunther Lamm, and Johannes Dehnert, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

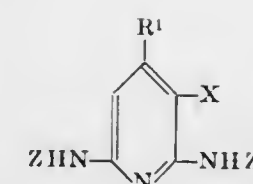
Filed Jan. 31, 1973, Ser. No. 328,459

Int. Cl. C07d 31/46

U.S. Cl. 260—294.9

1. A compound of the formula

6 Claims



in which:

R¹ is hydrogen, alkyl of one to seven carbon atoms or phenyl;

X is cyano or carbamoyl; and

each Z, independently of one another, is hydrogen, alkyl of one to eight carbon atoms, hydroxyalkyl of two to eight carbon atoms, cyanoalkyl of two to seven carbon atoms, alkoxyalkyl of two or three carbon atoms in the alkyl and one to eight carbon atoms in the alkoxy, cyclohexoxypropyl, benzyloxypropyl, β-phenyl-ethoxypropyl, phenoxypropyl, tolyloxypropyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, hydroxycyclohexyl, β-hydroxyethoxycyclohexyl, norbornyl, hydroxynorbornyl, hydroxymethylnorbornyl, chloromethylnorbornyl, β-hydroxyethylnorbornyl, bicyclooctyl, phenylalkyl or tolylalkyl of one to four carbon atoms in the alkyl, phenyl, phenyl substituted by methyl, methoxy, ethoxy, hydroxy, chloro or β-hydroxyethoxy, allyl, carboxyethyl, carboxypentyl, ω-pyrrolidonylalkyl of two to six carbon atoms in the alkyl,

or pharmaceutically acceptable salt thereof, where R₁ is hydrogen or methyl, R₂ is dialkylamino, wherein the alkyl has from 1 to 4 carbon atoms, R₃ is alkyl, of 1–4 carbon atoms, R₄ is hydrogen; s is 0 or 1; p and p₁ are integers equal to 0 or 1 with at least one p equal to 1; and x is an integer ranging from 0–2.

3,853,897

CERTAIN 1-SUBSTITUTED-3-AMINO-1(2H)PYRIDONES
Bruce E. Witzel; Tsung-Ying Shen, both of Westfield; Patricia M. Graham, Mountainside; Robert L. Clark, Woodbridge, and Arsenio A. Pessolano, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

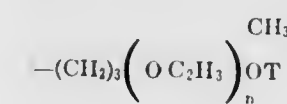
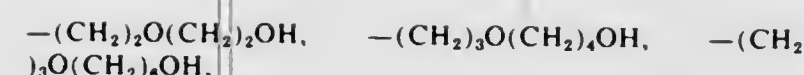
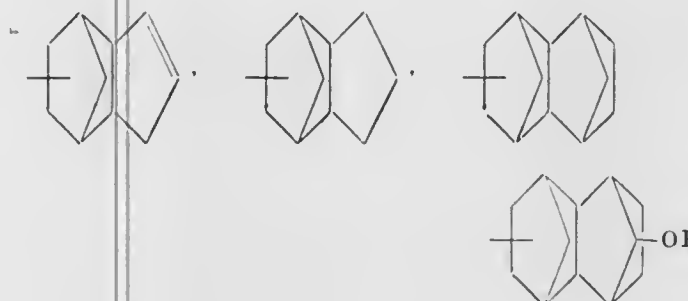
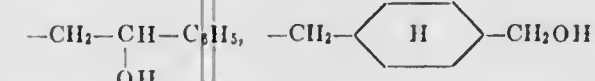
Continuation-in-part of Ser. No. 163,495, July 16, 1971, abandoned, which is a division of Ser. No. 876,059, Nov. 12, 1969, Pat. No. 3,654,291. This application Jan. 4, 1973, Ser. No. 321,070

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

1. A compound of the formula:

2 Claims



or —(CH₂)₃(OC₂H₅)_nOT,
n being 1, 2, 3 or 4, and

T being hydrogen, alkyl of one to four carbon atoms, benzyl, phenylethyl, cyclohexyl, phenyl or tolyl.

in which L is loweralkylaminolower alkyl or diloweralkylaminolower alkyl; R₁, R₂ and R₃ are each hydrogen, loweralkyl, haloloweralkyl or cycloloweralkyl of from 3–6 carbon atoms with the proviso that at least two of said R₁–R₃ are other than hydrogen.

3,853,898

3-(2-SUBSTITUTED AMINO) PYRIDYL-PHENYL
KETONE IMINES

Goetz E. Hardtmann, Florham Park, N.J., and Hans Ott, Basel-Land, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 164,453, July 20, 1971, Pat. No. 3,758,475, which is a continuation-in-part of Ser. No. 870,445, Oct. 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 782,743, Dec. 10, 1968, abandoned. This application May 7, 1973, Ser. No. 358,063

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

1. A compound of the formula:

5 Claims

3,853,896

CERTAIN DILOWERALKYLAMINO-METHYLENE(OR
ETHYLENE)-2(1H)PYRIDONES

Arsenio A. Pessolano, Colonia; Bruce E. Witzel, Westfield; Patricia M. Graham, Mountainside; Robert L. Clark, Woodbridge, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Rahway, N.J.

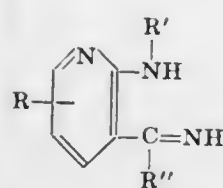
Filed June 25, 1971, Ser. No. 156,919

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

1. A compound of the formula:

9 Claims



wherein

R is hydrogen or alkyl of 1 to 5 carbon atoms,
R' is alkyl of 1 to 6 carbon atoms, allyl, methallyl, propargyl
or cycloalkyl of 3 to 6 carbon atoms, and
R'' is phenyl or substituted phenyl of the formula:



Y is halo of atomic weight of from 19 to 80, alkyl of 1 to 4
carbon atoms, or alkoxy of 1 to 4 carbon atoms, and
Y' is hydrogen, halo of atomic weight of from 19 to 80, alkyl
of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms.

3,853,899

7-ALKYL-2,2-DIMETHYL-4-(1-ARALKYL-1,2,3,4-TETRAHYDRO-4-PYRIDYL)-CHROMAN-5-OLS AND DERIVATIVES THEREOF

Charles Sylvester Fake, Harlow, England, assignor to Beecham Group Limited, Middlesex, England

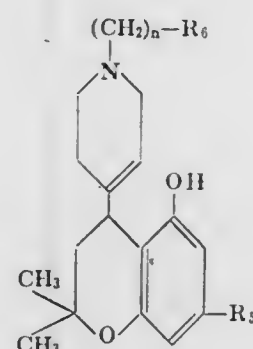
Filed Jan. 16, 1973, Ser. No. 324,222

Claims priority, application Great Britain, Jan. 26, 1972, 3654/72

Int. Cl. C07d 31/28

U.S. Cl. 260—297 B

1. A compound of the formula:



wherein R₃ is alkyl of 5 to 8 carbon atoms which is straight
chained or branched at the α-carbon atom, n is 1 or 2 and R₆
is phenyl or naphthyl, or a pharmaceutically acceptable salt
thereof.

3,853,900

4-BENZYLOXY-2 (1H)-PYRIDONES

Robert L. Shone, Palatine, Ill., assignor to G. D. Searle and Co., Chicago, Ill.

Filed Sept. 14, 1973, Ser. No. 397,233

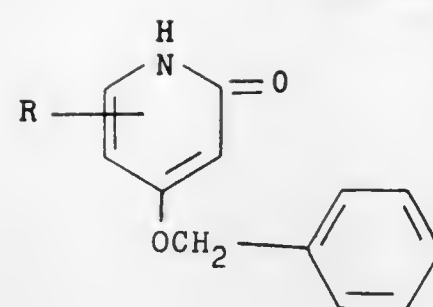
Int. Cl. C07d 31/30

U.S. Cl. 260—297 Z

1. A compound of the formula

4 Claims

or



wherein R represents hydrogen or methyl ortho to the ben-
zyloxy.

3,853,901

BIS-P-DITHIINO(2,3-E: 2',3'-G) (2,1,3)BENZOTHIADIAZOLE-5,6,9,10-TETRACARBONITRILE

Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 104,799, Jan. 7, 1971, Pat. No. 3,761,475.

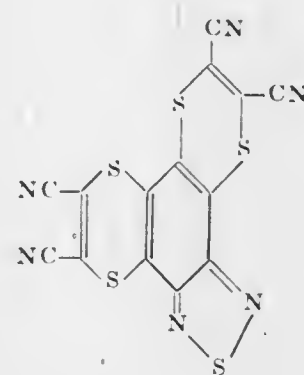
This application Feb. 20, 1973, Ser. No. 333,942

Int. Cl. C07d 99/10

U.S. Cl. 260—304

1 Claim

1. The compound which is bis-p-dithiino(2,3-e:2',3'-g)(2,1,3)benzothiadiazole-5,6,9,10-tetracarbonitrile corre-
sponding to the formula



3,853,902

HALOALKYL-4-THIAZOLIDINONE

Maynard S. Raasch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

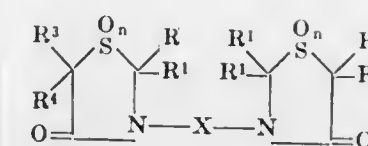
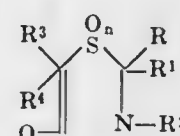
Filed Dec. 30, 1971, Ser. No. 214,378

Int. Cl. C07d 91/16

U.S. Cl. 260—306.7 R

8 Claims

1. A compound having the formula



wherein n is 0, 1 or 2.

R and R' are —CF₂H, —CF₂Cl, —CF₃ or C₂F₅

R² and R⁴ are hydrogen, aryl, aralkyl, alkenyl, cycloalkyl, alkyl or carboxyalkyl each of up to 8 carbon atoms.

R² is hydrogen, alkyl, alkenyl, aryl, aralkyl, hydroxyalkyl, carbalkoxyalkyl, or haloalkyl each of up to 8 carbon atoms and X is a polymethylene radical of up to 8 carbon atoms, or —CH₂COCH₂—.

3,853,903

SUBSTITUTED 2-BENZOYLISOXAZOLIDINES

Amedeo Omodei Sale, Voghera, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

Filed June 29, 1973, Ser. No. 374,854

Claims priority, application Italy, Aug. 17, 1972, 28245/72

Int. Cl. C07d 85/08

U.S. Cl. 260—307 F

4 Claims

1. A 2-benzoyl-isoxazolidine which is 2-(4-acetoxy-3,5-dimethoxybenzoyl)-5-carbomethoxy-5-methyl-isoxazolidine, 5-phenyl-2-(3,4,5-trimethoxybenzoyl)-isoxazolidine, or 3-phenyl-2-(3,4,5-trimethoxybenzoyl)-isoxazolidine.

3,853,904

DIBENZO-[B,F]-S-TRIAZOLO-[4,3-D][1,4]OXAZEPIN-3-(2H)-ONES

Jacob Szmuskovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,278

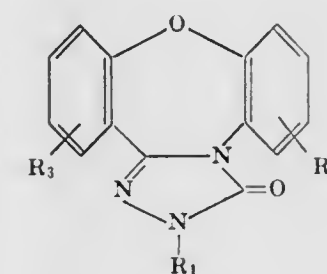
Int. Cl. C07d 99/02

U.S. Cl. 260—308 C

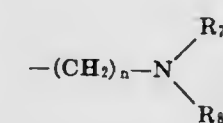
1. A compound of the formula:

13 Claims

wherein R₁ is hydrogen, C₁ to C₅-alkyl, C₂ to C₅-alkenyl, C₂-C₅-alkynyl; and
n is an integer of from 0 to 3;
and the pharmaceutically acceptable acid addition salts thereof.



wherein R₁ is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, or



in which n is 2 or 3, and R₇ and R₈ is hydrogen or alkyl defined as above, or together

3,853,905

CERTAIN 5-(PHENOXYPHENALKYL) TETRAZOLES

Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

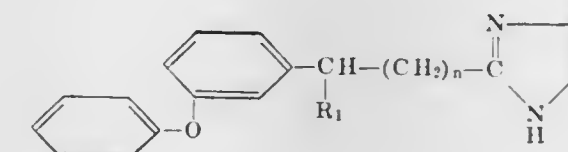
Division of Ser. No. 122,999, March 10, 1971, which is a continuation-in-part of Ser. No. 828,756, May 28, 1969, Pat. No. 3,600,437, which is a continuation-in-part of Ser. Nos. 823,477, May 9, 1969, abandoned, and Ser. No. 752,801, Aug. 15, 1968, abandoned. This application July 17, 1973, Ser. No. 380,037

Int. Cl. C07d 55/56

U.S. Cl. 260—308 D

1. A compound of the formula

1 Claim



3,853,906

CHROMATOGRAPHIC METHOD FOR THE SEPARATION OF THE OPTICAL ISOMERS

Sergei Vasilievich Rogozhin, ulitsa Vavilova, 55/5, kv. 52, and Vadim Alexandrovich Davankov, Leningardskoe shosse, 112/1, korpus 3, kv. 703, both of Moscow, U.S.S.R.

Filed June 24, 1969, Ser. No. 836,165

Int. Cl. C07b 19/00

U.S. Cl. 260—309

3 Claims

1. A method for the chromatographic separation of the optical isomers of compounds capable of forming complexes with transition metal ions which comprises treating an asymmetric ion-exchange resin capable of forming complexes with transition metal ions with a solution of a salt of a transition metal selected from the group consisting of copper, zinc, nickel, cobalt, cadmium, chromium, manganese, iron, lead, and silver, and passing through the treated sorbent bed a solution of the mixture of said isomers.

3,853,907

ANTIBACTERIAL BIS(IMIDAZOLIUM QUATERNARY SALTS)

Philip Neil Edwards, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 28, 1972, Ser. No. 293,058

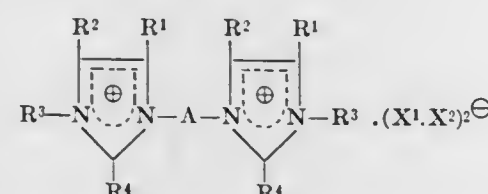
Claims priority, application Great Britain, Oct. 14, 1971, 47796/71

Int. Cl. C07d 49/36, 49/38

U.S. Cl. 260—309

7 Claims

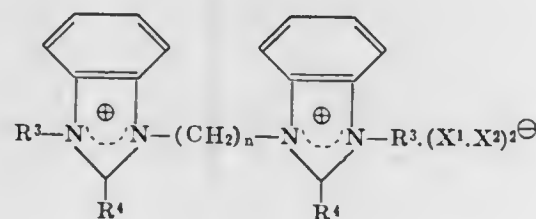
1. An imidazole derivative selected from the group consisting of compounds of the formula:



wherein R^1 and R^2 are hydrogen; R^3 is alkyl of 6 to 14 carbons, benzyl bearing 0 to 5 chlorines in the benzene ring thereof or 3-alkoxy-2-hydroxypropyl wherein the alkoxy part is of 4 to 8 carbons; R^4 is hydrogen or alkyl of 1 to 3 carbons; $(X^1, X^2)^{\ominus}$ represents two chloride, bromide, methanesulphonate, toluene-*p*-sulphonate or benzoate anions or a sulphate or hydrogen phosphate anion; and A is a linking group selected from

1. $-(CH_2)_n-$
2. $-CH_2CH(OH)CH_2-$
3. $-(CH_2)_2(OCH_2CH_2)_pO(CH_2)_2-$
4. $-(CH_2)_mCO.NH(CH_2)_nNH.CO(CH_2)_m-$
5. $-CH_2CO.NH(CH_2)_2O(CH_2)_3NH.COCH_2-$
6. $-(CH_2)_rZ.(CH_2)_s-$

wherein n is 2 to 12, m is 1 or 2, p is 0 to 2, r is 1 to 4 and Z is unsubstituted phenylene, naphthylene or phenylenedioxy, or one of these substituted by chlorine, methoxy or methyl or alkylendioxy of 2 to 12 carbons; and compounds of the formula:



wherein R^3 is alkyl of 6 to 14 carbons; R^4 is hydrogen or alkyl of 1 to 3 carbons; $(X^1, X^2)^{\ominus}$ represents two chloride, bromide, methanesulphonate, toluene-*p*-sulphonate or benzoate anions or a sulphate or hydrogen phosphate anion; and n is 2 to 12.

3,853,908

1-AMINO-SULFONYL-2-AMINOBENZIMIDAZOLES

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch-Gladbach; Ferdinand Grewe, Burscheid, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 2, 1973, Ser. No. 328,998

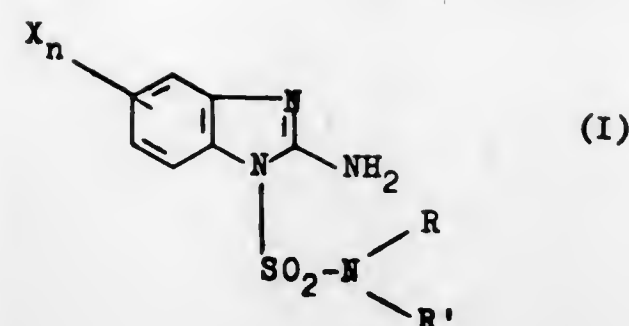
Claims priority, application Germany, Feb. 9, 1972, 2206010

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

7 Claims

1. A 1-aminosulfonyl-2-aminobenzimidazole of the formula



in which

X is halogen, lower alkyl or lower alkoxy,

 n is 0, 1 or 2, R and R' each independently is alkyl of 1 to 6 carbon atoms optionally substituted by one of halogen or lower alkoxy, or R and R' , together with the connecting nitrogen atom, is pyrrolidino or piperidino.

3,853,909

PROCESS FOR PREPARING CYCLICDICARBOXIMIDO-SUBSTITUTED PHOSPHONOTHIOATES

Herman O. Senkbeil, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

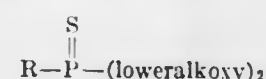
Filed Apr. 9, 1973, Ser. No. 349,154

Int. Cl. C07f 9/24

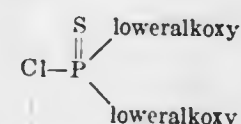
U.S. Cl. 260—326 E

6 Claims

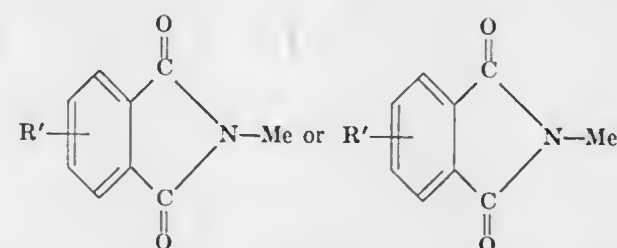
1. A process for preparing cyclicdicarboximido phosphonothioates corresponding to the formula



wherein R represents phthalimido, mono-methyl phthalimido, 4-cyclohexene-1,2-dicarboximido or mono-methyl-4-cyclohexene-1,2-carboximido which comprises reacting a phosphorochloridothioate corresponding to the formula



with an N-alkali-metal cyclicdicarboximide corresponding to the formula



wherein R' represents hydrogen or methyl and Me represents sodium or potassium at a temperature of from about 0°C . to about 100°C . in the presence of a catalytic amount of 1,4-diazabicyclo(2,2,2)octane and an inert tertiary alcohol.

3,853,910

PRODUCTION OF SUBSTITUTED ETHERS OF -2-PYRROLIDINONES

Harlan B. Freyermuth, and David I. Randall, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 23,448, March 27, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,801

Int. Cl. C07d 27/04

U.S. Cl. 260—326.5 FL

10 Claims

1. An improved process for the preparation of a compound of the formula:

3,853,913

BENZ-[C,D]-INDOLIUM DYESTUFFS

Alfred Brack, and Hubertus Psaar, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 8, 1972, Ser. No. 260,914

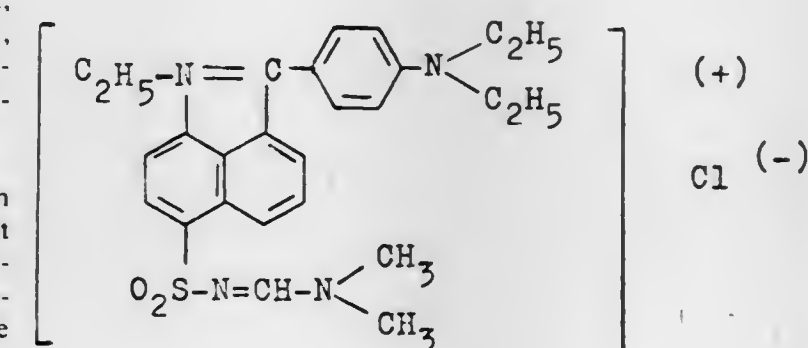
Claims priority, application Germany, June 8, 1971, 2128326

Int. Cl. C07d 27/44

U.S. Cl. 260—326.9

2 Claims

1. A dyestuff of the formula



wherein R is selected from the group consisting of methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, isobutyl, *n*-pentyl, *n*-hexyl, monyl, decyl, undecyl, dodecyl, tridecyl, octadecyl, hydroxymethyl, 2-hydroxyethyl, 3-hydroxypropyl, chloromethyl, chloroethyl, ethenyl, propenyl, propargyl, butynyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, phenyl, *o*-, *m*-, and *p*-xylyl, tolyl, 1-naphthyl, 2-naphthyl, benzyl and phenethyl, which comprises reacting *N*-hydroxymethyl-2-pyrrolidinone with an alcohol of the formula:

 $R-OH$

wherein R is as described above, at a temperature of from about 20°C to about 40°C in the presence of an acid catalyst of the group hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, phosphonic acid, acetic acid, para-toluenesulfonic acid, benzenesulfonic acid, methane-sulfonic acid and trichloroacetic acid, the molar ratio of said acid catalyst to said *N*-hydroxymethyl-2-pyrrolidinone being in the range of from about 0.1 to about 0.5.

3,853,911

ARYLMERCAPTONAPHTHOLACTAMS

Ernst Schefczik, 7 Dubliner Strasse, 6700 Ludwigshafen, Germany

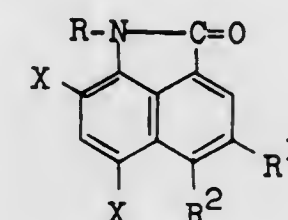
Filed July 11, 1973, Ser. No. 378,222

Int. Cl. C07d 27/00

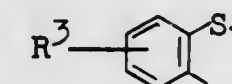
U.S. Cl. 260—326.5 S

2 Claims

1. An arylmercaptanaphtholactam of the formula (I):



in which

 R is hydrogen or unsubstituted or substituted alkyl, cycloalkyl, aralkyl or aryl; R^1 is hydrogen, methoxy or ethoxy; R^2 is hydrogen or methoxy;one X is $S-Ar$; and the other X is hydrogen, chloro or $S-Ar$; X and R^2 together may be

Ar is unsubstituted or substituted phenyl or naphthyl; and

 R^3 is hydrogen, alkyl or alkoxy.

3,853,912

N-(ALKYLTHIOPHENYL) MALEIMIDES

Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 17, 1972, Ser. No. 307,608

Int. Cl. C07d 27/18

U.S. Cl. 260—326.5 S

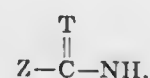
2 Claims

1. The compound which is N-(2'-methylthiophenyl)maleimide.

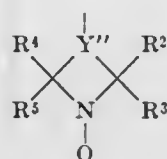
wherein:

 n is 0 or 1; m is 2 or 3; W^{10} is hydrogen; W^{11} and W^{12} are hydrogen, alkyl of from 1 to 3 carbon atoms, or may be taken together to form a six-membered ring with the nitrogen atom to which they are attached; W^{13} is hydrogen or methyl, only one W^{13} being methyl; W^{14} is hydrogen; W^{15} is hydrogen or hydroxyl; W^{16} is hydrogen, acyloxy of 1 to 3 carbon atoms, or hydroxy, with the proviso that W^{15} and W^{16} are both the

same when n equals 1, and when hydroxy oxo is intended; W^{17} is hydrogen or alkyl of 1 to 3 carbon atoms; with the proviso that one of W^{15-17} is $-X^*-A^*$, wherein X^* is



wherein T is oxygen or $=NH$ and Z is hydrocarbylene of from 1 to 10 carbon atoms, and A^* is of the formula:



wherein:

R^{2-3} is alkyl of from 1 to 3 carbon atoms and Y' is a trivalent hydrocarbon radical of from 1 to 3 carbon atoms and having from 0 to 1 site of ethylenic unsaturation.

3,853,915
9-OR

10-HALO-4H-BENZO[4,5]CYCLO-HEPTA[1,2-B]THIOPHEN-4-ONES

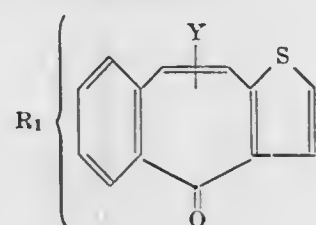
Jean-Pierre Bourquin, Magden/Aargaw; Gustav Schwarb, Allschwil, and Erwin Waldvogel, Aesch, all of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland
Continuation-in-part of Ser. No. 278,244, Aug. 7, 1972, Pat. No. 3,749,786, which is a continuation-in-part of Ser. No. 120,738, March 3, 1971, Pat. No. 3,682,930, and a continuation-in-part of Ser. No. 178,449, Sept. 7, 1971, Pat. No. 3,770,728. This application Aug. 8, 1972, Ser. No. 278,738

Claims priority, application Switzerland, Mar. 11, 1970, 3598/70; July 31, 1970, 11593/70; Sept. 24, 1970, 14120/70; Feb. 4, 1971, 1632/71

Int. Cl. C07d 63/18

U.S. Cl. 260-332.3 P

1. A compound of the formula:



in which

R_1 is hydrogen, halogen or alkoxy of 1 to 4 carbon atoms, and

Y is chlorine or bromine in the 9 or 10 position.

3,853,916

ALKYLATION OF ETHERS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 12, 1972, Ser. No. 261,891

Int. Cl. C07d 15/12

U.S. Cl. 260-340.6

9 Claims

1. A process for the alkylation of an alkyl or saturated cyclic ether consisting of carbon, hydrogen and oxygen atoms and having at least one hydrogen atom attached to a primary or secondary carbon atom and containing no functional groups other than the ether linkage, comprising the steps of reacting said ether with 1-alkene having from 2 to 20 carbon atoms in the presence of an organic peroxy compound selected from the group consisting of peracetic acid, persuccinic acid, dimethyl peroxide, diethyl peroxide, dipropyl peroxide, di-*t*-butyl peroxide, butyryl peroxide, lauroyl peroxide, benzoyl

peroxide, tetrahydronaphthalene peroxide, urea peroxide, *t*-butyl perbenzoate, *t*-butyl hydroperoxide, methylcyclohexyl hydroperoxide, cyclohexanone peroxide, and cumene hydroperoxide and also in the presence of hydrogen chloride in amount of from about 0.5:1 to about 4:1 weight percent of said organic peroxy compound, said ether and 1-alkene being reacted at a temperature in the range of from about 50° to about 300°C. and at least as high as the decomposition temperature of said organic peroxy compound and a pressure of from about 1 to about 100 atmospheres, and recovering the resultant alkylated ether.

3,853,917

PROCESS FOR THE PREPARATION OF D-GLUCAROLACTONE DERIVATIVES

Masanori Okada, Niiza; Kiyoshi Okui, Tsuchiura; Hidenori Takahashi, Omiya, and Arata Tanoura, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,540

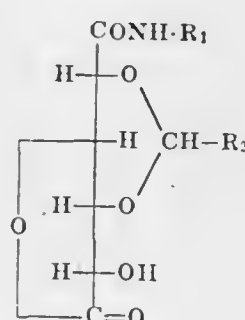
Claims priority, application Japan, Dec. 28, 1971, 46-105684

Int. Cl. C07d 15/04

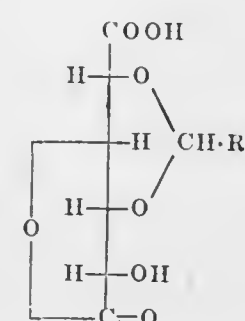
U.S. Cl. 260-340.7

5 Claims

1. A process for the preparation of a D-glucarolactone derivative represented by the formula:



wherein R_1 is selected from the group consisting of alkyl having 1-6 carbon atoms, alkoxyalkyl having 2-4 carbon atoms, cyclohexyl, allyl, phenyl, phenyl substituted with chloride or alkoxy having 1-2 carbon atoms as a substituent, benzyl and benzyl substituted with chloride as a substituent; R_2 represents phenyl, phenyl substituted with chloride, alkyl having 1-3 carbon atoms or ethoxy or methoxy as a substituent; which comprises the steps of reacting a compound of the formula:



wherein R_2 is as defined above, with chloroformic acid ester of the formula



wherein R represents alkyl having 1-10 carbon atoms, followed by reacting with an amine represented by the formula R_1NH_2

wherein R_1 is as defined above, in the presence of a condensing agent at a temperature below room temperature.

3,853,918

DIKETONES AND THEIR USE

Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,631

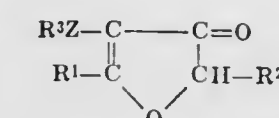
Claims priority, application Great Britain, Dec. 21, 1970, 60562/70

Int. Cl. C07d 5/10

U.S. Cl. 260-347.2

7 Claims

1. A method for the preparation of a substituted 2,3-dihydrofuran-3-one of the structure

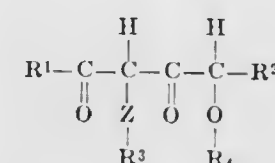


or a tautomeric structure thereof in which

$-Z$ represents an oxygen or sulphur atom

$-R^1$ and R^2 represent hydrogen or lower hydrocarbyl groups with the proviso that the number of carbon atoms of R^1 and R^2 taken together is from 1-4.

$-R^3$ represents a hydrogen, acyl derived from carboxylic acid, or alkyl group containing 1-24 carbon atoms comprising reacting in the presence of an acid a diketone of the general formula



or a tautomeric structure thereof in which R^1 , R^2 , and R^3 and Z represent groups indicated above and R^4 represents an alcohol protecting group resistant to alkali but removable under acid reaction conditions selected from the class consisting of a C^1-C^{20} alkyl group, 2-tetrahydrofuran-2-yl group, 2-tetrahydropyran-2-yl group, a methoxyethyl or ethoxyethyl group, or an α - or β -unsaturated group selected from an allyl, benzyl, or a meta- or para-methoxy phenyl.

3,853,919

MYCOPHENOLIC ACID DERIVATIVES

Takasi Mori, Tokyo; Sakae Takaku, Ageo, and Seikichi Suzuki, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1973, Ser. No. 332,102

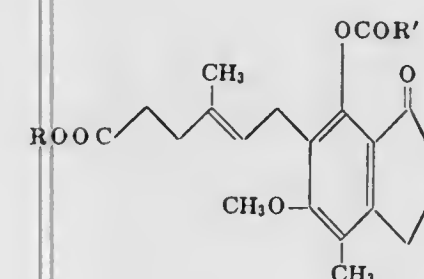
Claims priority, application Japan, Feb. 24, 1972, 47-18447

Int. Cl. C07d 5/06

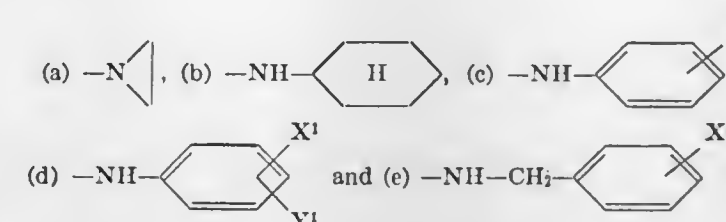
U.S. Cl. 260-343.3

32 Claims

1. a compound of the formula:



wherein R represents lower alkyl; R' is selected from the group consisting of



wherein X is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, $R''CO-$ wherein R'' is alkyl having 1 to 4 carbon atoms, chlorine group containing 2 to 5 carbon atoms, a halogen atom, alkoxy-carboxyl having 2 to 5 carbon atoms, $R'''CONH-$ wherein R''' is alkyl having 1 to 4 carbon atoms, dialkylaminoethoxycarbonyl having 5 to 7 carbon atoms, dialkylamino having 2 to 8 carbon atoms, hydroxy, carboxy, sulfamoyl, nitro, cyano and phenyl; X^1 and X^2 are the same or different and are selected from the group consisting of alkyl having 1 to 4 carbon atoms, hydroxy, carboxy and nitro; X^2 is selected from the group consisting of hydrogen, chlorine, and dialkylamino having 2 to 8 carbon atoms.

3,853,920

PRODUCTION OF SODIUM ERYTHORBATE CRYSTALS OF MICROCRYSTALLINE SIZE

Stuart R. Andrews, North Brunswick, and Lewis D. Morse, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 879,912, Nov. 20, 1969, abandoned, and a continuation-in-part of Ser. No. 100,782, Dec. 22, 1970, abandoned. This application Oct. 28, 1971, Ser. No. 193,587

Int. Cl. C07d 5/12

U.S. Cl. 260-343.7

9 Claims

1. The method of producing sodium erythorbate of microcrystalline size which comprises forming a substantially saturated solution of sodium erythorbate in water at a temperature between about 35°C and 85°C, then rapidly combining this hot solution with sodium chloride under constant agitation conditions, and separating the formed sodium erythorbate microcrystals from the brine.

3,853,921

PROCESS FOR THE PREPARATION OF 3-CYANOCROMONES

Sylvester Klutchko, Hackettstown, and Maximilian von Strandtmann, Rockaway, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

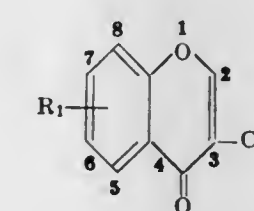
Filed Dec. 4, 1972, Ser. No. 312,155

Int. Cl. C07d 7/34

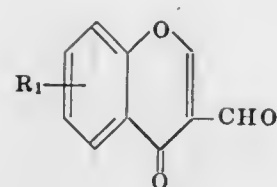
U.S. Cl. 260-345.2

1 Claim

1. A process for preparing a compound of the formula I:



wherein R_1 represents hydrogen, halogen or lower alkoxy, which comprises refluxing together a compound of Formula II,



formic acid, hydroxylamine, or a salt thereof and sodium formate.

3,853,922

PROCESS FOR PRODUCING TETRAHYDROFURAN
Mitsuo Yamaguchi, and Yoichi Kageyama, both of Yokohama, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 847,467, Aug. 4, 1969, abandoned. This application June 13, 1972, Ser. No. 262,186
Claims priority, application Japan, Aug. 10, 1968, 43-56889; Aug. 10, 1968, 43-56890

Int. Cl. C07d 5/02

U.S. Cl. 260—346.1 R

7 Claims

1. A process for producing tetrahydrofuran which comprises:

- a. reacting gaseous hydrogen with at least one compound selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, succinic acid, succinic anhydride, esters of said acids, and γ -butyrolactone at 150° to 400°C and at a hydrogen pressure of 100 to 600 atmospheres in the presence of an effective amount of a catalyst system until said tetrahydrofuran is formed,
1. the effective components of said catalyst system consisting of an intimate mixture of one part metallic nickel, 0.04 to 10 parts of at least one oxide of a metal selected from the group consisting of beryllium, magnesium, calcium, boron, aluminum, titanium, vanadium, chromium, manganese, zinc, zirconium, tungsten, molybdenum, and thorium, and 0.02 to 10 parts of at least one metallic member selected from the group consisting of iron and cobalt, said parts being by weight.

3,853,923

2-SUBSTITUTED-(2-HYDROXY-3-LOWER ALKAMINOPROPOXY)-BENZOFURANS

Kiyoshi Ito, Otsu; Masahiko Ikemoto, Honmachi; Kazuhiko Kimura, Otsu, and Teruo Nakanishi, Kyoto, all of Japan, assignors to Kakenyaku Kako Co., Ltd., Tokyo, Japan

Filed May 8, 1972, Ser. No. 251,454

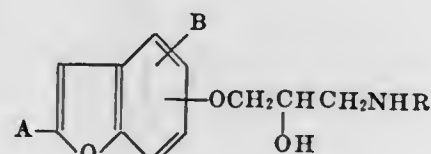
Claims priority, application Japan, May 13, 1971, 46-32145; July 14, 1971, 46-52333; Oct. 28, 1971, 46-86109; Jan. 6, 1972, 47-4395

Int. Cl. C07d 5/42

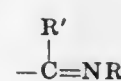
U.S. Cl. 260—346.2 R

21 Claims

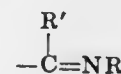
1. A benzofuran derivative of the formula:



wherein A is —COR',



II or ethyl; B is hydrogen atom when A is —COR', or



or —COR'' substituted at 3 or 4 position of benzofuran nucleus when A is ethyl; R is alkyl having 1 to 5 carbon atoms; R' is alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 3 carbon atoms or phenyl group; R'' is alkyl having 1 to 4 carbon atoms, phenyl or phenylalkyl wherein the alkyl moiety has 1 to 2 carbon atoms; and a pharmaceutically acceptable acid addition salt thereof.

3,853,924

RECOVERY OF TRIMELLITIC ACID FROM PSEUDOCUMENE LIQUID PHASE OXIDATION EFFLUENT

Delbert H. Meyer, Naperville, and George E. Johnston, Chicago, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 22, 1970, Ser. No. 100,817

Int. Cl. C07c 63/32

U.S. Cl. 260—346.3

4 Claims

1. A process of recovery of trimellitic acid from the liquid effluent from an oxidation zone in which pseudocumene is oxidized under liquid phase conditions in the presence of:

acetic acid having downward from 5 weight percent water in an amount of 2 to 6 weight parts of such acetic acid per weight part of pseudocumene and in the presence of one or more heavy metal oxidation catalysts and a side chain oxidation initiator at a final oxidation temperature of 385° to 455°F., which recovery comprises the combination of the steps of concentrating the liquid oxidation effluent and precipitating a first crop of trimellitic acid by vaporizing a mixture of acetic acid and water vapors in a flash zone operated at a pressure below that at which such effluent was formed down to atmospheric pressure, displacing and replacing the mother liquor from that concentrate with acetic acid having downward from 5 weight percent water in an amount producing a first slurry having 60 to 70 percent solids and 40 to 30 percent liquid on a weight basis, concentrating the displaced mother liquor to a second concentrate by evaporation of all but 10 to 20 weight percent of its acetic acid content, displacing and replacing the acetic acid content of such second concentrate with acetic acid having downward from 5 weight percent water in an amount producing a second slurry having 60 to 70 percent solids and 40 to 30 percent liquid on a weight basis, combining such first and second slurries and removing acetic acid therefrom.

3,853,925

URETHANES

Crispin Stuart Leworthy Baker, Hertford; Douglas Barnard, Welwyn Garden City, and Maurice Read Porter, Stevenage, all of England, assignors to The Natural Rubber Producers Research Association, London, England

Filed Aug. 17, 1971, Ser. No. 172,589

Claims priority, application Great Britain, Aug. 18, 1970, 39804/70

Int. Cl. C07c 131/08

U.S. Cl. 260—396 N

4 Claims

1. A compound having the formula: $R(NH.CO.O.N = Q = O)_m(NCO)_n(NH.CO.YX)_p$ where

m is 1 or 2

n is 0, 1 or 2

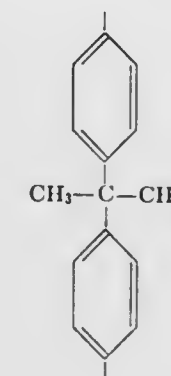
p is 0, 1 or 2

(n + p) is 1 or 2

Q is benzene, benzene substituted by one or more alkyl groups of up to four carbon atoms or naphthalene, and is in the p-quinonoid form

R is an aromatic or saturated aliphatic hydrocarbon group having a functionality of (m + n + p)

Y is an oxygen atom and X is phenyl, alkylphenyl, naphthyl, alkylphenyl, aliphatic saturated hydrocarbyl



or

YX is primary aliphatic saturated hydrocarbyl amino.

3,853,926

17 β -HYDROXY-16,16-DIMETHYLESTER-4-EN-3-ONE
David A. Tyner, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,340

Int. Cl. C07c 169/22

U.S. Cl. 260—397.4

1 Claim

1. 17 β -Hydroxy-16,16-dimethylester-4-en-3-one.

3,853,927

PROCESS FOR THE PREPARATION OF 3 ALPHA-HYDROXY STEROIDS

Joyce F. Grunwell, Hamilton, and Harvey D. Benson, Cincinnati, both of Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

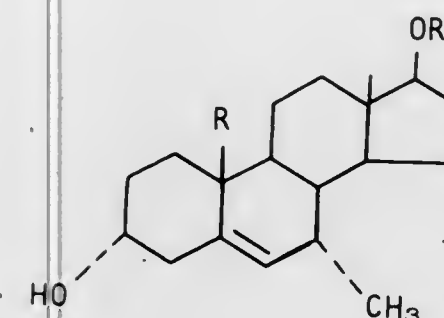
Filed Nov. 1, 1973, Ser. No. 411,790

Int. Cl. C07c 169/20

U.S. Cl. 260—397.5

6 Claims

1. A process for the preparation of 3 α -hydroxy steroids having the formula



wherein R is hydrogen or methyl, and R₁ is selected from the group consisting of hydrogen or acyl having from one to 12 carbon atoms which comprises reacting a corresponding 3-oxo steroid with a highly hindered lithium or potassium trialkylborohydride in a suitable solvent at a temperature of from -80° to 25° C. to form a steroidal borane; hydrolyzing the steroidal borane which forms; and recovering the 3 α -hydroxy steroid therefrom.

3,853,928

PROCESS FOR PREPARING TERTIARY PHOSPHORIC ESTERS OF PHENOLATED FATTY ACID ESTERS

Hirokazu Nakayama; Yoshiaki Inamoto, and Atsushi Goukon, all of Wakayama, Japan, assignors to Kao Soap Co. Ltd., Tokyo, Japan

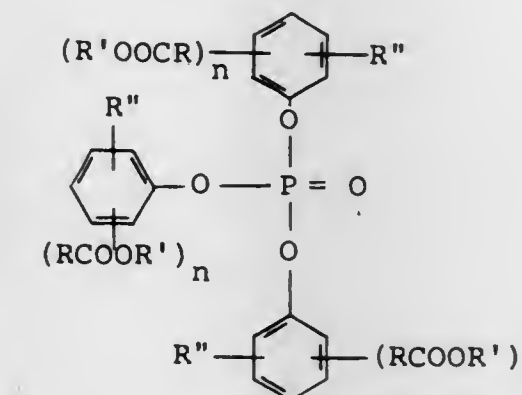
Filed Dec. 20, 1972, Ser. No. 316,682

Claims priority, application Japan, Dec. 28, 1971, 46-2774
Int. Cl. A23j 7/00; C07i 9/02

U.S. Cl. 260—403

3 Claims

1. A compound of the formula



wherein

n is a number from 1 to 2,

RCOOR' is a moiety of an ester of a fatty acid selected from the group consisting of undecylenic acid, myristoleic acid, palmitoleic acid, oleic acid, elaidic acid, erucic acid, linoleic acid, linoleic acid, conjugated linoleic acid, linolenic acid, conjugated linolenic acid, cyclopentene carboxylic acids, methylcyclopentene carboxylic acids and cyclohexene carboxylic acids, esterified with an alcohol having one to eight carbon atoms, cyclohexanol or methylcyclohexanol, and R'' is H or CH₃.

3,853,929

METHOD FOR CONTINUOUSLY EFFECTING SOLID-CATALYZED LIQUID PHASE REACTIONS IN A BUBBLE COLUMN-CASCADE REACTOR

Wolf Cornelius, Werne; Bodo Gross, Unna; Jochen Meiners, Unna-Siddinghausen; Eckhart Blass, and Kurt-Henning Koch, both of Clausthal-Zellerfeld, all of Germany, assignors to Schering AG, Berlin, Bergkamen, Germany

Filed Nov. 14, 1972, Ser. No. 306,198

Claims priority, application Germany, Nov. 22, 1971, 2157737

Int. Cl. B01j 9/16; C08h 9/00

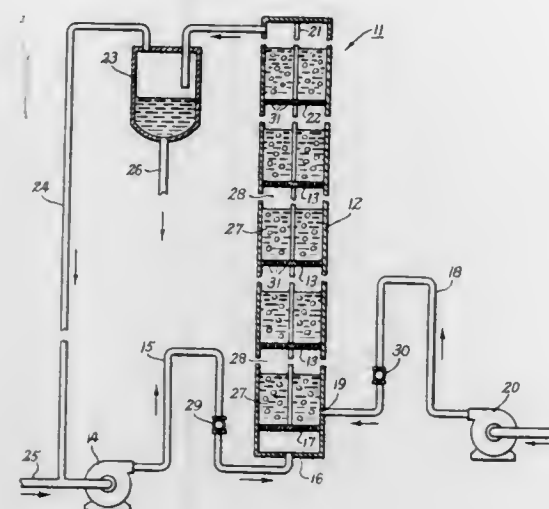
U.S. Cl. 260—407

4 Claims

1. A method for continuously effecting a solid-catalyzed liquid phase reaction which comprises flowing a liquid phase reagent, in the presence of said solid catalyst, and an inert gas upwardly through a walled vertically columnar reaction zone separated into a plurality of reaction compartments by perforated plates equidistantly stacked exactly horizontally in said reaction zone, adjacent plates being separated vertically by a distance at least three times the diameter of said columnar reaction zone and being tightly joined to the interior wall thereof, each plate having a plurality of apertures therein of the same size distributed uniformly over the area of the plate, the total free aperture area of the plates being from 0.5 percent to 15 percent of the cross-sectional area of said columnar reaction zone, the flow of inert gas and liquid through said reaction zone being such that

Reynolds number_{LD}/Reynolds number_{GD} = 0.1, whereby a gas cushion is formed under said plates, and wherein

Reynolds number_{La} = $w_{La} \times d \times \sigma_L / 72 L$,
 Reynolds number_{Gd} = $w_{Gd} \times d \times \sigma_G / 72 G$,
 w = velocity



d = aperture diameter
 ρ = density
 η = dynamic viscosity
 and the subscripts d , G , and L refer respectively to aperture diameter, the gas phase, and the liquid phase.

3,853,930

PROCESS FOR TREATING LANOLIN AND LANOLIN DERIVATIVES

Thomas B. Richey, 576 North Chestnut St., Westfield, N.J. 07090

Filed Feb. 4, 1972, Ser. No. 223,718
 Int. Cl. C09f 5/10

U.S. Cl. 260-428

4 Claims

1. The method of reducing the pesticide content of pesticide-containing lanolin and lanolin derivatives, which comprises continually feeding a pesticide-containing lanolin material whose content of said pesticide is in excess of about five parts per million of said feed material, into a vertically disposed jacketed chamber and causing the feed material in said chamber to flow downwardly along the inner surface of the chamber in the form of a wiped film of relatively minute thickness, while maintaining the jacket of the chamber at a temperature of 300° to 550° C., and simultaneously subjecting the feed material to the action of an inert vaporous stripping agent, while maintaining the flowing film under a vacuum of between two and thirty millimeters mercury, absolute pressure, said material having incorporated therein, prior to the feeding thereof to said chamber, a minor proportion of paraffinic hydrocarbon diluent, said diluent having a boiling point such that said diluent will be removed from the lanolin or lanolin derivatives under the aforesaid operating conditions, thereby to promote removal of said pesticide from the lanolin or lanolin derivative.

3,853,931

PRODUCTION OF HYDROCARBYL ALUMINUM HYDRIDES

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 15, 1973, Ser. No. 323,960
 Int. Cl. C07f 5/06

U.S. Cl. 260-448 A

10 Claims

1. In a process for reacting aluminum with hydrogen and an olefin or aluminum hydrocarbyl compound, the improvement which comprises reacting the hydrogen and the olefin or

aluminum hydrocarbyl compound with an aluminum base alloy powder containing at least 98 percent by weight aluminum and 0.1-2.0 percent by weight lithium, thereby increasing the reactivity of the aluminum.

3,853,932

PROCESS FOR PRODUCING SILANOL END-STOPPED POLYMERS OF LOW MOLECULAR WEIGHT

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,380
 Int. Cl. C07f 7/08

U.S. Cl. 260-448.2 E

10 Claims

1. A process for producing low molecular weight silanol end-stopped diorganopolysiloxane polymers comprising (a) contacting a cyclic trimer of the formula,



where R is selected from the class consisting of alkyl radicals, haloalkyl radicals and cycloalkyl radicals of one to eight carbon atoms, vinyl radicals, phenyl radicals and mixtures thereof with an acid-activated hydroaluminum silicate clay, in the presence of water and a polar solvent, and (b) separating the desired product.

3,853,933

CONTINUOUS PROCESS FOR PRODUCING POLYSILOXANE OILS UTILIZING A CARBON BLACK CATALYST

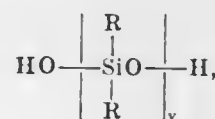
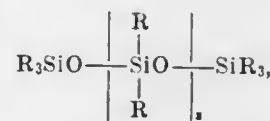
George R. Siciliano, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,095
 Int. Cl. C07f 7/08

U.S. Cl. 260-448.2 E

18 Claims

1. A continuous process for producing diorganopolysiloxane oils of 3 to 50,000 centipoise viscosity at 25° C comprising continuously passing a fluid siloxane feed mixture having therein siloxanes selected from the class consisting of $(R_2SiO)_x$,

 $[R_3Si]_2O$ and

and mixtures thereof where R is selected from the class consisting of alkyl radicals, alkenyl radicals, cycloalkyl radicals and mixtures thereof of one to 15 carbon atoms, x varies from 3 to 8, y varies from one to 10 and z varies from one to 10, into contact with a catalyst bed of acid-activated granular carbon black having a carbon to acid ratio of 10 parts to 1 part, to 40 parts to 1 part which catalyst bed is maintained at 85° to 150° C and over which catalyst bed there is maintained a vacuum of 5 to 200 millimeters of Hg and removing from the catalyst bed a product stream containing the diorganopolysiloxane of 3 to 50,000 centipoise viscosity at 25° and various low boiling siloxanes.

3,853,934
CONTINUOUS PROCESS FOR PRODUCING POLYSILOXANE OILS

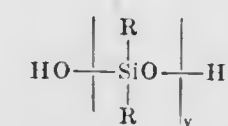
George R. Siciliano, Ballston Lake, and Norman G. Holdstock, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,123
 Int. Cl. C07f 7/08

U.S. Cl. 260-448.2 E

12 Claims

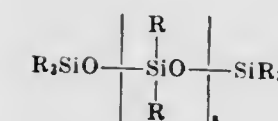
1. A continuous process for producing linear diorganopolysiloxane oils of a viscosity from 3 to 50,000 centipoise at 25° C comprising (a) continuously passing into a first column a feed mixture composed of compounds selected from the class consisting of



and



and



and mixtures thereof, where R is selected from the class consisting of alkyl radicals, alkenyl radicals and cycloalkyl radicals of one to 15 carbon atoms, x varies from 3 to 10, y varies from 1 to 10 and z varies from 1 to 10; (b) continuously passing into said first column from 0 to 1.0 percent by weight of said feed mixture of an acid-activated hydroaluminum silicate and 0.1 to 1 percent by weight of said feed mixture of a diatomaceous earth; (c) maintaining said first column at a temperature in the range of 150° - 200° C; (d) continuously removing from column first column a fluid siloxane mixture such that the fluid siloxane mixture emanating from said first column has less than 1,000 parts per million of water; (e) transferring the fluid siloxane mixture from said first column into a second column which is packed with an acid-activated hydroaluminum silicate which second column is maintained at 150°-200° C; and (f) continuously transferring the desired product stream out of the second column.

3,853,935

ARALKYL SILANES SUBSTITUTED IN THE NUCLEUS

Ismail Roshdy, Schulstr. 21, 5206 Neunkirchen, and Paul Janssen, Am Zaarhauschen 17, 506 Bensberg-Refrath, both of Germany

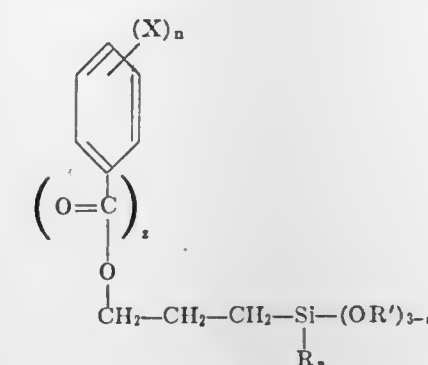
Filed Mar. 30, 1973, Ser. No. 346,528
 Claims priority, application Germany, Mar. 30, 1972, 2215629

Int. Cl. C07f 7/10, 7/18

U.S. Cl. 260-448.8 R

18 Claims

1. A novel organosilicon compound of the formula



wherein X is NO₂ or NH₂

n is 1 or 2

z is 0 or 1

a is 0, 1 or 2 or 1, 2 or 3 when R is halogen

R is independently selected from the group consisting of alkyl, aryl, aralkyl and halogen and

R' is independently selected from the group consisting of alkyl, alkyl ether radical, polyalkyl ether radical and aryl.

3,853,936

PROCESS FOR DISTILLATION OF TOLUENE DIISOCYANATE

Norman L. Van Winkle, Lake Charles, La., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 5, 1973, Ser. No. 329,309
 Int. Cl. C07c 119/04

U.S. Cl. 260-453 SP

11 Claims

1. In a toluene diisocyanate recovery and purification process wherein two toluene diisocyanate streams are charged to a distillation column and distilled therein, namely, a high quality stream, containing no more than about 1 percent by weight of high boiling impurities, and a low quality stream, containing a proportion of high boiling impurities which is at least four times that of said high quality stream, the improvement which comprises charging said streams to said distillation column individually through separate inlets, the inlet for said high quality stream being located in the upper two-thirds, but below the top one-tenth, of said column, and the inlet for said low quality stream being located in the bottom one-third of said column, said high quality stream being charged to said column at a feed rate which is from about 1 to about 20 times that of said low quality stream.

3,853,937

N-(1-ALKENYL)-PEROXYCARBONIC ESTERS

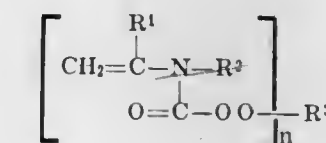
Herbert Naarmann, Wattenheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 5, 1973, Ser. No. 348,180
 Int. Cl. C07c 69/00

U.S. Cl. 260-453 R

2 Claims

1. An organic peroxide of the formula (I):



in which

R¹ is hydrogen or methyl;

R² is tertiary alkyl of four to eight carbon atoms;

R³ is tertiary alkyl of four to eight carbon atoms or ditertiary alkylene of eight to ten carbon atoms; and
 n is 1 or 2.

3,853,938

THIOPROPIONIC ACID DERIVATIVES

Ernest Haddock, and William J. Hopwood, both of Kent, England, assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,236

Int. Cl. C07c 153/07

U.S. Cl. 260—455 R

1 Claim

1. S-ethyl-N-benzoyl-N-(4-fluorophenyl)-2-aminothiopropanate.

3,853,939

ISOPROPYL-CYANOPHENYL ALKYL SULFONATES

Richard D. Partos, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 17,902, March 9, 1970, Pat. No.

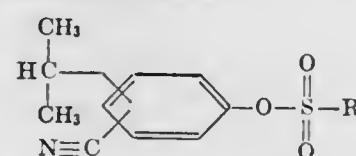
3,818,102. This application Sept. 1, 1972, Ser. No. 285,685

Int. Cl. C07c 143/68

U.S. Cl. 260—456 R

3 Claims

1. A compound of the formula



wherein R is alkyl having from 1 through 18 carbon atoms.

3,853,940

INNER SALTS OF ALKYL ALKOXYALKYL HYDROXYALKYL SULFONIUM SULFATES

Giuliana C. Tesoro, Dobbs Ferry, and Andrew Orozlan, Elmhurst, both of N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 227,717, Oct. 2, 1962, abandoned, which is a continuation-in-part of Ser. No. 165,017, Jan. 8, 1962, Pat. No. 3,419,566. This application Mar. 22, 1971, Ser. No.

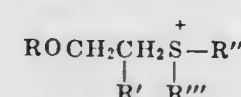
126,868

Int. Cl. C07c 141/02

U.S. Cl. 260—458

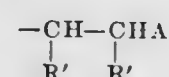
2 Claims

1. A compound having the formula



wherein R is lower alkyl.

R' is a member selected from the group consisting of hydrogen and lower alkyl, and R'' is the group



wherein

A is OSO3⁻ and R''' is alkyl.

3,853,941

PREPARATION OF ORTHOBORATES OF MONOHYDRIC ALCOHOLS AND PHENOLS

William V. Hough, Gibsonia; Clarence R. Guibert, Adams Township, Butler County, and Gerald T. Hefferan, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Mar. 1, 1971, Ser. No. 119,904

Int. Cl. C07f 5/04

U.S. Cl. 260—462 R

14 Claims

1. A method of preparing a trimethoxyborane comprising the step of reacting in the liquid phase a boron-containing reactant selected from the group consisting of boric oxide, boric acid and trimethoxyboroxine with methanol in the presence of a water absorbing molecular sieve having a pore diam-

eter of about 3A to about 4A, the molecular sieve being present in an amount sufficient to absorb substantially all of the water produced by the reaction, and separating the resultant liquid phase containing the trimethoxyborane from the molecular sieve.

3,853,942

PROCESS FOR THE MANUFACTURE OF CYCLOPROPA-NECARBONITRILE

Yel S. Sury, Mobile, Ala., and Henry C. Grace, Jr., Greensboro, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,211

Int. Cl. C07c 121/02, 121/46

U.S. Cl. 260—464

4 Claims

1. In the process of preparing cyclopropanecarbonitrile comprising the steps of reacting, in a dried inert organic solvent at elevated temperatures, 4-halobutyronitrile and a basic cyclization agent, and recovering the cyclopropanecarbonitrile product, the improvement which comprises reacting under refluxing condition 4-chlorobutyronitrile or 4-bromobutyronitrile with an alkali alkoxide in which the alkyl moiety has from 1 to 4 carbon atoms, the molar ratio of the nitrile to the alkoxide ranging from stoichiometric equivalency to about 10% molar excess of alkoxide, to obtain the cyclopropanecarbonitrile product and an alcohol byproduct, and removing the alcohol by-product substantially simultaneously with its formation.

3,853,943

CYCLOPENTADIENES IN WHICH AT LEAST FOUR OF THE RING CARBONS CARRY CYANO SUBSTITUENTS AND METHODS FOR THEIR PREPARATION

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 678,536, Oct. 27, 1967, Pat. No.

3,536,694, which is a continuation-in-part of Ser. No. 255,068, Jan. 30, 1963, abandoned. This application June 15, 1970,

Ser. No. 46,530

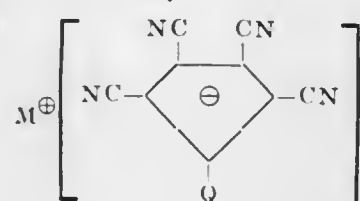
Int. Cl. A01n 9/20; C06b 15/00; C07c 121/48

U.S. Cl. 260—464

12 Claims

1. A cyanocyclopentadiene compound in which at least four ring carbon atoms carry cyano substituents, said compound selected from the group consisting of:

1-amino-2,3,4,5-pentacyanocyclopentadiene; and a compound of the formula



wherein:

M⁺ represents one equivalent of an ion selected from the class consisting of hydrogen ion, metal ion, ammonium ion, and C₁₋₁₈ alkyl-substituted ammonium ion wherein the metal ion is selected from Li⁺, Na⁺, Mg²⁺, Al³⁺, K⁺, Ca²⁺, Ti⁴⁺, Cr³⁺, Mn²⁺, Fe²⁺, Fe³⁺, Co²⁺, Co³⁺, Ni²⁺, Ni³⁺, Cu²⁺, Zn²⁺, Rb⁺, Sr²⁺, Mo⁶⁺, Ag⁺, Cd²⁺, Sn²⁺, Cs⁺, Ba²⁺, Hg²⁺, Pb²⁺, or Bi³⁺; andQ is selected from the class consisting of hydrogen, amino, cyano, hydroxy, carboxy, alkoxy, carbonyl wherein the alkoxy portion thereof contains up to and including 18 carbon atoms, chlorine, bromine, iodine C₁₋₁₈ alkyl, aryl of up to and including 18 carbon atoms, p-hydroxyphenyl, nitro, and mercapto.

3,853,944

SUBSTITUTED NITROALKYL NITRATE AND PEROXYNITRATE

William M. Cummings, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 144,212, May 17, 1971, Pat. No.

3,732,283. This application Dec. 4, 1972, Ser. No. 311,993 The portion of the term of this patent subsequent to May 8, 1990,

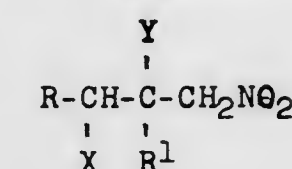
has been disclaimed.

Int. Cl. C07c 121/16

U.S. Cl. 260—465.1

3 Claims

1. A nitroalkyl nitrate characterized by the formula:

where R and R' are hydrogen or alkyl or from 1 to 10 carbons, where X is —CN and where Y is —ONO₂ or —OONO₂.

3,853,945

PROCESS OF PREPARING ALPHA-SUBSTITUTED ACRYLIC COMPOUNDS

Francis Weiss, and Raymond Rusch, both of Pierre-Benite, France, assignors to Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 328,096, Dec. 4, 1963, abandoned, Continuation-in-part of Ser. Nos. 413,350, Nov.

23, 1964, abandoned, and Ser. No. 647,341, June 20, 1967, abandoned. This application July 17, 1968, Ser. No. 745,379

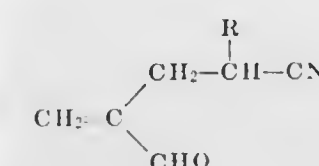
Claims priority, application France, Dec. 8, 1962, 62.918000; Nov. 21, 1963, 63.954478

Int. Cl. C07c 121/02

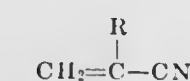
U.S. Cl. 260—465.4

8 Claims

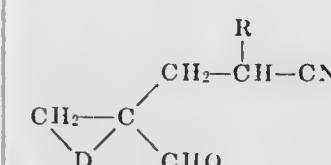
1. A process for preparing an α-substituted acrylic compound of the formula

wherein R is H or CH₃ which process comprises:

reacting acrolein with cyclopentadiene or anthracene at a temperature sufficient to form a Diels Alder adduct; treating the adduct thus formed with an acrylonitrile of the formula



in the presence of a base and at a temperature in the range between 0° and 80°C. to form a Michael's adduct of the formula



wherein R has the same meaning as stated above and D is the dienic moiety of cyclopentadiene or anthracene;

pyrolyzing, thereafter, the Michael adduct at a temperature sufficiently high to remove the dienic moiety; and recovering therefrom said α-substituted acrylic compound.

3,853,946

PROCESS FOR THE PREPARATION OF AMINOMETHYLENE MALONONITRILE

Willy Leimgruber, Montclair, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 197,968, Nov. 11, 1971, Pat. No.

3,742,015, which is a division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834,

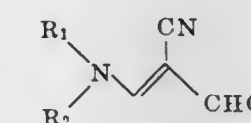
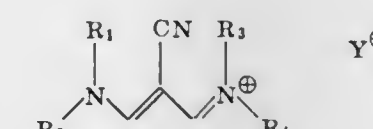
April 9, 1968, Pat. No. 3,542,848. This application Mar. 5, 1973, Ser. No. 338,018

Int. Cl. C07c 121/02

U.S. Cl. 260—465.5 R

1 Claim

1. A process of preparing an aldehyde compound of the formula:

wherein R₁ and R₂ are lower alkyl, containing from 1 to 6 carbon atoms; comprising treating an aqueous solution containing a halide salt of the formula:wherein R₁ and R₂ are as above; R₃ and R₄ are lower alkyl containing from 1 to 6 carbon atoms; and Y⁻ is a halide ion;

with an inorganic base to raise the pH of said solution to a range of from about 7 to 9 to form said aldehyde compound.

3,853,947

PURIFYING 1,4-DICYANOBUTENES

Leopold Golser; Erich Schwartz, both of Ludwigshafen, and Hans-Martin Weitz, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Mar. 7, 1973, Ser. No. 338,758

Claims priority, application Germany, Mar. 8, 1972, 2211060

Int. Cl. C07c 121/30

U.S. Cl. 260—465.8 R

3 Claims

1. A process for recovering pure 1,4-dicyanobutene from 1,4-dicyanobutene which contains chlorinated or brominated impurities, by treatment with hexamethylenediamine and recovery of the pure 1,4-dicyanobutene, wherein the 1,4-dicyanobutene to be purified is treated in the liquid phase with 1,6-hexamethylenediamine or with dihexamethylenetriamine and the 1,4-dicyanobutene is separated from the reaction products of the added hexamethylenediamine with the halogen compounds.

3,853,948
CATALYTIC ISOMERIZATION OF
2-METHYL-3-BUTENENITRILE TO LINEAR
PENTENE-NITRILES

William C. Drinkard, Jr., Orange, Tex., and Richard V. Lindsey, Hockessin, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 77,725, Oct. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 678,171, Oct. 26, 1967, Pat. No. 3,536,748, which is a continuation-in-part of Ser. No. 509,432, Nov. 23, 1965, Pat. No. 3,496,215. This application Sept. 5, 1972, Ser. No. 286,131. The portion of the term of this patent subsequent to Oct. 27, 1987, has been disclaimed.

Int. Cl. C07c 121/02, 121/30

U.S. Cl. 260—465.9

5 Claims

1. In a process of isomerizing 2-methyl-3-butenitrile to produce at least one linear pentenenitrile which comprises contacting 2-methyl-3-butenitrile, at a temperature in the range of 10°–200°C. with a zerovalent nickel catalyst of the formula Ni(PXYZ)₄, wherein X is OR, Y and Z are of the group consisting of R and OR, R being of the group consisting of alkyl and aryl hydrocarbyl radicals of up to 18 carbon atoms and aryl hydrocarbyl radicals of up to 18 carbon atoms substituted with a radical of the group consisting of chloride and alkoxy radicals, wherein any two of X, Y and Z can be joined to form a lower alkylene or the ethylenedioxy group; the improvement which comprises carrying out the process of isomerizing in the presence of at least a 1:1 mole ratio of a compound of the formula PXYZ to the catalyst of formula Ni(PXYZ)₄.

3,853,949

8-METHYLENE-1-CYCLOPENTENE-1-PENTANOIC ACID
William T. Comer, James W. Rayburn, and Davis L. Temple, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

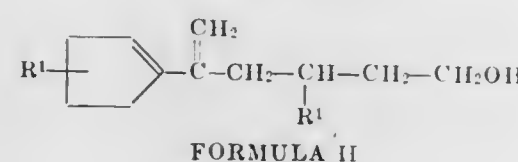
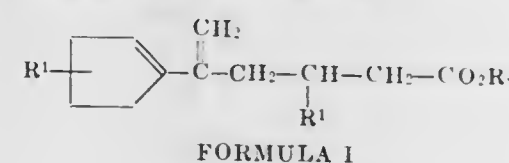
Continuation-in-part of Ser. No. 246,309, April 21, 1972, abandoned. This application Oct. 26, 1972, Ser. No. 300,942

Int. Cl. C07c 61/26, 69/74

U.S. Cl. 260—468 L

11 Claims

1. A compound selected from the group consisting of diene carboxylic acids and esters of Formula I



wherein

R¹ is hydrogen or methyl with the proviso that whenever R¹ is methyl the R¹-cyclopentenyl radical is selected from the group consisting of 3-methyl-1-cyclopentenyl and 3-methyl-1-cyclopentenyl;

R² is hydrogen, lower alkyl; or whenever R² is hydrogen the non-toxic pharmaceutically acceptable metal salts thereof.

3,853,950

15-LOWER ALKOXY PGA COMPOUNDS

Frank H. Lincoln, Jr., Portage; John E. Pike, and Gilbert A. Youngdale, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

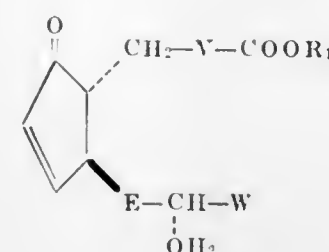
Division of Ser. No. 140,251, May 4, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,912

Int. Cl. C07c 61/36, 69/74

U.S. Cl. 260—468 D

9 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein E is —CH₂CH₂— or trans—CH=CH—; wherein R₁ is hydrogen, alkyl of one to eight carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein R₂ is alkyl of one to five carbon atoms, inclusive; wherein V is either —(CH₂)₅— or cis—CH=CH—(CH₂)₃—, provided that E is —CH₂CH₂— only when V is —(CH₂)₅—; and wherein W is 1-pentyl or cis 1-pent-2-enyl provided that W is cis 1-pent-2-enyl only when E is trans —CH=CH— and V is —CH=CH—(CH₂)₃—.

3,853,951

PREPARATION OF 9-OXO-13-TRANS-PROSTENOIC
ACID ESTERS BY ALANATE ADDITION TO
CYCLOPENTENONE

Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

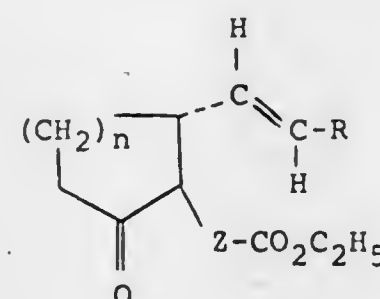
Division of Ser. No. 162,711, July 14, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 355,844

Int. Cl. C07c 67/74, 61/36

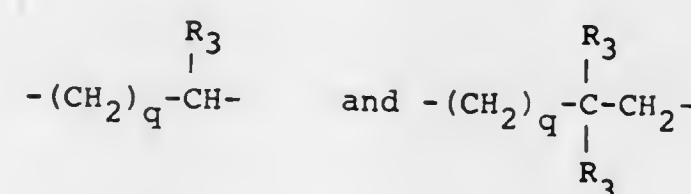
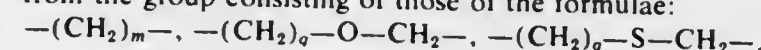
U.S. Cl. 260—468 D

10 Claims

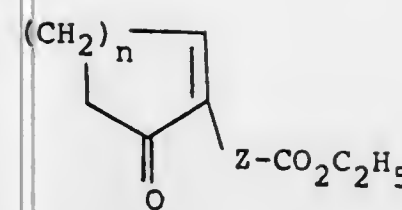
1. The process of preparing compounds of formula:



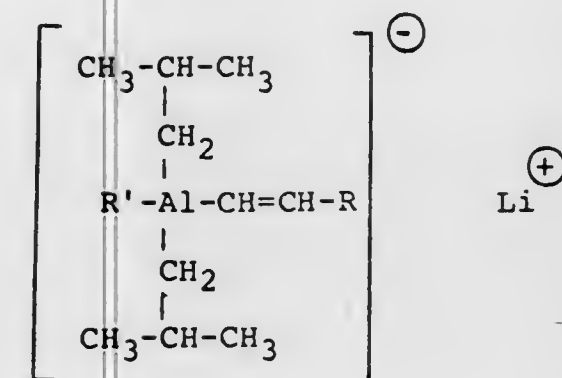
wherein n is the integer 1 or 2; R is selected from the group consisting of a straight chain alkyl group having from three to 10 carbon atoms, a straight chain alkyl group having from two to six carbon atoms and having one branched methyl group, a straight chain alkenyl group having from four to six carbon atoms, and a straight chain ω-chloroalkyl group having from three to six carbon atoms; and Z is a divalent radical selected from the group consisting of those of the formulae:



wherein m is an integer from 1 to 8, inclusive, q is an integer from 3 to 6, inclusive, and R is an alkyl group having from one to three carbon atoms; which comprises contacting a compound of the formula:



wherein n and z are as hereinabove defined, with up to 1.5 molar equivalents of a reagent of the formula:



wherein R' is a lower alkyl group and R is as hereinabove defined, in an inert solvent at from about 5°C. to about 40°C. for a period of time sufficient for a substantial degree of conjugate 1,4-addition to take place, hydrolyzing the so formed intermediate alanate-enolate adduct with excess dilute aqueous mineral acid, and recovering the so formed product from the reaction mixture.

3,853,952

2-ETHYNYLCYCLOPROPANE COMPOUNDS AND
PROCESS FOR THE PREPARATION THEREOF

Yukichi Kishida; Masafumi Yoshimoto, and Noboru Ishida, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed June 23, 1971, Ser. No. 156,049

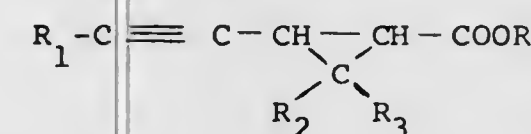
Claims priority, application Japan, June 29, 1970, 45-56798

Int. Cl. C07c 69/76

U.S. Cl. 260—469

12 Claims

1. A compound having the formula



wherein R₁ is a phenyl group of a phenyl group substituted with a trifluoromethyl, halogen, a lower alkyl, or a lower alkoxy group, R₂ and R₃ are the same or different and each represents a hydrogen atom or a phenyl group, and R₄ represents a hydrogen atom, a lower alkyl group or benzyl group, and an alkali metal, an alkaline earth metal or an aluminum salt thereof.

3,853,953

ALKYL (N-PHENYLSULFONYLOXY) CARBAMATES
Joseph Hellerbach, Basel, Switzerland; Armin Walser, West Caldwell, N.J.; Hermann Bretschneider, Innsbruck, Austria, and Werner Rudolph, Lorrach, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 111,731, Feb. 1, 1971, Pat. No. 3,772,271.

This application June 25, 1973, Ser. No. 373,070

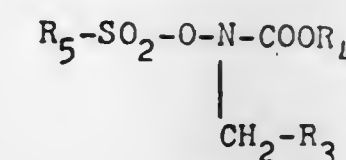
Claims priority, application Switzerland, Feb. 11, 1970, 1956/70

Int. Cl. C07c 161/00

U.S. Cl. 260—470

4 Claims

1. A compound of the formula



wherein R₃ signifies hydrogen, lower alkyl or aryl selected from the group consisting of phenyl, halo substituted phenyl and lower alkyl substituted phenyl; R₄ signifies lower alkyl and R₅ is aryl selected from the group consisting of phenyl, halo substituted phenyl and lower alkyl substituted phenyl.

3,853,954

TYROSINE DERIVATIVES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 3, 1971, Ser. No. 195,472

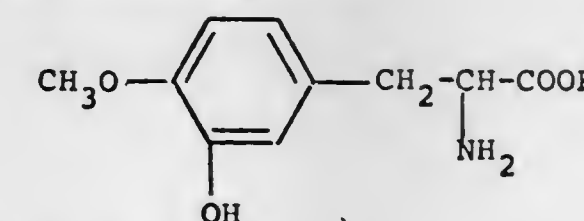
Claims priority, application Switzerland, Nov. 10, 1970, 16630/70

Int. Cl. C07c 101/08

U.S. Cl. 260—471 A

17 Claims

1. The L-antipode of the formula:



wherein R is hydrogen or lower alkyl group; or pharmaceutically acceptable salts thereof.

3,853,955

NOVEL BASIC SUBSTITUTED-ALKYLIDENAMINO-OXY
ALKYL-CARBOXYLIC-ACID ESTERS

Jan Van Dijk, and Johannes Maria Antonius Zwagemakers, both of Van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,793

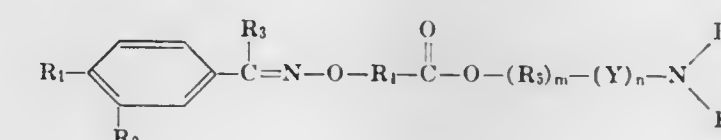
Claims priority, application Netherlands, June 11, 1970, 7008493; Mar. 2, 1971, 7102715

Int. Cl. C07c 101/24

U.S. Cl. 260—472

24 Claims

1. A compound selected from the group consisting of the amines of the formula:



wherein R₁ is a moiety selected from the group consisting of hydrogen, halogen, CF₃ and CH₃, R₂ is a moiety selected from the group consisting of chlorine and hydrogen, R₃ is a moiety selected from the group consisting of hydrogen and CH₃, R₄ is alkylene of up to 5 carbon atoms, m and n are each 0 or 1 and m + n is 1 or 2, R₅ is alkylene of up to 6 carbon atoms which may be substituted by phenyl, Y is a cyclic hydrocarbon radical of 5 or 6 carbon atoms, R₆ is a moiety selected from the group consisting of hydrogen, alkyl of up to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, phenyl, tolyl, and acetyl and (p-chloro α-methylbenzylidene) aminoxyacetyl and R₇ is a moiety selected from the group consisting of hydrogen, alkyl of up to 8 carbon atoms, alkyl of up to 8 carbon atoms substituted with hydroxyl with the proviso that when R₆ and R₇ are each alkyl or hydroxy substituted alkyl R₆ and R₇ together do not contain more than 10 carbon atoms and the acid addition salts thereof with pharmaceutically acceptable acids.

3,853,956

REACTION OF PHENOLS WITH OLEFINS AND CUPRIC HALIDE

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 20, 1969, Ser. No. 808,981

Int. Cl. C07c 65/12

U.S. Cl. 260—473 S

6 Claims

1. The preparation of O-alkylated, C-alkylated, and halogenated phenols by reacting a phenolic compound with an unsaturated hydrocarbon selected from the group consisting of monoalkenes, cyclomonoalkenes and arylmonoalkenes of from 2 to about 20 carbon atoms in the presence of cupric halide in solid form at a temperature in the range of from about 100° to about 300°C. and a pressure in the range of from atmospheric to about 100 atmospheres, and recovering the resultant products.

3,853,957

OXY SUBSTITUTED PEROXYKETALS

Antonio Joseph D'Angelo, and Wilbur H. McKellin, both of Buffalo, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

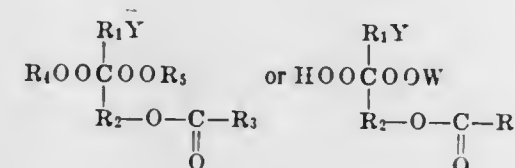
Filed May 7, 1968, Ser. No. 727,336

Int. Cl. C07c 69/76, 69/02

U.S. Cl. 260—476 R

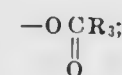
7 Claims

1. A peroxyketal having the formula

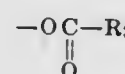


in which

R₁ and R₂ are C₁-C₁₀ alkylene, C₇-C₁₀-phenalkylene or C₃-C₁₂-cycloalkylene; or
—R₁—C—R₂— is a cyclohexylene ring;
Y is H or

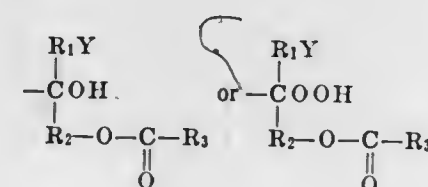


Y is attached to a carbon atom of R₁ which carbon atom also contains an attached hydrogen atom;



is attached to a carbon atom of R₂ which carbon atom also contains an attached hydrogen atom;

R₃ is C₁-C₁₂-alkyl, C₃-C₁₂-cycloalkyl; C₇-C₁₂-phenylalkyl; phenyl, naphthyl, chlorophenyl or nitrophenyl;
R₄ and R₅ are H, C₄-C₁₂-alkyl or C₄-C₁₂-cycloalkyl; and W is



3,853,958

4-THIA UNSATURATED ESTERS AND ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zeecon Corporation, Palo Alto, Calif.

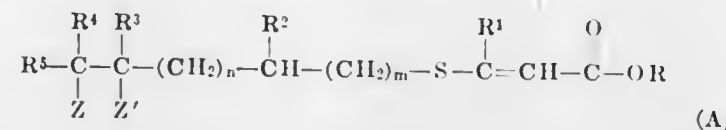
Filed Nov. 11, 1971, Ser. No. 197,953

Int. Cl. C07c 149/20

U.S. Cl. 260—481 R

13 Claims

1. A compound selected from those of the formula:



wherein,

R is hydrogen or lower alkyl;
each of R¹, R², R⁴ and R⁵ is lower alkyl;
R³ is hydrogen or methyl;
each of m and n is 1 or 2;
Z is hydrogen, lower alkyl, chloro or the group —OR⁶ in which R⁶ is lower alkyl; and
Z' is hydrogen or taken with Z, a carbon-carbon bond.

3,853,959

MERCAPTOALKANOIC ACID ESTERS OF POLYOXYPOLYOLS

Bryan Dobinson, Duxford; Bernard Peter Stark, Stapleford, and Eric Whichell Young, Saffron Walden, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 107,595, Jan. 18, 1971, Pat. No. 3,746,685. This application Feb. 4, 1972, Ser. No. 223,705

Claims priority, application Switzerland, Feb. 5, 1970, 5664/70

Int. Cl. C07c 149/20, 149/22

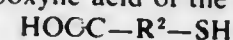
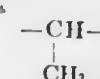
U.S. Cl. 260—481 R

2 Claims

1. A polymercaptan prepared by the esterification of a polyhydric alcohol of the formula



wherein G is a saturated aliphatic hydrocarbon residue having from two to six carbon atoms, n is a positive integer such that the alcohol has a molecular weight of at least 350 and at most 6,000, p is a positive integer of at least 2 and at most 6, with a mercaptocarboxylic acid of the formula

where R² is —CH₂—, —CH₂CH₂— or

wherein said reaction is conducted by heating said alcohol and said acid together in an inert solvent in the presence of a strong acid catalyst.

3,853,960

PROCESS FOR THE MANUFACTURE OF PENTAERYTHRITOL TETRACARBAMATE

Milton Crowther, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.

Continuation of Ser. No. 54,637, July 13, 1970, abandoned.

This application May 9, 1972, Ser. No. 251,676

Int. Cl. C07c 125/04

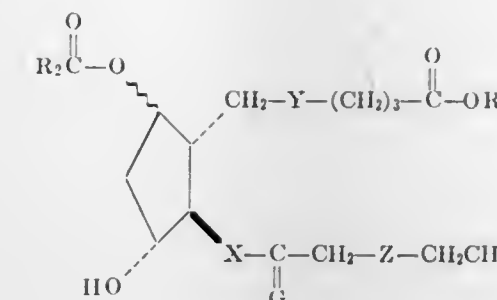
U.S. Cl. 260—482 B

7 Claims

1. A process for the manufacture of pentaerythritol tetracarbamate which comprises:

a. providing a reaction mixture consisting essentially of pentaerythritol, 6 to 10 mols of a carbamate ester of an alkanol having a boiling point below 150°C. for each mol of pentaerythritol and between about 0.1 to 10 percent of a transesterification catalyst based upon the combined weight of pentaerythritol and said ester,

- heating the reaction mixture to a temperature between 135° and 170°C. to produce transesterification between the pentaerythritol and said ester,
- removing alkanol produced by said transesterification from the reaction mixture by distillation,
- adjusting the temperature of the resulting reaction mass to between 90° and 150°C., and
- separating pentaerythritol tetracarbamate existing as insoluble product in the reaction mass from the remainder of the reaction mass existing as liquid portion at said temperature between 90° and 150°C.



3,853,961

PROCESS FOR THE PRODUCTION OF DICARBOXYLIC ACID ESTERS AND THE CORRESPONDING DICARBOXYLIC ACIDS

Udo Birkenstock, Homberg, Rathingen, and Karlfried Wedemeyer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 56,009, July 17, 1970, abandoned.

This application Dec. 26, 1972, Ser. No. 317,889

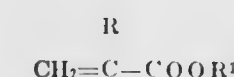
Claims priority, application Germany, Aug. 19, 1969, 1942016

Int. Cl. C07c 69/34, 55/02

U.S. Cl. 260—485 R

3 Claims

1. A process for the production of dicarboxylic acid esters and the corresponding dicarboxylic acids by reacting diolefins with α, β-unsaturated compounds in the presence of catalysts, wherein 1 mol of a compound corresponding to the general formula



in which R represents hydrogen or a methyl group and R¹ represents hydrogen or a linear or branched lower alkyl radical is reacted with at most 1.95 mols of butadiene in the presence of a nickel catalyst which contains nickel in an oxidation state of less than +2 and which can be modified by donors, or nickel tetracarbonyl at a temperature in the range from about 50° to about 160°C, the unsaturated compounds formed are hydrogenated optionally without being isolated

3,853,962

NOVEL METHACRYLATE MONOMER

Robert Johns Gander, Whitehouse, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 223,369, Feb. 3, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,731

Int. Cl. C07c 69/54

U.S. Cl. 260—486 R

1 Claim

1. As a new composition of matter, the methacrylate monomer, 1,3-bis[2,3-di(methacryloxy)-propoxy]-benzene.

3,853,963

PRASTAGLANDIN F TYPE 9-MONOACYLATES

Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 30, 1971, Ser. No. 214,477

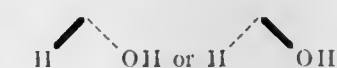
Int. Cl. C07c 69/10, 69/18, 69/30, 69/62, 69/78, 79/46

U.S. Cl. 260—488 R

6 Claims

1. An optically active compound of the formula

or a racemic compound of that formula and the mirror image thereof, wherein (a) X is trans—CH=CH— or —CH₂CH₂—, and Y and Z are both —CH₂CH₂—, or (b) X is trans—CH=CH—, Y is cis—CH=CH—, and Z is —CH₂CH₂— or cis—CH=CH—; wherein G is



wherein R₁ is hydrogen or alkyl of one to eight carbon atoms, inclusive; wherein R₂ is hydrogen; alkyl of one to 17 carbon atoms, inclusive, or alkyl of one to 12 carbon atoms, inclusive, substituted with one to three halo atoms, inclusive.

3,853,964

GUANIDINE SALTS OF CHLORINATED AND/OR BROMINATED AMINABENZENE SULFONIC ACIDS

John Clifford Summers, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 54,017, July 10, 1970, Pat. No. 3,718,658.

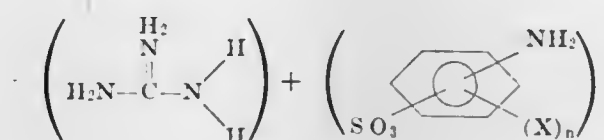
This application Nov. 9, 1972, Ser. No. 305,083

Int. Cl. C07c 143/63

U.S. Cl. 260—501.12

2 Claims

1. Compounds having the general formula:



wherein

n is a positive integer from 1 to 4, and
X independently represents Cl or Br.

3,853,965

ANILIC ACIDS OF 3-SUBSTITUTED 2,4,6-TRIODOANILINES

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 181,249, Sept. 16, 1971, Pat. No. 3,803,221, which is a division of Ser. No. 841,604, July 14, 1969, Pat. No. 3,660,408, which is a continuation-in-part of

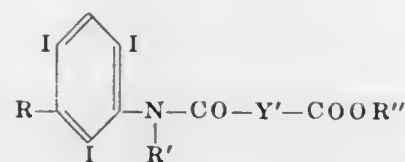
Ser. No. 715,583, March 25, 1968, abandoned. This application Aug. 13, 1973, Ser. No. 387,688

Int. Cl. C07c 149/40

U.S. Cl. 260—516

6 Claims

1. A compound of the formula



wherein Y' is an alkylene bridge having from one to eight carbon atoms interrupted by from one to three members selected from O, S, SO and SO₂, said members, when more than one, being separated by at least two carbon atoms; R is (lower-alkanoyl)NH, (lower-alkanoyl)NHCH₂, (lower-alkanoyl)N(lower-alkyl), (lower-alkoxy-lower-alkanoyl)NH, (lower-alkoxy-lower-alkanoyl)N(lower-alkyl), HOOC-Y'-CO-NH, or HOOC-Y'-CO-N(lower-alkyl); R' is hydrogen, lower-alkyl, or hydroxy-lower-alkyl; and R'' is hydrogen or lower-alkyl.

3,853,966

N-CHLOROTHIO UREAS

Melancthon S. Brown, deceased, late of 671 Spruce St., Berkeley, Calif. 94707 (by Gustave K. Kohn, administrator)
Continuation-in-part of Ser. Nos. 88,212, Nov. 9, 1970, Pat. No. 3,755,437, and Ser. No. 189,732, Oct. 15, 1971. This application May 8, 1972, Ser. No. 250,907

Int. Cl. C07c 155/02

U.S. Cl. 260—545 R

2 Claims

1. N-chlorothio-N-methyl-N'-2-fluorophenyl urea.

3,853,967

PROCESS FOR PREPARATION OF ALDEHYDE AND KETONE ORGANIC PEROXIDE COMPOSITIONS AND THE USE THEREOF AS POLYMERIZATION INITIATORS
Newton G. Leveskis, 49 Vallecito Ln., Walnut Creek, Calif. 94789

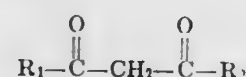
Division of Ser. No. 43,329, June 4, 1970, which is a continuation-in-part of Ser. No. 702,782, Feb. 5, 1968, which is a continuation-in-part of Ser. No. 473,855, July 21, 1965. This application Feb. 5, 1973, Ser. No. 329,918

Int. Cl. C08f 21/00

U.S. Cl. 260—861

26 Claims

1. In the method for cross linking an essentially linear unsaturated polyester of a polycarboxylic acid and a polyol with a vinyl monomer comprising subjecting said polyester and vinyl monomer to free radical polymerization conditions in the presence of a polymerization initiating amount of an organic peroxide composition, the improvement comprising using as said organic peroxide composition a composition prepared by concurrently reacting a beta dione of up to about 20 carbon atoms of the structure:



in which R₁ and R₂ are individually selected from the group consisting of alkyl, cycloalkyl, and aryl with a different carbonyl compound selected from the group consisting of ketones and aldehydes of up to about 20 carbon atoms free from aliphatic unsaturation and containing only carbon, hydrogen, and oxygen in a ratio of 1 mole of beta dione to about 3-20 equivalent weights of different carbonyl compound based upon the number of co-reactive carbonyl groups therein in an acidic hydrophilic fluid medium containing sufficient aqueous hydrogen peroxide to form appreciable amounts of organic peroxides therewith.

3,853,968

VINYL HALIDE POLYMER IMPACT MODIFIER

Newman M. Bortnick, Orelan; Warren D. Niederhauser, Meadowbrook, and Leonard H. Smiley, Jenkintown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 201,205, Nov. 21, 1971, Pat. No. 3,793,406, which is a continuation-in-part of Ser. No. 91,223, Nov. 19, 1970. This application Sept. 7, 1973, Ser. No. 396,269

Int. Cl. C08f 29/24

U.S. Cl. 260—876 R

5 Claims

1. A process for making impact modified polyvinyl halide polymers and copolymers comprising the steps:

- forming a rubbery, first stage polymer by emulsion polymerization of a monomer charge of 70 to 99.9 weight percent of an alkylacrylate compound, the ester moiety having two to eight carbons; 0 to 30 weight percent of a vinylaromatic monomer interpolymerizable therewith; and 0.1 to 10 weight percent of a polyfunctional crosslinking monomer, weights based on the total weight of the step (A) monomer charge;
- adding to the resulting rubber polymer stage produced in step (A) from 70 to 99.9 weight percent of a vinylaromatic monomer, and 0 to 30 weight percent of an alkyl acrylate, wherein the alkyl group of said acrylate has about 2 to 8 carbon atoms interpolymerizable therewith, and 0.1 to 10 weight percent of a second polyfunctional crosslinking monomer weight based on the total weight of the step (B) monomer charge; and emulsion polymerizing the second monomer charge to form a second stage polymer on/or within the rubbery polymer stage produced in Step (A);
- adding to the polymer resulting from steps (A) and (B) a third monomer charge of 80 to 100 weight percent of an alkyl methacrylate, wherein the alkyl groups have 1 to 4 carbon atoms, and emulsion polymerizing the third monomer charge to form a third stage polymer on the polymers in Steps (A) and (B), and
- adding to the resulting polymer resulting from Steps (A), (B) and (C), and based on the weight of said resulting polymer, a fourth monomer charge of 80 to 100 weight percent of a vinyl halide monomer, and emulsion polymerizing the fourth monomer charge to form a fourth stage polymer substantially entangled within the first and second stages resulting from Steps (A) and (B); wherein the first stage (A) monomers comprise about 20 to 45 parts, said second stage (B) monomers comprise about 20 to 35 parts, said third stage (C) monomers comprise about 20 to 35 parts, and said fourth stage (D) monomers comprise about 6 to 90 parts; and wherein the particle size of the resultant emulsion polymer is about 700-1,100 Å.
- adding the resulting heteropolymer to a polyvinyl halide polymer, whereby an impact resistant thermoplastic material is formed, said impact modified polyvinylhalide resin comprising 98 to 60 weight percent of said polyvinyl halide and about 2 to 40 weight percent of the heteropolymer.

3,853,969

CRYSTALLIZABLE STEREOBLOCK RUBBERY COPOLYMERS

Emmanuel G. Kontos, New Haven, Conn., assignor to United States Rubber Company, New York, N.Y.

Filed Oct. 17, 1960, Ser. No. 63,050

Int. Cl. C08f 15/04

U.S. Cl. 260—878 B

18 Claims

1. A crystallizable stereoblock rubbery copolymer, said stereoblock copolymer being amorphous in the undeformed state and capable of crystallization upon stretching and having at least three successive and alternating polymeric blocks, one of said polymeric blocks being an amorphous non-

crystallizable atactic copolymer of: (1) a monomer selected from the group consisting of ethylene and propylene and (2) a dissimilar 1-olefin having from 3 to 12 carbon atoms, the molar ratio of said monomer to said 1-olefin being from 20:80 to 80:20, another of said polymeric blocks being selected from the group consisting of a crystallizable homopolymer of a 1-olefin having from 2 to 12 carbon atoms and a crystallizable copolymer of (1) a monomer selected from the group consisting of ethylene and propylene and (2) a dissimilar 1-olefin having from 3 to 12 carbon atoms, the molar ratio of said monomer to said 1-olefin being in the ranges from 5:95 to 20:80 or 80:20 to 95:5.

3,853,970

VINYL CHLORIDE GRAFT POLYMERS AND PROCESS FOR PREPARATION THEREOF

Joseph J. Dietrich, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 180,546, Sept. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 761,840, Sept. 23, 1968, abandoned. This application Aug. 3, 1973, Ser. No. 385,392

Int. Cl. C08f 29/22

U.S. Cl. 260—878 R

7 Claims

1. A process for preparing an easily processed graft copolymer of vinyl chloride on a preformed ethylene/vinyl acetate copolymer which comprises reacting in an aqueous suspending medium for a time period of from 1 to 12 hours a mixture containing, by weight, from 60% to 95% of vinyl chloride monomer and from 5% to 40% of a preformed ethylene/vinyl acetate copolymer at a temperature of 90-165° C, while injecting a monomer-soluble free-radical type polymerization initiator at a prescribed rate into the reaction mixture during the reaction, said preformed ethylene/vinyl acetate copolymer containing, by weight, from 10% to 40% polymerized vinyl acetate and having an inherent viscosity of 0.50 to 1.50 as measured at 30° C, employing a solution containing 0.25 g of copolymer in toluene.

3,853,971

ORGANIC COATING COMPOSITION FOR AN ELECTRICAL STEEL SHEET

Hirotsada Kato; Kazuo Nakamura, and Toshiya Wada, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 5, 1974, Ser. No. 439,951

Claims priority, application Japan, Feb. 12, 1973, 48-17268. Int. Cl. C08f 24/50

U.S. Cl. 260—901

5 Claims

1. An organic coating composition adapted for use in the electrical steel sheet which comprises, as the main components, (A) 10 parts by weight of polyvinyl alcohol, (B) 0.5 to 5 parts by weight, as the solid value, of styrene resin selected from the group consisting of styrene homopolymer and copolymers of styrene with vinyl acetate or alkyl acrylate and (C) 2 to 10 parts by weight, as the solid value, of a water-soluble acrylic resin consisting essentially of at least one monomer selected from the group consisting of alkyl acrylate and alkyl methacrylate, said styrene resin containing at least 50% by weight of styrene.

3,853,972

PROCESS FOR RAPIDLY MOLDING ARTICLES FROM FOAMABLE THERMOPLASTIC PARTICLES INVOLVING MULTIPLE FOAMING OPERATIONS

Erling Berner, 2890 Cavey Crest Circle, Allison Park, Pa. 15101

Filed July 11, 1972, Ser. No. 270,669

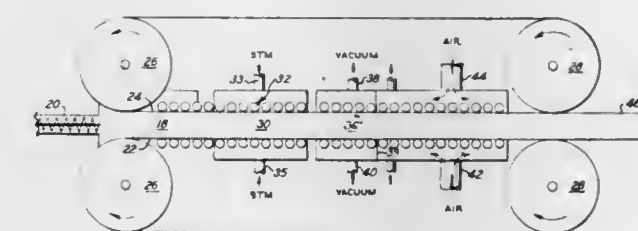
Int. Cl. B29d 27/00

U.S. Cl. 264—53

16 Claims

1. The process of rapidly molding articles from foamable beads comprising pre-expanding foamable beads containing

an excess of a volatilizable liquid foaming agent with heat under conditions to form pre-expanded beads containing at least sufficient, residual quantity of foaming agent about 0.05 to 2% in the expanded peripheral portions of said beads to allow rapid heat transfer and effect further expansion of said pre-expanded beads with heat, contacting said pre-expanded beads with a hot gaseous heating medium for a short period sufficient to contact the outer peripheral expanded portions of



said pre-expanded beads and to continue expansion thereof by activating the residual forming agent in the expanded portion of said bead, said heat supplied by said medium being sufficient to soften the surface portions of said beads enough to cause the expanded bead surfaces to cohere, and molding said beads continuously in a molding channel in which the moldable mass of heated beads is moved at a rate exceeding about 50 feet per minute

3,853,973

ISOSTATIC HOT-PRESSING PROCESS FOR MANUFACTURING DENSE SINTERED ARTICLES

Karl Heinz Hardtl; Heinrich Knufer, both of Aachen, Germany, and Andreas Leopoldus Stuijts, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

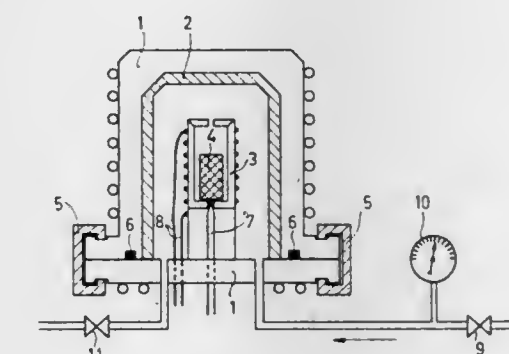
Filed Dec. 21, 1972, Ser. No. 317,427

Claims priority, application Germany, Dec. 22, 1971, 2163889

Int. Cl. F27b 9/04

U.S. Cl. 264—65

5 Claims



1. In the method of forming a polycrystalline body having a density greater than 98 percent of the theoretical density thereof in which particulate polycrystalline material is compacted and sintered to form a coherent dense body, the improvement comprising:

- introducing lattice defects into said particulate polycrystalline material,
- compacting said particulate polycrystalline material into a body, and
- exposing said compacted body directly and on all sides to an inert gas at a pressure of from 25 to 300 kg/cm² while heating said body to a temperature of about 300°C for a time sufficient to sinter and increase the density of said body to between 98 and 100 percent of the theoretical density.

3,853,974

METHOD OF PRODUCING A HOLLOW BODY OF SEMICONDUCTOR MATERIAL

Konrad Reuschel, Vaterstetten, and Wolfgang Dietze, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 87,202, Nov. 5, 1970, abandoned.

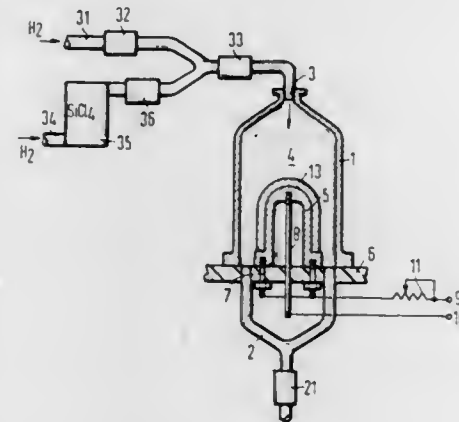
This application Feb. 21, 1973, Ser. No. 334,294

Claims priority, application Germany, Apr. 6, 1970, 2016339

Int. Cl. B01j 17/28; B29c 13/04

U.S. Cl. 264—81

13 Claims



1. The method of producing an at least unilaterally open, hollow body of silicon by thermally reducing a gaseous carrier halide or hydride of silicon and precipitating the segregating silicon upon a graphite carrier heated to the segregating temperature of the gaseous carrier and thereafter removing the graphite carrier from the resulting hollow silicon body, said method comprising the steps of supplying to the heated graphite carrier a mixture of hydrogen and said gaseous carrier halide or hydride of silicon in a molar ratio of said hydrogen to said gaseous carrier within the range from 1:0.005 and 1:0.5 corresponding substantially to the reaction equilibrium at the segregation temperature to thereby avoid the formation of crystallites or dendrites; applying a flow rate to precipitate $0.002 - 0.1 \text{ g Si/h cm}^2$, wherein Si denotes silicon, h denotes a time unit of one hour and cm^2 denotes a surface unit of one square centimeter and relates to the surface area upon which the semiconductor material is to be precipitated, until the precipitated silicon body has reached a layer thickness of at least 1 micron; and thereafter increasing the flow rate of the mixture to increase the rate of precipitation above the rate of precipitation in forming said layer thickness of at least 1 micron to an amount within the range of $0.05 - 0.2 \text{ g Si/h cm}^2$.

3,853,975

CERAMIC PRODUCTION

Eugene E. Olson, Oakland, and Ronald L. Clendenen, Orinda, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 13, 1972, Ser. No. 234,399

Int. Cl. C04b 15/14

U.S. Cl. 264—82

14 Claims

1. The process for preparing a metal ferrite of the formula $\text{MO} \cdot n\text{Fe}_2\text{O}_3$, wherein M is at least one divalent metal selected from the group consisting of barium, strontium and lead and n has a value of from 3 to 6.5, said ferrite having improved physical and magnetic properties, which consists essentially of the steps:

- preparing an admixture of solid particles comprising intimate agglomerates of (1) one mole of less than 0.1 micron grains of at least one oxide selected from the group consisting of barium oxide, strontium oxide and lead oxide and (2) from 3 to 6.5 moles of less than 0.1 micron grains of ferric oxide, with from about 0.1 to about 6 percent by weight of at least one metal fluoride of the Group IA and Group IIA metals of atomic number 3 through 56 of the Periodic Table;

- heating said mixture at about 500°C to 900°C for not more than 24 hours, thereby forming crystallites of divalent metal ferrite; and

- hot-pressing the metal ferrite composition of (b) at from 600°C to $1,100^\circ\text{C}$ and at from 1,000 to 30,000 psi directly into a solid metal ferrite body having a density of at least 95 percent of theoretical and crystallites having a uniform average size of less than 3 microns and an orientation of at least 90 percent.

3,853,976

METHOD FOR CASTING SLAB-FACED PANELS

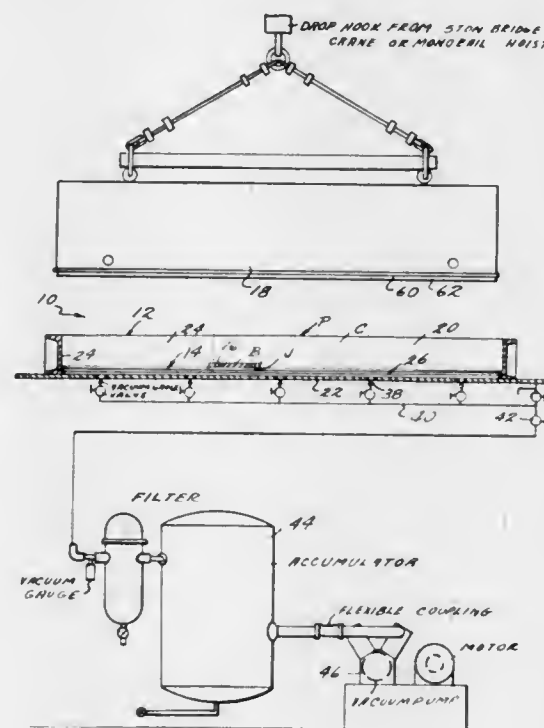
Paul S. Kelsey, Delray Beach, Fla., assignor to K. F. Brick Company, Inc., East Windsor Hill, Conn.

Filed June 23, 1970, Ser. No. 49,152

Int. Cl. B32b 31/06

U.S. Cl. 264—90

3 Claims



1. A process for manufacturing slab-faced panels in a horizontal casting box having a floor provided with a covering of resilient gasketing material, and peripheral sidewalls, comprising:

inserting a placement grid having a plurality of slab-receiving cells in the casting box;

inserting a brick slab in each placement grid cell;

mechanically seating all of said slabs against the resilient gasketing material by concurrently exerting a greater than atmospheric pressure downward mechanical force on the uppermost, backside of all of said slabs;

drawing a vacuum through said gasketing material to maintain the slabs in sealed contact with the resilient gasketing material and to so resiliently compress the gasketing material that it bulges up between adjacent ones of said slabs;

terminating exertion of said downward mechanical force; removing said placement grid from the casting box;

introducing a hardenable fluid backing composition into the casting box upon the slabs and spreading the composition therein to integrate the slabs into a panel having the lowermost sides of the slabs as a facing and to produce semi-flush concave joint simulations between adjacent ones of said slabs;

allowing the backing composition to harden;

terminating said drawing of vacuum; and

removing the slab faced panel from the casting box.

3,853,977

METHOD FOR PRODUCING MIXED FILAMENTS

Masao Matsui, Susumu Tokura, and Masahiro, Yamabe, all of Osaka, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

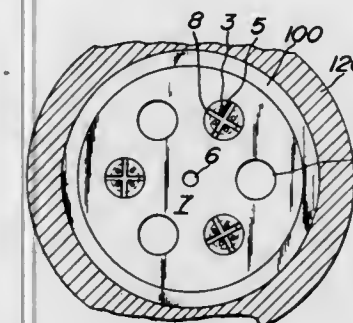
Filed Feb. 13, 1973, Ser. No. 332,068

Claims priority, application Japan, Feb. 24, 1972, 47-19451

Int. Cl. D02g 1/20

U.S. Cl. 264—103

10 Claims



1. A method for producing a yarn consisting of a mixture of (A) fibrillated multisegment composite filaments consisting of polyester and polyamide and (B) polyester monofilaments, said polyamide being selected from the group consisting of polyhexamethylene adipamide, polycapraamide and copolyamides thereof, said polyester being selected from the group consisting of polyethylene terephthalate and copolyesters thereof which comprises simultaneously and separately spinning through a common spinneret (1) monofilaments of polyester having a denier of more than 2 to form component (B) and (2) composite filaments of polyester and polyamide in which the polyester of each composite filament is divided into at least three separate segments by thin intersecting polyamide layers having a substantially uniform thickness throughout their length and which extend radially and diverge in a direction away from their intersection toward the periphery of said composite filament, said polyester segments having a denier of less than 1, said composite filaments being from 40 to 70 percent by weight based on the sum of the weights of said monofilaments and composite filaments, said polyamide being less than 40 percent by weight based on the weight of said composite filaments and said polyamide being less than 30 percent by weight based on the sum of the weights of said monofilaments and composite filaments,

combining the monofilaments and composite filaments, drawing the combined filaments and then false twisting the combined filaments to fibrillate said composite filaments whereby to form a yarn in which the fibrillated segments of said composite filaments and said polyester monofilaments are entangled and are homogeneously dispersed.

3,853,978

PROCESS FOR PREPARING A FILM OF A TAPERED COPOLYMER OF STYRENE-BUTADIENE OR MIXTURES THEREOF

Shigeki Horiie, Yokohama; Susumu Kurematsu, Zama-Machi; Shinichiro Asai, and Chiaki Saito, both of Tokyo, all of Japan, assignors to Denki Kagaku Kogyo K. K., Tokyo, Japan

Filed , Ser. No. 294,832

Claims priority, application Japan, Oct. 4, 1971, 46-77154; Oct. 25, 1971, 46-83960

Int. Cl. B29d 7/24; C08f 19/08; C08d 3/06

U.S. Cl. 264—210 R

4 Claims

1. A process for producing a film or sheet from a tapered styrene-butadiene copolymer or mixture thereof which comprises melt-extruding through a T die extruder wherein the temperature of the cylinder of the extruder is 140 to 200° and the temperature of the die is from 170° to 220° and stretching at a stretch roller pressure of 0.25 to 25 Kg/cm^2 a tapered styrene-butadiene copolymer with a molecular weight of $40,000 - 250,000$, a total styrene content of $60 - 90$ weight

percent, and a total butadiene content of $40 - 10$ weight percent, wherein said tapered styrene-butadiene copolymer contains: (a) more than 5% of the chain portion having a tapering rate of $0.3 - 4$ and a styrene content of $30 - 70$ weight percent, (b) more than 35% of the chain portion with a styrene content of more than 80% by weight, and (c) more than 10% of the chain portion with a styrene content from at least 5 weight percent to less than 50 weight percent between high styrene content chain portions which have a styrene content of greater than 80 weight percent.

3,853,979

METHOD FOR REMOVING RARE EARTHS FROM SPENT MOLTEN METALLIC FLUORIDE SALT MIXTURES

Leonard E. McNeese, Oak Ridge; Leslie M. Ferris, Knoxville, and Fred J. Smith, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

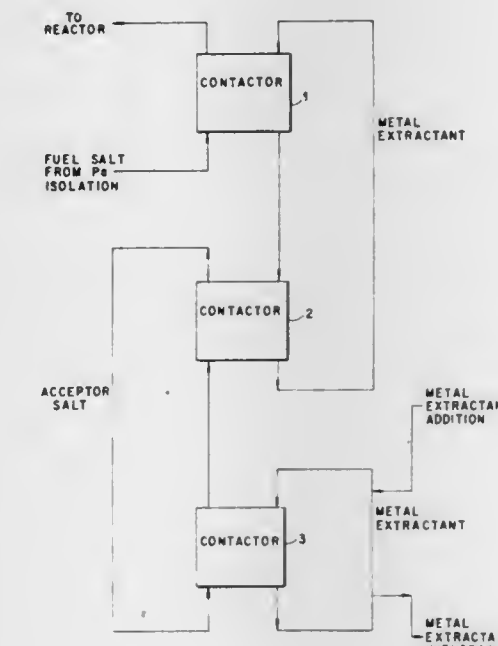
Continuation of Ser. No. 30,422, April 21, 1970, abandoned.

This application Aug. 14, 1972, Ser. No. 280,315

Int. Cl. C01g 56/00

U.S. Cl. 423—5

3 Claims



1. In a method for treating a liquid metal fluoride phase containing rare earths and thorium, in which said fluoride phase is contacted with a first liquid bismuth phase circulating in an enclosed cyclic path between a first contactor and a second contactor, said liquid bismuth phase containing a sufficient amount of a reductant selected from the group consisting of lithium and thorium to effect transfer of the rare earths and thorium into the liquid bismuth phase, the improvement which comprises:

- flowing said rare earth and thorium laden liquid bismuth phase to said second contactor in contact therein with a liquefied acceptor salt phase selected from the group consisting essentially of LiCl , LiBr , and mixtures thereof at a temperature of at least 30°C above the liquidus of said acceptor salt phase to effect selective transfer of the rare earths into the acceptor salt phase, said acceptor salt traversing an enclosed cyclic path between said second contactor and a third contactor; and the

- flowing said rare earth laden acceptor salt phase to said third contactor in contact therein with a second liquid bismuth phase containing from 0.05 to 0.5 mole fraction lithium to effect transfer of the rare earths from the acceptor salt phase to the second liquid bismuth phase.

3,853,980

RUTHENIUM DECONTAMINATION OF SOLUTIONS DERIVED FROM THE PROCESSING OF IRRADIATED FUELS

Yves Berton, Puy Ste-Reparate; Pierre Chauvet, Bagnols-sur-Ceze; Stephane Clapit, Bagnols-sur-Ceze, and Nicolas Fernandez, Bagnols-sur-Ceze, all of France, assignors to Commissariat A L'Energie Atomique

Filed Feb. 7, 1972, Ser. No. 224,241

Claims priority, application France, Feb. 8, 1971, 71.04147
Int. Cl. C01g 56/00; C22b 61/04

U.S. Cl. 423—12

16 Claims

1. A process for decontaminating ruthenium from a radioactive solution originating from the treatment of irradiated fuels and containing ruthenium comprising adding to said radioactive solution a solution of an oxidizing agent, thereafter simultaneously adding ferrous ions and cupric ions to said radioactive solution, mixing with said radioactive solution sufficient alkaline hydroxide to adjust the pH of the radioactive solution to between 7 and 8.5 so that hydroxides of copper and iron are precipitated with ruthenium adsorbed thereon, and coagulating and filtering the slurry so obtained to remove the ruthenium-containing copper and iron hydroxides therefrom, said process characterized in that the amount of oxidizing agent added to said radioactive solution is just sufficient to destroy any oxidizers of iron therein so that the ferrous ions added to said radioactive solution are not oxidized by said oxidizers.

3,853,981

LIQUID ION EXCHANGE PROCESS FOR THE RECOVERY OF METALS

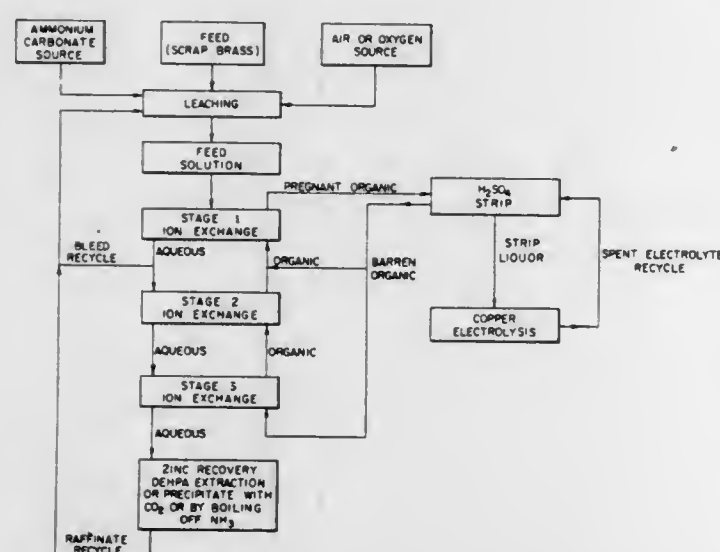
Pablo Hadzeriga, Arvada, Colo., assignor to Cyprus Mines Corporation, Los Angeles, Calif.

Filed June 26, 1972, Ser. No. 266,456

Int. Cl. C01g 3/00, 3/10, 3/14, 9/00; C22b 15/10, 19/24, 19/26

U.S. Cl. 423—24

10 Claims



1. A continuous ion exchange process for the selective recovery of copper and zinc from an ammoniacal ammonium carbonate leach solution in which zinc and copper are continuously added to the leach solution and recovered without build-up of zinc in the leach solution, the process comprising:

- contacting the leach solution in an ion exchange circuit for copper with a water immiscible organic phase comprising a copper selective ion exchange agent in an organic diluent,
- recycling a bleed portion of the aqueous phase containing copper and zinc from the ion exchange circuit to the leach solution to maintain the cupric-cuprous ratio therein at an active leaching level,
- recovering zinc from the remainder of the aqueous phase at a rate substantially equal to the rate of addition of zinc to the leach solution to prevent build-up of zinc in the leach solution,

- recycling the raffinate from step (c) to the leach solution, and
- recovering copper from said organic phase.

3,853,982

METHOD FOR RECOVERING VANADIUM-VALUES FROM VANADIUM-BEARING IRON ORES AND IRON ORE CONCENTRATES

Conrad B. Bare, Coopersburg, and Joseph W. Pasquali, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 7, 1973, Ser. No. 413,723

Int. Cl. C01g 31/00

U.S. Cl. 423—68

32 Claims

1. An improved method for extracting vanadium-values from vanadium-bearing iron ores wherein said ores are comminuted to a relatively fine particle size and are roasted and leached to produce a vanadate-rich aqueous solution and an undissolved residue containing iron-values, without contaminating said undissolved residues with alkali, said method comprising:

- mixing said comminuted vanadium-bearing iron ores and at least one calcium containing material taken from the group consisting of limestone, lime, hydrated lime and dolomite,
- charging the mix into a furnace,
- roasting the mix at a temperature for a time in an atmosphere containing oxygen to oxidize the vanadium-values therein and to form calcium vanadates,
- discharging the roasted mix from the furnace,
- cooling the roasted mix,
- comminuting the roasted mix,
- leaching the comminuted roasted mix in an aqueous solution of at least one material taken from the group consisting of sodium carbonate, sodium bicarbonate, potassium carbonate, potassium bicarbonate, ammonium carbonate, ammonium bicarbonate and water sparged with CO₂ gas for a time to react a substantial portion of the calcium vanadates with the leaching agent to form vanadates which are readily soluble in the aqueous solution to form a vanadate-rich aqueous solution and at least one calcium compound taken from the group consisting of calcium carbonate and calcium bicarbonate which is substantially insoluble in the aqueous solution and which remains in the undissolved residue containing iron-values, and
- separating the vanadate-rich aqueous solution from the undissolved residue containing iron-values.

3,853,983

METHOD FOR IMPROVING BRIGHTNESS OF KAOLINITE CLAYS INCLUDING IRON PYRITES

William F. Abercrombie, Jr.; Frank R. Trowbridge, and Norman Lary McCook, all of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed May 21, 1973, Ser. No. 362,155

Int. Cl. C01b 33/20

U.S. Cl. 423—113

1 Claim

1. A method for preparing a bright coating kaolin from a crude kaolinitic clay, including discoloring iron-based contaminants in the form of iron pyrites and sulfurous contaminants, comprising:

- subjecting said crude clay to comminution;
- roasting said comminuted crude clay in an oxidizing atmosphere at a temperature sufficient to oxidize the pyrites but insufficient to drive off the chemically bound water from the kaolinite crystals, said temperature being from 400°C to 600°C, until a substantial cessation of sulfurous fumes is noted, to convert at least a portion of the sulfurous contaminants to a form exhibiting increased magnetic susceptibility and increased solubility in chemical leachants selected from the group consisting of zinc dithi-

onite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof; thereafter forming an aqueous slurry of said roasted clay; subjecting at least a portion of said slurry to a magnetic field having an intensity of at least 2.4 kilogauss and high field gradients to separate at least part of said converted components; and thereafter subjecting said slurry to a leaching step employing about 1.2 weight percent leach selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof and to a filtration step.

3,853,984

CONTROLLING THE LEACHING OF KAOLIN CLAY

Charles R. Price, and William F. Abercrombie, Jr., both of Macon, Ga., assignors to J. M. Huber Corporation, Huber, Ga.

Filed Oct. 17, 1973, Ser. No. 407,065

Int. Cl. C01b 33/00, 33/26

U.S. Cl. 423—131

13 Claims

1. An improved method for continuously leaching a dispersed kaolin clay aqueous slurry for removing color impurities therein to provide kaolin clay products having improved optical and rheological properties with an optimum amount of leach compound, said method comprising:

- forming an aqueous slurry of a finely divided kaolin clay;
- adding to said aqueous clay slurry a leaching compound capable of reducing insoluble salts present in said clay slurry to a soluble form, said leaching compound comprising a compound containing an active (S₂O₄)²⁻ group or a compound capable of liberating such groups in said slurry;
- adjusting the pH of the slurry to between about 3.0 to 4.5 by the addition of a sufficient amount of a flocculating agent;
- measuring the oxidation-reduction potential in the leach compound-clay slurry mixture at a specified time period selected at least 20 minutes after said leach compound addition, said oxidation-reduction potential being measured by inserting the electrode assembly of an oxidation-reduction potentiometric cell into said leach-clay slurry mixture and reading the electric potential between said electrodes in said mixture; and
- adjusting the amount of the leach compound added to said aqueous clay slurry to provide an oxidation-reduction potential reading value of about -450 to about -300 millivolts, as read with a saturated calomel cell electrode and a dithionite-conditioned platinum electrode assembly.

3,853,985

METHOD OF PURIFYING GASES CONTAINING COMBUSTIBLE GASEOUS OR VAPOROUS IMPURITIES

Karl Winter, Dortmund, Germany, assignor to CEAG Concordia Elektrizitäts Aktiengesellschaft, Dortmund, Germany

Filed June 15, 1971, Ser. No. 153,345

Claims priority, application Germany, June 19, 1970, 2030153

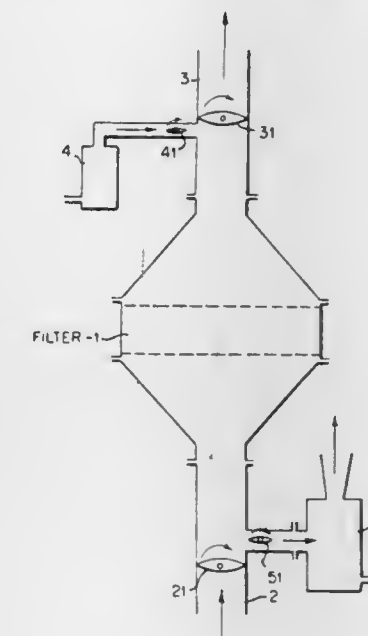
Int. Cl. B01d 53/34

U.S. Cl. 423—210

3 Claims

1. A method of purifying an air or gas flow of combustible vaporous or gaseous impurities comprising the steps of passing the air or gas through an adsorption zone in one direction thereof to purify said air or gas, charging said zone to a predetermined level, generating a hot inert gas by stoichiometrically burning a hydrocarbon, passing said hot inert gas through said zone in a direction opposite to that of said air or gas flow to desorb the adsorbed combustible gaseous or vaporous impuri-

ties from said zone, thereby producing a mixture of a desorbate and said inert gas, and adding to said mixture sufficient



3,853,986

BUBBLE COLUMN-CASCADE REACTOR AND METHOD

Eckhart Blass; Kurt-Henning Koch, both of Claust Hal-Zellerfeld; Wolf Cornelius, Werne, and Bodo Gross, Unna, all of Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

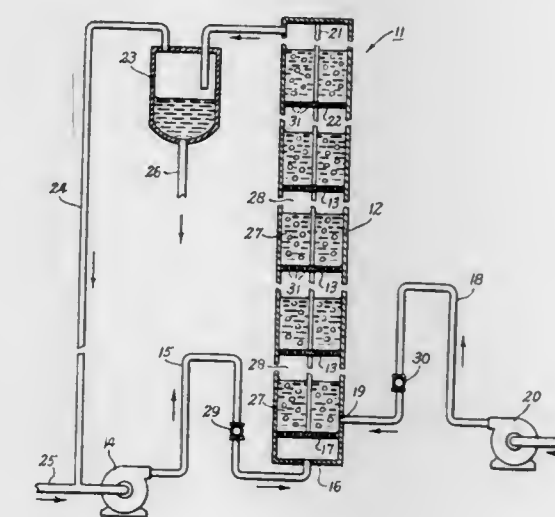
Filed Nov. 14, 1972, Ser. No. 306,199

Claims priority, application Germany, Nov. 22, 1971, 2157736

Int. Cl. B01j 1/00; C07f 5/06

U.S. Cl. 423—659

8 Claims



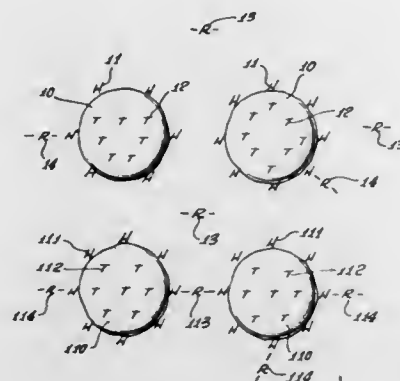
1. A bubble column-cascade reactor for continuously reacting a liquid with a gas or with a non-gaseous reagent in the presence of an inert or reactive gas, said reactor comprising a vertical column having a plurality of perforated plates equidistantly stacked exactly horizontally within said column, adjacent plates being separated vertically by a distance at least 3 times the diameter of the reactor, said plates being tightly joined to the interior wall of said reactor, each plate having a plurality of apertures therein of the same size distributed uniformly over the area of the plate, the total free aperture area of the plates being from 0.5 percent to 15 percent of the cross-sectional area of the empty reactor.

3,853,987

IMMUNOLOGICAL REAGENT AND RADIOIMMUNO ASSAY

William J. Dreyer, 2369 Highland, Altadena, Calif. 91001
 Filed Sept. 1, 1971, Ser. No. 177,017
 Int. Cl. A61k 27/04; G01n 31/22
 U.S. Cl. 424-1

8 Claims



1. The process of forming a reagent, that includes:
 - a. providing multiple water suspendible polymeric particles, and labelling each particle generally throughout the volume with a multiplicity of tracer molecules, and
 - b. covalently bonding to each particle a multiplicity of molecules of a substance selected from the group consisting of antibodies, antigens and portions and equivalents thereof, by contacting the particles with said molecules in aqueous solution in which the particles are dispersed.

3,853,988

SUSTAINED RELEASED PHARMACEUTICAL COMPOSITIONS

Silvano Casadio; Elvio Sclavi, and Roberto Perego, all of Milan, Italy, assignors to Establisments Arpic S.A., Geneva, Switzerland

Filed Sept. 28, 1971, Ser. No. 184,634
 Int. Cl. A61k 27/12

- U.S. Cl. 424-22 6 Claims
1. A matrix suitable for formulating a sustained release pharmaceutical composition, said matrix consisting essentially of from about 80% - 98% by weight of acetylsalicylic acid or a pharmaceutically acceptable salt or complex thereof, dimethyl polysiloxane having a viscosity of 20,000 to 150,000cps and a cellulose derivative selected from the group consisting of a water-insoluble low viscosity cellulose ether or ester, the weight ratio of said cellulose derivative to said polysiloxane being within the range of from 10:1 to 1:1.

3,853,989

DEFOAMER FOR AEROSOL CONCENTRATES

William K. Conn, Springfield, and Chester T. Blake, Jr., Up-land, both of Pa., assignors to Philadelphia Quartz Company, Valley Forge, Pa.

Filed Feb. 14, 1968, Ser. No. 705,390
 Int. Cl. A61k 7/00

- U.S. Cl. 424-47 10 Claims
1. In the known type of aerosol unit containing a foamable aqueous liquid concentrate and a propellant, the improvement which comprises including in the aerosol unit a finely divided hydrophobic solid siliceous material in the amount of about 0.001-3% based on the weight of said concentrate, said hydrophobic solid siliceous material is a finely divided silica having a particle size between about 7 and 100 μ and a pH above about 2 coated with a hydrophobic organic film.

3,853,990

INFECTIOUS KERATING BACTERIN AND ANTISERUM AND METHOD OF PREPARING SAME

Edward J. Madigan, 4800 W. 31st Ave., and Mark M. Ruszczycky, 4810 W. 31st Ave., both of Denver, Colo. 80212
 Continuation of Ser. No. 325,445, Jan. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 232,282, March 6, 1972, abandoned. This application July 13, 1973, Ser. No. 378,831

Int. Cl. A61k 23/00

U.S. Cl. 424-87

13 Claims

1. An antiserum for the treatment of infectious keratitis in animals which comprises the serum from the defibrinated blood of cattle which have been successively immunized and hyperimmunized against strains of *Moraxella bovis*, *Corynebacterium* and *Pasteurella multocida*.

3,853,991

ANTIBIOTIC AXENOMYCINE AND METHOD FOR THE PREPARATION THEREOF

Ernesto Cotta; Piera Julita, and Aurora Sanfilippo, all of Midland, Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Continuation-in-part of Ser. Nos. 832,448, June 11, 1969, abandoned, and Ser. No. 134,477, April 15, 1971, abandoned.
 This application Sept. 24, 1971, Ser. No. 183,671

Claims priority, application Italy, June 11, 1968, 17570/68; May 4, 1970, 24144/70

Int. Cl. A61k 21/00

U.S. Cl. 424-121

5 Claims

1. Antibiotic substance axenomycine A which has the elemental analysis 61.74% C, 8.52% H, 28.87% O, a molecular weight of 1451.3, melts from 127° to 142°C forming a transparent brick-red gel, $[\alpha]_D^{25} = +10.50^\circ$ (c = 0.9 in methanol), $R_f = 0.49$ over silica gel buffered at pH 7 (n.butanol:acetic acid:water:4:0.5:1), a U.V. spectra in methanol giving an absorption maxima at the following wave lengths 249, 254 and 330 m μ and a shoulder at 265 - 268 m μ and an I.R. spectrum in KBr showing bands at the following wave lengths (in μ) 2.94 - 3.44 - 5.78 - 6.00 - 6.16 - 6.24 - 6.88 - 7.25 - 7.41 - 8.61 - 8.85 - 9.35 - 10.00 - 10.40 - 10.95 - 11.8 - 12.5 or its salts with non-toxic acids.

3,853,992

ANTIBIOTIC EM-98

Edward Meyers, East Brunswick; Dorothy Smith Slusarchyk, Belle Mead, and Wen-chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
 Continuation-in-part of Ser. No. 242,304, April 10, 1972, abandoned. This application July 5, 1972, Ser. No. 268,994

Int. Cl. A61k 21/00

U.S. Cl. 424-116

5 Claims

1. A process for producing Antibiotic EM-98 which comprises cultivating *Streptomyces venezuelae* ATCC 21782 in an aqueous nutrient medium comprising an assimilable carbohydrate and an assimilable nitrogen source under submerged aerobic conditions until substantial antibiotic activity is imparted to the medium.

3,853,993

PROCESS FOR INCREASING OXYGEN DIFFUSIVITY AND METHOD FOR TREATING ATHEROSCLEROSIS

John L. Garner, Charlottesville, Va., assignor to The University of Virginia, Charlottesville, Va.

Division of Ser. No. 356,110, May 1, 1973. This application June 28, 1973, Ser. No. 374,801

Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424-180

15 Claims

1. A method for the treatment of atherosclerosis in a mammal which comprises administering to said mammal an effective dose of a water soluble carotenoid.

3,853,994

DIPHENYL(3-DI ALKYLAMINOPROPYL)SILANES AS THERAPEUTICS

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

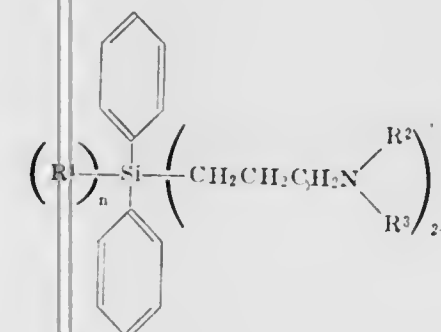
Division of Ser. No. 206,509, Dec. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 881,324, Dec. 1, 1969, abandoned. This application June 18, 1973, Ser. No. 370,690

Int. Cl. A61u 27/00

U.S. Cl. 424-184

17 Claims

1. A pharmaceutical composition in the form of a tablet or capsule comprising a pharmaceutically acceptable inert solid carrier and a hypertension or anxiety-relieving amount of a compound of the formula



where

- n is 0 or 1,
 each R^1 represents, independently, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyl of 1 to 4 carbon atoms or phenyl; and
 each R^2 and R^3 represent, independently, alkyl of 1 to 4 carbon atoms, or a pharmaceutically acceptable lower alkyl quaternary ammonium or acid addition salt of said compound.

3,853,995

IMIDAZOLINE TRANQUILIZING AGENTS

Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

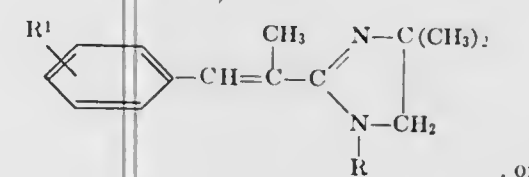
Division of Ser. No. 312,077, Dec. 4, 1972, Pat. No. 3,812,111.
 This application Dec. 13, 1973, Ser. No. 424,591

Int. Cl. A61k 27/00

U.S. Cl. 424-273

3 Claims

1. A method of tranquilizing an animal comprising administering thereto a tranquilizing amount of a compound corresponding to the formula



3,853,996

PROCESS FOR ENHANCING A FRESH CHEESE FLAVOR IN FOODS

Willem Johan Begemann, Den Haag, and Pieter Daniel Harkes, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,044

Claims priority, application Netherlands, Apr. 14, 1972, 7217430

Int. Cl. A231 1/26

U.S. Cl. 426-65

7 Claims

1. A process for enhancing or imparting a fresh cheese flavour to a food-product in which an alpha-hydroxy monocarboxylic acid of the general formula $R.CHOH.COOH$, where R is a branched-chain C_2 to C_8 alkyl or a C_7 or C_8 phenylalkyl group, is added to the food-product to give between 50 and 2,000 mg/kg of the acid in the food-product.

3,853,997

TORTILLA AND PROCESS USING SORBIC ACID AND ITS SALTS

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, N.L., Mexico

Filed July 24, 1970, Ser. No. 58,143

Int. Cl. A21d 13/00

U.S. Cl. 426-151

3 Claims

1. A tortilla consisting of nixtamalized corn or nixtamalized corn flour, an additive consisting of 0.05 to 0.5% of a compound of the class consisting of sorbic acid and its edible water soluble salts, and an additive of the class consisting of 0.1 to 0.8% of low molecular weight fatty acids having from 1 to 4 carbon atoms in the carbon chain, their anhydrides, their edible water soluble salts, and the edible water soluble diacetates.

3,853,998

TORTILLA AND PROCESS USING METHYL, ETHYL, BUTYL, AND PROPYL ESTERS OF PARA-HYDROXYBENZOIC ACID

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, N.L., Mexico

Filed July 24, 1970, Ser. No. 58,144

Int. Cl. A21d 13/00

U.S. Cl. 426-151

3 Claims

1. A tortilla consisting of nixtamalized corn or nixtamalized corn flour and a plurality of the methyl, ethyl, butyl and propyl esters of para-hydroxybenzoic acid each in the concentration of 0.03 to 0.4%.

3,853,999 PROCESS FOR SHAPING COMMINUTED MEAT PRODUCTS

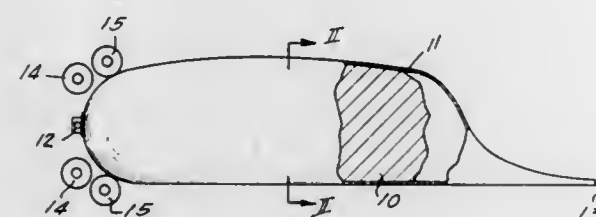
William E. Kentor, Highland Park, Ill., assignor to Servbest Foods, Inc., Highland Park, Ill.

Filed Dec. 6, 1972, Ser. No. 312,659

Int. Cl. A22c 18/00

U.S. Cl. 426-105

3 Claims



initially cylindrical casing having one closed end and an open end, said casing being composed of relatively flexible non-stretchable material, said casing being less than completely filled by the stuffed material, applying a rolling pressure about the stuffed meat on opposite sides of said casing to shape the periphery of the stuffed meat into a shape including at least two parallel flat sides and force excess meat toward said open end, closing the open end of the casing after such shaping and thereafter heating the meat within the casing until a meat temperature of at least 120°F. is reached.

3,854,000 BACTERICIDAL 3-HALO-5-ALKYL-Δ-THIADIAZOLIN- -ONE

Gustave K. Kohn, Berkeley, and Malcolm S. Singer, Richmond, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 232,961, March 8, 1972, Pat. No. 3,763,176. This application July 16, 1973, Ser. No. 379,540

Int. Cl. A01n 9/12

U.S. Cl. 424-270

6 Claims

1. A composition for controlling bacteria which comprises a bactericidally effective amount of a 3-halo-5-alkyl-Δ²-thiadiazolin-4-one, wherein the halogen is chlorine or bromine and the alkyl is from 1 to 4 carbon atoms, and a biologically inert carrier.

1. A method for shaping a comminuted meat product which comprises stuffing comminuted meat into the closed end of an

ELECTRICAL

3,854,001 CABLE GUIDE AND RETAINER

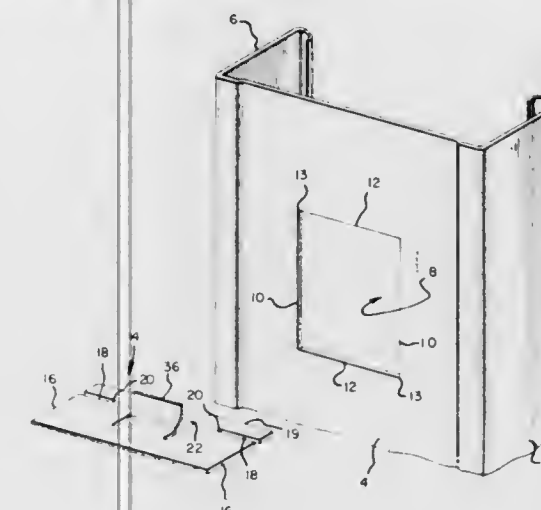
Frank Peter Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 9, 1973, Ser. No. 358,573

Int. Cl. H02g 3/26

U.S. Cl. 174-48

3 Claims



1. A cable guide and retainer member which is adapted to be mounted in a rectangular opening in a sheet metal member such as a sheet metal stud, said guide and retainer member comprising:

- a rectangular plate-like member of insulating material having a width between two opposite first sides which is substantially greater than the width of said rectangular opening and less than the diagonal dimension of said rectangular opening,
- a slot extending into each of said two opposite first sides of said guide and retainer member, said slots being in alignment with each other, the distance between the inner ends of said slots being substantially equal to, and slightly less than, said width of said rectangular opening, and
- a notch in one side of said member, said one side being between said two first sides, said notch having a root portion which extends alongside said one side, and an integral tongue extending from said root portion arcuately with respect to the plane of said retainer member whereby,

upon locating said guide and retainer member in said opening with the plane thereof extending substantially normally of said sheet metal member and with said retainer member oriented diagonally in said opening, and upon rotating said retainer member about a medial axis extending in its own plane and through said notch, two opposite edges of said opening will move relatively into said slots, and said retainer member will be mounted between said two edges and extend normally of the plane of said sheet metal member and a cable extending through said notch will be retained against said sheet metal member with said tongue bearing against said cable.

3,854,002 EXTENSIBLE HELICALLY COILED ELECTRICAL LEADS

Fritz O. Glander, Isernhagen; Horst Rager, Nurnberg, and Bernd Eilhardt, Vinnhorst, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Filed Dec. 21, 1970, Ser. No. 99,742

Claims priority, application Germany, Dec. 23, 1969, 1964339

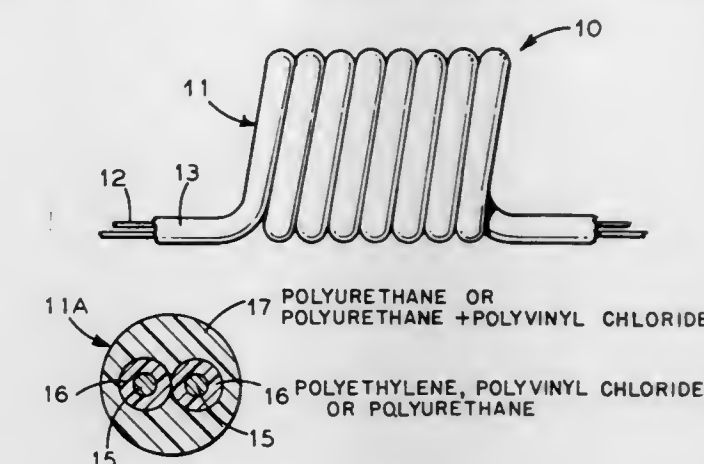
Int. Cl. H01b 7/06

U.S. Cl. 174-69

1 Claim

1. An extensible, helically coiled electrical lead comprising at least one conductor of large cross section and heavy current

carrying capacity and an elastomeric covering for said conductor whereby the convolutions of said helically coiled lead



are restored to their normal condition after extension of said lead, said elastomeric covering comprising polyurethane and a minor proportion by weight of polyvinyl chloride.

3,854,003 ELECTRICAL CONNECTION FOR AERATED INSULATION COAXIAL CABLES

Jean Duret, Lyon, France, assignor to Les Cables De Lyon, Lyon Cedex, France

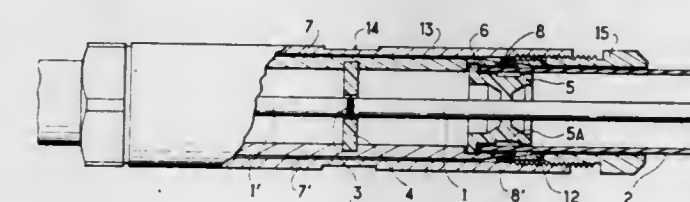
Filed Feb. 20, 1974, Ser. No. 444,066

Claims priority, application France, Feb. 26, 1973, 73.6732

Int. Cl. H02g 15/08

U.S. Cl. 174-88 C

6 Claims



1. In a device connecting together the external conductors of two sections of disk-insulated coaxial cables whose inner conductors are also connected, said device including two metallic half-shells arranged between the ends of said external conductors, a sleeve covering said half-shells and being internally threaded at its ends, and a nut fitted onto each of said conductors and screwed onto the ends of said sleeve clamping the device to the external conductors, the improvement comprising: an insulating end member fitted into each of the external conductors, and receiving the central conductor and having a flange abutting the end of the external conductor and wherein the two half-shells each have an internal groove which receives the flange of a respective end member, a ring having a tapered internal surface facing the ends of said half-shell, the ends of said half-shells being chamfered on their outer surfaces and provided with longitudinal slots, wherein the two nuts are screwed into the internal threads of the sleeve and clamping, by means of the rings, the ends of the half-shells onto the conductor.

3,854,004 INFORMATION STORAGE AND RETRIEVAL SYSTEM

Irwin D. Baumel, Jericho; Nathan A. Moerman, Roslyn Heights, Long Island, and Attilio A. De Meo, Brooklyn, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 20, 1968, Ser. No. 730,246

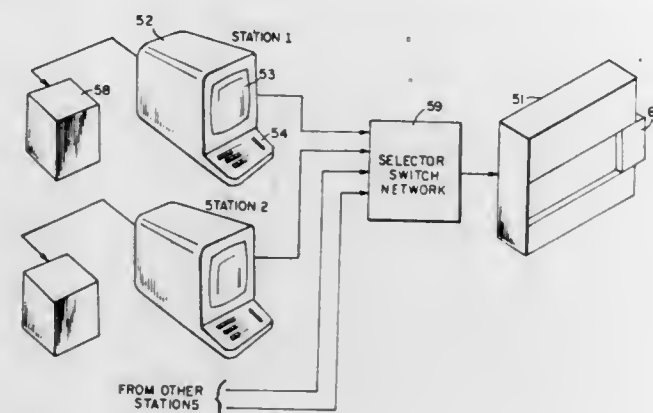
Int. Cl. G11b 1/02, 23/02

U.S. Cl. 178-6

2 Claims

1. An information storage and retrieval system, comprising a central file,

a plurality of information bearing records stored in said file, a record viewing station, means responsive to a signal identifying one of said records for transporting said viewing station to a position adjacent to said one record and for frictionally grasping and partially withdrawing said one record from its storage loca-



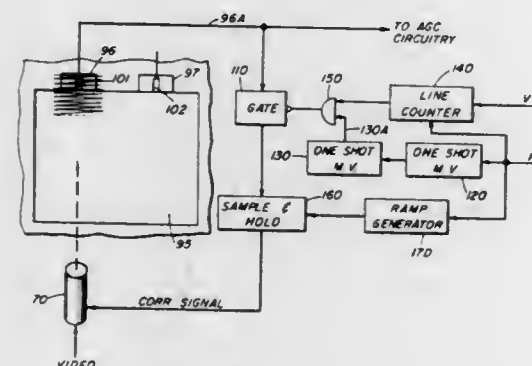
tion in said file to a position at which information on said one record is exposed to view, said means including a pair of fingers between which said record is grasped and by means of which withdrawal is initiated, and means for reading information from said one record while in its aforesaid position.

3,854,005 FILM STABILIZING SYSTEM FOR ELECTRON BEAM RECORDER

Robert A. Castrignano, Stamford, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.
Filed Apr. 2, 1973, Ser. No. 346,723
Int. Cl. H04n 5/84

U.S. Cl. 178-6.7 A

9 Claims



1. In an electron beam recording system which includes a film transport for moving a film past the scanning window; an electron sensitive plate means positioned adjacent said window; and means for scanning a modulated electron beam in a repetitive scanline pattern over a reference position which includes said plate and said window, the rate of said scanning being synchronized with the motion of the film, the plate means having an output which is the function of the intensity of the beam that is incident on an active area thereof; an improved subsystem for stabilizing the position of said beam with respect to said film, comprising:

interrupt means located at a prescribed position on said plate for causing an interruption signal in the output of said plate means when said electron beam is scanned over said prescribed position;

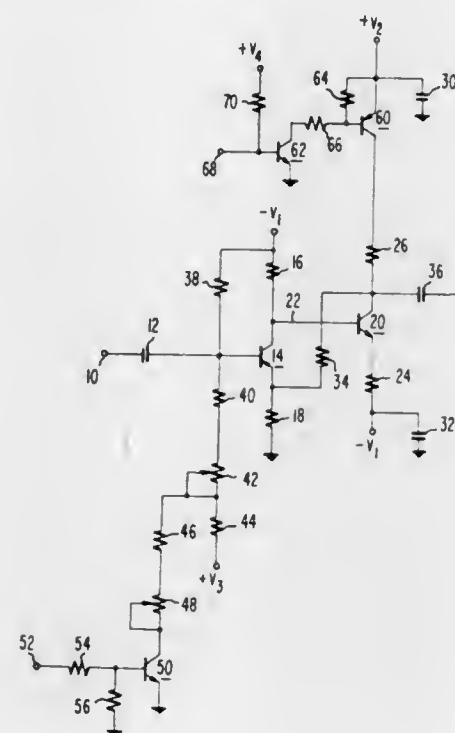
means for comparing the timing of said interrupt signal to the timing of individual scanlines and for generating a correction signal which reflects the comparison; and means for varying the reference position of said scanline pattern in accordance with said correction signal.

3,854,006 SWITCHABLE VIDEO AMPLIFIER

Denis Peter Dorsey, Levittown, Pa.; William E. Rodda, Trenton, and Kenneth Bruce Bahrs, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Oct. 23, 1973, Ser. No. 408,304
Int. Cl. H04n 5/68, 7/12

U.S. Cl. 178-6.8

5 Claims



1. In a television image transmission system of the type wherein a single storage device is controllably biased to "write," "read" and "erase" modes of operation both for the selection of a particular frame of television information for transmission to a remote receiver location by an audio communications link and for the reception and re-creation of frame information so transmitted, and in which there is included:

an amplifier stage having an input terminal to which image representative television information is supplied and an output terminal at which amplified versions of said image representative information is developed for application to said storage device for the selection or re-creation of said information dependent upon when said device is operating within said system in the transmitting or receiving mode;

first means for biasing said amplifier stage to develop amplified image representative signals of a first magnitude at its output terminal referenced to a first direct current level; second means for biasing said amplifier stage to develop amplified image representative signals of a second, different magnitude at its output terminal referenced to a second, different direct current level;

and first control means coupled to said first and second biasing means for conditioning at least one of said biasing means to operation to set the magnitude of developed amplified signals and the direct current level to which said amplified signals are referenced;

said first control means also being dependent upon the mode of operation of said storage device within said television image transmission system to establish Class A amplifier operation and said first signal magnitude and direct current level as a reference when said storage device is employed to select a particular television frame for transmission and to establish Class B amplifier operation and said second signal magnitude and direct current level as a reference when said storage device is employed to re-create a television frame received along said audio communications link;

the combination therewith of:

second control means coupled to said amplifier stage for

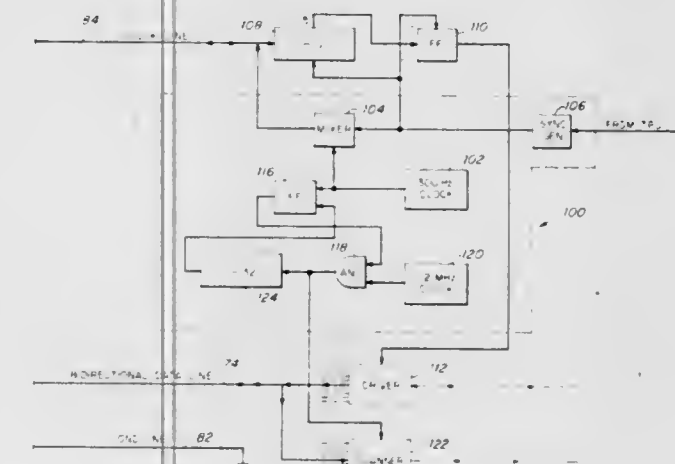
applying energizing potentials thereto substantially only when said storage device is biased to its "write" mode of operation, and to thereby reduce the quiescent power dissipated within said stage during the "read" and "erase" modes of operation of said device.

3,854,007 CONTROL SYSTEM BIDIRECTIONAL INTERFACE

Terence J. Hatton, Natick, Mass., assignor to The National Shawmut Bank of Boston, Boston, Mass.
Filed May 21, 1973, Ser. No. 362,519
Int. Cl. H04I 5/14

U.S. Cl. 178-58 R

3 Claims



1. A control system for transferring items of information over data lines between remote terminals and a receiving device comprising:

a first register in each said terminal for accumulating an item of information to be transferred to said receiving device;

clock means including a clock pulse generator for producing transfer pulses occurring at a first rate, a synchronizing generator for producing synchronizing pulses at a lower rate, and mixer means, responsive to both generators for producing a recurring series of timing pulses including a synchronizing pulse and a number of transfer pulses;

first driver means, responsive to said first register, for delivering said items to a said data line for transfer to said receiving device;

a second register in each said terminal for accumulating an item of information received from said receiving device on a said data line;

first gating means for enabling said first driver means to deliver an item of information from said first register to said receiving device over a said data line in response to a first group of said transfer pulses; and for enabling said second register to receive an item of information from said receiving device over a said data line in response to a second group of said transfer pulses;

second driver means in said receiving device for delivering an item of information on a said data line to a said terminal;

scanner means in said receiving device for receiving an item of information from each data line of each terminal in sequence; and

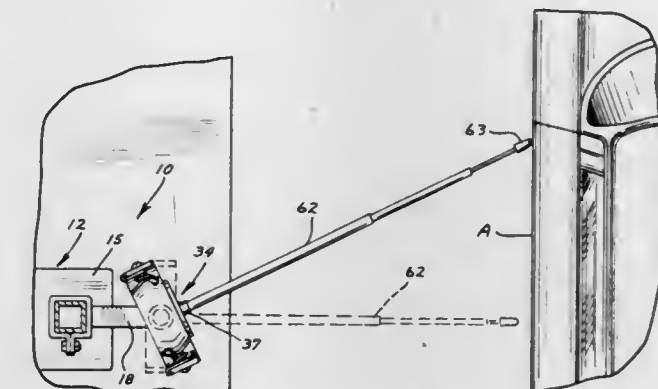
second gating means, responsive to said first group of transfer pulses, for enabling said scanner means to receive items of information from a said terminal over a said data line and responsive to said second group of transfer pulses, for enabling said second driver means to deliver an item of information to a said terminal over a said data line.

3,854,008 SOUND CONDUCTING APPARATUS FOR DRIVE-IN THEATERS

Kevin G. Duling, and Craig W. Maser, both of Lincoln, Nebr., assignors to Arthur M. Gunderson, St. Cloud, Minn.
Filed Jan. 26, 1973, Ser. No. 326,871
Int. Cl. H04r 7/04, 23/00

U.S. Cl. 179-1 DD

2 Claims



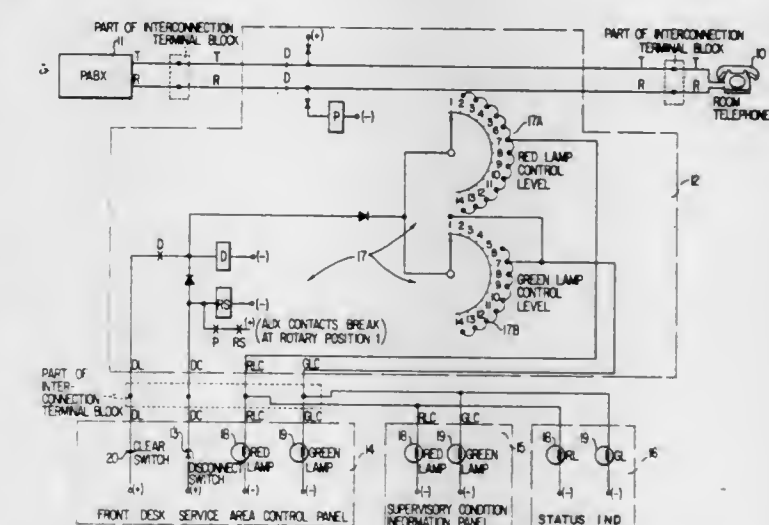
1. A sound reproducing apparatus for a drive-in theater embodying the use of an automotive vehicle body as a diaphragm, having in combination a sonic transducer, means yieldably supporting said transducer remote from and independent of an automotive vehicle body, an elongated adjustably extensible rod extending from said transducer engaging said automotive vehicle body, said yieldable supporting means when deflected by said vehicle body resiliently urging said rod against said vehicle body, and said rod transmitting vibrations from said transducer to said vehicle body producing sound.

3,854,009 AREA UNIT STATUS SYSTEM

Robert M. Pirnie, III, Montgomery, Ala., assignor to Communication Equipment & Contracting Co., Inc., Union Springs, Ala.
Filed Feb. 23, 1973, Ser. No. 334,980
Int. Cl. H04m 11/02

U.S. Cl. 179-2 A

4 Claims



1. For use with a plurality of dial telephones serving a plurality of service area units, which telephones are connectable to and disconnectable from a PABX with at least one telephone being in each service area unit; an area unit status system comprising:

a. a service area control means comprising a disconnect switch, a clear switch and visual status indicating lamps for each of the service area units;

b. at least one remote panel with corresponding status indicating lamps;

c. dial responsive means connected for actuation by dial pulses from said telephones when the telephones are disconnected from said PABX, and actuated upon energization;

- d. means for disconnecting the telephones from the PABX and energizing the dial responsive means;
- e. said means for disconnecting being operated under control of said disconnect switch;
- f. lamp operating means selectively responsive to energization of the dial responsive means to establish a first lamp indicating condition among said lamps, and selectively responsive to the dialing of a first digit to establish a second lamp indicating condition among said lamps, and selectively responsive to the dialing of a second digit to establish a third lamp indicating condition among said lamps; and
- g. said means for disconnecting being operated by said clear switch to connect the telephones to said PABX and de-energize the dial responsive means.

3,854,010

TIME DIVISION MULTIPLEXING TRANSMISSION SYSTEM

Takehiko Yoshino, Yokohama; Hisakichi Yamane; Eiichi Sawabe, both of Tokyo; Akio Yanagimachi, Kawasaki; Masaaki Eukuda, Tokyo; Tatsuo Kayano, Tokyo; Michio Masuda, Tokyo; Teruhiro Takezawa, Tokyo; Katsuo Mohri, and Hiroaki Nabeyama, both of Yokohama, all of Japan, assignors to Nippon Hoso Kyokai; Hitachi Limited and Hitachi Electronics, Ltd., all of Tokyo, Japan

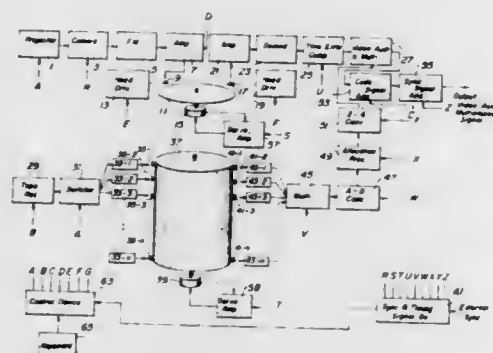
Filed May 18, 1973, Ser. No. 361,581

Claims priority, application Japan, May 23, 1972, 47-50987; May 23, 1972, 47-50988

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

29 Claims



1. A time division multiplexing transmission system for transmitting first and second information signals in turns at a time rate of a given integer ratio, said first and second information signals being divided at periods of first and second signals, respectively, said transmission system comprises at a transmitter end

- a signal generator for producing an original signal having a given frequency;
- a first circuit for producing said first signal having a first frequency which is equal to a fraction of an integer of said given frequency of said original signal;
- a second circuit for producing said second signal having a second frequency which has a relation of an integer ratio with respect to said first frequency;
- a third circuit for producing a third signal having a third frequency which is equal to fractions of integers of said first and second frequencies;
- a fourth circuit for producing a fourth signal having a fourth frequency which is equal to a fraction of an integer of said third frequency;
- a gate circuit for alternately passing said first and second signals at a time rate of said given integer ratio under a control of a gate signal formed by said fourth signal; and a digital synchronizing signal generator which is triggered by an output signal from said gate circuit and produces a digital synchronizing signal composed of a synchronizing information consisting of a pulse chain of a given repetition frequency and first and second control signals each consisting of a pulse chain, pulses of which pulse chain appear at given time slots in synchronism with occurrence

instances of said first, second and third signals, said synchronizing information of the given repetition frequency being of the common waveform in both of said first and second signal periods, but said first control signal which is produced in said first signal period being different from said second control signal which is produced in said second signal period; whereby said synchronizing information and first control signal are inserted in said first information signal divided at said first signal period and said synchronizing information and second control signal are inserted in said second information signal divided at said second signal period, and said transmission system further comprises at a receiver end

means for extracting said pulse chain having the given repetition frequency from said synchronizing information of the common waveform inserted in said first and second information signals which have been transmitted in turns at a time rate of said given integer ratio and producing clock pulses having a repetition frequency which is equal to said repetition frequency of said extracted pulse chain; means for extracting said first and second control signals on the basis of the produced clock pulses; and means for forming first and second synchronizing signals having said first and second frequencies, respectively, from said clock pulses, whereby said first and second synchronizing signals and said extracted first and second control signals are collated to each other and said means for forming said first and second synchronizing signals is controlled by a collation output so as to produce said first and second synchronizing signals of said first and second frequencies, respectively, in synchronism with a transmitted signal and said first and second information signals are reproduced by means of said first and second synchronizing signals.

3,854,011

FRAME SYNCHRONIZATION SYSTEM FOR DIGITAL MULTIPLEXING SYSTEMS

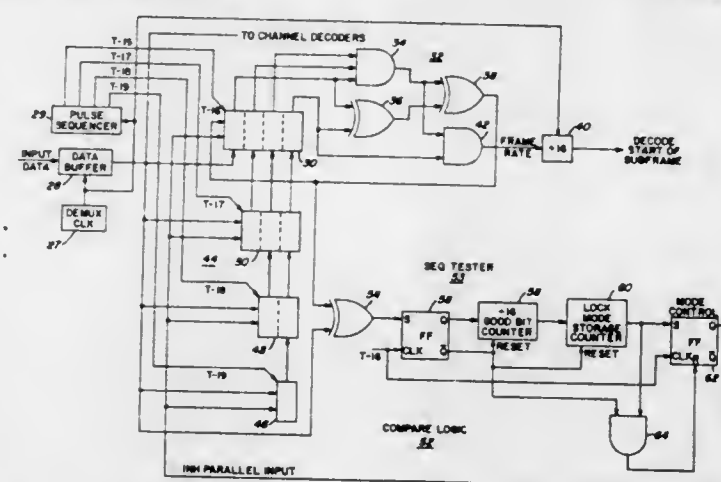
Peter E. Mallory, New Smyrna Beach; Raehn Davis, Altamont Springs, and Richard S. Van de Houten, Maitland, all of Fla., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed Sept. 24, 1973, Ser. No. 400,284

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

10 Claims



1. A frame synchronizing system for a demultiplexer of a digital multiplexing system wherein a frame sync pattern is a pseudo-random (PN) sequence of bits, said system comprising
- a. a PN sequence generator for generating a serial PN bit sequence as a function of input data to said demultiplexer;
- b. means for storing successive pluralities of sequential bits of said input data;
- c. means for sequentially comparing the bits of said input data with successive bits of said PN bit sequence from said generator;
- d. means operative when said comparing means indicates the absence of identity between bits compared therein for conditioning said PN generator to generate said serial PN sequence as a function of said plurality of bits then stored in said storing means.

3,854,012

SWITCHING CIRCUIT FOR PREVENTING LOST CALLS

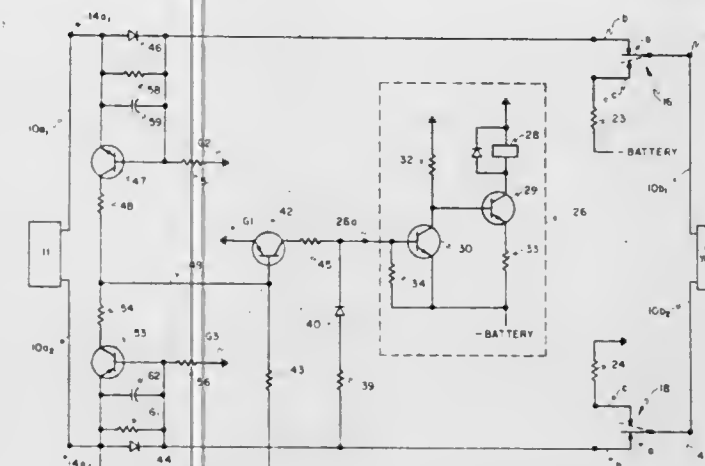
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Apr. 23, 1973, Ser. No. 353,236

Int. Cl. H04m 3/42

U.S. Cl. 179-18 AD

10 Claims



1. In a circuit for maintaining the connections between a telephone set and a PBX in the presence of an open circuit at the central office side of that PBX, the combination of first and second central office terminals, first and second PBX terminals, switching means having first and second operative states, said switching means being adapted to connect respective office and PBX terminals when said switching means is in a first operative state and to apply a predetermined voltage to said PBX terminals when said switching means is in a second operative state, means for connecting said switching means to said central office terminals, to said PBX terminals and to a source of voltage, means for establishing the second operative state of said switching means when the central office open circuits said first and second office terminals at a time when a telephone set is connected across said PBX terminals, and means for establishing the first operative state of said switching means under other voltage and current conditions at said PBX and central office terminals.

3,854,013

CALL FORWARDING ARRANGEMENT

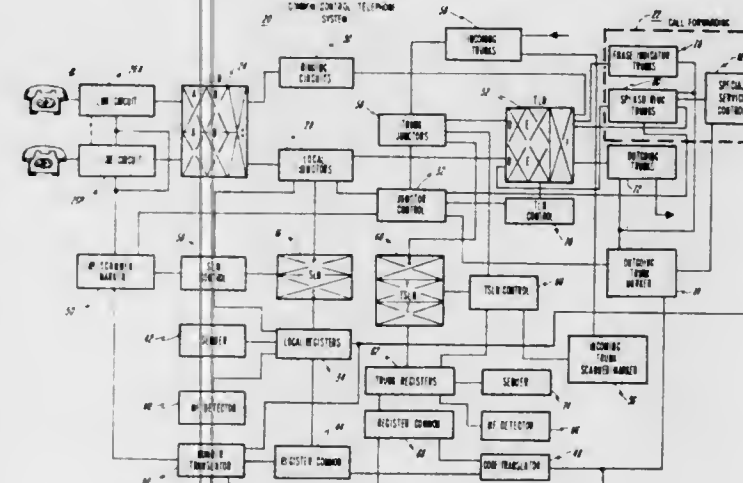
Otto Altenburger, Rochester, N.Y.; Robert H. Bansemir, Northlake, Ill.; George R. Bergquist, Rochester, N.Y.; Donald J. Mariotti, Fairport, N.Y., and Gunter F. Neumeier, Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,301

Int. Cl. H04m 3/54

U.S. Cl. 179-18 BE

9 Claims



1. A call forwarding arrangement for automatically forwarding calls by a calling subscriber station originally directed to a forwarder subscriber station to a forwarder subscriber station, for use in a telephone system including a common control having a plurality of registers for connection to any of

a plurality of subscriber stations for receiving dial pulses therefrom, said call forwarding arrangement comprising:

a memory for the random storage of equipment numbers of said forwarder and forwarder subscriber stations;

means for identifying any one of the plurality of registers having a call forwarding request or call forwarding erase codes dialed therein by a calling forwarder subscriber station connected to the register by the common control; message storage circuit means responsive to a call forwarding request code dialed in an identified register for receiving from the common control the identity and class of service of the forwarder subscriber station connected to the identified register, for receiving from the identified register the number of a forwarder subscriber station subsequently dialed into the register by the forwarder subscriber station, and for storing into said memory the forwarder subscriber identity and forwarder number;

memory erase circuit means responsive to a call forwarding erase code dialed in the identified register for receiving from the common control the identity and class of service of a forwarder subscriber station connected to an identified register for erasing from said memory the corresponding forwarder subscriber identity and forwarder subscriber station number previously stored therein, and

call diverter circuit means for identifying any one of the plurality of registers connected to a calling subscriber station by the common control and having the number dialed therein corresponding to a forwarder subscriber station having its identity stored in said memory for changing the number in the identified register to the corresponding forwarder subscriber station number stored in said memory.

3,854,014

CALL BACK ARRANGEMENT

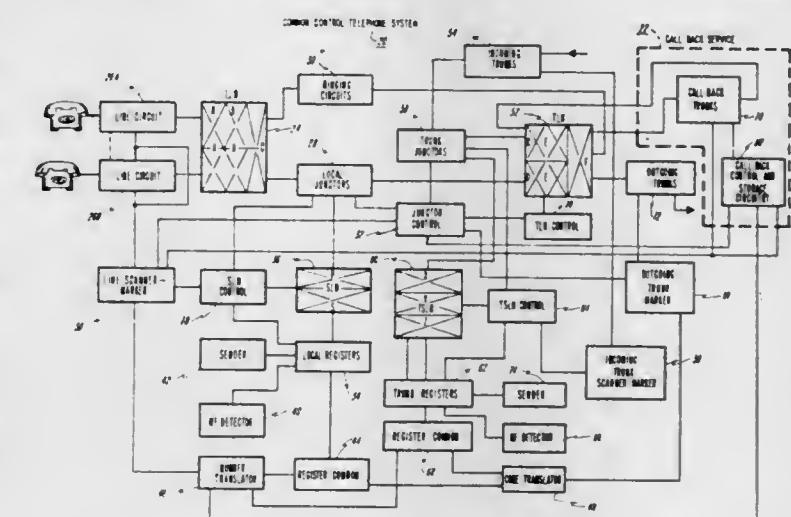
Robert J. Akin; Otto Altenburger, both of Rochester, N.Y., and Robert H. Bansemir, Northlake, Ill., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,121

Int. Cl. H04m 3/48

U.S. Cl. 179-18 BG

19 Claims



1. A call back arrangement for common control telephone systems comprising:

means for determining when a connection between a calling station and a called station cannot be completed by the common control;

means co-operating with the common control and effective upon a determination that a connection cannot be completed for connecting the calling station to means for receiving a signal from the calling station requesting the call be automatically retried, said means for connecting being arranged to transfer the identities of said calling and called stations from the common control to storage in said means for receiving upon connection of said calling station to said means for receiving;

means for determining when the called station is free and seizing the called station without signalling the called station;

means responsive to the seizure of the called station for ringing the calling station, and

means, responsive to the answer of the calling station, for automatically completing the connection between the calling station and the called station and ringing the called station.

3,854,015

SERVO SYSTEM FOR READING FROM A DISC-SHAPED RECORD CARRIER CONTAINING SIGNALS CODED IN OPTICAL FORM

Peter Johannes Michiel Janssen, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

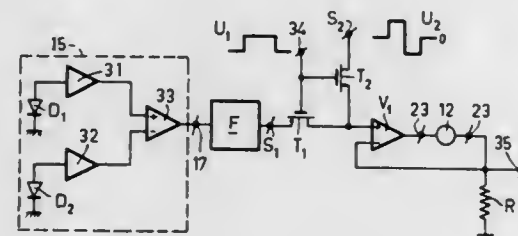
Filed Feb. 26, 1973, Ser. No. 335,934

Claims priority, application Netherlands, Mar. 29, 1972, 7204205

Int. Cl. G11b 7/00; H04n 5/84

U.S. Cl. 179—100.3 V

12 Claims



1. Apparatus for reading a disc-shaped record carrier of the type wherein video and/or audio signals are recorded in tangential tracks, the apparatus being of the type wherein an optical system directs a light beam from a light source to the record carrier, and images the information from the record carrier on a radiation detector means for converting the optical image into an electrical system, wherein position detector means for measuring the radial position of the optical system relative to a desired track provides position signals to a coarse position feedback loop for moving the optical system radially with respect to the record carrier and further provides position signals to a fine position feedback loop, wherein the fine position feedback loop controls a beam deflection means pivotally mounted in the path of the light beam of the optical system for selectively angularly redirecting said beam with respect to said radiation detector means in response to said position signals from said fine position feedback loop, the improvement wherein switching means are provided in said fine position feedback loop for selectively opening said fine position feedback loop and for providing a preselected auxiliary control signal to said beam deflection means thereby angularly deflecting said beam by a predetermined amount and for subsequently reconnecting said fine position feedback loop.

3,854,016

BI-DIRECTIONALLY ACTUATED SWITCH MECHANISM

John N. Cook, Crystal Lake, and Charles L. Madalinski, Jr., Schaumburg, both of Ill., assignors to Motorola, Inc., Chicago, Ill.

Filed Aug. 13, 1973, Ser. No. 387,975

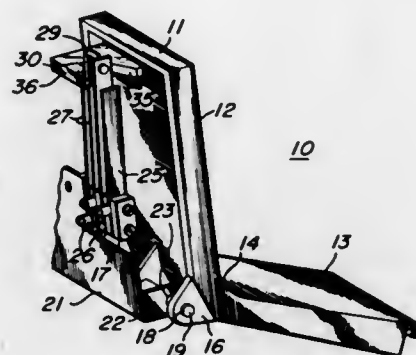
Int. Cl. H04r 1/02; H01h 19/20

U.S. Cl. 179—167

8 Claims

1. A switch mechanism including in combination; actuator means, pivot means secured to said actuator means, said actuator means being pivotal from a first position about said pivot means in one direction to a second position, and from said first position in the opposite direction to a third position, cam means including a V-shaped surface secured to said

actuator means, cam follower means engaged on the notch side of said V-shaped surface of said cam means for relative movement there between and being deflected substantially



perpendicular to pivotal motion of said actuator means, and switch means coupled to said cam follower means and identically operative in response to said actuator means being pivoted to one of said second and third positions to actuate.

3,854,017

TELEPHONE AND ELECTRIC CORD REEL

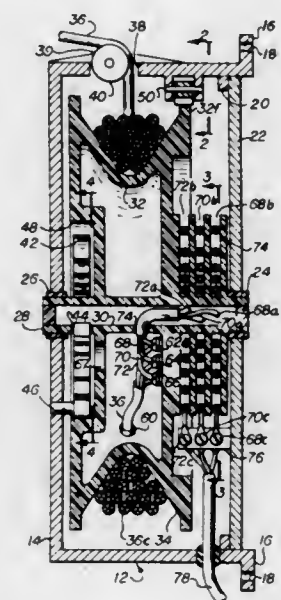
Walter W. Crim, P.O. Box 1276, Pacifica, Calif. 94044

Filed Dec. 18, 1972, Ser. No. 316,108

Int. Cl. H02g 11/00

U.S. Cl. 191—12.2 R

6 Claims



1. In a reel for a conductive multistrand cable a base, a rotatable cable storing spool that revolves about an axis on said base in one direction to dispense the cable and an opposite direction to retract the cable, a plurality of spiral resilient conductors each having a first end joined to the spool and electrically connected to the cable conductor, each of said spiral resilient conductors separate from each other and each coaxial with said spool, all said spiral resilient conductors being located axially remote from said spool, and a spring fixed to said base and said spool to rewind said spool to retract said cables, said spring being remote from said frame, said cable, and from said spiral resilient conductors.

3,854,018

MULTIPLE CIRCUIT SELECTOR SWITCH ASSEMBLY HAVING MOVABLE CONTACT MEANS ADAPTED TO RETAIN ITSELF IN CLOSED CIRCUIT POSITION

Charles Edward Reynolds, Camp Hill, and Harold Oakley Woolley, Jr., Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1973, Ser. No. 370,096

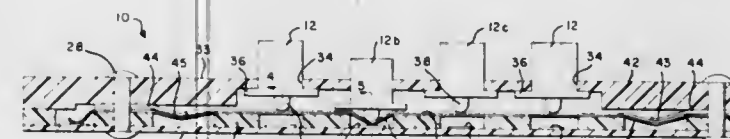
Int. Cl. H01h 13/74, 15/02

U.S. Cl. 200—5 A

14 Claims

1. A switch assembly comprising a contact board having a plurality of electrical contacts positioned thereon, an aper-

tured grate operatively connected to said contact board adjacent said electrical contacts and having a plurality of apertures formed therein respectively associated with each of said electrical contacts to expose said contacts through the grate, and a resilient electrically conductive contact strip having opposite end portions respectively operatively connected to opposite ends of said grate at predetermined points of connection on the side of said grate opposite said contact board, said contact strip being cross-curved about its longitudinal axis, transversely of its width; the distance between said predetermined points of connection on said grate being less than the length of said contact strip between said points of connection whereby a portion of said strip is flexed into a projection



extending towards and entering one of the apertures in said grate to engage the contact member associated with said one aperture; said cross-curved contact strip being flattened across its width at said projection by the flexing of the strip thereby holding the strip in said one aperture until the strip is urged through another aperture in said grate, causing said projection to occur at said another aperture and relieving the projection and flattening of the strip at said one aperture; and means for maintaining one portion of said contact strip in electrical connection with an electrical conductor at all times, whereby said strip operates to provide an electrical connection between said conductor and a selected one of said contacts at substantially all times, in accordance with the selected location of said projection.

3,854,019

ELECTRIC COMPRESSED-GAS CIRCUIT BREAKER

Siegfried Handke, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

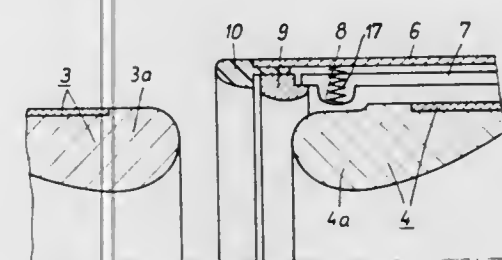
Filed Apr. 5, 1973, Ser. No. 348,276

Claims priority, application Germany, Apr. 25, 1972, 2220897

Int. Cl. H01h 33/80

U.S. Cl. 200—148 R

6 Claims



1. A contact arrangement for an electric compressed-gas circuit breaker equipped with gas-blast means for blasting a stream of gas through the arc drawn when the breaker opens; the contact arrangement comprising: two stationary contact pieces; a switching unit movable between closed and open positions for electrically bridging said contact pieces in the closed position and for electrically disconnecting said contact pieces in the open position whereby the arc develops when said switching unit is moved to the open position; said switching unit including a supporting body, electrical insulation disposed at said supporting body and made of elastic, yielding

material, a slide-contact ring carried by said supporting body and slideably contacting one of said contact pieces in the closed position, said slide-contact ring being made of arc-resistant material and being tension-fixed in said electrical insulation, said insulation being disposed between said supporting body and said ring thereby insulating said ring from said body, said slide-contact ring being configured at least in part as a body of carbon material, a plurality of elongated contact elements disposed in said supporting body for electrically connecting said contact pieces when said switching unit is in the closed position, and spring means for spring loading said contact elements to displace the same into electrically conductive contact with said slide-contact ring as said ring and said contact elements separate from said one contact piece when said switching unit moves into the open position.

3,854,020

TRIGGER MECHANISM FOR HAND-OPERATED POWER DEVICE INCLUDING STATIONARY LOCKING DEVICE WHICH PROVIDES LOCK-OFF AND LOCK-ON OPERATION

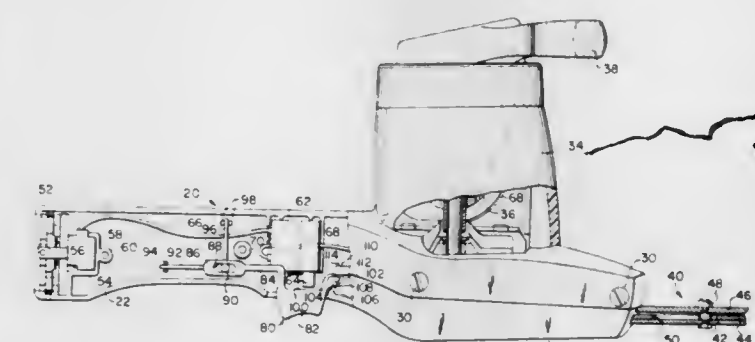
Richard Warmath Glover, Joppa; Gordon Frederick Musch, Fork, both of Md., and John A. Summa, Anaheim, Calif., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 29, 1973, Ser. No. 375,081

Int. Cl. H01h 9/20

U.S. Cl. 200—321

13 Claims



1. A trigger mechanism for a hand-operated power device including a motor and a control operatively associated with the motor, comprising:

a manually operable trigger movable from an inoperative level to an operative level to actuate the control and operate the motor, said trigger being manually movable in its inoperative level from a lock-off position to an unlock position wherein it is movable to its operative level to actuate the control and manually movable in its operative level to a lock-on position to continuously actuate the control;

a stationary locking device including a lock-off portion cooperatively engageable with said trigger in its lock-off position to prevent movement of said trigger from its inoperative level to its operative level and a lock-on portion cooperatively engageable with said trigger in its lock-on position to maintain said trigger in its operative level to continuously actuate the control and operate the motor;

means for normally biasing said trigger toward its inoperative level; and

means for biasing said trigger to a position in which said trigger cooperates with said lock-off portion when said trigger is at its inoperative level, and in which said trigger is released from said lock-on portion when said trigger is at its operative level.

3,854,021

ELECTROMAGNETIC HEATING SYSTEM WHICH INCLUDES AN AUTOMATIC SHIELDING MECHANISM AND METHOD FOR ITS OPERATION

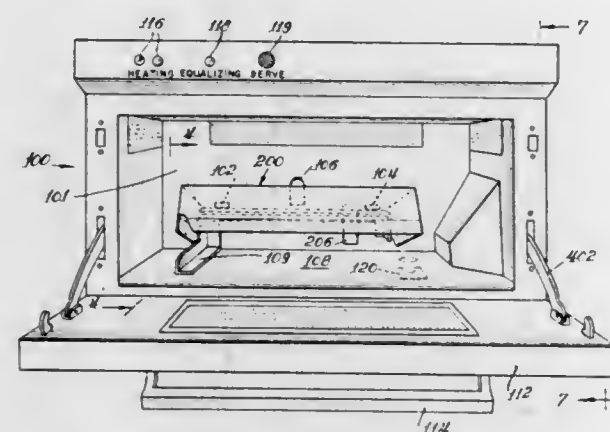
Donald G. Moore, Glencoe, Ill., and William E. Leyers, Louisville, Ky., assignors to Chemetron Corporation, Chicago, Ill.

Filed July 18, 1973, Ser. No. 380,188

Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

37 Claims



1. An electromagnetic oven system for heating materials carried on a tray comprising an oven cavity having electrically conductive walls and an open end for receiving trays inserted therein, a door to open and close said open end, means for directing microwave energy into said cavity, an electrically conductive shield mounted for movement in said cavity between an open tray receiving position and a closed position, means including said shield when in said closed position and cooperating with the bottom wall of said cavity to provide substantial shielding of a portion of a tray inserted in said cavity from microwave energy therein, and actuator means for moving said shield from said open to said closed position.

3,854,022

ELECTROMAGNETIC OVEN SYSTEM FOR AUTOMATICALLY HEATING VARIABLE NUMBERS AND SIZES OF FOOD ITEMS OR THE LIKE

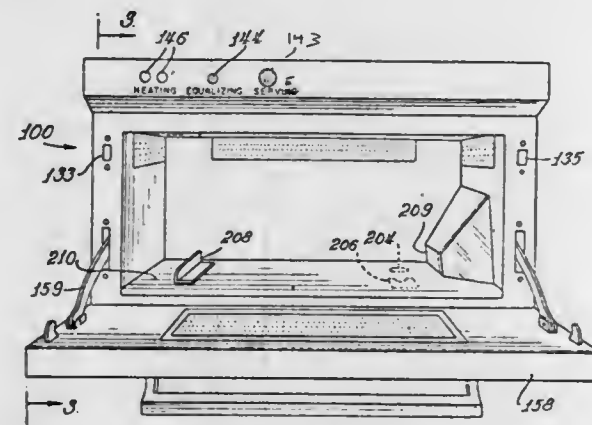
Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 300,763, Oct. 25, 1972., This application July 18, 1973, Ser. No. 380,187

Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

42 Claims



1. A system for heating articles comprising: a heating structure defining a cavity to which articles to be heated and electromagnetic energy for heating the articles are supplied; a control unit located outside said cavity for controlling the application of electromagnetic energy thereto; and a removable sensor coupled to said control unit when positioned at a predetermined location in said cavity and capable of absorbing energy at a rate which is proportional to the rate at which an article to be heated in-

creases in temperature, so that when an article to be heated reaches a predetermined temperature said control unit terminates the application of electromagnetic energy to said cavity.

3,854,023

MICROWAVE OVEN HEATING MEMBER

Melvin L. Leyinson, 1 Meiner St., Avenel, N.J. 07001

Continuation-in-part of Ser. No. 281,182, Aug. 16, 1972,

abandoned, which is a continuation-in-part of Ser. No.

193,940, Oct. 29, 1971, Pat. No. 3,731,037,

Continuation-in-part of Ser. No. 704,389, Feb. 9, 1968, Pat.

No. 3,701,872, which is a continuation-in-part of Ser. No.

470,809, July 9, 1965, abandoned, which is a

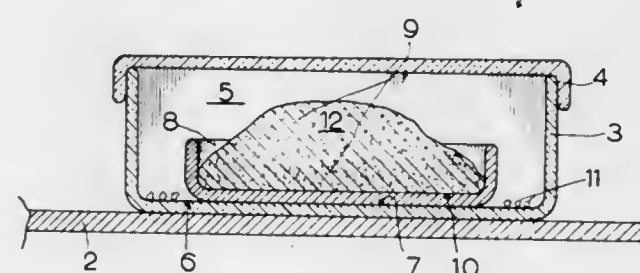
continuation-in-part of Ser. No. 483,144, Aug. 27, 1965,

abandoned. This application Aug. 23, 1973, Ser. No. 391,146

Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

14 Claims



1. For use in a microwave oven, an improved heating member comprising:

a microwave-reflective, heat-conductive body with at least one obverse surface which shields, from exposure to microwave energy, an adjacent portion of an article when located in contact thereon,

means to permit microwave energy to selectively heat an area of said article remote from said obverse surface when said article is located in said contact with said obverse surface,

a reverse surface of said microwave-reflective, heat-conductive body, complementary to said obverse surface, which shields, from exposure to microwave energy, liquid received in surface contact thereon,

a microwave-permeable, liquid-absorptive body disposed to absorb liquid from surface contact with at least a portion of said complementary reverse surface and transfer said liquid to a location exposed to microwave energy, and where said heat conductive body is a heat exchanger to exchange the cold of said article when in said contact with said obverse surface for the heat evolved from vapor condensing to a liquid on said complementary reverse surface.

3,854,024

ENVIRONMENTAL TEMPERATURE CONTROL SYSTEM

Harold B. Kaufman, Jr., New York; John P. McCarthy, College Point, and Robert F. Schiffmann, New York, all of N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,951

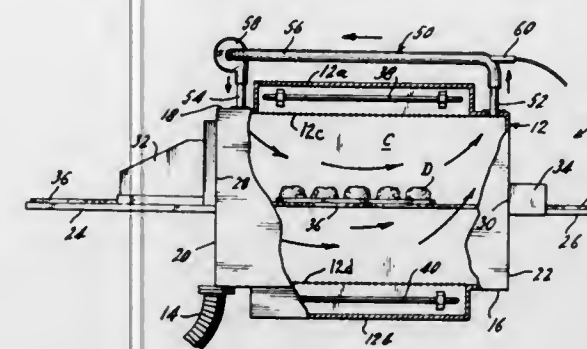
Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

8 Claims

1. In a microwave system, an enclosure defining a microwave cavity having heating means mounted therein, means defining an air-sampling zone external to said microwave cavity, means including microwave traps for connecting said air-sampling zone to said microwave cavity, means for drawing air from said microwave cavity into said air-sampling zone and returning air to said microwave cavity, a thermostatic control operatively connected to a power source and in controlling relation to said heating means and including a temperature sensor in said air-sampling zone operable to sense the

temperature of the air passing through said air-sampling zone without being effected by the microwave energy in said microwave cavity, and said thermostatic control being responsive to



said temperature sensor and controlling operation of said heating means to maintain the temperature of the air in said microwave cavity at a desired level.

3,854,025

METHOD AND APPARATUS FOR ELECTRICAL MACHINING OF METAL

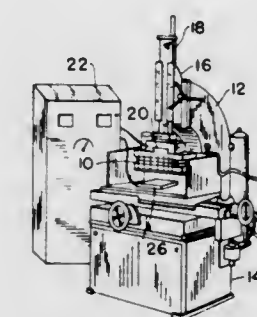
Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich. 48106

Continuation-in-part of Ser. No. 253,906, May 16, 1972, abandoned, which is a division of Ser. No. 545,652, April 27, 1966, Pat. No. 3,663,786. This application May 16, 1973, Ser. No. 360,829

Int. Cl. B23k 9/16

U.S. Cl. 219-69 M

8 Claims



1. The method comprising the steps of mounting a model electrode member having the dimensions of a workpiece to be formed from a master die member to be formed from the model electrode member in parallel relation to a die workpiece member, operating upon the die workpiece member with the model electrode member to form a cavity in the die workpiece member and in conjunction with such operation applying oscillatory rotary motion to one of said model electrode and die workpiece members so as to oscillate the same in its own plane to produce a master die member having a cavity which is oversize relative to said model electrode member by an amount equal to the total amplitude of the rotary motion and providing an abrasive surface on said master die member.

3,854,026

GATES TIMING SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Oliver A. Bell, Jr., Mooresville, and Randall C. Gilleland, Statesville, both of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Continuation-in-part of Ser. No. 373,377, June 25, 1973., This application Aug. 24, 1973, Ser. No. 391,504

Int. Cl. B23k 9/16

U.S. Cl. 219-69 C

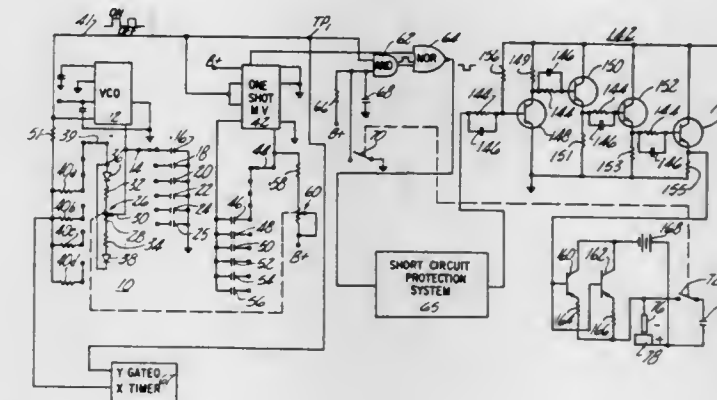
20 Claims

1. An apparatus for providing electrical discharge machining of a conductive workpiece by passing machining power pulses across a dielectric coolant filled gap, including a multi-

vibrator having its output operatively connected to an electronic output switch for operating it with predetermined on-off time to provide machining power pulses across the gap, wherein the improvement comprises:

a gated timer system operably connected to said multivibrator for providing machining by spaced groups of pulses, said groups having interposed therebetween single pulses, comprising:

a counter operatively connected to the output of said multivibrator and presettable to pass a predetermined number of pulses;



a first flip-flop stage operatively connected to the output of said counter for providing a signal responsive to the passage of the last of said predetermined number of pulses; turn-off means responsive to said signal for providing a turn-off pulse to said multivibrator for holding it off for a time period intermediate said group of pulses; a second flip-flop for allowing passage of a single next following pulse from said multivibrator and initiating a second like off time period of said multivibrator; and means operatively connected to said turn-off means for selectively adjusting the length of said time periods.

3,854,027

PERCUSSIVE STUD WELDING SYSTEM

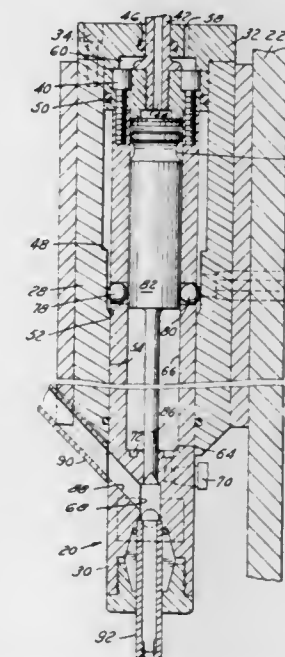
Donald H. Ettinger, Royal Oak, and Nicholas G. Zorka, Sterling Hts., both of Mich., assignors to USM Corporation, Boston, Mass.

Filed Sept. 13, 1972, Ser. No. 288,743

Int. Cl. B23k 9/20

U.S. Cl. 219-98

10 Claims



1. In a percussive stud welding system including stud supply means for delivering successive studs to a welding tool to be welded to a structural member, a welding tool comprising a body, collet means on the body for holding a stud in welding position, stud delivery passage means in said body establishing

communication between said stud supply means and said collet means, reciprocable plunger means shiftable within said delivery passage means to transfer a stud to said collet means and retain it thereat in said welding position, releasable locking means for rigidly locking said plunger against relative motion with respect to said body when in said stud retaining position, and means coupled to said locking means for actuating the same.

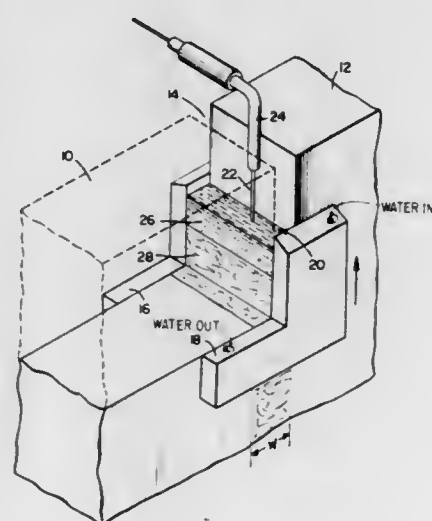
3,854,028

HIGH SPEED VERTICAL ELECTRO-SLAG WELDING
Gerald D. Utrachi, Westfield, and Daniel Christian, Wayne, both of N.J., assignors to Unlon Carbide Corporation, New York, N.Y.

Filed Sept. 18, 1973, Ser. No. 398,304
Int. Cl. B23k 9/18

U.S. Cl. 219-126

5 Claims



1. A method of welding workpieces, having thicknesses of between 3/8 to 2 inches, in a substantially vertical direction, under a blanket of a molten conductive slag, at high speed, comprising the steps of:

- forming a substantially vertical joint between the edges of the workpieces to be welded;
- surrounding said joint at a predetermined starting location with means to form a cavity;
- depositing a granular flux into said cavity;
- submerging the end of a consumable filler wire electrode beneath the surface of said deposit of granular flux;
- initially establishing an electric arc under said deposit of flux for forming said molten slag within said cavity;
- passing a current of above about 500 amperes through said electrode;
- advancing said cavity forming means vertically upstream from said starting location at a speed of between 3-10 inches per minute while continuously feeding said electrode into said molten slag; and
- controllably cooling said cavity forming means so as to form a substantially discontinuous solidified slag cover upon the surface of the solidified weld metal which represents no more than 35 percent of the total solidified weld surface area per linear foot of weld length.

3,854,029

METHOD AND APPARATUS FOR REPAIRING SHEET ELEMENTS OF AUTOMOBILES BODIES
Theodore Robert Fenollar, 12 Cours du Medoc, 33300 Bordeaux, France

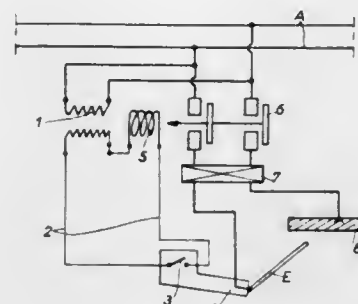
Filed Dec. 10, 1973, Ser. No. 423,244
Int. Cl. A05b 3/00; B21J 1/06

U.S. Cl. 219-149

3 Claims

1. A method of repairing sheet elements of automobile bodies, which have been hammered into shape, to smoothen such elements, said method comprising effecting instantaneous electrical heating of the sheet element in a sufficiently

local region thereof to prevent deformation of the sheet, and alternating the heating of the sheet element with cooling, said heating being effected by connecting the sheet element to a first electrode of a high-intensity electrical circuit, supporting a second electrode of said circuit by a portable operator-



carried element, and moving said portable element so that the second electrode is brought into and maintained in direct contact with said sheet element to effect localized heating of said sheet element at the location where it is contacted by said second electrode.

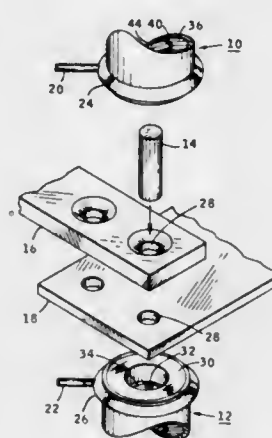
3,854,030

DIFFUSION BOND RIVETING SYSTEM
Cleveland E. Roye, Spring Valley, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Sept. 27, 1973, Ser. No. 401,526
Int. Cl. B21j 5/08; H05b 1/00; B23k 9/16

U.S. Cl. 219-150

6 Claims



1. A diffusion riveting device which comprises:

- Means to support a rivet in a hole through a material to be riveted;
- enclosing means surrounding said rivet and hole;
- means to maintain an inert atmosphere within said enclosing means;
- first heating means adapted to be positioned in contact with a rivet supported in said hole to heat said rivet to a diffusion bonding temperature;
- second heating means adapted to be positioned in contact with material adjacent to said hole and spaced from a rivet supported in said hole to heat said material adjacent to said hole to a diffusion bonding temperature; and
- pressure means to squeeze the end of said rivet toward each other to expand the body of said rivet into diffusion bonding contact with the wall of said hole and to reshape the ends of said rivets into the desired rivet head shape.

3,854,031

WELDING APPARATUS

Josef Keller, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

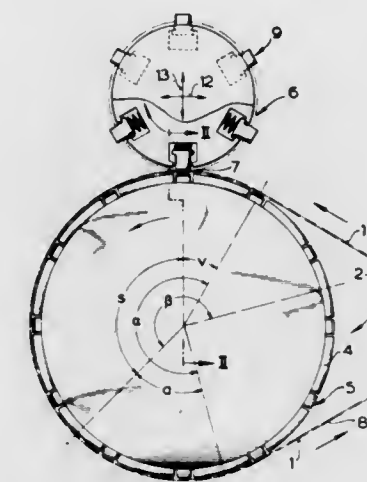
Filed May 23, 1973, Ser. No. 362,907

Claims priority, application Germany, May 27, 1972, 2225931

Int. Cl. H05b 1/00

U.S. Cl. 219-244

8 Claims



1. Apparatus for fusing a plurality of superposed continuously fed plastics films or the like to one another by means of transverse weld seams, comprising a rotary welding cylinder about which the films are partially slung, a plurality of welding bars carried by the welding cylinder at its periphery, a backing cylinder mounted on a rotary shaft for exerting pressure on the superposed films, a plurality of pressure bars provided on the backing cylinder at a pitch corresponding to that of the welding bars, and means for rotating the backing cylinder at the same peripheral speed as the welding cylinder, the rotary shaft of the backing cylinder being adjustable in position along an arc concentric with the welding cylinder.

3,854,032

SUPERHEATED ELECTRIC ARC STEAM GENERATOR

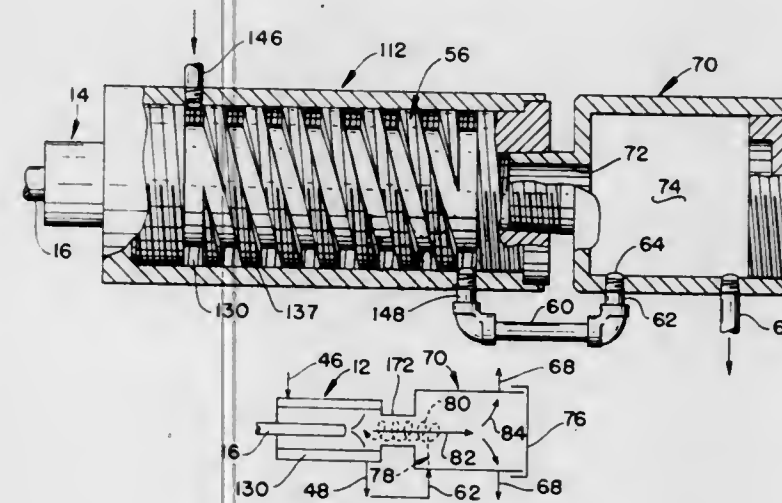
Jerry D. Cooper, 3020 W. 4th St., Odessa, Tex. 79761

Filed Dec. 26, 1973, Ser. No. 427,700

Int. Cl. H05b 7/18

U.S. Cl. 219-383

5 Claims



1. Steam generation apparatus comprising a longitudinally extending metal arc chamber having opposed ends, a closure means in the form of an electrode holder at one end thereof; an electrode supportingly received by said electrode holder and having a marginal end portion thereof extending into the space enclosed by said arc chamber; means electrically insulating said electrode from said arc chamber;

an annular water jacket concentrically formed about said arc chamber, a water inlet and a steam outlet spaced from one another and connected in fluid flow relationship to said water jacket;

electric circuit means including an electric source of energy for causing an arc to occur between said electrode and the interior wall surface of said arc chamber, to thereby generate heat which is removed by water which may be circulating through the water jacket;

a steam chamber having opposed ends spaced from one another, a closure means at one end of said steam chamber, the remaining end of said steam chamber being sealed to and in open communication with the remaining end of said arc chamber;

said steam chamber having a steam inlet port and a steam outlet port, conduit means flow connecting said steam inlet port to said steam outlet;

so that water flows into said water inlet, changes into steam and flows through said inlet port into said steam chamber where the steam is superheated and flows through said steam outlet port.

3,854,033

TIME SHARED CONTROL ARRANGEMENT FOR ELECTRICAL HEATERS AND METHOD

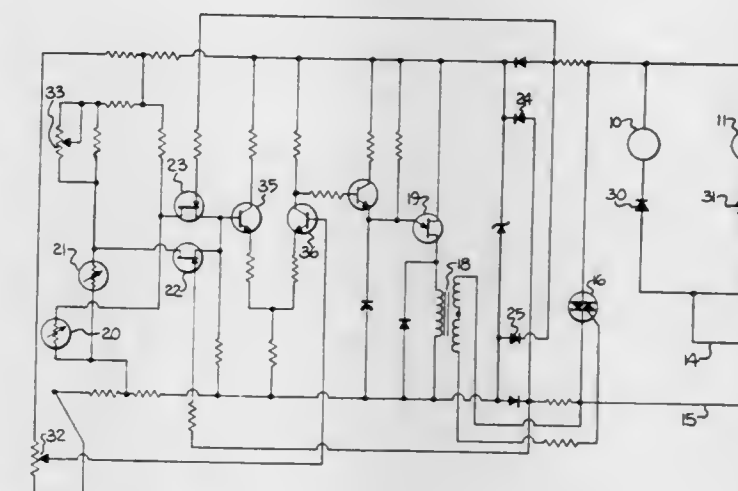
Harlan R. Edge, 227 Edgewood Dr., Greenville, S.C. 29605

Filed Apr. 17, 1972, Ser. No. 244,363

Int. Cl. H05b 1/02

U.S. Cl. 219-483

18 Claims



1. An arrangement for independently operating at least two electrical heaters while sharing a controller means and comprising:

alternating current electrical power controller means for selectively modifying at least one characteristic of electrical current flowing therethrough and thereby for controlling the average power delivered,

a plurality of electrical heaters, independent temperature sensor means operatively associated with each of said electrical heaters for independently sensing the temperatures of the corresponding ones of said heaters,

means operatively interconnected with said controller means, said electrical heaters and said sensor means for sensing the cyclic alternations of the electrical current flowing through said controller means, means for delivering successive cyclic portions of the electrical current through said controller means to successive ones of said electrical heaters and means for effecting response of said controller means independently during each successive cyclic portion to the one of said independent temperature sensor means corresponding to the one electrical heater to which the one cyclic portion is delivered so as to independently control the temperature thereof.

3,854,040

MOTOR VEHICLE LAMP ASSEMBLY

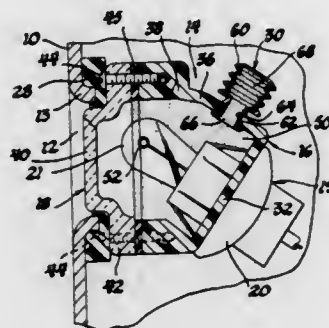
Fred G. Heiderer, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 386,009

Int. Cl. B60q 1/00, 3/00

U.S. Cl. 240-7.1 R

1 Claim



1. A motor vehicle lamp assembly comprising: a lamp housing adapted to be mounted on the motor vehicle, said housing including wall means terminating with a peripheral flange mating with peripheral rim of said housing and covering said opening; a gasket between the flange and the rim; fastener means securing said lens to said housing to compressively retain the gasket between the flange and the rim to define a sealed lamp cavity containing air at substantially atmospheric pressure; first and second openings in said wall means of said housing; a lamp member carried on said housing and projecting through said first opening into said lamp cavity, said lamp member including a filament adapted to be connected to an electrical source, said filament when energized directing illumination outwardly through said lens and heating and pressurizing the contained air in said lamp cavity; and an accordion pleated bellows having an expandable chamber and a tubular flanged base with an axial passage communicating with the chamber, said bellows being directly mounted on said wall means exterior of said housing with the flanged base being press fitted received within said second opening whereby said chamber fluidly communicating with said lamp cavity through said axial passage, said bellows expanding and contracting to vary the volume of said chamber to maintain the pressure therein substantially constant thereby preventing a pressure differential between the cavity and atmosphere tending to draw moisture into the lamp interior during cool down of the lamp assembly.

3,854,041

PROCESS FOR DETECTION OF BIOLOGICAL ACTIVITY

John R. Waters, 801 Stags Head Rd., Towson, Md. 21204, and Andrew A. Zwarun, 7 Dell Ct., Baltimore, Md. 21207

Continuation-in-part of Ser. No. 353,952, April 24, 1973,

This application Dec. 3, 1973, Ser. No. 421,354

Int. Cl. G01t 1/00; C12k 1/10

U.S. Cl. 250-303

8 Claims

1. In the process of detecting biological activity in blood wherein:

- a growth medium including a C^{14} containing carbon source which is fermentable to produce carbon dioxide is inoculated with a blood sample;
- the inoculated sample is exposed to conditions conducive to the occurrence of normal metabolic processes for a period of time sufficient to cause production of carbon dioxide by the fermenting of said source; and
- at least a portion of the gaseous atmosphere from said fermentation is measured for radioactivity to determine the presence of $C^{14}O_2$, the improvement comprising incorporating into the medium at least about 5 percent by weight of a compound selected from the group consisting of sucrose, raffinose and glycylglycine whereby the background noise for the measurement of radioactivity of gaseous $C^{14}O_2$ is reduced.

3,854,042

DEVICE FOR MEASURING THE THICKNESS OF LAYERS WITH A RADIONUCLIDE IRRADIATING THE LAYER

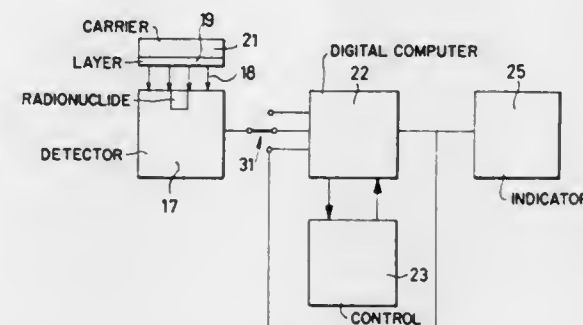
Albert Ott, Am Weinberg 22, 6201 Auringen b/Wiesbaden, Germany

Filed May 10, 1973, Ser. No. 359,010

Int. Cl. G01n 23/00

U.S. Cl. 250-308

1 Claim



1. Device for measuring the thickness of layers comprising radionuclide means irradiating the layer, which radionuclide means produces energy proportional to the thickness of the layer,

detector means which receives the backscatter radiation backscattered from the layer and a possibly present carrier material and produces at its output end a pulse rate, X , in the region between a lower first count, corresponding to the backscatter belonging to layer thickness zero, X_0 , and an upper count belonging to the region of a quasi-infinitely thick layer, X_n ,

series connected indicator means, and controllable digital computing means between the detector means and the indicator means for allowing for the non-linear relationship between count rate and layer thickness,

said digital computing means comprising: means for inputting a dimensionless constant, a , associated with the radionuclide being used and the particular combination of layer and carrier materials being measured, means for inputting a length-effected, one dimensional, constant, c , associated with the radionuclide being used and the particular combination of layer and carrier materials being measured,

means for normalizing the output count from said detector means comprising means for dividing the difference between said detected count and said lower first count corresponding to layer thickness zero by the difference between said upper count corresponding to a quasi-infinitely thick layer and said lower first count, and means for linearizing said normalized count, X_n , in accordance with the following function, in which Y is the thickness of the layer to be measured:

$$X_n = 1 - \frac{1 + \frac{aX}{X_n - X_0}}{\exp(Y/c) + \frac{aX}{X_n - X_0}}$$

3,854,043

X-RAY COLOR ELECTROPHOTOGRAPHY

Masahiro Hukase; Makoto Tomono, and Sigeru, all of Tokyo Inowa, JA, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 130,820, April 2, 1971,

abandoned. This application Feb. 16, 1973, Ser. No. 333,151

Claims priority, application Japan, Apr. 7, 1970, 45-29052

Int. Cl. G01n 23/04

U.S. Cl. 250-315

7 Claims

1. A method of producing a multi-color X-ray electrophotograph comprising:

charging a photoconductive layer of an X-ray sensitive plate comprising a base and the photoconductive layer, exposing the charged photoconductive layer to X-rays which have passed through an object to be electrophotographed such that an electrostatic latent image is formed on said photoconductive layer, said image having regions of reduced charge density in accordance with the concentration of exposing X-rays, injecting a first color developer powder onto the surface of said photoconductive layer, said first powder having an electrical charge of sign opposite to that of the photoconductive layer, applying an electrical force to said first powder, said force having a magnitude less than the magnitude of the force

measuring at said wavelengths the total intensity of at least substantially equal portions of both of said beams, so as to mutually cancel the intensity variations with wavelength due to the interference fringes of the individual beams.

3,854,045

MEASURING THE DUST CONCENTRATION IN AIR

Hans Breuer, Essen; Josef Gebhart, Frankfurt, and Klaus Robock, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 190,944, Oct. 20, 1971, This

application Jan. 31, 1973, Ser. No. 328,347

Claims priority, application Germany, Oct. 21, 1970, 2051546

Int. Cl. G01t 1/16

U.S. Cl. 250-341

20 Claims



which the regions of maximum potential exert on said first powder whereby said first powder is deposited only on those regions of said photoconductive layer which exert a force greater than the applied force, injecting a second differently colored developer powder onto the surface of said layer, said second powder having a charge of the same sign as said first developer powder, adjusting the magnitude of said applied force to a magnitude lower than the magnitude of the force exerted on said second powder by the region on the photoconductive layer having the next highest potential such that said second powder is deposited on all regions of said photoconductive layer which exerts a greater force on said second powder than said adjusted applied force.

1. A method for measuring the dust concentration in dust-containing air, comprising, in combination, the steps of illuminating said dust-containing air with a beam of light having a wavelength between 800 nm and 2,000 nm and travelling in a predetermined direction; detecting light which is forwardly scattered by the dust particles at an angle between 60° and 80° to said predetermined direction; and measuring the intensity of the so-scattered light, said so-measured intensity constituting a measure of said dust concentration of dust having a grain size within a predetermined continuous range in said air.

3,854,046

SCANNING HEAD FOR INSPECTING MATERIAL HAVING PARALLEL STRANDS

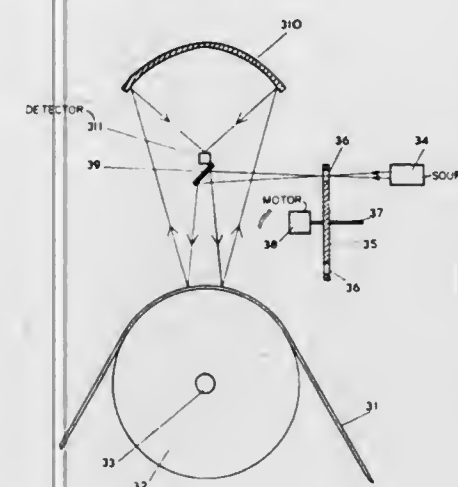
Guy B. Wood, Waverly, Pa., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Apr. 11, 1973, Ser. No. 350,189

Int. Cl. G01n 23/20

U.S. Cl. 250-358

4 Claims



1. A method for measuring a transmission spectrum of a film having a thickness which is of a similar order of magnitude to the wavelengths of the radiation used in the measurement, which method comprises directing the radiation onto the film thereby dividing the radiation into a transmitted beam and a returned beam, each beam individually having interference fringes caused by internal reflection within the film, and

1. In an apparatus for examining the arrangement of a plurality of strands in a body of material, the material being of type having a substantially homogeneous average transmissivity and the strands therein being of substantially constant width and spacing, the apparatus being of the type having a source of radiation to which the material is at least partially transparent, a radiation detector responsive to the radiation to produce a signal representative of the level of received radiation, means for supporting the source and the detector on

opposite sides of a portion of the material and in alignment with each other so that radiation passing through the material is received by the detector, and means for producing relative motion between the source and detector assembly and the material so that various portions of the material can be examined, the improvement comprising

means disposed between said source and said detector for limiting the area of exposure of the detector to radiation received from the source through the material, said means including means defining a radiation transparent aperture having a dimension in a direction transverse to the strands with is equal to the width of an integral number N of strands plus the width of the same integral number N of spaces between strands, the aperture being in the shape of a parallelogram with the sides defining said dimension being parallel to said strands.

3,854,047

DETECTOR HAVING A PLURALITY OF PAIRS OF PHOTO-DETECTORS FOR DETERMINING THE COORDINATES OF A LIGHT EVENT IN A SCINTILLATOR CRYSTAL

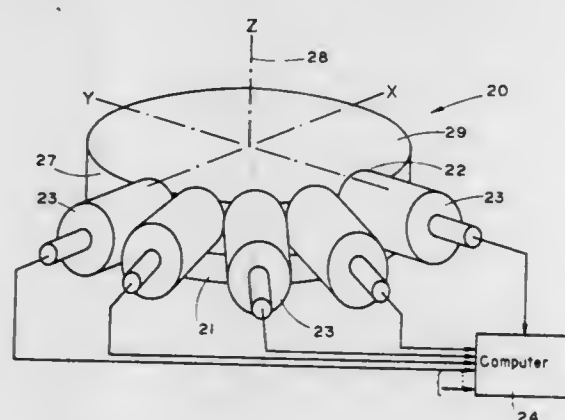
Avraham Suhani, and Benjamin Sabbah, both of Haifa, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Sept. 7, 1972, Ser. No. 286,986

Int. Cl. G01t 1/20

U.S. Cl. 250-366

10 Claims



1. A detector responsive to incident radiation stimuli comprising: a scintillator crystal responsive to an event therein caused by radiation stimulus for emitting a light pulse; the crystal being defined by a peripheral edge surface whose generatrix is parallel to the central axis of the crystal, and a pair of parallel polished and non-coated faces perpendicular to the axis; and a plurality of pairs of photo-detectors each of which has a photo-sensitive surface positioned adjacent different segments of the edge surface of the crystal for receiving light emitted by the crystal in response to an event, each photo detector of a pair being in diametrical alignment whereby the output of each photodetector is functionally dependent on the planar coordinates of the event relative to the central axis but is independent of the axial location of the event in the crystal.

3,854,048

APPARATUS FOR DETERMINING NEUTRON FLOW DENSITY OVER A LARGE AREA IN A NUCLEAR REACTOR

Ernst-Georg Runge, and Erich Klar, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1973, Ser. No. 337,175

Claims priority, application Germany, Mar. 10, 1972, 2211757

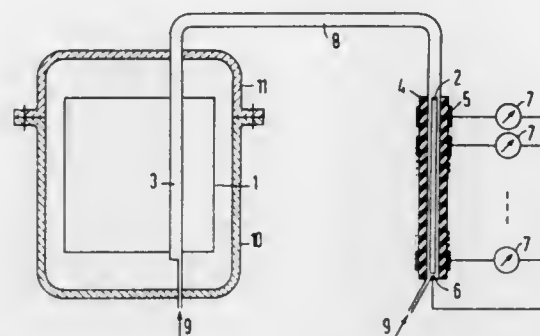
Int. Cl. G01t 3/00

U.S. Cl. 250-390

3 Claims

1. An apparatus for determining the neutron flow density in a nuclear reactor core and having emitter and collector electrodes insulated from each other and between which measurable current is produced by beta radiation; wherein the improvement comprises one of said electrodes being elongated to extend over a large area of said core and the other of said

trodes being in the form of a plurality of mutually separated sections interspaced along the length of said elongated electrode and cable conductors each individually connected to an individual one of said separated sections.



electrodes being in the form of a plurality of mutually separated sections interspaced along the length of said elongated electrode and cable conductors each individually connected to an individual one of said separated sections.

3,854,049

COMPENSATION FOR PATIENT THICKNESS VARIATIONS IN DIFFERENTIAL X-RAY TRANSMISSION IMAGING

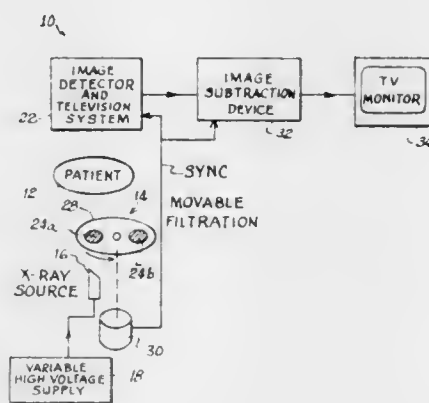
Charles A. Mistretta, and Frederick Kelcz, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 10, 1973, Ser. No. 423,115

Int. Cl. G03b 41/16

U.S. Cl. 250-402

30 Claims



1. A method of producing differential x-ray images to visualize a contrast material in a patient, comprising the steps of producing a first x-ray image using an x-ray source and first filter, producing a second x-ray image using said x-ray source and a second filter, said filters producing substantially different x-ray spectra, producing a differential image corresponding to the difference between said first and second x-ray images, said contrast material being visualized in said differential image, and adjusting the voltage of said x-ray source as in inverse function of the average patient thickness to minimize the effect of variations in patient thickness upon said differential image.

3,854,050

HIGH PRECISION FLUOROMETER FOR MEASURING ENZYMIC SUBSTRATES IN TISSUE

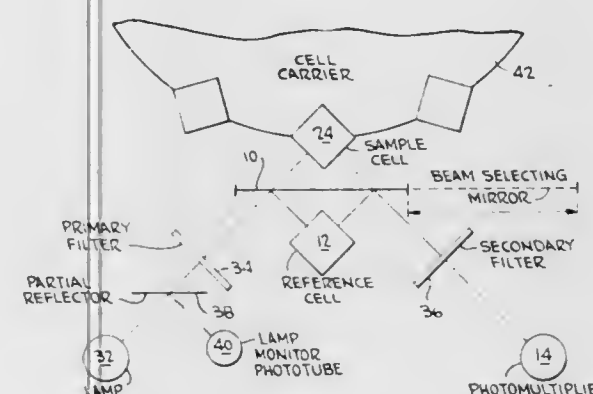
John Ivan Peterson, Falls Church, Va.; Walter S. Friauf, Bethesda, Md., and Stephen B. Leighton, Maplewood, N.J., assignors to The United States of America as represented by the Assistant Secretary, Health and Scientific Affairs, Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 11, 1973, Ser. No. 396,224

Int. Cl. G01t 1/20

U.S. Cl. 250-429

4 Claims



1. A high precision fluorometer for biochemical measurements comprising:

- A. a source of a beam of radiant energy;
- B. cell means for holding a sample to be measured, said sample being of a type exhibiting an initial level of fluorescence when irradiated by said radiant energy;
- C. means for dispensing a reagent into said sample cell means to thereby change the fluorescence level of said sample relative to said initial level;
- D. reference cell means;
- E. said sample cell means and said reference cell means having at least two adjacent faces at right angles to each other, said beam entering through one of said adjacent faces and fluorescence energy exiting through the other of said adjacent faces;
- F. photomultiplier means for converting fluorescent energy into electrical signals;
- G. a movably mounted mirror means for selectively directing said beam at said sample cell means or said reference cell means, whereby said sample or said reference, respectively, will be excited by said radiant energy to fluorescence, and simultaneously directing fluorescent energy from said sample cell means or said reference cell means, respectively, toward said photomultiplier means;
- H. means for converting said electrical signals to digital signals;
- I. means for integrating said digital signals over a predetermined time interval;
- J. means for comparing the signals from said sample cell with the signals from said reference cell, thereby producing the ratio of sample to reference intensity;
- K. print-out means;
- L. rotatable carrier means for a plurality of sample cells, said carrier means being a circular metal block containing channel means for circulation of water at a constant temperature to thereby control the temperature of said cells;
- M. means for rotating said carrier means to position individual cells for dispensing said reagents thereinto and excitation by said beam; and
- N. control means for selectively rotating said carrier means and directing said beams and activating said means for integrating said digital signals, comparing said sample and reference signals, and printing out the desired information.

3,854,051

GLOW DISCHARGE SOLUTION TREATMENT APPARATUS

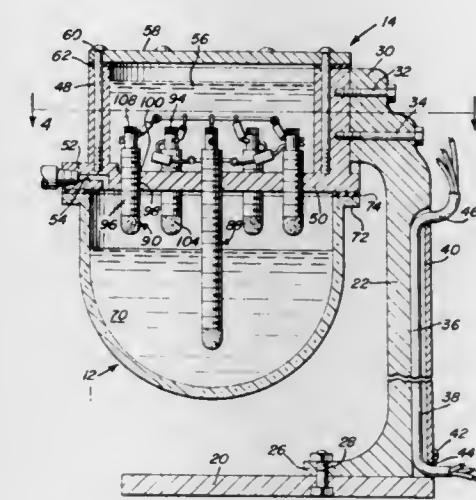
William L. Hudson, 11804 E. 67th St., Kansas City, Mo. 64133

Filed May 14, 1973, Ser. No. 360,546

Int. Cl. C22d 7/08; B01k 1/00

U.S. Cl. 250-546

15 Claims



1. Apparatus for treating material by glow discharge, comprising a housing, a reaction vessel separate from the housing enclosing the material being treated, means for supporting the housing, means for removably securing the reaction vessel to the housing to seal the material within the reaction vessel, anode means mounted in the housing and projecting into the reaction vessel above the material therein, cathode means mounted in the housing and extending therefrom into the material within the reaction vessel, electrical circuit means connected to the anode and cathode means and mounted internally within the housing for activating treatment of the material within the reaction vessel, and means connected to the housing for controlling and monitoring conditions exclusively within the reaction vessel.

3,854,052

METHOD OF AND APPARATUS FOR DIMENSIONALLY INSPECTING AN ARTICLE WITH A PAIR OF RADIANT ENERGY BEAMS

Madhu P. Asar, Columbus, and Harry L. Maddox, Reynoldsburg, both of Ohio, assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,003

Int. Cl. G01b 11/08; G01n 21/30

U.S. Cl. 250-560

23 Claims

1. In a method of ascertaining a relationship between a linear dimension of a first member with respect to a known linear dimension of a second member:

- scanning the first member with a first detector along the linear dimension thereof;
- initiating the generation of a first pulse train at a first frequency upon the first detector passing over the origin of, and until the first detector passes over the termination of, the linear dimension of the first member;
- counting and storing the pulses of the first pulse train;
- scanning the second member with a second detector along the known linear dimension thereof;
- initiating the generation of a second pulse train at a second frequency upon the second detector passing over the origin of, and until the second detector passes over the termination of, the known linear dimension of the second member, the second frequency being at a value to generate a pulse train having a pulse count equal to the pulse count of the first pulse train when the ratio of the linear dimension of the first member to the known linear dimension of the second member is equal to a known constant;
- applying the pulses of the second pulse train to sequen-

connected to said control electrode of said fourth semiconductor means through a capacitor.

3,854,058

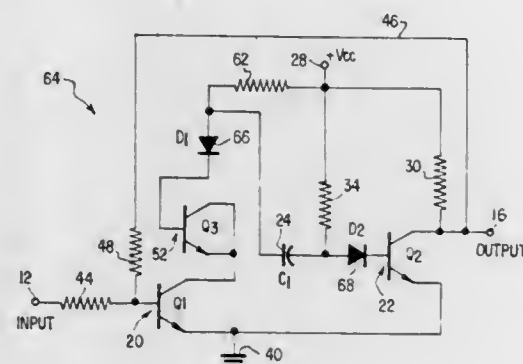
TEMPERATURE STABLE ONE-SHOT MULTI-VIBRATOR
Dudley D. Nye, Jr.; Peter J. Carlson, and Arley Keith, Jr., all of Fort Lauderdale, Fla., assignors to Airpax Electronics Inc., Fort Lauderdale, Fla.

Filed Sept. 5, 1973, Ser. No. 394,410

Int. Cl. H03k 3/10

U.S. Cl. 307-273

15 Claims



1. A one-shot multi-vibrator comprising first and second transistors each having an emitter, a collector, and a base, a pair of power supply terminals for coupling a DC power supply across the emitter-collector circuits of said transistors, means for supplying an input signal to the base of the first of said transistors, means for deriving an output signal from the collector of the second of said transistors, a timing capacitor coupled between the collector of said first transistor and the base of said second transistor, a resistor coupling the collector of said second transistor to said first transistor, a timing resistor coupling one of said power supply terminals to the base of said second transistor, means providing a semiconductor diode junction coupling said timing capacitor to the collector of said first transistor, a first semiconductor diode junction coupling one side of said timing capacitor to the base of said second transistor and second and third semiconductor diode junctions coupling the other side of said timing capacitor to the collector of said first transistor, and a fourth semiconductor diode junction coupling said one side of said timing capacitor to the collector of said second transistor.

3,854,059

FLIP-FLOP CIRCUIT

Kosei Nomiya, and Hiroto Kawagoe, both of Tokyo, Japan, assignors to Hitachi, Ltd. Tokyo, Japan

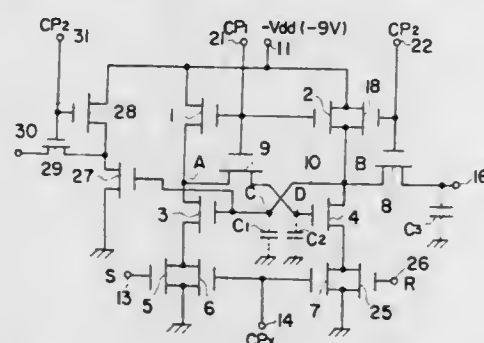
Filed Nov. 20, 1972, Ser. No. 307,786

Claims priority, application Japan, Nov. 19, 1971, 46-92416

Int. Cl. H03k 23/08, 23/30

U.S. Cl. 307-304

10 Claims



1. A flip-flop circuit comprising a first field effect transistor having a drain connected through first resistance means to a DC power source, a second field effect transistor having a drain connected through second resistance means to said DC power source, the gate of said first field effect transistor being connected to the drain of said second field effect transistor, a

third field effect transistor, the gate of said second field effect transistor being connected to said drain of said first field effect transistor through said third field effect transistor, first synchronizing means connected to the gate of said third field effect transistor for applying a first clock pulse signal thereto which renders said third field effect transistor periodically conductive, fourth and fifth field effect transistors connected in parallel, the drains of said fourth and fifth field effect transistors being connected to the source of said first field effect transistor and the sources thereof being grounded, the gate of said fourth field effect transistor being connected to an input signal source, a sixth field effect transistor having a drain connected to the source of said second field effect transistor, the source of said sixth field effect transistor being grounded, and second synchronizing means connected to the gates of said fifth and sixth field effect transistors for applying a second clock pulse signal thereto which renders said fifth and sixth field effect transistors non-conductive when said third field effect transistor is conductive and an input signal is received from said input signal source.

3,854,060

TRANSDUCER FOR FM SONAR APPLICATION

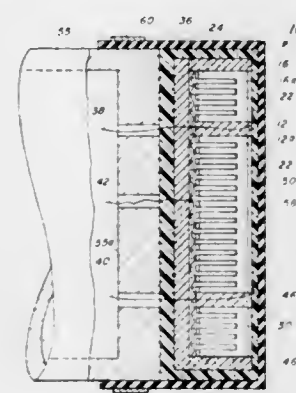
Rufus L. Cook, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,069

Int. Cl. H04r 17/00

U.S. Cl. 310-9.6

11 Claims



1. An electroacoustic transducer comprising: first and second pairs of piezoelectric elements; said piezoelectric elements of said first pair being substantially semi-disc shaped and presenting flat front surfaces each bounded by a straight side surface and an arcuate side surface, said piezoelectric elements of said first pair being disposed with said front surfaces in a first common plane with said straight side surfaces in adjacent, spaced, parallel relation to one another and said arcuate surfaces lying in a circle;

said piezoelectric elements of said second pair being substantially semi-annular in shape and presenting flat front surfaces each bounded by inner and outer arcuate surfaces and straight end surfaces, said piezoelectric elements of said pair being disposed in concentric relation to said first pair with said front surfaces lying in said first common plane and said inner arcuate surfaces in uniformly spaced relation to said arcuate surfaces of said first pair, said straight end surfaces being in spaced parallel relation to one another; said piezoelectric elements of said first and second pairs being further characterized by flat rear surfaces lying in a second common plane;

front electrode means, on each of said front surfaces, for effecting electrical connection therewith; rear electrode means, on said rear surfaces, for effecting electrical connection therewith; and said piezoelectric elements each being further characterized by a plurality of intersecting slots formed in said rear

surfaces and defining a plurality of rearwardly extending posts on each of said piezoelectric elements.

3,854,061

MAGNETOHYDRODYNAMIC GENERATOR ARC RESISTANT ELECTRODES

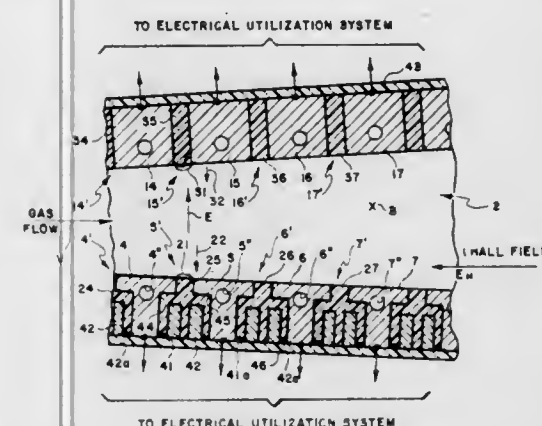
Richard J. Rosa, Cambridge, Mass., assignor to AVCO Everett Research Laboratory, Inc., Everett, Mass.

Filed Feb. 21, 1974, Ser. No. 444,357

Int. Cl. H02k 45/00

U.S. Cl. 310-11

9 Claims



1. In an MHD device having a duct for conveying an electrically conductive gas through a transverse magnetic field, said duct having opposed walls, electrode means comprising:

- a first set of electrodes spaced one from another disposed along one of said opposed walls, each of said electrodes having a first end surface proximate said gas;
- a second set of electrodes spaced one from another disposed along the other of said opposed walls, each of said electrodes having a second end surface proximate said gas;
- means electrically interconnecting said first and second set of electrodes to effect current flow between said sets of electrodes through said gas, said current flow producing a Hall potential in the gas along the direction of gas flow and a potential difference between adjacent electrodes; and
- arc splitting means comprising an arc splitting member disposed in the space between at least some adjacent electrodes of at least one of said sets of electrodes for increasing the voltage between said adjacent electrodes required to sustain an arc discharge therebetween.

3,854,062

FUSIBLE MEANS FOR ROTATING ELECTRICAL DEVICE

Bernard B. Winer, Pittsburgh, and Richard J. Keady, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 31,841, April 30, 1970, which is a continuation of Ser. No. 649,698, June 28, 1967, abandoned, and a continuation of Ser. No. 174,651, Aug. 25, 1971. This application Mar. 5, 1973, Ser. No. 338,014

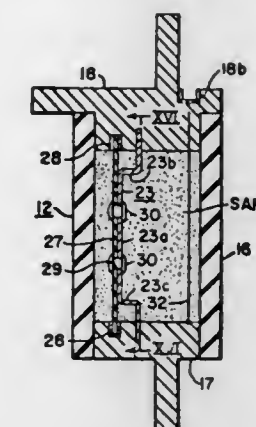
Int. Cl. H02k 11/00

U.S. Cl. 310-68 C

2 Claims

1. In combination, a rotating electrical device, a rotating fuse means, said rotating fuse means comprising one or more fuse assemblies (12), end terminal connectors (17, 18) disposed at the ends of each fuse assembly (12), each fuse assembly (12) comprising an insulating casing with an interiorly-disposed longitudinally-arranged insulating support-plate means (27) and a generally parallel-arranged fuse-link (23), means affixing said fuse-link (23) to the longitudinally-arranged insulating support-plate means (27), said support-plate means (27) being supported by said end terminal connectors (17, 18) for the rigid support thereof, means for in effect providing a common shaft carrying said rotating electrical

cal device and said rotating fuse means, circuit means carried by said shaft for electrically connecting said electrical device and said rotatable fuse means together, means locating said



fuse casing and said support-plate means (27) in a radial direction with respect to said shaft, and indicating means for indicating operation of the rotating fuse means.

3,854,063

ELECTRIC MOTOR ADAPTED TO BE COUPLED DIRECTLY TO A SHAFT OF APPARATUS FOR PERFORMING WORK

Carl-Axel Leopold Bergman, Atvidaberg, Sweden, assignor to Aktiebolaget Overums Bruk, Overum, Sweden

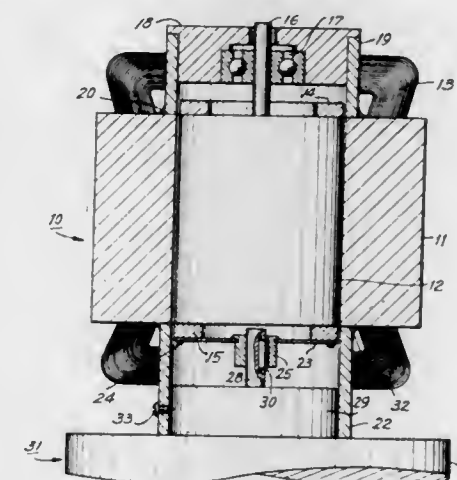
Filed Jan. 9, 1974, Ser. No. 431,915

Claims priority, application Sweden, Jan. 10, 1973, 7300322

Int. Cl. H02k 7/14

U.S. Cl. 310-75 D

4 Claims



1. For use with apparatus for performing work having a casing and a shaft projecting from an end wall thereof,

- an electric motor including a rotor adapted to be positioned adjacent to the shaft in axial alignment therewith,
- means for journaling the end of said rotor removed from the end wall of the casing, the opposite end of said rotor nearer to the end wall of said casing being characterized by the absence of journaling means,
- means for coupling said motor directly to the shaft,
- said coupling means comprising a flexible disk fixed to the end of said rotor nearer to the end wall of the casing, and
- a hollow hub which is carried by said disk at its axis of rotation and receives the shaft.

3,854,064

MECHANICAL SEAL ISOLATOR

Clarence E. Dunbar, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed May 10, 1973, Ser. No. 358,921

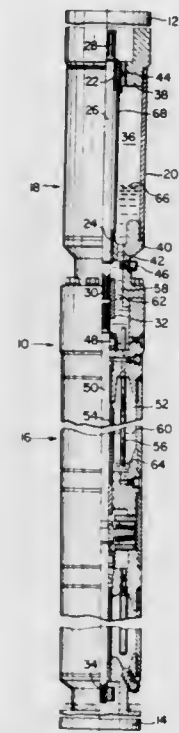
Int. Cl. H02k 5/12

U.S. Cl. 310-87

8 Claims

1. In a submersible pump installation, a rotary pump having a pump shaft section, means including an oil-filled electric

motor for driving said pump, said driving means having a shaft section provided with a mechanical seal for preventing the pumped fluid from passing therethrough to said motor, and a mechanical seal isolator comprising a housing interposed between said driving means and said pump and having a shaft section connecting said shaft section of said pump to said shaft



section of said driving means, said housing having a chamber therein communicating with said seal adjacent to one end of the housing, said chamber containing a fluid of greater density than said fluid to be pumped and said oil, said greater density fluid being in surrounding contact with said mechanical seal under all operating conditions of said motor, irrespective of the expansion and contraction of the oil in said motor.

3,854,065

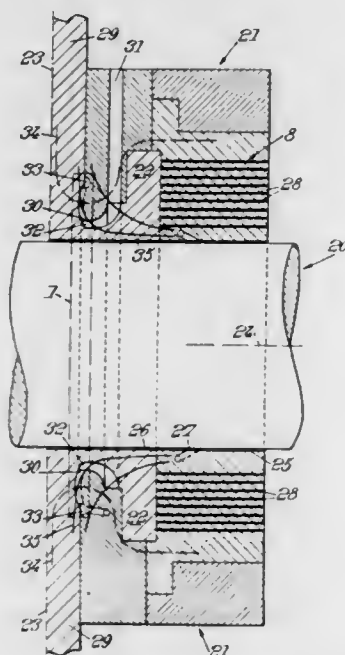
DEVICE FOR INCREASING THE PRESSURE OF A CONDUCTIVE LIQUID AND UNIPOLAR DYNAMO INCORPORATING SAID DEVICE

Christian Rioux, Cachan, and Jean Lucidarme, Ste. Genevieve, both of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly-sur-Seine, France
Filed Apr. 2, 1973, Ser. No. 346,845

Claims priority, application France, Apr. 7, 1972, 72.12259
Int. Cl. H02k 31/04

U.S. Cl. 310-178

5 Claims



1. Device for increasing the pressure of an electrically conducting liquid, comprising, in combination, a crown of elongated and curved blades which are each electrically insulated

and adjacent blades of which crown define between themselves a space for the passage of said liquid between a first end and a second end opposite the first in the direction of the length of the blades, inlet means for bringing the conductive liquid to the first end of each said space, electric current generating means adapted to create in each said space, when the conductive liquid is within said space, an electric current of high intensity and of direction substantially perpendicular to the surface defined by the longitudinal directions of the walls of the blades which define said space, and magnetic field generating means for generating a magnetic field having, at each space, a direction transverse with respect to said walls of the blades which define said space, so that said magnetic field and said electric current create in each space a Laplace force of substantially tangential direction to the walls of the blades which define that space, said force being oriented from said first towards said second end, said electric current generating means being independent of the said conductive liquid.

3,854,066

ELECTRON DEVICE INCORPORATING A MICROCHANNEL SECONDARY EMITTER

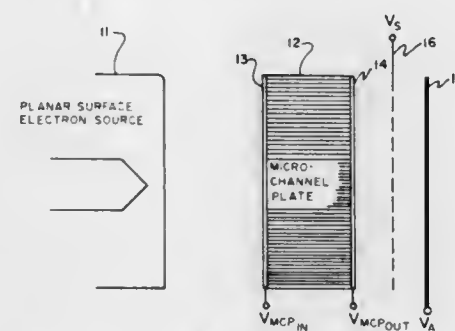
Wesley J. Payne, Bath, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 21, 1973, Ser. No. 418,001

Int. Cl. H01j 43/02

U.S. Cl. 313-105

2 Claims



1. A high gain electron device comprising:
 - a planar surface electron source having means associated therewith for causing electrons to be emitted therefrom;
 - a microchannel plate having parallel conductive entrance and exit faces positioned proximate said surface with said entrance face and said planar surface in parallel relationship;
 - anode means positioned to receive electrons from the exit face of said microchannel plate;
 - means associated with said entrance face for receiving a modulating voltage;
 - means associated with said exit face for receiving a biasing voltage, whereby the voltages impressed upon said faces control the gain of the device by causing the entrance and exit faces to function as a control grid and screen grid respectively; and
 - a suppressor grid located between said exit face and anode for preventing anode electrons from returning to said exit face.

3,854,067

SPARK PLUG

Thomas D. Morgan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 4, 1973, Ser. No. 403,419

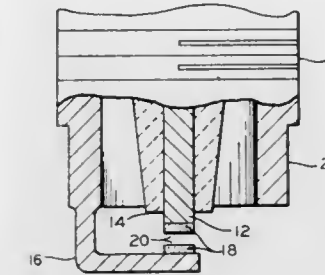
Int. Cl. H01t 13/02

U.S. Cl. 313-130

3 Claims

1. A spark plug for a combustion engine comprising in combination a metal shell, an insulator positioned within said shell, a first electrode passing through said insulator and projecting from the lower end of said insulator to form a spark-

producing area, a cap attached to the upper end of said first electrode, and a second electrode attached to said metal shell in juxtaposition with said first electrode to form a spark-gap



and a second spark-producing area, wherein said spark-producing areas of said electrodes consist of a button having thereon a coating of titanium dioxide.

3,854,068

SHIELD STRUCTURE FOR VACUUM ARC DISCHARGE DEVICES

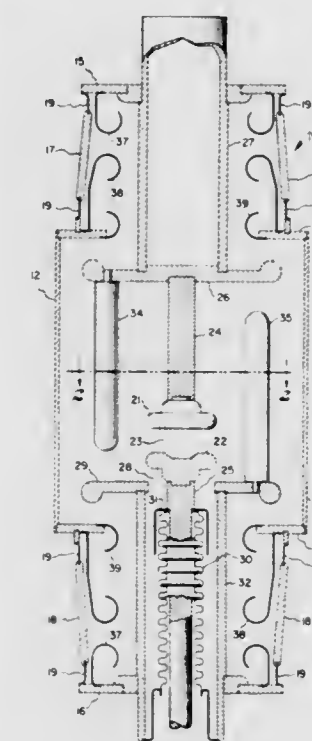
Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,024

Int. Cl. H01j 1/53

U.S. Cl. 313-240

9 Claims



1. An improved vacuum arc discharge device for carrying high currents at increased voltage levels comprising:
 - a hermetically sealed evacuated envelope, said envelope including a metallic cylindrical sidewall member, a pair of insulating sidewall members and a pair of oppositely disposed endwall members, each endwall member connected to one of said insulating sidewall members and said insulating sidewall members connected to the ends of said metallic sidewall member in a vacuum-tight seal;
 - a pair of support plates disposed in said envelope intermediate the ends thereof and supported by said endwall members;
 - a first plurality of spaced electrode members extending from one of said support plates;
 - a second plurality of spaced electrode members extending from the other of said support plates, said first and second plurality of spaced electrode members being substantially normal to said support plates and interleaved in alternating sequence to form a spaced circular array of electrodes;

means for causing an electric arc breakdown to be established between adjacently spaced arc-electrode members; and
means for connecting said arc-electrode members in circuit with an electric load.

3,854,069

METHOD OF MAKING AN ELECTRICAL CONTACT FOR A COLOR PICKUP TUBE

Susumu Tagawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

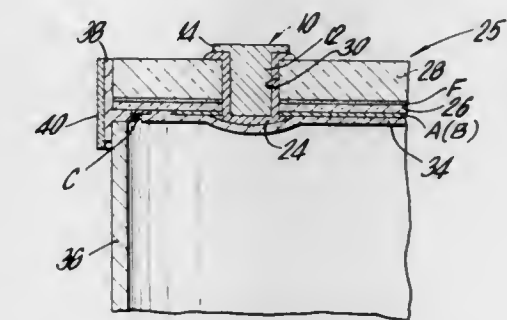
Filed Nov. 22, 1972, Ser. No. 308,656

Claims priority, application Japan, Nov. 27, 1971, 46-95639

Int. Cl. H01j 5/48, 5/50

U.S. Cl. 313-318

7 Claims



1. An improved electrical contact for use with an image signal pickup tube of the type having a transparent faceplate assembly, the faceplate assembly being provided with at least one hole passing from its exterior surface to its interior surface and having an electrode disposed on its interior surface, wherein the improvement comprises a metal post having a main portion whose diameter is less than the diameter of the faceplate assembly hole and an enlarged head portion whose diameter is greater than the diameter of the faceplate assembly hole; and a coating of electrically conductive, deformable material hermetically sealed to the main portion of the metal post and extending adjacent the enlarged head portion, the coated main portion of the metal post being disposed in the faceplate assembly hole and extending therethrough; a portion of the coating on the end of the metal post, nearest to the exterior surface of the faceplate assembly forming a hermetic seal at the juncture of said exterior surface and said metal post and a portion of the coating on the end of the metal post nearest to the interior surface of the faceplate assembly being deformed to extend outward over a portion of said interior surface so as to contact a surface of the electrode remote from said interior surface and to provide a hermetic seal.

3,854,070

ELECTROLUMINESCENT DEVICE WITH VARIABLE EMISSION

Natalya Andreevna Vlasenko, ulitsa Entuziastov, 15, kv. 175; Stepan Andreevich Zynio, prospekt Nauki, 142, korpus 14, kv. 24/4, and Zhanetta Alexandrovna Pukhly, bulvar Druzhby narodov, 3b, kv. 79, all of Kiev, U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,046

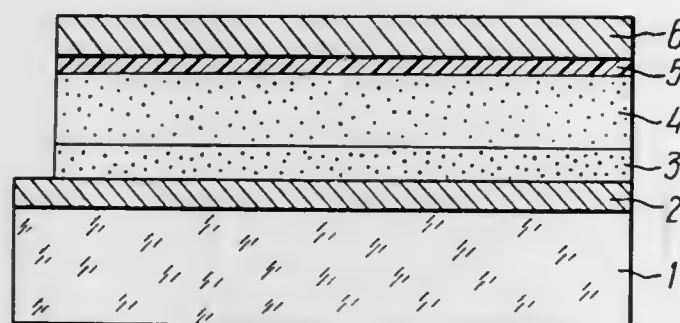
Int. Cl. H05b 33/22, 33/26

U.S. Cl. 313-503

2 Claims

1. An electroluminescent device having variable emission colors, said device comprising:
 - a substrate; and
 - at least five layers comprising, and being disposed onto said substrate in the following order:
 - a. a first electrode;
 - b. a protective layer being formed from a material which is transparent to luminescent emission;
 - c. a layer of electroluminescent substance, said protective layer having an index of refraction which is substantially equal to that of said electroluminescent substance

and being resistant to chemical reaction with the substances of the adjoining layers;
d. an insulating layer; and
e. a second electrode, one of said electrodes being partially transparent for luminescent emission, said first and second electrodes having a high reflection coefficient and forming a Fabry-Perot cavity tuned in resonance to a prescribed emission wavelength; the thickness of said protective layer, the coefficient of diffusion



of the material of said protective layer into said layer of said electroluminescent substance and the coefficient of diffusion of the material of said first electrode into said protective layer being selected so that at the temperature of thermal annealing of said layer of said electroluminescent substance there is no diffusion into said layer of said electroluminescent substance from either the material of said first electrode or the material of said protective layer.

3,854,071

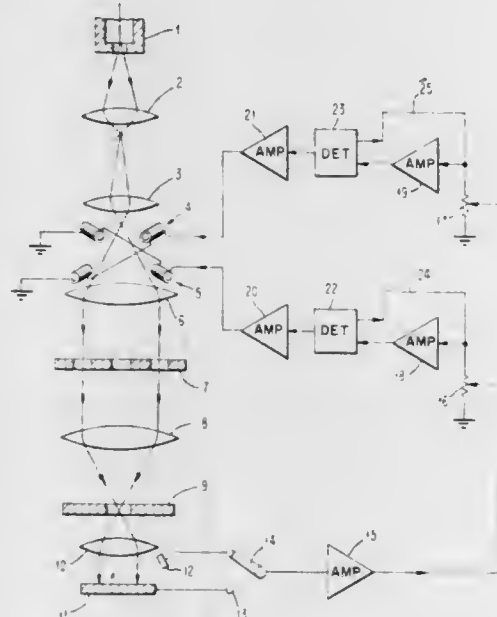
EXPOSURE REGULATED SCANNING ILLUMINATION MEANS FOR ELECTRON PROJECTION SYSTEMS

Marcus B. Heritage, Katonah, and George A. Wardly, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,246
Int. Cl. H01j 29/52

U.S. Cl. 315-30

5 Claims



1. In an electron beam projection system of the type including at least an electron beam source, a pair of deflection coils, for deflecting said electron beam in a raster mode and a target wafer onto which said electron beam is projected and scanned, the combination comprising:

means for providing a regulated scanning rate for said system so that the instantaneous scan velocity is proportional to the current falling on the target wafer, said means including:

means for detecting electron current from said target wafer being scanned by said electron beam;
first and second feedback circuits connected to said electron current detection means, each of said feedback circuits including an attenuator means to provide a scan control signal, a deflection amplifier means connected to separate ones of said pair of deflection coils to produce deflection currents in said deflection coils;
an integrating amplifier means interconnected to said attenuator means for integrating the electron current from said target wafer; and
a scan limit detector means connected to said deflection amplifier means in each of said feedback circuits to detect when a given desired amplitude is attained by said deflection coil to provide a retrace of said electron beam back to its initial point.

3,854,072

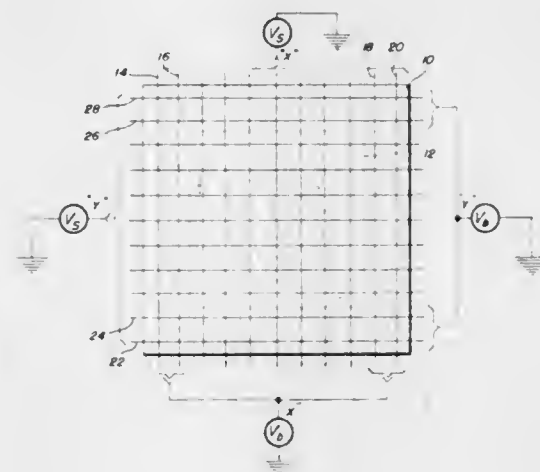
METHOD FOR RELIABLY LIGHTING CELLS IN A PLASMA DISPLAY PANEL

Ray L. Trogon, Urbana, Ill., assignor to University of Illinois Foundation, Champaign County, Ill.

Filed Apr. 26, 1972, Ser. No. 247,819
Int. Cl. H01j 17/30

U.S. Cl. 315-169 R

4 Claims



1. In entering information into information cells in a plasma panel in response to an applied selective address firing signal, sustaining signals being applied to said panel for sustaining the information entered into said panel, and said panel including a plurality of border cells around said information cells, an improved method for reliably entering said information comprising applying a border drive signal to said border cells for combining with said sustaining signals to discharge all of said plurality of border cells simultaneously with each application of said selective address firing signal.

3,854,073

DISPLAY DEVICE AND CONTROL CIRCUIT THEREFOR

Robert C. Quenelle, Stanford, Calif., assignor to IMS Corporation, Albuquerque, N. Mex.

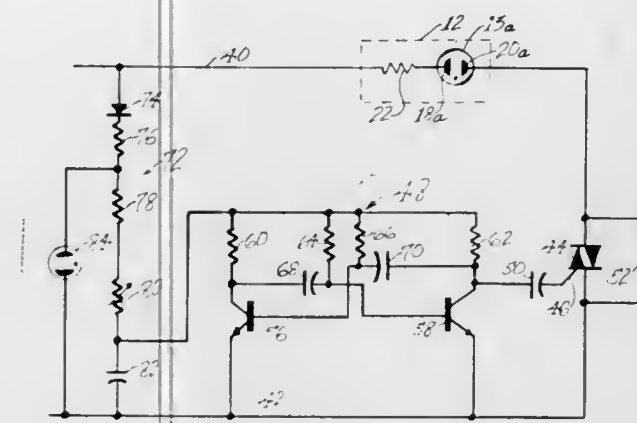
Continuation of Ser. No. 221,247, Jan. 27, 1972, abandoned.
This application Sept. 17, 1973, Ser. No. 397,799
Int. Cl. H05b 37/02

U.S. Cl. 315-200 A

11 Claims

1. A control circuit for a glow discharge lamp having independent electrodes to be illuminated upon application thereto of a voltage of a given polarity comprising: circuit means connected to the glow discharge lamp for receiving and alternating current voltage and controlling which polarity of voltage of the alternating current voltage is to be applied to said glow discharge lamp, and a current control circuit connected to said circuit means and in circuit with the glow discharge lamp to control operation of said circuit means to apply to said

electrodes a series of voltage pulses of a first polarity for a first time interval and then apply a series of voltage pulses of opposite



site polarity for a second time interval, thereby alternately visibly illuminating the electrodes of the glow discharge lamp.

3,854,074

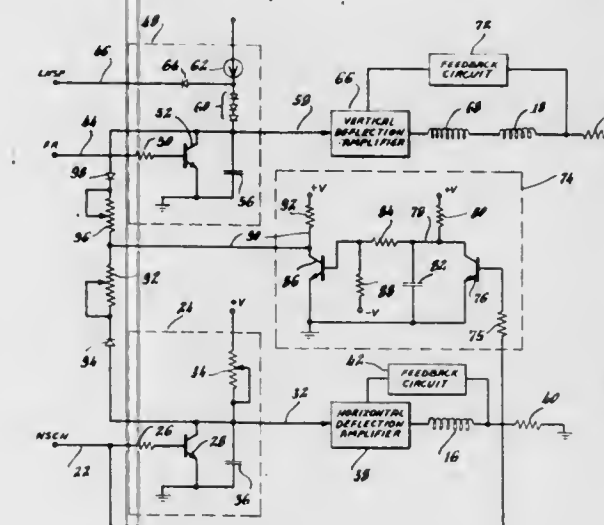
CIRCUIT FOR ELIMINATING CURRENT FLOW THROUGH THE DEFLECTION COILS OF A CRT WHEN THE BEAM IS NOT BEING MOVED THROUGH A RASTER PATTERN

John Demichiel, and Arthur Langer, both of Stamford, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 28, 1973, Ser. No. 374,777
Int. Cl. H01j 29/70

U.S. Cl. 315-393

13 Claims



1. In a cathode ray tube (CRT) display device of the type having a horizontal deflection coil for controlling the horizontal position of the CRT beam, a vertical deflection coil for controlling the vertical position of the CRT beam, and horizontal and vertical control means for respectively controlling the current flowing through said horizontal and vertical deflection coils, said coils being operative under control of said control means for moving the beam through a selected raster pattern, a circuit for substantially eliminating current flow through both of said deflection coils when the beam is not being moved through said raster pattern, comprising:

a time-out circuit which generates a selected output at all time except for a predetermined time period after it receives an input;
means operative when the beam is being moved through a raster pattern for applying successive pulses as inputs to said time-out circuit, the time period between said pulses being less than said predetermined time period; and

means included as part of each of said control means and responsive to the selected output from said time-out circuit for causing each of the control means to apply substantially zero current to the corresponding deflection coil.

3,854,075

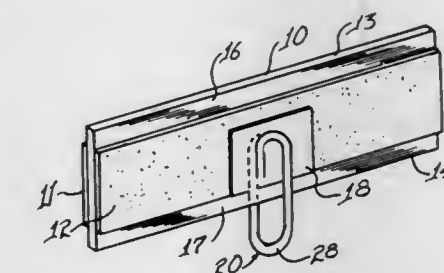
MINIATURE METALIZED FILM CAPACITOR

John Phillip Uhi, Arlington, Va., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Nov. 29, 1973, Ser. No. 420,236
Int. Cl. H01g 1/14

U.S. Cl. 317-260

5 Claims



1. A capacitor comprising at least one flexible dielectric layer, at least one first and one second flexible conductive layer disposed on opposite sides of said dielectric layer, an elongated conductive clip member having a looped end that extends externally of said flexible layers and forms a bight portion that may be removed, first and second substantially straight lead portions which are integral with said looped end and which normally are coplanar and which have first and second reverse bend bight portions that are integral with the inner ends of said first and second lead portions, respectively, said first and second reverse bend bight portions being biased toward each other so that they must be forced apart to receive said flexible layers therebetween, a first thin conductive foil piece positioned between said first conductive layer and said first reverse bend bight portion and a second thin conductive foil piece positioned between said second conductive layer and said second reverse bend bight portion, said foil pieces thereby being secured in place by the natural resiliency of said clip member when said flexible layers are positioned between said reverse bend bight portions and the force tending to separate said bight portions is removed.

3,854,076

DUAL LEVEL PLUGGING CIRCUIT

Joe Chester Lambert, Roanoke, Va., assignor to General Electric Company, Salem, Va.

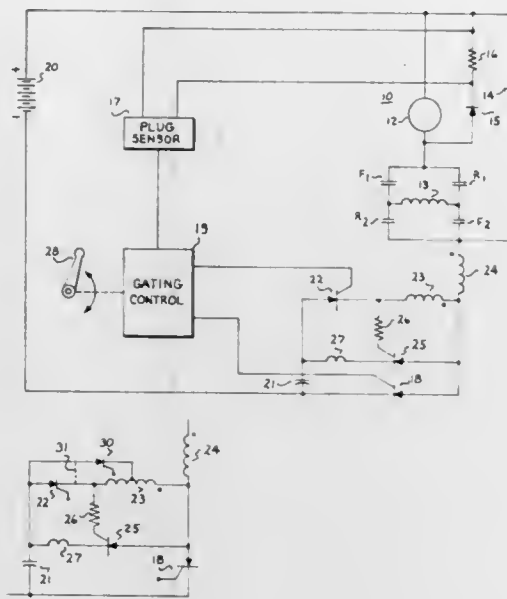
Filed Nov. 19, 1973, Ser. No. 416,805
Int. Cl. H02p 5/16

U.S. Cl. 318-341

14 Claims

1. In a pulse control system for an electric vehicle including a first thyristor for coupling a traction motor to a source of electric potential and a circuit for commutating the first thyristor after a predetermined time including a capacitor, an inductive winding and second and third thyristors, said second thyristor being energizable to couple said capacitor in circuit with the source of electric potential to allow the capacitor to charge in a first direction, and said third thyristor being energizable to allow the charge impressed upon said capacitor to flow through said inductive winding to reverse the polarity of

capacitor charge, the improvement comprising a fourth thyristor coupled in said circuit and energizable to conduct



charge from said capacitor about a portion of said inductive winding.

3,854,077

INDUCTION MOTOR SYSTEM WITH CONSTANT TORQUE

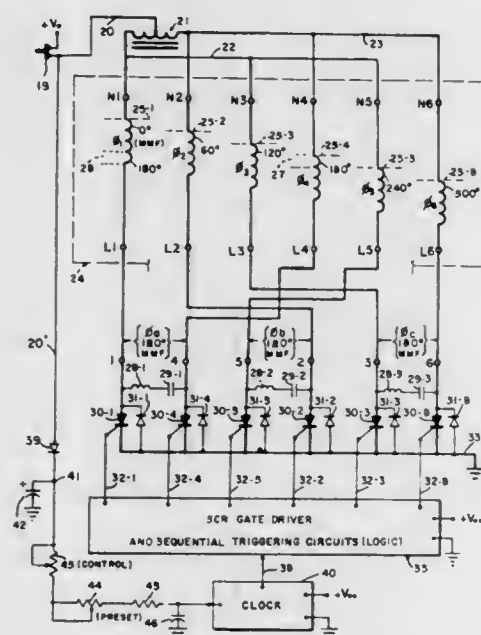
Jack E. Greenwell, Reno, Nev., assignor to Wm. Lear Enterprises, Inc., Reno, Nev.

Division of Ser. No. 144,847, May 19, 1971. This application Jan. 31, 1973, Ser. No. 328,327. The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.

Int. Cl. H02p 5/40

U.S. Cl. 318-227

10 Claims



1. A polyphase motor system comprising a stator and an induction rotor, said stator containing a plurality of half-phase windings in paired consequent pole array with one pair for each effective phase for the motor in polyphase operation, a controlled rectifier for each of said half-phase windings, control means connected with said controlled rectifiers to selectively establish conduction periods therefor and thereby for their associated half-phase windings to provide a rotating magnetic field in the stator for corresponding operation of

said induction rotor, said control means including a timing circuit that effects said successive conduction periods in related spaced time intervals among said half-phase windings once during each cycle of applied motor frequency, said timing circuit having an electronic clock, circuit means coupled to said clock and arranged to control its frequency and thereby the duration of said conduction periods, and electrical means providing a variable source of operating dc voltage for said half-phase windings, said circuit means including a Zener diode, said variable dc voltage being coupled to said Zener diode and thereby to said clock, whereby variation of the applied dc voltage from the source directly produces ranges of substantially constant torque output operation of the rotor.

3,854,078

COMMUTATORLESS MOTOR ARRANGEMENT

Klaus Hubner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

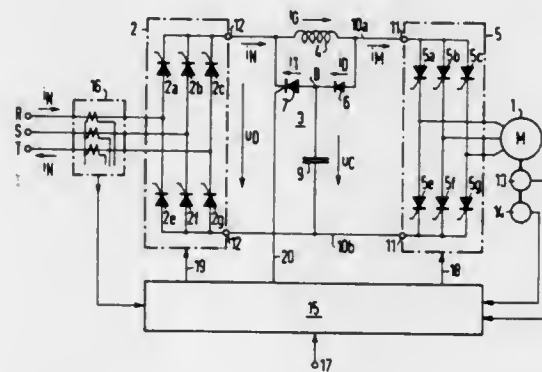
Filed Apr. 18, 1973, Ser. No. 352,204

Claims priority, application Germany, Apr. 19, 1972, 2219018

Int. Cl. H02p 5/40

U.S. Cl. 318-227

2 Claims



1. A commutatorless motor arrangement comprising a commutatorless motor, an inverter connected to the motor for commutating the same in response to outputs from an associated control unit, electric supply means, and a direct current intermediate circuit connected between said supply means and said inverter, said intermediate circuit including a smoothing inductance across which a self-induced voltage appears in response to a reduction of the current in said intermediate circuit, a controllable rectifying component connected in parallel with said smoothing inductance and poled with respect to said inductance so as to cause said self-induced voltage to be applied across said rectifying component in the forward conducting direction thereof, and a series circuit connected across the output of said intermediate circuit, said series circuit including an uncontrolled rectifying component, and a capacitor serially connected to said uncontrolled rectifying component, said uncontrolled rectifying component also being connected to said controlled rectifying component so as to conjointly define therewith a series circuit path in parallel with said smoothing inductance, with the control terminal of said controllable rectifier coupled to said control unit whereby said inductance, uncontrolled rectifier and controlled rectifier comprise a part of a common commutation circuit for said inverter.

3,854,079

SPEED CONTROL FOR D. C. MOTORS

Robert Hulme Brown, Kingston-upon-Thames, England, assignor to C.A.V. Limited, Birmingham, England

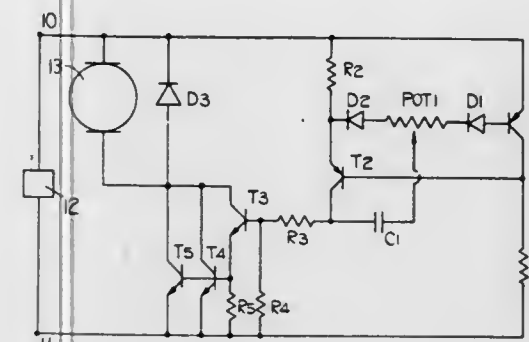
Filed Nov. 10, 1972, Ser. No. 305,507

Claims priority, application Great Britain, Nov. 10, 1971, 52202/71

Int. Cl. H02p 5/16

U.S. Cl. 318-341

9 Claims



1. A speed control apparatus for a D. C. motor comprising, in combination, a D. C. motor whose speed is desired to be controlled, and means for controlling the speed of said D. C. motor, said speed control means comprising:

Oscillator means comprising first and second transistors and a capacitor for producing a square wave oscillating signal; Means coupling said first and second transistors for effecting opposite respective conductive states thereof during operation;

A third transistor connected in series with said D. C. motor and a source of supply, means connecting said second transistor to said third transistor such that conduction of said second transistor effects conduction of said third transistor; said oscillator means including:

First circuit means including the base emitter path of said first transistor and an adjustable resistance element for charging said capacitor, said first circuit means being connected across said source of supply for charging said capacitor immediately upon the activation of said supply, said first transistor being rendered conductive during charging of said capacitor and being rendered non-conductive when said capacitor is charged;

Second circuit means including the collector emitter path of said second transistor and an adjustable resistance element for discharging said capacitor; and

Wherein the mark-space ratio of said oscillator means is controlled by varying said adjustable resistance elements.

3,854,080

ELECTRICAL DETENTING APPARATUS

Joseph E. Bambara, Brooklyn, and Gustave Pellegrino, Jr., Yonkers, both of N.Y., assignors to Maurer Commercial Products, Inc., Long Island, N.Y.

Filed July 17, 1973, Ser. No. 379,976

Int. Cl. H02p 7/00

U.S. Cl. 318-436

15 Claims

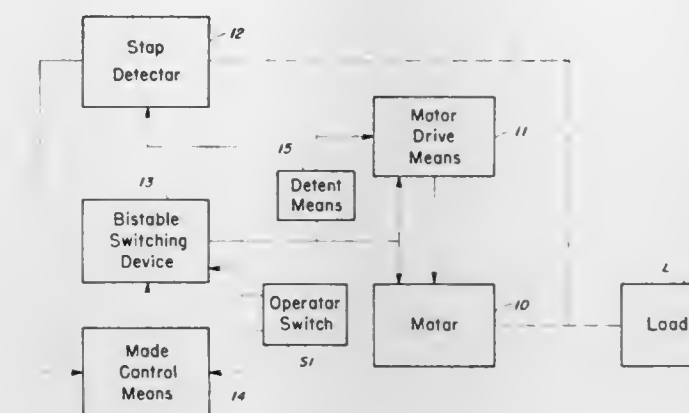
1. Apparatus for electrically detenting a translatable member of an electric motor having a plurality of windings at a position defined by the location of a predetermined one of said windings, comprising:

bistable switching means having an output admitting of a first or second electrical state;

commutating means responsive to the output of said bistable switching means admitting of said first electrical state for providing commutated output signals;

drive means responsive to said commutated output signals for supplying energizing potentials to said windings; and detenting means coupled to the output of said bistable switching means for conditioning said drive means to

supply an energizing potential to said predetermined winding when the output of said bistable switching means



admits of said second electrical state to detent said translatable member at the position defined by the location of said predetermined winding.

3,854,081

SERVO ERROR SIGNAL GENERATOR FOR NUMERICAL CONTROL SYSTEMS

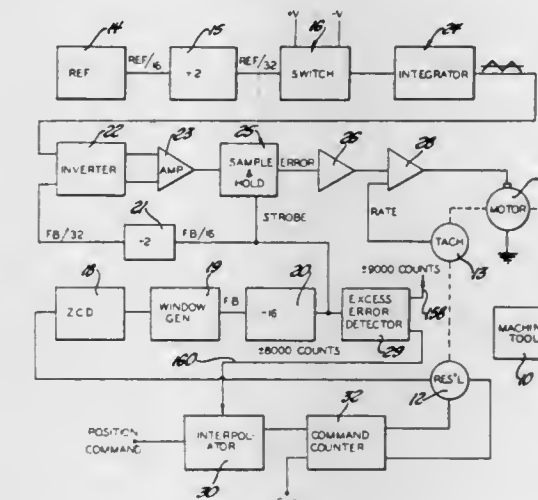
Reno V. Benaglio, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 14, 1973, Ser. No. 360,289

Int. Cl. G05b 21/02

U.S. Cl. 318-636

13 Claims



1. In a numerical control system for controlling the position of a controlled element within a predetermined coordinate system according to a stored program, a servo positioning apparatus comprising: first means operatively associated with said controlled element for producing a periodic signal quantity which varies in phase according to the position error of said controlled element relative to a commanded position; second means for producing a periodic reference signal in the form of an electrical voltage having an amplitude which varies linearly between maximum and minimum values over a period which is related to the period of said periodic signal quantity from said first means and of fixed phase and having a characteristic which varies substantially linearly over the period thereof, and third means interconnected with said first and second means for sampling and holding a quantity related to the instantaneous characteristic of said reference signal quantity upon the occurrence of said periodic signal quantity from said first means whereby the character of said reference quantity at the sample time represents the position error of said controlled element said first means including means for producing a sample strobe for each of said first periodic signal quantities.

3,854,082

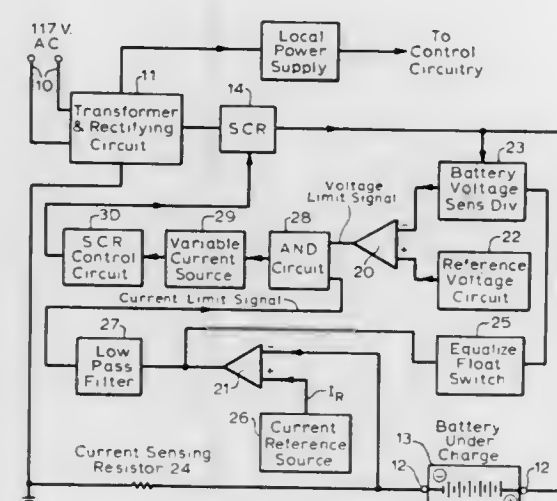
BATTERY CHARGING CIRCUIT

James S. Nasby, and William L. Stelter, both of Skokie, Ill., assignors to Master Control Systems, Inc., Skokie, Ill.
Filed June 7, 1973, Ser. No. 367,771

Int. Cl. H02j 7/04

U.S. Cl. 320-22

11 Claims



1. A battery charging circuit comprising:
 - an input adapted for connection to an external power source;
 - an output adapted for connection to a battery to be charged;
 - a charging source coupled to said output and to said input, and capable of providing said output with a constant charging current and constant charging voltages of first and second predetermined voltage magnitudes at varying charging currents;
 - a voltage sensor for sensing the magnitude of the charging voltage at said output and for providing an output voltage having a magnitude dependent upon the charging voltage;
 - a current sensor for sensing the magnitude of the charging current at said output and for providing an output voltage having a magnitude dependent upon the charging current;
 - an AND gate comprising a pair of serially connected transistors coupled to said voltage sensor and said current sensor for combining said voltage sensor and said current sensor output voltages and for providing a control signal responsive to said combined voltages; and
 - means responsive to said control signal for causing said charging source to supply said output with said constant current as long as said charging voltage is less than said first predetermined magnitude, for causing said charging source to supply said output with said constant voltage of said first predetermined magnitude when said charging voltage equals said first predetermined magnitude, and for causing said charging source to supply said output with said charging voltage of said second predetermined magnitude when the current sufficient to maintain said output at said first predetermined voltage magnitude falls below a predetermined limit.

3,854,083

MILLIMETER WAVE MIXER

Garry N. Hulderman, Riverside; Leon J. Lader, Los Angeles, and Jay B. Winderman, Claremont, all of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 11, 1973, Ser. No. 405,375

Int. Cl. H01p 5/12

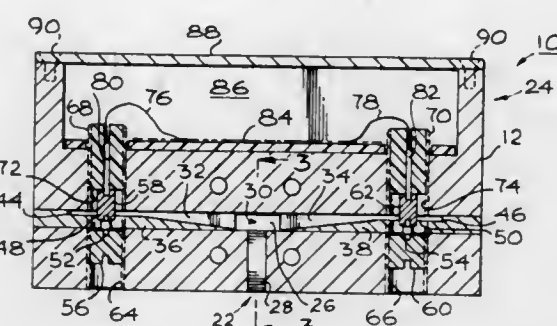
U.S. Cl. 321-69 W

14 Claims

1. A packaging arrangement for a millimeter wave mixer to provide an output signal to a following circuit comprising:
 - a. a block body defining waveguide means and a hybrid junction circuit communicating with said waveguide

means for the input of millimeter wave energy from said waveguide means to said junction circuit, said junction circuit having output arm means extending therefrom;

b. semiconductor holder means adjustably disposed in said body; and



- c. semiconductor mixer means disposed in said holder means and extending into said output arm means, whereby the depth of penetration of said mixer means into said output arm means may be adjusted by said holder means, said body further defining output signal coupling means coupled to said mixer means.

3,854,084

ELECTRONIC OBJECT COMPARATOR USING INDUCTIVE SENSORS AND FREQUENCY COMPARISON

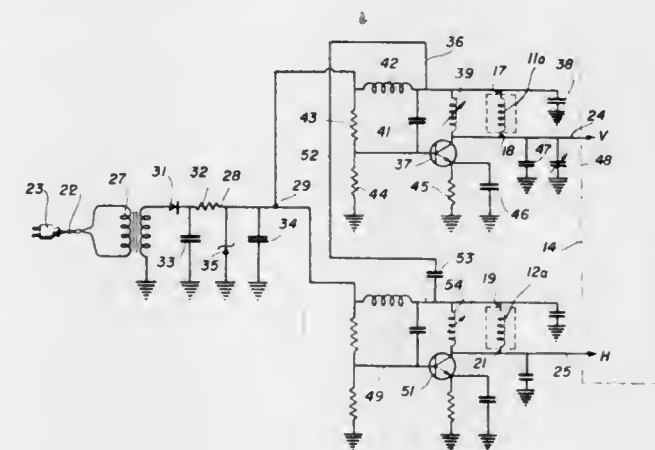
Edward I. Parker, 34 Oak Ridge Rd., Holden, Mass. 01520
Continuation of Ser. No. 195,697, Nov. 4, 1971, abandoned.

This application May 14, 1973, Ser. No. 359,857

Int. Cl. G01r 33/12

U.S. Cl. 324-34 R

1 Claim



1. An electronic comparator, comprising
 - a. a first coil having a predetermined inductance,
 - b. a second coil adapted to receive a workpiece to be tested and having when said workpiece is received substantially the same predetermined inductance,
 - c. a first circuit connected to the first coil, the first circuit having a first point and delivering to an output lead a signal whose frequency and phase is indicative of the inductance of the first coil,
 - d. a second circuit connected to the second coil, said second circuit being substantially the same as said first circuit and having a second point located at a point in said second circuit structurally corresponding to the first point in said first circuit and delivering to an output lead a signal whose frequency and phase is indicative of the inductance of the second coil,
 - e. a means for comparing the frequencies at the output leads, the means being in a first indicating state when the frequencies are equal, and a second indicating state when the frequencies are not equal, and
 - f. an electrical coupling between the first and the second points, the coupling containing a capacitor, and being

non-grounded for signals of the frequencies delivered by the circuits.

3,854,085

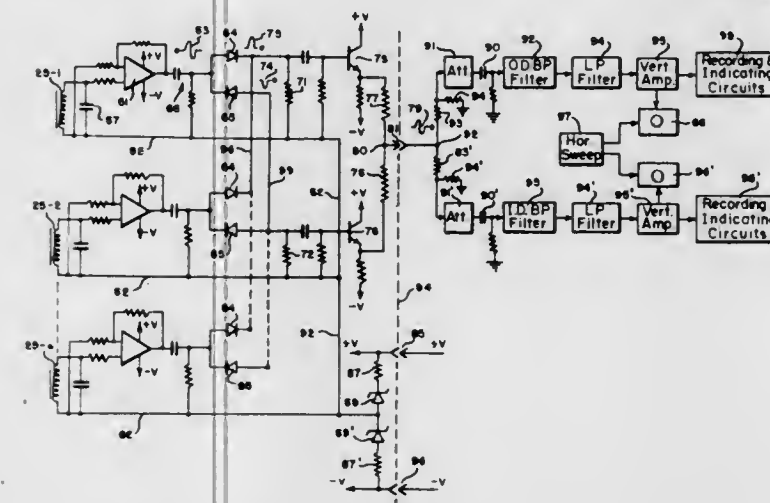
MULTI-PROBE FLUX LEAKAGE TESTING APPARATUS PRODUCING BIPOLAR SIGNALS FROM THE LARGEST SIMULTANEOUSLY OCCURRING SIGNALS OF EACH POLARITY

Sven E. Mansson, Hollviken, Sweden; Paul J. Bebeck, Bronx, and Edward D. Spierer, Belle Harbor, both of N.Y., assignors to Magnetics Analysis Corporation, Mt. Vernon, N.Y.
Filed June 7, 1973, Ser. No. 367,883

Int. Cl. G01r 33/12

U.S. Cl. 324-37

12 Claims



1. Multi-probe flux leakage testing apparatus for detecting flaws in an object relatively moving with respect to the probes which comprises

- a. means for producing a steady state magnetic field in said object in the test region thereof,
- b. a plurality of spaced leakage-flux probes for producing respective signal outputs having positive and negative excursions corresponding to flaws passing thereby in said test region,
- c. means for rectifying and combining the positive portions of the signals from said probes and rectifying and combining the negative portions of the signals from said probes to yield positive and negative signals corresponding to the largest signal of each polarity simultaneously occurring in said probes,
- d. adding means for adding said largest positive and negative signals to yield bipolar signals having corresponding positive and negative excursions,
- e. and circuit means responsive to said bipolar signals for indicating flaws in a said object.

3,854,086

NON-LINEAR FLUX DETECTION DEVICE UTILIZING MAGNETIC THIN FILM

Teruji Watanabe, Niiza; Takasuke Fukui, Tokyo; Minoru Higurashi, Yokohama; Takao Sugisaki, Ichikawa, and Tatsushiro Ochiai, Matsudo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and TDK Electronics Co., Ltd., both of Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,329

Claims priority, application Japan, May 31, 1971, 46-37590

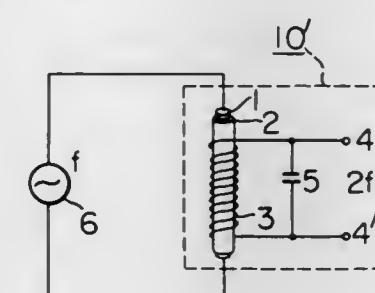
Int. Cl. G01r 33/02

U.S. Cl. 324-43 R

7 Claims

1. A non linear flux detection device utilizing a thin magnetic film comprising:
 - a. a flux detection element comprising a wire, a layer of magnetic material of uni-axial magnetic anisotropic characteristics plated on said wire, and a coil wound on said layer;
 - b. said layer of magnetic material having a hard magnetization axis in the direction of its axis and an easy magnetization axis in the circumferential direction;

- c. an exciting means connected to said plated wire for applying thereto a predetermined signal of frequency f having a maximum amplitude sufficient only to produce a magnetic field less than the anisotropic magnetic field in said plated wire, and
- d. a detecting means connected to the output of said coil and arranged to detect the presence of an amplitude of a



threshold level responsive signal of frequency $2f$ which appears suddenly at the output of said coil when the strength of an external magnetic field in the direction of the hard magnetization axis exceeds a predetermined threshold level, the threshold level responsive signal remaining until the external magnetic field drops below said predetermined threshold level, said threshold level being greater than zero.

3,854,087

KELVIN BRIDGE TYPE CORROSION MEASURING PROBE

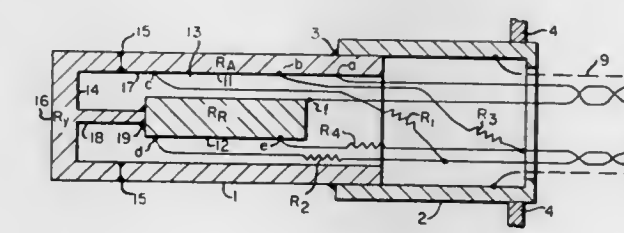
John Parsons Frenck, Newark, Del., and Edward Gilpin Poole, Jr., Chesapeake City, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1973, Ser. No. 413,366

Int. Cl. G01r 27/02

U.S. Cl. 324-65 CR

6 Claims



1. A Kelvin double bridge type probe for measuring corrosion on specimen metal in a corrosive medium, the probe characterized in having, electrically interconnected, elements of

- i. an enclosing shell, at least part of which is the specimen metal element of the bridge, one end of the shell being conductively connected to the specimen metal and to
- ii. a reference body of specimen metal that is inside the shell and thereby protected from contact with the corrosive medium, the reference body being at least partially surrounded by the shell, in thermal proximity to the shell, and electrically insulated therefrom except for bridge connections, and
- iii. two pairs of bridge resistances having electrical contact with a source of electricity, and connecting the specimen metal to the reference body, each resistance of each pair being connected to the other of the pair at one end with the other end connected to the specimen metal or the reference specimen, each pair of resistances having a junction between each resistance of the pair, each junction linked to output leads that provide a bridge signal as a function of corrosion of the specimen metal.

3,854,088

COUNTING AND ANALYSIS APPARATUS FOR PARTICLES SUSPENDED IN AN ELECTROLYTIC LIQUID

Hermann Gahwiler, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

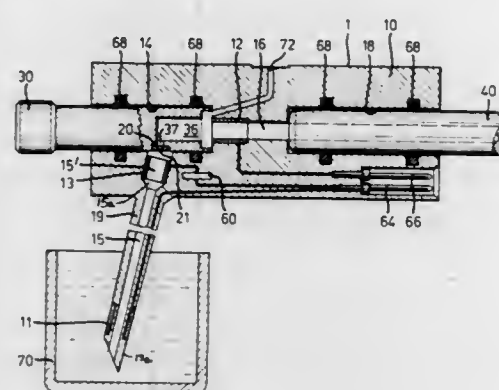
Filed Nov. 12, 1973, Ser. No. 414,839

Claims priority, application Switzerland, Nov. 30, 1972, 17483/72

Int. Cl. G01n 27/00

U.S. Cl. 324—71 CP

6 Claims



1. A counting- and analysis apparatus for particles suspended in an electrolytic liquid, comprising a sample container for the liquid, a conductivity cell, said conductivity cell being provided with means defining a bore having a predetermined diameter and serving as an electrical resistance measurement path through which flows the suspension, a respective electrode arranged to each side of said measurement path, said conductivity cell including a compartment arranged in front of the measurement path, a connection conduit leading from said compartment in front of said measurement path to said sample container, one of said respective electrodes comprising a direct-current supply electrode carried by the connection conduit and arranged in the sample container such that the gas bubbles formed thereat do not enter the connection conduit, and an auxiliary electrode arranged at least in the compartment in front of the measurement path for tapping-off the voltage fluctuations which are generated during passage of the particles through the measurement path.

3,854,089

LOW VOLTAGE MONITOR CIRCUIT

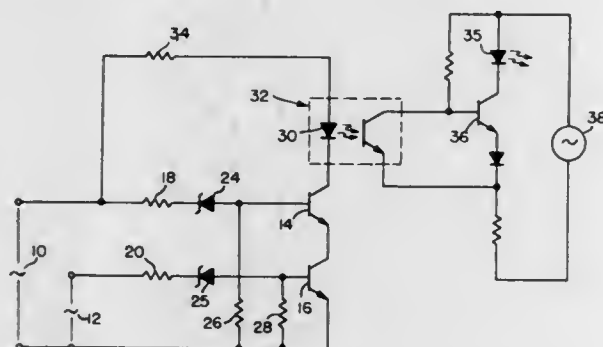
Michael G. Emler, Brighton, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 14, 1974, Ser. No. 432,847

Int. Cl. G01r 31/00

U.S. Cl. 324—96

3 Claims



1. A monitoring circuit for monitoring the voltage across a dc. current source comprising a sensing transistor, means for connecting the base and emitter electrodes of said transistor to respective terminals of the source to be monitored, an optical coupling device having an input diode connected in series with the collector and emitter of said transistor across the source to be monitored, a control transistor having its

input connected to the output of said optical coupling device, an annunciator connected in series with the collector and emitter of said control transistor, and means for connecting said annunciator and said control transistor across a current source independent of the source to be monitored.

3,854,090

BIMETAL TYPE INDICATOR

Hiroyuki Tashiro, and Mikio Takeshita, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

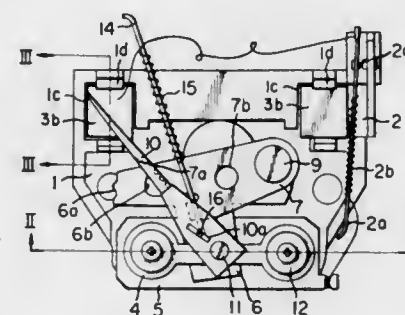
Filed Dec. 12, 1972, Ser. No. 314,457

Claims priority, application Japan, Dec. 27, 1971, 46-593

Int. Cl. G01r 5/26

U.S. Cl. 324—106

6 Claims



1. A bimetal type indicator comprising:
an insulating plate provided with locating projection means, a gauge section carrier plate fixed to said locating projection means on said insulating plate,
a pointer support means fixed to said locating projection means on said gauge section carrier plate,
a pointer means having a slot formed therein and pivotally mounted on said pointer support means by means of a pin,
a bimetal means having an elongated portion extending into said slot,
a bimetal holding plate, on which said bimetal means is fixed, for adjusting the range of the angular motion of said pointer means,
a holding plate pivotally holding said bimetal holding plate at one point and pivotally mounted on said gauge section carrier plate at the other point by means of a rivet which is coaxial with said pin, and
a dial mounted on said pointer support means, and on which at least a zero point and a full range point are calibrated, wherein said slot in said pointer means extends substantially in parallel with a tangent to an arc described by said elongated part of said bimetal means when said bimetal holding plate is pivotally moved with respect to said one point, whereby said pointer means is so adjusted to be in alignment with said zero point by rotating said holding plate with respect to said rivet and thereafter said pointer means is so adjusted to be in alignment with said full range point by rotating said bimetal holding plate with respect to said one point.

3,854,091

DIRECT CURRENT CONVERTER FOR ISOLATING A MEASURING TRANSDUCER FROM ITS POWER SOURCE

Ole Friis Knudsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 15, 1973, Ser. No. 416,180

Claims priority, application Germany, Nov. 20, 1972, 2256881

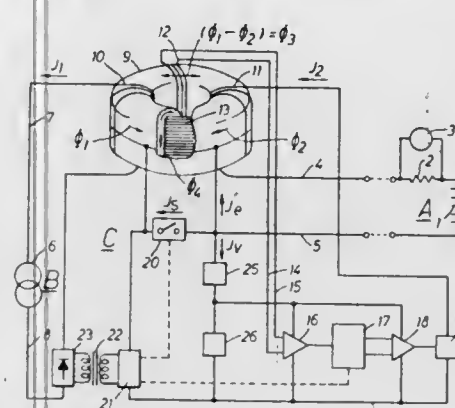
Int. Cl. G01r 19/18

U.S. Cl. 324—118

10 Claims

1. A direct-current converter suitable for electrically isolating a measuring transducer from the power source for the measuring transducer, the converter comprising:

a magnetic core;
a primary winding on said core;
a secondary winding on said core;
means for supplying respective substantially constant direct currents to said primary and secondary windings;
a sensor winding on said core in which sensor winding a control voltage is developed when a difference occurs between the magnetic flux due to currents in said primary and said secondary winding respectively;



a regulator for adjusting said direct current supplied to said secondary winding in dependence upon said control voltage such that said magnetic flux difference tends to zero; an energising winding for developing in said core a magnetic field at right angles to magnetic fields associated with said primary, secondary and sensor winding; and means for supplying an energising current to said energising winding for periodically changing the magnitude of the magnetic induction of said core.

3,854,092

APPARATUS FOR MEASURING DYNAMIC CHARACTERISTICS OF SEMICONDUCTOR SWITCHING ELEMENTS

Tatsuo Tani, and Michinobu Tomita, both of Tokyo, Japan, assignors to Kogyo Gijutsuin, an extra-Ministerial bureau of Japanese Government and Iwasaki Tsushinki Kabushiki Kaisha

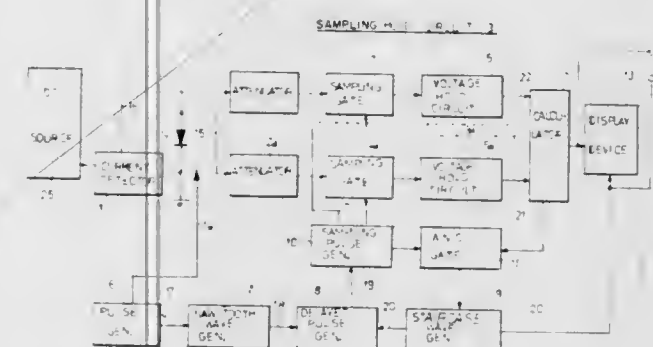
Filed Dec. 22, 1971, Ser. No. 210,743

Claims priority, application Japan, Dec. 27, 1970, 45-119227

Int. Cl. G01r 31/22

U.S. Cl. 324—158 SC

6 Claims



1. An apparatus for automatically measuring dynamic characteristics of a semiconductor switching element, comprising: a dc source for applying a dc bias voltage across electrodes of a semiconductor switching element, a pulse generator connected to the control electrode of the semiconductor switching element for applying at least one exciting pulse to said element to switch the element from the non-conductive state to the conductive state to develop a first output signal corresponding to the dynamic voltage characteristic of the semiconductor switching element, current detector means connected in series between said dc source and said semiconductor switching element for detecting the dynamic current flow-

ing in the semiconductor switching element and for developing simultaneously with the development of said first output signal a second output signal corresponding to the dynamic current characteristic, a sampling pulse generator responsive to said exciting pulse for developing sampling pulses at regular intervals, a first sampling and holding circuit receptive of said second output signal of said current detector means and responsive to said sampling pulses for sampling values of said second output signal and for holding each sampled value until the occurrence of the immediately succeeding one of said sampling pulses to develop a sampled-and-held current signal, a second sampling and holding circuit receptive of said first output signal and responsive to said sampling pulses for sampling values of said first output signal and for holding each sampled value until the occurrence of the immediately succeeding one of said sampling pulses to develop a sampled-and-held voltage signal, calculating means simultaneously receptive of said sampled-and-held current and voltage signals for performing, at desired intervals, calculations therewith to derive therefrom at least one other dynamic parameter characteristic of the semiconductor switching element and for developing a third output signal corresponding thereto, and display means receptive of said third output signal for displaying the waveform of said third output signal to display said other dynamic parameter characteristic.

3,854,093

TRANSCIEVER CHANNEL SELECTOR

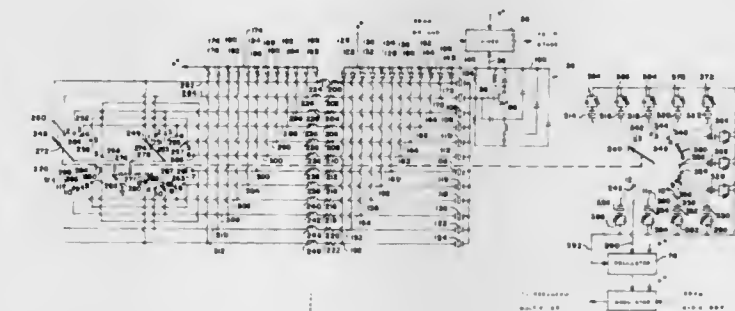
Louis E. Schonegg, Indianapolis, Ind., assignor to Regency Electronic, Inc., Indianapolis, Ind.

Filed Apr. 20, 1973, Ser. No. 353,140

Int. Cl. H04b 1/40

U.S. Cl. 325—18

14 Claims



13. Channel selection means for a multi-channel transceiver comprising:

- a first selection means for selecting a transmit channel from a first plurality of channels,
- a second selection means for selecting a receive channel from a second plurality of channels,
- means for actuating one of said selection means to select a channel,
- means for actuating the other of said selection means to select a channel, and
- said means for actuating one of said selection means including selectively operable means for actuating said the other of said selection means when said one of said selection means is actuated.

3,854,094

CRYSTAL CONTROLLED, FREQUENCY MODULATED TRANSMITTER

James F. Towler, Indianapolis, Ind., assignor to Regency Electronics, Inc., Indianapolis, Ind.

Filed Nov. 1, 1972, Ser. No. 302,811

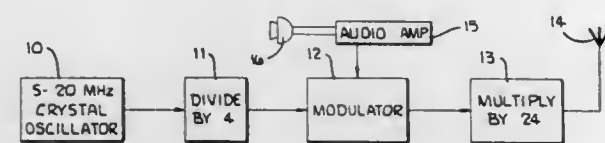
Int. Cl. H03c 3/06

U.S. Cl. 325—146

16 Claims

1. A frequency modulated transmitter which comprises:
a. oscillator means which includes:

1. a plurality of crystals having a fundamental frequency of oscillation between 5 to 20 MHz;
2. switch means for selecting any one of said crystals for use in controlling the output frequency of the transmitter; and
3. means for causing said selected crystal to oscillate and for producing a first carrier at the fundamental frequency of the crystal;
- b. frequency dividing means to divide said first carrier by an integer greater than 1 to produce a second carrier;



- c. means for converting audible sounds into an electrical audio signal;
- d. modulation means for frequency modulating said second carrier in response to said audio signal whereby a first modulated carrier is produced; and
- e. frequency multiplying means for multiplying said first modulated carrier by an integer greater than 3 whereby a second modulated carrier is produced for the output of the transmitter.

3,854,095

INTERSTAGE POLE SHIFTING NETWORK

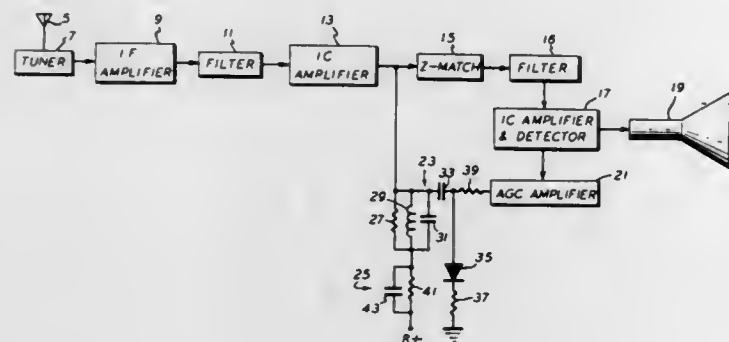
Wilfred Leslie Hand, Clarence, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 9, 1973, Ser. No. 349,557

Int. Cl. H04b 1/16

U.S. Cl. 325-490

9 Claims



1. In a signal receiver employing an integrated circuit (IC) having a pair of broad band amplifier stages connected by an impedance matching network with a junction therebetween and coupling a tuner stage to a detector stage with an automatic gain control (AGC) means coupled to the detector stage, an interstage pole shifting network comprising:

- a. a potential source;
- tuned circuit means coupling said potential source to said junction of said pair of IC broad band amplifier stages; and
- impedance means including a series connected capacitor, pin diode, and resistor AC coupling said junction of said pair of IC broad band amplifier stages to a potential reference level, said capacitor and pin diode having a junction therebetween coupled to said AGC means, said pole shifting network effecting a shift from a broad band, low Q, minimum gain at a center frequency f_1 to a narrow band, high Q, maximum gain at a center frequency f_2 upon a signal strength shift from maximum to minimum.

3,854,096
SELF-TRIGGERED CIRCUIT ARRANGEMENT FOR A MEASURING AMPLIFIER

Bernd Hermeyer, Hamburg-Schenefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

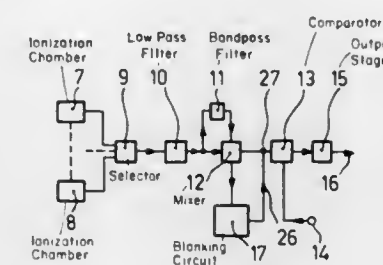
Filed July 13, 1972, Ser. No. 271,346

Claims priority, application Germany, July 17, 1971, 2135921

Int. Cl. H05g 1/20

U.S. Cl. 328-114

5 Claims



1. In a measuring amplifier including input means for processing a desired signal and interference pulses whose rise time is shorter than the rise time of the desired signal and an output stage with its input coupled to the output of said input processing means, the improvement comprising a self-triggered blanking circuit including means for blanking interference pulses and comprising an input coupled to the output of the input processing means and an output coupled to the input of said measuring amplifier output stage, said blanking means comprising means for differentiating a signal received from said input processing means, a multistage switching amplifier coupled to said differentiating means and including an amplifier output stage with an RC pulse shaping circuit for extending the width of a pulse applied thereto, and means for coupling the output of said amplifier output stage to the input of said measuring amplifier output stage so as to prevent said measuring amplifier output stage from responding to an interference pulse supplied thereto by said input processing means.

3,854,097

SELF-ENERGIZED PLASMA COMPRESSOR

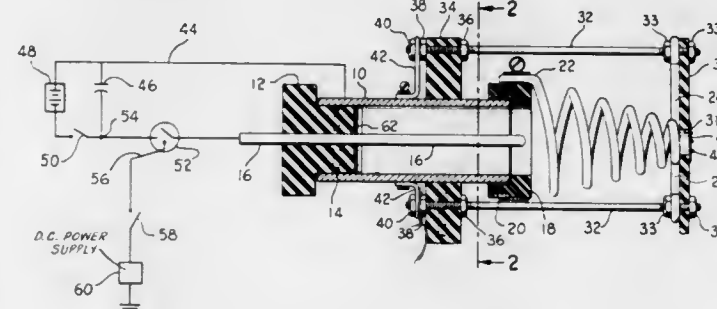
James C. Fletcher, administrator of the National Aeronautics and Space Administration with respect to an invention of; Edward L. Shriver, 4505 Garth Rd., S.E., Huntsville, Ala. 35802, and Eduard B. Igenbergs, Rauchstrasse 3, 8000 Munich 80, Germany

Filed June 6, 1973, Ser. No. 367,606

Int. Cl. H01j 23/26

U.S. Cl. 328-233

2 Claims



1. An apparatus for producing high temperature compressed plasma comprising:
 - a. an elongated cylindrical first electrode;
 - b. a central rod electrode disposed coaxially of said first electrode out of contact therewith;
 - c. an electrically conductive element extending between said central rod electrode and an inner end of said first electrode;

- d. means for applying a high voltage to said first electrode and said central rod electrode for causing said electrically conductive element to ionize producing a plasma which is accelerated out of the outer end of said first electrode;
- e. an insulating connecting means carried on an outer end of said first electrode;
- f. an elongated electrically conductive helical coil having a large diameter end and a small diameter end;
- g. said large diameter end of said helical coil being connected to said connecting means and said small diameter end being spaced longitudinally therefrom;
- h. means for electrically connecting said small diameter end of said helical coil to said first electrode;
- i. said helical coil being in axial alignment with said elongated cylindrical first electrode so that a current path is formed between an outer end of said central rod electrode and said helical coil as said plasma is accelerated out of the outer end of said first electrode producing current flow through said helical coil which in turn produces a time varying magnetic field that compresses said plasma adjacent said small diameter end of said coil;
- j. whereby a source of high temperature compressed plasma is produced adjacent said small diameter end of said helical coil.

3,854,098

MULTICHANNEL DISC DEMODULATION CIRCUIT

Nobuaki Takahashi, Yamato; Masaaki Sato; Yoshiki Iwasaki, both of Yokohama, and Kazunori Nisikawa, Fujisawa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

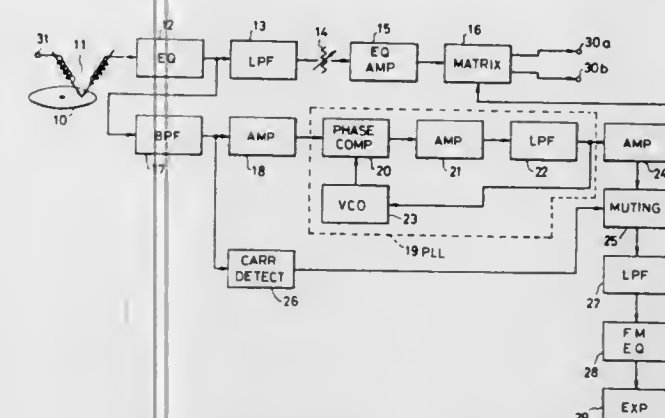
Filed Jan. 23, 1973, Ser. No. 326,027

Claims priority, application Japan, Jan. 24, 1972, 47-9534

Int. Cl. H03d 3/18; G11b 3/04

U.S. Cl. 329-103

12 Claims



1. A circuit for demodulating a multichannel disc having recorded thereon a multiplex signal including a non-modulated audio signal and an angle-modulated carrier wave signal, said demodulation circuit comprising a voltage controlled oscillator means for generating a signal having a frequency which is varied in accordance with a control signal, a phase comparator circuit means including a differential amplifier for comparing the phase of the output signal of said voltage controlled oscillator with the phase of the angle-modulated wave signal and for producing an error signal corresponding to the detected phase difference, said error signal representing a demodulated audio signal, and means for applying a part of said error signal to said voltage controlled oscillator as said control signal therefor, whereby the frequency of the signal generated by said voltage controlled oscillator coincides with the frequency of the angle-modulated carrier, said phase comparator circuit means comprising a pair of transistor means connected in said differential amplifier configuration, a direct current biasing circuit including a series combination of two resistors connected across a power source means for applying a direct current bias voltage from the junction of the two resistors to the base electrodes of the pair of transistors, means for applying the angle-modulated

wave signal from an amplifier through a preceding circuit to at least one of the base electrodes, said preceding circuit being constructed so that the AC impedance measured from the amplifier looking toward said phase comparator circuit is relatively large and the DC impedance looking back from the one base electrode is relatively small, whereby the angle-modulated wave signal is not phase-shifted when the amplitude of the envelope of the angle-modulated wave signal varies.

3,854,099

WIDEBAND COHERENT FM DETECTOR

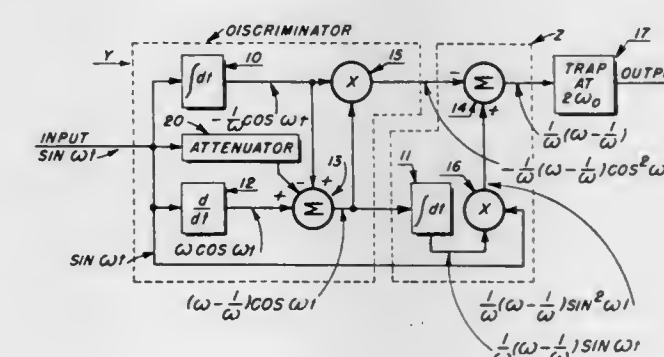
Edward J. A. Kratt, 3rd, Montville, N.J., and Jacob Klapper, New York, N.Y., assignors to RFL Industries Inc., Boonton, N.J.

Filed Feb. 15, 1973, Ser. No. 332,600

Int. Cl. H03d 3/06

U.S. Cl. 329-110

8 Claims



1. Apparatus for demodulating a frequency modulated carrier wave, which apparatus comprises,
 - a. a first network comprising a first integrator receiving said wave and producing a first output and a first differentiator receiving said wave and producing a second output, the two outputs being of substantially opposite polarity and having different amplitude vs frequency responses which cross at a predetermined frequency;
 - b. circuit elements applying the said two outputs to a first summer producing substantially a zero output at said predetermined frequency;
 - c. a first coherent amplitude detector having two inputs, and
 - d. circuit elements applying the output of said summer to one input of said detector, the other input to said detector being derived from the said first output, the output of said detector being the demodulated wave.

3,854,100

PUSH-PULL AMPLIFYING DEVICES WITH CLASS D TRANSISTORIZED AMPLIFIERS

Jean Pouzadoux, Paris, France, assignor to Thomson-CSF, Paris, France

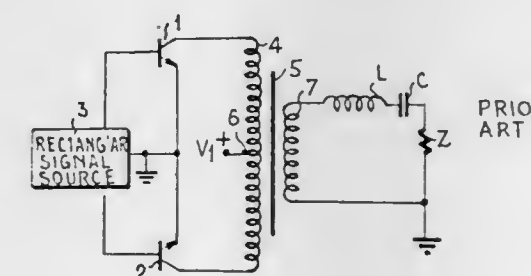
Filed Sept. 22, 1971, Ser. No. 182,689

Claims priority, application France, Oct. 2, 1970, 70.35703

Int. Cl. H03f

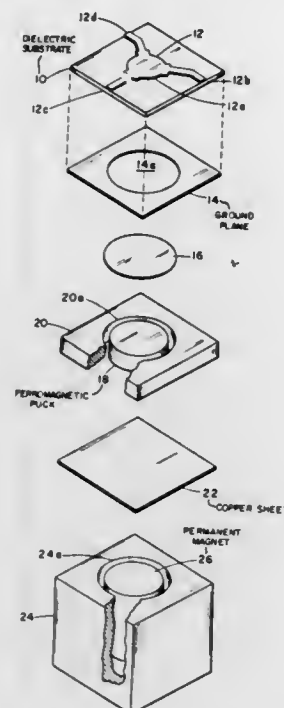
U.S. Cl. 330-15

3 Claims



1. A push-pull amplifying device comprising first and second transistorized class D amplifiers having respective inputs;

a ferromagnetic body means disposed in said recess but not in said dielectric slab;



means for applying a magnetic field to said ferromagnetic body, in a direction generally perpendicular to the first and second surfaces of the slab of dielectric material.

3,854,107

FILTERED CONNECTOR

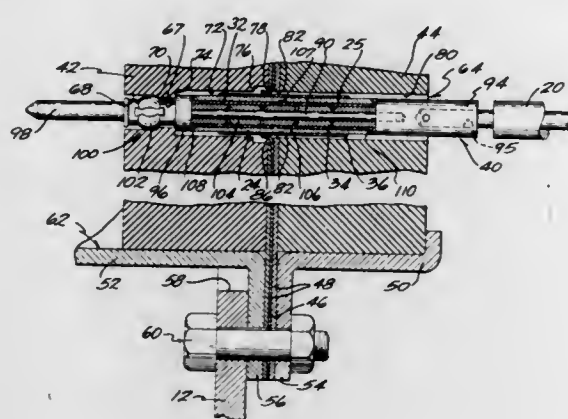
Jeff Tuchto, Don Mills, Ontario, and Eugene S. Joseph, Scarborough, Ontario, both of Canada, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. Nos. 55,939, July 17, 1970, abandoned, and Ser. No. 860,175, Sept. 19, 1969, abandoned, and Ser. No. 584,745, Oct. 16, 1966, abandoned. This application Nov. 6, 1972, Ser. No. 303,713

Int. Cl. H03h 7/04; H01r 13/66

U.S. Cl. 333-79

13 Claims



1. In an electrical connector having a plurality of individually removable and replaceable filtered contact units, a main support body comprising a pair of blocks of insulating material secured to each other and having a plurality of aligned contact passages therethrough; and electrical ground contact means comprising a planar layer of conductive material sandwiched between said pair of blocks and having openings aligned with the passages in said blocks; each of said filtered contact units including an elongated contact pin and filter means including a cylinder of fragile dielectric material, said contact pin having a first end portion adapted for connection with a mating connector member, a second end portion adapted for connection with an electrical conductor, and an elongated central portion interconnecting said end portions; said cylinder of fragile dielectric material having an outer diameter only slightly less than the diameter of a corresponding one of said support body passages and is positioned wholly within said support body passage for protection against damage; means securing each

of said contact pins individually in said support body but allowing removal in the direction of said second end portion and reinsertion of each contact pin individually without requiring separation of the blocks of insulating material; said cylinder of dielectric material having a relatively thin foil conductive sleeve on the outer surface thereof and a central through bore surrounding said contact pin central portion; said electrical ground contact means having surfaces extending into each of said passages and yieldingly engaging the conductive sleeve on said filter means; said cylindrical filter means having opposite ends retained inside said support body when inserted for use and being removable without requiring separation of the blocks of insulating material.

3,854,108

APPARATUS FOR COMPENSATION OF RIGHT AND LEFT PINCUSHION DISTORTION

Einosuke Horie; Masakazu Kikuchi, both of Takasaki, and Shigekazu Hatori, Gunma, all of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

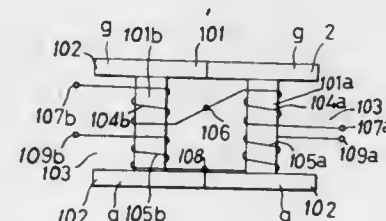
Filed Jan. 22, 1974, Ser. No. 435,588

Claims priority, application Japan, Jan. 23, 1973, 48-9201; Mar. 1, 1973, 48-24670

Int. Cl. H01f 7/00

U.S. Cl. 335-210

6 Claims



1. Apparatus for compensation of right and left pincushion distortions comprising a closed magnetic circuit including a saturable magnetic core having right and left half portions symmetrical to one another and a branch portion defining an air gap and symmetrically arranged with respect to said right and left half portions, a pair of first and second windings on each of the right and left half portions, the first windings of both pairs being connected in series so as to have the same winding directions in relation to the saturable magnetic core and being adapted for being connected to a saturable magnetic core and being adapted for being connected to a vertical deflection circuit, the second windings of both pairs being connected in series so as to have reverse winding directions in relation to the saturable magnetic core and being adapted for being connected to a horizontal deflection circuit.

3,854,109

DETECTING ELEMENTS OF EXTERNAL FORCE

Motohiro Gotanda, 3-6-29 Inakashira, Tokyo, Japan

Filed July 27, 1973, Ser. No. 383,156

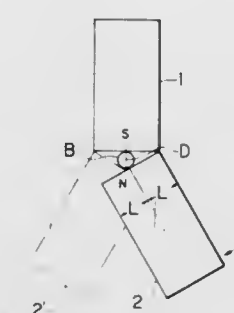
Int. Cl. H01h 36/00

U.S. Cl. 335-207

14 Claims

1. An external force detecting device for sensing the entry of an intruder or the like, said device comprising at least first and second actuator members, said axially aligned actuator

members being oppositely disposed and including magnetic poles at the end surfaces thereof; electrically conductive contacts located on said end surfaces of said actuator members which, when in engagement with the electrically conductive contacts of another actuator member, complete an electrical circuit through said contacts, contacts of said first and second actuator members being normally held in engagement



with one another by magnetic forces generated by said magnetic poles; and means, including electrical insulating means, disposed between said first and second actuator members, for providing a pivot about which said actuator members can rotate such that an external force applied to a said actuator member can cause breaking of the engagement between said electrically conductive contacts and hence breaking of the electrical circuit completed thereby.

3,854,110

METHOD OF ORIENTING BODIES IN MAGNETIC FIELD AND DEVICE FOR CARRYING SAME INTO EFFECT

Benjamin Alexandrovich Ioffe, ulitsa Raunas 45/2, kv. 81, Riga; Artur Eduardovich Mikelson, ulitsa Kr. Barona, 78, kv. 1, Latvinskaya, and Igor Mikhailovich Kirko, ulitsa Miera, 16, kv. 36, Riga, all of U.S.S.R.

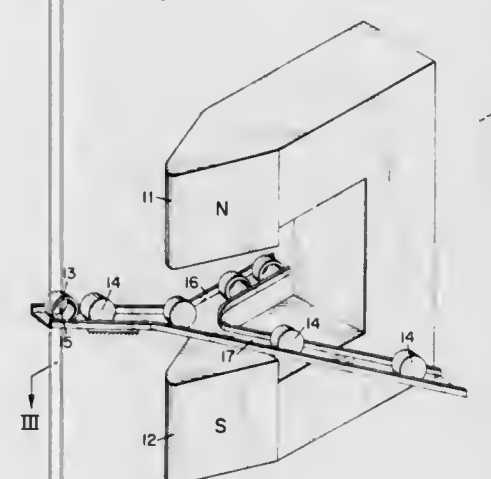
Continuation of Ser. No. 884,790; Dec. 15, 1969, abandoned.

This application Feb. 28, 1972, Ser. No. 230,057

Int. Cl. H01f 7/02

U.S. Cl. 335-302

3 Claims



1. A method comprising creating a magnetic field in an orientation zone, orienting bodies by passing the same through said magnetic field, said magnetic field being created as a non-uniform permanent magnetic field in an orientation zone to induce currents in each a body during the movement thereof through said field and such that the values of said currents in each body in unoriented positions thereof are different at different points and such that said currents have a symmetrical distribution pattern only in an oriented position corresponding to a stable position of each of as it moves further in the magnetic field, using the same permanent mag-

netic field for inducing current in each said body and interacting with the thusly induced current to orient the body in which the current is induced.

3,854,111

PROTECTOR FOR ELECTRIC CIRCUITS

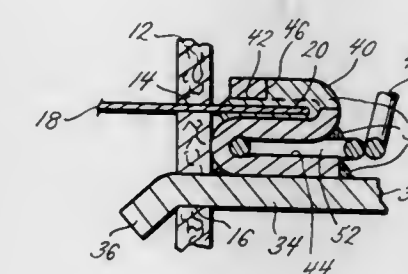
Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 23, 1973, Ser. No. 381,996

Int. Cl. H01h 71/20

U.S. Cl. 337-165

5 Claims



1. A heat-sensing circuit-opening protective device which comprises a metal heat-absorbing element, a metal conductor which has one end thereof coextensive with, but spaced away from, a portion of said metal heat-absorbing element, a spring, a generally S-shaped connector which defines a first generally U-shaped recess that freely accommodates said one end of said metal conductor and which defines a second generally U-shaped recess that accommodates one end of said spring in tightly-clamped relation, metal terminals which are electrically connected to said metal conductor and to said metal heat-absorbing member and which are connectable to an electric circuit, said spring biasing said connector for movement away from said one end of said metal conductor and away from said portion of said metal heat-absorbing element to interrupt said electric circuit, and a mass of low-melting point alloy that normally mechanically connects and electrically bonds said connector to said portion of said metal heat-absorbing element and that also normally mechanically connects and electrically bonds said connector to said one end of said metal conductor while holding the first said generally U-shaped recess telescoped over said one end of said metal conductor, said connector being a unitary piece of metal which is free of electrical and thermal interfaces, said low-melting point alloy responding to heat to permit said spring to move said connector away from said one end of said metal conductor and away from said portion of said metal heat-absorbing member and thereby interrupt said electric circuit.

3,854,112

PIEZORESISTIVE GLASS STRESS TRANSDUCER

John Christopher Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,907

Claims priority, application Great Britain, Dec. 19, 1972, 58481/72

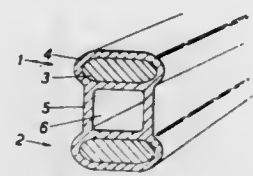
Int. Cl. H01c 9/06

U.S. Cl. 338-47

9 Claims

1. A piezoresistive stress transducer comprising: an element of piezoresistive glass; at least two physically separated electrodes each in contact with at least a portion of said element, thereby providing variations of electrical resistance in said element as a

result of application of said stress to said element; and means comprising at least a partial housing of insulating



glass joined to said element around at least a portion of the surface thereof.

3,854,113

VARIABLE RESISTANCE CONSTANT TENSION AND LUBRICATION DEVICE

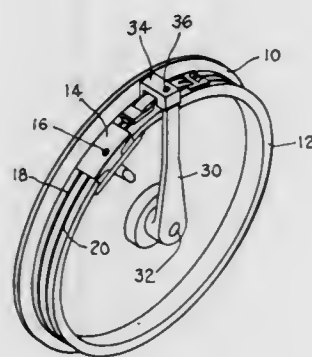
James C. Fletcher, Administrator of the Natl. Aeronautics and Space Administration with respect to an invention by, and Henry J. Smith, 2210 MacFarland Dr., Brevard, Fla. 32922

Filed Apr. 4, 1973, Ser. No. 347,952

Int. Cl. H01c 5/02

U.S. Cl. 338-75

6 Claims



1. A variable resistance device comprising:

- A. a cylindrical housing,
- B. an elongated resistance wire fixed to said cylindrical housing,
- C. a movable arm having a supporting block disposed adjacent said resistance wire,
- D. an arcuate spring steel member,
- E. pivot means carried adjacent a central portion of said arcuate spring steel member engaging said supporting block,
- F. a leather wiper member carried adjacent one end of said arcuate spring steel member engaging said resistance wire

for aiding in maintaining said resistance wire clean as said movable arm is shifted,

G. another end of said spring steel member being in contact with said resistance wire so that a balanced tension is maintained on said end of said arcuate spring steel member about said pivot means.

3,854,114

NOTCHED PLATE CLASP APPARATUS

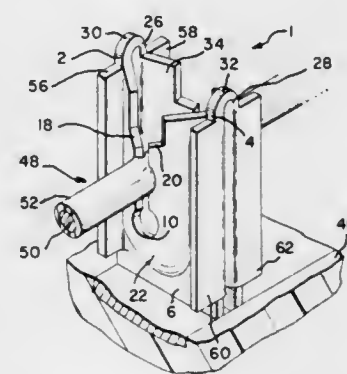
James Albert Kloth, 813 37th Ave., St. Petersburg, Fla. 33064, and George Henry Vigeant, deceased, late of 3932 Yardley Ave., North, St. Petersburg, Fla. 33713 (by Mrs. George Henry Vigeant, heir)

Filed Aug. 10, 1972, Ser. No. 279,612

Int. Cl. H01r 9/08

U.S. Cl. 339-97 R

7 Claims



1. In an electrical contact stamped and formed from a notched planar plate and constrained by a housing for desired resilient deflection upon forcible insertion of an electrical conductor wire into a notched portion of the planar plate, the improvement comprising: structure for stiffening the plate to prevent undesired buckling thereof and structure to constrain the plate for cantilever deflection without buckling thereof, said plate including a pair of cantilever uprights joined by a web, said notched portion of the plate being defined in said web to extend generally longitudinally of said uprights, said web being bulged outwardly from the plane of said planar plate for stiffening said web and preventing buckling of said contact upon insertion of a conductor wire into said slotted portion, said cantilever flanges having each a longitudinally attached stiffener flange bent generally outwardly from the plane of said planar plate, said cantilever uprights being stiffly and resiliently deformable by deflection away from each other substantially in the plane of said planar plate upon forceful insertion of a conductor wire in said notched portion, said cantilever uprights and said flanges thereon being mounted in said housing with the housing having portions thereof engagingly bearing against portions of the uprights and portions of the flanges to constrain the cantilever uprights against deflection out of the plane of the planar plate.

3,854,115

ECHO CORRELATION SYSTEM FOR SUBMARINE DETECTION USING ACTIVE SOUNDING DEVICES

Robert Lucien Barthelemy, Toulon, France, assignor to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction Technique des Constructions navales, Paris, France

Filed May 18, 1973, Ser. No. 361,508

Claims priority, application France, May 18, 1972, 72.17848

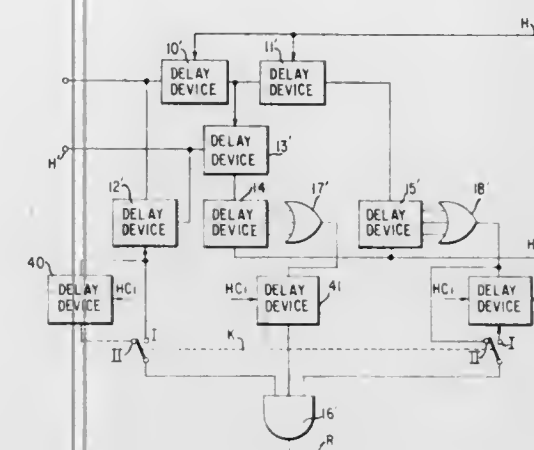
Int. Cl. G01s 9/66, 7/66

U.S. Cl. 340-3 R

9 Claims

1. A system for treating the echo signals received by an active sounding device to provide correlation between echoes received during the course of N successive sweeps, said system comprising first means including an input terminal and $N-1$

serially connected delay devices each providing a delay equal to the duration B of a sweep; second means including N storage means comprising a first storage means connected to said



input terminal and $N-1$ further storage means connected to the outputs of said $N-1$ devices and providing arithmetically increasing storage times; and an N -input coincident gate connected to the outputs of said N storage means.

3,854,116

UNDERWATER SOUND DETECTION

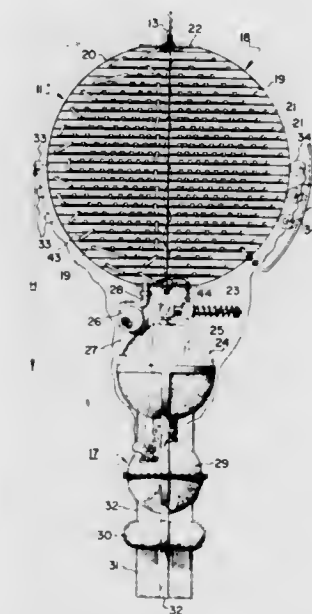
William J. Toulis, Columbus, Ohio, and Douglas A. King, Corona, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 24, 1966, Ser. No. 574,748

Int. Cl. G10k 11/06

U.S. Cl. 340-8 L

3 Claims



1. Apparatus for focusing acoustic energy at an underwater operating depth, and comprising:

- a. A collapsible array of gas-receiving compliant tube elements arranged in an approximate Luneberg-type distribution and fabricated of a material having a stiffness less than the stiffness of the gas to be received therein at the apparatus underwater operating depth,
 - b. A supply of pressurized gas separate from said collapsible array, and
 - c. Means for flowing gas from said gas supply to said compliant tube elements for array inflation at a pressure just slightly greater than the pressure corresponding to the apparatus underwater operating depth,
- said collapsible array being comprised of uniformly spaced-apart planar sub-arrays of joined concentric tube elements of circular plan when expanded from a collapsed condition and inflated to an operating condition.

3,854,117

PHASE-DIFFERENCE DETECTOR

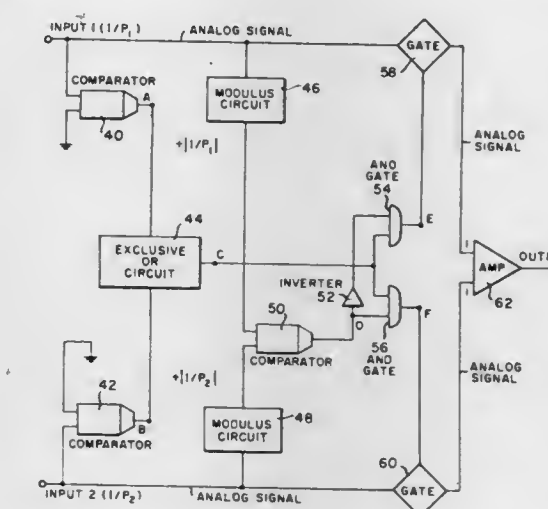
Noel O. Fothergill, 2210-46 Loyola Ave., Ottawa, Ontario, Canada

Filed Aug. 10, 1973, Ser. No. 387,401

Int. Cl. G01s 3/80

U.S. Cl. 340-16 R

10 Claims



1. A phase difference detector adapted to receive first and second versions from two different sources of a common input signal, with a variable phase difference between the two versions, and to provide an output which is a non-linear indication of the said phase difference, said detector comprising: means for comparing the two versions, and when both are of the same polarity, for selecting the version which has an instantaneous value closer to zero, and for presenting that version as the instantaneous output; and means for comparing the two versions, and when the two versions are of opposite polarity, for presenting zero as the instantaneous output.

3,854,118

SERVO HYDRAULIC VIBRATOR WITH PHASE ERROR CORRECTION

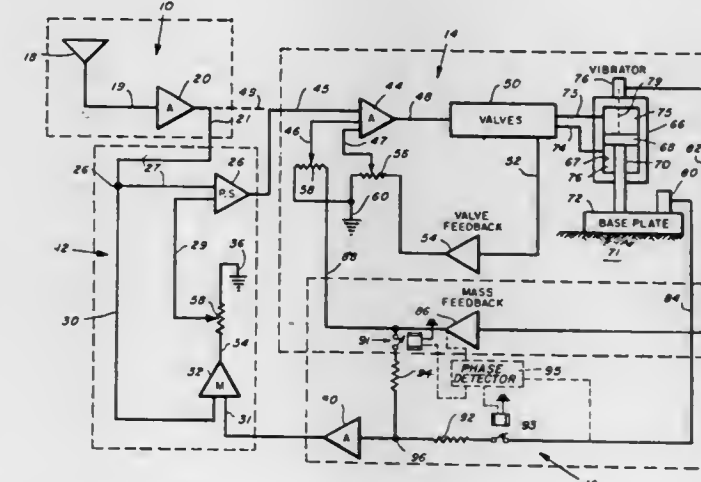
Charles R. Pelton, Ponca City, Okla., assignor to The Pelton Company, Inc., Ponca City, Okla.

Filed Nov. 10, 1971, Ser. No. 197,254

Int. Cl. G01v 1/16

U.S. Cl. 340-17

6 Claims



1. In a geophysical earth vibrator system including: means to provide a reference sweep signal having low and high frequency portions, a hydraulic actuated reaction mass type vibrator, a baseplate resting on said earth and hydraulically connected to said mass of said vibrator, electrohydraulic servo-valve means to drive said hydraulic actuated vibrator, a sensor means on said baseplate to provide a first control signal as a function of the acceleration of said baseplate,

sensor means to provide a second control signal responsive to a function of the relative displacement of said mass and said baseplate,

a phase control network including means to generate an error signal proportional to the phase error between a feedback control signal and said reference sweep signal, and

means to connect said reference sweep signal to said electrohydraulic servo-valve through said phase control network, to form a drive sweep signal to drive the vibrator the phase of said drive sweep signal being controlled by said error signal; the improvement in a method of generating said feedback control signal comprising the steps of:

- determining the phase difference between said first and second control signals,
- forming said feedback control signal from said second control signal during said low frequency portion when said determined phase difference is substantially zero, and
- forming said feedback control signal from said first control signal during said high frequency portion when said determined phase difference is greater than zero.

3,854,119

VEHICLE PROXIMITY ALERTING MEANS

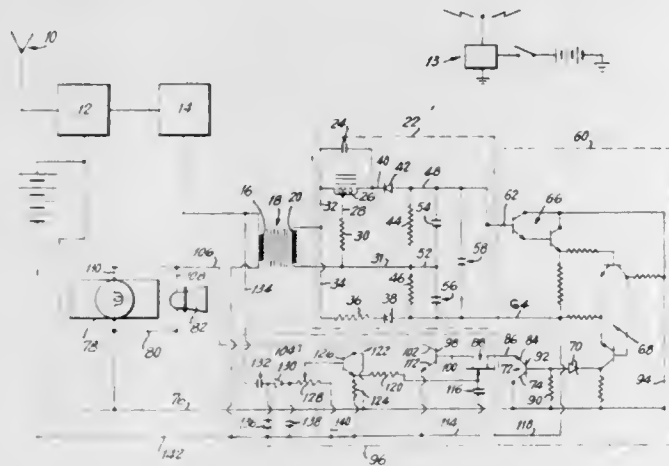
Benjamin Friedman, Pomona, and Guy E. Adams, Monroe, both of N.Y., assignors to Solitron Devices, Inc., Tappan, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,993

Int. Cl. H04b 1/16

U.S. Cl. 340-33

22 Claims



1. In a vehicular system for enabling vehicular proximity warning to be accomplished in accordance with an amplitude modulated signal, the combination comprising:

transmitter means carried by one vehicle, said transmitter means sending the amplitude modulated signal of a predetermined carrier frequency with a modulation signature;

receiver means carried by a second vehicle, said receiver means being adapted to receive and detect said amplitude modulated signal of a predetermined carrier frequency and modulation signature as transmitted by said transmitter means;

resonator circuit means tuned to a predetermined pass band to provide a positive potential when identifying said signal and a negative potential otherwise to operate switching means in said resonator circuit means, said resonator circuit means being connected to means to control an output of said switching means in accordance with the strength of said amplitude modulated signal as received by said receiver means;

a power source for energizing said receiver means and for providing energy to said resonator circuit means and said means to control output of said switching means; and alerting means connected to said power source and said resonator circuit means and said means to control the output of said switching means to be operated thereby to

provide range information to said second vehicle in reference to the proximity of said first vehicle.

3,854,120

ELECTROMECHANICAL PROGRAMMABLE LOCK

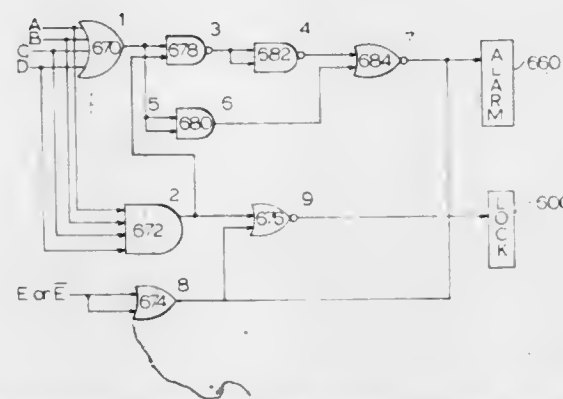
Victor G. Matto, Highlands Dr., Kinnelon, N.J. 07405, and Sandor A. Veres, 247 Washington Ave., Rutherford, N.J. 07070

Filed Apr. 30, 1973, Ser. No. 355,583

Int. Cl. E05b 49/00; H01h 27/00

U.S. Cl. 340-164 R

14 Claims



1. An electromechanical programmable lock comprising an annular lock section and an annular key section removably disposed within said lock section, said lock section having a plurality of first electrical lock contacts,

means in said lock section for selectively connecting one of said first electrical lock contacts in a first circuit, such selective connection comprising pre-programming of said lock section,

said key section having a plurality of second electrical key contacts, each of which contacts one of said lock contacts, and

means in said key section for selectively connecting one of said second electrical key contacts in a second circuit, such selective connection comprising pre-programming of said key section, whereby a selected first lock contact and a selected second key contact can be pre-programmed to match so that, when the pre-programmed key section is inserted into and matches the pre-programmed lock section, said first circuit and said second circuit are connected and operate as a permitted state for the programmable lock.

3,854,121

APPARATUS FOR FIXING THE LEVELS OF OUTPUTS FROM A DATA STORING CIRCUIT

Hisaharu Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

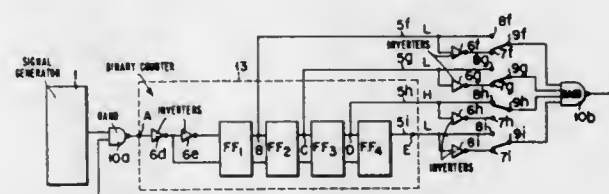
Filed Feb. 22, 1973, Ser. No. 334,571

Claims priority, application Japan, Feb. 29, 1972, 47-20214

Int. Cl. H04g 1/00

U.S. Cl. 340-168 R

10 Claims



1. An apparatus for fixing the levels of outputs from a circuit comprising:

a circuit having a memory function, outputs from which have their levels varied according to the manner in which input signals are received;

a signal generator for supplying said input signals to said circuit having a memory function;

an input gate circuit controlled by a separately generated control signal so as to permit or prevent any further supply of said input signals to said circuit having a memory function;

a first means for selecting a desired level state from output level states of said circuit having a memory function; and a second means for generating said control signal when said desired level state has been produced, thereby preventing any further supply of said input signals to said circuit having a memory function to fix the desired level state.

3,854,122

REMOTE STATION ADDRESSING SYSTEM

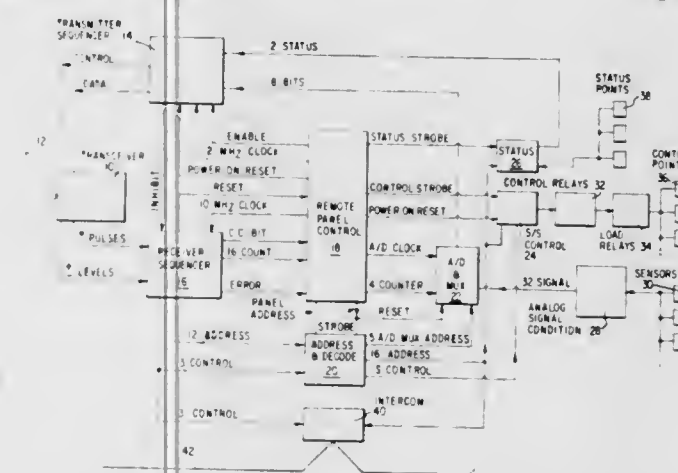
Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 12, 1972, Ser. No. 314,305

Int. Cl. H04q 9/00

U.S. Cl. 340-151

6 Claims



1. A remote station for use in a supervisory system to control and monitor a plurality of remote field points in response to messages from a central station having address and verifying portions, said remote station comprising

receiver sequencer means for receiving the messages from the central station and supplying an error signal if the address portion is not verified by the verifying portion; a plurality of field points;

address and decode means connected with said receiver sequencer means for enabling said field points in accordance with the address portions of the message prior to verification of the messages by said receiver sequencer means;

transmitter sequencer means connected with said field points for transmitting return messages to the central control station; and

control panel means connected with said receiver sequencer means and said transmitter sequencer means and responsive to said error signal to prevent the transmitting of said return messages by said transmitter sequencer means if the verifying portion does not verify the address portion of the messages.

3,854,123

REMOTELY CONTROLLABLE TUNING SYSTEM FOR TELEVISION TUNERS

Frank G. Banach, Oak Lawn, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 347,289

Int. Cl. H04b 1/16

U.S. Cl. 340-171 R

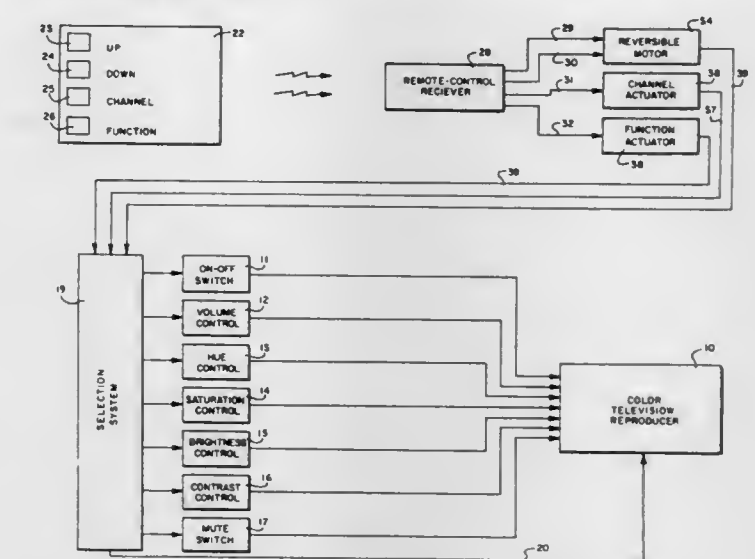
14 Claims

1. A television function-selection system comprising: a television receiver having a plurality of different functions to be controlled;

a corresponding plurality of operators individually spaced successively apart and each responsive to an impulse for individually operating respective different ones of said functions;

movable means, including a selectively rotatable lead screw and a nut movable along said lead screw upon rotation

thereof, movable to selected different ones of a plurality of different positions individually corresponding to respective different ones of said operators and, at each position, selectively delivering said impulse to the corresponding operator;



and means responsive to external command signals for selectively controlling movement of said movable means between said different positions and delivery of said impulse to said operators.

3,854,124

ELECTRONIC CALCULATOR

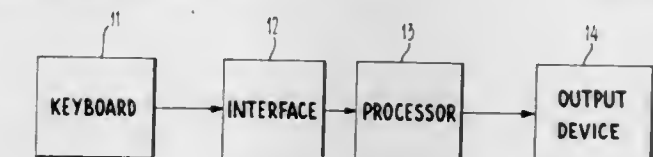
George E. Comstock, Danville, and Thomas P. Gilmer, Jr., Castro Valley, both of Calif., assignors to Friden, Inc., San Leandro, Calif. and The Singer Company, New York, N.Y.

Filed Nov. 21, 1966, Ser. No. 595,694

Int. Cl. G06f 3/00

U.S. Cl. 340-172.5

15 Claims



1. In a calculator, the combination comprising: an arithmetic portion; keyboard means coupled to said arithmetic portion for manually entering data into said arithmetic portion; a nonaddressable storage coupled to said arithmetic portion having more than one register; said storage including means to enter data therein and retrieve data therefrom in a first-in, first-out arrangement; and said keyboard having means for enabling access to said storage to store data therein and to recall such data therefrom as desired.

3,854,125

AUTOMATED DIAGNOSTIC TESTING SYSTEM

Ernest H. Ehling, Hackensack; Philip C. Jackson, Oakland, and James V. McCarthy, Riverdale, all of N.J., assignors to Instrumentation Engineering, Inc., Franklin Lakes, N.J.

Filed June 15, 1971, Ser. No. 153,902

Int. Cl. G06f 11/00

U.S. Cl. 340-172.5

22 Claims

1. In a system for automatically testing units having electrical circuits by exciting the unit under test with a stimulus device and obtaining an indication of the unit's response thereto by at least one measurement device and wherein the unit has a plurality of terminals, the improvement comprising means for connecting selected unit terminals to at least one device terminal, including:

input means for generating programmable command signals;

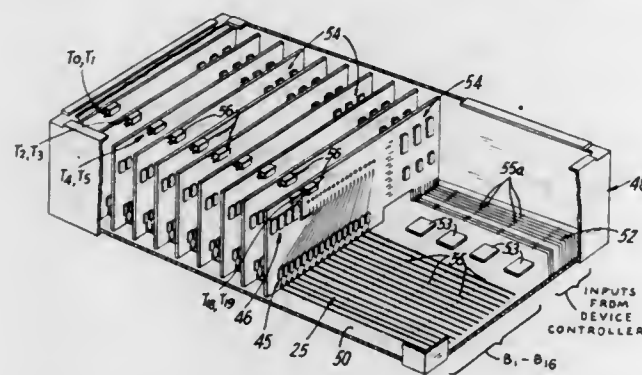
a plurality of buses over which signals to and from unit terminals may be transmitted;

a memory for storing electrical indications of existing terminal connections made via said buses;

switch means associated with the unit terminals and controllably operable to individually connect unit terminals to each of the plurality of buses;

switch means associated with the device terminals and controllably operable to connect at least said one device terminal to at least one bus;

control means responsive to said command signals including means for interrogating the memory storing said indications of existing connections of terminals to the buses to locate a bus to which no predetermined terminal connection



tion is made and which thereby is available for connection to the terminals to be interconnected;

means responsive to said interrogation for storing in the memory an indication that a terminal connection is to be made to said bus determined from said interrogation to be available, and

means for generating switch control signals; and

means for coupling the control means to the respective switch means so as to operate the switch means associated with the available bus in response to the switch control signals.

3,854,126

CIRCUIT FOR CONVERTING VIRTUAL ADDRESSES INTO PHYSICAL ADDRESSES

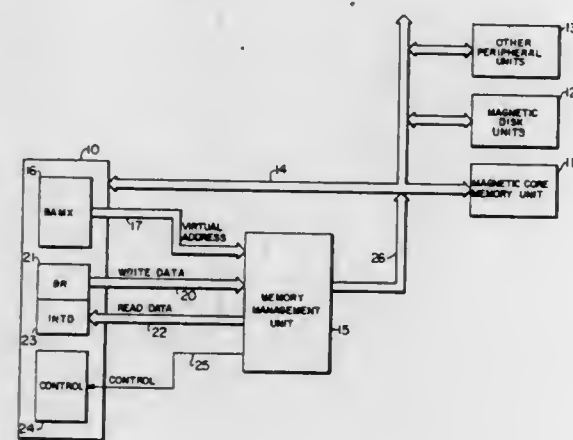
Robert C. Gray, Cambridge; Larry P. Wade, Acton, both of Mass., and Adrianus J. Van De Goor, Wilnes, Netherlands, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 10, 1972, Ser. No. 296,026

Int. Cl. G06f 9/20

U.S. Cl. 340-172.5

9 Claims



1. A data processing system comprising:
 - A. a bus comprising a plurality of conductors,
 - B. a plurality of physically addressed storage locations connectible to said bus,
 - C. a central processor unit for processing a program stored in certain of said storage locations, said program being written for operation in a virtual machine and including virtual addresses, each virtual address being divided into first, second and third portions, and
 - D. an address conversion unit connected between said central processor unit and said bus for transmitting onto

the bus, in response to each virtual address from said central processor unit, a physical address for selecting a said storage location, said address conversion unit including:

- i. a plurality of page address registers, each storing a base physical address for a block of consecutively addressed ones of said storage locations,
- ii. a page descriptor register corresponding to each of said page address registers, each page descriptor register storing a page length number representing the number of said consecutive storage locations which have been assigned to the base physical address in the corresponding one of said page address registers,
- iii. means responsive to the receipt of the first portion of each virtual address from said central processor unit for identifying a page address register and a corresponding page descriptor register,
- iv. address transmission enabling means for transmitting an enabling signal in response to a comparison of the second portion of each virtual address which indicates a selected number of locations and the page length number in the identified page descriptor register if the desired physical address will be a storage location assigned to the said page address register,
- v. means responsive to said enabling signal to combine the base physical address in the identified page address register and the second portion of each said virtual address for generating intermediate physical addresses, and
- vi. final address generating means coupled to said address transmission enabling means for combining the third portion of each said virtual address and the corresponding intermediate physical address to produce a final physical address for transmission onto said bus.

3,854,127

ALARM SYSTEM WITH AUTOMATIC RINGBACK

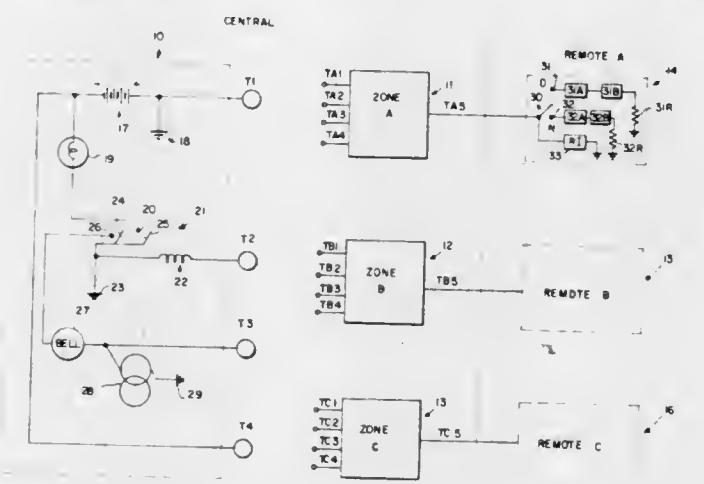
Clarence Stanley Damon, 6758 Penn Ave., Kansas City, Mo. 64113

Filed Sept. 18, 1973, Ser. No. 398,301

Int. Cl. G08b 25/00

U.S. Cl. 340-213.2

18 Claims



1. An alarm system with automatic ringback from a central location to a remote site comprising:
 - a manually operated remote switch at said remote site connected to said central location;
 - a remote indicator at said remote site connected to said central location;
 - a switching means at said central location having a first terminal connected to said remote indicator and a second terminal connected to a signal source;
 - a sensing means at said central location connected to said remote switch for sensing the condition of said remote switch; and
 - a switch control means at said central location connected to said sensing means for interconnecting said switching

means first and second terminals for a limited time in response to a first sensed condition;

whereby said remote indicator is activated by said signal source for said limited time.

3,854,128

SAFETY DEVICE FOR CRANE

Susumu Yamagishi, Tokyo, Japan, assignor to Unic Corporation, Tokyo, Japan

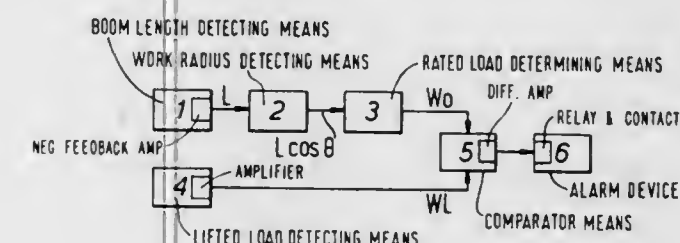
Filed Dec. 4, 1972, Ser. No. 312,225

Claims priority, application Japan, Dec. 29, 1971, 46-173

Int. Cl. B66c 13/48; G08b 21/00

U.S. Cl. 340-267 C

10 Claims



1. A safety device for a crane comprising boom length detecting means for detecting a boom length including means for generating a first electric signal corresponding to boom length, work radius detecting means for receiving said first signal and for generating directly a second electric signal corresponding to work radius, said second signal being a product of said first signal and a third cosine signal corresponding to a boom inclination angle, said cosine signal being generated in said work radius detecting means, lifted load detecting means for detecting a lifted load including means for generating a fourth electric signal corresponding to the lifted load, a rated load determining means including means for converting said second signal received therein to a fifth electric signal indicating a rated load corresponding to said work radius, said rated load determining means including a polygonal line function generator having an operational amplifier circuit and diode switches for changing amplification factors according to said second signal, and comparator means for comparing said fifth signal with said fourth signal to produce a sixth output signal providing information concerning safe crane operation when said lifted load is equal to or more than said rated load.

3,854,129

INFRASONIC INTRUSION DETECTION SYSTEM

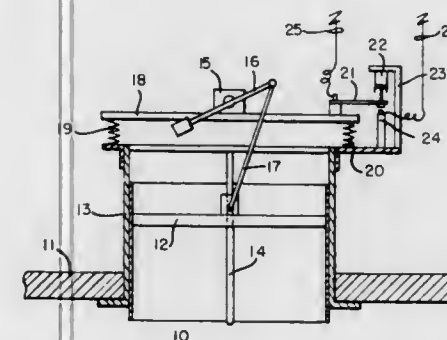
Frederick R. Haselton, 1205 Fallsmead Way, Rockville, Md. 20854

Filed July 19, 1973, Ser. No. 380,798

Int. Cl. G08b 13/16

U.S. Cl. 340-276

10 Claims



1. An infrasonic intrusion detector for use in a confined space comprising:
 - a. means for generating alternating infrasonic over and under pressure variations within a confined space, said pressure alternating with respect to ambient exterior pressure,

- b. means responsive to the atmospheric resistance encountered by said generating means as said generating means generates pressure variations within said protected volume,
- c. detector means for detecting any change in the atmospheric resistance encountered by said responsive means,
- d. alarm means activated by said detecting means to provide an alarm signal upon a change in said resistance.

3,854,130

POLYCHROMATIC GRAPHIC VISUAL DISPLAY AND CONTROL SYSTEM ASSEMBLY

Philippe Ligocki, Creteil, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

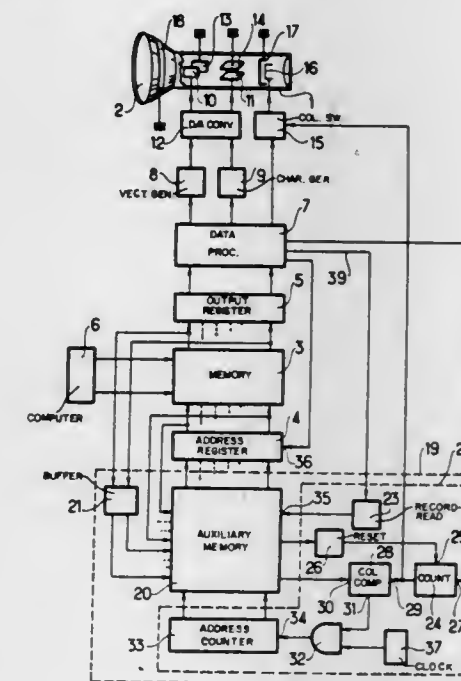
Filed May 18, 1973, Ser. No. 361,493

Claims priority, application France, May 19, 1972, 72.18013; Sept. 1, 1972, 72.31146

Int. Cl. G06f 3/14

U.S. Cl. 340-324 AD

14 Claims



1. Polychromatic graphic visual display assembly comprising:
 - a polychromatic cathode tube having a screen for receiving traces having portions of various colors, the traces being renewed in successive cycles;
 - a main memory means including a memory block, an address register and an output register from which graphic data items entered into the memory are extracted, the main memory means for each portion of traces recording a group of data items relating to that portion, the group of data items being classified in the memory means in a group of addresses, the first of the data items relating to the color of the portion and being classified as a first color change address in the group of addresses, the other data items relating to the parameters of the vectors constituting the portion being classified at following addresses in the group of addresses;
 - data processing means for enabling the generation of the traces on the screen of the cathode tube in response to the output register;
 - vector generator means and character generator means responsive to the data processing means for influencing a cathode beam deflection control element means so as to make traces and characters appear on the screen;
 - means for causing changes in color of the portions of traces in response to said data processing means; and
 - color change address selecting means responsive to said memory block and said address register thereof for listing the color change addresses of the various color groups and recording the corresponding color data thereof, the color change address selecting means selecting in se-

quence one of the various colors and controlling the reading of the main memory means for extracting successively from the main memory means all of the data corresponding to the groups of addresses of the main memory means containing identical color data for the selected color so as to extract the data corresponding to the various colors in sequence.

3,854,131

AUTO-MONITORING COMMUNICATION DEVICES FOR HANDICAPPED PERSONS

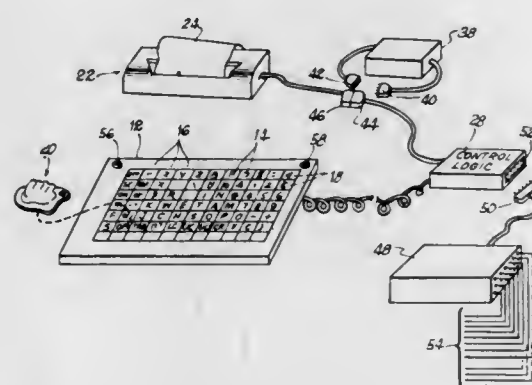
Greg C. Vanderheiden, 1323 Randall Ct., Madison, Wis. 53715; David F. Lamers, 8943 Robin Dr., Des Plaines, Ill. 60016; Chris Daniel Geisler, 138 Lothrop St., and Andrew M. Volk, 1240 Sweetbriar Rd., both of Madison, Wis. 53705

Filed Apr. 23, 1973, Ser. No. 353,462

Int. Cl. G08c 1/00

U.S. Cl. 340-365 L

11 Claims



1. A communication device for handicapped persons, comprising a panel having a matrix of communication elements disposed thereon, a matrix of sensors disposed adjacent said panel and corresponding with the matrix of communication elements, a cursor movable along said panel in a sliding fashion into alignment with each of said communication elements to select such element, said cursor including means for operating the sensor corresponding to the selected communication element, output means for producing a particular communications output in response to the operation of each of said sensors, and delay means responsive to the operation of said sensor for delaying the production of such output following the operation of each of said sensors, said delay means being effective to prevent the production of an output until said cursor remains in an operative relationship to any particular sensor for a predetermined amount of time.

3,854,132

RADAR SYSTEMS

Eric Davies, Danbury, England, assignor to The Marconi Company, Limited, Chelmsford, Essex, England

Continuation-in-part of Ser. No. 161,288, July 6, 1971, abandoned. This application May 21, 1973, Ser. No. 362,396

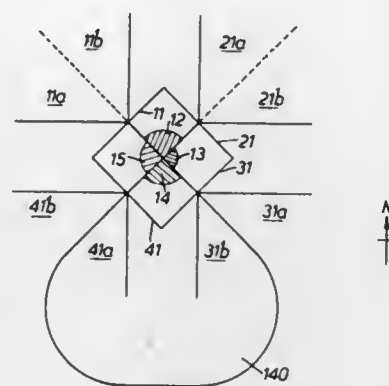
Int. Cl. G01s 9/02

U.S. Cl. 343-5 PD

18 Claims

1. A within-pulse radar system including a plurality of transmitting aerials each positioned to transmit a pulse of energy into a separate sector of an area of surveillance and a plurality of receiving aerial arrays each positioned to survey an area which includes substantially half of one sector into which a

pulse of energy is transmitted by one of said transmitting aerials and an adjacent half of a second sector into which a



pulse of energy is transmitted by a second one of said transmitting aerials.

3,854,133

ELECTRO-MAGNETIC DISTANCE MEASURING APPARATUS

Paul Joseph Cabion, Johannesburg, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

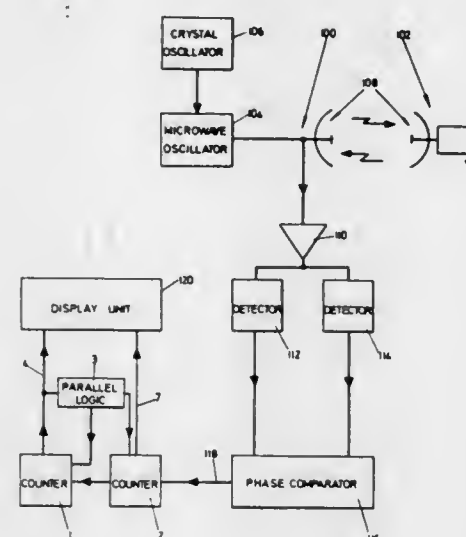
Filed May 29, 1973, Ser. No. 364,285

Claims priority, application South Africa, May 29, 1972, 72/3648

Int. Cl. G01s 9/04

U.S. Cl. 343-12 R

9 Claims



1. A device for processing phase measurements obtained from electro-magnetic distance measuring apparatus yielding successive phase difference measurements each having one digit with the same significance as the current most significant digit in a partial measure of the distance and one digit of greater significance than that digit to indicate the final distance, comprising means to accept measurements from the measuring apparatus, means to accumulate those measurements and after the first measurement to add in a modulo corresponding with the number of digits in a phase measurement and at the weight of the current most significant digit in the partial measure a correcting quantity to each measurement to allow for error in the measurement, means to control the accumulating means so that correcting quantity is a predetermined quantity minus the current most significant digit in the partial measure of distance, and means to indicate the final distance.

3,854,134

RADIO RANGING UTILIZING DOPPLER SIGNALS

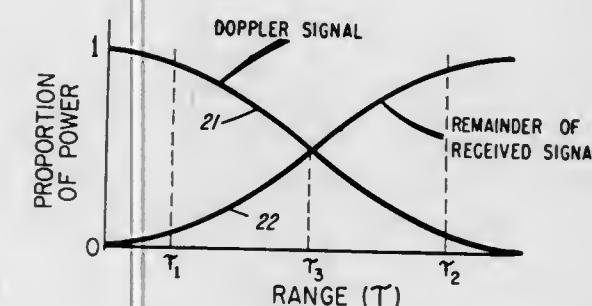
Raymond C. Johnson, Jr., Gainesville, Fla., and Salvador J. Peperone, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1966, Ser. No. 607,595

Int. Cl. G01s 9/24

U.S. Cl. 343-14

6 Claims



1. A radio ranging system comprising means for radiating a CW-FM radio signal, means for receiving a portion of said signal as reflected by an object, means for mixing the received signal with the signal being radiated to obtain the difference frequency signal thereof, and means for measuring the proportion of Doppler signal power in said difference frequency signal.

3,854,135

LOW ANGLE RADAR TRACKING SYSTEM

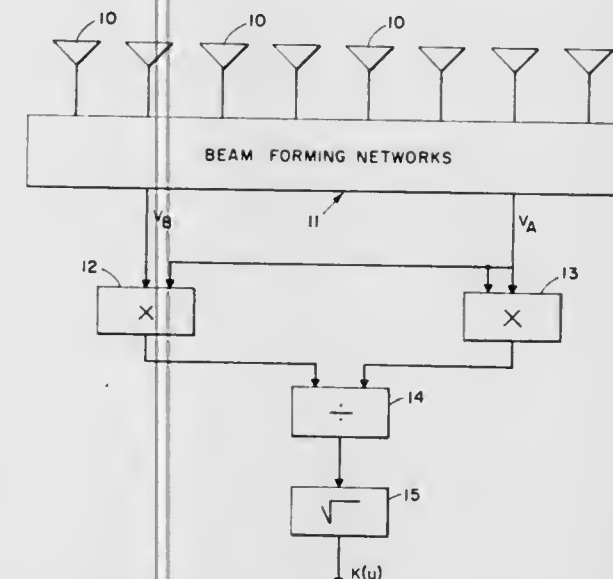
Warren D. White, Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1973, Ser. No. 414,465

Int. Cl. G01s 9/22

U.S. Cl. 343-16 M

8 Claims



1. In a method for determining by radar the elevation angle of a target which is at a relatively low altitude so that both direct and reflected radar signals are returned to the radar site, the steps of receiving said direct and reflected radar signals on a pair of directional beams which have patterns and are orientated such that their ratio has even order symmetry with respect to a horizontal axis; and determining the ratio of the signals received on said pair of directional beams, said ratio being indicative of said elevation angle.

3,854,136

CIRCUIT FOR FAST RECOVERY FROM JAMMING IN A RADAR RECEIVER SYSTEM WITH LARGE DYNAMIC RANGE

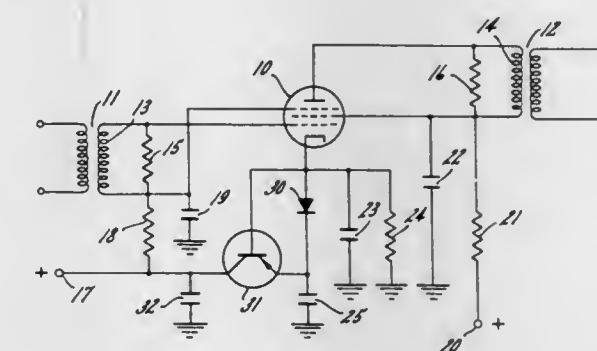
Keefer S. Stull, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1964, Ser. No. 365,570

Int. Cl. G01s 7/28, 7/36

U.S. Cl. 343-18 E

9 Claims



6. A circuit coupled to the intermediate frequency circuit of a radar receiver to provide fast recovery from jamming signals comprising:

an intermediate frequency pentode amplifier, having an input coupled to the control and suppressor grids and an output coupled to the screen grid and anode, and having a cathode coupled to a neutral potential through a parallel resistance and first capacitance network; a diode and a second capacitor coupled in series between said cathode and said neutral potential, said diode being oriented with the anode thereof coupled to said cathode; and a PNP transistor switching circuit having a base input thereto coupled to said pentode cathode, an emitter input thereto coupled to the cathode of said diode, and collector output means coupled to a biasing voltage whereby, upon the occurrence of a jamming signal on the input to said pentode, the cathode voltage thereof will rise in accordance with the charging rate of said second capacitor preventing pentode saturation for a jamming pulse time interval and allowing real target signals to be amplified and, upon reduction of a jamming signal on the input to said pentode, the cathode voltage thereof will decrease producing a voltage differential across the inputs of said transistor switching circuit to switch same into conduction and reduce the second capacitor voltage as rapidly as said jamming signal to immediately relieve back-bias on said pentode allowing real target signals to be amplified.

3,854,137

DIRECTION DETERMINING METHOD

Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,982

Claims priority, application Germany, Jan. 26, 1971, 2103580

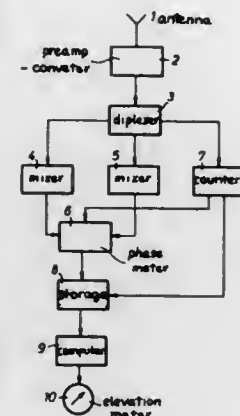
Int. Cl. G01s 1/44

U.S. Cl. 343-106 D

5 Claims

1. A method of determining direction from a moving receiving station with respect to a ground-based Doppler type radio navigation station, said ground-based station having a reference antenna and a commutated linear array, successive radiators of which are spaced by a linearly increasing distance from said reference antenna comprising the steps of: measuring at said receiving station, the respective phase difference between the waves successively transmitted by said reference antenna and each of said array radiators, the results of said measurement producing a series of phase values $\beta_1 \dots \beta_n$.

and computing a value representative of said direction ϕ' according to the relation $\sin \phi' = 2P / [\pi n(2d/\lambda)]$,



where

$$P = \sum_{v=1}^{v=n/2} (\beta_{n-v+1} - \beta_v),$$

and where n = an even number of radiators, v = the serial number of the radiator, d = spacing between adjacent radiators, and λ = the transmitted wavelength.

3,854,138

RADIOLOCATION SYSTEM PARTICULARLY ADAPTED FOR AIRCRAFT LANDING SYSTEMS

Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

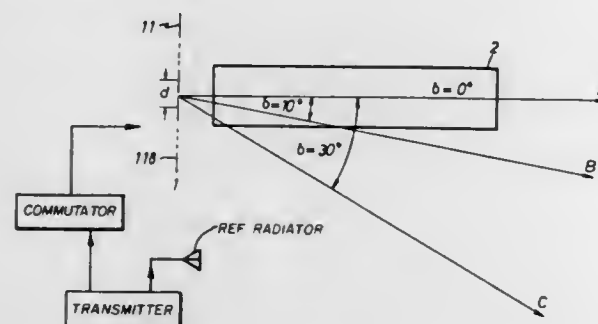
Filed May 17, 1973, Ser. No. 361,223

Claims priority, application Germany, May 18, 1972, 2224400

Int. Cl. G01s 1/16

U.S. Cl. 343-108 R

3 Claims



1. A radiolocation system particularly adapted for aircraft guidance in a terminal area and providing an ILS type presentation of air-derived angular guidance information based on group beacon transmissions, which includes a linear array of N substantially identical and substantially equally spaced radiators sequentially and cyclically energized from a transmitter producing signals of substantially constant phase and amplitude, said ground beacon also being arranged to transmit a pulse train prior to each ground beacon radiation cycle, said ground beacon transmitting a reference signal to facilitate remote phase measurements comprising:

a receiver located on said aircraft, said receiver including means responsive to said pulse train for determining the beginning of a ground beacon commutation cycle; means within said receiver for comparing the amplitude and phase of said reference signal with the amplitude and phase of energy received from each radiator of said ground beacon array energized, to produce a plurality of measured amplitude and phase values; means for adding said measured values vectorially to form a first vector sum;

means for determining the absolute value of said first sum to produce a value representative of the field strength which a group antenna pattern with a single main lobe would produce along a directional line perpendicular to said linear array at the location of said receiver;

means for shifting one half of the measured values by 180° in phase.

means responsive to said phase shifted measured values and the balance of said measured values in unmodified form for deriving a second vector sum, and for producing the absolute value thereof, said second vector sum absolute value characterizing a double-lobe group pattern with null on said directional line perpendicular to said linear array;

and means for taking the quotient of said first and said second vector sum absolute values for producing a signal having the same variational characteristics about said directional line perpendicular to said linear array as is produced by an ILS system.

3,854,139

AIRCRAFT PROXIMITY ALERT

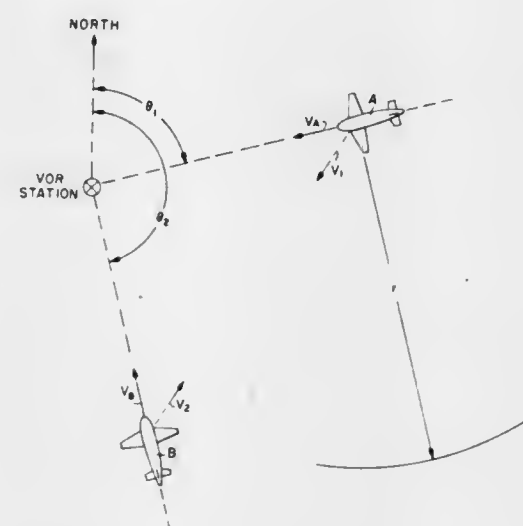
Alan H. Rich, 9910 Jacqueline Dr., Oxon Hill, Md. 20022

Filed Oct. 25, 1972, Ser. No. 300,606

Int. Cl. G01s 1/44

U.S. Cl. 343-112 CA

5 Claims



a shutter control circuit responsive to said first output of said multivibrator to close said shutter and to said second output of said multivibrator to open said shutter.

3,854,143

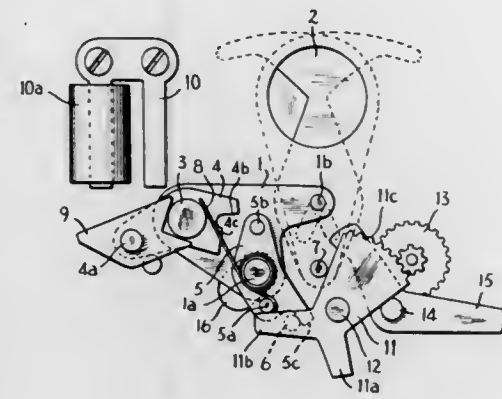
SHUTTER OPERATING MECHANISM

Kiyoshi Kitai, and Yukio Morino, both of Tokyo, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed July 5, 1973, Ser. No. 376,826

Claims priority, application Japan, July 4, 1972, 47-78343
Int. Cl. G03b 9/14

U.S. Cl. 354-265

6 Claims



1. In a camera shutter having shutter blades, the combination of an actuating lever movable for moving the shutter blades between open and closed positions thereof; a pivot pivotally mounting said actuating lever; a driving lever pivotally mounted on said actuating lever; a holding lever pivotally mounted on said pivot, coaxially with said actuating lever; means for selectively cocking and uncocking said holding and driving levers; and means on said levers for enabling said driving lever (a) when it is uncocked, to drive said actuating lever in one direction about said pivot to open the shutter blades and (b) when the holding lever is uncocked, to drive said actuating lever in the opposite direction about said pivot to close the shutter blades.

3,854,144

FOCAL PLANE SHUTTER WITH GROUPS OF SHUTTER BLADES IN IMPROVED ARRANGEMENT

Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

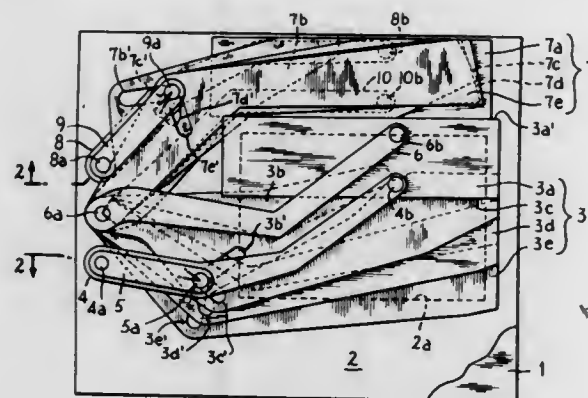
Filed Sept. 25, 1973, Ser. No. 400,612

Claims priority, application Japan, Sept. 26, 1972, 47-111776

Int. Cl. G03b 9/36, 9/18

U.S. Cl. 354-246

5 Claims



1. In a focal plane shutter, in combination, a pair of opposed plates defining a space therebetween and each having registering apertures defining a shutter aperture, two groups of shutter blades constituting a first group for opening the shutter aperture normally in a first operative position closing the

shutter aperture when the shutter is in a cocked condition and operable to a second operative position opening the shutter aperture, and a second group of shutter blades normally disposed in a first operative position alongside the shutter aperture and operable to a second operative position for closing the shutter to terminate a photographic exposure, each group of shutter blades having a slit-forming shutter blade having a straight edge for travelling across the shutter aperture, the slit-forming shutter blade in the first group of shutter blades constituting a trailing shutter blade and said straight edge thereon constituting a trailing edge controlling defining of an increasing exposure aperture slit as the shutter aperture is opened, the slit-forming shutter blade in the second group of shutter blades constituting a leading shutter blade and said straight edge thereon constituting a leading edge controlling defining of a decreasing exposure aperture slit as the shutter aperture is closed, each group of shutter blades having a driven lever pivotally mounted on one end and a free end thereof connected to said slit-forming shutter blade of the corresponding group of shutter blades, each group of shutter blades having an auxiliary lever pivotally mounted at one end and a free end thereof connected to said slit-forming blade of the corresponding group, the free ends of the auxiliary levers of each group being connected to the corresponding slit-forming shutter blades at a common plane passing through said shutter aperture means, pivotally mounting the driven levers and auxiliary levers independently on a common plane passing alongside the shutter aperture, driving means for each group for driving the remainder of the shutter blades of each group other than the slit-forming shutter blade of each group in conjunction with said driven lever thereof, the means pivotally mounting the auxiliary lever for each group pivotally mounting the remainder of said shutter blades at a common pivot with the corresponding auxiliary lever for pivoting about a common pivot in the same plane in which the driven levers and auxiliary levers pivot, the levers of said first group being a mirror image of the second group and the slit-forming shutter blades of each group being disposed remotest from each other and the remainder of shutter blades of both groups being disposed therebetween.

3,854,145

STRIP-CHART RECORDING APPARATUS

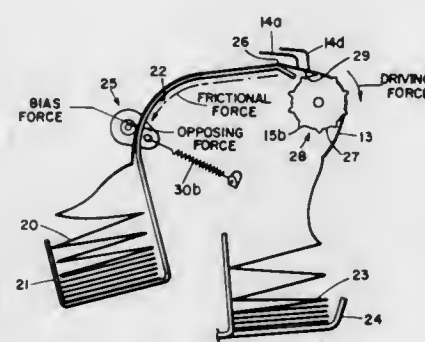
A. Lindsay Carroll, Jr., Cohasset, and Melvin J. White, Jr., Sharon, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Nov. 28, 1973, Ser. No. 419,754

Int. Cl. G01d 1/5/30

U.S. Cl. 346-116

5 Claims



1. A strip-chart recording apparatus for recording the value of a condition on a strip-chart of the type having a series of equally spaced sprocket holes at each side thereof and which is supplied in a compactly folded stack comprising, in combination:

a supply basket adapted to receive said compactly folded stack,

a surface aligned with said supply basket to support said strip-chart as it is unfolded from said stack,

said surface being flat in a direction transverse to the move-

ment of said strip-chart and convex in direction of said movement,
a chart roll having its axis of rotation aligned parallel to said flat surface and spaced a distance in the direction of said movement from the end of said surface whereby a section of said strip-chart is suspended between said end and the point of contact with said chart roll,
said chart roll having sprocket teeth at each end thereof adapted to engage said series of equally spaced sprocket holes in said strip-chart.

means for rotating said chart roll at a uniform speed,
a tensioning device biased to exert a force between said strip-chart and said surface at a distance from said end whereby said force and the friction of said strip-chart in contact with said convex surface resists the pull of said sprocket teeth as said chart roll rotates, thereby providing sufficient tension to hold the suspended section of said strip-chart in its unfolded condition substantially flat, and pen means adapted to record on said suspended section of said strip-chart.

DESIGN PATENTS

GRANTED DECEMBER 10, 1974

ERRATA

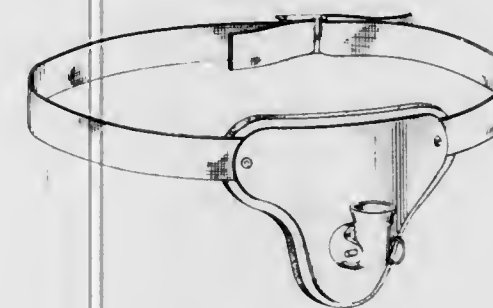
For CLASS	See PATENT NO.
D45-016.....	D233,906
D56-004.....	D233,913

DESIGNS

DECEMBER 10, 1974

233,865
FISHERMAN'S BELT
Anthony M. Vanus, 105 Brown Drive,
Claremont, Calif. 91711
Filed Apr. 27, 1973, Ser. No. 355,159
Term of patent 14 years
Int. Cl. D2—07

U.S. Cl. D2—381



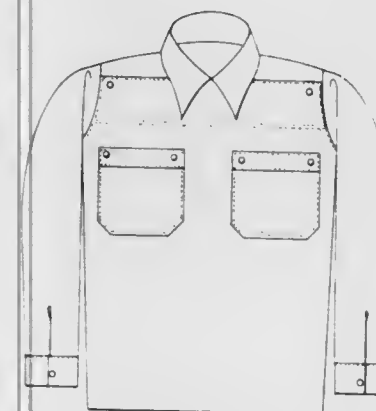
233,867
HASSOCK
Evalin S. Gilbert, 2121 N. Bay Shore Drive,
Miami, Fla. 33137
Filed Nov. 20, 1972, Ser. No. 308,040
Term of patent 14 years
Int. Cl. D6—02

U.S. Cl. D6—36



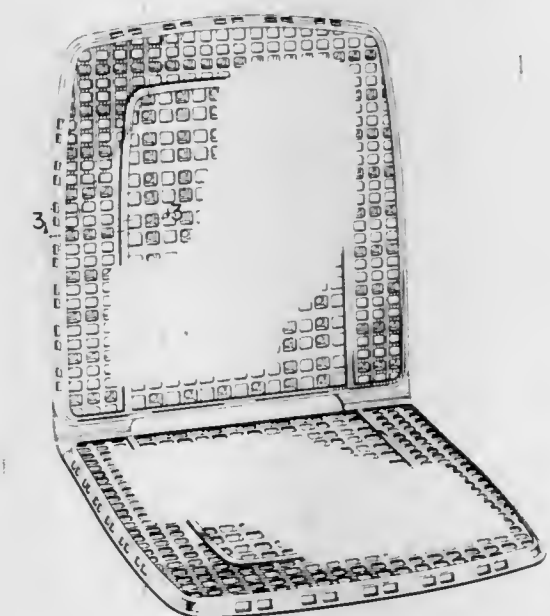
233,866
SPORT SHIRT
Vera Naumovski, 60 Roseland Drive,
Toronto, Ontario, Canada
Filed Mar. 2, 1973, Ser. No. 337,498
Term of patent 14 years
Int. Cl. D2—02

U.S. Cl. D2—208



233,868
VENTILATED CAR SEAT
Dwight N. Wooters, Wooster, Ohio, assignor to
Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,365
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—48



**233,869
CHAIR**

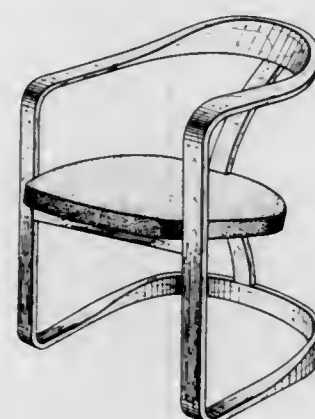
Leopoldo Lopez-Leautaud, Rio Vistula 339 Ote. Col.
Del Valle, Monterrey, Nuevo Leon, Mexico
Filed Apr. 18, 1973, Ser. No. 352,286
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—55

**233,870****ARM CHAIR**

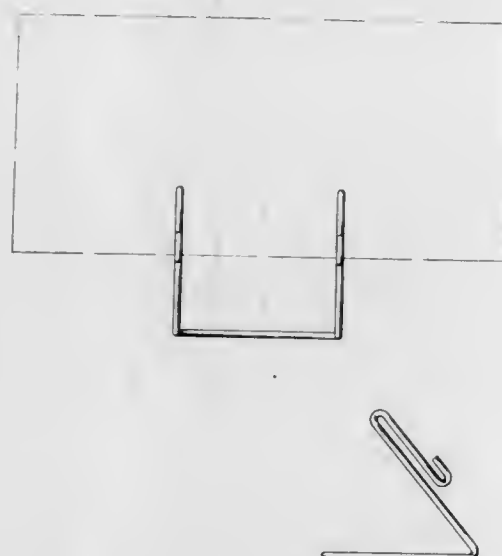
Richard Goldsmith, 19 Fiske Place,
Brooklyn, N.Y. 11215
Filed Mar. 28, 1973, Ser. No. 345,571
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—56

**233,871****RECIPE CARD HOLDER**

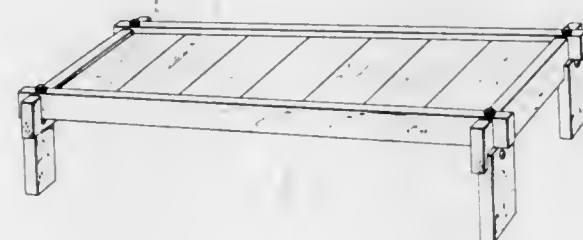
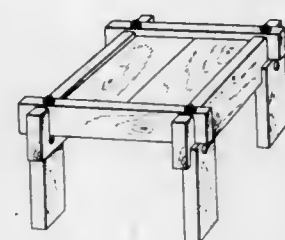
Carl J. Dexter, 130 Hideaway Lane,
West Lafayette, Ind. 47906
Filed June 14, 1973, Ser. No. 370,175
Term of patent 14 years
Int. Cl. D6—06

U.S. Cl. D6—85

**233,872
TABLE**

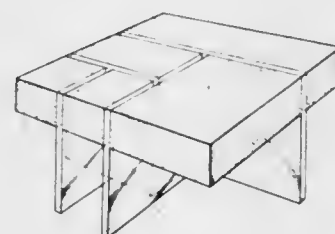
Denis Jester, Tiburon, Calif. (68 Belvedere St.
San Rafael, Calif. 94901)
Filed May 4, 1973, Ser. No. 357,334
Term of patent 14 years
Int. Cl. D6—03

U.S. Cl. D6—177

**233,873****MODULAR TABLE**

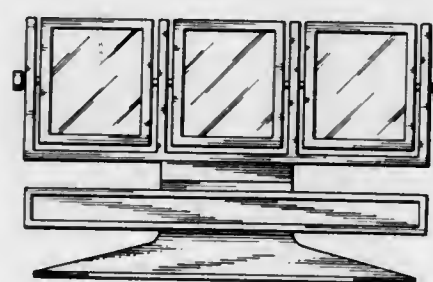
Floyd J. Mills, 1285 Briarcliff Road NE.,
Atlanta, Ga. 30306
Filed Dec. 7, 1972, Ser. No. 312,843
Term of patent 14 years
Int. Cl. D6—03

U.S. Cl. D6—177

**233,874****COMBINED PLURAL PHOTOGRAPH FRAME
AND LEGEND DISPLAY**

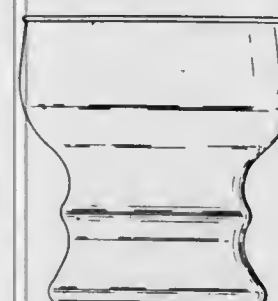
Ravadean Ashley, Newport News, Va.
(Quarters 306-B, 26th St., Fort Eustis, Va. 23604)
Filed Apr. 13, 1973, Ser. No. 351,094
Term of patent 14 years
Int. Cl. D6—07

U.S. Cl. D6—234

**233,875
GOBLET**

Harry G. Mazur, Melrose Park, Pa., assignor to
DCA Educational Products, Inc., Philadelphia, Pa.
Filed Mar. 12, 1973, Ser. No. 340,415
Term of patent 14 years
Int. Cl. D7—01

U.S. Cl. D7—13

**233,876
GOBLET**

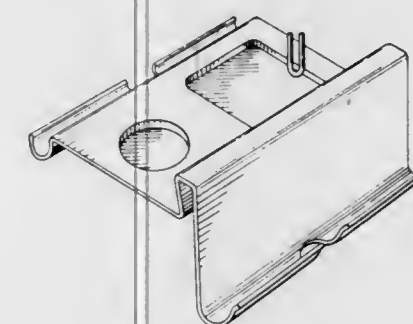
Harry G. Mazur, Melrose Park, Pa., assignor to
DCA Educational Products, Inc., Philadelphia, Pa.
Filed Mar. 12, 1973, Ser. No. 340,416
Term of patent 14 years
Int. Cl. D7—01

U.S. Cl. D7—13

**233,877****PORTABLE ATTACHMENT TRAY FOR
A DESK DRAWER**

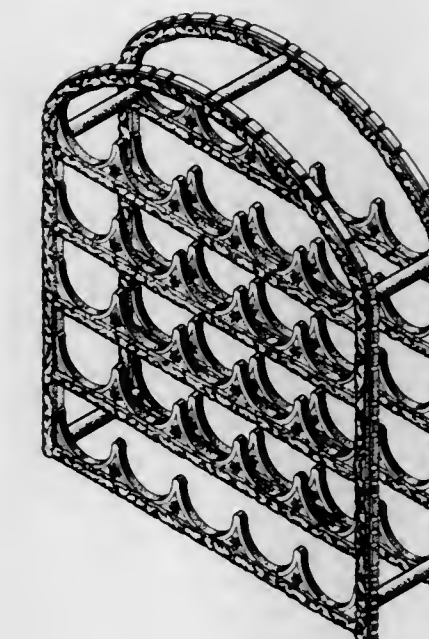
Jo Ann P. Sciarrone, 5046 Bayou Vista,
Houston, Tex. 77088
Filed Nov. 17, 1972, Ser. No. 307,602
Term of patent 14 years
Int. Cl. D7—99

U.S. Cl. D7—38

**233,878****RACK FOR CONDIMENT HOLDERS**

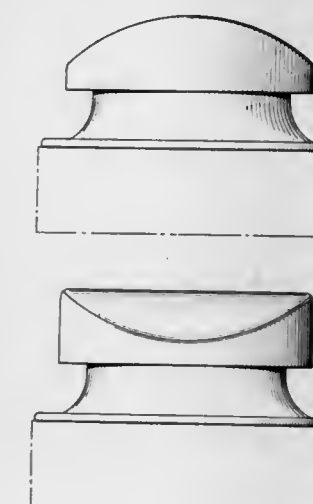
Paula H. Berger, 11752 Skyline Drive, Santa Ana, Calif.
02705, and Jack A. Birnbaum, 400 W. Orangethorpe,
#117 A, Fullerton, Calif. 92632
Filed June 1, 1973, Ser. No. 366,031
Term of patent 3½ years
Int. Cl. D7—06; D6—04

U.S. Cl. D7—71

**233,879****HANDLE FOR AN APPLICATOR**

John R. Howard, West Chicago, Ill., assignor to
Turtle Wax, Inc., Chicago, Ill.
Filed June 15, 1973, Ser. No. 370,338
Term of patent 14 years
Int. Cl. D7—05

U.S. Cl. D7—178



233,880

PLASTIC HINGE FOR COSMETIC CONTAINERS OR THE LIKE

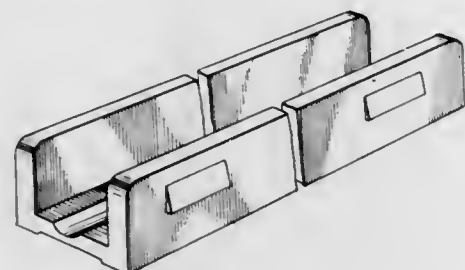
Roy S. Swenson, Danbury, and Thomas F. Holloway, Beacon Falls, Conn., assignors to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Apr. 16, 1973, Ser. No. 351,367

Term of patent 14 years

Int. Cl. D8—09

U.S. Cl. D8—189



233,881

JAR

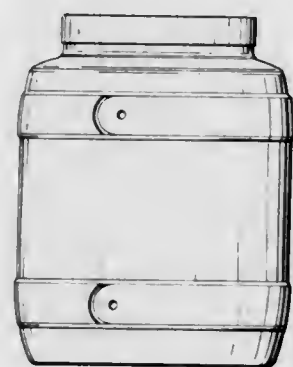
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 29, 1973, Ser. No. 346,097

Term of patent 14 years

Int. Cl. D9—07

U.S. Cl. D9—162



233,882

PACKAGING CUP

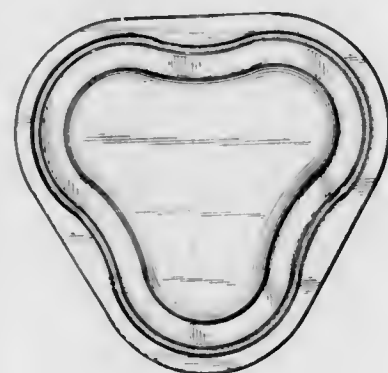
David K. Domnitz, Waukegan, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Filed Jan. 23, 1973, Ser. No. 326,049

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—219



233,883

JACK STAND

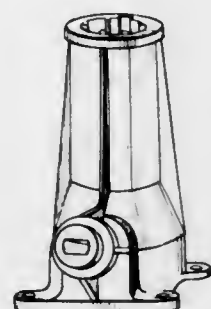
John A. Van Anrooy, St. Joseph, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed July 9, 1973, Ser. No. 377,216

Term of patent 14 years

Int. Cl. D12—05

U.S. Cl. D12—55



233,884

MOTOR VEHICLE

Frederick M. Stewart, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed July 24, 1972, Ser. No. 274,681

Term of patent 14 years

Int. Cl. D12—08

U.S. Cl. D12—99



233,885

BICYCLE STAND

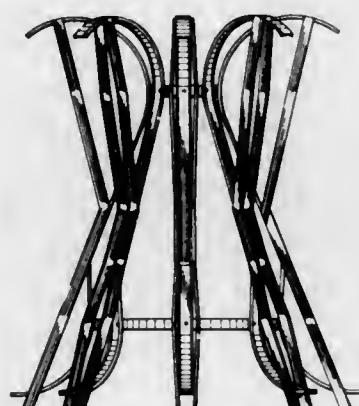
Daniel C. Myers, Arvada, Colo., assignor to Daka Industries, Inc.

Filed July 5, 1973, Ser. No. 376,630

Term of patent 14 years

Int. Cl. D8—99

U.S. Cl. D12—115



233,886

PORTABLE STILL

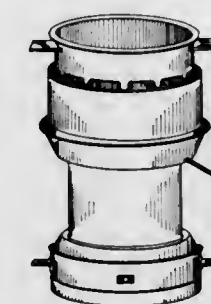
Robert R. Hansrote, 4717 Lowell St., Lincoln, Nebr. 68501

Filed Mar. 13, 1972, Ser. No. 234,459

Term of patent 14 years

Int. Cl. D24—99; D15—08

U.S. Cl. D16—2 B



233,887

SEPTIC TANK

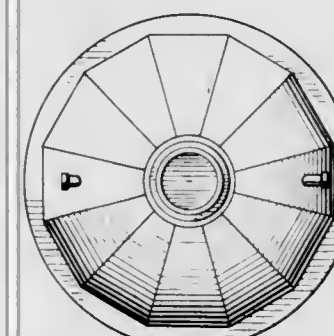
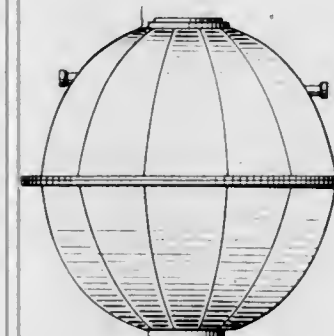
William M. Bower, Suffield, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed May 17, 1973, Ser. No. 361,353

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—2



233,888

SLIDE GATE

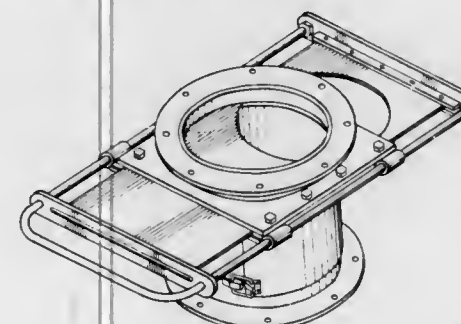
Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.

Filed Oct. 13, 1972, Ser. No. 300,402

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—38



233,889

URINAL FOR PORTABLE TOILET BUILDING

Phillip R. Juare, Minneapolis, Minn., assignor to Satellite Industries, Inc., Minneapolis, Minn.

Filed Feb. 5, 1973, Ser. No. 329,603

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—68



233,890

COMBINED PORTABLE TOILET SEAT COVER AND DISPOSABLE LINER

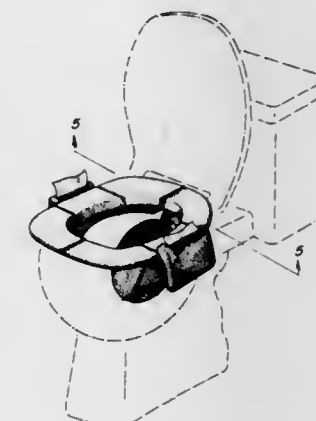
Sally J. Smith, 299 Lyons Ave., Newark, N.J. 07112

Filed Dec. 1, 1972, Ser. No. 311,286

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—71



233,891

WIRE CONNECTOR

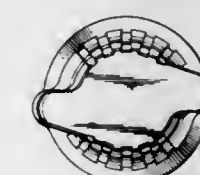
Rudolph P. Aldighieri, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,810

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—1 C



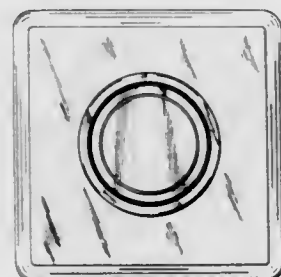
233,892

PUSHBUTTON ELECTRIC SWITCH

Andrew F. Kay, Del Mar, Calif., assignor to Switchpack Systems, Inc., Solana Beach, Calif.
Filed Sept. 15, 1972, Ser. No. 289,760

Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—13 B



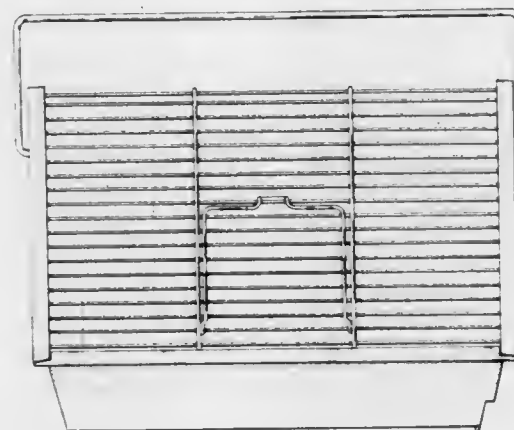
233,894

PET CAGE

Roy Frederick Perkins, Reigate, England, assignor to Genyk Products, Limited, Mitcham, Surrey, England
Filed Mar. 2, 1973, Ser. No. 337,459

Claims priority, application Great Britain Sept. 15, 1972
Term of patent 14 years
Int. Cl. D30—02

U.S. Cl. D30—4



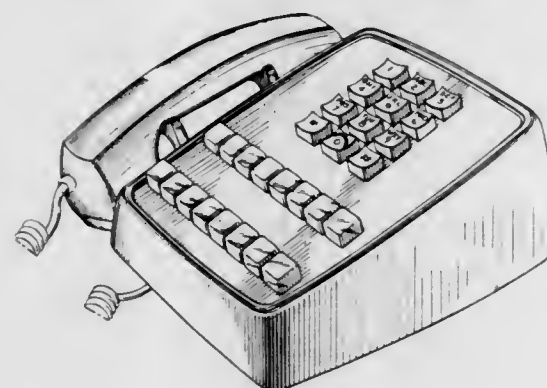
233,893

TELEPHONE SET

Paul Marchese, Greenwich, Conn., assignor to TIE/Communications, Inc., Stamford, Conn.
Continuation-in-part of design applications Ser. No. 378,424, Ser. No. 378,425, Ser. No. 378,426, and Ser. No. 378,427, all July 12, 1973, all now abandoned.
This application Jan. 28, 1974, Ser. No. 437,308

Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 A



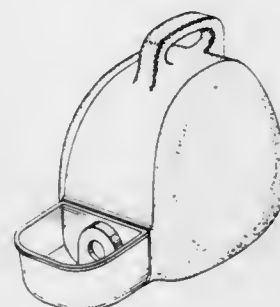
233,895

PET CANTEEN

Joseph C. Mineo, Los Angeles, Calif.
(6735 Shoup Avenue, Canoga Park, Calif. 91304)
Filed Oct. 19, 1972, Ser. No. 299,150

Term of patent 14 years
Int. Cl. D30—03

U.S. Cl. D30—13



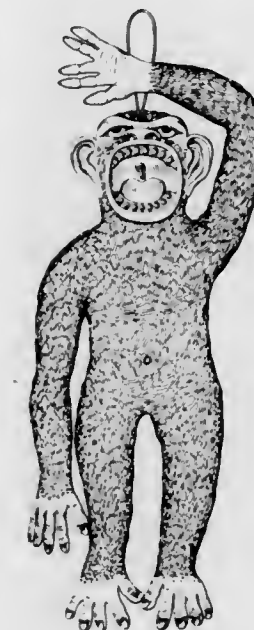
233,896

GORILLA FIGURE TOY

Fred Kort, Los Angeles, Calif., assignor to Imperial Toy Corporation, Los Angeles, Calif.
Filed Apr. 11, 1973, Ser. No. 350,050

Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—2 R



233,897

GOLF BALL POSITION MARKER OR THE LIKE

Walter Rowland Hart, Poole, England, assignor to Jack Smith (Gunmakers) Limited, Poole, Dorset, England

Filed Apr. 11, 1973, Ser. No. 350,018
Claims priority, application Great Britain Oct. 11, 1972
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D34—5 CB



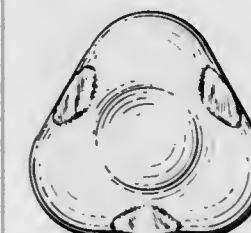
233,898

GAME DIE OR SIMILAR ARTICLE

John C. Warren, Exeter, N.H. 03833
Filed Apr. 20, 1973, Ser. No. 352,967

Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—5 DT



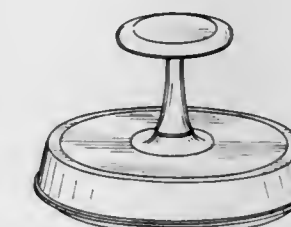
233,899

ROTARY AMUSEMENT DEVICE

Jacob W. Burkart, Cincinnati, Ohio, and John F. Mayer, Fort Thomas, Ky., assignors to General Mills Fun Group, Inc.

Filed Apr. 30, 1973, Ser. No. 355,983
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D34—5 G



233,900

ANIMAL FACE ACTION TOY

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Feb. 22, 1973, Ser. No. 334,544

Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 B



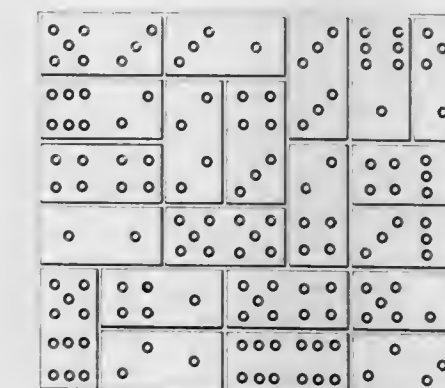
233,901

PEG BOARD PUZZLE

George Castanis, 444 6th Ave., New York, N.Y. 10011
Filed Feb. 26, 1973, Ser. No. 335,613

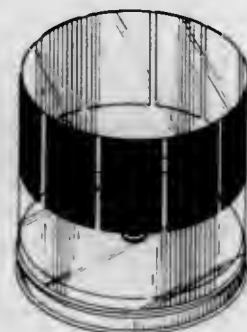
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 M



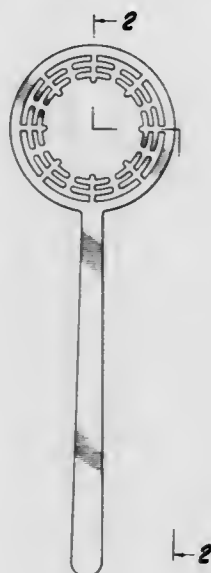
233,902
TOY VISUAL EFFECT DEVICE
 Kenneth S. Marks, 1315 Sandberg,
 Chicago, Ill. 60610
 Filed Mar. 30, 1973, Ser. No. 346,623
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D34-15 A



233,903
BUBBLE BLOWING WAND
 Fred Kort, Los Angeles, Calif., assignor to
 Imperial Toy Corporation, Los Angeles, Calif.
 Filed Nov. 1, 1973, Ser. No. 411,751
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D34-15 L



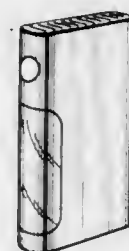
233,904
SURF-BOARD
 Folke Dage, Anderstorp, Sweden, assignor to
 Anderstorphs Werkstads AB
 Filed Mar. 22, 1972, Ser. No. 237,245
 Term of patent 14 years
 Int. Cl. D21-02

U.S. Cl. D34-42



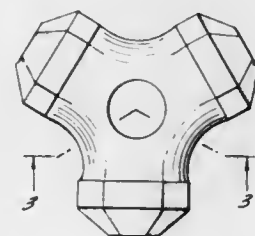
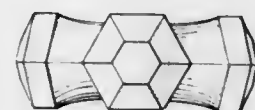
233,905
CIGARETTE LIGHTER
 Bernd Figur, Nieder-Roden, Germany, assignor to
 Rowenta-Werke, GmbH, Offenbach am Main, Germany
 Filed Sept. 26, 1973, Ser. No. 400,773
 Claims priority, application Germany Mar. 30, 1973
 Term of patent 14 years
 Int. Cl. D27-05

U.S. Cl. D48-27 R



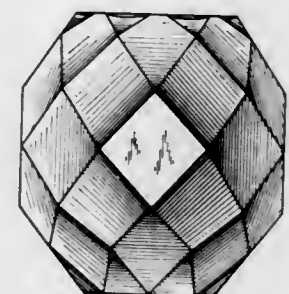
233,906
BEAD
 Harold Roger, 370 1st Ave.,
 New York, N.Y. 10010
 Filed Sept. 10, 1973, Ser. No. 395,825
 Term of patent 14 years
 Int. Cl. D11-01

U.S. Cl. D45-16 R



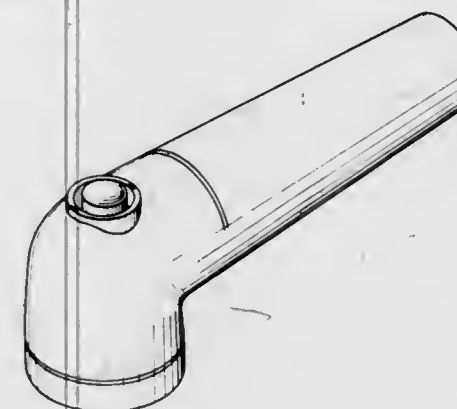
233,907
SCULPTURAL ORNAMENT
 Amnon Michaeli, 135-03 73rd Terrace, Queens,
 Kew Gardens Hills, N.Y. 11415
 Filed May 11, 1973, Ser. No. 359,489
 Term of patent 14 years
 Int. Cl. D26-99, 01, 05

U.S. Cl. D48-7 F



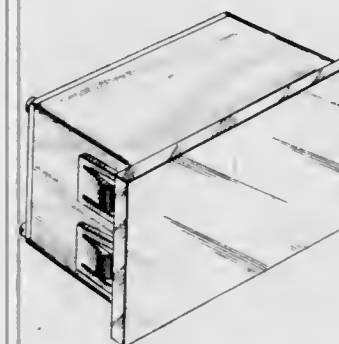
233,908
FLASHLIGHT
 Robert E. Brindley, New York, N.Y., assignor to
 Union Carbide Corporation, New York, N.Y.
 Filed Mar. 22, 1973, Ser. No. 343,706
 Term of patent 14 years
 Int. Cl. D26-02

U.S. Cl. D48-24 A



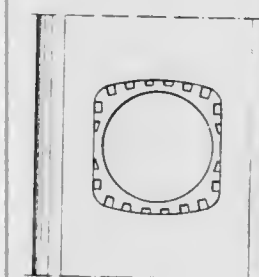
233,909
DIGITAL PANEL METER
 Paul E. Brefka, Southboro, Mass., assignor to
 Analog Devices, Incorporated, Norwood, Mass.
 Filed Nov. 8, 1972, Ser. No. 304,648
 Term of patent 14 years
 Int. Cl. D10-04

U.S. Cl. D52-6 R



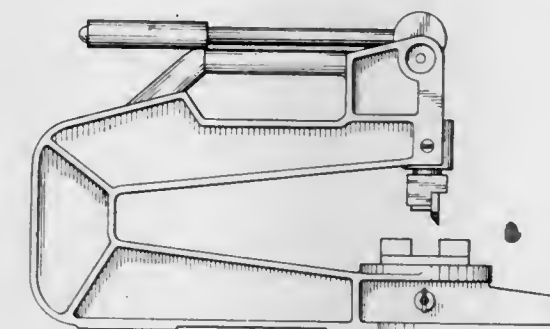
233,910
LADDER WITH NON-SLIP RUNGS
 Leon Gubri, 42 Rue Emile Deschanel,
 Courbevoie, France
 Filed Mar. 26, 1973, Ser. No. 344,495
 Claims priority, application France Oct. 26, 1972
 Term of patent 14 years
 Int. Cl. D6-99

U.S. Cl. D54-1 A



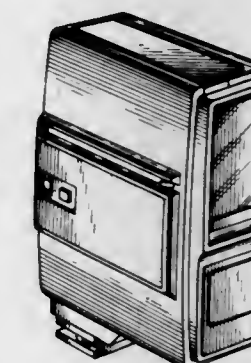
233,911
SHEET METAL LOUVER MAKING DEVICE
 Walter G. Marsh, Birmingham, and James J. Rhoades,
 Westland, Mich., assignors to Topco Products Com-
 pany, Inc., Detroit, Mich.
 Filed Feb. 15, 1973, Ser. No. 332,651
 Term of patent 14 years
 Int. Cl. D15-09

U.S. Cl. D55-1 A



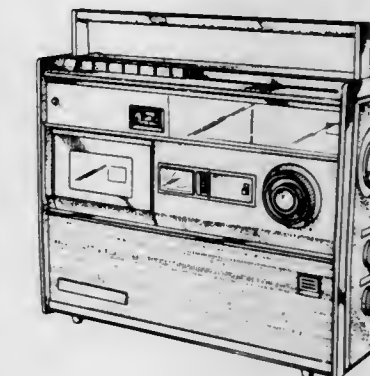
233,912
ELECTRONIC FLASH UNIT
 Albert L. Nagele, Wilmette, Ill., assignor to
 Bell & Howell Company, Chicago, Ill.
 Filed June 25, 1973, Ser. No. 373,346
 Term of patent 14 years
 Int. Cl. D16-05

U.S. Cl. D61-1 F



233,913
**COMBINED RADIO RECEIVER AND
 TAPE RECORDER**
 Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita
 Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
 Filed June 18, 1973, Ser. No. 371,235
 Claims priority, application Japan Dec. 21, 1972
 Term of patent 14 years
 Int. Cl. D14-03

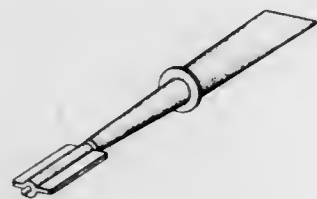
U.S. Cl. D56-4 B



233,914

DISPOSABLE CONTAINER FOR TOPICAL APPLICATION OF FLUID MEDICAMENTS
 Claes Peter Lofman, Stockholm, Sweden, assignor to Astra Lakemedel AB, Sodertalje, Sweden
 Filed Nov. 8, 1971, Ser. No. 196,862
 Term of patent 14 years
 Int. Cl. D24—04

U.S. Cl. D83—1 N



233,915

BOLUS GUN FOR CALVES
 Orin H. Osborn, Le Sueur, Minn., assignor to International Multifoods Corporation, Minneapolis, Minn.

Filed Jan. 2, 1973, Ser. No. 320,472

Term of patent 14 years

Int. Cl. D24—02; D30—99

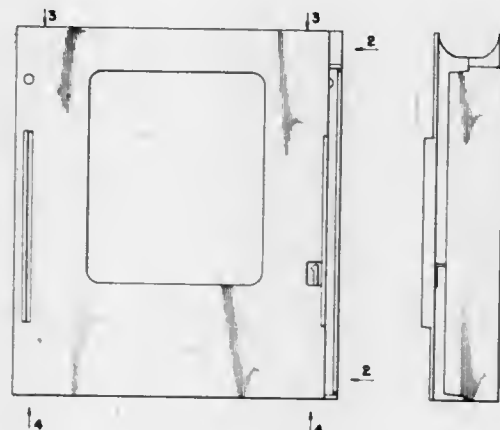
U.S. Cl. D83—12 A



233,916

CASSETTE HOLDER
 Roger E. Van Wyngarden, 5806 Rosslyn Ave., Indianapolis, Ind. 46220, and Mark E. Brackemyre, 1117 Dellwood Drive, Mooresville, Ind. 46158
 Filed Mar. 30, 1972, Ser. No. 239,836
 Term of patent 14 years
 Int. Cl. D3—02

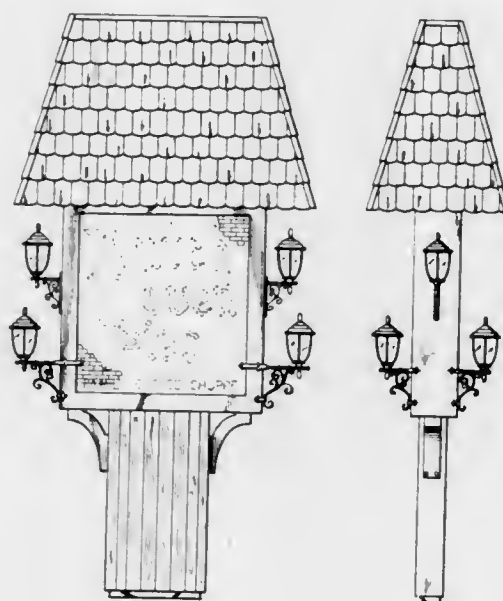
U.S. Cl. D87—1 D



233,917

RESTAURANT SIGN
 Charles Laughner, 7719 S. Belmont Road, Indianapolis, Ind. 46222
 Filed July 31, 1972, Ser. No. 276,515
 Term of patent 14 years
 Int. Cl. D20—03

U.S. Cl. D96—12 R



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- : See—
 Buckley, David A.; Jacknow, Burton B.; Mermelstein, Robert; and
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 Takao; and Ochiai, Tatsushiro, 3,854,086.
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 Heden, Carl Goran, 3,853,711.
 AB Bygg-Och Transportekonomi (BT): See—
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 AB Volvo: See—
 Forssell, Carl Fredrik Johan Sigvard, 3,853,296.
 Abbott Laboratories: See—
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 Abegg & Reinhold Co.: See—
 Boyadjieff, George I.; and Otsap, Ben A., 3,853,175.
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 Abex Corporation: See—
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 Achelpohl, Fritz, to Windmoller & Holscher. Process and apparatus for
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 35,000.
 Ackerman, James H., to Sterling Drug Inc. Anilin acids of 3-substituted
 2,4,6-triiodoanilines, 3,853,965, Cl. 260-516,000.
 Acorn Engineering Company: See—
 Morris, Earl Lavern, 3,852,834.
 Adams, Guy; and Defilippis, Joseph, to Solitron Devices, Inc. Solid
 state ignition, 3,853,108, Cl. 123-148,000.
 Adams, Guy E.: See—
 Friedman, Benjamin; and Adams, Guy E., 3,854,119.
 Adams, John Howard, to Chevron Research Company. Lubricant con-
 taining alkali metal borate dispersed with a mixture of dispersants,
 3,853,772, Cl. 252-18,000.
 Adams, Max Martin; and Duncan, Vernon Robert, to General Electric
 Company. Stall protector system for a gas turbine engine, 3,852,958,
 Cl. 60-39,280.
 Adler, Fred P.; and Craven, William A., Jr., to Hughes Aircraft Com-
 pany. Heat or light source tracking device, 3,853,405, Cl. 356-
 152,000.
 Aerodyne Development Corporation: See—
 Gordon, Mack; and Phillippi, John F., 3,853,508.
 Afanador, Carlos P.; and Jones, Richard L., to Dayton-Walther Cor-
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 29-447,000.
 Agata, Isao; Noguchi, Shunsaku; and Tanaka, Kunihiro, to Chino In-
 Pharmaceutical and Chemical Works Ltd. Process for producing
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 Agence Nationale de Valorisation de la Recherche Anvar: See—
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 Ahn, Junghi; Schwartz, Bernard; and Wilcox, David L., to International
 Business Machines Corporation. Multilayer circuits, 3,852,877, Cl.
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 Aigami, Koji: See—
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 Nye, Dudley D., Jr.; Carlson, Peter J.; and Keith, Arley, Jr.,
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 hiko; and Matsunami, Akira, 3,852,989.
 Akimtshev, Anatoly Alexeevich: See—
 Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova,
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 penderian, Amayak Pogodovich; Shagurin, Anatoly Zlexeevich;
 Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin,
 Sergei Sergeevich; Matveev, Anatoly Alexandrovich; Petrunin,
 Alexandr Mikhailovich; Sherstnev, Evgeny Sergeevich; Akimt-
 sev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and
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 Stromberg-Carlson Corporation. Call back arrangement, 3,854,014,
 Cl. 179-18,000.
 Aktiebolaget Electrolux: See—
 Amren, Jan Vilhelm, 3,853,138.
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 Bergman, Carl-Axel Leopold, 3,854,063.
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 Greven, Hendrik Marie, 3,853,836.
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 Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and
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 3,853,294, Cl. 248-235,000.
 Albright, Charles Jere; and Fitch, Clifford E., Sr., said Albright assor-
 to Chemetron Corporation, mesne. Apparatus for cooking food in
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 Brown, John Alexander; and Rhedey, Paul, 3,853,793.
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 Koenig, Lowell; and Presco, Albert, 3,853,558.
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 Alfa Romeo S.p.A.: See—
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 method and device for a tank during transportation, 3,853,240, Cl.
 220-15,000.
 Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma,
 Roger H., to Nalco Chemical Company. Sizing process and material,
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 Alliance Industrial Corporation: See—
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 Allied Tool Products, Inc.: See—
 Carpenter, Edwin A., 3,852,859.
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 Alpern, Melvin. Cover for decanter or like dispensing container,
 3,853,250, Cl. 222-517,000.
 Alpern, Melvin. Cover for decanter or like liquid dispensing container,
 3,853,251, Cl. 222-475,000.
 Altenburger, Otto: See—
 Akin, Robert J.; Altenburger, Otto; and Bansemir, Robert H.,
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 Altenburger, Otto; Bansemir, Robert H.; Bergquist, George R.; Mariot-
 ti, Donald J.; and Neumeier, Gunter F., to Stromberg-Carlson Cor-
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- American Air Filter Company, Inc.: *See—*
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- American Hoist & Derrick Company: *See—*
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- American Home Products Corporation: *See—*
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- American Shoe Machinery Corporation: *See—*
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- American Shower Door Co., Inc.: *See—*
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- Ammco Tools, Inc.: *See—*
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- Amoco Production Company: *See—*
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- Amos, Lynn G.; and Epps, William R., to Corning Glass Works. Apparatus for nutating and staining a microscope slide. 3,853,092, Cl. 118-56,000.
- AMP Incorporated: *See—*
Baker, Steven Clark, 3,853,380.
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- Amren, Jan Vilhelm, to Aktiebolaget Electrolux. Method and apparatus for conveying liquid through a long conduit. 3,853,138, Cl. 137-1,000.
- Amsted Industries, Incorporated: *See—*
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- Anchor Hocking Corporation: *See—*
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- Andersen, Niels H.: *See—*
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- Anderson, Carl C.; and Sturni, Lance C., to PPG Industries, Inc. Method of preparing a cationic acrylic electrodepositable interpolymer. 3,853,803, Cl. 260-29,6ta.
- Anderson, Edward P., to Brunswick Corporation. Reference electrode. 3,853,730, Cl. 204-195,00f.
- Anderson, Eugene A. Collating machine. 3,853,314, Cl. 271-173,000.
- Andreev, Vladimir Ivanovich: *See—*
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- Andrews, John Stanley, to Robertson, H. H., Company. Particle collecting apparatus. 3,853,527, Cl. 55-403,000.
- Andrews, Stuart R.; and Morse, Lewis D., to Merck & Co., Inc. Production of sodium erythorbate crystals of microcrystalline size. 3,853,920, Cl. 260-343,700.
- Andrews, Timothy Douglas, to Imperial Chemical Industries, Limited. Metal deposition process. 3,853,589, Cl. 117-47,00a.
- Anthony, Andrew James; Hutchinson, John Jefferson; and Klumb, Ralph Howard, to Combustion Engineering, Inc. Fuel assembly hold-up device. 3,853,703, Cl. 176-87,000.
- Appenzeller, Henry Albert; Miller, Joseph Charles; and Shea, Vincent, to International Business Machines Corporation. Wafer interlocking transport system. 3,853,313, Cl. 269-21,000.
- Applied Power Inc.: *See—*
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- Apstein, Maurice, to United States of America, Army. Canopy penetration fuze. 3,853,065, Cl. 102-70,20p.
- Aqua-Chem, Inc.: *See—*
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- Arcall Limited: *See—*
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- Archer, Milton C., to Monsanto Company. Method for facilitating the harvest of fruit. 3,853,533, Cl. 71-104,000.
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- Arfelt, Soren Christian Schoubye; Clausen, Ib Christian; Jensen, Johannes; Fynbo, Knud Hansen; and Fischer, Jean Arnold, to Daempa A/S. Door lock. 3,853,340, Cl. 292-165,000.
- Arlington Aluminum Company: *See—*
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- Armstrong, Edward T. Waste water treatment system. 3,853,764, Cl. 210-195,000.
- Armstrong, William Eddie, to Motorola, Inc. Method of making a semi planar insulated gate field-effect transistor device with implanted field. 3,853,633, Cl. 148-1,500.
- Arrow Development Company: *See—*
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- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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- Aspro Inc.: *See—*
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- Austin, Robert R., to International Telephone and Telegraph Corporation. Method of burning combustible fluids for further analysis. 3,853,474, Cl. 23-232,00e.
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- Bridge, Frank; and Singh, Tej Kuldeep. Footwear. 3,852,897, Cl. 36-44.000.
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- Champagnat, Alfred; and Laine, Bernard Maurice, 3,853,704.
- Desty, Denis Henry; and Young, Christopher John, 3,853,457.
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- Bross, Charles Frederick, to Pennwalt Corporation. Vial capping apparatus. 3,852,941, Cl. 53-317.000.
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- Buco, Stephen Nicholas. Stamp album sheets. 3,852,903, Cl. 40-159.000.
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- Burford, Bruce Alfred, to Simpson Pope Limited. Height-adjustable griller. 3,853,113, Cl. 126-41.00e.
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- Chang, Edward H., to Fremont Industries, Inc. Silk screen cleaner composition. 3,853,782, Cl. 252-139.000.
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- Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., to Du Pont de Nemours, E. I., and Company. Electroless plating apparatus. 3,853,094, Cl. 118-417.000.
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- Herwig, Walter; and Kleiner, Hans-Jerg, to Farbwerke Hoechst Aktiengesellschaft. Flame resistant thermoplastic polyesters. 3,853,819, Cl. 260-75,00p.
- Herzog, Alexis; and Brechbuehler, Hans Ulrich, to Ciba-Geigy Corporation. Azido-s-triazines. 3,853,868, Cl. 260-249,600.
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- Hirashima, Kenzo; Matsui, Shuni; and Hayakawa, Yoshikazu, to Nissan Motor Company, Limited. Collision sensor for fender bumper operated vehicle safety device. 3,853,199, Cl. 180-91,000.
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- Pearson, Bernard A., to Smith-Williston, Inc. Method of inserting buttons in a drilling head. 3,852,874, Cl. 29-525.000.
- Peck, Gordon H., to Autotronic Controls Corporation. Vehicular performance analyzer. 3,853,002, Cl. 73-133.00r.
- Pedginski, James J.; and Peper, William A., to Minnesota Mining and Manufacturing Company. Sewing tape. 3,853,595, Cl. 117-68.500.
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- Peichl, Robert: *See—*
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- Pelton, Charles R., to Pelton Company, Inc., The. Servo hydraulic vibrator with phase error correction. 3,854,118, Cl. 340-17.000.
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- D'Angelo, Antonio Joseph; and McKellin, Wilbur H., 3,853,957.
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- Pereda, Eugene F. Slot antenna apparatus for measuring the detonation of an explosive material. 3,852,994, Cl. 73-35.000.
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- Perry, William A.: *See—*
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- Peters, Norman J., to DEC International Inc. Cheese making apparatus. 3,853,241, Cl. 220-344.000.
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- Petrinin, Alexandr Mikhailovich: *See—*
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- Petutschnigg, Karl. Modulation mechanism for harps. 3,853,030, Cl. 84-266.000.
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- Pinke, Paul A.; and Massie, Stephen N., to Universal Oil Products Company. Cyclalkylation of amines. 3,853,887, Cl. 260-293.640.
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- Pircon, Ladislav J., to Purity Corporation, The. Pollution control apparatus and method. 3,853,506, Cl. 55-91.000.
- Pirnie, Robert M., III, to Communication Equipment & Contracting Co., Inc. Area unit status system. 3,854,009, Cl. 179-2.00a.
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- Prebil, Stanley. Motor rapid warming device. 3,853,270, Cl. 237-12.30b.
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- Quack, Paul, to Scharman & Co. Horizontal drilling and milling machine with a headstock movable upwardly and downwardly on guiding means. 3,853,423, Cl. 408-235.000.
- Quenelle, Robert C., to IMS Corporation. Display device and control circuit therefor. 3,854,073, Cl. 315-200.00a.
- Quinlan, William J.; and Huver, Laurence L., to Hastings Manufacturing Company. Wiper arm adapter for converting a single wiper arm to an articulating wiper arm. 3,852,845, Cl. 15-250.230.
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- Reinis, Gedeminas J.; and Nelson, Kyle F., to Xerox Corporation. Method of color imaging a layer of electrically photosensitive agglomerates. 3,853,555. Cl. 96-1.200.
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- Reynard, Kennard A.; and Rose, Selwyn H., to Horizons Incorporated, a division of Horizons Research Incorporated. Alkylarylox-phosphazene polymers. 3,853,794. Cl. 260-2.00p.
- Reynolds, Charles Edward; and Woolley, Harold Oakley, Jr., to AMP Incorporated. Multiple circuit selector switch assembly having movable contact means adapted to retain itself in closed circuit position. 3,854,018. Cl. 200-5.00a.
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- Rhodes, Jerome H., to Monsanto Company. Method for improving the bonding of nylon filaments by the use of a hydrogen halide. 3,853,659. Cl. 156-181.000.
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- Summers, John Clifford, to Du Pont de Nemours, E. I., and Company. Guanidine salts of chlorinated and/or brominated aminobenzene sul-fonic acids. 3,853,964, Cl. 260-501.120.
- Sun Research and Development Co.; See—
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- Sury, Yel S.; and Grace, Henry C., Jr., to Ciba-Geigy Corporation. Process for the manufacture of cyclopropanecarbonitrile. 3,853,942, Cl. 260-464.000.
- Sutar, William; See—
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- Sutherland, William. Automatic water sampler. 3,853,009, Cl. 73-423.00r.
- Sutliff, Wayne N.; and Downen, Jim L. Duplex hydraulic-mechanical jar tool. 3,853,187, Cl. 175-297.000.
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- Svec, Joseph J. Disc type indicia recording and display device. 3,852,900, Cl. 40-70.00r.
- Swanson, Bernard H., to Super Pigeon Corporation. Reusable target pigeon. 3,853,319, Cl. 273-105.400.
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- Tabler, Donald C., to Phillips Petroleum Company. Hydrogenation of cyclopentadiene. 3,853,748, Cl. 208-255.000.
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Wodrich, Geotz Werner; Heckh, Gerhard; and Zerweckh, Manfred, to Siemens Aktiengesellschaft. Slot nozzle for isotope separation of gaseous compounds. 3,853,528, Cl. 55-434.000.
Wojcik, Bruce Charles: See—
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Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., to American Home Products Corporation. Ortho-mercaptopyrimidines and salts thereof abstract of the disclosure. 3,853,876, Cl. 260-268.00c.
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Wright, Harold; and Jones, Keith Thomas, to British Iron and Steel Research Association. The Impact crusher. 3,853,274, Cl. 241-40.000.
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Wrzesinski, Joseph Francis, to Grace, W. R., & Company. Sprayable photocurable surface coating composition. 3,853,727, Cl. 204-159.180.
Wrzesinski, Joseph Francis, to Grace, W. R., & Company. Photocurable polishing wax containing a polyene-polythiol resin. 3,853,728, Cl. 204-159.180.
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- Wurr, Jürgen; and Vering, Antonius, to Polysius AG. Rotary drum for the heat treatment of strongly erosive material. 3,853,458, Cl. 432-118.000.
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Yazawa, Masahide; and Inoue, Kimio, to Polymer Processing Research Institute Ltd. and Kobe Steel Co., Ltd. Method for laminating uniaxially stretched thin layers of film as warps and wefts. 3,853,662, Cl. 156-265.000.
Yen, Shiao-Ping S.; and Rembaum, Alan, to California Institute of Technology. Ionic block elastomeric polymers. 3,853,804, Cl. 260-32.60n.
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- Yoshi, Hirosato, to Kabushiki Kaisha Sanwa Jidoki Seisakusho. Apparatus for automatically binding the opening in the automatic packer. 3,852,939, Cl. 53-138.00a.
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Yoshizaki, Hirohumi, to Caterpillar Mitsubishi Ltd. Two-way bulldozer. 3,853,181, Cl. 172-805.000.
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Zimmer, Peter. Apparatus for printing and/or dyeing of high pile webs. 3,852,980, Cl. 68-5.00d.
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Zundel, Arthur P., to National Can Corporation. Container end and forming method. 3,853,080, Cl. 113-121.00c.
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Irwin, John W., to International Business Machines Corp. Intrarecord resynchronization in digital-recording systems. Re. 28,265, 12-10-74, Cl. 360-50.
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Parker, Dorothy G.: See—
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Parker, Joseph D.: See—
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Szkudlanski, Alfons H.: See—
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Anderstors Werkstads AB: See—
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Ashley, Ravadeau. Combined plural photograph frame and legend display. 233,874, 12-10-74, Cl. D6-234.
Astra Lakemedel AB: See—
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Brindley, Robert E., to Union Carbide Corp. Flashlight. 233,908, 12-10-74, Cl. D48-24.
Burkart, Jacob W., and J. F. Mayer, to General Mills Fun Group, Inc. Rotary amusement device. 233,899, 12-10-74, Cl. D34-5.
Castanis, George. Peg board puzzle. 233,901, 12-10-74, Cl. D34-15.
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Guhrl, Leon. Ladder with non-slip rungs. 233,910, 12-10-74, Cl. D54-1.
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Mazur, Harry G., to DCA Educational Products, Inc. Goblet. 233,876, 12-10-74, Cl. D7-13.
Michaeli, Amnon. Sculptural ornament. 233,907, 12-10-74, Cl. D48-7.
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Minea, Joseph C. Pet canteen. 233,895, 12-10-74, Cl. D30-13.
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 Smith, Sally J. Combined portable toilet seat cover and disposable liner. 233,890, 12-10-74, Cl. D23-71.
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 Van Anrooy, John A., to Auto Specialties Mfg. Co. Jack stand. 233,883, 12-10-74, Cl. D12-55.
 Vanus, Anthony M. Fisherman's belt. 233,865, 12-10-74, Cl. D2-381.
 Van Wyngarden, Roger E., and M. E. Brackemyre. Cassette holder. 233,916, 12-10-74, Cl. D87-1.
 Warren, John C. Dice or similar article. 233,898, 12-10-74, Cl. D34-5.
 Wooters, Dwight N., to Rubbermaid Inc. Ventilated car seat. 233,868, 12-10-74, Cl. D6-48.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 10, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2		CLASS 29		CLASS 51		53.58	3,852,971	125	3,853,544		3,853,567
3B	3,852,822	48.5A	3,852,858	5B	3,852,917	72.4	3,852,972	128A	3,853,545	47R	3,853,568
3R	3,852,821	96	3,852,859	12	3,852,918	CLASS 62		147	3,853,547	50	3,853,569
68	3,852,823	110	3,852,860	15	3,852,919	45	3,852,973	171	3,853,548	97	3,853,570
79	3,852,824	132	3,852,861	33R	3,853,499	79	3,852,974	208R	3,853,549	105	3,853,571
146	3,852,825		3,852,862	105R	3,852,920	294	3,852,975	213	3,853,550	284	3,853,572
168	3,852,826	159R	3,852,863	133	3,852,921	499	3,852,976	227	3,853,551	288B	3,853,573
224A	3,852,828	182	3,853,492	218A	3,852,922	CLASS 64		71	3,853,025	300	3,853,574
224R	3,852,827	182.5	3,853,491	352	3,852,923	CLASS 65		91R	3,853,026		3,853,575
243R	3,852,829		3,853,493	CLASS 52		30D	3,852,977	CLASS 81			
CLASS 3		193.5	3,853,494	79	3,852,924	CLASS 66		266	3,853,030	CLASS 108	
1	3,852,830	203B	3,852,865	169	3,852,925	18	3,853,520	4	3,853,027	55	3,853,072
	3,852,831		3,852,866	241	3,852,926	71	3,853,521	461	3,853,028	91	3,853,073
36	3,852,832	203H	3,852,864		3,852,927	87	3,853,522	552	3,853,029	101	3,853,074
	3,852,833	208B	3,852,867	263	3,852,928	99A	3,853,523			136	3,853,075
CLASS 4		208D	3,852,868	293	3,852,931	178	3,853,524	CLASS 84		CLASS 110	
146	3,852,834	408	3,852,869	495	3,852,932	181	3,853,525	266	3,853,031	7R	3,853,076
185L	3,852,835	413	3,852,870	533	3,852,933	253	3,853,526	267	3,853,032	173A	3,853,077
219	3,852,836	445	3,852,871	539	3,852,934	CLASS 66		275	3,853,033	CLASS 112	
		447	3,852,872	543	3,852,935	19	3,852,979	380	3,853,034	211	3,853,078
155	3,852,837	460	3,853,495	664	3,852,930	CLASS 68		465		218R	3,853,079
247	3,852,838	487	3,852,873	730	3,852,935	CLASS 70		33C	3,853,035	CLASS 113	
CLASS 7		527.4	3,852,875	26	3,852,936	5D	3,852,980	CLASS 89		CLASS 114	
8	3,852,839	571	3,853,496	29	3,852,937	2	3,852,981	276	3,853,036	121C	3,853,080
CLASS 8		583	3,852,876	35	3,852,938	457	3,852,982	440	3,853,037	CLASS 115	
11	3,853,464	625	3,852,877	138A	3,852,939	76	3,853,530	128	3,853,038	20A	3,853,081
18	3,853,459	629	3,852,878	292	3,852,940	78	3,853,531	1C	3,853,039	51	3,853,082
84	3,853,460	630C	3,852,879	317	3,852,941	104	3,853,532	35R	3,853,040	210	3,853,083
130.1	3,853,462			382	3,852,942	CLASS 72		61A	3,853,041	219	3,853,084
137	3,853,463	77	3,852,880	CLASS 55		12	3,852,983	12	3,852,984	CLASS 116	
189	3,853,461	92	3,852,881	15	3,853,500	21	3,852,984	21	3,852,985	67R	Re.28,268
CLASS 12		276	3,852,882	37	3,853,501	56	3,852,985	11Y	3,853,554	114AD	3,853,086
61A	3,852,840	346.58	3,852,883	48	3,853,502	60	3,852,986	1R	3,853,552	114R	3,853,087
142R	3,852,841			67	3,853,503	193	3,852,987	1.2	3,853,555	129R	3,853,088
CLASS 15		63	3,852,884	80	3,853,504	197	3,852,988	1.3	3,853,556	133	3,853,089
21D	3,852,842		3,852,885	85	3,853,505	201	3,852,989	29R	3,853,557	CLASS 117	
93	3,852,843	76V	3,852,886	91	3,853,506	342	3,852,990	33	3,853,558	5.5	3,853,576
142	3,852,844	181AT	3,852,887	112	3,853,511	389	3,852,991	35	3,853,559	8	3,853,577
250.23	3,852,845	277	3,852,889	185	3,853,513	469	3,852,992	36.1	3,853,560	8.5	3,853,578
CLASS 16		286	3,852,888	257	3,853,514	CLASS 73		36.4	3,853,561	15	3,853,579
48.5	3,852,846	366	3,852,890	269	3,853,507	12	3,852,993	41	3,853,564	17	3,853,580
CLASS 19				270	3,853,516	35	3,852,994	76C	3,853,562	22	3,853,582
144.5	3,852,847	95	3,852,891	288	3,853,517	40	3,852,995	84R	3,853,563	33.5T	3,853,583
240	3,852,848	134	3,852,892	302	3,853,508	40.5R	3,852,996	124	3,853,565	34	3,853,584
CLASS 23				337	3,853,518	61.1R	3,852,997	CLASS 98		37R	3,853,585
230B	3,853,465	17	3,852,893	341	3,853,509	67.1	3,852,999	78	3,853,042	46FC	3,853,586
	3,853,466	48R	3,852,894	368	3,853,510	88.5R	3,853,000	CLASS 99		3,853,587	
	3,853,467			387	3,853,519	133R	3,853,001	306	3,853,043	3,853,588	
	3,853,468	2.5AL	3,852,896	403	3,853,527		3,853,002	320	3,853,044	47A	3,853,589
	3,853,469	2.5R	3,852,895	434	3,853,528	141R	3,853,003	433	3,853,045	3,853,590	
	3,853,470	44	3,852,897	499	3,853,529	151.5	3,853,004	447	3,853,046	3,853,591	
	3,853,471	73	3,852,898	CLASS 56		290R	3,853,005	479	3,853,047	3,853,592	
	3,853,472			12.2	3,852,944	301	3,853,006	572	3,853,048	3,853,593	
232E	3,853,473	77.6	3,852,899	12.7	3,852,945	395	3,853,007	584	3,853,049	3,853,594	
252R	3,853,475	CLASS 40		140BY	3,852,947	423A	3,853,011	590	3,853,050	64R	3,853,595
253TP	3,853,476	70R	3,852,900	140R	3,852,948	423R	3,853,008	CLASS 100		68.5	3,853,596
254R	3,853,477	125H	3,852,901	CLASS 58		423	3,853,009	27	3,853,051	69	3,853,597
258.5	3,853,479	129R	3,852,902	2	3,852,949	425.6	3,853,010	229A	3,853,052	75A	3,853,598
259.1	3,853,480	159	3,852,903	4A	3,852,950	505	3,853,013	233	3,853,054	76T	3,853,599
267A	3,853,481			23R	3,852,951	CLASS 74		CLASS 101		3,853,600	
267R	3,853,478	74	3,852,904	24R	3,852,952	63	3,852,998	316	3,853,055	98	3,853,601
284	3,853,482	CLASS 43		59	3,852,954	70	3,853,014	CLASS 102		105	3,853,602
288F	3,853,483	15	3,852,905	39.15	3,852,956	112	3,853,015	16	3,853,056	107.2P	3,853,603
	3,853,484	43.14	3,852,906	39.28R	3,852,957	231C	3,853,016	49.2	3,853,057	119.8	3,853,604
293A	3,853,485	44.9	3,852,907		3,852,958	242.13A	3,853,017	69.3	3,853,058	126GB	3,853,605
301SP	3,853,487	102	3,852,908	290	3,852,959	473R	3,853,018	47	3,853,059	138.8F	3,853,606
	3,853,488	62	3,853,497	317	3,852,960		3,853,019	49.3	3,853,060	140	3,853,607
301R	3,853,486	CLASS 44		354	3,852,961	560	3,853,020	70.2G	3,853,066	155UA	3,853,608
313	3,853,490	CLASS 46		517	3,852,962	568R	3,853,021	70.2P	3,853,067	161ZB	3,853,609
		26	3,852,909	561	3,852,963		3,853,022	70.2R	3,853,068	205	3,853,610
73P	3,852,849	74D	3,852,910	717			3,853,023		3,853,069	212	3,853,611
134R	3,852,843	CLASS 47		CLASS 61		5R	3,853,537	CLASS 104		217	3,853,612
136R	3,852,850	34.11	3,852,912	IF	3,852,964	1	3,853,538	70	3,853,067	240	Re.28,270
205.11L	3,852,851	37	3,852,913		3,852,965	3	3,853,539	148LM	3,853,068	8	3,853,093
205.14A	3,852,852	58	3,852,914	35	3,852,966	41	3,853,540	CLASS 105		49	3,853,094
230AT	3,852,854	CLASS 48		46	3,852,967	53	3,853,541	247	3,853,070	56	3,853,095
230A	3,852,853	CLASS 49		46.5	3,852,968	68B	3,853,542	409	3,853,071	417	3,853,096
265EE	3,852,855	209	3,853,498	51	3,852,970	72	3,853,543	CLASS 106		4	3,853,097
6	3,852,856	143	3,852,915	CLASS 64				44	3,853,566	18	3,853,098
1.3	3,852,857	409	3,852,916	CLASS 65							

268BC	3,853,880	468L	3,853,949	165	CLASS 292	3,853,340	260	CLASS 317	33	3,854,119	CLASS 408					
268FT	3,853,877	469	3,853,952	171	3,853,341	262	3,853,342	151	3,854,122	14	3,853,420					
268PC	3,853,881	470	3,853,953	262	3,853,342	264	3,853,343	164R	3,854,120	52	3,853,421					
268PH	3,853,875	472	3,853,955	264	3,853,343			168R	3,854,121	161	3,853,422					
268TR	3,853,878	473S	3,853,956					171R	3,854,123	235	3,853,423					
	3,853,879	476R	3,853,957					172.5	3,854,124			CLASS 416				
268R	3,853,876	481R	3,853,958	84	CLASS 293	3,853,344	341	3,854,076	3,854,125	20	3,853,424					
287R	3,853,884		3,853,959					3,854,079	3,854,126	95	3,853,425					
288	3,853,883	482B	3,853,960	64R	CLASS 294	3,853,345	436	3,854,080	213.2	3,854,127	140	3,853,426				
290R	3,853,885	485R	3,853,961	72	3,853,346			3,854,081	267C	3,854,128	167	3,853,427				
292	3,853,886	486R	3,853,962						276	3,854,129	231	3,853,428				
293.51	3,853,888	488R	3,853,963	1A	CLASS 296	3,853,347	22	3,854,082	324AD	3,854,130			CLASS 417			
293.55	3,853,889	501.12	3,853,964	23MC	3,853,348			69W	3,854,083	365L	3,854,131	356	3,853,429			
293.63	3,853,890	516	3,853,965	28R	3,853,349				CLASS 324			5PD	3,854,132	403	3,853,431	
293.64	3,853,887	545R	3,853,966	35R	3,853,368			34R	3,854,084	12R	3,854,133	405	3,853,432			
293.76	3,853,892	861	3,853,967	62	3,853,369			37	3,854,085	14	3,854,134	423	3,853,433			
293.87	3,853,891	876R	3,853,968	97C	3,853,370			43R	3,854,086	16M	3,854,135			CLASS 418		
294.8C	3,853,894	878B	3,853,969	137R	3,853,371			65CR	3,854,087	18E	3,854,136	55	3,853,434			
294.8E	3,853,893	878R	3,853,970					71CP	3,854,088	106D	3,854,137	61B	3,853,435			
294.9	3,853,895	901	3,853,971	45	CLASS 297	3,853,372		96	3,854,089	108R	3,854,138		3,853,436			
295.5B	3,853,864			341	3,853,373			106	3,854,090	112CA	3,854,139	61	3,853,437			
296R	3,853,896	53	3,853,972	404	3,853,350			118	3,854,091	756	3,854,140	113	3,853,438			
	3,853,897	65	3,853,973	452	3,853,351			158SC	3,854,092	777	3,854,141	121	3,853,439			
	3,853,898	81	3,853,974		3,853,352			CLASS 325				142	3,853,440			
297B	3,853,899	82	3,853,975	CLASS 299	3,853,353			18	3,854,093	116	3,854,145	226	3,853,441			
297Z	3,853,900	90	3,853,976	2	3,853,354			146	3,854,094							
304	3,853,901	103	3,853,977	43				490	3,854,095							
306.7R	3,853,902	210R	3,853,978	CLASS 302	3,853,355			114	3,854,096							
307F	3,853,903			66	3,853,356			233	3,854,097							
308C	3,853,904	3R	3,853,306	CLASS 303	3,853,357			103	3,854,098							
308D	3,853,905	3C	3,853,307	21F	3,853,357			110	3,854,099							
309	3,853,906	34T	3,853,308	CLASS 305	3,853,358			15	3,854,100							
	3,853,907	41	3,853,309	24	3,853,358			30D	3,854,101							
309.2	3,853,908			35EB	3,853,359			15	3,854,101							
326E	3,853,909	47	3,853,310	58	3,853,360			10	3,854,101							
326.47	3,853,914	64R	3,853,311	CLASS 307	3,854,054			1A	3,854,102							
326.5FL	3,853,910	152	3,853,312	41	3,854,055			55	3,854,103							
326.5S	3,853,911			115	3,854,056			108A	3,854,104							
	3,853,912			217	3,854,057			111	3,854,105							
326.9	3,853,913	21	3,853,313	273	3,854,058			CLASS 333								
332.3P	3,853,915			304	3,854,059			1.1	3,854,106							
340.6	3,853,916	173	3,853,314	CLASS 308	3,853,361			79	3,854,107							
340.7	3,853,917	204	3,853,315	122	3,853,362			207	3,854,109							
343.3	3,853,919			9.6	3,854,060			210	3,854,108							
343.7	3,853,920	30	3,853,316	CLASS 310	3,854,061			302	3,854,110							
345.2	3,853,921	88	3,853,317	11	3,854,062			165	3,854,111							
346.1R	3,853,922	102.1G	3,853,318	68C	3,854,063			47	3,854,112							
346.2R	3,853,923	105.4	3,853,319	75D	3,854,064			75	3,854,113							
346.3	3,853,924	106.5C	3,853,320	178	3,854,065			19	3,853,375							
347.2	3,853,918	130A	3,853,321	38	3,853,363			59R	3,853,376							
396N	3,853,925	134ES	3,853,322	206	3,853,364			75MP	3,853,377							
397.4	3,853,926	137R	3,853,323	223	3,853,365			75P	3,853,378							
397.5	3,853,927	142E	3,853,324	105	3,854,066			91R	3,853,380							
403	3,853,928	183E	3,853,325	130	3,854,067			92M	3,853,381							
407	3,853,929			240	3,854,068			95R	3,853,382							
428	3,853,930			318	3,854,069				3,853,383							
448A	3,853,931	105	3,853,326	503	3,854,070			96	3,853,385							
448.2E	3,853,932			CLASS 312	3,854,071			97R	3,854,114							
	3,853,933	63	3,853,327	38	3,853,363			192RL	3,853,388							
	3,853,934	72R	3,853,328	184	3,853,364			217S	3,853,389							
	3,853,935			206	3,853,365			275R	3,853,390							
448.8R	3,853,935			223	3,853,366											
4453P	3,853,936			259	3,853,367											
453R	3,853,937	47.35	3,853,329	CLASS 313	3,854,066											
455R	3,853,938	99	3,853,330	105	3,854,067											
456R	3,853,939	150AB	3,853,331	130	3,854,068											
458	3,853,940		3,853,332	240	3,854,069											
462R	3,853,941		3,853,334	318	3,854,070											
464	3,853,942	150A	3,853,335	503	3,854,071											
	3,853,943	478R	3,853,335	CLASS 315	3,854,072											
465.1	3,853,944			30	3,854,073											
465.4	3,853,945	18	3,853,336	169R	3,854,074											
465.5R	3,853,946	49	3,853,337	200A	3,854,075											
465.8R	3,853,947	86	3,853,338	393	3,854,076											
465.9	3,853,948	157	3,853,339	CLASS 316	3,854,077											
468D	3,853,950			19	3,854,078											
	3,853,951	38	3,854,053	CLASS 317	3,854,079											

D2—	208	233,866		234	233,874	D12—	55	233,883		13B	233,892		B	233,900	D54—	1A	233,911	
	381	233,865		13	233,875		99	233,884		14A	233,893		L	233,903	D55—		233,912	
D6—	36	233,867			233,876		115	233,885		D30—	4	233,894		M	233,901	D56—	4B	233,913
	48	233,868		71	233,877	D16—	2R	233,886			13	233,895		42	233,904	D61—	1F	233,914
	55	233,869		38	233,878	D23—		233,887		D34—	2R	233,896		16R	233,906	D63—	N	233,915
	56	233,870		178	233,879		68	233,888			5CB	233,897	D45—	7F	233,907		12A	233,916
	85	233,871		189	233,880	D8—		233,889			DT	233,898	D48—	24A	233,908	D87—	1D	233,917
	177	233,872		D9—	162	233,881		71			G	233,899		27R	233,905	D96—	12R	233,918
	233,873			219	233,882	D26—	1C	233,891			15A	233,902	D52—	6	233,909			

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PATENTS

1 : 3,853,075	3,853,144	3,853,815	3,853,514	17 : 3,853,724	3,853,736
3,853,204	3,853,167	3,853,832	3,853,691	3,853,839	3,853,746
3,853,462	3,853,173	3,853,833	3,853,703	3,853,846	3,853,763
3,853,942	3,853,175	3,853,844	3,853,788	3,853,849	3,853,835
3,854,009	3,853,187	3,853,845	3,853,791	3,853,856	3,853,887
3,854,097	3,853,195	3,853,853	3,853,816	3,853,871	3,853,900
3 : 3,853,649	3,853,205	3,853,854	3,853,862	3,853,892	3,853,916
4 : 3,852,905	3,853,220	3,853,885	3,853,899	3,853,924	3,853,924
3,853,336	3,853,230	3,853,888	3,853,998	3,853,926	3,853,926
3,853,543	3,853,249	3,853,901	3,854,005	3,853,956	3,853,956
3,853,633	3,853,258	3,853,912	3,854,074	3,853,999	3,853,999
3,853,771	3,853,261	3,853,914	3,854,141	3,854,016	3,854,016
6 : 3,852,830	3,853,264	3,853,958	3,853,124	3,853,074	3,854,021
3,852,832	3,853,267	3,853,966	3,853,607	3,853,077	3,854,022
3,852,834	3,853,281	3,853,967	3,853,688	3,853,080	3,854,072
3,852,854	3,853,318	3,853,969	3,853,754	3,853,099	3,854,082
3,852,881	3,853,319	3,853,975	3,853,755	3,853,132	3,854,103
3,852,885	3,853,332	3,853,987	3,853,859	3,853,133	3,854,123
3,852,887	3,853,337	3,854,000	3,853,902	3,853,192	3,854,192
3,852,911	3,853,345	3,854,017	3,853,943	3,853,209	3,854,212
3,852,916	3,853,348	3,854,030	3,853,964	3,853,212	3,854,214
3,852,923	3,853,365	3,854,036	3,854,087	3,853,214	3,854,087
3,852,926	3,853,367	3,854,054	3,853,064	3,853,231	3,854,072
3,852,931	3,853,379	3,854,055	3,852,867	3,853,232	3,854,072
3,852,934	3,853,394	3,854,073	3,852,908	3,853,236	3,854,073
3,852,935	3,853,405	3,854,083	3,852,960	3,853,242	3,854,073
3,852,965	3,853,415	3,854,124	3,853,146	3,853,257	3,854,124
3,852,981	3,853,463	3,854,142	3,853,166	3,853,270	3,854,142
3,852,982	3,853,468	7 : 3,853,802	3,853,168	3,853,272	3,853,316
3,852,990	3,853,474	8 : Re 28,265	3,853,225	3,853,282	3,853,449
3,852,999	3,853,481	3,852,967	3,853,278	3,853,293	3,853,449
3,853,003	3,853,484	3,853,016	3,853,469	3,853,303	3,853,449
3,853,006	3,853,529	3,853,025	3,853,470	3,853,314	3,853,449
3,853,008	3,853,590	3,853,060	3,853,473	3,853,389	3,853,449
3,853,010	3,853,610	3,853,262	3,853,499	3,853,419	3,853,449
3,853,031	3,853,634	3,853,342	3,853,976	3,853,482	3,853,449
3,853,049	3,853,645	3,853,356	3,853,356	3,854,001	3,853,449
3,853,050	3,853,646	3,853,427	3,853,427	3,854,011	3,853,449
3,853,059	3,853,648	3,853,981	3,853,981	3,854,058	3,853,449
3,853,067	3,853,656	3,853,990	3,853,990	3,854,060	3,853,449
3,853,082	3,853,679	3,852,864	3,852,864	3,854,102	3,853,449
3,853,093	3,853,700	3,852,883	3,852,883	3,854,113	3,853,449
3,853,101	3,853,742	3,852,893	3,852,893	3,854,114	3,853,449
3,853,105	3,853,747	3,852,920	3,852,920	3,854,134	3,853,449
3,853,109	3,853,751	3,852,942	3,852,942	3,854,134	3,853,449
3,853,117	3,853,761	3,852,956	3,852,956	3,854,134	3,853,449
3,853,123	3,853,774	3,853,089	3,853,089	3,854,134	3,853,449
3,853,125	3,853,784	3,853,246	3,853,246	3,854,134	3,853,449
3,853,126	3,853,784	3,853,390	3,853,390	3,854,134	3,853,449
3,853,127	3,853,804	3,853,406	3,853,406	3,854,134	3,853,449
3,853,140	3,853,809	3,853,426	3,853,426	3,854,134	3,853,449

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

PI 49

21 : 3,853,459	3,853,421	3,853,574	3,853,614	3,853,855	3,853,989
3,853,519	3,853,440	3,853,580	3,853,619	3,853,927	3,854,018
22 : 3,852,894	3,853,579	3,853,600	3,853,620	3,853,970	3,854,046
3,853,190	3,853,684	3,853,601	3,853,640	3,854,012	3,854,062
3,853,291	3,853,718	3,853,689	3,853,654	3,854,052	3,854,122
3,853,722	3,853,734	3,853,710	3,853,671	3,854,116	3,854,886
3,853,723	3,853,843	3,853,716	3,853,715	3,852,910	3,852,079
3,853,936	3,853,873	3,853,744	3,853,732	3,852,949	3,854,033
24 : 3,852,823	3,853,881	3,853,745	3,853,733	3,853,087	3,852,827
3,852,919	3,853,882	3,853,749	3,853,778	3,853,137	3,853,102
3,853,056	3,853,904	3,853,764	3,853,806	3,853,182	3,853,305
3,853,061	3,853,909	3,853,779	3,853,807	3,853,185	3,853,399
3,853,063	3,853,950	3,853,780	3,853,817	3,853,186	3,853,820
3,853,065	3,853,963	3,853,783	3,853,831	3,853,271	3,853,847
3,853,066	3,854,025	3,853,811	3,853,932	3,853,285	3,853,979
3,853,068	3,854,027	3,853,851	3,853,934	3,853,430	48 : Re 28,271
3,853,081	3,854,040	3,853,856	3,853,940	3,853,503	3,852,836
3,853,114	3,854,081	3,853,857	3,853,944	3,853,618	3,852,890
3,853,202	3,854,106	3,853,867	3,853,951	3,853,737	3,852,902
3,853,424	27 : Re 28,270	3,853,877	3,853,957	3,853,748	3,852,918
3,853,524	3,852,943	3,853,891	3,853,965	3,853,753	3,852,945
3,853,647	3,852,995	3,853,893	3,854,004	3,853,823	3,852,969
3,853,681	3,853,013	3,853,894	3,854,013	3,853,824	3,852,971
3,853,727	3,853,054	3,853,896	3,854,014	3,854,064	3,852,972
3,853,728	3,853,897	3,853,897	3,854,024	3,854,067	3,853,026
3,853,741	3,853,176	3,853,920	3,854,066	3,854,118	3,853,026
3,853,789	3,853,194	3,853,921	3,854,068	41 : 3,853,111	3,853,034
3,854,020	3,853,253	3,853,930	3,854,071	3,853,226	3,853,118
3,854,037	3,853,412	3,853,962	3,854,080	3,853,628	3,853,177
3,854,041	3,853,595	3,853,992	3,854,085	3,853,669	3,853,178
3,854,129	3,853,632	3,853,994	3,854,089	42 : Re 28,267	3,853,184
3,854,136	3,853,650	3,854,006	3,854,095	Re 28,272	3,853,222
3,854,139	3,853,773	3,854,023	3,854,119	3,852,866	3,853,223
25 : 3,852,840	3,853,782	3,854,028	3,854,135	3,852,903	3,853,245
3,852,843	3,854,039	3,854,039	3,854,140	3,852,906	3,853,315
3,852,879	3,852,835	3,854,120	3,852,857	3,852,921	3,853,369
3,852,930	3,853,048	3,854,125	3,852,946	3,852,924	3,853,370
3,852,968	3,853,083	3,852,994	3,852,947	3,852,933	3,853,375
3,852,996	3,853,349	3,853,002	3,852,992	3,852,937	3,853,443
3,853,055	3,853,441	3,853,490	3,853,171	3,852,984	3,853,497
3,853,112	29 : 3,852,822	3,852,825	3,853,350	3,852,984	3,853,501
3,853,119	3,852,837	3,852,828	3,853,657	3,853,070	3,853,670
3,853,134	3,853,017	3,852,850	3,853,659	3,853,156	3,853,720
3,853,215	3,853,073	3,852,861	3,853,766	3,853,161	3,853,721
3,853,301	3,853,237	3,852,865	3,853,960	3,853,174	3,853,735
3,853,327	3,853,292	3,852,876	3,854,026	3,853,196	3,853,810
3,853,362	3,853,456	3,852,877	3,854,034	3,853,203	3,853,948
3,853,403	3,853,479	3,852,889	3,852,826	3,853,219	3,854,032
3,853,407	3,853,530	3,852,915	3,852,863	3,852,238	3,854,038
3,853,428	3,853,530	3,852,973	3,852,870	3,852,250	49 : 3,852,974
3,853,445	3,853,531	3,852,983	3,852,872	3,852,251	3,853,145
3,853,455	3,853,533	3,853,007	3,852,882	3,852,276	3,852,853
3,853,478	3,853,534	3,853,012	3,852,900	3,852,294	3,852,880
3,853,489	3,853,776	3,853,021	3,852,928	3,853,306	3,852,938
3,853,562	3,853,825	3,853,024	3,852,958	3,853,308	3,853,106
3,853,582	3,853,839	3,853,032	3,852,962	3,853,322	3,853,255
3,853,672	3,853,939	3,853,091	3,852,975	3,853,347	3,853,351
3,853,690	3,854,051	3,853,108	3,853,052	3,853,380	3,853,377
3,853,725	3,854,111	3,853,116	3,853,053	3,853,402	3,853,437
3,854,007	3,854,127	3,853,121	3,853,107	3,853,425	3,853,515
3,854,056	3,852,907	3,853,122	3,853,139	3,853,432	3,853,547
3,854,061	3,853,302	3,853,122	3,853,148	3,853,451	3,853,586
3,854,084	3,854,008	3,853,129	3,853,149	3,853,483	3,853,588
3,854,126	3,852,896	3,853,130	3,853,213	3,853,518	3,853,591
3,854,145	3,853,033	3,853,136	3,853,228	3,853,525	3,853,760
26 : 3,852,838	3,854,077	3,853,157	3,853,239	3,853,538	3,853,828
3,852,845	3,852,977	3,853,159	3,853,248	3,853,540	3,853,993
3,852,862	3,853,042	3,853,160	3,853,260	3,853,542	3,854,050
3,852,901	3,854,057	3,853,217	3,853,273	3,853,572	3,854,075
3,852,912	3,852,884	3,853,227	3,853,304	3,853,572	

6	:	233,865	8	:	233,885		233,902		233,911		233,891	39	:	233,868		
		233,872	9	:	233,880		233,912	27	:	233,888		233,900		233,881		
		233,878			233,887	18	:	233,871		233,889	36	:	233,870	233,899		
		233,884			233,893			233,916		233,915			233,901	42	:	233,875
		233,892	12	:	233,867			233,917	31	:	233,886		233,906			233,876
		233,895	13	:	233,873	25	:	233,909	33	:	233,898		233,907	48	:	233,877
		233,896	17	:	233,879	26	:	233,883	34	:	233,890		233,908	51	:	233,874
		233,903			233,882											

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

PATENT OFFICE
C. Marshall Dann, Commissioner

A UNITED STATES
DEPARTMENT OF
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PUBLICATION



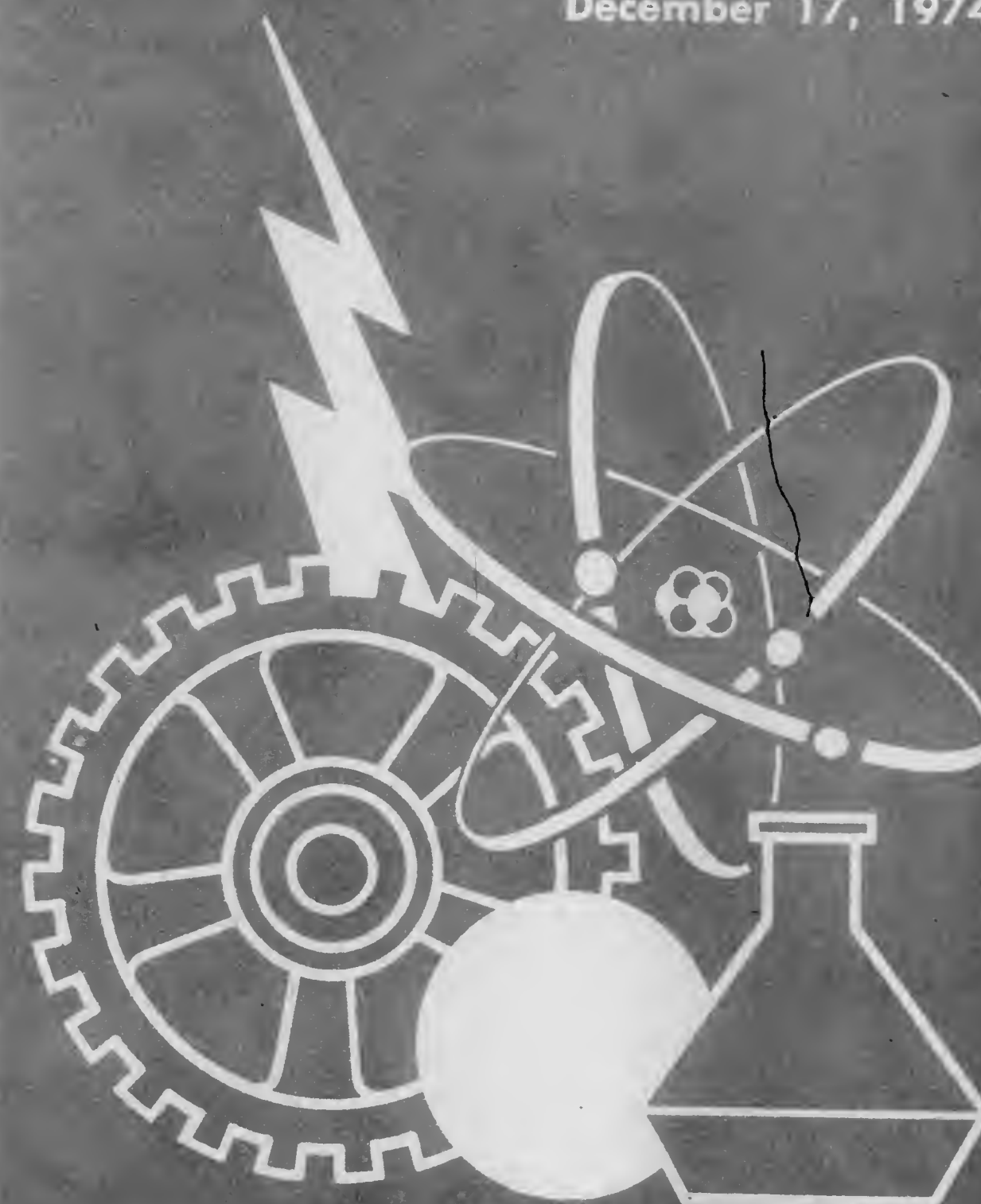
Vol. 929 Number 3

OFFICIAL GAZETTE

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PATENTS

December 17, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Service by Publication

Alexander G. Makowski

In accordance with Rule 47(a) of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on Nov. 24, 1972, of an application for patent entitled "Free Flow, Interlocking Packing Material of Low Bulk Density," on behalf of Alexander G. Makowski, whose last known address is P.O. Box 7223, Wilmington, Del. 19803. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by Arthur Graham and Gunter Fuss without execution by the said Alexander G. Makowski. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Alexander G. Makowski in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,000,013, W. J. Traenkle, WITHIN-THE-SHOE SOCK, filed June 20, 1974, D.C., S.D.N.Y., Doc. 74-C-2642, William J. Traenkle v. Lindsey Moretz Sales Co. Inc.

3,055,705, K. H. Wilson, FOLDING TABLE AND SEAT STRUCTURE, filed Jan. 25, 1971, D.C., N.D. Ind. (South Bend), Doc. 71-S-8, Kermit H. Wilson and Sico Incorporated v. The Peabody Seating Co., Inc. and American Standard, Inc. Plaintiffs take nothing by their complaints; and defendants take nothing by their counterclaims by consent of both parties and with prejudice, June 18, 1974.

3,239,145, A. D. Russo, DISPENSING CONTAINER FOR AIR TREATING GEL, filed July 31, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1748-AAH, Blue Cross Laboratories v. Airwick Industries, Inc. A permanent injunction has been issued against plaintiff enjoining and restraining them from infringing upon said patent, June 21, 1974.

3,310,268, H. Kramer, HINGE BRACKETS, filed May 26, 1967, D.C., S.D.N.Y., Doc. 67-C-2079, Hyman Kramer, doing business as Hy Kramer Enterprises v. Duralite Company, Inc. Opinion considered as finding of fact and conclusions of law under Rule 52 (a) of FRCP, device did not rise to the level of an invention, Dec. 20, 1973. Same, filed May 26, 1967, D.C., S.D.N.Y., Doc. 67-C-2081, Hyman Kramer doing business as Hy Kramer Enterprises v. G. & A. Machine Works, Inc. Opinion considered as findings of fact and conclusions of law under Rule 52 (a) of FRCP, device did not rise to the level of an invention, Dec. 20, 1973.

3,368,432, K. F. Halls, SLIDING SIDE JAW WRENCH HAVING A PERFORATED DRIVE BELT; 3,555,939, same, ADJUSTABLE OPEN END WRENCH, filed Mar. 14, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-181-C, Eugene E. Petersen v. Fee International, Ltd. Judgement in favor of plaintiff, defendants permanently enjoined from infringing said patents, June 5, 1974.

3,408,523, Demarest and Karlson, LIGHT BULB WITH A PLURALITY OF INDEPENDENTLY CONNECTED FILAMENTS FOR INDICATING GRAPHICS SYMBOLS, filed May 15, 1970, D.C., S.D.N.Y., Doc. 70-C-2011, Chicago Miniature Lamp Works v. Refac Technology Development Corp. Filed order that the above action is discontinued, Oct. 6, 1972.

3,430,376, Drybread, Sr. and Fritz, LICENSE PLATE HOLDER, filed Apr. 5, 1974, D.C., S.D.N.Y., Doc. 74-1554, Dem-O-Jiffy Plate, Inc. and John S. Drybread, Sr. v. Unival Corporation et al.

3,443,285, Goldhammer and Mahrt, APPARATUS FOR OPENING BALES OF FIBERS, filed Mar. 28, 1974, D.C., W.D.N.C. (Charlotte), Doc. C-C-74-68, Schubert & Salzer Maschinenfabrik Aktiengesellschaft v. Automatic Material Handling, Inc. and Parkdale Mills, Inc.

3,452,387, Jerila and Holmes, CLOSING DEVICE FOR DOORS, filed Aug. 30, 1972, D.C., E.D. Ill. (Chicago), Doc. 73c771, Ajax Hardware Corporation v. National Lock, a div.

of Keystone Consolidated Industries. On stipulation of parties, cause dismissed with prejudice, Mar. 19, 1974.

3,452,851, L. Holmes, Jr., TYPEWRITER BASEPLATE ENABLING MACHINE OPERATION BY AND GENERATION OF ELECTRICAL SIGNAL, filed Apr. 5, 1974, D.C. Del. (Wilmington), Doc. 74-65, Tycom Corporation v. Redactron Corporation and Sperry Rand Corporation.

3,465,654, H. Fox, DRAIN DEVICE, filed June 28, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV-74-1805-RJK, Harco Products, Inc. v. White Cap Plastic Products, Inc.

3,503,760, W. M. Allen, METHOD OF SMOKING A COMESTIBLE PRODUCT, filed June 6, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1538, Beatrice Foods Co. v. Bluebird Inc. et al.

3,555,939. (See 3,368,432.)

3,619,675, S. M. Baker, CONTROL ROD DRIVE MECHANISM, filed Apr. 9, 1974, D.C., E.D. Calif. (Sacramento), Doc. S-74-130, Royal Industries, Inc. v. Sacramento Municipal Utility District.

3,632,879, R. Freisinger, AUTOMATIC TELEPHONE DIALER FOR EMERGENCY MESSAGES, filed June 3, 1972, D.C.N.J. (Newark), Doc. C-964-72, Atlantic Metal Products Inc. v. Napco Security Systems Inc. Order of dismissal of action, June 26, 1974.

3,641,391, A. R. Badewitz, DEVICE FOR RESTORING CATHODE EMISSION IN CATHODE RAY TUBE GUNS, filed Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c761, Beltron Inc. and Appleway Electronics, Inc. v. RCA Distributing Corp. Order of dismissal—order complaint and counterclaim be dismissed without prejudice, Jan. 10, 1974.

3,665,477, Budrow and Reed, ELEVATABLE AND FOLDABLE ANTENNA, filed Mar. 4, 1974, D.C., W.D. Mich. (Grand Rapids), Doc. G74-65 CA, Barker Manufacturing Company, Inc. v. RS Electronics-Grand Rapids, Inc.

3,674,401, Annis, Jr. and Kyritsis, APPARATUS FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL; 3,776,989, same, METHOD FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL INVOLVING AUTOGENOUS FLOW; 3,801,686, Kyritsis and Simmonds, Jr., METHOD OF INJECTION MOLDING ARTICLES OF FOAM MATERIAL, filed Apr. 16, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1056, USM Corp. v. Service Plastics, Inc.

3,675,247, J. O. Ferrell, METHOD FOR FABRICATING PANTY HOSE, filed Apr. 24, 1974, D.C., W.D.N.C. (Statesville), Doc. St-C-74-16, Tights, Inc. v. J. P. Stevens & Co., Inc.

3,728,180, Morton and Morton, STEAM HUMIDIFIER WITH CENTRIFUGAL SEPARATOR; 3,730,899, Messerschmidt, Jr., Heyman and Johnson II, POWDERLESS ETCHING BATH ADDITIVE, filed May 10, 1973, D.C.N.J. (Newark), Doc. 657-73-C, Philip A. Hunt Chemical Corporation v. Mona Industries, Inc. Stipulation and order of dismissal of action, Feb. 4, 1974.

3,729,763, R. M. Coley, WHEEL WASHING APPARATUS, filed June 20, 1974, D.C., M.D.N.C. (Greensboro), Doc. C-74-184-G, Vend-A-Matic, Inc. v. Automatic Car Wash, Incorporated, doing business as MacCleen's of Greensboro.

3,730,899. (See 3,728,180.)

3,741,107, Boyd, Bond, Elliott, Gisolfi and Merklin, PORTABLE REFUSE HANDLING APPARATUS, filed June 26, 1973, D.C. Md. (Baltimore), Doc. 73-647-K, Union Environmental Corporation and John A. Boyd v. Board of Education of Montgomery Compackager Corporation et al. Order that case be dismissed without prejudice, Apr. 26, 1974.

3,744,200, E. K. Rice, PRECAST CONCRETE BUILDING CONSTRUCTION, filed Nov. 2, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-4696-C, Unicon Parking Structures, Inc. and Edward K. Rice v. Young Hadawi Inc., Ben Young and Nabil Hadawi.

3,751,737, B. E. Mustee, FREE-STANDING SHOWER STALLS, filed Mar. 28, 1974, D.C., W.D. Ky. (Louisville), Doc. C-74-124-L(B), VBM Corporation v. E. L. Mustee & Sons, Inc.

3,776,989. (See 3,674,401.)

3,801,686. (See 3,674,401.)

DECEMBER 17, 1974

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Certificates of Correction for the Week of Dec. 17, 1974

P.P. 3,595	3,791,205	3,829,315	3,837,227
Re. 28,187	3,791,397	3,829,391	3,837,230
D. 228,888	3,791,441	3,829,437	3,837,262
D. 232,559	3,795,375	3,829,495	3,837,417
D. 232,574	3,798,216	3,829,525	3,837,470
D. 233,075	3,798,457	3,830,275	3,837,485
3,338,167	3,799,055	3,830,464	3,837,491
3,540,688	3,799,297	3,830,727	3,837,661
3,617,251	3,801,084	3,830,736	3,837,705
3,649,157	3,801,766	3,830,843	3,837,715
3,664,332	3,803,552	3,830,934	3,837,894
3,665,460	3,803,634	3,830,959	3,837,966
3,666,479	3,806,491	3,831,358	3,838,090
3,678,039	3,807,453	3,831,806	3,838,124
3,681,385	3,808,095	3,832,204	3,838,300
3,683,608	3,809,009	3,832,215	3,838,442
3,687,690	3,811,006	3,832,490	3,838,465
3,694,201	3,812,029	3,832,491	3,838,574
3,705,827	3,812,701	3,833,062	3,838,600
3,715,584	3,813,399	3,833,303	3,838,721
3,716,347	3,813,537	3,833,337	3,838,831
3,717,698	3,813,609	3,833,362	3,838,873
3,723,911	3,813,758	3,833,408	3,838,910
3,729,806	3,814,196	3,833,417	3,838,971
3,732,469	3,814,246	3,833,465	3,839,049
3,734,687	3,814,855	3,833,487	3,839,138
3,735,803	3,815,695	3,833,514	3,839,252
3,739,691	3,816,346	3,833,675	3,839,269
3,741,413	3,816,349	3,833,690	3,839,716
3,744,410	3,817,880	3,834,200	3,839,769
3,751,207	3,818,113	3,834,374	3,840,030
3,752,875	3,819,395	3,834,445	3,840,156
3,757,732	3,819,474	3,834,462	3,840,224
3,758,073	3,820,233	3,834,494	3,840,320
3,759,879	3,820,710	3,834,549	3,840,389
3,762,316	3,820,950	3,834,700	3,840,458
3,764,335	3,820,958	3,834,803	3,840,469
3,766,012	3,821,185	3,834,950	3,840,569
3,767,645	3,821,703	3,834,978	3,840,625
3,767,734	3,821,949	3,835,204	3,840,711
3,768,820	3,822,245	3,835,227	3,840,760
3,769,828	3,822,358	3,835,297	3,840,806
3,770,015	3,822,543	3,835,355	3,840,831
3,772,254	3,822,832	3,835,439	3,840,847
3,772,349	3,823,084	3,835,684	3,840,930
3,772,512	3,823,299	3,835,692	3,841,012
3,775,360	3,823,594	3,835,701	3,841,076
3,775,385	3,823,833	3,835,843	3,841,162
3,775,797	3,824,467	3,836,139	3,841,276
3,775,937	3,824,545	3,836,173	3,841,351
3,776,038	3,825,002	3,836,237	3,841,482
3,776,112	3,825,619	3,836,327	3,841,702
3,777,615	3,825,661	3,836,349	3,841,862
3,778,367	3,825,691	3,836,466	3,842,013
3,779,182	3,825,988	3,836,626	3,842,173
3,781,464	3,827,113	3,836,640	3,842,239
3,781,884	3,827,315	3,836,679	3,842,394
3,782,474	3,827,516	3,836,743	3,842,790
3,782,956	3,827,682	3,836,769	3,842,791
3,786,009	3,827,905	3,836,874	3,843,278
3,789,002	3,828,341	3,836,875	3,843,432
3,789,538	3,828,358	3,836,988	3,843,503
3,790,524	3,828,480	3,837,137	3,843,528
3,790,550	3,828,709	3,837,212	3,843,962

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 23, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-29-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-19-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-26-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-11-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-3-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-26-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-19-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director..... Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-11-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-11-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during November 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 17, 1974

ERRATA

For CLASS	See PATENT NO.
004-110.....	28,278
053-003.....	28,277
141-006.....	28,275
182-006.....	28,273
353-044.....	28,274
195-096.....	28,276

REISSUES

DECEMBER 17, 1974

Matter enclosed in heavy brackets **[]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,273

RESCUING DEVICE

Otto Brda, 10 Breitenau D-8112,
Bad Kohlgrub, Germany

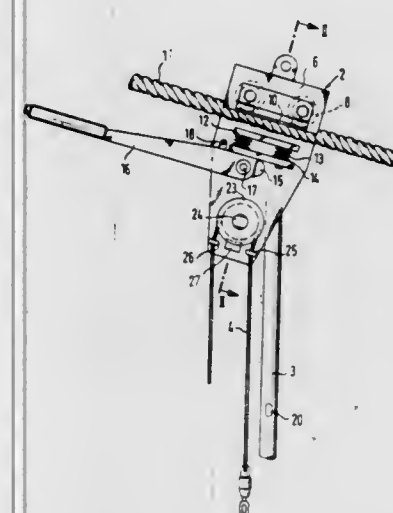
Original No. 3,703,218, dated Nov. 21, 1972, Ser. No. 157,516, June 28, 1971. Application for reissue Oct. 19, 1973, Ser. No. 407,798

Claims priority, application Germany July 20, 1970,
P 20 35 933.5

Int. Cl. A26b 1/14

U.S. Cl. 182-6

14 Claims



1. **[REscuing]** Rescuing device for rescuing persons from ropeways, chairlifts and similar means for transporting persons along cables, ropes or the like over a certain height difference above the ground, comprising
 - a. a supporting member;
 - b. rolling means provided on said supporting member for movement along the rope or cable;
 - c. frictional braking means, provided on said supporting member and movable thereon, which in a first position contact the rope or cable to exert a frictional braking force on the same and in a second position provide a predetermined space between the braking means and the rolling means;
 - d. spring means acting on said frictional braking means;
 - e. an adjustable member to compress said spring means to increase the pressure acting on said frictional braking means;
 - f. cylinder means supported on said supporting member by a free-wheeling bearing means, which allow a rotation of the cylinder means in one direction of rotation and block their rotation in the other direction of rotation;
 - g. rope means, wound around the cylinder means at least one and a half times;
 - h. belt means releasably connected to the first end of said rope means, whereby this first end acts on said cylinder means in the direction, in which a rotation of the cylinder means is blocked;
 - i. transporting means connected to said supporting member; such that a first person sitting on the trans-

porting means and operating the adjustable member can slide down an inclined rope or cable into the vicinity of a second person to be rescued and fasten said belt means around said second person, and wherein the second person can controlledly be moved down by gradually releasing the second end of said rope means.

28,274

LOW PROFILE EPISCOPIC PROJECTOR AND OPAQUE MATERIALS THEREFOR

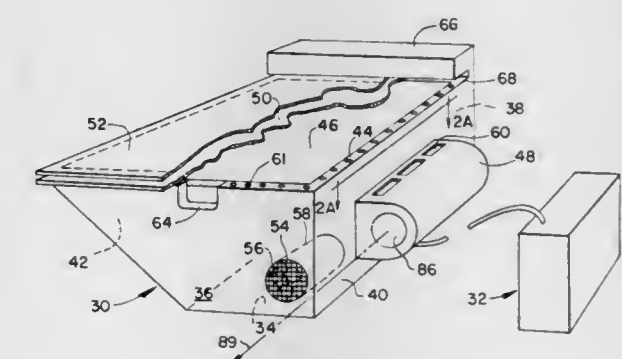
Gerald Altman, 41 Westminster Road,
Newton Centre, Mass. 02154

Original No. 3,778,142, dated Dec. 11, 1973, Ser. No. 81,987, Oct. 19, 1970, which is a continuation-in-part of applications Ser. No. 742,423, July 3, 1968, now Patent No. 3,614,199, and Ser. No. 780,313, Dec. 2, 1968, now abandoned. Application for reissue Apr. 2, 1974, Ser. No. 457,277

Int. Cl. G03b 21/06, 21/132

U.S. Cl. 353-44

4 Claims



1. A large copy optical projector capable of imaging a generally horizontal copy sheet on a generally vertical viewing screen spaced from said projector, said copy sheet having a top face and a bottom face, at least one of said faces being associated with a reflector which is in optical communication with said bottom face, **[an upper face and a lower face, said lower face being reflectorized,]** said optical projector comprising:
 - a. housing means defining an enclosed chamber, said housing means having a substantially horizontal upper portion, said upper portion having a first opening throughout a major portion of its area;
 - b. a flat Fresnel lens at said opening in said upper portion, said Fresnel lens being substantially coextensive with said opening in said upper portion;
 - c. said copy sheet, when releasably placed on said Fresnel lens, being substantially coextensive therewith and having substantially the entire upper face of said copy sheet accessible visually and manually to an operator;
 - d. said housing means having a second opening, objective lens means at said second opening for receiving imaging light along an imaging path and defining a

- projection axis that is directed toward said generally vertical viewing screen;
- lamp means in said chamber for directing illuminating light along an illuminating path;
 - an oblique plane mirror underlying said Fresnel lens within said chamber, an edge of said mirror being adjacent to an edge of said Fresnel lens;
 - said illuminating light diverging in said illuminating path along a first illuminating axis communicating with said oblique plane mirror and then being reflected along a second illuminating axis communicating with said Fresnel lens;
 - said imaging light reflected from said copy sheet being converged by said Fresnel lens in said imaging path along a first imaging axis communicating with said oblique plane mirror and then being reflected along a second imaging axis communicating with said objective lens means;
 - said lamp means and said objective lens means being disposed at one side of said oblique plane mirror;
 - said projection axis being disposed externally of the region directly overlying said Fresnel lens;
 - said Fresnel lens directing substantially parallel illuminating light to said bottom face of said copy sheet and receiving substantially parallel imaging light from said bottom face of said copy sheet; and
 - said chamber being substantially light tight with respect to stray light therewithin when said copy sheet is superposed on said Fresnel lens.

28,275

CONTAINER FILLING APPARATUS

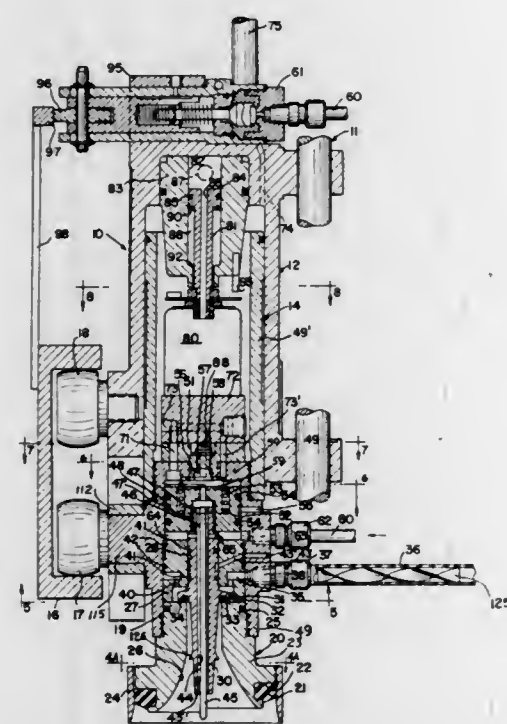
Kenneth F. M. Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Original No. 3,720,242, dated Mar. 13, 1973, Ser. No. 80,895, Oct. 15, 1970. Application for reissue Mar. 23, 1973, Ser. No. 344,129

Int. Cl. B67c 3/06

U.S. Cl. 141—6

31 Claims



1. In a container filling machine, a filling head which comprises a hollow cylindrical housing having a downwardly opening, upper housing member and a lower housing member in sliding telescoped relation within the

upper housing member, a sealing bell mounted on the lower end of said lower housing member which is adapted to be brought into sealing engagement with the mouth of a container positioned in vertical alignment beneath the same when the housing member is lowered, a hollow liquid product distributor mounted in said lower housing member which has a passageway connecting with a product inlet port for directing a liquid product through said lower housing member and into said container, a fluid product supply line connected with said product inlet port, a fluid control valve in said product supply line, a device in said supply line immediately adjacent said inlet port for creating extreme turbulence and high pressure drop, a product feed valve assembly having a body member mounted in said product distributor for axial movement between valve opening and closing positions so as to control the entry of the product into said container, a piston mounted for axial sliding movement in said lower housing member and connected to said feed valve body member, resilient means to normally hold said feed valve body member in valve closing position, means for supplying counter pressure which is operative to pressurize said container and to move said product feed valve to open position, fluid means operative on said piston to move said product feed valve to closed position, a control valve for said piston operating fluid means, and means actuated upon the filling of the container to a predetermined level to operate the control valve for said piston operating fluid means so as to move said product feed valve to closed position.

28,276

MILK FERMENTING PRODUCT AND METHOD OF MAKING SAME

Stewart M. Farr, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

No Drawing. Original No. 3,420,742, dated Jan. 7, 1969, Ser. No. 404,526, Oct. 16, 1964, which is a continuation-in-part of abandoned application Ser. No. 285,858, June 6, 1963. Application for reissue Nov. 19, 1973, Ser. No. 417,134

Int. Cl. C12k 3/00

U.S. Cl. 195—96

5 Claims

1. The method of producing a mixed bacterial concentrate useful for culturing milk which comprises:
- separately incubating in separate culture media two types of bacteria, the first type being selected from the group consisting of *Streptococcus lactis*, *Streptococcus cremoris*, *Lactobacillus bulgaricus* and *Streptococcus thermophilus* which produce lactic acid wherein the incubation culture medium contains skim milk and wherein during the incubation the lactic acid produced is neutralized as the pH of the medium drops by adding a neutralizing agent to maintain the growth of the bacteria, and the second type being selected from the group consisting of *Streptococcus citrovorus* and *Streptococcus paracitrovorus*, wherein the culture medium contains skim milk or a digest milk to produce bacteria which are centrifugable from the media to form a concentrate;
 - concentrating the respective media to obtain separate concentrates of the two bacteria[,] containing at least about 10×10^9 cells/ml. each;
 - mixing together the two types of bacteria in the desired proportions to produce a mixed concentrate having closely controlled amounts of the two types of bacteria therein without permitting further growth of the bacteria; and
 - then freezing the mixed concentrate so that it can be stored for a long time without major loss in the viability of the bacteria.

28,277

METHOD AND APPARATUS FOR INSERTING A THREE-SIDED WRAP

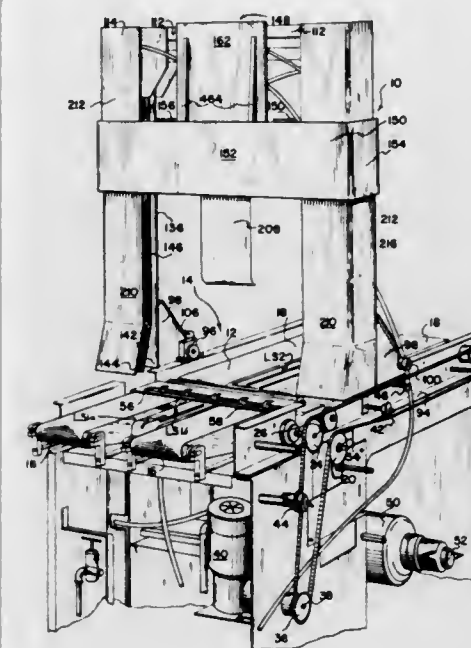
James C. Wright, Golden, Colo. and Peter Nemeth, Den Haag, Netherlands, assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Original No. 3,716,960, dated Feb. 20, 1973, Ser. No. 99,156, Dec. 17, 1970. Application for reissue Sept. 24, 1973, Ser. No. 400,335

Int. Cl. B65b 11/06, 41/16

U.S. Cl. 53—3

18 Claims



PLANT PATENTS

GRANTED DECEMBER 17, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,660

CHRYSANTHEMUM PLANT

Barrie John Machin, Chichester, England, assignor to Frampton's Nurseries Limited, Chichester, England
Filed Apr. 12, 1973, Ser. No. 350,627

Int. Cl. A01h 5/00

U.S. Cl. Plt.—81

1 Claim

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as shown and described, characterized particularly as to its novelty by the unique combination of a deep red purple color, a deep incurving flower form, strong and uniform response under winter light conditions, and blooms having an average diameter of about 9 cm. when fully open.

3,661

GLADIOLUS

George M. Ruppel, Bridgehampton, N.Y., assignor to Selected Glads, Inc., New Albany, Ind.
Filed Nov. 16, 1972, Ser. No. 307,010

Int. Cl. A01h 5/00

U.S. Cl. Plt.—85

1 Claim

1. A new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its extremely large size and its peach color.

3,662

ILEX BLUE ANGEL

Kathleen K. Meserve, St. James, N.Y., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Aug. 9, 1973, Ser. No. 387,042

Int. Cl. A01h 5/00

U.S. Cl. Plt.—65

1 Claim

1. A new and distinct variety of Ilex plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a compact, densely branched, dwarf and vigorous growth habit, an abundance of distinctive, glossy, evergreen leaves of "Christmas Holly" type, with coarse, spiny teeth and wavy, crinkled margin, and more cold tolerant than other red berried, evergreen Ilex, with such glossy, attractive leaves and with stem and leaf color giving an overall bluish effect and bearing dark red berries of good size and having year around ornamental value particularly appropriate to landscape and environmental needs.

3,663

PERPETUAL FLOWERING CARNATION PLANT

Glacomo Nobbio, Duca degli Abruzzi n. 85, San Remo, Italy

Filed Dec. 27, 1973, Ser. No. 428,893

Claims priority, application Italy May 29, 1973, 50,291/73

Int. Cl. A01h 5/00

U.S. Cl. Plt.—70

1 Claim

1. A perpetual flowering carnation of slender growth, having flowers colored Primrose yellow with shades of

Chartreuse green, characterized in that the first plant of this variety was obtained by stabilizing a bud mutation ("Sport") of the yellow flowered variety of perpetual flowering hybrid called "Alice," said plant having the following unique combination of characteristics:

a. *from the physical standpoint*: a plant that grows to an average height of 100-120 cm. from the ground, while remaining erect, vertical; remarkably sturdy, with numerous flowering branches starting from close to the soil and diverging only slightly from the axis of the plant, straight, rigid, with sometimes a slight angle at the nodes; having abundant foliage, with long wide leaves over total height of plant, leaf stems slightly divergent, curved downwards in an arc or slightly bent over, sometimes forming a circle or spiral; having average to large flowers of very regular shape, regularly rounded outline, slightly scalloped and delicately indented, well developed outer petals, center of the flower averagely raised and full, central petals free, vertical, folded or curly, with the corolla colored Primrose yellow with shades of Chartreuse green and a few radial streaks tinted with white;

b. *from the physiological standpoint*: a plant that is resistant to disease, and is more than sufficiently hardy for industrial production in different types of soil; that is perpetual flowering, with many flowers, which are resistant to inclemency of weather and to discoloration from sunlight, withstand transport and packing well, which last well after being cut and are eminently suited for commerce and export; and the flowers and other parts of the plant being suitable for reproduction by agamic means.

3,664

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 6, 1973, Ser. No. 422,207

Int. Cl. A01h 5/00

U.S. Cl. Plt.—21

1 Claim

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant, large deep red buds and flowers with especially prominent white veining on the reverse of the petals.

3,665

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 6, 1973, Ser. No. 422,171

Int. Cl. A01h 5/00

U.S. Cl. Plt.—19

1 Claim

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique

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combination of its upright and well branched habit of growth; its uniform, long lasting flower color, its lack of strong flower fragrance. blend and combination soft pink and cream colors of its bomb shaped flower form, the relatively short height of the plant growth, and its profuse production of flowers borne on sturdy, stiff stems.

3,666

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Oct. 24, 1973, Ser. No. 409,270

Int. Cl. A01h 5/00

U.S. Cl. Plt.—12

1 Claim

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright, well branched habit of growth; abundant quantities of blooms which are a clear Rose Madder on the upper sides of the petals while the under sides are a very light tint of Rose Madder; dark Parsley green, glossy foliage and lack of fragrance.

3,667

PEONY PLANT

Carl George Klehm, Arlington Heights, Ill., assignor to Klehm Properties, Inc., Arlington Heights, Ill.

Filed Oct. 24, 1973, Ser. No. 409,171

Int. Cl. A01h 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of peony plant substantially as herein shown and described, characterized by the

3,668

ROSE PLANT

Carl Meyer, Cleves, Ohio, assignor to Geo. J. Ball Inc., West Chicago, Ill.

Filed Sept. 28, 1973, Ser. No. 401,881

Int. Cl. A01h 5/00

U.S. Cl. Plt.—20

1 Claim

1. A new and distinct garden variety of hybrid tea rose plant substantially as herein shown and described, characterized by the fluorescent red coloring of its large high centered blossoms which are produced continuously and profusely on vigorous, upright and much branched plants which reach a height of at least four feet.

3,669

GLADIOLUS PLANT

Ruth F. Melk, Mequon, Wis. 53092

Filed Nov. 17, 1972, Ser. No. 307,546

Int. Cl. A01h 5/00

U.S. Cl. Plt.—85

1 Claim

1. A new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its unique color, which is predominantly rose but with a silver border, and its early blooming habit.

PATENTS

GRANTED DECEMBER 17, 1974

ERRATA

For CLASS	See PATENT NO.
023-267.....	3,854,176
034-077.....	3,854,224
028-072.....	3,854,313
081-377.....	3,854,354
242-086.....	3,854,509
350-160.....	3,854,751
425-008.....	3,854,850

PATENTS

GRANTED DECEMBER 17, 1974

GENERAL AND MECHANICAL

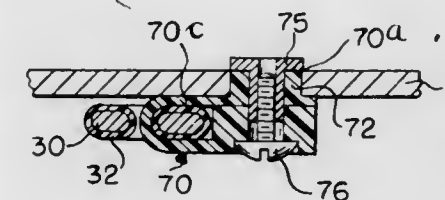
3,854,146

FOOTBALL FACEMASK

Fred R. Dunning, 3800 Oakes Rd., Brecksville, Ohio 44141
Continuation-in-part of Ser. No. 316,126, Dec. 18, 1972. This application May 4, 1973, Ser. No. 357,462
Int. Cl. A42b 3/00

U.S. Cl. 2-9

5 Claims



1. In a face mask and a helmet wherein the mask is an integral one-piece construction of a light metal core and a plastic coating covering said core, and wherein the mask comprises a plurality of arcuately curved bars which extend across the face opening of the helmet and which converge on each other at each end to form integral side portions and means for operable attachment of said side portions to the helmet, and said mask having arm portions integrally connected with said side portions lying along the surface of the helmet overlying the forehead of the user thereof, and each arm portion terminating in a terminal, said terminals being spaced apart from each other on said helmet surface, fastening means fastening each terminal to the helmet comprising a bushing having a first part extending into the helmet and a second part extending into said terminal, an enlarged shoulder surrounding said bushing and located in between said first and second parts, fastener means disposed in said bushing and in pressure engagement with each said helmet and said terminal to resiliently bind the latter to said helmet.

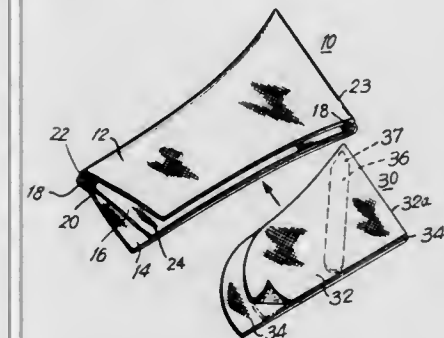
3,854,147

SHIRT COLLAR CONSTRUCTION

Edward T. Duffy, Wyckoff, N.J., assignor to Manhattan Industries, Inc., New York, N.Y.
Filed June 6, 1973, Ser. No. 367,325
Int. Cl. A41b 3/06

U.S. Cl. 2-132

3 Claims



1. A shirt collar assembly comprising a multi-layered sandwich, the inner marginal turned edges thereof being secured only along the bottom and side edges thereof by a line of stitches, said layers otherwise being free of securement, the stitch line being disposed out-of-sight inside the sandwich, a preformed stiffening patch within each collar wing comprising a second multi-layered sandwich, at least two layers of which are heat-fused together, and a third layer of which second sandwich is a relatively stiff, curl-preventing, thin, flat strip, the wing and lower edges of the fused layers of the patch coinciding in shape and length to the collar wing and disposed in offset relation to the coinciding wing and the lower edges

3,854,148

SHEET COVERING MEANS FOR HAIR COLORING, PERMANENT WAVING, AND HAIR CONDITIONING
Jasper Samuel La Rose, 491 Oxford Ave., Akron, Ohio 44310
Filed May 9, 1973, Ser. No. 358,659
Int. Cl. A47k 3/12; A61h 35/00

U.S. Cl. 4-159

5 Claims



1. A combination for the treatment of a head of human hair which comprises a basin and an impervious, flexible sheet, means for fastening one edge of the sheet around the face of a person leaning backward with his head in a substantially horizontal position, with the sheet extending over the hair, with means which is supported by the basin and supports the sheet over the hair and provides space between the hair and the tent and at least partially encloses the hair.

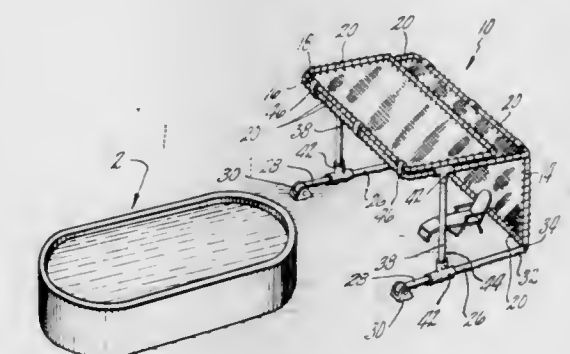
3,854,149

SUN CANOPY CONVERTIBLE TO A SWIMMING POOL COVER

Robert Mischke, Middletown, Conn.
Filed June 21, 1973, Ser. No. 372,326
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.11

10 Claims



1. A device convertible from a sun canopy mode to a swimming pool cover mode comprising:
a roof portion having a rearward edge;
a back portion having a top edge adjacent said rearward edge, said back portion being pivotally connected to said roof portion and having a lower portion;

base means including a forward end and rearward end said rearward end being pivotally connected to said lower portion;

support means attached to said roof portion at least when the device is in the sun canopy mode;

said forward end of said base means adapted to be pivotally secured to ground along a horizontal axis which is forward of said back portion when the device is in the sun canopy mode, said back portion being substantially vertical in the sun canopy mode and said roof portion extending forwardly therefrom and being supported at an angle with respect thereto by said support means when the device is in the sun canopy mode, said roof portion, back portion and base means adapted to pivot forwardly about said horizontal axis until said roof portion and said back portion are forward of said axis and are substantially horizontal for covering a swimming pool.

3,854,150

JOINT FOR CUSHIONED TOILET SEAT

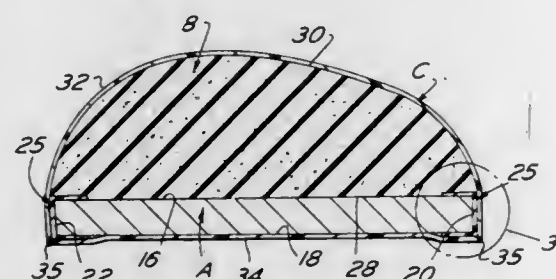
Stanley J. Samuels, 2031 Locust St., and Samuel Samuels, 1801 John F. Kennedy Blvd., both of Philadelphia, Pa. 19103

Filed June 14, 1973, Ser. No. 369,911

Int. Cl. A47k 13/02

U.S. Cl. 4-237

3 Claims



1. A cushioned toilet seat comprising a rigid generally annular base having interior and exterior peripheral edges, a plastic back-up strip of generally U-shaped configuration cemented to the interior and exterior peripheral edges of said base along the margins thereof, a resilient cushioning element of annular configuration overlying said base, and a plastic skin encapsulating said base and said cushioning element, said plastic skin including an upper facing and a sole sheet, each of annular configuration and having inside and outside marginal edges in overlapped disposition adjacent the interior and exterior marginal edges of said base, the inside and outside marginal edges of said facing and said sole sheet being pinch lapped and heat sealed together in combination with the adjacent back-up strip to define a welded three-element joint of trihedral configuration.

3,854,151
FLOOR DRAIN

Robert H. Boudewyn, 5035 S.W. 48th Ave., Des Moines, Iowa 50321

Filed Aug. 2, 1972, Ser. No. 277,154

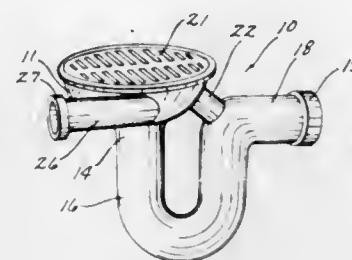
Int. Cl. E03c 1/26

U.S. Cl. 4-288

4 Claims

1. In a floor drain having a circular bowl portion, a strainer plate covering the bowl portion, a U-shaped trap conduit positioned below the bowl portion and fluidly connected at one end to the bowl portion at the extreme bottom of the bowl portion, and a main drain conduit connected to and leading from the other end of said U-shaped trap conduit, an improvement comprising a secondary inlet conduit connected to the bowl portion intermediate the top and bottom surfaces of the bowl portion, said secondary inlet conduit having a longitudinal axis and being connected to the bowl portion with the axis

aligned substantially tangentially with respect to a circular segment of the circular bowl to thereby provide a swirling of



the fluid from the secondary inlet within the circular bowl through said trap.

3,854,152

APPARATUS FOR TRANSFERRING PATIENTS

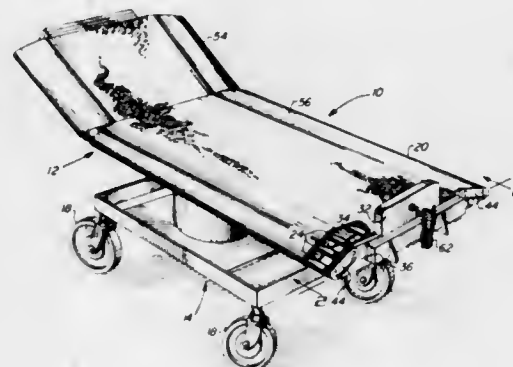
David A. Chez, Phoenix, Ariz., assignor to Harold A. Ziskin, Phoenix, Ariz.

Filed Apr. 2, 1973, Ser. No. 346,839

Int. Cl. A47b 83/04; A61g 1/02

U.S. Cl. 5-81 R

5 Claims



1. A self contained patient transferring device for attachment to a transfer cart having a height-adjustable, horizontal platform sufficient to hold a patient and wheels for ease of moving the transfer cart from place to place, said patient transferring device comprising:

- a pair of slider mechanisms;
- a plurality of parallel disposed rollers outlining an upper track and a plurality of parallel disposed rollers outlining a lower track, all of said rollers journaled to and between said pair of slider mechanisms, the length of said rollers being sufficient to support a patient in a prone position along his length and the rollers of the upper track being displaced along the slider mechanism sufficient to support his width;
- a pair of superposed endless belts, one of said endless belts stretched around the plurality of rollers outlining the upper track and a second of said endless belts stretched around the plurality of rollers outlining the lower track, both of said endless belts being of sufficient width to cover the rollers;
- said pair of slider mechanisms, the pairs of parallel disposed rollers and the pairs of superposed endless belts forming a rectangular frame member having a top and bottom and ends;
- a common drive means mounted on said frame member connected to said plurality of rollers outlining the upper track and said plurality of rollers outlining the lower track to selectively rotate the upper and lower tracks, said lower track rotating to drive both tracks to and from an extended position via said slider mechanism and said upper tracks rotating to place and remove the patient from the patient transferring device;
- a plurality of universal joining means, one for each of the plurality of rollers of both tracks and all located in the

same vertical plane thereby forming two sections of the upper and lower tracks; and means to raise and support one section of the upper and lower tracks while keeping the second section in the horizontal position.

3,854,153

SOFA-SLEEPER

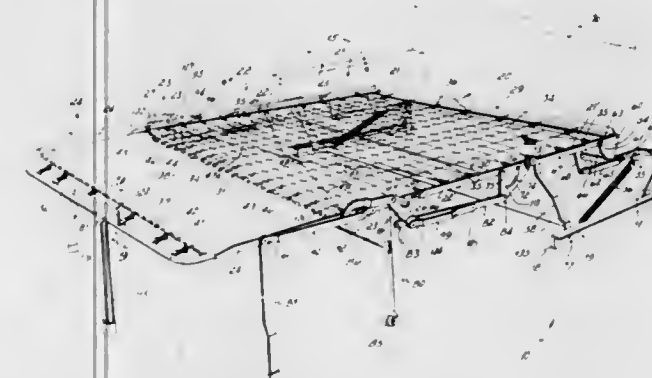
Leonard L. Fadler, Carthage, and C. Robert Findley, Joplin, both of Mo., assignors to Leggett & Platt Incorporated, Carthage, Mo.

Filed Jan. 12, 1973, Ser. No. 323,231

Int. Cl. A47c 17/40, 17/14

U.S. Cl. 5-13

11 Claims



1. A foldable sofa bed fixture adapted to be mounted upon a stationary sofa frame, said fixture comprising a plurality of pivotally interconnected head, body, intermediate and foot bed frame sections, said frame sections each including a pair of opposed side rails, said frame sections being extendable to form a bed and foldable to form a sofa seat, longitudinally and laterally stretched wire fabric means carried by at least said head, body, and intermediate bed frame sections, and

the improvement which comprises crossed wires attached at their opposite ends to the side rails of said body section of said frame, said crossed wires being located beneath and partially supporting said fabric means of said body section of said frame, said crossed wires being in tension and attached to the four corners of said body section of said frame, and said body section of said frame being rigidified by at least two laterally extending cross rails bent downwardly out of the plane of said body section of said frame.

3,854,154

UNDER MATTRESS FOR RECLINING FURNITURE

Felix Degen, Binningen, Switzerland, assignor to Inpaver AG, Zug, Switzerland

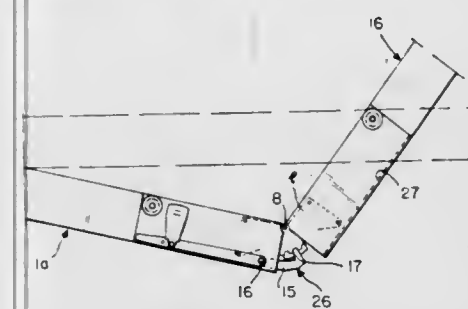
Filed Nov. 14, 1973, Ser. No. 415,556

Claims priority, application Switzerland, Nov. 15, 1972, 16643/72

Int. Cl. A61g 7/06; A41c 19/00

U.S. Cl. 5-202

7 Claims



1. In an under mattress for reclining furniture having a frame which is pivotally mounted in side portions of the reclining furniture and is subdivided into at least two sections which are relatively pivotable about an axis transverse to the longitudi-

dinal axis of the reclining furniture, the angular position of the two sections being lockable by a stop means operable by a person resting on the under mattress in a substantially horizontal stop position and at least one other stop position, the improvement wherein: said stop means comprises locking devices provided on each side of said frame at the ends of each section thereof adjacent to said pivoting axis, each device comprising a plurality of parallel spaced-apart arresting plates forming an assembly rigidly attached to its associated section of said frame, edges of said plates in each assembly being formed with a plurality of relatively aligned recesses, with leading portions of the corresponding assemblies of the two locking devices attached to the adjoining sections of said frame interdigitating on each side of said frame, whereby the assemblies forming each pair of interdigitated assemblies are relatively turnable when the two sections of said frame are relatively tilted, there being provided adjacent to the recessed edges of at least one pair of interdigitated assemblies a locking pawl which is manually tiltable about a pivot and having a locking tooth which points towards the recesses in said arresting plates, said pawl being resiliently urged into locking engagement with said recesses, the end of said pawl remote from its locking tooth being attached to a member which is adapted to be frictionally retained by a retaining element on a longitudinal side member of said frame to thereby maintain said locking pawl out of engagement with said recesses, said retaining element comprising a friction roller provided with a peripheral slot which narrows in the radially inward direction.

3,854,155

MULTI-PURPOSE BED TABLE MOVABLE BED'S LENGTH UNDER PATIENT'S CONTROL

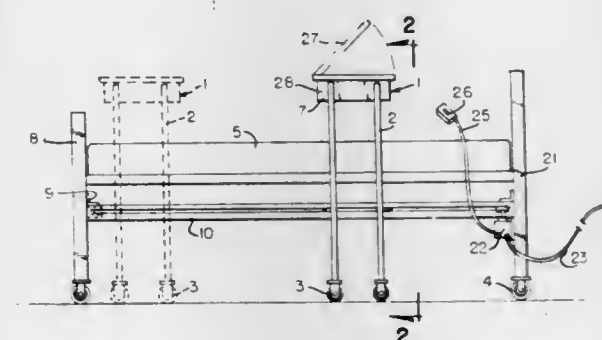
Alice M. Picard, 8601 Harding Ave., Miami Springs, Fla. 33144

Filed Jan. 3, 1974, Ser. No. 430,547

Int. Cl. A47b 23/00

U.S. Cl. 5-332

5 Claims



1. The combination of a bed and a table positioned over the bed but not resting thereon, which table has spaced legs positioned on each side of the bed, the bed having a side rail with channel therein substantially the entire length thereof, the said legs being attached to the said table at their upper extremity, and at their lower end provided with rollers to contact and move upon the floor, a flexible cable which is attached at approximately the mid-height of the legs to legs of the table, pulleys fastened to the respective ends of the bed contiguous the channel in the side rail, the cable movable within the side rail and contacting the pulleys in the length-wise channel in the side rail, means for activating the cable in opposite directions, whereby a person lying in the bed can cause the table to move in the direction of the length of the bed up and down at will.

3,854,156

PORTABLE BABY WARMING APPARATUS

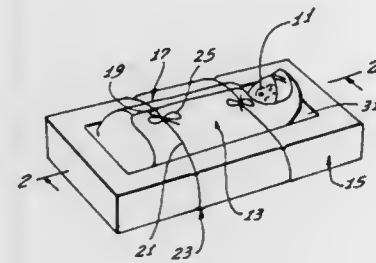
Vernon L. Williams, Dana Point, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Filed Mar. 20, 1972, Ser. No. 236,120

Int. Cl. A61f 7/00, 7/06; F75d 3/08

U.S. Cl. 5-347

25 Claims



1. In combination for maintaining an infant at a substantially constant temperature:
a portable mattress made from an insulating material;
first means disposed upon the mattress and having characteristics for chemically reacting to provide a substantially constant temperature for an extended period of time; and
second means disposed upon the first means for swaddling the infant and for permitting the transfer of heat from the first means to the infant at the substantially constant temperature and for facilitating the maintenance of the infant at the substantially constant temperature.

3,854,157

UNITARY SPACE FRAME

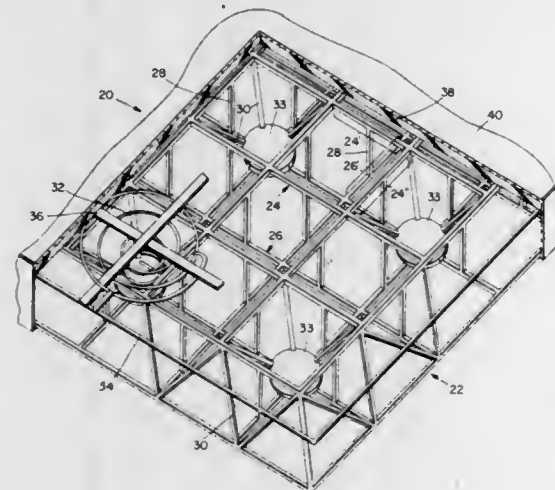
David C. Trimble, Yorklyn, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 25, 1973, Ser. No. 382,625

Int. Cl. A47c 23/04, 25/00

U.S. Cl. 5-351

5 Claims



1. A unitary space frame suitable for forming in a simple two-piece mold having a direction of mold opening travel, comprising:

an upper and a lower grid composed of grid members, said upper grid being offset from said lower grid in plan; and
a plurality of first connecting members each interconnecting a grid member in said upper grid and a grid member in said lower grid that are angularly askew, said first connecting members being oriented parallel to the direction of mold opening travel.

3,854,158

APPARATUS FOR BINDING LOOSE PERFORATED SHEETS FOR ALBUMS, COPY-BOOKS, CALENDARS AND THE LIKE

Daniele Pesenti Pigna, Bergamo, and Antonio Camozzi, Alzano Lombardo, all of Italy, assignors to Cartiere Paolo Pigna, S.p.A., Alzano Lombardo, Italy

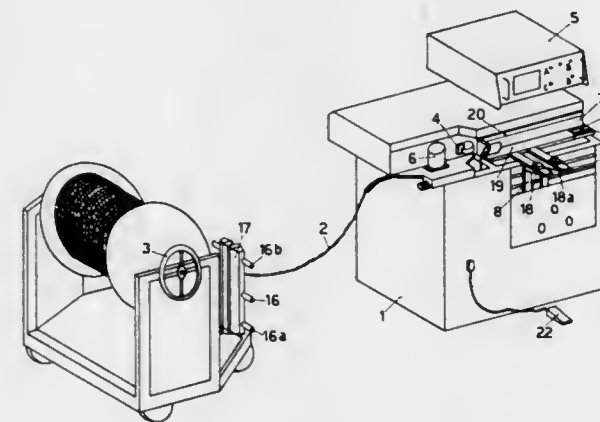
Filed May 21, 1973, Ser. No. 362,059

Claims priority, application Italy, May 26, 1972, 24914/72

Int. Cl. B42c 5/12

U.S. Cl. 11-1 A

11 Claims



1. A semi-automatic apparatus for binding loose sheets perforated along one edge, comprising:
a feed reel for storing a wire band configured as a series of "C-shaped" loops;
feed means for feeding said wire band from said feed reel along a predetermined feed path;
counter means for counting the number of loops of said wire band which are fed from said feed reel;
actuable cutter means for cutting the fed wire band into binder segments;
selector means for permitting manual selection of the number of said loops to be included in a binder segment;
comparator means arranged to compare the counted number at said counter means and the selected number at said selector means, and to terminate feeding by said feed means and actuate said cutter means when the two numbers are equal;
means for resetting said counter means when said cutter means is actuated;
a coupling station located along said feed path including means for receiving a stack of said loose perforated sheets when manually inserted into said station transversely of said feed path such that the perforated edges of said sheets enter said "C-shaped" loops;
actuable press means for closing the "C-shaped" loops at said coupling station about the perforated edges of the sheets in said stack; and
control means responsive to absence of predetermined positioning of said sheets at said coupling station for inhibiting operation of said press means, and responsive to removal of a stack of sheets from said predetermined positioning at said coupling station for re-initiating wire band feed by said feed means.

3,854,159

COMPOSITE EXPANSION JOINT ASSEMBLY

Ronald L. McLean, Tonawanda, and Richard J. Bartula, Buffalo, both of N.Y., assignors to Acme Highway Products Corporation, Buffalo, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,182

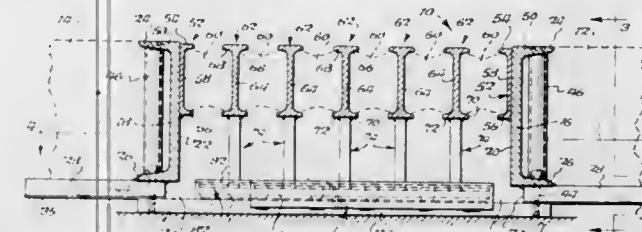
Int. Cl. E01c 11/00

U.S. Cl. 14-16

12 Claims

1. A composite expansion joint assembly comprising: edge members adapted to define the opposite sides of an expansion groove between deck sections; a plurality of longitudinally spaced bearing plates defining the bottom of said groove and

projecting outwardly of said edge members; opposed plates rigidly secured to the lower ends of said edge members and supported on said bearing plates for sliding movement relative thereto adjacent at least one end thereof; a plurality of resiliently yieldable elongated sealing elements in side-by-side



relation between said edge members; an elongated rigid structural member interposed between each pair of adjacent sealing elements; and support members rigidly secured to the lower ends of said structural members at spaced intervals therealong and supported on said bearing plates for sliding movement relative thereto.

3,854,160

STREET SWEEPER WITH A HYDROSTATIC TRANSMISSION

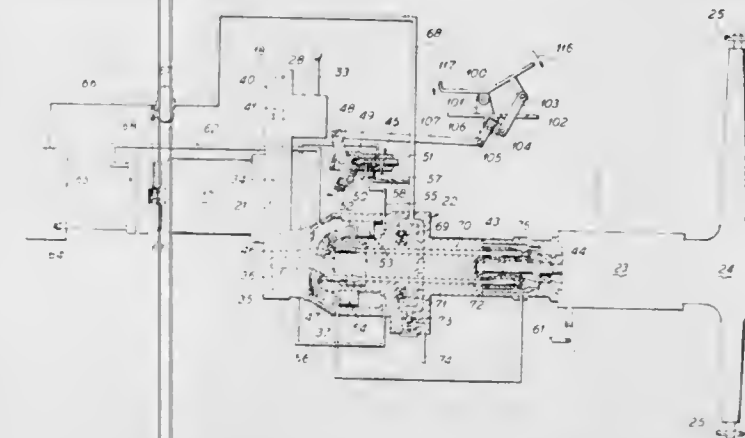
Donald L. Hildebrand, Union; Ernest F. Prescott, and Donald G. Kirk, both of Elgin, Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Sept. 25, 1973, Ser. No. 400,703

Int. Cl. E01h 1/04

U.S. Cl. 15-84

19 Claims



1. In a self-propelled street sweeper having sweeping means including a rotatable broom and conveyor means for depositing material dislodged by the broom into a hopper, said sweeper having a single engine with a crank shaft connected by a power splitting mechanism to a differential and sprockets of a chain drive for driving each of the driven wheels, a pair of wheels of the sweeper for propelling the sweeper and to drive means for actuating the sweeping means, the improvements comprising the drive train including a hydrostatic transmission comprising a hydrostatic motor in fluid communication with a variable displacement pump which transmission includes means for controlling the volume and direction of the displacement of the pump to control the speed and direction of movement of the street sweeper, said hydrostatic transmission driving through the differential and the sprockets of the chain drive for driving each of the driven wheels, and linkage means extending from an operator position on the sweeper and connected to the control means so that the speed and direction of the movement of the street sweeper can be controlled independently of the speed of the sweeping means.

3,854,161

WINDSHIELD WASHER

Robert D. Benson, 2521 Cedar Ave., White Bear Lake, Minn. 55110

Filed Sept. 6, 1973, Ser. No. 394,569

Int. Cl. B60s 1/48

U.S. Cl. 15-250.04

14 Claims

1. A windshield washer structure for adhesive attachment in

a substantially parallel contiguous relationship to a wiper blade supporting assembly for oscillation with said assembly during cleaning of a windshield, said structure comprising an elongated flexible strip portion and an elongated tubular portion fixed along one longitudinal edge of said strip portion, said strip portion being characterized as a flange-like member extending laterally from said tubular portion, said flange-like strip portion being adapted to nest snugly in adhesive attachment lengthwise upon a wiper blade supporting assembly to cause said tubular portion to be in a substantially parallel and



laterally juxtaposed relationship to the wiper blade supported by said assembly, and said tubular portion having a plurality of apertures therein located relatively on the ventral side thereof opposing a windshield as said washer structure is affixed as aforesaid upon a wiper blade supporting assembly, whereby in operation said apertures are adapted to direct washing fluid as fed to said tubular portion toward the windshield at a position adjacent the wiper blade during oscillation of the supporting assembly.

3,854,162

DOCTOR BLADE HOLDER

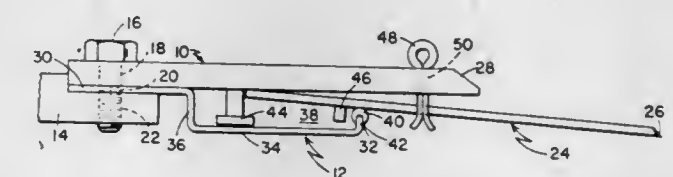
Robert H. Russell, Norfolk, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Mar. 2, 1973, Ser. No. 337,437

Int. Cl. B41f 9/10; D21g 3/00

U.S. Cl. 15-256.51

5 Claims



1. A holder for a doctor blade for doctoring rolls and the like comprising:

a pair of holder members constructed and arranged to be secured together to a support adjacent one of their longitudinal edges with their opposite edges free for receiving and retaining the back portion of a doctor blade between them with its doctoring edge projected beyond them and with one member resiliently urged toward the other member to exert sufficient pressure on said blade to hold it in operative position against the other member;

said one member being formed of resilient metal and being arranged to be fastened to the other said member adjacent their edges remote from the doctoring edge of a said blade received between them so that the other edge of said one member is flexible toward and away from the other said member;

said one member having mounted thereon adjacent said other edge thereof a resilient, yieldable strip material extending longitudinally of said member and blade and positioned so that said one member exerts said pressure on said blade through said material, said material being deformable under said pressure;

and means to secure said holder members to a said support with said other member preceding said one member in the direction of rotation of the surface to be doctoring.

3,854,163

LIQUID-VACUUM GENERATOR FOR USE WITH TWO CHAMBER CLEANING NOZZLE

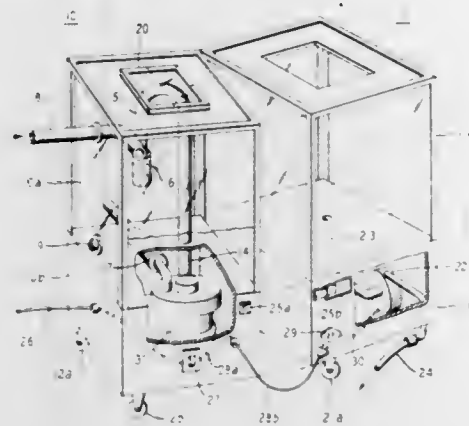
James King Evans, 2601 Kutztown Rd., Reading, Pa. 19605

Filed Sept. 12, 1973, Ser. No. 396,501

Int. Cl. A47H 7/00

U.S. Cl. 15—321

2 Claims



1. A two tank liquid - vacuum generator for use with a two chamber cleaning nozzle comprising:
 - a first vacuum unit comprising:
 - a first housing,
 - vacuum means having an intake and an outlet, mounted within the first housing,
 - a vacuum tank mounted on the first housing,
 - a standpipe extending upwardly from the bottom of the vacuum tank,
 - a vacuum line communicating the intake side of the vacuum means with the lower end of the standpipe,
 - a vacuum inlet having one end thereof extending inwardly through the side of the vacuum tank near the top of the vacuum tank in the vicinity of the top of the standpipe, and the other end thereof formed for releasable connection to the cleaning nozzle,
 - a float valve attached to the top of the standpipe.
 - A second liquid unit comprising:
 - a second housing,
 - a liquid pump having an intake and an outlet, mounted within the second housing,
 - a liquid tank mounted on the second housing,
 - a liquid supply line extending from the bottom of the liquid tank to the intake side of the liquid pump, and
 - a liquid tube having one end thereof communicating with the pump and the other end thereof formed for releasable connection to the cleaning nozzle, and
 - means for releasably joining the vacuum unit and liquid unit to form the generator.

3,854,164

SELF-PROPELLED UPRIGHT VACUUM CLEANER

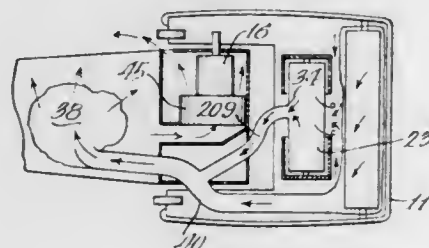
Joseph F. Schmitz, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 15, 1973, Ser. No. 323,779

Int. Cl. A47I 9/00

U.S. Cl. 15—340

16 Claims



1. In a vacuum cleaner having means forming a dirt collecting chamber, a selectively positionable handle attached to said

means forming a dirt collecting chamber for controlling movement of the vacuum cleaner selectively forwardly and rearwardly over a surface to be vacuum cleaned, an air conducting nozzle in communication with said dirt collecting chamber, and air moving means including first motor means for moving air through said nozzle to become dirt laden and moving said dirt laden air to said dirt collecting chamber means for removing the dirt therefrom, propelling means comprising: drive wheel means mounted on said vacuum cleaner nozzle for engaging the surface to be cleaned; second motor means carried by said vacuum cleaner nozzle and drivingly connected to said drive wheel means; and means for selectively controlling said second motor means for reversibly driving said drive wheel means forwardly and rearwardly in response to selective positioning of said handle, said air moving means including means for conducting cooling air other than the dirt laden air in heat transfer association with said second motor means for cooling said second motor means.

3,854,165

PANEL DOOR ASSEMBLY

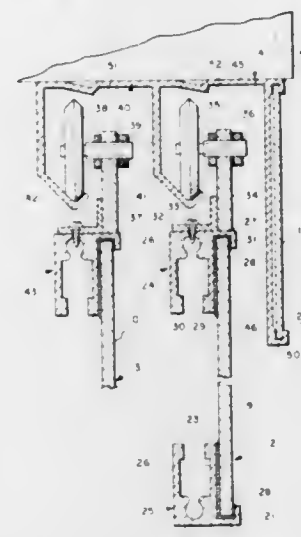
James C. Haley, Tucson, Ariz., assignor to Arizona Glass and Mirror Co., Inc., Tucson, Ariz.

Filed May 14, 1973, Ser. No. 359,796

Int. Cl. A47H 1/04

U.S. Cl. 16—96 R

3 Claims



1. A panel door structure for supporting a sliding panel within a post and lintel door opening, said structure being hidden from view such that it does not set off the decor of said panel, said structure comprising in combination:

- a. a pair of horizontal rails forming the top and bottom sides of said framework, each of said horizontal rails including a load bearing structural section and an inwardly directed asymmetric channel for receiving a horizontal edge of said panel, each said horizontal rail being formed as a unitary single element structure wherein said load bearing structural section includes a first and second leg in lateral spaced relation to one another and extending from a common first base coincident with the respective edge of said panel to define an inwardly directed horizontal channel, and wherein said asymmetric channel includes said second leg, a center section extending from said common base and a lip for retaining said panel, whereby each of said vertical rails extend lateral to said panel by an amount equivalent to the thickness of said common first base;
- b. a pair of vertical rails forming opposite vertical sides of said framework, each of said vertical rails including a further load bearing structural section adjacent the rear surface of said panel and a strip extending from said further structural section adjacent the respective vertical side of said panel without impinging upon the front surface of said panel, each said vertical rail being formed as a unitary single element structure wherein said further

3,854,167

VEHICLE DOOR HINGE

Riyouichi Fukumoto, Nagoya; Kenichi Fukura, Chiryu, and Mizuo Nyunoya, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha (Aisin Seiki Co., Ltd.), Kariya City, Aichi Pref., Japan

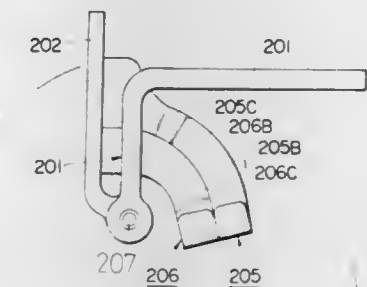
Filed Mar. 2, 1973, Ser. No. 337,399

Claims priority, application Japan, Mar. 2, 1972, 47-26146; Mar. 2, 1972, 47-26147

Int. Cl. E05f 1/12

U.S. Cl. 16—184

10 Claims



- load bearing structural section includes a third and fourth leg in spaced relation to one another and extending from a common second base to define an inwardly directed vertical channel, said strip extending from said second base in the plane of said second base, whereby each of said vertical rails extend lateral to said panel by an amount equivalent to the width of said strip;
- c. a track depending from and extending along the full length of the lintel of the door opening; and
- d. support means for suspending said framework from said track, said support means being the sole support for said structure within the door opening; whereby, said door panels are structurally braced and supported by said load bearing structural sections of said horizontal and vertical rails located at the rear surface of said panel and do not set off or intrude upon the decor of the front surface of said panel.

3,854,166

CAST HINGE

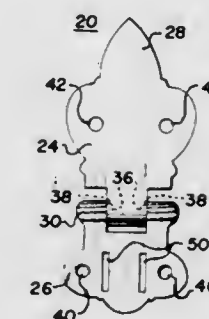
Karl Hannes, White Plains, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 187,427, Oct. 7, 1971, Pat. No. 3,742,555. This application May 30, 1973, Ser. No. 365,269 The portion of the term of this patent subsequent to July 30, 1990, has been disclaimed.

Int. Cl. E05d 1/06

U.S. Cl. 16—171

8 Claims



1. An article having a first element, first and second parallel extensions depending from an edge of said first element, first and second bearing means on said first and second extensions, the bearing means being aligned and directed toward each other,

- a second cast element, extension means depending from an edge of said second cast element, third and fourth aligned bearing means on said extension means and being directed away from each other, and engaging said first and second bearing means respectively to form an articulated joint,

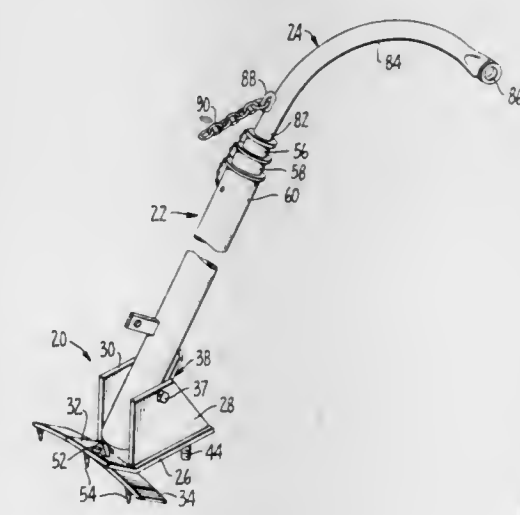
- the respective bearing means being sufficiently overlapped to prevent non-destructive assembly and disassembly of said first and second elements,

- said first element having a compressed region between said first and second extensions in which the material of the first element is distorted in a direction tending to separate said first and second extensions.

3,854,168
SKINNING TREE
Orval C. Bradley, 19 Sunset, Willows, Calif. 95988
Filed June 26, 1972, Ser. No. 266,463
Int. Cl. A22b 5/06

U.S. Cl. 17—44.2

6 Claims



1. A portable skinning tree for suspending large game animals comprising:

- a. a base including a mounting plate having a slot therein and a tree-engaging plate detachably mounted on the mounting plate, said tree engaging plate including an upstanding tab insertable into the slot in the mounting

plate, said tab having a hole therein through which a cotter pin may be inserted to retain the tab in the slot and wherein the tree engaging plate has at least one spike provided thereon for engaging a tree trunk,
b. a telescoping boom pivotally connected to the base, and
c. an arch member extending from the distal end of the telescoping boom.

3,854,169

MEANS FOR MOUNTING FALLERS IN A TEXTILE GILL BOX

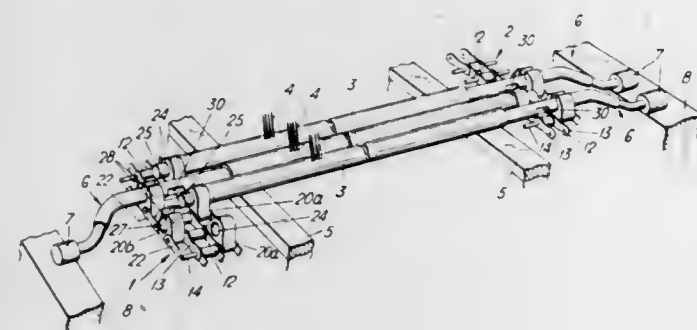
John K. P. Mackie, Belfast, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland
Filed Nov. 6, 1972, Ser. No. 303,922

Claims priority, application Great Britain, Nov. 18, 1971, 53630/71

Int. Cl. D01g 19/10

U.S. Cl. 19—127

7 Claims



1. Means for mounting fallers in a textile gill box including: chain means comprising a plurality of links and a plurality of pins connecting said links to form said chain means, a plurality of housings secured to said chain means in a succession along the length thereof but individually separable therefrom, said housings having recesses therein for the reception of the ends of fallers, which recesses extend for a predetermined distance transverse to the length of the chain means, said pins being located in openings in said links distinct from the recesses in said housings, and each housing being spaced in said transverse direction from the housing next in said succession by a distance at least equal to said predetermined distance.

3,854,170

COTTON LINT CLEANER

James Daniel Caughlin, La Jolla, Calif., assignor to Ginners Incorporated, Monroe, La.

Filed Aug. 17, 1973, Ser. No. 389,384

Int. Cl. D01b 3/00

U.S. Cl. 19—202

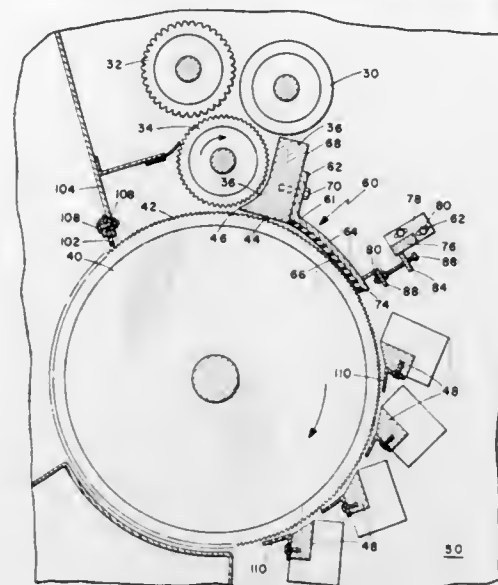
7 Claims

1. In a cotton lint cleaning machine having means for forming lint into a continuous bat of cotton, a rotatable toothed saw cylinder on which the cotton bat is held and spun to eject trash therefrom, and feed means including a feed bar adjacent the cylinder for applying the bat to the teeth of the cylinder, the improvement comprising:

an extension plate secured to the feed bar and extending therefrom in the direction of rotation of the cylinder and across substantially the entire length thereof, said extension plate conforming arcuately to the periphery of the cylinder and having a trailing edge portion remote from the feed bar;

the cylinder confronting face of said extension plate being

of a non-sparking material; and means for adjusting at least the trailing edge portion of



said extension plate substantially radially relative to the cylinder.

3,854,171

STEERING WHEEL HOLDER

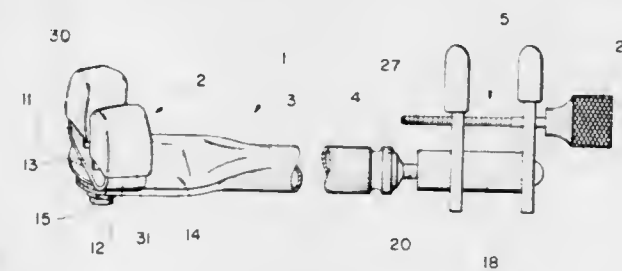
Edward D. Wilkerson, P.O. Box 755 S. Court, Morristown, N.J. 08739

Filed Aug. 29, 1973, Ser. No. 392,653

Int. Cl. A44b 21/00; B62d 11/16

U.S. Cl. 24—81 A

4 Claims



1. In a removable steering wheel holder for anchoring a vehicle steering wheel in a desired position relative the vehicle and which holder has an elongated body supporting a steering wheel clamp and a vehicle clamp, the improvement comprising a universal coupling connected to the elongated body to support the vehicle clamp with the vehicle clamp being pivotable relative to the elongated body in both of two perpendicular planes with a full circle of vehicle clamp attitudes, and in which the universal coupling includes an angle link and a vehicle clamp shaft with the angle link having two legs one of which is pivotable in a first plane relative the elongated body and the other leg supports the vehicle clamp shaft so the clamp is rotatable in a full circle of rotation relative the second leg in a plane perpendicular to the first plane.

3,854,172

CLAMP ASSEMBLY FOR STEEL CORE ALUMINUM STRANDED WIRES

Hiroshi Noda, Tokyo, Japan, assignor to Sanwa Tetsuki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,508

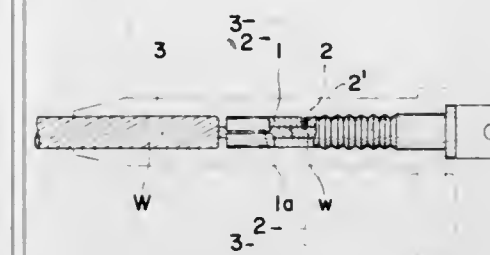
Int. Cl. F16g 11/02, 11/06

U.S. Cl. 24—122.3

1 Claim

1. A compressible clamp assembly for steel core aluminum stranded wires comprising a steel sleeve having an axial bore and provided with a plurality of axial slits through the outer wall and communicating with the bore partially along the length thereof for permitting the sleeve to be radially compressed; a steel core wire inserted in the bore; a through screw hole directed to the axis of the sleeve near the base of the slits,

a machine screw driven radially into the screw hole into locked engagement at an inner end with the screw being hidden beneath the outer periphery of the steel sleeve wall; and a cylindrical aluminum sleeve telescoped over the steel



3,854,174

SLIDING CLASP FASTENER

Tadahiro Yoshida, Fujisawa, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

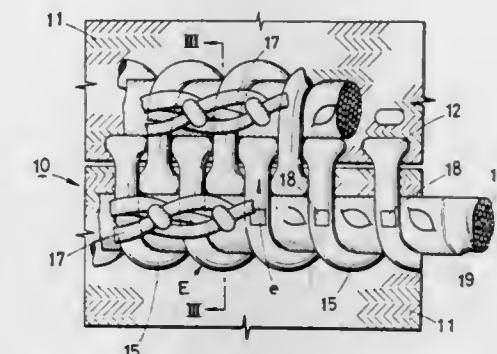
Filed Oct. 2, 1972, Ser. No. 294,323

Claims priority, application Japan, Oct. 2, 1971, 46-90376

Int. Cl. A44b 19/12

U.S. Cl. 24—205.1 C

3 Claims



sleeve and hidden screw and deformably compressed onto the outer periphery of and comprising the steel sleeve at the axial slots onto the steel core wire and maintaining the screw in locked engagement with the core wire.

3,854,173

TURNBUCKLE RETAINER

Barry Roger Michael Barnett, 41 Blackthorn Ave., West Drayton, England

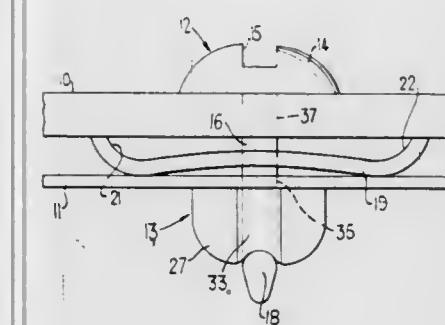
Filed Feb. 12, 1973, Ser. No. 331,455

Claims priority, application Great Britain, Feb. 18, 1972, 7665/72

Int. Cl. A44b 17/00

U.S. Cl. 24—221 R

4 Claims



1. A fastener combination for securing two apertured panels together comprising a turnbuckle and a bush, the turnbuckle including a head and a shank extending integrally from the head and having transversely extending locking lugs at its leading end, the bush including a shank adapted to extend through the aperture in one of the panels so as to be nonrotatable therein, a head integral with the panels and adapted to abut one surface of said one panel, retaining means on the shank adapted to engage the other surface of said one panel to retain the bush in the aperture, and an elongate bore extending through the head and through the length of the shank whereby the turnbuckle shank can be passed through the head of the bush and into the shank of the bush and rotated through 90° to engage the locking lugs across the end of the shank of the bush, the head of the bush being substantially resilient at a position remote from the shank of the bush and in the direction of the length of said shank so as to be compressible in a direction towards the shank to accommodate a substantial tolerance in the length of the turnbuckle shank.

3,854,175

SLIDER FOR CONCEALED ZIP FASTENERS

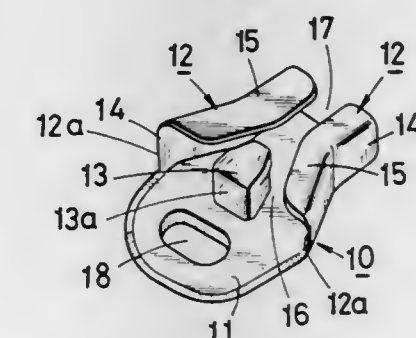
Kyumatsu Yoshida, Utsu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1972, Ser. No. 294,437

Int. Cl. A44b 19/26

U.S. Cl. 24—205.1 R

4 Claims



1. A slider for concealed zip fasteners which comprises a base, a pair of side flanges extending from opposite longitudinal edges of said base and having upright sidewalls and horizontal top walls integral therewith and lying substantially parallel with the plane of said base, and a guide post situated centrally between said side flanges and extending upright to a point substantially flush with the top walls of said flanges, said guide post defining with said flanges a Y-shaped guide channel for passing a zip fastener, said base having an aperture formed forwardly of said guide post for receiving in laterally surrounding relation a pin-like object with which to move the slider in any selected one of two opposite directions, said pin-like object being normally removed when not moving the slider.

3,854,176

HIGH CAPACITY GEOMETRICALLY-FAVORABLE SOLVENT EXTRACTION COLUMNS FOR PROCESSING FISSILE MATERIALS

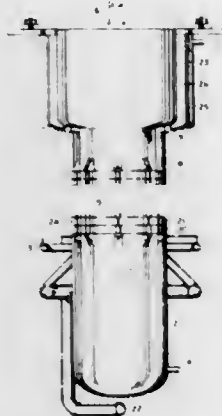
Jack B. Kendall, Williston, S.C., and James H. Nordahl, Richmond, Wash., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sept. 29, 1971, Ser. No. 184,709

Int. Cl. B01d 11/04

U.S. Cl. 23-267 C

5 Claims



1. A pulsed solvent extraction column for processing fissile materials having a vertically disposed annular column processing section, a removable array of a plurality of plates spaced at intervals within said annular column processing section and an annular disengaging section, said annular column processing section being bounded by a removable internal cylinder and an external cylinder, said internal cylinder containing a liquid solution of a neutron absorbing or moderating material maintained at a higher hydrostatic pressure than the processing fluid in said annular column processing section whereby, in the event of leakage, the liquid solution of neutron absorbing or moderating material will flow into the annular processing section, thereby decreasing the possibility of displacement of the liquid in the internal cylinder by fissile solutions.

3,854,177

PROCESS AND APPARATUS FOR TEXTURING YARN

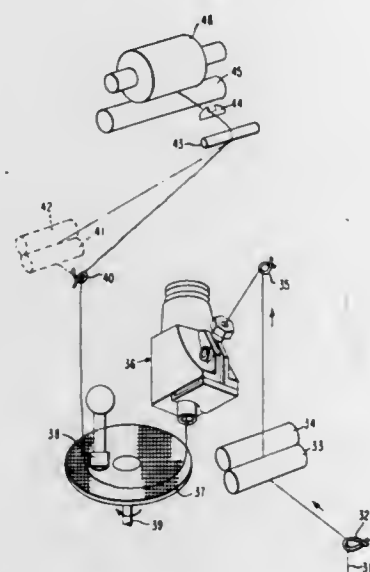
Alvin L. Breen, and Herbert G. Lauterbach, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 43,897, July 19, 1960, abandoned, which is a continuation-in-part of Ser. No. 698,103, Nov. 22, 1957, abandoned. This application Apr. 15, 1968, Ser. No. 721,403

Int. Cl. D02g 1/16

U.S. Cl. 28-1.4

10 Claims



1. In a process for texturing multifilament yarn comprising thermoplastic synthetic linear polymer filaments with com-

pressible fluid heated to a temperature which will plasticize the filaments to impart a persistent crimp having a random, three-dimensional, curvilinear, extensible configuration continuously along the filaments; the improvement which comprises jetting a high velocity stream of the heated fluid to form a turbulent plasticizing zone of heated fluid, feeding the filaments at a rate of at least 500 yards per minute into the turbulent zone, continuously forwarding and crimping the filaments by turbulent action of the heated fluid while the filaments are in a plasticized condition, receiving the treated filaments on a moving surface to remove the filaments from the heated fluid in a substantially tensionless state, conveying the filaments on the moving surface through a stream of cooling fluid to set the crimp in the filaments, and finally taking up the cooled filaments from the moving surface.

3,854,178

STUFFER CRIMPER YARN GUIDE MEANS

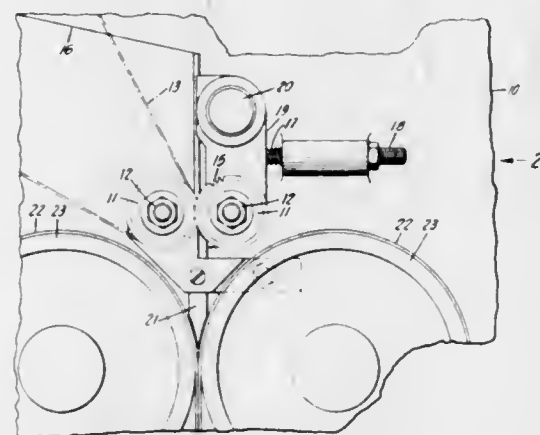
Ronald S. Schartel, Reading, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 363,920

Int. Cl. D02g 1/12

U.S. Cl. 28-1.6

1 Claim



1. An improved yarn guide means of a type which receives multi-filament thermoplastic yarn being fed at a high rate from a source by a pair of cooperating feed members and discharging into a nip formed between a pair of rolls driving a pair of opposed cooperating belts which operate at a slower speed than said feed members and which define a texturing zone where said yarn is held in a compacted condition while it is heated and subsequently cooled to effect texturing, wherein the improvement comprises:

a tubular body having an axial opening therethrough; said tubular body having a first end which includes a pair of extended tab portions adapted to closely receive said pair of cooperating feed members therebetween; said tubular body having a second end which is tapered to closely extend into said nip; and said axial opening being defined by a smooth, continuous inner wall of said tubular body in the form of a frustum of a cone with its larger cross-sectional area adjacent said nip; whereby

said tabs and said taper of said second end of said tubular body insure that said yarn is retained within said axial opening as it is being compacted and the shape of said axial opening and the continuity of said inner wall permits unrestricted flow of said yarn in said compacted condition to said texturing zone.

3,854,179

TASSEL AND POMPOM MAKING APPARATUS

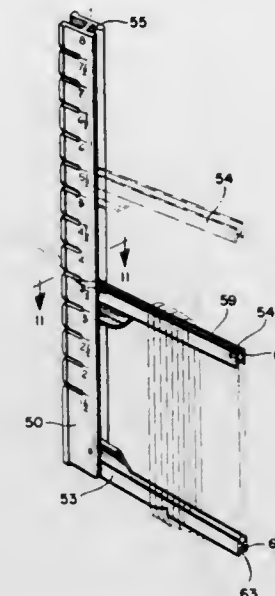
Jonas Montoya, 400 E. Randolph, Chicago, Ill. 60601

Filed June 5, 1972, Ser. No. 259,543

Int. Cl. D04d 7/08, 7/06

U.S. Cl. 28-2

4 Claims



1. Apparatus for making a tassel or the like from a flexible string of material, said apparatus comprising:

a substantially flat U-shaped object having spaced first and second members projecting outwardly from a base member,

said first and second members each having inner and outer walls connected by an outboard wall,

said outboard and outer walls of said first and second members having retaining means located along at least a portion of their length for guiding and retaining a flexible string of material therein;

a string retaining notch disposed on at least one of said first and second members adjacent said retaining means; and, means mounting one of said first and second members on said base member for adjusting the space between said first and second members, whereby a string of material may be guided and retained by said retaining means and said notch in the course of making a tassel or the like.

3,854,180

METHOD OF CONNECTING A FILAMENT TO A SUPPORT IN AN ELECTRIC FILAMENT LAMP

Leopold Stanislas Maria Pastijn, Deurne, and Ghislain Felix Alfons Arthur Verboven, Genk, both of Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

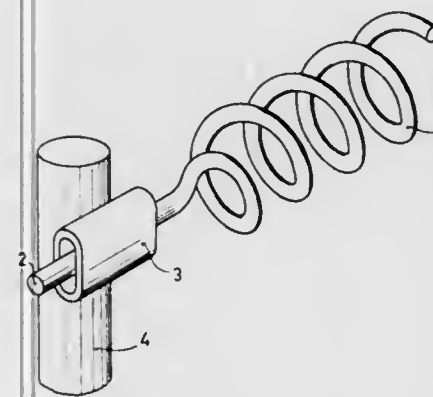
Division of Ser. No. 218,269, Jan. 17, 1972, abandoned. This application Sept. 12, 1973, Ser. No. 396,449

Claims priority, application Netherlands, Jan. 16, 1971, 7100606

Int. Cl. H01j 9/00

U.S. Cl. 29-25.15

1 Claim



1. A method of connecting a filament to a support in an electric filament lamp comprising the steps of:

inserting an end of the filament in a cylindrical sleeve; juxtaposing the sleeve containing said filament end transversely to and in contact with said support; and simultaneously compressing said sleeve against said filament wire and support to deform said sleeve into a non-circular cross section and spot welding said compressed sleeve to said support and said filament to said sleeve.

3,854,181

METHOD OF PRODUCING VARIABLE CAPACITORS

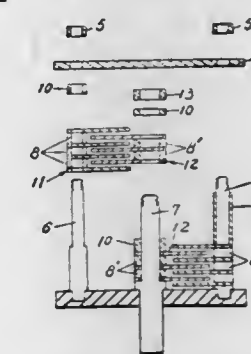
Yoshio Matsuoka, and Yukihisa Fujishima, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,828

Int. Cl. H01g 13/00

U.S. Cl. 29-25.41

2 Claims



1. A method of producing a variable capacitor comprising the steps of preparing selected numbers of highly conductive stator electrodes, highly conductive rotor electrodes, and spacers, each of said spacers having a core of a first highly conductive metal and an exterior coating of a second metal whose specific volume resistivity is larger than that of the highly conductive metal of its core, stacking alternately said stator electrodes and said spacers to form a first structure and said rotor electrodes and said spacers to form a second structure such that each stacked structure has the electrodes positioned on the outermost opposite ends, pressing each stacked structure and heating contacting zones between said spacers and said electrodes to melt the metal plated around each said spacer in each contacting zone and to cause adjacent electrodes and spacers to fusion-weld one to another through the molten plated metal, cooling said welded electrode structures, and, assembling the integrated rotor electrode structure to a rotor shaft and the integrated stator electrode structure to a capacitor stationary member to thereby produce a variable capacitor.

3,854,182

PROCESS FOR MANUFACTURING ELECTRICAL CONDENSERS

Herbert Forster, Grunbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 215,121, Jan. 3, 1972, abandoned.

This application Dec. 26, 1973, Ser. No. 428,404

Claims priority, application Germany, Feb. 25, 1971, 2108988

Int. Cl. B32b 31/26

U.S. Cl. 29-25.42

6 Claims

1. In a process of producing a wound electrical condenser in the form of a coil formed of at least one paper layer impregnated with a dielectric impregnating medium and at least one layer composed of a synthetic resin that shrinks when heated and swells when brought into contact with the dielectric impregnating medium, which condenser is formed by first winding the paper and synthetic resin layers into a tightly wound coil and then impregnating the wound coil with a dielectric impregnating medium at a temperature at which the dielectric impregnating medium is liquid and tempering the said coil by heating at an elevated temperature and at atmospheric or a subatmospheric pressure, the improvement which comprises preliminarily impregnating the paper which is to be used in producing the condenser in the form of a loosely wound coil

with a molten dielectric impregnating medium that is solid at room temperature and thereafter assembling the thus-impregnated paper with the synthetic resin layer into a tightly wound coil and impregnating the same with the liquid dielectric impregnating medium and tempering the thus tightly wound impregnated coil by heating the same at an elevated temperature at atmospheric or a subatmospheric pressure.

3,854,183

TOOL HOLDER

Axel Sven Olof Roos, Odengatan, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

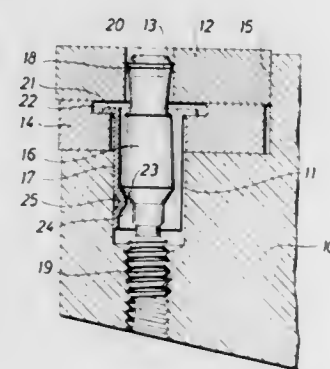
Filed Jan. 28, 1974, Ser. No. 437,306

Claims priority, application Sweden, Feb. 21, 1973, 73023889

Int. Cl. B26d 1/00

U.S. Cl. 29-96

3 Claims



1. Tool holder for clamping an apertured indexable insert (12) into an insert-receiving site in a holder body so that the insert rests on a bottom-supporting surface which is formed by a detachable shim plate (14), these being a clamping pin threadably received with loose engagement in a portion of bore (11) in the holder while received in the hole of the insert so as to secure the insert into clamping engagement with at least one lateral abutment (15) in said site, characterized in that the clamping pin (16) is at least partially surrounded by a sleeve member (17) arranged in the bore (11) for cooperation with said clamping pin, said sleeve member being provided with a radially extending collar (21) to abut against a support surface (22) on the shim plate (14), there being an inclined cam surface (23) provided on said sleeve member cooperating with a complementary shaped conical abutment surface (24) on said clamping pin, so that the clamping force exerted on said cam surface (23) when in-screwing the clamping pin causes a component parallel to the axis of the sleeve member that urges the sleeve member against the shim plate while a component directed inwardly against the tool holder body urges the clamping pin and the insert against said lateral abutment or abutments.

3,854,184

DEMOUNTABLE PRINTING CYLINDERS

Sidney Katz, Spring Valley, N.Y., assignor to Mosstype Corporation, Waldwick, N.J.

Filed Sept. 25, 1973, Ser. No. 400,685

Int. Cl. B21b 31/08

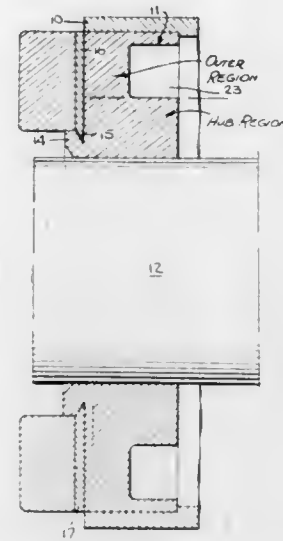
U.S. Cl. 29-123

8 Claims

1. A demountable printing cylinder adapted to be shrunk fit by means of a flat annular heating element onto a mandrel formed of metal having a relatively low thermal coefficient of expansion; said cylinder comprising:

an open-ended tube, and end closures disposed at opposite ends of said tube, each closure having a collar-like formation defining annular front and rear faces, an inner region surrounding a central bore through which the mandrel is extended and an outer region whose periphery engages the associated end of said tube, said outer region being relieved in the rear face of the closure to reduce the mass

thereof whereby thermal energy applied to said closure by means of said annular heating plate engaging substantially the entire front face thereof is transferred mainly to said inner region to expand said bore at a rapid rate, only



a minor portion of said heating energy being transferred by said relieved outer region to said tube, said closure being formed of a metal having a relatively high thermal coefficient of expansion.

3,854,185

METHOD OF FORMING STRUCTURAL JOINTS

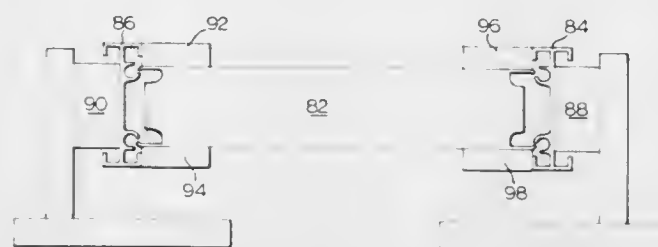
Robert John Reid, 50 Transwell Ave., Willowdale, Ontario, Canada

Filed July 9, 1973, Ser. No. 377,786

Int. Cl. B23p 17/00, 11/00

U.S. Cl. 29-155 R

14 Claims



1. A method of forming a structural joint between a first and a second rigid element, said first element having at least one flange extending from a face thereof and having an outer end, said second element having at least one elongate groove which is substantially arcuate in cross-section provided on a face thereof, each said groove having opposed edges which define an elongate opening of a dimension to permit entry of a flange into said groove, comprising the steps of:

placing the outer end of at least one flange into the elongate opening of said at least one groove; and applying sufficient external force to at least one of said first and second elements to cause relative movement between said elements so as to decrease the distance between the opposing faces thereof and so as to deform said flange within said groove to form at least a portion of a coil therein having a width which is greater than the width of said elongate opening.

3,854,186

METHOD OF PREPARING A HEAT EXCHANGER

Francis J. Sergeys, Kensington, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 14, 1973, Ser. No. 370,135

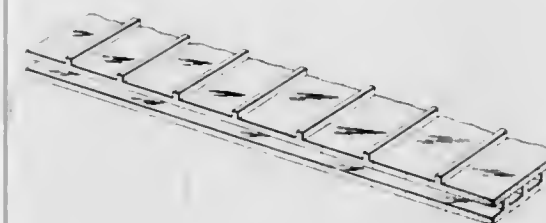
Int. Cl. B21d 53/02; B23p 15/26

U.S. Cl. 29-157.3 D

4 Claims

1. A process for preparing a heat exchanger which comprises the steps of:

- Preparing a mixture containing 30-85 percent of a ceramic powder, 5-20 percent of an olefinic polymer having a molecular weight of about 150,000 to 2,000,000, and 10-50 percent of a plasticizer,
- compounding the mixture by heating to about 300°-555°F with working until a uniform composition results, extruding said composition as a flat sheet and embossing to form a series of ribs thereon,
- Positioning one of the sheets on top of the other in a manner such that the ribs of the lower sheet contact the back of the upper sheet, and that the ribs are in 90° relationship to each other,



- Heat-sealing the ribs of the lower sheet to the back of the upper sheet to form a layered structure,
- Heating the surfaces of the layered structure to about 350°-500°F and winding the structure about a mandrel thus forming a bonded structure,
- Cutting structures in the desired shape from said bonded structure and extracting the plasticizer therefrom,
- Heating to about 240°-700°C to burn out the polyolefin and sintering to a temperature of 1,300°-1,400°C for about 2-6 hours,
- Cooling and recovering the heat exchanger structure.

3,854,187

APPARATUS FOR MAKING BEADED BELTS

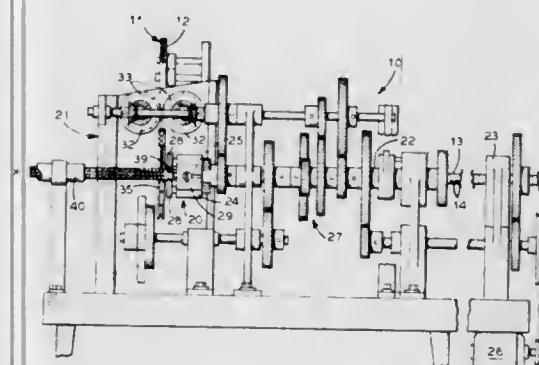
David Engelson, 67-70 Yellowstone Blvd., Forest Hills, N.Y. 11375

Filed July 30, 1973, Ser. No. 384,139

Int. Cl. B23p 19/04

U.S. Cl. 29-208 D

10 Claims



1. An apparatus for making beaded belts which comprises a first feed means operable to advance a length of belt stock helically along a given longitudinal path, and a second feed means operable to feed a string of beads to said belt stock for winding thereupon as said belt stock helically advances.

3,854,188

METHOD OF ASSEMBLING A CURVED ROLL-RACK

John J. Anderton; Max S. Dudzic, and Wilmer C. Whren, all of Oil City, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 265,379, June 22, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,292

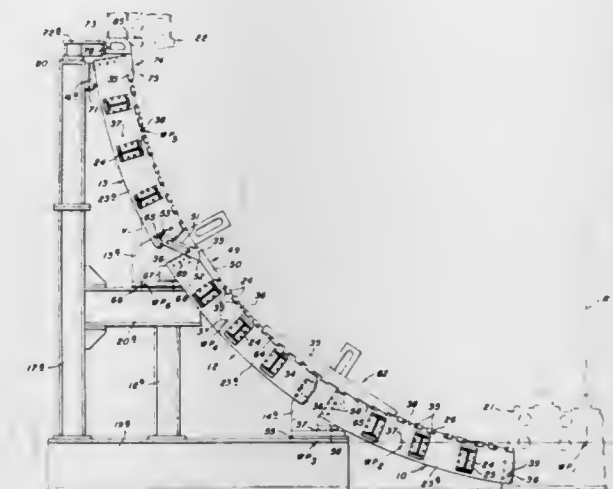
Int. Cl. B23q 17/00

U.S. Cl. 29-407

8 Claims

1. A method of assembling a curved roll-rack in relation to surrounding structure comprising pivotally mounting a lower

frame section at its exit end on a fixed body at the exit end of the rack, accurately positioning said lower frame section by aligning a predetermined accurately marked point thereon with a predetermined working point on the surrounding structure, roughly positioning a base member at the entry end of



said lower section, accurately positioning the base member with a gauge which engages reference pins on said lower section, and repeating the foregoing steps to position a middle section on said base member, another base member at the entry end of said middle section, and an upper section on said second-named base member.

3,854,189

METHOD OF MAKING A BONDED SILICON NITRIDE

ARTICLE HAVING PORTIONS OF DIFFERENT DENSITY

Andre Ezis, Plymouth; Michael U. Goodyear, Grosse Ile, and Karsten H. Styhr, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 20, 1973, Ser. No. 426,834

Int. Cl. B22f 7/06

U.S. Cl. 29-420

6 Claims

1. A method of making a duo density article of silicon nitride which comprises the steps of:

compacting a mixture consisting of from about 95 to 99.5 percent by weight silicon nitride particles and from about 5 to 0.5 percent by weight of a densification aid to at least 98 percent of theoretical density by use of heat and pressure thereby to form a first element of silicon nitride;

forming the general shape of a second element by a slip casting operation, said slip casting being accomplished from a slip containing silicon metal particles suspended in a vehicle;

sintering said second element in an inert atmosphere for a time and at a temperature sufficient to increase the strength of said second element, the inert atmosphere being formed of a gas which will not react with the silicon metal particles;

nitriding said second element in a nitriding operation so that said element is converted substantially to pure silicon nitride;

bringing a surface area of said first element into close association with a surface area of said second element; holding said associated surfaces of said first and said second elements so they do not move with respect to one another; and

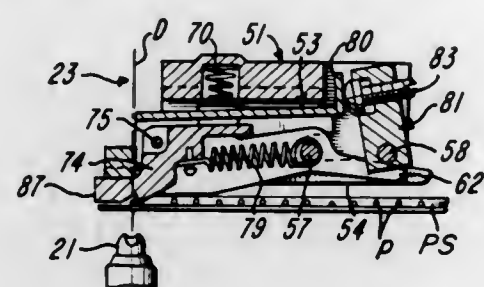
forming a bond between said associated surfaces of said first and said second elements by applying heat to both elements and pressure on one of said elements while the other of said elements is held thereby to force a portion of the silicon nitride forming said surface area of said one element into bonding relationship with said surface area of the other element.

3,854,190

PINNING METHOD AND APPARATUS

Robert William Stark, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
 Filed Sept. 20, 1973, Ser. No. 399,026
 Int. Cl. B23p 11/00; B25c 5/16
 U.S. Cl. 29—432.1

14 Claims



1. Method of pinning tags to merchandise, which method is practiced in a pinning machine having an anvil and a cooperable plunger and adapted to have a supply of tags and a supply of pins disposed in a generally parallel arrangement on a flexible pin strip, the approximate pin-to-pin distance being equal to P, wherein compensation is made for the absence of pins from N number of successive pin positions in the pin strip, a tag and merchandise being adapted to be disposed at a pinning position between the cooperable anvil and plunger, and the pin strip being fed toward a pin receiving position in alignment with the pinning position by a movable claw, the claw being controlled by a control member which can ride on a pin during the forward movement of the claw until the claw has reached the leading pin in the pin strip, comprising the steps of:

feeding a tag to the pinning position;
 driving a pin at the pin receiving position through the tag and merchandise while the anvil and plunger are in cooperation;
 and moving the claw in a pin strip feeding stroke through a distance of at least $(N+1)P$ but not less than $2P$ while the control member prevents engagement of the claw with any pin but the leading pin in the pin strip until the claw is in position to engage the leading pin to feed the pin strip a distance equal to P in the event the leading pin is a distance P from the pin receiving position or through a distance equal to $(N+1)P$ in the event the leading pin in the pin strip is a distance $(N+1)P$ from the pin receiving position.

3,854,191

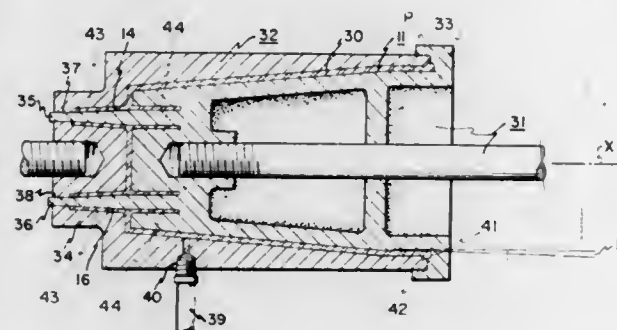
METHOD OF MAKING FLUID COLLECTION RECEPTACLES

Legrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah
 Continuation-in-part of Ser. No. 98,566, Dec. 16, 1970, Pat. No. 3,738,381. This application May 25, 1973, Ser. No. 363,849

Int. Cl. B23p 11/02

U.S. Cl. 29—453

4 Claims



4. A method of making a container structure comprising a container and a base closure member engaging the former, said method comprising the steps of: molding a container,

having an open end, in the manner of simultaneously molding through positive and negative molds a peripheral side wall, an upper closed end integral therewith, an exterior base snap bead, and plural, exteriorly extending, wholly-open port extensions integral with said upper closed end and communicating with the interior of said container, said peripheral side wall being assured of uniform wall thickness through such method step including mold-keying means passing through said port extensions for keying the mutual movement of said molds mutually together and apart; providing a closure base having an interior snap recess; and then fastening said closure base at said snap bead and recess in a liquid seal engagement with respect to said open end.

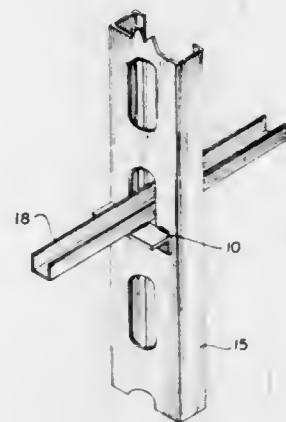
3,854,192

METHOD OF ATTACHING LATERAL BRACING TO METAL STUDDING

Theodore S. O'Konski, Wheeling, W. Va., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.
 Filed Aug. 3, 1973, Ser. No. 385,457
 Int. Cl. B23k 31/02

U.S. Cl. 29—470.5

1 Claim



1. A method of attachment of lateral bracing elements to metal studding of the perforated web type, comprising the steps of:

a. attaching in preliminary position against the web of a stud and in transverse relation to a perforation therein a clip having studding gripping means,
 b. extending a bracing element through the perforation and resting it on said clip,
 c. leveling the bracing element in a uniformly horizontal position,
 d. manually adjusting the clip to a level corresponding to the leveled position of the bracing elements,
 e. welding the clip to the studding in the position as determined in clause (d), and
 f. welding the bracing element to the clip.

3,854,193

METHOD OF PRODUCING COPPER CLAD ALUMINUM WIRE

Tetsuo Yamaguchi, Teruyuki Takayama, and Masao Hiderita, all of Tokyo, Japan, assignors to The Fujikawa Cable Works Limited, Tokyo, Japan

Filed Dec. 14, 1972, Ser. No. 314,912

Claims priority, application Japan, Dec. 27, 1971, 46-1255

Int. Cl. B21d 39/04

U.S. Cl. 29—473.9

5 Claims

1. A method of producing a copper clad aluminum wire comprising covering an aluminum core longitudinally with a copper strip in cylindrical form;
 facing the resulting seam of said copper strip and welding said seam together in a shielded atmosphere comprising an inert gas at a pressure greater than atmospheric pres-

3,854,195

METHOD OF MAKING AN INTRICATE FREE-FORM CAST METAL ART OBJECT

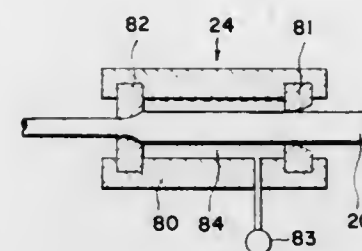
Thomas W. Landig, 1136 Westmoreland Cir., Walnut Creek, Calif. 94596

Filed Dec. 3, 1973, Ser. No. 421,097

Int. Cl. B22d 23/08

U.S. Cl. 29—527.5

19 Claims



reducing the diameter of said copper clad aluminum wire through a die having a half-approach angle of from 35° to 55° at a temperature below 200°C.

3,854,194

LIQUID INTERFACE DIFFUSION METHOD OF BONDING TITANIUM AND/OR TITANIUM ALLOY STRUCTURE AND PRODUCT USING NICKEL-COPPER, SILVER BRIDGING MATERIAL

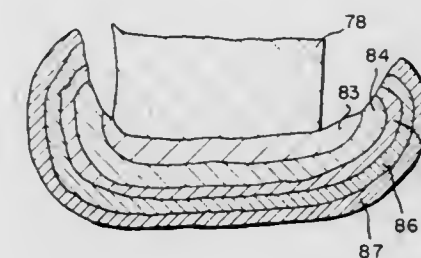
James R. Woodward, El Cajon, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 99,061, Dec. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 765,156, Oct. 4, 1968, abandoned. This application Aug. 16, 1973, Ser. No. 388,739

Int. Cl. B23k 31/02, 35/38

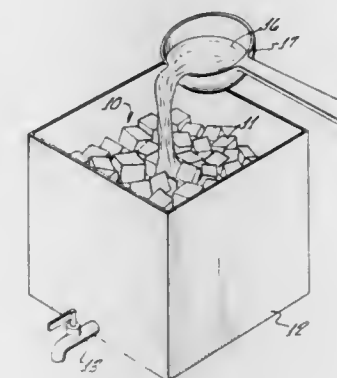
U.S. Cl. 29—494

24 Claims



1. The liquid interface diffusion method of bonding honeycomb core material to its facing sheets where said core and face sheets are made of titanium or titanium based alloy material which comprises the steps of:

depositing on the core edge surface sequentially as a laminate thereon layers of at least three metals to form a diffusion bridge material;
 placing together the faying surfaces to be bonded with said bridge material therebetween;
 subjecting said faying surfaces to sufficient positive pressure to maintain position and alignment for joining; and
 while the faying surfaces are being so held in a protective atmosphere, raising the temperature of the same to first cause an atomic diffusion to take place within the laminate of said bridge material and between said bridge material and the titanium, secondly to cause a melt of the eutectic alloy formed by said diffusion, and thirdly to maintain the temperature at a predetermined level above said melt level for a predetermined period of time after the eutectic melt solidifies to thereby dilute said bridge material and titanium in the region of the bond by solid state diffusion therebetween, said three metals of the laminate being nickel, copper and silver, said nickel and copper layers of the laminate being equal and consisting of from 76 to 90 percent of the total weight of the laminate.



1. A method of creating a unique three-dimensional metal art casting having a variety of protrusions and open spaces, which method comprises:

a. providing a bed consisting essentially of a multiplicity of pieces of ice,
 b. causing molten metal of relatively low melting point to flow through intervening regions between the pieces of ice in said bed, and
 c. simultaneously permitting said metal to solidify to thus form the unique metal art casting.

3,854,196

STACKED ELECTRODE CAPACITOR AND METHOD OF MAKING SAME

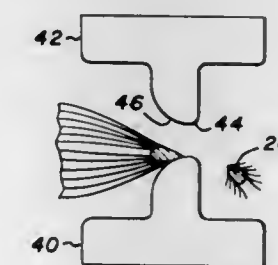
Noah S. Derrick, Lexington, and Jacob T. Zeigler, Cayce, both of S.C., assignors to General Electric Company, Owensboro, Ky.

Division of Ser. No. 246,069, April 20, 1972, Pat. No. 3,806,769. This application Sept. 24, 1973, Ser. No. 399,989

Int. Cl. B01j 17/00

U.S. Cl. 29—570

5 Claims



1. A method of constructing a capacitor comprising:

a. assembling a stack of foil electrodes having dielectric spacers therebetween so that the edges of preselected electrodes extend beyond one side of the stack while the remainder of said electrodes extend from another side;
 b. placing a terminal bar adjacent the foil edges protruding from one side of said stack; and
 c. pressing the electrode foil edges and the bar together to cause the foil edges, and the foil edges and the bar to frictionally engage and to laterally move relative to each other with an abrasive action to remove oxides and other surface materials from the edges and the bar so that the pressure will cause the foil edges to weld to said bar and to each other.

3,854,197

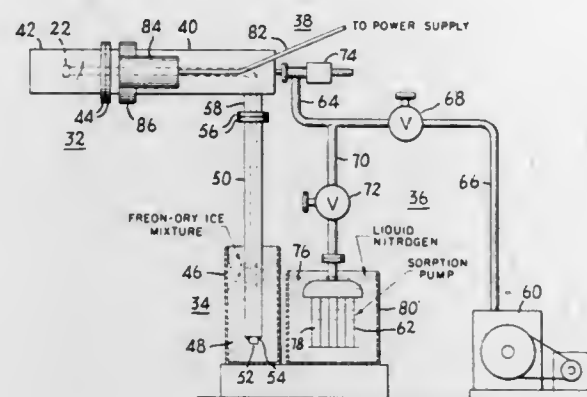
STABILIZATION OF RADIATION DETECTORS
 Sanford Wagner, Knoxville, Tenn., assignor to Ortec, Incorporated, Oak Ridge, Tenn.

Filed Aug. 9, 1972, Ser. No. 279,176

Int. Cl. B01j 17/00

U.S. Cl. 29—585

6 Claims



1. A method of stabilizing the full-energy peak efficiency of a semiconductor radiation detector comprising the steps of: placing the detector in a substantial vacuum; cooling the detector substantially to the temperature of dry ice; applying a reverse bias to the detector during the cooling to generate a reverse leakage current in the detector; maintaining the detector substantially at the temperature of dry ice and under reverse bias for a period of 2 to 8 hours until the reverse leakage current reaches a minimum value; and further cooling the detector substantially to the temperature of liquid nitrogen.

3,854,198

SEMICONDUCTOR ARRANGEMENT AND METHOD OF PRODUCTION

Winfried Schierz, Roth, Germany, assignor to Semikon Gesellschaft für Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany

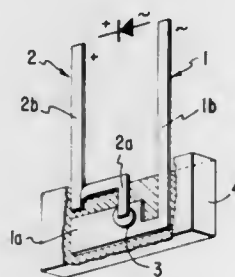
Continuation of Ser. No. 109,831, Jan. 26, 1971, abandoned, which is a division of Ser. No. 8,996, Feb. 5, 1970. This application July 2, 1973, Ser. No. 375,535

Claims priority, application Germany, Apr. 1, 1969, 1916554

Int. Cl. B01j 17/00

U.S. Cl. 29—588

8 Claims



1. A method of manufacturing semiconductor arrangements wherein semiconductor diode wafers are arranged in a plane and contacted between portions of associated conductors comprising the steps of:

producing, from a band of planar conductive material, a plurality of periodically repeating planar geometrically patterned structures of conductors each of which is connected to a longitudinally extending portion of said band of conductive material which serves as a transport strip; forming a plurality of clamp-type semiconductor wafer mountings within said structures by bending one of a pair of adjacent conductors so as to raise a portion thereof out

of the plane of said structure and displace said portion parallel to said plane and laterally in a direction parallel to the longitudinally extending portion so that said portion substantially maintains its original orientation with respect to said band of conductive material and overlaps the other of said pair of adjacent conductors, where the overlapping portions extend perpendicularly to the longitudinally extending portion, each of the bent conductors having a first section which is attached to said longitudinally extending portion of said band and extends perpendicularly therefrom, a second section which is attached to said first section and extends parallel to said longitudinally extending portion, and a third section which is attached at the end of the second section and extends perpendicular thereto, said third section forming the overlapping portion;

inserting a semiconductor wafer with the proper electrical orientation between the overlapping conductors of each of said clamp-type mountings; simultaneously processing all of said planar structures to provide a plurality of encapsulated semiconductor devices which are connected to said transport strip by means of portions of said conductors; and separating each of said semiconductor devices from said transport strip.

3,854,199

MANUFACTURE OF MAGNETIC TRANSDUCING HEADS
 Peter Charles Ridgway, Staines, England, assignor to International Computers Limited, London, England

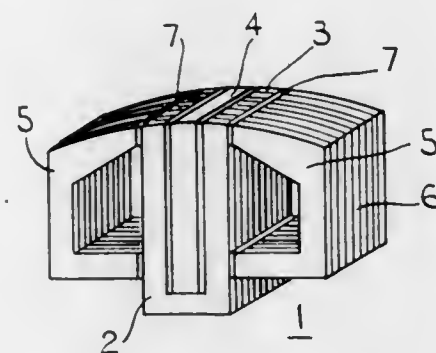
Filed Apr. 13, 1973, Ser. No. 350,981

Claims priority, application Great Britain, Apr. 15, 1972, 17477/72

Int. Cl. G11b 5/42

U.S. Cl. 29—603

3 Claims



1. A method of manufacture of a magnetic transducing head including the steps of providing a first member; providing a plurality of magnetic laminations each with an aperture therein, the apertures being aligned on a common axis; assembling the laminations on to the first member, the first member passing through the apertures of all the laminations; bonding the laminations to one another and to the first member to form an aligned stack; forming two flat parallel surfaces on opposite edges of the stack; forming an assembly by bonding two magnetic laminar C-shaped members, each terminating in a pair of co-planar surfaces, one to each of said flat surfaces of the stack with said co-planar surfaces of each C-shaped member being spaced from the respective flat surface to which it is bonded, the first member lying between the C-shaped members, the laminations of the stack and the laminations of the C-shaped members lying in parallel planes; removing material from the bonded assembly to form a face parallel to said common axis, the first member being at least partially exposed on the face so formed to produce a surface having two magnetic gaps respectively between the C-shaped members and the stack.

3,854,200

INTEGRATED CIRCUIT LEAD FRAME PACKAGE
 Horace Pops, Fort Wayne, Ind., and Barry C. Johnson, Pittsburgh, PA, assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Mar. 5, 1973, Ser. No. 338,360

Int. Cl. H01r 43/00

U.S. Cl. 29—628

8 Claims



1. A method for making an integrated circuit assembly of the type including at least one lead attached to at least one component by a conductive bond connection comprising the steps of:

fabricating said lead from a material having a shape memory characteristic; straining said lead to a first position; placing said lead in a position for eventual contact with a conductive bond; and heat treating said lead to effect said shape memory, thereby reversing the strain and permitting said lead to engage the conductive bond and be retained by said bond after the heat treatment.

3,854,201

SYSTEM FOR DISPENSING RAZOR BLADE CARTRIDGES

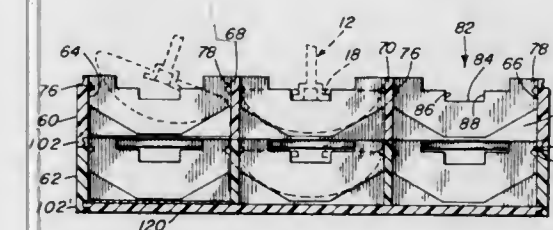
Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 270,138, July 10, 1972, Pat. No. 3,783,493, which is a continuation-in-part of Ser. Nos. 191,665, Oct. 22, 1971, Pat. No. 3,783,510, and Ser. No. 236,723, March 21, 1972, Pat. No. 3,785,051, and Ser. No. 258,682, June 1, 1972, abandoned. This application May 21, 1973, Ser. No. 361,921 The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

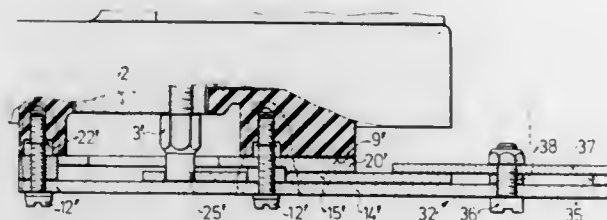
Int. Cl. B26b 21/22; A45d 27/24; B26b 21/24

U.S. Cl. 30—40.2

4 Claims



for eccentric rotation relative to said housing and accessible exteriorly of the latter, said rotatable member having a plurality of tapped bores of different diameters; a tool mountable on said housing and comprising at least one stationary component, and at least one movable component connected with and movable relative to said stationary component and provided with a slot; a plurality of projecting portions, all of said projecting portions being threaded and having different diameters



so as to be usable only selectively and in conjunction with a corresponding particular one of said bores, one of said projecting portions being threaded into the corresponding particular one of said bores fixed with said rotatable member for movement therewith and extending into said slot so as to impart periodic movement to said movable component; a mounting face located in the plane of movement of said projecting portion; and connecting means for connecting said stationary component to said mounting face.

3,854,204

SELF CONTAINED PRUNING MECHANISM

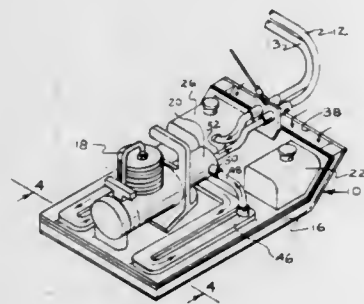
Adrian Gonzales, Jr., 1300 Graham Hill Rd., Santa Cruz, Calif. 95060

Filed Dec. 19, 1973, Ser. No. 426,066

Int. Cl. B26b 15/00

U.S. Cl. 30—228

11 Claims



I. A self contained, power operated device comprising a partially hollow sled, a motor mounted on the sled, a fluid pump having inlet and output ports and being mounted on the sled and powered by the motor, a first portion of the hollow sled being coupled to the pump to act as a fluid reservoir, a fluid actuated device, a mast assembly for supporting the fluid actuated device, the mast assembly having inner and outer coaxial tubes at least one of which is operatively connected to the fluid activated device, and control means for selectively providing a fluid path between the pump and the coaxial tubes such that one of the coaxial tubes is operatively connected to the pump, the coaxial tubes being rigidly interconnected at both at their ends and means for placing the coaxial tubes in compression and tension relative to each other.

3,854,205

HOSE CUTTING DEVICE

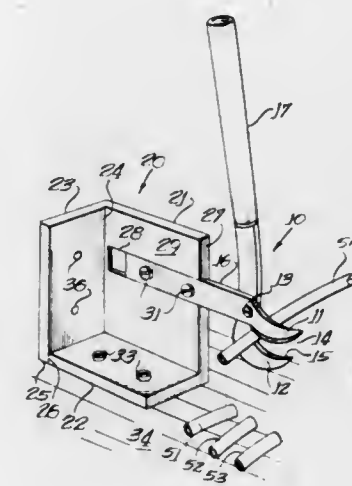
Jr. Boskus, 63 Turnage Trl., Carlile Highlands, Rt. No. 5, Mt. Home, Ark. 72653

Filed Apr. 18, 1973, Ser. No. 352,118

Int. Cl. B26b 13/00

U.S. Cl. 30—231

6 Claims



I. A hose cutting device adapted for use in cutting hoses of various lengths and diameters into selected lengths comprising:

- a shears having a pair of opposed cutting jaws pivotally connected together at a point rearwardly of the jaws for pivotal substantially parallel cutting type movement toward and away from each other;
- a mounting bracket including a support member adapted for supporting one of the cutting jaws in a stationary manner;
- a handle member attached to the other cutting jaw for operation thereof in a movable manner relative to the stationary cutting jaw;
- means securing the stationary cutting jaw to the support member of the mounting bracket;
- means adapted for securing the mounting bracket to a supporting surface;
- a substantially flat shaped vertically disposed stationary jaw support member having a top edge, a bottom edge, a front edge, and a back edge;
- a first substantially flat mounting base having a side edge connected to the bottom edge of the support member and projecting substantially perpendicularly outwardly therefrom in a horizontal plane, the first mounting base member including a front edge, a back edge, and an outermost projecting side edge;
- a second substantially flat mounting base member having a side edge connected to the back edge of the support member with a bottom edge connected to the back edge of the first mounting base member and projecting vertically in a plane normal to both the plane of the support member and the plane of the first mounting base member;
- a slot provided in the support member extending from the front edge of the support member and disposed substantially normal to the plane of the front edge of the support member, the slot adapted to receive therein a portion of the stationary jaw member in a manner fixedly supporting the stationary jaw member projecting forwardly of the front edge of the support member; and
- the combination of the two mounting base members providing a universal type of mounting bracket for the support member with the first mounting base member adapted for mounting generally to a horizontal support surface and with the second mounting base member adapted for mounting generally to a vertical support surface such that the shears may be positioned in any desired location for convenient hose cutting.

3,854,206

PIERCING OF SUCTION HOLES IN SANDING DISCS

Alma A. Hutchins, 49 N. Lotus Ave., Los Angeles, Calif. 91107

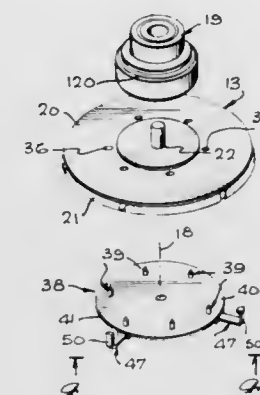
Division of Ser. No. 282,348, Aug. 21, 1972, This application

July 16, 1973, Ser. No. 379,210

Int. Cl. B26f 1/00

U.S. Cl. 30—368

8 Claims



I. For use with a portable sander having a power driven essentially circular backing structure which is adapted to carry an essentially circular abrasive sheet and contains a plurality of spaced suction openings through which air and abraded particles are withdrawn by suction from a work surface, a piercing tool comprising:

- a plate adapted to extend essentially transversely of a predetermined axis;
- a plurality of projections attached rigidly to said plate and projecting therefrom in a predetermined axial direction at locations spaced about said axis in a pattern corresponding to the pattern of said suction openings; said projections terminating in essentially sharp ends for piercing holes in said abrasive sheet upon movement relative thereto;
- a first locating element carried by said plate at the periphery thereof and projecting generally in said predetermined axial direction and then extending generally radially inwardly at a location axially beyond said ends of said projections in said predetermined axial direction to engage a peripheral recess in said backing structure beyond said abrasive sheet; and
- a second locating element carried by said plate at the periphery thereof and at a location offset circularly about said axis less than 180° therefrom; said second locating element projecting generally axially in said predetermined axial direction and then generally radially inwardly at a location axially beyond said ends in said predetermined axial direction to engage a second peripheral recess in said backing structure beyond said abrasive sheet.

3,854,207

ORTHODONTIC BRACKET WITH SPRING CLIP RETAINER MEANS

Alexander J. Wildman, Eugene, Oreg., assignor to Silverado Industries, Inc., Napa, Calif.

Filed Aug. 13, 1973, Ser. No. 387,908

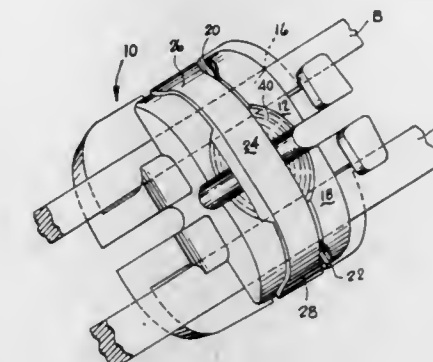
Int. Cl. A61c 7/00

U.S. Cl. 32—14 A

14 Claims

- I. An orthodontic bracket comprising,
- a base defining a pair of spaced, longitudinal channels, each of said channels having an opening for receiving at least one arch wire, said base further defining a pair of detents within opposed sides of said base, with a portion of said detents proximate to said channels extending further into said base than the remaining portion,
 - a U-shaped spring clip fitting about the bracket transversely adjacent to the opening of each of said channels, said clip having a pair of ears at the clip ends of a dimension less than the co-linear dimension of said detents for engaging a portion of the detents, said spring clip having spring

force tending to push said ears together so that said spring clip closes said channel openings and permits arch wire



release when said spring clip ears are moved within said detents to respective positions above said channel openings.

3,854,208

DENTAL FACE BOW ASSEMBLY

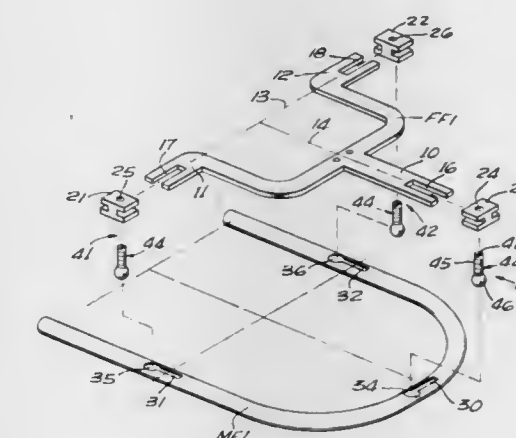
Gene W. Arant, 2444 Jupiter Dr., Huntsville, Ala. 90046

Filed Jan. 19, 1973, Ser. No. 324,957

Int. Cl. A61c 9/00

U.S. Cl. 32—19

13 Claims



- I. A dental face bow assembly comprising:
- a rigid fixed frame adapted to be supported from a mouth-piece held in the mouth of a patient, said fixed frame having left and right lateral arms and a forward arm;
 - a unitary, rigid generally U-shaped movable frame adapted to extend around the face of the patient, having means on its ends for aligning both of its ends, concurrently, with the hinge axis of the patient's jaws as represented by a pair of reference points on the patient's face;
 - an orbital pointer carried by one of said frames and adapted to be aligned to a third reference point on the patient's face;
 - three individually adjustable support means associated with corresponding ones of said arms for supporting said movable frame at three corresponding support locations whereby said movable frame may be supported in a desired alignment position relative to said three reference points; and
 - each of said support means including an elevation screw that is manually operable for controlling the elevation of said movable frame at the associated support location.

3,854,209

IMPRESSION SYRINGE

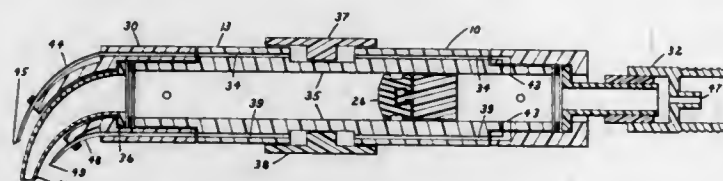
Mark E. Franklin, 29 Kaster Dr., Freehold, N.J. 07728, and James R. Schmidt, 33 Birmingham Dr., Englishtown, N.J. 07726

Filed June 23, 1972, Ser. No. 265,731

Int. Cl. A61c 5/04

U.S. Cl. 32—60

4 Claims



1. In an improved device for use in the deposition of impressionable material into a desired site during the fabrication process, the latter material being subsequently used for the casting of at least one synthetic tooth, said device having: a) a hollow housing having a first and second end of open construction, said housing containing a plunger longitudinally slideable in opposed directions; b) said first end adapted to receive interchangeable heads, one of said heads for use in the suction loading of impressionable material into said housing prior to use, and the other head for use in the ejection of said impressionable material from said housing during such fabrication; and c) said second end adapted with interchangeable fittings, one of said fittings for use in communication with a suction source during loading, and the other of said fittings for use in communication with a pressure source of the gaseous variety during said fabrication, the improvement consisting essentially of: valving means of a manual nature provided on said housing for control of the duration and intensity of air from a source to said site, said flow of air for use in the displacement of the peripheral tissue circumscribing said site, said valving means including at least one longitudinal passageway integral to the side of said housing for said air-flow, the latter air-flow being controlled by a longitudinal valve within said passageway.

3,854,210

MATRIX AND RETAINER THEREFOR

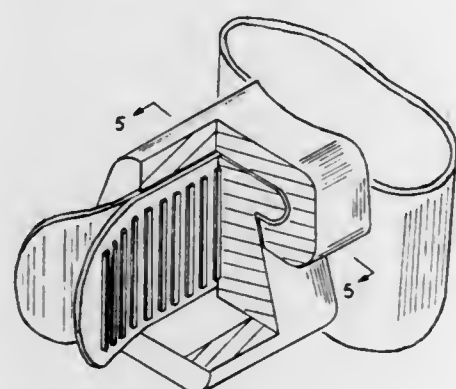
Mark E. Franklin, 29 Kaster Dr., Freehold, N.J. 07728, and James R. Schmidt, 33 Birmingham Dr., Englishtown, N.J. 07726

Filed Jan. 11, 1973, Ser. No. 322,721

Int. Cl. A61c 5/12

U.S. Cl. 32—63

2 Claims



1. The combination of a matrix and retainer adapted for use in the procedure of restoring a tooth, said combination consisting of:

a matrix comprising an elongated body including a tooth engaging portion and two end portions, said end portions adapted to be held together in longitudinal mating relationship, each of said end portions including a plurality of outwardly projecting ribs, and

a retainer removably secured to the end portions of the matrix, said retainer comprising an essentially triangular shaped body including a base and first and second up-standing arms, said first arm having a hook projecting inwardly toward the center of the retainer and said second arm having an outwardly projecting flange retained within said hook portion to removably hold the upper ends of the arms together, said retainer further including locking means in the form of projections located on the inside of each of said arms, said locking means gripping said matrix between said ribs whereby relative movement between the retainer and the matrix is prevented.

3,854,211

METHOD AND APPARATUS FOR MAKING AN UNDERWATER PIPELINE CONNECTION

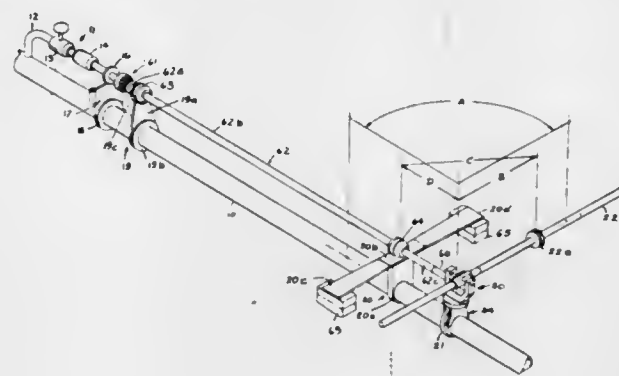
John P. Oliver, Alfred W. Wedel, and Paul T. Priesmeyer, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Division of Ser. No. 30,538, April 21, 1970, Pat. No. 3,718,004. This application Aug. 10, 1972, Ser. No. 279,685

Int. Cl. G01b 3/38

U.S. Cl. 33—1 H

6 Claims



1. Apparatus for use in measuring the angular relationship of a first pipeline with respect to a second pipeline when said second pipeline is laid across the first pipeline at an underwater location, said apparatus comprising a first member, means for connecting the first member to the first pipeline, a second member connected to the first member for rotation with respect thereto about an axis generally perpendicular to the axis of the first pipeline, said second member having means thereon rotatable into a position to receive a portion of the second pipeline when said second pipeline is laid across the first pipeline, and means for locking the first and second members against relative rotation when said second member is so positioned, the means connecting the first member to the first pipeline being releasable to permit said first and second members to be raised to a position for observation of their relative rotative positions.

3,854,212

FOOT MEASURING DEVICE

Robert A. Rose, 7325 Choctau Rd., Palos Heights, Ill. 60463

Filed Mar. 9, 1970, Ser. No. 17,362

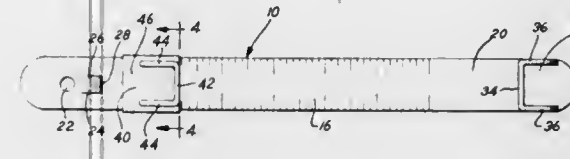
Int. Cl. A43d 1/02

U.S. Cl. 33—3 A

5 Claims

1. A foot measuring device comprising, in combination, an elongated resilient stage having marking indicia on one surface thereof, a buttress formed integral with one end of the stage, a keeper formed integral with the stage adjacent to the end opposed to the end having the buttress, said keeper having a sloped wall and having a scarp, said sloped wall of the keeper facing away from the buttress, said scarp of the keeper facing the buttress, a slide moveably mounted on the stage between the keeper and the buttress, said slide having a resilient saddle engageable with the stage, said saddle having a base adjacent to the stage and being cooperative with the marking indicia on the stage, a pair of opposed side walls formed integral with the

base and adjacent to opposite elongated sides of the stage, and an ear formed integral with each of the side walls and extending toward the other ear, the distance between the base and each of the ears is less than the height of the stage plus the maximum height of the keeper for holding the slide between



the keeper and the buttress, said distance is sufficiently great to allow the saddle to be forced along the sloped wall of the keeper to deform temporarily the saddle and the stage to allow the saddle to pass over the keeper for slideably locked assembly of the slide and the stage.

3,854,213

ELLIPSE DRAWING COMPASS

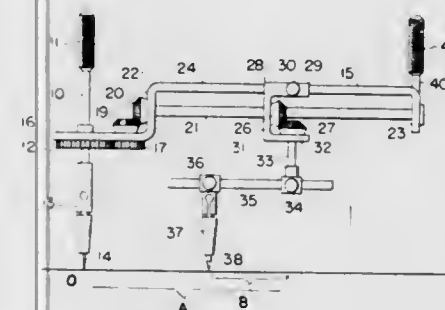
Roy Jesse Armitt, 314 St. George St., Toronto, Ontario, Canada

Filed Feb. 12, 1974, Ser. No. 441,755

Int. Cl. B43I 11/04

U.S. Cl. 33—30 G

1 Claim



1. A compass for drawing ellipses comprising, in combination, a center post having a first handle at its upper end and a pin at its lower end; a first spur gear fixed to said center post; an arm of flat stock having a centrally disposed end pivotally mounted on said center post above said first spur gear and a free end having an inner vertical portion bent upward from said centrally disposed end, a horizontal portion bent outward from the top of said inner vertical portion, and an outer vertical portion bent downward from said horizontal portion; a first shaft extending through and being journaled in said centrally disposed end of said arm; a second spur gear mounted on said first shaft below the centrally disposed end of said arm and meshing with said first spur gear, said second spur gear having a pitch diameter one half that of said first spur gear; a longitudinal shaft journaled in said inner and outer vertical portions below said horizontal portion of said arm; a first set of meshing first and second miter gears, said first miter gear being mounted on said longitudinal shaft and said second miter gear being mounted on said first shaft above the centrally disposed end of said arm; a downward extending second vertical shaft; a second set of meshing third and fourth miter gears, said third miter gear being slidably mounted on said longitudinal shaft; a bracket having a top flange slidably disposed about said horizontal portion of said arm, clamping means on said top flange to lock said bracket along said horizontal portion of said arm, a vertical back engaging said third miter gear holding said third miter gear in mesh with said fourth miter gear, and a horizontal foot extending from said vertical back under said longitudinal shaft and said top flange, said downward extending second vertical shaft being journaled in said horizontal foot with said fourth miter gear being mounted on said vertical shaft; a drawing element; a beam; a first clamp adjust-

ably fixing said beam to said second vertical shaft; a second clamp fixing said drawing element along said beam an adjustable distance from said second vertical shaft; and a second handle at the free end of said arm so that, when said first handle is held and said arm is swung through 360° by said second handle, said gears rotate said second vertical shaft twice relative to said arm and said drawing element scribes an ellipse.

3,854,214

GUIDE FOR SEVERING SHEET MATERIAL

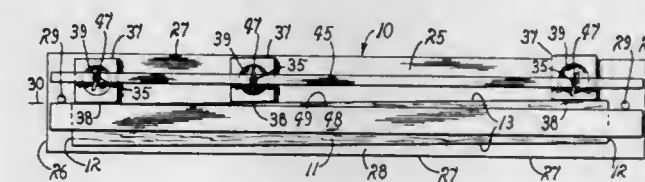
James H. Crockett, 1442 N. First Ave., Fresno, Calif. 93728

Filed Aug. 20, 1973, Ser. No. 389,699

Int. Cl. B43I 13/00

U.S. Cl. 33—80

4 Claims



1. A guide for severing sheet material comprising a sheet material receiving platform; pegs secured on the platform in spaced relation defining a line of reference on the platform; a guide plate, having a material abutting edge, positioned in rested engagement with the platform laterally disposed with respect to said line of reference; a pair of second guide plates, having material abutting edges, positioned in rested engagement on the platform; means for securing the material abutting edges of the guide plates in selected positions with respect to said line of reference, said securing means including a cross bar mounted on the platform for adjustment to and from binding engagement with the guide plates; and an elongated sheet material engaging plate, having a knife guiding straight edge, positionable on the work surface with the straight edge thereof engaging the pegs.

3,854,215

MULTIPLANAR SENSOR AND CONTROL SYSTEM FOR USE IN ROLL FORMING MACHINES

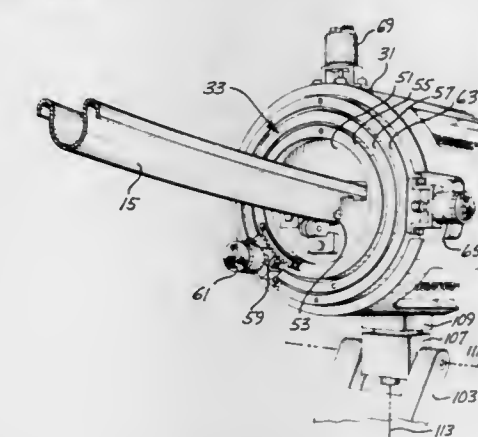
Gene B. Foster, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 27, 1973, Ser. No. 383,374

Int. Cl. G01b 5/20, 7/28

U.S. Cl. 33—174 L

14 Claims



1. A multiplanar sensor suitable for use with a roll forming machine comprising:

a housing having a longitudinal axis; an end plate mounted in said housing so as to be freely movable in at least one plane, said end plate including an orifice; a first sensor mounted so as to sense the movement of said end plate in said at least one plane; and, mounting means for mounting said housing with respect to said roll forming machine in a manner such that a part

exiting from said roll forming machine passes through said housing and said orifice so as to vary the position of said end plate in accordance with the curvature of the part.

3,854,216

DISC BRAKE TOOL

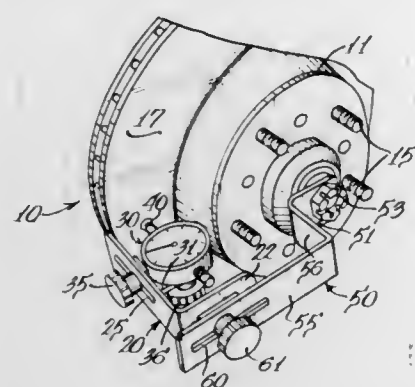
Charles L. Mosher, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed May 14, 1973, Ser. No. 360,301

Int. Cl. G01b 3/38

U.S. Cl. 33—181 AT

9 Claims



1. A disc brake tool for checking a disc brake rotor for thickness variations and lateral run-out comprising, a gauge arm mountable to a spindle supporting said rotor, a gauge leg carrying an indicator gauge, means on said gauge leg coaxing with said gauge arm to mount the gauge leg and indicator gauge in position to check lateral run-out, and additional plane establishing means on said gauge leg to position the gauge leg and indicator gauge independently of the gauge arm with the gauge leg parallel to a face of the brake rotor for checking the rotor for thickness variations.

3,854,217

ELEVATION ADJUSTMENT MECHANISM FOR ARCHERY BOW SIGHTS

Gerald I. Killian, Portland, Oreg.

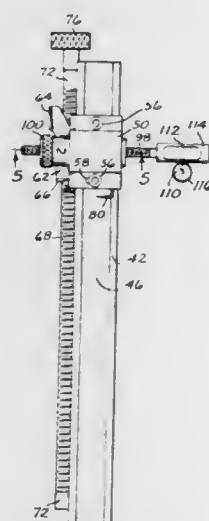
Continuation of Ser. No. 263,419, June 16, 1972, abandoned.

This application Mar. 18, 1974, Ser. No. 451,944

Int. Cl. F41g 1/46

U.S. Cl. 33—265

4 Claims



1. Elevation adjustment mechanism for an archery bow, comprising:

- a. an elongated base,
- b. a sight support mounted on the outer surface of the base for movement longitudinally thereof and supporting a sight disposed laterally of the base,
- c. an elongated micrometer screw mounted on the outer surface of the base and spaced from the sight support for

rotation about an axis parallel to the line of movement of the sight support,

- d. a latch member mounted on the sight support having a screw-engaging portion movable between an inoperative position disengaged from the screw for movement of the sight support freely along the base and an operative position engaging the screw for movement of the sight support along the base by rotation of the screw, and
- e. base mounting means including
 1. an elongated arm secured at one end substantially normal to the base intermediate the ends of the base and spaced from the sight support, latch member and screw for unobstructed movement of the latch member, rotation of the screw and movement of the sight support between the opposite ends of the base,
 2. a mounting plate mounting the arm for longitudinal adjustment of the arm relative to the plate, and
 3. means for attaching the mounting plate to an archery bow with the arm extending alongside the bow substantially parallel to the line of sighting of the bow, whereby longitudinal adjustment of the arm relative to the mounting plate effects adjustment of the distance between the sight and the eye of an archer, and with the longitudinal axis of the base disposed substantially parallel to the plane of the bow.

3,854,218

PLUMB BOB AND LEVEL

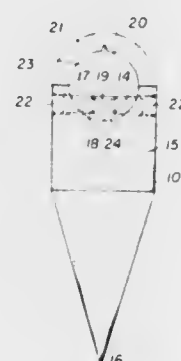
Harry Cohen, New York, N.Y., assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Apr. 14, 1972, Ser. No. 244,103

Int. Cl. G01c 15/10, 9/32

U.S. Cl. 33—358

1 Claim



1. An improved plumb bob for obtaining accurate determinations of the true vertical point under the point of support of the attached plumb line under conditions which prevent the plumb bob from coming to a static rest position, consisting of

- a. plumb bob body with means to attach a line directly above the vertical axis of said body, said body being pointed at its nethermost point on said axis, with
- b. a level indicating device incorporated in said plumb bob body visible from the side or from above the body when suspended by the attached line, said level indicating device indicating the level position when the suspended plumb bob body is at the static rest position, in which the level indicating device consists of a sealed tube containing a liquid and a bubble of air, said tube of the level indicating device being mounted in the upper portion of the plumb bob body, with the longitudinal axis of the tube being perpendicular to the vertical axis of the suspended plumb bob body, with a
- c. handle of circular shape fastened to the upper surface of the body so as to project above the upper surface of the plumb bob body, the undersurface of said handle being notched at its central point directly above the center of gravity of the plumb bob body in the suspended state, with the level indicating device installed parallel to the axis of said handle, so that a flexible line may be attached

to the plumb bob handle by being looped through the notch of the handle, said notch attachment point ensuring that the level indicating device will indicate the level position when the plumb body is suspended from the attached flexible line in the static position.

3,854,219

ELECTRONIC DRYER

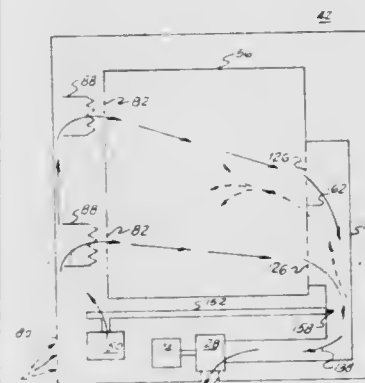
James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 18, 1973, Ser. No. 370,863

Int. Cl. F26b 3/34

U.S. Cl. 34—1

9 Claims



1. An electronic fabric dryer comprising:

- a. a cabinet having a microwave impermeable drying chamber therein for accommodating fabrics to be dried;
- b. generating means including a magnetron for producing microwave energy at a predetermined ultra-high frequency;
- c. air circulating means associated with said drying chamber for circulating a stream of air therethrough;
- d. a conduit coupling said circulating means with said drying chamber thereby serving as an air duct, said conduit also serving as a waveguide to conduct said microwave energy to said drying chamber;
- e. an air inlet disposed upstream of said magnetron such that said air stream serves to cool said magnetron while said magnetron serves to preheat said air stream;
- f. a heat source disposed in said air stream upstream of said drying chamber for further heating said preheated air stream before it enters said drying chamber thereby serving to accelerate the drying process;
- g. output means coupling said magnetron with said conduit for transmitting energy from said magnetron to said conduit, whereby moisture from said fabrics is heated and vaporized by said microwave energy and by said preheated air stream and is carried from said drying chamber by said air stream; and
- h. control means associated with said generating means and said heat source, the control means being responsive to the moisture content of said fabrics to interrupt the transmission of microwave energy into said drying chamber and to interrupt the supply of heat to said air stream when said fabrics have reached a predetermined degree of dryness.

3,854,220

METHOD AND APPARATUS FOR CONTINUOUSLY DRYING WET NON-HYGROSCOPIC SURFACES OF SHEET MATERIAL

Morio Yamaguchi, Tokyo, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

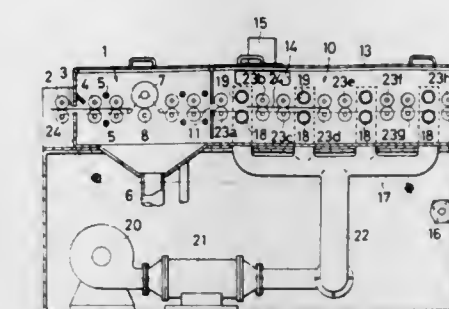
Filed June 22, 1973, Ser. No. 372,755

Claims priority, application Japan, July 10, 1972, 47-68804

Int. Cl. F26b 3/00

U.S. Cl. 34—9

8 Claims



1. An apparatus for continuously drying wet non-hygroscopic surfaces of a sheet material, comprising:

- a. a housing provided with an inlet and an outlet for said sheet material to be dried,
- b. plural pairs of squeeze rolls provided in said housing and juxtaposed in the conveying direction of said sheet material, said squeeze rolls being coated with elastic, liquid non-repellent material, and
- c. hot air supply pipes each being disposed between the adjacent pairs of squeeze rolls with hot air spouts opening in opposition to the respective squeeze rolls along the substantially entire length of the squeeze rolls.

3,854,221

APPARATUS AND METHOD FOR CONTINUOUS DRYING OF LAUNDRY GOODS

Frederick W. Grantham, 600 S. Lairport St., Santa Monica, Calif. 90245

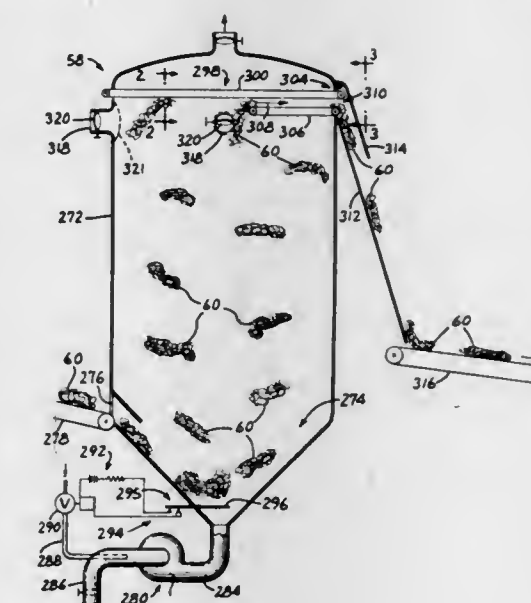
Continuation-in-part of Ser. No. 16,318, March 4, 1970, Pat. No. 3,693,382. This application Sept. 21, 1972, Ser. No.

290,863

Int. Cl. F26b 3/10

U.S. Cl. 34—10

10 Claims



1. A method of continuously drying laundry goods, including the steps of:

- a. continuously introducing the goods into a vertically oriented container;

introducing heated air at the bottom of the container and forcing the air upwardly therein and thereby raising the goods, and so continuously raising them higher as the goods become progressively drier and lighter; raising only those goods which are sufficiently dry to warrant removal to a predetermined region adjacent the top of the container; and continuously removing the dried goods from said region adjacent the top of the container by physically engaging said goods and conveying them out of the container.

3,854,222

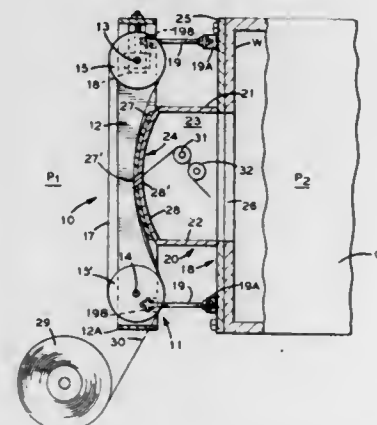
METHOD AND APPARATUS FOR SEALING THE INTERFACE OF ZONES HAVING DIFFERENT ENVIRONMENTAL CONDITIONS WITH AN OPENING IN THE INTERFACE FOR PASSING MATERIAL BETWEEN THE ZONES

Robert M. Lesh, 26 Old Albany Port Rd., Newburgh, N.Y. 12550, and Eugene T. Woodberry, Jr., 131 Plainsboro Rd., Cranbury, N.J. 08512

Filed Aug. 10, 1973, Ser. No. 387,432

Int. Cl. F26b 5/04

U.S. Cl. 34-15



1. Apparatus for subjecting material to successive environmental conditions comprising a chamber maintained internally thereof at an environmental condition different from the environmental condition externally thereof, said chamber including a wall portion formed with an opening therein for passing said material therethrough, said wall portion being arcuate to provide a convex outer surface, means for sealing the opening in said wall portion, said sealing means comprising a flexible member for overlying and pressing said material against the convex surface portion of said wall portion, and means for tightly conforming said flexible member to said convex surface along areas of said convex surface extending from opposite sides of said opening.

3,854,223

MOLECULAR MODELS FOR NUCLEIC ACIDS

Charles Wesley Dingman, II, 10113 Bevern Ln., Potomac, Md. 20854

Filed Nov. 26, 1973, Ser. No. 419,082

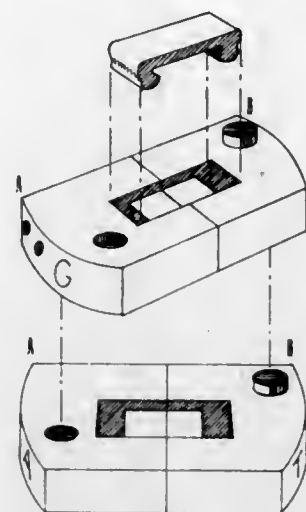
Int. Cl. G09b 23/20; A63h 33/08

U.S. Cl. 35-18 A

1 Claim

1. Molecular models of mononucleotides for use in teaching and research consisting of blocks having two configurations of such a design that (a) pairs consisting of one block of each of the two configurations may be held together firmly in horizontal pairs by easily applied clips to illustrate hydrogen-bonded nucleotide pairs having opposite polarity at a scale of either 1mm to 1 A. or 5mm to 1 A.; (b) many blocks of the same configuration may be snapped easily together by means of pairs of magnetic discs embedded in the blocks and then coupled more strongly, if desired, by means of connecting pins to illustrate semi-flexible, single-stranded polynucleotides to the same scales as referred to in part (a); and (c) many pairs

of blocks (consisting of one block of each configuration) may be snapped easily together in vertical arrays (as described in (b) above but with each pair rotated 36° in a right-handed



3,854,224

DEVICE FOR HEATING AND DRYING COPY MEDIUMS

Keizo Yamaji; Hajime Katayama; Toru Takahashi, all of Tokyo; Shoji Ohashi, Yokohama, and Yuji Nishigaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

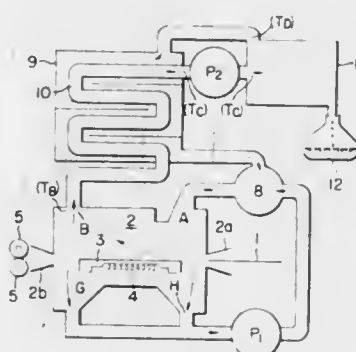
Filed June 11, 1973, Ser. No. 368,532

Claims priority, application Japan, June 16, 1972, 47-60253; June 16, 1972, 47-60254; June 16, 1972, 47-60255

Int. Cl. F26b 21/06

U.S. Cl. 34-77

20 Claims



1. A device for heating and drying copy mediums in a liquid development type copying machine, comprising:

a heating-drying chamber having an inlet and an outlet for receiving and discharging copy mediums, and including means for heating and drying copy mediums wet with developing liquid;

suction means for sucking air containing developing liquid vapor produced in said heating-drying chamber and for reducing the pressure in said chamber below the ambient air pressure surrounding said machine wherein said suction means comprises a first suction portion for sucking the part of the developing liquid vapor containing air which is at a higher vapor pressure and a second suction portion for sucking the part of said air which is at a lower vapor pressure;

cooling-liquifying means for cooling and liquifying the sucked air containing said developing liquid vapor;

means for collecting the developing liquid liquified by said cooling-liquifying means;

a passageway for circulating air between said heating-drying chamber and said cooling-liquifying means; and means for blowing the cooled air provided by said cooling-liquifying means through said passageway and into said heating-drying chamber.

3,854,225

ROTATING TANK DEMONSTRATOR

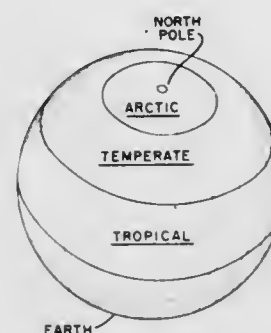
Robert L. Wyener, Casselberry, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1973, Ser. No. 353,879

Int. Cl. G09b 23/06

U.S. Cl. 35-19 R

2 Claims



1. In a training device for demonstrating the effects of Coriolis and the interrelationships of ocean and atmospheric circulation.

three concentric tanks formed by three concentric walls to provide an inner, an intermediate and an outer tank with a common axis of rotation for holding three liquid masses, means for rotating said tanks and liquids about said common axis of rotation,

the inner of said walls being formed with ports selected in number and size to provide a desired mixing of liquids between adjacent tanks when said tanks are rotated, means providing color to said separate tanks of liquid, and

heating and cooling means connected to said tanks to provide said inner, intermediate and outer tanks respectively with cold water representative of arctic seas, temperate water representative of the temperate seas and warm water representative of tropical waters to provide, when said tanks are rotated, the varied swirl patterns of the Coriolis effect induced by liquid circulation movements and currents of warm water intermixing with more dense cold water.

3,854,226

ELECTRONICALLY OPERATED MACHINE FOR TEACHING MATHEMATICS

David L. Divine, and Darrell L. Vines, both of P.O. Box 16305, Lubbock, Tex. 79490

Filed Aug. 20, 1973, Ser. No. 389,698

Int. Cl. G09b 19/02

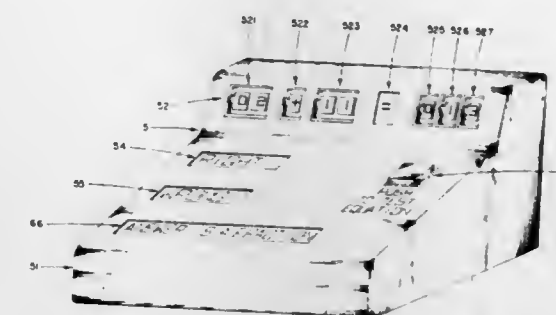
U.S. Cl. 35-31 C

8 Claims

1. A teaching machine for teaching mathematic tables to a student and for aiding the student to memorize the table COMPRISING:

a a case,
b four memories in the case,
c a function switch means for enabling one of said memories,
d a first number switch means for addressing the enabled memory,
e a second number switch means for addressing the enabled memory,
f an answer switch means for generating a student answer,
g a comparator in the case,

h a display means on the case for displaying the results of the comparator,
hh said display means including the following indications



i right
ii wrong
iii the answer is a fraction,
j said comparator connected to said enabled memory, said answer switch means, and said display means.

3,854,227

FOOTWEAR HAVING A TWO-COLOR RUBBER SOLE

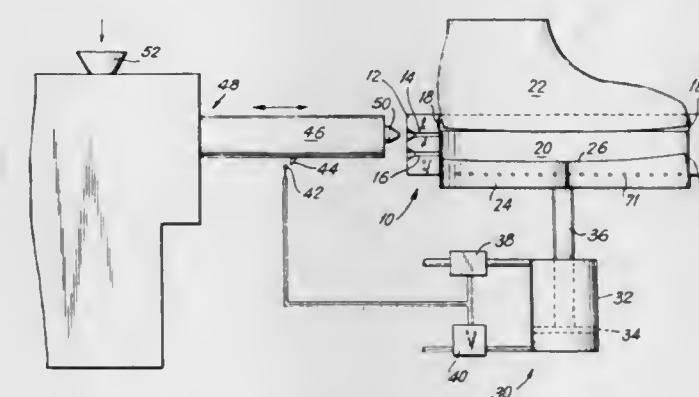
John F. Borisuck, and Reuben A. La Chall, both of New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 61,457, Aug. 5, 1970, Pat. No. 3,751,200, which is a division of Ser. No. 729,570, May 16, 1968, Pat. No. 3,608,004. This application May 4, 1973, Ser. No. 357,432

Int. Cl. A43b 1/10

U.S. Cl. 36-4

2 Claims



1. In an article of footwear having an upper and a two-color rubber sole; the improvement wherein said sole comprises

A. a rubber midsole-foaming component vulcanized to said upper; and
B. a rubber outsole component vulcanized to said midsole-foaming component;
C. said midsole-foaming component consisting of
i. a midsole portion underlying and vulcanized to the inwardly lasted bottom margin of said upper, and
ii. a foaming portion, said foaming portion having
a. a first peripheral lip-shaped section extending upwardly relative to said midsole portion and vulcanized along its inner surface to the bottom side portion of said upper, and
b. a second peripheral lip-shaped section extending downwardly relative to said midsole portion and having a downwardly and outwardly slanted inner surface;
D. said outsole component being disposed within the confines of said second lip-shaped section of said foaming portion and having a correspondingly downwardly and outwardly slanted peripheral surface, said outsole component being vulcanized along said slanted peripheral surface thereof to said slanted inner surface of said second lip-shaped section and along the top surface of said out-

sole component to the bottom surface of said midsole portion, said outsole component having a thickness substantially equal to the height of said second lip-shaped section, and no part of the rubber of said outsole component showing as a blemish on the outer surface of said foxing portion; and

E. said midsole-foxing component having a higher modulus than said outsole component.

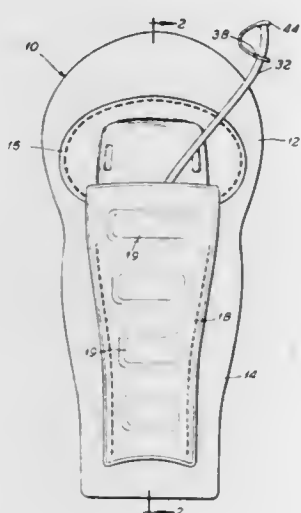
3,854,228

ATHLETIC ARMOR AND INFLATABLE BAG ASSEMBLY
Robert E. Conroy, 505 S. Delphia, Park Ridge, Ill. 60068
Continuation-in-part of Ser. No. 249,668, May 2, 1972, Pat. No. 3,784,985. This application Nov. 9, 1973, Ser. No. 414,183

Int. Cl. A43b 19/00

U.S. Cl. 36-71

7 Claims



1. A unitary foot inflatable member for use with a substantially rigid foot gear, including:
 - a pair of flexible plastic side walls forming an air chamber therebetween, said side walls being sealed along their peripheral edges, said side walls having a configuration and dimension sufficient to cover a heel portion and substantial side foot portions of the user,
 - an air-fill means communicating with said air chamber, and means to seal said air-fill means to retain air blown into said air chamber of said inflatable member to allow said inflatable member to be inflated when positioned within said foot gear, and
 - said inflatable member having upper and lower edges, said inflatable member being elongated with a central heel portion and side foot portions, said side foot portions being spaced from each other in a preset arched configuration, and
 - a linking member connected at the opposite ends to the lower edge of the side foot portions so that the linking member fits against the bottom of the heel, whereby the inflatable member assumes said preset arched configuration.

3,854,229

LAMINATED LABEL OR SIMILAR ARTICLE
Burton D. Morgan, Hudson, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio
Continuation-in-part of Ser. No. 8,508, Feb. 4, 1970, abandoned. This application Aug. 13, 1971, Ser. No. 171,511

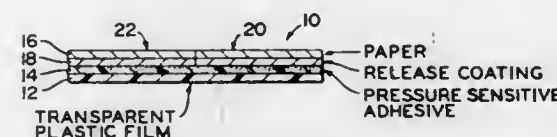
Int. Cl. C09j 7/04

U.S. Cl. 40-2

2 Claims

1. An initially complete three layer laminated label comprising:
 - a first or surface layer of transparent plastic film,
 - a second layer of transparent pressure sensitive adhesive on one surface of said film and coextensive therewith, and permanently bonded thereto and

a third layer of paper having a release coating on the entire area of a first surface thereof applied to said adhesive layer and coextensive therewith with said release coating being adjacent said adhesive layer, said paper layer having a removable center portion and a removable separate outer portion whereby said outer portion can be removed to expose the peripheral part of the adhesive layer, said



center portion being adaptable to having data applied on an exposed second surface thereof and, when so applied, the center portion being removable to be reapplied to the adhesive layer with the data bearing surface adjacent said adhesive layer and visible through said first and second layers, said second surface of said center portion being initially exposed in the label for receiving printing thereon.

3,854,230
PERPETUAL CALENDAR

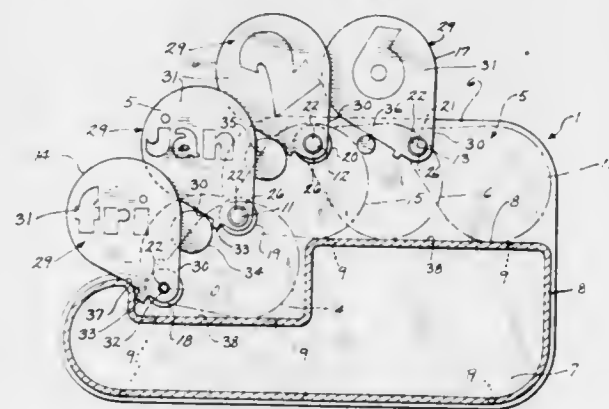
Dennis A. Knaus, Germantown, and Richard E. Wysocky, Grafton, both of Wis., assignors to Jos Schlitz Brewing Company, Milwaukee, Wis.

Filed Sept. 4, 1973, Ser. No. 393,788

Int. Cl. G09d 3/00

U.S. Cl. 40-107

5 Claims



1. A perpetual calendar, comprising a first panel having a first upper portion and a first lower portion including a supporting projection, a second panel having a second upper portion spaced from said first upper panel portion and a second lower portion connected to said supporting projection of said first panel, a first, second and third pivot assemblies connected in spaced relationship to said first upper panel portion, a first group of indicia bearing members each displaying a different units digit or the days utilized to represent the month rotatably connected to said first pivot assembly having means for selective independent rotation between a first position wherein said selected members are masked by said second upper panel portion and a second position wherein a first selected member from said first group is displayed, a second group of indicia bearing members each displaying a different tens digit utilized to represent the days of the month rotatably connected to said second pivot assembly having means for selective independent rotation between a first position wherein said selected members are masked by said second upper panel portion and a second position wherein a second selected member from said second group is displayed, and a third group of indicia bearing members each displaying a different month of the year rotatably connected to said third pivot assembly having means for selective independent rotation between a first position wherein said selected members are masked by said second upper panel portion and a second position wherein a third selected member from said third group is displayed.

position wherein a third selected member from said third group is displayed, said selected first, second and third displayed members being adjacently located and providing in combination a preselected calendar date.

3,854,231

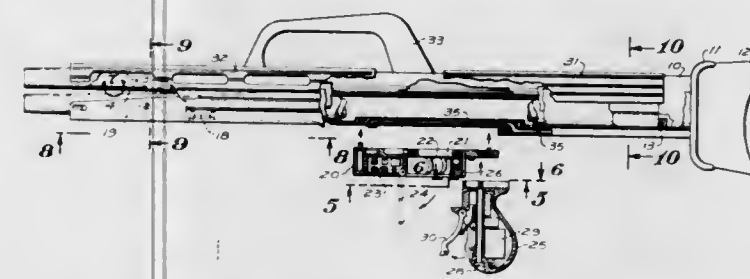
ELECTRICALLY FIRED MULTIPLE BARREL SUPERIMPOSED PROJECTILE WEAPON SYSTEM
Howard F. Broyles, 4841 Maryland Ave., La Crescenta, Calif. 92014

Filed Sept. 26, 1968, Ser. No. 773,691 The portion of the term of this patent subsequent to Sept. 17, 1989, has been disclaimed.

Int. Cl. F41c 19/12

U.S. Cl. 42-84

8 Claims



1. An electrically operated gun system and ammunition therefore comprising:
 - a. an elongated receiver including a trough portion;
 - b. a cluster of gun barrels operatively mounted thereon in said trough portion with the breech portions pivotable out of said trough for reloading;
 - c. a combination breech block and recoil mechanism rigidly mounted to said receiver;
 - d. a trigger removably mounted on said receiver;
 - e. an electrical power source and related circuitry operatively disposed within said gun; and
 - f. an electrically fired multiple charge cartridge adapted to be fired in said gun, wherein
 said breech and recoil mechanism comprise a generally rectangular breech block adapted to receive and hermetically seal the breech end of the barrel cluster, the forward face thereof being provided with a plurality of electrical connections capable of transmitting electrical power to cartridges disposed in said barrels and a piezoelectric element disposed adjacent thereto in a manner so as to receive the recoil force of each cartridge each time it fired so as to generate power thereby.

3,854,232

CLIP HOLDING GUIDE

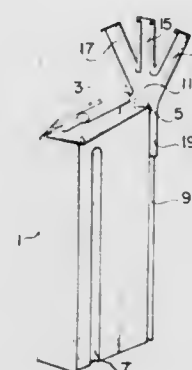
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Jan. 16, 1974, Ser. No. 433,744

Int. Cl. F41c 27/00; F42b 39/06

U.S. Cl. 42-87

17 Claims



1. A clip holding guide comprising:
 - means for attaching said guide to a magazine and a plurality of convergent clip support means, each positionally

3,854,233

FISHING LURE

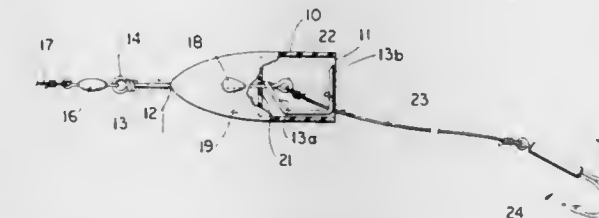
Paul T. Browning, III, 1825 Zinnia Dr., Indianapolis, Ind. 46219

Filed Oct. 17, 1973, Ser. No. 407,221

Int. Cl. A01k 85/00

U.S. Cl. 43-42.29

3 Claims



1. A fishing lure having a tubular body with a leading closed end and a trailing open end, a wire extending centrally through said body and leading closed end and protruding substantially beyond said leading closed end, said wire being slidable within the body between positions of maximum and minimum extension from the leading end of the lure body, a line or leader attaching eyelet formed on the extending tip of said wire, the opposite end of said wire having a transversely bent tip which is positioned at said trailing open end of the body when said wire is in said maximum extended position and is spaced exteriorly of the open trailing end of the body when the wire is in said minimum extended position, a detachable tail component for the lure formed of elastomeric material and adapted for impalement on said transversely bent tip of the wire when the wire is in its said minimum extended position and being drawn into said body when the wire is moved to its said maximum extended position, a hook-bearing member attached to an eyelet formed in said wire, said hook-bearing member extending from the trailing end of said body and carrying at least one hook adapted to be imbedded in said elastomeric tail component.

3,854,234

CATFISH BAIT

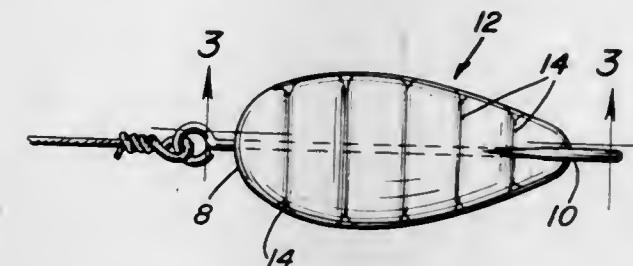
John M. Hardin, P.O. Box 138, Calhoun City, Miss. 38916

Filed July 11, 1973, Ser. No. 378,142

Int. Cl. A01k 85/00

U.S. Cl. 43-42.06

4 Claims



1. An artificial fishing bait comprising, in combination, an edible doughball-type core molded to assume and maintain a prescribed shape resembling a larval form known to appeal to certain fish, catfish for example, and a shape retaining and texture preserving jacket snugly encasing, retentively encapsulating and completely covering said core, said core containing cheese, cereal grains, mixture of corn syrup, animal by-products and preservatives, and said jacket comprising a grade of moldable plastisol which is porous, absorbs and emits enticing and tantalizing odors and liberates flavor known to be savory and attractive to fish.

3,854,235

QUICK-RELEASE CASTING WEIGHT MEANS

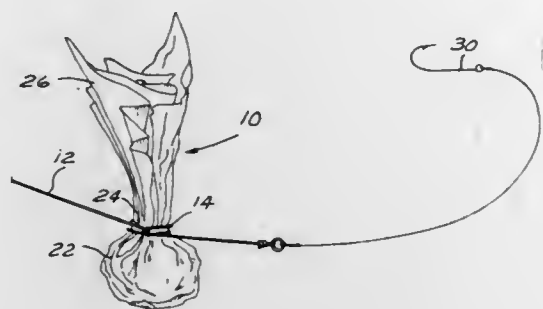
Robert L. Thompson, 5583 Riverview Dr., Riverside, Calif. 92509

Filed Aug. 20, 1973, Ser. No. 390,014

Int. Cl. A01k 95/00

U.S. Cl. 43-43.12

8 Claims



1. Quick-release casting weight means suitable for use in the casting of a baited fishing line to a desired spot on the water for surface fishing purposes, comprising at least one casting weight and at least one piece of paper adapted to come apart immediately upon contact with said water, said paper being wrapped around said casting weight in such manner as to permit the attachment of said fishing line to the paper so that the weight means remains affixed to said line until the latter is cast to said desired spot; whereby the line with said weight means so attached can be cast to said spot, and said paper then immediately begins coming apart in said water to release the casting weight which sinks without dragging the line down so that said line remains substantially at the surface of the water.

3,854,236

FISH BAG HOLDERS

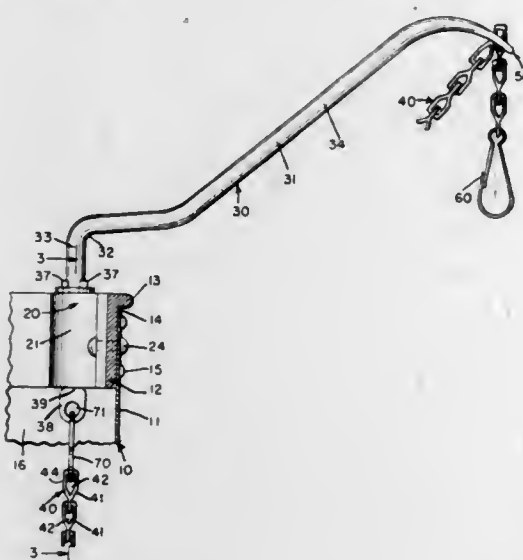
Dean L. Goserud, St. Paul, Minn.

Filed Feb. 26, 1973, Ser. No. 336,026

Int. Cl. A01k 97/00

U.S. Cl. 43-55

3 Claims



1. A fish holder applicable to the oar lock of a boat and adapted to cooperate with a suspension member having spaced protrusions, said holder comprising:

- an upstanding journal adapted to be inserted into the oarlock,
- an arm extending outwardly from the upper end of the journal,
- the outer end of said arm having spaced shoulders between which said suspension member may be disposed,
- the protrusions of said suspension member being engagable with said shoulders to restrain downward longitudinal movement of said suspension member,
- the space between said shoulders communicating with an opening in said outer portion of the arm and through

which the suspension member and protrusions may freely pass,
f. said opening being at a higher elevation than the space between said shoulders.

3,854,237

TOY BUILDING BLOCK

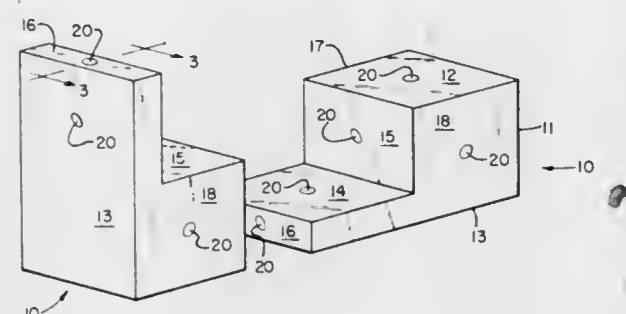
Richard Bert Loth, 424 Sowams Rd., Barrington, R.I.

Filed Nov. 3, 1972, Ser. No. 303,524

Int. Cl. A63h 33/10

U.S. Cl. 46-26

4 Claims



1. A set of blocks, each block of which comprises a geometric figure having eight sides, a back side square in shape and having an area with a selected unit of measure, a top side square in shape and at right angles to said back side and having an area equal to the area of said back side, a bottom opposite and parallel to said top side and at right angles to said back side, rectangular in shape and equal to twice the area of said top side, a platform face, square in shape and equal in area to said top side, parallel and opposite to said bottom, an end wall opposite and parallel to said back side and located at right angles to said top side and platform face, said end wall being rectangular in shape and having an area approximately two-thirds of the area of said back side, to provide a recess area in said block, a front wall parallel to said back side and end wall and at right angles to both said platform face and bottom, a left side perpendicular to both said top side and bottom and a right side opposite and parallel to said left side.

3,854,238

TOY BOAT

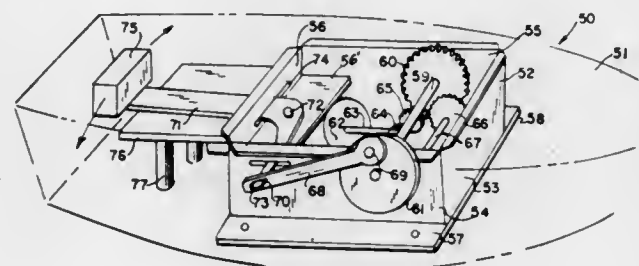
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Feb. 26, 1973, Ser. No. 335,574

Int. Cl. A63h 23/02

U.S. Cl. 46-93

5 Claims



1. A toy comprising in combination:
a hull adapted to float on water,
means for propelling said hull through the water,
a movable weight for shifting the center of gravity of said toy as it is propelled through the water in an oscillating manner to cause said hull to rock about an axis which is substantially parallel to the longitudinal axis of the hull so as to cause the toy boat to rock from side to side during its movement through the water and to simulate the operation of a boat in rough seas.

3,854,239

ATTACHMENT STRUCTURE FOR PUPPET, MANIPULATOR COMBINATION

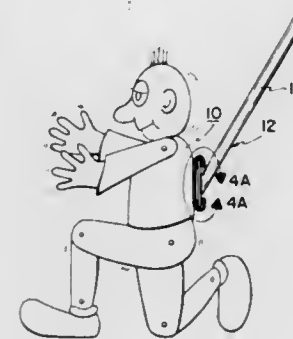
Barbara Williams, Kanarrville, Utah

Filed Mar. 25, 1974, Ser. No. 454,162

Int. Cl. A63h 7/00

U.S. Cl. 46-126

4 Claims



1. In a puppet and manipulator combination comprising a puppet and a manipulator attached thereto, an improvement wherein said puppet has a back surface having secured thereon first attaching means comprising an attachment-type, fabric, flexible overlap member, said manipulator comprising an elongate member provided at one end with an attached plate which is inclined with respect to the axis of said elongate member, second attaching means comprising a releasably securable fabric attachment member secured to said plate and detachably cooperatively self-securable to said flexible overlap member by surface engagement therewith, said fabric attachment member being disposed over said plate, and doubled back over at least one edge of said plate, said fabric attachment member being adhered in place in its doubled back configuration with respect to said plate, said flexible overlap member having, along at least one edge thereof, a foldable flexible overlap portion, said plate with said fabric attachment member being releasably secured to said flexible overlap member in a manner such that said flexible overlap portion is overlappingly disposed around at least said one edge of said plate and in said surface engagement with said fabric attachment member where the latter itself doubles back over said plate edge.

3,854,240

ISOTOPICALLY LABELLED COMPOUNDS

Kenneth Gordon Oldham, Little Chalfont, and Noel Gordon Carr, Liverpool, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 13, 1972, Ser. No. 234,326

Claims priority, application Great Britain, Mar. 12, 1971, 6779/71

Int. Cl. A01h 13/00

U.S. Cl. 47-1.4

6 Claims

1. In a method of making a ^{14}C -labeled compound by growing a micro-organism in a medium provided with a high isotopic abundance of ^{14}C in a form in which it is taken up by the micro-organism, harvesting the organism after the vegetative reproduction thereof and recovering the ^{14}C -labelled compound therefrom, the improvement which consists in using as the microorganism a micro-organism of the genus *Anacystis*.

3,854,241

PROCESS FOR SOIL IMPROVEMENT

Friedrich Zimmermann, Striegastrasse 12, 3300

Braunschweig; Ernst Seifert, Otto-Palm-Strasse 6, 3100

Celle; Helmut von Freyhold, Salierplatz 2, 4000 Dusseldorf-

Oberkassel, all of Germany; Arnold Saxen, deceased, late of

Abt-Jerusalem-Strasse 6, 3300 Braunschweig, Germany,

and Elke Carsch, nee Saxen, executrix, 19 Schnellstrasse,

Husum, Germany

Continuation-in-part of Ser. No. 858,910, Sept. 12, 1969,

abandoned. This application Feb. 29, 1972, Ser. No. 230,495

Claims priority, application Austria, Sept. 13, 1968, A8947

Int. Cl. A01b 79/02

U.S. Cl. 47-58

5 Claims

1. A process for improving clayey soils for cultivation consisting essentially of incorporating from 20 to 750 gm/m² of a carbonate of calcium into clayey soils and inducing a gas formation in said soils by chemical reaction by an acidic treatment of said soil with an acidic material selected from the group consisting of acidic silica sols, acid-adjusted sodium silicate suspensions and mixtures of sodium silicates and acidic calcium phosphates, in approximately the stoichiometric amount based on the carbon dioxide content of said carbonate, whereby porous aggregates are built up.

3,854,242

SUPPORT STRUCTURE FOR A RECEPTACLE OR THE LIKE

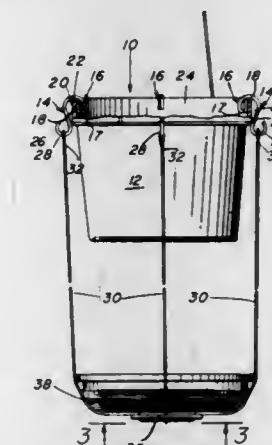
Alan Gladstein, 8210 Clinton Ave., Los Angeles, Calif. 90048

Filed July 25, 1973, Ser. No. 382,576

Int. Cl. A47g 7/00; A01g 9/04

U.S. Cl. 47-35

2 Claims



1. A support structure for a receptacle being attachable to a hanging flower pot having an upper, enlarged, open end and a lower end, said support structure comprising:

- a plurality of hook-attaching means for removably securing to said hanging flower pot, said hook-attaching means comprising:
- a brace member defined by an upper semi-circular member formed as an integral part of said hook-attaching means and having a free end extending inwardly of the semi-circular member and then upwardly, to provide a restrictive opening therein for attaching said hook-attaching means to said upper, enlarged, open end of said flower pot;
- an intermediate member; and
- a lower semi-circular member, wherein said upper semi-circular member, said intermediate member, and said lower semi-circular member are integrally formed in a substantially "S"-shaped configuration;
- a plurality of predetermined lengths of cords having terminating free ends;
- an eyelet formed in each free end of said cords, whereby said cords are hooked to said lower semi-circular member of said hook-attaching means, said cords depending from said hook-attaching means and forming a loop under said hanging flower pot; and

a base plate having a plurality of apertures through which said cords are threaded, said base plate being centrally positioned below said flower pot and intermediate the free ends of said cords.

3,854,243

VEHICLE GATE MECHANISM

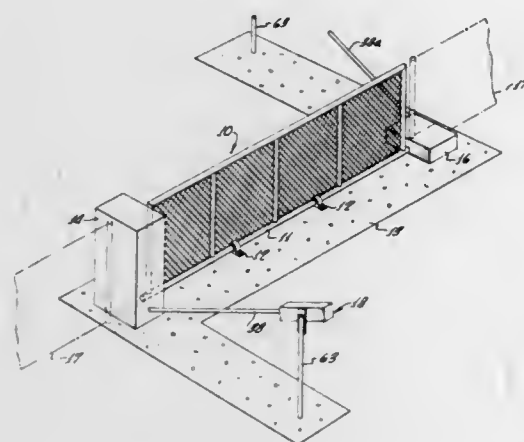
Raymond Andre Walker, Orange, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Filed Aug. 28, 1973, Ser. No. 392,205

Int. Cl. E06b 11/04

U.S. Cl. 49-131

16 Claims



- I. A vehicle gate mechanism, which comprises:
 - a. a vehicle gate element mounted in a roadway for pivotal movement about a predetermined axis, said gate element being adapted, except when in latched condition, to pivot to open condition when the front end of a motor vehicle pushes thereagainst,
 - b. a latch element,
 - c. means to movably mount said latch element for shifting between a latching position which latches said gate element against pivotal movement and a releasing position which permits pivotal movement of said gate element about said axis, said latch element being adapted to shift back to said latching position unless held in another position,
 - d. mechanical operating means disposed on one side of said gate element in a position such that the driver in the driver's seat of said vehicle can, while said vehicle is positioned on said roadway and facing said gate element, reach and move said operating means,
 - e. latch-actuating means adapted, when shifted from an initial location to another location, to move said latch element to a releasing position such that pushing on said gate by said vehicle will effect opening of said gate, said latch-actuating means being adapted to shift back to said initial location unless held in another location,
 - f. mechanical means to connect said operating means to said latch-actuating means, whereby movement of said operating means causes shifting of said latch-actuating means to said other location permitting opening of said gate,
 - g. means to maintain said latch-actuating means in said other location to thus cause said latch-actuating means to maintain said latch element at said releasing position, whereby said operating means may be moved back to the initial position thereof, without causing movement of said latch element to a latching position,
 - h. means responsive to pushing on said gate by said vehicle to release said latch-actuating means and permit shifting thereof back to said initial location, and
 - i. means to pivot said gate element to closed condition after said vehicle passes therethrough.

3,854,244 DAMPER AND SPRING-BIAS MECHANISM FOR VEHICLE GATES

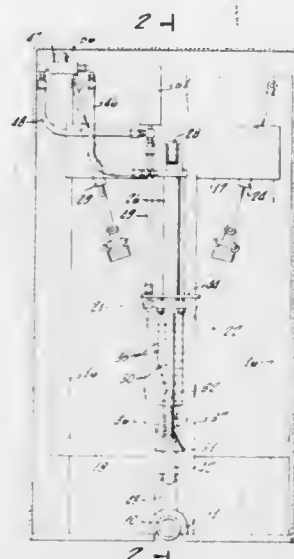
Raymond Andre Walker, Orange, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Filed Aug. 28, 1973, Ser. No. 392,206

Int. Cl. E06b 11/04

U.S. Cl. 49-131

9 Claims



- I. A horizontal-axis gate for motor vehicles, which comprises:
 - a. a horizontal shaft which is mounted for rotation about a horizontal axis, said axis being disposed relatively adjacent the surface of the roadway,
 - b. a barrier connected to said shaft and extending upwardly and generally vertically when in closed roadway-blocking condition,
 - c. support means provided at the side of the roadway adjacent one end of said barrier,
 - d. a fluid cylinder having its upper end pivotally connected to said support means and extending downwardly toward said shaft,
 - e. a piston disposed in said cylinder and connected to a piston rod which extends downwardly below the lower end of said cylinder,
 - f. a pawl mounted at the lower end of said piston rod,
 - g. cam and ratchet means mounted on said support means adjacent said cylinder,
 - h. said cam and ratchet means being adapted to move upwardly and downwardly along a predetermined path,
 - i. means to associate said cam and ratchet means with said barrier in such manner that said cam and ratchet means moves downwardly upon opening of said barrier and moves upwardly upon closing thereof,
 - j. means to engage said pawl with the ratchet portion of said cam and ratchet means when said pawl is disposed at the same elevation as said ratchet portion, and
 - k. bias means to effect upward movement of said barrier to closed condition after a vehicle has passed through the gate,

- said cylinder and piston being adapted, when said pawl is engaged with the ratchet portion of said cam and ratchet means, to retard the upward movement of said barrier in response to operation of said bias means,
- said cam and ratchet means incorporating a cam portion adapted to effect disengagement of said pawl from said ratchet portion of said cam and ratchet means after said barrier has pivoted upwardly to a predetermined inclined condition, whereby said barrier may then spring freely upwardly to closed condition in response to operation of said bias means.

3,854,245 BUILDING STRUCTURE

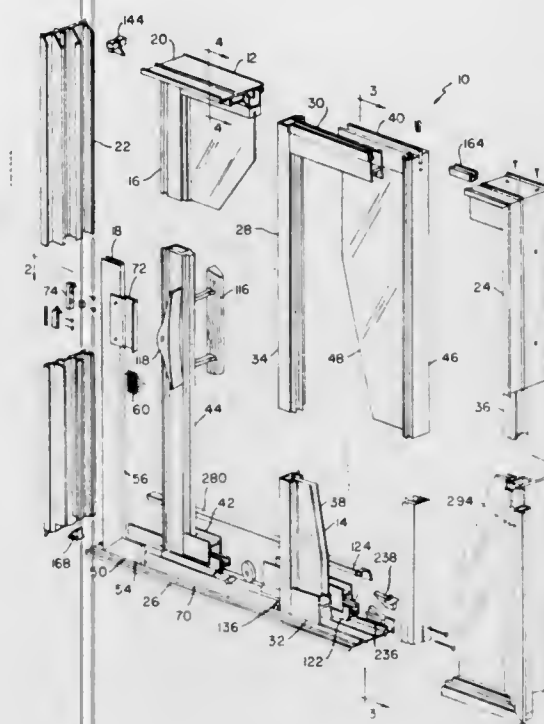
Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson, Mfg. Co., Owensboro, Ky.

Filed Jan. 20, 1972, Ser. No. 219,330

Int. Cl. E05d 13/04

U.S. Cl. 49-449

10 Claims



- I. Sliding door structure comprising an outer frame having two upper and two lower mitered corners, jambs with a returned fin thereon, a sill and a head with a single door panel guiding fin and at least two additional fins extending inwardly of the frame in spaced relation to the guiding fin on opposite sides thereof, at least one movable door panel in assembly with the outer frame including a top rail in engagement with one of the additional fins and having a slot in the top thereof receiving the guiding fin and at least one fixed door panel positioned between the other additional fin and the movable door panel in assembly with the frame and movable door panel, and weather strip means positioned about the periphery of each of the door panels in assembly in the frame and with the movable door panels in a closed position, and combined weather stops and miter aligning members secured between the sill and jambs at the lower corners of the frame.

3,854,246 THRESHOLD WEATHERSTRIP

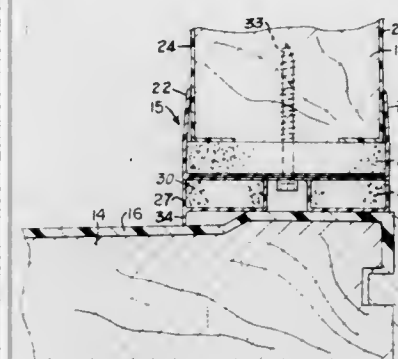
Owen E. McAllister, Oshkosh, Wis., assignor to Combustion Engineering Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 179,935, Sept. 13, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,263

Int. Cl. E06b 11/70, 7/22

U.S. Cl. 49-470

19 Claims



- I. Weather sealing means for the bottom of a door comprising a channel member of reinforced plastic material of gener-

ally U-shaped cross section which is of sufficient length to enable it to be mounted so as to extend along the entire bottom edge of the door with upstanding side flanges which are flared inwardly at the top edges so as to snugly engage the bottom margins of the exterior and interior door faces, an elongate strip member of resilient, compressible material disposed in said channel member between the bottom edge of the door and the bottom of the channel member which has a width less than the distance between said side flanges, adjustable fastening means for securing the channel member in adjusted position on the bottom edge of the door with said strip member adapted to be compressed in the space between the bottom edge of the door and the bottom of the channel member so as to substantially fill said space while permitting limited adjustment of said channel member on the door edge, and resilient, compressible strip means extending in depending relation along the bottom face of said channel member and between the side edges of the door so as to contact in wiping engagement with the sill surface which confronts the bottom face of said channel member when the door is moved to a closed position thereby to form a weather seal.

3,854,247

SEALING STRIP FOR MOTOR VEHICLES

Karl Stark, Sindelfingen; Werner Achterwinter, and Karl-Heinz Brauer, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

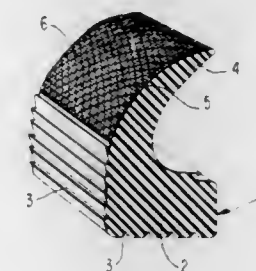
Filed June 6, 1969, Ser. No. 831,173

Claims priority, application Germany, June 6, 1968, 1755665

Int. Cl. E06b 7/23

U.S. Cl. 49-495

22 Claims



- I. A sealing strip made from an elastomeric material for use in doors or the like of motor vehicles which, with a closed door, abuts with a sealing lip means thereof at a painted metal part, said sealing lip means being provided, at least partially on its abutment side, with recess means emanating from the surface thereof, characterized in that said recess means includes a plurality of depressions of minor width which are arranged approximately in mesh form in closely spaced serial relationship such that during use the only contact between the abutment side and the painted metal part is along thin abutment lines formed by the edges of the depressions whereby noises due to relative movement of the painted part and the sealing strip are reduced, and characterized in that the depressions have a pyramid-like shape.

3,854,248 DUCT ACCESS DOOR

Lloyd Giddis Dayus, 3400 Riverspray Dr., Mississauga, Ontario, Canada

Filed May 21, 1973, Ser. No. 362,043

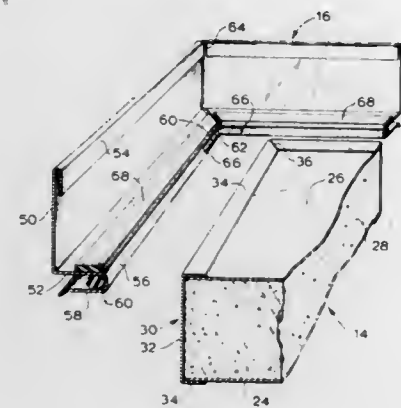
Int. Cl. E06b 11/04

U.S. Cl. 49-504

9 Claims

- I. Apparatus for manufacturing door frames for insertion into a door opening in a wall, for example in air handling ducts and the like, and comprising:
 - a door frame forming member adapted to form a rectangular door frame having four corners and defining a frame

sidewall which may be set up into a rectangular frame, a frame facing wall extending from said frame sidewall in a generally L-shaped manner whereby to lie within the frame when the same is set up, channel means formed alongside the facing wall and remote from the sidewall and oriented to receive a portion of the wall surrounding the opening therewith, and,



notch means formed in said frame facing wall and said channel means at spaced intervals to permit bending of said frame sidewall for setting up as aforesaid, and, means at at least one end of said frame forming member whereby the ends thereof may be fastened together when the same is in its rectangular position as aforesaid.

3,854,249

DECKLE GRINDER

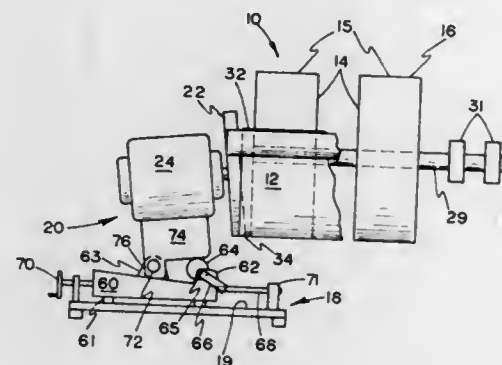
Wade D. Fletcher, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed July 9, 1973, Ser. No. 377,368

Int. Cl. B24d 7/00, 9/00

U.S. Cl. 51-75

8 Claims



1. A deckle grinder comprising: means for supporting a moving web of material in an arcuate configuration; grinding means for removing a portion of the edge of the arcuate section of the web to provide a deckle; said grinding means mounted at an angle to said supporting means and within said arcuate section of said web, whereby a portion of the web may be removed by the grinding means to provide a uniform and properly angled deckle on the edge of the web.

3,854,250

ROUGHING MACHINE HAVING COUNTERWEIGHTED ROUGHING TOOL

Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Nov. 1, 1973, Ser. No. 411,608

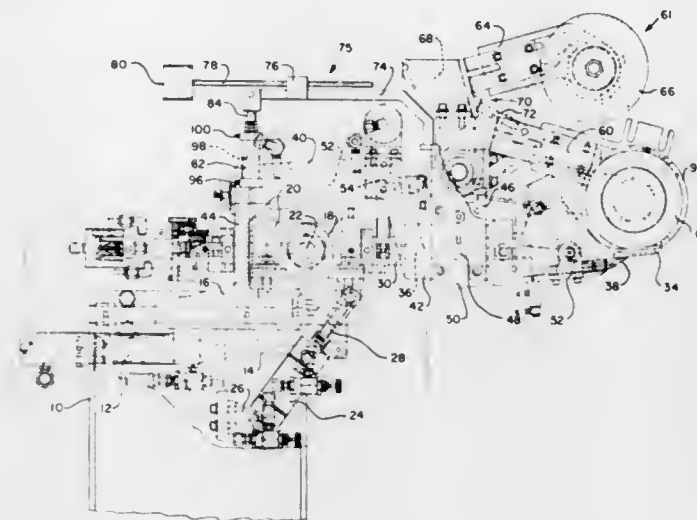
Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51-99

6 Claims

1. A roughing machine comprising: a mounting member; a tool head assembly pivotally mounted to the mounting member for heightwise movement about a pivot axis and extending forwardly of the axis; a roughing tool mounted to the tool head assembly; a counterweight assembly connected to the tool

head assembly and extending rearwardly of said axis; said assemblies being so constructed and arranged that they have opposed and approximately equal moments about said axis; and powered adjustable force applying means connected to one of the assemblies effective to impart heightwise move-



ment to the assemblies including an adjustable downward force to the tool head assembly whereby the powered means may effect a downward movement of the tool head assembly to cause the roughing tool to engage and rough a workpiece with a force that is proportional to the force imparted to the assemblies by the powered means.

3,854,251

SHARPENING DEVICE FOR CUTTING IMPLEMENTS SUCH AS RAZOR BLADES

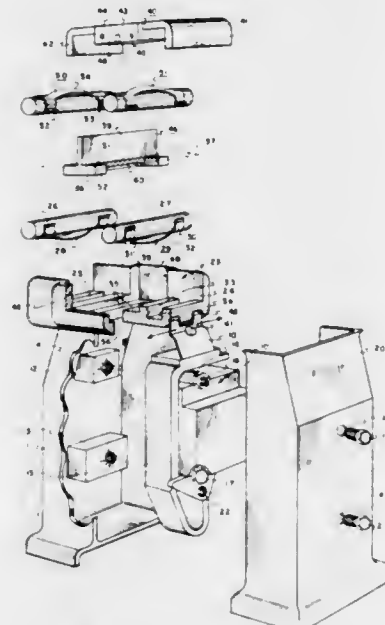
Michael L. Paule, 8823 South 1275 East, Sandy, Utah 84070

Filed Oct. 12, 1972, Ser. No. 297,006

Int. Cl. B24b 3/48

U.S. Cl. 51-158

5 Claims



1. In combination, means having first and second opposite sides for removably mounting an external cutting implement to be sharpened at at least one cutting edge on said first side; means for rectilinearly reciprocating said mounting means, engaged therewith at said second side; a set of cylindrical honing means disposed proximate said mounting means for honing said cutting edge; and plural clip means releasably receiving and resiliently biasing said honing means toward said cutting edge, and wherein said plural clip means comprise spring clips, said spring clips comprising mutually spaced clip

portions and outwardly convex elongate spring portions integral with and connecting said clip portions.

3,854,252

WORK SUPPORT SHOES FOR CENTERLESS GRINDING MACHINES

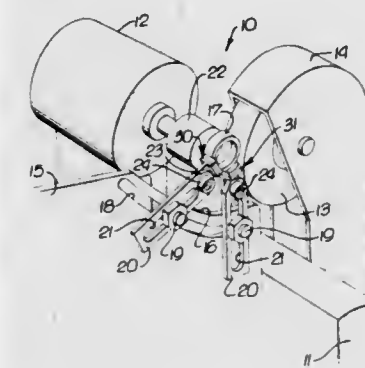
Arwin O. Lindsay, 13445 Oscar St., Sylmar, Calif. 91342, and Kenneth C. Boalen, 1839A Verdugo Loma Dr., Glendale, Calif. 91208

Filed July 26, 1973, Ser. No. 382,872

Int. Cl. B24b 5/34, 41/06

U.S. Cl. 51-238 GG

5 Claims



1. For use in a centerless grinding machine having a grinding wheel, a plate secured to a frame of the machine in general alignment with the circumferential grinding surface of said wheel and extending transversely with respect to the wheel axis, said plate being adapted to be in alignment with a workpiece to be ground by the wheel, chuck means to hold the workpiece between said plate and said wheel in the grinding position, said plate being adapted to extend generally laterally and downwardly of the workpiece in the grinding position, support arms adjustably mounted on said plate and having inner ends adapted to extend toward the workpiece in the grinding position, work support shoes having outer ends adjustably mounted to respective inner ends of said support arms;

the improvement comprising:

said work shoes each having a workpiece contact portion and a shank portion, each shank portion having an outer and an inner end, said outer ends of said shank portions defining the outer ends of said work support shoes, each shank portion being made of a phenolic base material having sufficient degree of flexibility to dampen vibrations imparted to its outer end by the grinding machine during the grinding operation whereby vibration of the inner end is substantially eliminated, each contact portion being mounted on an inner end of a respective shank portion, the periphery of the inner end of the shank portion being at least substantially coextensive with the periphery of the contact portion, and each contact portion having an inwardly facing surface arranged for contacting and supporting the workpiece, said contact portion being made of a high density, low porosity, wear resistant ceramic material.

3,854,253

JOINT CONSTRUCTION BETWEEN SUPPORTED AND SUPPORTING MEMBERS

Joseph A. Slowbe, Cleveland, Ohio

Continuation-in-part of Ser. No. 249,681, May 1, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,383

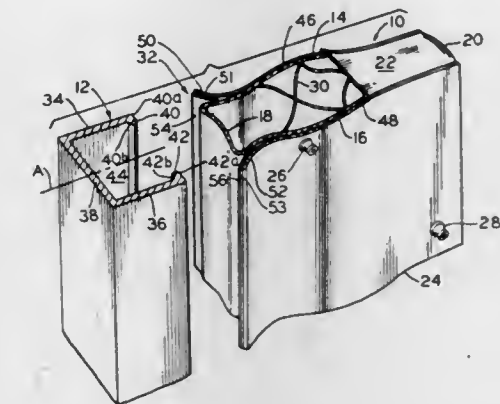
Int. Cl. E04b 1/345

U.S. Cl. 52-2

10 Claims

1. A joint structure comprising, an elongated support component having a bottom wall and laterally spaced apart sidewalls, said bottom wall and sidewalls defining a recess, flange

means on said sidewalls and extending laterally inwardly thereof to define a restricted entrance to said recess, said flange means having inner surfaces with respect to said recess, and panel means interengaged with said support component, said panel means including an inflatable body of flexible sheet material, a portion of said body extending through said restricted entrance and into said recess, means filling said body and forcing the sheet material of said portion of said body in



3,854,254

PATIO CANOPY STRUCTURE

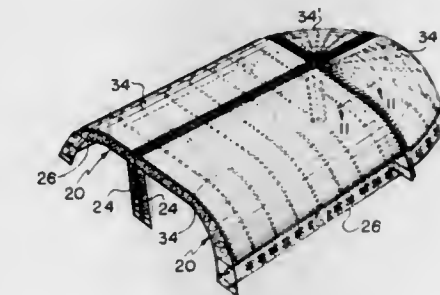
Michael J. Janosko, 2421 Bridge Ave., Cleveland, Ohio 44113

Filed July 9, 1973, Ser. No. 377,763

Int. Cl. E04b 1/347, 1/32

U.S. Cl. 52-63

5 Claims



1. Patio canopy structure including a main roof sheet support comprising two generally identical end frames each comprising a beam having essentially the shape of one-quarter of an ellipse whose lower end at the apex of the longer ellipse axis is adapted to rest on the ground and whose upper end is at the distal end of the short ellipse axis, each of said beams comprising two substantially parallel upper and lower bars lying in the same vertical plane and filler structure lying in said vertical plane and having inclined portions rigidly secured near their opposite ends to said upper and lower bars respectively and providing a truss effect between said bars, each end frame including a vertical column L-shape in section rigidly secured to said distal end of its associated beam, each vertical column including two vertical planar beams at right angles to each other, each of these last named beams comprising an outer bar at the end of each leg of the L-shape and comprising a common inner bar at the apex of the L-shape, each of said vertical planar beams having a filler structure lying in the same plane as the associated bars and rigidly secured to said associated bars and providing a truss effect there, structure rigidly

connecting the lower ends of said two end frames, a stringer rigidly connecting the upper ends of said two end frames; a plurality of sheet supporting roof ribs spaced between said end frames and rigidly connected at their opposite ends to said connecting structure and to said stringer respectively, said ribs having the same quarter-elliptical shape as the upper bars of said end frame beams, and a flexible roof cloth covering said canopy structure and secured to said end frames and to said structure rigidly connecting the lower ends of said two end frames and to at least some of said ribs.

3,854,255

SPACE ENCLOSING STRUCTURE

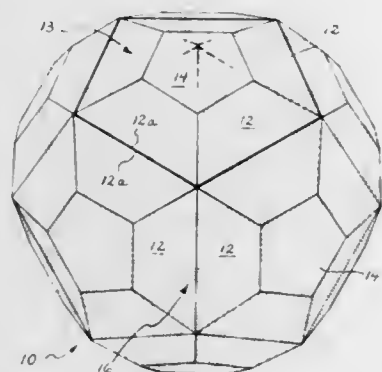
Robert Lisle Baker, 25 Glenland Rd., Chestnut Hill, Mass. 02167

Filed Oct. 24, 1972, Ser. No. 299,678

Int. Cl. E04b 1/34, 7/08

U.S. Cl. 52-81

9 Claims



1. A space enclosing structure comprising:
a plurality of trapezoidal structural elements having equal base angles not greater than 58° or less than 54° and assembled in groups of five each to form a plurality of outwardly extending, pentagonal based, truncated pyramidal modules, said modules being assembled in abutting base edge-to-base edge relationship to form at least a portion of a spheroid.

3,854,256

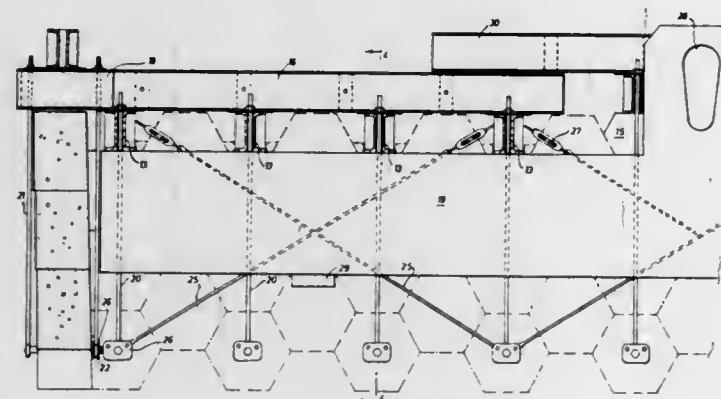
FABRICATION OF FURNACE LININGS WITH SUPPORT FRAME

Brian J. Wilce, Inner Court, Pewley Hill, Guildford, England
Continuation-in-part of Ser. No. 255,188, May 19, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,213

Int. Cl. E04c 3/22

U.S. Cl. 52-122

6 Claims



1. A unit for use in the fabrication of furnaces, comprising in combination:

- a. a cluster of refractory blocks, said cluster comprising a lower row of blocks having a generally horizontal centre line and an upper row of blocks located above the lower row of blocks, each of at least some of the blocks in the lower row having therein at least one bore that extends through the block from the front to the back face of the

block in a horizontal direction generally perpendicular to the centre line of the lower row of blocks,

- b. a support frame resting upon the upper row of blocks,
c. a connecting element extending through each of said bores, each said element having a first portion, projecting beyond the front face and a second portion projecting beyond the back face of the block through which said bore passes,
d. a pair of vertically extending load bearing members associated with each connecting element, one of said members being connected to said first portion and the other being connected to the second portion of the element, the upper ends of the members being secured to the support frame,
e. wire ropes strung obliquely from the support frame to the points of connection of at least some of the load bearing members and connecting elements, the wire ropes being under sufficient tension to apply a force to hold the cluster of blocks together laterally.

3,854,257

SEALING STRUCTURE

Morris Lobel, 6501 Fern Rd., Montreal, Quebec, Canada (266)

Filed Aug. 27, 1973, Ser. No. 391,096

Int. Cl. E04f 10/04; E06b 1/56

U.S. Cl. 52-173

12 Claims



1. A sealing structure for application to the periphery of a door or like opening which comprises: a first and a second sheet of flexible form-retaining material, each said sheet having first and second parallel longitudinal edges, said sheets being secured together substantially along said first side edges such that said sheets tend to lie together in face-to-face relationship; and means located on each said sheet adjacent the second side edge thereof for attaching said sheet to a wall or like structure.

3,854,258

ARTICULATED HOLD-DOWN ANCHOR DEVICE FOR THE EMBEDDED CABLES OF A PRESTRESSED CONCRETE GIRDER

Joseph J. Colado, 666 S. Iowa, Addison, Ill. 60101, and Norman G. Turner, 323 W. Sheridan Pl., Lake Bluff, Ill. 60044

Filed May 17, 1973, Ser. No. 361,216

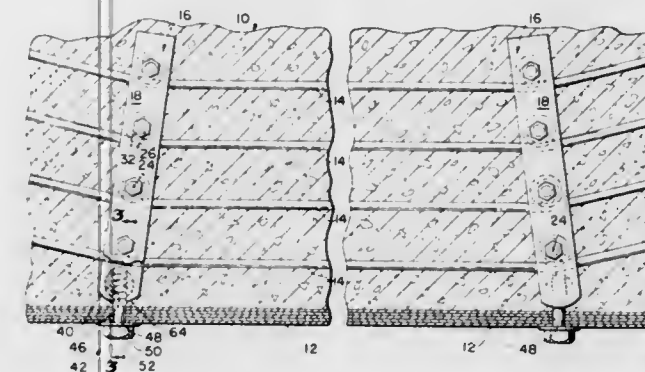
Int. Cl. E04c 3/10

U.S. Cl. 52-226

1 Claim

1. In a concrete girder form, a horizontal base member upon which wet concrete is adapted to be poured in the production of a prestressed concrete girder, a plurality of tensioning cables extending longitudinally through said form, and a plurality of hold-down anchor devices mounted on said base member for assimilating the upward thrust of the cables when the latter are tensioned, each device comprising an elongated

upstanding frame including a pair of spaced apart parallel side plates, a plurality of transversely extending cable hold-down members extending across said side plates and beneath which the cables extend, a pivot shaft projecting across said side plates in close proximity to the lower ends thereof, said pivot shaft having circular end faces which slidably engage the inside faces of the end plates, trunnions projecting centrally and outwardly from said circular end faces and extending through holes which are provided in the side plates, said pivot shaft being formed with a diametrically extending bore there-



through, the lower ends of said side plates overhanging said pivot shaft, extending a slight distance therebelow, and being formed with arcuate lower edges which are concentric with the axis of the pivot shaft, and an anchor bolt extending upwardly through said base member of the girder form and threadedly received in and projecting completely through said diametrically extending bore and effective under tension to draw the pivot shaft downwardly and thus cause the arcuate edges of the side plates to move into sliding engagement with the upper surface of the base plate when said anchor plate is tightened with an appreciable degree of pressure.

3,854,259

ARRANGEMENT OF PANELS FOR CONSTITUTING DISPLAY UNITS AND SIMILAR

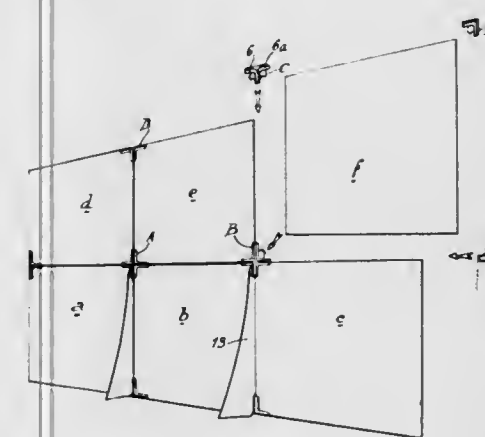
Bernard Louis Lechene, Clichy, France, assignor to Glory Impression Cartonnage, Asnieres, Hauts-de-Seine, France

Filed Dec. 8, 1972, Ser. No. 313,397

Int. Cl. E04c 1/10

U.S. Cl. 52-293

20 Claims



1. A panel arrangement comprising:
at least two rectangular panels each including a cut formed near at least one angle of said panel, said cut extending along a direction substantially perpendicular to the bisectrix of said angle,
a connector comprising:
at least two right-angled arms and protruding means including a hook member between each of said two right-angled arms for insertion in one of said cuts of said panels, whereby a self-locked connection is provided between said protruding means and said cut in which said protruding means is inserted; and

first and second elongated members connected to and substantially parallel to said right angled arms and spaced apart from each other by a distance substantially equal to the thickness of said panel, whereby a lateral groove is formed for receiving the angled portion of said panels.

3,854,260

BUILDING SYSTEM

Edward J. O'Hanlon, Lake George, N.Y.

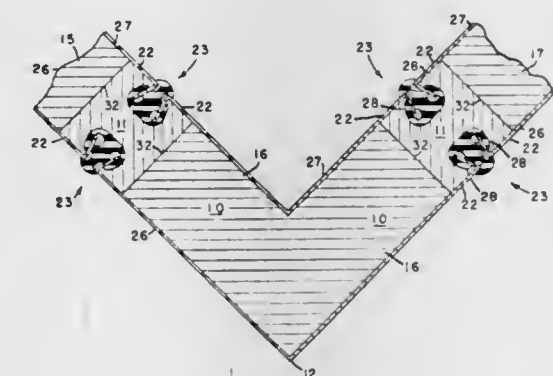
Continuation of Ser. No. 854,585, Sept. 2, 1969, abandoned.

This application May 4, 1972, Ser. No. 250,202

Int. Cl. E04c 1/00; E04b 2/08

U.S. Cl. 52-309

2 Claims



1. In a building construction formed at least in part of thermally insulating panels each formed of a pair of parallel skins and an intervening layer of insulating material, means for joining two such panels in edge-to-edge relationship comprising in combination,

a flange at each edge of said skin interiorly of the panel and formed by the folding of said edge back upon the skin at an acute angle relative thereto,

a pair of separate resilient joining members each adapted to engage the adjoining skins on a respective one of the sides of the two panels to be joined, each said resilient joining member extending over the full length of the edges of said panels being joined,

each said resilient joining member comprising:

- a. a central core portion of outwardly diverging cross section lying between and abutting over at least a portion of its opposed surfaces the opposed flanges of the skins on the respective panels to be joined, said central core portion being provided on its outwardly diverging sides with at least one protruding cam element for forcing said joining member inwardly of said joined panels when the panels to be joined are urged toward each other,
b. a first end portion integrally formed with said central core portion at one end thereof and adapted to flushly fit against the juxtaposed skins on the outside of the panels being joined,
c. and a pair of wing portions each also integrally formed with said central core portion at the other end thereof and each adapted to slide and fit behind a respective one of the flanges of the juxtaposed skins internally of the panels to be joined.

3,854,261

SHELL FOR APPARATUSES WORKING IN
SOUND-ABSORBING, HEAT INSULATING OR AIRTIGHT
CONDITIONSErnst Frei, Konolfingen, Switzerland, assignor to Hermann
Pieren AG, Canton of Berne, Switzerland

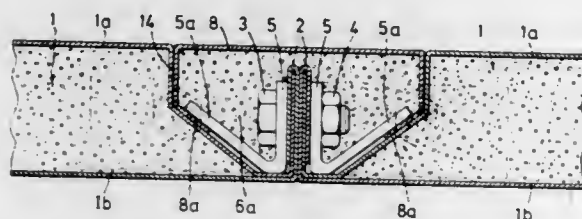
Filed Nov. 30, 1972, Ser. No. 310,757

Claims priority, application Switzerland, Dec. 9, 1971,
017953/71

Int. Cl. E04c 2/38; E04d 1/36

U.S. Cl. 52-404

5 Claims



1. In a sound-absorbing, heat insulating or airtight housing for apparatuses, the walls, the bottom and the ceiling of which are assembled of elementary self-supporting insulation plates, each plate comprising two parallel metal sheets arranged at a distance from each other defining an interior space therebetween, the rims of said sheets being pressed together and bent on each side of the plate as to form a shank and a channel, the shanks of two adjacent plates serving for connecting both plates together, the improvement wherein the shanks and the channels of each plate lie within a space defined by planes extending through both said metal sheets, and the shanks of two adjacent plates serve as a support of an insulating means, wherein the insulation means is a soft porous material filling out a space formed at a jointure of adjacent plates, said material being covered from the outside by a cover lid aligning with the outside surfaces of the plates.

3,854,262

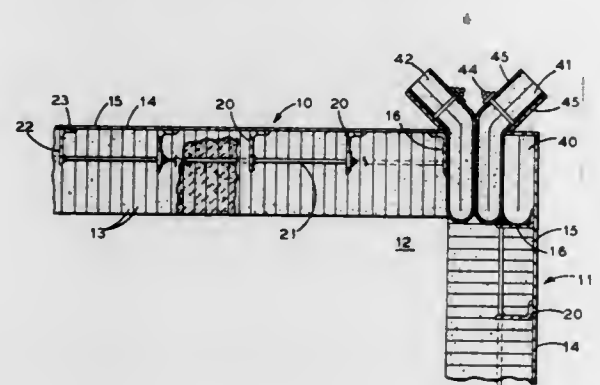
INPALED AND COMPRESSED FIBROUS FURNACE
LININGWilliam S. Brady, Western Springs, Ill., assignor to The Ba-
bock & Wilcox Company, New York, N.Y.

Filed May 1, 1973, Ser. No. 356,263

Int. Cl. F23m 5/04

U.S. Cl. 52-404

6 Claims



1. An insulation support system for a furnace wall which comprises a plurality of panels arranged in side by side relation on the furnace wall, each panel including a metallic base member and metallic members having a flange attached in transversely spaced attached relation to and extending outwardly of the base member, and means including rods attached to the outwardly extending flanges and extending parallel to and spaced from the base of the panel for impaling and compressing a plurality of strips of heat insulating fibrous materials between flanges within each of the panels to provide a thickness of insulating fibrous materials between the interior of the furnace and the metallic parts of the panels.

3,854,263

DOOR BODY

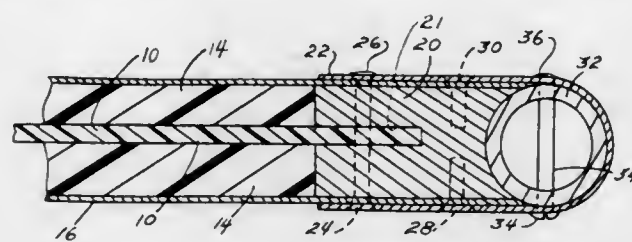
Oliver C. Eckel, P.O. Box 226, Weston, Mass. 02138

Filed Feb. 22, 1973, Ser. No. 334,838

Int. Cl. E04c 2/24

U.S. Cl. 52-615

2 Claims



1. A door body comprising a core extending straight and of relatively firm but resilient material, pad means on opposite sides of said door of compressible but resilient material, the latter material being more resilient than said core material, a cover sheet of compliant material exteriorly of said pad means and core and providing a cover for said door body, a solid stile forming the inner side portion of said door body and having a slot extending inwardly from the inner end portion of said body, a portion of said core extending into said slot, said pad means terminating at said stile, said pad means being unitary and reversing itself beyond the outer end of said core.

3,854,264

TELESCOPIC ADJUSTABLE VERTICAL POST FOR
PARTITION WALLSSteinar Thomassen, Oesteraas, Norway, assignor to A/S Nor-
enia, Oslo, Norway

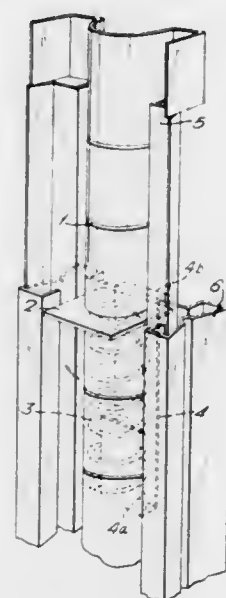
Filed Dec. 18, 1972, Ser. No. 315,989

Claims priority, application Norway, Dec. 16, 1971,
04658/71

Int. Cl. E04g 25/04

U.S. Cl. 52-632

5 Claims



1. A telescopic vertical post of adjustable length and used for the support of partition walls, said post comprising a channel-shaped profile beam of metal which at one end is provided with an adjustable extension by means of which the post can be fixed between a floor and a ceiling, said extension comprising a slide member within and telescopically movable along the inner surface of the channel-shaped profile beam, helical compression spring means biasing said slide member upwardly from said profile beam such that it will rest firmly against the lower surface of the ceiling, said spring means being located within said channel-shaped profile beam between transversely opposed surfaces of said profile beam and said slide member, bracket means secured to said profile beam and fixedly supporting the lower end of said helical spring, transverse openings in said slide member spaced along the length thereof and

insertably and removably receiving in any one of said openings an abutment member bearing against the upper end of said spring, such that the spring extends upwardly past the lower end of said slide member and biases said abutment member and said slide member upwardly relative to said profile beam, and the extensibility of said slide member is readily adjustable by varying the location of said abutment member along said slide member without varying the location of said spring means in said beam.

3,854,265

METHOD FOR CONSTRUCTING AN UNDERGROUND
STORAGE TANKAkio Kobayashi, Tokyo; Tadao Yamada, Yokohama; Masuo
Kawakami, Yamato; Hitoshi Ishioka, Tokyo, and Hideyuki
Nishiura, Soka, all of Japan, assignors to Ishikawajima-
Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

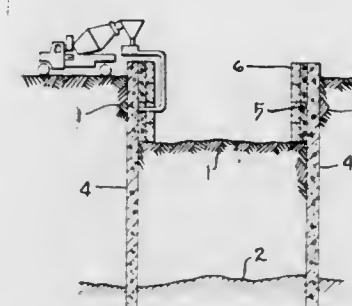
Filed Jan. 2, 1973, Ser. No. 320,005

Claims priority, application Japan, June 12, 1972, 47-58334

Int. Cl. E02d 15/02, 27/38

U.S. Cl. 52-742

2 Claims



1. A method for constructing an underground storage tank for low-temperature liquefied gas, said method comprising the steps of excavating an annular hole in the soil until a sound foundation is reached; forming a first concrete, outer shell in the annular hole with the outer shell resting on the foundation; removing the soil to the desired depth from the area within the outer shell; vertically stacking a plurality of segments within the outer shell, the stacked segments being positioned inward of the inner wall surface of the outer shell to define an annular space between the outer shell and the vertically stacked segments; filling the annular space with a second, inner shell of concrete; and adding a roof and a bottom to the inner and outer shells.

3,854,266

METHOD OF CONSTRUCTING BUILDING STRUCTURES
OF ZIG-ZAG PROFILE

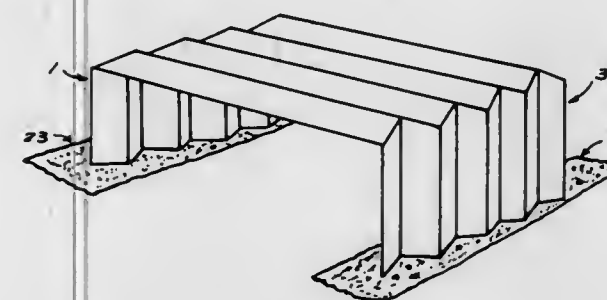
Frank D. Salas, 605 Passaic Ave., Nutley, N.J. 07110

Filed Oct. 18, 1971, Ser. No. 189,868

Int. Cl. E04g 21/14

U.S. Cl. 52-742

3 Claims



1. A method of constructing a building structure of predetermined design formed of walls each having a zig-zag profile bounded by alternating ridges and valleys, each wall consisting of a plurality of edge-wise adjoining and interconnected planar, straight-edged polygonal panels disposed at an angle to one another, comprising the following steps:

- excavating two parallel trenches spaced from one another at a distance corresponding to the intended width of the building structure, each trench having a length corresponding to the intended length of the building structure, each trench having a width and a depth adapted to receive lowermost zones of two walls of the building structure;
- juxtapositioning and hingedly interconnecting all panels to form a coplanar, coherent assembly, panels constituting one and the same wall follow each other along the length dimension of said structure and are disposed at an angle of 180° with respect to one another, panels constituting different walls follow each other along the span dimension of said structure, wherein adjoining walls are disposed at an angle of 180° with respect to one another, said coplanar, coherent assembly being laid over said trenches;
- imparting a dual folding to said coplanar assembly in a single operation for gradually forming said zig-zag profile of all of said walls and, simultaneously, gradually decreasing the angle between adjoining walls, wherein all the angles of inclination between any two adjoining panels in any wall decrease in unison and have all identical magnitudes at any moment of the folding operation, whereby each panel maintains unchanged its planar configuration at all times;
- dropping, in the course of said dual folding operation, said lowermost zones of two walls into said trenches, whereby said predetermined design is reached;
- discontinuing, subsequent to step (D), said dual folding operation;
- fixing, subsequent to step (E), all the hinges between all the panels to obtain a permanently rigid building structure of said predetermined design; and
- filling, subsequent to step (E), said trenches with a material to permanently immobilize said lowermost zones.

3,854,267

GROUT COMPOSITIONS

David S. Weiant, Moorestown; William R. Velivis, Trenton,
and John V. Fitzgerald, Netuchen, all of N.J., assignors to
Tile Council of America, Inc., Princeton, N.J.

Filed Mar. 15, 1971, Ser. No. 124,559

Int. Cl. E04f 13/00

U.S. Cl. 52-744

24 Claims

1. A method for setting and grouting tiles in an edge-to-edge, spaced-apart relationship on a support surface, said spaces between the tiles forming joints, the improvement which comprises setting the tiles and filling the joints between the tiles with an aqueous non-hydraulic grouting composition comprising (i) 2-16 percent by weight of a polymer emulsion capable of coalescing upon the loss of water from the grouting composition and having a solids content of 40-75 percent; and (ii) 50-90 percent by weight of a water insoluble filler in which at least 2 percent thereof is spherical glass having a particle size range of from 2 to about 500 microns, said grouting composition having a viscosity of 10,000 to 4,000,000 cps, water retention value of from 10-40, and a volatile component of from 8-20 percent by weight.

3,854,268

CORNER BRACKET FOR FURNITURE CASE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Filed Dec. 13, 1972, Ser. No. 314,711

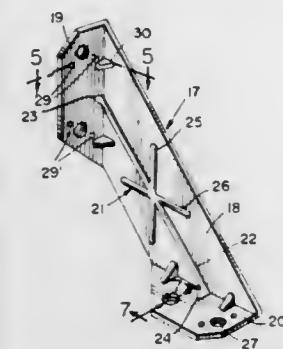
Int. Cl. A47b 96/06

U.S. Cl. 52-753 D

1 Claim

1. A corner bracket for a furniture case comprising a unitary substantially rigid member having a substantially flat intermediate portion and upstanding integral end portions disposed generally orthogonally relative to the intermediate portion, the end portions being orthogonally related to each other and so disposed as to bear against a horizontal parting rail and a vertical frame member, respectively, a plurality of

gussets interconnecting said intermediate portion with said end portions, said intermediate portion being equipped with reinforcing rib means, said rib means including a first rib extending generally longitudinally of the member and terminating within the end portions, said rib means also including transverse ribbing to strengthen said member in a plane normal to the plane strengthened by the longitudinal rib, said end portions being equipped with a plurality of screw receiving



openings, each opening on the side of the end portion adapted to confront said parting rail and said frame member being equipped with an outstanding annular flange for biting engagement with said parting rail or frame member as the case may be, said end portions also being equipped with projections on the same surface as is equipped with said annular flanges, said annular flanges projecting outwardly from said surfaces slightly greater than said projections.

3,854,269

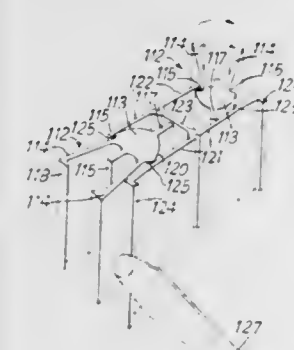
CONNECTING MEANS

John Philip Hancock, Egham Hill, England, assignor to The British Aluminium Company Limited, London, England
Continuation-in-part of Ser. No. 131,647, April 6, 1971, abandoned. This application Feb. 2, 1973, Ser. No. 329,112
Claims priority, application Great Britain, Feb. 4, 1972, 5330/72

Int. Cl. F16h 5/06

U.S. Cl. 52-754

18 Claims



1. Connection means for connecting the edge of a sheet of material to a member such as the edge of another such sheet comprising: an edging strip having a beading having a longitudinal axis from which beading extend integral leg formations positioned to receive the edge of a sheet of material therebetween, the beading defining externally re-entrant formations circumferentially spaced relative to the longitudinal axis of the beading, the beading having a maximum width on the opposite side of the re-entrant formations from the leg formations, and a securing device defining a channel having a plane of symmetry, the securing device having parts extending towards said plane of symmetry, said parts having ends spaced apart by a distance slightly less than said maximum width, and the beading and securing device being relatively proportioned for snap fitting together by first inserting a first of said parts in one of the re-entrant formations with the other part contacting the beading and then relatively rotating the beading and securing device with said first part acting as a pivot until the other part engages in the other re-entrant formation.

3,854,270 APPARATUS FOR AUTOMATICALLY ERECTING AND LOADING CARTONS

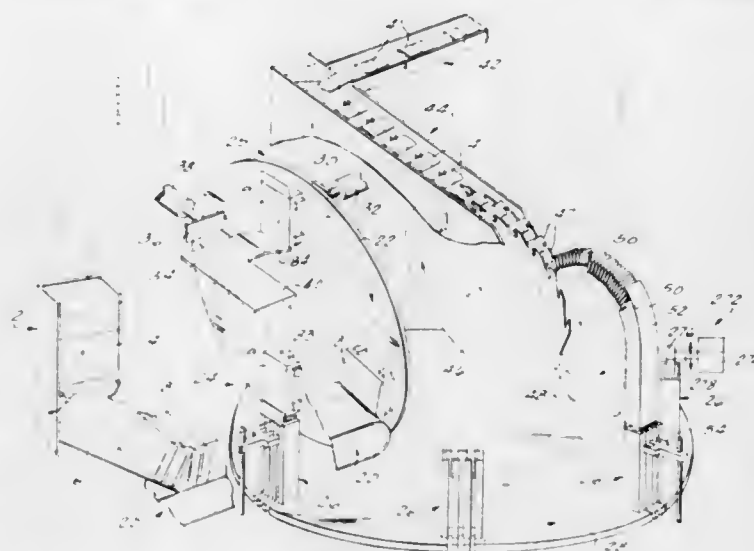
Charles E. Cloud, Wilmette, and Donn Allan Hartman, Zion, both of Ill., assignors to Cloud Machine Corporation, Chicago, Ill.

Filed Aug. 20, 1973, Ser. No. 389,804

Int. Cl. B65b 5/06, 35/50

U.S. Cl. 53-159

17 Claims



1. Packet cartoning apparatus comprising:
a continuously moving horizontal conveyor having a discharge end,
a continuously moving transfer wheel rotatable about a horizontal axis and having its periphery at the discharge end of said conveyor,
said transfer wheel having compartments spaced around its periphery to receive individual packets,
a continuously moving assembly conveyor adjacent the periphery of said transfer wheel and presenting a series of assembly compartments moving past said transfer wheel, each compartment adapted to receive a predetermined number of packets from said transfer wheel,
a holding conveyor below said assembly conveyor and having a plurality of vertical holding compartments,
means for guiding said predetermined number of packets from each said assembly compartment to said holding compartment,
and means for raising said packets out of said compartments and into cartons.

3,854,271

DRIVE MECHANISMS

Edward J. Aldred, Ipswich, England, assignor to Ransomes, Sims & Jefferies, Limited, Ipswich, England

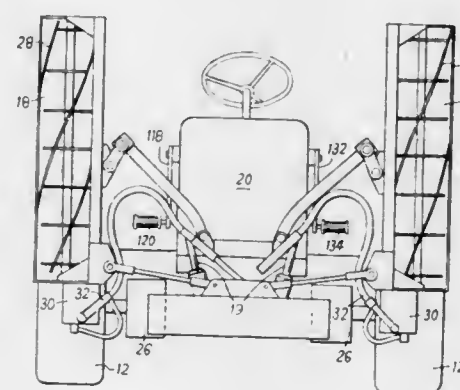
Filed Mar. 27, 1973, Ser. No. 344,181

Claims priority, application Great Britain, Mar. 27, 1972, 14343/72

Int. Cl. A01d 75/30

U.S. Cl. 56-7

15 Claims



1. A drive mechanism for driving a plurality of independently rotatable members, comprising a plurality of groups of

fluid motors with each group including at least one fluid motor, each fluid motor adapted to be connected to a respective one of the rotatable members, a plurality of variable delivery pumps each connected to a separate group of the fluid motors to supply fluid thereto, each of said pumps having a separate control element for varying the rate of delivery of fluid from the respective pump, a prime mover arranged to drive the pumps, and control means operatively connected to the control elements of the pumps so as to vary simultaneously the rates of delivery of fluid from the pumps thereby to vary the speed of rotation of the respective groups of motors while maintaining constant at a pre-set value the ratio of the rates of delivery of respective pumps.

3,854,272

CROP GATHERING BELT

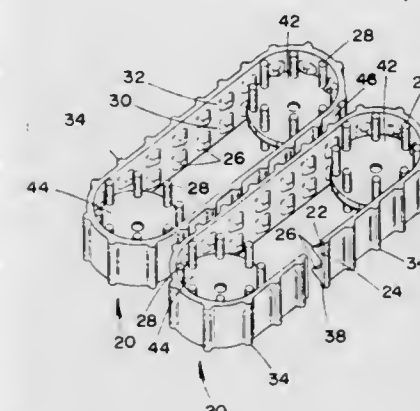
James Murray Lane, III, 12304 E. Iowa Dr., Denver, Colo. 80012, and Guy E. Lingenfelter, 135 Emerald Dr., Broomfield, Colo. 80020

Filed Feb. 20, 1973, Ser. No. 333,934

Int. Cl. A01d 45/02

U.S. Cl. 56-98

9 Claims



1. In harvesting apparatus for gathering and conveying severed crops, said apparatus of the type having two oppositely facing endless means, for conveying crops, gathering means for directing crop to the endless means, and dispersing means for directing crop from the endless means, wherein improvement in the endless means comprises:

at least two oppositely-facing generally flat belts each of which is trained around at least two pulleys where at least one pulley for each belt is toothed, each belt comprising: a first layer of flexible material extending longitudinally of the belt to define a driving portion including a plurality of integrally molded longitudinally spaced lugs adapted to mesh with teeth of the pulley to define a positive belt drive, the lugs having longitudinal and lateral base portions
a second layer of flexible material spaced from and generally parallel to said first layer to define a crop engaging member that includes a plurality of spaced projecting members aligned generally transversely; and
a tensile section of high modulus material disposed between said first and second layers;
said belts adapted and arranged so a portion of the crop engaging member of one belt is juxtaposed with the crop engaging member of the oppositely facing second belt.

3,854,273

APPARATUS FOR PICKING FRUIT GROWING ON A TREE

Baruch Rosenberg, 4, Hadekaum St., Ramataim, Israel

Filed Oct. 30, 1973, Ser. No. 411,026

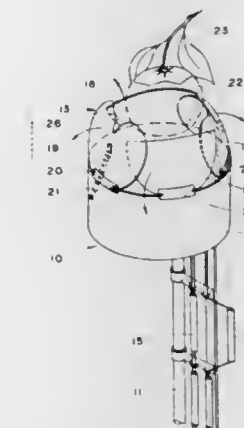
Claims priority, application Israel, Nov. 6, 1972, 40744

Int. Cl. A01g 19/08

U.S. Cl. 56-334

13 Claims

1. A cutterhead for picking fruit growing on a tree comprising an open frame to which an elongated rod is attachable and



shaped so that, in their closed position, a central opening is defined for holding a stem in a fixed position relative to the leaf-plates; a stem cutter mounted on one of the leaf-plates and having a movable cutter bar whose path of movement crosses the central opening for severing a stem held therein; and a selectively actuatable stem cutter operator for moving the cutter bar.

3,854,274

METHOD AND APPARATUS FOR JOINING BROKEN ENDS

Gerhard Bartling, Burgstall, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

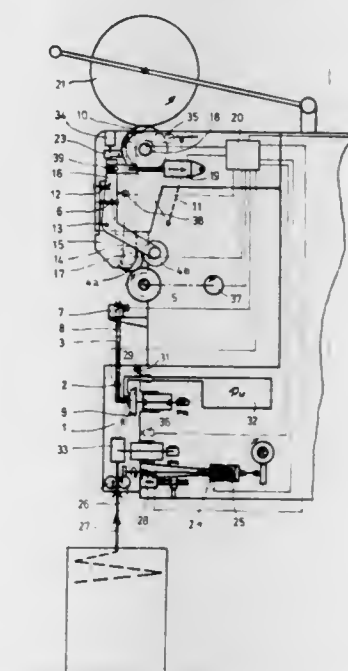
Filed June 20, 1972, Ser. No. 264,527

Claims priority, application Germany, June 21, 1971, 2130690

Int. Cl. D01h 15/00

U.S. Cl. 57-34 R

12 Claims



1. A method for rejoining a broken thread with the spinning fibers in a spindleless spinning machine having a chamber to which the fibers are fed, a turbine for spinning said fibers and means for withdrawing said fibers, comprising the steps of sensing the movement of said withdrawn thread, producing a first signal responsive to a break in said thread, and in response to said signal initiating an automatic program for sequentially stopping the withdrawal of said thread, cutting a portion from the end of said thread, reversing the movement

of said thread to said chamber, producing a second signal responsive to the reverse movement of said cut end, producing a series of impulses in response to said second signal, and after a predetermined number of said impulses recommencing the withdrawal of said thread.

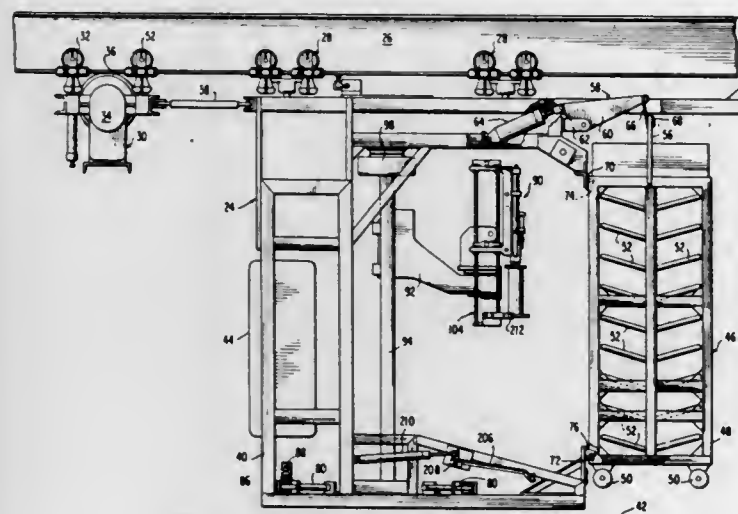
3,854,275

MECHANIZED BOBBIN HANDLER

Thomas J. Bethea, and Joe L. Ritchie, both of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.
Division of Ser. No. 147,951, May 28, 1971, Pat. No. 3,765,160. This application Nov. 12, 1973, Ser. No. 415,286
Int. Cl. D01h 9/10

U.S. Cl. 57—34 R

2 Claims



1. In combination, bobbin handling apparatus and a spinning machine having a plurality of bobbin spindles uniformly spaced along the length of the machine, means for propelling the bobbin handling apparatus along the spinning machine and positioning the apparatus in registration with the spindles, said bobbin handling apparatus including a carriage suspended from an overhead rail extending longitudinally of said spinning machine, said propelling means comprising:

- tractor means having a wheel engaging said rail and a fluid motor driving said wheel;
- brake means for selectively stopping said wheel;
- a pair of cams on said spinning machine, a first follower on said carriage operable to reduce power transmitted from said tractor motor to said wheel when said follower engages one of said cams, and a second follower on said carriage operable to apply said brake means when said second follower engages the other of said cams, said cams being arranged on said spinning machine to engage said first follower prior to engagement of said second follower by the other cam as said carriage progresses along said rail, whereby the first cam causes the speed of the carriage to be reduced and engagement by the second follower with the other cam applies the brake means while the carriage is moving slowly, resulting in an immediate stop at the desired position relative to the spinning machine.

3,854,276

FALSE TWISTER DEVICE

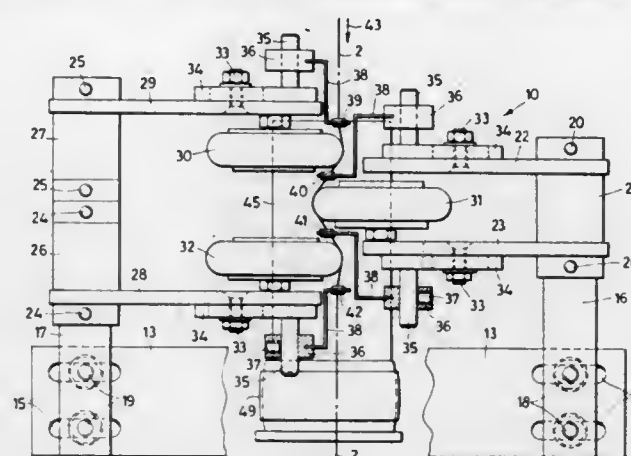
Angelo Marzoli, Bergamo, Italy, assignor to F. LLI Marzoli & C. S.p.A., Palazzolo Sull'Oglio (Brescia), Italy
Filed Oct. 25, 1973, Ser. No. 411,354
Claims priority, application Italy, Oct. 31, 1972, 31186/72
Int. Cl. D02g 1/04

U.S. Cl. 57—77.4

5 Claims

1. A false twister device for increasing the volume of textile yarn, and particularly continuous filament synthetic yarn, said device comprising a frame including supports, discs of relatively yieldable material mounted on said supports and having axes parallel with each other and lying in parallel planes to define a zig-zag passage for the yarn, drive means for rotating said discs which come into contact with the yarn traversing the

zig-zag passage, said drive means including at least one wear resistant cylinder in contact with said discs to rotate the same



by friction therebetween and means for adjusting the distances between the parallel axes of the discs and between the planes in which they lie.

3,854,277

ELECTRONIC STOP-WATCH AND TIMEPIECE

Toshihide Samejima, Yachiyo, and Yasuhiro Ooi, Funabashi, both of Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

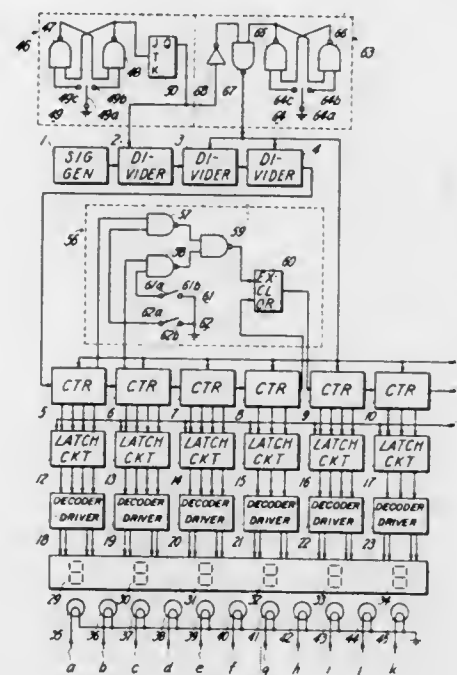
Filed Apr. 26, 1972, Ser. No. 247,618

Claims priority, application Japan, Apr. 27, 1971, 46-27856

Int. Cl. G04f 9/02; G04b 19/30

U.S. Cl. 58—39.5

5 Claims



1. An electronic time-keeping device usable as a stop-watch and as a timepiece comprising, a signal generator for generating pulses having a base frequency, frequency-dividing means dividing the base frequency in time, time count start-stop means for controlling a time count, counting means for counting the output pulses of said frequency-dividing means and developing therefrom signals representative of a time count having predetermined units of time, latch means comprising storage circuits receptive of said signals representative of a time count, latch control means to control storage of said time count signals to cause said device to function as a stop-watch means, display means for displaying a time count when said device functions as a stop-watch and as a timepiece and in which said time count start-stop means develops a signal output maintaining said counting means in a counting state, and includes counting means for controlling the content of a time count of said counting means comprising reset means for generating a reset output signal applied to said counters and gate means receiving a signal from said counting start-stop

means and said reset output signal from said reset means rendering the reset output signal ineffective when said time count start-stop means develops said output signal thereof for maintaining said counting means in said counting state.

3,854,278

ELECTRONIC WRIST WATCH DISPLAY

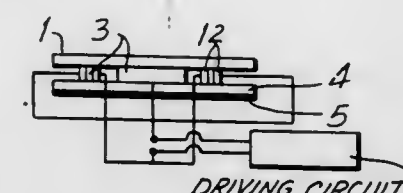
Hiroshi Takeshita, and Katsuhiko Teraishi, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 319,069

Claims priority, application Japan, Dec. 27, 1971, 46-2868; Dec. 28, 1971, 46-2751

Int. Cl. G04b 19/30; H05b 39/09
U.S. Cl. 58—50 R

8 Claims



1. A timepiece display device for digital display of the time comprising a polarizer plate for circularly polarizing light incident thereon and passing therethrough, a reflector plate opposed to said polarizer plate and means intermediate said opposed plates for controllably retarding said light passing between said opposed polarizer and reflector plates, said means being activatable for controlling the retardation of said light by selective impositions of a suitable voltage to at least a portion of said means, substantially no light reflected from said reflector plate being transmitted through said polarizer plate in the absence of a voltage applied to said means.

3,854,279

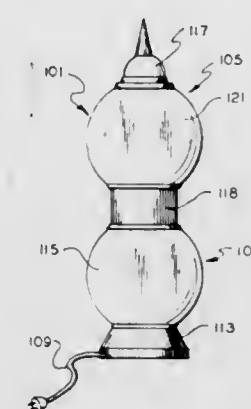
METHOD AND APPARATUS FOR INDICATING TIME IN TERMS OF COLOR

Frank L. Edmunds, 615 W. Onondaga St., Syracuse, N.Y. 13202

Filed Feb. 4, 1974, Ser. No. 439,354

Int. Cl. G04b 19/00
U.S. Cl. 58—50 R

6 Claims



1. Apparatus for indicating time in terms of color, said apparatus comprising:

- a first plurality of differently colored electric lamps, each lamp having a color corresponding to particular hours of the day;
- a first container having a chamber for holding said first plurality of electric lamps, said container transmitting light from the colored lamps when the lamps are ignited; first switching means for connecting said lamps to an electric power source in hourly sequence to ignite each lamp in turn according to the hour of the day to which the color of each lamp corresponds;

a second plurality of differently colored electric lamps, each lamp having a color corresponding to a particular part of each hour of the day;
a second container having a chamber for holding said second plurality of electric lamps, said container transmitting light from the colored lamps when the lamps are ignited; and
second switching means for connecting said second plurality of lamps to an electric power supply in timed sequence to ignite each lamp in turn for the period of the hour of the day to which the color of each lamp corresponds.

3,854,280

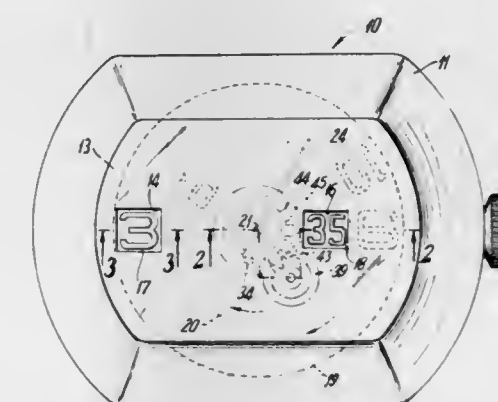
MECHANICAL DIGITAL WATCH

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Watertown, Conn.

Filed June 10, 1974, Ser. No. 477,731

Int. Cl. G04b 19/02, 19/00
U.S. Cl. 58—125 B

10 Claims



1. A digital watch having an outer case and watch drive means located therein comprising:
a dial mounted to said case and having at least one window therein,
a drive shaft coupled to the watch drive means and having a seconds hand mounted thereon,
a minute disc coupled to said shaft and having indicia located on the periphery thereof for indicating minutes, said indicia being viewable through said window in the dial,
an hour disc concentrically coupled to said drive shaft and having hour indicia located about the periphery thereof, said indicia being viewable through said window in the dial, said hour disc having a disc gear portion extending therefrom,
a cannon pinion coupled to said drive shaft and having a protruding nose portion on the periphery thereof, and,
a pinion hour drive assembly comprising a Geneva drive pinion actuated each hour by said cannon pinion and a pinion gear portion which engages the hour disc gear to drive said gear during a relatively short interval at the turn of each hour thereby rapidly changing the hour indicia in said window.

3,854,281

HOURLY METER FOR EQUIPMENT HAVING SHORT OPERATING TIMES

Heinz Reichert, Neviges, Germany, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sept. 26, 1973, Ser. No. 401,013

Claims priority, application Germany, Jan. 31, 1973, 2304479

Int. Cl. G04f 9/06; G04b 5/20
U.S. Cl. 58—145 R

11 Claims

1. An hourmeter for indicating the operating time of electrical equipment having short and intermittent operating cycles during which an electrical signal is produced comprising:

Storage means connectable to the electrical equipment for accumulating to a predetermined level the electrical signal produced by the electrical equipment during the operating cycles;



switching means for providing a control signal in response to said storage means accumulating to said predetermined level the electrical signal from the electrical equipment; and

indicating means responsive to said control signal from said switching means to provide an indication of the operating time of the electrical equipment.

3,854,282

KEY FOR MASTER CHAIN LINK

Carlman Mazel, 10606 Jordan Ave., Chatsworth, Calif. 91311

Filed Dec. 26, 1973, Ser. No. 428,213

Int. Cl. B21H 21/00

U.S. Cl. 59-7

3 Claims



1. A key for removing the clip on a master link wherein the clip is generally U-shaped having two arms with the closed end of clip at the joined end of the arms engaging a groove in and adjacent the end of one cross pin and the open end of the clip at the free end of the arms engaging a groove in and adjacent the end of another cross pin, comprising:

a shank having a handle at one end,

said shank being wider in one direction than the gap between the arms when the free ends of the arms engage the groove in the other pin and spreading the arms when the width of the shank lies perpendicular to said arms so that the free end of at least one arm disengages the groove in said other pin,

and at least one cam surface in the shank immediately adjacent the other end for engaging one of said arms and lifting it beyond the end of said other pin when the width of the shank is turned between the arms to a plane perpendicular to the pins.

3,854,283

INTERNAL COMBUSTION STEAM GENERATING SYSTEM

Robert L. Stirling, 108 Edgar Ave., Brookhaven, N.Y. 11719

Filed Oct. 25, 1973, Ser. No. 409,695

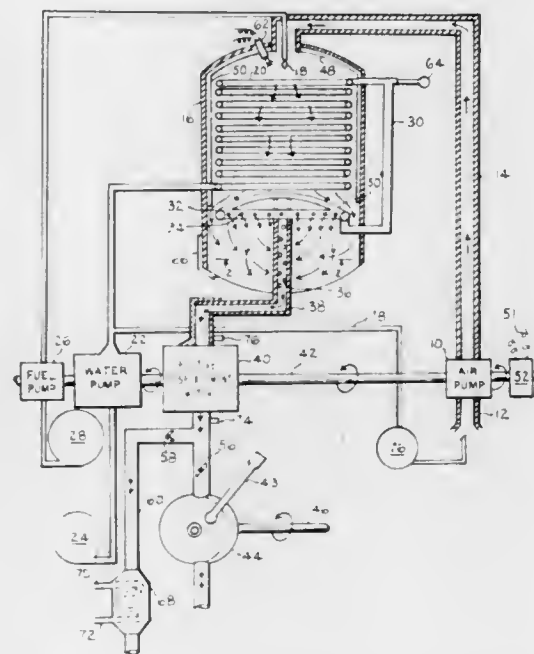
Int. Cl. F02c 7/02

U.S. Cl. 60-39.17

10 Claims

1. An energy conversion arrangement, comprising in combination, a combustion chamber; a source of compressed air connected to said chamber; a source of fuel connected to said chamber and mixed with said compressed air for combustion; a source of water and containing means in said chamber for receiving water to be converted into steam by the combustion of said fuel and air, said containing means isolating said water from contact with the interior of said combustion chamber and from contact with the products of combustion, said steam

being released from said container means and passed into the interior of said chamber for intermixing with the products of combustion within said chamber; ring-shaped means for distributing said steam about the interior of said chamber for intermixing substantially uniformly with the products of combustion; first conversion means connected to the output of said chamber for receiving the mixture of steam and products of combustion and converting partially the energy thereof into mechanical energy; means interconnecting said first conversion means with said sources of compressed air, fuel and water whereby all said sources are operated simultaneously with the operation of said first conversion means; second conversion means connected to said first conversion means for converting into mechanical energy the remaining available energy of said



steam and products of combustion from said first conversion means; and valve means between said first and second conversion means, said first and second conversion means being operated when said valve means is in open position, said first and second conversion means being held stationary in inoperative position when said valve is in closed position, said mixture of steam and products of combustion having a substantially constant energy content for a predetermined time interval during which said first and second conversion means are in inoperative position with said valve in closed position, said mixture of steam and products of combustion transferring energy to said first and second conversion means upon return of said valve means to said open position from said closed position.

3,854,284

ENGINES

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Continuation-in-part of Ser. No. 185,727, Oct. 1, 1971. This application Apr. 25, 1973, Ser. No. 354,209

Int. Cl. F02g 3/00

U.S. Cl. 60-39.61

24 Claims

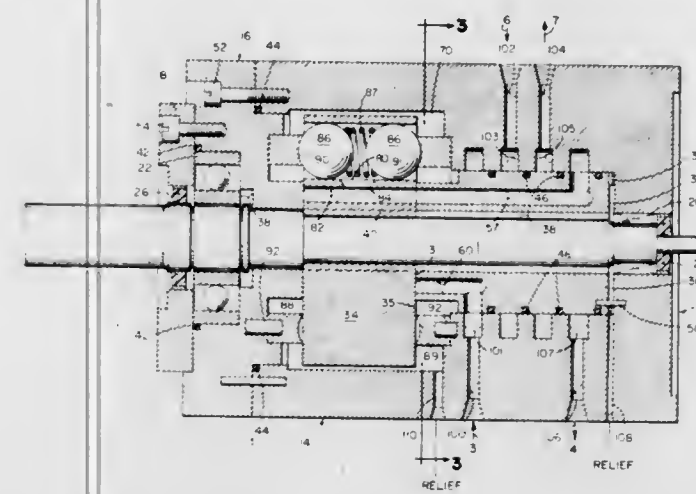
1. An engine having an inlet port and an exhaust port and comprising:

a rotary piston support defining a piston bore, a porting surface, and a conduit extending from said bore to a port at said porting surface;

a cam defining a generally annular cam surface of $2n$ cycles, said cycles being arranged in n sets each of two cycles, one cycle of each set being adjacent and having a displacement greater than that of the other cycle of said each set, and said cam and said piston support being relatively rotatable,

a piston mounted in said bore for movement relative to said support and engaging said cam surface;

a manifold fixed with respect to said cam and having a porting surface engaging said support porting surface, said manifold porting surface defining a plurality of ports, each of said cycles having at least one of said manifold ports associated therewith, said manifold ports being arranged such that during the respective predetermined portions of the relative rotation of said manifold and said support that said piston engages each said cycle said port at said support porting surface communicates with said one manifold port associated with said each cycle, and said manifold and said support being relatively movable; a power chamber including means for increasing the internal energy of a gaseous fluid therein;



a first conduit communicating with said inlet port and a first one of said manifold porting surface ports and providing for intake flow of fluid from said inlet port through said first one port to said bore;

a second conduit communicating with said power chamber and a second one of said manifold porting surface ports and providing for flow of fluid from said bore through said second one port to said power chamber;

a third conduit communicating with said power chamber and a third one of said manifold ports and providing for flow of fluid from said power chamber through said third one port to said bore; and

a fourth conduit communicating with a fourth one of said manifold ports and said exhaust port and providing for exhaust of fluid from said bore through said fourth one port to said exhaust port.

3,854,285

COMBUSTOR DOME ASSEMBLY

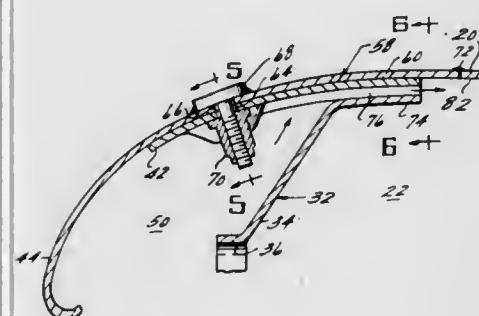
Richard E. Stenger; Arthur J. Gardella, and Thomas C. Campbell, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 26, 1973, Ser. No. 335,684

Int. Cl. F02c 7/18

U.S. Cl. 60-39.66

8 Claims



1. In a combustor assembly including a pair of combustor liners radially spaced from one another and adapted to form a combustion zone therebetween, a dome assembly adapted to be positioned between said liners and to cooperate therewith

to form the upstream end of said combustion zone, and a pair of snout rings adapted to surround said dome assembly and to define an inlet plenum upstream of said combustion zone, the improvement comprising:

said dome assembly includes a dome plate having an upstream end, a downstream end, which forms a generally annular-shaped opening which lies in fluid flow communication with said combustion zone, and at least one mounting ring extending from said downstream end of said dome plate, said mounting ring includes means for removably connecting said dome plate to at least one of said liners, wherein said connecting means are characterized in that they are positioned completely outside of said combustion zone, and wherein said mounting ring includes means for delivering a coolant from said inlet plenum to the inner side of at least one of said liners as a substantially uniform circumferential film at the intersection of said dome assembly and said liner wherein said connecting means comprise a plurality of bolts at least a portion of which extend into said inlet plenum upstream of said coolant delivery means such that said bolts do not interfere with said coolant film, and said mounting ring includes a wiggle strip connected to said dome plate in such a manner as to surround said dome plate at said intersection of said dome assembly and said liner.

3,854,286

VARIABLE BYPASS ENGINES

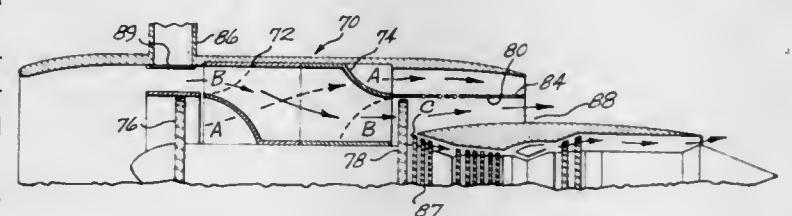
Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 226,850, Feb. 16, 1972, Pat. No. 3,792,584, which is a continuation-in-part of Ser. No. 196,422, Nov. 8, 1971, Pat. No. 3,779,282. This application Feb. 5, 1973, Ser. No. 329,768

Int. Cl. F02k 3/04

U.S. Cl. 60-204

12 Claims



1. A turbine engine having a centrally located housing containing a core gas generator, and a fluid flow control system located between a forward blade element and an aft blade element of said engine; said flow control system comprising means for inverting the respective positions of two separate adjacent annular flow patterns between the entrance and exit ends of said system, means for switching the respective positions of said two flow patterns from their inverted positions to the same respective positions at each of said entrance and exit ends; and wherein there is additionally included in said engine a core passageway means for supplying intake air to said core gas generator which provides a flow path not affected by flow in said two separate flow patterns.

3,854,287

SELF-TRIMMING CONTROL FOR TURBOFAN ENGINES
John P. Rembold, Juno Isles, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,754

Int. Cl. F02c 3/06, 9/04; F02k 3/06

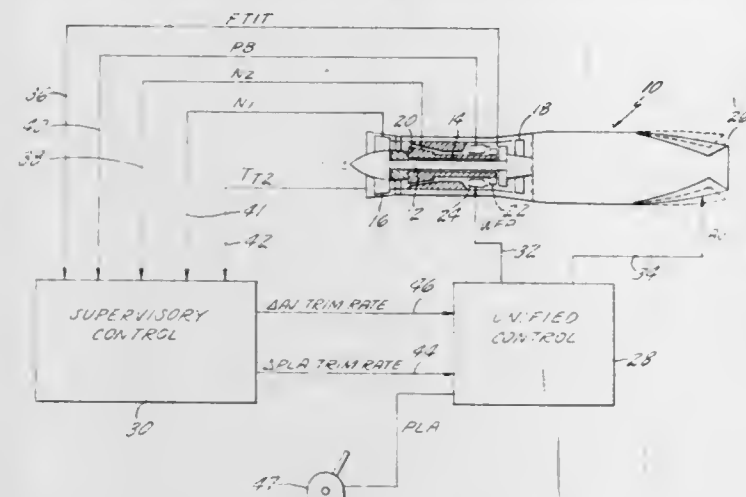
U.S. Cl. 60-236

8 Claims

1. In a control for a twin spool turbine engine having an inlet, a low pressure rotor and a high pressure rotor each having a turbine driven compressor, a burner to which fuel is supplied for driving said turbines, and a variable area exhaust nozzle,

means responsive to selected engine operating conditions for maintaining a desired relationship between param-

ters of low pressure turbine inlet temperature and high pressure compressor speed including means for generating a first signal indicative of a scheduled operating limit for one of said parameters, means responsive to selected engine operating conditions for generating a second signal indicative of a reference value for the other of said parameters, means for measuring the actual value of said other parameter and producing a third signal indicative thereof,



means for comparing said second and third signals and producing therefrom an error signal proportional to the difference therebetween, means responsive to said error signal for scheduling a trim signal, means for adding said trim signal to said first signal to produce a fourth signal indicative of the desired value of said one parameter, and means for trimming the flow of fuel to said burner in response to said fourth signal.

3,854,288

ARRANGEMENT FOR EXHAUST GAS CLEANING
Herbert Heitland, and Peter Manderscheid, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

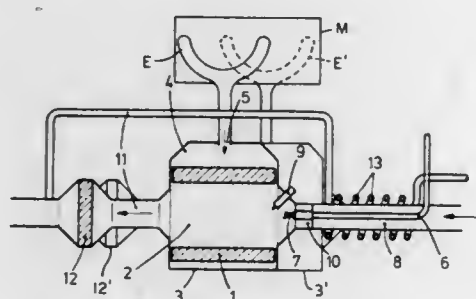
Filed June 12, 1972, Ser. No. 262,008

Claims priority, application Germany, June 11, 1971, 2129023

Int. Cl. F01n 3/14; F02b 75/10

U.S. Cl. 60-300

9 Claims



1. A combustion engine emitting an exhaust gas in the process of its operation comprising a cleaning arrangement for cleaning the exhaust gas, said cleaning arrangement comprising a thermal reactor for oxidizing the components in the exhaust gas and a first catalyzer placed upstream with respect to the flow of exhaust gases before the thermal reactor for performing a reduction of the components in the exhaust gas, said first catalyzer comprising a hollow body surrounding said thermal reactor, a housing for receiving said first catalyzer and said thermal reactor, said first catalyzer forming with said housing a chamber, and an input conduit for the exhaust gases terminating in said chamber, said thermal reactor comprising a heating arrangement including a fuel supply, a secondary air

supply and sparkplug means for igniting the fuel and air mixture supply to said thermal reactor, said heating arrangement being placed adjacent an end wall portion of said housing into which said thermal reactor and said first catalyzer are placed, said housing comprising another end wall portion including an exhaust gas output conduit.

3,854,289

HYDRAULIC CONTROL APPARATUS FOR ENDGATES OF TRUCKS OR THE LIKE

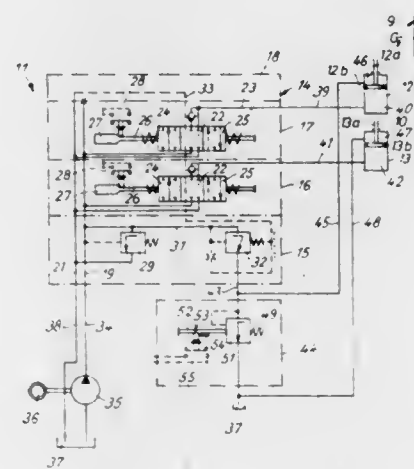
Walter Herrmann, Vaihingen/Enz; Heinrich Geisler, Gerlingen, and Friedrich-Wilhelm Hofer, Hofingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Sept. 7, 1973, Ser. No. 395,372

Claims priority, application Germany, Sept. 11, 1972, 2244445

Int. Cl. F15b 11/16

U.S. Cl. 60-423

16 Claims



1. In a hydraulic control apparatus for at least one double-acting consumer wherein at least one control valve includes at least one valve member movable between first operative, second operative and neutral positions to thereby respectively connect a first fluid-conveying line of said consumer with a supply conduit which is connected to a source of pressurized fluid, with a return conduit which is connected to a tank, and to seal said first line from said conduits, and wherein said valve member regulates the flow of fluid in a control conduit for a switchover valve which opens in response to fluid flow in said control conduit to thereby provide a path for the flow of pressurized fluid in an additional conduit connecting said source to said tank, the improvement which consists in the provision of auxiliary valve means installed in said additional conduit between said tank and said switchover valve to regulate the pressure of fluid in a second fluid-conveying line which connects said consumer with said additional conduit between said switchover valve and said auxiliary valve means.

3,854,290

HOT-GAS RECIPROCATING ENGINE

George Albert Apollonia Asselman, and Adrianus Petrus Johannes Castelijns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,440

Claims priority, application Netherlands, Sept. 13, 1972, 7212380

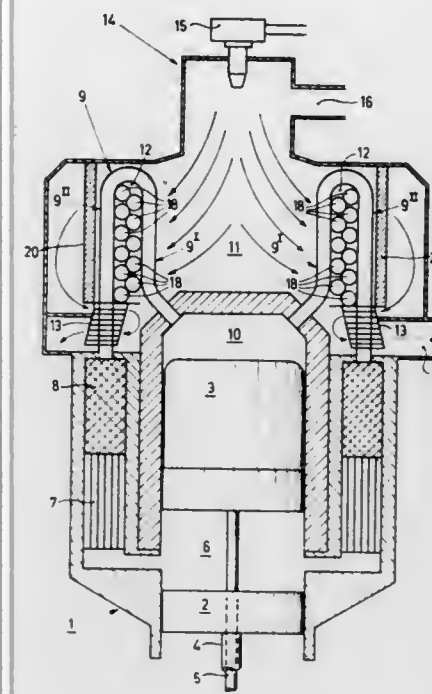
Int. Cl. F01k 27/00

U.S. Cl. 60-524

7 Claims

1. In a hot-gas reciprocating engine including a heater as a heat exchanger for exchanging heat between combustion gases and a working medium present in the engine, the improvement in combination therewith wherein said heater comprises at least two inner and outer rows of pipes, the rows of pipes being spaced apart in the direction of the gas flow thus forming an intermediate space between the rows, with

passages for the combustion gases present between the pipes of each row, said heater further comprising within said inter-



mediate space a mass of hollow spherical elements which elements are readily heat-radiant during operation of the engine and between which the combustion gases can flow.

3,854,291

SELF-CLEANING FILTER FOR HYDROLOGICAL REGENERATION

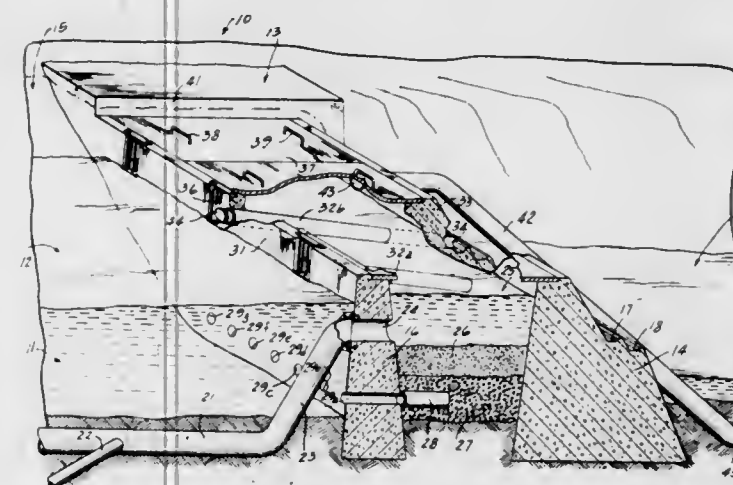
Earl Stuart Perkins, 3207 York Rd., Oak Brook, Ill. 60521

Filed Dec. 26, 1972, Ser. No. 318,099

Int. Cl. E02b 8/02

U.S. Cl. 61-2

6 Claims



1. A system for purifying streams, comprising a dam installed across the river bed of the streams to form a holding pool above the dam, a filter chamber formed in the dam, an inlet sewer pipe sealed from the holding pool connected to the dam to supply input fluid to said filter chamber, filter outlet means extending from the bottom of said filter chamber into said holding pool to normally supply filtered fluid into said holding pool, including pass-through conduit means extending from said holding pool to downstream of said dam and positioned so that the normal head in said holding pool is less than in said filter chamber, including valve means connected to said pass-through conduit means and normally open and adapted to close when the level of said holding pool rises above a preset level, and including a spill way formed in the dam and the elevation of the spill way above the head in said filter chamber such that the filter is backwashed and cleaned by fluid passing from said holding pool through said filter outlet means to said filter.

3,854,292

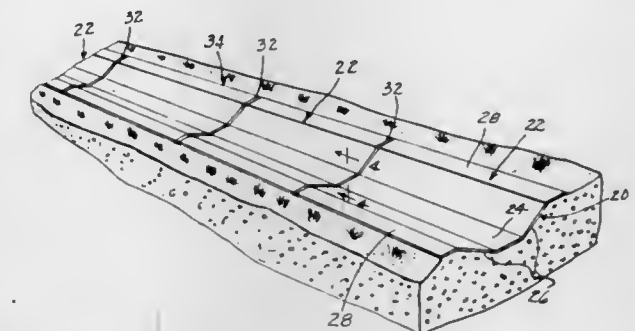
IRRIGATION DITCH LINER AND METHOD FOR MAKING SAME

Hans Nienstadt, P.O. Box 6565, Caracas, Venezuela
Filed Sept. 30, 1971, Ser. No. 185,165

Int. Cl. E02b 5/02

U.S. Cl. 61-7

4 Claims



1. A liner for use in a channel such as an irrigation ditch comprising a plurality of prefabricated sections laid end to end in a channel conformably supporting the same, each of said sections being formed of fiber reinforced plastic resin of predetermined characteristics and being concave upwards, each section having fibers initially extending from the opposite ends thereof with the extending fibers of successive sections in overlapping relation providing a double layer of fibers, and plastic resin of said predetermined characteristics cured to set in place over said overlapping fibers and thus forming with the compatible plastic resin of adjacent sections a continuous integral liner with reinforced integral areas between adjacent sections; certain spaced sections along the length of the liner being of a plastic resin of different characteristics rendering the same flexible as compared to remaining sections for accommodating shifting of the said remaining sections.

3,854,293

LINING FOR UNDERGROUND EXCAVATIONS

Klaus Spies, Dortmund-Wellinghofen, Germany, assignor to Bochumer Eisenhütte Heintzmann & Co., Bochum, Germany

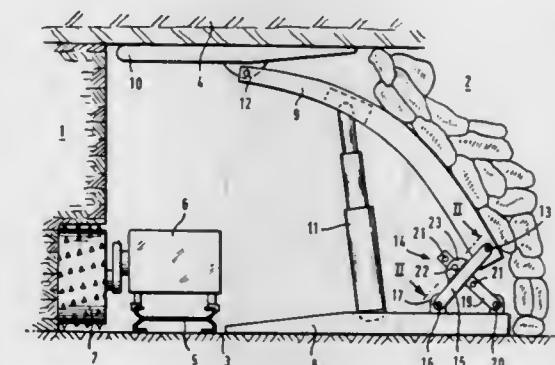
Filed May 18, 1973, Ser. No. 361,643

Claims priority, application Germany, May 18, 1972, 2224207

Int. Cl. E21d 15/44

U.S. Cl. 61-45 D

15 Claims



1. In a lining for underground excavations, a combination comprising a floor base having two spaced sides; a shield comprising at least one part which extends over said floor base in direction from one toward the other of said sides and has a free end portion, and an other end portion spaced from said free end portion in said direction; a roof cap attached to said free end portion of said shield and projecting beyond the same; at least one pit prop arranged between and engaging said floor base and said shield and being extendable so as to adjustably support said shield and said roof cap on said floor base; a bracket attached to said floor base and provided with an elongated cam opening; and an adjustable support assembly comprising a first pivot supported in said cam opening for

displacement longitudinally thereof, a support mounted for rotation about and displacement together with said first pivot relative to said floor base and having a floor base portion of an eccentric cylindrical configuration abutting against said floor base and subjecting said first pin to displacement longitudinally of said cam opening during the rotation of said support, a second pivot engaging said other end portion of said shield so as to subject said other end portion to displacement along an arcuate path extending in said direction and through a plurality of positions during the rotation of said support so that the distance of said other end portion from said floor base increases as said support rotates from said one to said other side due to the rotation of said support and displacement of said first pivot in said cam opening, and means for fixing said other end portion in selected positions of said plurality.

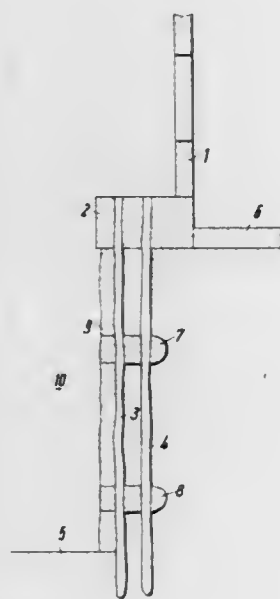
3,854,294

METHOD FOR PRODUCING A PILE SUPPORT ARRANGEMENT

Anton Frank, Kololdstrasse 37, 8000 Munich 83, Germany
Filed Dec. 29, 1972, Ser. No. 319,398

Int. Cl. E02d 27/48, 5/36

U.S. Cl. 61—51



1. A method of production of a pile support arrangement for underpinning the pre-existing foundation of a building structure and the like, comprising the steps of:

installing a plurality of piles by boring through the foundations into ground so as to be supportively disposed beneath the pre-existing foundations of the structure to form a first set of vertically installed piles stretching longitudinally of the foundations and with a predetermined number thereof being installed at angles to one another, and a second set of piles installed obliquely to said first set in a non-vertical direction, and stretching longitudinally of the foundations;

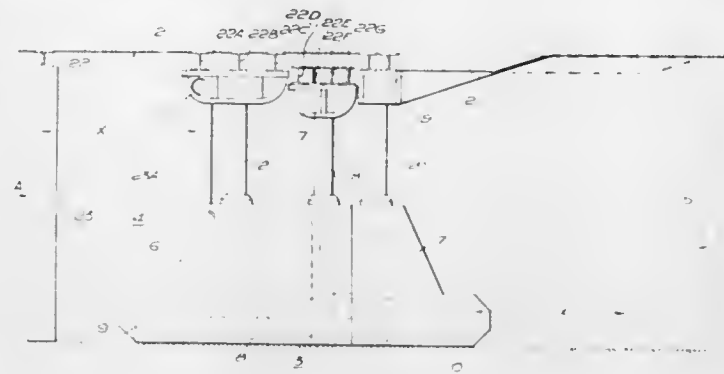
injecting concrete material at selected positions between the driven piles to form hardened nodes within the ground connecting at least respective ones of the piles together at said selected positions whereby a trussed grid-structure comprising an array of interconnected rigid triangular structural portions, is developed throughout said plurality of piles to form said pile support arrangement which is capable of absorbing vertical and oblique forces applied thereto and transmitting same to ground, in which the step of injecting concrete material is selected at positions within the driven piles to form rigid triangular pile structures in the direction of continuous footings.

3,854,295
MINING EQUIPMENT
Charles Round, Rotherham, England, assignor to Fletcher Sutcliffe Wild Limited and Charles Round
Filed Sept. 10, 1973, Ser. No. 395,543
Claims priority, application Great Britain, Sept. 19, 1972, 43245/72

Int. Cl. F21d 15/58

U.S. Cl. 61—63

9 Claims



1. A machine for setting permanent mine-roadway supports, each support being constituted by one horizontal roof bar and two spaced apart vertical legs, said machine comprising a canopy adapted to carry a horizontal roof bar of a permanent mine roadway support to be set in position by the machine, hydraulic displacement means for advancing said canopy towards a roof of a roadway or for retracting said canopy from said roof of said roadway, and at least one hydraulic ram carried by, or supported from, said canopy and adapted, in use, to act directly below said roof bar to be set and on upper ends of said two vertical legs which complete the permanent mine roadway support, by displacing said upper ends of said legs from an inclined position to a set position in which both said legs engage said roof bar advanced by said canopy to said roof.

3,854,296

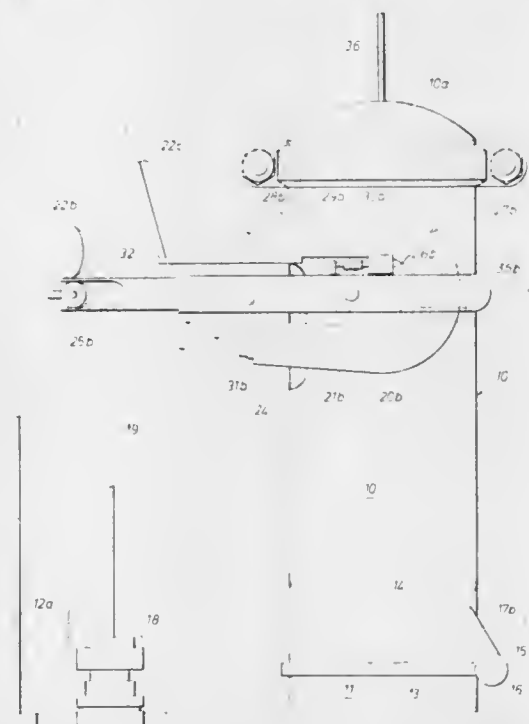
SUBSURFACE WORK CHAMBER FOR MAKING TRANSPARENT AN UNDERWATER CLOUDY WORK AREA

Ivo C. Pogonowski, Blackburg, Va., and Paul D. Carmichael, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Apr. 27, 1973, Ser. No. 355,115

Int. Cl. B63c 11/00

U.S. Cl. 61—69 R

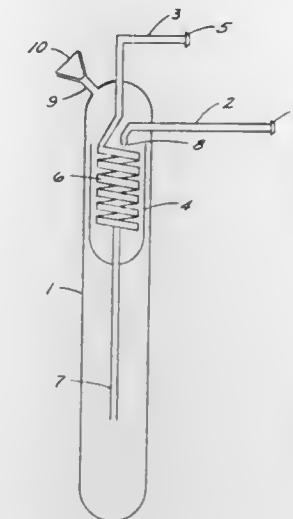
12 Claims



1. A subsurface well servicing and life supporting work chamber for housing workers and wellhead equipment for

operating in an underwater area covered with cloudy water comprising:

- submarine chamber means,
- water filter means including water inlet means and pump means for said submarine chamber means for drawing in cloudy water and filtering said cloudy water to provide clear water,
- water ejection means for said submarine chamber means,
- said water ejection means being responsive to said water filter means for ejecting clear water over said underwater area for providing a relatively transparent area of clear water to work in, and
- baffle plate means being positioned between said water inlet means and said water ejection means for limiting mixing of the ejecting clean and clear water with the incoming cloudy water and to increase the size of work area swept by the clean and clear water.



catating through one end thereof with said dip tube and through the other end thereof with said outlet tube, said inlet tube

projecting through a wall of said container and terminating within said cup member near said coil.

3,854,297

METHOD AND APPARATUS FOR LAYING MARINE PIPELINES

Douglas E. Broussard; Dean P. Hemphill, both of Houston; Robert H. Kolb, Cypress, all of Tex., and Robert H. Macy, Pascagoula, Miss., assignors to Shell Oil Company, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,667

Int. Cl. B63b 35/04; F16l 1/00

U.S. Cl. 61—72.3

6 Claims



1. A semi-submersible vessel for carrying out offshore operations comprising:

- a single, hollow, water-tight barge-shaped hull member;
- a plurality of open-top ballast pen means supported on the upper surface of the barge hull member for temporarily holding water as a wave moves across said barge hull;
- a number of water-tight selectively floodable buoyancy control chambers within said barge hull;
- pumping means in fluid communication with said buoyancy control chambers adapted to selectively flood and evacuate said chambers thereby varying the buoyancy of said vessel in said body of water;
- a plurality of vertically extending buoyant stabilizing columns supported on the upper surfaces of said hull and spaced longitudinally thereon; and
- work platform means supported at the upper ends of said columns for accomodating equipment for said offshore operations.

3,854,298

CONDENSATE TRAP

D. Charles Carter, Dayton, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed July 23, 1973, Ser. No. 381,945

Int. Cl. B01d 5/00

U.S. Cl. 62—55.5

3 Claims

1. A device for condensing vapors from gaseous streams which comprises an elongated generally tubular container containing an inlet tube and an outlet tube, a cup member disposed within said container in spaced relationship to the inner surface of said container, an open-ended dip tube projecting downward through the bottom of said cup member and terminating within said container beneath said cup member, a tubular coil disposed within said cup member and communi-

COOLING CONCENTRATED, DIAPHRAGM CELL SODIUM HYDROXIDE SOLUTIONS

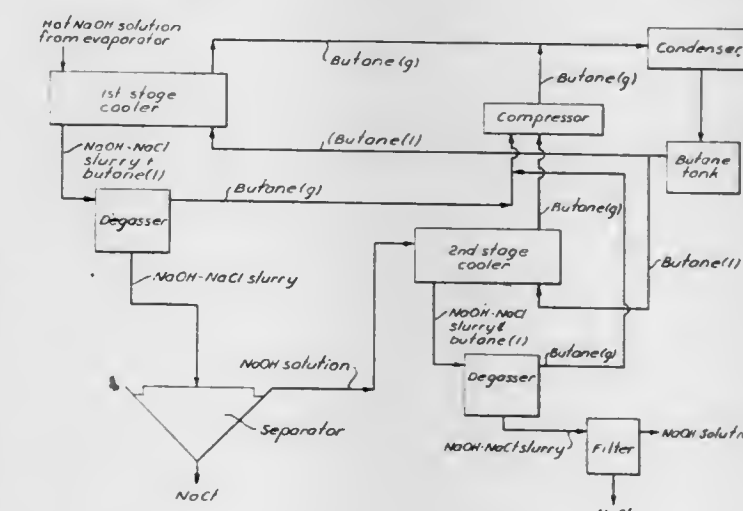
Harold D. Myers, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 27, 1971, Ser. No. 192,941

Int. Cl. B01d 9/04

U.S. Cl. 62—58

24 Claims



1. A process to reduce the sodium chloride concentration in a sodium hydroxide solution which comprises:

- cooling a hot, concentrated, diaphragm cell sodium hydroxide solution containing sodium chloride by contact with a liquid refrigerant, whereby sodium chloride is precipitated; and
- separating the precipitated sodium chloride from the sodium hydroxide solution.

3,854,300

WATER VAPOR REMOVAL FROM VENT GAS SYSTEMS

Clarence G. Gerhold, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 8, 1973, Ser. No. 368,419

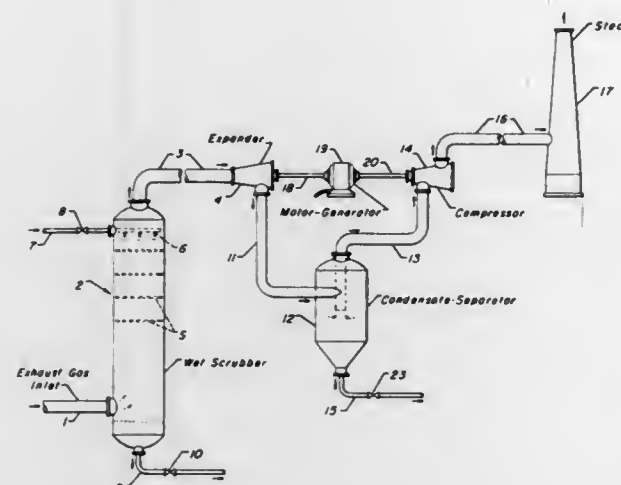
Int. Cl. F25b 9/00

U.S. Cl. 62—88

2 Claims

1. In the scrubbing of waste gases with aqueous liquid to remove pollutants therefrom, thereby forming a scrubbed gas stream of high moisture content such that an objectionable visible plume of water vapor is formed upon discharge of the gas stream to the atmosphere through a stack, the method of minimizing said visible plume from the stack which comprises

expanding said scrubbed gas stream of high moisture content to a lower pressure such as to effect cooling and resulting water vapor condensation, separating resulting water condensate from the gas stream, recompressing the cooled gas stream



with retained latent heat of vaporization and thereby further heating said stream, and then discharging the resulting heated stream with the lowered moisture content through said stack to the atmosphere.

3,854,301

CRYOGENIC ABSORPTION CYCLES

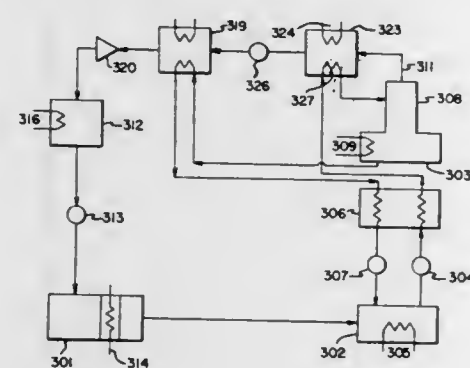
Ellis P. Cytryn, 900 W. Rt. 70, Marlton, N.J.

Filed June 11, 1971, Ser. No. 152,332

Int. Cl. F25b 15/00

U.S. Cl. 62-101

10 Claims



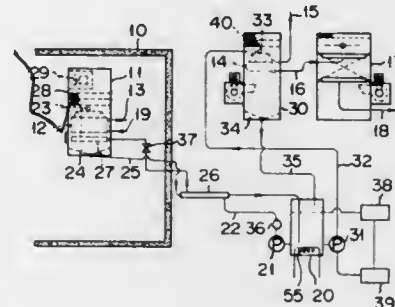
1. A refrigeration process comprising the steps of: absorbing a refrigerant vapor in a liquid absorbent; increasing the pressure on resultant mixture of said refrigerant and said absorbent; distilling and rectifying the mixture into substantially pure refrigerant vapor and pure absorbent; reducing the pressure on resultant pure liquid absorbent and returning the latter to the absorbing step; cooling and condensing the refrigerant vapor to the liquid state; reducing the pressure upon the liquid refrigerant to below the triple point of the refrigerant to produce solid refrigerant; sublimating the solid refrigerant to the vapor state; and passing resultant refrigerant vapor to the absorbing step at a rate that maintains the pressure below the triple point.

3,854,302
DEFROSTER FOR A REFRIGERATING SYSTEM
Fujio Masuda, Tokyo, Japan, assignor to Sakura Refrigerating & Heating Engineering Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 288,666, Sept. 13, 1972, Pat. No. 3,772,897. This application Aug. 29, 1973, Ser. No. 392,748

Claims priority, application Japan, Apr. 14, 1973, 48-42601
Int. Cl. F25d 21/10

U.S. Cl. 62-282

10 Claims



1. A defroster for removing the frost deposited on the surface of the evaporator of a refrigerating system which comprises spray means for spraying an antifreezing solution on the evaporator to remove the frost deposited on the evaporator; an antifreezing solution tray positioned below the evaporator so as to receive the antifreezing solution sprayed on the evaporator and dripping therefrom after melting the frost deposited thereon; a pre-cooler located between the tray and evaporator to cause the antifreezing solution passing through the pre-cooler to be cooled from the outside by a separate portion of the antifreezing solution which has been cooled by melting the frost deposited on the evaporator; and means for conducting the antifreezing solution collected in the tray to the spray means through the pre-cooler, whereby the antifreezing solution flowing through the pre-cooler is pre-cooled from the outside by a separate portion of the antifreezing solution which has been cooled by melting the frost deposited on the evaporator and thereafter being sprayed again on the evaporator by the spray means.

3,854,303

AIR-CONDITIONING SYSTEM FOR MOTOR VEHICLES

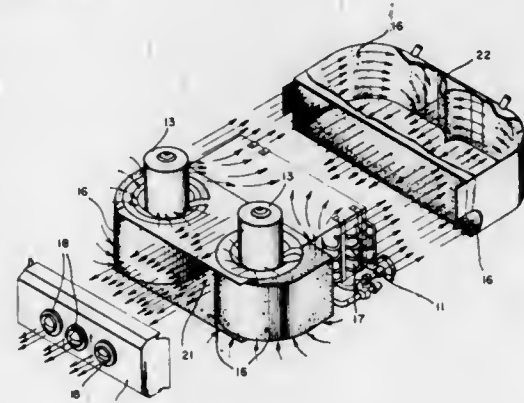
Luis Suchard, 2332 Portland St., Los Angeles, Calif. 90007

Filed Nov. 3, 1972, Ser. No. 303,596

Int. Cl. F25d 17/06

U.S. Cl. 62-426

2 Claims



1. An air conditioning system for vehicles comprising: an outer casing having an open front end; an inner casing disposed within said outer casing and spaced therefrom, said space defining an air flow path therebetween;

cooling coils disposed within said inner casing and partially extending into said air flow path;
a face plate disposed in and covering said front end; circulation means disposed within said outer casing and adjacent said inner casing for drawing uncooled air into said air flow path to reduce the heat and moisture content of said air, and for forcing the drier cooler air across the cooling coils for additional temperature reduction;
means for insulating the interior surfaces of said outer casing and said face plate; and
louver members provided on said face plate and adapted to permit the directed expulsion of cooled air therefrom into the surrounding atmosphere.

3,854,304

MULTI-SYSTEM CIRCULAR KNITTING MACHINE HAVING A PATTERN DEVICE

Gerhard Hamma, Spaichlingen, Germany, assignor to Mayer & Cie. Maschinenfabrik, Taifingen/Wuertt, Germany

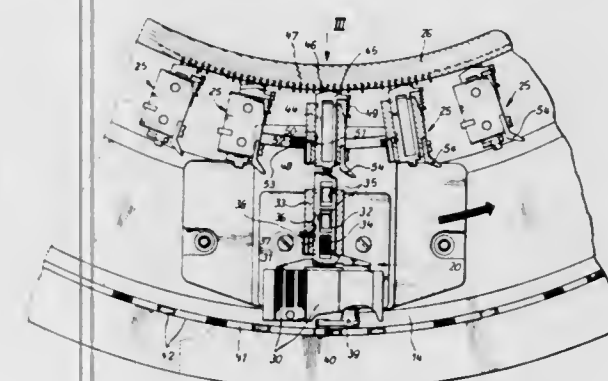
Filed Feb. 5, 1973, Ser. No. 329,424

Claims priority, application Germany, Feb. 8, 1972, 2205750

Int. Cl. D04b 15/78

U.S. Cl. 66-50 R

3 Claims



1. In a multi-system circular knitting machine having a rotating needle cylinder provided with a plurality of guide grooves and a stationary cam cylinder and a plurality of cylinder needles and jacks reciprocally movably mounted in said guide grooves, an improved device for producing a knitted fabric, comprising in combination,

a plurality of equidistantly mounted means for supporting sets of non-rotating sliding members, each non-rotating sliding member being slidable in its supporting means to assume a radially inward operative position and a radially outward inoperative position, said sliding members when in their operative positions being adapted to engage preselected ones of said plurality of jacks, whereby each set of sliding members corresponds to a knitting system of the multi-system knitting machines;

means for supporting a single set of positioning members, said supporting means being rotatable in the circular knitting machine synchronously with said needle cylinder and each positioning member of said set of positioning members being movable from an inoperative position to an operative position wherein it is adapted to coact with preselected sliding members of all sets of said non-rotating sliding members so as to position said preselected sliding members into their operative position by slidingly moving them radially inwards;

a control cam mounted on said means for supporting said positioning members, said control cam coacting with all sets of non-rotating sliding members to lock the sliding members of each set in place at predetermined time intervals;

rotating means for supporting positioning members passes by said stationary cam member;
a set of holding magnets corresponding to the number of positioning members and mounted on the same means which support said positioning members, each positioning member is adapted to coact with a holding magnet; and a pattern program storage device electrically connected to each holding magnet for selectively energizing it to thereby release the corresponding positioning member; wherein each of said means for supporting sets of non-rotating sliding members comprises a first locking mechanism adapted to coact with said control cam so as to lock preselected non-rotating sliding members in each set into their operative or inoperative positions, and wherein said means for supporting said single set of positioning members comprises a second locking mechanism, an annular stationary control cam mounted in the circular knitting machine, said second locking mechanism being adapted to coact with said annular control cam so as to lock preselected positioning members in their operative or inoperative positions.

3,854,305

ADJUSTABLE STITCH CAM

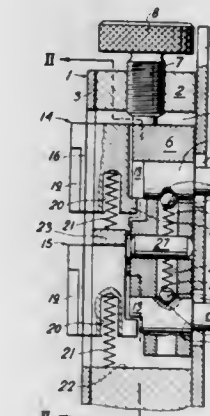
Rudolf Bandoch, Bilovice, and Karel Sodomka, Brno, both of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Switzerland

Filed Sept. 8, 1972, Ser. No. 287,427

Int. Cl. D04b 15/32

U.S. Cl. 66-54

4 Claims



1. An arrangement for adjusting stitch cams in circular knitting machines, comprising in combination, a cam box having a front plate and a back plate each having at least one opening, said plates defining a space therebetween, and having a top plate and a bottom plate; a member having at least two transverse bores is movably mounted in said space; a corresponding number of stitch cam setting pins adjustably mounted in said transverse bores; a corresponding number of stitch cams adjustably mounted in said cam box and being adapted to coact with said setting pins; screw means threadably mounted in said top plate and extending into said space so as to contact said member; biasing means disposed in said cam box and urging said member into contact with said screw means; the position of said member including the setting pins relative to the distance from the top and bottom plates is adjustable by said screw means, whereby an adjustment of each stitch cam can be made via the coacting setting pin provided the corresponding setting pin is in its operative position, said stitch cams being individually settable into operative or inoperative position by the turning of said setting pins.

3,854,306

KNITTING MACHINES AND LIKE FABRIC-PRODUCING MACHINES

Jack Heywood, and Roger Heywood, both of Rochdale, England, assignors to Meiners Optical Devices Limited, London, England

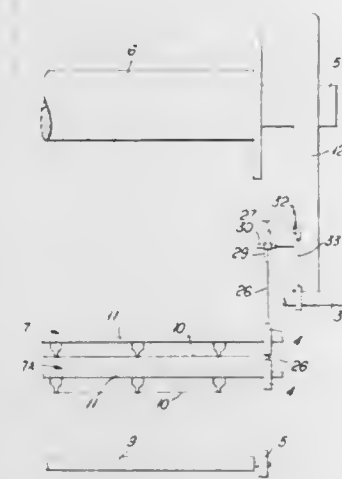
Filed Sept. 11, 1972, Ser. No. 287,807

Claims priority, application Great Britain, Sept. 16, 1971, 43330/71; Mar. 27, 1972, 14341/71

Int. Cl. D04b 23/00

U.S. Cl. 66—86 A

14 Claims



1. Yarn handling and control apparatus in a knitting machine, including at least one warp beam supplying warp yarns, yarn length control means over which warp yarn supplied by said at least one warp beam pass, a row of knitting elements to which said warp yarns travel after passing over said yarn length control means, said warp yarns extending from said yarn length control means to said knitting elements in close mutually parallel relationship and all in a common plane so as to form a yarn sheet, a fabric take-up roller receiving fabric knitted by said knitting elements, said yarn length control means comprising a wholly rigid coupling including a rigid tension bar extending parallel to said yarn sheet plane and at right angles to the direction of travel of said yarns, said tension bar being mounted for only rigidly controlled oscillation to and fro in a direction toward and away from said yarns, power-actuated drive means oscillating said tension bar rigidly in said a direction in synchronism with the operation of said knitting elements, and means automatically responsive to stopping and starting of said machine to vary the stroke of oscillation of said tension bar such that said bar is driven farther in the direction toward said yarns on stopping and withdrawn in the direction away from said yarns through an equivalent distance on starting of such extent as to create an excess of warp yarn length on stopping, and means for progressively reducing said warp yarn length under controlled tension in response to restarting of said machine.

3,854,307

DRIVE MEANS FOR POSITIVE YARN FEEDING DEVICES MOUNTED ON A CIRCULAR KNITTING MACHINE

John Seibold, Ronkonkoma, N.Y., assignor to Wesco Industries Corp., Plainview, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,567

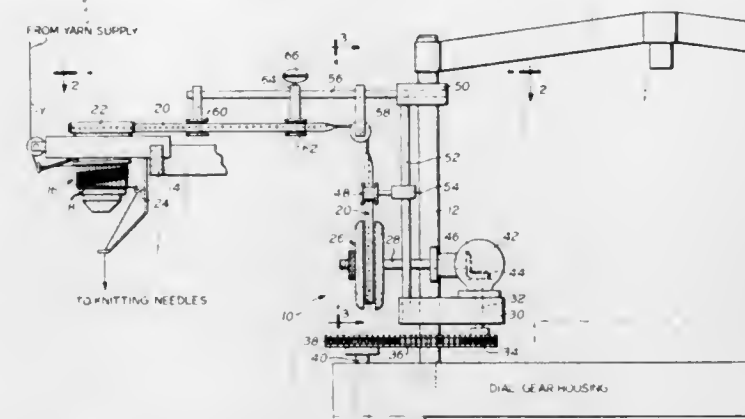
Int. Cl. D04b 15/48

U.S. Cl. 66—132 T

8 Claims

1. In a circular knitting machine equipped with a plurality of positive yarn feeding devices, each having a rotating element mounted for rotation about a vertical axis and said rotating elements being mounted at the same elevation whereby to be driven by a single endless tape adapted to travel in a horizontal path for drivingly engaging said rotating elements, means for driving said tape at a speed having a predetermined relation to the rotational speed of the knitting machine, comprising

- a pulley adapted to drive said tape,
- means mounting said pulley onto said knitting machine for rotation about a horizontal axis disposed below the elevation of said rotating elements whereby the tape travels vertically as it enters into and departs from its engagement with said pulley,



- shaft means operatively related to said knitting machine drive means for driving said pulley at a speed proportional to the rotational speed of said knitting machine, and
- idler means supported by said knitting machine for guiding said tape from said pulley to said horizontal path for drivingly engaging the rotating elements of said positive feeding device.

3,854,308

SUSPENSION MOUNTING ASSEMBLY FOR AUTOMATIC WASHER

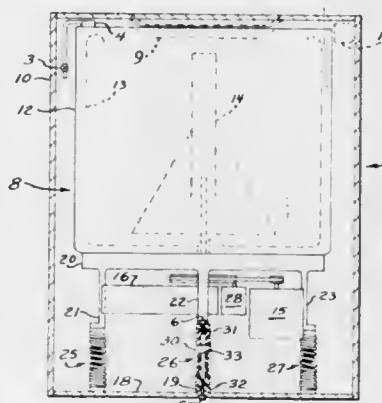
James I. Czech, Stevensville, and Roy C. Oakley, Jr., Coloma, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 23, 1973, Ser. No. 325,983

Int. Cl. D06f 37/24

U.S. Cl. 68—23.3

10 Claims



1. In a vertical axis automatic washing machine having a cabinet, a cabinet base, and a receptacle assembly within said cabinet, a suspension means for suspending said receptacle assembly above said base, said suspension means comprising: a plurality of essentially identical, vertically oriented helical springs each having the same number of coils;

a plurality of mounting members, one for connecting each of said springs to said receptacle assembly at one end portion of each of said springs, and also for connecting each of said springs to said base at the opposite end portion of each of said springs, said mounting members each having a generally cylindrically shaped surface with a helical groove in said surface of sufficient length to receive engagingly a given number of said spring coils of the one of said springs associated therewith, one of said mounting members as so connected to one end of one of said springs having a longer such groove than at least one other of said mounting members as connected to one end of at least one other respective one of said springs,

3,854,310

ELECTRIC CONTROL MOTOR DRIVEN LOCK MECHANISM

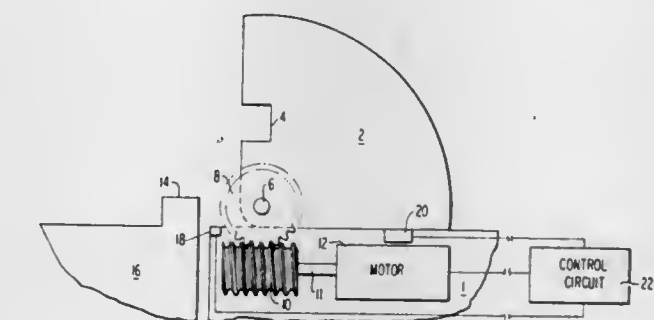
Stephen Paull, Falls Church, Va., and Paul A. Crafton, Pottomac, Md., assignors to Constellation Corporation, Rockville, Md.

Continuation of Ser. No. 216,132, Jan. 7, 1972, abandoned, Division of Ser. No. 84,085, Oct. 26, 1970, abandoned. This application Mar. 7, 1974, Ser. No. 449,134

Int. Cl. E05b 47/00

U.S. Cl. 70—280

10 Claims

**3,854,309 LETTING-OUT OF HIDES AND SIMILAR MATERIALS**

Kurt Rabanus, Grabenstrasse 22, 5608 Radevormwald, Germany

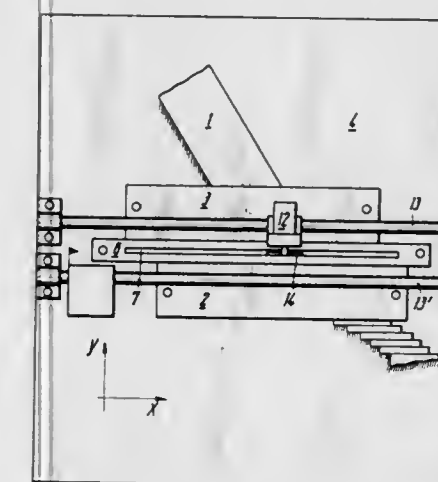
Filed Jan. 30, 1973, Ser. No. 328,007

Claims priority, application Germany, Jan. 31, 1972, 2204399

Int. Cl. C14b 1/40

U.S. Cl. 69—23

7 Claims



1. An apparatus for letting out hides and the like, which comprises a base means disposed to receive the hide to be let-out and having an elongated opening extending along and about a reference cutting line, a first pair of holders operable to grip the hide along two first lengthwise regions disposed in opposite spaced-apart relation about said cutting line, said first pair of holders being movable relative to each other along said cutting line and movable relative to each other along a line transverse to said cutting line; a second pair of holders movable relative to each other and operable to grip the hide along two second lengthwise regions disposed between the cutting line and said first regions, said second pair of holders including a rail which contacts the hide on the hair-free side thereof, and a carriage which contacts the hair side of the hide and has means operable to part the hair of the hide along said cutting line; cutter means operable to sever the hide along said cutting line to form two separate hide parts having confronting edge portions; said first pair of holders being movable one relative to the other along said cutting line to position said hide parts in staggered relation to one another, said first pair of holders being movable one relative to the other along said line transverse to the cutting line to press together the confronting edge portions of said hide parts to accommodate stitching said hide parts together in staggered relation.

1. An electrically controlled motor driven lock mechanism, comprising:

- a sector bolt rotatable between a locked and an unlocked position,
- a reversible electric motor having a shaft,
- a worm connected to the motor shaft,
- a worm gear driven by the worm and connected to the sector bolt, wherein the gear ratio between the worm and worm gear is such that the worm will only rotate when a rotative force is applied to the motor shaft,
- a door, wherein said sector bolt is mounted on said door,
- a door frame for receiving said door, said door frame having a notch means thereon,
- said sector bolt having a recess means thereon such that when said sector bolt is in a locked position said recess means receives said notch means,
- a motor current control circuit means for controlling the direction of current through said motor and thereby the direction of rotation of the shaft of said motor;
- a first logic circuit means having a plurality of AND gates with inverted outputs for generating a first output, said first output being applied to said motor current control circuit means, whereby when said first logic circuit means generates an output said motor current control circuit means causes the rotation of said motor shaft in a direction to cause said sector bolt to rotate to said unlocked position;
- a second logic circuit means having a plurality of AND gates, with inverted outputs for generating a second output, said second output being applied to said motor current control circuit means, whereby when said second logic circuit means generates an output, said motor current control circuit means causes the rotation of said motor shaft in a direction to cause said sector bolt to rotate to said locked position;
- a first sensing means for sensing when said sector bolt is in said unlocked position and for preventing said first logic circuit from generating an output when said unlocked position is sensed;
- a second sensing means for sensing when said sector bolt is in said locked position and for preventing said second logic circuit from generating an output when said sector bolt is in said locked position and,
- a third sensing means for sensing when said door is not received in said door frame and for preventing said second logic circuit means from generating an output when said door is not received in said door frame.

3,854,311

PICK RESISTANT LOCK HAVING LATERALLY MOVABLE WAFERS

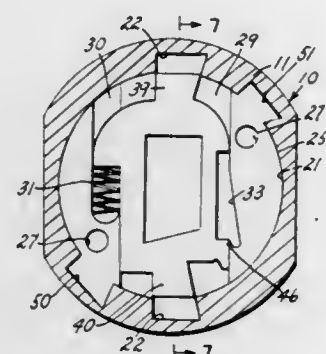
Leonard Mercurio, 34 Beaumont Dr., Plainview, N.Y. 11803

Filed Oct. 29, 1973, Ser. No. 410,428

Int. Cl. E05b 15/14, 29/02

U.S. Cl. 70—364 R

1 Claim



1. In a pick-resistant tumbler lock of a type including a relatively fixed cylinder defining a cylindrical bore, at least one plug element arranged for relative rotation within said bore, said plug element having a resiliently urged wafer slidably mounted thereon for selective projection radially outwardly to engage a corresponding groove in said fixed cylinder, the improvement comprising: said plug element having a radially extending recess therein, said wafer being disposed within said recess, said recess having a generally rectilinear wall at one side thereof, said wafer having corresponding edge surfaces slidably contacting said wall whereby said wafer may execute rectilinear motion relative thereto, said generally rectilinear side wall having a recess therein defining a shoulder, said wafer having a laterally extending surface thereon selectively engageable with said shoulder accompanying a small degree of pivotal motion of said wafer relative to said recess; said wafer defining a generally rectangular opening therein for entrance of a key shank, at least one of the edges defining said opening being disposed in non-rectangular relation to form a camming surface cooperating with a picking tool to urge said wafer into engagement with said shoulder; whereby upon the occurrence of an attempt to pick said lock by exerting a torque upon said plug element relative to said cylinder element, and urging said wafer to a point where said wafer disengages said relatively fixed cylinder, said wafer will be urged to cantered relation relative to the axis of said plug element, and predisposed to enter said recess upon inward movement to engage said shoulder prior to disengagement of said wafer from said fixed cylinder, said cantered relation occurring in the absence of exerting said torque upon the insertion of a picking tool into said plug element, and the contact of said picking tool with said one of said edges defining said opening.

3,854,312

ROTARY LOCK

James J. Van Gompel, Fremont, Ind., assignor to Brammall Inc., Angola, Ind.

Filed Dec. 26, 1973, Ser. No. 428,432

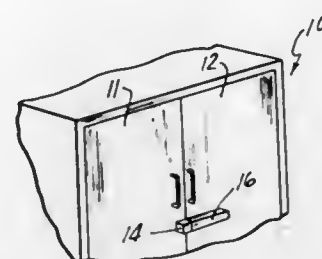
Int. Cl. E05b 35/06

U.S. Cl. 70—412

14 Claims

1. A lock comprising, a housing, a cylindrical bolt movably mounted in said housing, a transverse pin attached to said bolt, a plurality of locking plates mounted in said housing and formed with openings through which said bolt extends, and a

plurality of radial slots formed in said locking plates and arranged so as to be misaligned with each other so that said bolt



must be angularly displaced relative to its longitudinal axis for said transverse pin to pass through said plurality of radial slots.

3,854,313

PROCESS FOR THE MANUFACTURE OF SLUB YARNS

Norbert Heichlinger, Munich, and Karl Andiel, Bobingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

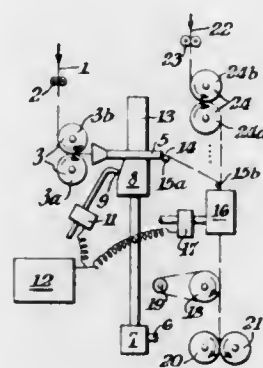
Filed Jan. 9, 1973, Ser. No. 322,136

Claims priority, application Germany, Jan. 11, 1972, 2201147

Int. Cl. D02g 1/16

U.S. Cl. 28—72.12

6 Claims



1. A process for the manufacture of slub yarns from continuous filaments, which comprises feeding continuous filaments through the inlet orifice of a guide tube at a feed rate superior to the withdrawal rate at the outlet orifice, and sucking them into a connecting tube by means of a sucking jet in such a manner that an increasingly enlarging open loop is formed; wherein a gaseous medium, in intervals and periods of time programmed by a control system, is blown into the connecting tube, thereby passing through the feeder tube of a blowing jet mounted to the end of the connecting tube which is adjacent to the guide tube; the gaseous medium causing a ligature of the neck of the open loop of the yarn, which loop so ligatured is subsequently united over its total length with the continuous filament.

3,854,314

STEP CONTROLLED TUBE EXPANDER

Paul Warren Martin, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 25, 1973, Ser. No. 382,413

Int. Cl. B21d 39/06

U.S. Cl. 72—122

10 Claims

1. Tube expander apparatus comprising in combination:
a. a rotatable expander for insertion into an end of a receiving tube to be expanded against a header sheet;
b. motor means for rotatably driving said expander within the receiving tube in rolling relation to a longitudinal wall segment thereof for effecting tube expansion of the segment against the header;
c. a stop collar supported on said expander at a location outward of the receiving tube end to prevent said expan-

3,854,316

METHOD OF MAKING A HOLLOW METAL BAT WITH A UNIFORM WALL THICKNESS

Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

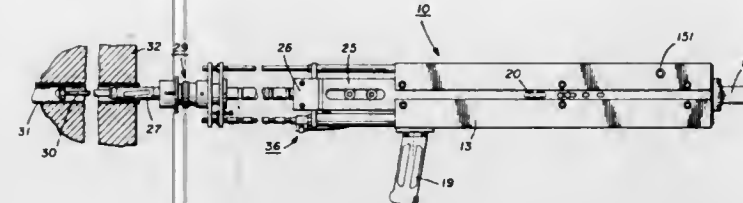
Division of Ser. No. 179,666, Sept. 13, 1971, This application

Jan. 22, 1973, Ser. No. 325,423

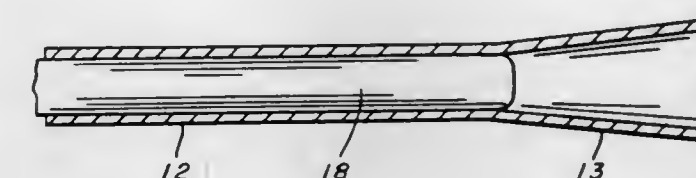
Int. Cl. B21k 17/00

U.S. Cl. 72—370

2 Claims



tion a predetermined distance away from the tube end for said expander to subsequently conduct expansion on an additional wall segment of said tube.



1. A method of making a hollow metal bat having a non-uniform weight per unit length characteristic, said bat comprising an elongated hollow metal body having a cylindrical barrel portion of one diameter tapering through a transition portion to a cylindrical handle portion of reduced diameter, the method comprising the steps of

placing a longitudinal portion of a hollow metal tube blank having a substantially uniform wall thickness and diameter on a fixed mandrel having a constant outer diameter corresponding to the inner diameter of the cylindrical handle portion to be formed on the mandrel, maintaining a longitudinally fixed relative relationship between the mandrel and the tube blank, reducing the inner and outer diameters of the longitudinal portion of the tube placed on the mandrel to form the handle and transition portions of the bat body, and to provide the longitudinal tube portion with a wall thickness substantially the same as that of the hollow tube blank.

3,854,317

SPACED FORWARDING DEVICE FOR CUT WIRE

Hiroki Sato, and Norimitsu Yoshida, both of Chigasaki, Japan, assignors to Neturen Company Ltd., Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,912

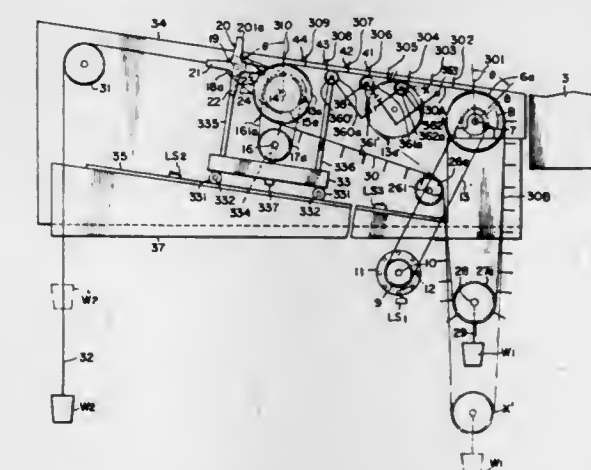
Claims priority, application Japan, Apr. 26, 1972, 47-41274

Int. Cl. B21f 23/00

U.S. Cl. 72—422

7 Claims

1. Apparatus for conditioning elongated metal strips of different widths comprising means supporting the strip for longitudinal movement along a predetermined planar datum path, first work rolls for deflecting the longitudinal edge portions of the strip along one edge thereof out of the predetermined path, second work rolls transversely aligned with said first work rolls for deflecting the longitudinal edge portions of the strip along the other edge thereof out of the predetermined path, means to hold the center longitudinal portion of the strip in the predetermined path adjacent to and disposed transversely with respect to said first and second work rolls, third work rolls for deflecting the center portion of the strip out of the predetermined path at a point disposed longitudinally from said first and second work rolls, first support rolls disposed in transverse alignment with said third work rolls for holding the edge portions of the strip along the one edge thereof in the predetermined path, second support rolls disposed in transverse alignment with said third work rolls and said first support rolls for holding the edge portions of the strip along the other edge thereof in the predetermined path, first mounting structure for said first work rolls and said first support rolls for positioning the same at selected distances away from the center line of the predetermined path to accommodate corresponding different widths of strips to be engaged thereby, and second mounting structure for said second work rolls and said second support rolls to mount the same for movement toward and away from said first mounting structure for positioning the same at selected distances away from the center line of the predetermined path to accommodate corresponding different widths of strips to be engaged thereby.



1. A spaced forwarding device for cut wires comprising
a. chain means including a plurality of wire arresting bosses at predetermined intervals on the periphery of said chain;
b. inclined plate means, wherein said chain means has a first inclined portion following said inclined plate means and a second vertical portion;
c. at least three rotatable wheel means;
d. first weight means suspended from a first of said rotatable wheel means positioned at the top of the inclined portion of said chain means and second weight means suspended

from a second of said rotatable wheel means positioned at the bottom of said vertical portion of said chain means, wherein said second weight is greater than said first weight and said wheel means can rotate intermittently and said first wheel means can be shifted along said inclined plate means whereby cut wires are engaged one by one by said arresting bosses and are moved down said inclined plate means due to the dependent or independent intermittent rotating of said wheel means.

3,854,318

FORGING MACHINE

Vaino Korpeinen, Niittykumpu Itapaa, Finland

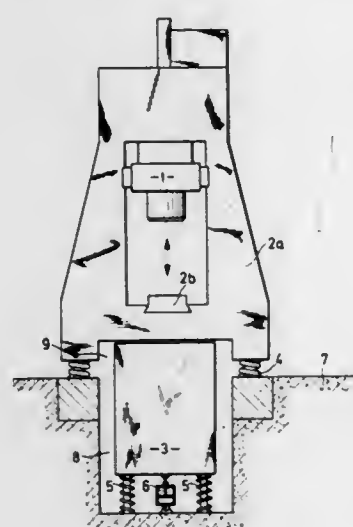
Filed May 23, 1973, Ser. No. 363,064

Claims priority, application Finland, May 26, 1972, 1481/72

Int. Cl. B21j 13/04

U.S. Cl. 72-465

5 Claims



1. A forging machine comprising a frame adapted to be supported on a foundation, said frame including an affixed anvil and a ram block mounted for dropping movement relative to the frame for impact against the anvil supporting a workpiece, said frame means being resiliently supported on a foundation by spring means for movement of predetermined amplitude after said impact, a damping mass mounted adjacent the frame for movement upon impact of the dropping head against the anvil, said damping mass being resiliently mounted relative to a support surface for amplitude of movement after said impact greater than said predetermined amplitude of movement of the frame, and said damping mass including damping means to dampen motion created by contact with the frame after impact of the dropping head and anvil.

3,854,319

ALCOHOLIC BREATH SIMULATOR

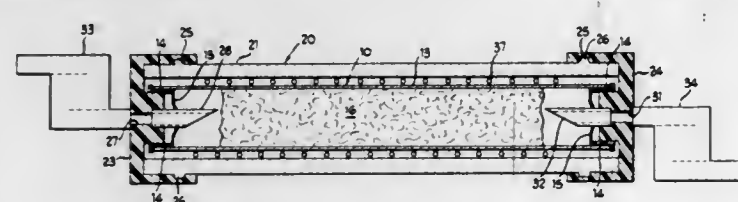
James E. Burroughs, Mount Prospect, and Joseph P. Hoppesch, Streamwood, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 16, 1972, Ser. No. 298,082

Int. Cl. G01n 31/00

U.S. Cl. 73-1 A

5 Claims



1. A device useful in simulating alcoholic breath to calibrate breath analyzers, comprising:

a disposable, elongated sealed enclosure containing an absorbent material which has been impregnated with a solution including ethyl alcohol to produce a concentration of alcohol vapor within said enclosure, the alcohol-impregnated absorbent material substantially filling said enclosure but providing ample air passages to permit the free flow of breath through the enclosure under normal breath pressures, the ends of said enclosure being pierceable in order that a simulated breath sample, having a known alcohol concentration, will evolve from one end of said enclosure in response to blowing of alcohol-free breath at normal breath pressures into the other end when said enclosure is maintained at a given temperature, the alcohol-free breath displacing the alcohol vapor produced by the alcohol-impregnated absorbent material.

3,854,320

QUIESCENT BREATH TESTING SYSTEM

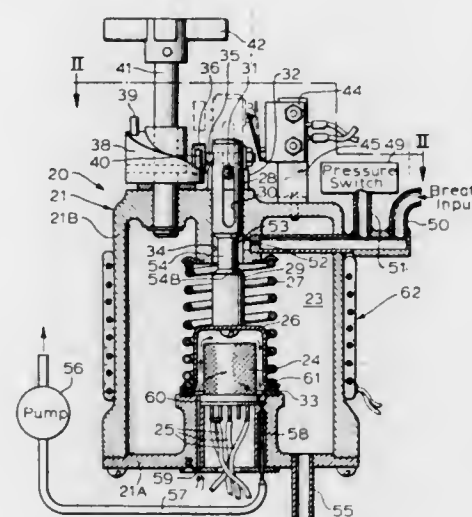
James E. Burroughs, Mt. Prospect; John W. Seibert, Aurora, and Joseph P. Hoppesch, Schaumburg, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,890

Int. Cl. G01n 31/00

U.S. Cl. 73-23

6 Claims



1. In a breath testing system of the type employing an alcohol sensor unit and having means for providing a breath sample for testing which sample is the result of a predetermined, essentially continuous and uninterrupted blowing of breath so that the sample obtained is suitable lung breath, the improvement comprising: means for receiving and holding the lung breath sample for a time period sufficient for the sample to achieve an essentially quiescent state; and means, including the sensor unit, for deriving an electrical output signal indicative of the alcohol concentration in the essentially quiescent sample, including means for shielding the sensor unit from the breath sample until it has achieved the essentially quiescent state and for thereafter unshielding the sensor unit for deriving the electrical output signal, whereby said sensor unit is protected from flow effects and from reacting to any but the suitable lung sample.

3,854,321

AEROSOL BEAM DEVICE AND METHOD

Barton E. Dahneke, 89 Johnson Rd., Palmyra, N.Y. 14522

Filed Apr. 27, 1973, Ser. No. 355,047

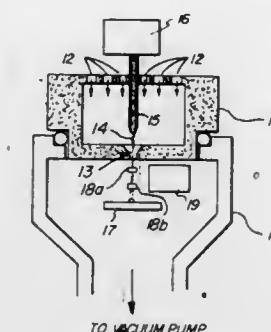
Int. Cl. G01n 15/00, 1/22

U.S. Cl. 73-28

16 Claims

1. A device for detecting airborne particles comprising: a. means for directing a stream of an aerosol, comprised of a continuous gaseous phase and a discontinuous phase of

said particles, through an aperture and into a vacuum chamber whereby the gaseous phase expands away from said particles thereby forming an aerosol beam and



b. means for measuring the times of flight of said particles over at least one portion of their trajectory.

3,854,322

CALIPER GAUGE

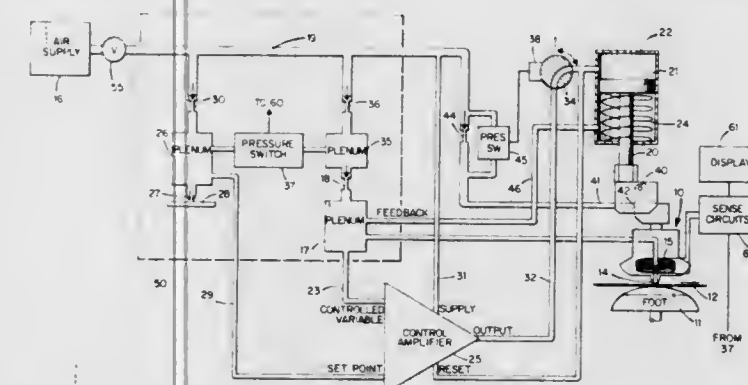
David F. Wood, Acton, and Richard F. Murphy, Wilmington, both of Mass., assignors to LFE Corporation, Waltham, Mass.

Filed June 6, 1973, Ser. No. 367,631

Int. Cl. G01b 13/02

U.S. Cl. 73-37.5

8 Claims



1. A caliper gauge for measuring the thickness of moving sheet material comprising:

- a reference plate over which sheet material is transported;
- a pivotally supported sensing head facing said plate such that said sheet material passes therebetween;
- a pneumatic nozzle in said sensing head facing said plate;
- a pneumatic feedback control system driving a pneumatic piston responsive to backpressure on said nozzle to move said sensing head maintaining said head a predetermined space from said sheet material;
- a pneumatic line, said line being closed by said sensing head in its normal pivotal position and opened by said sensing head being moved to an abnormal pivotal position;
- a pressure sensor, said pressure sensor being responsive to increased flow in said line to cause retraction of said piston; and
- means for continuously monitoring the spacing between said sensing head and said plate.

3,854,323

METHOD AND APPARATUS FOR MONITORING THE SAND CONCENTRATION IN A FLOWING WELL

Daniel P. Hearn, Richardson, and Thomas K. Perkins, Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 31, 1974, Ser. No. 438,382

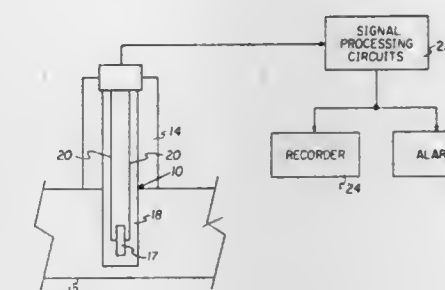
Int. Cl. E21b 47/00

U.S. Cl. 73-61 R

19 Claims

1. The method of determining the sand concentration in the produced fluids of a well comprising the steps of:

- deriving from the acoustic noise generated by the flow stream of said fluids a first broad band electrical signal;
- filtering said first electrical signal to obtain therefrom at least one preselected narrow band frequency component whose amplitude approximates a first known function of the flow velocity of said fluids and the sand concentration therein;



- deriving a second electrical signal responsive to the movement of said flow stream whose amplitude approximates a second known function of said flow velocity and said sand concentration; and
- computing from said at least one frequency component and said second signal an output signal responsive thereto whose amplitude represents a simultaneous solution of said first and second functions for said sand concentration independent of said flow velocity.

3,854,324

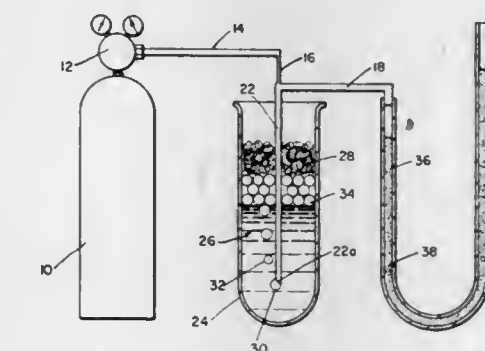
BLOOD CLOTTING TIME AND STRENGTH MEASURING SYSTEM

Thomas L. Altshuler, 110 Hillcrest Rd., Concord, Mass. 01742, and John H. Altshuler, 5700 Dunbarton Dr., Englewood, Colo. 80110

Continuation-in-part of Ser. No. 192,875, Oct. 27, 1971, abandoned. This application June 11, 1973, Ser. No. 368,970 Int. Cl. G01n 33/16

U.S. Cl. 73-64.1

19 Claims



- The method of detecting the commencement of clotting in a blood specimen comprising the steps of
 - bubbling a gas below the surface of the specimen,
 - monitoring the pressure required to blow the bubbles in the specimen,
 - rejecting the high frequency pressure fluctuations characteristic of bubbles blown in unclotted blood,
 - detecting only the relatively low frequency fluctuations of the pressure which are characteristic of bubbles blown in clotting blood, and
 - measuring the time of commencement of the low frequency pressure fluctuations.

3,854,325

METHOD AND MEANS FOR DETERMINING FATIGUE DAMAGE AND SURFACE STRESS

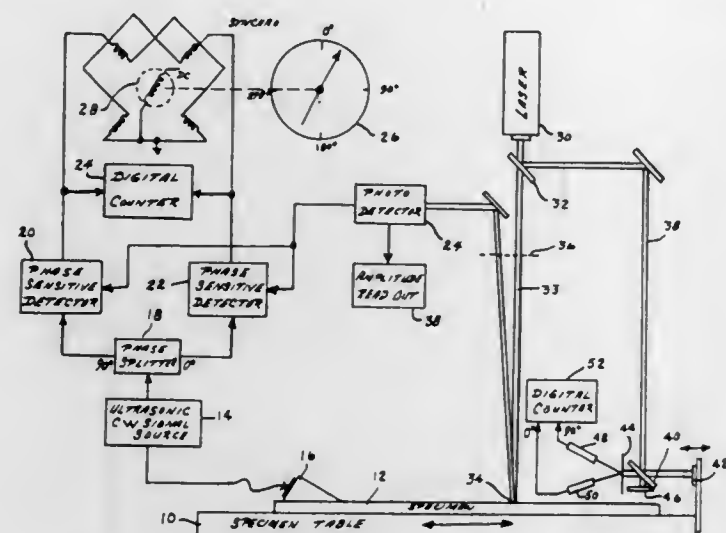
Forrest M. Coate, Hawthorne, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,029

Int. Cl. G01n 29/04

U.S. Cl. 73-67.6

5 Claims



1. A method for determining early fatigue damage and surface stress in metals comprising the steps of: transmitting an ultrasonic wave across a surface to be examined; directing a beam of coherent radiation at a point on the said surface, through the ultrasonic wave; detecting the reflected coherent radiation; moving the surface in a known manner; measuring the change in amplitude of the reflected radiation, and comparing the phase relationship of the reflected radiation to the ultrasonic wave whereby variations in said amplitude and phase will be indicative of fatigue damage and surface stress.

3,854,326

ROTARY ULTRASONIC TESTING APPARATUS

Matthew James Hetherington, near Market Harborough, and Peter Atkinson, Stanion, near Kettering, both of England, assignors to British Steel Corporation, London, England

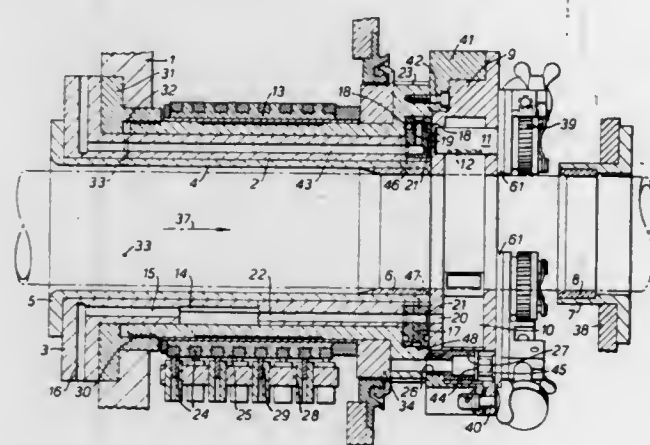
Filed May 31, 1973, Ser. No. 365,524

Claims priority, application Great Britain, June 8, 1972, 26827/72

Int. Cl. G01m 9/24

U.S. Cl. 73-67.8 S

7 Claims



1. Rotary ultrasonic testing apparatus comprising a single annular stator carrying a first replaceable hollow tube guideway; a replaceable annular ultrasonic probe assembly disposed beyond one end of the stator and mounted for rotation solely on said single annular stator; and a second replaceable hollow tube guideway mounted separate from the stator on the opposite side of the probe assembly from the stator.

METHOD AND APPARATUS FOR DETERMINING THE CROSS SECTION OF MATERIAL USING A SOUND FIELD

Ernst Felix, Uster, Switzerland, assignor to Zellweger, Ltd., Ulster, Switzerland

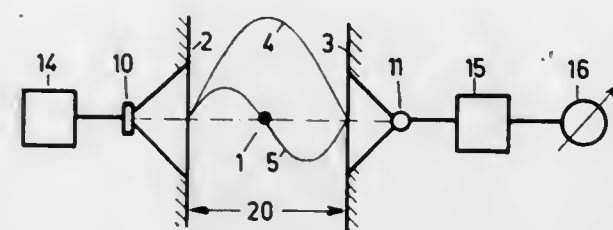
Filed Mar. 9, 1973, Ser. No. 339,883

Claims priority, application Switzerland, Mar. 15, 1972, 3828/72

U.S. Cl. 73-69

Int. Cl. G01n 29/00

26 Claims



1. A method of at least approximately determining the cross section of filamentary or wire form material, comprising the steps of generating standing waves with at least two different frequencies within a resonator tuned such that at least one pressure maximum of the first standing wave and at least one pressure minimum of another standing wave substantially coincide at a point in the resonator, guiding the material to be tested through said point and detecting variations in said standing waves produced by the presence of said material to be tested.

3,854,328

RESILIENCY TESTING DEVICE

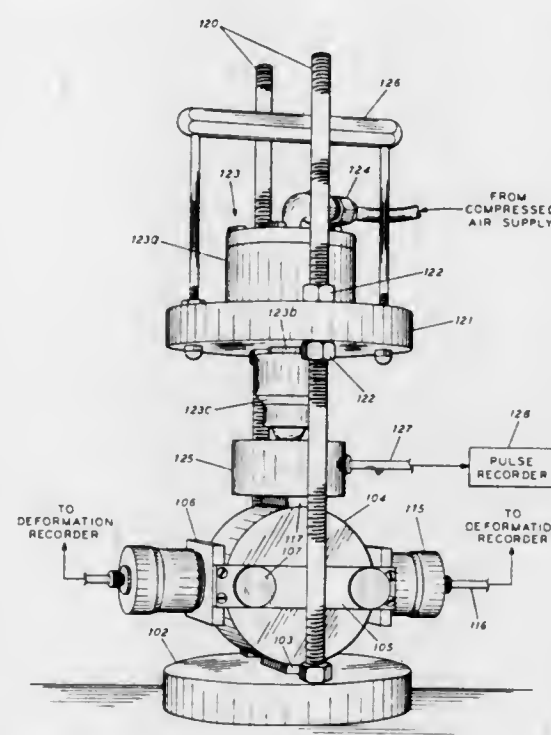
Robert J. Schmidt, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 18, 1973, Ser. No. 324,637

Int. Cl. G01n 3/32

U.S. Cl. 73-91

24 Claims



1. An apparatus for use in measuring the resiliency of a sample comprising:
a frame means,
means for mounting a sample to be measured in said frame means,
means for applying a pulsating external force to the said sample to cause said sample to sequentially deform and recover in sequential deformations and recoveries corresponding to said force,

sensing means on said frame means, said sensing means operatively arranged to sense a deformation and recovery of said sample, and
means for recording said sequential deformations and recoveries.

ector comprising an air outlet opening arranged in such close vicinity to an associated one of said deflectable members that said associated member acts as an impact plate for the thus formed pneumatic micrometer.

3,854,329

APPARATUS FOR WEB TENSION MEASUREMENT

Graham Robin Scott Jones, Bristol, England, assignor to Mason Scott Trissell Engineering Ltd., Bristol, England

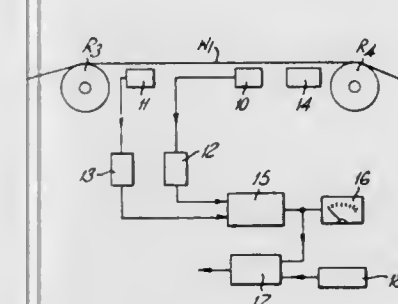
Filed Nov. 21, 1972, Ser. No. 308,424

Claims priority, application Great Britain, Nov. 23, 1971, 54242/71

U.S. Cl. 73-143

Int. Cl. G01l 5/10

6 Claims U.S. Cl. 73-167



1. Apparatus for measuring tension of a web stretched between supports, comprising means for exciting transverse vibrations in said web, first and second sensors positioned at first and second distances respectively along the web from said exciting means, and means responsive to signals from both said sensors being provided for converting the time interval between the sensing of the vibration in the web, caused by said exciting means, at said first and said second sensors into an indication of the tension of said web.

3,854,330

APPARATUS FOR MEASURING MASS DENSITY VARIATIONS IN A STAPLE FIBER SLIVER ON SPINNING PREPARATORY MACHINES

Rudolf Wildbolz, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

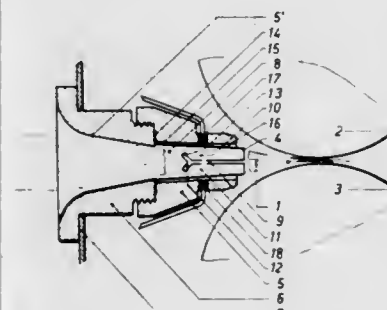
Filed Apr. 13, 1973, Ser. No. 350,790

Claims priority, application Switzerland, May 10, 1972, 6919/72

U.S. Cl. 73-160

Int. Cl. G01n 9/00, 33/36

12 Claims



1. An apparatus for measuring mass density variations in a staple fiber sliver on spinning preparatory machines, comprising a sliver funnel having a throughput duct converging in the direction of flow of the fiber material, said sliver funnel embodying substantially centrally symmetrical members which are radially elastically deflectable and serving to condense at all sides the throughputing fiber sliver, amplifier means, at least one detector operatively connected with said amplifier means and with said deflectable members for transmitting a signal to said amplifier means which corresponds to the deflection of at least one of said deflectable members, said de-

3,854,331

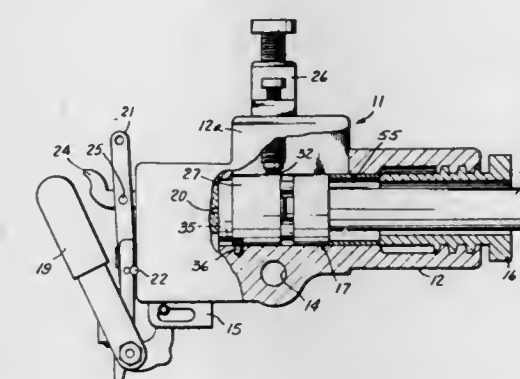
VENTED TEST BARREL ASSEMBLY FOR REVOLVER AMMUNITION

Charles H. Bateman, Jr., East Haven; Allan A. Campbell, Trumbull, and James J. Capasso, Shelton, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Apr. 3, 1973, Ser. No. 347,381

Int. Cl. G01l 5/14

5 Claims



1. A test barrel assembly for a universal receiver having cartridge firing means, said test barrel assembly comprising a cylinder having a single chamber for receiving a cartridge and having a forward end, a barrel of predetermined length having a longitudinal bore and having a rear end, attachment means for securing said cylinder to said barrel with said chamber and said bore in axial alignment, and spacer means for producing a gap of predetermined thickness between the forward end of said cylinder and the rear end of said barrel.

3,854,332

INCENDIARY CAPTURE DEVICE

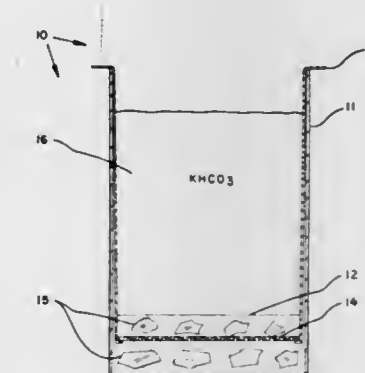
Warren K. Smith, Poway, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 24, 1973, Ser. No. 400,449

Int. Cl. G01n 33/22

U.S. Cl. 73-167

10 Claims



1. A method of investigating the effectiveness of incendiary weapons including:
placing a plurality of containers in spaced relationship in an area surrounding a weapon to be tested;
creating a fluidized bed of inert powder in each container;
activating the test weapon; and
examining any incendiary particles falling into said fluidized beds.

3,854,333

METHOD FOR DETERMINING DIRECTION AND SPEED OF OCEAN CURRENTS

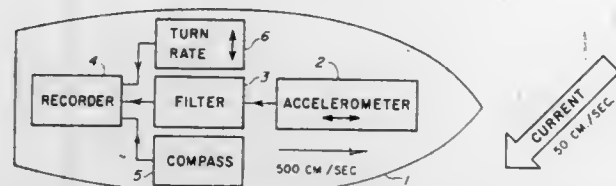
Joseph D. Richard, 3613 Loquat Ave., Miami, Fla. 33133

Filed Apr. 25, 1973, Ser. No. 354,368

Int. Cl. G01d 1/00

U.S. Cl. 73-170 A

8 Claims



1. The method for measuring the speed and direction of an ocean current from a moving powered vessel comprising: measuring horizontal accelerations along at least one axis of the aforementioned powered vessel during a turning maneuver; while substantially maintaining a constant speed of the vessel relative to the water measuring the rate of turn of the aforementioned powered vessel during the said turning maneuver; indicating the compass heading of the aforementioned powered vessel during the said turning maneuver; computing the speed of the aforementioned ocean current from the said measured accelerations and turning rate; and determining the direction of the aforementioned ocean current by indicating the compass heading which coincides with a null in the said measured acceleration.

3,854,334

SIGNAL RECOVERY SYSTEM FOR VORTEX TYPE FLOWMETER

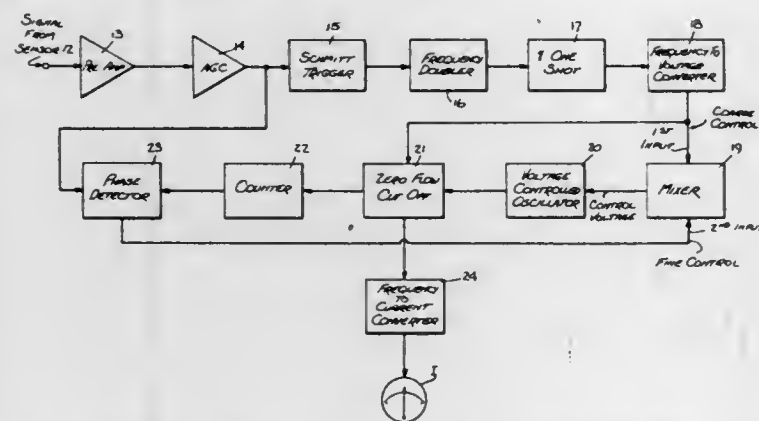
Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Oct. 1, 1973, Ser. No. 402,387

Int. Cl. G01f 1/00

U.S. Cl. 73-194 B

9 Claims



1. A signal recovery system for a vortex-type flowmeter wherein the fluid is directed past a vortex-producing element to cause vortex shedding at a fundamental frequency proportional to flow rate, said shedding being detected by a sensor yielding an electrical signal subject to intermittent fading for relatively brief periods due to flow disturbances which inhibit vortex shedding, said system comprising:

- an electronic flywheel constituted by a voltage-controlled-oscillator;
- means coupled to said sensor to produce a control voltage whose amplitude is a function of said fundamental frequency, said means having a relatively slow decay characteristic whereby the control voltage is sustained during fading periods;
- means applying said control voltage to said oscillator to generate an output frequency which depends on the amplitude of said voltage and which continues during said fading periods; and
- means to drive a continuous flow rate indication from said oscillator output frequency.

3,854,335

FLOWMETER

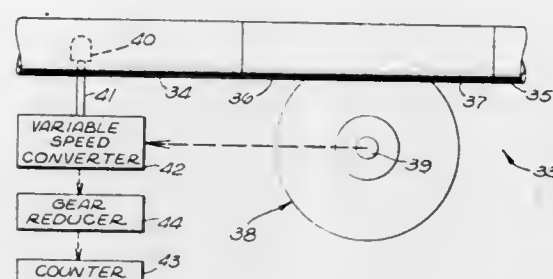
Lawrence Taylor Garnett, Fullerton, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 319,988

Int. Cl. G01f 15/02

U.S. Cl. 73-233

12 Claims



1. A flowmeter comprising: a section of pipe to carry a fluid to be metered, said pipe section having a wall; a fluid motor connected with said pipe section, said fluid motor having an output shaft, said fluid motor being constructed to rotate said output shaft thereof at an angular velocity approximately proportional to the rate of volume flow of said fluid there-through; a speed converter having an input shaft and an output shaft, said speed converter being connected in a manner such that the input shaft thereof is rotated at an angular velocity directly proportional to that of said fluid motor output shaft; output means connected from said converter output shaft, the average gear ratio of said converter being R_n over one revolution of said converter input shaft; and control means connected with said converter for varying the magnitude of R_n , said control means including a plate, said converter including a housing, an arm pivoted on said housing, said converter input shaft being rotatable about an axis parallel to the pivot axis of said arm, said converter input shaft being mounted in a fixed axial but rotatable angular position through said arm, said arm having a pin spaced from the pivot axis thereof, a plate having a fork with a slot therein, said fork being fixed with said plate in a position straddling said pin, said plate having a slot therein, said slot having a uniform width and lengthwise direction running normal to a plane through said arm pivot axis and said converter output shaft axis, a releasable clamp screw extending through said plate slot and threaded into said housing, said clamp screw having a shank with a diameter slightly smaller than said plate slot width, a nut fixed relative to said plate with an axis parallel to the length dimension of said plate slot, and an adjustment screw threaded through said nut, said adjustment screw being held in a fixed axial but rotatable angular position on said housing.

3,854,336

METHOD FOR DETECTING THERMAL CHANGES ON A SURFACE

Malcolm M. Bibby, Bath, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 26, 1972, Ser. No. 221,010

Int. Cl. G01k 3/06

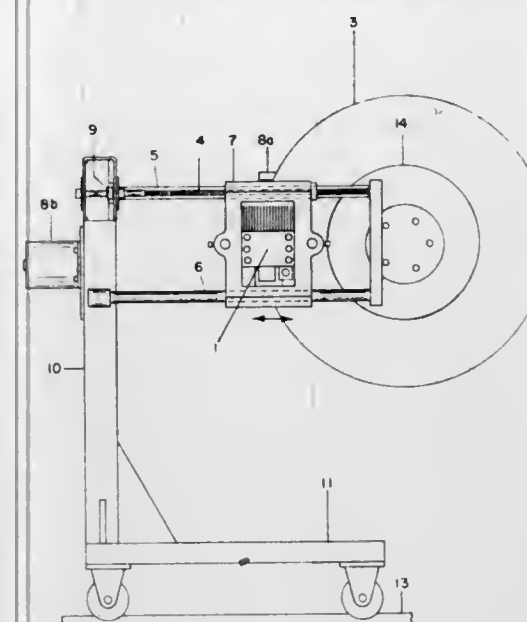
U.S. Cl. 73-351

18 Claims

1. In a method for detecting by infrared scanning thermal changes on a surface of a pneumatic object subject to imposition of load and the generation of heat when in service wherein the object is heated, signals are generated proportional to surface temperature variation and the surface is subjected to repeated scans, the improvement which comprises

generating reference values of signals representative of a scanning interval over a surface of the object,

subtracting said reference values from values of signals positioned with respect to said measuring means for suspending the container in horizontal balance when either a volume representative of a subsequent scanning interval over the



same surface area, making the subtractions between a series of scanning intervals and summing the resulting differences.

3,854,337

CHARGE STORAGE DEVICE

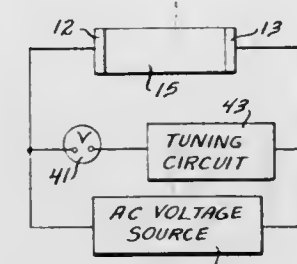
Paul R. Moran, Madison, Wis., and Ervin B. Podgorsak, Toronto, Ontario, Canada, assignors to The United States of America as represented by the United States Atomic Energy, Washington, D.C.

Filed Oct. 1, 1973, Ser. No. 402,412

Int. Cl. G01k 7/00

U.S. Cl. 73-362 R

7 Claims



1. A temperature programmable charge storage device, comprising an ionic solid dielectric doped such that the concentration of the most abundant impurity ion is at least six times greater than the concentration of all other impurities combined, a pair of electrodes between which said dielectric is disposed with the electrical conductivity of said electrodes being less than the ionic conductivity of said dielectric, thereby preventing injection of charge carriers from said electrodes into said dielectric.

3,854,338

DIRECT READING SPECIFIC GRAVITY INDICATOR

James A. Shorten, 611 W. Belmont, Chicago, Ill. 60657

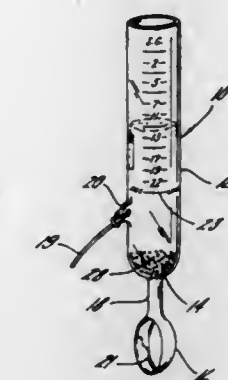
Filed Aug. 3, 1973, Ser. No. 385,486

Int. Cl. G01n 9/02

U.S. Cl. 73-433

7 Claims

1. A direct reading specific gravity indicator comprising a graduated container suitable for holding a volume of liquid, the graduations on said container being calibrated to indicate a continuous sequence of specific gravities within a predetermined range, measuring means attached to said container and sized for holding a predetermined volume of said liquid; and support means connected to said container and operatively



of liquid equal to said predetermined volume or a volume of matter equal in weight to the weight of said predetermined volume of liquid is placed in said measuring means.

3,854,339

PROCESS AND DEVICE FOR BALANCING OF ROTORS

Richard Muller, Worfelden, Germany, assignor to Gebr. Hoffmann KG, Darmstadt, Germany

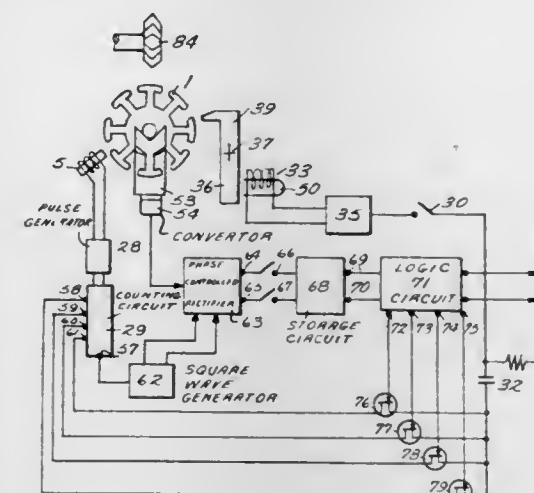
Filed Aug. 31, 1973, Ser. No. 393,309

Claims priority, application Germany, Sept. 1, 1972, 2243002

Int. Cl. G01m 1/16

U.S. Cl. 73-462

11 Claims



1. Apparatus for stopping a rotor at a given position comprising: means for mounting a rotor for rotation, means for rotating the mounted rotor, means for sensing portions of a rotating rotor extending about its periphery and separated by areas having characteristics different from said portions and producing a train of pulses, each pulse being associated with a portion, means connected to said sensing means for receiving said train of pulses, counting said pulses and providing a reference pulse for each revolution of said rotor, and means responsive to said reference pulse for stopping said rotor in a given angular position.

3,854,340

ROTATING DYNAMIC ACCELEROMETER

Curtis C. Bell, Inglewood, and Robert L. Forward, Oxnard, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 26, 1972, Ser. No. 266,167

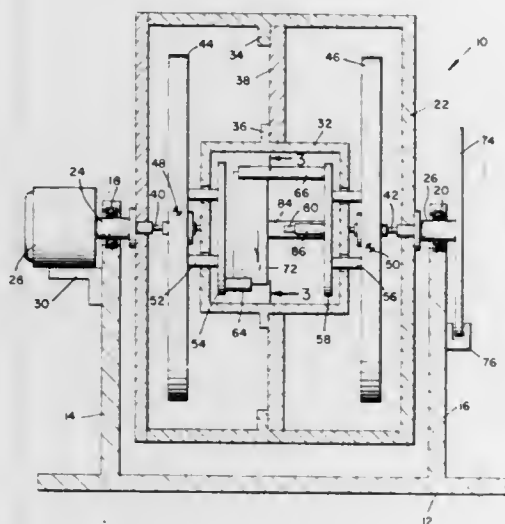
Int. Cl. G01p 15/08

U.S. Cl. 73-517 R

10 Claims

1. A rotating dynamic accelerometer comprising:

a base;
 mounting means on said base for defining an axis of rotation;
 a body mounted for rotation on said base with respect to said base, means for rotating said body with respect to said base;
 a mass;
 means for mounting said mass on said body for rotation with said body on said axis with respect to said base, with the center of said mass being away from said axis so that, when an acceleration is applied to said base at an angle to said axis, said mass tends to rotate with respect to said axis;



said means for mounting said mass including spring means connected between said mass and said body for resiliently connecting said mass and said body, said spring means being deflected by rotary motion of the center of mass around said axis with respect to said body, said spring means applying a returning force, said mass and said spring means being sized to provide torsional resonance at the body rotation speed; and
 means for converting rotation of the center of said mass around said axis with respect to said body due to accelerational forces applied thereon to signals so that, as said mass is rotated, modulated signals are produced.

3,854,341

MULTIPLE ROTATION GYROSCOPE WITH A SINGLE MOVING ELEMENT

Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 365,871

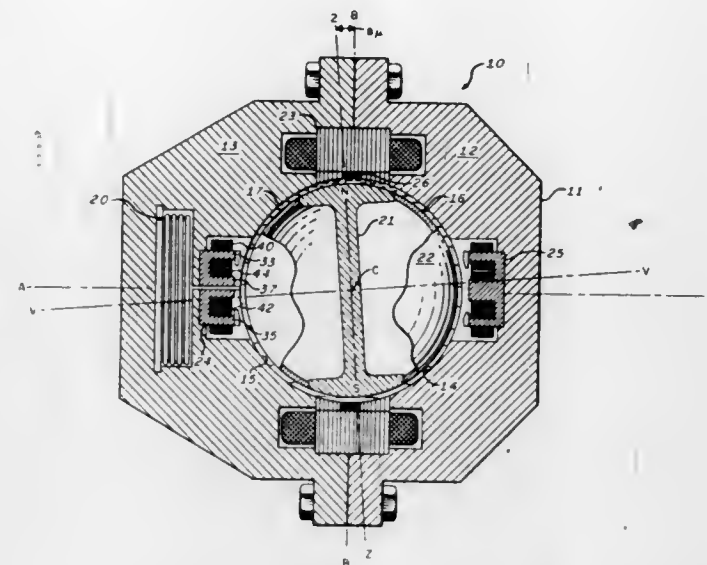
Int. Cl. G01c 19/20, 19/08

U.S. Cl. 74-5.7

19 Claims

1. A multiple rotation gyroscopic apparatus comprising first power source means, second power source means, an inertial element having first and second mutually perpendicular axes of inertial symmetry, said inertial element having a moment of inertia about said first axis which is greater than its moment of inertia about said second axis, gimbal less housing means including an internal cavity enclosing said inertial element, fluid means contained within said cavity for suspending said inertial element in neutral buoyancy, first motor drive means coupled to said first power source means and disposed in said housing means external to said cavity around the equatorial perimeter of said cavity for rotating said inertial element about said first axis at a high rate of speed, second motor means coupled to said second power source means and disposed in said housing means external to said cavity and substantially aligned along said first axis of said inertial element for rotating said inertial element

about said second axis at a lower rate of speed than about said first axis, and pickoff-torquer means cooperative with said inertial element, disposed in said housing means external to said



cavity and substantially aligned along said second axis for sensing angular displacements of said inertial element with respect to predetermined axes and producing coercive torques which are applied to said inertial element with respect to said predetermined axes.

3,854,342

RADIO TUNING APPARATUS

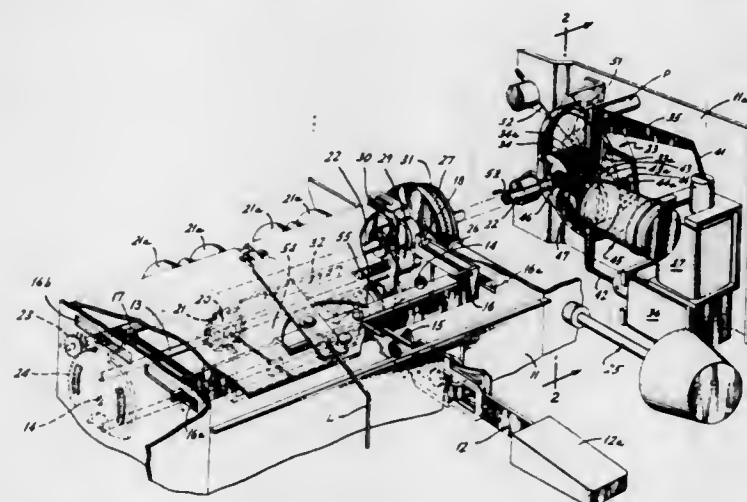
Robert T. Smith, Jr., Southampton, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Dec. 12, 1973, Ser. No. 424,098

Int. Cl. F16h 35/18

U.S. Cl. 74-10.5

11 Claims



1. In radio receiving apparatus of the type including adjustable means for tuning over a predetermined band of frequencies, improved drive means for moving said tuning means at a relatively slow rate for tuning in one direction and at a relatively rapid rate for repositioning in the opposite direction, said drive means comprising: driven wheel means drivingly coupled with said tuning means; a unidirectionally rotatable motor; a lever; means defining a pivot for said lever in provision for rocking movements thereof; first and second solenoid means coupled with said lever, each selectively energizable to rock said lever in one or the other direction; first and second drive wheel means, of different diameters, driven with said motor; said lever being operable, upon energization of said first solenoid means, to rock said lever in one direction to effect a coupling between said first drive wheel means and said driven wheel means in provision of the recited relatively slow drive rate of said tuning means, and, upon energization of said second solenoid means, to rock said lever in the other direction to effect a coupling between said second drive wheel

means and said driven wheel means in provision of the recited relatively rapid drive rate of said tuning means.

3,854,343

REVERSING CAM DRUM FOR QUICK TRAVERSE WINDER AND TRAVELLER FOR SAID REVERSING CAM DRUM

Erhard Thaddaus May, Kempten, Germany, assignor to Firma A. Ott, Kempten, Germany

Continuation of Ser. No. 155,821, June 23, 1971, abandoned.

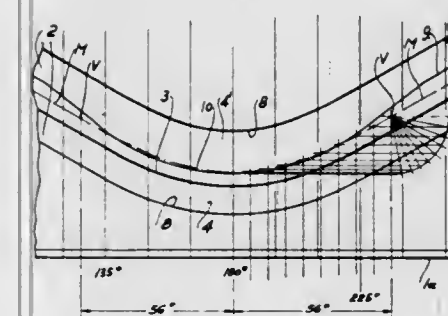
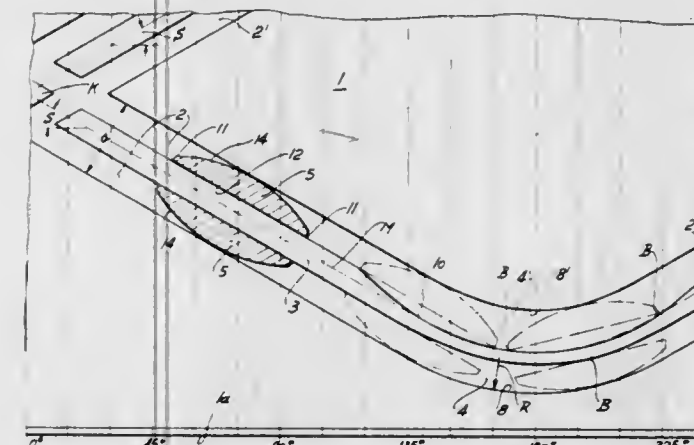
This application Aug. 15, 1973, Ser. No. 388,609

Claims priority, application Germany, June 26, 1970, 2031562

Int. Cl. F16h 25/12

U.S. Cl. 74-57

5 Claims



1. A reversing cam drum for textile machines, especially for quick traversing winders, including a pair of helical grooves having opposite hand threads, outer limiting surfaces and reversing points at the ends of drum claimed in claim 1, drum respectively, a central guide rail between the pair of grooves, and a traversing traveller guided within said pair of grooves, said opposite hand threads of said pair of grooves being interconnected by transition curves at said reversing points, wherein said transition curves each define one-half of a complete sine cycle, wherein said outer limiting surfaces comprise a pair of lateral surfaces defining limiting envelopes of the path of said traveller whereby a point of said traveller moves through the said cycle at each transition curve, and wherein said central guide rail is uninterrupted within said transition curve.

3,854,344

ASSEMBLY ADAPTED TO BE ASSEMBLED FROM TWO SEPARATE DRIVING BODIES

Minoru Konno, Oyama, and Mitsuo Ichiki, Tokyo, both of Japan, assignors to Coper Co., Ltd., Tokyo, Japan

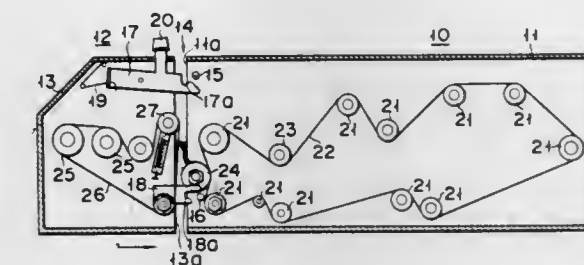
Filed Nov. 12, 1973, Ser. No. 414,623

Claims priority, application Japan, Nov. 16, 1972, 47-131142

Int. Cl. F16h 7/00, 57/00, 57/02

U.S. Cl. 74-216.5

5 Claims



1. An assembly adapted to be detachably assembled from first and second bodies, comprising means for mechanically connecting together these two bodies, a first chain belt provided in the first body so as to be driven, a second chain belt provided in the second body so as to be driven, and a transmission sprocket provided in the first body to be engaged with the first chain belt and, when the first and second bodies are mechanically connected together, adapted to be engaged with the second chain belt to permit the first and second chain belts to be operatively connected together.

3,854,345

NOISE ATTENUATING IMPACT ABSORBING MEANS FOR SPROCKET TEETH AND TRACK

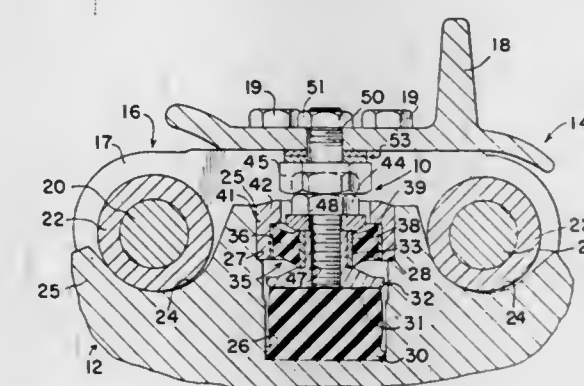
Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 20, 1974, Ser. No. 453,091

Int. Cl. F16h 55/30

U.S. Cl. 74-243 R

17 Claims



1. A drive sprocket for a track-laying vehicle having a plurality of equiangularly spaced teeth and notches and having impact absorbing noise suppressing means comprising: spring means mounted circumferentially about said sprocket within at least one of said plurality of teeth for absorbing impact energy, first contact means separate from said spring means and mounted radially outwardly from said spring means within said at least one tooth for coacting with said spring means and for transmitting impact forces to said spring means for absorption thereof, seal means mounted within said at least one tooth radially between a portion of said first contact means and said spring means for protectively sealing said spring means.

3,854,346

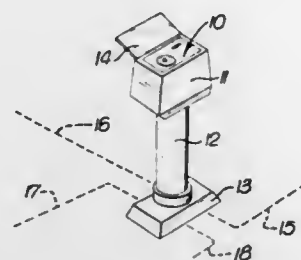
AUTOMATIC CONTROLLER DRIVE MECHANISM

Edwin J. Hunter, Riverside, Calif., assignor to The Toro Company, San Marcos, Calif.

Division of Ser. No. 190,530, Oct. 19, 1971, Pat. No. 3,735,779. This application Nov. 22, 1972, Ser. No. 308,649
Int. Cl. F16h 53/00

U.S. Cl. 74—568 T

4 Claims



1. In an automatic control apparatus having a camming means for operating a series of cam followers, a constant speed motor, and clutch and transmission means for selectively connecting said camming means to said constant speed motor to be driven thereby past said cam followers, said followers offering resistance to the movement of said camming means thereby when engaged by said camming means, the improvement comprising the provision of:

rapid advance means associated between said clutch and transmission means and said camming means for storing energy received from said motor during operation thereof and for advancing said camming means between engagements with said cam followers by said stored energy more rapidly than the advancement thereof by said motor.

3,854,347

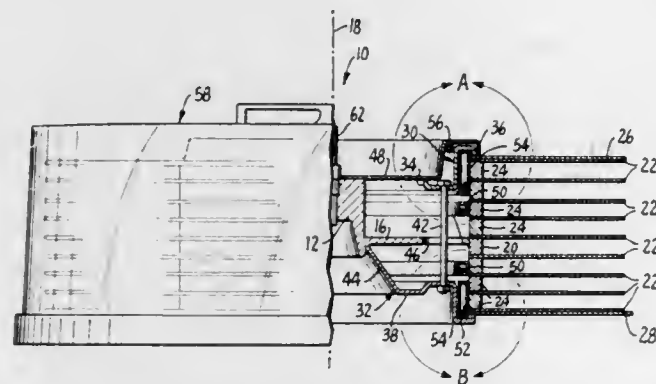
DYNAMIC BALANCING DEVICE FOR A COMPUTER DISC MEMORY

Joseph Hellerich, 611 W. Belmont, Redwood City, Calif. 94061

Filed Aug. 15, 1973, Ser. No. 388,450
Int. Cl. F16f 15/22

U.S. Cl. 74—573

8 Claims



1. A dynamic balancer for use in a computer disc memory of the type having a plurality of memory discs, each disc having a center hole, support means for rotating the discs about a common axis, the support means including a plurality of spacer rings for separating the discs, top and bottom clamp rings for clamping the discs and the spacer rings in a stack which is generally centered about the common axis, and a hub generally centered on the common axis within the center holes of the memory discs and having a flange attached to at least one of the spacer rings, the dynamic balancer comprising an annular support positioned within the center hole of, at least, one of the discs and exterior of the hub, the annular support having an annular cavity which encircles the common axis, and mass members which are contained by and freely movable within the annular support cavity.

3,854,348

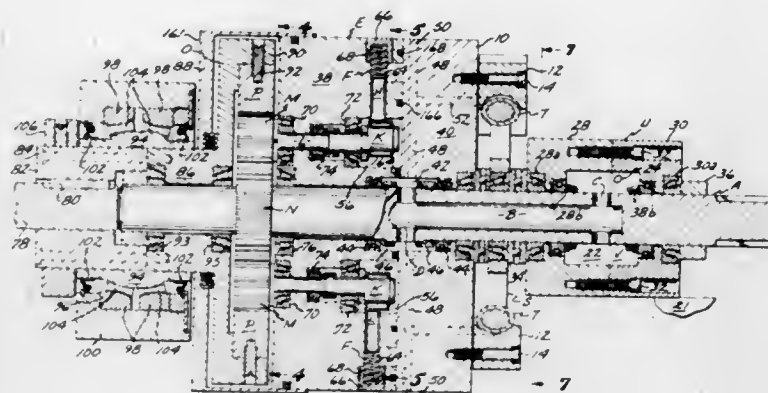
VARIABLE SPEED TRANSMISSION

Gerald W. Stevenson, 8007 S. Michigan Ave., Whittier, Calif. 90602

Filed June 13, 1973, Ser. No. 369,414
Int. Cl. F16h 5/18, 39/00

U.S. Cl. 74—774

11 Claims



1. In a transmission of the type that includes: a driving shaft; a plurality of planetary gears; a sun gear rigidly secured to said driving shaft; a plurality of first shafts having first and second ends, with said planetary gears affixed to said first ends, and each of said planetary gears in toothed engagement with said sun gear; a housing rotatably supported on said driving shaft, said housing formed with at least one endless circular confined space therein that is filled with a first hydraulic fluid, and said housing rotatably supporting said first shafts in fixed relationship relative thereto; pump means operatively associated with said second ends of said shafts for pumping said hydraulic fluid in said confined space when said shafts are rotated; a driven shaft assembly coaxially aligned with said driving shaft and occupying a fixed position relative thereto, said driven shaft assembly including first gear means that are at all times in toothed engagement with said planetary gears, with the degree of rotation of said driven shaft assembly relative to said driving shaft being determined by the degree of actuation of said pumping means, said driving shaft and driven shaft assembly being in a one to one ratio when there is no actuation of said pumping means; the improvement for controlling the force required to actuate said pumping means to pump said first hydraulic fluid in said first confined space to regulate the degree of rotation of said driven shaft assembly relative to said driving shaft, said improvement comprising:

- a plurality of rotatable valve members disposed in circumferentially spaced locations in said first confined space, said valve members capable of occupying fully open, fully closed and positions intermediate therebetween;
- a plurality of circumferentially spaced parallel second shafts having first and second ends, said second shafts rotatably supported in said housing, and said valve members secured to said first ends of said second shafts; and
- second means that rotate concurrently with said housing and are so operatively associated with said second ends of said first shafts that said valve members can be rotated between said fully open and fully closed positions to cause said driven shaft assembly to rotate at a desired speed ratio relative to the speed of rotation of said driving shaft.

3,854,349

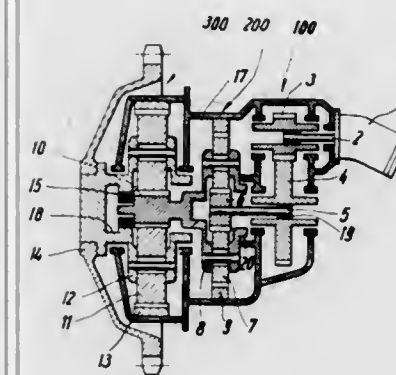
MULTI-STAGE SPEED REDUCER WITH RESILIENT SHAFT SUPPORTSWilhelm Michling, Hattingen, Germany, assignor to Lohmann & Stolterfoht Aktiengesellschaft, Witten/Ruhr, Germany
Filed Dec. 11, 1972, Ser. No. 314,216

Claims priority, application Germany, Dec. 16, 1971, 7147881; Dec. 23, 1971, 2165286

Int. Cl. F16n 1/46

U.S. Cl. 74—801

6 Claims



1. Multi-stage speed reducing gear, including a first speed reducing stage having input pinion and large diameter output gear, the speed reducing gear further including first and second, serially operating planetary gears each having a central gear and planet gears journaled in a carrier,

the carrier of the second planetary gear having a hollow shaft, the central gear of the second planetary gears having a shaft end journaled in the hollow shaft, the improvement comprising:

resilient means for yieldingly journaled the shaft end in the hollow shaft for limited transverse displacement therein, and centering the shaft end in the hollow shaft upon no-load conditions;

the carrier of the first planetary gear being rigidly secured to and supported by the central gear of the second planetary gear, on one side of the central gear of the first planetary gear, for driving the latter central gear as the latter central gear is being resiliently supported by said resilient means in said hollow shaft;

the carrier of the first planetary gear as secured to the central gear of the second planetary gear, being supported by the latter central gear so as to permit pendulum movement of the portion of the carrier of the first planetary gear as extending on the other side of the central gear of the first planetary gear;

shaft means carrying the central gear of the first planetary gear for connecting the central gear of the first planetary gear to the large diameter output gear permitting limited angular displacement of the end of the shaft means relative to the large gear, the central gear of the first planetary gear meshing with the planet gears thereof and being journaled therewith and being free from additional bearing support; and

a housing for the speed-reducing gear, bearings for the pinion and for the large diameter output gear of the first reducing stage, and spur gears of the first and second planetary gears being secured to said housing.

3,854,350

PRODUCTION OF EXTERNALLY THREADED BOLTS OR THE LIKE WITH INTERSECTING RIGHT-HAND AND LEFT-HAND HELICES

Carl Otto Bauer; Ernst Bode; Karl Diehl, and Gerd Rauhaus, all of Wuppertal, Germany, assignors to Carl Bauer, Wuppertal, Germany

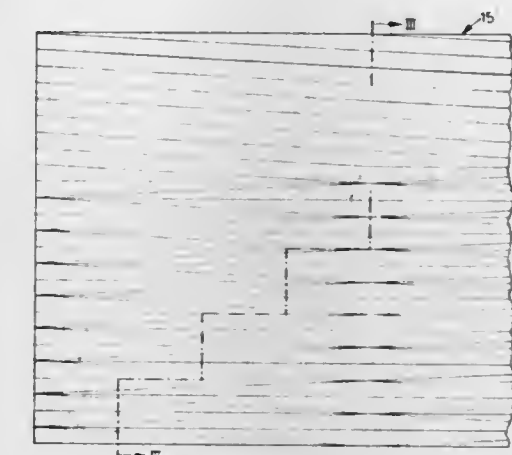
Filed Oct. 13, 1972, Ser. No. 297,439

Claims priority, application Germany, Oct. 15, 1971, 2151356

Int. Cl. B21k 5/20

U.S. Cl. 76—107 R

8 Claims



1. A method of producing rolling dies for simultaneous rolling of intersecting left-hand and right-hand threads into the external surfaces of rod-like metallic blanks, comprising the steps of making a master die having a flat surface and forming in said flat surface a profile corresponding to the profile of a finished blank; and utilizing said master die for the production of rolling dies having profiles complementary to the profile of said master die.

3,854,351

ARC JOINT PLIER

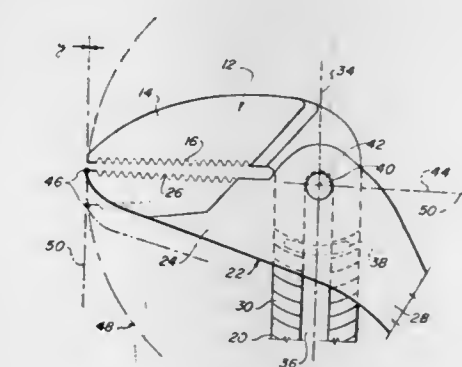
Ralph Martin, Colorado Springs, Colo., assignor to Western Forge Corporation, Colorado Springs, Colo.

Filed Oct. 12, 1973, Ser. No. 405,860

Int. Cl. B25b 7/04

U.S. Cl. 81—414

1 Claim



1. An arc joint slip-type plier tool comprising: a first jaw member having a jaw head portion with an elongated gripping surface thereon and a handle portion extending generally transversely therefrom, a second jaw member having a jaw head portion with an elongated gripping surface thereon and a handle portion extending generally transversely therefrom, the elongated gripping surfaces on said first jaw member and the elongated gripping surface on said second jaw member facing one another in generally parallel relationship and defining a jaw cavity therebetween terminating inwardly and closed adjacent the handle portions and

terminating outwardly in a jaw cavity opening defined by terminal transverse outer surfaces of said jaw portions, an elongated slot in one of the handle portions extending at substantially a right angle to the elongated gripping surfaces and defined by spaced parallel side surfaces on opposite sides of a central longitudinal axis of said slot, pivot pin means slidably rotatably mounted in said slot between said spaced parallel side surfaces and pivotally connecting the handle portions for pivotal movement relative to one another between an open jaw cavity position and a closed jaw cavity position and slidably connecting the handle portions for sliding adjustment along said slot to variably adjusted positions to vary the spacing between the elongated gripping surfaces in the closed jaw cavity position,

said pivot pin means having a pivotal axis extending transversely of and located in general coplanar relationship with said central longitudinal axis of said slot and with said elongated gripping surface on said second jaw portion in all of said variably adjusted positions,

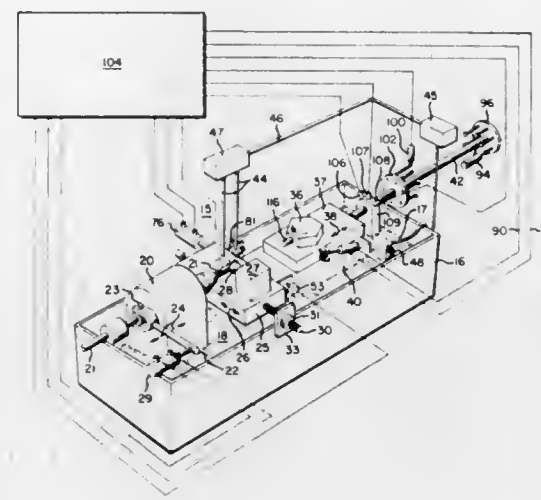
an arc-type lug means on one of the handle portions and located and spaced axially along said central longitudinal axis of said slot from said pivot pin means beyond said jaw cavity and having a radius of curvature extending toward and coaxial with said pivotal axis of said pin means,

a plurality of arc-type groove means on the other of the handle portions each being separately slidably rotatably cooperable with said arc-type lug means and having a radius of curvature extending toward said pivotal axis of said pin means and having a radius of curvature of equal length to the length of the radius of curvature of said arc-type lug means,

said pin means and said pivotal axis provided thereby being movable along said slot to a plurality of variably displaced positions whereat said arc-type lug means is slidably rotatably cooperably associated with various separate ones of said arc-type groove means for relative rotatable sliding movement about said pivotal axis of said pivot pin means,

the transverse terminal outer surfaces of said jaw portions being substantially aligned and coterminous in each of said adjusted positions when the jaw portions are in the closed jaw cavity position and the path of relative movement of said transverse terminal outer surfaces of said jaw portions in each of said adjusted positions during movement between said closed jaw cavity position and said open jaw cavity position being arcuate about said pivotal axis of said pin means whereby the distance between said terminal transverse outer surfaces of said jaw portions and the central longitudinal axis of said slot in any open jaw cavity position is always equal to or less than the distance between said terminal transverse outer surfaces of said jaw portions and the central longitudinal axis of said slot in said closed jaw cavity position.

the movement of said table from a predetermined position during its travel in each direction; and



d. gas-controlled means responsive to said position signals for controlling gas flow to said cylinder.

3,854,353 METHOD AND APPARATUS FOR PERFORMING A THREADING OPERATION ON A ROTATING WORKPIECE

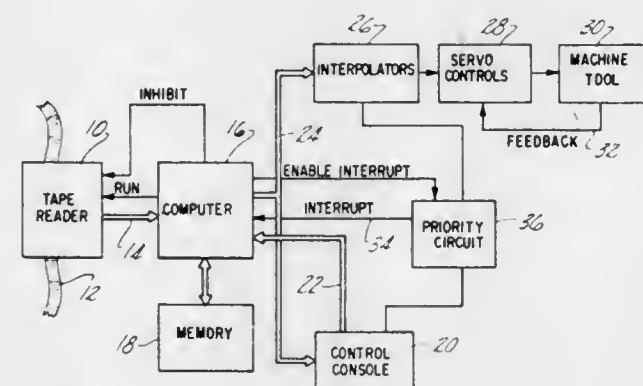
Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 20, 1973, Ser. No. 371,813

Int. Cl. B23b 1/00, 5/46

U.S. Cl. 82-1 C

12 Claims



1. A method of operating an N/C machine tool comprising the steps of: reading blocks of coded data from an active record of tool displacements and machine functions; reading from said record at least one block containing a preparatory code for initiation of a cyclical program including the steps of causing a tool to be displaced into engagement with a rotating workpiece, causing displacement of the tool along the workpiece to machine the workpiece, withdrawing the tool from engagement with the workpiece, and repeating the tool displacement steps of engagement, machining, and withdrawal at cutting depths which increase incrementally within said limits; reading from the blocks containing said preparatory code and storing in a mass memory data defining limits of tool displacement within said cyclical program of tool displacements; and thereafter executing said cyclical program under the control of parameters stored in said memory and without reference to said active record.

3,854,352 PNEUMATICALLY-CONTROLLED LATHE SYSTEM

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

Filed June 6, 1973, Ser. No. 367,582

Int. Cl. B23b 21/00, 13/00, 3/28

U.S. Cl. 82-21 A

7 Claims

1. A gas-controlled system for an automatic turret lathe having a crossfeed table and a turret ram table, said system comprising:

- a cylinder having a gas-operated piston connected between a fixed part and one of said tables for moving said table from one end position to the other;
- two fixed gas-operated sensors disposed to sense when said one of said tables is at each of its end positions for developing respective position signals;
- two liquid-operated dampers fixed with respect to and cooperating with said one of said tables for slowing down

3,854,354 PLIER TYPE TOGGLE WRENCH

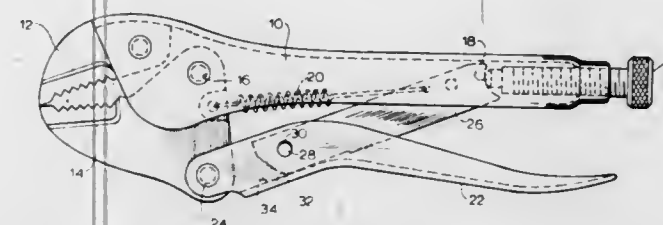
Torsten F. Angquist, Jamestown, N.Y., assignor to Cooper Industries Inc., Houston, Tex.

Filed Nov. 19, 1973, Ser. No. 417,382

Int. Cl. B25b 7/12

U.S. Cl. 81-377

8 Claims



1. In a wrench of the type having a main handle-like body portion provided with a fixed jaw; a movable jaw pivotally mounted upon said body; a spring normally biasing said movable jaw toward open position relative to said fixed jaw; and a toggle mechanism operable for locking said jaws in closed condition upon a work-piece, said toggle mechanism including a lever handle pivotally connected to said movable jaw and a toggle link having opposite ends thereof operably coupled to said lever handle and pivotally bearing upon a fulcrum device carried by said body;

the improvement wherein said toggle link is operably coupled to said lever handle by a pin-slot connection device and said link is provided with a cam surface arranged for engagement with a cam reaction surface portion of said lever handle when the latter is moved in one direction to a wrench-closed position and to simultaneously shift said toggle mechanism so as to arrange the pin of said pin-slot connection device substantially on the center line of said toggle mechanism whereby to frictionally lock said lever handle in said position whereat maximum jaw-locking strain is applicable upon a work-piece by the wrench parts.

3,854,355 METHOD OF PUNCHING SHEET SEGMENTS HAVING SUBSTANTIALLY ANNULAR SECTOR SHAPE

Gunnar Anefall, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

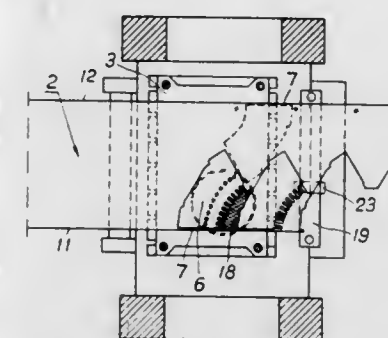
Filed Oct. 4, 1973, Ser. No. 403,721

Claims priority, application Sweden, Oct. 5, 1972, 12828/72

Int. Cl. B26f 1/40

U.S. Cl. 83-50

4 Claims



1. Method of punching sheet segments having substantially annular sector shape, intended to form the stator core in a turbo-generator, each segment lying within a sector angle of 40° - 80° and being limited by a back side (9), a slot side (10) and two radially oriented sides (7,8), said method comprising feeding a sheet metal strip (2) of constant width from a wind-recoiler (1) between the lower part (3) and the upper part (4) of a punching tool (5), the working profile of which tool corresponds to the shape of said sheet segments (6), and individually and successively punching out a plurality of sheet segments by said tool, the sheet metal strip (2) having a width which is larger than the air gap radius and smaller than twice

the maximum outer radius of said stator core, the punching tool being oriented in such a way that a cutting edge of the tool corresponding to one of said radially oriented sides (7,8) is parallel to and almost coincides with a first longitudinal edge (11) of said sheet metal strip, a remaining portion of the sheet metal strip (13) which is located adjacent a second longitudinal strip edge (12) and which is not affected during the punching being moved out by the punching tool by the feeding movement, coiling such remaining portion on a wind-recoiler (14) and feeding such remaining portion into the punching tool (5), said tool having such an orientation in relation to the sheet strip that said cutting edge is parallel to and substantially coincides with said second longitudinal sheet strip edge (12).

3,854,356 THREAD CUTTING AND CLAMPING MEANS

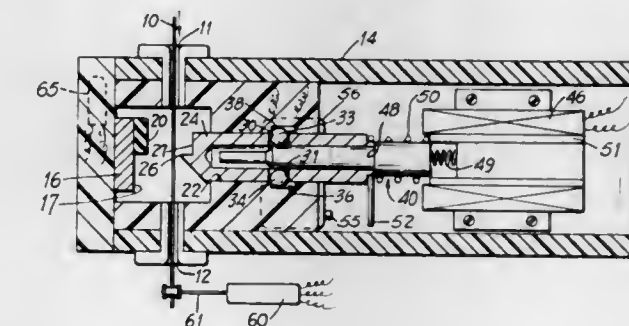
Richard Z. Okreglak, Washington, D.C., assignor to AMF Incorporated, White Plains, N.Y.

Filed July 17, 1973, Ser. No. 379,998

Int. Cl. B26d 5/08

U.S. Cl. 83-66

10 Claims



1. A device for cutting a strand of thread, yarn, or the like comprising, means for guiding a strand along a path, a cutting anvil located on one side of said path, a translatable hollow barrel having cutting means at one end thereof, a slideway disposed on the other side of said path and adapted to receive said barrel for permitting the barrel to slide from a latched position removed from said path to an unlatched position in which said cutting means is in engagement with said anvil, spring means for sliding the barrel toward said path to bring the cutting means into contact with the anvil, at least one aperture through the wall of said hollow barrel, detent means receivable within said aperture and radially movable with respect thereto, a stem member disposed within said hollow barrel and axially movable with respect thereto between latched and unlatched positions, said stem having first and second spaced portions of different thicknesses, detent receiving means fixedly positioned exteriorly of said barrel for engaging said detent when the barrel is in its latched position, said first stem portion being proportioned to contact the detent and urge it into engagement with the detent receiving means when the stem and barrel are in their latched positions, the second stem portion being proportioned to engage the detent and permit its radial disengagement from the detent engagement means when the stem is in its unlatched position, electromagnet means fixedly positioned relative to said stem, armature means associated with said stem for moving the stem from its latched to its unlatched position upon energization of the electromagnet,

said aperture and detent means being constructed and arranged to move the detent into contact with the second stem portion when the stem is in its unlatched position.

3,854,357

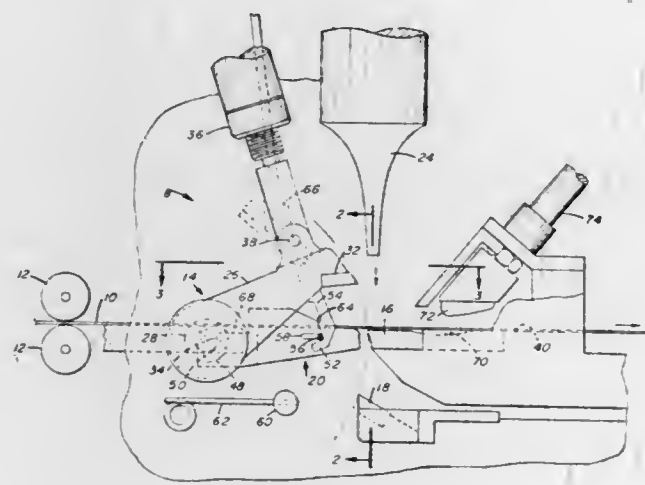
APPARATUS FOR REMOVING AN IMPERFECT PORTION OF A WEB

Martin W. Kron, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 290,605, Sept. 20, 1972, Pat. No. 3,799,826. This application Nov. 14, 1973, Ser. No. 415,588 Int. Cl. B26d 7/18

U.S. Cl. 83-105

11 Claims



1. In a severing apparatus for removing an imperfect portion of a web to form trailing and leading perfect web end portions adapted to be spliced together to form a continuous perfect web, the combination comprising:

- web transport means;
- means defining a perfect web path along which a web having an imperfect portion can be transported by said web transport means;
- first severing means adjacent said perfect web path;
- second severing means spaced from said first severing means to define a passageway therebetween through which said imperfect portion can be transported along an imperfect web path; and
- third severing means movable from an initial to a final position and cooperable with said first and second severing means in succession during such movement for severing said web at opposite ends of said imperfect portion to form trailing and leading perfect web end portions respectively; and
- web guiding means responsive to said third severing means for movement from a first position in which it guides the web along said perfect web path to a second position in which it guides said imperfect portion along said imperfect web path.

3,854,358

PROFILE STEEL CUTTER

Erwin Kruse, Gevelsberg, Germany, assignor to Werner Peddinghaus, Sprockhovel-Hasslinghausen, Germany

Filed Oct. 5, 1972, Ser. No. 295,121

Claims priority, application Germany, Oct. 6, 1971, 2149845 The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

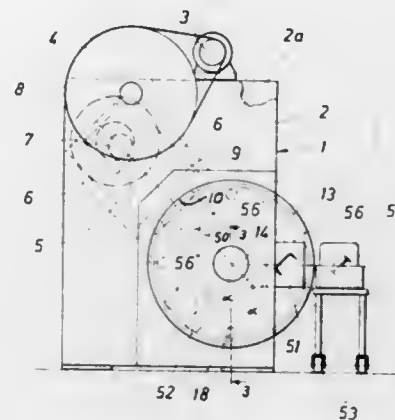
Int. Cl. B23d 23/00

U.S. Cl. 83-198

3 Claims

1. A profile steel cutter which includes in combination: a rectilinearly movable tool carriage, a rotatably and adjustably mounted turret index disk having a plurality of sets of recesses, said sets of recesses being circularly arranged in spaced relationship to each other, a plurality of stationary cutting blade means stationary with regard to said turret index disk, a plurality of cutting blade means movable relative to said

stationary cutting blade means and respectively forming with said stationary cutting blade means sets of cutting blade means which are interchangeable and are removably arranged in said sets of recesses during operation, locking means for arresting said turret index disk at each respective adjusted position with one set of blade means operative by said tool carriage and with a recess having another set of blade means opening laterally for removal of said set of blade means therein, and a magazine table displaceable horizontally in a direction of feed movement transverse to the plane of said turret index disk and



arranged adjacent said turret index disk at substantially the level of the axis of rotation of said turret index disk and of said one of said recesses opening laterally, said magazine table being adapted to receive and support sets of cooperating cutting blade means, said sets being arranged one behind the other when looking in the direction of feed movement of said magazine table, said sets and recesses in said turret index disk defining an angle with each other corresponding to the angle defined by the longitudinal axis of said carriage with the cutting blade supporting surface of said magazine table.

3,854,359

APPARATUS FOR ENABLING AUTOMATIC FEED FOR A PRESS WITH ONE-STAMPING DIE

Shuji Tagami, Uozu, Japan, assignor to Kabushiki Kaisha Tagami Kanagata, Uozu-shi, Japan

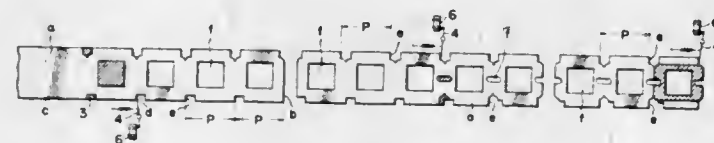
Filed Mar. 16, 1973, Ser. No. 341,932

Claims priority, application Japan, June 7, 1972, 47-57164; June 15, 1972, 47-60210; Mar. 18, 1972, 47-33035[U]

Int. Cl. B26f 1/12

U.S. Cl. 83-212

2 Claims



1. An apparatus for automating feed in a press having a ram and a one-stamping die comprising punching means to form dents along an edge of the material fed to the press with descent of said ram, said punching means being disposed at the material feed side of said die, a pitch determining means disposed at the discharge side of said die and arranged to be engaged or held against either the leading end of the material or an edge spaced at one pitch intervals but released from the engaged or held condition simultaneously with the descent of said ram, a control means to detect completion of each material positioning for punching work and issue an operating instruction to said ram, and feed rollers provided on both feed and discharge sides of the press and powered by their own power sources.

3,854,360

SELF-GAUGING MITRE SAW

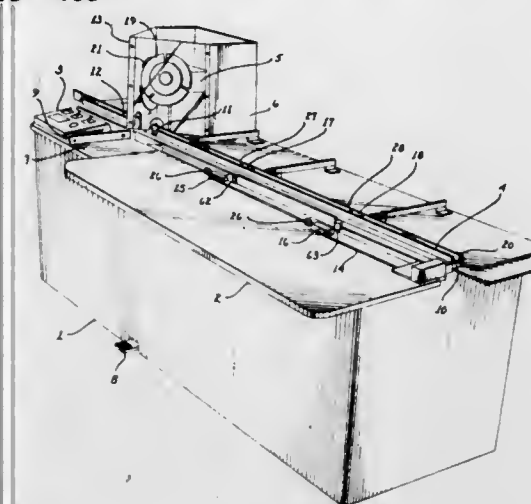
James C. Reed, San Diego, Calif., assignor to Manufacturing Approaches & Total Concepts, Inc., San Diego, Calif.

Filed Feb. 16, 1973, Ser. No. 333,383

Int. Cl. B27b 27/10, 5/20

U.S. Cl. 83-468

5 Claims



1. A self-gauging mitre saw apparatus mounted upon a work table for cutting molding to a length equivalent to the distance between opposing first and second sides of a pattern piece, said apparatus comprising in combination:

- a. a channel secured to the work table for receiving a length of molding;
- b. a vertically movable dual cut mitre saw assembly having a pair of cutting blades set at an angle of 90° with respect to one another, said cutting blades being at angles of 45° and 135°, respectively, with respect to said channel, said saw assembly being selectively movable in the vertical axis to intersect said channel;
- c. an upwardly extending reference point fixedly attached to the work table in proximity to said saw assembly for defining the position of the first side of the pattern piece;
- d. a slideable gauge plate having a gauge extending lateral therefrom, said gauge plate being slideable parallel to said channel to position said gauge adjacent the second side of the pattern piece; and
- e. a stop disposed within said channel for limiting the length of molding to be cut by said saw assembly, said stop being secured to said gauge plate and slideable therewith within said channel; whereby, the gauge plate automatically determines the length of molding to be cut to conform with the distance between the first and second sides of the pattern piece.

3,854,361

QUICK CHANGE LABELING HEAD

Dean S. Kercher, Woodstock, and Trygve R. Rod, Mundelein, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 153,313, June 15, 1971. This application Division of Ser. No. 153,313, June 15, 1971, Pat. No. 3,774,489.

This application June 25, 1973, Ser. No. 372,877

June 25, 1973, Ser. No. 372,877

Int. Cl. B23d 19/06; B26d 1/24

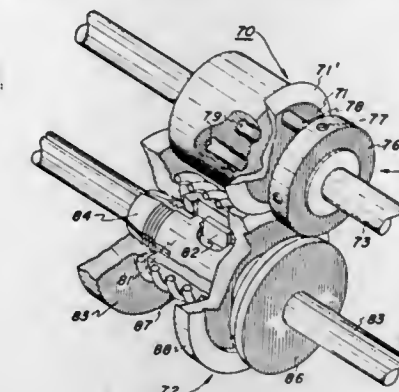
U.S. Cl. 83-499

4 Claims

1. As a means to expedite changeover of an addressing machine labeling head from one size label form to another size label form, said labeling head including a knife pair for removing the label form margins in preparation for use of the form labels, the combination of:

- means supporting at least one of said trim knives for adjusting movement relative to the other of said trim knives whereby to permit the relative spacing between said trim knife pair to be adjusted for the label form being used;
- locating means disposed adjacent said one trim knife in a preset locating position; and
- indexable gauge means adjacent said locating means and engageable therewith to position said one trim knife

relative to said locating means and thereby locate said one trim knife relative to the other trim knife, said gauge means having spacing surfaces of predetermined dimension at each index position thereof corresponding to different ones of said label forms for engagement with



3,854,362 HYDRAULIC CONTROL SYSTEM FOR HOLLOW PUNCHING MACHINES

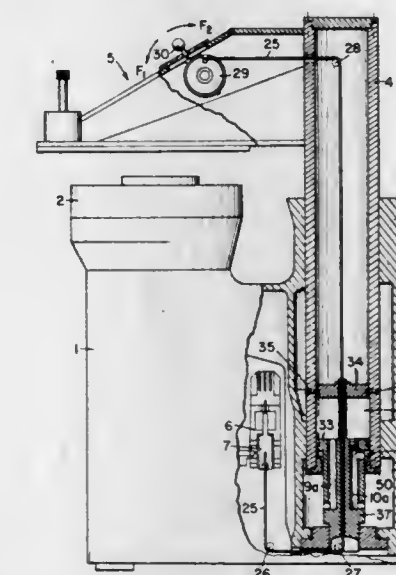
Emiliano Cantella, Vigevano Pavia, Italy, assignor to Atom di Cantella-Deambrosi & Gaia, Vigevano-via Ristoria, Italy

Filed Aug. 22, 1972, Ser. No. 282,689

Claims priority, application Italy, Aug. 22, 1972, 27735/72 Int. Cl. B26d 5/12

U.S. Cl. 83-530

10 Claims



1. In a punching machine having an overhanging head, a movable column vertically movable for lowering said head from a raised position and raising said head to said raised position, a hydraulic cylinder for reciprocable driving of said column means defining a hydraulic circuit for providing fluid under pressure to said cylinder for lowering and raising said head, an electrical control circuit, the improvement which comprises a valve in said hydraulic circuit for controlling application of hydraulic fluid to said cylinder maintaining said head in a raised position, and for selectively lowering and raising said column thereby lowering and raising said head, said valve comprising a valve body and a valve spool reciprocable therein controlling flow of fluid under pressure into said cylinder for lowering and raising said head, said valve spool having an axial extension actuated under control of said control circuit for effecting travel of said spool for control of application of hydraulic fluid under pressure to said cylinder for lowering the column, means connected to said head and to said valve spool displacing said spool in a direction, as said column is raised, for controlling flow of hydraulic fluid under pressure to said cylinder for regulating the speed of raising said column and maintaining it in said raised position, adjust

means coactive with said means connected to said head and to said valve spool for variably adjusting the position of said spool relative to said valve body thereby variably setting the raised position of said column and said head, and said valve body and said spool each having a plurality of coating, axially spaced annular lands defining flow paths controlling application of said hydraulic fluid to said cylinder for lowering and raising said column thereby lowering and raising said head.

3,854,363 CHAIN SAW UNIT

Karl Ake Bengt Merckell, and Jan-Christer Henric Oveson Carlsen, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandvik, Sweden

Continuation of Ser. No. 23,807, March 30, 1970, abandoned.

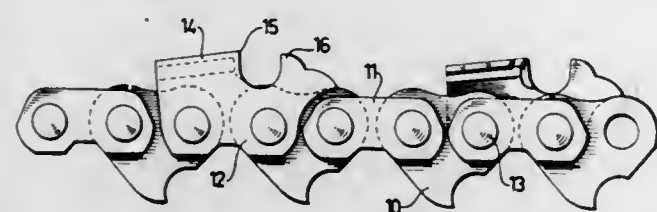
This application May 21, 1973, Ser. No. 362,248

Claims priority, application Switzerland, Mar. 31, 1969, 4482

Int. Cl. B27b 33/14

U.S. Cl. 83-834

7 Claims



1. A saw chain link, in heat-treated and hardened condition, for a saw chain of a motor-driven chain saw, said link being made of a low alloy steel with good working qualities and at the same time having very high toughness, sharpness-permanency and wear-resistance, said low alloy steel being composed of, in weight percentages: 0.60-0.7 percent carbon, 0.9-1.4 percent silicon, 0-1.5 percent manganese, 0.3-0.7 percent chromium, one of the metals molybdenum and tungsten, 0.1-0.5 percent, 0-0.25 percent vanadium, 0-0.20 percent aluminum, 0-0.3 percent nickel and the remainder iron and normally present impurities, the microstructure of the link being bainitic, and which has been hardened by being heated at 850°-950° C. for 3-15 minutes and quenched in a salt bath at 280°-330° C.

3,854,364 SAW BLADE

Erik Wilhelm Sundstrom, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 23, 1973, Ser. No. 418,220

Claims priority, application Sweden, Nov. 23, 1973, 16984/73

Int. Cl. B27b 33/08; B23d 61/02

U.S. Cl. 83-835

6 Claims



1. In a circular metal saw blade including a base plate having cutting elements at its peripheral edge and a covering plate concentrically assembled to said base plate by gluing, the

improvement according to which circularly extending indentations are imparted to the covering plate, each said indentation extending concentrically with respect to the center of said plate assembly.

3,854,365 ELECTRONIC MUSICAL INSTRUMENTS READING MEMORIZED WAVEFORMS FOR TONE GENERATION AND TONE CONTROL

Norio Tomisawa; Takehisa Amano; Yasuji Uchiyama, and Takatoshi Okumura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

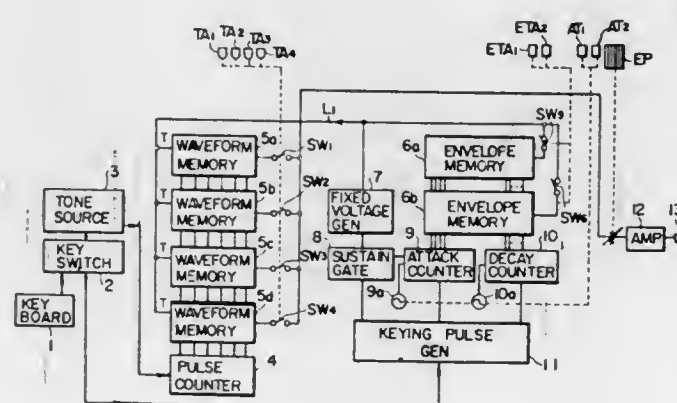
Filed Apr. 4, 1973, Ser. No. 347,725

Claims priority, application Japan, July 31, 1971, 46-57830; July 31, 1971, 46-57831; Sept. 16, 1971, 46-71245; Sept. 22, 1971, 46-73441

Int. Cl. G10h 1/00, 5/00

U.S. Cl. 84-1.01

14 Claims



1. In an electronic musical instrument, a sound waveform producing system for producing sound waveforms by scanning stored waveforms comprising:

a tone source means including a plurality of clock pulse generators for generating a plurality of sound frequencies,

key-operated switches coupled to said clock pulse generators, each of said switches being assigned to a sound frequency,

a waveform memory means for storing a plurality of sampled representations of a sound waveform, said memory including a bank of voltage divider circuits, said voltage divider circuits including a bank of resistor elements having predetermined resistance values representing in analog form the desired waveform amplitude at each of a plurality of sampling points of said waveform, and a common resistor connected in series with said bank of resistors, and switching means for rendering the respective voltage divider circuits operative and inoperative, read-out means connected to said waveform memory means and including frequency divider circuits operable to read out said memory at selectable rates, and

coupling means for coupling said tone source means to said read-out means, said coupling means being operable to determine, in accordance with the pulse frequencies gated by keyed ones of said switches, the frequency divider circuits to be inputted with the selected pulse train from the clock pulse means so that the total number of the enabled read-out means is decreased with an increase in the frequency of the output signal to be produced.

3,854,366 AUTOMATIC ARPEGGIO

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Apr. 26, 1974, Ser. No. 464,363

Int. Cl. G10h 1/00, 5/00

U.S. Cl. 84-1.24

22 Claims



1. Apparatus, useful in conjunction with an electronic musical instrument, for producing arpeggio and like effects, comprising:

a note storage device containing note-selection signals indicative of an arpeggio chord,

note scanning means for repetitively sequentially scanning said note storage device, said scanning being suspended to permit tone production each time that a note-selection signal is detected in a scanned location of said note storage device, and

play direction means, operative upon detection of a note-selection signal, for directing said musical instrument to produce a tone, the note and octave of said tone being established respectively by the scanned location containing said detecting note-selection signal and by the number of times said storage device has been scanned repetitively.

3,854,367 DUAL VIBRATO SYSTEM

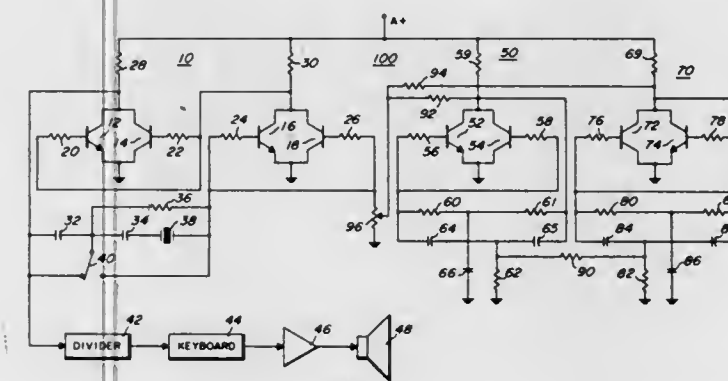
Donald C. Ryon, Carol Stream, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 4, 1973, Ser. No. 393,762

Int. Cl. G10h 1/04

U.S. Cl. 84-1.25

6 Claims



1. A system for producing a non-sinusoidal vibrato signal having a periodic complex waveform, comprising:

a first low frequency vibrato oscillator including a frequency determining circuit tuned to a first frequency for

providing first oscillations having the first predetermined frequency;

a second low frequency vibrato oscillator including a frequency determining circuit tuned to a second frequency higher than said first frequency and a predetermined even multiple thereof for providing second oscillations having the second predetermined frequency;

a coupling circuit connecting said first and second oscillators for synchronizing in phase locked relation said second oscillations to the predetermined frequency multiple of said first oscillations; and

a combining circuit connected to said first and second oscillators for receiving and combining said first and second oscillations, said combining circuit having an output terminal for providing said combined first and second oscillations to provide said periodic complex waveform.

3,854,368 FINGER MOUNTABLE GUITAR STRING CONTACT DEVICE

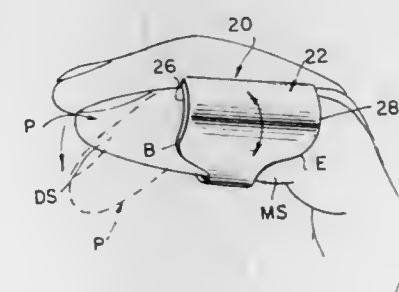
Leonard Pogan, 895 West End Ave., New York, N.Y. 10025

Filed Mar. 22, 1974, Ser. No. 453,859

Int. Cl. G10d 3/00

U.S. Cl. 84-319

12 Claims



1. A device to be mounted on a finger for use in altering the vibration of a normally vibrating guitar string, said device comprising: string contact means extending at least partially around the circumference of a finger for contacting a vibrating guitar string; said string contact means having a longitudinal axis, a first end and a second end spaced circumferentially from said first end; said string contact means having a length along said longitudinal axis being a first value at said first end and being a second value, smaller than said first value, at said second end; means for snugly mounting said string contact means on the finger of a user so that said longitudinal axis is aligned with said finger; said mounting means and said string contact means being constructed and arranged to permit said string contact means first end to be selectively mounted in a use position on the ventral side of a user's finger, in a storage position on the dorsal side of a user's finger, and in a position on a user's finger intermediate said dorsal side and said ventral side.

3,854,369 OBOE FINGERING SYSTEM AND MOUTHPIECE

Dick Paladino, 4221 San Bernardino Ave., Las Vegas, Nev. 89102

Division of Ser. No. 349,625, April 9, 1973, Pat. No. 3,789,721, which is a continuation-in-part of Ser. No. 234,481, May 15, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,029

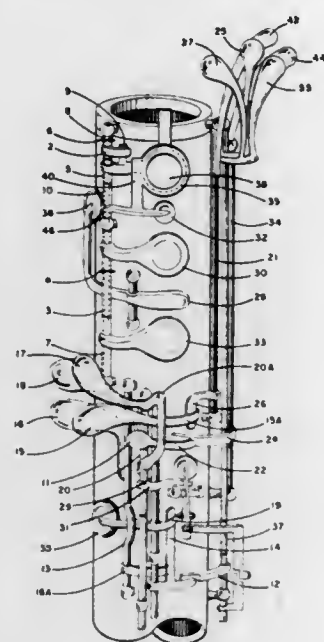
Int. Cl. G10d 7/00

U.S. Cl. 84-380

1 Claim

1. In a lower portion of an oboe or English horn, a key arrangement comprising an F natural key and tone hole cover therefor underlying an over ring positioned for depression by the first finger of the right hand, both of said tone hole cover and said over ring being attached to separate hinge tube segments, a second finger right hand ventless F sharp key and

tone hole cover therefor overlying an F natural tone hole, a tone hole cover overlying an F sharp tone hole located between the F natural and F sharp keys which cover is attached to said over ring and means connecting said second finger F sharp key with said F natural tone hole cover for depressing said F natural tone hole cover when said second finger F sharp



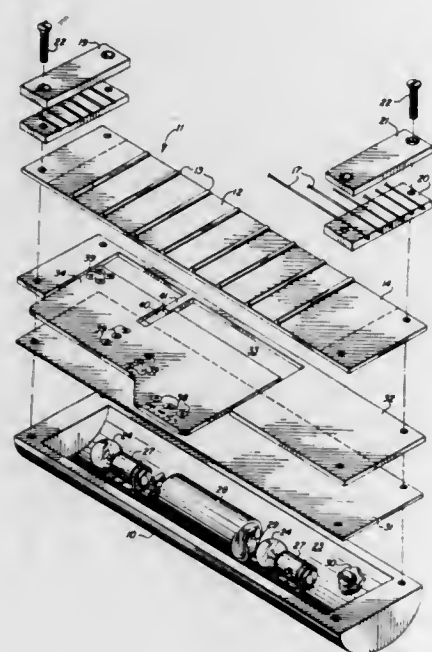
key is depressed wherein depression of said second finger right hand F sharp key also depresses said underlying F natural tone hole cover but not said over ring and said attached F sharp tone hole cover whereas depression of said over ring depresses said F natural and said attached F sharp tone hole covers but not the second finger F sharp key.

3,854,370

TRAINING AID FOR STRINGED MUSICAL INSTRUMENT
Stanley Sapinski, 1716 E. Wesleyan Dr., Tempe, Ariz. 85282
Filed May 1, 1974, Ser. No. 465,728
Int. Cl. G10b 15/00

U.S. Cl. 84-485

1 Claim



1. A training aid for stringed instruments of the type having a neck and fingerboard, including guitars and mandolins, for assisting the player thereof in the proper placement of fingers on the fingerboard, said training aid comprising in combination:

a. a stringed instrument neck;

- b. a fingerboard carried by said neck including
 - i. an elongate light transmitting substrate spaced from said neck,
 - ii. a plurality of spaced transverse frets upon the outer surface of said substrate, and
 - iii. a plurality of spaced strings extending longitudinally of said substrate over said frets;
- c. a fingering indicator including
 - i. a plate insertable between said neck and said substrate carrying illuminatable indicia corresponding to a preselected fingering pattern;
- d. means for illuminating said indicia, and
- e. locating and retaining means for registering said chord indicator with said fingerboard.

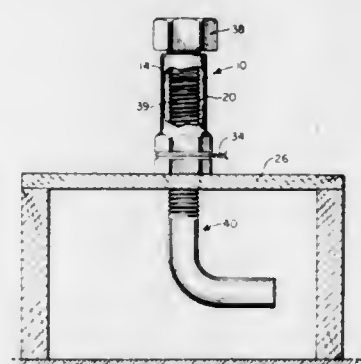
3,854,371

ANCHOR BOLT PROTECTIVE CAP

Surgues M. Lamothe, 1813 Feronia St., Metairie, La. 70005
Filed May 10, 1973, Ser. No. 359,020
Int. Cl. F16b 35/00, 37/00, 39/20

U.S. Cl. 85-1 R

28 Claims



1. A combination which comprises:

- a. an anchor bolt having a threaded shank;
- b. a template to position the anchor bolt in a selected locus, the template having an aperture therethrough to accommodate said threaded shank;
- c. radially yieldable capping means having a bore therein adapted to receive and encase an end portion of said threaded shank, the interior of said means having thread gripping means around said bore, the top of the capping means having an upwardly extending, threaded stud sized to receive a nut which fits the threaded shank, said capping means having an elongate upwardly extending slot in a sidewall thereof; and
- d. clamping means; the threaded shank of the anchor bolt extending upwardly through the aperture of the template and into the bore of the capping means supported on the template with the base of said capping means resting and supported on or above the upper surface of said template, and the clamping means being positioned around the lower portion of the capping means and applying a constrictive force around the bore of the capping means to cause engagement between said thread gripping means and the threaded shank at a locus above said aperture so that the anchor bolt is held in position.

3,854,372

SCREW ADAPTED FOR VISIBLE INSPECTION OF TIGHTNESS

Charles E. Gutshall, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Oct. 20, 1972, Ser. No. 299,347

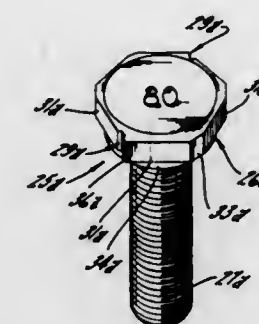
Int. Cl. F16b 31/02

U.S. Cl. 85-61

37 Claims

1. A one-piece screw adapted to be threaded into a workpiece by a tool to a predetermined torque, said screw including an elongated threaded shank, a head integrally formed on one end of said shank and shaped for engagement by said tool,

a weakened swageable portion of malleable material integrally formed with said head and having a predetermined strength correlated with said predetermined torque, a generally flat, external, tool-engaging face on said portion for abutting engagement by the tool to tighten the screw in the workpiece, and a recess within said head adjacent said portion to receive said portion and having a volume at least as great as the volume of said portion, said recess weakening said portion in



torsion and said portion being swaged generally toward the central axis of said screw and into said recess without breaking loose from said head as the tightening torque applied to said portion exceeds said predetermined strength thereby providing visual evidence of tightening the screw in the workpiece to said predetermined torque and to cause the tool to slip in engagement with said weakened portion to prevent the screw from being tightened excessively in the workpiece.

3,854,373

EXPANSION ANCHOR

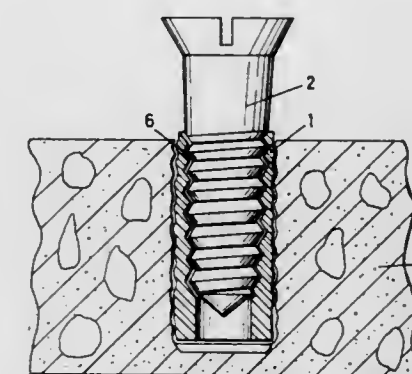
Ingo Romey, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Filed Dec. 12, 1972, Ser. No. 314,438
Claims priority, application Germany, Dec. 13, 1971, 2161717

U.S. Cl. 85-82

Int. Cl. F16b 13/14

8 Claims



1. An expansion anchor, comprising a tubular expansion anchor sleeve having substantially smooth outer and inner surfaces and a bore of substantially constant diameter, said sleeve being composed of a plastically deformable carbon-based material, including substantially 65-75 percent by weight of particulate matter selected from the group consisting of hard and soft coal, 15-30 percent by weight of a first substance selected from the group consisting of natural and synthetic rubber, and substantially 5-10 percent by weight of a second substance selected from the group consisting of polyvinylchloride and polyethylene; and an expansion member having at least partly a diameter greater than said diameter of said bore of said expansion anchor sleeve and insertable into said bore for causing expansion of said expansion anchor sleeve.

3,854,374

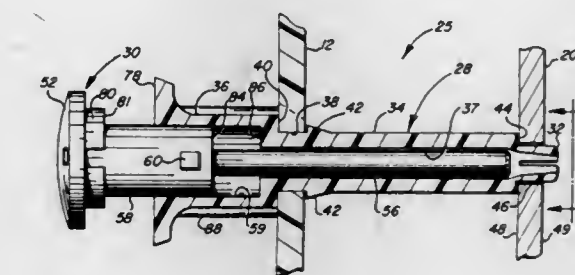
QUICK-RELEASE STANDOFF AND SUPPORT DEVICE
Jamie N. Boyle, and Edmund C. Decker, Jr., both of Phoenix, Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed May 29, 1973, Ser. No. 364,990

Int. Cl. F16b 13/04

U.S. Cl. 85-84

1 Claim



1. A threadless plastic support device for detachably mounting a panel member to a structural member at a predetermined distance therefrom, said device being attachable in an aperture of the structural member, said device comprising:

a body member and a locking pin carried slidably in said body member;

said body member including a head, a fastener, a spacer arranged axially between the head and the fastener, and a central passage extending through said body member for receiving said locking pin;

said body member insertable in a hole formed in the panel member, the head having a face of greater cross-sectional dimension than the spacer so that the face abuts one surface of the panel member, the spacer passing through the hole and extending for said predetermined distance laterally beyond the surface opposite said one surface;

first means on the spacer for retaining said body member securely in the panel member hole, and further means on the spacer proximate to the fastener and located said predetermined distance along said spacer from said retaining means, said further means engaging one surface of the structural member when the fastener is inserted in the aperture of the structural member, so that said one surface of the structural member is spaced said predetermined distance from said opposite surface of the panel member;

the fastener depending from the spacer and formed in the shape of a grommet having an external wall and an internal wall defining the portion of the central passage traversing the fastener, and fastener having at least one transverse slot segmenting the grommet;

said locking pin including an actuating member with a cylindrical shaft depending therefrom, the actuating member being external of the head, the shaft slidably engageable in the passage traversing the fastener by applying an external force to the actuating member;

a guide on said locking pin receivable in a keyway formed in said body member, the guide and the keyway cooperating to slidably interlock said body member and said locking pin;

the fastener, prior to engagement of the shaft therein, being insertable in and through the aperture of the structural member, the internal wall of the fastener tapered to form a chamber of gradually decreasing size receiving the shaft, the tapered internal wall wedgedly engaged by the shaft to distend the slotted grommet radially outward to frictionally engage and grip the structural member in the aperture thereof and lock said device to the structural member, the spacer holding the panel member fixedly spaced said predetermined distance apart from the structural member; and

means for disengaging the shaft from the fastener, including means for limiting the transverse movement of the shaft within the passage of the body member.

3,854,375

NOISE ATTENUATING BRAIDER CARRIER

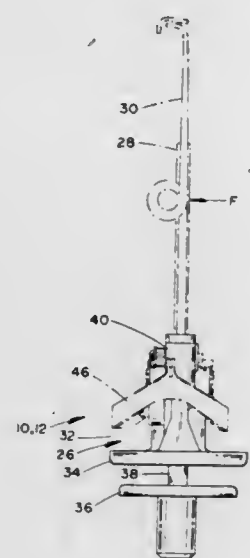
James F. Lefevre, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Nov. 12, 1973, Ser. No. 415,045

Int. Cl. D04c 3/18

U.S. Cl. 87-55

2 Claims



1. In a braiding apparatus of the type having a generally planar deck with two out-of-phase generally sinusoidal and concentric grooves formed therein, a plurality of strand carriers slidably mounted to operate in the grooves, and means to advance the carriers in timed relation in the grooves, the improvement in the carriers comprising:

- a resilient polymeric body having upper and lower portions, the lower portion including two oppositely facing generally parallel flat portions spaced apart with a generally flat web portion, the flat portions interfacing the planar deck and the web portion slidably mounted and guided by the sinusoidal grooves, the flat portions in combination with the web portion defining a first compliant section in said body, the upper portion including upwardly extending generally parallel spaced mounting portions defining a second compliant section therebetween;
- a bobbin spindle removably attached to one mounting portion, the bobbin spindle, mounting portion, and first and second compliant sections having a combined deflection capability of generally 0.07 to 0.1 inch per pound of force laterally applied to near the mid-point of the bobbin spindle; and
- a strand guide removably attached to the other mounting portion, the bobbin spindle and strand guide extending upwardly in generally parallel fashion, the strand guide, strand guide mounting portion, and first and second compliant sections having a combined deflection capability of generally 0.25 to 0.75 inch per pound of force laterally applied to near the mid-point of the strand guides; and means for tensioning strands mounted to the upper body portion;
- the first and second compliant sections in combination defining a strand dampening means for controlling strand tension in cooperation with the strand tensioning means; whereby the first compliant section in association with the deck dampens audible vibrations as the carrier is advanced on the deck.

3,854,376

LIQUID PROPELLANT WEAPON

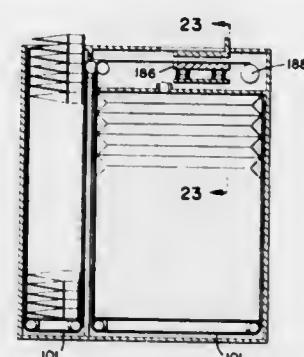
Lester C. Elmore, Portola Valley, and Thomas M. Broxholm, Palo Alto, both of Calif., assignors to Pulsepower Systems Inc., San Carlos, Calif.

Division of Ser. No. 179,759, Oct. 13, 1971, Pat. No. 3,803,975. This application Oct. 23, 1973, Ser. No. 408,570

Int. Cl. F41c 25/00

U.S. Cl. 89-33 B

4 Claims



1. A magazine for a liquid propellant gun of the kind in which liquid propellant is pumped into a combustion chamber and ignited to fire a projectile from the gun, said magazine comprising a stack of projectiles, a tank of liquid propellant and an elevator lift mechanism for raising the stack of projectiles and for raising the bottom wall of the tank of liquid propellant to feed the projectiles and liquid propellant to the gun when the magazine is associated with the gun.

3,854,377

TANK TURRET FOR AUTOMATIC WEAPONS

August Schiele, Augsburg, Germany, assignor to Keller & Knappich Augsburg Zweigniederlassung der Industrie-Weike Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Germany

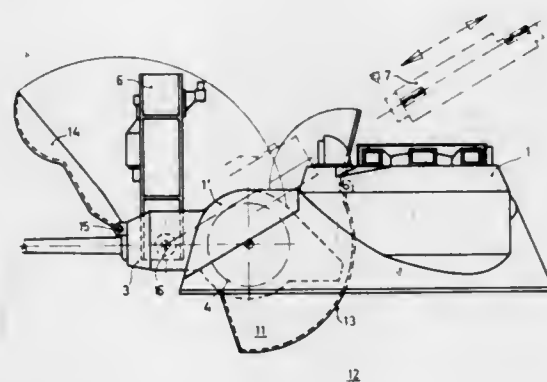
Filed Apr. 11, 1973, Ser. No. 350,234

Claims priority, application Germany, May 20, 1972, 7219032

Int. Cl. F41f 21/06, 23/10

U.S. Cl. 89-36 K

4 Claims



1. A housing for automatic weapons used in supporting a cannon comprising in combination:

- a turret body having a removable portion;
- a pair of trunnions disposed in said turret body;
- a weapon carrier pivotably supported in and disposed between said pair of trunnions;
- a weapon mount pivotably supported in said weapon carrier, said weapon carrier further comprising a rotatable plate pivotable about the front of said weapon carrier allowing access to the cannon;
- separable bearing support means supporting the trunnions perpendicularly to the fixed turret axis, said separable means having an upper half and a lower half, the upper half being affixed rigidly to said turret's removable portion;

tion, the lower half being affixed rigidly to said turret body; and means for detachably securing said turret's removable portion to said turret body so that the cannon may be removed from the housing by separating said turret's removable portion from said turret body.

3,854,378

DEVICE FOR STABILIZATION OF AN OSCILLATING MASS

Jean-Luc Vogel, Meudon, France, assignor to Republic of France as represented by the State Minister charged with National Defence, Delegation Ministerielle pour l'Armement, Paris, France

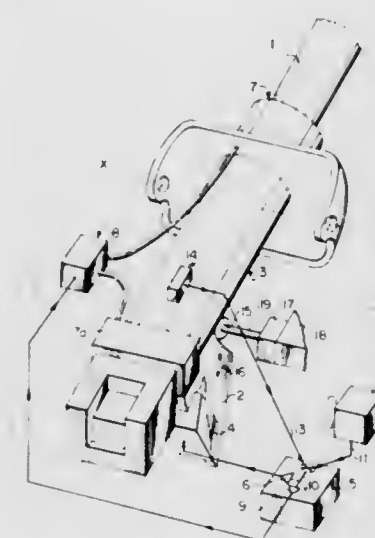
Filed July 9, 1973, Ser. No. 377,288

Claims priority, application France, July 7, 1972, 72.24598

Int. Cl. F41f 21/16; F41g 5/16, 5/24

U.S. Cl. 89-37 F

4 Claims



1. In combination with an oscillating mass pivotally mounted with two degrees of freedom on a moving frame, a stabilization device comprising means for transmission of torque to the oscillating mass, said means comprising a metallic sector carried by said oscillating mass at one of its ends and constituting the rotor of a stabilizing torque producing drive with very low viscosity whose stator is integral with the frame and constitutes the inductor, and means for automatic correction of systemic and random imbalances comprising a mass transfer device mounted directly on the mass to be stabilized.

3,854,379

TOROIDAL SURFACE PROCESSING MACHINE

Francis Vass, and Dezideriu Horacek, both of Brasov, Romania, assignors to Uzina de Autocamioane Brasov, Brasov, Romania

Filed Aug. 21, 1972, Ser. No. 282,551

Int. Cl. B23c 3/16, 3/34

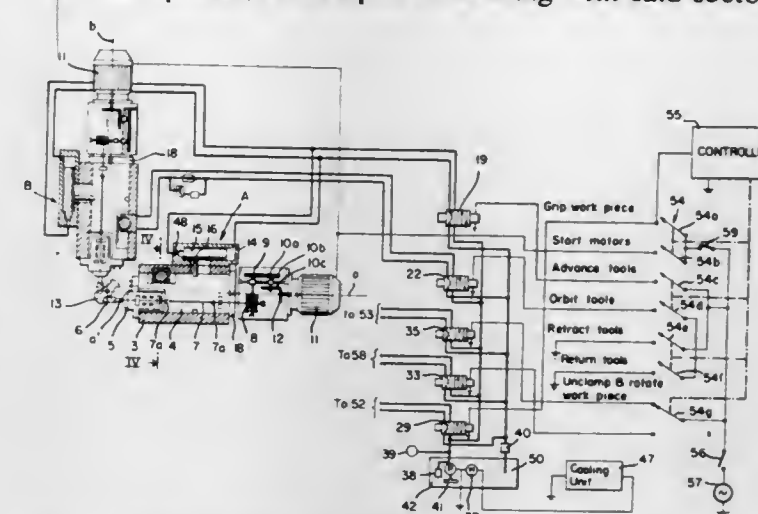
U.S. Cl. 90-15.1 A

9 Claims

1. An apparatus for milling ball seats into a constant-velocity ball-coupling half comprising:

- a support;
- means on said support to displace a first tool parallel to a first axis;
- means on said support for orbiting said first tool about said first axis;
- means on said support for displacing a second tool parallel to a second axis intersecting said first axis;
- means on said support for orbiting said second tool about said second axis; and
- clamping means on said support for holding a coupling-half blank at the intersection of said first and second axes and for rotating said blank through 180° about a third axis transverse to and intersecting said first and second axes, each of said means for orbiting including a spindle rotatable about the respective axis, said tool being mounted

eccentrically on said spindle, a toothed sector provided on said spindle, a rack piston meshing with said sector,



and cylinder means for displacing said piston to rotate said spindle.

3,854,380

THREE-WAY LEVER CONTROL FOR HYDRAULIC CONTROL CIRCUIT

Robert Casey, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

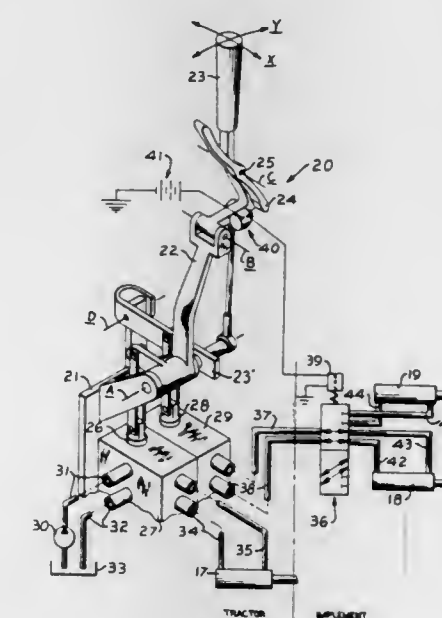
Division of Ser. No. 265,427, June 23, 1972, Pat. No.

3,795,280. This application Sept. 24, 1973, Ser. No. 399,987

Int. Cl. F15b 1/116

U.S. Cl. 91-413

2 Claims



1. A hydraulic control circuit comprising a three-way lever control adapted to actuate separate valves comprising

- a stationary support,
- an articulated handle having a first arm, adapted to actuate a first valve, pivotally mounted on said support for pivotal movement about a first axis,
- a second arm, adapted to actuate a second valve, pivotally mounted on said first arm for pivotal movement about a second axis disposed transversely relative to said first axis, and
- a third arm, adapted to actuate a third valve, pivotally mounted on said second arm for pivotal movement about a third axis,

first and second control valves each having a stem reciprocally mounted therein,

means pivotally interconnecting each of said first and second arms with a respective one of said valve stems whereby pivotal movement of said handle about said first axis will reciprocate one of said valve stems and pivotal

movement of said handle about said second axis will reciprocate the other one of said valve stems, electrical switch means mounted on said second arm, closely adjacent to said third arm for actuation thereby, an electrically actuated third control valve operatively connected to said switch means, a pressurized fluid source operatively connected to said first and second control valves, fluid actuated first cylinder means operatively connected to one of said first and second control valves for actuation thereby, and fluid actuated second and third cylinder means operatively connected to said third control valve for actuation thereby, said third control valve operatively connected to the other one of said first and second control valves.

3,854,381

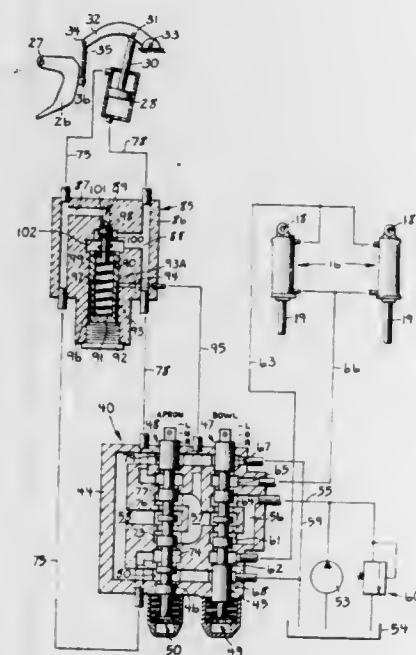
RELIEF VALVE SYSTEM FOR A SCRAPER APRON
Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 4, 1974, Ser. No. 439,216

Int. Cl. F15b 11/16, 13/06

U.S. Cl. 91-414

7 Claims



1. In a hydraulic system for controlling the bowl and apron of a scraper, which system includes a bowl lift cylinder, an apron lift cylinder, a bowl control spool valve connected by bowl cylinder conduits to the head end and to the rod end of said bowl lift cylinder and controlling admission of hydraulic fluid to said conduits; an apron control spool valve connected by apron cylinder conduits to the head end and to the rod end of said apron lift cylinder and controlling admission of hydraulic fluid to said apron cylinder conduits, and a high flow rate pressure relief valve for returning hydraulic fluid from said system to a reservoir, pressure relief means for the rod end of the apron lift cylinder comprising, in combination:

a relief valve housing that has an inlet passage connected to the apron cylinder conduit for the rod end of the apron lift cylinder and an outlet passage;

a valve member in said housing that controls the passage of hydraulic fluid from the inlet passage to the outlet passage;

means biasing said valve member to a closed position with a predetermined force so that a first predetermined pressure in the inlet passage is required to open said valve;

a signal conduit connecting said housing to the apron control spool valve;

and means responsive to increased pressure in said conduit to increase the force applied to said valve member by the

biasing means and thereby require a second, and higher predetermined pressure to open said valve member.

3,854,382

HYDRAULIC ACTUATOR CONTROLS

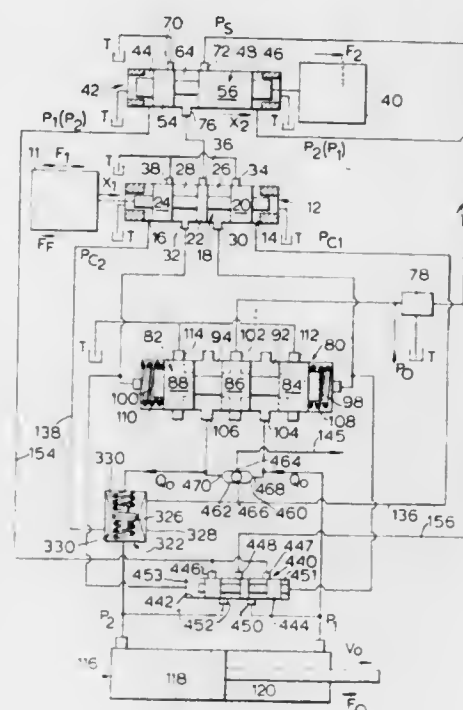
Ronald Bernard Walters, Wembley, and Peter Michael Hamey, Emsworth, both of England, assignors to Sperry Rand Limited, London, England

Filed June 20, 1973, Ser. No. 371,861

Int. Cl. F15b 11/10, 13/043

U.S. Cl. 91-433

10 Claims



1. A device for controlling the pressure of fluid applied to a double acting hydraulic actuator responsively to an electrical input signal comprising fluid pressure operated main control valve means for regulating the fluid flow to and from the actuator, pilot valve means for controlling the main control valve means, said pilot valve means including spool means for regulating the fluid pressures for operating the main control valve means, transducer means for producing a first force dependent upon said electrical input signal and for applying said force to said spool means, piston means associated with said spool means and comprising substantially equal piston areas effective in opposite directions, and feedback means including shuttle valve means responsive to the direction of actuator movement against a load, said shuttle valve means comprising a housing having inlet ports and outlet ports and containing opposed pressure chambers, and a valve piston movable in said housing responsively to pressures in said opposed pressure chambers, said feedback means further including conduit means connecting said shuttle valve inlet ports to opposite sides of said actuator and conduit means connecting said opposed pressure chambers to a fluid outlet of said pilot valve means to connect the inlet ports alternately to the outlet ports such that one of the outlet ports is always subjected to the operating pressure at the side of the double acting actuator being supplied with fluid and the other is always subjected to the operating pressure at the side of the double acting actuator from which fluid is being withdrawn, said feedback means further comprising feedback conduit means connecting said shuttle valve outlet ports to said opposed piston areas for applying to said opposed piston areas a pressure differential dependent upon the magnitude of the fluid pressure difference operating on the actuator to apply to said spool means a second net force opposed to said first force.

3,854,383

TENSION ACTUATED PRESSURIZED GAS DRIVEN ROTARY MOTORS

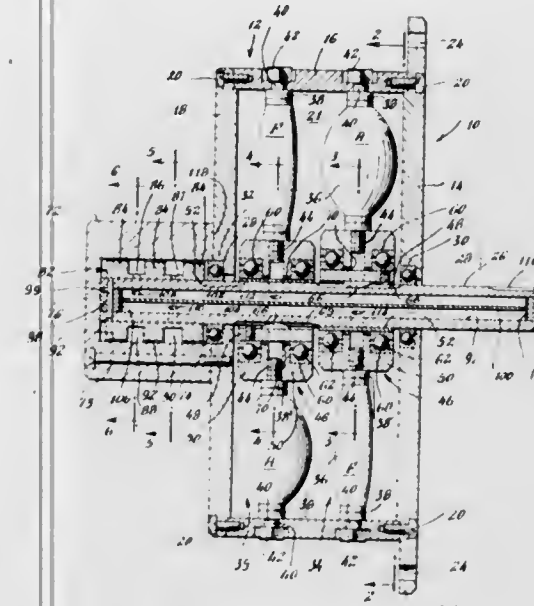
Henry M. Paynter, Reading, Mass., assignor to Dynacycle Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,432

Int. Cl. F01b 13/04, 3/10

U.S. Cl. 91-492

23 Claims



1. A tension actuated, pressurized fluid driven rotary motor for producing continuous rotary motion comprising:

a plurality of pressurized fluid driven tension actuators, longitudinally contractible upon inflation with pressurized fluid,

means for mounting said tension actuators about the axis of said shaft,

connecting drive means for linking said tension actuators to said shaft with the axis of said connecting drive means offset with respect to the longitudinal axis of said shaft,

fluid distribution inlet and exhaust means including inlet and exhaust port means, inlet and exhaust intermediate fluid conducting means, and distributor means for sequentially distributing pressurized fluid to and exhausting fluid from each of said tension actuators to cyclically inflate and deflate each of said tension actuators for applying contraction tension forces to said offset connecting drive means to rotate said shaft and frame means relative to each other.

said distributor means comprising a collector ring member having a central axial bore, and plurality of radial fluid passageways disposed therein, said tension actuators being fixedly attached to said collector ring member with each of said radial passageways communicating with one of said tension actuators, and

a distributor hub member, rotatably disposed with respect to said central axial bore of said collector ring member, having valving inlet and exhaust passages communicating with said inlet and exhaust intermediate fluid conducting means, respectively, for successively communicating with and distributing pressurized fluid from said inlet intermediate fluid conducting means to each of said tension actuators through said valving inlet passage, and for subsequently, successively communicating with and exhausting pressurized fluid from each of said tension actuators to said exhaust intermediate fluid conducting means through said valving exhaust passage, upon rotation of said distributor hub relative to said collector ring member.

3,854,384

METHOD OF MAKING TOBACCO SMOKE FILTERS
Donald B. Naylor, Dibden-Purley, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

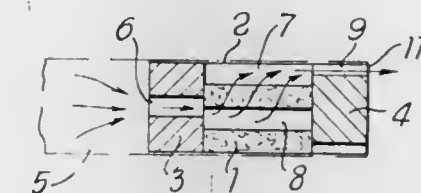
Division of Ser. No. 245,357, April 19, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,988

Claims priority, application Great Britain, May 24, 1971, 16572/71

Int. Cl. A24c 5/50

U.S. Cl. 93-1 C

9 Claims



1. A method of producing a radial-flow tobacco-smoke filter, which filter comprises a porous filter tube extending eccentrically and substantially longitudinally within an outer tubular wrapper whereby a crescent-shaped space is defined between said filter tube and said outer wrapper, a first closure element disposed at one end of the filter tube closing the crescent-shaped space between said filter tube and said outer wrapper, said first closure having an opening therein communicating with the interior of the filter tube, and a second closure element disposed at the opposite end of said filter tube sealing the filter tube, said method comprising the steps of:

A. depositing at least one first closure element and at least one second closure element, which closure elements have substantially equal exterior diameters, and at least one filter tube having an exterior diameter less than that of said closure elements upon a moving band, so that a filter tube is disposed between first and second closure elements and eccentric to the axes of said closure elements;

B. bringing said filter tube and said first and second closure elements into abutting relationship, and

C. enrobing said filter tube and said closure elements, with said filter tube eccentric to the axes of said closure elements, in a strip of wrapper material.

3,854,385

MACHINE FOR ERECTING AND GLUING CARTON BLANKS

Kay Arne Wallin, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed May 24, 1973, Ser. No. 363,644

Claims priority, application Sweden, June 1, 1972, 7191/72

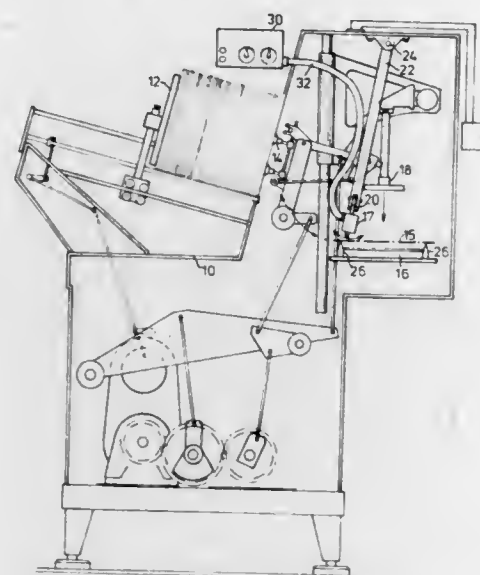
Int. Cl. B31b 3/60, 1/62

U.S. Cl. 93-36 MM

2 Claims

1. A machine for erecting planar carton blanks to form glued boxes comprising a shaping die for erecting the blanks and a ram for pressing said blanks against said die, and means having at least one nozzle for applying warm, liquid glue in strings or spots to the portions of the blank to be glued together, characterized in that from the machine frame above the die there is suspended a pivot arm which is pivotally mounted at its upper end on a pin which extends parallel with one of the two main directions of the die, which directions extend perpendicularly to each other, that the lower end of the arm supports a glue dispensing nozzle which is connected with a glue container via a conduit, that the nozzle is pivotable between two limit positions located in the region on opposite sides of the die, and that the length of the arm between the nozzle and the pivot pin of said arm is at least twice the dis-

tance between the limit positions of the nozzle, so that during the whole of its movement above a planar blank on the die the



nozzle is located at a small distance from the blank sufficient to apply glue.

3,854,386

AIR DIFFUSERS

Warren R. Hedrick, Holland, Mich., assignor to Allied Thermal Corporation, New Britain, Conn.

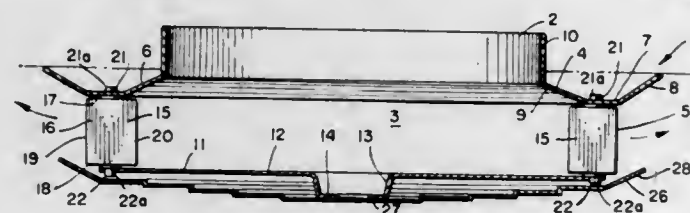
Filed July 2, 1973, Ser. No. 375,449

Claims priority, application Great Britain, Feb. 13, 1969, 7880/69

Int. Cl. F24f 7/00

U.S. Cl. 98—40 D

6 Claims



1. A ceiling air diffuser comprising
 - a. A substantially square upper plate comprising
 1. a substantially flat, horizontally extending peripheral edge portion
 2. a second peripheral edge portion projecting upwardly and outwardly from the outer edge of said first mentioned peripheral edge portion,
 3. a third peripheral edge portion projecting upwardly and inwardly from the inner edge of said final mentioned peripheral edge portion, and
 4. a substantially annular air-inlet collar
 - a. attached to the inner edge of said third peripheral edge portion, and
 - b. projecting substantially vertically upwardly from the latter,
 - b. a second substantially square plate disposed in
 1. downwardly spaced,
 2. substantially parallel relation to said first mentioned peripheral edge portion,
 - c. a third substantially square plate
 1. mounted below said second plate, and
 2. having an outer peripheral edge portion
 - a. projecting outwardly beyond the outer peripheral edge of said second plate, and
 - b. disposed in downwardly spaced, substantially parallel relation to said second peripheral edge portion,
 - d. said first mentioned, second and third peripheral edge portions defining one side of a discharge passageway for discharging air, received from said air-inlet collar, outwardly from the peripheral edge of said plates,

- e. said second plate and said outer peripheral edge portion of said third plate defining the opposite side of said discharge passageway, and
- f. vanes mounted in said discharge passageway for controlling the flow of air therethrough,
- g. said vanes each comprising
 1. substantially flat blades having
 - a. oppositely disposed ends, and
 - b. two oppositely disposed edges extending between said ends, and
 2. two reduced end portions projecting outwardly from substantially the midpoint of respective ones of said ends to afford pivot members,
- h. said vanes being disposed between said first mentioned and said second plates with
 1. said pivot members on one end of said blades being rotatably mounted in said first mentioned peripheral edge portion of said first mentioned plate, and
 2. said pivot members on the other end of said blades being rotatably mounted in the outer peripheral edge portion of said second plate for rotation of said vanes through 360° around the longitudinal center lines of the pivot members thereon, and
- i. said longitudinal center lines being spaced from each other along respective sides of the square-shaped peripheral edge portions of said first mentioned and second plates that said vanes along each of said sides may be rotated around said pivot members thereon into and out of position effective to close the corresponding side of said discharge passageway against the discharge of air therefrom,
- j. said vanes disposed along such a side, when they are disposed in said position thereof, being disposed in such position that said blades thereof are disposed in substantially uniplanar relation to each other with said oppositely disposed edges of adjacent ones of said blade disposed in closely adjacent, substantially abutting relation to each other.

3,854,387

SAFETY SNUBBER FOR COUNTERWEIGHT

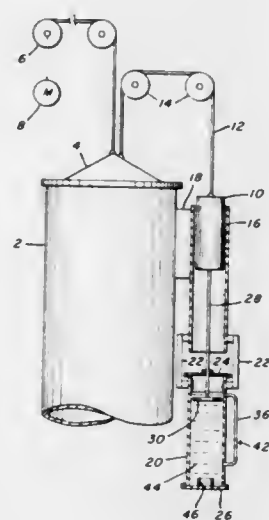
Steckle, Charles, McCandles Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 11, 1973, Ser. No. 378,369

Int. Cl. F231 17/02

U.S. Cl. 98—59

4 Claims



1. In a combination which includes a stack, a cap normally closing the upper end of said stack, lifting means connected to said cap for raising the cap from the stack, a counterweight mounted on said stack and support means connecting said counterweight to said cap whereby said counterweight assists said lifting means in raising said cap, the combination therewith comprising a hollow cylinder closed on one end and mounted on the stack, a piston loosely fitting inside said cylinder,

der, means connecting the counterweight to said piston for moving said piston as the counterweight descends, a by-pass line connected to said cylinder providing a passageway to the cylinder interior between a location near the closed end of the cylinder and another location near the outer end of the cylinder and a fluid in said cylinder whereby descent of the counterweight is controlled by the rate of flow of said fluid through said bypass line as said piston moves between the bypass connections and by the rate of flow of said fluid between said piston and the wall of said cylinder as said piston moves towards the closed end of said cylinder.

3,854,388

RANGE HOOD AIR CLEANING DEVICE

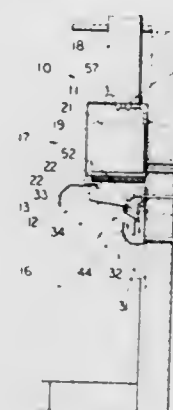
Donald E. King, Louisville, Ky., assignor to Ayr-King Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 378,566, July 12, 1973. This application Sept. 13, 1973, Ser. No. 397,091

Int. Cl. B01d 47/06

U.S. Cl. 98—115 K

1 Claim



1. Range ventilating apparatus for removing grease vapors, odors, smoke and the like including a hood structure overhanging and spaced above a range cooking surface, said hood structure having a vertically extending box-like configuration with a forwardly extending upper portion, an elongated horizontal slot formed in the front face of said box-like hood structure below said extending upper portion, said slot being defined by a unitary tubular structure removably inserted into said box-like hood, one wall of said tubular structure being formed to provide an upper lip portion at the upper edge of said slot turned inwardly and downwardly within said hood and terminating above the base of said hood, the other wall of said tubular structure being formed to provide a lower lip portion at the lower edge of said slot, and outwardly directed horizontally extending flange provided along the lowermost margin of said upper lip portion and an inwardly directed horizontally extending flange provided along the uppermost margin of said lower lip portion, said horizontal flanges providing a passage of reduced area therebetween for air and fumes within the hood structure, a series of spray nozzles supplied with cooling water arranged along the rear surface of said upper lip portion and within the hood structure for directing a continuous water spray downwardly within said hood structure to impinge on the rear surface of said upper lip portion, whereby when the pressure within said hood structure is below atmospheric, air and fumes from the range surface are drawn through said slot and provided increased downwardly directed velocity by the proximity to each other of said horizontal flanges and are then reversed to flow upwardly through said hood structure, the water spray cooling said upper lip portion to prevent grease particles impinging thereon from being baked on the lip surface, and the removability of said unitary tubular structure permitting maintenance access to said spray nozzles and the interior of said hood structure.

3,854,389

APPARATUS FOR PRODUCING LIQUID COFFEE

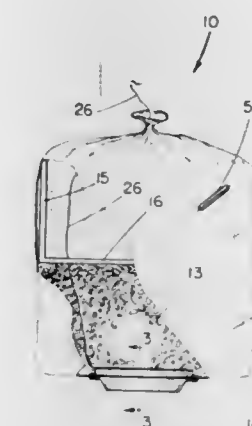
Robert E. Hillemann, Indianapolis, Ind., assignor to Harold G. Crane, Carmel, Ill., a part interest

Filed Apr. 4, 1973, Ser. No. 347,816

Int. Cl. A47j 31/00

U.S. Cl. 99—295

9 Claims



1. An apparatus for producing liquid coffee comprising:
 - a disposable first container having an openable top and a sealed bottom;
 - a partition mounted in said container dividing said container into a first compartment and a second compartment for receiving cold water, said partition being porous allowing said cold water to pass therethrough and into said second compartment;
 - coffee positioned in said second compartment with said container and said partition limiting movement of said coffee; and,
 - a filter mounted to said sealed bottom of said container; supporting means mounted within said first compartment of said container and being operable to maintain the configuration of said first compartment of said container; and wherein:
- said container includes plastic flexible side walls defining said first compartment and said second compartment, said side walls are prevented from inward collapse by said supporting means, said container further includes a plastic bottom wall joined to said flexible side walls.

3,854,390

HYDROMAGNETIC WATER CONTROL FOR AUTOMATIC COFFEE BREWER

Harvey R. Krueger, Dundee, Ill., assignor to Reynolds Products, Inc., Schaumburg, Ill.

Filed Oct. 17, 1973, Ser. No. 407,300

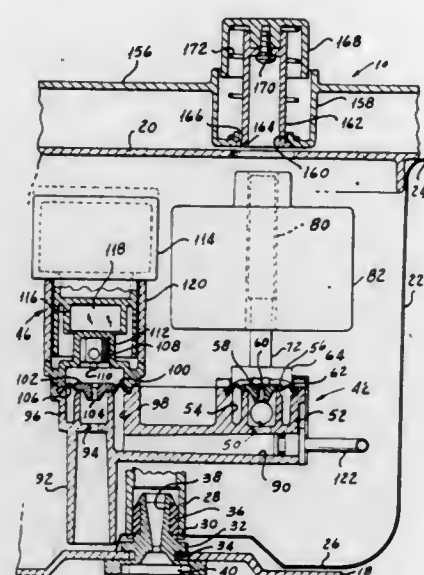
Int. Cl. A23f 1/00, 1/08

U.S. Cl. 99—307

15 Claims

1. Apparatus for controlling the flow of cold water into and the flow of hot water out of a storage tank of an automatic coffee brewer including in combination, a storage tank having inlet and outlet means, means including a normally closed inlet valve connected to said inlet means opening to admit cold water into said tank, means including a normally open outlet valve connected to said outlet means permitting hot water to flow out of said tank, a float carried in said tank being operatively connected to said inlet valve, said float being movable manually from a first position downwardly to a second position, means normally urging said float to said first position, means responsive to said manual movement of said float to said second position opening said inlet valve under the influence of said urging means, means for closing said outlet valve concomitantly with opening of said inlet valve, and

means responsive to movement of said float under the influence of incoming cold water moving said float to a third position and concomitantly closing said inlet valve and opening said outlet valve.



3,854,391

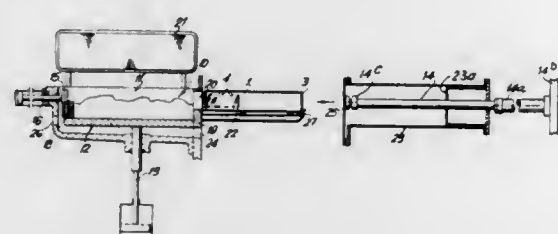
APPARATUS FOR USE IN PREPARING COOKED MEAT
Harry Briggs Ackroyd, Bletchley, England, assignor to Scot Meat Products Limited, Bletchley, Milton Keynes, England
Continuation-in-part of Ser. No. 197,810, Nov. 11, 1971, abandoned, which is a division of Ser. No. 11,267, Feb. 13, 1970, Pat. No. 3,638,554. This application Apr. 27, 1973, Ser. No. 355,208

Claims priority, application Great Britain, Feb. 13, 1969, 7880/69

Int. Cl. A47j 27/20; B30b 7/00

U.S. Cl. 99—349

9 Claims



1. A meat press for use in preparing units of cooked meat of substantially uniform cross-section and quality, comprising a trough with an openable air-tight cover, said trough having outer and inner ends formed with aligned openings, means for supporting and securing a tubular container of comparable cross section to the trough in end to end alignment therewith and for preventing the ingress of air to said trough through said container, means to evacuate air from the trough and first ram means having a line of action extending through the trough from said outer end thereof and through said outer and inner ends for pushing a meat unit out of said trough through said inner end into a container, characterized by the provision of second ram means having a line of action extending through the position of a container supported on said supporting and securing means, said second ram means having a stroke of a length to extend substantially through an aligned container to a point adjacent said trough inner end for applying a counter pressure resisting movement of said first ram means to maintain meat being placed within a container under compressing by said ram means at substantially all times during pushing of a meat unit out of said trough into said container.

3,854,392 WIENER COOKER ATTACHMENT UNIT FOR ROTISSERIES

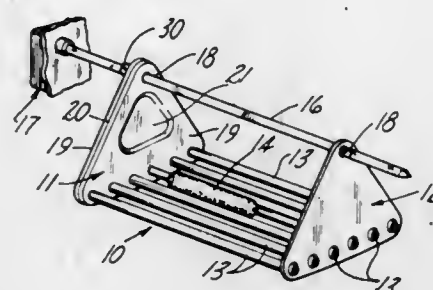
E. Craig Eason, 31323 W. Wind, Fraser, Mich. 48026

Filed May 7, 1973, Ser. No. 358,107

Int. Cl. A47j 37/04

U.S. Cl. 99—421 H

14 Claims



1. A rotisserie device to be driven by an elongated rotary rotisserie member, comprising a frame having means to non-rotatively suspend the same at an upper portion thereof from said member in dependent relation thereto despite rotation of the member, at least two elongated and parallel driven rollers mounted on said frame to cradle a wiener or like object to be broiled, and a driven unit carried by said frame, including an endless flexible power-transmitting member, a rotary member about which said flexible member is trained for drive, said rotary member being connectable to said rotary rotisserie member for rotation by the latter, and a plurality of rotary driven members across which said flexible power-transmitting member is passed for their drive, at least some of said driven members each being fixedly connected to an object-cradling roller to rotatively drive the latter.

3,854,393

APPARATUS FOR PRODUCING PREPARED HASH BROWN POTATO PRODUCT

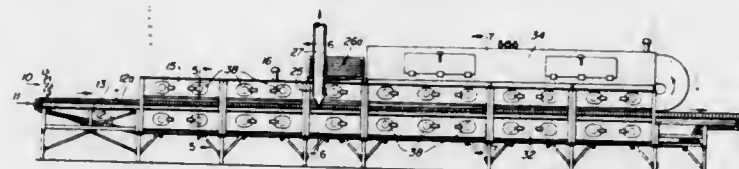
James T. Knight, and Glen R. Green, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Ontario, Oreg.

Division of Ser. No. 200,828, Nov. 22, 1971, This application Jan. 22, 1973, Ser. No. 325,611

Int. Cl. A23b 7/06; A23i 1/12

U.S. Cl. 99—443 C

7 Claims



1. Apparatus for producing potato shreds useful in the forming of a prepared hash brown potato product, comprising means for shredding raw potatoes; a perforate support arranged to receive the shredded raw potatoes as a loosely laid bed; and means for forcing a hot blanching fluid upwardly through said support and said bed under sufficient pressure and diffused velocity to maintain the individual potato shreds substantially separated during blanching thereof, the perforations of said support being sufficiently small and numerous to diffuse said fluid throughout said bed such that localized channeling thereof will be substantially prevented.

3,854,394

EGG LIQUID EXTRACTOR APPARATUS

Charles H. Willsey, Maple Hill, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Jan. 4, 1973, Ser. No. 321,000

Int. Cl. A23n

U.S. Cl. 99—495

17 Claims

1. An apparatus for crushing shell egg materials and separating the liquid from the shell particles which comprises an

endless traveling belt of substantial width mounted on spaced end rollers with its upper run in a generally horizontal plane so as to support material deposited thereon, an upper endless traveling belt also of substantial width mounted on spaced end rollers with a lower run in substantial vertical alignment and traveling in a plane inclined toward the leading end of the upper run of the bottommost belt and in the direction of advance of the opposed upper and lower runs so that there is substantial entrance space between the trailing ends of said upper and lower belt runs which space decreases to an area of contact between said upper and lower belt runs in the direction of advance thereof, means for driving the belts so that said upper and lower runs advance in the same direction, a

deflection of the cables under product load to cause the cables to partially conform to the product contour and hence to provide an abradant, supporting contact of substantial longitudinal extent with the generally spheroidal products, said cables being spaced by a distance that is several times greater than the cable diameter.

3,854,396

TWINE MEASURING TRIP MECHANISM FOR BALERS

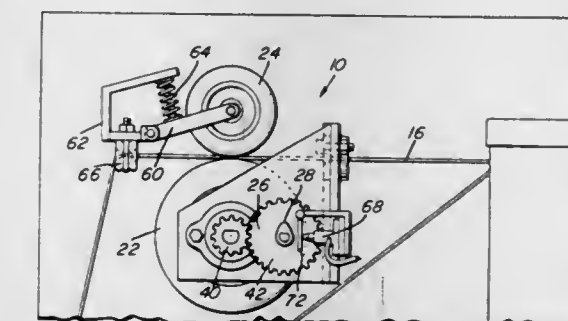
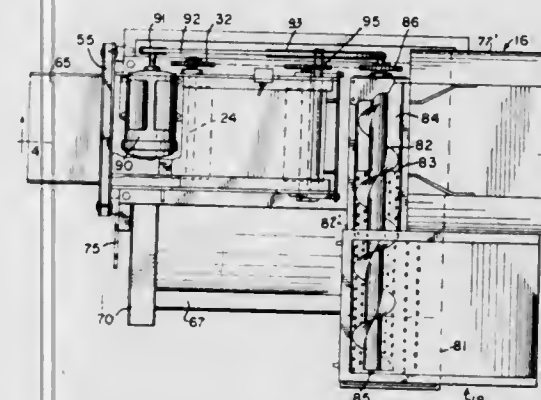
Donald A. Greytak, P.O. Box 1267, and Duane S. Sargent, 1146 Wilson Ave., both of Harve, Mont. 59501

Filed July 12, 1973, Ser. No. 378,388

Int. Cl. B65b 57/10

U.S. Cl. 100—4

7 Claims



feed chute at the entrance to said opposed belt runs for depositing material onto the upper run of said bottommost belt, a drain pan for receiving liquid disposed beneath and extending beyond at least one side of said bottommost belt, and a discharge chute disposed at the end of said belt runs for receiving the shell particles discharged at the end of the upper run of the bottommost belt, said material fed onto the upper run of the bottommost belt being advanced between the contact of said upper and lower belt runs and the liquid portion of the material will be discharged over the sides of the upper run of said bottommost belt into said pan while shell portions will be crushed between said belt runs and carried into said discharge chute at the end of said upper run of said bottommost belt.

1. For use in a baler incorporating knoting apparatus and a twine supply, a twine measuring mechanism for actuation of the knoting apparatus in response to movement of a predetermined amount of twine, said mechanism being positioned between the twine supply and the knoting apparatus for reception of the twine as it moves from the supply to the knoting apparatus, said mechanism comprising a twine measuring element engageable by the twine and movable in response to passage of the twine thereover, and control means operative in response to a predetermined movement of the twine measuring element to activate the knoting apparatus, said twine measuring element comprising a rotatably mounted measuring wheel engageable at a point on its periphery by the twine with the frictional engagement therebetween effecting a rotation of the wheel in response to movement of the twine.

3,854,395

FLEXIBLE CABLE DRY PEELER

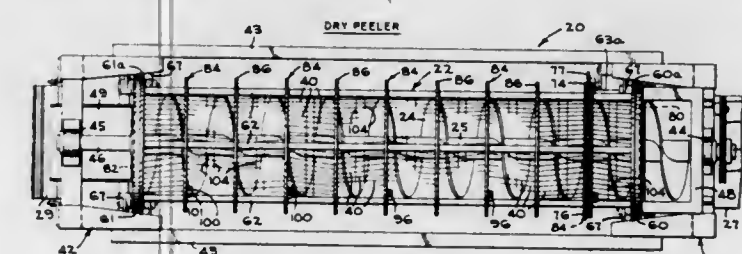
Katsuji Hirahara, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 12, 1973, Ser. No. 331,403

Int. Cl. A23n 7/02, 7/10

U.S. Cl. 99—630

6 Claims



1. A peeler for generally spheroidal food products such as vegetables, potatoes or the like which have been treated to soften their skins for removal, said peeler being of the type that provides a rotary cage having an open abradant surface, means for rotating the cage, means for propelling the products longitudinally through the cage, means for feeding treated products to the cage, and means for removing peels that fall from the cage; the improvement wherein said cage comprises a pair of end support rings, at least one intermediate support ring and an abradant envelope formed of longitudinally extending, circumferentially spaced, straight braided steel wire cables supported on said rings, means for tensioning said cables sufficiently to maintain their generally longitudinal direction under product load while accommodating sufficient

3,854,397

REFUSE COMPACTING DEVICE

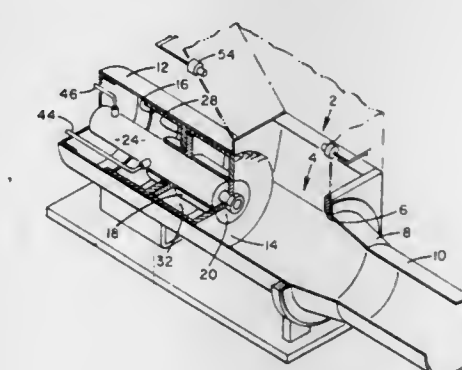
James W. Dempster, Knoxville, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,747

Int. Cl. B30b 1/12

U.S. Cl. 100—41

6 Claims



6. A method of compacting refuse material, including: the steps of supplying refuse material to be compacted to a compaction chamber; driving a small high-pressure ram device into the refuse in the compaction chamber; and forcing the refuse material through a funnel shaped opening in the compaction chamber by means of a larger ram

device driven by the small ram device through the compaction chamber.

3,854,398

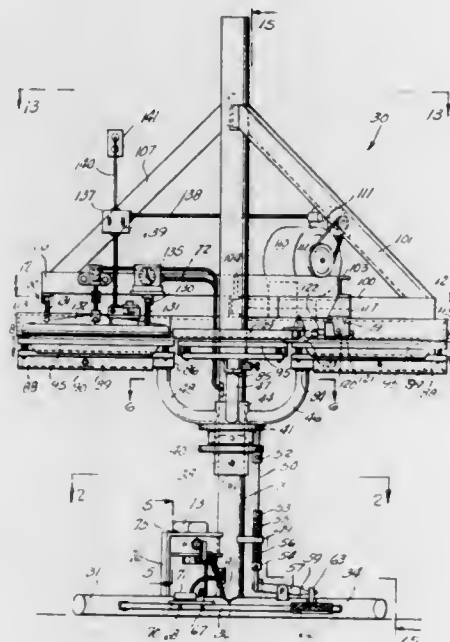
SCREEN PRINTING AND DRYING MACHINE

Michael S. Martin, 1219 Fay Cir., Sacramento, Calif. 95831
Filed Nov. 3, 1972, Ser. No. 303,359

Int. Cl. B41f 15/12, 15/26

U.S. Cl. 101-41

1 Claim



1. A turret type silk screen printing, drying and cooling machine for printing on articles such as garments, comprising a center post, a plurality of article support heads positioned in circumferentially equi-spaced relation about said center post, printing means on said post for printing against said support heads, means mounting said heads on said post for rotation thereabout, means for locking said last named means in a plurality of adjusted positions spaced 90° apart, means on said post providing heating means positioned at right angles from said printing means for heat drying an article positioned thereunder, air cooling means positioned at right angles from said heating means for cooling an article positioned therebeneath, means provided for permitting movement of said printing means from a position in contact with said article to a position spaced above said article, means on said machine operatively connected to said heating means for selectively moving said heating means into contact with said article and for selectively moving said heating means out of contact with said article, said support heads for said article including a heat resistant spring mounted tempered plate positioned in generally horizontal position, said plate being made of tempered glass so as to provide a smooth non-sticking surface, and a blower secured to said machine and operatively connected to said cooling means for supplying cooling air to said cooling means immediately after the article is printed thereon.

3,854,399

METHOD AND MEANS FOR OPERATING AN INK JET PRINTER WITHOUT SPLATTER

Robert I. Keur, Niles, and Henry A. Dahl, Mt. Prospect, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.
Filed Dec. 29, 1972, Ser. No. 319,909

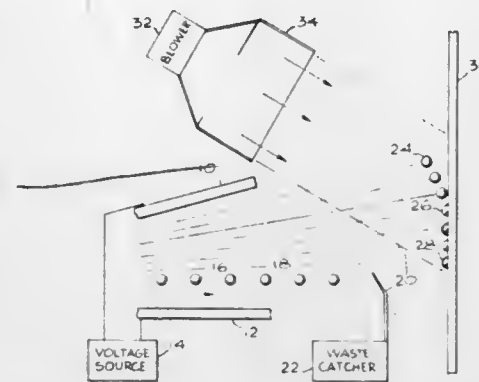
Int. Cl. G01d 15/18

U.S. Cl. 101-426

6 Claims

1. In an ink drop printer of the type wherein charged drops are projected by means through air, through a deflecting electric field toward paper, located beyond said deflecting electric field, to fall thereon at a location determined in accordance with the reaction between their charge and the electric field,

means for eliminating the effects of spatter caused by said drops impacting on said paper comprising:



means for directing a flow of gas to intercept only the terminating portion of the path of said ink drops just prior to and at the time of impacting upon said region of said paper and to cover the region of said paper upon which said ink drops fall, for maintaining said drops intact.

3,854,400

CASELESS AMMUNITION AND PROPELLANT AND METHOD OF MAKING SAME

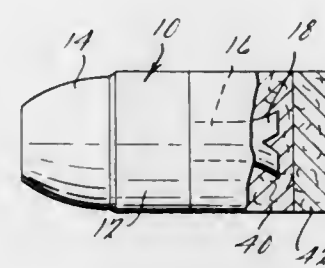
Jules E. Van Langenhoven, La Hulpe, Brussels, Belgium, assignor to Victor Comptometer Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 473,556, July 7, 1965, abandoned, Continuation-in-part of Ser. No. 189,621, April 23, 1962, abandoned. This application Dec. 19, 1968, Ser. No. 785,317

Int. Cl. F42b 5/18

U.S. Cl. 102-38

20 Claims



1. A propellant charge for small arms ammunition consisting of a single grain having a porous structure, which is produced by mixing 100 to 150 parts by weight of a water soluble substance having a limited particle size in a range between 0.030mm and 0.25mm with 100 parts by weight of propellant composition, kneading the resulting composition with addition of solvent, forming the kneaded mixture into a desired shape to obtain a green grain, and immersing the thus obtained green grain in water for several days to elute out the water soluble substance homogeneously dispersed therein, drying the obtained grain, combining with the propellant charge a priming device at one end thereof and a bullet at the other end thereof to form a caseless cartridge.

3,854,401

THERMAL IGNITION DEVICE

Evan D. Fisher, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1967, Ser. No. 687,397

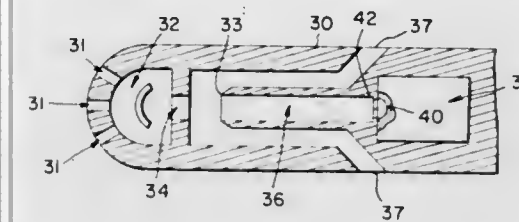
Int. Cl. F42c 5/00

U.S. Cl. 102-70 R

1 Claim

1. A self ignition device for initiating thermal power supplies, comprising:

- a hollow cylinder having an open end and a closed end forming a resonant cavity, said closed end being a membrane and said open end being adapted to receive ram air thereby generating a substantial amount of heat in said closed end;
- a low ignition composition bonded to said membrane so that said low ignition material will be ignited by the heat generated in said closed end of said cavity;



- a thermal power supply placed in close proximity to the said closed end of said cavity so that thermal power supply will be initiated upon the ignition of said low ignition composition;
- a pressure recovery chamber having inlet ports adapted to receive ram air; and
- a nozzle connecting said pressure recovery chamber to said open end of said cavity.

3,854,402

PROJECTILE FUZE WITH FLEXIBLE BAFFLE

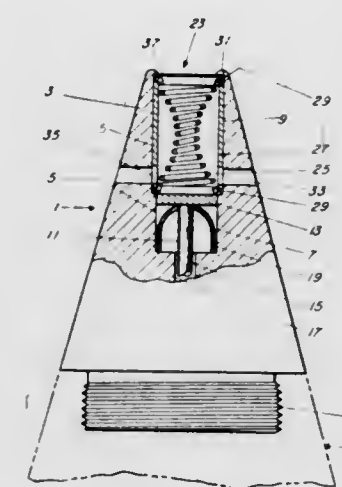
Stephan Kosonocky, Whippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 30, 1973, Ser. No. 383,646

Int. Cl. F42c 1/00

U.S. Cl. 102-73 R

5 Claims



- A fuze, for an explosive projectile, comprising: a fuze body having a rear portion adapted to be attached to the front end of a projectile and a forward end adapted to impact a target, said forward end being formed with an elongated axially-extending cavity open at the front end and having a stop intermediate the ends thereof; a firing pin disposed within said body behind said stop and including a head slidable in said cavity; and a flexible resilient discontinuous baffle mounted in said cavity, said baffle comprising a spiral coil spring extending between said stop and said open end and having close-spaced turns with a maximum spacing therebetween of about 4 mm., to form a barrier to discrete light objects, such as raindrops or foliage, having minimum dimensions greater than said maximum spacing, for dissipating the kinetic energy of said light objects and preventing said light objects from passing through said baffle and actuating said firing pin.

3,854,403

TRACKED AIR CUSHION VEHICLES

Denys Stanley Bliss, Cambridge, England, assignor to Bliss Pendair Limited, London, England

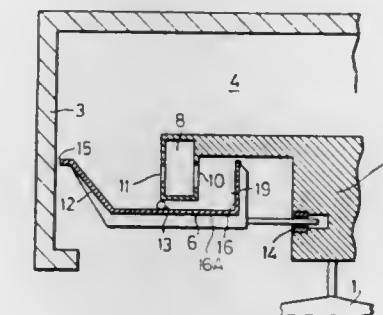
Filed July 2, 1973, Ser. No. 375,647

Claims priority, application Great Britain, July 3, 1972, 30954/72

Int. Cl. B61d 15/00

U.S. Cl. 104-23 FS

23 Claims



1. In a tracked air cushion vehicle assembly comprising a lift platform movable longitudinally of a channel section track with which it cooperates to define a chamber, said track channel having side walls, means for maintaining within said chamber an air cushion sustaining the weight of the vehicle, the lift platform supporting along opposite sides thereof edge seal members extending in the general plane of the lift platform towards the side walls of the track channel, and said edge seal members being capable of conforming to the profile of said side walls, the improvement wherein at least part of each edge seal member forms a barrier between the chamber and the external atmosphere, which barrier lies at an angle to the general plane of the platform whereby a resultant pressure force acts on each barrier tending to move the edge seal members towards each other, and wherein means are provided for applying an opposing force to said edge seal members whereby to balance said resultant forces when the pressure difference across each barrier is of predetermined magnitude.

3,854,404

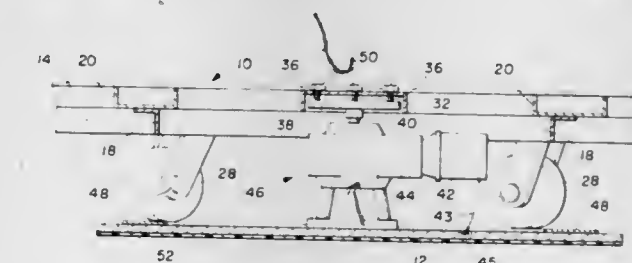
TURNABLE FOR HEAVY OBJECTS

Joseph F. Janda, 423 38th St. N.E., Cedar Rapids, Iowa 52402
Filed Feb. 18, 1972, Ser. No. 227,460

Int. Cl. B60s 13/02

U.S. Cl. 104-44

6 Claims



1. A portable turntable for displaying a heavy object, said turntable comprising a supporting base engageable with the floor or other supporting surface for the turntable, a deck rotatable about a vertical axis and having a substantially flat upper surface suitable for carrying said object, a plurality of rollable anti-friction means affixed to the lower surface of said deck around the center thereof at locations equally distant from said axis, said anti-friction means being rollable on said base and transmitting the entire weight of said deck and the object carried thereby to said base, and drive means supported by said base and removably connected to said deck for controllably rotating said deck about said axis, said drive means including a motor, a vertical drive shaft driven by said motor, a drive plate connected to said shaft, and vertical drive pins

connecting said drive plate and said deck, said drive plate being vertically spaced from said deck so as not to receive any vertical force therefrom.

3,854,405

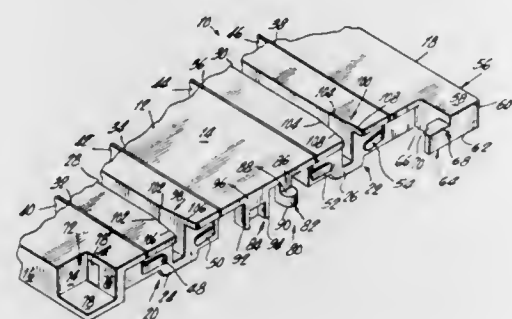
HIGH PERFORMANCE MODEL VEHICLE RACETRACK
Donald E. Martin, Smithtown, N.Y., assignor to Aurora Products Corp., West Hempstead, N.Y.

Filed June 8, 1973, Ser. No. 368,015

Int. Cl. A63g 1/00, 7/00, 21/00

U.S. Cl. 104—60

5 Claims



1. A track section for interconnection with like adjacent track sections for guiding a model vehicle, said track section comprising an elongated body having at least two ends and a running surface, at least one longitudinally extending guide means having at least two ends and being recessed within said track section for guiding a model vehicle with respect to said track section, means for removably interconnecting said track section with a like adjacent track section in a manner that the guide means of one of said like adjacent track sections substantially aligns with the guide means of the other said like adjacent track sections, lead-in means being located adjacent a track section end and also being located adjacent an end of said guide means, said lead-in means being constructed and arranged to at least partially align with a corresponding lead-in means of a like adjacent track section for smoothly guiding a model vehicle from the guide means of one of said like adjacent track sections to the guide means of the other of said like adjacent track sections notwithstanding misalignment of said respective guide means.

3,854,406

MOTORIZED SUSPENDED TROLLEY

Maxime Monne, 19 bis boulevard Delessert, 75 Paris, France

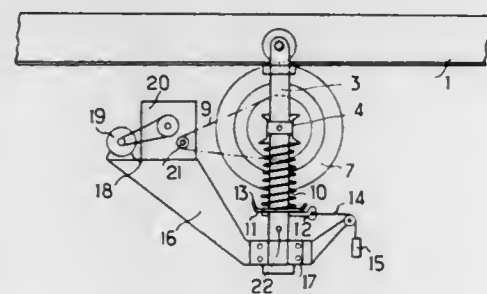
Filed Jan. 11, 1972, Ser. No. 217,069

Claims priority, application France, Jan. 13, 1971, 71.01562

Int. Cl. B61b 3/02; B61c 13/04; E01b 25/22

U.S. Cl. 104—94

10 Claims



1. In a suspended transportation system having at least one flanged track portion, a trolley, which comprises:

- roller means movable on a first side of said at least one flanged track portion;
- drive wheel means selectively supported in resilient movable engagement with a second side of said at least one

flanged track portion substantially opposite said roller means and operative to move therealong when rotated;

c. means for operatively supporting said drive wheel means in said resilient movable engagement with said second side including

- column means connected to said roller means,
- slidable means mounted on said column means for slidable movement therealong and carrying said drive wheel means, and
- resilient means for urging said slidable means along said column means for said resilient movable engagement of said drive wheel means with said second side, including means operative to selectively permit non-resilient movement of said slidable means along said column means.

3,854,407

AERIAL TRAMWAY VEHICLE DRIVE AND CONTROL SYSTEM

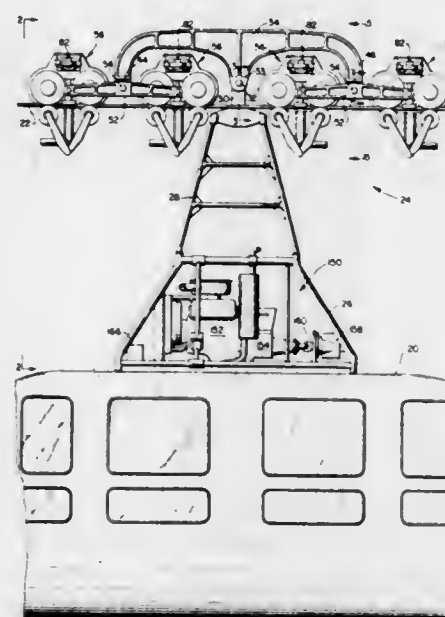
Kelly H. Cocroft, Mesa, Ariz., assignor to Skytram Systems, Inc., Scottsdale, Ariz.

Filed Apr. 4, 1973, Ser. No. 347,687

Int. Cl. B60b 17/02; B61b 7/06; B61h 7/12

U.S. Cl. 104—112

16 Claims



1. An aerial tramway system comprising overhead track means, a vehicle, carriage means including wheel means suspending said vehicle from said track means, control means including fluid motor means drive connected to said wheel means for moving said vehicle along said track means, a fluid control circuit for supplying actuating fluid to said motor means, and pressure sensing means responsive to the pressure of the fluid discharged from said motor means to cause said motor means to automatically apply a fluid braking force to said wheel means when said discharge pressure reaches a predetermined value, thereby preventing runaway of said vehicle.

3,854,408

TRAFFIC NETWORK SYSTEM

Richard Montgomery Miller, 2700 Oakland Ave., Chula Vista, Calif. 75014

Filed Mar. 5, 1973, Ser. No. 337,904

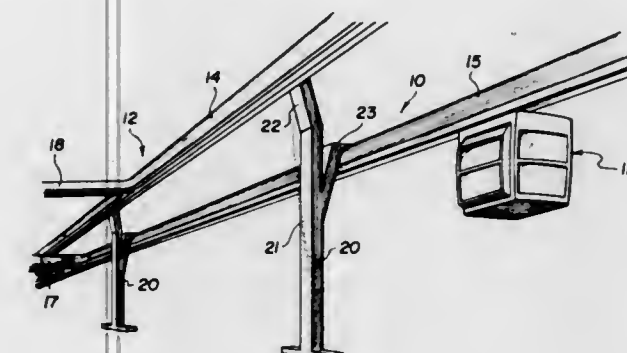
Int. Cl. E01b 25/22

U.S. Cl. 104—124

5 Claims

1. A vehicle transportation system having a plurality of vehicles of predetermined height and a continuous track layout adapted to accommodate said vehicles for movement therealong, said track layout having at least a first mainline track for movement of vehicular traffic in one direction, and

another mainline track for movement of vehicular traffic in another direction, said mainline tracks being separated by a relative elevation sufficient to permit vehicles moving among one track to pass across the other track without substantial gradient motion, said track layout being elevated above a supporting ground level and said vehicles being suspended



below said tracks, the difference in said relative elevation between said tracks being greater than the vertical height of any suspended vehicle, spaced apart stanchion members for supporting said track system, said stanchion members including a single pillar and a plurality of arms for supporting a corresponding plurality of tracks.

3,854,409

GUIDE SYSTEM FOR VEHICLE CARRIAGES

Ernst Blochlinger, Neuhausen, a.R., Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen a.R., Switzerland

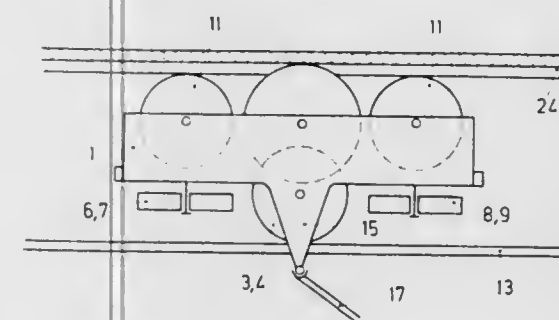
Filed Apr. 7, 1972, Ser. No. 242,178

Claims priority, application Austria, Apr. 16, 1971, 3241/71; Nov. 10, 1971, 9692/71

Int. Cl. E01b 25/26

U.S. Cl. 104—130

23 Claims



1. A system for guiding a travelling vehicle carriage through a switch comprising a rail in which said carriage rides, said rail having branch sections for leading said carriage in or from one or another direction, said carriage having roller means engaging the inner surfaces of said rail, single selector means mounted on said carriage independently of said roller means and disposed in the direction of travel of said carriage, tracking means fixed in said rail at least in the vicinity of said branch section adapted to engage said selector means, guide means adapted to engage said selector means fixed in each of said branches, and diverting means located between said tracking means and said guide means for engaging said selector means, said selector means and said diverting means being selectively movable relative to each other transversely to the direction of travel of said carriage to cooperatively cause said carriage to move laterally with respect to the corresponding branch section and to cause said selector means to engage said guide means located therein.

3,854,410

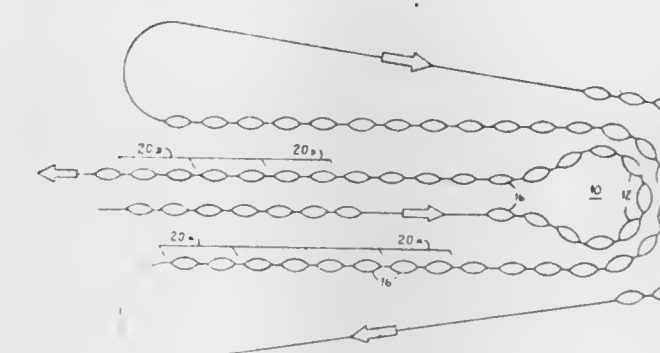
PNEUMATIC-ELECTRIC TRANSIT SYSTEMS
Wyly Kenneth Crowder, 3255 Windcroft Dr., Pontiac, Mich. 48054

Filed Apr. 5, 1972, Ser. No. 241,109

Int. Cl. B61b 13/00

U.S. Cl. 104—147 R

13 Claims



1. A drive system for vehicles comprising, cylindrical guide means having a tubular opening therein, drive means in said guide means movable within said opening, said drive means including electric motor means powered by conductor means in said guide means, said drive means including helical traction wheel means in said opening operable by said motor means to operate a vehicle exteriorly connected to said guide means and said drive means, and pitch control means for said helical traction wheel means responsive to torque and thrust of said drive means for varying the pitch of said helical traction wheel means.

3,854,411

MECHANICALLY SETTABLE SWITCH FOR A MAGNETIC SUSPENSION RAILROAD

Alfred Lichtenberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

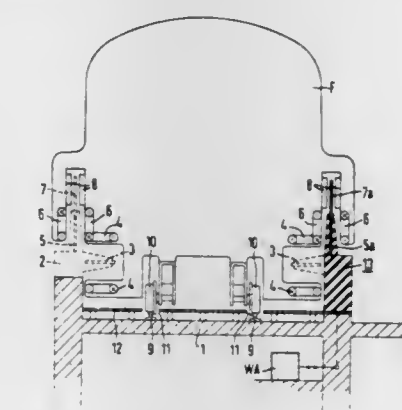
Filed Aug. 15, 1973, Ser. No. 388,562

Claims priority, application Germany, Aug. 25, 1972, 2241792

Int. Cl. B61b 13/08; B60m 7/00

U.S. Cl. 104—148 MS

5 Claims



1. A mechanically settable switch for a magnetic suspension railroad in which guidance and support forces are generated by the interaction of primary conductor loops installed in the vehicle and secondary conductor means installed on the roadbed, and wherein propulsion is obtained through a linear motor which comprises stators in the vehicle which react with a reaction rail on the roadbed, comprising:

- a continuous non-magnetic conductor surface covering essentially the full switch area with which the primary conductor loops may react to support the vehicle while within the switch; and
- a tongue movable between the straight portion and the curved portion of the switch, said movable tongue carry-

ing thereon secondary conductor means adapted to react with the primary conductor loops for guidance and a reaction rail for the linear motor.

3,854,412 SWITCH FOR USE IN A MAGNETIC SUSPENSION RAILROAD

Hans-Jürgen Dull, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

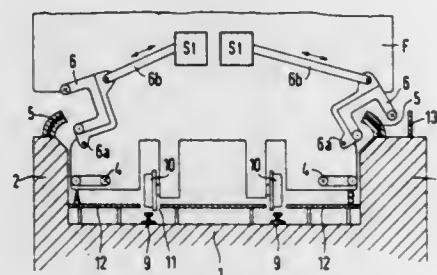
Filed Aug. 15, 1973, Ser. No. 388,755

Claims priority, application Germany, Aug. 25, 1972, 2241790; Aug. 25, 1972, 2241789

Int. Cl. B60m 7/00; B61b 13/08

U.S. Cl. 104-148 MS

11 Claims



1. In a magnetic suspension railroad in which a vehicle is magnetically suspended and guided by the reaction of primary current carrying conductor loops in the vehicle with secondary conductor means installed on the roadbed, an improved switching arrangement for switching the vehicle between a straight track and a curved track comprising:

- a first secondary conductor means following a direction parallel to the direction of the straight portion of track;
- a second secondary conductor means following the path of the curved section of the track;
- means comprising primary conductor loops installed in the vehicle arranged to react with said first and second secondary conductor means; and
- means to selectively provide for relative movement of said primary conductor loops with respect to said first and second secondary conductor means so that in the switch area only one secondary conductor plate is in the action range of said primary conductor loops.

3,854,413

TWIN TUBE CAR DRIVE

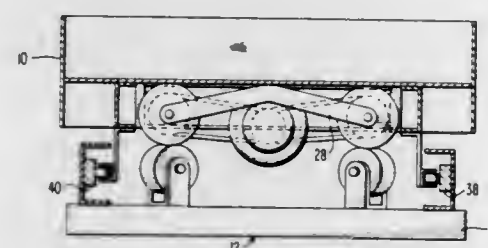
Joseph W. Broome, 430 S. 108th St., Franksville, Wis. 53126

Filed Sept. 13, 1973, Ser. No. 396,965

Int. Cl. B61b 13/00

U.S. Cl. 104-166

6 Claims



1. A propulsion system for an individual car of a transportation system in which the cars are guided along predetermined pathways, said propulsion system comprising:

- a pair of cylindrical tubes extending longitudinally of the car in parallel, spaced relationship to each other;
- means mounted on said car for journalling said tubes for rotation about their axes;

- a first plurality of wheels mounted in the predetermined pathways in position to engage the cylindrical surfaces of one of said pair of tubes, said first plurality of wheels being pivotably mounted in the predetermined pathways so that the angle the axis of each wheel makes with the longitudinal axis of the pathway at the point where that wheel is mounted can be varied;
- a second plurality of wheels mounted in the predetermined pathways in position to engage the cylindrical surfaces of the other of said pair of tubes, each one of said second plurality of wheels being mounted opposite a corresponding one of said first plurality of wheels with reference to the longitudinal axis of the pathway at the point where that wheel is mounted, said second plurality of wheels likewise being pivotably mounted so that the angle the axis of each wheel makes with the longitudinal axis of the pathway at the point where that wheel is mounted can be varied;
- means journalling said first and second plurality of wheels for rotation about their axes;
- means operatively connecting corresponding wheels of said first and second plurality of wheels so that the absolute value of the angle the axis of each makes with the longitudinal axis of the pathway at the point where they are mounted is always equal, but the sense of the angle is opposite; and
- power means operatively arranged to drive the system comprising said tubes and said reaction wheels.

3,854,414

POWER MERGE-SYNCHRONOUS

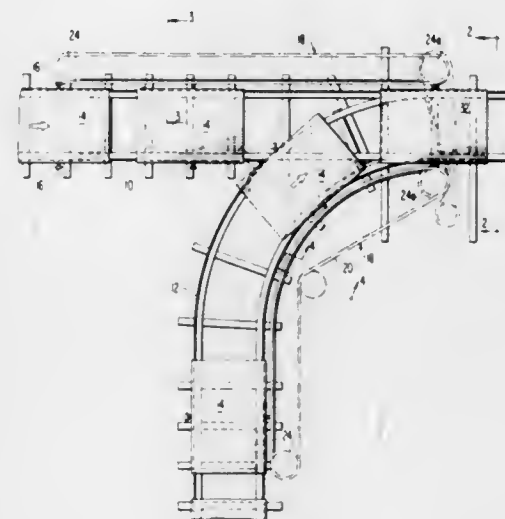
Bernard G. Bradbury, Chico, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 19, 1973, Ser. No. 417,322

Int. Cl. B61b 13/00

U.S. Cl. 104-172

45 Claims



1. In a unit carrier system in which a plurality of cars are driven over a trackway having merges therein, a merge assisting device for interleafing on an outgoing track cars approaching a merge on a plurality of different incoming tracks without stopping said cars prior to the merge, said merge assisting device comprising:

- a controlled-pathway, propelling device mounted adjacent to each of said incoming tracks;
- at least one dog carried by each of said controlled-pathway, propelling devices and positioned to engage an incoming car on the adjacent one of said incoming tracks and to remain in engagement with said car until it has reached an exit speed at least equal to the speed of the fastest of said incoming cars times the number of said incoming tracks;
- means for driving said controlled-pathway, propelling devices at said exit speed; and
- means for synchronizing said controlled-pathway, propelling devices so that said cars reach said merge at intervals

at least slightly in excess of the length of the longest of said cars, whereby said cars may be interleaved on said outgoing track without danger of collision with one another.

3,854,415

CONVEYING SYSTEM WITH WATER-WAY

Paul Lamberet, Vonnas-Ain, France

Filed Jan. 12, 1973, Ser. No. 322,975

Claims priority, application France, July 21, 1972, 72.26993

Int. Cl. B61b 9/00

U.S. Cl. 104-173

5 Claims



1. A conveying system for a production line, said system comprising means defining an endless water-way and including bottom and lateral inner walls, a plurality of floating carriages in said water-way, pulleys spaced along said water-way, a cable passing over said pulleys and along said water-way, and connecting means for attaching said carriages to said cable whereby the carriages are caused during operation of the conveying system to follow along said water-way, said carriages having bottom outer surfaces, said means for attaching said carriages pivotally to said cable being positioned substantially centrally on the bottom outer surfaces to avoid generation of pivotal torque during the operation of the conveying system and whereby said carriage can pivot freely as required, said carriages having side outer walls and including thereon rollers having vertical axes, said rollers being adapted to engage the lateral inner walls of said water-way for the guiding of said carriages; said connecting means including resilient means for accommodating expansion and contraction of said cable, said water-way including at least one rectilinear section and the carriages being connected to the cable such as to be in substantially abutting relation in said rectilinear section.

3,854,416

RAILWAY CAR FUEL TANK ASSEMBLY

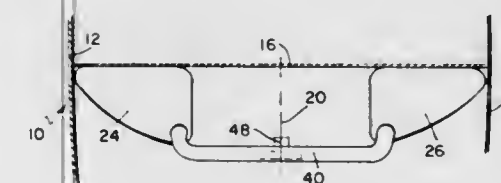
Andre E. Pelabon, Paris, France, assignor to ANF Frangeo S.A., Courbevoie, France

Filed Apr. 13, 1973, Ser. No. 350,810

Int. Cl. B61c 5/02, 17/02; B61f 1/08

U.S. Cl. 105-1 A

6 Claims



1. Liquid fuel storage system for a railway car, comprising a pair of similar elongated tanks extending horizontally along the length of a car and transversely spaced on opposite sides of the centerline thereof, conduit means disposed generally in the horizontal plane defined by the respective lowermost portions of said pair of tanks and in communication with the interiors of said tanks at said lowermost portions, and a single feed pipe for supplying fuel to an engine, one end of said feed pipe being in communication with said conduit means at a location midway of the respective ends of said tanks.

3,854,417

AUTOMATIC VISUAL HAND BRAKE SYSTEM

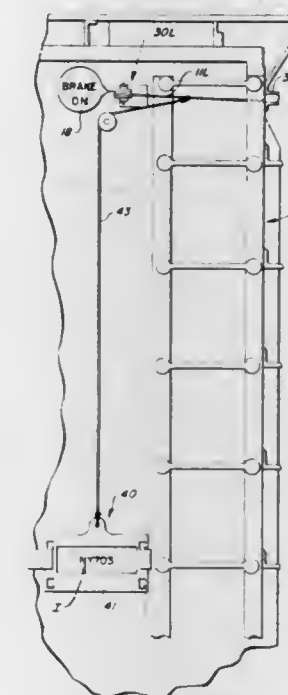
Robert W. MacDonnell, Crete, and Otto A. Shander, Chicago Heights, both of Ill., assignors to R. W. Mac Company, Crete, Ill.

Filed Mar. 13, 1974, Ser. No. 450,874

Int. Cl. B61d 49/00

U.S. Cl. 105-1 A

8 Claims



1. An automatic indicator system for a railway car having a truck mounted or conventional type B-end hand brake that has a hand wheel operable in a brake applying direction to take up a brake actuator chain and operable in a brake release direction to pay out the chain, said indicator system comprising an indicator flag, drive means for shifting the flag between an OFF position adjacent the car and an ON position projecting sideways beyond the car to be visible from anywhere alongside a train or track of cars, and actuator means connected under tension between said drive means and said chain and including a series connected take-up spring to accommodate differences in travel of said hand brake chain and said drive means in moving between ON and OFF positions.

3,854,418

IMPROVEMENTS IN RACK-AND-PINION SYSTEMS

Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

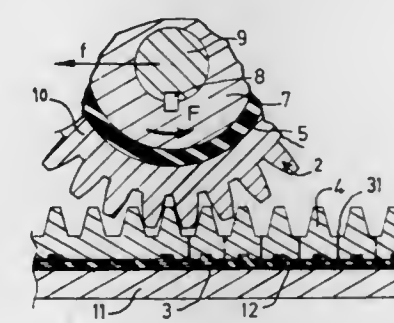
Filed Mar. 1, 1973, Ser. No. 336,950

Claims priority, application France, Mar. 3, 1972, 72.07481; Sept. 21, 1972, 72.33405

Int. Cl. B61c 11/00

U.S. Cl. 105-29 R

18 Claims



1. A rack-and-pinion system including a rack and a toothed pinion in mutual meshing engagement, said rack comprising: a rigid longitudinal base having a proximal face with respect to the pinion; and

a resilient longitudinal element having:
a distal face with respect to the pinion, which distal face rests upon and is fixed to said proximal face of the said rigid longitudinal base, and
a proximal face with respect to the pinion, which proximal face is shaped into corrugations adapted to engage the teeth of the pinion.

3,854,419

AERIAL TRAMWAY DRIVE ASSEMBLY

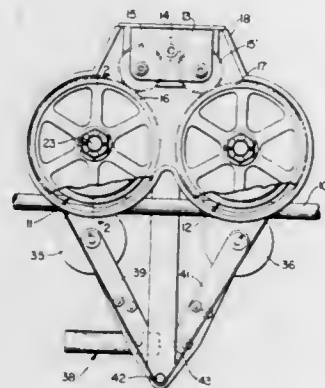
Kelly H. Cocroft, Mesa, Ariz., assignor to Skytram Systems, Inc., Scottsdale, Ariz.

Filed Apr. 9, 1973, Ser. No. 349,567

Int. Cl. B60b 17/02; B61b 7/06; B61h 7/12

U.S. Cl. 105—153

12 Claims



1. An aerial tramway drive wheel comprising inner and outer wheel rim members detachably secured together for axial assembly and separation, axially inwardly projecting annular portions on said members, and similar oppositely inwardly inclined external peripheral tire mounting surfaces on said portions, each said surface being formed with circumferentially alternate axially extending projections and peripherally open recesses.

3,854,420

CROSS-COUPLING FOR THE TRUCKS OF A RAILROAD VEHICLE

Hermann Hinnen, Sulz/Attikon, and Gaston Borgeaud, Winterthur, both of Switzerland, assignors to Schweizerische Lokomotiv- und Maschinenfabrik, Winterthur, Switzerland

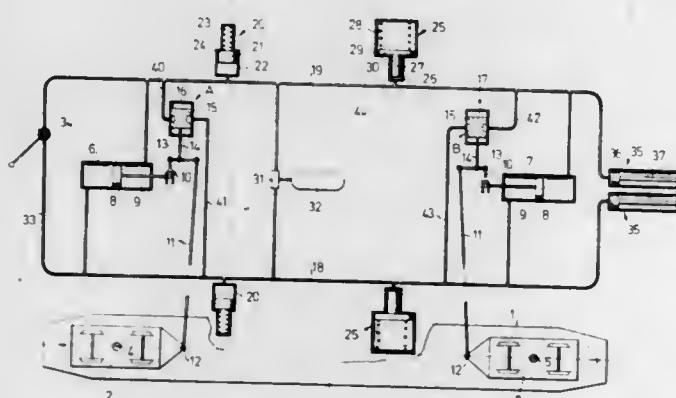
Filed June 27, 1973, Ser. No. 373,913

Claims priority, application Switzerland, July 7, 1972, 10267/72

Int. Cl. B61d 1/00

U.S. Cl. 105—176

16 Claims



1. In combination with a rail vehicle frame having at least two trucks pivotally mounted thereon about respective vertical axes, a cross-coupling including a pair of hydraulic cylinder means mounted on said vehicle frame, each said means being connected to a respective truck for pivoting said respective truck about a respective one of said vertical axes relative to said rail vehicle frame, and a pair of connecting conduits hydraulically connected between said cylinder means for

synchronizing said cylinder means to pivot said trucks in opposite directions in response to pivoting of at least one of said trucks.

3,854,421

MINE CAR TRANSPORTATION SYSTEM

Hans Widiger, Neukollner Strasse 73a, Oberhausen-Sterkrade, and Dieter Hoffmann, Holthausenstr. 39, Hattingen, both of Germany

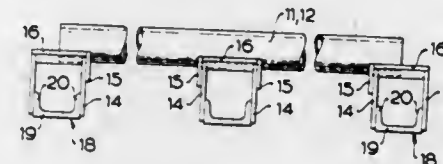
Division of Ser. No. 91,004, Nov. 19, 1970, Pat. No. 3,774,547.

This application Jan. 22, 1973, Ser. No. 325,638

Int. Cl. B61b 9/00; B61d 11/02; B61f 5/00

U.S. Cl. 105—275

3 Claims



1. In a transport system for underground mining comprising a car body having an elongate chassis, the chassis including a pair of laterally spaced longitudinally extending parallel arms and cross members connecting said arms, and further comprising at least two bogie means respectively adjacent each end of said chassis for supporting the respectively adjacent end of the chassis, the improvement wherein each bogie means comprises:

- A. a platform,
- B. a pair of horizontally aligned brackets mounted centrally on the upper side of said platform,
- C. a bearing box secured to each bracket and receiving therein a portion of the adjacent parallel arm,
- D. a plate situated beneath said platform,
- E. means affixed to the platform and to the plate for supporting the platform above the plate and for enabling relative turning movement of the platform and plate about a vertical axis, and
- F. track engaging wheel means mounted on said plate for engaging tracks and supporting the chassis during movement along the tracks.

3,854,422

RETRACTABLE CONTAINER SUPPORT FOR RAILWAY FLAT CARS

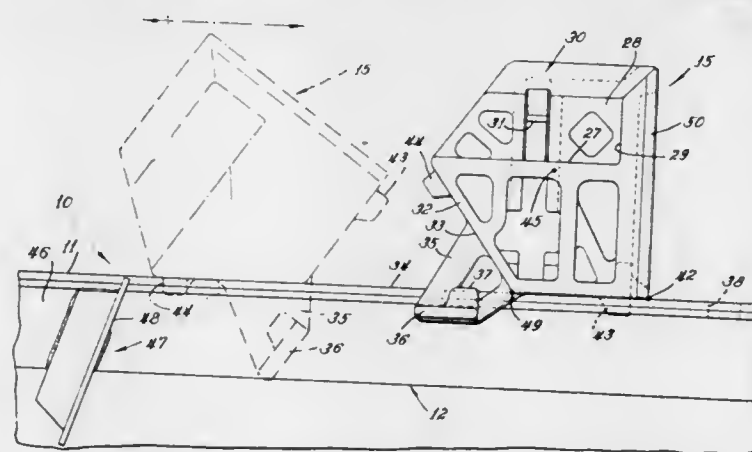
Theodore J. Sweger, Lake Worth, Fla., assignor to Illinois Railway Equipment Company, Chicago, Ill.

Continuation-in-part of Ser. No. 276,692, July 31, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 390,015

Int. Cl. B65j 1/22; B60p 7/10

U.S. Cl. 105—366 D

7 Claims



1. A railway flat car comprising a deck having a longitudinal slot with windows in spaced relation along one side, a container support slidable along said slot having a generally horizontal seat to support an associated lower corner of a con-

3,854,424

TIE-DOWN AND LOCKING SYSTEM

Donald J. Blunden, Southfield, and Israel D. Peisner, Huntington Woods, both of Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.

Continuation-in-part of Ser. No. 342,385, March 19, 1973.

This application May 16, 1973, Ser. No. 360,766

Int. Cl. B60p 7/08

U.S. Cl. 105—368 T

16 Claims

tainer, said container support having a pair of connected walls arranged in right angular relation and extending upwardly from said seat to restrain said container against horizontal movement, one of said connected walls adapted to overlie said vertical side wall of said container, a strut extending from a side of said container support through said slot, a wing at the distal end of said strut underlying said deck and said windows, shear lug means depending from said container support and adapted to extend into one of said windows for restraining said container support against horizontal movement, and said side of said container support from which said strut extends having a sliding surface for sliding engagement with said deck when said container support is pivoted to withdraw said shear lug means from said one window to permit movement of said container support along said slot, the center of gravity of said container support being longitudinally spaced on one side of said shear lug means when said container support is in the operative position and being longitudinally spaced from said shear lug means in the opposite direction when said container support is pivoted to the sliding position whereby no upward force is required to be applied to said container support during such movement.

3,854,423

RAIL CAR TRAILER HITCH AND CONTAINER MOUNT

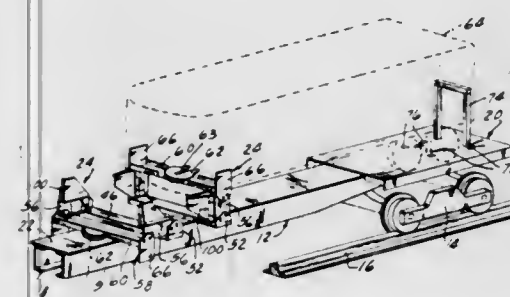
John Bridge, 65 W. Jackson, Chicago, Ill. 60604

Filed Dec. 6, 1972, Ser. No. 312,660

Int. Cl. B65j 1/24; B60p 7/08

U.S. Cl. 105—368 B

12 Claims



1. A combination trailer hitch and container mount, carried on a railway flatcar comprising:

a collapsible stanchion means having a hitch means arranged to secure and support the kingpin of a vehicular highway trailer carried on the flatcar when said collapsible stanchion is in an upright, non-collapsed position and having a container mount means arranged to retain and support a cargo container carried on the flatcar when said collapsible stanchion is in a lowered, collapsed position, said collapsible stanchion means being mounted on said railway flatcar and having a cushioning means for limited yieldable movement along a longitudinal plane and being substantially restricted in a lateral plane,

said hitch means comprised of a laterally extending hitch frame having a retainer plate secured to each of opposite ends thereof and arranged to laterally retain said highway trailer, and said container mount means comprises a laterally extending base plate having a support leg connected at each end thereof, arranged to laterally retain said cargo container.

3,854,425

END DOORS FOR AUTO RACK CARS

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

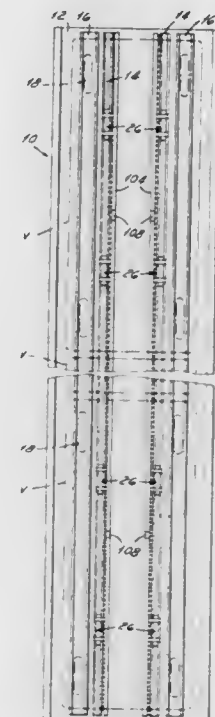
Filed July 9, 1973, Ser. No. 377,407

Int. Cl. B65j 1/22

U.S. Cl. 105—368 R

7 Claims

1. An end wall for an automobile carrying multi-deck railway car said end wall comprising an inboard section and an outboard section means pivotally connecting said inboard and outboard sections for swinging movement relative to each



other about a vertical axis and means connecting said inboard section to said decks for swinging movement about an axis



3,854,426

LOCKING MEANS FOR SUSPENSION MEMBER IN SUSPENDIBLE LOAD SPACER

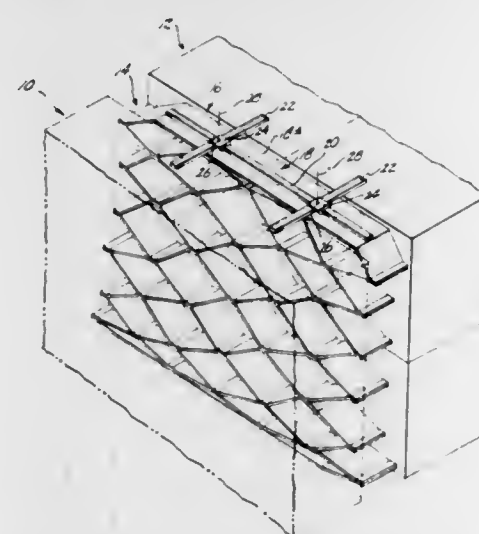
William P. Kinnune, Jr., Portland, Oreg., assignor to Western-Kraft Corporation, Portland, Oreg.

Filed May 4, 1973, Ser. No. 357,358

Int. Cl. B61d 45/00

U.S. Cl. 105-486

7 Claims



1. In a load spacer for holding apart a pair of adjacent laterally spaced loads, where the spacer includes a spacing structure which is removably placeable between such loads, and an elongated suspension member pivoted intermediate its ends to the top of the spacing structure for swinging about a generally upright axis between a stored position where its extremities are disposed inwardly of the opposite sides of the spacing structure, and a suspending position where such extremities extend laterally beyond said opposite sides, whereby such extremities may rest on the tops of such loads thus to suspend the spacing structure between the loads, the improvement comprising

means for automatically and releasably locking said suspension member in said suspending position with swinging of the member to such position from said stored position, said means including

a resilient latch mounted on said suspension member for swinging therewith, capable of elastic bending away from

the suspension member in a direction substantially normal to the plane in which the member can swing, and a catch fastened to the top of said spacing structure adjacent said suspension member, operable releasably to catch said latch with movement of said suspension member to said suspending position, thus releasably to lock the suspension member in said suspending position, movement of said suspension member toward its said suspending position causing engagement of said latch and catch, with resultant bending and climbing of the former over the latter to become caught by the latter.

3,854,427

ADJUSTABLE SUPPORT SHELF

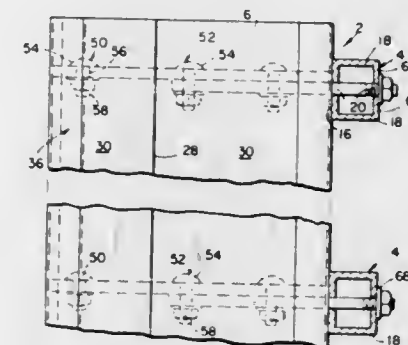
Williams M. Corns, Baywood Ave., Ross, Calif. 94957

Filed Jan. 26, 1973, Ser. No. 326,915

Int. Cl. A47I 5/12

U.S. Cl. 108-1

4 Claims



1. In an adjustable shelf having upright supports and horizontally extending shelves the relative position of which is adjustable for accommodating objects of varying sizes and weights, the improvement comprising:

a. a plurality of posts defined by pairs of members aligned in a vertical plane, each pair being spaced apart to define narrow upright slits between them;

b. a plurality of generally L-shaped shelf members defined by a one-piece sheet metal piece having an uninterrupted surface and a plurality of at least three parallel, longitudinally extending substantially perpendicular bends defining laterally terminating U-shaped end sections extending over the length of the shelf members;

c. a plurality of L-shaped brackets having first and second perpendicular legs free ends of which being disposed within the U-shaped end sections for slideable movement of the brackets over the length of the shelf members, the brackets having a pair of slots extending from the free ends to adjacent opposite ends of the bracket legs, the bracket legs, the spacing of the brackets on the shelf members corresponding to the spacing of the slits between the upright member pairs;

d. a pair of horizontally extending eye bolts for each bracket disposed in the slits;

e. first bolt means for each eye bolt extending through an eyelet thereof and through one of the slots;

f. second bolt means extending through the other one of the slots;

g. the first and second bolt means including shaft sections larger than the width of the slots;

h. means for tightening the first and second bolt means to thereby engage the shaft sections thereof with the adjacent legs of the brackets, firmly secure the eye bolts to the brackets, spread the free ends of the bracket legs and to thus secure the brackets to the shelf members;

i. means for tightening the eye bolts to thereby draw the shelf members towards the upright members until the shelf members contact the upright members and the eye bolts, the shelf members and the upright members firmly engage each other and form a rigid structure;

whereby the number of posts and shelf members and their relative positions are readily and infinitely adjustable and variable over their respective extent for adopting the shelf for use with articles of varying size and weight.

3,854,428

OVERBED TABLE

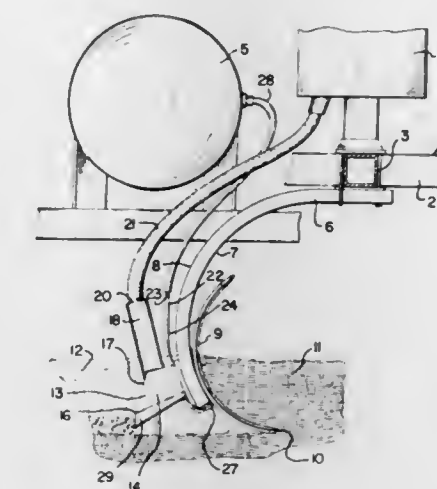
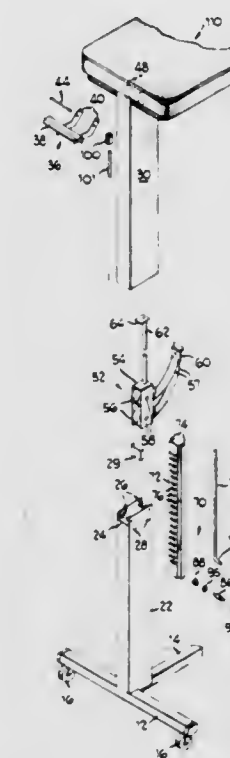
Eugene Henry Fullenkamp, Batesville, Ind., assignor to Hill Rom Company, Inc., Batesville, Ind.

Filed May 14, 1973, Ser. No. 359,980

Int. Cl. A47b 9/00

U.S. Cl. 108-146

10 Claims



e. said bottom wall sloping downwardly and rearwardly from said support and serving to close the portion of the furrow into which ammonia is dispensed while dry material is directed rearwardly from said box, and

f. wings directed laterally outwardly of said side walls near said bottom wall and adapted to cooperate with said bottom wall in closing said furrow portion.

3,854,430

MATERIAL HANDLING APPARATUS AND METHOD

Carney J. Bryan, Greensboro, N.C., assignor to Blue Bell, Inc., Greensboro, N.C.

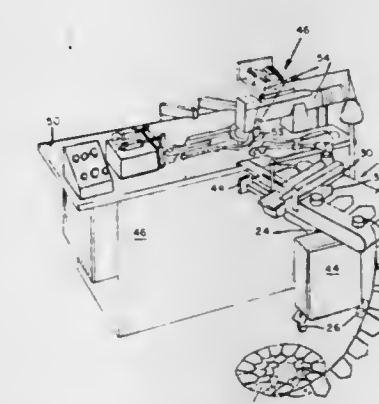
Continuation of Ser. No. 675,947, Oct. 17, 1967, abandoned.

This application May 22, 1972, Ser. No. 255,910

Int. Cl. D05b 19/00

U.S. Cl. 112-121.11

25 Claims



1. In a hospital table having a base vertically supporting a first member with a second member telescopically mounted thereon and having a table cantilevered from said second member, the improvement comprising:

a. Surface means having spaced notches vertically carried by one of said members;

b. A detent mechanism carried by said other member and having a pawl means engageable with said notches for normally precluding downward telescopic movement of said second member and friction means continuously engaging said pawl means and said surface means for automatically disengaging the pawl means upon upward telescopic movement of said second member;

c. Mechanical unlatch means carried by the other member and attached to said pawl means for manually unlatching said detent mechanism for downward telescopic movement of second member.

3,854,429

FERTILIZER DISPENSER

Calvin B. Blair, P.O. Box 76, Barnard, Kans. 67418

Filed Jan. 19, 1973, Ser. No. 325,175

Int. Cl. A01c 23/02

U.S. Cl. 111-7

5 Claims

1. A fertilizing implement comprising:

a. an agricultural tool plow tooth support having a forward surface and a trailing surface,

b. a plow tooth mounted on said forward surface and having a point adapted to project into the soil and open a furrow upon the forward motion of said support,

c. a rearwardly open dispenser box mounted on said trailing surface and having spaced apart upwardly extending side walls and a bottom wall,

d. a dry material dispensing tube secured to said box and having a lower end opening above said bottom wall, dry material supply means communicating with said dispens-

1. A method of handling a supply of connected material segments, the segments having a common edge sewn by and suspended from connecting elements such that the segments are sequentially positioned in spaced relation along the connecting elements, comprising the steps of: feeding the connected segments sequentially along a directed path of travel, orienting and aligning the connected segments in a prescribed manner as they are moved along a directed path of travel by engaging the connecting elements and the common sewn edges of the segments; separating the connected and aligned segments as they are moved along a directed path of travel by severing the connecting elements intermediate adjacent segments; feeding the separated segments sequentially proximate sewing instrumentalities; simultaneously forming a plurality of parallel stitch lines on a segment with at least one abrupt change in direction of the stitch lines to achieve a preselected, irregular sewn pattern; reconnecting the separated segments with parallel stitch lines; and discharging the connected segments in a connected fashion.

3,854,431

OPENING MEANS FOR BUTTON-HOLDING ACCESSORY TO SEWING MACHINE

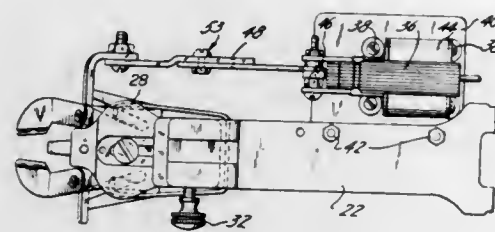
Massimo A. Chierico, Lyndhurst, N.J., assignor to A-1 Sewing Center, Lyndhurst, N.J.

Filed June 19, 1973, Ser. No. 371,551

Int. Cl. D05b 3/00

U.S. Cl. 112-114

1 Claim



1. A button-holding accessory for a sewing machine including an opening device, said accessory having two inwardly, angularly, spring-biased button-holding jaws, wherein said accessory comprises:

- a. a base upon which said jaws are pivotally mounted; and
- b. means for opposing the spring-bias of said jaws, said opposing means comprising:
 - i. a solenoid mounted upon said base,
 - ii. a cross-bar disposed in abutting relationship to said button-holding jaws, and
 - iii. a connecting link comprised of two longitudinally adjustable bars, one of said bars being mounted to said solenoid, and the other of said bars being mounted upon said cross-bar which urges said two button-holding jaws apart against the spring-bias of said jaws to effect a required opening in order to seat and hold a button therein in abuttingly opposed relationship to said spring-biased jaws, thereby assisting the operator of a sewing machine in the opening of said jaws.

3,854,432

PRESSER FOOT ATTACHMENTS

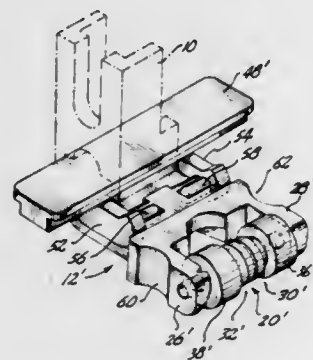
Robert B. Howell, 3400 W. Mercer Way, Mercer Island, Wash. 98040

Continuation-in-part of Ser. Nos. 125,203, March 17, 1971, abandoned, and Ser. No. 764,518, Oct. 2, 1968, said Ser. No. 125,203, is a division of Ser. No. 869,836, Oct. 27, 1969, Pat. No. 3,618,547, which is a continuation-in-part of Ser. No. 764,453, Oct. 2, 1968, Pat. No. 3,511,201, said Ser. No. 764,518, and Ser. No. 764,453, each is a continuation-in-part of Ser. No. 678,742, Oct. 27, 1967, Pat. No. 3,473,498, which is a continuation-in-part of Ser. No. 501,066, Oct. 22, 1965, Pat. No. 3,349,736, which is a continuation-in-part of Ser. No. 475,486, July 28, 1965, Pat. No. 3,342,151. This application Aug. 14, 1972, Ser. No. 280,473

Int. Cl. D05b 29/10

U.S. Cl. 112-235

10 Claims



1. For use with a sewing machine equipped with a reciprocating needle, a material advancing mechanism, and a presser

bar located generally above said material advancing mechanism, a presser foot assembly comprising:

a foot component including downwardly directed presser surface means; a transverse slide member located above said foot component having a substantially constant cross-sectional configuration throughout its length; mounting shank means removably connectible to said presser bar, and including means for frictionally engaging said transverse slide member, but permitting longitudinal travel of the transverse slide member in response to a force of sufficient magnitude to overcome the friction force, said means for frictionally engaging said slide member comprising means forming a transverse slideway at the lower end of the mounting shank having a cross-sectional configuration like that of the transverse slide member;

connector means interconnected between said transverse member and said foot component, permitting limited pivotal movement of the foot component relative to the transverse member within a vertical plane, so that when the foot assembly is in place on a presser bar the foot component is free to pitch slightly in response to variations in material thickness below it, said connector means comprising a pair of connector members, one on each side of said foot component, and each having a first end portion connected to the transverse member and a second portion spaced therefrom longitudinally of the foot component, and pivot joint means securing said second portion to said foot component for pivotal movement about an axis extending laterally of said foot component, each said connector member including a transverse pivot shaft received in a transverse socket formed in an upper intermediate portion of the foot component; and said foot component being recessed at its sides to receive said connector members and including side boundaries forwardly of the recesses which serve as guide surfaces.

3,854,433

ZIPPER FOOT FOR USE WITH SEWING MACHINE

Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

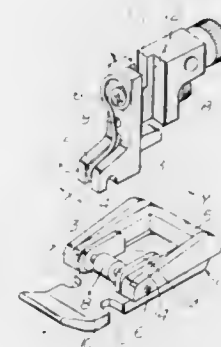
Filed May 2, 1973, Ser. No. 355,849

Claims priority, application Japan, May 4, 1972, 47-51511

Int. Cl. D05b 29/00

U.S. Cl. 112-235

2 Claims



1. A zipper foot for use with sewing machines having a needle for sewing of material that is being fed in a longitudinal direction, and a supporting member provided with a zipper-foot retaining spring, said zipper foot comprising a base plate having a top face and a bottom face for contacting the material, a pair of opposite longitudinal edges extending in said direction and formed with respective inwardly extending needle recesses, and a pair of upstanding walls each projecting upwardly from said top face and being transversely spaced by a first width; a mounting pin extending transversely of said longitudinal edges from one to the other of said upstanding walls; and adjusting means axially shiftable on said mounting pin and having in axial direction of the same a second width

smaller than said first width so that an axially extending portion of said mounting pin is always exposed for engagement with said supporting member and said retaining spring, said adjusting means being axially shiftable on said mounting pin between two first positions in each of which an imaginary line passing through said needle in said longitudinal direction intersects one of said needle recesses inwardly of the respectively associated edge, and two second positions in each of which said imaginary line coincides with one of said longitudinal edges.

3,854,434

LOCK PINTLE FOR A RUDDER

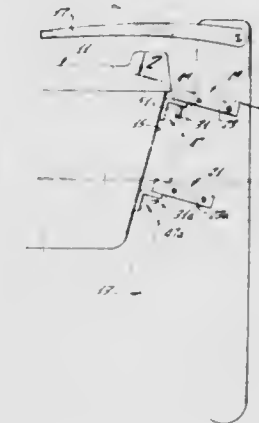
Kurt J. Pfahl, 3077 Hayes Ave., Costa Mesa, Calif. 92626

Filed June 29, 1973, Ser. No. 374,882

Int. Cl. B63h 25/00

U.S. Cl. 114-172

10 Claims



1. A lock pintle for attaching a rudder to a mounting member of a boat wherein the mounting member has an aperture therein, said lock pintle comprising:

- a bracket attachable to the rudder;
- a pintle;

means for attaching the pintle to the bracket with a portion of the pintle projecting away from the bracket, said portion of said pintle being receivable in the aperture of the mounting member to at least assist in mounting the rudder for pivotal movement relative to the boat;

a locking element attached to the pintle and movable generally radially thereof between a locking position in which the locking element locks said portion of the pintle against removal from the aperture of the mounting member and a releasing position in which the locking element allows said portion of the pintle to be withdrawn from the aperture of the mounting member, said locking position being radially outwardly of said releasing position; and means for resiliently urging said locking element radially outwardly toward said locking position.

3,854,435

INSTALLATION FOR ASSEMBLING SHIP HULL SUBASSEMBLIES

Yoshitaka Kinoshita, Yokosuka, Japan, assignor to Sumitomo Shipbuilding & Machinery Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1973, Ser. No. 419,945

Claims priority, application Japan, Jan. 18, 1973, 48-8336; Feb. 28, 1973, 48-23885

Int. Cl. B63b 3/00

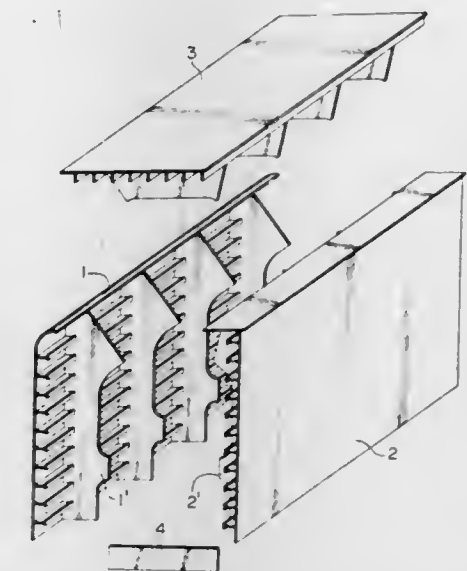
U.S. Cl. 114-65 R

5 Claims

1. An installation for assembling ship hull subassemblies each consisting of a pair of vertical subblocks which are to be assembled in parallel with each other in the longitudinal direction and in transversely spaced apart relation and a horizontal subblock to be joined to the upper or lower side edges of said pair of vertical subblocks, said installation comprising

- a. a parallelepiped structure whose ceiling and at least one side are opened,

- b. means for separately carrying said subblocks into said structure,
- c. means for positioning said subblocks in said structure, said positioning means comprising stopper means which is disposed adjacent to one end wall of said structure for abutting against one vertical end of said subblock, and means for pushing said subblock in the longitudinal direction so as to abut said subblock against said stopper means,



- d. means for releasably engaging with the vertical ends of said vertical subblocks, thereby holding said vertical subblock in vertical position,
- e. scaffold carriage means which is provided with a plurality of vertically movable scaffolds and which is adapted to travel in the horizontal direction in a lower or upper portion, and
- f. a carriage adapted to travel upon the floor of said structure, to carry an assembled subassembly thereupon and to move said subassembly out of said structure through said opened side thereof.

3,854,436

MOTORCYCLE BOAT

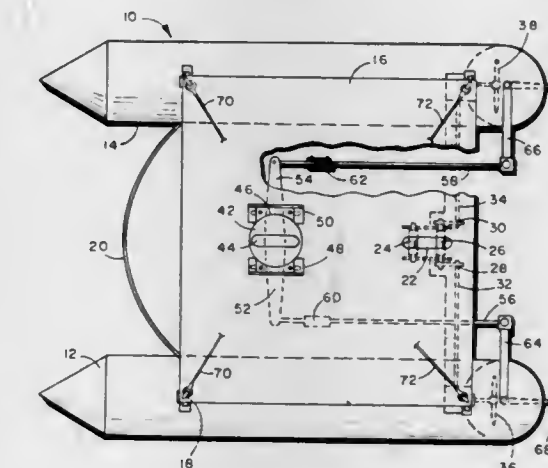
Oscar Leon Cox, 3856 Castleman, Riverside, Calif. 92503

Filed Oct. 23, 1973, Ser. No. 408,544

Int. Cl. B63h 25/00

U.S. Cl. 115-.5 A

3 Claims



1. A catamaran boat for use in combination with an engine-driven motorcycle which has a single ground-engaging drive wheel rotated by engine power and which has a single ground-engaging wheel movable on a substantially vertical axis for steering of the motorcycle, said boat comprising:

- two spaced catamaran hulls and a deck attached to said hulls for providing buoyancy and stability to said boat and to the motorcycle mounted on said boat and to an operator of the motorcycle;

a power roller and another roller mounted on said platform for engagement by the ground-engaging wheel of the motorcycle, first and second propellers mounted for rotation on axes extending generally longitudinally of said boat, one of said propellers being associated with each one of said hulls at the aft end thereof and positioned so that a substantial portion of said propellers is submerged when said boat is floating, drive means interconnecting said power roller and said propellers for rotating said propellers when said power roller is rotated;

a turntable mounted on said platform for engagement by the steerable wheel on the motorcycle, a rudder mounted at the rear of each of said hulls on said boat respectively positioned aft of said propellers on said hulls and positioned to be substantially submerged when said boat is floating to steer said boat, the steering yoke secured to each side of said turntable and extending laterally therefrom in opposite directions, steering rods pivotally connected to the outer ends of said steering yoke, steering arms respectively secured to said rudders and being attached to said steering rods so that rotation of said turntable causes rotation of both of said rudders in the same direction so that steering of the steerable wheel on the motorcycle causes rotation of said turntable and change in direction of said rudder for directing said boat as it moves through the water.

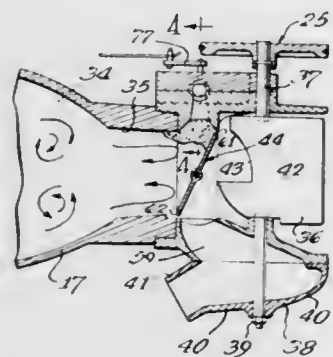
3,854,437

HYDRAULIC JET STERN STEERING CONTROL
Thomas A. Stansbury, 7237 S. Shore Dr., Chicago, Ill. 60649
Filed May 12, 1972, Ser. No. 252,901

Int. Cl. B63h 11/10

U.S. Cl. 115-12 R

17 Claims



1. A directional control means for a hydraulic jet turbine having a Venturi section, a main propulsion opening in said Venturi section, a main shutoff valve closing said main propulsion opening, said valve being able to close the Venturi nozzle to stop flow of water through the Venturi section wherein the improvement comprises another opening in said Venturi section contiguous to said main shutoff valve to evacuate material forming against said main shutoff valve when it is closed and said hydraulic jet turbine is in operation and a secondary shutoff valve means closing said another opening.

3,854,438

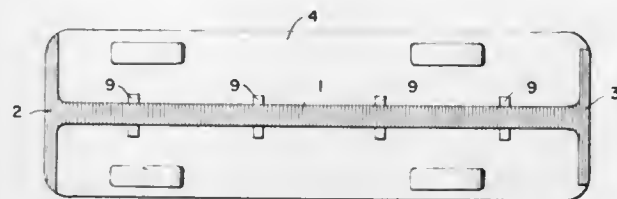
ACCIDENT PREVENTION DEVICE
Jose J. Soto, 3041 Edwin Ave., Fort Lee, N.J. 07024
Filed Mar. 29, 1973, Ser. No. 346,117

Int. Cl. B60q

U.S. Cl. 116-28 R

5 Claims

1. In combination with a vehicle, an accident prevention device comprising a longitudinally extending light conducting material having a front end portion fitted on the outside front of said vehicle and a rear end portion fitted on the outside rear of said vehicle, said front end portion having a contoured surface for collecting impinging light originating from a forward vehicle and transmitting said light through the length of said light conducting material, and said rear end portion having a contoured surface for transmitting light collected at said front end portion to a following vehicle.



3,854,439

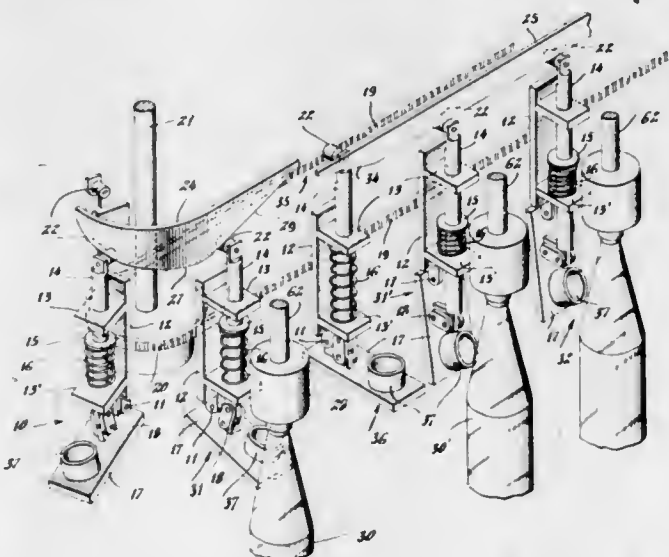
BOTTLE SPRAYING APPARATUS
Joseph T. Harmuth, Greenwich, Conn., assignor to Indian Head Inc., New York, N.Y.

Filed June 21, 1973, Ser. No. 372,161

Int. Cl. B05c 5/00

U.S. Cl. 118-4

8 Claims



1. In a continuous production line system for spraying articles supported by a plurality of moving chuck conveyors, protective means for automatically covering empty chucks comprising in combination, a first conveyor line carrying a plurality of uniformly spaced chucks at predetermined intervals, means for moving said first line at a constant rate of traverse, a second conveyor line extending a selected distance parallel and adjacent to said first line, means for moving said second line in synchronism with said first line, a plurality of hinged cover members mounted on said second conveyor line at uniformly spaced intervals corresponding to said predetermined chuck intervals, each of said hinged cover members adjacent one of said chuck members through out said selected distance, and cam operated means connected to each of said hinged cover members for controlling movement of said hinged members into protective covering engagement with an adjacent empty chuck.

3,854,440

SLIDE STAINING APPARATUS
Thomas W. Astle, 607 Harbor View Rd., Orange, Conn. 06477
Filed Apr. 24, 1972, Ser. No. 246,720

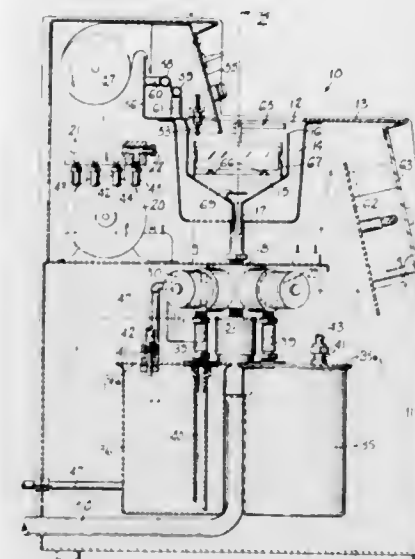
Int. Cl. B05c 11/00

U.S. Cl. 118-7

11 Claims

1. Apparatus for staining slides comprising a staining chamber adapted to receive slides therein, said chamber having an open top and a lower passage communicating with a manifold, a plurality of receptacles adapted to contain reagents, valving means connecting each of said receptacles to said manifold, means for operating said valves to selectively allow a reagent from a receptacle to be delivered to said chamber and returned to its receptacle, a second chamber surrounding said staining chamber and adapted to catch any overflow therefrom.

from, additional inlet valve means and outlet valve means, said inlet valve means adapted to connect said manifold to a fresh



3,854,442

VAPOR-DEPOSITION APPARATUS

Helmut Adam, Alfred Ortlieb, and Eberhard Traub, all of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 18, 1972, Ser. No. 272,967

Claims priority, application Germany, Aug. 20, 1971, 2141723

Int. Cl. C23c 13/08

U.S. Cl. 118-49

6 Claims

water tap supply, said outlet valve means connecting staining chamber to a drain, and conduit means connecting said second chamber to said drain.

3,854,441

APPARATUS FOR APPLYING BARRIER COATING SUBSTANCES TO SHEET MATERIALS

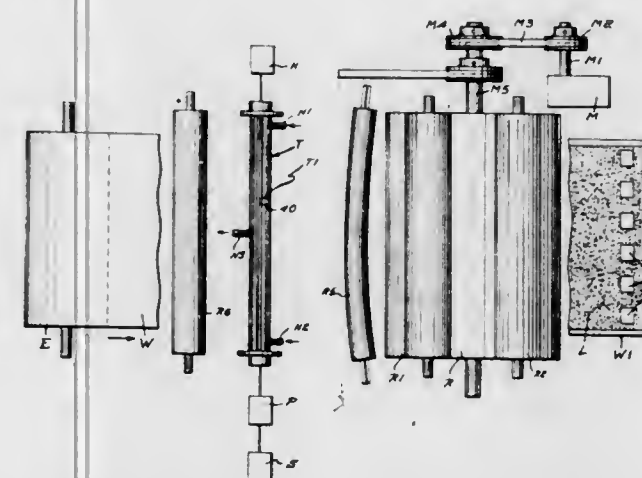
George C. Park, North Reading, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Continuation-in-part of Ser. No. 259,072, June 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 48,660, May 15, 1970, abandoned, Division of Ser. No. 806,473, March 12, 1969, Pat. No. 3,556,832, which is a continuation-in-part of Ser. No. 806,040, March 6, 1969, abandoned, which is a continuation of Ser. No. 335,67, Jan. 3, 1964, abandoned. This application Feb. 22, 1973, Ser. No. 334,747

Int. Cl. B05c 5/02

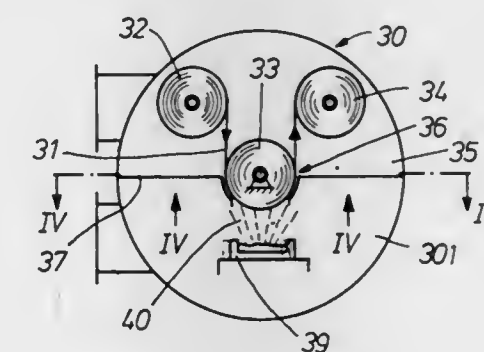
U.S. Cl. 118-34

1 Claim



1. Apparatus for applying a viscous coating of the hot melt class to a web of material, said apparatus comprising a frame, a supply roll member for supporting a wound roll of the material at one end of the frame, winding roll means mounted at an opposite end of the frame, power driving mechanism for actuating the winding roll and drawing off a web of the material at a desired rate of travel, a coating tube arranged in the frame below the path of said web to engage the web, said coating tube being constructed with a curved upper side and having an elongated discharge aperture formed along said

upper side and lying within the confines thereof, said aperture having high lead-on edge and a low lead-off edge, tension roll means located both in advance of, and in rear of, said tube on said path for exerting tension in the web and guiding the web in an arcuate path of travel over said curved upper side and over said lead on and lead-off edges, a roll mount structure, a press roll rotatably supported in the roll mount structure above the coating tube in rolling engagement with the web and forming a pressure nip with said tube, and said press roll having its axis of rotation in rear of said lead on edge directly above said lead-off edge and lying in a vertical plane which passes through the lead-off edge of the elongated discharge aperture.



1. A vapor-deposition arrangement, comprising, in combination, housing means defining a vaporization compartment and an additional compartment communicating with said vaporization compartment via a communication opening; moving means for moving a web to be coated across said communication opening along a predetermined path so oriented with respect to said communication opening that a web moved by said moving means across said opening and along said path blocks said opening and separates said compartments from each other; evacuating means for establishing subatmospheric pressure in said compartments; and vaporizing means within said vaporization compartment for creating a stream of vaporized material directed towards said communication opening for condensation upon the one side of the web facing said vaporization compartment, whereby any volatile substance which, due to the liberated heat of said condensation, escapes from the web at other side thereof and into said additional compartment will substantially be prevented by the presence of the web from passing into said vaporization compartment through said communication opening, and wherein said moving means includes a generally cylindrical guide roller interposed between said compartments substantially closing said opening and adapted to guide and support a ribbon-like web at the side of the latter facing said additional compartment, and wherein the outermost peripheral surface of said guide roller is incomplete so that a web supported on said outermost peripheral surface will be engaged by said roller only at portions of its surface so as to permit passage into said additional compartment of volatile substances escaping from the unsupported portions of said other side of such web.

3,854,443

GAS REACTOR FOR DEPOSITING THIN FILMS

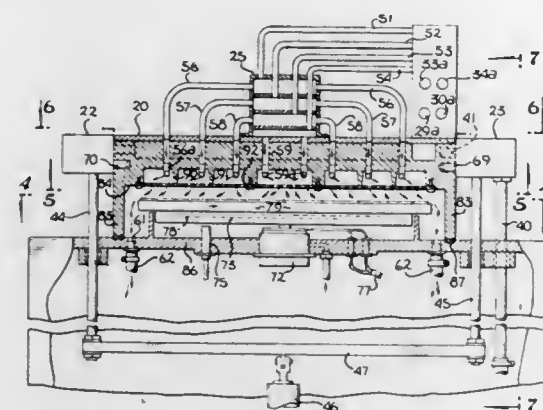
William Baerg, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1973, Ser. No. 426,307

Int. Cl. C23c 13/08

U.S. Cl. 118-49

5 Claims



1. In a reactor for vapor depositing, comprising: a bell member and a horizontally disposed platform defining a reaction chamber; a horizontally disposed rotatable susceptor supported on said platform and adapted to support at least one substrate thereon; means to controllably heat said susceptor; means to rotate said susceptor; means to relatively translate said bell member and platform whereby said chamber is selectively opened or sealed; a plurality of concentric, horizontally spaced annular wall elements disposed within said bell member and depending from the roof thereof whereby defining a central chamber zone and a plurality of annular chamber zones thereabout; said zones coextensively overlying said susceptor; a diffuser screen extending across the open ends of each said chamber zone; a plurality of reactor exhaust means disposed at the periphery of said platform; a plurality of inlet ports in each of said zones for feeding the gas of said deposition vapor and whereby said gas is uniformly dispensed through said diffuser screen, radially swept across the at least one substrate to effect said deposition and passed through said exhaust means.

3,854,444

APPARATUS FOR MANUFACTURING WATERPROOF CABLE

Edward L. Franke, Jr., Perry Hall, and William J. Hyde, Baltimore, both of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 155,055, June 21, 1971, Pat. No. 3,767,456. This application June 13, 1973, Ser. No. 369,652

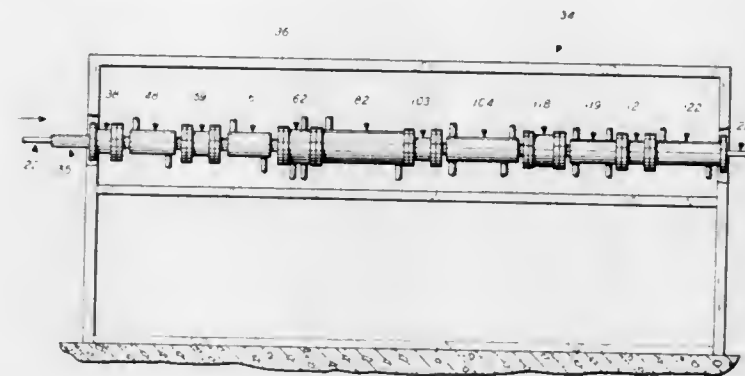
Int. Cl. C23c 13/10

U.S. Cl. 118-50

8 Claims

1. Apparatus for applying a compound to a stranded article, which comprises: means for evacuating air from interstices of successive portions of the stranded article; a compound-applying section; means for moving the air-evacuated successive portions of the stranded article through the compound-applying section; means for moving amounts of the compound in a semifluid state into the compound-applying section and into contact with the successive portions of the stranded article to facilitate the drawing of portions of the semifluid compound into the air-evacuated interstices of the successive portions of the stranded article;

a compound-conditioning section whereat the compound is placed in a jelly-like state, means for moving the compound-filled stranded article through the compound-conditioning section whereat the semifluid compound is conditioned to place the compound in a jelly-like state so that the compound is non-flowable and is retained within the interstices of the stranded article independently of any other supporting structure, and



- means for cooling the air-evacuated successive portions of the stranded article after the portions have been moved through the means for evacuating air and prior to the entry of the portions into the compound-applying section to place in a jelly-like state any portions of the compound which are drawn from the compound-applying section toward the means for evacuating air to preclude entry of the compound into the means for evacuating air.

3,854,445

CAN TREATING APPARATUS

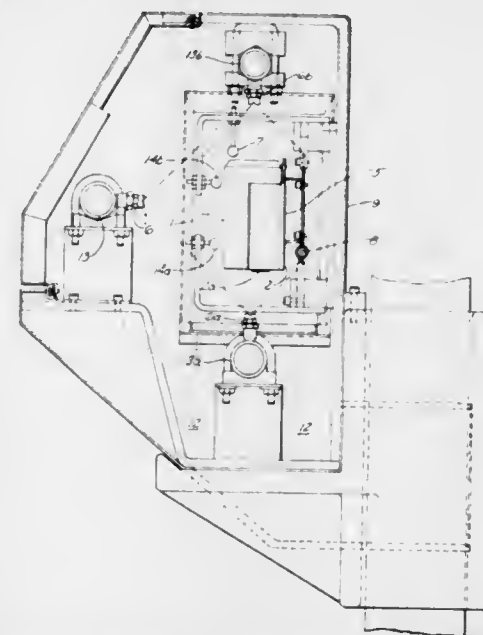
Ralph J. Stolle, Lebanon; Richard J. Hasselbeck, Houston, and Elton G. Kaminski, Sidney, all of Ohio, assignors to The Stolle Corporation, Sidney, Ohio

Filed July 13, 1973, Ser. No. 379,096

Int. Cl. B05c 11/08

U.S. Cl. 118-62

6 Claims



1. A can treating apparatus comprising a tube, an endless cable arranged to travel through said tube, a plurality of can carriers fixed to said cable to be transported through said tube whereby, the portion of the tube on the carrier side of said cable constituting a treatment chamber; a first series of nozzles arranged to project the fluid against the outside of the walls of cans being transported by said carrier, a second series of nozzles arranged to project the fluid downwardly onto the tops of the said cans, and a third series of nozzles arranged to project the fluid upwardly into the insides of said cans, the force of the projection of fluid upwardly from said third series of nozzles being sufficient to overbalance the projection from

said second series of nozzles and the weight of the can; the portion of the tube on the other side of said cable constituting a drain manifold for said fluid; said carriers being in the form of half cylinders of a diameter providing a clearance around the outside of the cans being treated, and having a drain opening substantially centrally thereof communicating with said drain manifold, and having a plurality of protuberances on their inside surface to maintain the axial position of the cans in the carriers to insure said clearance; whereby flow of fluid around both sides of each can results in complete and uniform treatment of the entire surface of each can.

3,854,446

APPARATUS FOR WET TREATMENT OF SHEET OR STRIP MATERIAL

Emile Frans Stievenart, Antwerp; Hugo Frans Deconinck, Deurne Zuid, both of Belgium, and Jurgen Muller, Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

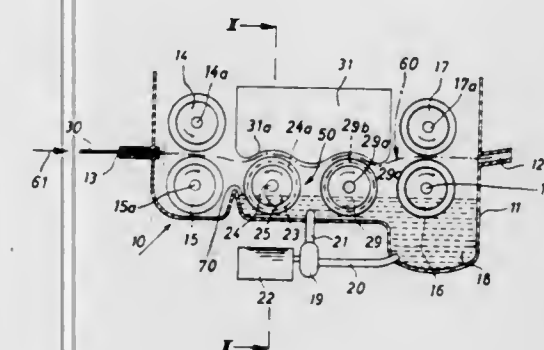
Filed May 23, 1973, Ser. No. 363,079

Claims priority, application Germany, May 26, 1972, 2225637

Int. Cl. B05c 1/08

U.S. Cl. 118-223

13 Claims



1. In an apparatus for wet treatment of running sheet or strip material, combination comprising a vessel for a supply of treating liquid, said vessel having an inlet for introduction and an outlet for evacuation of material whereby the material travels lengthwise between said inlet and said outlet advances along a predetermined path; at least one elongated roll mounted in said vessel and including an elongated hollow cylindrical housing having a peripheral surface contacting the material in said path, an internal surface, at least one liquid-admitting first opening in the region of one end and at least one liquid-discharging second opening in the region of the other end thereof, said housing being rotatable about a substantially horizontal axis extending transversely of said path and at least a portion thereof dipping into said supply of liquid; and liquid conveying means including a feed screw provided in said housing and arranged to establish a flow of liquid from said first to said second opening, said feed screw having threads in at least partial sealing engagement with said internal surface of said housing.

3,854,447

APPARATUS FOR DEPOSITION OF SEMICONDUCTOR THIN LAYERS

Hiroyuki Kobayashi, Kawasaki, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Filed Oct. 18, 1973, Ser. No. 407,605

Claims priority, application Japan, Oct. 19, 1972, 47-105114

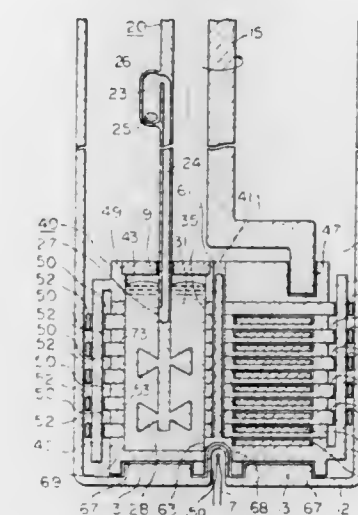
Int. Cl. B05c 3/00

U.S. Cl. 118-421

11 Claims

1. Apparatus for depositing epitaxial layers on a plurality of substrates from a liquid phase, which comprises:

a refractory furnace; a refractory tube disposable internally of said furnace; an epitaxial growth boat disposable within said refractory tube, and provided with at least one cavity arranged axially thereof, a solution of material to be epitaxially grown on a plurality of substrates and stored in said at



- least one cavity, said boat comprising a plurality of flat members arranged on top of one another, each of said plurality of flat members having at least one recess for accommodating said substrate, alternate members of said plurality of flat members being arranged to be movable relative to the remaining flat members so that a plurality of substrate-solution contacts are accomplished.

3,854,448

TIRE PROTECTOR

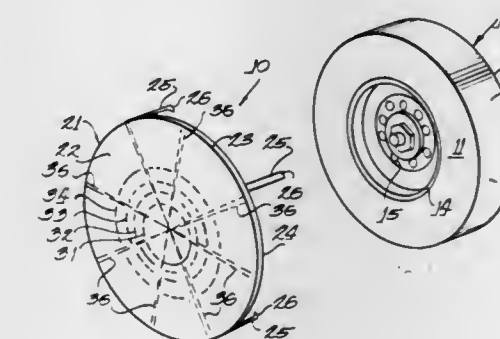
Dennis P. Kromanaker, 439 Cascoigne Dr., Waukesha, Wis. 53186

Filed Dec. 5, 1973, Ser. No. 422,531

Int. Cl. B05c 11/00

U.S. Cl. 118-505

4 Claims



1. A tire protector intended to provide a painting shield over the face surface of a tire about the wheel and wheel rim to permit painting of the wheel and rim without paint marring the appearance of the tire surface, the protector comprising a substantially flat circular disc shaped body member having a front surface, a back surface, and a peripheral circular edge surface, a plurality of different diameter concentric circles formed concentrically with said body member and defined by perforations extending partially through said body member and adapted for removal of an inner portion of said shield whereby to conform said shield to the inner diameter of the tire and whereby to permit painting of said wheel and rim, and a plurality of angularly spaced apart radially extending lines disposed in said body and defined by perforations extending partially through said body, said lines extending radially from the axis of said body to said outer edge thereof and adapted to permit radial separation of adjacent segments of said body for shaping said body to the contours of said tire face surface when applying said protector thereto, and means for detach-

ably securing said protector to said tire about said tire about said wheel and rim.

3,854,449

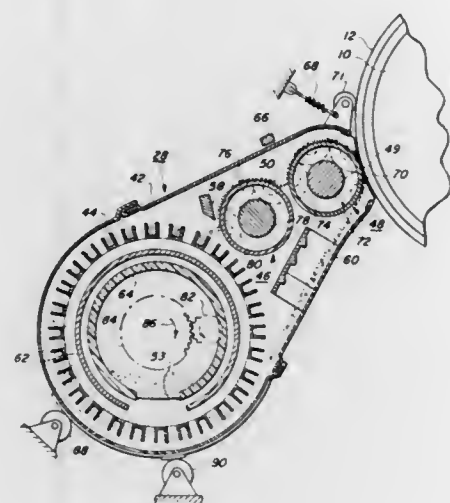
DEVELOPMENT APPARATUS

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 22, 1972, Ser. No. 255,259

Int. Cl. G03g 13/00

U.S. Cl. 118-637



1. An apparatus for rendering visible an electrostatic latent image, including:

a housing having a chamber therein for storing particles; means, mounted for movement in unison with said housing, for depositing particles onto the latent image; means for advancing the particles from the storage chamber of said housing to said depositing means; and means, responsive to the latent image advancing to a first predetermined location, for moving automatically said housing from an inoperative position where said depositing means is spaced from the latent image to an operative position where said depositing means is closely adjacent to the latent image in operative communication therewith, said moving means in response to the latent image advancing to a second predetermined location after particles have been deposited thereon, returning automatically said housing from the operative position to the inoperative position.

3,854,450

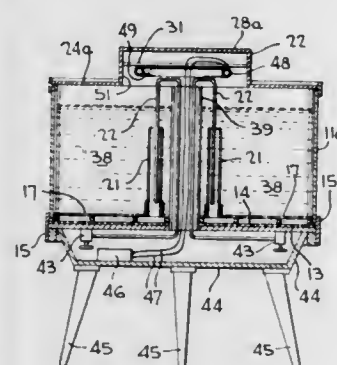
AQUARIUM ASSEMBLY

Sam S. Puckett, Portland, Tex., assignor to Atlas Aquariums, Inc., Corpus Christi, Tex.

Filed June 8, 1972, Ser. No. 261,070

Int. Cl. A01k 64/00

U.S. Cl. 119-5



1. An aquarium assembly comprising a transparent tank body, base plate means at one end thereof, an upright tube within said body and extending through said plate means at

substantially the central portion thereof, at least two compartments within said body defined by at least one divider wall extending between said tube and the side wall of said body, a perforated filter plate in each said compartment spaced from said base plate means, and a filtration air tube for each said compartment extending upwardly through said tube.

3,854,451

STARTING GATE MASTER SWITCH AND CIRCUITRY

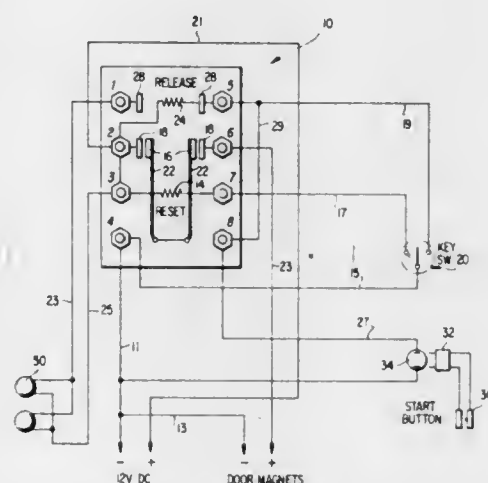
Leroy S. Mackey, Charles Town, W. Va., assignor to United Starting Gate Corporation, Tuckahoe, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,229

Int. Cl. A63k 3/02

U.S. Cl. 119-15.5

3 Claims



1. A starting gate for race tracks comprising a frame and a plurality of side-by-side stalls formed by said frame, door means pivoted to said frame adjacent the forward end of each stall, said door means being normally biased to an outward position to open the forward end of each stall, said door means being closeable and releaseably held by electromagnetic means in a circuit with a power source on said gate, said circuit including a bell signal, a relay coil with an armature and two pairs of contacts, a locking switch in said circuit to energize said relay and establish current to said electromagnetic means through a first pair of said contacts, a release coil with a pivotable armature latch in said circuit and said release coil being in communication with a starter switch, said pairs of contacts being alternatively connected by spring arm means which are normally biased to bridge a second pair of contacts, said pivotable armature in a first position latching said first pair of contacts in communication with one another to close the circuit to said electromagnetic means and retain said door means in closed position, said starter switch being operable to energize said release coil and pivot said armature latch, breaking the circuit to said electromagnetic means whereby said arm means is released to bridge said second pair of contacts leading to the bell signal, said bell signal being activated substantially simultaneously with the release of said armature latch and said electromagnetic means which permits said door means to open said stalls.

3,854,452

INCUBATORS FOR EGGS

Michel Bardet, Tours, France, assignor to Buckeye Stephens Limited, Gloucester, England

Continuation-in-part of Ser. No. 196,463, Nov. 8, 1971. This application Mar. 29, 1973, Ser. No. 346,027

Int. Cl. A01k 41/04

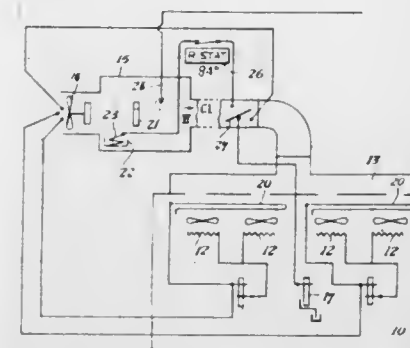
U.S. Cl. 119-37

17 Claims

1. An incubator having a chamber containing living eggs, the chamber having single air passages for respectively admitting and allowing output of air respectively, including drive means for impelling air into the chamber, a preconditioner conditioning the air before it is introduced into the chamber to preselected values of temperature and absolute humidity

lower than those desired in the running state of the chamber, and means controlling the rate of such introduction with

material; inlet means for bringing water into the tank means; outlet means for extracting water from the tank means; fossil fuel fired burner means external to the tank means for producing heat; and heat pipe means for transporting heat from the burner means to the interior of the tank means; the heat pipe means comprising a heat transfer fluid, an evaporator exterior



reference to wet bulb temperature sensed in the chamber, the said means including a damper variably obstructing a said air passage.

3,854,453

STEAM GENERATOR

Hans Mayer; Heinz-Jürgen Schroder, and Gerhard Schuck-tanz, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

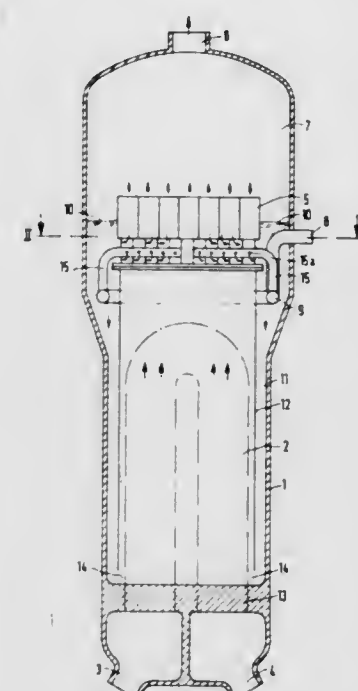
Filed Nov. 15, 1972, Ser. No. 306,939

Claims priority, application Germany, Nov. 17, 1971, 2157069

Int. Cl. F22b 1/06

U.S. Cl. 122-32

4 Claims



1. A steam generator having a steam dome with a steam output line in its upper portion and a tank enclosure below said dome, a heat exchanger in said enclosure, a water separator in said steam dome and discharging water downwardly, and a feed-water inlet for said tank; wherein the improvement comprises means for distributing at least a portion of the feed-water from said inlet throughout the cross-sectional area of said separator.

3,854,454

HEAT PIPE WATER HEATER

Lazaros J. Lazaridis, Lincoln, Mass., assignor to Therma Electron Corporation, Waltham, Mass.

Filed Nov. 1, 1973, Ser. No. 411,940

Int. Cl. F22b 1/02

U.S. Cl. 122-33

15 Claims

1. A storage water heater comprising tank means for containing water, wherein the tank means comprises a plastic

to the tank means heated by the burner means for evaporating the heat transfer fluid, a condenser located within the tank means and immersed in the water for condensing the heat transfer fluid, and transitional means between the evaporator and the condenser for transportation of hot heat transfer vapor from the evaporator through a wall of the tank means to the condenser.

3,854,455

HEATING SYSTEM PROVIDING CONTROLLED CONVECTIVE HEATING

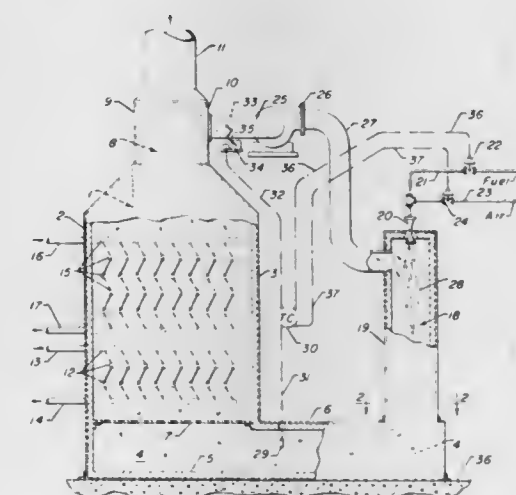
Don B. Carson, Mt. Prospect; Steven R. Orfanedes, and Kurt J. Zentner, Jr., both of Arlington Heights, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 17, 1973, Ser. No. 425,472

Int. Cl. F23b 21/24

U.S. Cl. 122-356

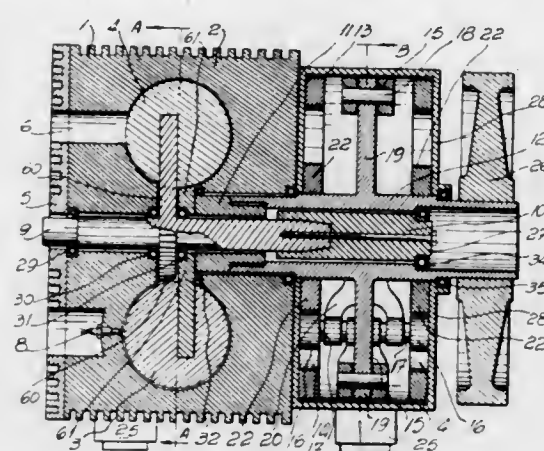
8 Claims



1. A heating system for heat sensitive fluids to provide uniform heating for the tube banks therein and preclude excessive fluid film temperatures for the fluids passing through the individual tubes, which comprises in combination, a confined tube heating section, a plurality of interconnected small diameter tubular members positioned in said section to provide at least one tube bank therein, inlet and outlet means to the latter to provide for the flow of at least one fluid stream therethrough, at least one combustion section with burner and fuel supply means connective therewith to provide for the introduction of hot combustion gases into the interior of such section, duct means connecting between said combustion section and the lower end of said heating section to provide for a hot gas convective heating stream to said tubular mem-

of pistons displaceable in one direction of rotation in said chamber and one pair with respect to the other pair; means for respectively connecting one pair of said pistons to each other and to one of said shafts and the other pair of said pistons to each other and to the other of said shafts; a first pair of arms integral with one of said shafts and projecting substantially opposite each other radially therefrom; a second pair of arms integral with the other of said shafts and projecting substantially opposite each other radially from said other shaft, each of said arms having a radially outer end; only two rollers arranged substantially diametrically opposite to each other between the outer ends of said first and second pair of arms; a pair of links for each roller pivotally connecting the respective roller to the respective outer ends of said arms so that said rollers may move radially with respect to the axis of said shafts upon angular movement of said first and second pairs of arms with respect to each other; stationary endless cam means

5 Claims

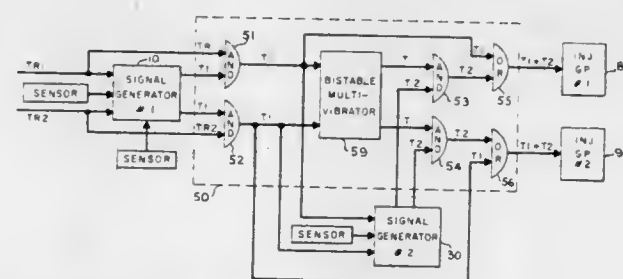


extending about said axis substantially in a plane normal thereto, said cam means being engaged by said rollers; one of said pair of pistons leading in said one direction of rotation, and inertia means fixedly connected to that shaft which is connected to said one pair of pistons, said one pair of pistons defining with said other pair of pistons in said toroidal chamber two diametrically opposite main chambers, and two opposite further chambers; first port means successively communicating with said main chambers during movement of said pistons in said one direction and expansion of said main chambers for feeding a fuel mixture into the respective main chamber; fuel mixture firing means for igniting said mixture in the respective main chamber; and second port means successively communicating with said main chambers for discharging combustion gases therefrom during contraction of said main chambers, said further chambers expanding during contraction of said main chambers and vice versa but do not receive fuel from said first port means.

15 Claims

6 Claims

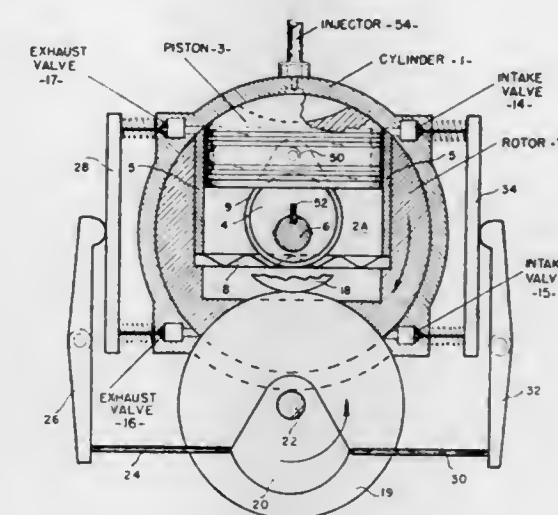
1. In an internal combustion engine fuel control system of the type having trigger signal generating means for generating



1. In an internal combustion engine fuel control system of the type having trigger signal generating means for generating

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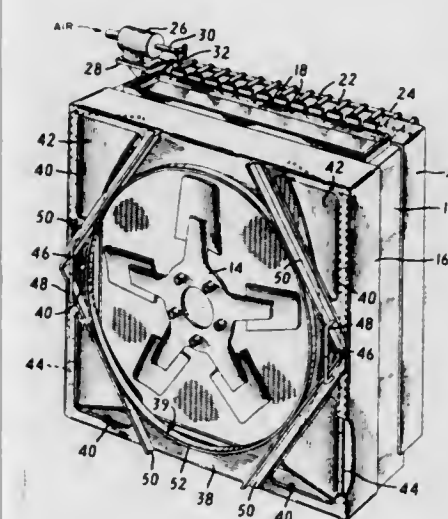
5 Claims



second gating means responsive to said further pulse generator means pulses operative to apply second generator signal pulses to said first gating means in a manner determined by said further pulse generator means signal.

U.S. Cl. 165—39

12 Claims

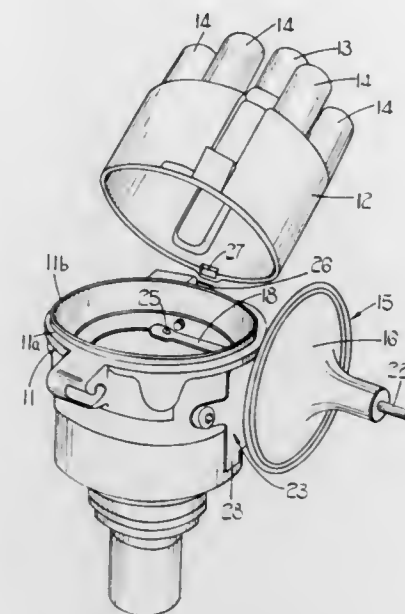


U.S. Cl. 123-117 A

4 Claims

1. A vacuum unit (as claimed in claim 1 wherein), for an ignition distributor, including a housing divided internally into first and second chambers by a diaphragm, a connecting link secured at one end to the diaphragm and extending from the first chamber for connection, in use, to the timing plate of an ignition distributor, and a bracket secured to the housing and whereby the unit can be secured in position on the casing of an ignition distributor, the bracket (is) being so shaped as to permit two alternative positions of the unit relative to the casing of the distributor, one position providing clockwise rotation of the timing plate of the distributor as the connecting link is withdrawn by the unit in use, and the second position providing anti-clockwise rotation of the timing plate as the connecting link is withdrawn in use, the bracket being provided with a pair of location members one or other of which is engageable, in use, by the detachable insulating cap of the distributor so as to locate the cap angularly in the desired

position on the distributor casing, (for the distributor cap) one of the pair being operative in said one position of the



bracket and the other of the pair being operative in the second position of the bracket.

3,854,462

MIXTURE PREPARATION INSTALLATION FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Robert Binder, Schwieberdingen, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche KG, Stuttgart-Zuffenhausen, Germany

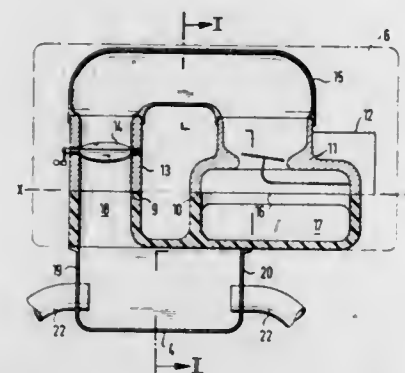
Filed Oct. 13, 1972, Ser. No. 297,228

Claims priority, application Germany, Oct. 14, 1971, 2151187

Int. Cl. F02m 51/00

U.S. Cl. 123-119 R

13 Claims



1. A mixture preparation installation for a multi-cylinder injection-type internal combustion engine having a suction system, said installation comprising: an air filter housing, a filter insert disposed in a portion of said air filter housing, a fuel injection means operating with continuous injection operatively connected with said air filter means including a control housing, measuring means disposed in said control housing for controlling the fuel metering action in dependence on the air quantity flowing through the suction system, connecting means for connecting said control housing with the suction system, a valve means including a throttle valve disposed in said connecting means for controlling the air flow therethrough, said connecting means, the portion of said filter housing in which said filter insert is disposed and said control housing being disposed adjacent one another, said air filter housing, said control housing and said connecting means being provided with sealing surfaces disposed substantially in a common plane, said control housing and said connecting means being disposed on the sealing surface of said air filter housing.

3,854,463 EFFICIENCY INCREASING ANTI-POLLUTION CONTROL DEVICE

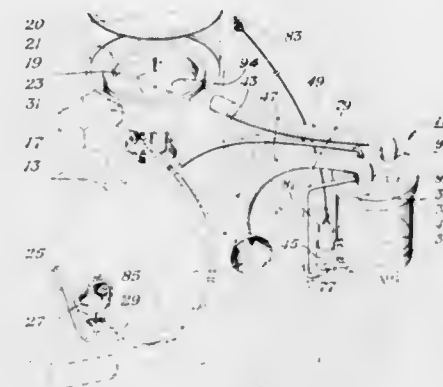
Henry Owen Burden, Sr., 1521 Pinto St., Dallas, Tex. 75211

Filed July 24, 1973, Ser. No. 382,123

Int. Cl. F02m 17/18

U.S. Cl. 123-133

19 Claims



1. Apparatus for supplying a combustion mixture to an internal combustion engine having conventional accessories, including an intake manifold, comprising:

- a carburetor having an air intake passageway, a liquid fuel supply and liquid fuel passageways for supplying liquid fuel to the air being taken into said internal combustion engine, and an effluent passageway that is connected with the intake manifold on said internal combustion engine; said carburetor being connected with a control, such as an accelerator pedal, and adapted for conventional operation of said internal combustion engine; and
- evaporating and admixing means for effecting complete vaporization of liquid fuel and for admixing the resulting fuel vapor with a portion of the air being supplied to said carburetor; said evaporating and admixing means being connected with said air intake passageway of said carburetor; said evaporating and admixing means being adapted to supply only fuel vapor and not atomized or liquid fuel that would burn incompletely.

3,854,464

TOOL FOR ADJUSTING DIESEL GOVERNORS

Edward J. Reinhard, 2524 S. Fickett Ave., Tucson, Ariz. 85713

Filed Oct. 12, 1973, Ser. No. 406,033

Int. Cl. F02d 11/00

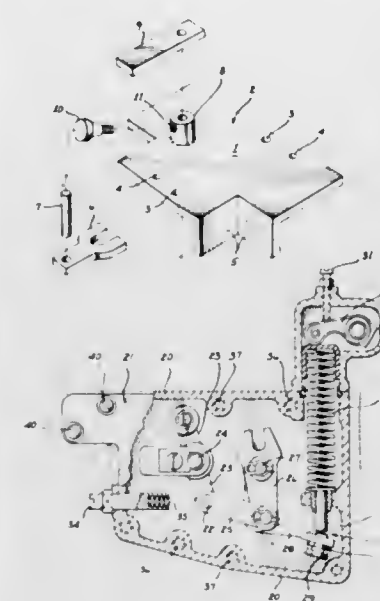
U.S. Cl. 123-140 R

4 Claims

1. Apparatus for use in tuning a diesel governor, which governor includes: (i) a housing containing lubricating oil and having removable cover means, (ii) mechanical linkages for controlling and correlating engine speeds, and (iii) governor adjustment means; said apparatus comprising in combination: a. auxiliary cover means for temporarily replacing said removable cover means while the governor is being tuned, said auxiliary cover means including: (i) a sealed passage allowing physical access to said governor adjustment means while substantially containing fugitive lubricating oil within said housing, and (ii) a tuning passage; and

- tuning means for controllably maintaining engine speed at a desired level, said tuning means including: (i) displacement means for mechanically engaging said mechanical linkage within said housing, (ii) control means connected to said displacement means through said tuning passage for translating selected mechanical displacement

ment outside said housing into corresponding changes in the position of said translation means, and (iii) locking



means for securing said displacement means in a selected position during the adjustment of said governor.

3,854,465

ELECTRONIC IGNITION SYSTEM

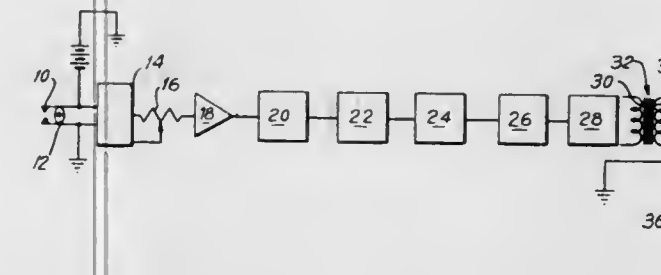
Guy Adams, Monroe, N.Y., assignor to Solitron Devices, Inc., Tappan, N.J.

Filed May 22, 1972, Ser. No. 255,396

Int. Cl. F02p 3/02, 5/08

U.S. Cl. 123-148 E

10 Claims



1. An engine ignition system comprising: an electrical source;

first means connected to said source and operable in response to engine operation for generating an impulse signal of predetermined time duration;

second means connected to said first means for receipt of said impulse signal and operable to change a square waveform of said impulse signal to a non-linear sloping waveform for said time duration of said impulse signal, said non-linear sloping waveform of said second means terminating upon termination of said square waveform of said impulse signal;

third means operatively connected to said second means to vary the gradient of said non-linear sloping waveform within the time duration of said square waveform of said impulse signal to provide a faster or delayed rise of the non-linear sloping waveform from said second means whereby control of the position of a triggering potential therefrom is possible for proper timing of the engine ignition system;

fourth means connected to said third means and energized by the triggering potential to generate a signal within the time duration of said impulse signal and displaced in time from the inception of said impulse signal in accordance with the triggering potential on the non-linear sloping waveform to be of a duration of time within said predetermined time duration of said impulse signal of said first means;

fifth means connected to said fourth means providing a switching signal within said time duration of said impulse signal of said first means;

an ignition coil connected to said electrical source and switching means whereby charging of a primary winding of said coil is controlled by said switching means to control transmission of a high energy potential from a secondary winding of said coil within said time duration of said impulse signal; and

spark plug means connected to said coil to be activated by said high energy potential to provide engine ignition.

3,854,466

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Diedrich Steinberg, Stuttgart; Winfried Jahnke, Ludwigsburg; Helmut Roth, Stuttgart; Walter Ruf, Munchingen; Ulrich Steinbrenner, Stuttgart, and Hans Linstedt, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

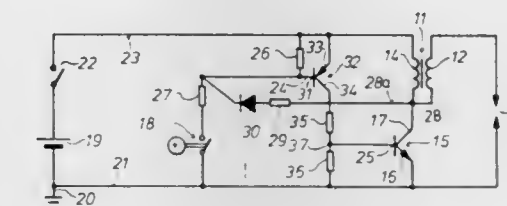
Filed July 19, 1972, Ser. No. 273,185

Claims priority, application Germany, July 24, 1971, 2137204

Int. Cl. F02p 1/00

U.S. Cl. 123-148 E

41 Claims



1. In an ignition system for an internal combustion engine of the type including an ignition transformer comprised of a primary winding and a secondary winding and spark producing means connected across said secondary winding, in combination therewith, a rotary element driven by and rotating in synchronism with the engine; an ignition breaker switch coupled to said rotary element and arranged to be open during first time intervals corresponding to first predetermined ranges of angular positions of said rotary element and to be closed during second time intervals alternating with said first time intervals and corresponding to second predetermined ranges of angular positions of said rotary element; switching means connected in the current path of said primary winding and operative when open for preventing flow of current through said primary winding through such current path and operative when closed for permitting flow of current through said primary winding through such current path; first circuit means connected between said ignition breaker switch and said switching means and normally operative for causing said switching means to open when said breaker switch opens and for causing said switching means to close when said breaker switch closes; and second circuit means connected to said first circuit means and operative if due to faulty operation said breaker switch briefly closes during one of said first time intervals for maintaining said switching means open despite such brief closing of said breaker switch.

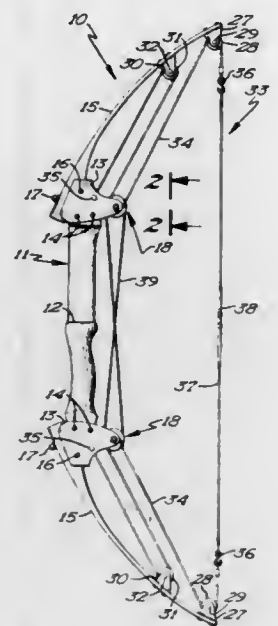
3,854,467

FORCE MULTIPLYING TYPE ARCHERY BOW
 Russell Hofmeister, Waseca, Minn., assignor to Herter's, Inc.,
 Waseca, Minn.

Filed Mar. 14, 1974, Ser. No. 451,212
 Int. Cl. F41b 5/00

U.S. Cl. 124-24 R

4 Claims



1. An archery bow comprising:
 - a. an elongate handle member having spaced apart ends,
 - a pair of elongate resilient limbs connected to the ends of said handle member and projecting outwardly therefrom, said limbs having free terminal ends,
 - a bowstring support means mounted on said limbs adjacent the free terminal ends thereof,
 - a pair of similar eccentric sheaves, each eccentric sheave of said pair of eccentric sheaves being revolvably mounted on said handle immediately adjacent each end thereof, a pair of concentric sheaves, each concentric sheave of said pair of concentric sheaves being fixedly connected to an associated one of said eccentric sheaves and revolvable therewith,
 - a bowstring assembly having opposite free ends thereof connected with said handle and being trained about said spaced apart eccentric sheaves and about said bowstring support means and defining a nocking stretch between said bowstring support means, said nocking stretch being movable between drawn and rest positions, said eccentric sheaves being revolvable in response to movement of the nocking stretch between the drawn and rest positions,
 - an elongate flexible, endless connecting cable trained about said spaced apart concentric sheaves to define a pair of stretches which cross each other and cooperating with said concentric sheaves to cause said eccentric sheaves to rotate in unison in response to movement of the nocking stretch between drawn and rest position.

3,854,468

VORTEX HUMIDIFIER FOR FORCED FLOW HOT AIR FURNACE

Michio B. Nozaki, Lagrange, Ill., assignor to Rheem Manufacturing Company, New York, N.Y.

Continuation of Ser. No. 218,395, Jan. 17, 1972, abandoned.
 This application Sept. 4, 1973, Ser. No. 393,849

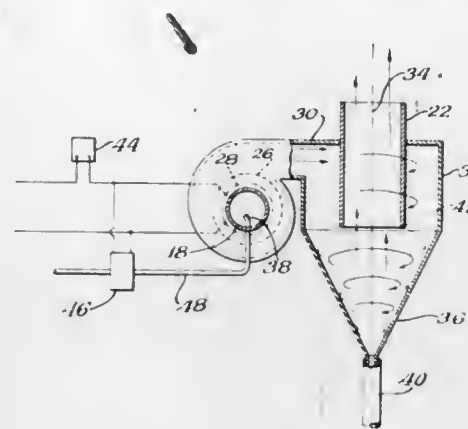
Int. Cl. F24h 3/00

U.S. Cl. 126-113

5 Claims

1. Humidifier apparatus for evaporating water in a heated air flow comprising, in combination:
 - a water supply conduit;
 - a flow passage for heated air;
 - fan means in said passage for moving hot air therethrough;
 - water vaporization means in said passage connected with said conduit for vaporizing water in the flow of hot air;

a vortex chamber connected with said passage down stream from the water vaporization means, said chamber including a frusto conical portion with a wide upper end, a narrow lower end and an axis of revolution, said passage being tangentially connected with said chamber adjacent the upper end to induce a circular flow of hot air and water vapor in said chamber, said chamber also including



an outlet tube extending axially from the interior of said chamber to provide a humidified hot air outlet;
 a drain at the lower end for collecting unevaporated water; and
 means on the interior surface in said frusto conical portion for effectively increasing the surface area of said interior surface to move effectively promote evaporation of water.

3,854,469

EPIURETHRAL VALVE

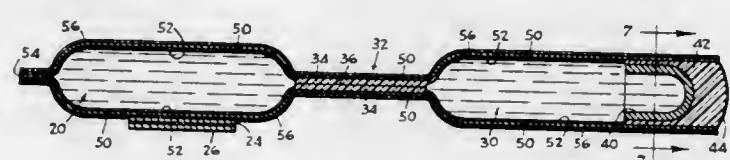
Francis A. Giori, Clarence, and Alvin S. Topolski, Tonawanda, both of N.Y., assignors to Electro Sciences for Medicine, Inc., Clarence, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,602

Int. Cl. A61b 19/00; A61f 01/00

U.S. Cl. 128-1 R

8 Claims



1. A device for controlling the flow of fluid through a physiological vessel such as the flow of urine through the urethra comprising:
 - a. first inflatable means defining a chamber initially containing fluid and adapted to be positioned in operative relation to the outer surface of the vessel;
 - b. second inflatable means defining a chamber for containing fluid, said second inflatable means being of a size sufficient to store fluid initially contained in said first inflatable means;
 - c. pressure responsive valve means joining said first and second inflatable means, said valve means including a single, common passage means for placing said chambers of said first and second inflatable means in direct fluid communication, said passage means being opened when a fluid pressure difference exists between said first and second inflatable means to allow fluid normally to flow at a relatively low rate between said chambers until a pressure equilibrium therebetween exists at which time said passage closes, the time during which said passage is opened being a function of the length and cross-sectional dimension of said passage, and said valve means allowing said passage means to open in a manner allowing fluid to flow at a relatively high rate in response to sufficiently high pressure applied thereto; and

- d. said first and second inflatable means being of predetermined and relative size such that initially a pressure equilibrium condition exists therebetween and said first inflatable means contains a sufficient amount of fluid to apply sufficient pressure against the vessel to prevent flow of fluid therethrough and said second inflatable means while storing fluid initially contained in said first inflatable means applies fluid pressure against said valve means to open said passage means for a return fluid flow at said relatively low rate;
- e. whereby in response to manual pressure applied by the patient through his skin to said first inflatable means fluid is caused to flow at said relatively high rate from said first inflatable means through said passage means of said valve means and into said second inflatable means thereby deflating said first inflatable means to relieve the pressure against the vessel and allow it to permit fluid to flow therethrough and upon release of the pressure applied to said first inflatable means said second inflatable means applies fluid pressure against said valve means thereby allowing fluid to return from said inflatable means through said passage means to said first inflatable means at said relatively low rate whereupon after a predetermined time a pressure equilibrium again exists between said first and second inflatable means and said first inflatable means again contains a sufficient amount of fluid to apply sufficient pressure against the vessel to prevent flow of fluid therethrough.

3,854,470

REPRODUCTION PROCESSES FOR CELLULAR BODIES
 Lynn Lawrence Augspurger, 642 Fairfax, Birmingham, Mich. 48009

Filed Nov. 23, 1973, Ser. No. 418,604

Int. Cl. A61k 17/00, 17/06

U.S. Cl. 128-1 R

100 Claims

1. A process for embryo transplantation for increasing the number of progeny of female omnivorous and herbivorous hoofed mammal donors comprising:
 - inducing superovulation in a desired donor by administration of gonadotrophin,
 - receiving the ova from the donor,
 - placing the recovered ova in tirrus culture medium and storing the recovered ova for a period of time,
 - preparing recipients of prospective transplantations and determining the time of ovulation in the recipients,
 - selecting one or more of the individual ovum or cellular bodies from said stored ova in said culture medium,
 - transplanting selected individual ovum or cellular bodies derived from said donor to a selected recipient at a time corresponding to a synchronization
 - of the individual ovum or cellular bodies transplanted and the time of normal fertilization of the recipient such that the transplant is synchronized at the blastocyst stage in the recipient at the time the recipient would normally implant a blastocyst had the recipient been fertilized.

3,854,471

ULTRASONIC METHOD FOR SYSTEMATIC SEARCH AND DETECTION OF TISSUE ABNORMALITIES

John J. Wild, 1100 E. 36th St., Minneapolis, Minn. 55407

Filed Sept. 15, 1972, Ser. No. 289,359

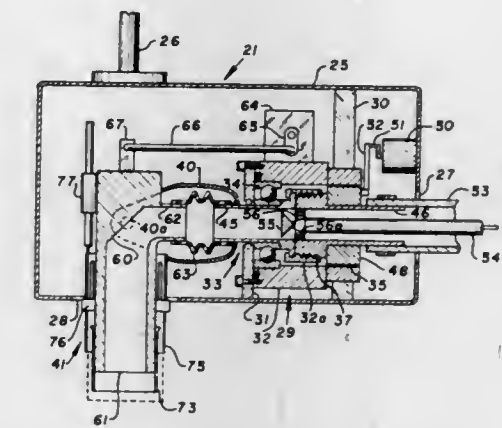
Int. Cl. A61b 10/00

U.S. Cl. 128-2 V

8 Claims

1. Method for systematic examination and detection of tissue abnormalities including:
 - a. providing an ultrasonic energy transmitting source to provide a tissue intercepting beam and receiving source therefor;
 - b. positioning said source in close association to the tissue to be examined;

- c. moving said source in a first predetermined direction over the tissue in a path;
- d. oscillating said beam of energy in a first plane, said first plane being substantially coincident with and in the same direction of movement of said source across the tissue; said oscillating beam of energy being simultaneously transmitted in a second plane generally normal to said first plane and therefore generally normal to the directions of movement across the tissue;



- e. continuing moving the source and its beam oscillations in different but closely adjacent paths;
- f. providing interpretation means for the instantaneous processing and readout of said beam energy receiving means and,
- g. said interpretation means including means for quantitatively reading the energy returned from the tissue whereby conversion of such energy to a delayed visual form is eliminated.

3,854,472

PULSE COMPARATOR

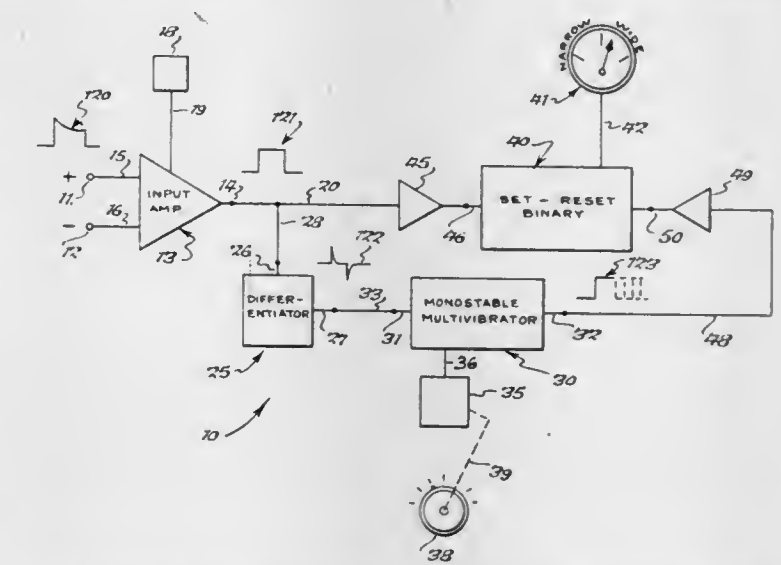
Francis A. Giori, Clarence, and Anthony J. Ditsa, Williams-ville, both of N.Y., assignors to Electro Sciences for Medicine, Inc., Clarence, N.Y.

Continuation-in-part of Ser. No. 84,646, Oct. 28, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 353,118

Int. Cl. A61b 5/04

U.S. Cl. 128-2.06 A

15 Claims



1. Physiological monitoring apparatus for measuring the pulse width of an electrical signal occurring in the body of a patient comprising:

- a. sensing electrode means adapted to be operatively connected to the body of a patient;
- b. comparison means having first and second inputs and responsive to input pulse time duration for providing an indication of relative pulse width, said comparison means including means for maintaining said indication until another input pulse arrives;

- c. means for coupling said sensing electrode means to one input of said comparison means;
- d. means for producing a reference pulse of known time duration, said reference pulse producing means being coupled to adjustable means whereby the time duration of the reference pulse can be varied; and
- e. means for applying the output of said reference pulse producing means to the other input of said comparison means;
- f. whereby said comparison means provides an indication of whether the time duration of the signal occurring in the body of a patient is less than or greater than the duration of the reference pulse and said comparison means maintains the indication until another comparison is made.

3,854,473

STILET FOR ENDOSCOPES

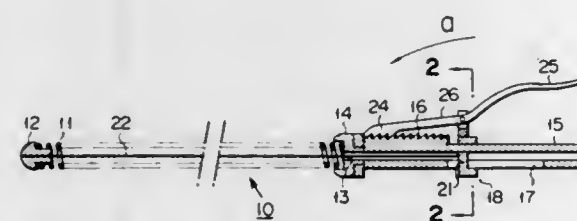
Kazumasa Matsuo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,258

Int. Cl. A61b 1/06, 1/26

U.S. Cl. 128-8

9 Claims



1. A stilet for varying the flexibility of an endoscope comprising:

- a coil spring having a central axis, said coil spring being adapted to be inserted in the flexible tube of an endoscope,
- a retracting wire inserted through the coil spring substantially along said central axis, one end of the wire being operatively connected to one end of the coil spring, and adjusting means provided on the other end of the coil spring and coupled to the other end of the wire to selectively tighten said wire relative to the coil spring to compress adjacent turns thereof closer to each other to stiffen the coil spring, or to retract and loosen the wire relative to the coil spring to render the spring more flexible, thereby selectively adjusting the flexibility of the coil spring and of the flexible endoscope tube in which the coil spring is inserted.

3,854,474

ALL-PURPOSE MASSAGER

Edwin I. Carruth, 1416 Yale St., Fort Worth, Tex. 76114

Filed June 25, 1973, Ser. No. 373,103

Int. Cl. A61h 1/00

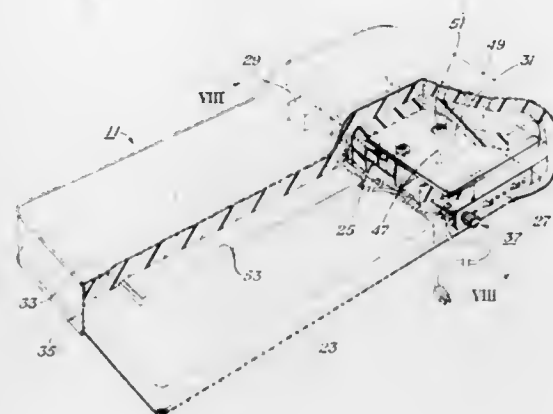
U.S. Cl. 128-33

14 Claims

1. A portable all-purpose massager capable of supplying a plurality of levels of massage intensity comprising:

- a. a base that is more flexible transversely than longitudinally for amplifying vibrations imparted to its lateral center;
- b. a motor-vibrator fixedly connected with said base at said lateral center for imparting vibrations thereto; said motor-vibrator having means for connecting with a power source and having controls that are accessible to a user;
- c. first and second counterweights fixedly attached to said base adjacent each side edge for further amplifying predetermined vibrations imparted to said transversely flexible base;
- d. a head member disposed above said motor-vibrator and said counterweights; said head member also being more flexible transversely than longitudinally for amplifying said predetermined vibrations imparted to its lateral center;

ter; said head member being connected with said base at a plurality of points spaced respectively along respective longitudinally extending lines located one on each side of and laterally intermediate said motor-vibrator and each side edge of said base and said head member;



- e. a layer of padding material on the front side of said base and said head member for effecting a soothing soft side; and
- f. a cover enclosing said layer of padding material and said base; said cover being immediately adjacent said base without intervening padding on the back side of said base for effecting a penetrating hard side.

3,854,475

FEMALE CONTRACEPTIVE DEVICES

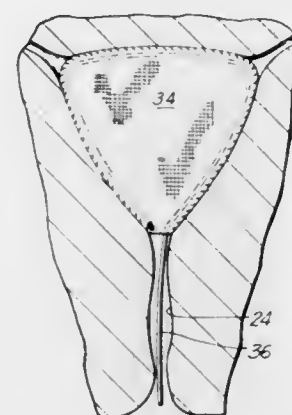
Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,621

Int. Cl. A61H 5/46

U.S. Cl. 128-130

8 Claims



1. For use by an individual having a uterine cavity of a given size and shape, an IUD comprising at least one sheet of filamentary material having said size and shape outside of and independent of the uterine cavity so as to be capable of being situated in said cavity extending completely across the entire uterine cavity, said sheet being composed of longitudinally and transversely extending filamentary elements and said longitudinally extending elements, which extend in the general direction of the mouth of the uterus, including means rendering said longitudinally extending elements capable of longitudinal contraction and expansion in conformity with pulsating movements of the uterus.

3,854,476

INTRA-VAGINAL DEVICE AND METHOD

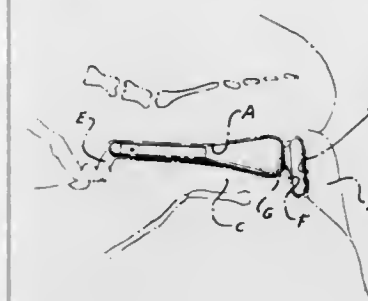
Ben Wade Oakes Dickinson III, 2125 Broderick St., San Francisco, Calif. 94115, and Robert Wayne Dickinson, 40 Maplewood Dr., San Rafael, Calif. 94901

Filed Apr. 5, 1973, Ser. No. 348,204

Int. Cl. A01k 21/00

U.S. Cl. 128-138

18 Claims



13. In a method of contraception employing long-term vaginal retention of a contraceptive device in an animal of the type having a vagina terminating at the posterior end in a normally closed vulva and at the anterior end in a normally closed cervix and having a defined sphincter muscle therebetween, utilizing the contraceptive device which includes an elongate member with an extension element, a flexible posterior disc, and coupling means therebetween, the steps of inserting the device totally within the animal's vagina with said extension element lying along the vaginal axis and with the disc posteriorly directed and contacting the vaginal wall about its periphery adjacent the sphincter muscle which inhibits insertion of the penis of the male, and permitting bypass of fluids, and retaining said device in said inserted position in the animal's vagina with flexing of the disc responsive to movement of the vagina for a substantial period of time for contraception.

3,854,477

APPARATUS AND METHOD FOR THE APPLICATION OF A CONTINUOUS SOMATIC NERVE BLOCK

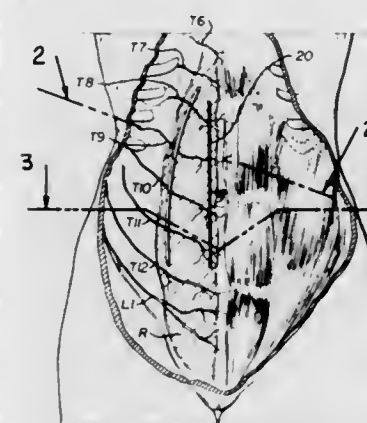
Stuart L. Smith, 8796 W. Colfax Ave., Lakewood, Colo. 80215

Filed Apr. 6, 1973, Ser. No. 348,611

Int. Cl. A61m 5/14, 25/00

U.S. Cl. 128-213

12 Claims



1. A method for placing the porous section of an infusion tube, having a porous section and a non-porous section, in the body wall of a patient, for applying an analgesic to control postoperative pain where somatic nerves are severed by an incision in the patient's body wall, which includes the steps of: a. locating the paths of the nerves severed by the incision and selecting a course in the patient's body wall which traverses the severed nerves between the spinal column and the points of severance, which is spaced from the incision in undamaged tissue and which is located between layers of fascia and/or muscle adjacent to the somatic nerves to minimize disruption of body tissue and the amounts of analgesic needed to reach the nerves;

- b. implanting the porous section of the infusion tube in the patient's body wall at the selected course and alongside the severed nerves, with the non-porous section of the tube extending from the patient's body wall at one end of the course; and
- c. delivering fluid analgesic into the tube whereby the same will flow into the porous section within the patient's body wall and thence to tissue including nerves alongside the porous section of the tube.

3,854,478

MEDICATION SERVER AND GUARD

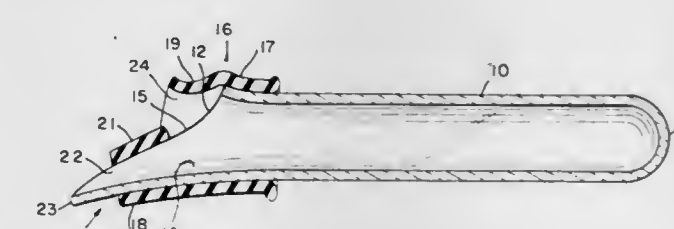
Dortha Cunningham, 2901 E. Hanna, Indianapolis, Ind. 46227

Filed Jan. 18, 1973, Ser. No. 324,670

Int. Cl. A61j 7/00

U.S. Cl. 128-222

5 Claims



1. A medication server comprising a hollow stem closed at one end and merging at its other end with a spoon having a bowl, and a bite strip transversely spanning said bowl substantially at the level of the lateral edges of said bowl and wholly above the bottom of said bowl, said bite strip being provided by a collar circumscribing said stem and extending substantially midway of the length of said bowl and formed to provide an upper, part-peripheral, lip-receiving socket adjacent its distal end and opening into said bowl.

3,854,479

DEVICE FOR ADMINISTERING AN ENEMA

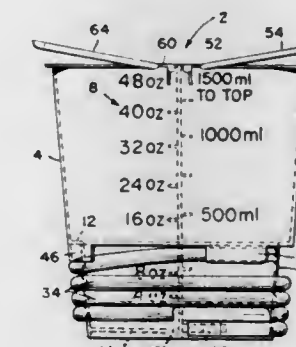
Robert T. Duke, Audubon, Pa., assignor to Fibre Formations, Inc., Philadelphia, Pa.

Filed Mar. 22, 1974, Ser. No. 453,670

Int. Cl. A61m 3/00

U.S. Cl. 128-227

6 Claims



1. A device for administering an enema comprising: a bucket having a bottom, an upper wall, a connected lower wall of a smaller diameter than the upper wall, and a recess in the lower wall adjacent the bottom, a discharge conduit in said recess and in communication with the interior of the bucket, a flexible tube connected to said conduit and coiled about said lower wall between the discharge conduit and the upper wall, and means on one of said walls to releasably hold the outer end of the tube to prevent the tube from uncoiling.

3,854,480

DRUG-DELIVERY SYSTEM

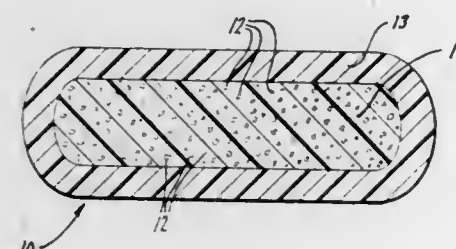
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. Nos. 812,116, April 1, 1969, and Ser. No. 864,175, Oct. 6, 1969. This application June 2, 1970, Ser. No. 42,786

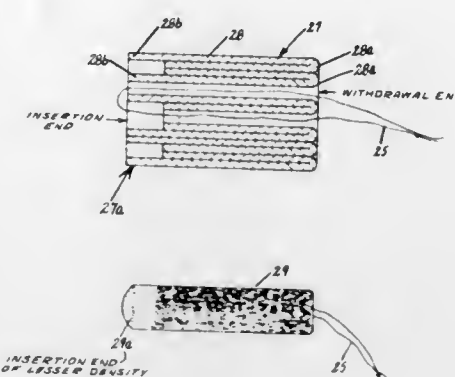
Int. Cl. A61m 5/00

U.S. Cl. 128-260

11 Claims



such amount that the material of said insertion end has a density less than the density of the material of said rolled body



portion, thereby increasing the rate of absorption of said tampon.

3,854,482

UMBILICAL CORD CLAMP

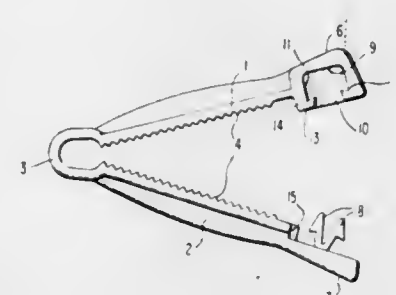
Lorene Laugherty, and James R. Laugherty, both of Knoxville, Tenn., assignors to Avis Research, Inc., Knoxville, Tenn.

Filed Nov. 22, 1972, Ser. No. 308,822

Int. Cl. A61b 17/08

U.S. Cl. 128-346

5 Claims



1. An umbilical cord clamp comprising a substantially V-shaped member including a pair of arms joined together at the apex by a loop integral therewith and forming a hinge between the arms at one end thereof and with the opposite ends being free and normally spaced apart, said arms being movable toward each other to clamp a cord therebetween, and means on the free ends on the arms for latching the arms in clamping relation to the cord, said latching means including a pair of hooks on one arm facing in opposite directions and a box-like socket on the free end of the other arm having an entrance opening facing the hooks, said entrance opening having shoulders on opposite sides thereof in the direction of the hooks, the hooks having diverging shanks of yieldable material and with engaging faces in positions to overlap the respective shoulders when the latching means is in closed relation, said hooks having means thereon in position to engage the shoulders at the entrance opening yieldably to move the hooks toward each other during passage through the entrance opening thereby compressing the hooks toward each other and after passage through the opening the yieldable shanks of the hooks causing lateral expansion thereof apart into overlapping relation with the respective shoulders, the box-like socket being open at the lateral side for access laterally to the hooks.

3,854,481

TAMPON HAVING AN INSERTION END OF LESSER DENSITY THAN THE BODY PORTION

Bernd Messing, Fischertal, Germany, assignor to Dr. Carl Hahn K.G., Dusseldorf, Germany

Continuation of Ser. No. 696,969, Dec. 26, 1967, abandoned. This application Dec. 2, 1970, Ser. No. 94,552

Claims priority, application Netherlands, Jan. 13, 1967, 6700538

Int. Cl. A61f 13/20

U.S. Cl. 128-285

6 Claims

1. A rolled tampon having an insertion end and a withdrawal end, said tampon being made from a continuous non-woven fabric which is rolled about its longitudinal axis thereby forming a rolled body portion, said rolled body portion being radially compressed to a predetermined dense state, said insertion end having a non-woven fibrous portion protruding from said rolled body portion, the material of said insertion end being axially compressed, said axial compression being of

3,854,483

URETHRAL INTRODUCTION CATHETER

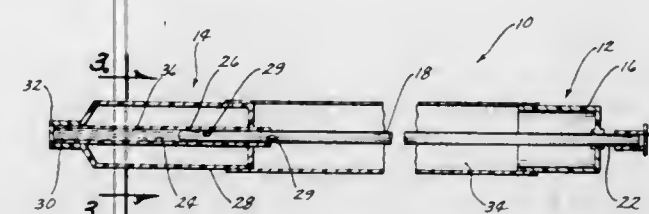
Jerry G. Powers, 1621 Post Dr., Omaha, Nebr. 68114

Filed Oct. 9, 1973, Ser. No. 404,388

Int. Cl. A61m 25/00

U.S. Cl. 128-349 R

7 Claims



1. A urethral introduction catheter comprising, an elongated flexible catheter having distal and proximal ends, a connector secured to said catheter adjacent the proximal end thereof, said catheter having a drain spout portion extending from said connector, an introducer having a catheter introducer end portion extending therefrom, a sterile lubricant in said introducer, the distal end of said catheter being movably received by said introducer and slidably received by said introducer end portion so that the sterile lubricant is pushed from said introducer into the patient's urethra as the catheter is inserted into the patient's urethra, and a flexible sheath secured at its proximal end to said connector and secured at its distal end to said introducer.

3,854,484

ENDOTRACHEAL TUBE WITH LIQUID FILLABLE CUFF

Richard R. Jackson, Eight Trinity Rd., Marblehead, Mass. 01947

Continuation-in-part of Ser. No. 191,708, Oct. 22, 1971, Pat. No. 3,766,927. This application Nov. 28, 1972, Ser. No. 310,129

Int. Cl. A61m 25/00

U.S. Cl. 128-351

11 Claims



1. A tracheal tube device comprising a tube sized for introduction of air through the trachea into the lungs of a living being, a cuff member surrounding and secured to said tube and adapted to be filled with liquid to cause extension of said cuff into sealing contact with tracheal tissue about said cuff to create a seal between said tube and the trachea and a filling lumen extending proximally from said cuff for communication with a source of filling liquid, the improvement wherein said cuff comprises a material which in the presence of said liquid is permeable to air and substantially nonpermeable to said liquid at the normal pressure said liquid exerts upon the interior of said cuff while creating said seal.

3,854,485

TOBACCO COMPOSITIONS COMPRISING MONO-ESTERS OF MONO- AND DIALKYLMALONATES

James D. Mold; Andrew G. Kallianos; Richard E. Means, all of Durham, N.C., and Melvyn I. Simpson, Kentfield, Calif., assignors to Liggett & Myers Incorporated, New York, N.Y.

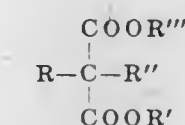
Filed Sept. 24, 1973, Ser. No. 399,981

Int. Cl. A24b 15/04

U.S. Cl. 131-17 R

9 Claims

1. Tobacco smoking compositions comprising tobacco and a small but effective amount of at least one monoester of mono- and di-alkylmalonates having the formula:



wherein R, R' are independently selected from the group consisting of straight or branched-chain alkyl and aralkyl radicals having from one to eight carbon atoms, R'' is either hydrogen or lower alkyl radical having from one to six carbon atoms, and R''' is hydrogen or an alkali or alkaline earth metal.

3,854,486

CIGARETTE MAKING MACHINES

Desmond Walter Molins, London, England, and Francis Auguste Maurice, Neuilly-sur-Seine, France, assignors to Molins Limited, London, England

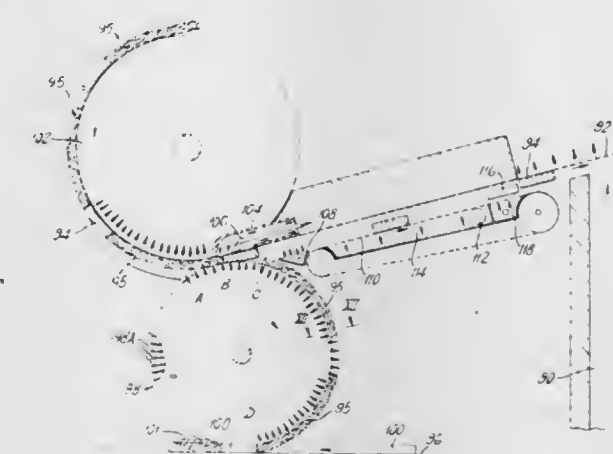
Filed Oct. 27, 1972, Ser. No. 301,567

Claims priority, application Great Britain, Oct. 29, 1971, 50492/71

Int. Cl. A24c 05/52

U.S. Cl. 131-61 A

34 Claims



1. A cigarette-making machine for making filter-tipped cigarettes, comprising an air-pervious first conveyor; a plurality of studs secured to said conveyor at regular intervals forming between them recesses for receiving tobacco, each stud having a pair of end walls facing in opposite directions and the confronting end walls of adjacent studs being arranged to contain and confine substantially the entire end surfaces of the tobacco sections formed between them in said recesses; means for filling the spaces between successive studs with tobacco; means for compressing the tobacco sections between the studs by a differential air pressure; a second conveyor including suction means for receiving the tobacco sections in spaced relation with recesses therebetween and carrying them towards a continuous wrapper web; means for feeding filter sections into the recesses between successive tobacco sections after the tobacco sections have left the first conveyor; and a rod-forming device for enclosing the tobacco sections and filter sections in a continuous wrapper web to form a continuous rod filled successively with tobacco sections and filter sections.

3,854,487

MANUFACTURE OF FILTER TIPPED CIGARETTE
Desmond W. Molins, London, England; Francis A. M. Labbe, Neuilly-sur-Seine, France; Edward G. Preston, and Norman W. Jackson, both of London, England, assignors to Molins Limited, London, England

Filed Oct. 30, 1972, Ser. No. 301,911

Claims priority, application Great Britain, Apr. 27, 1972, 1971/72; Oct. 29, 1971, 50492/71

Int. Cl. A24c 05/52

U.S. Cl. 131-61 A

5 Claims



1. A cigarette making machine for making filter-tipped cigarettes, including means for forming a continuous tobacco stream on a segmented wheel comprising a plurality of segments which total less than 360° and are movable relatively to one another about the axis of rotation of the wheel; a drive member for said wheel, and a crank member associated with each segment of the wheel, each crank member being pivotally connected to the drive member and having a first arm which carries a cam follower arranged to cooperate with a fixed cam extending around the axis of rotation of the wheel, and a second arm formed with gear teeth which engage with gear teeth on a part connected to the corresponding segment, whereby pivotal movement of the crank member in response to action of said cam and cam follower causes relative movement of the segments by accelerating and decelerating each segment when the wheel is rotated by said drive member, so that the segments are adjacent to one another in one region where the continuous tobacco stream is formed on them, and are spaced apart at a second region so as to form spaced tobacco sections; and means for inserting filter sections into the spaces between successive tobacco sections.

3,854,488

CIGARETTE HOLDER WITH TAR COLLECTING MEANS
Katsuhisa Terasaki, No. 43 Okimiyacho, Edogawa-ku, Tokyo, Japan

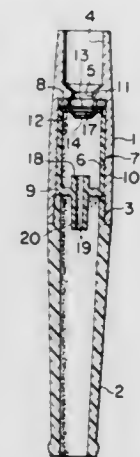
Filed Feb. 13, 1973, Ser. No. 332,155

Claims priority, application Japan, May 2, 1972, 47-51235

Int. Cl. A24f 13/06

U.S. Cl. 131-210

7 Claims



1. A cigarette holder comprising a cigarette holding member and a mouth piece member, both of said members being removably engaged with respect to each other and defining a smoke passage extending therethrough, and a tar collecting cartridge provided within said smoke passage, said tar collecting cartridge being composed of a substantially cylindrical

vessel open at one end and having a substantially restricted opening at the other end thereof and first and second disc members mounted in the open end portion of said vessel to substantially close said open end, said first disc member having at least one small opening adapted to introduce a smoke stream into said cartridge at a high speed by constricting the same, said second disc member being mounted in close proximity to said first disc member and having a portion thereof displaced with respect to the remaining portion toward said other end of the cartridge so as to form two lateral outlet ports at the opposite sides thereof, said displaced portion providing a smoke impinging surface against which the smoke stream constricted by the opening of said first disc member impinges, said outlet ports providing openings through which the smoke stream passes after it has impinged against said displaced portion.

3,854,489

HAIR STYLING APPLIANCE

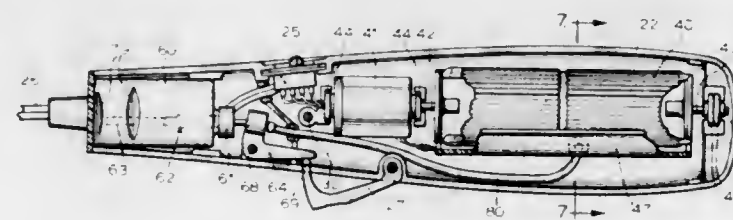
Edward J. Doyle, Hatboro; Earle Landis, Leola, and Mieczyslaw Saganowski, Lititz, all of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Oct. 12, 1972, Ser. No. 297,019

Int. Cl. A45d 24/00

U.S. Cl. 132-11

6 Claims



1. A hair styling appliance for simultaneously applying a liquid spray and hot air stream to hair as it is combed or brushed, comprising, in combination:
a housing;
a nozzle for injecting a mist into said hot air stream;
a liquid reservoir;
means comprising a manually actuatable liquid pump communicating with said reservoir for drawing liquid therefrom;
pump actuator means for actuating said pump;
means comprising a liquid passageway extending between said pump and said nozzle for supplying liquid under pressure to said nozzle; and
means comprising a pressure relief valve disposed within said liquid passageway adjacent the discharge end thereof for inhibiting the flow of said liquid through said passageway when said pump is not being actuated to prevent the unintentional discharge of liquid into said air stream.

3,854,490

AUTOMATIC MONEY DISPENSING MACHINE

Yoshihiro Hatanaka; Hideto Shigemori, and Hisashi Kitagami, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Hyogo-ken, Japan

Continuation-in-part of Ser. No. 213,401, Dec. 29, 1971, Pat. No. 3,756,256. This application Sept. 4, 1973, Ser. No. 393,822

Claims priority, application Japan, Dec. 29, 1970, 45-121648; Sept. 30, 1971, 46-75863

Int. Cl. G07d 1/00

U.S. Cl. 133-4 A

3 Claims

1. An automatic money dispensing machine for dispensing a required amount of money specified by an operator and comprising:

first selector means for selecting said required amount of money to be dispensed and providing a first output signal representative thereof;
second selector means for selecting a monetary denomination of a particular monetary unit, of which said required

amount of money is to be composed and providing a second output signal representative thereof;
storage means for storing said first output signal and providing a third output signal representative of said required amount of money stored therein;
money issuing control section means operatively responsive to said first output signal and said second output signal and providing control signals representative thereof;
money issuing means operatively responsive to said control signals for issuing money according to said required amount and said specified monetary denomination;

followed by an enlarged opening to obtain final opening of said diaphragm.

3,854,492

GEAR TYPE FLOW DIVIDER

Yasuo Kita, Kyoto, Japan, assignor to Shimadzu Seisakusho, Ltd., Kyoto, Japan

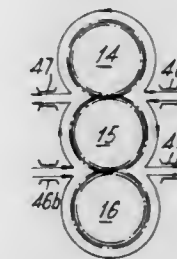
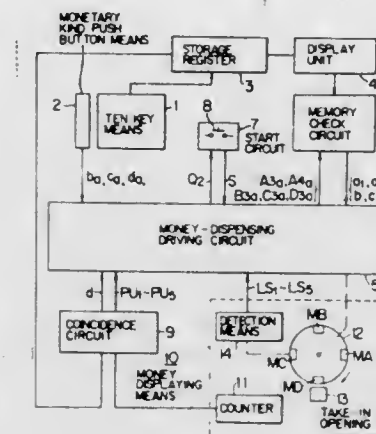
Continuation of Ser. No. 299,590, Oct. 20, 1972, abandoned, which is a continuation of Ser. No. 59,280, July 29, 1970, abandoned. This application Dec. 28, 1973, Ser. No. 429,325

Claims priority, application Japan, July 31, 1969, 44-73125

Int. Cl. F01c 1/18

U.S. Cl. 137-99

7 Claims



1. A flow divider for dividing an inflow fluid into a plurality of outflow fluids of substantially the same flow rate regardless of the difference in pressure acting on the outflow fluids comprising a casing having a side wall body and end closures, said casing having at one of said end closures both a plurality of fluid inlets and a plurality of fluid outlets, said fluid inlets being adapted to be connected to a single fluid supply line to form a manifold, a gear train located within said casing, said gear train comprising at least three intermeshing rotatable gears, each adjoining pair of which constitute a gear motor and pump structure having a low pressure side and a high pressure side wherein said low pressure side and said high pressure side being communicated to their own corresponding inlet and outlet formed in said one of said end closures of said casing, respectively, for rotation in unison of said intermeshing gears as fluid passes therethrough and wherein one adjoining pair of said intermeshing gears is adapted to function as a motor while the other of said adjoining pair of intermeshing gears functions as a pump in response to a difference in pressure acting on the outflow fluids, said intermeshing gears having their peripheries spaced from the inner wall of said side wall body, gear periphery sealing means for each inlet and outlet side of each adjoining pair of said gears covering the periphery portions of said gears near their meshing areas, said gear periphery sealing means having arcuate concave sealing surfaces corresponding to the addendum circles of said gears and having a running clearance therewith for free and smooth rotation thereof, a pair of thrust plates on the opposite sides of said gear train, each of said thrust plates having peripheral portions for receiving said gear periphery sealing means so that said gear periphery sealing means are maintained in position by bridging it between said two thrust plates, said peripheral portions being shaped to receive said sealing surfaces in sealing relationship.

3,854,491

CONTROLLED OPENING, VARIABLE ORIFICE, EXPLOSIVELY ACTUATED VALVE

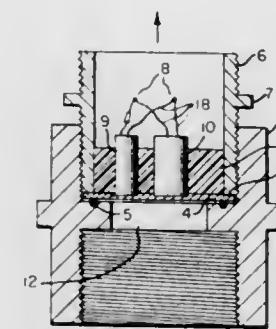
Paul J. Bryan, Hewitt Post Office, and Ronald F. McConnell, Pompton Lakes, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 3, 1972, Ser. No. 214,839

Int. Cl. B60r 21/08

U.S. Cl. 137-1

5 Claims



1. A valve comprising a body having a passage therethrough which passage provides an inlet and an outlet for fluid under pressure, a fluid-impermeable diaphragm closing said passage to the movement of said fluid, a plurality of electrically actuated and explosively operated devices adapted to perforate said diaphragm, means to sequentially activate said devices thereby producing an initial opening of the diaphragm which is smaller than that of the final opening in said diaphragm

3,854,493
VALVE CARTRIDGE
Gerald J. Farrell, Elmhurst, Ill., assignor to Elkay Manufacturing Company, Broadview, Ill.

Filed Dec. 11, 1972, Ser. No. 313,824

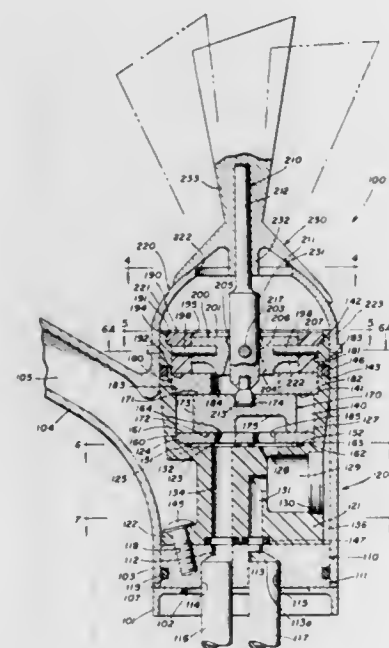
Int. Cl. F16k 11/06

U.S. Cl. 137-360

9 Claims

1. A valve cartridge for use in a faucet casing defining a cylindrical enclosure receiving said valve cartridge and closed at one end by a base and at the other end receiving an operating handle therethrough and having a water spout extending from the side of the casing and communicating with the en-

sure therein, at least one water inlet extending through the casing base, said valve cartridge comprising a generally cylindrical housing fitting within the cylindrical enclosure of the associated faucet casing and including a base integral therewith and disposed against the casing base and having a chamber therein, an inlet port in said housing base interconnecting the water inlet in the casing base with said chamber and an outlet port in said housing interconnecting said chamber and the interior of the cylindrical enclosure and the spout of the associated faucet casing, valve means in said chamber for



controlling the quantity of fluid delivered from said inlet port to said outlet port, and an operating handle mounted on said housing for controlling said valve means and extending through the other end of the associated faucet casing to an exposed position for grasping by a user, a recess in the side of said housing adjacent to said housing base and defining therewith flange means disposed on the associated casing base, said flange means having a plurality of openings extending there-through for receiving fasteners to mount said valve cartridge upon the associated casing base within the associated faucet casing.

3,854,494 SAFETY VALVE

John Richard Zahorsky, Norwood, Mass., assignor to Crosby Valve & Gage Company, Wrentham, Mass.

Filed Feb. 4, 1974, Ser. No. 439,437

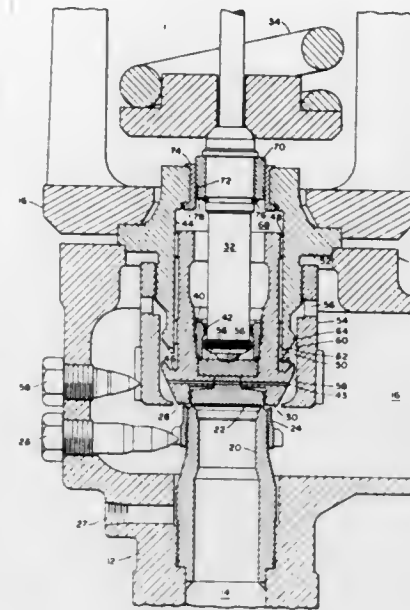
Int. Cl. F16k 17/04

U.S. Cl. 137-472

9 Claims

1. A safety relief valve having, in combination, a body having inlet and outlet passages, a valve seat communicating with said passages and a sleeve coaxial with the seat, said sleeve having a guide ring forming an axially adjustable extension thereof with a port through the guide ring communicating with the outlet passage, and a valve head slidable with clearance in the sleeve having a stem slidable relative to said body with a portion in position to close upon said seat, said valve head and sleeve

defining a chamber, said sleeve having an outer venturi end surface forming a first passage communicating with



said port and narrowing in the direction from the interior of the guide ring toward the outlet passage.

3,854,495 PRESSURE REGULATOR

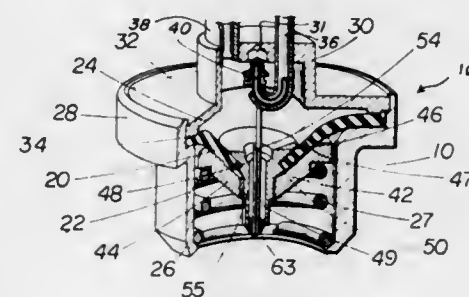
John James Cowley, 235 Carmichael Ave., Toronto, Ontario, Canada

Filed May 8, 1972, Ser. No. 250,868

Int. Cl. F16k 31/365

U.S. Cl. 137-505.44

4 Claims



1. Gas flow regulator including:

a casing,
a metal tube having an open end for connection to a high pressure gas source,
said tube ending in a resiliently deformable straight metal extent terminating in said open end,
a seat member defining therein a closed well with an inner bore defined by a metal wall to receive said straight tube portion in said well bore with predetermined clearance; said metal wall being tapered substantially up to said seat to provide that the said predetermined clearance from such tube will be decreasing in the direction approaching said seat,

whereby said resiliently deformable tube and the tapering wall interact to provide a throttling action on gases passing therebetween, and so that such throttling action will increase as said tube open end approaches said seat, material of lesser hardness than the tube and of lesser hardness than the metal wall located in the base of said well, shaped to form a seat for said tube open end, means defining a chamber to receive gas originating with said tube and emerging from said well,
a pressure responsive linear actuator responsive to the pressure in said chamber relative to pressure exterior thereto and connected to relatively move said tube open

end away from said seat when said relative pressure in said chamber falls below a predetermined value and to relatively move said tube open end into contact with said seat when said relative pressure in said chamber rises above a predetermined value.

3,854,496 RETURN VALVE

Jurgen Broszeit, Bremen, Germany, assignor to Gustav F. Gerds KG, Bremen, Germany

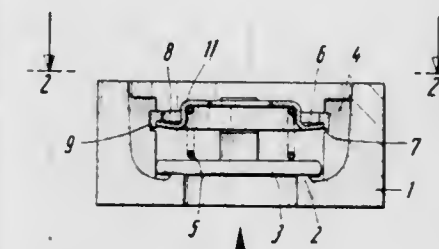
Filed Oct. 1, 1973, Ser. No. 402,416

Claims priority, application Germany, Nov. 30, 1972, 22586421

Int. Cl. F16k 15/02

U.S. Cl. 137-540

5 Claims



1. A valve comprising

a housing having a valve seat surrounding an inlet opening;
a valve plate disposed over said opening for coaction with said valve seat;
a plurality of axial ribs on the interior of said housing with each of said ribs having a transverse groove thereacross;
a radially slotted fastening ring yieldably engaging the groove of each of said ribs;
spring means having one end bearing on said valve plate;
a circular abutment plate supporting the opposite end of said spring means and serving as a stop for limiting the movement of said valve plate; and
said abutment plate having a central aperture therethrough and an open slot extending from said aperture to the rim of said abutment plate with substantially the entire circumference of said rim in pressing engagement with the internal cylindrical surface of said ring for firmly mounting said abutment plate in said ring and firmly mounting said ring in said grooves.

3,854,497 COMBINATION SHUT-OFF VALVE AND FLOW CONTROL VALVE WITH SIDE ACCESS AND VIEWING PORT FOR OBSERVATION, TESTING AND ON-LINE SERVICING

David Rosenberg, Los Angeles, Calif., assignor to Sydney Lampert, Studio City and Herman Wertheimer, Encino, both of Calif., part interest to each

Filed July 1, 1971, Ser. No. 158,931

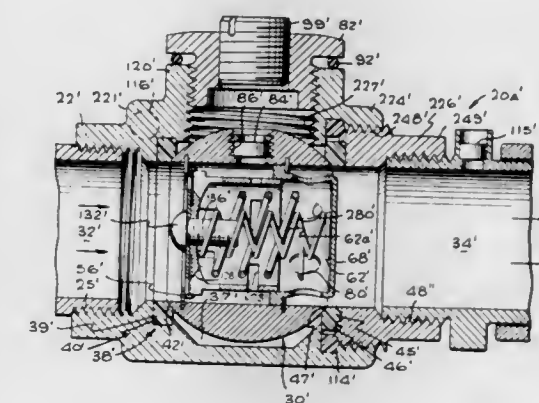
Int. Cl. F16k 31/12

U.S. Cl. 137-557

15 Claims

1. Combination shut-off valve and flow-control valve with side access and viewing port for observation and on-line servicing comprising a valve casing having an inlet passage and an outlet passage, a rotatable valve member positioned in said casing between said inlet and outlet passages, said valve member being capable of being turned into different angular positions including a flow-control operating position and shut-off position, said valve member having a bore extending there-through for permitting liquid flow to occur between said inlet and outlet passages when said valve member is turned into its flow-control position in which said bore communicates with both said inlet and outlet passages, flow-control means in said bore for controlling the liquid flow through said bore, said valve member shutting off both said inlet and outlet passages

when said valve member is turned into its shut-off position in which said bore is angularly displaced away from said inlet and outlet passages, said casing having a side access port therein providing access to said valve member, openable closure means normally closing said side access port and capable of being opened for permitting access through said port to said valve member, a window in said valve member permitting observation of said flow-control means in said bore, said window being positioned in alignment with said access port when said valve member is turned into its flow-control position for providing visual inspection of said flow-control means through said side access port while said combination valve remains



on-line in flow-control operation, and said bore being positioned in alignment with said side access port when said valve member is turned into its shut-off position for providing access to said flow-control means through said side access port for servicing said flow-control means while said combination valve remains on-line in its shut-off position, said flow-control means in said bore including plunger means movable downstream in said bore, spring means urging said plunger means in an upstream direction, and said plunger means including visible characteristics on its side such as scribed lines, graduations, side openings or the like which are observable through said window for visually determining the operating position of said plunger means.

3,854,498 GAS SUPPLYING APPARATUS

Emil Uecker, Hamburg, Germany, assignor to Albert Hoffmann, Westrauderfeh and Hans Spechtmeyer, Leer, both of Germany

Filed July 9, 1973, Ser. No. 377,354

Claims priority, application Germany, July 25, 1972, 2236404

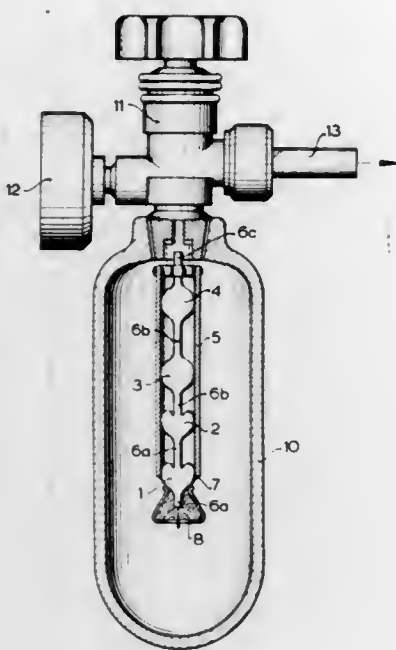
Int. Cl. F16k 47/00

U.S. Cl. 137-544

14 Claims

1. A medical (An) apparatus for supplying gas at a reduced pressure from (a) an oxygen bottle pressure vessel containing a pressurized gas and having an outlet valve fitted thereon comprising:
an oxygen bottle;
a plurality of nozzle means arranged in said oxygen bottle; and
a plurality of stacked spaced-apart chamber means communicating with and disposed so as to be alternately supported between said plurality of nozzle means, one of said plurality of nozzle means being an inlet nozzle communicating with the gas under pressure in said oxygen bottle and another of said plurality of nozzle means being an outlet nozzle communicating with (the) said outlet valve

to thereby provide an expansion path for the gas from the inlet to the outlet nozzle as it proceeds alternately



through said plurality of nozzle means and chamber means.

3,854,499 VALVE

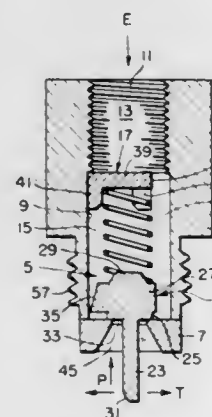
Donald A. Sievenpiper, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,653

Int. Cl. F16k 11/00

U.S. Cl. 137-596.2

12 Claims



3,854,500 GATE VALVE

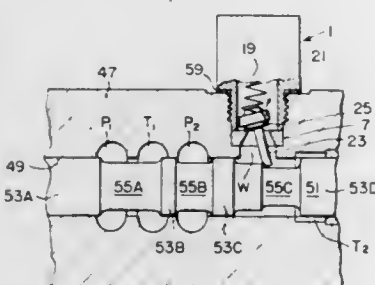
Thomas H. Cooper, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1972, Ser. No. 319,592

Int. Cl. F16k 3/30

U.S. Cl. 137-601

1 Claim



1. In a hydraulic system comprising a control valve including a core member having a bore which slidably retains a spool means through or about which hydraulic fluid is capable of controlled flow by reciprocation of the spool in the bore, at least one fluid input port, tank port, and work port, said ports being in the walls of said bore and communicating with said spool, and a check valve located within said work port, said check valve comprising a housing member, a valve mechanism, and a valve seat,

said housing member comprising walls which define a fluid path, said valve mechanism being located in said path, said valve mechanism comprising a spring means, a spring retaining member, a sealing means, and a stem means for tilting said sealing means, said sealing means being free to move in a first direction of flow through said valve against the bias of said spring means,

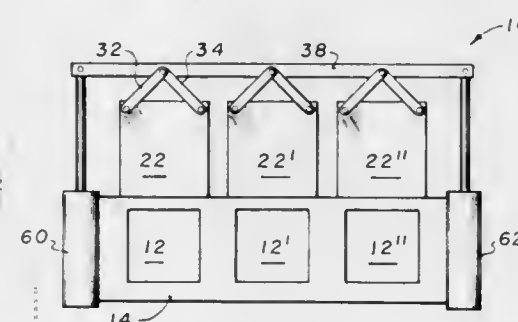
said valve seat being positioned against flow in said housing member path, and said spring means normally biasing said sealing means into sealing engagement with said valve seat,

said housing member path comprising a relatively large valve mechanism retaining chamber and a relatively smaller orifice, said spring retaining member being located at the point of communication of said retaining chamber and said smaller orifice, said spring means being a coil spring, one end of which contacts said spring retaining member while the other end contacts said sealing means,

said sealing means comprising a seat member, a guide means, and a coil spring centering means, said seat member being of a diameter larger than said valve seat orifice, said guide means being of a diameter only slightly less than the diameter of said chamber and said coil spring centering means being of a diameter only slightly less than the inner diameter of said coil spring,

said guide means comprising a guide plate of a cross-sectional shape different from that of said retaining chamber, said other end of said coil spring contacting the guide plate said seat member being located on said guide plate and in flow intercepting communication with said valve seat orifice, and said spring centering means being located on said guide plate and extending into the cone defined by said coil spring a distance sufficient to retain said spring in its centrist position when said sealing means is tilted,

said spool including at least one groove located in flow communication with said work port, and at least one land adjacent said groove, said stem means extending through an orifice in said valve seat a sufficient distance such that when said spool is reciprocated so as to isolate said work port from said input port and bring said groove into flow communication with said tank port, said land moves said stem in a direction substantially perpendicular to flow through the check valve thereby tilting said sealing means so as to place said check valve in flow communication with said tank port.



1. A gate valve for controlling flow of fluid under pressure comprising:
a. a plurality of gates arranged in parallel;

- b. a plurality of valve bodies for receiving said gates;
- c. means on said valve bodies for providing a labyrinth seal between said gates and said valve bodies;
- d. means for moving said multiparallel gates in their planes between and across said labyrinth seal means for valve closing and opening;
- e. means pivotally interconnecting said gates and said moving means at one point for each gate, said point for each gate lying along a line passing through an individual gate's center of mass parallel to the direction of movement of said gate, for transferring the force generated by said valve opening and closing means to said gates; and
- f. fluid support means positioned at the downstream side of said gates for reducing sliding friction between said gate and said valve body when opening and closing said gates by lifting said gates against said fluid pressure.

3,854,501 ANTILOCK BRAKE SYSTEM AND CONTROL VALVE THEREFOR

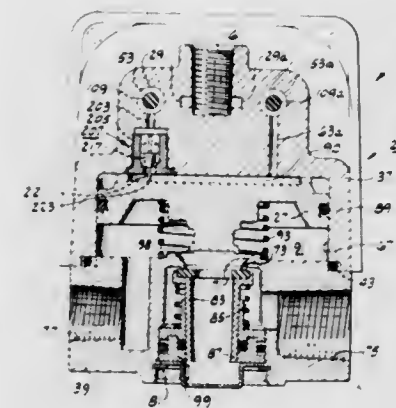
John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed June 14, 1973, Ser. No. 369,966

Int. Cl. B60t 8/12

U.S. Cl. 137-627.5

46 Claims



1. A control valve for an antilock brake system comprising a housing, means movable in said housing in response to control fluid pressure applied thereto between an inoperative position and an operative position for effecting the application through said housing of fluid pressure supplied thereto; and other means movable in said housing to a position predeterminedly restricting the applied flow of control fluid pressure to said first named means upon movement thereof to its operative position, said other means comprises means for engagement with said first named means in its inoperative position thereby to urge said other means to a substantially non-restricting position in said housing.

3,854,502 METHOD AND APPARATUS FOR AN EQUALIZING VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Continuation of Ser. No. 214,685, Jan. 3, 1972, abandoned.

This application July 23, 1973, Ser. No. 381,481

Int. Cl. F16k 11/16

U.S. Cl. 137-629

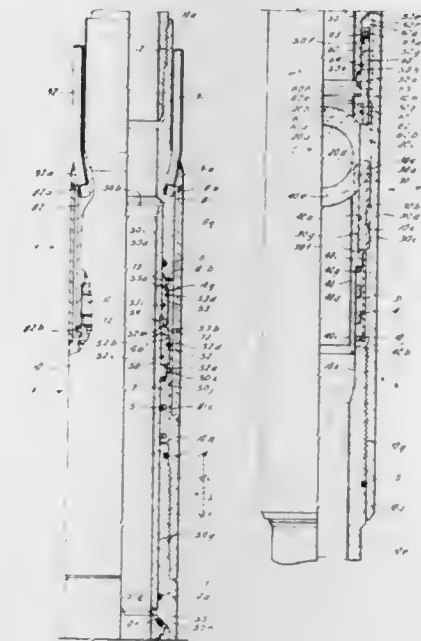
13 Claims

1. A subsurface safety valve adapted for mounting with a well conduit for controlling flow of fluid through the well conduit at a subsurface location in the well including:

- a. a flow housing having a bore therethrough communicating with a flow passage of the well conduit above and below the safety valve;
- b. bore closure means mounted with said flow housing for movement to and from an open position for enabling flow of fluid through the flow passage and a closed position for

blocking flow of fluid through the flow passage of the well conduit;

- c. means with said flow housing for effecting operating movement of said bore closure means to and from the open and closed positions, said means for effecting movement moving said bore closure means to the open position in response to a first control signal communicated from the surface through a first control means;
- d. fluid pressure equalizing means for enabling desired fluid communication about said bore closure means when said



bore closure means is in the closed position to substantially balance the urging of the fluid pressure on said bore closure means; and

- e. means for operating said fluid pressure equalizing means to equalize the fluid pressure about said bore closure means in response to a second control signal communicated to said flow housing from the surface through a second control means independent of the well conduit and said first control means wherein fluid pressure urging on said bore closure means may be equalized.

3,854,503 FLAME TUBES

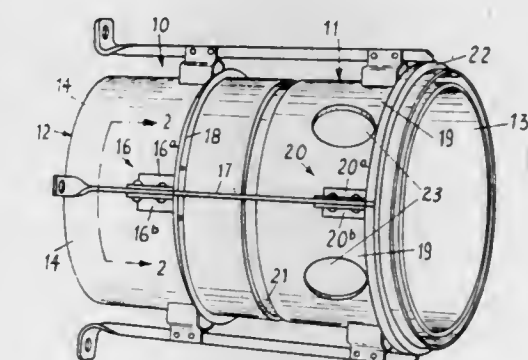
Tom Worsley Nelson, Crawshawbooth; Gordon Sedgwick, Nelson, and Roy Lindop, Bolton, all of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 5, 1971, Ser. No. 169,449

Int. Cl. F15d 1/00; F23d 15/02

U.S. Cl. 138-37

23 Claims



1. A flame tube for a gas turbine engine, comprising a first tube member of ceramic material having openings at both ends, one of the said openings forming an inlet for the flame tube, a baffle within the inlet and adapted to direct air enter-

ing the inlet against the wall of the first tube member, an axially aligned second tube member spaced from the end of the first tube member remote from the said inlet and having at its end remote from the inlet an opening which forms the flame tube outlet, a plurality of passages for air in the wall of the second tube member, and clamping means engaging both of the tube members to maintain them in aligned spaced relationship, the said clamping means permitting differential thermal expansion between the clamping means and the tube members.

3,854,504

MULTI-LAYERED PLASTIC PIPE

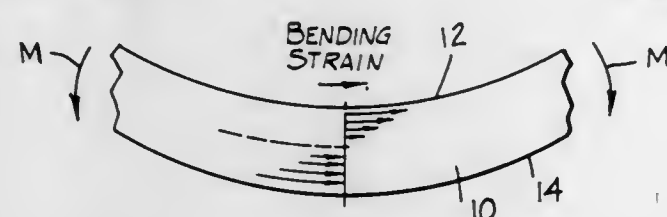
Robert S. Morrison, Piscataway, N.J., and Jack E. Hesse, Englewood, Colo., assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,323

Int. Cl. F16I 9/12

U.S. Cl. 138-141

7 Claims



1. A plastic pipe especially suitable for carrying acidic and alkaline solutions underground, said pipe comprising:

- an inner circumferential layered section, including organic yarn adapted to be exposed to said solutions;
- an outer circumferential layered section including glass fibers; and
- a circumferential protective barrier including reinforced organic laminate positioned between and separately bonded to said inner and outer circumferential layers, said barrier being approximately located at points of minimum bending strain along the cross-section of the pipe so as to minimize the possibility of crazing to the barrier by said bending strain.

3,854,505

SHUTTLELESS LOOM GRIPPERS

Jean Duplessy, "Le Sommet", 5 bis, rue J. B. Simon, Sainte-Foy Les-Lyon, France

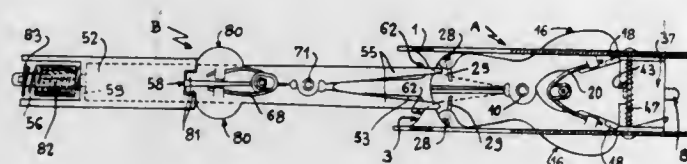
Filed Apr. 27, 1973, Ser. No. 355,008

Claims priority, application France, Apr. 27, 1972, 72.15999

Int. Cl. D03d 47/20

U.S. Cl. 139-122

8 Claims



1. In a loom on which the insertion of weft threads into successive sheds is accomplished by two gripper rapiers, a feed gripper A and a take-off gripper B which, starting from opposite sides, meet in the middle of a shed where the feed gripper A transmits to the take-off gripper B, a weft thread which it has drawn from a fixed supply located on one side of the loom, and characterized in that the grippers penetrate each other when they meet in the middle of the shed; each gripper being provided with a cooperating means (29, 62) which while said grippers are in the prolongation of each other act to mutually interlock at the beginning of the return run of said grippers so as to ensure the alignment thereof; to open gripper A to release the weft thread, and to close gripper B on

to the same weft thread, said actions being brought about by the opposite pull of said grippers.

3,854,506

GRIPPER SHUTTLE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

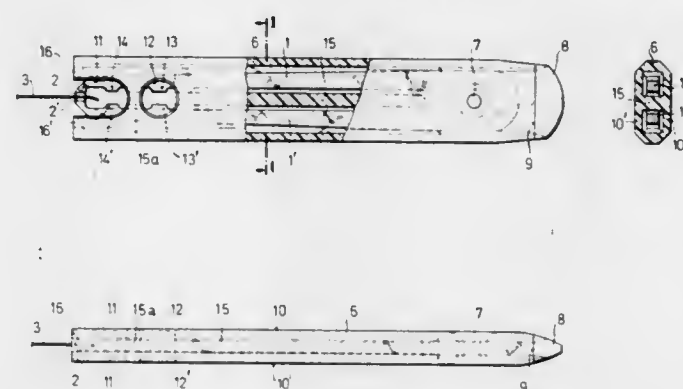
Filed May 23, 1973, Ser. No. 363,151

Claims priority, application Switzerland, May 26, 1972, 7814/72

Int. Cl. D03j 5/06

U.S. Cl. 139-125

10 Claims



1. A gripper shuttle for picking weft yarns in a weaving machine comprising a housing, a gripper clamp mounted within said housing having means for gripping a weft yarn, and a stay-like longitudinal partition extending within said housing over at least some of the length of said housing for reinforcing said housing.

3,854,507

FRACTION DISPENSER

Masanari Nishioka, Fumio Tomatsu, and Ryuzoo Fukami, all of Osaka, Japan, assignors to Kabushiki Kaisha Toyo Seisakusho, Osaka, Japan

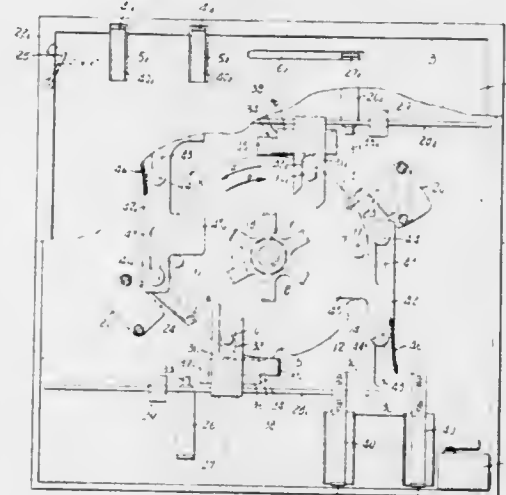
Filed Aug. 3, 1972, Ser. No. 277,785

Claims priority, application Japan, Aug. 4, 1971, 46-58800

Int. Cl. B65h 43/56

U.S. Cl. 141-130

8 Claims



1. A fraction dispenser comprising:
1. a plurality of receptacles supported in a plurality of racks;
2. means for dispensing samples into said receptacles as they are individually positioned under said dispensing means; and
3. means for shifting said plurality of racks in lateral and longitudinal directions to position said racks with respect to said dispensing means so that the receptacles of respective racks are sequentially individually positioned under said dispensing means, said shifting means comprising:

- driving means;
- a cam having projection means thereon and rotatably connected to said driving means;
- first means operative to be selectively engaged by said projection means and operative in response to rotation of said cam to shift said racks in the longitudinal direction;
- second means operative to be selectively engaged by said projection means and operative in response to rotation of said cam to shift said racks in the lateral direction; and
- means associated with said cam, and driving, first and second means operative to control rotation of said cam to selectively engage said first and second means.

3,854,508

AUTOMATED SAMPLE-REAGENT LOADER

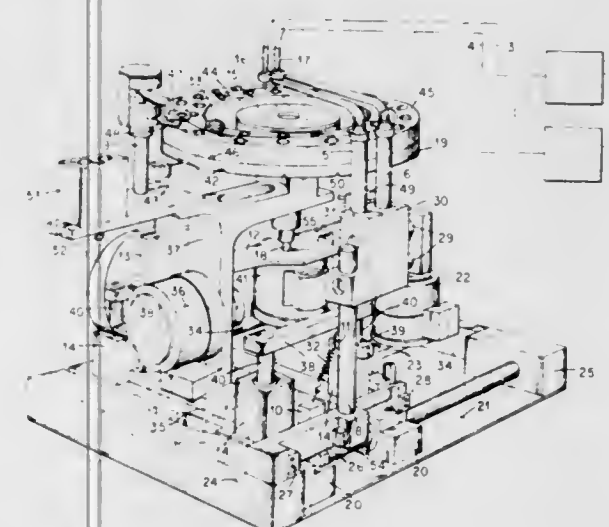
Carl A. Burtis, Knoxville; Wayne F. Johnson, Loudon, and William A. Walker, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 13, 1973, Ser. No. 350,860

Int. Cl. B65h 43/60; G01n 1/10

U.S. Cl. 141-130

4 Claims



1. An automatic loader for loading a photometer analyzer rotor provided with a plurality of cavities, comprising a rotor table for holding said rotor at the center thereof during a loading operation; an inner ring provided with a plurality of holes for receiving and holding a plurality of respective reagent cups, said ring adapted to be positioned on said table and encompassing said rotor; an outer ring provided with a plurality of holes for receiving and holding a plurality of respective sample cups, said outer ring adapted to be positioned on said table encompassing said inner ring such that respective pairs of said reagent cups and sample cups are in radial alignment with corresponding cavities in said rotor; a base plate; a pair of horizontal slide rods mounted on said slide rods; a first pipette support member affixed to said base plate; a second pipette support member slidably supported by said first support member to provide slight relative motion therebetween; an off-center spring mounted between said second pipette support and said support mechanism to effect said slight motion when said support mechanism is moved from one limit position to another limit position; four vertical slide rods mounted on said support mechanism, each of said vertical slide rods being spaced apart each from the other at a given distance; respective slide members encompassing respective ones of said vertical rods; a respective horizontal bracket member extending between and affixed to respective pairs of said slide members; an L-shaped bracket having a vertical portion and a horizontal portion and being affixed to one of said bracket members; a vertical motion synchronous motor affixed to the vertical portion of said L-shaped bracket, the

horizontal portion of said L-shaped bracket supporting said rotor table on the top thereof, a first crank arm coupled between said vertical motion motor and said support mechanism; a first pair of limit switches mounted on said support mechanism for sensing the limits of vertical travel of said L-shaped bracket and rotor table; a synchronous table motor mounted beneath the horizontal portion of said L-shaped bracket and supported thereby and being coupled to said rotor table; a horizontal motion synchronous motor mounted on said base plate; a second crank arm coupled between said horizontal motion motor and said slidable support mechanism; a second pair of limit switches mounted on said first pipette support member for sensing the limits of horizontal travel of said table support mechanism; a plurality of indexing notches provided in the underside of said rotor table; an indexing switch for sequentially engaging each of said notches during said loading operation; a pair of automatic pipettes provided with respective tips and coupled to respective ones of said pipette supports; electrical control means mounted on said base plate connected to and controlling said vertical motion motor, said synchronous table motor, said horizontal motion motor, and said automatic pipettes; said control means being provided with a RUN/RESET switch and a START switch, whereby said control means under control of said switches is adapted to effect the bringing of the table and one of said sample cups and one of said reagent cups underneath the pipette tips, effect the bringing of said cups to said tips by upward table movement, effect the drawing of liquids from said cups by said automatic pipettes, effect the bringing of said cups and table down, effect the movement of the table horizontally over to bring the rotor cavities under said tips followed by an upward movement of said table to bring said cavities to said tips, and effect the dispensing of said drawn liquids into said cavities by said automatic pipettes after which said table is brought down, effect the rotating of said table to its next indexed position and sequentially effecting a repetition of the above procedure until all of the rotor cavities are filled.

3,854,509

MOBILE REEL SUPPORT UNIT

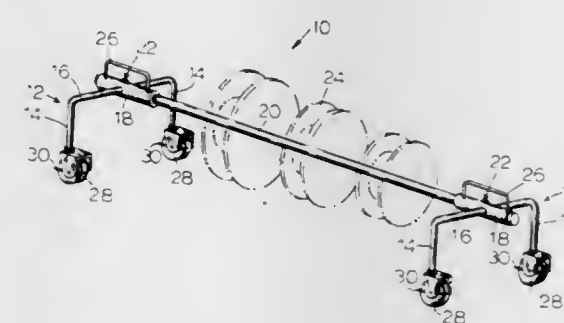
Richard L. Bailey, R.D. No. 3, Spring Grove, Pa. 17362

Filed Nov. 30, 1973, Ser. No. 420,395

Int. Cl. B65h 75/40

U.S. Cl. 242-86.5 R

2 Claims



1. A mobile reel support unit designed to accommodate a plurality of reels in an elevated horizontal configuration so that materials packaged upon said reels may be manually or mechanically dispensed therefrom, said support unit comprising in combination, a longitudinal axle member of uniform geometrical cross-sectional configuration having opposite end portions slidably assembled within an upright standard member at either end thereof, said standard members being similar and U-shaped and the legs thereof extending downwardly to form vertically extending support members, a horizontal sleeve rigidly connected to the upper horizontal portions of said U-shaped supports and extending in opposite directions therefrom transversely to the planes thereof, said sleeves having a cross-sectional shape closely complementary to that of said axle member and slidably adjustably receiving end portions of said axle member, a caster assembly attached to

the lower end of each of said support members of said standard members, said sleeves of said standard members each having a thumb screw to connectably engage said axle member to position said standard member at desired positions upon said axle member, each of said standard members further having a U-shaped handle assembly connected to and extending upwardly from the upper portions thereof to facilitate movement of said support unit, said thumb screws extending upwardly between the legs of said U-shaped handles to prevent accidentally loosening the screws.

3,854,510

TREE FELLING DEVICE

August Matlik, Gavle, Sweden, assignor to Brundell och Jonsson AB, Gavle, Sweden

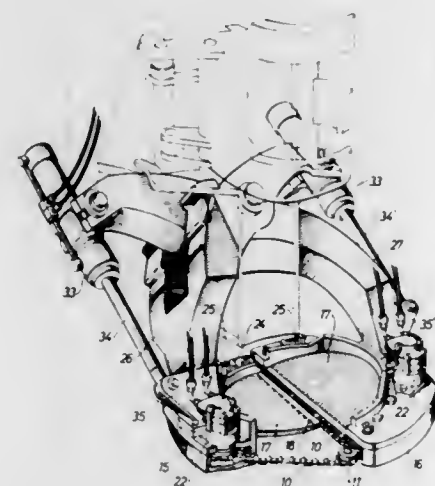
Filed June 1, 1973, Ser. No. 366,018

Claims priority, application Sweden, June 19, 1972, 8067/72

Int. Cl. A01g 23/08

U.S. Cl. 144—34 R

4 Claims



1. A tree felling device adapted to be operated when suspended from a crane beam and comprising:
at least one arcuate frame member pivotally mounted about a single pivot shaft;
an endless saw chain journaled about a plurality of sprockets in a plane in each said at least one frame member; means associated with one of said sprockets for rotating said one sprocket and for thereby rotating said saw chain in an operative direction;
said saw chain having a straight length thereof between two of said sprockets forming an operative part for cutting;
a saw blade mounted within said frame member;
said saw blade having a straight guiding edge portion extending between ends of said frame member and having therein a straight groove, said operative part of said saw chain being slidably guided within said groove, at least said guiding edge portion of said saw blade having a thickness at least as great as the largest cross sectional shape of said saw chain, said guide edge portion of said blade thus forming means for supporting a tree during cutting and preventing said tree section from clamping downwardly on said operative part of said saw chain;
said pivot shaft being located outside said saw chain and having an axis inclined at an angle of from 0°-60° to the principal direction of movement of said operative part of said saw chain; and
the cross sectional shape of said saw blade, formed by any plane perpendicular to said pivot shaft, being an arc with a radius substantially corresponding to the perpendicular distance from said pivot shaft.

3,854,511

BLADE HOLDER FOR STEEL STRIP BLADES

Gerhard Maier, Brackwede, Germany, assignor to Maschinenfabrik B. Maier KG, Brackwede, Germany

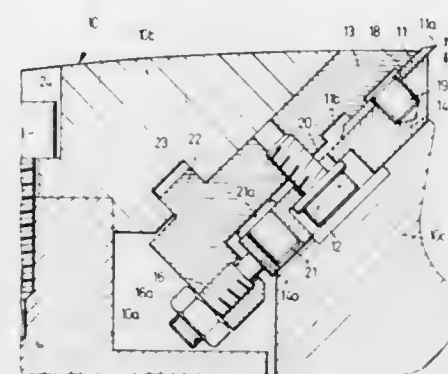
Filed Apr. 12, 1973, Ser. No. 350,491

Claims priority, application Germany, Apr. 24, 1972, 2220003

Int. Cl. B27g 13/00; B26d 1/12

U.S. Cl. 144—230

10 Claims



1. A steel strip blade holder which is detachably locatable in a cutting head of a wood chipping machine, said holder comprising two clamping jaws, connecting elements for clamping said jaws together and a steel strip blade clamped and interchangeably retained between said jaws, said steel strip blade being detachably connected to a holding means in fixed relation thereto; and adjusting means acting on said holding means to displace said holding means and said strip blade relative to at least one of said jaws so as to set said steel strip blade with its effective cutting edge projecting a required distance from said one jaw at right angles to the longitudinal direction of said cutting edge.

3,854,512

METHOD OF CUTTING FLAT SHEETS INTO STRIPS

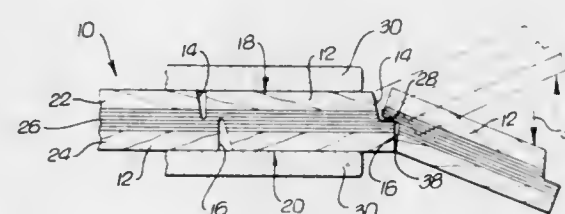
Harvey J. Hill, Monterey Park, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Filed June 11, 1973, Ser. No. 368,740

Int. Cl. B27c 9/00

U.S. Cl. 144—326 R

5 Claims



1. A method of cutting into strips a flat sheet having spaced, parallel, first and second sides, including the steps of:
a. sawing in the first side of the sheet parallel first grooves which are uniformly spaced apart in a direction parallel to the planes of the sides of the sheet;
b. sawing in the second side of the sheet parallel second grooves which are uniformly spaced apart in said direction the same distance as said first grooves, and which are paired with and are slightly spaced from said first grooves, respectively, in said direction to provide pairs of slightly offset first and second grooves, the combined depths of said first and second grooves of each pair being at least equal to the thickness of the sheet, thereby dividing the sheet into strips of the same width breakable from each other in zones respectively interconnecting said first and second grooves of said pairs; and
c. breaking each of said strips from the adjacent strip by applying adjacent the free edge of the strip to be broken off a force generally perpendicular to the planes of the

sides of the sheet and acting along the entire length of said free edge.

c. securing means adapted for:

3,854,513

INTERNAL WHEEL SAFETY DEVICE FOR VEHICLES

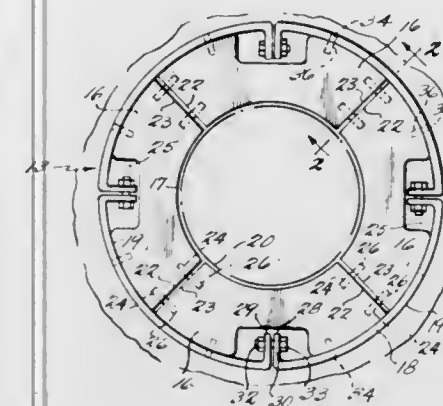
Valsin J. Buttone, 8445 Fairfax Dr., Chalmette, La. 70043, and Larry J. Buttone, 4428 Reich St., Metairie, La. 70002

Filed Oct. 17, 1973, Ser. No. 407,057

Int. Cl. B60c 17/04

U.S. Cl. 152—158

6 Claims



1. For use with a vehicle wheel rim and tire, a safety device mounting within said tire comprising:

- at least two arcuate spacer segments; each of said spacer segments having two oppositely disposed ends, an inner and outer periphery and a recess opening located along the outer periphery intermediate of said ends; said spacer segments being placed end to end to extend in a common plane and having said inner peripheries adapted to be disposed against said rim;
- at least two arcuate band members, each of said band members having two oppositely disposed ends, each of said band member ends having a portion extending radially inwardly; said band members being placed end to end around the outer peripheries of said spacer segments with said radially inwardly extending portions being disposed in said recesses;
- fastening means disposed parallel to the plane of said segments and adapted to secure said portions of said band members together;
- pin means for securing said spacer segment ends together; and
- additional pin means for securing said steel band segments to said spacer segments so that when said fastening means are secured, said band members will be disposed against said spacer segments, resulting in a tight frictional fit of said spacer segments against said rim.

3,854,514

TIRE CHAIN CARRIERS

Ralph R. Edwards, 1 Haymount Ter., Briar Cliff Manor, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,238

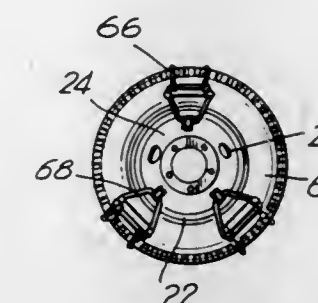
Int. Cl. B60c 27/02

U.S. Cl. 152—233

12 Claims

1. A snow chain carrier for a vehicle wheel, the vehicle wheel being of the type having a bowl-shaped body portion, the bowl having hand holes spaced at regular intervals thereabout, said chain carrier comprising:

- hook engaging means adapted for:
extending across at least a portion of one of the hand holes on one side of the bowl, and
engaging the hook end of a snow chain;
- strap engaging means adapted for:
extending across at least a portion of the hand hold on the opposed side of the bowl, and
engaging the strap end of snow chains; and



extending through the hand hole, and rigidly securing said hook engaging means and strap engaging means to opposed sides of the bowl.

3,854,515

RADIAL TIRE HAVING POLYESTER CORD BREAKER

Satoshi Takemura, Mitsuki Maeda, and Noboru Sakai, all of Tokyo, Japan, assignors to Bridgeton Tire Company Limited, Tokyo, Japan

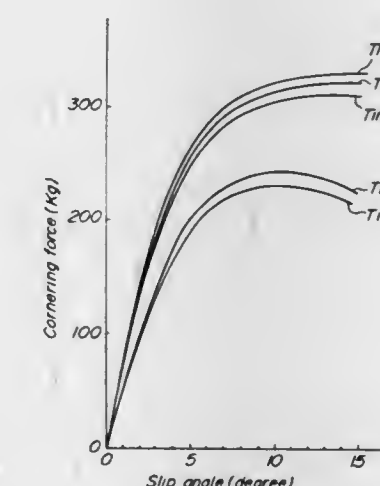
Filed June 22, 1973, Ser. No. 372,573

Claims priority, application Japan, June 28, 1972, 47-64638

Int. Cl. B60c 9/18; D02g 3/48

U.S. Cl. 152—361 R

4 Claims



1. In a radial tire having a tread portion, a pair of side portions extended to the tread portion at both the shoulders thereof, a pair of bead portions formed in the inner peripheries of the side portions respectively, a breaker formed inside the tread portion along its peripheral direction, and a carcass, the improvement characterized by:

- the breaker comprising adhesive treated, heat set polyester cords formed of twisted yarns,
- each yarn comprising a bundle of a plurality of filaments consisting of polyester having a low polymerization degree and an intrinsic viscosity of 0.3-0.8 measured in o-chlorophenol at 25°C,
- the twisting being performed at a twisting coefficient (N_T) of 0.15-0.45, said twisting coefficient being expressed by the following formula:

$$N_T = N \times 0.139 \times D / \rho \times 10^{-3}$$

wherein N is the number of cable twists per 10 cm of cord, D is one-half of the total deniers of cord, and ρ is the density of fiber,

- the cords being treated with an adhesive to implement their adherence to rubber, and
- the heat setting being performed at a temperature of 230°-255°C for 2-4 minutes under a tension of 0.15-1.0 g/denier.

3,854,516

VEHICLE WHEELS

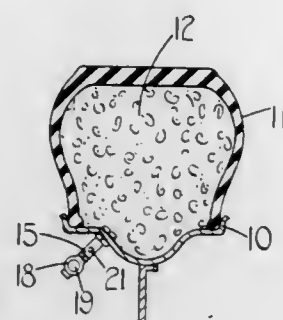
Hughie Burnell, West Bromwich, England, assignor to Archibald Kenrick & Sons Limited, West Brunswick, England

Filed May 9, 1973, Ser. No. 358,632

Claims priority, application Great Britain, May 12, 1972, 22537/72

Int. Cl. B60c 23/00

U.S. Cl. 152—415



1. A method of filling a tire on a vehicle wheel comprising fitting the tire to a rim of the wheel, injecting through an inlet opening in the rim, liquid ingredient materials to create a polyurethane foam filling for the interior of the tire, closing said inlet opening, revolving the wheel about a vertical axis to distribute said ingredients around the interior of the tire and when foam begins to escape through an outlet at a position on the rim diametrically opposite the inlet opening, closing a shut off valve at said outlet to prevent escape of further foam.

3,854,517
ROLL BLIND

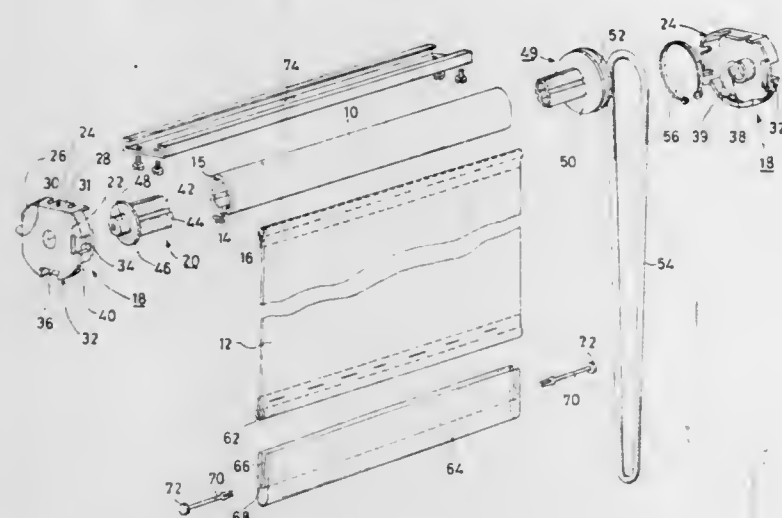
Isamu Nakamura, 12-24-403 5-chome, Minami-Aoyama, Minatoku, Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,285

Claims priority, application Japan, May 17, 1972, 47-57761; May 23, 1972, 47-60382; May 23, 1972, 47-60383; July 7, 1972, 47-80363

Int. Cl. A47h 1/10

U.S. Cl. 160—323



1. A blind which comprises a rotary hollow tube for suspending and winding an element about the hollow tube, a pair of fixing means fixably mountable to wall means of a room for supporting said hollow tube, coupling means for rotatably connecting said hollow tube to one of the pair of fixing means, pulley means for rotatably connecting said hollow tube to the other of the pair of fixing means, each of the pair of fixing means including (a) a disc portion having at its periphery an inwardly projecting square rim comprising a straight and a curved portion respectively provided with (b) at least two recesses and two openings, said openings being positioned in symmetrical opposed relation to said straight portions of the square rim, and (c) a horseshoe shaped bearing provided, at

the center of the disc, with an access opening adapted to receive shaft portions respectively provided on said coupling and pulley means.

3,854,518

MELT EXTRUSION METHOD FOR PRODUCING WIRE FROM STEEL ALLOYS

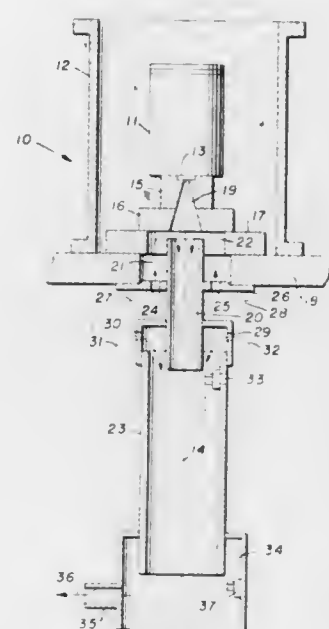
Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1973, Ser. No. 429,333

Int. Cl. B22d 11/12

U.S. Cl. 164—66

4 Claims



1. In the method for forming fine diameter wire directly from the melt of an alloy of steel by extruding said melt as a free-streaming molten jet into an oxygen-containing medium to form a stabilizing film about the peripheral surface of the jet and thereafter cooling the film stabilized molten jet to produce a solid wire product, the improvement which comprises effecting said cooling by:

- leading said film stabilized molten jet through a first cooling zone in which gaseous hydrogen is continuously admitted into the entrance thereof at a predetermined flow rate, the direction of said hydrogen flow being cocurrent with that of said molten jet;
- causing the jet together with said hydrogen flow to enter a second cooling zone being provided with a continuous supply of air introduced proximate to the entrance thereof at a predetermined rate of flow, the direction of said air flow being co-current with that of said jet and said hydrogen whereby a combustible gas mixture of air and hydrogen is caused to form;
- igniting said combustible gas mixture to cause combustion thereof; and
- exhausting the products of said combustion at the terminal end of said second cooling zone while continuously forwarding the resulting solidified wire product to a take-up device.

3,854,519

APPARATUS FOR STARTING EXTRUSION OF FILAMENTS FROM METALLIC MELTS

Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1973, Ser. No. 429,331

Int. Cl. B22d 11/08

U.S. Cl. 164—274

1 Claim

1. In an apparatus for forming continuous filaments directly from the melt of a metal, wherein under a positive head pressure the melt is ejected through an orifice and into a discharge cavity as a molten metal stream from whence the stream

3,854,521

SELF CONTAINED METAL CASTING DIES

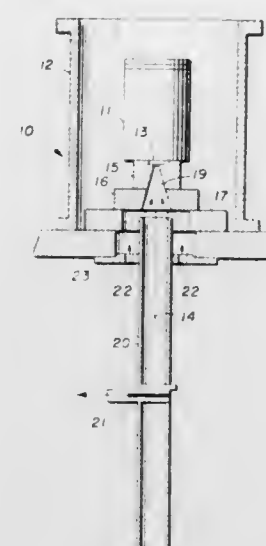
Karl Hannes, White Plains, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Filed July 25, 1972, Ser. No. 274,910

Int. Cl. B22d 1/00

U.S. Cl. 164—347

8 Claims



pressure level across the orifice, said means comprising: a slide valve positioned in said cooling column downstream from said discharge cavity and means for introducing a pressurizing gas into said discharge cavity.

3,854,520

VIBRATION-PREVENTIVE CENTRIFUGAL CASTING APPARATUS

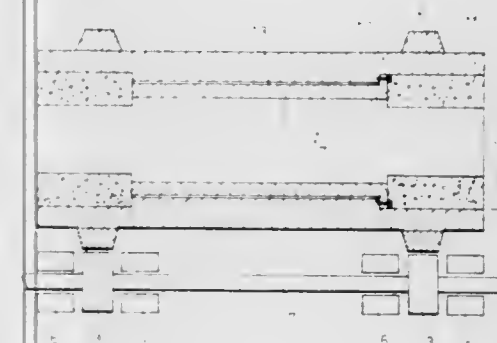
Reizo Yokota, Osaka, Japan, assignor to Yodogawa Steel Works, Ltd., Osaka-shi, Osaka-fu, Japan

Filed Oct. 30, 1972, Ser. No. 302,000

Int. Cl. B22d 13/02

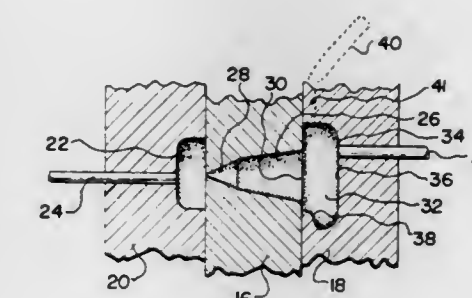
U.S. Cl. 164—291

2 Claims



1. A vibrationless centrifugal casting apparatus comprising: a mold shell adapted to be rotated for centrifugal casting said shell having a raised central section at its inner surface forming shoulders on the inner surface at each end of said central section;

a cylindrical metallic liner fitted in said mold shell, said liner having an outer surface spaced a minute distance from the inner wall of said mold shell when fitted therein and said outer surface having an uneven configuration which will provide discontinuous contact with the inner wall of said mold shell when said liner is thermally expanded, said liner having a flange portion at one end thereof and said flange being secured to one shoulder of the central section of said mold shell; and a pair of sand molds mounted within said mold shell and abutting each end of said liner.



1. Die casting apparatus having a plurality of die plates for forming a metal cast part and attached gate part therein comprising

- a first outer die plate having a first recess in which said cast part is formed by injecting molten metal therein;
- a second die plate positionable in abutment with said first die plate during casting and having an opening there-through in communication with said first recess to permit said molten metal to flow through said opening into said first recess;

said second die plate being mounted in a substantially fixed position within said apparatus, and said first die plate being movable with respect thereto;

- a third outer die plate having a second recess therein, said second recess and said opening in communication with each other when said second and third plates are in abutment and adapted to form the gate part when the molten metal is injected therein, said third plate being in abutment with said second plate during casting and being movable relative thereto,

said second recess being open at the surface of said third die plate and including at one end a portion which extends beyond the area of the recess open at the surface of the third die plate and thus constitutes an undercut portion of said third die plate, said undercut portion including a convex surface extending inwardly from the surface of the third die plate and terminating at a concave surface portion of said third die plate within said second recess, said convex and concave surface portions being shaped to permit removal of said gate part only by pivotal movement about said convex surface portion; and means mounted on said first and third plates for ejecting said cast part and said gate part respectively from said die plates.

3,854,522

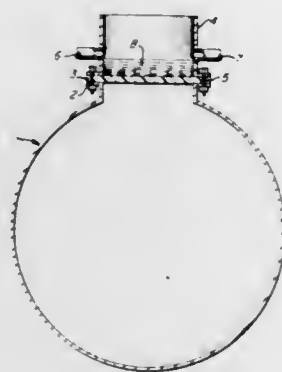
HIGH SERVICE TEMPERATURE PRESSURE SENSITIVE DEVICE

William J. Didycz, Whitehall Borough, and Almon D. Seabury, Hampton Twp., Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 133,938, April 14, 1971, Pat. No. 3,780,793. This application Apr. 25, 1973, Ser. No. 354,609 Int. Cl. F24h 13/00

U.S. Cl. 165-1

3 Claims



1. A method of increasing the service temperature of vented rupture discs comprising maintaining a body of cooling liquid on the outer surface of said vented rupture disc.

3,854,523

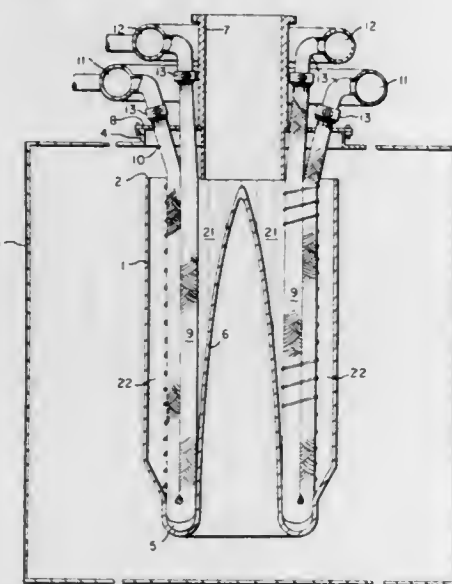
LIQUID HEAT EXCHANGE SYSTEM

Frank T. Smith, and Robert D. Smith, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 173,108, Aug. 19, 1971, and a continuation-in-part of Ser. No. 63,851, Aug. 14, 1970, abandoned. This application May 4, 1973, Ser. No. 357,078 Int. Cl. F28d 7/00

U.S. Cl. 165-1

7 Claims



1. An apparatus for accomplishing heat exchange between a flowing first liquid and a second liquid having a temperature significantly different from that of the first liquid which comprises

- a tank having an input means for receiving the flowing first liquid and an output means by which the flowing first liquid exits,
- a plurality of tube bundles each of which comprises a plurality of small diameter flexible tubes made from an organic polymer composition, one end of each of which bundles is coupled to an inlet means while the other end is coupled to an outlet means to permit the flow of the second liquid through the interior of the tubes, each tube bundle being disposed within and extending substantially from the top to the bottom of the tank and in relationship

to the input and output means of the tank such that a substantially unbroken annular heat exchange region is provided and the tank is divided into an input side and an output side,

- means for directing the passage of a substantially uniform volume of the first liquid from the input side to the output side of the tank and through each unit area of the annular heat exchange region,
- particle trapping means, located at the bottom of said tank adjacent to the input region for receiving and containing particles carried by said flowing first liquid before it passes through said annular heat exchange region.

3,854,524

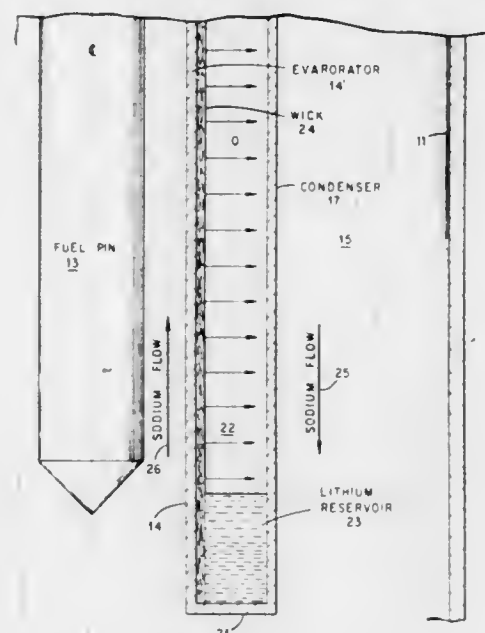
THERMAL SWITCH-HEAT PIPE

Keith E. Gregorie, and Henry C. Pfefferlen, both of San Jose, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 7, 1972, Ser. No. 287,211 Int. Cl. F28d 15/00

U.S. Cl. 165-32

4 Claims



1. An apparatus defining a thermal switch positioned about a nuclear heat source capable of producing a large change in thermal conductivity of a structure by a relatively small change in the temperature of the hotter side of the structure such that negligible heat is transported during a predetermined operating temperature of the structure while a large amount of heat is transported during a temperature excursion comprising: vertically positioned annular evaporator means defining a first wall member, annular condenser means positioned externally of and in vertical spaced relationship with respect to said evaporator means and defining a second wall member, means defining a third member interconnecting one end of said wall member of said evaporator means and one end of said wall member of said condenser means defining an annular chamber therebetween and forming an annular reservoir for working fluid at the lower end portion thereof, wick means located within said chamber and said reservoir and secured only to said wall member of said evaporator means, said wick means being selected from the group consisting of a plurality of layers of fine mesh screen and a layer of powdered stainless steel bonded to said wall member of said evaporator means, and a quantity of working fluid retained in said reservoir and in contact with a portion of said wick means, said working fluid being selected from the group consisting of lithium and sodium and of the type capable of climbing by capillary action and wetting said wick means.

3,854,525

AIR CONDITIONING PLANT, PARTICULARLY FOR MOTOR VEHICLES

Manfred Illg, Aldingen, Germany, assignor to Firma Sueddeutsche Kuehlerfabrik Julius Fr. Behr, Stuttgart-Feuerbach, Germany

Continuation-in-part of Ser. No. 18,528, March 11, 1970, abandoned. This application Mar. 7, 1973, Ser. No. 339,028 Claims priority, application Germany, Mar. 12, 1969, 1912607

U.S. Cl. 165-42

Int. Cl. B40h 3/00

4 Claims



1. In an air conditioning plant for motor vehicles comprising, a housing having an air suction chamber, a heat exchanger, a refrigerating plant having a condenser, an evaporator, a blower motor and blower means, the improvement where said blower means is a double radial blower disposed in a housing, said blower motor is disposed between said radial blowers, said air suction chamber is disposed between said two blowers and a fresh air and an ambient air channel are provided in said housing on opposite sides thereof in proximity to said blower means, a slidable closure movable relative to said fresh air and said ambient air channels, said slidable closure being a flexible band disposed along the outer edges of said suction chamber, and means operative to slide said closure into different positions to admit fresh air, ambient air or a mixture of both.

3,854,526

TANK

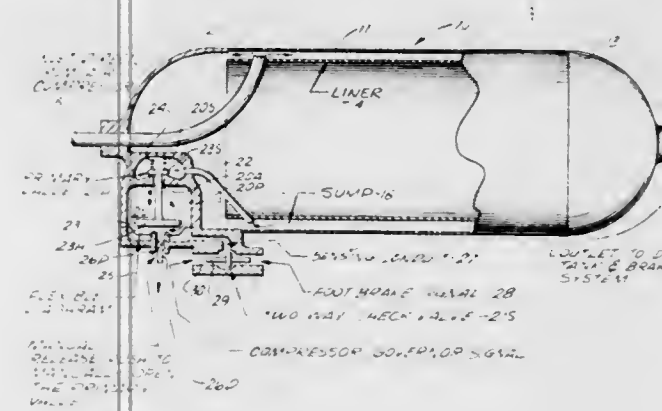
Robert R. Cole, Yorba Linda, and Raymond S. Bullard, La Palma, both of Calif., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed May 31, 1973, Ser. No. 365,554

U.S. Cl. 165-71

Int. Cl. F16f 1/34

16 Claims



1. A fluid tank comprising: an enclosed shell adapted to convey a hot, moisture laden fluid therethrough by means of a fluid conduit defined with the inner wall of the shell and to separate and collect the moisture from the fluid passed therethrough at a preselected location in the tank, said shell including a moisture outlet, and a valve mounted in the moisture outlet operative for draining the collected moisture out of the shell, said valve being mounted substantially within the tank so as to be exposed to the hot fluids being conveyed through the shell to thereby render the valve operative for a wide

range of ambient temperatures including freezing temperatures.

3,854,527

APPARATUS AND METHOD FOR FABRICATING CORRUGATED PLASTIC TUBING

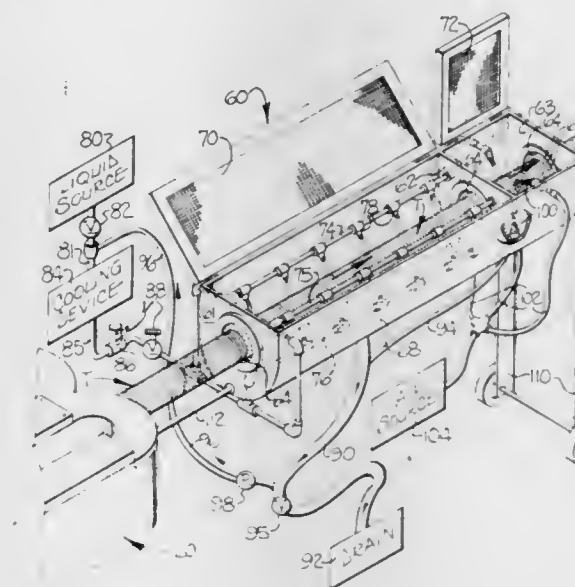
Ernest J. Maroschak, Box 878, Roseboro, N.C. 28382

Filed Sept. 1, 1972, Ser. No. 285,669

Int. Cl. F24h 3/02

U.S. Cl. 165-120

9 Claims



1. An apparatus adaptable for cooling a horizontally advancing hot annularly corrugated plastic tube following the molding thereof and wherein the tube is delivered in a dry condition to facilitate subsequent processing thereof, said apparatus comprising

a housing including three horizontally spaced vertical walls defining a first zone between the first and second walls and a second zone between the second and third walls, each of said walls having an opening for passage of the tube therethrough in a horizontal direction, means located in said first zone for directing a plurality of streams of liquid coolant against the corrugated exterior surface of the advancing tube disposed in said first zone, and means in said second zone for directing a high velocity current of gas against the corrugated exterior surface of the advancing tube disposed in the second zone to remove the adhering residual liquid coolant therefrom and further cool the same.

3,854,528

HEAT-EXCHANGER MODULE

Pierre Poudroux, Meudon-la-Forêt; Guy Salon, Le Chesnay, and Jean Andro, La Celle St-Cloud, all of France, assignors to Stein Industrie, Paris, France

Filed Feb. 6, 1973, Ser. No. 330,114

Claims priority, application France, Feb. 11, 1972, 72.04689

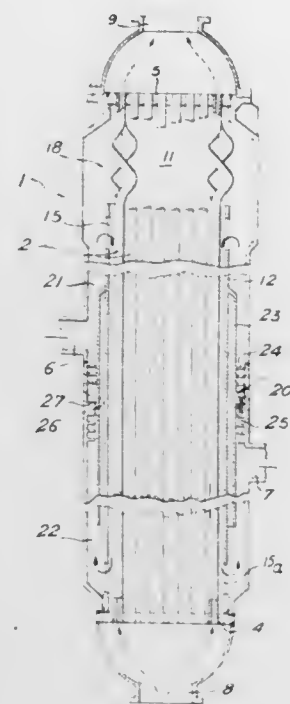
Int. Cl. F28b 9/22

U.S. Cl. 165-158

6 Claims

1. A heat-exchanger unit comprising a tube bundle, an inner sleeve surrounding said bundle, openings located at the ends of the inner sleeve for admission and discharge of a first fluid into and from said bundle, an outer shell for the heat-exchanger unit spaced from said inner sleeve, a jacket on said inner sleeve extending downwardly between said sleeve and said outer shell a transverse partition-wall between said jacket and said shell, two annular spaces consisting of an upper and lower space between said wall and said jacket and said shell, external ducts opening into said spaces for the admission and discharge of a second fluid, and said ducts opening immedi-

ately adjacent to said partition-wall whereby minimum differential expansion under both steady-state and transient flow



conditions occurs between said outer shell and the tubes of said bundle.

3,854,529

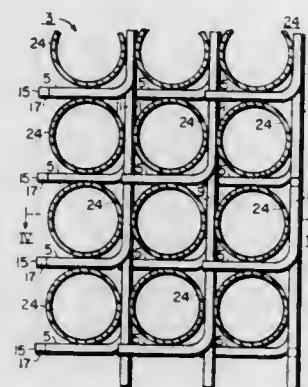
TUBE SUPPORT SYSTEM FOR A HEAT EXCHANGER
Stanley S. Sagan, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 166,109, July 26, 1971, abandoned.
This application Sept. 14, 1973, Ser. No. 397,492

Int. Cl. F28b 9/00

U.S. Cl. 165—162

4 Claims

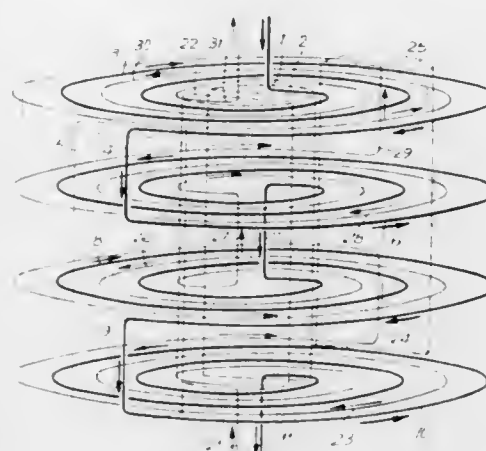


1. A tube support system for a heat exchanger having a plurality of tubes, said tube support system comprising a plurality of bars, each bar having a plurality of openings and arms disposed along each longitudinal margin thereof, the openings and arms on opposite margins being staggered, the arms of each bar being integral therewith, being longer than the tube's diameter, extending from said bar in one direction, and being generally normal thereto, the arms disposed along one margin being out of phase one half a pitch with the arms disposed along the opposite margin, and adjacent bars being mirror images, so that tips of the arms fixed to one bar register with openings in an adjacent bar, whereby the bars interlock to form a rigid support system.

3,854,530
HEAT EXCHANGER
Etienne Jouet, 19 Rue du Panorama, 95 Montigny-les-Cormeilles, and Pascal Rebuffe, 18 Rue de Sevres, Boulogne-Billancourt, both of France
Division of Ser. No. 888,591, Dec. 29, 1969, This application Sept. 20, 1972, Ser. No. 290,518
Int. Cl. F28f 3/00

U.S. Cl. 165—163

8 Claims



1. A heat exchanger of generally cylindrical form acting between two fluids, comprising:
a. first and second chambers wound in juxtaposed and enclosing spirals; and a thin metal wall separating said chambers from each other, said metal wall having gofferings formed thereon and abutting against the wall of an adjacent chamber;
b. a central cylindrical tube, said chambers spirally encompassing said tube, fluid inlet and outlet means for said second chamber being formed by said tube;
c. an external cylindrical hoop concentrically encompassing said central tube and forming an annular space therebetween, said hoop and tube forming the supporting framework of said heat exchanger, said chambers being located in said annular space between said hoop and said tube, and said external cylindrical hoop axially extending beyond the level of said spirally coiled chambers;
d. closure caps attached to said cylindrical hoop so as to form two enclosures, said enclosures being in direct communication with said first chamber through the open lateral ends thereof and forming respectively inlets and outlets to said first chamber;
e. obturation means dividing into two portions forming, respectively, a distribution portion and a collector portion, said second chamber communicating with the distribution portion at its central portion and with the collector portion at the other end thereof;
f. and guide means being positioned within said second spirally coiled chamber and adapted to guide the fluid in said chamber to flow therealong in a centrifugal direction from the distribution portion of the tube substantially to the periphery of said chamber, and in a centripetal direction from the periphery of said chamber to the collector portion of said tube.

3,854,531

VISCOUS PETROLEUM RECOVERY PROCESS
Joseph T. Carlin, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,979

Int. Cl. E21b 43/22

U.S. Cl. 166—272

9 Claims

1. A method for recovering heavy oil from a subterranean reservoir having finite permeability without fracturing the reservoir wherein there is at least one injection well penetrating and in communication with the reservoir and at least one production well penetrating and in communication with the

reservoir by injection of fluids through the reservoir from the injection well to the production well which comprises:

- injecting a first aqueous fluid into the reservoir through the injection well in order to establish communication in the reservoir between the injection and production wells,
- injecting a second aqueous fluid into the reservoir through the injection well containing sodium hydroxide, guanidine hydrochloride and sodium oleate to spontaneously emulsify the oil in the reservoir and
- injecting steam into the reservoir through the injection well and producing bitumen, steam, and aqueous fluids through the production well.

3,854,532

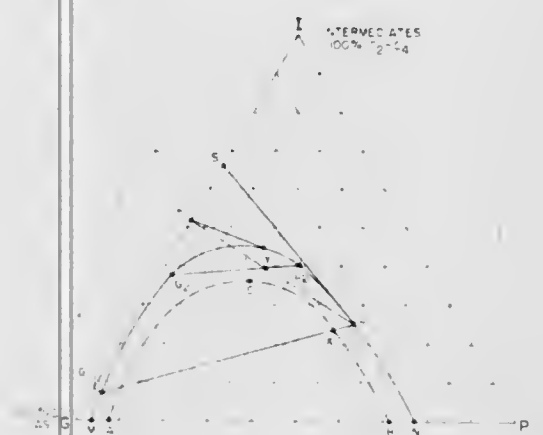
ENRICHED GAS DRIVE RECOVERY PROCESS
William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,772

Int. Cl. E21b 43/16

U.S. Cl. 166—274

18 Claims



1. A process for recovering hydrocarbons from a hydrocarbon-bearing reservoir having a hydrocarbon liquid phase and a gas saturation, traversed by at least one injection well and one production well, comprising the steps of:

- determining the composition of a hydrocarbon solvent that is conditionally miscible with said liquid phase at the temperature and pressure of said reservoir;
- injecting into said reservoir via said injection well a slug of said hydrocarbon solvent in an amount sufficient to establish a miscible transition zone of said slug with said hydrocarbon liquid phase;
- injecting into said reservoir a drive fluid at a pressure and in an amount sufficient to maintain a drive of said slug and said reservoir hydrocarbons toward said production well and;
- recovering said hydrocarbons via said production well.

3,854,533

METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A SUBTERRANEAN FORMATION
Derrel G. Gurley, New Orleans, La., and Claude T. Copeland, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 312,797, Dec. 7, 1972, abandoned. This application Oct. 24, 1973, Ser. No. 409,357
Int. Cl. E21b 43/04, 43/26

U.S. Cl. 166—276

26 Claims

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:

- forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, and a carrier liquid to form a slurry, said particulate material ranging in size from about 0.1 to about 0.0025 inch in diameter and is present in an amount ranging from about 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprising

an epoxy resin and a polar organic solvent for said resin, said solvent in conjunction with said resin being only partially miscible with said carrier liquid, said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material, said resin-solvent mixture containing from about 55 to about 85 percent by weight of resin,
b. introducing said slurry through a well bore and into a permeable formation which is subjected to fracturing pressure, and
c. curing said slurry in place in said formation to form a consolidated permeable mass.

3,854,534

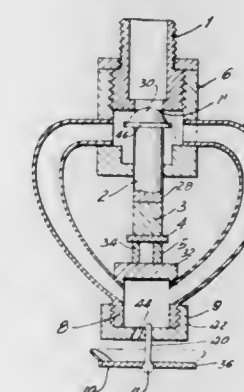
ROTARY AUTOMATIC SPRINKLER VALVE
Se Bin Pak, 44, Sam-Sun Dong 3-ka, Sung-Puk-ku, Seoul, South Korea

Filed Oct. 15, 1973, Ser. No. 406,240

Int. Cl. A62c 37/30

U.S. Cl. 169—42

5 Claims



1. An automatic sprinkler valve comprising:
an upper chamber having closed top and bottom ends;
an inlet pipe entering said upper chamber through an opening in said top end, said inlet pipe having an end disposed within the interior of said upper chamber;
a lower chamber spaced below said upper chamber, said lower chamber having closed top and bottom ends;
a valve stem extending through said upper chamber bottom end into the interior of said upper chamber so as to normally abut against and seal said pipe end;
hollow support means interconnecting the interiors of said upper and lower chambers and securing said lower chamber to said upper chamber;
spray means including at least one passage through said lower chamber bottom end; and
stem support means formed of a low melting point material interposed between the top of the lower chamber and said stem adapted to support the stem in said normal position.

3,854,535

FIRE INHIBITING FOAM SYSTEM
Clifton Leroy Kehr, and Nelson S. Marans, both of Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,242

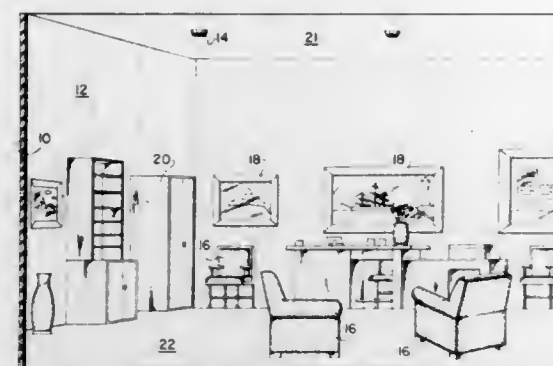
Int. Cl. A62c 35/00

U.S. Cl. 169—48

6 Claims

1. A fire inhibiting system which comprises in combination, a water outlet disposed to release water under fire or smoke conditions, a water-retaining foam structure disposed to re-

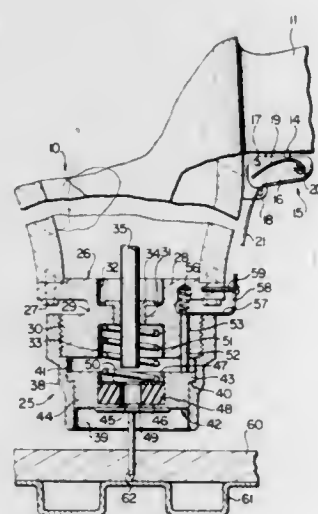
ceive water from said outlet, said foam being capable of absorbing and retaining from about 5 to about 50 times its dry



3,854,536
ADAPTER FOR FLUID OPERATED DRIVING TOOL
Robert L. Hallock, Jr., 48 Rockland Ave., Larchmont, N.Y. 10538

Filed Feb. 25, 1974, Ser. No. 445,766
Int. Cl. B25c 1/00, 3/00
U.S. Cl. 173-15

7 Claims



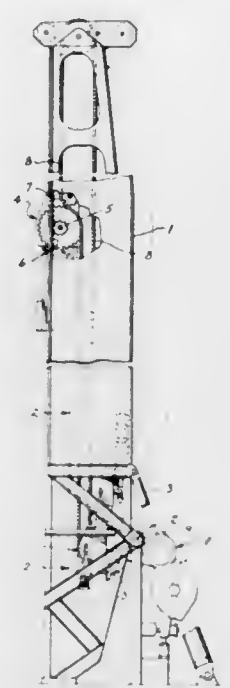
1. Apparatus for use with a tool having a power driven member for driving a fastener into a media which provides a predetermined resistance to the penetration of the fastener, said apparatus comprising holder means mounted for reciprocation coaxially of the power driven member and having a fastener engaging portion which is normally spaced outwardly of said power driven member, said holder means being constructed and arranged to permit said power driven member to contact the fastener without obstruction from said holder means, spaced inner and outer stop means limiting the movement of said holder means, resilient means normally urging said holder means toward said outer stop means, said holder means being movable toward said inner stop means upon engagement of the fastener with media of predetermined resistance prior to operation of said driving member, said resilient means not permitting movement of said holder means in media of less than said predetermined resistance, and linkage engaged by said holder means and conditioning said tool in non-driving state unless said holder means has moved to said inner stop means, whereby said fastener may be blind-nailed through an overlying media of less than said predetermined resistance into an underlying media having areas of greater and areas of less than said predetermined resistance and said power driven member will operate only when the fastener engages underlying media which is greater than said predetermined resistance.

3,854,537
TWIN PULL DOWN CHAIN EQUALIZER
Jack D. Nelmark, New Berlin, and Matthew Smith, Milwaukee, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 26, 1973, Ser. No. 419,218
Int. Cl. E21b 7/02

U.S. Cl. 173-140

3 Claims



1. In a dual chain equalizer for equalizing the tension in chains of a drill string rotating mechanism of a drilling apparatus having a mast, the combination comprising:
two spaced, vertical equalizer frames slidably mounted on the mast, one of said equalizer frames being positioned on each side of the drill string axis;
each of said equalizer frames having a pair of vertically spaced sprockets rotatably mounted thereon in engagement with the chains of the drill string rotating mechanism, one of said sprockets being slidably disposed and biased downwardly against one of the chains of the drill string rotating mechanism;
an equalizer bar connected between said equalizer frames;
a slide member pivotally attached to the midpoint of said equalizer bar; and
a hydraulic cylinder associated with the mast and having one end connected with and activating said slide member for vertical displacement whereby said equalizer bar shifts said equalizer frames in response to variable chain pressures to keep the chains of the drill string rotating mechanism taut.

3,854,538
HYDRATED METAL OXIDE DEPOSITION
George O. Suman, Jr.; Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 221,401, Jan. 27, 1972, Pat. No. 3,756,315. This application Feb. 12, 1973, Ser. No. 331,930
Int. Cl. E21b 21/04

U.S. Cl. 175-72

6 Claims

1. A drilling fluid filtrate-effected sand consolidating drilling process comprising:
drilling a borehole into a permeable granular subterranean earth formation while circulating an aqueous drilling fluid that contains an aqueous solution of an amphoteric metal oxide and a pH reducing reactant adapted to lower the pH of the solution to one at which a hydrated metal oxide is precipitated and suspended relatively finely divided solid particles adapted to form a fluid loss controlling filter cake on a permeable earth formation; and

pressurizing said circulating drilling fluid within the borehole so that said permeable earth formation is invaded by the solution from which a hydrated metal oxide is subsequently precipitated.

3,854,539
HAMMER-DRILL CORE BARRELING DEVICE
Gerald T. Sweeney, Federal Way, Wash., assignor to Tigre Tierra, Inc., Puyallup, Wash.

Filed Aug. 23, 1972, Ser. No. 283,208
Int. Cl. E21b 1/06, 9/20

U.S. Cl. 175-92

32 Claims



1. In combination, a rotary drill rod comprising an elongated pipe having a longitudinally extending bore therethrough and a percussive bit at the distal end thereof, means defining an abutment relatively transverse the bore adjacent the bit and operatively connected with the bit to receive and transmit hammer blows into the working face of the bit, drive means including a piston-like member retractably inserted in the bore in slidable engagement with the wall thereof and having a fluid operated hammer mechanism thereon, the hammer of which is reciprocable between the member and the abutment to apply the blows to the abutment, fluid transmission means for operating the hammer mechanism including means for passing fluid through the piston-like member and means for exhausting the fluid into the region adjacent the working face of the bit after the mechanism has operated, means on the rod whereby the exhausted fluid can discharge from said region toward the proximal end of the pipe on the opposite side of the pipe from the piston-like member, and means on the piston-like member for generating a pressure differential across the drive means longitudinally of the bore to maintain the mechanism in operative relationship to the abutment during the application of the blows.

3,854,540
VEHICLE WEIGHING MEANS
Godfrey A. Holmstrom, Jr., 895 S.W. Cedar Glade, Issaquah, Wash.

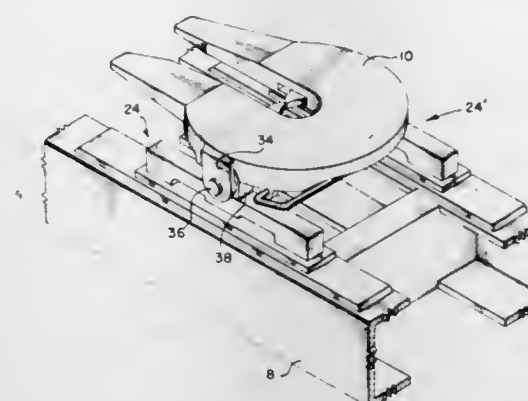
Filed Aug. 3, 1973, Ser. No. 385,288
Int. Cl. G01g 19/08

U.S. Cl. 177-136

5 Claims

1. A fifth wheel weighing system for sensing the weight of a trailer transmitted to the fifth wheel of a tractor which comprises two load cells spaced apart and secured to the tractor, each load cell comprising transducer means including an elongated bending beam secured at its ends and adapted to deflect upon application of a downward load at the beam midsection, strain sensing means applied to said bending beam to provide electrical signals proportional to vertical loads

applied to said beam midsection, and fifth wheel support means secured to and extending above said beam midsection; a fifth wheel in load bearing contact with said fifth wheel support means; connecting means securing said fifth wheel to the fifth wheel support means of each load cell such that said



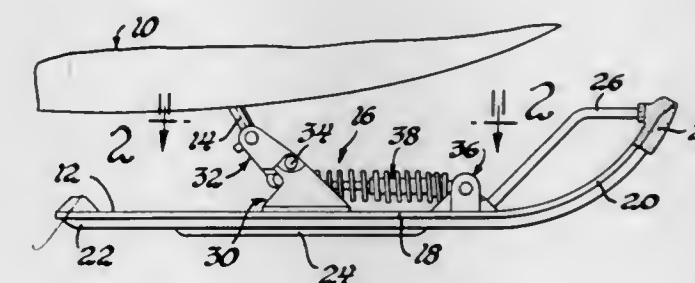
fifth wheel is able to shift position and remain in continuous load bearing contact with both fifth wheel support means such that vertical loads applied to said fifth wheel are transferred to the beam midsections through respective fifth wheel support means.

3,854,541
SNOWMOBILE SKI SUSPENSION ASSEMBLY WITH HORIZONTAL SHOCK ABSORBER MEANS
Harold E. Hollnagel, 918 W. Laramie Ln., Milwaukee, Wis. 53022

Filed Mar. 16, 1973, Ser. No. 342,017
Int. Cl. B62m 27/00

U.S. Cl. 180-5 R

16 Claims



1. A suspension assembly comprising: bracket-support means, lever arm means attached for pivotal movement to said bracket-support means, said lever arm means being attached to said bracket-support means at a point lying between the end of said lever arm means, stop means for limiting the pivotal motion of said lever arm means in a first direction, and resilient means for resisting pivotal motion of said lever arm means in a second direction and for continuously urging said lever arm means in said first direction toward said stop means.

3,854,542
MODULAR VEHICLE COUPLING
Ronald M. Jesswein, Berrien Springs; Richard R. Hushower, Buchanan, and Ralph M. Duttarier, Saint Joseph, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

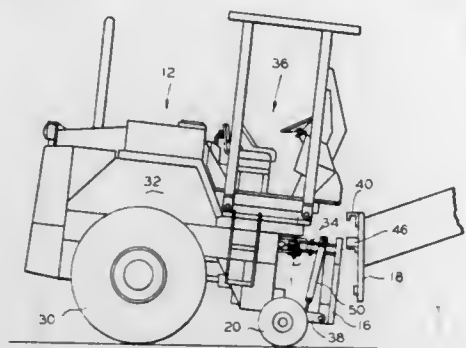
Filed May 20, 1974, Ser. No. 471,379
Int. Cl. B60d 7/00

U.S. Cl. 180-12

4 Claims

1. In a modular vehicle which is separable into a tractor module and an implement module the combination comprising, a first coupling plate forming a portion of the tractor module, a second coupling plate forming a portion of the implement module and detachably connectible to the said first coupling plate, the two coupling plates being in confronting position when in coupling relation, the said first coupling plate having a transverse horizontally disposed upper edge and a

pair of sloping guide edges adjacent the respective ends of the said upper edge, an upper bracket secured to the said second coupling plate and extending over the said first coupling plate in contact with the said upper edge when the coupling plates are in coupling relation, the said upper bracket having a downwardly projecting portion adjacent the back surface of the said first coupling plate whereby during a coupling operation



movement of the said first coupling plate either forwardly or rearwardly produces movement of the said second coupling plate in the same direction, and a pair of guide brackets secured to the said second coupling plate and located where they are contacted by the said sloping edges on the first coupling plate when the first coupling plate is raised upwardly to bring the said upper edge on the first coupling plate in contact with the said upper bracket on the second coupling plate.

3,854,543

AUXILIARY DRIVEN AXLES

Charles Hartley Hull, Huddersfield, England, assignor to David Brown Tractors Limited, Huddersfield, England

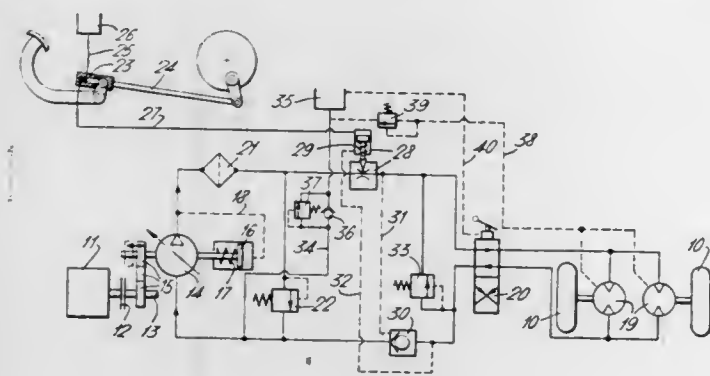
Filed May 8, 1973, Ser. No. 358,276

Claims priority, application Great Britain, May 24, 1972, 24551/72

Int. Cl. B60d 7/00

U.S. Cl. 180-14 A

13 Claims



1. An auxiliary driven axle of a power driven vehicle or of a trailer for such a vehicle having hydrostatic drive means including a hydraulic pump driven at a speed proportional to that of the power unit of the vehicle with control means for automatically varying the rate of its delivery in inverse proportion to the pressure of its delivery.

3,854,544

SYSTEM FOR MOVING FURNITURE

Cirilo Kolchev, 1243 15th Ave., San Francisco, Calif. 94122

Filed Aug. 10, 1973, Ser. No. 387,499

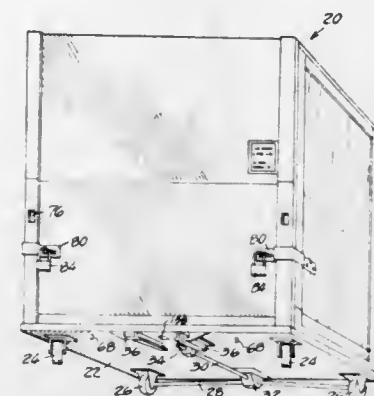
Int. Cl. B60d 1/00

U.S. Cl. 180-14 E

7 Claims

1. A container of the kind that can be erected for loading and knocked down for storage, said container comprising, a floor, wheel means on the bottom of the floor, collapsible wall and top means, and connecting means for connecting the wall and top means to form a rigid container when erected for loading and for disconnecting the wall and top means to a stack on the floor when collapsed for storage, and wherein the collapsible wall and top means include two separate sidewall

panels and a single hinged member comprising back wall, top wall, front wall panels connected together by hinges for folding to a flat condition by an accordion type fold, and wherein



the wheel means include wheels at the corners of the floor, the wheel means include a drive shaft connected to at least two laterally spaced wheels and a drive connection for engaging a drive motor with the drive shaft to power the wheels.

3,854,545

POWER TRANSFER UNIT FOR TANDEM WHEELS

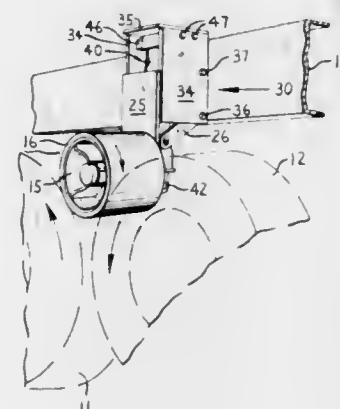
Frederick J. Barcroft, 7700 S.W. Garden Home Rd., Portland, Oreg. 97223

Filed Apr. 20, 1973, Ser. No. 352,896

Int. Cl. B62d 61/10

U.S. Cl. 180-24.12

4 Claims



1. A power transfer wheel unit for frictionally driving a road wheel on a dead axle from a road wheel on a drive axle in a tandem axle vehicle suspension, comprising a vertical plate adapted for mounting on an outside vertical face of a longitudinal frame member of the vehicle, link arms pivotally supported from said plate, a support member pivotally mounted on said link arms, said plate, link arms and support member forming a parallelogram linkage for vertical movement of said support member, a fluid pressure cylinder having a piston connected with said support member, a horizontal pivot pin on said support member, a vertical arm pivotally mounted on said pivot pin, a horizontal stub shaft on said vertical arm, and a friction wheel on said stub shaft having an operative position engaging tires on both of said road wheels and having an inoperative position retracted away from said tires, said unit being wholly mounted on said outside face of the vehicle frame member.

3,854,546

PROPULSION DEVICE

Kjell Arne Andersson, Huskvarna, Sweden, assignor to Huskvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden

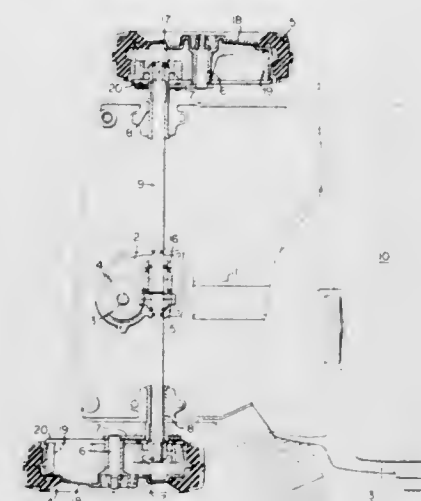
Filed Nov. 13, 1972, Ser. No. 306,334

Claims priority, application Sweden, Nov. 12, 1971, 14499

Int. Cl. B60k 17/04

U.S. Cl. 180-70 R

5 Claims



1. A transmission assembly for driving at least a pair of wheels of a vehicle having a chassis which wheels are parallel and offset in relation to each other in the driving direction of the vehicle, comprising a driven shaft, axles of rotation of said wheels and a gearing arrangement housed within each wheel and provided with a pinion gear mounted on each end of said shaft to be rotated therewith and a gear secured to the wheel, said pinion gear at the one and the other end of said shaft engaging the respective one of said other gears in front of, respectively behind the axle of rotation of each wheel.

3,854,547

AIR CUSHION VEHICLE

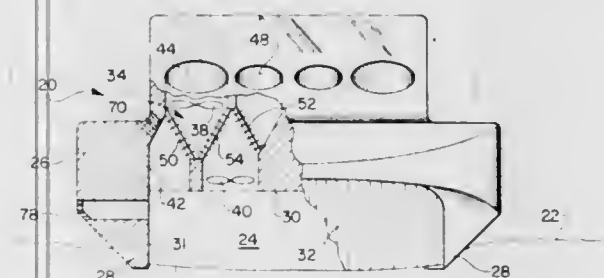
Arnold M. Hall, Westerly, R.I., assignor to Hovermarine Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 425,849

Int. Cl. B60v 1/04

U.S. Cl. 180-117

11 Claims



1. An air cushion vehicle adapted for travel over a surface comprising:

a hull; structure for maintaining a cushion of pressurized fluid beneath said hull at least partially supporting said hull above the surface as it proceeds; duct means extending between ambient fluid and the cushion of pressurized fluid; first and second sources of pressurized fluid for delivery to the cushion, said first and second sources located in said duct means; and louver means in said duct means selectively operable to arrange said first and second sources in a series relationship to thereby obtain optimum pressure in the cushion under one occurring condition and to arrange said first and second sources in a parallel relationship to thereby

obtain optimum flow into the cushion under another occurring condition.

3,854,548

SILENCING APPARATUS

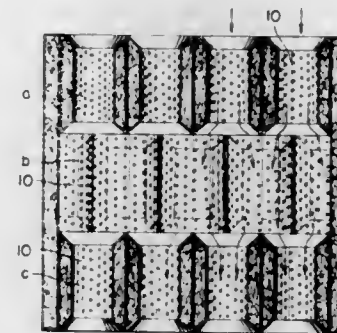
Hisao Suzuki, 2-1-1, Taiheidai Tsujido, Fujisawa-shi, Kanagawa-ken, Japan

Filed Aug. 1, 1973, Ser. No. 384,581

Int. Cl. F01n 1/08

U.S. Cl. 181-56

1 Claim



1. A silencer for noise-generating gases comprising: an elongated casing opening axially from end-to-end,

said casing having a closed outer wall and a porous inner wall spaced from the outer wall and a sound-absorbing material disposed therebetween;

a plurality of individual silencing tubes disposed in axially spaced stages extending along the length of said casing, each of the stages of the silencing tubes comprising a plurality of mutually parallel, peripherally engaged individual tubes disposed parallel to the longitudinal axis of the casing and the gases passing therethrough, the plurality of tubes of each of the respective stages substantially filling the cross section of the casing in which they are disposed,

each of the tubes of an upstream stage of tubes being laterally offset so that the longitudinal axis thereof is offset with respect to tubes of a next adjacent stage of tubes, the ends of adjacent tubes of adjacent stages of tubes abutting so that gases leaving an upstream tube pass interiorly and exteriorly of next adjacent tubes of the next adjacent stage of tubes, so that the individual tubes continuously divide the streams of gas entering the casing from the inlet and subdivide and modulate the streams of gas as it moves in individual streams from stage-to-stage,

each of the individual tubes comprising concentric, perforated, axially spaced sleeves with sound-absorbing material in the space therebetween, said tube sleeves being connected at opposite ends by annular collars converging axially from opposite ends of the individual silencing tubes whereby sound generated by the gases passing through the silencing tubes is absorbed by the sound-absorbing material of the casing and individual tubes as the paths of travel of the gases is continuously altered and frequency is changed from stage-to-stage.

3,854,549

REED MUFFLER

Paul S. Moller, Davis, Calif., assignor to Discajet Corporation, Davis, Calif.

Filed Oct. 10, 1973, Ser. No. 405,059

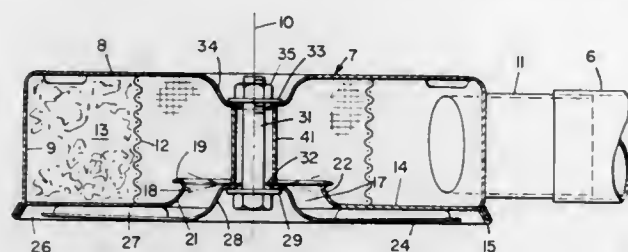
Int. Cl. F01n 1/08

U.S. Cl. 181-58

3 Claims

1. A reed muffler for an internal combustion engine having an exhaust duct comprising means defining a circular-cylindrical chamber disposed about an axis, said chamber having a substantially tangent inlet connected to said duct and having an outlet, said outlet being of Venturi form and having a throat symmetrical with said axis; a plurality of flexible,

radial reeds arranged in a disc-like, planar array of substantially the size of said throat; and means for mounting said array



in said outlet with the plane of said array normal to said axis and substantially in said Venturi throat.

3,854,550

MOBILE OUTRIGGER FOR SCAFFOLDS

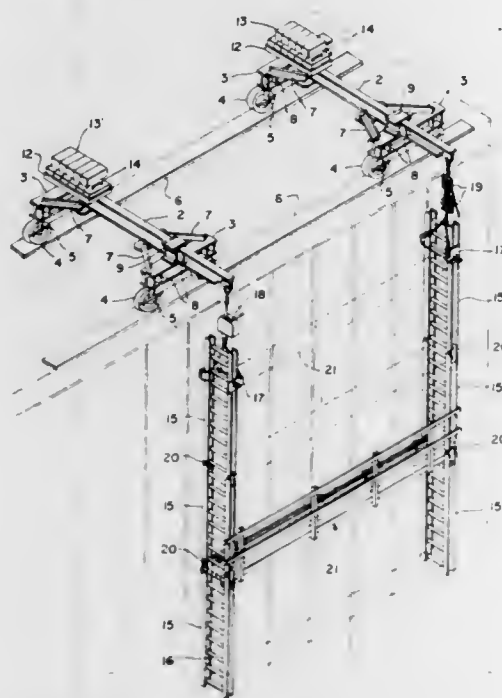
Thomas M. Shingler, Pittsburgh, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 317,180, Dec. 21, 1972. This application June 1, 1973, Ser. No. 365,955

Int. Cl. E04g 3/10

U.S. Cl. 182-36

5 Claims



1. In combination with a scaffold and suspension means therefor, a vehicular outrigger movably mounted on tracks on the roof of a building for moving the scaffold alongside the building and around corners thereof, comprising a pair of spaced parallel trucks, each in the form of a beam mounted on a pair of casters having brake means for locking the casters in any selected position, a beam guide mounted on and transversely of each truck, a beam extending transversely of said trucks and telescopically fitted through said beam guides and including an extension to adjustably move said suspension means and scaffold towards and away from the side of a building so that said scaffold can be maneuvered around a building corner and clear all structural surfaces, each truck being struttled into said transversely extending beam by a pair of angular extending ties integrally secured at each end to said truck and transverse beam, respectively.

3,854,551

TREE STAND AND SEAT

Gerald L. Lindow, 175 1/2 E. North Water St., Nennah, Wis. 54956

Filed Dec. 5, 1973, Ser. No. 421,857

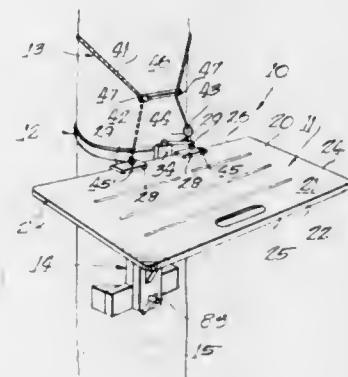
Int. Cl. A47c 9/10

U.S. Cl. 182-187

4 Claims

1. A combination stand and seat adapted for support from a tree or other upstanding support comprising a substantially

flat rectangularly shaped platform having a top surface, a bottom surface, a front edge, a back edge, and opposed side edges, an elongated slot formed in the platform adjacent the front edge thereof and defining a handle carrying member for use in the transporting of the stand between locations of use, a flexible strap affixed intermediate its terminal ends to the back edge of said platform and adapted to be slung about the circumference of the tree in a manner to retain the platform secured to the tree, a flexible safety rope having one end affixed to the platform adjacent the back edge thereof with the opposite end adapted to be passed about the circumference of the tree at a level above the position of the strap about the



tree, the free end of said rope adapted to be releasably secured to said back edge of said platform at a position spaced apart from the opposite end of said rope, a vertically extending support bracket affixed at its top end to the back edge and bottom surface of said platform with said bracket extending vertically downwardly therefrom to terminate at a terminal edge, a pair of horizontally disposed wedge forming members adjustably secured to the terminal edge portion of said bracket and extending laterally outwardly of opposite sides of said bracket, and means adjustably retaining said wedge members in adjusted positions relative to each other to engage the circumference of the tree for stabilizing and supporting said platform on said tree.

3,854,552

SCAFFOLD PLANKING CLAMP

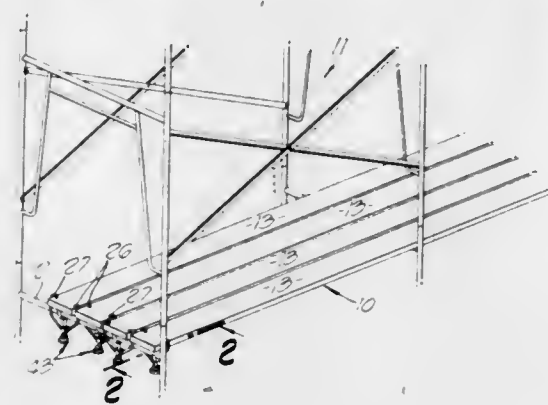
Milo M. Kensrue, 2265 S. Grand, Santa Ana, Calif. 92705

Filed July 2, 1973, Ser. No. 375,528

Int. Cl. E04g 5/08

U.S. Cl. 182-222

4 Claims



1. A device for anchoring a scaffold planking to a scaffold supporting structure, comprising:

- means positioned on the underside of the planking for grippingly engaging a cross-member of the structure, said means comprising a clamping bar engageable with the cross-member and an under surface of the planking;
- force applying means connected with said first means having a portion adapted to extend over and engage the upper surface of the planking, said force applying means comprising a pair of elongate hook members connected with a nut, one of the hook members having a fixed con-

nection with the nut and the other a hinged connection, each hook member having a deflected outer end portion adapted to overlies the upper surface of the planking; and c. actuating means operable to move said force applying means so that said portion is clampingly forced against the upper surface of the planking, said actuating means comprising a manually operable screw member rotatably carried by said clamping bar and having threaded engagement with said nut.

3,854,553

LUBRICATION SYSTEM FOR SWING GEAR DRIVE

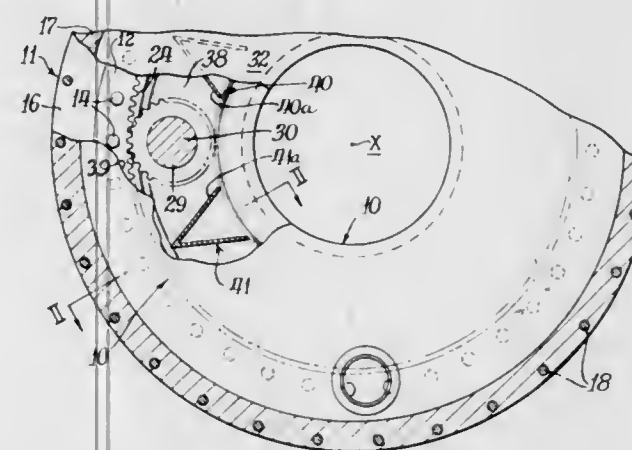
Calvin L. Miller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 1, 1973, Ser. No. 411,774

Int. Cl. F16n 29/00

U.S. Cl. 184-6.12

5 Claims



1. A gear drive mechanism comprising a horizontally disposed, annular ring gear having teeth formed thereon which face radially inwardly towards a vertically disposed central axis thereof and a pinion gear mounted for rotation about a vertically disposed axis thereof, parallel to said central axis, and meshing with the teeth of said ring gear, an annular enclosure enclosing said gear drive mechanism in an annular chamber thereof and lubricating means, including at least one member disposed in said chamber on a circumferential side of said pinion gear, for continuously pressing a lubricant into meshing teeth of said ring and pinion gears.

3,854,554

ELEVATOR SYSTEM

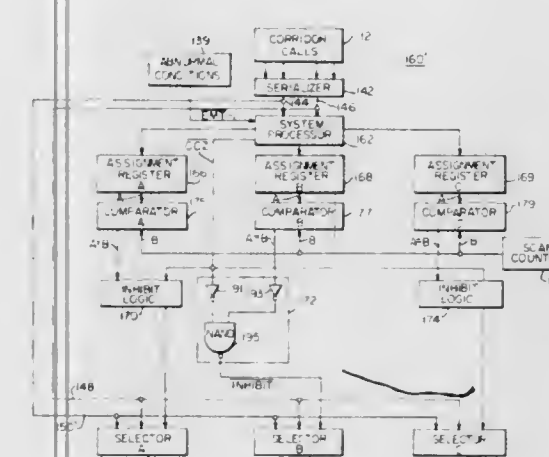
Clyde A. Booker, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1973, Ser. No. 340,616

Int. Cl. B66b 1/18

U.S. Cl. 187-29 R

13 Claims



1. An elevator system, comprising:
a structure having a plurality of landings,

a plurality of elevator cars mounted for movement relative to the landings,
means for registering calls for service from the landings,
car control means for each of said elevator cars,
means connecting the calls for service to the car control means of said elevator cars, said car control means being operable for moving its associated elevator car in response to calls for service,
and system control means, said system control means being responsive to said calls for service to assign at least certain of said calls to predetermined elevator cars by providing assignment signals for the car control means of all of the elevator cars,
said assignment signals overriding and preventing each car control means from considering an assigned call for service which has not been assigned thereto.

3,854,555

PEDAL OPERATED SHOE BRAKE FOR JUVENILE BIKE

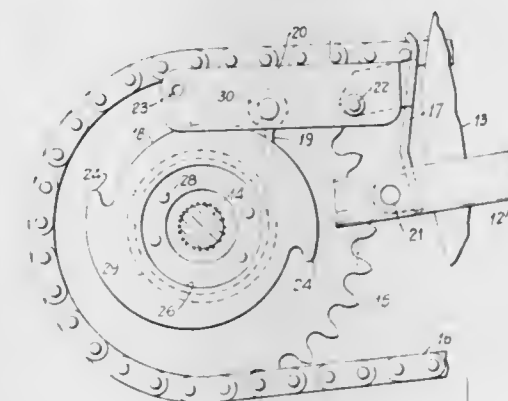
Carter E. Quisenberry, Olney, Ill., assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,286

Int. Cl. B62l 1/04

U.S. Cl. 188-24

1 Claim



1. A shoe brake for the rear wheel of a juvenile bike, comprising a brake shoe pivoted off the bike frame in front of the rear wheel, a cam wheel and spacer collar rotatable with a bike pedal crank, said cam wheel being positioned adjacent to a bike pedal hanger tube and being spaced from a bike sprocket by said collar, a link pivotally connected to said brake shoe and extending therefrom to said cam wheel, a pin on said link overlying said cam wheel and lobes on said cam wheel for engagement with said pin, and a spring for disengaging said pin from said lobes and said brake shoe from said rear wheel when pedalling forward, but allowing said lobes to engage said pin when reverse pedalling to engage said brake shoe with said rear wheel through said link, said spring being stiff and having several turns loose on said collar between said cam wheel and sprocket, and one end of said spring being disposed behind said collar alongside said cam wheel and being pivotally connected to said link between said pin and brake shoe.

3,854,556

ANTI-SKID SYSTEM HAVING IMPROVED SENSOR

Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1973, Ser. No. 428,709

Int. Cl. B60t 8/08

U.S. Cl. 188-181 R

14 Claims

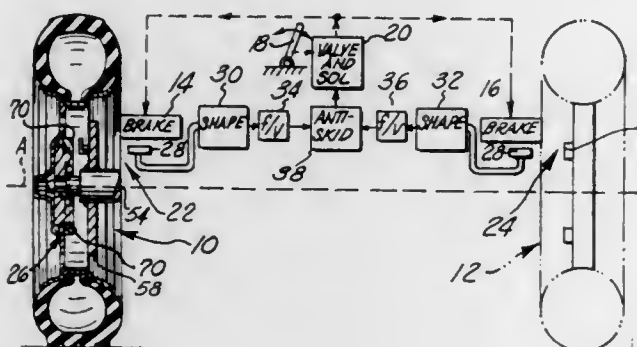
1. An anti-skid system for relieving brake forces applied to at least one independently rotatable wheel in response to a skid signal comprising:

anti-skid control circuit means for providing a said skid signal in dependence upon a received wheel speed signal representative of the wheel speed of a said wheel;
wheel speed signal generating means including a variable reluctance wheel speed sensor, said sensor including a

stationary stator and a rotor adapted to be mounted on said wheel for rotation therewith in close proximity to said stator and cooperating with said stator to define an air gap therebetween;

said rotor including an annular ferromagnetic member having an annular array of teeth with adjacent teeth being separated by a recess, each said tooth extending toward said stator and terminating in a pole face having a width in the direction of rotation corresponding with the width in the same direction of each said recess;

said stator comprising means for defining a magnetic flux source and a split magnetic flux path, said defining means including spaced apart first and second leg members which define, at least in part, first and second magnetic



circuits and a third member which defines a common magnetic path for said first and second magnetic circuits, each said first and second leg member having a pole face which faces said rotor and being spaced therefrom to define an air gap, said first and second leg members being oriented and configured such that the reluctance change in said first and second leg members caused by rotation of said rotor is essentially 180° out of phase and the reluctance change in said first and second leg members caused by a like change in said air gap spacing is essentially in phase, coil means for providing an output signal in dependence upon said reluctance changes such that essentially no output signal is provided when said reluctance changes are in phase.

3,854,557

UNIVERSAL JOINT FOR PISTON-CONNECTING ROD ASSEMBLY

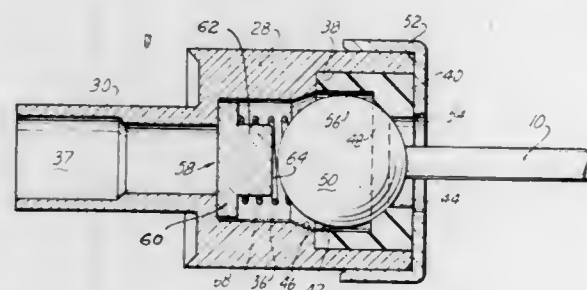
Lance C. Wilcox, Wilton, Conn., assignor to Airpot Corporation, Norwalk, Conn.

Continuation of Ser. No. 8,449, Feb. 4, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 233,898

Int. Cl. F16f 9/34

U.S. Cl. 188—322

10 Claims



1. In a miniature damping dashpot for use in electromagnetic assemblies or the like, a piston-connecting rod assembly for universally pivotally mounting a connecting rod in force transmitting relationship to a piston comprising a ball-like member rigidly mounted on said connecting rod, an element operatively connected to said piston and having an open-ended chamber therein, said connecting rod extending into said chamber with said ball-like member received therein, and retainer means having an aperture through which said con-

necting rod extends with lateral clearance therearound; the improvement comprising a socket member formed substantially completely of soft easily deformable rubber-like elastomeric material received, with substantially no deformation thereof, within said chamber and having a concave ball-like inner surface adapted to operatively engage the outer surface of said ball-like member along an area shaped to conform to a substantial portion of the surface of said ball-like member with substantially no deformation of said concave surface, said socket member surface having an aperture in registration with said aperture on said retainer means through which said connecting rod extends with lateral clearance therearound, the lateral clearance between said connecting rod and both said apertures being sufficient to permit said connecting rod a degree of universal movement relative to said element as it moves angularly relative to said cylinder, said socket member aperture being of a size normally insufficient to allow passage of said ball-like member therethrough, said elastomeric material surrounding said aperture in said socket member being yieldable to allow insertion of said ball-like member through said socket member aperture, thereby to provide for the mounting of said socket member on said connecting rod prior to insertion of said socket member into said chamber, whereby said socket member is effective to provide a bearing surface for universal rotation of said ball-like member within said socket member to act as a resilient linear force transmitting member between said connecting rod and said piston, and to act as a soft shock-absorbing and wear-resistant element, said retainer means engaging said socket member and retaining it substantially immovably in said chamber.

3,854,558

TACKLE BOX LATCH

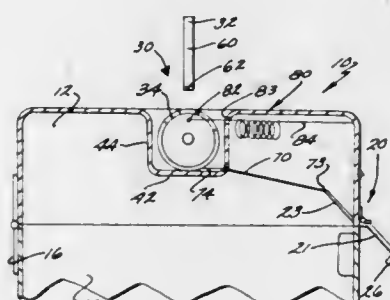
Steve Corson, R.R. No. 1, Luther, Mich. 49656

Filed July 30, 1973, Ser. No. 383,502

Int. Cl. A45c 13/10

U.S. Cl. 190—58 A

6 Claims



1. In a container having a base, a cover hingedly mounted to said base for closing same, a handle associated with said cover for carrying the container, and latching means shiftable between locked and unlocked positions for maintaining said cover and base in closed relationship when in locked position, the improvement comprising:

means for mounting said handle to said cover, said mounting means being shiftable between a handle-securing position and a handle-release position; and

actuator means for shifting said mounting means between said positions, said actuator means operatively connecting said latching means and said mounting means, said actuator means shifting said mounting means to said handle-securing position when said latch is in locked position, and to said handle release when in unlocked position.

3,854,559

CONTROL SYSTEM FOR A HYDRAULICALLY-OPERABLE BRAKE AND TRANSMISSION

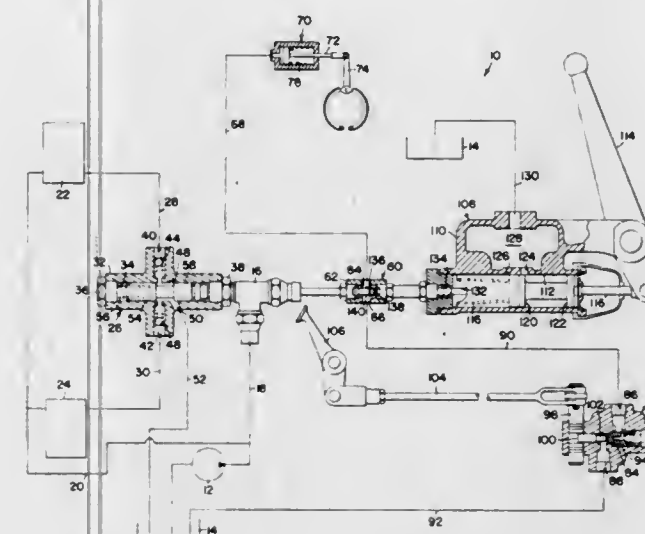
John Frank Talak, and John Lester Hobson, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 1, 1973, Ser. No. 402,395

Int. Cl. B60k 29/02

U.S. Cl. 192—4 A

12 Claims



7. A hydraulic brake and transmission control system comprising: a normally engaged vehicle brake means; a fluid pressure operable actuator means connected to said brake means for selectively releasing the latter; a pump having an inlet connected to a sump and an outlet connected to said actuator means; said outlet also being connected to said sump through brake control valve means including a normally closed valve means acting to block the flow of fluid between the pump outlet and the sump; a manually operable actuator means connected to said brake control valve means for selectively effecting an open condition therein; fluid operable transmission means including actuating fluid passage means connected to said sump by means including a normally open pilot-operated dump valve means; said pump outlet also being connected to said fluid-operable transmission means, exclusive of said dump valve means and to a pilot port of said dump valve means, the dump valve means being responsive to a pre-determined minimum pressure of the fluid delivered by said pump at said pilot port to block the flow of fluid between the actuating fluid passage means of said transmission means and the sump, whereby fluid pressure will be available to operate said transmission, when the pump is operative to deliver said minimum pressure, until said normally closed brake control valve means is opened to connect the pump to the sump thus resulting in a pressure drop at said dump valve means, the latter then acting to connect the transmission means operating fluid to sump.

3,854,560

LATCH OPERATED CLUTCH

Tatsuo Nishikawa, and Toshiaki Ozawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1973, Ser. No. 350,647

Claims priority, application Japan, Apr. 19, 1972, 47-38683

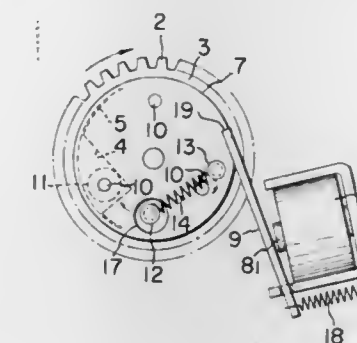
Int. Cl. F16d 41/02, 15/00

U.S. Cl. 192—27

8 Claims

1. A latch operated clutch comprising, a continuously rotating cylindrical main rotary member, a follower rotary member loosely fitted in said main rotary member, said follower rotary member being provided with at least one cut-away portion in the peripheral surface thereof, a roller disposed in said cut-away portion, a disc having mounted thereon a first supporting means for said roller, a second supporting means mounted on the front surface of said follower rotary member, said disc being provided with an opening at a position corresponding to

said second supporting means, a third supporting means mounted on the front surface of said disc, biasing means extended between said second and third supporting means for biasing said follower rotary member and said disc in respectively opposite rotational directions so that said follower rotary member and said roller are in engagement, releasing



means for releasing the engagement between said follower rotary member and said roller when in a non-transmission mode, stopping means for stopping the rotation of said disc, and control means for controlling said stopping means for converting a continuous rotation of said main rotary member into an intermittent rotation of said follower rotary member.

3,854,561

UNIDIRECTIONAL SLIP CLUTCH

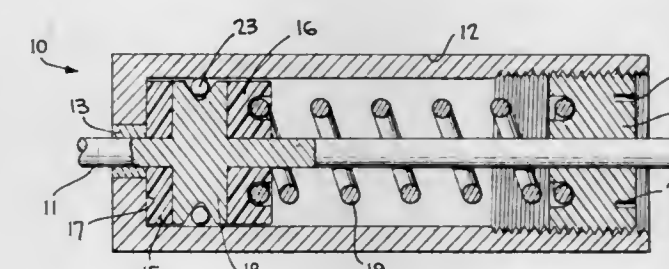
Hector O. Conde, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed May 9, 1973, Ser. No. 358,610

Int. Cl. F16d 47/04, 41/07

U.S. Cl. 192—48.92

2 Claims



1. Apparatus which functions as a unidirectional slip clutch comprising: a shaft; a cylinder mounted in bearings on said shaft; said shaft having fixedly mounted thereon within the cylinder a disc-shaped means having a plurality of peripherally spaced grooves located in the circumference thereof, each groove receiving a ball therein and having a shallow portion at one end of the groove and a deep portion at the other end, the grooves being triangular shaped, with the shallow portion of the groove being located at the end of the groove which corresponds to the apex of the triangle; first and second friction discs mounted on the shaft, said first friction disc being located between the disc-shaped means and one inner end wall of the cylinder, said second friction disc being located on the opposite side of said disc-shaped member; a spring located within the cylinder, one end of said spring engaging said second friction disc, the other end engaging an axially adjustable means carried by said cylinder so that the torque between the shaft and cylinder may be varied by varying the pressure on said spring, said bearings being located on the ends of said cylinder, one of said bearings being threadedly carried at the end of said cylinder remote from said disc-shaped means and defining said axially adjustable means, the threadedly carried bearing being provided with at least one recess in its outer surface for engagement by rotating means.

3,854,562

ELECTROMAGNETIC CLUTCH

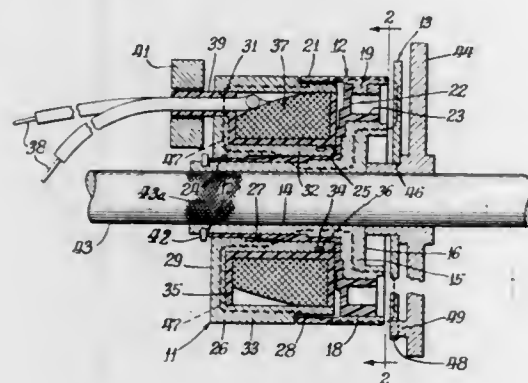
Robert Hugh Wilczewski, Roselle, Ill., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Aug. 15, 1973, Ser. No. 388,454

Int. Cl. F16d 27/10

U.S. Cl. 192-84 C

11 Claims



1. An electromagnetic clutch mounted on a supporting shaft, comprising a unitary rotor having a hollow cylindrical inner portion of magnetic material secured to said shaft with a radially extending flange at one end, an outer collar portion of magnetic material, and a thin-walled connecting member of non-magnetic bearing material injection molded to secure said inner and outer portions together in radially spaced relation and define a cylindrical bearing, a stationary field comprising a coil housing of magnetic material having a bore supported by said bearing and inner and outer axial flanges joined by an outer end wall to define an annular recess, a bobbin of non-magnetic plastic mounted in said recess, a toroidal coil wound on said bobbin, and an armature disc movable axially into contact with said rotor in response to energization of said coil; and a drive member rotatably mounted on said shaft and having relative axially slidable and non-rotatable engagement with said armature disc.

3,854,563

ARCuate PRINTER

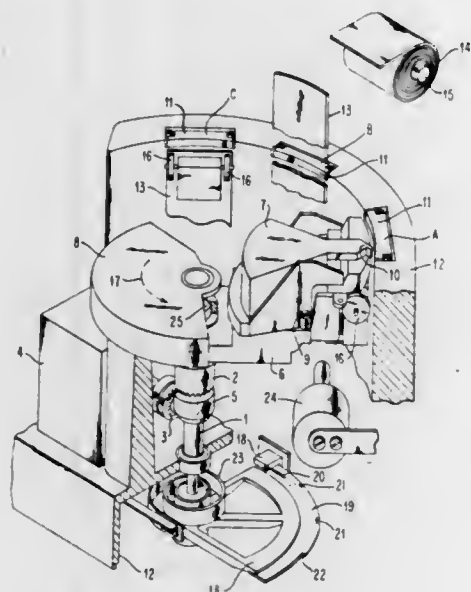
Robert L. Cowardin, Cary; George C. Matuck, Raleigh; Charles M. McCray, Raleigh; Flavius M. Powell, Raleigh; Woodrow W. Pratt, Cary; Delbert C. Thomas, Jr., and William D. Thorne, both of Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,057

Int. Cl. B41j 1/24

U.S. Cl. 197-1 R

5 Claims



1. Media marking apparatus, comprising:

at least one mark producing means for making visible marks on a medium;

support means for supporting said mark producing means in proximity to a medium to be marked and in a position to make a mark when said mark producing means is operated;

pivot means mounted at a fixed radial distance from said medium and supported in bearings for rotation about the central axis of said pivot, said axis being perpendicular to the radius establishing said radial distance;

said support means supporting said mark producing means being rigidly affixed to said pivot for rotation therewith to traverse an arc of a circle having its center on the axis of said pivot;

at least one arcuate platen means for supporting said medium at said fixed radial distance from said pivot in a position to be marked upon by said mark producing means while it traverses said arc, said arc of said platen means being cylindrical and having its axis coincident with said axis of said pivot means;

drive means connectable to said pivot means for turning said pivot through an arc;

return drive means coupled to said pivot means for turning said pivot means in an arc in an opposite direction to that produced by the action of said drive means when it is connected to said pivot means; and

motion sensing and quantizing means for indicating the rotation of said pivot and for signalling the relative amount of travel along said arc taken by said support means and said mark producing means in response to said drive means.

3,854,564

PRINTING HEADS FOR PRINTING MACHINES

Bernard Henri Gabriel Flaceliere, and Jean-Pierre Talvard, both of Allee des Elfes, France, assignors to Logabax S.A., Arcueil, France

Continuation of Ser. No. 169,759, Aug. 6, 1970, abandoned.

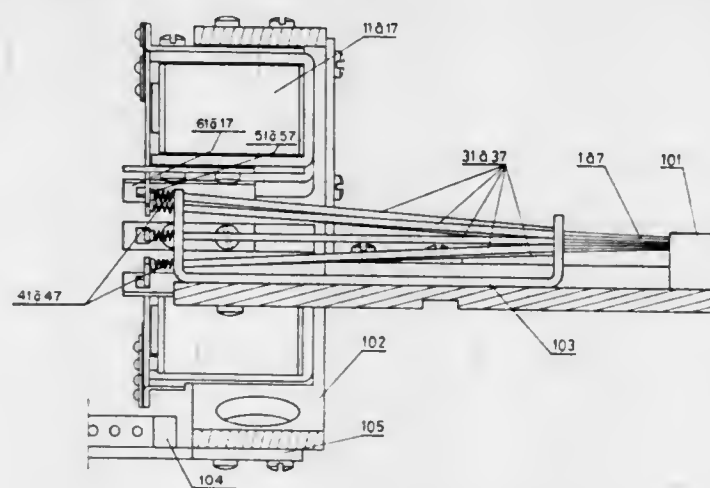
This application July 9, 1973, Ser. No. 377,659

Claims priority, application France, June 17, 1970, 70.2241

Int. Cl. B44j 1/34

U.S. Cl. 197-1 R

1 Claim



1. A printing head device including slidable elongate marker needle elements projectable against an anvil during striking a straight line of dots of a selected character, the device including a body having a longitudinal axis of symmetry, a plurality of electromagnets each having a frame mounted within said body and radially projecting towards said axis of symmetry, said frame including a blade-like armature extending radially towards said axis of symmetry and having a movable radially inner end, the inner ends of said armatures being centrally disposed in a circular array about the axis of symmetry of the said body; the needle elements directly cooperating at a first end with the respective inner ends of the armatures, and having at a second end, terminal portions parallel to said axis of symmetry, a supporting member se-

3,854,565

MAGAZINE FOR A TYPEWRITER RIBBON SPOOL

Wolfgang Kupferschmidt, Resse, and Dietrich Lison, Hannover, both of Germany, assignors to Firma Gunther Wagner, Hannover, Germany

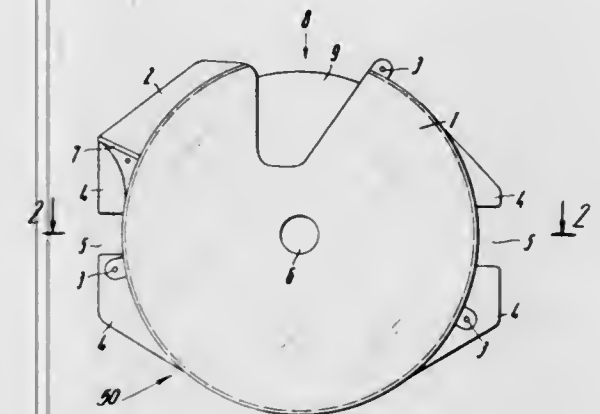
Filed Oct. 16, 1972, Ser. No. 297,837

Claims priority, application Germany, Oct. 21, 1971, 7139793

Int. Cl. B41j 33/14

U.S. Cl. 197-151

4 Claims



1. A magazine for holding a typewriter ribbon spool having an inner edge on a typewriter frame, comprising a substantially cylindrical flat container having a lid wall with a typewriter spool centering pin formation and an opposite wall spaced therefrom by an amount to accommodate the typewriter ribbon spool therebetween, a centering ring on the opposite wall for centering the spool around said centering pin formation, and engagement means defined on said container for anchoring said container against rotation with respect to said typewriter, said centering ring comprising an individual end formation on said opposite wall defining a bearing wall opposing the inner edge of the typewriter ribbon spool, and said centering pin formation comprising an indentation having an interior solid wall portion of circular configuration for centering the typewriter ribbon spool, whereby said magazine is engageable and useable with a variety of typewriter models without the necessity of passing bolt means completely through the magazine to secure the magazine to the typewriter frame.

3,854,566

PHOTOELECTRIC TABULATING APPARATUS

George R. Ellis, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 25, 1973, Ser. No. 363,918

Int. Cl. B41j 25/18

U.S. Cl. 197-176

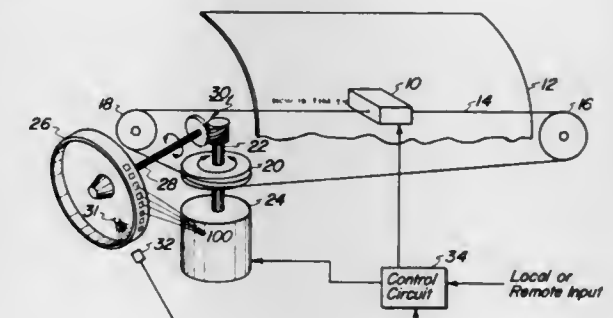
5 Claims

1. Tabulator apparatus for use in a printer having relative movement in fixed increments between a printing mechanism and a recording medium, said apparatus comprising a cylindrical shell connected for rotation in synchronism with said relative movement, said shell having a plurality of apertures along a line of rotation of said shell, said

apertures being spaced along said line to correspond to said fixed increments,

a plurality of shutters slidably mounted on said shell, each of said shutters being associated with a respective one of said apertures and having an opening therein selectively alignable with a respective aperture,

a light source mounted to transmit light to said apertures, and



a phototransducer having an output terminal for providing a signal thereon when light from said light source impinges on said phototransducer, said phototransducer being mounted in spatial relation to said shell so that said apertures pass said phototransducer in correspondence with the relative movement of said printing mechanism and said recording medium, light from said light source impinging on said phototransducer only when a shutter opening is aligned with a respective aperture passing said phototransducer.

3,854,567

DEVICE FOR CONVEYING ROD-SHAPED OBJECTS SUCH AS CIGARETTES

Raymond Poupin, Fleury-Les-Aubrais, and Henri Anfossi, Orleans, both of France, assignors to Service D'Exploitation Industrielle Des Tobacs Et Des Allumettes, Paris, France

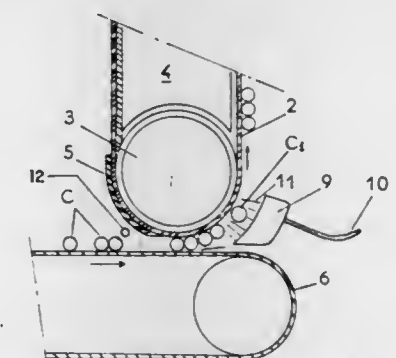
Filed Dec. 20, 1971, Ser. No. 210,029

Claims priority, application France, Dec. 23, 1970, 70.46369

Int. Cl. B65g 47/00

U.S. Cl. 198-20 C

1 Claim



1. A device for conveying and grouping substantially rod-shaped articles comprising first, upstream, smooth conveyor means for carrying a single layer of said rod-shaped articles and second, downstream, smooth conveyor means, said second conveyor means having a perforated conveying surface and associated suction means operable to urge said rod-shaped articles into contact with the conveying surface of said second conveyor means, said first and second conveyor means being disposed, relative to one another, so as to define a transferral zone in which rod-shaped articles disposed crosswise on the conveying surface of said first conveyor means are transferred to the conveying surface of said second conveyor means by the urging of said suction means, and braking means downstream of said transferral zone comprising a source of air current so disposed as to deliver said air current in opposition to the direction of passage of said rod-shaped articles exiting from said transferral zone, said braking means being operable

to delay the passage of single, ungrouped rod-shaped articles on said second conveyor means downstream from said transfer zone until parallel to and contiguously grouped with at least one other rod-shaped article and to permit a plurality of such parallel and contiguously grouped rod-shaped articles to be conveyed by said second conveyor means.

3,854,568

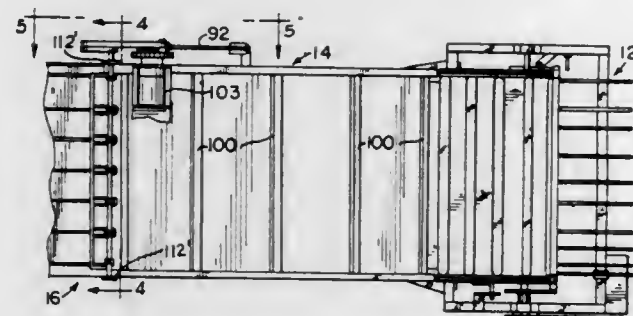
ARTICLE HANDLING APPARATUS

Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Division of Ser. No. 177,931, Sept. 7, 1971, Pat. No. 3,752,340. This application Mar. 16, 1973, Ser. No. 341,959
Int. Cl. B65g 47/26

U.S. Cl. 198—30

5 Claims



1. In an apparatus for handling eggs or similar articles, a horizontally disposed supporting table member of a length and width sufficient to provide an area for accumulating a substantial quantity of eggs thereon, means for advancing eggs along the surface of said table to said accumulating area which egg advancing means includes egg engaging means operative to normally move the eggs along said table surface and to brush past the eggs when they meet an obstruction, means at the leading end of said accumulating area and depending between the eggs for guiding the eggs into a plurality of laterally spaced lanes and means for imparting sufficient oscillating movement to said table surface in a direction laterally of the path of advance of the eggs to agitate the eggs when they are approaching the entrance to said lanes so as to prevent piling up at the entrance to said lanes and facilitate the entry of the eggs into said lanes.

3,854,569

CONVEYOR SYSTEM FOR MANUFACTURED ARTICLES, PARTICULARLY CONFECTIONS

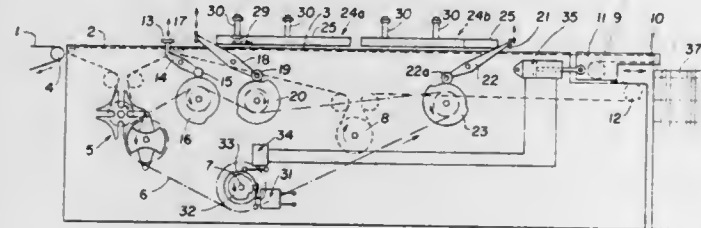
Gilbert Steinhart, Hannover, and Heinrich Bock, Empelde, both of Germany, assignors to Nabisco, Inc., New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,428
Claims priority, application Germany, Feb. 9, 1972, 2206137

Int. Cl. B65g 47/26

U.S. Cl. 198—34

5 Claims



1. In a conveyor system of the type having a first conveyor belt movable at a velocity v_1 and adapted to transport irregularly spaced objects, the improvement comprising means for aligning said objects, said means comprising a second conveyor belt positioned to receive said objects from said first belt, means for intermittently operating said second belt, a continuously running third belt having a velocity greater than

v_1 and positioned to receive said objects from said second belt, alignment rail means positioned above said third belt, means for periodically moving said rail means to a first position to inhibit movement of said objects on said third belt and moving said rail means to a second position to permit movement of said objects on said third conveyor belt, laterally operative rake means, means for positioning said rake means above said third belt following said rail means, means for periodically operating said rake means for urging objects transversely on said third belt, and frame means for movably supporting said rake means, said rake means comprising first and second rakes spaced apart, in the direction transverse to the direction of movement of said third belt, by a distance substantially equal to one half the width of said third belt.

3,854,570

VERTICAL CONVEYOR SHELF TILTING MECHANISM

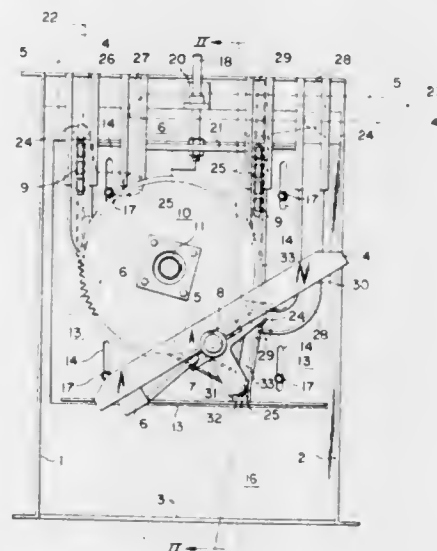
Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Apr. 20, 1973, Ser. No. 352,959

Int. Cl. B65g 17/00

U.S. Cl. 198—158

12 Claims



1. A tilting shelf, vertical conveyor, comprising: at least one rotatably mounted sprocket wheel having a generally horizontal axis of rotation; an endless chain in driving interengagement with said sprocket wheel and being guided to have a first generally vertical conveyor run on one side of said sprocket wheel and a second generally vertical conveyor run on the opposite side of said sprocket wheel; means for driving said sprocket wheel and chain in one conveying direction, with said one conveyor run traveling generally vertically to said sprocket wheel and said second conveyor run traveling generally vertically away from said sprocket wheel; a plurality of shelves having load carrying surfaces; bearing means pivotally mounting each of said shelves on said chain for pivotal movement about respective generally horizontal axes; each of said shelves having a first guide roller rotatable about an axis parallel to the axis of pivoting for said bearing means and said sprocket wheel axis, and a second guide roller rotatable about an axis parallel to said axes; the axes of rotation of said first guide roller and said bearing means lying within a plane intersecting the plane having therein the axes of rotation of said second guide roller and said bearing means; first and second stationary guide channels generally parallel to each other and extending along one of said conveyor runs, and respectively guidingly receiving therein said first and second guide rollers; said first and second guide rollers, and said first and second guide channels together constituting means holding said shelves with their load carrying surfaces in one of a generally vertical position and a generally horizontal position during movement along said one of said conveyor runs; third and fourth stationary guide channels generally parallel to each other and extending along the other of said conveyor runs, and respectively guidingly receiving therein said second and first

guide rollers; said third and fourth stationary guide channels and said first and second guide rollers together constituting means holding said shelves with their load supporting surfaces in the other of a generally vertical position and a generally horizontal position during movement along said other of said conveyor runs; said first, second, third, and fourth stationary guide channels being so arranged that said first guide roller must cross over said third stationary guide channel to reach said fourth stationary guide channel; first stationary transition guide channel means extending from the cross-over point of said third guide channel to and in alignment with the adjacent end of said fourth guide channel for receiving said first guide roller after it has crossed over said third guide channel and for guiding said first guide roller into said fourth guide channel; second stationary transition guide channel means having a first channel portion guidingly receiving therein said second roller as said first roller approaches said cross-over, a second channel portion guidingly receiving therein said second roller as said first roller crosses over said third guide channel, and a third channel portion receiving therein said second roller as said first roller moves within said first transition guide channel means; said first, second and third channel portions defining a generally cusp-shaped path of travel for said second guide roller as said bearing means travels in an arcuate path concentric with said sprocket and said shelf is tilted to said other position; said second stationary transition guide channel means positively controlling the tilting of its shelf to cause said first guide roller to approach said third guide channel, cross over said third guide channel, and move over and into said first stationary transition guide channel means; and said first, second and third channel portions being uninterrupted with respect to each other.

3,854,571

SCOOP BELT CONVEYOR

Esko Eemeli Siirtola, 39700 Parkano, Finland

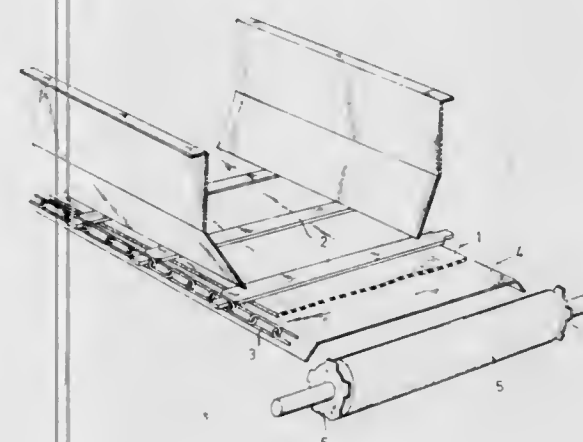
Filed Oct. 20, 1972, Ser. No. 299,309

Claims priority, application Finland, Oct. 27, 1971, 3045

Int. Cl. B65g 15/10

U.S. Cl. 198—162

1 Claim



1. An endless belt conveyor for transporting material comprising a stationary sliding base having a smooth upper surface, a shaft, sprocket wheels secured to said shaft for rotation therewith, a drum mounted for free rotation on said shaft between said sprocket wheels, an endless belt having one run thereof supported on said stationary sliding base and trained about said drum, parallel spaced chains driven by said sprocket wheels and a plurality of transversal conveying means fixed between said chains for movement thereon moving over said one run; and driving means operatively connected to said chain conveyor; the material to be transported being carried on the endless belt with its weight supported by the stationary sliding

base and said endless belt being carried along by the material being transported.

3,854,572

CORN HEADER WITH AUTOMATIC TENSIONING OF FEEDER CHAINS

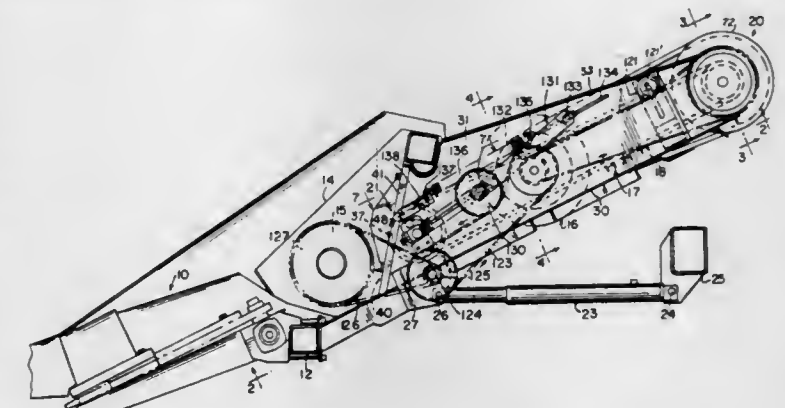
Arved Maiste, Brantford, Ontario, Canada, assignor to White Motor Corporation of Canada Limited, Brantford, Province of Ontario Dominion, Canada

Filed Sept. 25, 1972, Ser. No. 291,895

Int. Cl. B65g 19/00

U.S. Cl. 198—174

1 Claim



1. In apparatus for feeding crop material rearwardly and upwardly from a crop gathering head for a combine into the combine, said apparatus comprising, a housing having a floor, top and side walls and adapted to be mounted in inclined relation at the forward end of the combine, said housing being adapted to have its lower end connected in crop receiving relationship with said crop gathering head and its upper end connected in crop delivering relationship with said combine, and a feeder chain conveyor mounted in said housing and having a lower run which is operative to advance the harvested material upwardly along the floor of said housing, said chain conveyor having its upper end mounted on a top shaft assembly, power receiving means on said top shaft assembly for receiving power to drive said conveyor, and said conveyor having its bottom end mounted on an idler shaft assembly; the improvement comprising means mounting said idler shaft assembly for allowing limited movement thereof in a direction toward and from the floor of said housing and means for biasing said idler shaft assembly forwardly toward a downward position, said means for mounting said bottom idler shaft assembly comprising a cross shaft having its ends extending outside of the housing side walls through accommodating apertures therein, bearing members on the ends of said shaft, support arms pivotally mounted exteriorly on said housing side walls, said bearing members being movably mounted on said support arms and resilient means for urging said bearing members in a direction to automatically tension the conveyor chains and to urge said bearing members in the direction of the floor of said housing.

3,854,573

LOAD CARRIER WITH DUAL PIN SUSPENSION

Gerald W. Freier, Sr., Neenah, Wis., assignor to Neenah Foundry Company, Neenah, Wis.

Filed July 30, 1973, Ser. No. 384,153

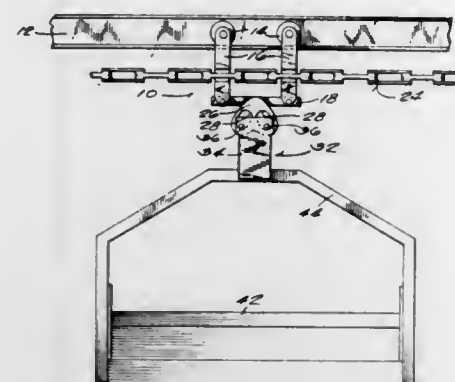
Int. Cl. B65g 17/20

U.S. Cl. 198—177 R

12 Claims

1. In a suspension system for suspending a load carrier from an overhead trolley having a load carrier supporting member, the improvement in which said load carrier is provided with two pintles spaced apart from each other longitudinally of, and at the top of, the load carrier and spaced inwardly from the ends of the load carrier so that the center of gravity of a load carried by the load carrier can be located between said pins and an end of the load carrier, said supporting member having a surface for receiving and supporting said pintles, there being an open space in said supporting member above

each of the pintles so that each pintle can be lifted off its supporting surface, whereby an unbalanced load so located in said load carrier causes the load carrier to tilt so that it is



supported by the pintle which is nearest the load's center of gravity, thereby reducing the tilting moment of the load carrier in response to an unbalanced load.

3,854,574

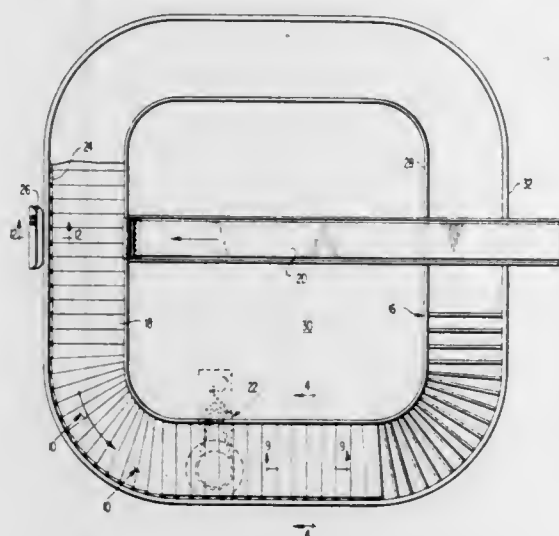
LUGGAGE DISPENSING CONVEYOR

Frederik Theijssmeijer, Elwood City, Pa., and Bert Krivec, Waukesha, Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed May 29, 1973, Ser. No. 364,473

Int. Cl. B65g 15/00

U.S. Cl. 198-181

19 Claims



1. In a conveyor useful for handling luggage to be claimed and having an inclined conveyor surface traversing an endless non-circular path, the conveyor being of the type having a plurality of interconnecting inclined flights with relatively slideable plates moving together along the path and supported by rollers from inside and outside rails, an endless chain connected to the flights for moving the flights, the chain being guided around the outside periphery of the path and attached to the outer end of each flight, the improvements comprising: a large diameter sprocket wheel with cycloidal teeth mounted on a stationary stub shaft and contacting rollers of the chain on a straight portion of the chain path, motor means positioned within the path and connected by power transmission means to drive the sprocket wheel, and each flight further comprising:

a structural flight support rib extending the length of each flight and attached to the chain at a roller thereof, the chain having a substantially smaller pitch than the flight support rib, and each plate for each flight having a single longitudinal bend so that the free exposed edge of each plate is positioned more closely adjacent the surface of the adjacent plate that it overlaps, and means for rigidly attaching each plate to the support rib.

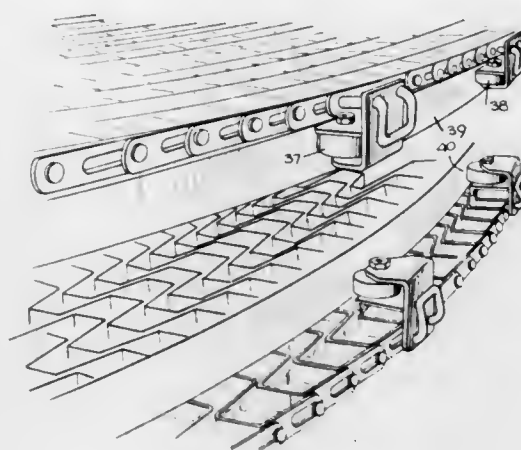
3,854,575
CONVEYOR BELT SYSTEM
Joseph Fraioli, Sr., 300 Martine Ave., White Plains, N.Y. 10603

Filed Oct. 30, 1973, Ser. No. 411,082

Int. Cl. B65g 15/00

U.S. Cl. 198-182

5 Claims



1. An endless chain belt conveyor system for transporting articles along an arcuate path, said system comprising:
A. a trackway extending along said arcuate path and having an outer rail formed by a curved strip,
B. an endless belt movable along said trackway and capable of turning to follow said path, the outer margin of said belt overhanging said rail and riding thereon, and
C. a roller mounted on the underside of the overhang of said belt at spaced positions therealong, the upper side of the overhang being free of obstruction to provide an uninterrupted belt surface which may be lifted relative to said rail, said rollers engaging and rolling along the outer surface of said rail and being tracked thereby whereby the stresses imposed by said belt in the course of turning movement are distributed along said rail which also functions as a bed for said belt.

3,854,576

ECCENTRIC WHEEL ACCUMULATORS

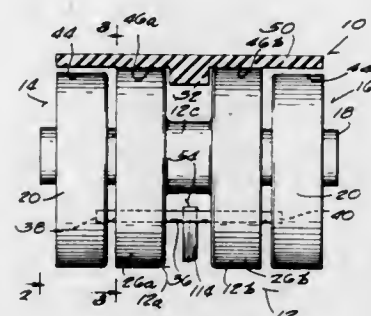
Clyde L. Bowman, Grand Rapids, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed June 27, 1973, Ser. No. 373,928

Int. Cl. B65g 15/00

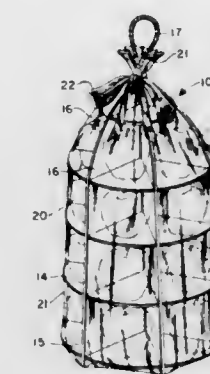
U.S. Cl. 198-184

26 Claims



1. A cam roller means for supporting a propelling member in both a raised and lowered position comprising first and second eccentric rollers mounted coaxially, and rotatable relative to each other between a lowered position wherein the portions of least radius of said rollers are in phase with each other and supporting said propelling member in its lowered position and a raised position wherein the portions of least radius of said rollers are out of phase with each other forming a circular roller means supporting said propelling member in its raised position.

3,854,577
PACKAGE AND CENTER-PIECE
Henry J. DuMolin, Rt. 1, Hwy. 23, Port Sulphur, La.
Filed Apr. 4, 1972, Ser. No. 241,032
Int. Cl. B65d 65/16, 77/26; A47b 47/00
U.S. Cl. 206-45.33

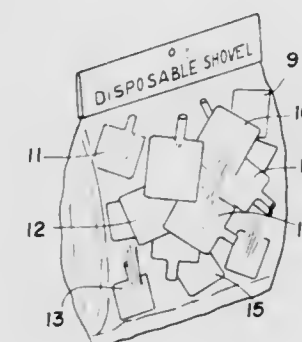


1. A package and center-piece for packing and ornamental display of contents individually and by grade sizes comprising in combination: a plurality of horizontal members each defining a plurality of slots equally spaced around the perimeter of each said horizontal member, and extending inward for less than a quarter of the distance between opposite points on each said perimeter; a plurality of vertical members, each having the same plurality of vertically spaced parallel slots as there are horizontal members for association therewith and each slot extending for a quarter of the distance between opposite points on the perimeter of the associated horizontal member, the slots of said horizontal members and the slots of said vertical members interfitting and forming vertical tiers of side-opening cubicles to receive, support and display said contents; and a clear plastic bag open at an end and enclosing said interfitting members, said open end being tied at the top thereof for the retention of contents therein in visible ornamental display.

3,854,578
DOG DROPPING DISPOSAL KIT
Grace S. Sharpe, San Francisco, Calif., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed May 7, 1973, Ser. No. 357,913
Int. Cl. B65f 1/06

U.S. Cl. 206-223

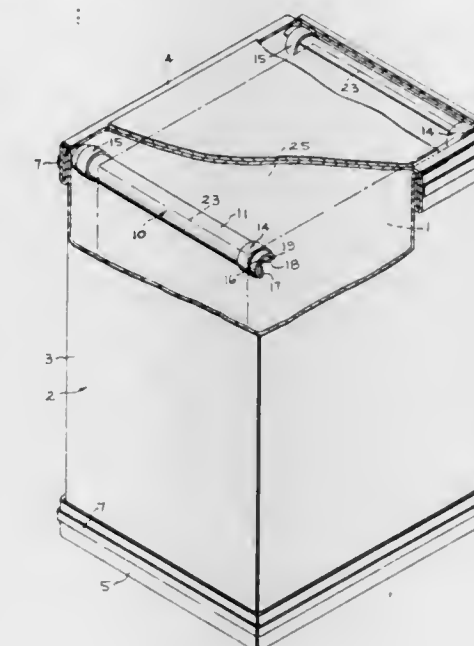
3 Claims



1. A dog dropping disposal kit, comprising
a bucket;
a plurality of disposable liners for the bucket;
a shovel stick; and
a plurality of disposable shovel heads each adapted to be removably affixed to the stick.

3,854,579
PACKAGED ARTICLE INCLUDING BLOCKING AND CUSHIONING MEANS
Edward W. Scharre, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Continuation-in-part of Ser. No. 186,923, Oct. 6, 1971. This application Jan. 29, 1973, Ser. No. 327,789
Int. Cl. B65d 81/06, 85/30, 5/50
U.S. Cl. 206-320

7 Claims



1. An edge and corner blocking member for protectively packaging a top edge and adjacent corners of a rectangular article in spaced relationship to the adjacent inner surfaces of a rectangular container, said top edge and corners of the container being defined by intersecting walls and top of said rectangular article, comprising:

an elongated pad having ends, an axis, a semi-cylindrical portion having first and second ends and extending along the axis for engaging adjoining side and top wall surfaces of the container in the installed position and a pair of integral wing cushioning portions for resiliently contacting and supporting intersecting side and top wall surfaces forming said edge of said rectangular article, each of said wing cushioning portions having a first edge hingedly connected to the first edge of the respective semi-cylindrical portion and a second edge positioned adjacent and directed toward the concave surface of said semi-cylindrical portion;
a pair of cylindrical blocking collars each having inner and outer edges, an axis, and an opening extending axially therethrough, said pad extending through the collar openings with each collar being positioned adjacent and spaced from a respective pad end and with the inner edges of each collar substantially engaging an opposed wall of said article in the installed position; and
fastening means for pivotally connecting each collar to the pad for pivotal movement of the collar relative to the axis of the pad.

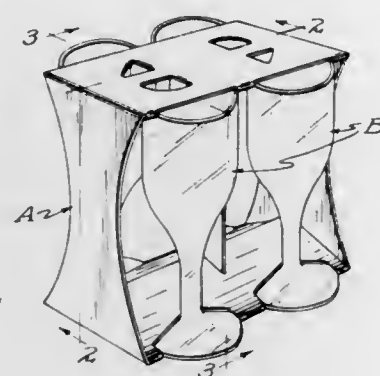
3,854,580
CARRIER FOR TUMBLERS, GOBLETs AND THE LIKE
Russell J. Hennessey, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Nov. 17, 1972, Ser. No. 307,653
Int. Cl. B65d 5/04

U.S. Cl. 206-426

4 Claims

1. A carrier for at least a pair of objects, the upper ends of which are substantially hollow and cylindrical, the carrier being formed of paperboard, the carrier including:
horizontal top and bottom panels and vertical side wall panels hingedly connected to the top and bottom wall to form a carrier sleeve.

a reinforcing flange secured to one edge of said top panel and folded into face contact with the under surface thereof;
 a flap hingedly connected to the inner edge of said reinforcing flange and inclining inwardly and downwardly therefrom;
 means connecting said top and bottom panels engaging said flap to hold the same in inclined position,



said flap having apertures therethrough defining edges adapted to engage said objects to limit movement thereof away from said one edge of said top panel,
 locking tabs foldably connected to said top panel and foldable into the hollow upper ends of the objects to restrain them from movement thereof in an outward direction toward said one edge, and
 means on said bottom panel adapted to engage with the lower ends of said objects to hold them restrained.

3,854,581

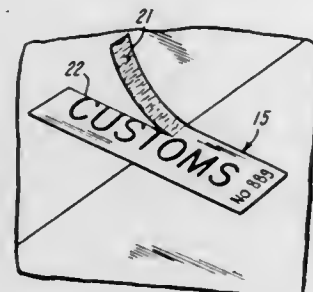
PRESSURE-SENSITIVE MATERIAL AND SUPPORTING MATERIAL COMBINATION

Ernest Charles Jones, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 10, 1972, Ser. No. 242,465
 Int. Cl. B32b 5/18; G09f 3/00

U.S. Cl. 206—460

4 Claims



1. A tamper-indicating label construction, comprising: a longitudinally extending web of supporting material, label material having a coating of pressure-sensitive adhesive releasably securing the label material to the supporting material, and cuts through the label material at longitudinally spaced apart intervals defining labels, the label material comprising extruded, foamed, stretched, uniaxially oriented polyolefin film which tears readily longitudinally and wrinkles transversely, wherein the polyolefin film comprises polypropylene, the labels being capable of being removed from the supporting material and applied to articles but providing a telltale indication of tampering by tearing longitudinally and/or by wrinkling transversely if attempted to be removed.

3,854,582

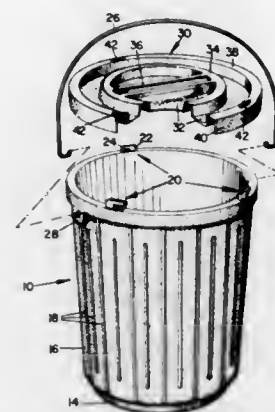
CLOSURE AND CONTAINER

Arnold C. Martinelli, Lake Shore Dr., Rawdon, Quebec, Canada

Filed Apr. 17, 1973, Ser. No. 351,953
 Int. Cl. B65d 21/02, 41/06, 25/28

U.S. Cl. 206—508

1 Claim



1. In combination, an open topped container and a closure therefor, locking lugs on the container registrable with locking slots in the closure and selectively movable out of such registration for locking the closure relative to the container, a stacking ring depending from the bottom wall of the container and a mating stacking ring extending upwardly from the closure, whereby a plurality of containers may be stacked one upon the other when the closure is in place on the open end of the container, the locking lugs on the container comprising a web portion fixed to and extending upwardly from the upper end of the container and a locking bar extending outwardly from the upper end of the web portion in spaced parallelism to the upper end of the container, a handle on the closure for facilitating its movement, and stacking ribs on the exterior side walls of the container, wherein the closure upon removal from the upper end of the container and placement on the ground or other supporting surface may function as a base or pedestal for the container, with the stacking ring of the container being engaged with the stacking ring of the closure.

3,854,583

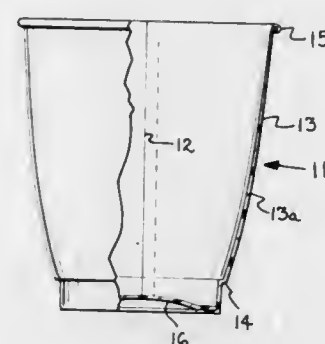
NESTABLE FABRICATED THERMOPLASTIC CONTAINER AND METHOD OF FABRICATION SAME

Stephen W. Amberg, Saint James, and Thomas E. Doherty, Setauket, both of N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 23, 1971, Ser. No. 211,259
 Int. Cl. B65d 21/02

U.S. Cl. 206—520

18 Claims



1. A two-piece nestable cup-like container comprising, in combination: a sidewall formed from a single double-ended sheet of a heat-shrinkable thermoplastic material, and having an inner surface adapted to contact a liquid product to be contained in said container, the ends of said sheet being joined to one another to form a liquid-tight seam extending from the top to the bottom of said container, said container having a mouth at its top which is defined by the upper portion of the sidewall, said upper portion being reversely folded into a

relatively thin tight bead which surrounds said mouth, said sidewall continuously and progressively tapering inwardly and downwardly from a point near the open mouth of the container to a point near the bottom of the container for a major portion of the height of the container, the height of said major portion constituting substantially more than one-half of the height of said container, the thickness of the sidewall increasing continuously and progressively over said major portion from a lesser thickness at the top to a greater thickness at the bottom thereof; and a piece separate from the unitary sidewall and sealingly joined thereto for closing the bottom of the container in a liquid-tight manner.

3,854,584

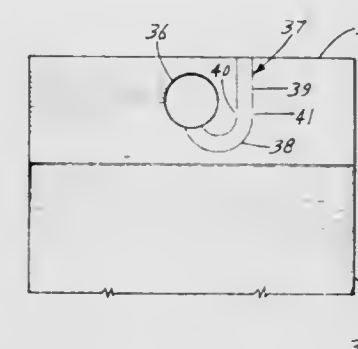
PACKAGE HAVING CONVERTIBLE HEADER FOR HANGING

Elmer I. Olson, Golden Valley, Minn., assignor to Durkee-Atwood Company, Minneapolis, Minn.

Filed July 30, 1973, Ser. No. 383,825
 Int. Cl. B65d 5/44

U.S. Cl. 206—527

10 Claims



1. A package for containing merchandise having a convertible header for suspending the package for storage and display, said header comprising a piece of at least semi-rigid sheet material connected to said package adjacent the edge thereof and characterized by:

- An opening in said header spaced from the top edge thereof and adapted to engage the elongated generally horizontal hanger support of a display rack.
- A punch-out section in said header bounded by a pair of spaced apart weakened borders extending from the lower portion of said opening to a free edge of the header; and
- Said punch-out section being easily severable from the header to produce a channel in the header between said spaced apart borders.

whereby said header is convertible for hanging from either hook-type or closed loop-type hanger supports.

3,854,585

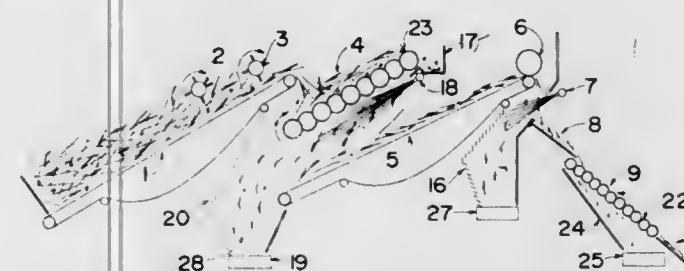
CLEANING APPARATUS FOR MACHINE HARVESTED SUGAR CANE

John W. Herkes, 425 High St., Wailuku, Hawaii 96793

Filed Feb. 28, 1973, Ser. No. 336,414
 Int. Cl. B07b 9/00

U.S. Cl. 209—3

6 Claims



1. Apparatus for cleaning machine harvested sugar cane comprising:
 a. a first inclined elevating conveyor having a power drive means operatively connected to the conveyor to dis-

charge from the upper end materials placed on the lower end;

- a material thickness control means operatively connected to the first inclined conveyor to limit the thickness of the blanket of material being discharged;
- a mechanical screening device comprised of a multitude of toothed rollers having support means holding the rollers in a parallel spaced relationship on an incline with its lower end positioned to receive material discharged from the first conveyor and having drive means operatively connected to the rollers to rotate the rollers in a direction to both pull material through the space between rollers and to spread material on up the incline;
- a rock receiver at one end of said mechanical screening device;
- a second inclined elevating conveyor having a supporting means holding the second conveyor in a position generally parallel in inclination with and below the mechanical screening device, said second elevating conveyor being longer than said screening device with the upper end of the second conveyor being out from under the mechanical screening device and having a power driving means operatively connected to the conveyor to discharge materials deposited thereon from the upper end;
- a cross flow cutter operatively connected to and above the upper portion of the second elevating conveyor and in spaced relationship therewith so as to cut long cane stalks into short lengths for discharge from the second conveyor; and
- a material separating device comprising a series of parallel spaced generally horizontal pocketed rolls, a receiving plate, a waste receiver, a supporting means positioning the receiving plate and pocketed rollers on an incline with the receiving plate interposed on the incline between the discharge end of the second conveyor and the pocketed rolls to direct material discharged from the second conveyor onto the pocketed rollers and supporting the waste receiver beneath the pocketed rollers and driving means operatively connected to the pocketed rolls to rotate the rolls in a direction opposing the flow of material down the incline such that extraneous material caught in the pocketed surfaces will be carried up and over each roll and dropped beneath the rolls into the waste receiver with the clean cane stalks sliding down over the pocketed rolls for discharge separately from the extraneous material.

3,854,586

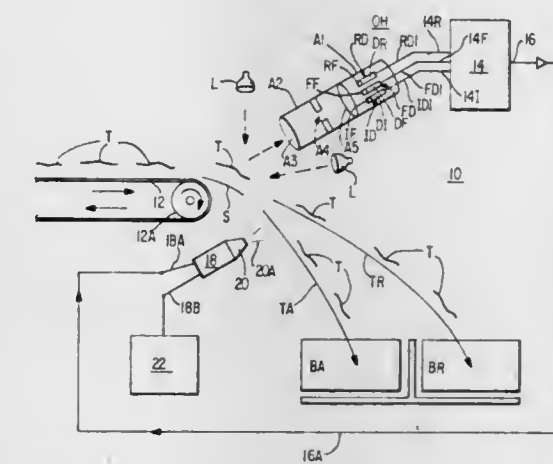
AUTOMATIC GRADER FOR SORTING OBJECTS ACCORDING TO BRIGHTNESS AND COLOR TONES

Joseph R. Perkins, III, Burke, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed May 15, 1973, Ser. No. 360,570
 Int. Cl. B07c 5/342

U.S. Cl. 209—111.6

82 Claims



1. Transducer means determining the relative brightness and color tones of articles to predetermined standards and classifying same into categories comprising:
 a background surface having a predetermined color;

source means impinging polychromatic light on the obverse face of said background surface to reflect light therefrom in both the presence and absence of articles on said obverse face;

detector means receiving reflected light from said obverse face in first, second and third bands of the spectrum and producing, for each band, first output parameters representative of the respective intensities of reflected light in each said band in the presence of an article on said obverse face of said background reference;

reference means storing a second parameter for each band representative of the intensity of reflected light in each band in the absence of an article over said obverse face; differential means operating on said parameters and producing, for each band, a third parameter representing the magnitude of the difference of said first and second parameters;

means modulating said third parameter for each band to vary the magnitude thereof by predetermined interrelated scalar multipliers;

summing means operating on said modulated third parameters and producing the sum thereof;

control means providing, as said predetermined standards, comparison parameters defining divisions of relative brightness and color tones, said divisions defining a plurality of quality zones of known color characteristics for which said articles might qualify;

selection means designating said zones as acceptable and unacceptable;

comparison means comparing said comparison parameters and said sums of said third parameters determining the presence and absence of said articles over said obverse face of said background surface and the zone for which said articles qualify;

and correlating means responsive to said selection means and said comparison means classifying said articles into acceptable and unacceptable categories.

3,854,587

OPTICAL INSPECTION APPARATUS

Robert W. McLoughlin, Belfast, and Colin P. Nuttall, Bangor, both of Ireland, assignors to Gallaher Limited, Belfast, Ireland

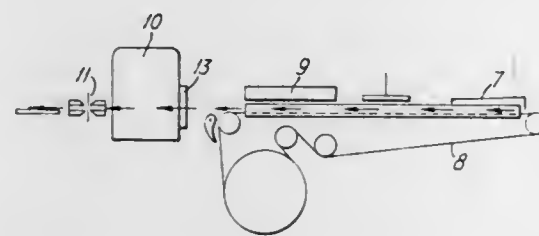
Filed June 20, 1973, Ser. No. 371,685

Claims priority, application Great Britain, June 29, 1972, 30557/72

Int. Cl. B07c 5/342

U.S. Cl. 209-111.7

8 Claims

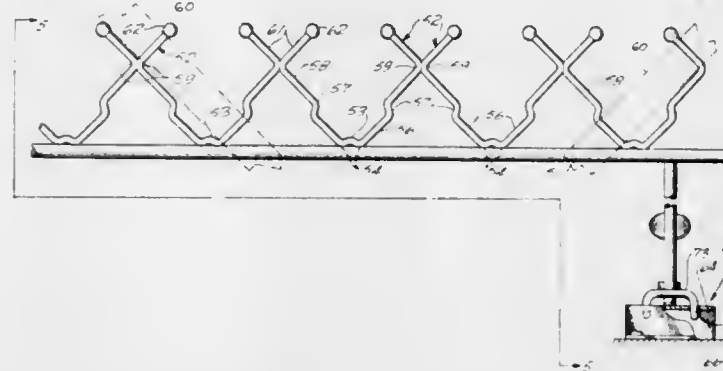


1. An optical inspection apparatus for monitoring a continuously moving rod, said apparatus comprising a circular head through which said rod passes, a first set of fibre optic conductors the ends of which terminate at an inner peripheral surface of said head and which transmits light from a source to said head to illuminate said rod passing therethrough, and a second set of fibre optic conductors the ends of which also terminate at said inner peripheral surface of said head to pick up light reflected from said rod passing through said head and transmit said reflected light to a photosensitive element, said second set of conductors being divided into angularly spaced groups around said head and adjacent groups leading to separate photosensitive elements.

3,854,588
TENNIS RACKET RACK
William C. Kinard, Pasadena, Calif., assignor to Relton Corporation, Arcadia, Calif.
Continuation-in-part of Ser. No. 235,682, March 17, 1972, Pat. No. 3,814,263. This application Feb. 26, 1973, Ser. No. 336,059. The portion of the term of this patent subsequent to June 4, 1991, has been disclaimed.
Int. Cl. A47f 7/00

U.S. Cl. 211-13

11 Claims



1. A tennis racket display rack comprising:
an elongated support member;
means for mounting the support member in a horizontal position;
a plurality of individual tennis racket support bays along the length of the support member for supporting the heads of a plurality of rackets, each support bay having racket support portions skewed relative to the length of the support member for supporting the heads of adjacent rackets parallel to each other and offset from each other for exposing a portion of the face of each racket, each support bay being formed by:
the inside of a generally L-shaped bar bonded at the crook of the L to the support member,
a cross-bar on the end of each leg of the L extending generally parallel to the other leg of the L; and
means at the end of each of the cross-bars for inhibiting removal of a racket from the bay unless it is partly lifted from a display position within the bay.

3,854,589

INDEX CARD HOLDER

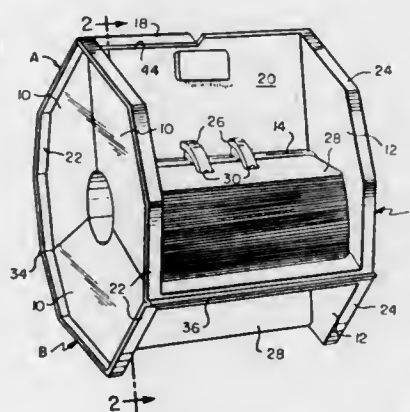
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.

Continuation-in-part of Ser. No. 183,131, Sept. 23, 1970, Pat. No. 3,710,487. This application Jan. 11, 1973, Ser. No. 322,625

Int. Cl. A47f 7/16; B65d 1/22

U.S. Cl. 211-45

8 Claims



1. An index card holder comprising at least a first cradle-like sector and a second cradle-like sector, each of said sectors being open ended and having a first faceted side wall and a

second faceted side wall, a core sector extending between said side walls, a first end wall and a second end wall extending radially from said core sector, each of said side walls having at least one flat surface, the flat surfaces of opposing side walls being aligned to provide a supporting surface for the card holder; means for detachably and hingedly connecting said sectors at the outermost ends of their adjacent end walls whereby said sectors may be in a closed position, resulting in an endless arrangement of said sectors, and alternatively, whereby said sectors may be in an open position, resulting in a linear arrangement of said sectors; and alternatively, whereby said sectors may be separated from one another into a detached position, each of said sectors being open ended in said open position, said closed position and said detached position, said means for detachably and hingedly connecting said sectors being integral with said sectors, a card mounting rail extending from said first end wall to said second end wall in said first and second sectors.

3,854,590

WINE RACK

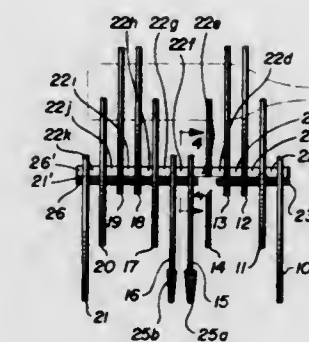
John Topping Dolby, Winnetka, Ill., assignor to John T. Dolby and David M. Bender, both of Chicago, Ill.

Filed Nov. 20, 1972, Ser. No. 307,938

Int. Cl. A47b 73/00, 69/00; A47g 23/02

U.S. Cl. 211-74

9 Claims



1. A wine bottle rack comprising:
a rod;
a plurality of circular, disk-like plates disposed in a fixed, spaced relation along said rod, each of said plates having a first and second bottle aperture therein of sufficient size to accommodate a bottle to be stored therein;
said plates being disposed in helical relation on said rod; and,
means for aligning said plates in said fixed, spaced relation whereby a second bottle aperture of a first plate is aligned concentrically with a first bottle aperture of a second plate, to bound and form thereby a common aperture suitable for use as a bottle storing space.

3,854,591

DISPOSABLE HANGER RETAINER FOR DISPLAY RACKS

Richard D. Schuessler, 564 Meadow Rd., Winnetka, Ill. 60093

Filed Apr. 26, 1973, Ser. No. 354,856

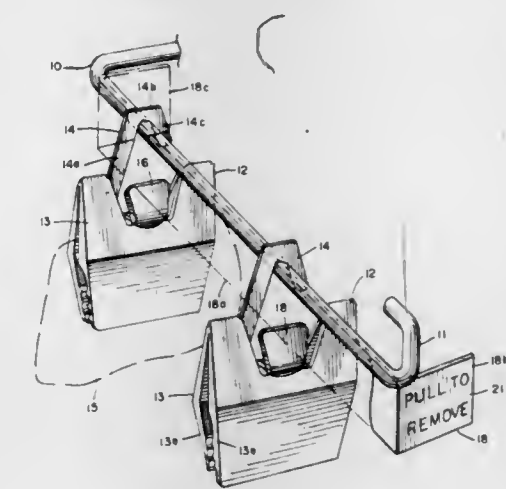
Int. Cl. A47f 7/19

U.S. Cl. 211-123

16 Claims

1. In combination with a horizontal support rod and a plurality of article-supporting hangers suspended in parallel therefrom, each of said hangers having a hook portion hooked over said rod and having a body portion directly therebelow defining a space therebetween, said hook portion having a free

end disposed above said body portion a vertical distance less than the maximum vertical dimension of said space, wherein the improvement comprises an elongated locking strip of flexible material extending through the spaces beneath the hook portions of all of said hangers, said strip having an upper longitudinal edge engaging the underside of said hook portion and a lower longitudinal edge engaging said body portion of said hanger, whereby, said strip restrains each of said hangers from being unhooked from said support rod, said strip slidably



engaging said hook and body portions and being removable by longitudinally sliding said strip out from beneath the hook portion of all of said hangers, the distance between the upper and lower longitudinal edges of said strip exceeding the vertical distance between the free end of said hook portion and said body portion, said body portion of said hanger being provided with an upwardly facing recess, and said lower longitudinal edge of said strip being received within said recess and being restrained thereby against lateral movement.

3,854,592

VARIABLE CAPACITY CRANE HOIST

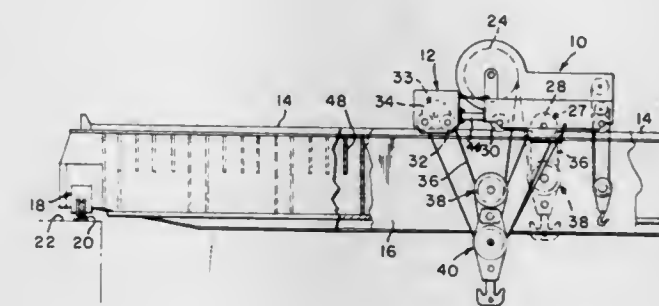
Sigurd C. Mordre, Dockton, Wash., assignor to Ederer Incorporated, Seattle, Wash.

Filed May 25, 1973, Ser. No. 364,109

Int. Cl. B66c 17/00

U.S. Cl. 212-11

10 Claims



1. A convertible crane suitable for large-capacity temporary use and long-life, lower capacity ordinary use comprising primary support means movable along a horizontal surface and carrying powered hoist means for lowering and raising a line, means on said primary support means for propelling the primary support means along said horizontal surface, said hoist means being designed for ordinary use substantially less than the capacity for said temporary use, and secondary support means on said horizontal surface for supporting auxiliary sheave means for receiving said line, movement of said primary and secondary support means along said horizontal

surface being powered by said propelling means on said primary support means and traveling block means for receiving said line from said hoist means and said auxiliary sheave means and adapted to be connected to a load whereby the combined primary and secondary support means increases the load capacity of the crane to said large capacity for temporary use but without substantially increasing the size of the primary support means and powered hoist means.

3,854,593

OVERLOAD SWITCH-OFF DEVICE FOR HYDRAULIC LIFTING OR ADJUSTING MECHANISMS CONNECTED IN TANDEM, IN PARTICULAR FOR HYDRAULIC LOADING AND UNLOADING CRANES

Siegfried Gross, 7, Rotdornweg, 4935 Hiddesen near Detmold, Germany

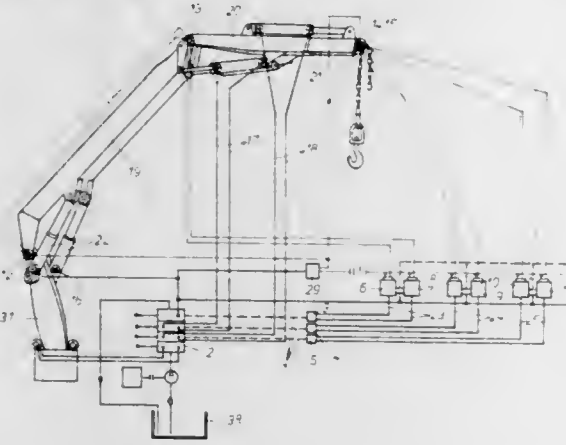
Filed Sept. 19, 1972, Ser. No. 290,297

Claims priority, application Germany, Dec. 24, 1971, 2164628

Int. Cl. B66c 13/48

U.S. Cl. 212-39 R

3 Claims



1. An overload switch-off arrangement for hydraulic loading and unloading cranes comprising a plurality of jib arms connected in tandem for relative movement with respect to each other; a plurality of hydraulic actuating means, each associated with adjacent jib arms, for moving said adjacent jib arms relative to each other; a plurality of hydraulic conduit means, each connected to one of said hydraulic actuating means for conducting hydraulic fluid to and from each of said actuating means; and a plurality of main control valves, each connected to one of said hydraulic conduit means for controlling hydraulic fluid flow therethrough; said overload switch-off arrangement comprising:

- a pressure-sensitive switch in at least one of said conduit means and sensitive to a predetermined maximum hydraulic pressure;
- a plurality of switches, each associated with adjacent sets of said jib arms and arranged to be actuated when said adjacent sets of jib arms are moved to obtain a predetermined position relative to each other;
- a plurality of valve means, each associated with one of said switches;
- means operatively connecting said pressure-sensitive switch, switches and valve means;
- a plurality of hydraulically operated blocking valves, each operatively connected to one of said main control valves, and
- a plurality of further hydraulic conduit means, each extending between one of said valve means and one of said blocking valves;
- whereby an overload is detected by at least one of said valve means when actuated by closure of said pressure-sensitive switch and at least one of said switches associated with adjacent sets of said jib arms, and the associated blocking valve is actuated closing the associated main control valve, interrupting the supply of hydraulic fluid to one of said hydraulic actuating means, and those operations of the jib arms attending to increase the overload are blocked, while those operations of the jib arms tending to reduce the overload are permitted.

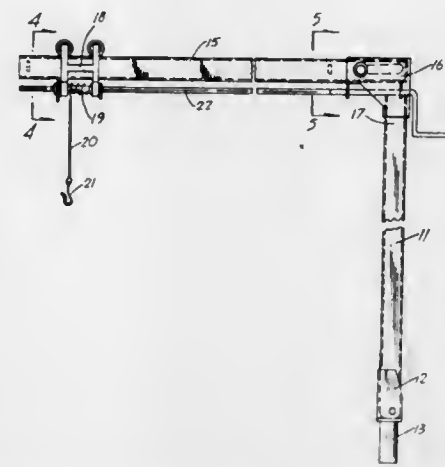
3,854,594
COLLAPSIBLE HOISTING APPARATUS
William Ronald Brookes, Regina, Saskatchewan, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 26, 1973, Ser. No. 419,202

Int. Cl. B66c 23/06

U.S. Cl. 212-56

3 Claims



1. Collapsible hoisting apparatus, comprising an upright member having a shoe at one end and a swivel pin mounted in the shoe and adapted to pivotally seat in a socket;
- a boom;
- a boom head affixing one end of the boom to the other end of the upright member for rotation from a position in which the boom is parallel to the upright member in the plane of the boom and the upright member to a position in which the boom is at right angles to the upright member in said plane;
- trolley means movably mounted on the boom for movement along the length thereof;
- cable winding means rotatably mounted on the trolley means;
- a cable having a hook at one end thereof and affixed to the cable winding means at the other end thereof and wound on the cable winding means; and
- turning means coupled to the cable winding means and extending beyond the boom head for selective manual winding and unwinding of the cable.

3,854,595

MOBILE CRANE

Eberhard Kuhn, Hochdahl, Germany, assignor to Demag Baumaschinen Gesellschaft mit beschränkter Haftung, Düsseldorf, Germany

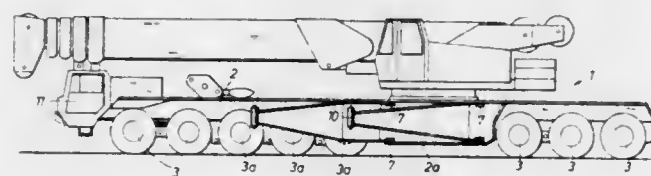
Filed Dec. 3, 1973, Ser. No. 421,503

Claims priority, application Germany, May 4, 1973, 2322383

Int. Cl. B66c 23/62

U.S. Cl. 212-145

7 Claims



1. A mobile crane or like vehicle having a chassis of predetermined width and two pairs of outrigger arms pivotable laterally outwardly to increase the support basis of the vehicle foldable back into the chassis for transport of the vehicle, characterized in that

- a plurality of wheel supporting first axles are mounted on said chassis, the forwardmost and rearwardmost of said first axles having a first predetermined length generally equal to the width of said chassis;
- a plurality of wheel supporting second axles of a second

predetermined length, smaller than said first predetermined length, mounted on said chassis between said first axles;

- means mounting said outrigger arms to said chassis adjacent said second axles of smaller length, whereby said outrigger arms are nested within the chassis vehicle width and in juxtaposition to wheels supported by said second axles when said arms are folded against the chassis for vehicle transport.

3,854,596

RAILWAY UNIT CUSHIONING APPARATUS

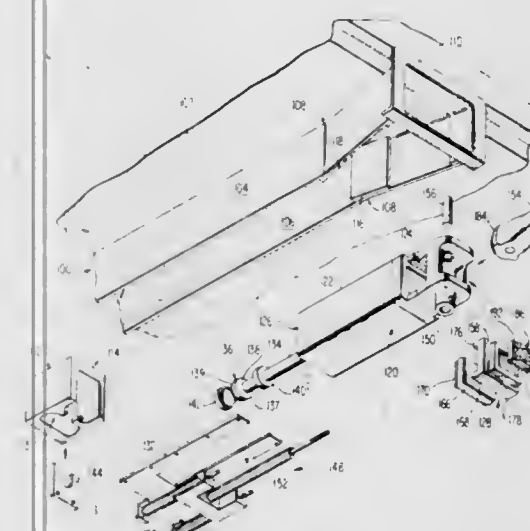
Jack G. Stephenson, and John E. Mosier, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 327,997, Jan. 30, 1973, This application Jan. 16, 1974, Ser. No. 433,857

Int. Cl. B61g 9/16

U.S. Cl. 213-8

17 Claims



1. A railway unit cushioning apparatus comprising: sill means directly connectable to and generally longitudinally alignable with a railway unit underframe and including:
 - a first side wall operable for normally projecting downwardly from the railway unit underframe;
 - a second side wall operable for normally projecting downwardly from the railway unit underframe and extending in a spaced parallel posture coextensively with said first side wall

wherein the improvement comprises:

- buff backstop means operable for normally projecting downwardly from the railway unit underframe and extending between said first and second side walls at the buff end thereof;
- draft stop means connected within said sill means to the draft end of said first and second side walls of said sill means;
- cushioning housing means positioned within said sill means for operative translation between said buff backstop and said draft stop means, said cushioning housing having a barrier transversely extending intermediate the ends thereof;
- said transverse barrier, in combination with said cushioning housing means, defining one side a mechanical cushioning cavity at the draft end of said housing;
- said transverse barrier, in combination with said cushioning housing means, defining on the other side thereof an hydraulic cushioning cavity at the buff end of said housing, wherein said hydraulic cushioning cavity is longitudinally aligned with respect to said mechanical cushioning cavity;
- said mechanical cushioning cavity being further defined by inwardly extending retainer means at the draft end of said cushioning housing means, and

said hydraulic cushioning cavity being further defined by wall means transversely extending across the buff end of said cushioning housing means;

mechanical cushioning means extending within said mechanical cushioning cavity between said transverse barrier and said inwardly projecting retainer means for cushioning both buff and draft forces, and including follower means positioned within said mechanical cushioning cavity adjacent said retainer means;

elastomeric cushioning means extending between said transverse barrier and said follower means, and spacer means at least partially coaxially surrounding said cushioning means and having an axial dimension less than the axial dimension of said cushioning means such that said cushioning means may be compressed until said follower means goes solid with said transverse barrier through said spacer means;

hydraulic cushioning means extending within said hydraulic cushioning cavity for cushioning both buff and draft forces and including:

cylinder means coaxially extending within said hydraulic cushioning cavity between said transverse barrier and said wall means whereby a high pressure fluid cavity is formed within the interior of said cylinder means and a relatively lower pressure fluid cavity formed within said hydraulic cushioning cavity coaxially surrounding said cylinder means;

piston means received for translation within said cylinder means between said transverse barrier and said wall means;

a piston rod connected at one end to said piston means within said cylinder means and translatablely extending through said wall means;

anchoring means positioned within said buff backstop means for anchoring the other end of said piston rod in a fixed longitudinal posture with respect to said sill means;

means for permitting the passage of fluid from said low pressure fluid cavity to said high pressure fluid cavity at either end of said cylinder means while simultaneously preventing the flow of fluid from said high pressure fluid cavity to said low pressure fluid cavity;

means for permitting the flow of fluid from said high pressure fluid cavity to said low pressure fluid cavity, with a first impedance in response to coupling force induced relative movement of said piston means within said cylinder means, and with a second impedance greater than said first impedance in response to run-in train action force induced relative movement of said piston within said cylinder means, and

coupler bar means connected to the draft end of said cushioning housing means;

said coupler bar means being operable in response to buff forces to transmit said buff forces through said mechanical cushioning means and into said cushioning housing means and effect actuation of said hydraulic cushioning means until said cushioning housing goes solid with said buff backstop means and into said mechanical cushioning means to effect compression of said elastomeric cushioning means until said spacer means goes solid with said transverse barrier of said cushioning housing means; and

said coupler bar means being further operable in response to draft forces to transmit draft forces into said cushioning housing means and effect actuation of said hydraulic cushioning means until said follower plate of said mechanical cushioning means goes solid with said draft stop means and into said mechanical cushioning means to effect actuation of said elastomeric cushioning means until said spacer means goes solid with said transverse barrier of said cushioning housing means, and

means connected to said cushioning housing means for biasing said cushioning housing means toward the draft end of said sill means.

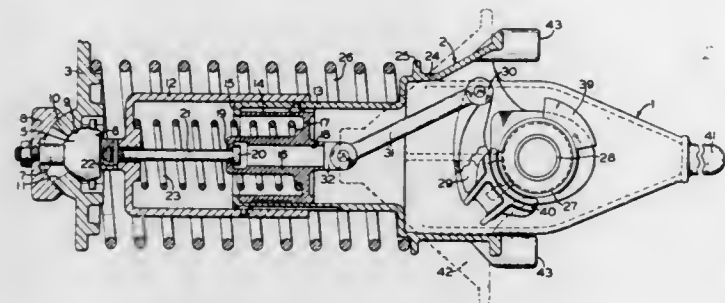
3,854,597

AUTOMATIC HOSE CONNECTOR FOR RAILWAY CARS
Glenn T. McClure, McKeesport, and William K. Mong, Irwin, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed July 30, 1973, Ser. No. 383,524
Int. Cl. B61g 5/08

U.S. Cl. 213-76

9 Claims



1. An automatic hose connector for a railway car having a car coupler at one end thereof for coupling to a counterpart car coupler of an adjacent car and a train line hose for connection to a counterpart train line hose on the adjacent car, said automatic hose connector comprising:

- a mating head having rotatably mounted thereon the connecting end of the train hose of the respective car;
- support spring means for flexibly supporting said mating head on the car coupler in an axially aligned position for coupling with a counterpart mating head carried by the counterpart car coupler; and
- operating means operable responsively to coupling action of said mating head with the counterpart mating head for effecting rotation of the connecting end of the train line hose in one rotational direction from a disengaged position to an engaged sealing position with the connecting end carried by the counterpart mating head.

3,854,598

AUTOMATIC UNLOCKING DEVICE FOR ROLLING STOCK COUPLERS

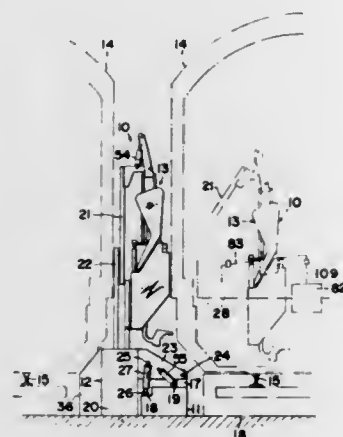
Shigezo Yamazaki, Tokyo; Mitsuru Wakao, Iwatsuki, and Kenichi Inami, Kawasaki, all of Japan, assignors to Japanese National Railways and Kayabakogyokabushikisha, both of Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,001

Claims priority, application Japan, Jan. 30, 1973, 48-11579
Int. Cl. B61g 7/04

U.S. Cl. 213-211

10 Claims



1. An automatic unlocking device for rolling stock couplers, comprising a railway track which carries any rolling stock to be separated, a base stand which is installed on the ground at the railway track side, a boom mechanism which is supported by said base stand tilting freely toward the railway track and incorporating parallel shift links movable along the said railway track, a robot which is hung from said boom mechanism, and lock release devices which are arranged on the robot for unlocking couplers of any rolling stock to be separated when they are travelling on said track.

3,854,599

RAILWAY COUPLER

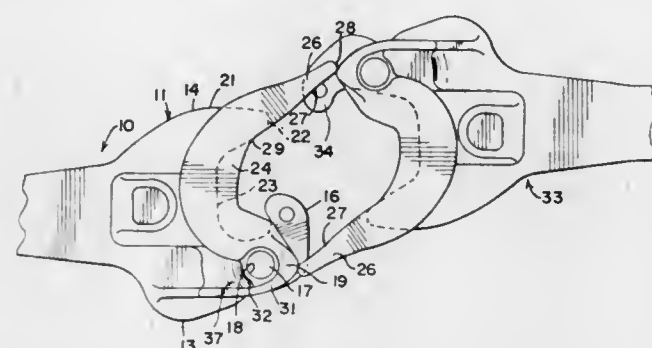
John Charles Day, Hinsdale, and Carl Edward Tack, Elmhurst, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 10, 1973, Ser. No. 424,346

Int. Cl. B61g 3/04

U.S. Cl. 213-100 R

7 Claims



1. In a railway vehicle coupler having a coupler housing including a knuckle side, a guard arm having a guard arm nose, and a guard arm face extending from said nose, a front face extending between said knuckle side and said guard arm, and a knuckle mounted on said knuckle side; the improvement comprising horizontal shelf means projecting beyond said front face and vertically spaced from the longitudinal center line of said coupler and extending between said knuckle side and said guard arm, said horizontal shelf means being spaced from the longitudinal center line of said housing a distance at least as great as the height of said knuckle but not greater than the distance at which said knuckle would fail to couple with another coupler resting on said shelf means.

3,854,600

CLOSURE FEEDING APPARATUS

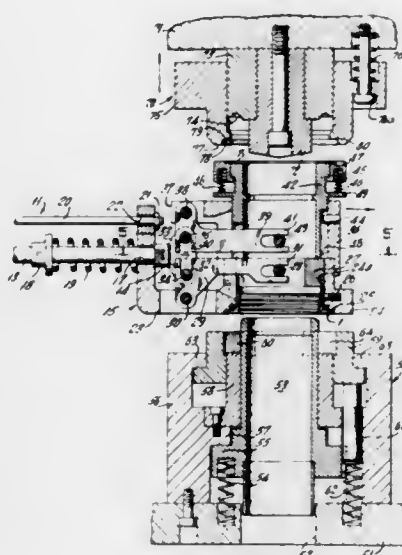
John Jesevich, Cicero, and Vyto Simkus, Chicago, both of Ill., assignors to American Flange & Manufacturing Co. Inc., New York, N.Y.

Division of Ser. No. 131,258, April 5, 1971, Pat. No.

3,800,401. This application Oct. 25, 1973, Ser. No. 409,390
Int. Cl. B25j 3/00

U.S. Cl. 214-1 BB

4 Claims



1. Apparatus for simultaneously feeding a closure flange and a tag ring element into an insertion die for securing to a container wall, comprising a horizontally reciprocating drive member operatively connected to said insertion die, drive means connected to the outer end of said drive member, said drive member having an inner end adjacent said die including closure flange supporting means and tag ring element supporting means whereby said drive means acting upon said drive member is adapted to deliver said closure flange and said tag ring element for placement in said insertion die.

3,854,601

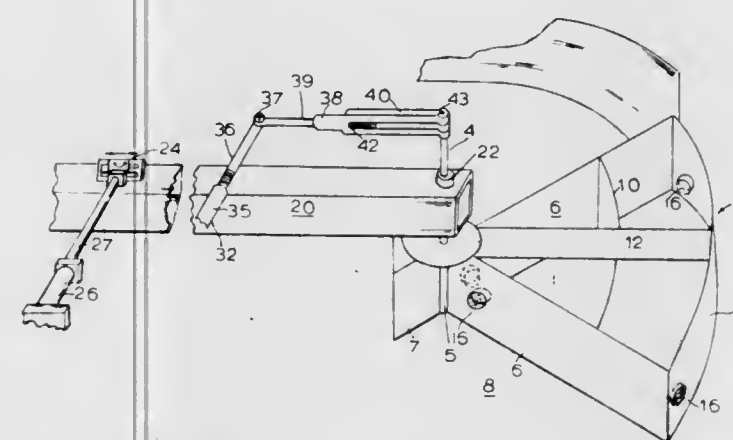
APPARATUS FOR FORMING PATTERNED LAYERS
Frank H. Miller, Jr., Louisville, and David L. Witherspoon, Anchorage, both of Ky., assignors to Miller Engineering Corporation, Louisville, Ky.

Filed July 5, 1973, Ser. No. 376,741

Int. Cl. B65g 57/24

U.S. Cl. 214-6 P

11 Claims



1. A pattern forming device for stacking patterned layers of articles onto a pallet, comprising:

- an endless conveyor, including a receiving zone for receiving articles, a loading zone comprising an aperture in said endless conveyor through which said articles gravitationally pass onto said pallet, and a fixed stop disposed over the terminal border of said pallet for stopping said articles and to maintain said articles in fixed position for loading onto said pallet through said aperture.

- the improvement in said pattern forming device of:

- a first turning station for turning articles clockwise and counterclockwise to both sides of their original line of travel along the long axis of said conveyor so that each turned article lies laterally spaced from the center line of said conveyor and with each turned article's longitudinal axis turned at about 90 degrees from the center line of said conveyor;
- a pair of second turning stations, one on either side of said conveyor operative to turn articles a second time so that the longitudinal axes of the twice turned articles on one side are parallel and laterally disposed to their original line of travel and normal to the longitudinal axes of the once turned articles on the other side of said conveyor; and,
- a pattern closer and locator for pushing articles on either side of said conveyor together so as to close the pattern and locate a patterned layer of said articles over said pallet.

3,854,602

MAGNETIC HOPPER SYSTEM

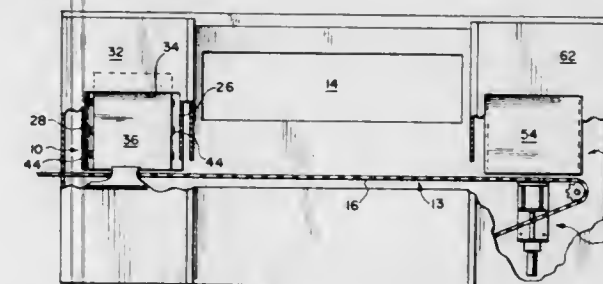
Fritz Blank, Miramar, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 27, 1973, Ser. No. 391,582

Int. Cl. B65g 57/30, 59/06

U.S. Cl. 214-6 BA

8 Claims



1. In a system for storing elongate objects each having magnetizable material therein and for sequentially moving the objects transversely of the long axis of each object onto a

conveyor, a magazine including a generally upright member having means for magnetically holding a plurality of objects thereagainst, deflectable pawls situated adjacent said upright member and deflectable inwardly of said plate, and means for moving said upright member downwardly to move the objects held thereto from an upper position downwardly over said pawls to a lower position and for moving said upright member upwardly as said pawls engage the objects and hold the same in the lowered positions the lowermost position being adjacent the conveyor.

3,854,603

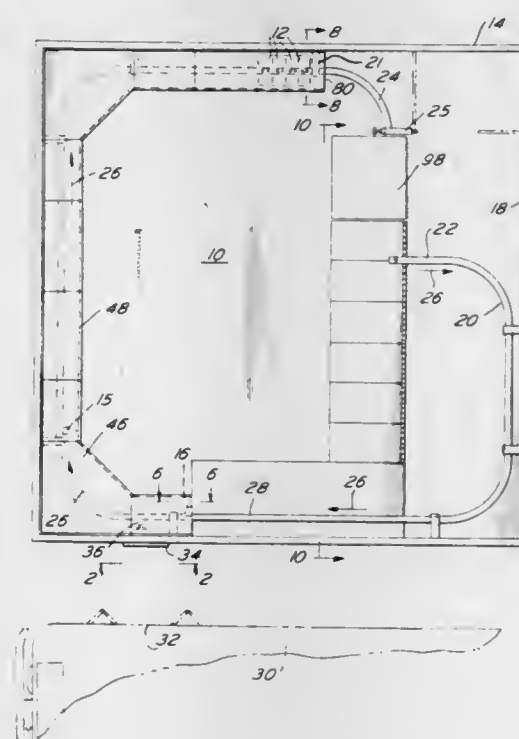
SECURITY SYSTEM AND METHOD FOR VALUABLES
Russell W. Walters, Reading, Pa., assignor to BMR Security Products Corp., Reading, Pa.

Filed Jan. 22, 1973, Ser. No. 325,333

Int. Cl. B65g 1/08

U.S. Cl. 214-16 B

11 Claims



1. The method of collecting and maintaining containers having valuables stored therein in a fixed secure enclosure comprising the steps of:

- moving a carrier to a loading position accessible through a lockable doorway to the outside of said secure enclosure;
- mounting a container with valuables stored therein on said carrier;
- moving said carrier into and through said secure enclosure;
- stopping said carrier in said secure enclosure in a position remote from and inaccessible to said loading position; and
- storing said carrier having said container mounted thereon at said remote and inaccessible stopped position within the secure enclosure.

3,854,604

ARTICLE STORAGE AND RETRIEVAL

Charles E. Peterson, Boulder, and Donald W. Schaefer, Lakewood, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,698

Int. Cl. B65g 1/06

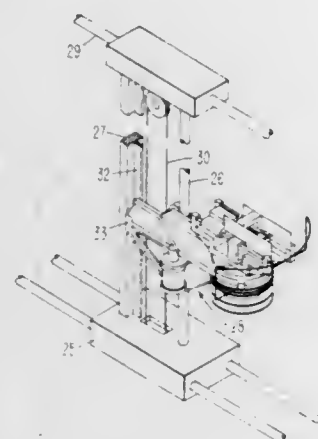
U.S. Cl. 214-16.4 A

10 Claims

1. An information document storage apparatus having two spaced-apart parallel-extending facing storage walls each having a multiplicity of open storage compartments, plane travel means extending parallel to and disposed between said storage walls including improved movable means for selec-

tively accessing any of said storage compartments, exchange means accessible by said movable means for exchanging documents with a document handler,

- the improved movable means including in combination:
 - main carriage means including elevator means for two-dimensional movements along a given defined plane in said plane travel means between said walls an elevator support pole on said carriage means;
 - a frame in said elevator movable along one of said two-dimensional movements along said defined plane and having a portion extending in cantilevered relationship from said elevator support pole;
 - a platform on said frame;
 - a pivoting bed having a front end portion on said platform and disposed for pivoting motions transverse to said defined plane;



reciprocating carriage means on said pivoting bed and including article retaining means and reciprocal between a traveling position central of said pivoting bed and a load/unload position at said front end portion; and control means on said frame connected to said pivoting bed for establishing plural stable pivoted positions for said pivoting bed, a first one of said stable positions including said front end portion being adjacent a first one of said storage walls for enabling exchange of an article between said article retaining means and a selected storage compartment in said first storage wall, a second one of said stable positions including said first end portion being adjacent a second one of said storage walls for enabling exchange of an article between said article retaining means and a selected storage compartment in said second storage wall.

3,854,605

ARTICLE CONVEYING

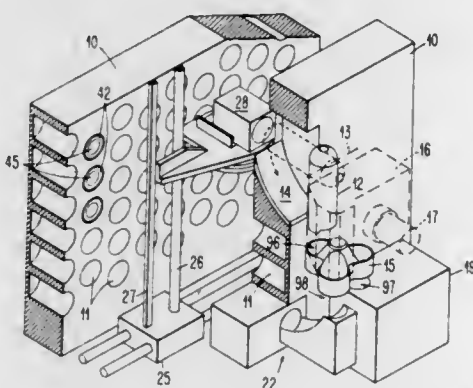
Davis S. Proper, Arvada, and William J. Rueger, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,732

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 A

6 Claims



1. Article conveying apparatus for handling axially elongated circular articles,

the improvement including in combination:

- a storage compartment wall having an open side for storing a plurality of the articles with a given end always facing outward from said open side when stored, during storage said articles having an axis disposed horizontally;
- an article receiver having an open end and pivotable between horizontal and vertical positions, when in a horizontal position said open end is positioned at said open side, means pivotally mounting said receiver to said compartment wall for pivoting between said horizontal position and said vertical position wherein said open end faces downwardly, means yieldably urging said receiver to said horizontal position;
- movable means for selectively conveying an article from a compartment to said receiver;
- an indexable rotary conveyor having a plural article retainer assembly for successively receiving a plurality of articles from said receiver, each index position of said rotary conveyor having one article retainer under said article receiver;
- reciprocating work means movable through said retainer assembly for selectively removing an article from said retainer assembly to a work position below said retainer assembly;
- driving means connected to both said rotary conveyor and said work means for synchronizing the operation thereof; and
- exit means receiving said article from said rotary conveyor including means for receiving said article moving in the first direction, means pivoting about an axis parallel to said first direction for moving said article in a direction transverse thereto.

3,854,606

VEHICLE WITH MATERIAL LOADER

Charles T. Hayes, Oakland; Donald M. Faust, Winchester, and Harry F. Weinert, Portland, all of Oreg., assignors to Cascade Corporation, Portland, Oreg.

Filed Nov. 26, 1971, Ser. No. 202,245

Int. Cl. B60p 1/48

U.S. Cl. 214—77 R

7 Claims



1. In combination with a vehicle having a vehicle frame, a material-handling boom and frame construction, comprising supporting frame structure having opposed ends and front and rear sides extending between such ends, said frame structure being mounted on the vehicle frame with such occupying an upstanding position and having its front and rear sides extending transversely of the vehicle frame and its ends adjacent opposite sides of the vehicle,
- a foldable boom assembly including main and jib sections located laterally of one of said sides of the supporting frame structure and adapted to be folded and lowered to a stowed position disposed in laterally adjacent relation to said one side, and
- swivel means journaling the base of the main section of the boom assembly on said supporting frame structure adjacent an end of the supporting frame structure and at one side of the vehicle with said base above the top of said

supporting frame structure permitting side-to-side swiveling of the boom assembly over the top of the supporting frame structure with the boom assembly unfolded and raised,

said main boom section with the boom assembly in its stowed position inclining downwardly from said swivel means and across the vehicle to an end disposed on the vehicle's other side adjacent the base of said supporting frame structure.

3,854,607

TRACTION ASSIST MEANS FOR LOADING MACHINES AND THE LIKE

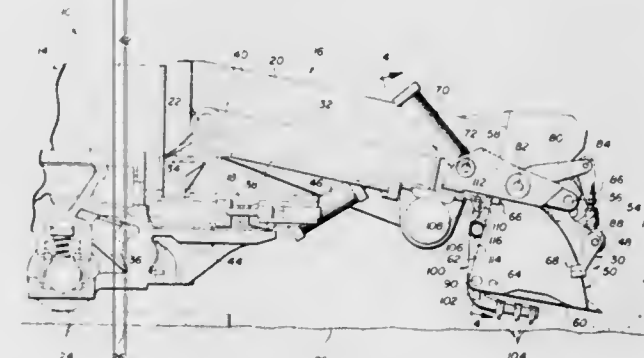
Haim J. Kanner, Palatine, Ill., assignor to Goodman Equipment Corporation, Chicago, Ill.

Filed Dec. 18, 1972, Ser. No. 316,406

Int. Cl. B66f 9/00

U.S. Cl. 214—140

11 Claims



1. A loading machine comprising, in combination, frame means movable along a ground surface to a position generally adjacent a pile of loose material to be loaded, bucket means supported by said frame means for movement from a lowered position adjacent the pile of material to an advanced position into the pile of material to load said bucket means, and thereafter to an elevated position effective to dump said material from said bucket means onto said frame means, first operating means including actuating cylinder means and swing arm means cooperative with said bucket means to effect said movement thereof, and traction assist means including at least one ground engaging member supported by said frame means rearwardly from and independently of said support of said bucket means by said frame means, and second operating means operatively associated with said actuating cylinder means in a manner to move said ground-engaging member to a ground engaging position and effect movement of said frame means toward the pile of material as said bucket means is moved to its said advanced position by said first operating means, said second operating means being further operative to maintain said ground-engaging member in said ground engaging position throughout movement of said bucket means from its lowered position to its said elevated position so as to stabilize said frame means during a loading cycle.

3,854,608

MATERIALS HANDLING

Carroll H. Arnold, Hubbardston, Mass., assignor to Wain-Roy Company, Inc., Hubbardston, Mass.

Continuation-in-part of Ser. No. 133,501, April 13, 1971, Pat. No. 3,767,070. This application Dec. 2, 1971, Ser. No. 203,977

Int. Cl. E02f 3/70

U.S. Cl. 214—145

29 Claims

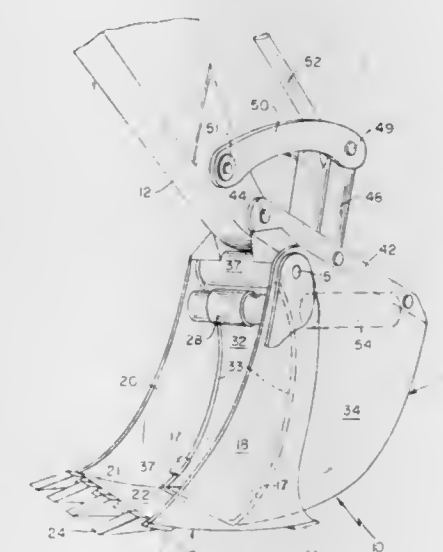
1. A materials handling attachment for connection by engagement with an excavation bucket of the type including first and second sections, each having two sides and a bottom, mounted for pivotal movement relative to each other between a relatively closed position and a relatively open position, said attachment comprising:

- a materials handler; and,
- an attachor rigidly connected to said handler and defining three pairs of generally oppositely-facing engagement

surfaces arranged for engaging respective surfaces defined by said bucket,

a first pair of said engagement surfaces including a generally rearwardly facing surface arranged for engaging a generally forwardly-facing surface defined by said first section, and a generally forwardly-facing surface located forwardly of said rearwardly-facing surface and arranged for engaging a generally rearwardly-facing surface defined by said second section;

a second pair of said engagement surfaces being generally perpendicular to said first pair and including a generally downwardly-facing surface arranged for engaging a generally upwardly-facing surface defined by said first section, and a generally upwardly-facing surface arranged for engaging a generally downwardly-facing surface defined by said second section, said upwardly-facing surface



of said second pair being spaced from said downwardly-facing surface of said second pair in the direction away from said first section and being on the side of said first pair opposite said downwardly-facing surface of said second pair, and

a third pair of said engagement surfaces being generally perpendicular to said first pair and including a generally downwardly-facing surface on the side of said first pair opposite said downwardly-facing surface of said second pair and arranged for engaging a generally upwardly-facing surface defined by said second section, and a generally upwardly-facing surface arranged for engaging a generally downwardly-facing surface defined by one of said sections and spaced from said downwardly-facing surface of said third pair in the direction toward said first section.

3,854,609

BOOM SUPPORTED MATERIAL HANDLING FORK

Randal A. Cox, Rural Rt. 1, Van Wert, Iowa 50262

Filed Mar. 12, 1973, Ser. No. 340,173

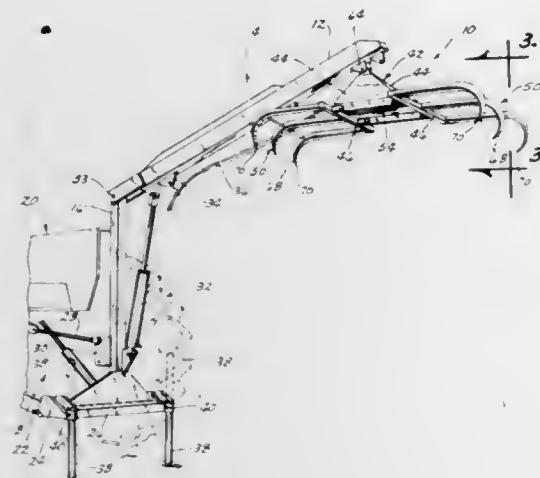
Int. Cl. B66c 3/04

U.S. Cl. 214—147 G

3 Claims

2. A material handling unit comprising,
 - a boom mounted at its lower end on the rear end of a tractor, by means of a three-point hitch, said hitch having lifting arms, said boom including inner and outer pivotally connected boom sections and said inner boom section including a cross member to which the lifting arms of said three-point hitch are connected.
 - a pair of vertically adjustable supports carried on said cross member adapted to engage the ground and support said boom when said lift arms are in a lowered position whereby said lift arms may be lowered further to be disconnected from said cross arm,
 - a power means for raising and lowering the outer end of said boom,

a fork unit on the outer end of said boom; said fork unit including an A-shaped frame having its apex pivotally connected to said boom and a pair of cooperating fork members having upper pivot arms pivotally connected to the lower ends of the sides of said A-shaped frame, an upstanding ear on each of said pivot arms of said fork members, and



a hydraulic power cylinder extending between the sides of said A-shaped frame and having its opposite ends connected to said upstanding ears on the pivot arms of said fork members for pivoting said fork members to a closed position when said cylinder is extended and to an open position when said cylinder is contracted.

3,854,610

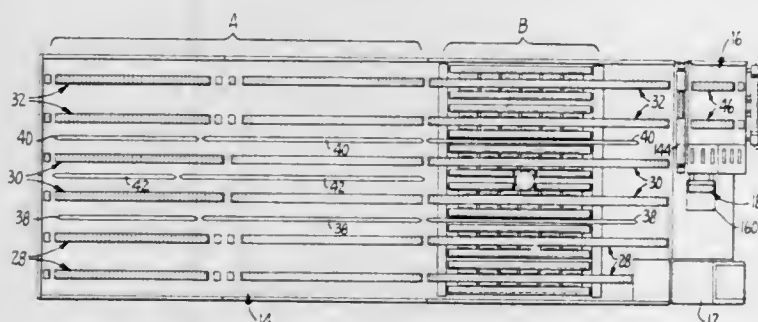
FREIGHT TRANSPORTER AND LOADER FOR AIRCRAFT

Victor H. Carder, San Francisco, Calif., assignor to Cochran-Booth Airport Systems, San Francisco, Calif.
Filed Apr. 9, 1973, Ser. No. 349,417

Int. Cl. B60p 1/44

U.S. Cl. 214-520

3 Claims



1. A freight unit transporter and loader vehicle for aircraft comprising a conveyor support bed, a pair of conveyor tracks mounted on the bed for movement lengthwise thereof, means for driving the tracks in the same direction, means for driving the tracks in opposite directions, and freight unit support means located between the tracks and operable when the tracks are driven in opposite directions to assist in pivotally reorienting a freight unit carried by the tracks, said support means comprising a pad member, having a freight unit contacting surface of substantial, horizontally disposed area means mounting said member for movement upwardly to an operative position in engagement with the underside of a freight unit and for movement downwardly to an inoperative position out of engagement therewith, and means to raise and lower said member.

3,854,611
METHOD AND APPARATUS FOR FEEDING
CIGARETTES OR ANALOGOUS ARTICLES TO PACKING
MACHINES OR THE LIKE

Gunter Wahle, Reinbek, Germany, assignor to Hauni Werke Korber Co. KG, Hamburg, Germany

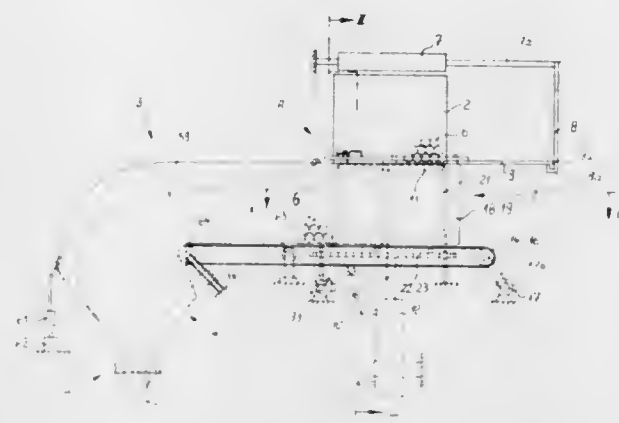
Filed Apr. 19, 1972, Ser. No. 245,409

Claims priority, application Germany, Apr. 21, 1971, 2119311

Int. Cl. B65g 65/04

U.S. Cl. 214-302

23 Claims



1. A method of feeding to a consuming station cigarettes or analogous rod-shaped articles which are transported on holders from at least one producing station to an evacuating station in the form of stacks of confined parallel articles and are further processed at the consuming station, each stack being made up only of the entire contents of one said holder, comprising the steps of withdrawing each successive stack from each successive holder at said evacuating station by moving the stack in a substantially vertical direction only — while maintaining the articles of the respective stack in at least substantially unchanged position with respect to each other — to an intermediate supply station where each of the thus withdrawn stacks forms an intermediate supply of articles; transporting each of said stacks of articles from said intermediate supply station in a substantially horizontal direction by moving the articles of said stack sideways and while maintaining the articles of the respective stacks in at least substantially unchanged position in which they have been during vertical movement from said evacuating station to said intermediate supply station whereby the thus successively transported stacks form a main supply of articles; and transferring articles from said main supply to the consuming station in at least substantially parallel position with respect to each other and at the rate at which the articles are being processed at said consuming station.

3,854,612

CONTAINER DISCHARGE SYSTEMS

George W. Snape, Shipston-on-Stour, England, assignor to Bulk Unit Load Systems Limited, Warwickshire, England
Division of Ser. No. 210,940, Dec. 22, 1971, abandoned. This application May 11, 1973, Ser. No. 359,479

Claims priority, application Great Britain, Dec. 28, 1970, 61380/70; Feb. 23, 1971, 5234/71; Mar. 30, 1971, 8181/71

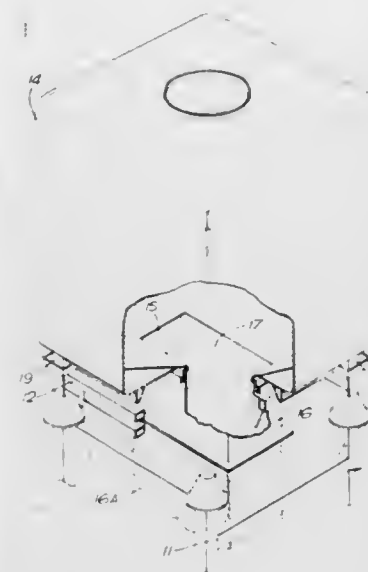
Int. Cl. B65g 67/40

U.S. Cl. 214-308

10 Claims

1. A bulk container discharge apparatus comprising a vibratory support frame having means to support a container, and on which there is a vibratory device to vibrate the container when placed thereon by the application to the vibratory support frame of forced vibrations of different characteristics, depending upon the amount of material in the container, in which the vibratory device comprises two out of balance weights, one of which is capable of being fixed rigidly to a rotatable shaft, and the other of which is mounted on and is

rotatable relative to said shaft, which weights have two pairs of corresponding abutments disposed so that when the shaft is



rotated in different directions, the weights take up configurations giving different combined effects.

3,854,613

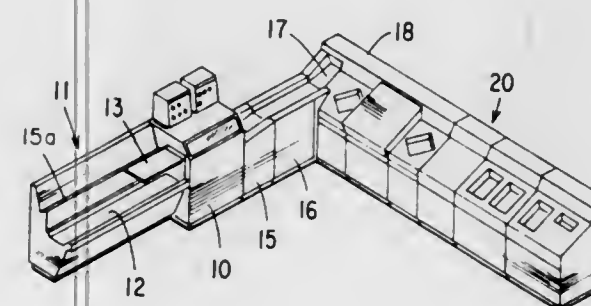
BATCH TO CONTINUOUS FLOW MAIL HANDLING
Donald F. Renfrow, Richardson, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Aug. 3, 1973, Ser. No. 385,295

Int. Cl. B65g 65/04

U.S. Cl. 214-314

5 Claims



1. A system for handling stacks of mail unloaded from mail trays which comprises:

- a mail tray turnover box including a load end, an unload end, and a bottom panel on which stacks of edge supported mail pieces are deposited from mail trays, said bottom panel having laterally spaced longitudinal slots extending through said unload end,
- paddle means actuated when each stack is placed on said bottom panel to move said stack in the direction of said unload end, said paddle having vertical slots open at the bottom paddle edge and aligned with said longitudinal slots,
- a rank of aligned upstanding fingers mounted to follow a closed course having an upper traverse arranged so that the tips of said fingers pass upward through said longitudinal slots and through said vertical slots during movement through said unload end to push each stack away from said paddle and out of said box, and
- means to turn over said box.

3,854,614

LOG FEEDING AND TURNING MACHINE

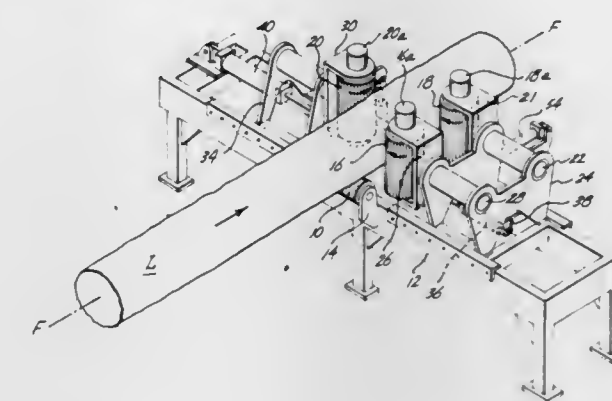
Dennis W. Albrecht, Seattle, Wash., assignor to Stetson-Ross Machine Company, Inc., Seattle, Wash.

Filed Oct. 5, 1972, Ser. No. 295,207

Int. Cl. B65h 51/26

U.S. Cl. 214-339

15 Claims



1. Apparatus for endwise feeding and rotational positioning of a log during feeding in a feed path comprising means to support and guide a log for longitudinal movement along a feed path, mutually opposing feed rolls, opposing support means disposing the respective feed rolls with their respective rotational axes in normal feed positions substantially parallel to each other and transverse to the feed path adjacent opposite sides of a log in the feed path, including positioning means cooperating with the respective support means for positioning the rolls in driving engagement with the log, the positioning means for the rolls on opposite sides of the log being yieldable relative to each other transversely to the log to accommodate varying log contours with the rolls in said driving engagement, drive means for rotating the rolls about their respective axes to apply cooperative feeding forces to the log engaged by the rolls so as to move it endwise in the feed path, and tilt means selectively operable for tilting the opposing driven rolls out of their normal feed positions in respectively opposite directions by substantially equal amounts in respective planes parallel to the feed path so as to apply to the log cooperative log rotating forces accompanying cooperative endwise log feeding forces both applied by roll rotation.

3,854,615

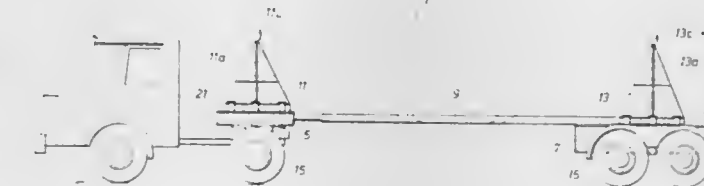
TRUSS CARRIER

William G. List, 7718 Lettie, Houston, Tex. 77034
Filed June 8, 1973, Ser. No. 368,204

Int. Cl. B60p 1/16

U.S. Cl. 214-501

9 Claims



1. In a lateral unloading carrier of the type generally comprising front and rear frame means connected to one another by a chassis having a central axis, and including a pair of load support means pivotally affixed to each said frame means so that each of said pair is adapted to pivot laterally of the central axis, the improvement comprising pivotally affixing each of one of said pairs of load support means on one of said frame means on either side of said central axis at a first given distance therefrom, pivotally affixing each of said other pair of load support means on the other of said frame means on either side of said central axis at a second given distance therefrom which is greater than the first given distance.

each of said pair of load support on the rear frame means being adapted to cooperate with each of the front load support means on the corresponding side of the central axis so that lateral pivoting of either of said other pair of load support means results in a following pivotal movement by its cooperating load support means when a common load is carried by both of them.

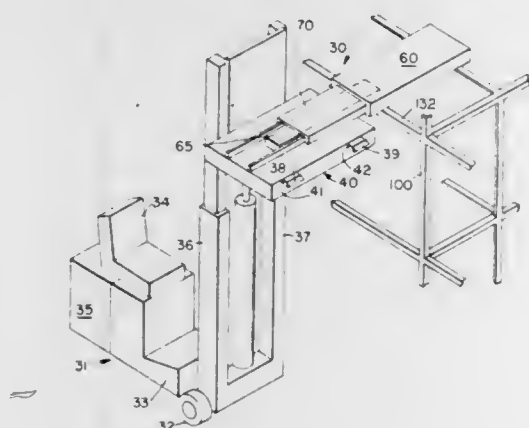
3,854,616 SIDE-LOADING ATTACHMENT FOR FORKLIFT TRUCKS

Wilfred Ernest Willis, 3633 Jackson, San Francisco, Calif. 94118, and Dickie L. Johnston, 10944 Ridgeview Ave., San Jose, Calif. 95127

Filed Sept. 20, 1972, Ser. No. 290,637
Int. Cl. B65g 1/06; B66f 9/14

U.S. Cl. 214—620

14 Claims



1. A side-loading attachment for a device having a support portion and means for raising and lowering said support portion vertically, said attachment being used in conjunction with load-supporting pallets and storage means for supporting loaded said pallets, including in combination:

- a base frame for support by said support portion,
- means for locking said base frame to said support portion to prevent relative vertical movement between said base frame and said support portion,
- a pair of laterally extending channel members rigidly secured to said base frame and lying thereabove,
- a stabilizer laterally disposed with respect to said base frame, said stabilizer having at each side thereof a plurality of rollers riding in and on said channel members for sidewise movement of said stabilizer, laterally of said base frame, whereby said stabilizer never tilts relative to said base frame,
- means for moving said stabilizer laterally,
- fore-and-aft extending pivots on the fore-and-aft axis of said base frame,

an upper frame pivotally supported on said pivots so as to be tiltable relative to said base frame,

- a pallet-and-load-supporting platform supported by said upper frame at a level above said stabilizer, at all times supported separately from said stabilizer for movement wholly independently of said stabilizer, for movement relative to said upper frame in line with the pivotal position thereof,

a plurality of hydraulic jacks on each side of said base frame and in contact with said upper frame for leveling said upper frame relative to said base frame and for tipping it in either direction, the jacks on one side of said axis raising while the jacks on the other side lower and vice versa, and

platform moving means for moving said platform out where it lies wholly beyond said device.

3,854,617 CLOSURE FOR BOTTLES AND JARS

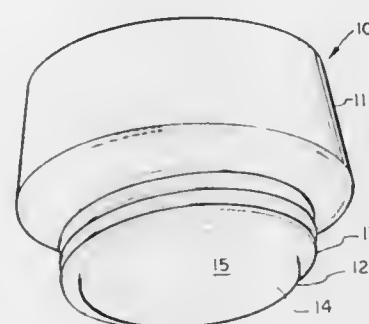
Edward M. Edwards, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 8, 1973, Ser. No. 321,775

Int. Cl. B65d 39/04

U.S. Cl. 215—364

2 Claims



1. A hollow two-piece closure manufactured from plastic material for use with a wide mouth container comprising a handle portion having a generally top planar surface and an annular grasping flange, a container insertion portion (12) of generally elliptical cross-sectional configuration telescopically coupled to said handle portion (11) along a longitudinal axis, locking means (27) (33) coupling said handle portion with said insertion portion, a plurality of resilient spaced apart radial fins (13) arranged on said insertion portion normal to said longitudinal axis, said fins each completely encompassing said insertion portion and having a radial extent, at all locations, that is equidistant from said container insertion portion.

3,854,618 VACUUM PACKAGING

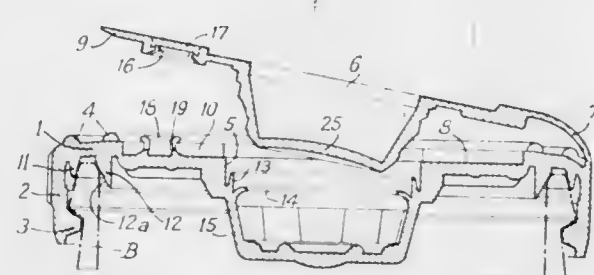
Gino P. Beghini, 42 Rue d'Avron, 75020 Paris, France

Filed July 25, 1973, Ser. No. 382,483

Int. Cl. B65d 47/20

U.S. Cl. 215—307

8 Claims



1. A lid assembly moulded of plastics material for closing a container to be evacuated, the assembly comprising:

- i. a lid having a portion defining an opening;
- ii. a generally frusto-conical valve member for closing the opening;
- iii. means hingedly connecting said valve member to said lid;
- iv. gripping means connected to said valve member;
- v. inner and outer lips on said lid for engaging the edge of the opening of a container to be closed by the lid assembly; and
- vi. first and second lips on said lid portion defining the opening, said first lip extending outwardly of the lid generally perpendicular to the general plane of the lid and said second lip extending generally parallel to the general plane of the lid inwardly of the opening.

3,854,619 TRANSFERABLE CARGO CONTAINER

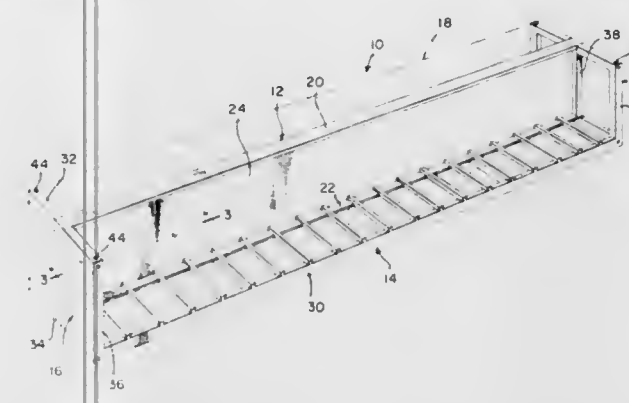
Oliver M. Gaudy, 2466 E. Sammamish Rd. North, Redmond, Wash. 98052

Filed May 10, 1973, Ser. No. 358,888

Int. Cl. B65j 1/00; B65d 19/00

U.S. Cl. 220—1.5

7 Claims



1. A transferable cargo container capable of being moved as a unit with its cargo from one carrying vehicle to another, such as from a trailer to a ship, said container having a longitudinal axis and a transverse axis and a predetermined length, width and height, said container defining a cargo carrying space having a bottom, top, sides and ends, said container comprising:

- a. a main longitudinally extending vertically positioned beam member located proximate a longitudinal center axis of said carrier, said beam comprising:
 - 1. an upper longitudinally extending beam portion located proximate the top center of said cargo carrying space to withstand upper beam bending moment forces,
 - 2. a lower longitudinally extending beam portion located at the bottom center of said cargo carrying space and coacting with said upper beam to withstand lower beam bending moment forces,
 - 3. a vertical web portion interconnecting said upper and lower beam portions in load bearing relationship and providing cargo center partition means for maintaining cargo in proper position on said container, and
- b. a lower load supporting framework located at the bottom of said cargo space for cargo support, said framework having a plurality of longitudinally spaced secondary beam means cantilevered from a lower part of said main beam in opposite laterally extending relationship therefrom, in a manner that vertical cargo loads on said secondary beam means are transmitted into said main beam.

3,854,620 CONTAINER

Glen W. Saidla, Wyomissing Hill, Pa., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 139,427, May 3, 1971, Pat. No. 3,802,975.

This application Oct. 2, 1972, Ser. No. 294,136

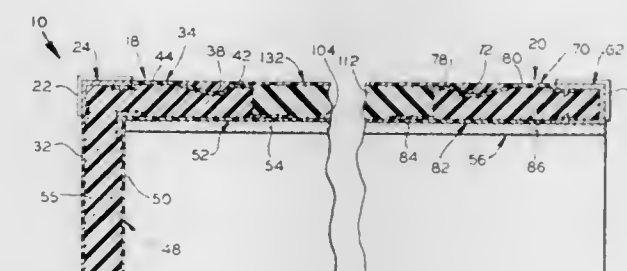
Int. Cl. B65d 11/22

U.S. Cl. 220—9 F

10 Claims

1. A container comprising (a) a hollow body section which is rectangular when viewed in transverse cross-section, (b) at least one end cap having inner and outer skins spaced from each other and an inner and outer longitudinally extending lip portion which forms a part of said inner and outer skins respectively with said inner lip extending longitudinally beyond said outer lip, (c) a transversely extending rectangularly shaped end skin portion connected to said outer lip portion on said outer skin of said end cap, (d) a rectangular metallic member including four pieces of angle iron with one leg thereof bonded to said outer lip portion and the other leg thereof bonded to said end skin portion and having corner castings interconnecting said pieces of angle iron, (e) a transversely extending rectangularly shaped end skin portion on

said inner skin connected to said inner lip portion and forming an end wall for said container, (f) a second rectangular metallic member comprised of four interconnected pieces of angle iron, (g) said second rectangular member engaging the surface of said inner skin which faces said outer skin at the junction of said inner lip portion and said end skin portion of said inner skin, (h) a plurality of interconnecting metallic elements connecting said rectangular metallic members, (i) an inner body skin overlapping and bonded to said inner lip portion



and extending longitudinally therefrom, (j) an outer body skin overlapping and bonded to said outer lip portion and extending longitudinally therefrom in a spaced and substantially parallel relationship with said inner body skin, (k) a peripheral groove in said outer lip portion spaced inwardly from the longitudinally inner end thereof and the overlapping portion of said outer body skin fits into said peripheral groove, and (l) a core of structural insulating material disposed between and bonded to said inner and outer end skins and body skins.

3,854,621 AUXILIARY STORAGE DEVICE FOR VEHICLES

Alan C. Parry, Des Moines, Iowa, assignor to Mid-America Body & Equipment Co. Inc., West Des Moines, Iowa

Filed May 7, 1973, Ser. No. 358,007

Int. Cl. B65d 85/00

U.S. Cl. 220—20

3 Claims



3. An auxiliary storage device for vehicles having a box therein with opposite side walls, a front wall, and a floor, said storage device comprising:

- a. an elongated housing having a plurality of exterior walls including a top wall, a front wall, and end walls and at least one interior wall to form at least two enclosed compartments therein;
- b. a fuel spout mounted in said top wall providing communication from the interior of one of said compartments to the exterior of said housing whereby fuel may be introduced into one of said compartments;
- c. at least one door opening in said top wall providing communication into the other of said compartments;
- d. a door covering for said door opening movable out of a covering relation with said door opening to provide access to the interior of said other compartment;
- e. said one interior wall being horizontal and located below said top wall and said one compartment constituting a

- fuel storage compartment positioned below said other storage compartment,
- f. said fuel spout extended from said top wall through said other compartment and said one interior wall into said fuel storage compartment, said fuel storage compartment having a bottom wall and a plurality of side walls formed by certain of said exterior housing walls and an outlet opening in one of said certain exterior walls for removal of fuel from said fuel storage compartment, and
- g. means for selectively opening and closing said outlet opening;
- h. said housing having a length slightly less than the spacing between said opposite side walls and a flange extended transversely of the upper exterior surface of each end wall thereof having a downwardly facing horizontal shoulder engageable with the upper surface of a corresponding adjacent one of said opposite side walls of the vehicle box, said housing front wall positionable against and detachably secured to the front wall of said vehicle box.

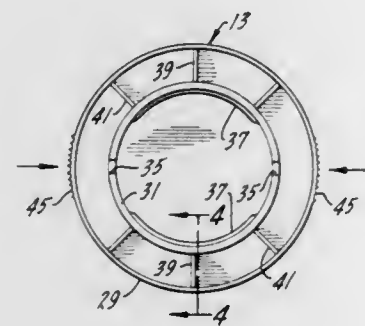
3,854,622

CHILDPROOF COVER

Robert A. McKirnan, Winnetka, Ill., assignor to Knight Engineering & Molding Co., Arlington Heights, Ill.
Filed Dec. 5, 1972, Ser. No. 312,284
Int. Cl. B65d 83/14

U.S. Cl. 220-60 A

6 Claims



1. A childproof cover for a container such as an aerosol container having a roof, a circular collar located on said roof with said collar having an undersurface positioned above said roof, said cover being formed of a flexible plastic and including:

- a circular top, and outer skirt depending from said circular top, an inner skirt coaxial with said outer skirt and also depending from said top, a pair of lips projecting inwardly from the lower end of said inner skirt and positioned to engage the undersurface of said circular collar when said cover is positioned on said container, said lips being spaced from and located opposite to each other,
- a pair of slits formed in said inner skirt and extending from the lower edge thereof towards the circular top with said slits being located generally diametrically of each other and between said lips, and
- a pair of webs connecting said outer and inner skirts with said webs positioned relative to said slits so that forces inwardly applied to opposite sides of said outer skirt at the lower edge thereof adjacent said slits will cause distortion of said outer skirt and radially outward movement of said webs which in turn will cause distortion of said inner skirt and release of said lips from engagement with the undersurface of said circular collar.

3,854,623

FLUID STORAGE TANK EMISSION COLLECTION HOOD

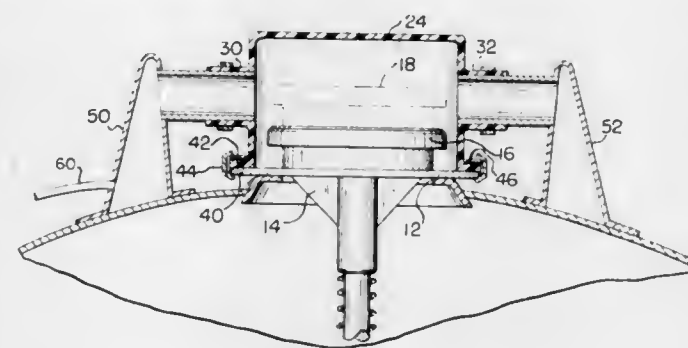
Karl B. Pierson, Warren, Pa., assignor to Betts Machine Company, Warren, Pa.

Filed Nov. 1, 1972, Ser. No. 302,841

Int. Cl. B65d 25/00; F16l 35/00

U.S. Cl. 220-85 P

8 Claims



1. An emission collection device for a fluid storage tank vent comprising, a fluid storage tank vent hood configured to completely enclose the tank vent to collect gaseous vapors emitting from the vent, said hood having at least one outlet for directing the collected vapors therein to an associated vapor collecting tank, said hood being formed of a flexible resilient material whereby if the tank is inadvertently overturned the hood will collapse and automatically return to its original shape when the tank is uprighted.

3,854,624

MEAL SERVICE SET

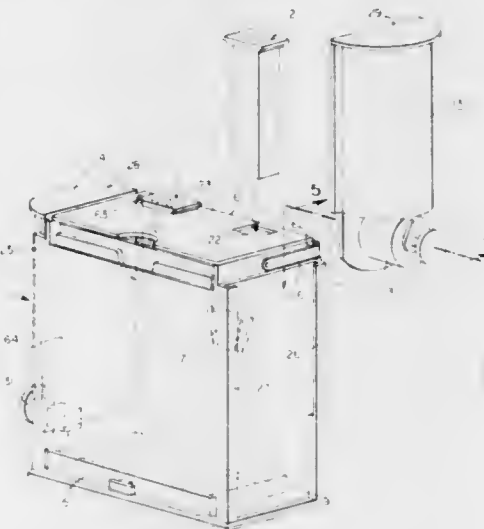
Daniel G. Canci, 355 Margate Rd., Upper Darby, Pa. 19082

Filed Aug. 10, 1973, Ser. No. 387,510

Int. Cl. A47g 19/24

U.S. Cl. 221-96

4 Claims



1. A meal service set comprising:

- a casing open at one end adapted to contain a supply of napkins;
- spring-actuated napkin compressing means within said casing;
- an adjustably tightenable hinged casing lid, positioned at the open end of said casing such that a slot exists between said casing and said lid at a non-hinge edge of said lid through which one napkin at a time may be removed without opening said lid;
- two rigid plates within said casing, between which the napkins are compressed, the plate nearest the slot having a smooth surface facing the napkins which promotes the easy removal of the napkins;
- salt and pepper shakers, removably attached to said lid;
- a cream dispenser, removably attached to a side of said casing, adapted to be used for dispensing cream while attached to said casing;

means on said casing adapted for quick attachment of said casing to a wall, and removal therefrom;

a carrying handle attached to said casing, adapted to be swiveled to a non-functional out-of-the-way position when said picnic service set is in use;

a separate drawer within said casing, adapted to contain articles of the approximate size and shape of tea bags; and a sugar dispenser including means adapted to incrementally dispense one teaspoon of sugar at a time, said dispenser being removably attached to a side of said casing, and adapted to be used for dispensing sugar while attached to said casing, said means adapted to incrementally dispense one teaspoon of sugar at a time comprising a rotatable hollow cylindrical chamber having a cylindrical wall in rotational sliding contact with an opening beneath and communicating with the sugar, said cylindrical wall having a slot communicating with the interior of the cylindrical chamber through which the sugar enters the chamber when the slot is rotated to juxtaposition with the sugar opening, and through which the sugar is dispensed when the slot is rotated to a downwardly facing position.

3,854,625

DISPENSING APPARATUS

Ervin L. Kuebler, 589 N. Johnson Ave., El Cajon, Calif. 92021

Filed Feb. 13, 1974, Ser. No. 438,331

Int. Cl. B65h 1/00

U.S. Cl. 221-198

13 Claims



1. An apparatus for dispensing objects of uniform size comprising:

- a hollow outer housing having an upper portion with an aperture therethrough and a lower portion with an inner retaining member positioned inward from an outer open end, said open end having a larger diameter than said inner retaining member;
- a movable dispensing member disposed within said hollow outer housing and movable from a first position to a second position said dispensing member comprising an upper portion forming an operating button, said button passing through said aperture and has sliding engagement therewith for translating said dispensing member downwardly when depressed and a lower portion having a cavity of uniform diameter for storing a plurality of loose fitting objects for dispensing, a normally restrictive inner wall portion having a smaller diameter than said cavity and a normally flaired outer lip having a larger diameter than said cavity, when said dispensing member is in said first position said inner retaining member is positioned adjacent the normally flaired lip for applying inward pressure thereto for deforming same to a diameter less than said cavity thereby restricting the dispensing of the bottom

most object in said cavity and the deforming of said normally flaired lip causes said normally restrictive inner wall portion to bow outwardly to a diameter equal to said cavity thereby allowing unrestricted movement of the objects therethrough and when said operating button is depressed, said dispensing member moves downwardly to said second position placing said normally flaired lip below said inner retaining member thus allowing said normally flaired lip to return to its original configuration for releasing said bottom most object and allowing said restrictive inner wall portion to return to its normal configuration for retaining the now bottom most object and preventing its release therethrough.

3,854,626

PILL CONTAINER-DISPENSER

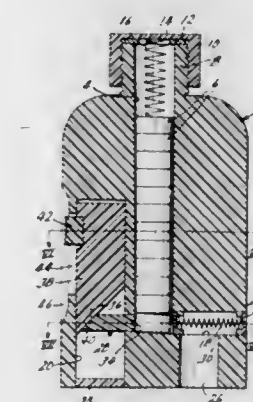
Joseph Krechmar, 6001 W 53 Pl., Mission, Kans. 66202

Filed Apr. 30, 1973, Ser. No. 355,937

Int. Cl. B65h 3/00

U.S. Cl. 221-264

1 Claim



1. A container-dispenser for pills and the like comprising:
- a. a body member having formed therein an elongated pill reservoir adapted to contain a series of pills in stacked relation, said pills having a uniform thickness longitudinally of said reservoir, a pill discharge opening laterally offset from said reservoir and opening exteriorly of said body member, and a slide passageway extending transversely to said reservoir and interconnecting said reservoir and said discharge opening, said reservoir being otherwise hermetically sealed,
- b. a slide longitudinally movable in said passageway, and having a hole formed transversely therethrough the axis of which is parallel to said reservoir, said slide being movable between a first position in which said hole registers with said reservoir and a second position in which said hole registers with said discharge opening, said slide being wedge-shaped in a plane parallel to the reservoir axis, being taperingly reduced in thickness in the direction of movement thereof toward its first position, the walls of said passageway mating with the wedge surfaces of said slide when said slide is in its first position being correspondingly tapered, whereby in said first slide position to provide sealing contact between said slide and body member in encircling relation to the reservoir entry to said passageway, and to the hole of said slide, the thickness of said slide, longitudinally of said reservoir, being respectively less than and greater than the thickness of a single pill at the edges of the slide hole which are respectively adjacent the thinner and the thicker ends of the wedge portion of the slide,
- c. resilient means operable to bias a stack of pills contained in said reservoir toward the end of said reservoir interconnected with said slide reservoir,
- d. manually operable means for moving said slide from said first position to said second position, and
- e. resilient means biasing said slide toward said first position.

3,854,627

METHOD AND APPARATUS FOR DISCHARGING MEASURED AMOUNTS OF DOUGH

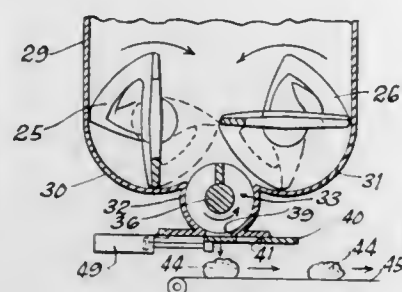
Uzal E. Coons, Oaklawn, Ill., assignor to Wm. Wrigley, Jr. Company, Chicago, Ill.

Filed June 7, 1971, Ser. No. 150,364

Int. Cl. A21c 11/10

U.S. Cl. 222-1

9 Claims



1. Apparatus for manipulating doughy products, said apparatus comprising a container for the products, a discharge opening in the bottom region of the container, rotatable means for moving a portion of the products opposite said opening in a radial direction said radial direction being oriented about a longitudinal axis of said rotatable means, additional means for moving products into said rotatable means behind said radially moving portion, said rotatable means pushing part of the radially moving portion through said opening and severing means on said rotatable means cooperating with the edge of said opening to sever said part from said radially moving portion and thereby form and discharge said part from the container as a discrete loaf.

3,854,628

COLLAPSIBLE TUBE DISPENSER

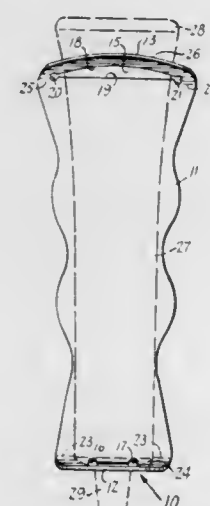
Harford E. Goings, P.O. Box 64, Manassas, Va. 22110

Filed Nov. 17, 1971, Ser. No. 199,641

Int. Cl. B65d 35/56

U.S. Cl. 222-103

2 Claims



1. A collapsible tube dispenser comprising in combination a collapsible tube and an elongate one piece flexible strip type holder, means on said holder for securing said holder to a wall, a flange integrally formed on the lower end of said dispenser and extending perpendicularly outwardly therefrom, an aperture formed in said flange to receive the dispensing end of the collapsible tube extending therethrough, an arcuate support bar integrally formed on the upper end of said holder delineated by an aperture having a straight generally horizontal lower edge and an arcuate upper edge, said bar offset outwardly of said holder in an arcuate form to provide an opening of a size and shape to receive an arcuate portion of the body of said collapsible tube therein for supporting the collapsible

tube for removing the contents therefrom by inward and downward finger pressure thereon.

3,854,629

EJECTING DEVICE

Rudolf Bliederger, Fliederweg 4, D-7057 Winnenden, Germany

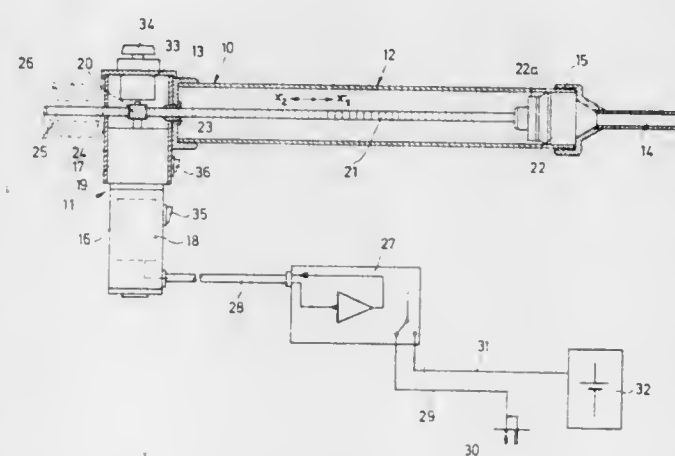
Filed June 7, 1973, Ser. No. 367,266

Claims priority, application Germany, June 8, 1972, 2227930; Feb. 17, 1973, 2307947

Int. Cl. B67d 1/16

U.S. Cl. 222-109

17 Claims



1. A device of the character described, comprising a cylinder having an interior at least partially filled with a substance to be expelled; a piston mounted in said interior of said cylinder for reciprocation with respect thereto between a plurality of positions delimited by a forward position and a retracted position and adapted to expel the substance from said interior of said cylinder during its movement toward said forward position and to draw a medium into said interior of said cylinder during its movement toward said retracted position; nozzle means connected to said cylinder and communicating with said interior thereof for dispensing the substance expelled therefrom; drive means for reciprocating said piston; and retracting means for limited retraction of said piston toward said retracted position subsequently to the termination of each movement toward said forward position to thereby retract the substance present in said nozzle means into said interior of said cylinder and prevent dripping.

3,854,630

APPARATUS FOR INJECTING COLORANT INTO INJECTION MOLDING MACHINE

Robert E. Standridge, Covington, Ga., assignor to Evans Products Company, Portland, Oreg.

Filed Apr. 4, 1973, Ser. No. 347,896

Int. Cl. B67d 5/52

U.S. Cl. 222-135

6 Claims

1. In a plastic processing apparatus having a cylinder, a screw within said cylinder and a hopper mounted above and communicating with said cylinder for retaining a supply in pellet form of the plastic material to be processed, the invention comprising:

a liquid material dispersing means extending into said hopper at a position a short distance above said cylinder, sufficient that said screw is shielded from said dispersing means by said pellets to prevent liquid material extruded from said dispersing means from falling upon said screw; pressurizable supply means for retaining a supply of the liquid material under pressure;

and means communicating with said supply means and said dispersing means for supplying a predetermined amount



3,854,631

AUTOMATIC DISPENSER FOR HOT FLUIDS UNDER PRESSURE

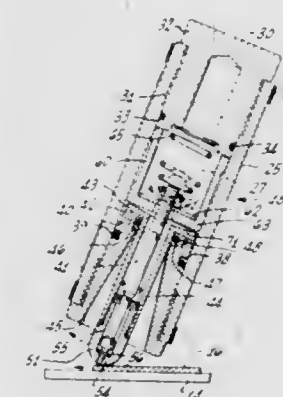
Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90605

Filed May 4, 1973, Ser. No. 357,501

Int. Cl. B67d 5/62

U.S. Cl. 222-146 IIE

17 Claims



1. In an automatic high pressure fluid dispenser the improvement comprising:

a dispenser body having an interior chamber for containing a fluid under high pressure;
an actuator retainer affixed within said body and having a passage for mounting an actuator therethrough;
an actuator having a tubular barrel extending through said passage of said container with clearance therebetween;
pivot means, interconnecting a rear inner end of said retainer and a rear inner end of said actuator, comprising rigid, opposed portions of said retainer and said actuator that are biased into pivotal abutment for pivotal movement of said actuator relative to said retainer and body about an axis that is normal to and intersects the longitudinal axis of said passage of said retainer;
and an endless fluid seal means in said clearance intermediate said passage of said retainer and the exterior of said barrel, said seal means and said pivot axis being positioned in substantially a common plane comprising the median plane of said seal means, the coplanar relationship of said axis and said median plane of said seal means, minimizing radial compression of said seal means in response to pivotal deflection of said actuator.

3,854,632

ACTUATING ASSEMBLY FOR AEROSOL SPRAY CAN

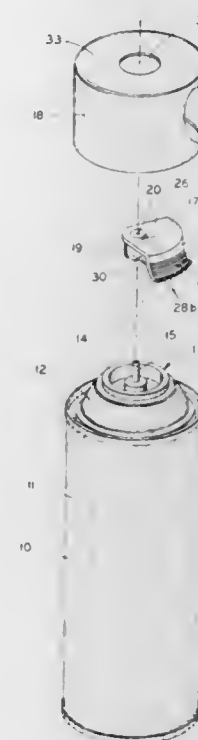
Thomas J. Smrt, 4N671 Rt. 59, Bartlett, Ill. 60103

Filed Jan. 12, 1973, Ser. No. 323,145

Int. Cl. B65d 83/14

U.S. Cl. 222-182

2 Claims



1. An actuator for an aerosol spray can having a generally cylindrical body and a valve-equipped top, the valve being adapted to open when moved laterally relative to the longitudinal axis of the can, the actuator comprising a spray nozzle portion mounted on the valve, an intermediate portion extending outwardly from the nozzle portion generally transversely to the longitudinal axis of the can, and a finger portion extending concavely arcuately outwardly and downwardly from the intermediate portion whereby the valve can be opened by pressing the finger portion to move the valve laterally, a cap rotatably mounted on the top of the can, the cap having a generally cylindrical side wall and a top wall, the finger portion of the actuator being positioned inwardly of the side wall, the top wall being provided with an opening therethrough above the nozzle portion of the actuator through which the contents of the can are sprayed when the valve is opened, the side wall of the cap being provided with an opening therethrough, the cap being rotatable on the can between an actuating position in which the opening in the side wall of the cap exposes the finger portion of the actuator and permits the actuator to be pressed to open the valve and non-actuating positions in which an imperforate portion of the side wall of the cap is adjacent the finger portion of the actuator to prevent the actuator from being pressed, the top of the can being generally dome-shaped and the lower periphery of the finger portion of the actuator extending arcuately in a plane extending transversely to the axis of the can with substantially the same curvature as the dome-shaped top, the spacing between the lower periphery of the finger portion and the dome-shaped top when the valve is closed being such that the lower periphery of the finger portion engages the dome-shaped top before the actuator is pressed sufficiently to spray the contents of the can against the top wall of the cap.

3,854,633

ARRANGEMENT FOR SECURING AN ATTACHMENT, SUCH AS A SPRAY PUMP, TO THE NECK OF A BOTTLE

Pierre Bouvaist, Impasse Terracol, Tassin (Rhône), France

Filed Jan. 18, 1973, Ser. No. 324,855

Claims priority, application France, Jan. 19, 1972, 7203011

Int. Cl. G01f 11/38

U.S. Cl. 222-183

8 Claims

1. A device for securing a spray pump on to a container comprising:

a spray pump;
a container provided with a neck;
said spray pump being provided with an annular collar member;
the lower surface of said annular collar member being positionable to bear on top of said container neck;
an intermediate piece which is disposed in direct contact with said annular collar member of said spray pump and with the exterior of said container and which ensures the



affixing of said spray pump onto the neck of said container;
said intermediate piece comprising a plate spring which bears on the annular collar member of said spray pump and the exterior of said container; and a hollow rigid jacket engaged around said plate spring to hold said plate spring in a locked position to prevent said plate spring from being inadvertently disengaged from said spray pump or from said container.

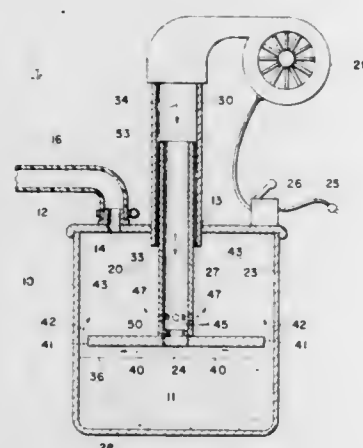
3,854,634 POWDER DISPENSER

Robert J. Hart, Tulsa, Okla., assignor to Commercial Resins Company, Tulsa, Okla.

Filed Jan. 2, 1974, Ser. No. 429,748

Int. Cl. B67d 5/54

U.S. Cl. 222-193



1. A powder dispenser, comprising,
an enclosable powder receiving receptacle having input and output holes,
movable plate means locatable within said receptacle,
a first tube attached adjacent a hole through said plate means and extending through the input hole to outside said container to define an airflow path therebetween,
a second tube disposed about said first tube, extending outwardly from said container from said input hole,
blower means for ejecting a gas into said second tube to be conducted by said first tube through the hole in said plate means to pick up the powder and expel it through the exhaust hole, and for maintaining the position of said

plate means above the powder to form a gas flow path of constant dimensions above said powder to provide uniform powder pick up independent of the quantity of contained powder.

3,854,635

SLIDING CAR ARRANGEMENT FOR A SHAFT FURNACE
Friedrich Tschinkel, Thalwil, Switzerland, assignor to Maerz Ofenbau AG, Zurich, Switzerland

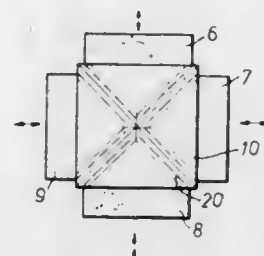
Filed Dec. 14, 1973, Ser. No. 424,706

Claims priority, application Austria, Dec. 18, 1972, 10760/72

Int. Cl. B65g 65/58

U.S. Cl. 222-199

6 Claims



1. A discharge arrangement for a vertically extending shaft furnace having a discharge outlet at its lower end and used for the treatment of bulk material comprising at least three sliding cars located below the lower end of the shaft and movable in a horizontal plane outwardly and inwardly relative to the central axis of the shaft, the discharge outlet from the shaft extending for the entire circumferential periphery of the lower end of the shaft, wherein the improvement comprises that the surfaces of said sliding cars supporting the material within the shaft furnace combine to extend under the full horizontal cross sectional area of the lower end of the shaft for supporting its contents and each said sliding car is movable outwardly from the center of the shaft along a rectilinear path different from the path of the other said sliding cars.

3,854,636

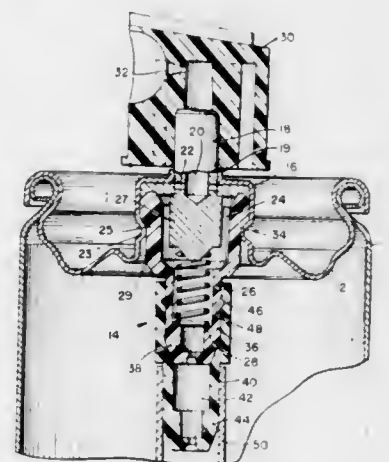
AEROSOL VALVE FOR LOW DELIVERY RATE
John J. Conway, Racine, Wis., and Roger A. Evesque, Cary, Ill., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jan. 15, 1973, Ser. No. 323,679

Int. Cl. B65d 83/14

U.S. Cl. 222-402.24

7 Claims



2. In an aerosol valve of the type having a valve body defining a valve cavity and a restricted valve body orifice through which product enters said cavity from an associated container, a valve stem movably mounted within said cavity and defining an inlet orifice and a discharge passage, a spray nozzle attached to and in fluid communication with said stem and defining a terminal spray orifice, and means to bias said stem to a closed position, the improvement of additional means

defining at least one expansion chamber positioned below said valve cavity and below said restricted valve body orifice, said additional means defining a second restricted feed orifice for product entry to said expansion chamber, whereby product is delivered by said valve at a reduced flow rate.

3,854,637

APPARATUS FOR LOADING SOLID PARTICLES INTO A VERTICAL VESSEL

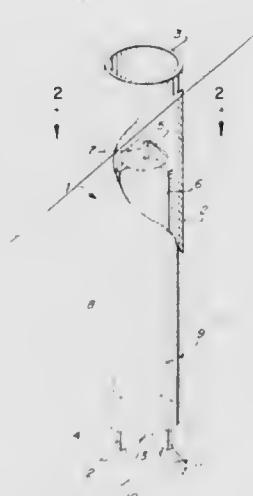
Karl A. Muller, Jr., Homewood, Ill.; Lyle M. Lovell, Portage, Ind.; Walker F. Johnston, Flossmoor, and Gerald J. Kramer, South Holland, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed July 20, 1973, Ser. No. 381,042

Int. Cl. B67d 3/00

U.S. Cl. 222-564

12 Claims



1. An apparatus for distributing solid particles into a vertical vessel when said solid particles are being loaded into said vessel, said apparatus being designed for use in a substantially vertical position, which apparatus comprises: (1) a hollow first cylinder having an inlet end at its top and an outlet end at its bottom and having its axis in a vertical position; (2) a first baffle means located in said first cylinder near said inlet end and having its vertex pointed toward said inlet end and being positioned co-axially with said first cylinder, the diameter of the base of said first baffle means being smaller than the inner diameter of said first cylinder; (3) a second baffle means located directly below said outlet end and being positioned co-axially with said first cylinder, the diameter of the base of said second baffle means being at least as large as the inner diameter of said first cylinder; and (4) a third baffle means being co-axial with said first cylinder and having its top connected to the bottom of said first baffle means and its bottom connected to the upper surface of said second baffle means and its vertical sides connected to the inner wall of said first cylinder.

3,854,638

FISH STRINGER AND CARRIER

Denver R. Anderson, 1739 Wilson Ave., Columbus, Ohio 43207

Filed Aug. 9, 1973, Ser. No. 386,998

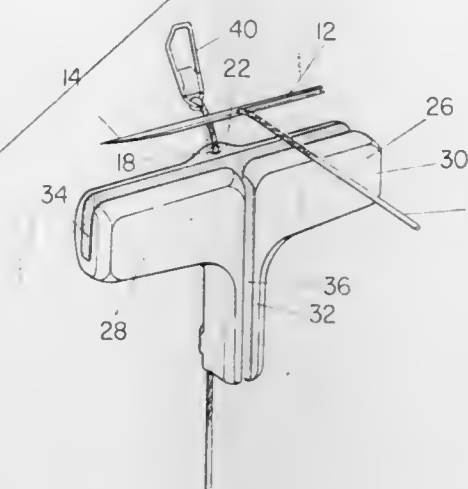
Int. Cl. A45f 3/00

U.S. Cl. 224-7 E

7 Claims

1. A fish stringer device comprising:
a. a flexible cord means;
b. a needle means attached to one end of said cord means intermediate the end of said needle means; and
c. a hand grippable generally T-shaped body attached to said cord means at a substantially central portion of said body and spaced from said needle means, said body formed, in an operable position, by a pair oppositely extending horizontal arms and a downwardly extending

vertical arm with a generally horizontal, upwardly opening elongated slot for removably receiving said needle



means and a generally vertical slot intersecting said horizontal slot for removably receiving a portion of said cord.

3,854,639

TOOL HOLDER

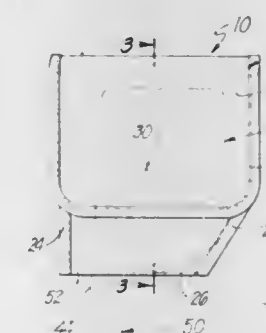
Rocco Genchi, 1154 Kraemer Pl., Anaheim, Calif. 92806

Filed Feb. 26, 1973, Ser. No. 335,481

Int. Cl. A45c 1/04

U.S. Cl. 224-26 B

4 Claims



1. A tool holder adapted to be worn by the user of and contain a tool kit including a handle a hatchet head to be attached to said handle to form a hatchet having a blade extending laterally to one side of the handle, and a shovel blade to be attached to the handle to form a shovel, said holder comprising:

a holster-like tool case including front, center, and rear walls having side and bottom edges joined to one another to form an upwardly opening front pocket between said front and center walls and an upwardly opening rear pocket between said center and rear walls, and a pocket closure flap joined to said rear wall and foldable forwardly over said pockets and downwardly against said front wall,

one of said pockets being adapted to receive said shovel blade and the other pocket being adapted to receive said hatchet head when attached to said handle to form said hatchet a,

said one pocket being relatively deep to contain substantially the entire shovel blade, and said other pocket being relatively shallow compared to the depth of one pocket to contain said hatchet head and having a bottom opening adjacent one side edge of said other pocket through which said handle may extend when attached to said hatchet head,

coacting means on said front wall and flap for releasably securing said flap to said front wall, and means on said rear wall for attaching said case to the user's belt, wherein said front pocket is the shovel blade receiving pocket and said rear pocket is the hatchet head receiving pocket.

ceiving pocket and said rear pocket is generally cylindrically formed along said one side edge to accommodate said handle.

3,854,640 SKI CARRIER

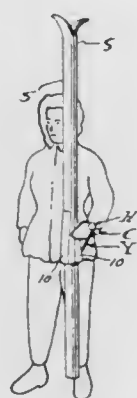
Charles T. Willmarth, 1245 S. Beverly Glen Blvd., Los Angeles, Calif. 90024

Filed Sept. 27, 1973, Ser. No. 401,503

Int. Cl. A45f 5/00

U.S. Cl. 224—28 R

8 Claims



1. A carrier for a pair of skis arranged bottom to bottom with their bindings projecting oppositely, and including: a substantially flat base affixed to a supporting cuff adapted to surround the wrist of a skier, a housing of deformable material and of inverted cup-shape overlying the base and supported by a central column extending from one side of the base, a lanyard of flexible cord anchored to one of said base and column and adapted to wrap around the column for storage within the housing chamber and to alternately unwrap and extend from between the base and said overlying deformable housing, the free end of the lanyard including means for releasably looped engagement around the pair of skis, said housing of deformable material being comprised of a circularly-shaped top wall carried by and spaced by the central column to overlie the said one side of the base, and of a peripheral wall concentrically circular in form around the said central column and depending from the top wall and said peripheral wall having a lower edge normally juxtaposed to the said one side of the base, said lanyard being wrapped or unwrapped about the central column and within said housing by manually drawing the lanyard beneath the flexible housing and between the lower edge of the peripheral wall and the base, said lower edge deflecting either inwardly or outwardly to permit the lanyard to pass therebelow.

3,854,641

ARTICLE CARRIER FOR RECREATIONAL VEHICLES

Richard S. Kohls, 802 N.E. Ravenna Blvd., Seattle, Wash. 98115

Filed Feb. 27, 1973, Ser. No. 336,327

Int. Cl. B60r 9/00

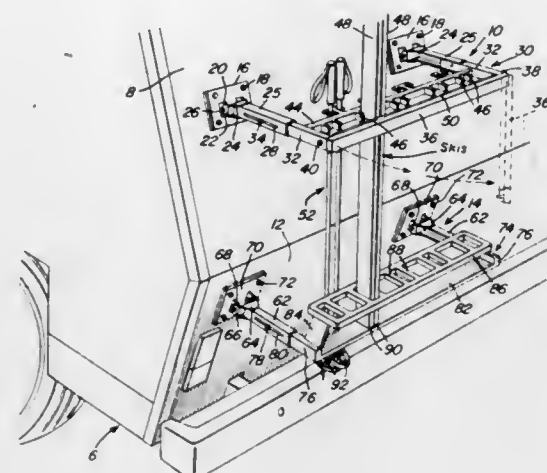
U.S. Cl. 224—29 R

6 Claims

1. A carrier for skis and related equipment adapted for use on substantially vertical support surfaces, such as the rear end or side surface of a camper, van or similar recreational vehicle, comprising:

complimentary upper and lower carriers for racking and clamping skis and ski poles vertically, means mounting the upper and lower carriers to upper and lower areas of the support surfaces, respectively, including (1) extensible and retractable members connected to the upper and lower carriers, and (2) means secured to the support surfaces mounting the extensible and retractable members and carriers connected thereto for vertical movement.

wherein the upper carrier includes a pair of spaced, parallel, co-planer end members interconnected medially by a co-planer brace and a clamping area extending parallel to the brace for clamping skis in place between the brace



and the arm, one end of the arm pivotally mounted to the other terminal end of one end member and the other end of the arm having key lockable retaining means connecting the other end of the arm to the outer terminal end of the other end member.

3,854,642

METHOD OF GUIDING A THIN FLEXIBLE WEB STRIP WHICH IS AT LEAST PARTIALLY METALLIC

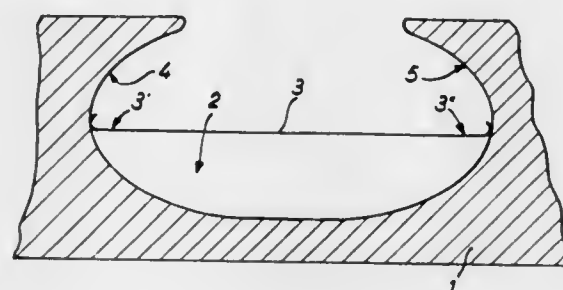
Pierre Mueller, Preverenges, Switzerland, assignor to J. Bobst & Fils S.A., Prilly, Switzerland

Continuation of Ser. No. 127,178, March 23, 1971. This application Jan. 26, 1973, Ser. No. 326,686

Int. Cl. B65h 23/04

U.S. Cl. 226—3

6 Claims



1. A method of guiding a thin flexible web strip which is at least partially metallic, said web strip having opposite curled edge portions, comprising:

receiving and running the web strip within and through a guide having two uniformly curvilinear guide surfaces extending generally upwardly from a common base and facing one another and providing intermediate their height allochiral bights spaced apart slightly less than the width of the web strip between opposite edges of the web strip;

engaging said curled edge portions of the web strip in lateral alignment within said bights and thereby guiding the web strip as it runs through the guide;

and as the strip runs through the guide maintaining the curled edge portions in said bights and thereby maintaining said web strip below upwardly extending portions of said surfaces and freely spaced above said base and above downwardly extending portions of said surfaces.

3,854,643

SPLICE FINDER

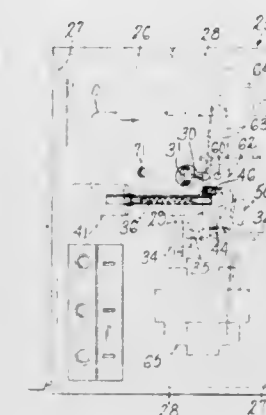
Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.

Continuation-in-part of Ser. No. 339,704, March 9, 1973, abandoned. This application Nov. 14, 1973, Ser. No. 415,650

Int. Cl. B65h 23/16

U.S. Cl. 226—35

13 Claims



1. Apparatus for detecting a splice in a length of recording tape where two ends of tape are spanned by a splicing tape, comprising a capstan for driving the tape, a pressure wheel adapted to contact the tape on one side thereof and hold said tape against the capstan, said pressure wheel being carried on a movable shaft, means for moving said shaft toward a retract position away from said capstan, means for holding said shaft in an operating position in which the pressure wheel engages the tape, and sensing means responsive to movement of said shaft when a splice on said tape passes between said capstan and said pressure roller for deactivating said holding means whereby said moving means moves said shaft towards a retract position.

3,854,644

PLOTTER SYSTEM AND METHOD OF OPERATION

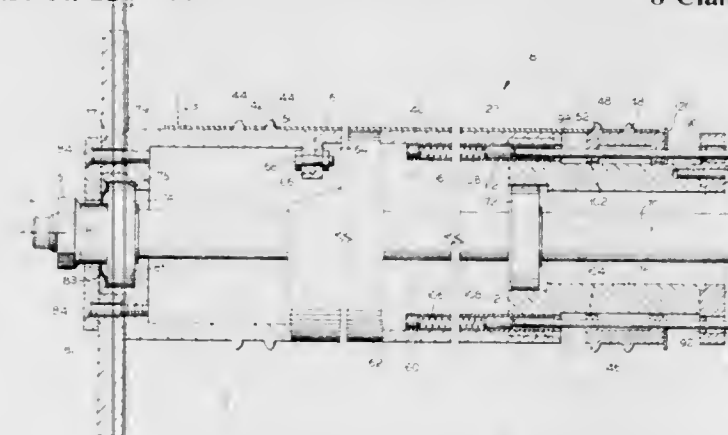
Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 20, 1973, Ser. No. 353,116

Int. Cl. G03b 1/24

U.S. Cl. 226—79

8 Claims



1. A drum for advancing a strip of recording material thereover in a flattened condition comprising:

a first rotatable member having an axis of rotation and first engaging means located about the axis of rotation for engaging the strip of material at one longitudinal edge as the strip passes over the drum;

a second rotatable member positioned coaxially of the first member and the axis of rotation and having second engaging means located about the axis of rotation for engaging the strip of recording material at the other longitudinal edge as the strip passes over the drum;

a set of support rods extending between the first and second rotatable members in parallel with the axis of rotation,

each rod being fixedly attached to one of the members and slidably received in the other of the members to allow relative movement of the two members in the axial direction and to couple the members together for simultaneous rotational motions about the axis in unison; and resilient means interposed between the two rotational members for urging the one member axially away from the other.

3,854,645

CLAMPING AND TRANSFER DEVICE FOR ELONGATE ARTICLES

Richard Northan Knights, Gloucester, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, Warwickshire, England

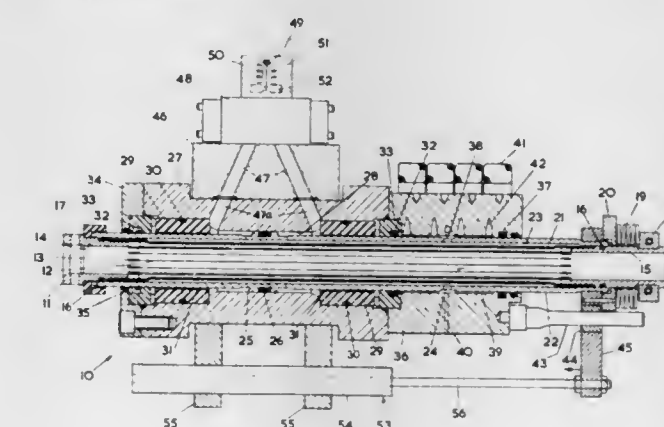
Filed Aug. 13, 1973, Ser. No. 387,726

Claims priority, application Great Britain, Aug. 25, 1972, 39704/72

Int. Cl. B65h 17/36

U.S. Cl. 226—162

7 Claims



1. A clamping and transfer device for transferring tube, rod or like articles in a direction longitudinally of the article, the device comprising a housing having a bore therein, a hollow piston slidably mounted in the bore for longitudinal movement therealong, fluid-supply passageways in the housing for supply of fluid to move the piston in both senses of longitudinal movement, and a radially contractible article-engaging tubular clamping member disposed within the hollow piston with end portions of the clamping member fluid-tightly mounted in respect of end portions of the piston.

the improvement consisting in a valve block mounted on the housing and having a bore through which is movable part of the piston and which provides an annular fluid-supply channel, a plurality of orifices in the piston providing communication from the fluid-supply channel to between the piston and the clamping member throughout movement of the piston in the valve block, and valve means on the valve block connected to the annular fluid-supply channel, whereby fluid can be supplied between the piston and the clamping member thereby to pressurise and radially to compress the clamping member onto an article when the piston is moving in one sense of direction, and whereby fluid can be returned from between the piston and the clamping member to release pressure on the clamping member while the piston is moving in the other sense of direction.

3,854,646

PRESSURE-BALANCED WIDE WEB GUIDE ROLLER

Walter Dorfel, and Bernd Gerner, both of Weilheim-Teck, Germany, assignors to Ahlstrom Development GmbH, Weilheim-Teck, Germany

Filed July 10, 1973, Ser. No. 377,921

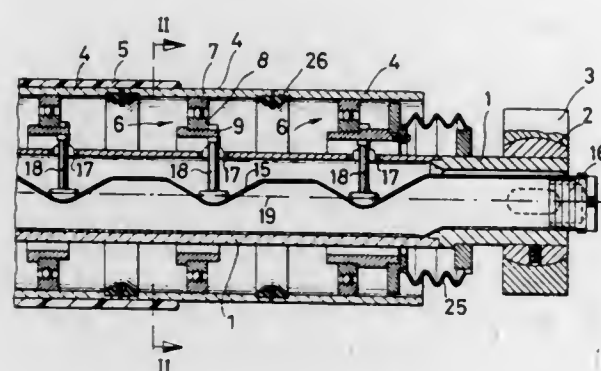
Int. Cl. B65h 17/20

U.S. Cl. 226—191

32 Claims

1. A pressure-balanced guide roller assembly adapted for the conveyance of wide webs, comprising in combination:

a non-rotating, substantially rigid head traverse extending centrally through the entire length of the roller assembly and connected to a frame-support on each end thereof; a plurality of roller segments arranged axially adjacent to one another on the head traverse so as to form an outwardly substantially continuous, generally cylindrical roller assembly for contact with a running web or the like; an independent bearing unit rotatably supporting each roller segment, each bearing unit including a non-rotating sleeve surrounding the head traverse;



means for adjustably positioning each bearing unit relative to the head traverse, including means for radially biasing each bearing unit and its roller segment in opposition to the contact pressure exerted by the web against the roller assembly; and means for restraining the adjustment displacements of each bearing unit to motions of the bearing unit center along only a single displacement path within a radial plane.

3,854,647

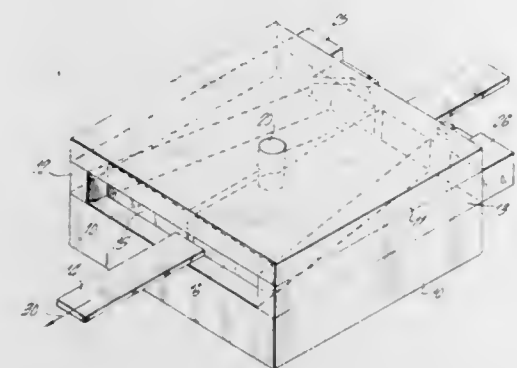
SELF-ADJUSTING STOCK CENTRALIZER

Jean H. Mittendorf, 82 Pawnee Ave., Oakland, N.J. 07436
Filed Feb. 11, 1974, Ser. No. 441,370

Int. Cl. B65h 23/28

U.S. Cl. 226-198

7 Claims



1. A self-adjusting guide assembly for center alignment of elongated work pieces comprising:

- a base for supporting all the components of the guide;
- a cover secured to the base;
- a pair of spaced, fixed guides mounted between the cover and base and formed with inner sloping edges for defining a wedge shaped space therebetween;
- a pair of slidable aligning plates positioned in the space between the guides; said plates formed with outer sloping edges to engage the inner sloping edges of the guides;
- an alignment pin secured to the cover and depending therefrom to engage the inner edges of the aligning plates; and
- resilient means disposed between the aligning plates and the base for urging the aligning plates along the guide rods to yieldably hold a work piece in the aligning plates.

3,854,648
AIR OPERATED FASTENER DRIVING TOOL,
ESPECIALLY FOR TACKS

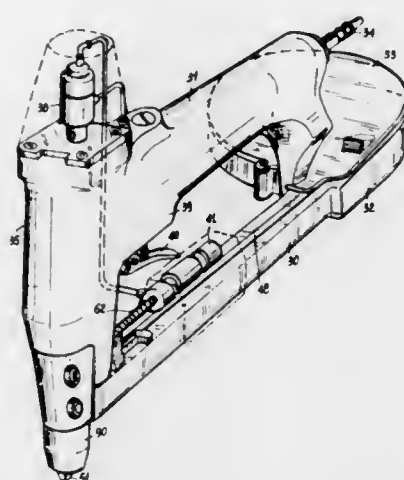
Giovanni Inzoli, Enrico Arosio, and Stefano Iarrera, all of Via Don Minzoni 21, Bresso, Italy

Filed Oct. 4, 1972, Ser. No. 294,865

Int. Cl. B25c 1/04

U.S. Cl. 227-136

14 Claims



1. A fastener driving tool, for driving tacks connected to each other at the head end to form a flexible band, comprising cylinder means having opposite ends; a piston arranged in said cylinder means reciprocable between an active stroke toward one end of said cylinder means and a return stroke; a rod-shaped driver coaxially fixed at one end of said piston and projecting therefrom toward said one end of said cylinder means; a magazine for receiving the tacks connected to each other in the form of a flexible band; guide channel means extending between and connected to said magazine and said one end of said cylinder means for guiding the band in longitudinal direction from said magazine to said one end of said cylinder means; feed means movable between a feed stroke and a return stroke for placing at the end of the feed stroke the leading tack on the band in a position coaxial with the other end of said driver; actuating means for first actuating said feed means on its feed stroke and then said piston on its active stroke so that the driver will shear off the leading tack from the band and drive the tack into material adjacent said one end of said cylinder means; and means directly engaged by and cooperating with said feed means for closing part of said guide channel means at the end thereof adjacent said one end of said cylinder means to prevent the sheared off tack from returning into the feed channel means and to prevent also further movement of the band during shearing off the leading tack therefrom.

3,854,649

THIN-WALLED CONTAINER

Ulrich Wagner, Esslingen; Eugen Scherr, Ebersbach, and Karl-Dieter Fuchslocher, Esslingen, all of Germany, assignors to Wilhelm Wagner, Esslingen, Germany

Filed Aug. 7, 1972, Ser. No. 278,380

Claims priority, application Germany, Aug. 6, 1971, 2139588

Int. Cl. B65d 1/00

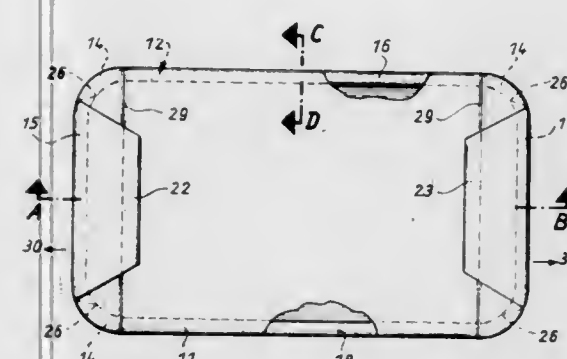
U.S. Cl. 229-3.5 MF

9 Claims

1. In a two-part thin-walled metal container for storing and serving prepared food, said container being of the type that has a receptacle and a lid removably secured thereto for covering the same, the improvement comprising:

- a continuous flange forming part of said receptacle and having
 - two straight, opposed, parallel first flange zones which serve as guide rails for guiding the removal of said lid from said receptacle,

- two opposed second flange zones,
 - rounded corner zones, each connecting a first flange zone with a second flange zone,
- B. a continuous edge zone forming part of said lid and bent about said continuous flange to form a continuous crimp and
- a pull tab formed integrally with and as a continuation of each of those portions of the crimped continuous edge zone of said lid that lies beneath said second flange zones



of the receptacle flange and having a base portion connected to the part of the crimped continuous edge zone that lies beneath the corner zones flanking its respective second flange zone; upon exerting a manual pulling force on both said pull tabs, the adjacent crimp portion about the associated second flange zone and about the flanking corner zones being disengaged to an extent that said lid being adapted to be slid relative to said first flange zone guide rails and removed from said receptacle.

3,854,650
CUSHION

Shigeru Hanaue, Yomato, Japan, assignor to Sony Corporation, Tokyo, Japan

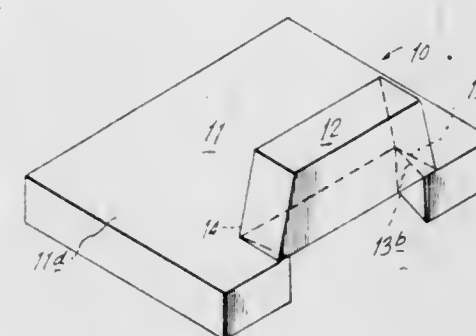
Filed May 11, 1973, Ser. No. 359,317

Claims priority, application Japan, May 24, 1972, 47-60773

Int. Cl. B65d 81/04, 85/30

U.S. Cl. 229-14 C

15 Claims



1. A foldable packing cushion comprising a flat part and at least a first standing part of resilient material, the standing part being hinged to the flat part, at least one of the standing and flat parts having a projecting, generally trapezoidal shaped tab which engages within a similarly shaped recess in the other of the standing and flat parts prior to being folded, the standing and flat parts each having a set of corresponding, orthogonally related edges which are initially compressed and then engaged with each other when the standing part is bent substantially perpendicular with the flat part during folding whereby the engagement of the corresponding edges maintains the perpendicular relationship of the flat and standing parts after being folded.

3,854,651

LOIN AND BUTT BOX

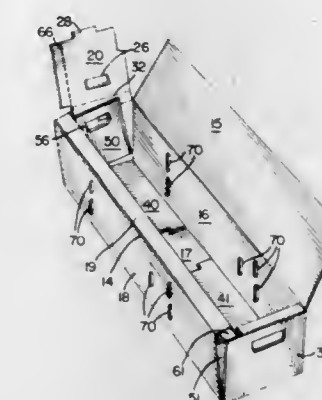
Edward L. Osborne, Kansas City, Kans., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,563

Int. Cl. B65d 5/24

U.S. Cl. 229-34 R

3 Claims



1. A blank of cut and scored paperboard or the like suitable for use in forming a container comprising:

- a plurality of body forming panels foldably connected to one another along parallel fold lines and consisting of a top wall, rear wall, bottom wall and front wall;
- a first pair of flaps located adjacent the ends of said top wall and separated therefrom by a pair of first cut lines, each of said first flaps including a first locking tab along an edge thereof;
- a second pair of flaps foldably attached to the ends of said rear wall along a pair of single fold lines and to the adjacent edges of said first pair of flaps along a pair of spaced apart fold lines;
- a pair of slots formed at the blank outer edges in the region of said spaced apart fold lines, said slots extending at least between said spaced apart fold lines;
- a third pair of flaps located adjacent the ends of said bottom wall and separated therefrom by a pair of second cut lines said third pair of flaps being foldably attached to the adjacent edges of said second pair of flaps along a pair of single fold lines and including along said fold lines a pair of locking tab receiving slots;
- a fourth pair of flaps foldably attached to the ends of said front wall and separated from the third pair of flaps by a pair of third cut lines and including along said cut lines a second pair of locking tabs cut from the adjacent pair of third flaps and,
- a top wall supporting flap foldably attached to the free edge of said front wall, said top wall supporting flap including a pair of retaining tabs foldably attached to each end thereof said retaining tabs being dimensioned to fit within and be retained by the slots formed at the blank outer edges.

3,854,652

BLANK FOR CONTAINER COVER

Warren A. Brackmann, Cooksville, Ontario; Arthur K. Bunnell, and Karel Hrboticky, Etobicoke, Ontario, all of Canada, assignors to Carling O'Keefe Limited, Toronto, Ontario, Canada

Filed Feb. 7, 1973, Ser. No. 330,197

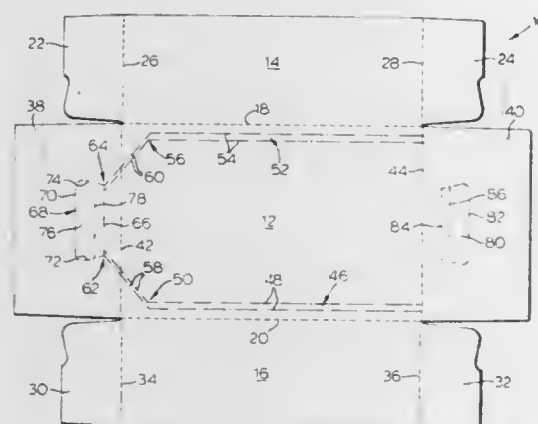
Int. Cl. B65d 5/54, 5/48

U.S. Cl. 229-43

7 Claims

1. An integrally formed blank for a disposable cardboard sleeve comprising a rectangular center panel having first and second longitudinal side edges and first and second lateral side edges, a first rectangular side panel having a longitudinal side edge coextensive with one of said longitudinal side edges of said center panel and joined thereto by a first crease line, a second rectangular side panel having a longitudinal side edge coextensive with the other of said longitudinal side edges of said center panel and joined thereto by a second crease line,

said first and second rectangular side panels each having first and second lateral side edges and a free longitudinal side edge, a first rectangular end panel having a longitudinal side edge coextensive with one of said lateral side edges of said center panel and joined thereto by a third crease line, a second rectangular end panel having a longitudinal side edge coextensive with the other of said lateral side edges of said center panel and joined thereto by a fourth crease line, each of said rectangular end panels having a free longitudinal side edge and free lateral side edges, a first pair of flaps each of which has a side edge coextensive with one lateral side edge of said first rectangular side panel and joined thereto through a fifth crease line, a second pair of flaps each of which has a side edge coexten-



sive with one lateral side edge of said second rectangular side panel and joined thereto through a sixth crease line, the lateral width of said side panels and the lateral width of said end panels being substantially equal, and first and second laterally spaced apart scorings in said center panel and one of said end panels, each of said scorings extending from one lateral side edge of said center panel to the other, at least a substantial length of one of said scorings extending adjacent and substantially parallel to one longitudinal side edge of said center panel and at least a substantial length of the other of said scorings extending adjacent and substantially parallel to the other longitudinal side edge of said center panel, the scorings terminating in said one of said end panels and being joined together by a third scoring in said one of said end panels.

3,854,653

VACUUM TIGHT PLASTIC SHEET ENVELOPE

Herbert Engelsberger, Viersen, Germany, assignor to Feldmühle Anlagen- und Produktionsgesellschaft mit beschränkter Haftung, Düsseldorf-Oberkassel, Germany

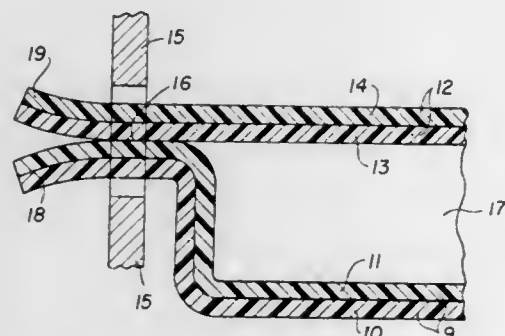
Filed Nov. 8, 1973, Ser. No. 413,920

Claims priority, application Germany, Nov. 10, 1972, 2255026

Int. Cl. B65d 5/54, 5/70, 17/00

U.S. Cl. 229-51 R

6 Claims



1. A vacuum-tight envelope comprising:

- a. first and second laminar plastic sheets having each a central portion and an edge portion extending about the central portion in a closed loop;

- b. each sheet having an outer layer and an inner layer bonded to said outer layer;
- c. said central portions being spacedly superposed in such a manner that said inner layers of said central portions bound a pocket therebetween;
- d. said edge portions being contiguously superposed;
- e. an elongated weld integrally connecting said inner layers of said edge portions in a closed loop sealing said pocket;
- f. respective lug parts of said edge portions extending beyond said weld away from said pocket and being movable relative to each other;
- g. the breaking strength and tear propagation resistance of the outer layer of said first sheet being greater than the breaking strength and the tear propagation resistance of the inner layer of said first sheet;
- h. the inner layers of said first and second sheets consisting of ethylene polymers, the inner layer of said first sheet being more brittle than the inner layer of said second sheet;
- i. the strength of the bond between the inner and outer layers in said first sheet being smaller than the breaking strength of said weld.

3,854,654

ENVELOPE ASSEMBLY WITH REMOVABLE TRANSFER SHEETS

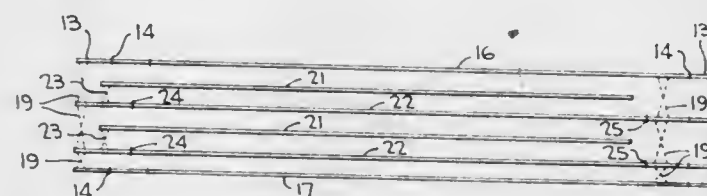
Edmund G. Van Malderghem, Lewiston, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Feb. 27, 1973, Ser. No. 336,351

Int. Cl. B65d 27/10

U.S. Cl. 229-69

5 Claims



1. An assembly of stuffed envelopes interconnected along transverse lines of weakening, front and back plies closed on all sides forming each envelope, insert material and transfer material within each envelope, a first removable tear strip at one end of said envelope including a portion of said insert material, said transfer material being attached to said portion of said insert material, said insert material being removably connected to a portion of said envelope whereby, upon removal of said first tear strip, said transfer material is extracted from said envelope while said insert material remains within said envelope, a second removable tear strip on said envelope, said plies being sealable together at said second strip, said insert material having an edge defined upon the removal of said first tear strip, and said insert material edge extending into and lying within said second tear strip so that, upon movement of said second tear strip including said insert material edge away from the remainder of said envelope, said insert material is freed from said envelope.

3,854,655

CONTAINERS FOR BANKNOTES AND THE LIKE

John Hugh Gerald Armstrong, Tower Court, Tower End, Victoria Rd., Freshfield, England

Filed July 19, 1973, Ser. No. 380,865

Claims priority, application Great Britain, July 28, 1972, 35312/72

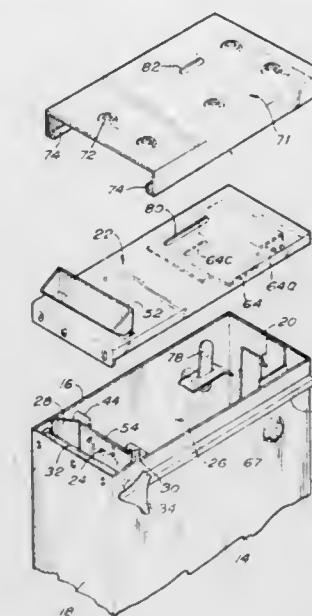
Int. Cl. A47g 29/00

U.S. Cl. 232-4 R

16 Claims

1. A container for storing substantially planar, resilient articles comprising means defining a reception chamber for receiving articles to be stored, means defining a storage chamber for storing such articles, means forming a constriction between the reception and storage chambers of width less

than that of the smallest article to be handled, and a plunger means for forcing an article in the reception chamber through the constriction whereby it is caused to bow in passing through the constriction into the storage chamber, the arrangement



being such that on passing beyond the constriction and into the storage chamber the article is permitted to straighten out to restrict its return through the constriction when the plunger is subsequently retracted.

3,854,656

POSTAL DROP BOX

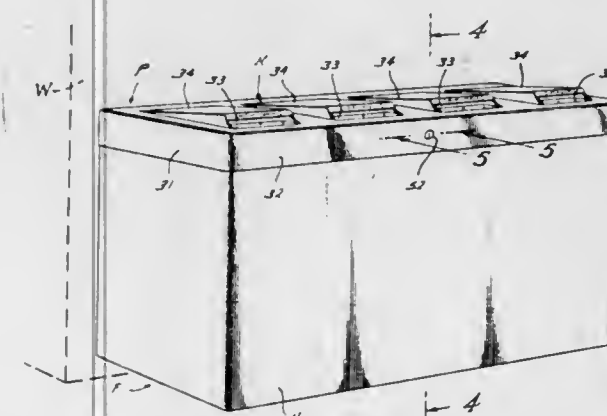
Bill H. Bishop, 1111 S. Post Oak, Houston, Tex. 77027, and Jack R. Shaw, Magnolia, Tex. 77355

Filed Sept. 11, 1972, Ser. No. 287,895

Int. Cl. B65d 91/00

U.S. Cl. 232-27

7 Claims



1. A postal drop-box, comprising:

- a generally rectangularly-shaped framework formed into a plurality of compartments disposed lengthwise side-by-side, each of which is adapted to receive a mail bag;
- a housing enclosing said framework on the front and sides and secured thereto for preventing access to said compartments from the front and sides of said framework;
- means for mounting said framework on the wall of a building for closing off the back of said framework and with the bottom close to the floor to prevent access thereto;
- a cover having hinge means therewith secured to said framework and closing said top of said framework to prevent access to said compartments when said cover is secured to said housing;
- said cover having a limited access slot for each of said compartments for the entry of mail but restricted in size to prevent retrieval of mail therethrough from said compartments; and
- said means for mounting said framework on the wall including a mounting bracket adapted to be secured to a wall and having a pocket therein which is open at its upper

end, and a rear framework section to which said hinge means is connected and having at least portions of said section adapted to drop into said pocket to prevent its movement downwardly or outwardly from the wall to thereby support the entire drop-box on the wall while permitting pivoting of said cover to and from its open and closed positions.

3,854,657

DRUM FOR A CENTRIFUGE

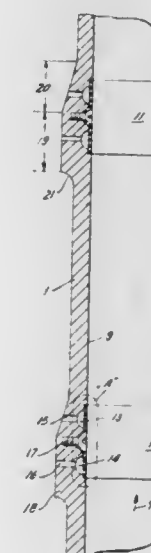
Kurt Pause, Grevenbroich; Ernst Ullrich Dregger, Neuss, and Gottfried Otten, Grevenbroich, all of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Apr. 23, 1973, Ser. No. 353,719

Int. Cl. B04b 7/16

U.S. Cl. 233-2

5 Claims



1. A centrifuge drum for a discontinuously operating centrifuge, particularly for separating a liquid phase from a fine fiber solid phase, said drum having an upper and a lower end and being provided with a circumferential wall having an outer side and a smooth cylindrical inner side and provided with a plurality of screen zones having perforations communicating with the interior of said drum; and a plurality of asymmetric reinforcements provided at said outer side of said drum wall in the region of said screen zones and each comprising a first section tapering upwardly and inwardly with respect to said drum wall and provided with at least one channel communicating with the interior of said circumferential wall, a second section extending downwardly and parallel with respect to said drum wall from substantially midway of the respective screen zone downwardly below the lower edge of the respective screen zone, merging with said drum wall abruptly via a small rounded portion, and provided with at least one channel communicating with the interior of said drum wall.

3,854,658

SOLID BOWL CONVEYER TYPE CENTRIFUGE

Helmuth Probstmeyer, South Norwalk, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,929

Int. Cl. B04b 1/20, 15/06

U.S. Cl. 233-7

9 Claims

1. A horizontal solid bowl type centrifugal machine adapted to separate a slurry representing a liquid-solids feed mixture into an overflow fraction of centrifugally separated liquid, and a concentrated solids fraction of moist cake consistency, which comprises an external solid bowl having a cylindrical wide end portion providing at the outer end thereof the overflow for said separated liquid fraction, and having a conically constricted end portion extending from the inner end of said cylindrical portion, and providing at the outer narrow end

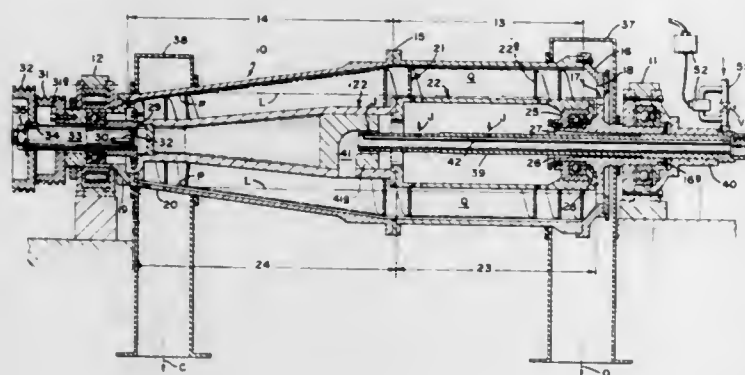
thereof for the discharge of said solids fraction, each end of said solid bowl having a hollow trunnion,

main bearing means for rotatably supporting said solid bowl, which in turn comprise a first main bearing for the trunnion at the wide end of said bowl, and a second main bearing for the trunnion at the narrow end thereof, coaxial with said first main bearing.

a conveyor scroll having a hollow core member concentric with said bowl, extending from end to end thereof, said core member comprising a wide section surrounded by the wide portion of the bowl, and a constricted section surrounded by the conical section of the bowl, scroll conveyor means on said core member, extending substantially from end to end thereof, and cooperating with the surrounding bowl in moving with said solids fraction towards delivery from said narrow end, while the liquid overflows from the opposite end, said core member further having an intermediate transverse partition located about midway between the ends thereof, and further having a radially outwardly directed feed passage opening located at the side of the partition facing said narrow end, and further having radially outwardly directed auxiliary openings located at the opposite side of said partition.

a pair of auxiliary bearings supporting the respective ends of said core member for rotation relative to the surrounding bowl.

differential drive means for rotating said bowl and said conveyor scroll at a speed differential adapted to move said solids fraction for delivery to said constricted end.



while said liquid fraction overflows from said wide end of the bowl.

a stationary pipe assembly presenting a substantially cylindrical outer surface, extending coaxially through the trunnion in said first main bearing and through the associated auxiliary bearing into said core member and through said partition, said pipe assembly comprising a slurry feed pipe for delivery of said feed mixture to said discharge opening beyond said partition into the surrounding portion of the solid bowl, and a flush pipe co-extensive and unitary combined with said feed pipe in fixed relationship therewith, and having an outer end portion at the wide end of the bowl, provided with means for connecting said flush pipe to a supply of a flushing fluid, support structure located outwardly from said first main bearing in fixed relationship therewith, for fixedly supporting the outer end portions of said pipe assembly axially aligned with the machine, said pipe assembly normally extending from said support structure through the adjacent trunnion in the adjacent main bearing, and the associated auxiliary bearing, and adapted to be retracted in axially outward direction from said support structure and from said machine, said pipe assembly furthermore being so constructed and arranged that flush fluid is emitted from at least one point of said pipe assembly into said wide section of the core member independently of the passage of slurry through the slurry pipe.

and means for controlling the admission of flushing fluid into said auxiliary pipe.

3,854,659

FREQUENCY SELECTIVE CIRCUIT ARRANGEMENTS

Erwin Bucherl, Munich, and Walter Peters, Taufkirchen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

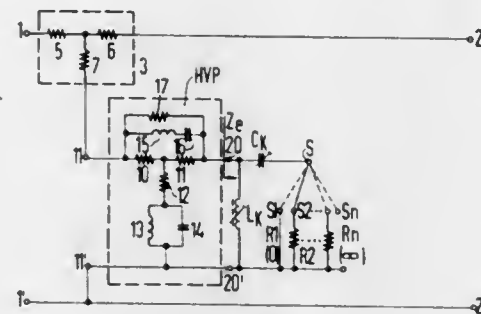
Filed July 30, 1973, Ser. No. 383,992

Claims priority, application Germany, July 31, 1972, 2237578

Int. Cl. H03h 7/10, 7/14

U.S. Cl. 333-28 R

6 Claims



1. A frequency selective circuit arrangement for use as an adjustable correcting device, in which a resistor network is provided for connection between a signal supply line and an auxiliary four-terminal network connected to a reference potential and the attenuation of said correcting device is varied by adjustment of the terminating impedance of said four-terminal network, the self-capacitance C_s and the supply line inductance L_s of a variable terminating resistance R_n being compensated by a reactive half-section filter combination having a series arm which contains a capacitor C_k having a capacitance equal to $1/\omega m^2 L_s$ and a shunt arm which contains a coil L_k having an inductance equal to $1/\omega m^2 C_s$, said filter combination being arranged in such manner that said coil is connected nearest to said four-terminal network, and m , which equals $\omega m^2 \pi$, signifies the variation middle frequency.

3,854,660

CONTROL SYSTEM FOR MULTIPLE TAPE READERS IN AN N/C SYSTEM

Hubert B. Henegar, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

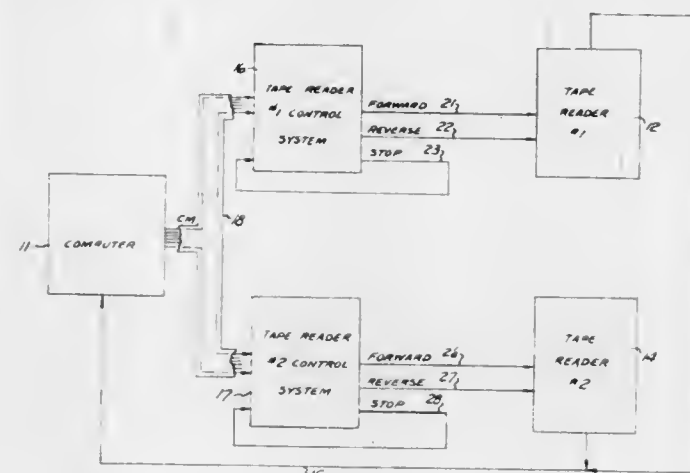
Continuation of Ser. No. 249,445, April 26, 1972, abandoned.

This application Sept. 21, 1973, Ser. No. 399,600

Int. Cl. G06k 13/00; G06f 15/46; G11b 15/00

U.S. Cl. 235-61.11 R

10 Claims



1. In a numerical control system having a data storage medium for receiving data from coded records through a plurality of selectively actuated tape readers, a tape reader control system for selectively controlling said tape readers so that one of said tape readers can be actuated to supply data to said storage medium simultaneously with the rewinding of another of said tape readers and the deactivation of the re-

maining of said tape readers, said tape reader control system comprising:

first means receiving particular command signals for selectively generating an enable signal and a disable signal in response to said command signals, said enable signal placing a tape reader in condition for receiving other commands and said disable signal prevents a tape reader from receiving other commands;

second means receiving other particular command signals for selectively generating forward and reverse signals in response to said other command signals;

third means receiving tape channel perforation signals for providing actuating signals indicating channel perforation conditions of a tape passing through one of said tape readers; and

fourth means for generating a stop signal, said fourth means receiving said disable signal, said reverse signal and the output of said third means as enabling signals so that said stop signal is generated upon the failure of any one of said enabling signals to thereby effect the disabling of said tape reader.

3,854,661

EMBOSSSED CHARACTER SENSING DEVICE

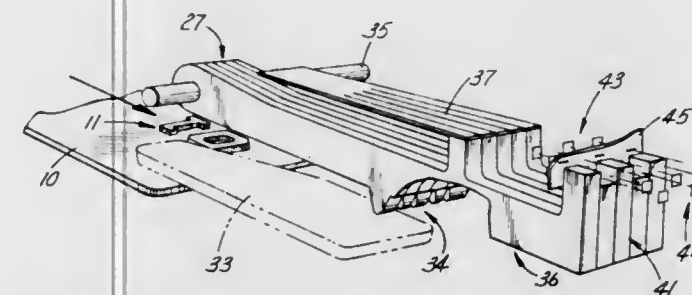
Charles F. Weber, and Carl W. Sherman, both of Euclid, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 2, 1973, Ser. No. 329,270

Int. Cl. G06k 7/10

U.S. Cl. 235-61.11 E

8 Claims



1. A device for sensing embossed indicia on the surface of data cards, comprising in combination: a sensing head frame; means for supporting said data cards; means mounting said head frame for a universal movement relative to said means for supporting said data cards; means for causing relative scanning movement between said sensing head frame and said data cards; guide means carried by said sensing head frame for riding a card on said means for supporting said data cards and for tracking the sensing head frame along a row of embossed indicia on a card for causing alignment of said sensing head frame with said row of indicia, and means urging said sensing head frame in a direction toward a data card and across the said row of embossed indicia.

3,854,662

HUMIDIFIER FOR SAUNA ROOMS

Sven-Olof Janson, Fredagsgrand 13, S-302 53 Halmstad, Sweden

Continuation of Ser. No. 270,764, July 11, 1972, abandoned.

This application Feb. 6, 1974, Ser. No. 440,114

Claims priority, application Sweden, July 13, 1971, 9046/71

Int. Cl. B01f 3/02

U.S. Cl. 236-44 C

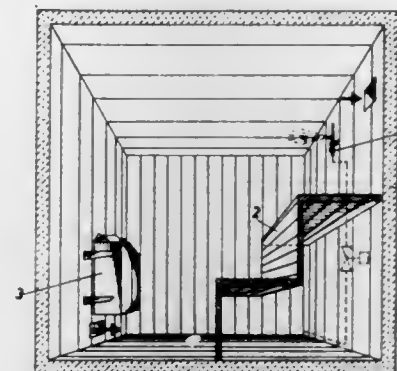
2 Claims

1. In combination, a sauna room, means for heating the atmosphere therein and means for humidifying said atmosphere, said humidifying means comprising:

1. a water supply conduit,

2. a first valve in said supply conduit for controlling the flow of water therethrough,

3. a nozzle connected to said supply conduit adapted to disperse water as a fine mist into the sauna room atmosphere, and



4. a thermostatic valve having a valve member intermediate said first valve and said nozzle and adapted to maintain the nozzle closed when the temperature of the atmosphere in the sauna room is below a predetermined value.

3,854,663

CONSTANT DENSITY REGULATOR

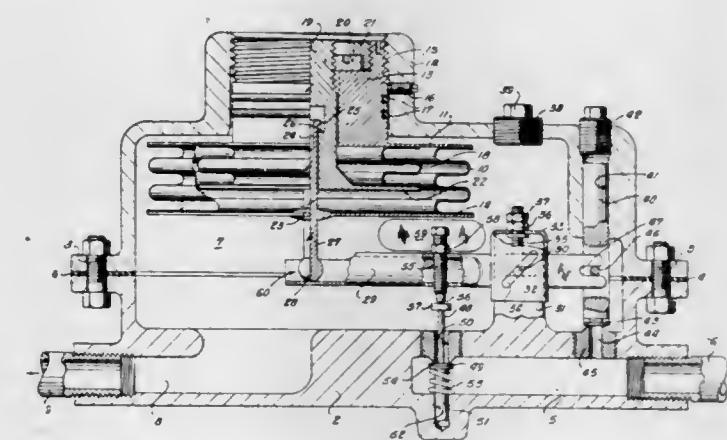
Fred L. Goldsberry, Dallas, Tex., assignor to Lone Star Gas Company, Dallas, Tex.

Filed Oct. 2, 1972, Ser. No. 293,821

Int. Cl. G05d 23/12

U.S. Cl. 236-92 C

11 Claims



1. In a regulator, a hollow housing having an inlet for high pressure fluid and an outlet for low pressure fluid; an outwardly opening first valve in the housing openable toward the inlet; spring means biasing the first valve toward closed position; an inwardly opening second valve controlling admission of high pressure fluid from the inlet to the interior of the housing; a sealed control bellows diaphragm in the housing; actuating means contacting one end of the bellows arranged to move each valve off its seat upon expansion of the bellows; adjustable means in the housing contacting the other end of the bellows arranged to be moved inwardly and outwardly of the housing to adjust the contraction of the bellows; the exterior of the bellows being in constant communication with the outlet; a fulcrum arm pivotally mounted between the first and second valves, arranged to be pivoted about the pivot point therefor upon expansion of the bellows to cause simultaneous opening of the first and second valves; means to adjust the pivot point longitudinally with reference to the first and second valves.

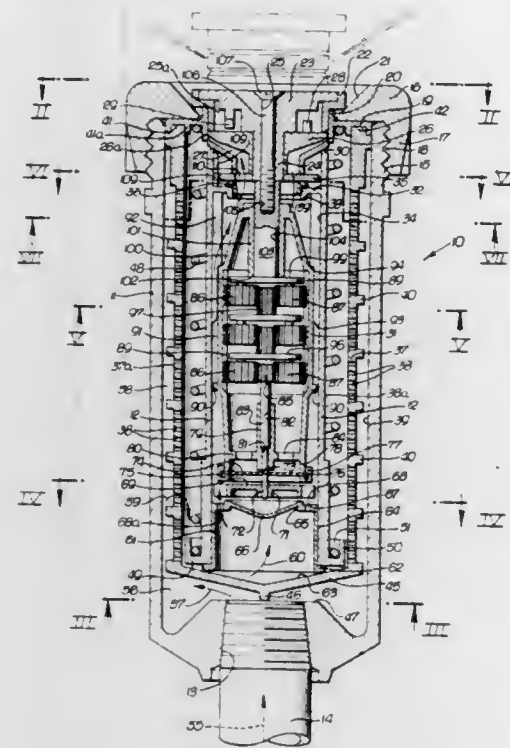
3,854,664 SPRINKLER SYSTEMS

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Continuation of Ser. No. 346,445, March 30, 1973, abandoned. This application Oct. 11, 1973, Ser. No. 405,690
Int. Cl. B05b 3/16

U.S. Cl. 239-206

20 Claims



1. In a sprinkler system having fluid under pressure flowing therethrough, and a sprinkler head operatively connected to said system having a nozzle for dispersing said fluid therefrom, the improvement which comprises:

impeller means associated with said head operatively engaging said nozzle for rotating said nozzle in response to said fluid passing through said system, said impeller means including transmission means for transmitting movement of said impeller to said nozzle, said transmission means being sealed off from engagement by said fluid at one end by an expandable diaphragm separating said transmission means from said fluid and closed-off in a fluid-tight manner at the other end and a lubricating medium completely filling the sealed-off portion of said transmission means, said lubricating medium being free to selectively contract or expand thereby displacing said diaphragm in response to varying ambient conditions encountered by said sprinkler head.

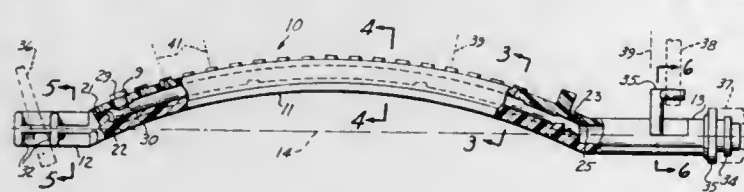
3,854,665 OSCILLATING SPRINKLER WITH SNAP-IN NOZZLE STRIP

J. Linn Rodgers, 9606 La Serna Dr., Whittier, Calif. 90605
Filed Feb. 7, 1974, Ser. No. 440,376

Int. Cl. B05b 1/04, 1/20, 3/14

U.S. Cl. 239-242

8 Claims



1. In a liquid sprinkler of the type having:
a hollow conduit having two ends and an opening at at least one of said ends for attachment to a source of supply of liquid and containing a bowed section between said ends, provided with nozzle holes along its length through which streams of liquid are ejected, said conduit being adapted

to be oscillated in rotary motion about an axis coaxial with said ends,
the improvement comprising:
an open slot along the convex side of said bowed section, the opposite sides of said slot each having a bevelled groove along its length;
a strip dimensioned to close said slot; said strip having bevelled sides adapted to snap into the bevelled grooves of said slot;
said strip being provided with a plurality of nozzle holes spaced along its length through which liquid within the conduit is ejected in streams all of which emerge from the conduit in a pattern substantially in one plane.

3,854,666 PROCESS FOR PULVERIZING COAL TO ULTRAFINE SIZE

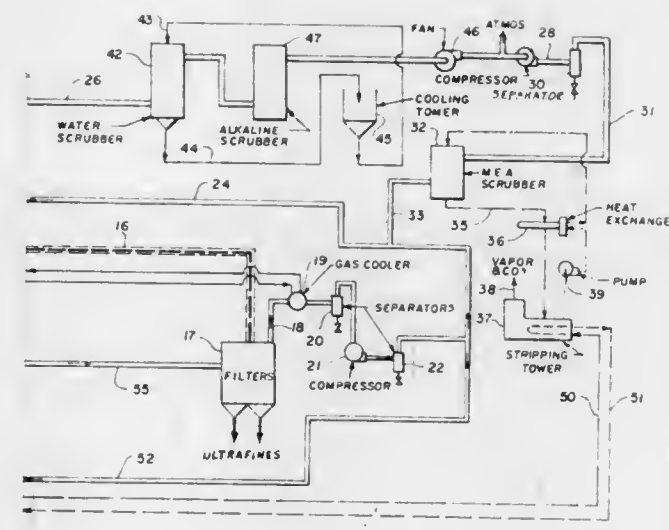
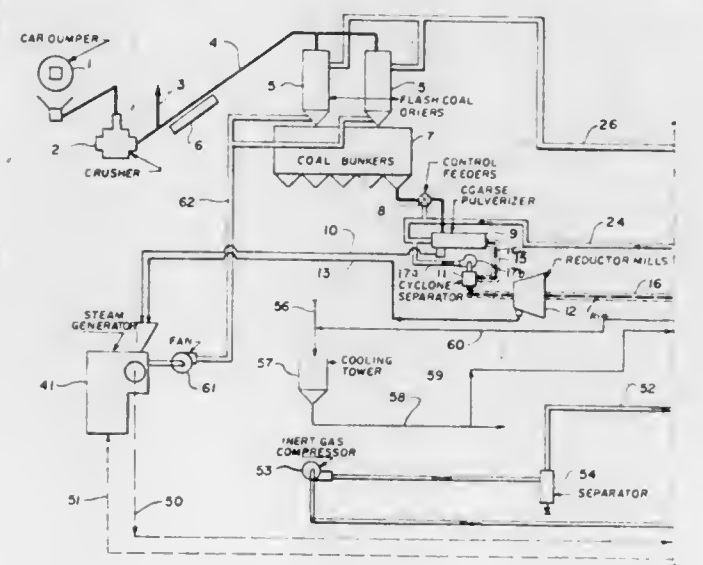
George W. Switzer, Jr., Reading, Pa., assignor to Gilbert Associates, Inc., Reading, Pa.

Filed Jan. 29, 1973, Ser. No. 327,877

Int. Cl. B02c 21/00

U.S. Cl. 241-18

15 Claims



1. A process of pulverizing coal to ultrafine size of a few microns, comprising conveying the coal through pulverizing means together with an inert gas, separating the pulverized ultrafine size coal from said inert gas, cooling and recycling said inert gas through said pulverizing means, producing makeup inert gas by scrubbing boiler flue gases to remove particulate matter and carbon dioxide, thereby leaving essentially nitrogen inert gas, and introducing said makeup inert gas in said pulverizing means.

3,854,667 APPARATUS FOR PULPING AND GRADING OF WASTE PAPER

Theodor Baehr, and Helmut Thumm, both of Heidenheim Brenz, Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

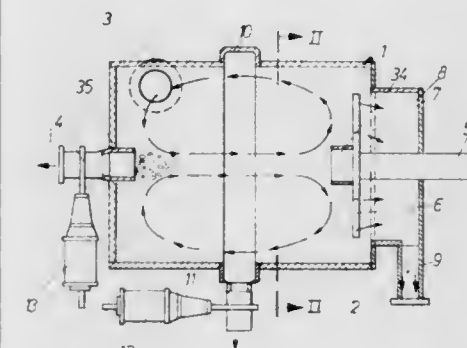
Filed July 16, 1973, Ser. No. 379,578

Claims priority, application Germany, July 31, 1972, 2237521

Int. Cl. B03b 1/00

U.S. Cl. 241-46.11

7 Claims



1. In an apparatus for pulping and grading of waste paper which may be admixed with matter having low specific gravity, a combination comprising a receptacle adapted to accommodate a waste paper suspension and having a peripheral wall; rotor means having an axis of rotation and located in said receptacle adjacent one portion of said wall for shredding the waste paper in said suspension so as to obtain a pulp; first outlet means in said wall in the region of said rotor means for discharge of the pulp; second outlet means in another portion of said wall opposite to said one portion and extending transversely of said axis and substantially concentric thereto for discharging of matter having low specific gravity; and a tubular sleeve provided on said rotor means substantially concentric with said axis and said second outlet means and operative for directing and centering a vortex core of suspension which is being agitated by said rotor means.

3,854,668 WINDER LINKAGE

David William Rudd, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1973, Ser. No. 364,924

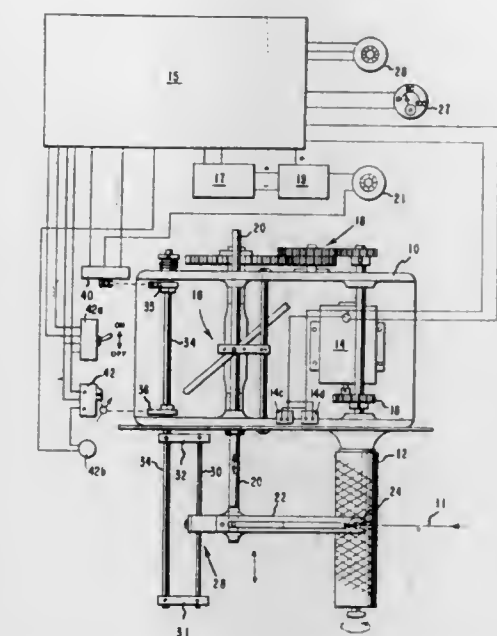
Int. Cl. B65h 59/00

U.S. Cl. 242-18 CS

1 Claim

1. In a machine for winding yarn packages that includes a frame, a rotating yarn support mounted to said frame driven by a motor having torque control means, a variable potentiometer connected to the torque control means for regulating the output of the control means during winding and a reciprocating arm pivotally mounted intermediate its ends to said frame and having a yarn guide on one end for guiding yarn onto said support in a controlled manner, said yarn guide maintaining surface contact with the yarn package being wound, a linkage coupled between said arm and said potentiometer comprising: an elongated member slidably attached to said other end of the arm, said arm being free to reciprocate on said member; a shaft rotatably mounted to said frame, said shaft being attached at one end to said member and coupled

to said variable potentiometer whereby upward displacement of said arm by an increase in package size causes downward



movement of said member for rotation of said shaft and movement of said variable potentiometer.

3,854,669 CARTRIDGE FOR ENDLESS COIL OF TAPE

Serge Leon Louis Cailliot, Neuilly-sur-Seine, France, assignor to Georges Tchekassky, Parc Saint-Maur, France

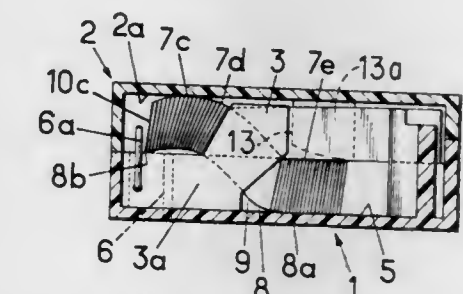
Filed Feb. 8, 1973, Ser. No. 330,588

Claims priority, application France, Feb. 11, 1972, 72.04699; Jan. 15, 1973, 73.01333

Int. Cl. B65h 17/48

U.S. Cl. 242-55.19 A

5 Claims



1. Cartridge holding an endless coil of tape having an innermost turn encircling a central opening and an outermost turn, said turns being connected by a connecting loop extending over the remaining turns of said coil, said cartridge comprising a bottom part, a stationary pillar means projecting upward from said bottom part, passing through the central opening in said coil, and holding said coil away from the peripheral wall of the cartridge, said pillar means having a portion of its upper peripheral surface which is inclined inwardly of said cartridge at a slight angle to a perpendicular to said bottom, said portion constituting an abutment surface about which said connecting loop is bent away from said innermost turn, supporting means on the same side of pillar means as said inclined surface, said supporting means defining a narrow surface generally parallel to said cover part which confines a first section of said coil at a first level between said narrow surface and said cover part, and guide means on the opposite side of said pillar means from said supporting means and defining a narrow surface spaced from the top of said cartridge which confines a second section of said tape at a second level between said surface on said guide means and said bottom part, with the upper surface of said second coil section lying slightly below the lower surface of said first coil section so that said connecting loop may pass substantially untwisted across said second coil section, said tape having a

stiffness sufficient to provide for said coil to rotate in either direction within said cartridge when said connecting loop is friction driven in that direction.

3,854,670

DEVICE FOR THE AUTOMATIC REVERSAL OF THE LENGTHWISE MOTION OF THE INK-RIBBON IN TYPEWRITERS AND PRINTERS

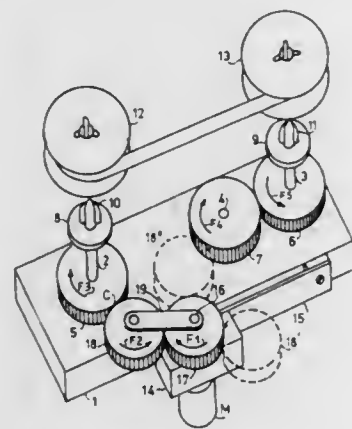
Ugo Bertolazzi, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Aug. 22, 1973, Ser. No. 390,535

Claims priority, application Italy, Sept. 1, 1972, 28733/72
Int. Cl. B65h 17/02

U.S. Cl. 242-67.4

4 Claims



1. A printing device, including a first take-up spool mounted on a first shaft; a second take-up spool mounted on a second shaft; a base plate supporting said shafts; an ink ribbon extending from one spool to the other spool and adapted to be wound on one spool and unwound from the other spool and vice versa; and drive means for alternately driving a first driven gear coupled to drive said first shaft and a second driven gear coupled to drive said second shaft, said drive means comprising:

- a driving gear;
- said first driven gear;
- said second driven gear;
- a planetary gear engaged with said driving gear and arranged for alternately engaging said first and said second driven gear by planetary rotation about said driving gear; and
- elastic support means for supporting said driving gear on said base plate to permit relative displacement of said driving and driven gears in response to an increase in resistant torque applied to one of the driven gears engaged by said planetary gear, whereby said planetary gear is permitted to disengage from one of said driven gears, rotate about said driving gear, and engage the other of said driven gears.

3,854,671

REEL FOR COILING STRIP

Alexander Rodach, Pforzheim, Germany, assignor to Frau Irma Ungerer geb. Dollinger, Pforzheim, Germany

Filed Feb. 16, 1973, Ser. No. 333,061

Claims priority, application Germany, Apr. 6, 1972, 2216554

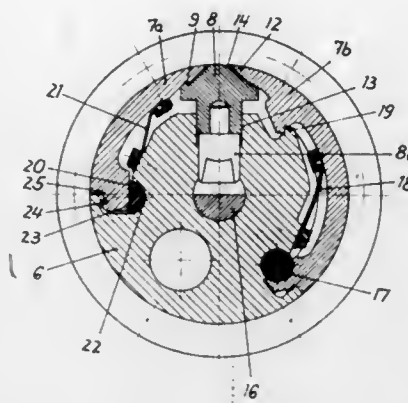
Int. Cl. B65h 75/28

U.S. Cl. 242-74.1

8 Claims

1. A reel for coiling strip, which comprises first and second expansible shell portions each having a free end and each of said shell portions extending peripherally from said free end disposed adjacent to the other shell portion to a pivoted end, an expanding and clamping bar, which engages said free end of said first shell portion and clamps a strip end portion against said free end portion of said first shell portion and which is radially outwardly movable to expand said shell portions, and a bearing, in which said pivoted end of said second shell portion is mounted and which limits said second shell portion to perform a pivotal movement and a movement substantially in the direction in which said bar is radially movable.

tion is mounted and which limits said second shell portion to perform a pivotal movement and a movement substantially in the direction in which said bar is radially movable.



said bar being engaged with said free end of said second shell portion so that said second shell portion is moved substantially in the same direction as said bar during a radially outward movement of said bar.

3,854,672

MULTIPLE CLUTCH STRIP TENSIONER

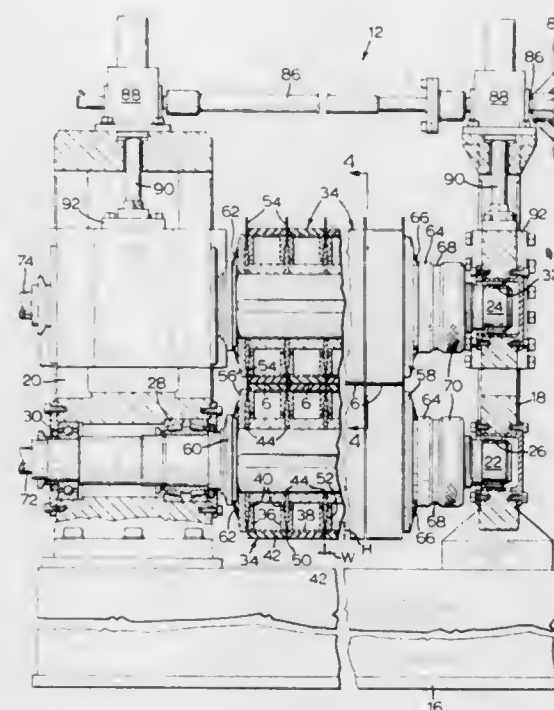
Ferenc Tilban, 310 Niska Rd., Apt. 1103, Downsview, Ontario, Canada

Filed Feb. 21, 1973, Ser. No. 334,302

Int. Cl. B65h 23/14

U.S. Cl. 242-75.2

4 Claims



1. A tensioner for tensioning a plurality of parallel side by side strips, comprising:

- 1. a pair of parallel spaced shafts,
- 2. a plurality of roller rings rotatably mounted on each shaft, one ring on each shaft for each strip to be tensioned, said rings each having outer circumferential friction facings, said shafts being spaced to support said roller rings of one shaft adjacent and opposed to the facings of corresponding rings of the other shaft, for said strips to pass therebetween,
- 3. friction means connected between each said shaft and said roller rings thereof for controllably limiting rotation of said roller rings of each shaft relative to such shaft, said friction means comprising friction discs keyed to each said shaft for axial movement thereon, one friction disc being located between each adjacent pair of roller rings and said friction discs being of lesser diameter than said roller rings, said friction discs spacing said roller rings of

each shaft axially apart to provide axial spaces of predetermined width between the outer portions of said roller rings of each of said shafts,

- 4. a plurality of annular separator discs each of axial thickness less than said predetermined width, said separator discs having central apertures of diameter greater than that of said friction discs and less than that of said roller rings, said separator discs being mounted over said friction discs of one of said shafts between said roller rings thereof and being freely rotatable on such friction discs, said separator discs being slidable axially on said friction discs on which they are mounted but such axial movement of said separator discs being limited by the sides of such roller rings, said separator discs being of outer diameter greater than that of said roller rings and projecting into said spaces between the outer portions of said roller rings of the other of said shafts, to prevent sideways movement of said strips relative to said roller rings while reducing drag on the edges of said strips,
- 5. means for controllably compressing said roller rings and friction discs of each shaft axially to limit rotation of said roller rings of each shaft,
- 6. and common means for limiting rotation of each shaft.

3,854,673

BOBBIN HOLDER FOR ATTACHMENT OF DIFFERENT SIZED BOBBINS TO A SPOOL

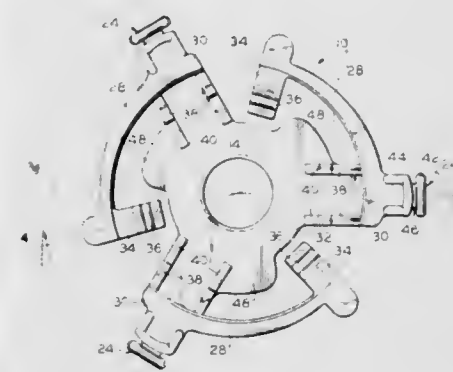
Eugene P. Manning, Gresham, Oreg., assignor to Kamre Corporation, Troutdale, Oreg.

Filed Aug. 14, 1972, Ser. No. 280,543

Int. Cl. B65h 75/02; B65d 79/00

U.S. Cl. 242-118.41

12 Claims



1. A bobbin holder apparatus in which the improvement comprises:

- holder means for holding bobbins of different outside diameters including a plurality of resilient arcuate holder elements which are adapted to extend arcuately around a bobbin and bend to enable insertion and removal of the bobbin and which hold the bobbin on the holder means between said holder elements;
- attachment means for releasably attaching said holder apparatus to one end of a spool of thread, including a support member which projects away from holder means and is adapted to extend into the central opening of said spool to position the holder means outwardly of said one end of said spool; and
- said attachment means being formed integral with said holder means.

3,854,674

TAPE DRIVE UNIT WITH OFFSET BACKPLATE

Zoltan L. Herger, Northglenn; Thomas S. Kavanagh, Boulder; Dennis R. Olmsted, Westminster, and Ronald R. Campbell, Boulder, all of Colo., assignors to Storage Technology Corporation, Boulder, Colo.

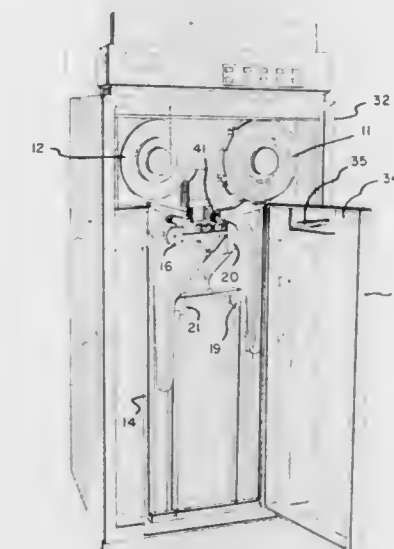
Continuation of Ser. No. 139,708, May 3, 1971, abandoned.

This application Aug. 17, 1973, Ser. No. 389,125

Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32

U.S. Cl. 242-182

10 Claims



- 1. A magnetic tape unit comprising: a cabinet for said tape unit, a file reel and a machine reel, a magnetic head mounted intermediate said reels, a capstan for driving magnetic tape in both directions past said head and between said reels, means for threading said magnetic tape from said file reel to said machine reel, a pair of tape vacuum buffer columns each having an open end disposed adjacent one of said reels on opposite sides of said magnetic head, a guide positioned above the vacuum column adjacent said machine reel, said guide having a width which accommodates magnetic tape of normal width which guides said tape through said vacuum column during normal operation, a back plate, said guide and said head being mounted on said back plate, said back plate having an offset portion which extends above said guide, said offset portion of said back plate forming one side of a threading guide which is wider than said width of said guide, said back plate being mounted in said cabinet so that said guide and said head are accessible through the open front of said cabinet, a door for closing the front opening of said cabinet, and a glass plate mounted on said door to form the other wall of said threading guide when said door is closed, said glass plate providing a relatively airtight seal between said vacuum columns and said back plate.

3,854,675

ROTARY ACCUMULATION DEVICE

Siefried H. Hunke, 268 Babbitt Rd., Thomaston, Conn. 06787

Filed Dec. 14, 1973, Ser. No. 424,867

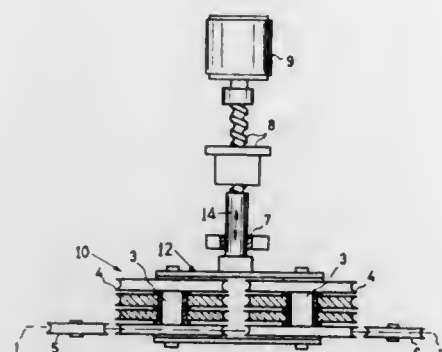
Int. Cl. B65h 51/20

U.S. Cl. 242-154

7 Claims

1. An accumulating device for selectively accumulating and discharging a line of material being longitudinally fed along a path of travel comprising a rotary accumulator, entry and exit guide means for feeding the line of material to and from the rotary accumulator, the rotary accumulator being rotatable about a first axis of rotation and having a plurality of stacks of a plurality of independently rotatable coaxial reels mounted for rotation about axes generally parallel to and radially offset from said first axis such that the rotatable reels are mounted

for planetary movement about said first axis, said stacks being spaced for initially threading the line of material between and passing the line of material partly around entry reels thereof, indexing means for relatively axially indexing in opposite axial directions the reel stacks and the entry and exit guide means in conjunction with the rotation of the rotor assembly whereby



quantity for providing a torque on said supply motor in a direction opposite to the instantaneous direction of rotation of said motor, and connecting one of said tachogenerators to the input of said control arrangement, the control signal of which is applied to said control arrangement for increasing the control quantity provided thereby, and a change over switch operated by said switch means for changing over said control arrangement to an operating point at which it cuts off supply energy to the motor connected to its output when the control signal applied to its input reaches a value which corresponds to standstill of the tachogenerator producing said signal, thereby stopping tape travel.

3,854,677

WEB FEEDING APPARATUS WITH GUIDE ARM
William Allen Martin, Fairport, and Richard Carleton Chesley, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,996

Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242—195

13 Claims

the rotor assembly is rotatable in opposite angular directions for respectively accumulating a line of material and discharging it at both the entrance and exit of the rotary accumulator and respectively onto and off of successive reels of the reel stacks, and rotation control means providing for rotating the rotary accumulator in opposite angular directions for selectively accumulating and discharging a line of material.

3,854,676

RECORDING AND/OR PLAYBACK APPARATUS
Walter Fischer, and Herbert Rutkowski, both of Vienna, Austria, assignors to U.S. Phillips Corporation, New York, N.Y.

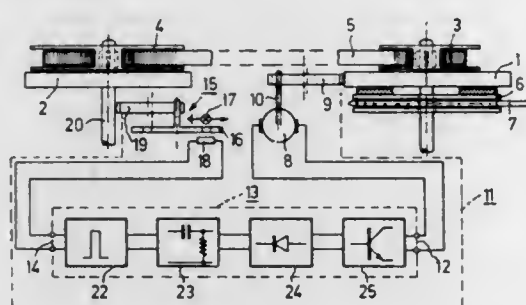
Filed Oct. 19, 1972, Ser. No. 299,147

Claims priority, application Austria, Oct. 22, 1971, 9151/71

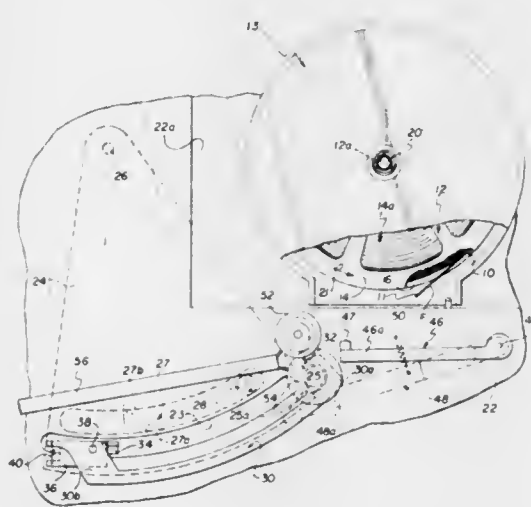
Int. Cl. G11b 15/32

U.S. Cl. 242—191

3 Claims



1. A recording and/or playback apparatus comprising two turntables for carrying thereon tape reels to transport magnetic tape therebetween, a motor connected to each turntable for driving same to take-up the tape on its respective turntable, means for energizing said motors said that one of said motors operates its turntable as a tape take-up turntable and the other turntable operates as a tape supply turntable when the tape is traveling in one direction and vice versa when the tape is traveling in the opposite direction, a tachogenerator connected to each turntable for producing a control signal proportional to the speed of its respective turntable, at least one control arrangement providing a control quantity to determine the speed of the motor operating the take-up turntable, change-over means for establishing a control circuit in accordance with the direction of the tape transport, said control circuit including the tachogenerator of the supply turntable connected to the input side of said control arrangement, and the motor of the take-up turntable connected to the output of said control arrangement so that the control signal of the tachogenerator of said established control circuit and an operating point of said control arrangement provides said control quantity to determine the speed of the motor in said established control circuit, and switching means for stopping tape travel connecting the motor of the supply turntable to the output of a control arrangement which produces a control



1. Apparatus for feeding a leading end portion of a strip of web material from a roll of such material, said roll being rotatable in a plane in a direction for taking up web material onto said roll, and said strip having an opening in its leading end portion, the apparatus comprising:

- a member having shank portion and a hook portion, the hook portion being engageable with said strip through said opening for feeding said strip of web material from said roll;
- means mounting said member for movement between (1) a first position wherein said hook portion is separated from said roll, and (2) a second position wherein said hook portion is located in said plane adjacent said roll of web material for entering and opening in said strip to couple said hook portion to said strip in response to rotation of said roll in a take-up direction;
- means coupled to said member for moving said member between said first and second positions; and
- guide means selectively engageable with said member for guiding movement of said hook portion transversely relative to said plane of said roll and the direction of movement of said member during movement of said member from its first position to its second position so that said hook portion of said member is aligned with said opening in said web material when said member is in its second position, thereby to insure coupling of said hook portion of said member with said strip of web material during rotation of said roll in a take-up direction.

3,854,678

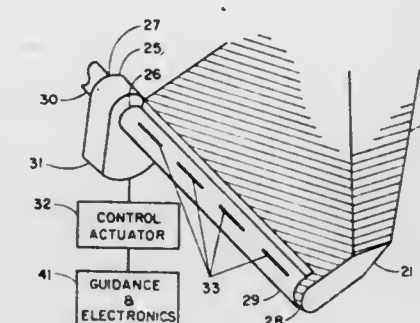
ROTARY VALVE JET FLAP CONTROL SYSTEM
Robert J. Geres, China Lake, Calif., assignor to The United States of America as represented by the Secretary of Navy, Washington, D.C.

Filed Sept. 17, 1973, Ser. No. 398,039

Int. Cl. F42b 25/24

U.S. Cl. 244—3.16

3 Claims



1. A control apparatus for use with an aerial missile the combination comprising:
guidance control means for said aerial missile;
a wing attached to said aerial missile;
aperture means positioned substantially adjacent the trailing edge of said wing and extending on either side of the center line of said wing;
hollow chamber means in communication with said apertures and having two rotatable substantially cylindrical tubes independently rotatable from each other;
attachment means at the inner and outer ends of said cylindrical tubes for attachment of said tubes to extend substantially along the entire length of the trailing edge of said wing and adjacent thereto;
control actuator means for selectively moving said cylindrical tubes through 360° in response to signals from said guidance unit; and
air passage means from said missile to said hollow chamber means;
whereby compressed gas from the missile is controlled by said guidance control to cause gas flow through said air passage into said hollow chamber and out through said apertures.

3,854,679

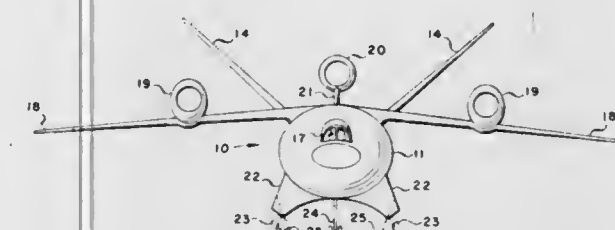
WATER-BASED AIRPLANE ESPECIALLY DESIGNED FOR ADAPTATION TO STOL
Rollo G. Smethers, Jr., Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 7, 1974, Ser. No. 431,574

Int. Cl. B64c 1/04

U.S. Cl. 244—106

6 Claims



1. A multi-engine high performance airplane especially designed for adaptation to short take-off from and landing on water comprising an aerodynamically streamlined fuselage, a pair of spaced apart hulls extending along the underside of said fuselage, a pair of spaced apart booms extending from the aft end of said fuselage, each said boom terminating in an angularly disposed fin projecting outwardly therefrom whereby both booms constitute a V-tail for said airplane, a wing projecting from each side of said fuselage adjacent the top thereof, a jet engine mounted on top of each said wing and on said fuselage, the longitudinal dimension of such engines

being substantially parallel one to the other and located so as to discharge exhaust in an aftward direction with the exhaust from each wing mounted engine passing on the remote sides of the tail fins aforesaid and the exhaust from the fuselage mounted engine passing between said fins.

3,854,680

DEVICE FOR STEADYING LOADS SUSPENDED FROM AIRCRAFTS

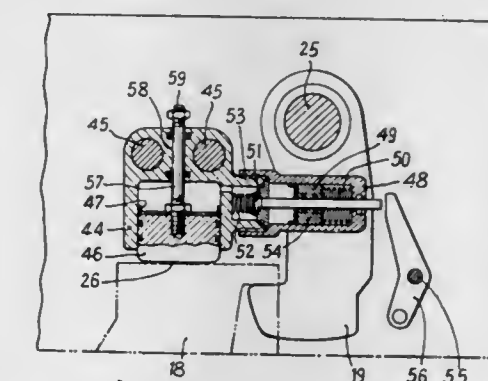
Jean Henri Hasquenoph, Lagny, and Pierre Fernand Coutin, Paris, both of France, assignors to R. Alkan & Cie, Valenton, France

Division of Ser. No. 366,054, June 1, 1973, This application Mar. 7, 1974, Ser. No. 449,014

Int. Cl. B64d 1/02

U.S. Cl. 244—118 R

2 Claims



1. Device for steadying loads suspended from aircrafts, wherein fork-shaped hooks rigid with a carrier member of the aircraft co-act with bridge pieces with the load and having a flat top face, comprising a pair of wedge members associated with each fork-shaped hook and transversely disposed on the opposite sides of said hook, each wedge member consisting of a hydraulic piston sliding within a cylinder rigid with the carrier member of the aircraft and in a direction perpendicular to the top face of the bridge piece in order to engage said top face in response to a fluid under pressure supplied through a non-return valve.

3,854,681

DEVICE FOR STEADYING LOADS SUSPENDED FROM AIRCRAFTS

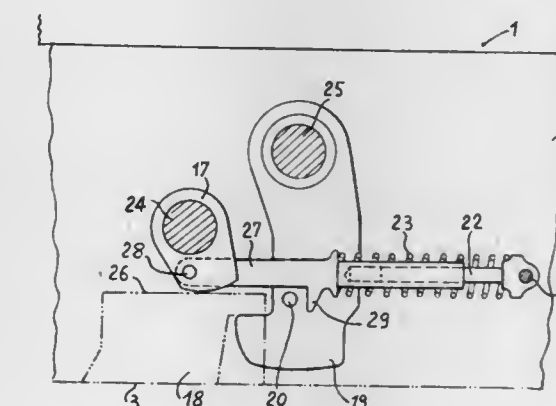
Jean Henri Hasquenoph, Lagny, and Pierre Fernand Coutin, Paris, both of France, assignors to R. Alkan & Cie, Valenton, France

Division of Ser. No. 366,054, June 1, 1973, This application Mar. 7, 1974, Ser. No. 449,015

Int. Cl. B64d 1/02

U.S. Cl. 244—118 R

7 Claims



1. Device for steadying loads suspended from aircrafts, comprising a pair of fork-shaped hooks rigid with a carrier member of the aircraft and coacting with bridge pieces rigid with the load and having a flat top face, and a pair of wedge members associated with each fork-shaped hook on the oppo-

site sides thereof, each wedge member consisting of a cam member pivoted to a telescopic spring-urged rod and said cam member being forced by the spring associated with the corresponding telescopic rod to engage the top face of the bridge piece and to ensure the wedging of the load.

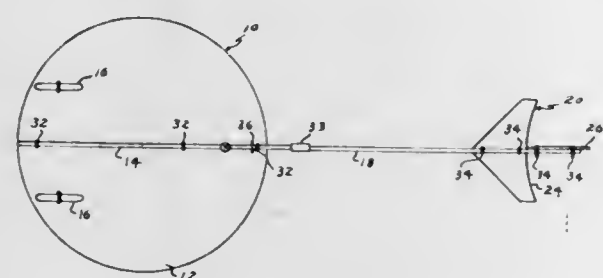
3,854,682

KITE ARRANGEMENT AND METHOD OF CONSTRUCTION

Bernard Lindenbaum, 4929 Thorain Ct., Dayton, Ohio 45416
Filed May 7, 1973, Ser. No. 357,568
Int. Cl. B64c 31/06

U.S. Cl. 244-154

4 Claims



1. A kite, comprising: a flexible wing member of plastic foam material having a thickness less than three-eighths inch; a longitudinal spar secured to said wing member by means of tie wires; a horizontal tail member and a vertical tail member spaced from said wing member; means for connecting the horizontal tail member and the vertical tail member to said longitudinal spar; a bridle having three lines which meet to form a substantially Y-shaped bridle; means for securing two of said lines to the forward portion of the wing member at points laterally spaced from the longitudinal spar; said means for securing two of said lines to the forward portion of the wing member including a pair of bridle attachment bars, extending a predetermined distance over the surface of the wing member; means for connecting the third line to the longitudinal spar adjacent the rear portion of the wing member and a kite line connected to the bridle at the intersection of said three bridle lines.

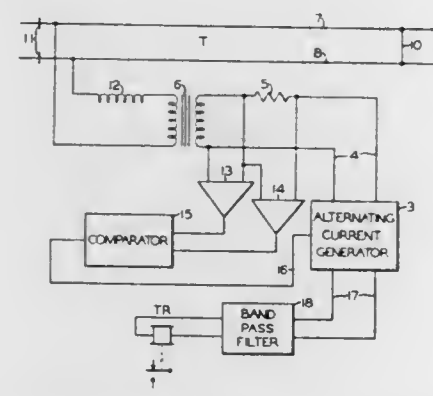
3,854,683

DETECTOR TRACK CIRCUIT

Marcel Bieder, and Jean Leclert, both of Paris, France, assignors to Wabco Westinghouse, Freinville-Sevran, France
Filed Dec. 10, 1973, Ser. No. 423,176
Int. Cl. B61l 1/02

U.S. Cl. 246-40

10 Claims



1. Track circuit apparatus for detecting trains occupying a section of railroad track, each rail of which forms a continuous electrical path from the near end to a distant end, comprising in combination,

- a crossbond connected between said rails at said distant end,
- a controllable frequency alternating current source having a basic frequency normal output,

c. a first impedance means connected to said rails at said near end to form a circuit path through said crossbond having a preselected inductive impedance at said basic frequency,

1. said first impedance means further connected for coupling said source to the circuit path including said rails, d. a second impedance means connected in series with said source in said circuit path and having a constant value of impedance, at any frequency, selected to provide equal voltages across said first and second impedance at said basic frequency,

e. comparator means coupled for comparing the voltages developed across said first and second impedance means under all track occupancy conditions,

1. said comparator connected to said source for varying the output frequency from said basic frequency to equalize the voltages across said first and second impedances when a rail shunt within said section changes said first impedance, and

f. detection means coupled to said source to receive an output having the existing frequency, and responsive thereto for registering the unoccupied condition of said section only when the received output has said basic frequency,

1. said detection means registering an occupied condition of said section when said output has any other frequency.

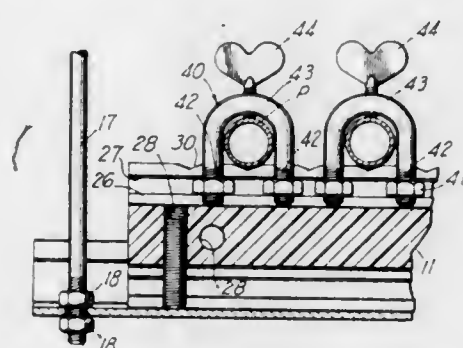
3,854,684

SUPPORT BRACKET

Arvel H. Moore, 1505 Chattahoochee Ave., Atlanta, Ga. 30318
Filed Jan. 4, 1973, Ser. No. 320,903
Int. Cl. F16l 3/00

U.S. Cl. 248-68 R

4 Claims



1. Apparatus for use in supporting, spacing and aligning at least one elongated element in a set position comprising:

- a base support means consisting of a support member having a recessed continuous receiving channel with a pair of receiving shoulders, said support means including a support surface having a plurality of element receiving recesses transverse to said channel; and
- securing means including a plurality of retaining shoulders complementary to said receiving channel and said receiving shoulders operable for permitting adjustment of said securing means along said channel so that said securing means can be selectively aligned relative to one of said recesses, and wherein said securing means includes means for clamping at least one of said elements in a set position relative to one of said recesses on said base support means;
- said base support means including a plurality of angularly disposed supporting surfaces with each surface including said receiving channel with said receiving shoulders for receiving said securing means;
- said apparatus including a substantially U-shaped outer supporting channel comprising side walls and flanges depending from the terminal portion of said walls; said angularly disposed surfaces being of a size to permit said depending flanges to be received within said receiving shoulders so as to lockingly and slidably engage said outer supporting channel.

3,854,685

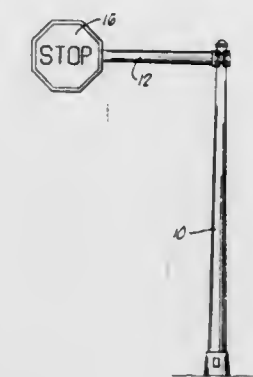
SIGNAL MASTARM BRACKET ASSEMBLY

Alfred P. Parduhn, Rt. 2, Box 33, Oklahoma City, Okla. 73114
Continuation-in-part of Ser. No. 231,131, March 2, 1972, Pat. No. 3,764,099. This application Aug. 20, 1973, Ser. No. 389,943

Int. Cl. F16m 13/02

U.S. Cl. 248-214

13 Claims



1. A mastarm bracket assembly comprising: an elongated mounting member adapted to supportably receive a structure for providing a visual display of indication;

track means on said elongated member;

track engaging means slidably engaging said track means for sliding movement longitudinally along said elongated mounting member;

means for clamping the track means to the track engaging means to arrest the sliding movement of the track engaging means along the track means at a selected location therealong;

movable joint means secured to said track engaging means and projecting from the track engaging means in a direction substantially normal to the longitudinal axis of said elongated mounting member, said joint means including: a first tubular section; and

a second tubular section telescopically engaging the first tubular section for rotation on the first tubular section about an axis extending through, and common to, the first and second tubular sections;

means for selectively securing the second tubular section against rotation on the first tubular section at a desired point in the course of one complete rotation about said first tubular section;

a clamp plate secured to the end of said second tubular section opposite its end telescopically engaged with the first tubular section;

at least one elongated flexible element having one end secured to said clamp plate; and

means for detachably securing the other end of said elongated flexible element to said clamp plate.

3,854,686

CANTILEVER RACK

Anthony N. Konstant, Mt. Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

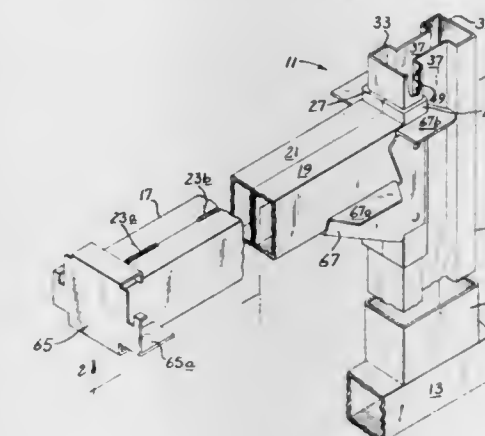
Filed June 21, 1972, Ser. No. 264,784
Int. Cl. A47b 96/12; A47l 5/01, 5/16

U.S. Cl. 248-243

9 Claims

1. A cantilever storage rack structure comprising an elongated vertical standard having a front surface, a pair of side surfaces extending rearward from said front surface and a re-entrant surface extending inward from the rear end of each of said side surfaces, and a cantilever support arm having an inner end for attachment to said standard so that it extends from said front surface thereof and an outer end that will be spaced from said standard, which arm includes a pair of elongated generally horizontal tubular members and means joining said elongated members together at at least spaced points generally adjacent said outer end of said support arm and

thereby causing said elongated members to normally lie in contiguous relationship at said inner end of said support arm, and which support arm also includes a bracket affixed to the inner end of each of said elongated tubular members for attaching said support arm to said standard, said brackets each having a first flange portion for abutting said front surface of said standard when attached thereto, a second portion extending rearward from said first flange and a re-entrant flange element extending from said second bracket portion in the same direction as said first flange and generally abutting said re-entrant flange of said standard, said elongated members



being unconnected to each other for a substantial distance adjacent the inner end of said support arm and the free edges of said re-entrant flange elements being so spaced apart that, when one said flange element is located in contact with one said re-entrant surface of said standard and said cantilever arm is rotated, said tubular members are resiliently spread apart as a result of said rotation to an open condition and thereafter snap back together in partially circumscribing relationship about said standard at a location intermediate its upper and lower ends, said support arm tubular members even when loaded remaining in said snapped together condition without additional attachment.

3,854,687

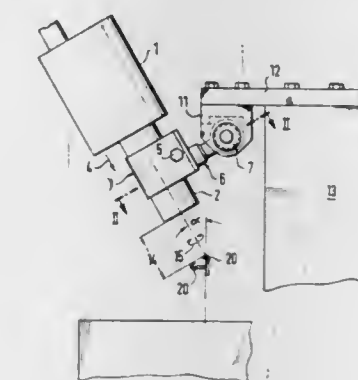
MOUNTING FOR OPTICAL DEVICE

Erwin Sick, Stifterweg Icking, Germany, assignor to Erwin Sick Optik-Elektronik, Waldkirch, Germany

Filed July 16, 1973, Ser. No. 379,207
Claims priority, application Germany, Aug. 28, 1972, 2242266

Int. Cl. F16c 11/06; F16l 27/00
U.S. Cl. 248-276

5 Claims



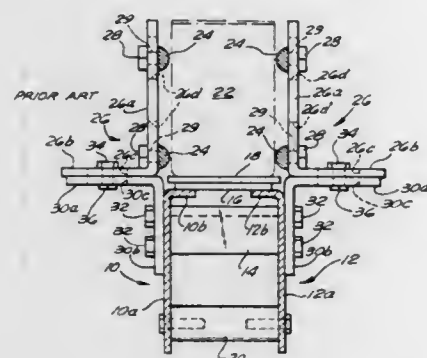
1. Mounting for an optical device to be precisely adjusted on a fixed frame, in particular for an optical needle-checking device in circular knitting machines, comprising a spherical joint permitting movement in all directions as well as distance adjustment and rotation around the axis of said optical device, said joint having a ball connected with said optical device which is lockably and unlockably mounted on a fixed support having a hard socket supporting said ball on a circular ring comprised of two parts diametrically opposite with respect to

the center of the ball having an angular distance of approximately 90°, and there being provided a pressure plate which is substantially softer than said support pressing against said ball from the side opposite the support.

3,854,688

QUICK ADJUSTING GUIDE RAIL FOR CONVEYOR
Lloyd N. Shuford, 11 Middleboro Pl., Lynchburg, Va. 24502
Division of Ser. No. 285,671, Sept. 1, 1972. This application
Oct. 4, 1973, Ser. No. 403,644
Int. Cl. E05d 7/04; F16l 3/00
U.S. Cl. 248—316 A

13 Claims



1. An adjustable bracket structure effective to mount a pair of upstanding brackets on a support having a pair of vertical side walls with openings in said side walls, comprising an inwardly extending tongue on each of said brackets receivable in and movable into and out of said openings in different planes at opposite side walls of said support, and manually adjustable locking means accessible through at least one of said openings, adapted to adjustably engage said tongues and effective to lock said brackets against movement relative to said support.

3,854,689

LOAD-BEARING HOOK

Hans Michael Engels, 15, Lerchenweg, Hofheim, Germany (6238)

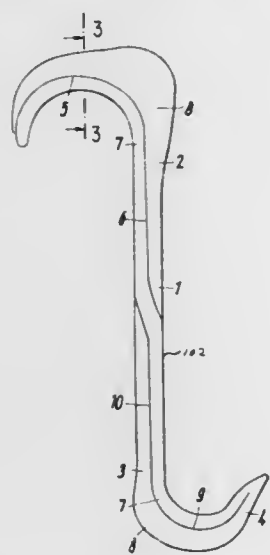
Filed July 24, 1972, Ser. No. 274,359

Claims priority, application Germany, Aug. 3, 1971, 7129741[U]; Dec. 2, 1971, 2159730

Int. Cl. A22c 15/00

U.S. Cl. 248—340

6 Claims



1. A unitary load-bearing hook having an S-shape configuration which lies in a single plane when viewed from the side, said hook comprising:

an arcuate top part including a lower flange portion having a lower surface, said lower surface corresponding to a segment of the outer surface of a cylinder and further including an upper longitudinal stiffening rib positioned

perpendicularly to said flange portion, the said lower surface of said flange portion being the load-bearing surface of said top part;

an arcuate bottom part being substantially pointed at one end thereof and including an upper flange portion having an upper surface, said upper surface corresponding to a segment of the surface of a cylinder, and further including a lower longitudinal stiffening rib positioned perpendicularly to said flange portion, said upper surface being the load-bearing surface of said lower part;

a connecting portion between the top part and the bottom part comprising a flange portion and a longitudinal stiffening rib portion said flange portion of said connecting portion passing across said connecting portion whereby the flange on said upper portion of the connecting portion adjacent to the arcuate top part lies on one side of the hook and comprises a continuation of the downward facing surface of said top part while the remaining portion of said flange on the lower portion of the connecting portion adjacent to the bottom arcuate part lies on the other side of the hook and comprises a continuation of the upward facing surface of said bottom part; and

the thickness of the stiffening rib measured perpendicularly to the load-bearing surface of the top part increases from the free end of the top part to a maximum value substantially at a point just before the radius of curvature of said top part increases at its point of juncture with said connecting portion, thereafter the total thickness of the rib along said connecting portion decreases to a constant value relative to the thickness of the flange along the major section of said connecting portion increasing again to its maximum value at the lower sector of the hook substantially at a point just after the radius of curvature of said bottom part decreases to its substantially constant value decreasing again to reach its minimum at the free, pointed end of the bottom arcuate part.

wherein said hook is constructed of heavy duty load-bearing plastic which is resistant to corrosion when in contact with meat.

3,854,690

MEANS FOR FORMING CIRCULAR ROOFS

Otto Heinze, Sonderberg 19, A-6840 Gotzis, Austria

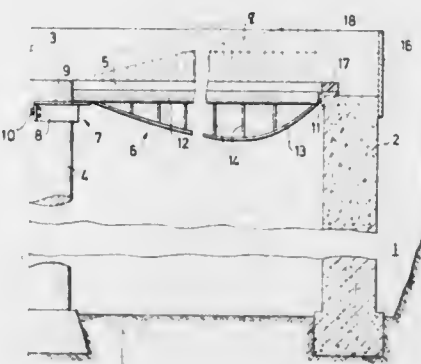
Filed Dec. 26, 1972, Ser. No. 318,273

Claims priority, application Austria, Dec. 24, 1971, 11120/71

Int. Cl. E04g 11/04

U.S. Cl. 249—19

5 Claims



1. An arrangement for pouring a concrete ceiling comprising:

- an upright supporting column having an axis;
- an upright wall extending about said column in radially spaced relationship, said wall circumferentially bounding a cavity about said column;
- a collar having a plurality of parts;
- fastening means releasably tightening said parts about the topmost portion of said column in a position in which said collar projects radially from said column;

- a plurality of horizontally elongated carriers, each carrier having an inner longitudinally terminal portion supported on said collar and an outer longitudinally terminal portion supported on the top surface of said wall;
- panel means supported on said carriers, said panel means substantially closing said cavity in an upward direction and constituting the bottom of a form;
- annular sheeting means upwardly projecting from said wall beyond said panel means for horizontally containing concrete poured in said form; and
- recess-forming means superimposed on each of said outer terminal portions for forming a recess in said poured concrete.

3,854,691

APPARATUS FOR MOULDING PLASTIC ARTICLES

Victor William Stanley Humphrey, Radlett, England, assignor to GKN Sankey Ltd., Bilston, Staffordshire and ARO Plastics Development Limited, London, both of, England

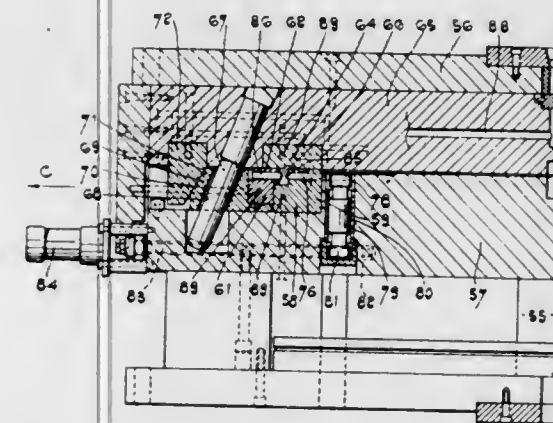
Division of Ser. No. 139,376, May 3, 1971, Pat. No. 3,787,549.

This application Sept. 10, 1973, Ser. No. 395,582

Int. Cl. B29c 6/02

U.S. Cl. 249—91

3 Claims



1. Apparatus for making an aperture-defining frame member comprising a rigid frame-shaped reinforcement embedded in synthetic resinous material, the apparatus comprising mould parts which define a mould cavity having the shape of the required frame member, the mould parts including a fixed inner member, outer members movable towards and away from the inner member in first directions parallel to a fixed plane and a closing member movable towards and away from inner and outer members in second directions perpendicular to said plane, a plurality of pin like projections for locating the reinforcement in the cavity, means for mounting respective pairs of said projections on said inner and outer members around said cavity to prevent movement of the reinforcement in the cavity at least in directions parallel to said plane and so that the longitudinal axis of each projection is parallel to said plane and to one of said first directions; and positively operable means for projecting into and withdrawing from the mould cavity those respective projections mounted on the inner member.

3,854,692

CORNER LOCKS FOR CONCRETE FORMS

George A. Milton, 5412-103A Ave., and Ian M. Russell, 5411-103A Ave., both of Edmonton, Alberta, Canada

Filed June 23, 1972, Ser. No. 265,525

Claims priority, application Canada, July 20, 1971, 118649

Int. Cl. E04g 9/00

U.S. Cl. 249—194

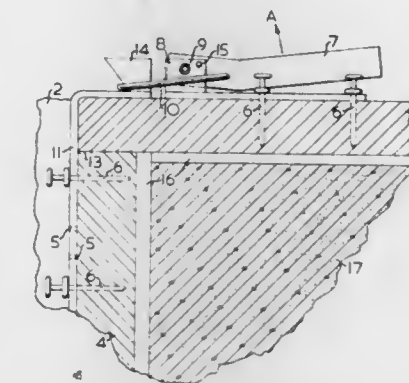
4 Claims

1. A corner assembly of a concrete form comprising: a substantially upright sheeting defining inner walls of said corner assembly; first and second whalers being substantially horizontal and supporting said sheeting to form an outer corner assembly;

an end face of said first whaler abutting against the side of said second whaler adjacent at the end of said second whaler;

a corner lock for releasably holding said first and said second whalers in an assembled position to support said sheeting;

said corner lock comprising a lever base and a catch base, each of said bases being secured to one of said whalers; said lever base being provided with a lever assembly including a lever pivotally connected to a bracket means and carrying a hook link;



the catch base carrying a catch adapted to be engaged with said hook link;

one of said bases being substantially straight and secured to said second whaler, the other base being bent to form two arms to angularly fit said corner, one of said arms being secured to said first whaler, the other of said arms being in engagement with an outer face of said second whaler, whereby the clamping force created by the locking of said lock is substantially parallel to said outer face of said second whaler.

3,854,693

SUPPORT SYSTEM FOR CONCRETE FORMS

Laurenz Kistler, Chamerstrasse 117, Zug, Switzerland

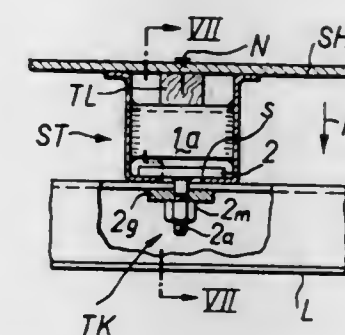
Filed Aug. 12, 1971, Ser. No. 171,216

Claims priority, application Switzerland, Aug. 17, 1970, 12356/70; Apr. 15, 1971, 5502/71

Int. Cl. E04g 17/00

U.S. Cl. 249—210

20 Claims



1. In combination a support system for concrete forms and concrete forms having form sheathing, comprising form support means, at least one girder provided for said form support means, each said form support means comprising two similar and parallelly extending substantially Z-shaped profile elements arranged in spaced relationship from one another, said pair of Z-shaped profile elements providing profile web means and a pair of confronting flanges and a pair of oppositely directed flanges, traverse means applied to said profile web means for maintaining said Z-shaped profile elements spaced from one another and arranged in such a fashion with respect to the form sheathing that their oppositely directed flanges come to lie at the load side of the form support means at the side of the form sheathing and their confronting flanges at the side of the girder leave free between themselves a slot which is continuous and extends over the entire length of the form

support means, support clamp means for fixedly clamping the girder with the form support means, said support clamp means being introduced from the front of the associated form support means into such essentially perpendicular thereto and through the slot thereof, at least one support extension, and coupling clamp means for fixedly clamping the support extension introduced into a form support means with such form support means, said coupling clamp means being introduced from the rear of said form support means into such and through the slot thereof.

3,854,694

APPARATUS FOR AN AGGREGATE PUMP

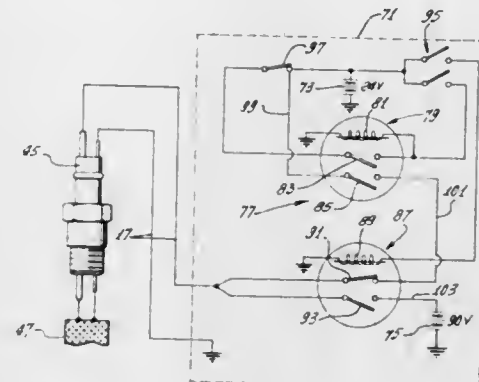
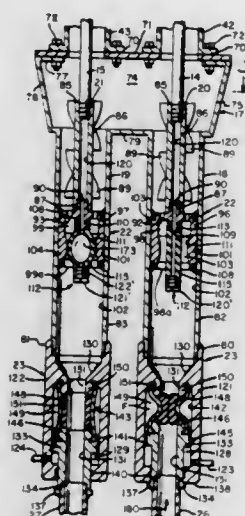
Malcolm G. Coone, 10521 Greenwillow, Houston, Tex. 77035
Division of Ser. No. 77,068, Oct. 1, 1970, Pat. No. 3,749,521.

This application Feb. 2, 1973, Ser. No. 329,106

Int. Cl. F16j 15/48

U.S. Cl. 251-5

20 Claims



cally actuated means to shift said valve member to said other position or for connecting said second source of lower potential to said electrically actuated means to retain said valve member in said other position; wherein said switching means comprises a first relay selectively energizable by the lower potential to introduce the higher potential to the electrically actuated means, a second relay connected to the first relay and energizable to introduce the lower potential to the electrically actuated means, a first normally open switch connected to the source of lower potential and operable to simultaneously energize the first and second relays so that the lower potential is introduced to the second relay and the high potential is introduced to the electrically actuated means, and means for continuing current flow from the lower potential through the second and first relays to the electrically actuated means after the first switch is opened to reduce the power consumed and maintain the valve member in said other position.

3,854,696

FLUID FLOW VALVE

John Harold Crawford Keyes, Corbridge, and George William Napier, Newcastle upon Tyne, both of England, assignors to Jas. Young & Cunningham (Newcastle) Limited, Killingworth Township, Newcastle upon Tyne, England

Filed Dec. 14, 1972, Ser. No. 315,005

Claims priority, application Great Britain, Dec. 14, 1971, 58085/71

Int. Cl. F16k 5/20

U.S. Cl. 251-163

1 Claim

1. In a butterfly valve device in which the butterfly valve disk is movable transversely of an axis of rotation of the valve disk prior to rotation of the valve disk when opening the valve device by the turning of a handle-shaft means comprising a valve-shaft to which the valve disk is operatively rotatably attached for rotation therewith, including a flow conduit housing for the valve disk with the flow conduit housing providing a valve seat for the valve disk and providing a stem port with the valve shaft extending axially therethrough and rotatable therein and sealed therein against leakage, and including the valve shaft being movable initially axially and then rotatably

3,854,695

ELECTROMAGNET CONTROL APPARATUS

Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Sept. 28, 1972, Ser. No. 293,007

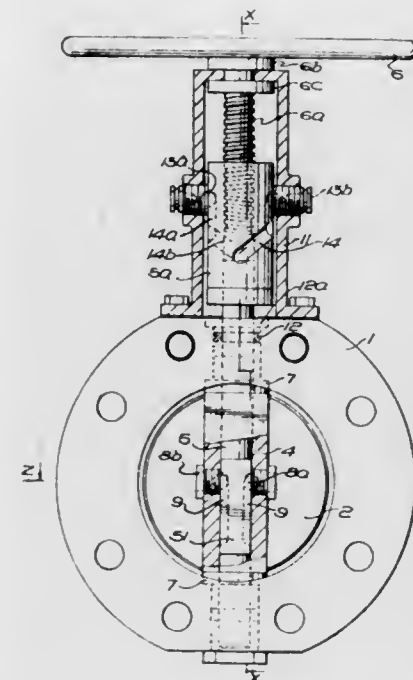
Int. Cl. H01h 47/04; F16k 31/06

U.S. Cl. 251-129

7 Claims

1. In apparatus for effecting operation of a fluid actuated device: valve means operatively connectable to a source of

during the turning of a handle to open the valve disk to a valve-open position, and with the valve-shaft being operatively connected at one end thereof to the valve disk such that initial axial movement of the valve-shaft causes the valve disk to move laterally away from its valve seat of the flow conduit housing and causes the valve disk after the lateral movement to move with the valve-shaft rotatably in valve disk opening action; the improvement in combination with the valve disk, the handle-shaft means and valve-shaft thereof, and the flow conduit housing with its valve seat and with its stem port, comprising: the valve disk having opposite substantially flat faces extending in substantially parallel planes, the shaft extending in a direction substantially parallel to the planes of said valve disk's opposite flat faces, there being a cylindrically shaped sleeve structure having the valve-shaft fixedly secured



thereto and extending axially from a lower end of the sleeve structure and having an axially extending bore within an upper end of the sleeve structure with the bore being threaded with female threads; a collar housing structure defining a handle-shaft port at an upper end thereof, a base-valve port through which the valve-shaft is extendable upwardly before its connection with a lower end of the sleeve structure, the handle-shaft port and the base-valve port being axially aligned with the stem port, and a side port aligned radially to a cylindrical side of the cylindrically shaped sleeve structure, the collar housing structure being fixedly mounted to said flow conduit housing in surrounding relation to said cylindrical sleeve structure; bearing means mounted within said side port having a ball-bearing structure extending radially inwardly within the collar housing structure, said bearing means being removably mounted in said side port; said cylindrically shaped sleeve structure defining in its cylindrically shaped outer wall two serially consecutive first and second grooves, a first groove being an upper groove extending axially downwardly a first predetermined distance, and continuous with the lower end of the first groove the second groove extending helically downwardly, the width and size of the respective first and second grooves being of predetermined dimensions for accommodating receiving slidably along the grooves the ball-bearing structure such that upon the sleeve structure being moved axially upwardly, the sleeve structure moves non-rotatably upwardly as the ball-bearing structure slidably rides along the first groove from an upper to a lower end thereof, and such that upon the structure being moved further upwardly, the ball-bearing structure rides in the helical second groove, whereby during the initial upward movement of the sleeve structure the valve-shaft moves axially upwardly, to withdraw the valve disk from the valve seat and whereby during subsequent helical upward movement of the sleeve structure, the valve-shaft rotates the valve disk to a valve-open position; and the handle-shaft means further including a helically threaded

male handle-shaft mounted within said handle-shaft port for rotation therein and mounted against axial movement within said handle-shaft port, a lower end of the helically-threaded male handle shaft being meshably engaged within the female-threaded axial bore of the sleeve structure; and including handle-structure fixedly mounted on the upper end of said male handle shaft; and including parallel flanges extending parallel to each other and spaced from one another a predetermined spacing-distance, formed on and extending perpendicularly outwardly from one of said parallel faces of the valve disk, said flanges each defining therein bearing means directed toward and spaced from the bearing means of the opposite parallel flange, with the bearing means of the respective parallel flanges being substantially axially aligned with one another; and the valve-shaft having the end having the valve disk attached thereto on each of opposite sides of a rectangular formed section thereof third and fourth grooves serially continuous, the third grooves being upwardly located and inclined downwardly, the third and fourth grooves of each of the opposite rectangular surfaces respectively being of predetermined guide dimensions receivable and slidable therein of the respective opposite flange bearing means, such that during initial axial upward movement of the shaft, and valve disk is moved away from the valve seat, and the fourth grooves being continuous with a lower end of the third grooves, the fourth grooves extending axially downwardly such that rotary movement of the valve-shaft rotates therewith the valve disk, the parallel flanges and the valve-shaft oppositely located sides of the rectangular section defining the third and fourth grooves being tightly fitted with one another such that the bearing means of the respective parallel flanges are closed from environmental fluid flowing through the conduit housing, and additionally enclosing connecting structure extending between the opposing parallel flanges on said valve disk such that the valve-shaft is substantially circumscribed in juxtaposition to the third and fourth grooves.

3,854,697

DOUBLE DISC GATE VALVE

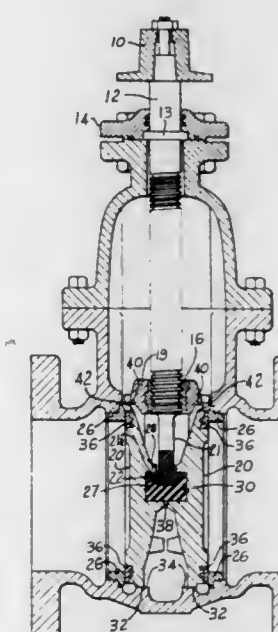
Fred W. Salloga, and Charles R. Burger, both of Chattanooga, Tenn., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Jan. 31, 1974, Ser. No. 438,376

Int. Cl. F16k 31/10

U.S. Cl. 251-167

8 Claims



1. A gate valve including, a body portion with body seats, a bonnet portion attached to said body portion, a threaded valve stem rotatably secured to said bonnet portion for raising and lowering said gates to preset stops, and a yoke having a central annular ring with female threads cooperatively en-

gaged with the threads of said threaded valve stem and spaced fingers depending from said ring, wherein the improvement comprises:

- two gates each removably and individually suspended from said yoke;
- each gate having a rear surface and an outer face;
- said rear surfaces of said gates being spaced in close proximity to each other and having aligned mating cavities therein;
- a solid flowable material enclosed between said gates and partially filling said cavities;
- ram means formed onto the lower extremities of said yokes and filling the remainder of said cavities for compressing said solid flowable material when said gates are lowered onto said preset stops, whereby said gates are forced apart into fluid-tight engagement with said body seats.

3,854,698

DEVICE WITH ADJUSTABLE TURN-SHIFTING BLADES FOR LAYING OR RECOVERING SUBMARINE CABLES

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

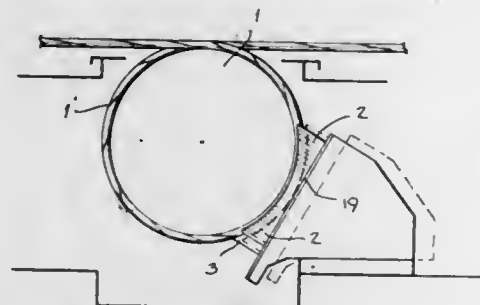
Filed Nov. 8, 1972, Ser. No. 304,652

Claims priority, application France, Oct. 24, 1972, 72.37625; Italy, Nov. 10, 1971, 30896/71; Finland, Oct. 29, 1972, 02698/72

Int. Cl. B66d 1/36, 3/12; B65h 5/100

U.S. Cl. 254—190 R

5 Claims



1. In a device for laying or recovering cable comprising a driven or braked drum revolvable about a predetermined axis and having a peripheral surface on which one or more turns of cable are wound, the combination therewith of mounting means adjacent said peripheral surface of said drum, said mounting means being adjustable toward and away from said peripheral surface, at least one turn-shifting blade, adjustable means mounting said blade on said mounting means adjacent said peripheral surface and with a surface of said blade facing in the direction of said axis and engageable with a portion of a cable on said peripheral surface for shifting said portion in the direction of said axis of said drum, said blade having opposite ends and a length therebetween which is less than the peripheral dimension of said peripheral surface, said blade being disposed with said ends spaced from each other in a direction circumferentially of said axis and said surface of said blade being substantially continuous between said ends and being inclined with respect to a plane orthogonal to said axis, said adjustable means comprising supporting means on said mounting means pivotally supporting said blade and movable with respect to said mounting means in the direction of said axis whereby the inclination of said surface of said blade with respect to said plane may be varied by moving said supporting means in the direction of said axis, said supporting means comprising a pair of means, one engaging a first portion of said blade and the other engaging a second portion of said blade spaced from said first portion thereof in the direction of the spacing of said ends of said blade, both of said pair of means being movable with respect to said mounting means in the direction of said axis, and a pair of thrust elements on said mounting means, one said element acting between said mounting means and one of said pair of means and the other said element acting between said mounting means and the

other of said pair of means, each of said thrust elements comprising a fluid actuatable cylinder and piston means and said pair of means being a pair of slides slidable on said mounting means in the direction of said axis whereby said slides and hence said blade may be moved in the direction of said axis by actuation of said cylinder and piston means.

3,854,699

MEANS FOR PROTECTING THE ROD OF A HYDRAULIC LIFT JACK FROM DAMAGE BY THE LIFT CHAIN

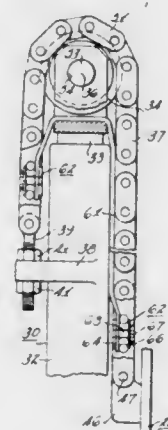
Donald P. Garnett, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 11, 1974, Ser. No. 450,010

Int. Cl. B60p 1/14, 1/22; B66f 3/24

U.S. Cl. 254—4 C

5 Claims



1. In a lift truck having a mast structure, a carriage reciprocally mounted on said mast structure for vertical movement, means for raising and lowering said carriage on said mast structure including a lift jack with a cylinder structure supported on said truck and a rod having an upper end extending from the top of said cylinder structure, a roller carried on said upper end of said rod for rotation about a horizontal axis and a chain trained over said roller and having one end secured to one of said structures and its other end secured to said carriage, the improvement comprising:

a flexible protective band passing beneath said roller and between the latter and said upper end of said rod and having its opposite ends secured to said chain, said band being disposed between said chain and said lift jack at diametrically opposite sides of the latter and operable to prevent said chain from slapping said rod when the latter is extended from said cylinder structure.

3,854,700

MACHINE FOR PRODUCING AERATED FOOD PRODUCTS

John MacManus, 143-16-22nd Rd., Whitestone, N.Y. 11357

Filed Sept. 6, 1973, Ser. No. 394,779

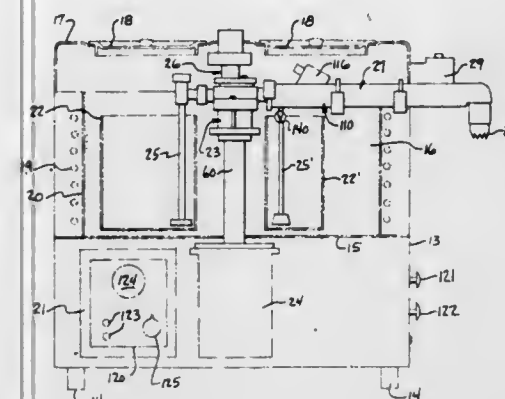
Int. Cl. B01f 15/02

U.S. Cl. 259—4

20 Claims

1. A machine for producing whipped cream and other stiff flowable aerated emulsion food products, the machine comprising a motor-driven, rotary vane pump having an inlet and an outlet, an air intake operatively connected to the pump inlet, an unpressurized liquid product container, a suction tube leading from the container and operatively connected to the pump inlet, whereby in use the whippable liquid food product and air are simultaneously drawn into the pump, apparatus connected to the pump outlet and defining a flow path along which the mixture of liquid product and air is pumped to a product discharge outlet, and the flow path including a static homogenizer for emulsifying the mixture; characterized in that the pump has a housing defining a pump chamber; a rotor in the pump chamber; a head overlying one end of the pump chamber and having a flat face at said one end through which the inlet and outlet communicate axially

with the pump chamber; a plurality of bolts extending through the head into the housing to removably mount the head on the housing; and a combination seal and wear pad substantially



co-extensive with the flat face of the head and engaged with the body and rotor; the combination seal and wear pad having openings for the passage of the bolts, and openings mating with the inlet and outlet in the head.

3,854,701

FLUID MIXER

James R. Palma, 1502 Curry Rd., Schenectady, N.Y. 12306

Continuation-in-part of Ser. No. 375,623, July 2, 1973, which is

a continuation-in-part of Ser. No. 312,041, Dec. 4, 1972, Pat.

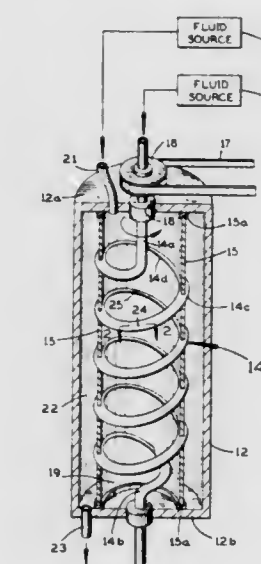
No. 3,768,658. This application Sept. 20, 1973, Ser. No.

398,967

Int. Cl. B01f 7/24

U.S. Cl. 259—8

11 Claims



1. In a fluid mixer having an outer housing, and a convoluted conduit inside said outer housing, the improvement which comprises:

an annular wall inside said housing which extends between and joins the successive convolutions of said conduit and provides therewith a first chamber at the inside of said convolutions, and together with said housing and said convolutions provides a second chamber at the outside of said convolutions; said conduit having openings at the inside of its convolutions which communicate directly with said first chamber and having openings at the outside of its convolutions which communicate directly with said second chamber; means for introducing first and second fluids under pressure into said conduit to mix with each other inside said conduit; and means for withdrawing the mixed fluids from the interior of the conduit.

929 O.G.—40

3,854,702

METHOD AND DEVICE FOR THE CONTINUOUS PRODUCTION OF SYNTHETIC RESIN MASSES

Gunther Papenmeier, deceased, late of Schulstrasse, Pivitsheidtstr. Kr. Detmold, Germany, (Luise Papenmeier, nee Melles, widow)

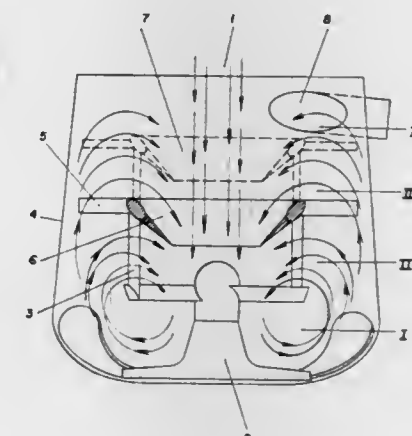
Filed Apr. 28, 1969, Ser. No. 819,709

Claims priority, application Germany, Apr. 29, 1968, 1778436 The portion of the term of this patent subsequent to June 17, 1989, has been disclaimed.

Int. Cl. B01f 3/08, 7/20

U.S. Cl. 259—8

6 Claims



1. A method of continuously mixing and preparing synthetic resins comprising the steps of:

- centrally feeding into a mixing container at least one synthetic resin and at least one adjuvant into a first zone of said container;
- heating said synthetic resin and said adjuvant by intensive frictional and shearing forces produced by a mixing tool rotating on the bottom of said mixing container in said first zone;
- displacing at an increased temperature the mixed and heated lighter synthetic particles upwardly in and on the smooth walls of the container;
- feeding said heated particles to a second zone in the container immediately above said first zone;
- admixing said heated particles with the continuously centrally fed cold heavier particles;
- further heating said heated particles in admixture in said first zone;
- feeding said further heated particles to a third zone in said container, said third zone being immediately above said second zone;
- admixing said further heated particles with said heated particles of said second zone and said continuously centrally fed cold heavier particles;
- additionally heating said further heated particles in admixture in said first zone;
- feeding said additionally heated particles to a fourth zone in said container, said fourth zone being immediately above said third zone;
- admixing said additionally heated particles with said further heated particles of said third zone, said heated particles of said second zone and said continuously centrally fed cold heavier synthetic particles;
- still further heating said additionally heated particles in admixture in said first zone;
- and conducting said still further heated synthetic particles away from the upper portion of said mixing container at a given temperature.

3,854,703

METHOD OF AND APPARATUS FOR PROMOTING A REACTION BETWEEN A LIQUID SPECIMEN AND A LIQUID REAGENT

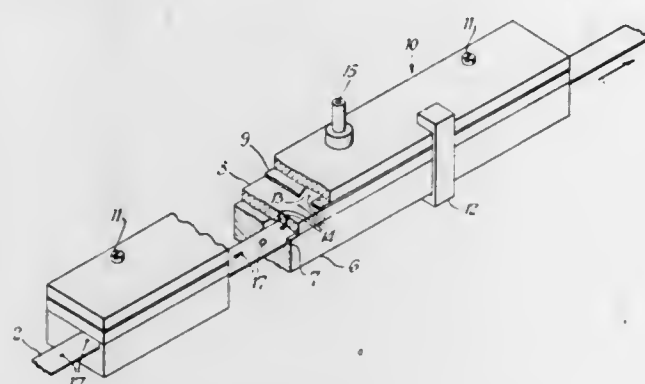
Dudley Francis Gibbs, Bracknell; Edward John Bennet, Wokingham, and William Ian Hopkinson, Camberley, all of England, assignors to Vickers Limited, London, England
Filed Sept. 15, 1972, Ser. No. 289,344

Claims priority, application Great Britain, Sept. 17, 1971, 43575/71; Mar. 30, 1972, 15218/72

Int. Cl. B01f 13/02

U.S. Cl. 259-11

10 Claims



1. A method of promoting a reaction between a liquid specimen and a liquid reagent, comprising the steps of applying the liquid specimen and the liquid reagent to a liquid-impermeable support surface to form a liquid mixture thereon, causing a jet of gaseous fluid to emerge from a supply duct outlet and impinge upon the liquid mixture on the support surface, and bringing about relative movement between the support surface and said supply duct outlet thereby to cause agitation of the liquid mixture.

3,854,704

MAGNETIC CELL STIRRER

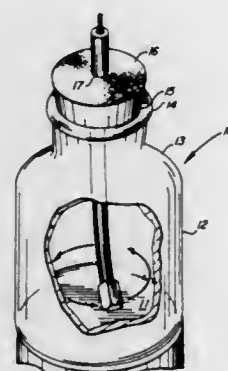
John Thomas Balas, Vineland, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed July 13, 1973, Ser. No. 379,081

Int. Cl. B01f 7/16

U.S. Cl. 259-118

5 Claims



1. For use with a container for stirring cells and the like, said container including a bottom, a wall upstanding from said bottom, and an opening at the top, a magnetic flexible stirrer comprising:

- a closure for said opening formed with a central vertical passage and proportioned for a tight fitting relationship with said opening;
- a flexible shaft (rotatably) mounted in said central passage with said closure between the ends thereof; and
- a coated magnet rigidly mounted on said flexible shaft at the lower end thereof and closely adjacent to the bottom of said container when the stirrer is assembled therewith, whereby as said magnet is rotated by magnetic operating mechanism the shaft flexes into an arcuate configuration and moves upwardly and outwardly relative to said bot-

tom by the centrifugal force generated by such rotation causing the said flexure.

3,854,705

AUTOMATIC DOUGH KNEADER FOR HOME USE

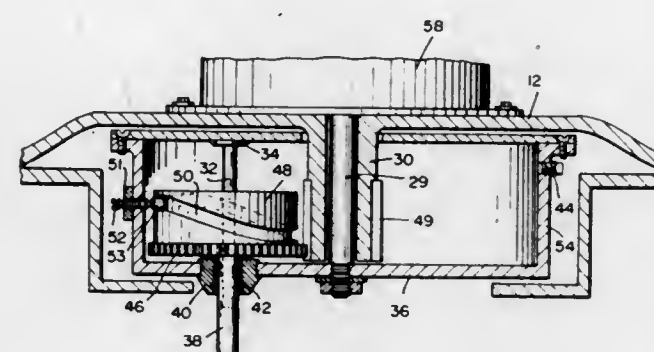
Jeanne Mull Shaff, 2 Maple Dr., Roosevelt, N.Y. 11575

Filed July 17, 1973, Ser. No. 380,060

Int. Cl. A21c 1/00

U.S. Cl. 259-185

8 Claims



1. A dough kneading machine for home use comprising, in combination, a container for dough to be kneaded, said container having a closed bottom, an open top and wall portions, a lid for said container, means for securing said lid to said open top portion, a sleeve bearing extending downwardly from said lid centrally of said lid, a drive shaft rotatable in said sleeve bearing, a motor mounted on said lid for driving said drive shaft, a closed drum housing having a wall, top and bottom secured to said drive shaft, a kneader arm mounted in said drum housing eccentrically of said drive shaft, said kneader arm extending into said container, and cam means in said drum housing for simultaneously operating said kneading arm in a circular and vertically reciprocating paths during the rotation of said drum housing.

3,854,706

SHOCK ABSORBING APPARATUS FOR HEAVY LOADS

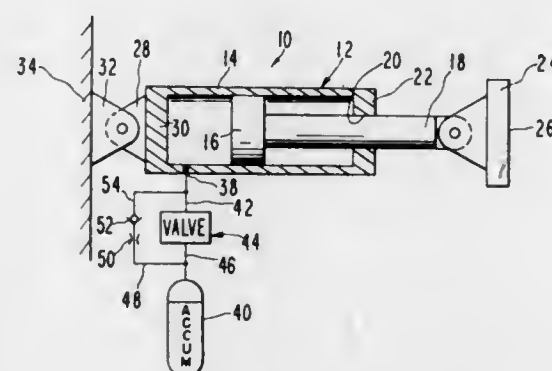
James G. Johnston, Willits, Calif., assignor to Stanray Corporation, Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 341,812

Int. Cl. F16f 5/60

U.S. Cl. 267-116

12 Claims



1. Energy absorbing apparatus comprising: a fluid buffer having a first, fixed, hollow part adapted to contain a hydraulic fluid and a second part mounted on the fixed part for movement relative thereto, said second part adapted to be engaged by a moving mass and to be shifted thereby relative to said first part in one direction to exert a force on the fluid therein; a fluid accumulator exterior of the buffer; means forming a first fluid flow path between said first part and said accumulator; means in said first path for defining a resistance to the increase of pressure in said first path after the pressure therein due to the force exerted by said second part on said fluid has reached a predetermined value; and means in bypassing relationship to said defining means for presenting a second

fluid flow path to allow fluid directed to the accumulator along said first path to return to said first part, to thereby urge the second part in the opposite direction when the effect of the movement of said moving mass has been removed therefrom.

3,854,707

APPARATUS FOR INDUCTIVELY HEATING AND QUENCH HARDENING SURFACES ON A CRANKSHAFT

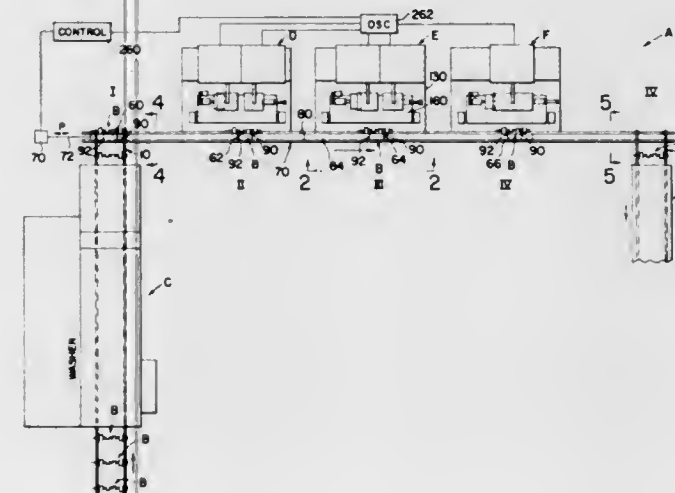
Robert G. Armstrong, Chardon, and George C. Nebesar, Parma, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Nov. 2, 1973, Ser. No. 412,277

Int. Cl. C21d 1/66

U.S. Cl. 266-4 E

6 Claims



2. An apparatus for inductively heating and quench hardening bearing surfaces on a crankshaft having a central axis, said apparatus comprising: a shuttle extending along a given longitudinal path and having longitudinally spaced crankshaft receiving nest means for supporting a crankshaft with said central axis extending along said path; means for moving said shuttle to locate one of said nest means at a selected position; a carriage pivotally mounted at said position about a carriage axis generally parallel to and offset laterally from said longitudinal path, said carriage comprising means for supporting a crankshaft for rotation about its central axis on a work axis generally parallel to said path and means for rotating said crankshaft in said supporting means about said work axis; means for selectively pivoting said carriage about said carriage axis between a first angular position with said work axis of said carriage generally coinciding with said path, a second angular position, and a third angular position below said second position; means on said carriage for selectively gripping a crankshaft in said one nest means by said support means when said carriage is in said first angular position; means for inductively heating at least one of said bearing surfaces when said carriage moves a crankshaft into said second angular position; and means for quench hardening at least said one surface when said carriage moves a heated crankshaft into said third angular position.

3,854,708

FLUID-COOLED PANEL FOR FURNACE HOOD

Grant H. Highberger, Lyndhurst, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 160,718, July 8, 1971, abandoned.

This application July 11, 1973, Ser. No. 378,095

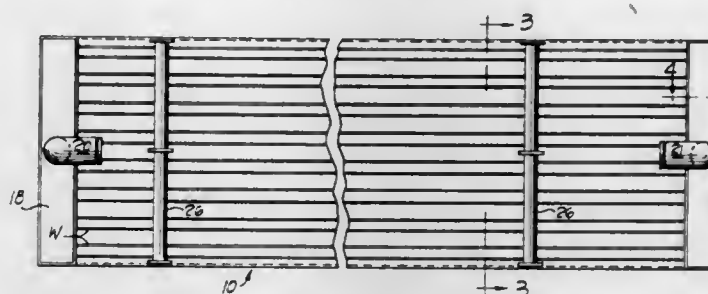
Int. Cl. C21c 5/40

U.S. Cl. 266-16

4 Claims

1. A fluid-cooled metal hood panel for a basic oxygen furnace, said panel comprising two spaced headers, a plurality of parallel tubular fluid conduits extending between and connected at opposite ends to and in fluid communication with said headers, nonconduit-forming panel portions between and connecting adjacent fluid conduits, narrower than the con-

duits and offset to one side of a plane passing midway through and lengthwise of said conduits, said fluid conduits and non-conduit-forming panel portions being formed of a corrugated sheet member having alternate ridges and valleys on each side



and flat conduit-forming means spanning said valleys on one side only of said sheet member and comprised of a plurality of strips each welded between two adjacent ridges of said corrugated sheet member, and means for supplying fluid to one of said headers and exhausting fluid from the other.

3,854,709

CONTAINMENT OF DUST AND FUMES FROM A METALLURGICAL VESSEL

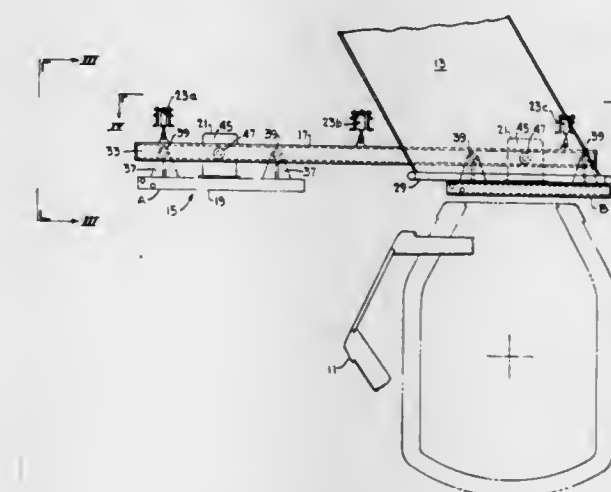
Richard Gerard Gaw, Pittsburgh, Pa., assignor to Mary F. Gaw, Pittsburgh, Pa., a part interest

Filed July 13, 1973, Ser. No. 379,163

Int. Cl. C21c 5/40

U.S. Cl. 266-16

21 Claims



1. A device comprising:

- a rotatable metallurgical furnace having a furnace mouth disposed at its top; said furnace being disposed in an upright position for oxygen blowing operations and being adapted to rotate about an axis to the left and to the right of said upright position for operations other than oxygen blowing operations;
- an exhaust hood positioned above said furnace for the capture of gas effluent; said hood having a hood mouth that is aligned with said furnace mouth when said furnace is disposed in said upright position; and
- means for use at said hood mouth that is capable of variably and partially restricting selected portions of the cross-sectional area of said hood mouth to provide a reduced, unrestricted portion and a restricted portion at said hood mouth; said means being cooperatively associated with the rotation of said furnace from its upright position so that said reduced unrestricted portion is disposed to the left of said restricted portion when said furnace is rotated to the left of said upright position and said reduced unrestricted portion is disposed to the right of said restricted portion when said furnace is rotated to the right of said upright position whereby the face velocity of gas effluents entering said hood through said reduced unrestricted portion is increased to improve the capacity of said hood to capture gas effluents.

3,854,710

MOTOR-CYCLE SUSPENSIONS

Lawrence George Nicholls, Birmingham, England, assignor to
Girling Limited, Birmingham, England

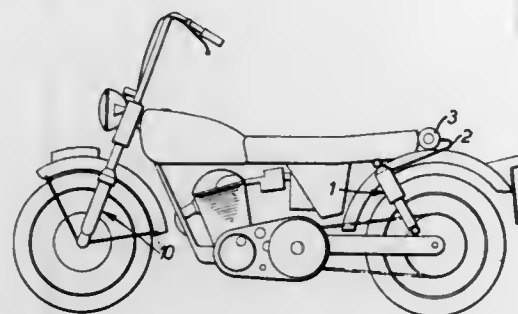
Filed Dec. 16, 1971, Ser. No. 208,794

Claims priority, application Great Britain, Dec. 29, 1970,
61667/70

Int. Cl. B60g 11/26

U.S. Cl. 267-64 R

10 Claims



1. A motorcycle suspension system including a hydraulic ram connected between a wheel part and a body part of a motorcycle, said ram including a cylinder connected to one of the parts for movement therewith and a fluid pressure responsive piston including a rod connected to the other part for movement therewith, means for adjusting the pressure acting on said piston comprising means defining an air pressure space and a hydraulic pressure space, said hydraulic pressure space directly communicating with the piston of said ram, a first selectively moveable fluid tight member constituting an end wall of said air pressure space, a second moveable fluid tight partition wall separating said hydraulic and air pressure spaces, and position-varying means for selectively moving said end wall of said air pressure space to adjust the volume of said air pressure space and consequently the pressure within both said spaces to control the hydraulic pressure force acting on the piston of said ram.

3,854,711

PORTABLE MAGNETIC CHUCK

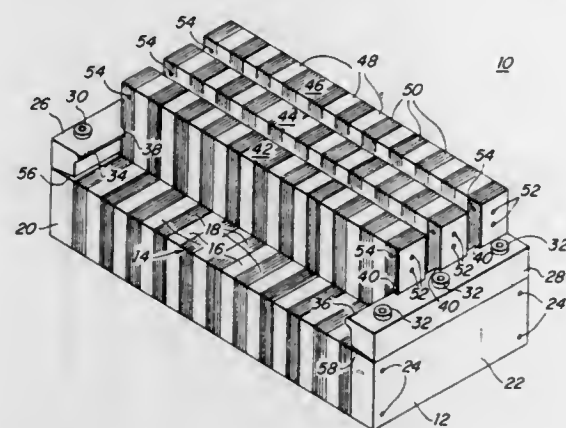
Poy Dong, 70 Louise Rd., Chestnut Hill, Mass. 02135

Filed June 13, 1972, Ser. No. 262,299

Int. Cl. B25b 11/00

U.S. Cl. 269-8

3 Claims



1. A magnetic work holder system including a work holder base adapted to hold a plurality of position blocks for positioning one or more work pieces and having a laminated work surface formed of alternately arranged magnetic and non-magnetic strips, comprising first and second clamp members disposed at opposite sides of said work surface, each of said position blocks having a recess at each end, each of said clamp members having a salient portion on its inner edge for engaging said recess in one or more position blocks disposed between them on said work surface, each of said clamp members including means for tightening a said clamp member toward said work holder base and means, cooperating with a said clamp member, for rotating said salient portion inwardly and

downwardly to secure said position blocks, said magnetic strips on said work surface extending farther down than said non-magnetic strips and providing a plurality of spaces between the extended said magnetic strips; and means for providing a magnetic field including an array of magnet members spaced apart by the thickness of a non-magnetic strip, said array being nestable in the underside of the work surface with its magnet members between the magnetic strips and proximate the underside of said non-magnetic strips.

3,854,712

SKI VISE

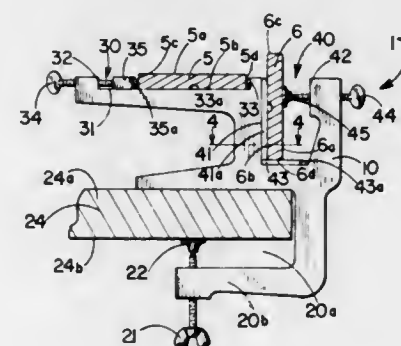
Weldon L. McGee, 2512 S. Highway 100, Apt. 433, St. Louis
Park, Minn. 55416

Filed Dec. 3, 1973, Ser. No. 421,261

Int. Cl. B25b 11/02, 11/20

U.S. Cl. 269-43

3 Claims



1. A ski vise, securable to bench tops and the like, for simultaneously holding two vertically and horizontally oriented skis, said skis generally having relatively flat top and bottom surfaces and opposed lateral edges, said vise comprising:

- a. A vise body;
- b. Support securing means for removably attaching said vise body to the edge of a bench top and the like;
- c. Vertical jaw means carried by said vise body for holding a first ski with the ski top surface in a generally vertical orientation and the ski edges generally horizontal, said vertical jaw means including:
 - i. Said vise body containing a vertical channel having opposed first and second sidewalls and a bottom surface;
 - ii. A screw-advance vise jaw carried by said first sidewall and advanceable towards said second wall, said jaw selectively positionable to bear against the ski for holding it in a vertical orientation; and
 - iii. Said channel bottom surface spanning the entire width of said channel and positioned therebetween to support one ski edge in abutting engagement therewith and the opposite ski edge exposed above said sidewalls;
- d. Horizontal jaw means carried by said vise body for holding a second ski simultaneously with and adjacent to the first ski and with the ski top surface in a generally horizontal orientation, said horizontal jaw means including:
 - i. Said vise body containing a horizontal channel having opposed first and second sidewalls and a bottom surface;
 - ii. A screw advance vise jaw carried by said first wall and advanceable toward said second wall, said jaw selectively positionable to bear against the edges of the second ski for holding it in a horizontal orientation; and
 - iii. Said channel bottom surface spanning the entire width of said channel and positioned therebetween to support one abutting ski surface with the opposite surface exposed above said channel sidewalls.

3,854,713

DOCUMENT FEED MECHANISM

Yasuhiko Kohda, Tokyo, Japan, assignor to Fujitsu Limited,
Kawasaki-shi, Japan

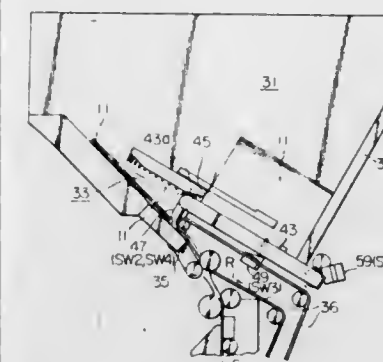
Filed July 7, 1972, Ser. No. 269,608

Claims priority, application Japan, July 7, 1971, 46-49586

Int. Cl. B65h 3/02, 7/14

U.S. Cl. 271-3.1

5 Claims



1. A mechanism adapted for feeding documents of various lengths comprising:

- a file-hopper having an upwardly open mouth from which a stack of said documents of various lengths can be piled at any time and a stop plate inclining to one side thereof from a vertical direction so that said stack of documents piled from the mouth into said file-hopper have their rear edges aligned with each other;
- means for conveying a substack of documents of various lengths from said stack of documents in a direction substantially the reverse of the direction in which said documents are to be fed while keeping the rear edges of the conveyed substack of documents aligned, and;
- feeding means for momentarily storing said substack of documents of various lengths fed by said feeding means in such a form that the rear edges thereof are aligned and for feeding out one document a time from said momentarily stored documents with said aligned rear edges becoming the front edges of said fed out documents.

3,854,714

SHEET DISPENSING MACHINE

Yoshihiro Hatanaka; Masahiro Abe; Hiroshi Terada, and
Shigejiro Inoue, all of Himeji, Japan, assignors to Glory
Kogyo Kabushiki Kaisha, Himeji-shi, Japan

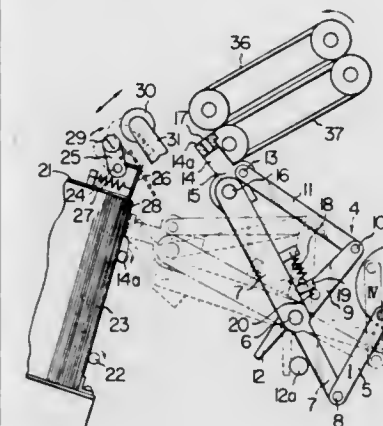
Filed Dec. 28, 1971, Ser. No. 213,005

Claims priority, application Japan, Dec. 28, 1970, 45-
120343; Dec. 28, 1970, 45-120344; Dec. 28, 1970, 45-132798

Int. Cl. B65h 5/08

U.S. Cl. 271-12

7 Claims



1. A sheet dispensing machine in which sheets held in a stack are successively sucked and continuously fed to a sheet-dispensing section, comprising a container for holding therein the sheets in a stack, conveyor means to convey the sheet placed thereon toward the sheet dispensing section, said conveyor means having an input; and a suction head adapted to

be subjected to head-shaking movement for successively sucking and separating the foremost sheet from said stack and to conveying movement for drawing out the sucked sheet from said container while sucking said sheet by said suction head and then for carrying said drawn sheet to the input of said conveyor means; driving means for causing said head-shaking movement of said suction head and said conveying movement; and sheet-holding means including a sheet-holding member which, in relation to the motion of said suction head, moves into and out of contact with the next foremost sheet within said container to step with the motion of said suction head so as to retain this next foremost sheet in place while said foremost sheet is separated from the stack, the driving means comprising a linkage connected to the suction head and rotatable means to which the linkage is connected eccentrically, said linkage and rotatable means causing tilting of the suction head upon contact with the foremost one of the sheets within said container, thereby partly separating said foremost sheet from the rest of the sheets, said linkage including a first link coupled at one end to said rotatable means, a second link swingably mounted at an intermediate point of its length and said suction head, a third link swingably coupled to a mid-part of said second link and having an extended end, a stop positioned to restrict the angle of swing of said third link by engagement by said extended end, a spring member biasing said second and said third link toward each other, and a fourth link extending between the other end of said third link and said suction head.

3,854,715

CAM

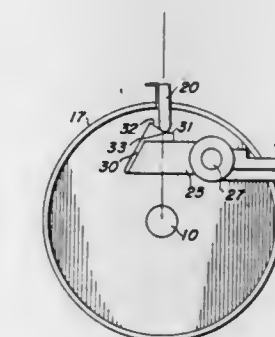
John F. Coleman, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1973, Ser. No. 342,640

Int. Cl. B65h 5/14

U.S. Cl. 271-277

2 Claims



1. In facsimile apparatus, the combination comprising a rotatable drum for conveying sheet material, a gripper bar extending through the surface of said drum and rotating with said drum, said gripper bar being biased toward the center of said drum for engaging an edge of said sheet material in fixed relationship to said drum surface, and means for simultaneously moving said gripper bar radially outward from said drum and rotating said drum to a predetermined angular position including a cam movable from a first to a second position, said cam having a notched surface for engagement with said gripper bar as said cam is moved from said first position to said second position, said first position being closer to the center of said drum and farther from the surface of said drum than said second position.

3,854,716

MOVING FIGURE TOY ROUNDABOUT

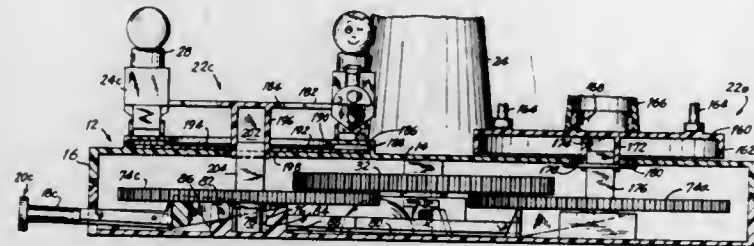
Norman Spiegel, New York, N.Y., assignors to Nasta Industries Inc.

Filed Apr. 19, 1973, Ser. No. 352,603

Int. Cl. A63h 13/20

U.S. Cl. 272-31 R

13 Claims



1. Moving figure toy comprising, in combination, a generally enclosed base portion having an upper surface longitudinally extensive in each of a plurality of directions; a plurality of rotatably movable structures carried by said base portion at differing spaced apart locations on said base portion's upper surface; motor means contained within said base portion; a driving pinion gear means carried within said base portion in a first plane spaced apart and generally parallel said upper surface driven by said motor means; a plurality of driven pinion gear means carried within said base portion each positioned relative a respective one of said movable structures and operatively connected for imparting movement thereto, each of said driven pinion gear means being normally disposed in a plane generally beneath the plane of said driving pinion gear means so that said driving pinion gear means may rotate without meshing therewith; and means for selectively elevating each of said driven pinion gear means for meshing with said driving pinion means.

3,854,717

AMBULATORY AMUSEMENT AND EXERCISE DEVICE

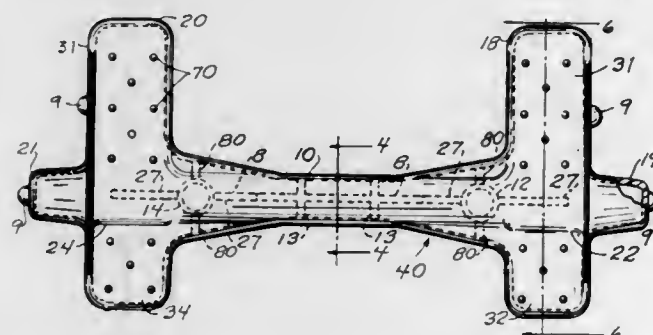
Herbert T. Judkins, R.R. No. 3 Box 235-A-16, Soddy, Tenn. 37379, and Lucian C. Miller, 1903 Leonhard St., Dayton, Ohio 45404

Continuation of Ser. No. 181,309, Sept. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 878,388, Nov. 20, 1969, abandoned. This application May 25, 1973, Ser. No. 363,848

Int. Cl. A63b 23/04

U.S. Cl. 272-70

1 Claim



1. An exercise device of a unitary construction for balance development and amusement, comprising:

- A straight substantially semicircular rod;
- A right leg and a left leg molded on the concave surface of the semicircular rod near the two ends of the straight substantially semicircular rod; and

c. A right shoe holder and a left shoe holder each of which has a heel section and a sole section, with the upper surface of each sole section being coplanar with the convex surface of said semicircular rod near the ends of said rod, and the upper surface of each heel section being lower than the upper surface of each corresponding sole section.

3,854,718

APPARATUS FOR IMPROVING BOWLING SKILL

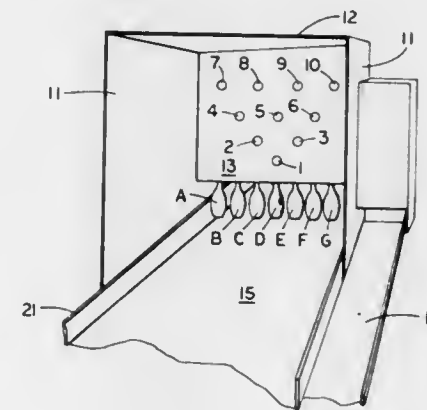
Richard H. Brosier, 266 S. Washington Blvd., Hamilton, Ohio 45013

Filed Mar. 7, 1974, Ser. No. 448,938

Int. Cl. A63d 5/04

U.S. Cl. 273-41

5 Claims



1. A practice apparatus for perfecting bowling technique, said apparatus comprising means providing an elongated alley area down which a conventional bowling ball may be delivered and terminating at a row of seven bowling pins, the longitudinal axes of which all lie generally in a single vertical plane transverse to and at one end of said alley area, said pins being suspended over but out of engagement with said alley area, an array of ten visual indicators arranged above said pins and mounted on a vertical display board, said indicators being adapted to be electrically illuminated upon actuation of controlling switches and said indicators being numbered and positioned in the conventional triangular ten-pin fashion, a switch-actuating probe mounted to the rear of each of said pins for pivotal movement on a horizontal axis parallel to the plane of said row of pins when struck by a bowling ball delivered down the alley, two additional switch-actuating probes extending respectively into the space between the central pin in said row and the pin on its right and into the space between the central pin and the pin on its left, said additional probes being mounted for pivotal movement on a horizontal axis inclined to the plane of said row of pins, electrical means including controlling switches associated with said probes each actuated by pivotal movement of its respective probe completing a circuit to illuminate certain of but less than all of said visual indicators, movement of either of said additional probes to actuate its associated switch completing a circuit to illuminate all ten of said visual indicators.

3,854,719

TENNIS BALL HAVING AN ELECTRICALLY CONDUCTING SURFACE

Lyle David Supran, 54, Brondesbury Villas, London, N.W. 6, England

Filed Mar. 1, 1972, Ser. No. 230,897

Claims priority, application Great Britain, Mar. 3, 1971, 5865/71

Int. Cl. A63b 61/00

U.S. Cl. 273-61 R

1 Claim

1. A tennis ball comprising: flexible material in the form of a hollow sphere; a surface consisting of two panels of cloth

3,854,721

RECTANGULAR FIELD WITH TRANSVERSE BALL HURDLE

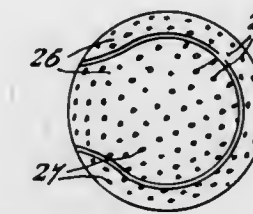
Robert Ellis, 350 Lomas Santa Fe Dr., Solana Beach, Calif. 92075

Filed Aug. 31, 1973, Ser. No. 393,501

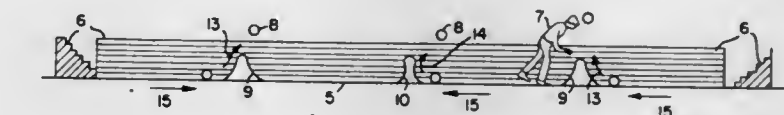
Int. Cl. A63b 71/02

U.S. Cl. 273-95 H

2 Claims



steel uniformly woven into the cloth to form an electrically conducting surface to the tennis ball.



1. A foot-ball game comprising: a large, rectangular playing field, at least one goal at each of the transverse ends of the playing field, at least one hurdle extending transversely across the width of the playing field, said hurdle comprising a rigid sheet of material having a rounded top with outwardly flared and open space between the top and the field surface such that a ball impelled onto the hurdle will be deflected upwardly and over said hurdle, and at least one resilient ball, so constructed to enable it to roll over the surface of the field.

3,854,720

BASEBALL GAME HAVING VARIABLE BATTING MEANS

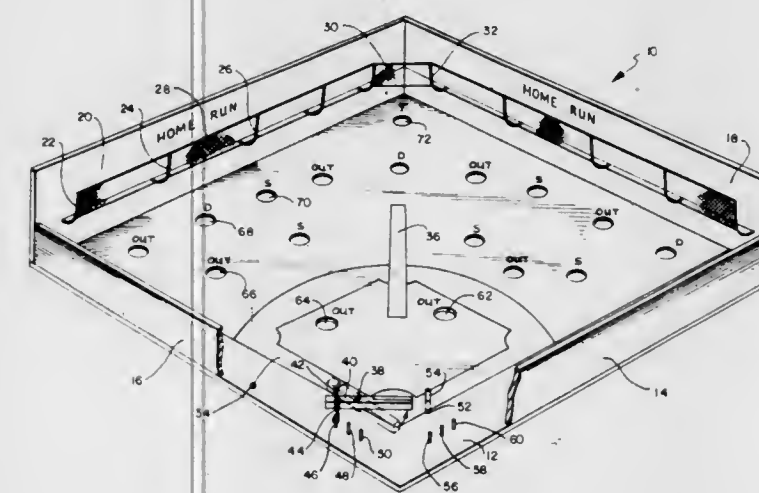
Calvin David Duvall, 147 Dockser Dr., Crownsville, Md. 21032

Filed Mar. 28, 1973, Ser. No. 345,709

Int. Cl. A63f 7/06

U.S. Cl. 273-89

3 Claims



1. A baseball game, said game having a diamond shaped base member having four sides, two infield walls secured adjacent each other along two respective sides of said base member, two outfield walls having a height greater than said infield walls secured to the remaining two sides of said base member, a simulated series of bases including a home plate on base member, a pair of apertures juxtapositioned in said base member adjacent to and on opposite sides of home plate, a pivot means adapted to fit in either aperture mounted in one of said apertures, a bat means pivotally mounted on said pivot means for hitting a ball propelled thereto a plurality of peg means located on said base member behind each said aperture, tension means adapted to be selectively connected to any one of said peg means and one end of said bat means whereby the force with which the bat pivots after being released to engage a ball can be varied, the other end of said bat means having a variable means thereon for hitting a ball propelled thereto, a series of shallow aperture means on said base member, each having indicia thereon representing results of a hit and a pitching area on said base member from which one player propels a ball toward home plate.

3,854,722

ELECTRICAL INDICATING TARGET WITH REMOVABLE CENTER SECTION

Johan Alex Ingvar Ohlund, Huskvarna; John Mannerblad, and Gunnar Alexius Wallgard, both of Jonkoping, all of Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

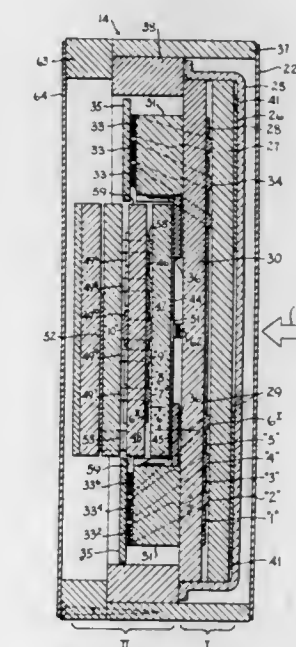
Filed Dec. 18, 1972, Ser. No. 316,033

Claims priority, application Sweden, Dec. 23, 1971, 16554/71

Int. Cl. F41j 5/04

U.S. Cl. 273-102.2 A

5 Claims



1. A target at which electrically conductive projectiles are to be shot from a location in front of the target and which has

defined scoring zones comprising a central zone within which shots are most desirably placed and a plurality of outer zones which lie at different distances outwardly from said central zone and each of which surrounds it, said target being of the type comprising a plurality of pairs of cooperating sheet-like electrically conductive elements that are penetrable by said projectiles, there being at least one of said pairs of elements for each scoring zone and the two elements of each pair being flatwise spaced apart by a distance such that a projectile can be in electrically connecting contact with both simultaneously during its penetration of them, said target also comprising means for electrically connecting each of said pairs of elements with a scoring device that indicates the particular pair of said elements that a projectile has penetrated, said target being characterized by:

- A. a frame large enough to embrace all of said zones;
- B. first flat, thin carrier means substantially permanently fixed to the frame near the front thereof and carrying pairs of said elements for an outer portion of one of said outer scoring zones and for the whole of all of the outer scoring zones farther out from the central zone than said one outer scoring zone;
- C. second flat, thin carrier means having thereon pairs of said elements for the inner portion of said one outer scoring zone and for the whole of all scoring zones inwardly of said one outer scoring zone;
- D. readily releasable fastening means detachably supporting said second carrier means in the frame behind the first carrier means and edgewise in a position in which its said pairs of elements are substantially in register with their respective scoring zones;
- E. there being partial but substantial edgewise overlap between said elements for the outer portion of said one outer scoring zone and said elements for the inner portion thereof; and
- F. corresponding ones of said overlapping elements on the two carrier means being electrically interconnected so that accurate scoring is obtained of shots placed in the scoring zone for said overlapping elements and in the scoring zones adjacent thereto, notwithstanding any edgewise misregister of the carrier means relative to one another.

3,854,723

HUNTING ARROW

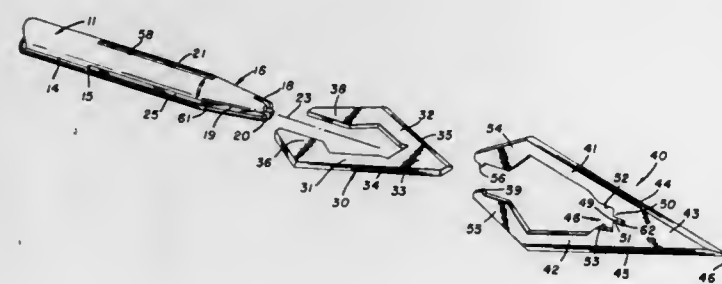
Richard I. Wilson, Kalamazoo, Mich., assignor to Shakespeare Company, Kalamazoo, Mich.

Filed July 6, 1970, Ser. No. 52,463

Int. Cl. F41b 5/02

U.S. Cl. 273-106.5 R

7 Claims



1. A hunting arrow comprising, a shaft having a rearward end, a nose portion and an outer surface, a nock means secured to the rearward end of said shaft, fletchings secured to said shaft forwardly of the nock means, first and second diametric slots opening in a plane axially through the nose portion of said shaft, diametric grooves in the outer surface of said shaft aligned with the plane of said first slot, an anchor

means in at least one of said grooves, primary broadhead blade means having a generally triangular web portion terminating in an apex defining the point of said blade means, opposed legs diverging rearwardly from said web portion, a stabilizing edge means on said web portion medially of said legs, a locating foot on each leg spaced rearwardly of said web portion, locking means carried on said locating feet, said stabilizing edge means removably receivable within said first slot and said locating feet removably receivable in said grooves, said locking means interengaged with said anchor means releasably to maintain said primary blade means on said shaft, said second slot having a greater axial extent than said first slot, a second set of diametric grooves in the outer surface of said shaft aligned with the plane of said second slot, a secondary broadhead blade means having opposed legs joined at the forward portion thereof by a stabilizing bridge, a locating foot on each leg of said secondary blade means spaced rearwardly of said stabilizing bridge, said stabilizing bridge removably receivable in said second slot and the locating feet on said secondary blade means removably receivable in the grooves aligned with the plane of said second slot, the stabilizing edge on the web portion of said primary blade means cooperating with the stabilizing bridge means on said secondary blade means to maintain said secondary blade means on said shaft when said primary blade means is secured thereto.

3,854,724

GAME BOARD AND ASSOCIATED APPARATUS

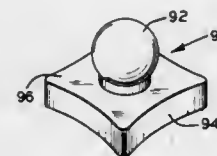
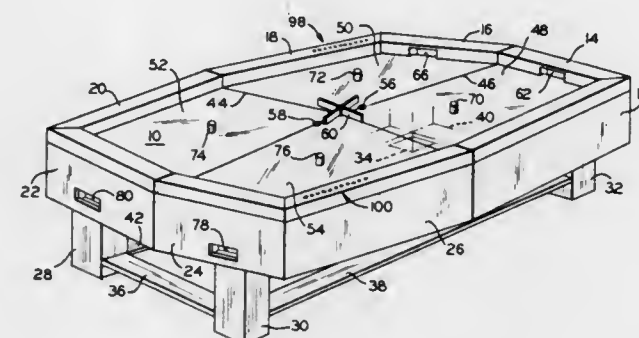
Paul P. Abraham, P.O. Box 597, Athens, Ohio 45701

Filed July 18, 1973, Ser. No. 380,352

Int. Cl. A63d 13/00

U.S. Cl. 273-125 R

9 Claims



1. An amusement device comprising: a game board having a multiplanar upper surface; a playing piece capable of being propelled on the upper surface of said game board; a striking means capable of propelling said playing piece wherein said striking means includes a striking body slidable on said multiplanar upper surface and having an upstanding generally centrally disposed handle, and at least one concave surface on its periphery adapted for striking said playing piece;

at least a pair of spaced apart playing receiving means; at least a pair of upwardly extending projections positioned upon the upper surface of said game board between said receiving means;

means extending upwardly from said game board for containing said playing piece and defining a playing surface and having a plurality of holes formed therein for indicating the total number of points scored; and rotary means for deflecting said playing piece rotatably attached at the center portion of the playing surface of said game board.

3,854,725

ELECTRIC CHESS GAME BOARDS

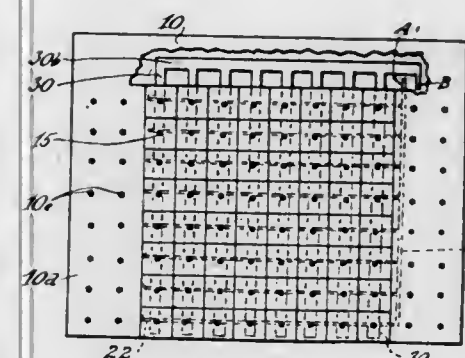
Perry U. Cluck, 15928 Finch Ave., Harvey, Ill. 60426

Filed Aug. 6, 1973, Ser. No. 386,221

Int. Cl. A63f 3/02

U.S. Cl. 273-131 A

7 Claims



1. A game board with a field of squares, playing pieces deposited on desired squares when played, and means actuated by the deposit of any playing piece to illuminate said piece comprising electric sockets contained in said field squares, rods in the bottom of said game board extending in parallelism under said squares and attached to said sockets along said rods, a bar connecting said rods and an electrical circuit with one terminal connected to said bar.

3,854,726

SCREENED PHOTOGRAPH PUZZLE

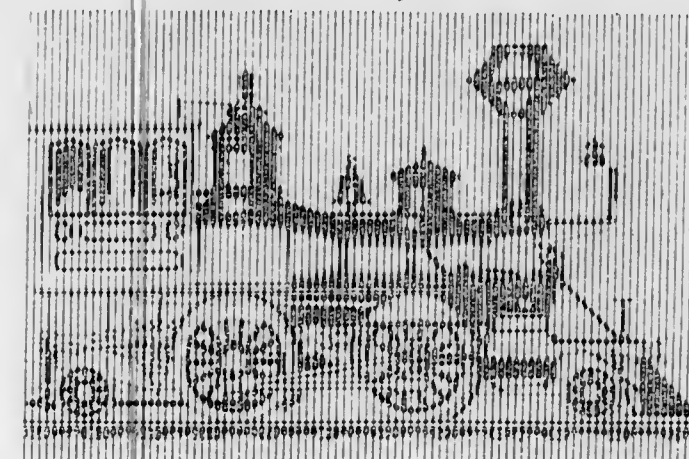
Alton Parker Balder, 7902 Seven Mile Ln., Baltimore, Md. 21215

Filed Nov. 2, 1973, Ser. No. 412,182

Int. Cl. A63f 9/10

U.S. Cl. 273-157 R

4 Claims



1. A puzzle, comprising a plurality of puzzle pieces the combination of which forms an enlarged discernible compos-

ite photographic image including screen lines, enlargement of the original photographic image to produce the discernible composite photographic image on the pieces causing of plurality of shades of distorted and varying random-appearing densities to exist on the pieces, the puzzle pieces being defined physically along their edges by the screen lines, each puzzle piece having a substantially identical physical configuration as the other pieces, each puzzle piece having a specific pattern thereon forming a portion of the discernible composite photographic image, the pattern on each piece being defined by the plurality of shades, the shades having varying degrees of quality and being distorted to provide random-appearing densities of the shades on the pieces, the patterns on the pieces and the edges of the pieces defined by the screen lines being combinable in a predetermined alignment by matching the shades on the surfaces of the pieces and along the edges thereof to allow proper location of each piece within the puzzle to reveal the nature of the enlarged composite image.

3,854,727

COMBINED SNOW BORING TOOL AND BALL STRIKING CLUB

Ernest H. Alexander, 5136 Woodland Rd., Minnetonka, Minn. 55343

Filed Mar. 7, 1974, Ser. No. 449,190

Int. Cl. A63b 53/00

U.S. Cl. 273-162 F

5 Claims



1. A combined snow-boring tool and club for playing a golf-like ball game in snow and adapted to bore a cup in the snow for receiving of the ball, comprising:

- an elongated, substantially straight shaft having first and second ends and a central longitudinal axis, first and second spaced apart hand grip members located on said shaft adjacent said first and second ends respectively;
- a rigid snow-compressing disk having a central axis and fixed to said shaft adjacent said first end, the axes of said disk and shaft substantially coinciding, the obverse side of said disk forming a flat snow-compressing surface oriented substantially perpendicularly to said shaft and facing away from said second end of said shaft for compressing

snow when said disk and first end of said shaft are forced axially downwardly into the snow to form a cup in the snow;

a rigid drill plate fixed to and extending outwardly from said snow-compressing surface of said disk, said drill plate being oriented perpendicularly to the said snow-compressing surface and positioned diametrically across said snow-compressing surface of said disk to cut through snow in response to rotation of said drill plate, disk and shaft about the axes of said shaft and disk; and

a weighted club head rigidly fixed to said second end of said shaft to increase the momentum of said shaft, disk and drill plate when said shaft is forced vertically downwardly by an operator to urge said drill plate and disk into the snow to pierce and compress the snow to define a circular cross-section ball cup in the snow, said club head including at least one ball-striking surface to permit driving of the ball with the club head when said club head and said shaft are swung through an arc.

3,854,728

GOLF PUTTING GAME DEVICE

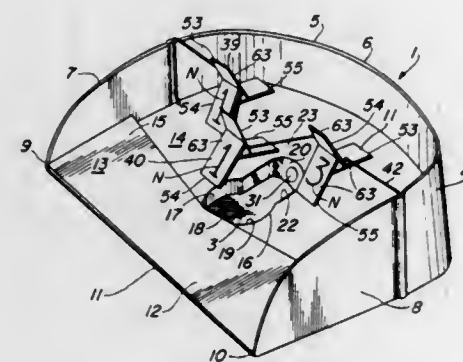
John R. Brandell, 1527 Sequoia Ave., Glenview, Ill. 60025

Filed Aug. 13, 1973, Ser. No. 388,125

Int. Cl. A63b 69/36

U.S. Cl. 273-179 A

21 Claims



1. A golf putting game device comprising
 - a means affording a target area into which a ball may be putted from a putting position remote from that area,
 - means for returning a ball along a predetermined path from said area toward said putting position,
 - spinner means, having a plurality of at-rest positions, mounted in said path in position to be struck by such a ball during movement of said ball along said path from said area toward said putting position to thereby cause said spinner means to rotate out of the at-rest position in which it was disposed.

3,854,729

RECORD DIVIDER AND PRESERVATIVE

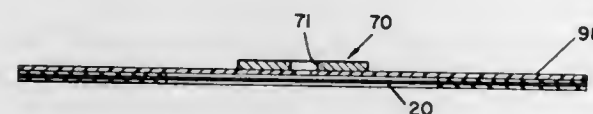
Thomas P. Downs, 1927 Mathews Ave., Apt. A, Redondo Beach, Calif. 90278

Filed June 1, 1973, Ser. No. 365,965

Int. Cl. G11b 3/62

U.S. Cl. 274-1 R

4 Claims



1. An annular protective disc for use with 45 r.p.m. records for insertion between said records prior to stacking the re-

cords on the spindle of a record player, while said disc is substantially the same in circumference as a 45 r.p.m. record, said disc having a radially innermost portion and a radially outermost portion in concentric relationship therewith, said radially outermost portion coextensive with the sound groove zone of a 45 r.p.m. record, comprising:

a layer of annular sheet stock of magnetic material coextensive with the diameter of said disc, having a centrally disposed aperture adapted to receive the spindle of a record player, said aperture similar to the size of the aperture in a long playing record,

cushioning material secured to the top and bottom of the radially outermost portion, to protect said sound groove zone,

an annular magnetic ring, having an outer circumference slightly less than the circumference of the central aperture of a 45 r.p.m. record, said ring adapted to fit within said central aperture in a close juxtaposition relationship to the circumference of said aperture, wherein the bottom end of said magnetic ring is concentrically mounted with respect to the aperture of the sheet stock, to prevent lateral or longitudinal displacement of the 45 r.p.m. record, said magnetic ring having an inner diameter of approximately 1/2 inch, and having the requisite strength and thickness to secure a 45 r.p.m. record to said protective disc by means of magnetic attraction when the 45 r.p.m. record is placed on said spindle intermediate the top end of said magnetic ring and said protective disc, the thickness of said magnetic ring being greater than the combined thickness of said cushioning material and said 45 r.p.m. record, so that said top end of said magnetic ring is higher than the level of the label area of said 45 r.p.m. record.

3,854,730

CONTROL MECHANISM FOR PHONOGRAPH RECORD PLAYER

Kazuyuki Takizawa, Inzai-machi, Japan, assignor to Sony Corporation, Tokyo, Japan

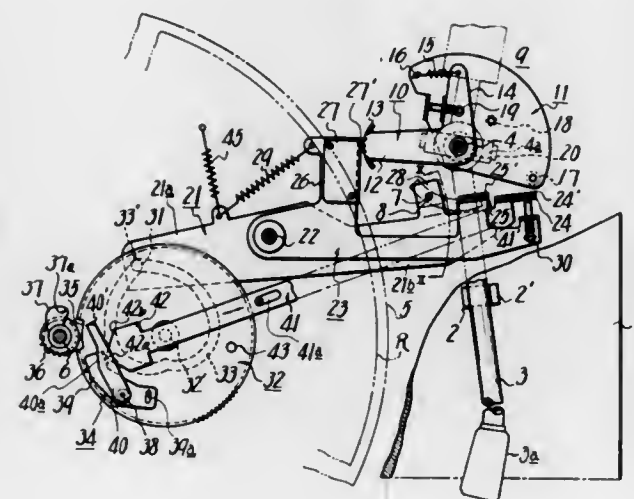
Filed Dec. 18, 1973, Ser. No. 425,831

Claims priority, application Japan, Dec. 29, 1972, 48-556

Int. Cl. G11b 17/06

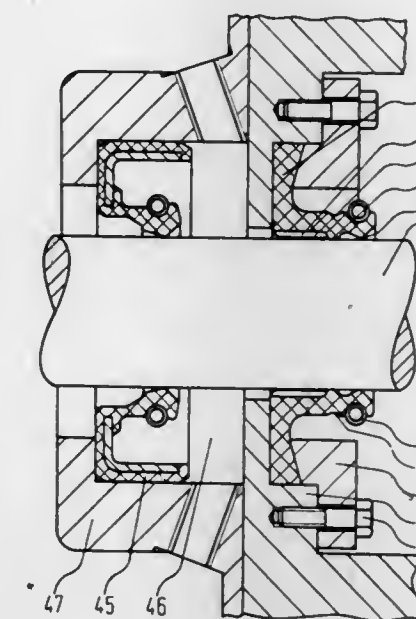
U.S. Cl. 274-15 R

14 Claims



1. In a phonograph record player for use with a phonograph record having a spiral groove with sounds recorded therein leading to a final non-recorded groove portion, and which includes a frame, a turntable rotatable on said frame, a motor operative for driving the turntable, a tone arm assembly hav-

ing a tone arm for carrying a pickup with a stylus to track the groove of a record on said turntable, and means mounting said tone arm on said frame for lateral swinging movement across said turntable and for raising and lowering of the tone arm relative to said turntable between an elevated rest position outside the perimeter of said turntable and an inner position corresponding to the engagement of the pickup stylus in said first non-recorded groove portion of a record; a control mechanism comprising switch means having ON and OFF conditions for rendering said motor operative and inoperative, respectively, switch operating means for establishing said OFF condition of the switch means when said tone arm is initially in said rest position and for establishing said ON condition of the switch means in response to at least a predetermined lateral swinging movement of said tone arm from said rest position, detecting means operative in response to the arrival of said tone arm at said inner position thereof, a rotatable control member rotated from an initial position by said turntable in response to operation of said detecting means, a lever connected with said rotatable control member so as to be turned from a starting position to a displaced position and then returned to said starting position in response to a complete revolution of said control member starting from said initial position, cooperatively engageable means on said lever and tone arm assembly for returning said tone arm to said rest position in response to turning of said lever to said displaced position, and means on said lever for preventing the establishment of said OFF condition of the switch means by said switch operating means when said lever is displaced from said starting position thereof.



3,854,731

FLUID TIGHT SEAL AND METHOD OF MAKING SAME

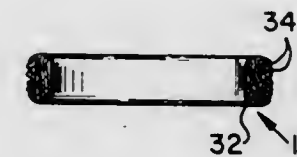
Arthur E. Gealt, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 5, 1973, Ser. No. 329,444

Int. Cl. F16j 15/10

U.S. Cl. 277-26

2 Claims



1. A fluid tight sealing means to seal an opening formed between the outer wall of a cylindrical member that has a low coefficient of thermal expansion and an adjacent annular member that surrounds said cylindrical member that has a substantially higher coefficient of thermal expansion while wide degrees of temperature changes occur in the environment surrounding the sealing means, said sealing means being a ring constructed of a resilient plastic material that has an inner fluid tight sealing wall surface and axial sidewall surfaces which together provide a U-shaped configuration, said inner sealing wall being dimensioned to resiliently engage the outer wall of the cylindrical member, and a wrinkled outer wall surface that is dimensioned to resiliently engage the inner surface of said annular member.

1. A sealing arrangement comprising, in combination, a first member, and a second member surrounded by said first member, one of said members being rotatable relative to the other and said members being lubricated by a flow of lubricating fluid directed at their interface along said one member axially of the same; at least one annular sealing member received between said first and second members and having radially directed sealing edges respectively engaging the same, said sealing member also having oppositely directed axial ends one of which is subject to higher and the other of which is subject to lower ambient fluid pressure, and a circumferential surface provided with engaging portions of a material having low coefficient of friction and high resistance to wear; and a circumferentially extending contact face provided on said circumferential surface of said sealing member at said other axial end in the region of one of said sealing edges, said contact face being of at least approximately cylindrical outline and being in engagement with said one member via an interposed film of said lubricating fluid.

3,854,733

SHAFT SEAL

Roy E. Wilson, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed July 24, 1972, Ser. No. 274,555

Int. Cl. F16j 9/00

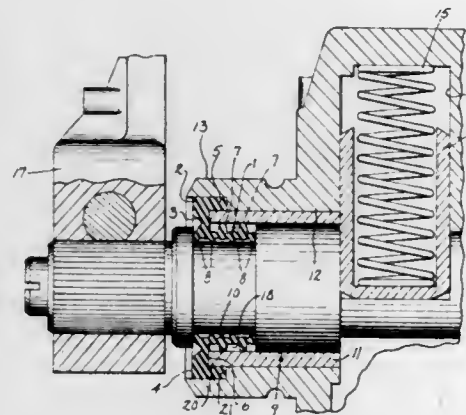
U.S. Cl. 277-82

6 Claims

1. In a seal for a shaft that extends through an opening of a member which presents an axially extending rim, a length of said shaft being smaller in diameter than said opening to have

an annular space for receiving a seal, the combination of:

- a resilient sleeve that encircles said shaft and is disposed in said annular space so as to be encircled in turn by the wall of said opening;
- a plurality of axially spaced annular sealing ribs formed integrally on the interior surface of said sleeve to project radially inward and abut the surface of said shaft;
- a plurality of axially spaced annular pressure ridges formed integrally on the exterior surface of said sleeve that are in an offset axial relation to said sealing ribs, and projecting radially outward from said sleeve to abut against the wall of said opening;



said sleeve with said integral sealing ribs and pressure ridges having a radial depth greater than the radial extent of said annular space when removed from said space, so that upon insertion in said space the ribs and ridges fit firmly against said shaft surface and said opening wall respectively with portions of said sleeve between ribs and ridges held in flexed condition; and

an integral head portion for said sleeve having an annular flange projecting radially outward from one end of said sleeve, which flange has a circumferential lip extending back to overhang said sleeve to form a niche in the head portion, said niche receiving said rim of said member with a snug fit to seal said rim with said head portion.

3,854,734

BEARING SEAL ASSEMBLY

James E. West, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

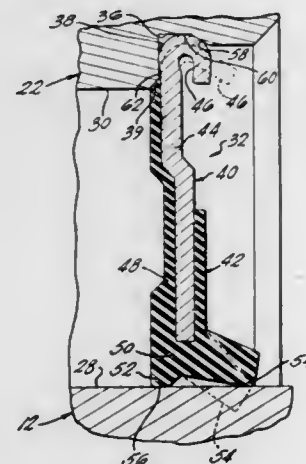
Continuation of Ser. No. 821,663, May 5, 1969, abandoned.

This application Feb. 3, 1971, Ser. No. 112,462

Int. Cl. F16c 1/24

U.S. Cl. 277—170

7 Claims



1. A seal for sealing the space between confronting radially inner and outer cylindrical surfaces of a pair of spaced relatively rotatable members wherein the outer cylindrical surface

has an annular groove, comprising an annular reinforcing element including a shallow cup-shaped ring of metal with a long generally radial flange and with a short generally axial outwardly directed flange defining the outer periphery of the seal and which can be folded in press-fitting engagement into the groove of said outer cylindrical surface, an annular sealing element including a body portion secured to the radial flange of said reinforcing element and projecting radially inward therefrom and a marginal portion projecting radially inward from the body portion and defining at its radially inner extremity axially spaced inner and outer lips, the inner lip extending in a radial direction normal to the axis of the annular sealing element and having in its unstressed condition a continuous cylindrical surface normal to said radial direction for seating on the outer circumference of said inner cylindrical surface, said continuous cylindrical surface being located axially inward of said radial flange, the outer lip being inclined away from the inner lip and terminating axially outward of said radial flange and radially beyond said cylindrical surface of the inner lip so that it can be deflected radially and axially outward to a position providing an interference fit with said radially inner cylindrical surface, said marginal portion having a relatively large cross-section with said inner lip being relatively short and thick with a radially inner wall parallel to said radial flange and said outer lip being relatively long and thick.

3,854,735

STATIC FACE SEAL

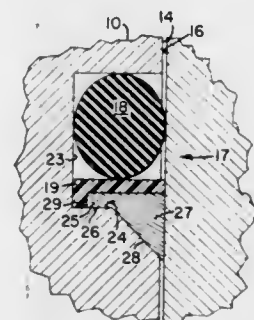
William C. Maurer, and Everett H. Lock, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Oct. 24, 1972, Ser. No. 300,074

Int. Cl. F16j 15/06

U.S. Cl. 277—189

14 Claims



1. A static face seal assembly for sealing the junction of a pair of radially extending surfaces, one of said surfaces having a groove formed therein, said groove being defined in part by an outer axially extending wall having a beveled edge, said static face seal assembly comprising a seal ring disposed in said groove for sealing the clearance gap between said pair of radially extending surfaces; a soft-metal anti-extrusion ring having a first portion which defines an axially extending surface sized to fit in close conformity with said axially extending wall of said groove, and a second portion which defines an outwardly sloping shoulder adapted to engage said beveled edge in said one of said surfaces and the other of said surfaces to prevent extrusion of said seal ring.

3,854,736

DENSIFIED CONVOLUTE GASKET STRUCTURE

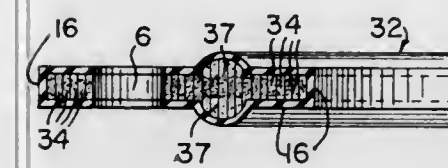
Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co., Lyons, Ill.

Filed Oct. 27, 1972, Ser. No. 301,435

Int. Cl. F10j 15/06

U.S. Cl. 277—204

17 Claims



1. A substantially flat gasket structure for sealing mating parts together in which the gasket structure is interposed between the mating parts and clamping means are provided for drawing the mating parts into sealing engagement with the gasket structure, the improvement wherein said gasket structure has a flat body portion comprising a convolutedly wound annular gasket characterized by alternate discrete layer of a carrier material and a fluid impermeable polymeric material adhered thereto with the polymeric material being cured and of substantially uniform thickness from layer to layer, said body portion throughout substantially the entire extent of the gasket structure being compacted to a substantially uniform density, said gasket structure having one or more apertures spaced inwardly from the peripheral edge thereof, and a coating on the top and bottom surfaces of the gasket structure and on the interior walls of said apertures, said coating comprising a unitary and continuous layer of at least partially cured elastomer-resin formed from a thermosetting mixture of synthetic elastomer and synthetic resin with the mixture curing at a temperature in the range of 325° F and 400° F and having a thickness in the range of .0001 inch and .005 inch, said coating being of lower density than the compacted body portion and highly conformable to surface imperfections in the mating parts.

3,854,737

COMBINATION ROTARY AND RECIPROCATING UNITARY SEALING MECHANISM

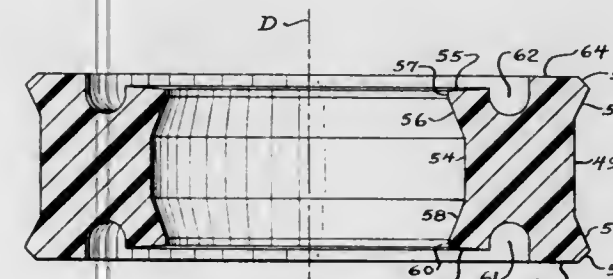
Howard E. Gilliam, Sr., North Tonawanda, N.Y., assignor to Chemprene, Inc., Alden, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,341

Int. Cl. F16j 15/48

U.S. Cl. 277—205

18 Claims



1. A sealing mechanism described in relation to a horizontal plane which intersects said mechanism into upper and lower segments; said upper segment comprising an upper surface; a channel, located in said upper surface and projecting towards said plane; a first wall vertically positioned with respect to said

plane said connected to said upper surface; a second side wall vertically positioned with respect to said plane and connected to a first lip, which lip is connected to said upper surface and comprises an upper face which is attached to said upper surface, a lower face which is attached to said second side wall, which upper and lower faces converge and are attached to a vertically positioned side face; said lower segment comprising a lower surface; a channel, located in said lower surface and projecting towards said plane; a third side wall vertically positioned with respect to said plane and connected to said lower surface and to said first side wall; a fourth side wall vertically positioned with respect to said plane, connected to said second side wall and to a second lip, which lip is connected to said lower surface and comprises an upper face which is attached to said fourth side wall, a lower face which is connected to said lower surface, which upper and lower faces converge and are attached to a vertically positioned side face.

3,854,738

MONOSKI

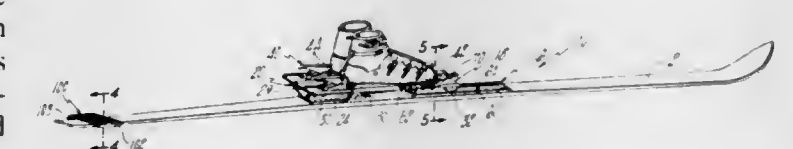
Norman B. Fish, 191 Miller Rd., North Windham, Conn. 06256

Filed May 31, 1973, Ser. No. 365,411

Int. Cl. A63c 5/00

U.S. Cl. 280—11.13 W

11 Claims



1. In a monoski comprising an elongated ski with a lower running surface and a platform assembly with forward and rear platform supports on the ski with upper forward and rear platform sections collectively providing a raised platform above the ski, and upper ski boot binding means for selectively supporting a skier on the raised platform, the improvement wherein the platform assembly comprises platform support mounting means for longitudinally adjusting at least one of the platform supports to adjust the relative spacing of the forward and rear platform supports on the ski between first relatively adjacent positions for supporting a skier with the upper ski boot binding means on the raised platform and second relatively spaced positions for supporting a skier at an alternative lower position below the raised platform and between the forward and rear platform sections, and wherein the monoski comprises lower ski boot binding means for selectively supporting a skier at said alternative lower position between the platform sections.

3,854,739

SKIS WITH STEERING STRINGS

Takashi Toda, Nishinomiya; Katsumi Kimizuka, Nagoya, and Iwao Takahashi, Hyogo, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed July 30, 1973, Ser. No. 383,744

Int. Cl. A63c 5/06

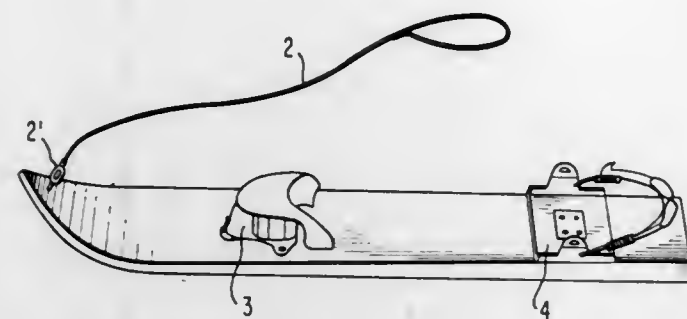
U.S. Cl. 280—11.13 S

5 Claims

1. A ski adapted to support a single foot, said ski having the following characteristics:

- a. an upwardly curved front tip;
- b. an uncurved sliding surface;
- c. a steering string attached to the curved front tip;
- d. a boot heel binding mounted on the ski plate near its tail end so as to place the center of the body weight near the tail end of the ski;

e. overall length which is remarkably shorter than that of conventional skis; and



f. gradually increasing thickness from the front tip to the tail end.

3,854,740

RELEASABLE SKI BINDING PARTIALLY MOUNTED IN A SKI BOOT SOLE

Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch AG, Wengen, Switzerland

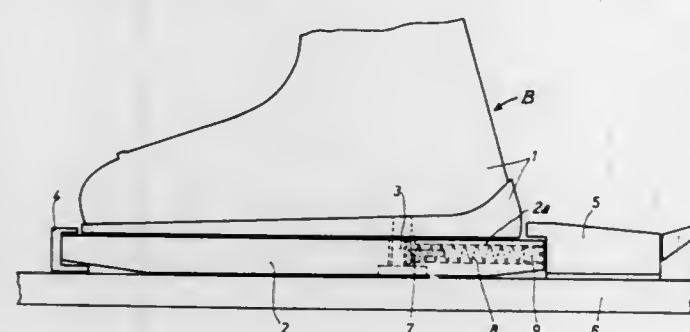
Filed Nov. 27, 1972, Ser. No. 309,927

Claims priority, application Switzerland, Dec. 6, 1971, 17794/71

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 R

6 Claims



1. A releasable binding for skis and partially mounted in the ski boot sole of a ski boot having a ski boot upper and ski boot sole, the improvement comprising said ski boot sole and ski boot upper being connected for rotation with one another, a mechanism for lateral release of the ski boot for retaining the ski boot sole and the ski boot upper against rotation, said lateral release mechanism including a spring-loaded locking mechanism mounted in the ski boot, and a mechanism for the vertical release of the ski boot which is arranged upon the ski, said ski boot upper and said ski boot sole form two parts of the ski boot, said spring-loaded locking mechanism includes pivot means defined by a cam-like member, a cam follower member cooperating with the cam-like member, and said spring biasing said cam follower towards the cam-like member, said cam-like member being carried by one part of said ski boot and said cam follower being carried by another part of said ski boot.

3,854,741

TOE IRON FOR SAFETY SKI BINDINGS

Hannes Marker, Hauptstrasse 51-53, and Roland Jungkind, both of Garmisch-Partenkirchen, Germany, assignors to said Marker, by said Jungkind

Filed Feb. 6, 1973, Ser. No. 329,991

Claims priority, application Germany, Feb. 25, 1972, 2209055

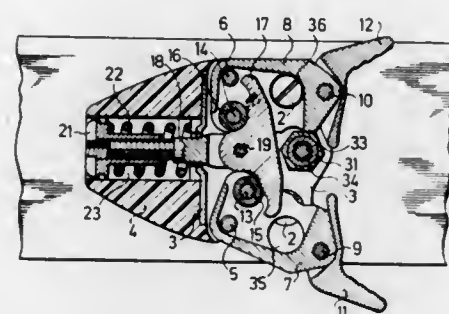
Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T

10 Claims

1. A toe iron for safety ski bindings, the toe iron comprising: a toe iron member adapted to be secured to a ski and having a center line which lies substantially along the longitudinal

center line of an associated ski; first and second levers pivotally mounted at one end on respective vertical axes opposite from one another on respective sides of the center line of the toe iron member; first and second soleholders mounted at the respective free ends of said first and second levers; a bearing member on each of said first and second levers nearer to the center line of said toe iron member than said vertical axes; a



yoke adapted to move relative to the associated ski having first and second guideways for bearing against respective ones of said bearing members; a stop adapted to be fixed relative to the associated ski for limiting the movement of said first and second levers to a predetermined normal position; and spring means for biasing said yoke against said bearing members to thereby urge said first and second levers to pivot into engagement with said stop.

3,854,742

GUIDING AND CENTERING DEVICE FOR SKI-BOOT

Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Annecy, France

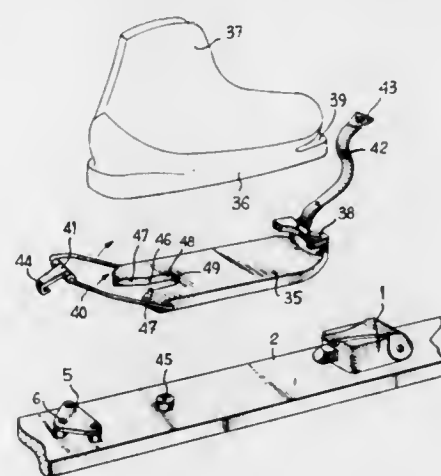
Filed May 2, 1973, Ser. No. 356,353

Claims priority, application France, May 5, 1972, 72.16103

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 Y

15 Claims



1. A device for guiding and centering a boot in relation to a ski, prior to the ski-fitting operation carried out by binding means adapted to fasten the boot firm in position on the ski and to release said boot automatically under predetermined loads, said device comprising: at least two cooperating male and female profiles, one of said profiles being secured to the ski, the other of said profiles being secured to the boot; said female profile extending in the longitudinal direction of the element to which said female profile is secured and including at least one passage defined by two lateral surfaces, said passage running substantially in the longitudinal axis of said element and having at least one end open to receive said male profile, said male and female profiles allowing a longitudinal sliding displacement of said boot on said ski to thereby provide a correct positioning of the boot in relation to the ski before said boot is fastened firm to said ski by said binding means.

3,854,743

SKI BOOT ATTACHMENT FRAME

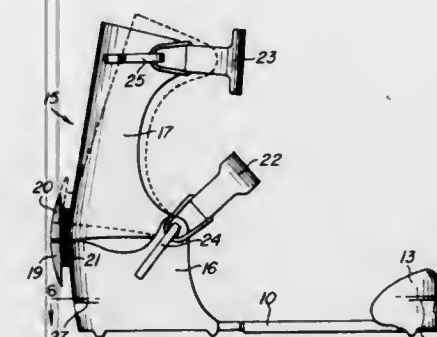
Hans Walter Hansen, 78 College Ave., Ephraim, Utah 84627

Filed Aug. 2, 1973, Ser. No. 385,160

Int. Cl. A43b 3/10

U.S. Cl. 280—11.35 K

5 Claims



1. A device for attaching a soft boot to ski bindings on a ski and for strait-jacketing such soft boot so it simulates a stiff ski boot for skiing purposes, comprising an elongate, rigid, step in base having a front member for securely retaining the toe of the soft boot, and a substantially separate, articulated rear member constituting a heel upper of unstretchable material, said heel upper opening forwardly and including a lower heel portion and an upper ankle portion, means pivotally connecting the two portions for articulation about a horizontal axis, and means yieldable under stress normally interconnecting said portions so as to resist articulation, said heel upper being adapted to close to embrace the upper of a received soft ski boot; means for securing said rear member in closed, constrictive position about said upper of the received soft ski boot; and means on the base for latching cooperation with a ski binding.

3,854,744

SKI SAFETY BINDING

Georges Pierre Joseph Salomon, 34, avenue de Loverchy, Annecy, France

Filed May 31, 1973, Ser. No. 365,639

Claims priority, application Switzerland, June 9, 1972, 8566/72

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 K

5 Claims



1. A ski safety binding for ski boots comprising, a foot-plate for mounting on the upper surface of a ski, spaced front and rear end stops fixed to said ski upper surface and between which said binding is mounted, at least one of said stops including a flexible retaining device, said foot-plate including clamping members for a boot, at least one of said clamping members being adjustable so as to enable the attachment to said ski of a boot of shorter or longer length than the length of said foot-plate, the upper surface of said rear stop disposed substantially flush with the upper surface of said foot-plate to enable one of the ends of a boot longer than the foot-plate to extend beyond it, and a planar extension plate mounted on the rear of said foot-plate and extending the upper surface of the rear end of said foot-plate beyond the rear of said foot-plate and in an overlying manner relative to said rear stop, said extension plate engaging the upper surface of said rear stop and supporting at least a portion of the bottom surface of a heel of a boot to provide a continuous boot supporting member having a substantially planar supporting surface from the

toe to the heel of the boot, said extension plate having a low coefficient of friction relative to said rear stop to facilitate separation as an integral unit of said foot-plate extension plate and boot from said ski upon impact of an unusual force.

3,854,745

SKI CONSTRUCTION, PARTICULARLY FOR CHILDREN

Martin Puchtler, Rangenweg 9, D-8583 Bischofgrun, Germany

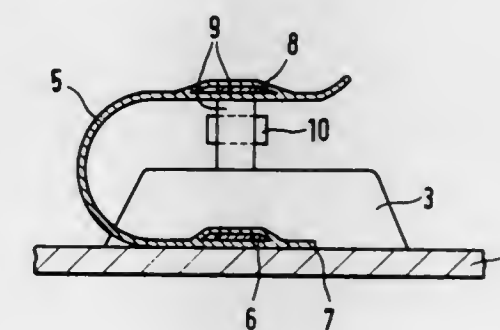
Filed July 30, 1973, Ser. No. 383,473

Claims priority, application Germany, Aug. 2, 1972, 2238047

Int. Cl. A63c 9/04

U.S. Cl. 280—11.35 A

12 Claims



1. In a ski, particularly for children, an elongated ski body having a lower running surface and an upper shoe-engaging surface, heel-holding means situated between the ends of said body and being rigid therewith, said heel-holding means extending upwardly from said upper surface of said body and having a front concave surface directed toward a front end of the ski so that said heel-holding means can receive a heel of the shoe, said heel-holding means including a strap for holding the heel releasably in engagement with the heel-holding means, a pair of side wings situated at least in part forwardly of said heel-holding means at opposite sides of the ski body and being rigid therewith and extending upwardly from the upper surface of said ski body at the opposed side edges thereof, said pair of wings respectively being formed at least with a pair of aligned openings extending through said wings and being substantially flush with the upper surface of said ski body, an elongated sheet-material strip having a width substantially equal to the width of the ski body between said wings thereof, said strip of sheet material having one end region situated next to the upper surface of said ski body between said wings thereof and said strip extending first forwardly then upwardly and then rearwardly over the part of said strip which is situated next to said upper surface between said wings, and strap means engaging said strip and extending therefrom through said openings of said wings and to the portion of said strip which extends rearwardly over the portion situated between said wings next to said upper surface of said ski body for forming together with said strip an enclosure for receiving and covering a front end region of a shoe.

3,854,746

COLLAPSIBLE ICE SHELTER AND SLED

Errol W. Flynn, 9845 84th St. S.E., Alto, Mich. 49302, and Gene E. Mutschler, 1063 Dahlia, Wayland, Mich. 49348

Filed June 1, 1973, Ser. No. 366,185

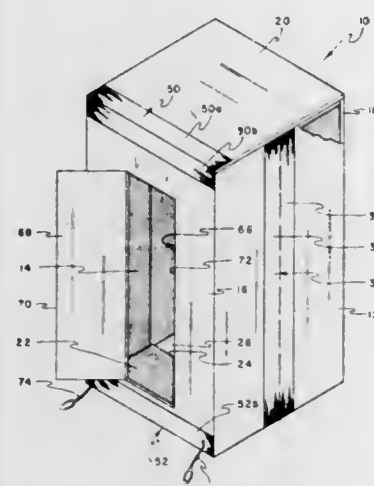
Int. Cl. B62b 13/16

U.S. Cl. 280—12 S

12 Claims

1. A collapsible ice shelter comprising, in combination: first and second pairs of opposed wall panels hingedly connected to each other, said first pair of wall panels having first and second panel portions hingedly connected to each other and to said second pair of wall panels, said first and second panel portions of said first pair of opposed wall panels being foldable between an erected position wherein each of said first and second panel portions lie in the same plane forming said first

pair of opposed wall panels, said first and second pairs of opposed wall panels forming a rectangular enclosure, and a collapsed position wherein said first and second panel portions of said first pair of opposed wall panels are folded relative each other into parallel flush planes intermediate said second pair of opposed wall panels in accordion fashion; a roof and floor panel hingedly connected to one of said second pair of opposed wall panels and foldable relative said one panel between an erected position wherein said roof panel covers the top of said shelter and said floor panel covers at least a portion of the bottom of said shelter when said shelter is upright and said first pair of wall panels are in said erected position, and



a collapsed position wherein said roof and floor panels are in a parallel flush plane with said one panel; one of said wall panels having means defining an access opening into and out of said shelter when erected and a door means hingedly connected to said one panel along one edge of said access opening to close said access opening, the floor of said shanty having means defining a fishing opening therein when erected; and a pair of runners fixed to the outer side of the other of said second pair of opposed wall panels, said other of said second pair of opposed wall panels and runners forming a sled for transporting said shelter when said panels are in collapsed position.

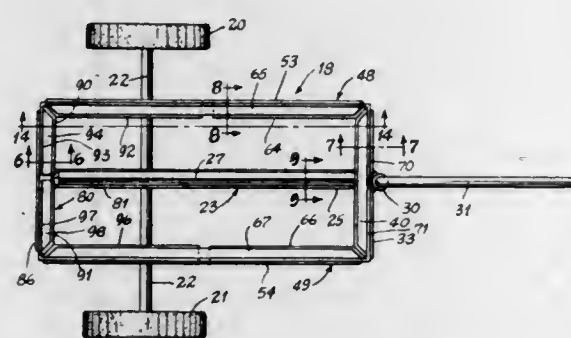
3,854,747

LATERALLY AND LONGITUDINALLY EXTENSIBLE TRUCK

James F. Johnston, P.O. Box, Union, Mo. 63084
Filed Mar. 28, 1974, Ser. No. 455,641
Int. Cl. B62d 21/14

U.S. Cl. 280—34 B

10 Claims

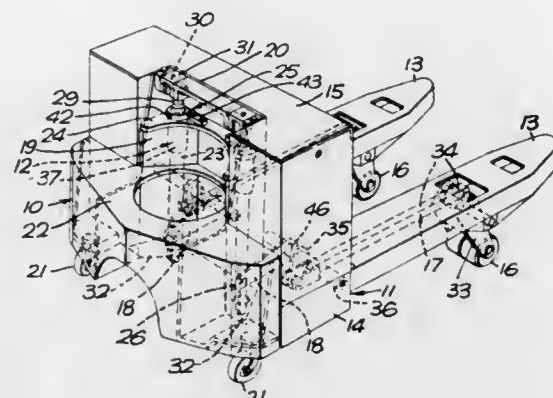


10. In the truck of claim 1: the main frame comprising and elongated spine member, the laterally spaced supporting elements comprising a transverse axle secured to the spine member between its ends, with a wheel at each end; the spine having the second support means at its end and comprising a vertically disposed element engageable with the ground and projecting upwardly, and a handle engageable with the upwardly projecting part of the vertically disposed element.

3,854,748
INDUSTRIAL PALLET AND STILLAGE TRUCKS
Cecil Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Apr. 3, 1973, Ser. No. 347,366
Claims priority, application Great Britain, Apr. 10, 1972, 16485/72

Int. Cl. B62 3/02
U.S. Cl. 280—43.12

6 Claims



1. An industrial pallet or stillage truck comprising a body portion, a load carrying portion mounted for up and down movement relatively to the body portion, two hydraulic rams for raising a root portion of the load carrying portion, and a linkage operated by movement of the root portion relatively to the body portion and including ground engaging members for raising and lowering the end of the load carrying portion remote from the root portion, in unison with the root portion, each ram comprising a standing part connected to the body portion and a movable part connected to the load carrying portion, and the linkage comprising two operative levers each pivotally connected at its fulcrum to said root portion and also being pivotally connected directly to the lower end of said standing part of one of the rams, whereby up and down movement of the root portion imparts pivoting movement to the levers to operate said linkage, and means for mounting the standing part of at least one of said rams to said body portion so that it is adjustable longitudinally with respect to said body portion, whereby longitudinal adjustment of the standing part of said one ram moves the lever connected to that standing part and thereby adjusts the position of the associated ground engaging member with respect to the load carrying portion.

3,854,749

SAFETY BELT

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Mar. 21, 1973, Ser. No. 343,572
Claims priority, application France, Dec. 4, 1972, 72.43077; Mar. 24, 1972, 72.10528

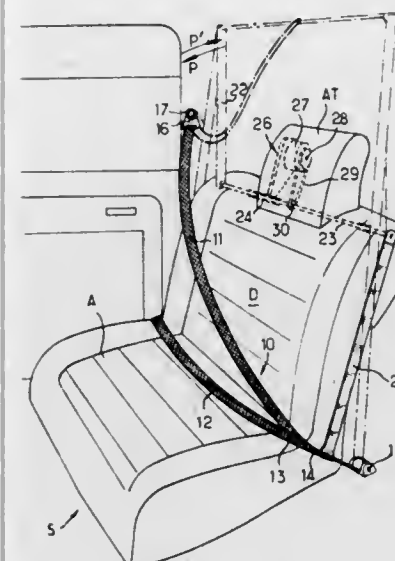
Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

9 Claims

1. Three point safety belt installation particularly for an occupant of a vehicle having a floor and a seat with a seat back, comprising a seat belt, either end thereof being fixedly anchored to respective one of two vertically spaced structural portions of the vehicle on one side of the seat, a common strap, one end thereof being secured to an intermediate portion of said seat belt and the other end thereof being connected to a belt retractor secured to the floor on the other side of the seat, a transverse shaft rotatably mounted in an upper portion of the seat back, a pair of arms movable from a first position wherein said seat belt engages the occupant of the vehicle to a second position wherein said seat belt is removed from the occupant for easy ingress and egress to and from the seat, each of said arms being non-rotatably connected at one end thereof to a respective end of said shaft and having an aperture provided at the other thereof, each said aperture

slidably engaging respective one of said common strap and said seat belt, actuating means operatively connected to said



shaft for rotating said arms between said first and second position.

3,854,750

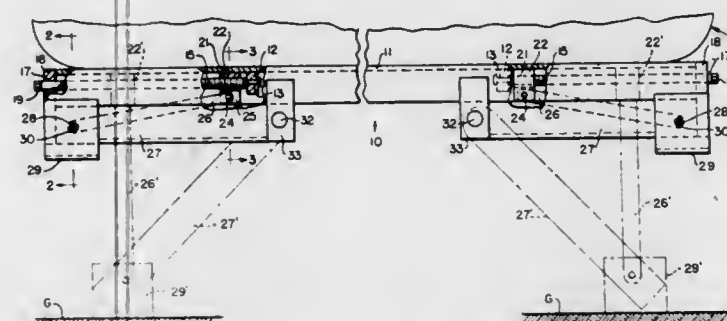
RETRACTABLE SUPPORT FOR MOBILE CAMPERS AND THE LIKE

Carl Voehringer, Jr., 2 Wedger Rd., Spencerport, N.Y. 14559
Filed Jan. 15, 1973, Ser. No. 323,625

Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

2 Claims



1. A device for supporting a parked camper, comprising a beam adapted to be secured beneath a camper to extend transversely between opposite sides thereof, a pair of spaced operating screws, each of which is journaled at opposite ends, respectively, in a channel in said beam for rotation independently of each other about a common axis extending longitudinally of said beam, and each of which has a wrench-engageable head at its outer end, a nut threaded on each of said screws for axial movement in said channel when the associated screw is rotated, a pair of legs mounted on said beam to pivot about fixed parallel axes, extending transversely of said beam, the pivots for the two legs being disposed closer to one another than the inner ends of the two screws, a pair of links, each pivotally connected at one end to one of said nuts and at its opposite end to one of said legs, whereby, upon rotation of a screw in one direction, the associated leg is lowered to supporting position, and, upon rotation of the screw in the opposite direction, the associated leg is retracted.

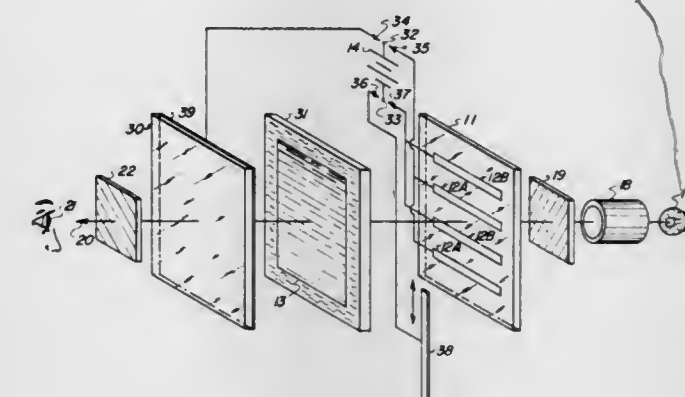
3,854,751
METHOD FOR RAPIDLY SWITCHING A DISPLAY BY SEQUENTIAL APPLICATION OF ORTHOGONAL ELECTRIC FIELDS TO A LIQUID CRYSTAL MATERIAL HAVING OPTICAL PROPERTIES OF THE NEMATIC MESOPHASE

Werner E. L. Haas, Webster, and James E. Adams, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1973, Ser. No. 349,497

Int. Cl. G02f 1/28
U.S. Cl. 350—160 LC

21 Claims



1. An electro-optic method, comprising:
a. providing a layer of liquid crystalline substance having the optical properties of the nematic mesophase optical uniaxial state;
b. applying a first electrical field substantially normal to the optic axis of said substance, wherein the optic axis of said substance is rotated substantially parallel to said first electrical field; and
c. removing said first electrical field and then applying a second electrical field substantially normal to the direction of said first electrical field, wherein the optic axis is rotated substantially parallel to said second electrical field.

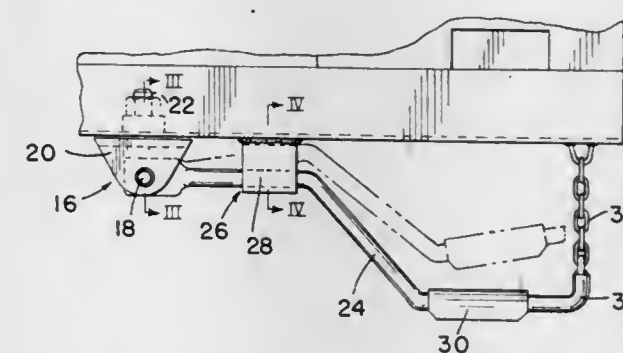
3,854,752

VEHICLE STEP MOUNTING ARRANGEMENT
Walker H. Flint, Peoria, and Gerald R. Haedicke, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 23, 1973, Ser. No. 390,878
Int. Cl. B60r 3/02

U.S. Cl. 280—166

9 Claims



1. In a vehicle having a frame portion which is susceptible to encountering obstacles, step means attached to said framed portion comprising:
a bar member;
pivot means interconnecting one end of the bar member and the frame portion, and allowing the bar member to be pivoted upwardly and downwardly relative to the frame portion;
restraining bracket means fixed relative to the frame portion and associated with the bar member for supporting the bar member in a lower position, the bar member

adopting such lower position by pivoting downwardly relative to the frame portion under its own weight, meanwhile allowing pivoting of the bar member upwardly relative to the frame portion upon the bar member encountering an obstacle tending to pivot the bar member upwardly relative to the frame portion.

3,854,753

DEVICE FOR FIXING A GEAR-CHANGER ON A FRAME OF CYCLES

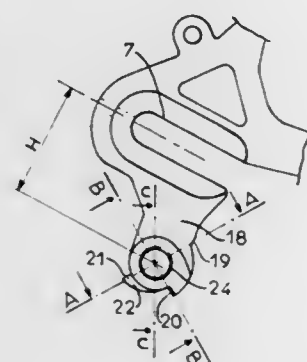
Claude Hautier, Chinois Nantes, France, assignor to Micmo S.A., Machecoul, France

Filed Jan. 8, 1973, Ser. No. 322,023

Int. Cl. B62m 25/00

U.S. Cl. 280—236

4 Claims



1. Bracket means on a cycle frame for supporting any of a plurality of different gear changers for pivotal movement thereon and having stop means for limiting pivoting of the gear changers in one direction;

said bracket means having an opening for pivotally supporting said gear changers; and

a plurality of stop shoulders on said bracket, angularly spaced about said opening and each being positioned to cooperate with the stop means on only one of different gear changers.

3,854,754

ARM PROPELLED CYCLE

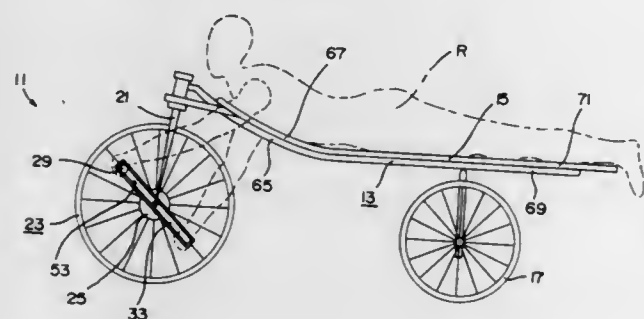
Raymond C. Jablonski, 1879 Coventry Dr., Memphis, Tenn. 38127

Filed Apr. 26, 1974, Ser. No. 464,513

Int. Cl. B62m 1/14

U.S. Cl. 280—242 R

6 Claims



1. An arm propelled cycle for carrying a rider disposed in a prone position thereon, said cycle comprising frame means including an elongated body board for supporting the rider in a prone position, a pair of axially aligned rearward wheels rotatably attached to said frame means, downwardly directed fork means pivotally attached to said frame means for pivotal movement about a substantially vertical axis, forward wheel means having coaster-brake means for rotatably attaching said forward wheel means to the lower end of said fork means; crank means coupled to said coaster-brake means and being operable therewith for selectively propelling said cycle, stopping said cycle, and steering said cycle; said crank means

having a pair of hand-grip members rotatably attached thereto for permitting the rider to manipulate said crank means by grasping said hand-grip members, and slide-bar means established in part by said crank means for enabling one of said hand-grip members to be slidably shifted relative to the other from a drive position wherein said hand-grip members are radially displaced 180° one from the other to a coasting-steering position wherein said hand-grip members are radially aligned one with the other.

3,854,755

COLLAPSIBLE BICYCLE

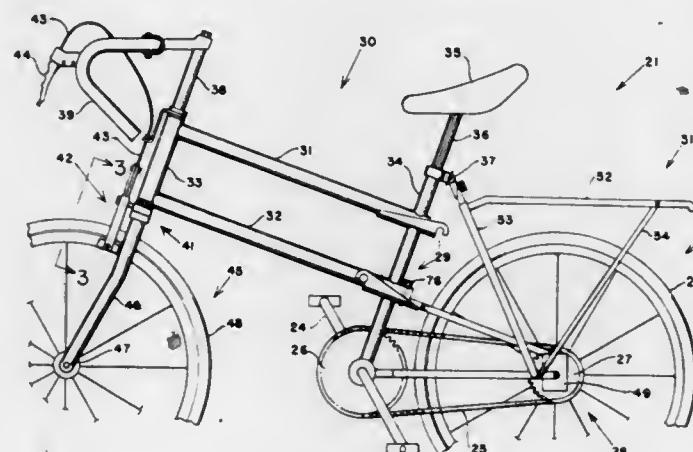
Thomas L. C. Tang, 254 Gorwin Dr., Holliston, Mass. 01496

Filed Apr. 20, 1973, Ser. No. 352,952

Int. Cl. B62k 13/00

U.S. Cl. 280—278

22 Claims



1. A collapsible bicycle comprising:

a rear power module including a rear wheel and pedal means coupled thereto;

an operator control module comprising seat means and steering means;

power module coupling means for detachably coupling said rear power module and said operator control module;

a front wheel module comprising a front wheel and a fork means; and

front wheel coupling means for detachably operatively coupling said fork means to said steering means.

3,854,756

CONDUIT SYSTEM

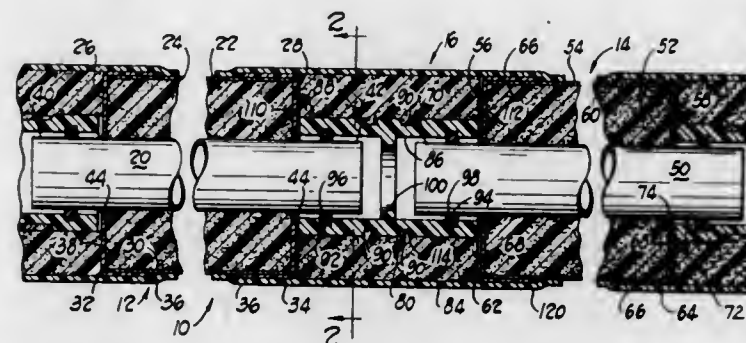
Robert O. Couch, Wadsworth, Ohio, assignor to Ric-Wil, Incorporated, Brecksville, Ohio

Filed Apr. 19, 1973, Ser. No. 352,511

Int. Cl. F16l 11/12

U.S. Cl. 285—47

11 Claims



1. In a conduit system wherein a plurality of insulated conduit units are laid end to end and adjacent ends of the conduit units are joined and sealed;

a. a first conduit unit comprising a length of pipe, a body of insulating material extending circumferentially about said pipe and axially along said pipe, a sleeve-like jacket extending circumferentially about said body of insulating material, said pipe defining end portions extending a predetermined distance axially from said body of insulating material and sealing means extending circumferen-

tially between the pipe and the jacket for sealing said body of insulating material;

b. a second conduit unit comprising a second length of pipe, a second body of insulating material extending circumferentially about said pipe and axially along said pipe, a second sleeve-like jacket extending circumferentially about said body of insulating material, said second pipe defining end portions extending a predetermined distance axially from said second body of insulating material; and second sealing means extending circumferentially between the second pipe and second jacket for sealing a jacket portion at each axial end of said second body of insulating material; and,

c. a coupling unit interposed between said first and second conduit units, said coupling unit comprising a tubular body member defining an axial opening extending therethrough for slidably receiving adjacent end portions of said first and second pipes, said adjacent end portions of said first and second pipes being spaced apart and unconnected within said tubular member, first and second seals axially spaced from each other along said tubular body and extending between said tubular body and said first and second pipes, respectively, said first and second seals providing a fluid tight seal between said tubular body and said pipes while permitting said adjacent end portions of said pipes to move endwise within said tubular body, a third body of insulating material extending about said tubular body and interlocked with said tubular body whereby said tubular body and said third body of insulating material are fixed against movement relative to each other, and insulation protecting means extending at least circumferentially about said third body of insulating material, at least one of said tubular body and said third body of insulating material having an axial length which is greater than the combined projecting lengths of said adjacent end portions of said first and second pipes whereby said first and second pipes are free to thermally expand and contract axially relative to said coupling unit.

3,854,757

COUPLING FOR PIPE-LIKE COMPONENTS

Ivan Charles McOran-Campbell, Salisbury, Rhodesia, assignor to Turners Asbestos Products (Private) Limited, Salisbury, Rhodesia

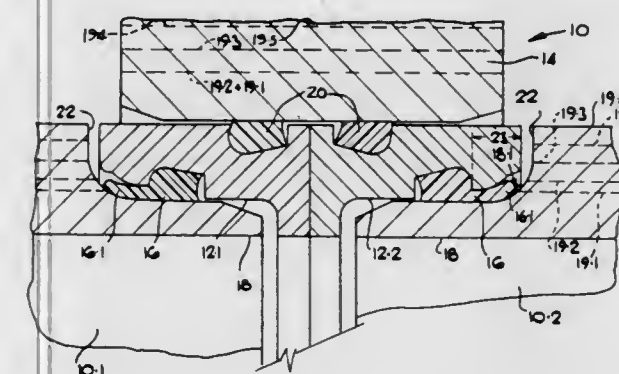
Filed July 6, 1972, Ser. No. 269,297

Claims priority, application Rhodesia, July 8, 1971, 262

Int. Cl. F16l 17/00

U.S. Cl. 285—100

12 Claims



1. A coupling for connecting two hollow members which, in use, are internally pressurized, each member having a coupling spigot of lesser outside diameter than the outside diameter of the adjoining part of the member so that a shoulder is defined between each spigot and the adjoining part; an axially movable annular piston surrounding each spigot; surfaces on said members for limiting the distance through which the pistons can move in the direction away from one another; an annular collar surrounding the pistons; a collar seal sealing between each piston and the collar, the collar seals being located in grooves and the axial length of the collar being

greater than the spacing between the collar seals when the pistons are at their maximum separation; and a spigot seal sealing between each piston and its spigot, the collar and pistons and seals defining a chamber which extends around the spigots and which is in communication with the interior of the spigots, the arrangement being such that, in use, the pressure in said chamber tends to force the pistons apart towards their respective shoulders, and both the insides and outsides of the spigots are subjected to the pressure within said members thereby to minimise the risk of the spigots bursting.

3,854,758

FLEXIBLE EXPANSION JOINT HAVING MEANS FOR LIMITING LATERAL MOVEMENT

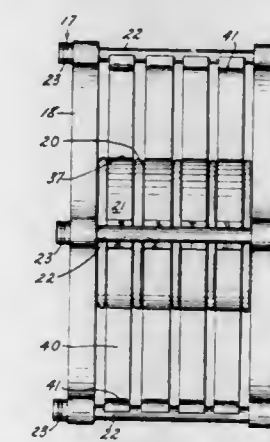
Douglas R. Lewis, Summit, N.J., assignor to Ethylene Corporation, Murray Hill, N.J.

Filed May 4, 1973, Ser. No. 357,328

Int. Cl. F16l 13/04

U.S. Cl. 285—114

3 Claims



1. In a flexible joint coupling for use in interconnecting a pair of rigid conduits and including first and second flange elements connected to a bellows-type flexible conduit element having means surrounding the same limiting radial expansion thereof under internal pressure, the improvement comprising: said flange elements each having a plurality of outwardly extending ears, each ear having a centrally disposed bore therethrough, a corresponding plurality of axially extending rods, each slidably interconnecting on each end thereof a bore in an ear on each of said flange elements, and means on said rods preventing disengagement of said flange elements from said rods; said means limiting radial expansion including a plurality of rigid bands surrounding portions of said flexible conduit element, each of said rigid bands having a plurality of outwardly extending members, the outer ends thereof having means slidably engaging medially disposed surfaces of said rods; whereby said first and second flange elements may slide axially on said rods as said flexible conduit element contracts, expands, and adapts to misalignment, and the outer ends of said outwardly extending members on said rigid bands slidably engage said rods preventing substantial lateral shifting or displacement of the flexible conduit element.

3,854,759

APPARATUS FOR INTERCONNECTING A HYDRANT AND A RISER

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed Mar. 27, 1973, Ser. No. 345,283

Int. Cl. F16l 33/00, 47/00

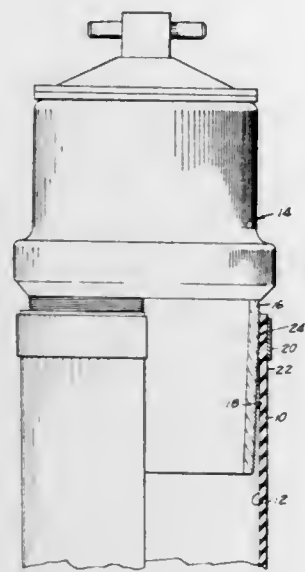
U.S. Cl. 285—251

5 Claims

1. Apparatus for interconnecting a hydrant with an unthreaded riser pipe fixed in a vertical position for conducting fluids therethrough comprising:

a tubular body portion fixed relative to and communicating with the hydrant and extending inwardly of the riser pipe, and defining an outer threaded surface tapered down-

wardly and inwardly of the riser pipe and in threaded engagement with the inner surface of the riser pipe, the diameter of the inwardly extending end of the body portion being smaller than the inner diameter of the riser pipe and the diameter of the body portion toward the hydrant being greater than the inner diameter of the riser pipe; and



means disposed about the riser pipe in the area of engagement of the inner surface of the riser pipe with the tapered outer surface of the tubular body portion to limit outward movement to a predetermined amount of the riser pipe in relation to the tubular body portion, and to provide substantially sealing relation of the inner surface of the riser pipe and the tapered outer surface of the tubular body portion.

3,854,760

JOINT FOR OIL WELL DRILLING PIPE

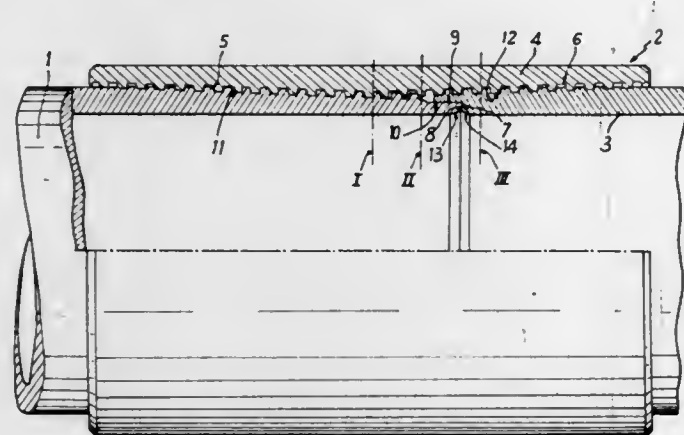
Jean Duret, Aulnoye-Aymeries, France, assignor to Societe anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France

Filed Feb. 22, 1973, Ser. No. 334,944

Claims priority, application France, Feb. 25, 1972, 72.6471
Int. Cl. F16I 25/00

U.S. Cl. 285-334

11 Claims



1. In a joint for connecting metallic pipe sections comprising
 - a male member provided with a thread formed on a frusto-conical outer surface, and
 - a female member provided with a mating thread formed on a frusto-conical inner surface of said female member, said female member having a shoulder positioned at the inner end of the threads thereon, which shoulder limits the penetration of said male member into said female mem-

ber due to the abutment of the end of said male member against said shoulder, and which shoulder is provided with an annular groove defined by a frusto-conical inner surface which inclines inwardly of said female member as it approaches the tip of said shoulder, and an outer surface encircling said inner surface,

said male member having a lateral surface adjacent the inner end thereof which is spaced by a first lateral clearance from the encircling portion of said female member, the improvement according to which:

said female member is a composite member comprising a sleeve and a false male member, said sleeve being provided with two female threads positioned on frusto-conical surfaces, each of which is inclined outwardly as it approaches one of the two ends of the sleeve, one of which female threads is the thread mating with said male member and separately receives said male member, while the other female thread permanently grips mating threads on said false male member, said shoulder being formed at the end of said false male member and a second lateral clearance being provided between the shoulder-carrying end of said false male member and the part of said threaded sleeve encircling it.

3,854,761

SEALING ARRANGEMENT

Walfried David, Maxdorf, Germany, assignor to Bopp & Reuther GmbH, Mannheim, Germany

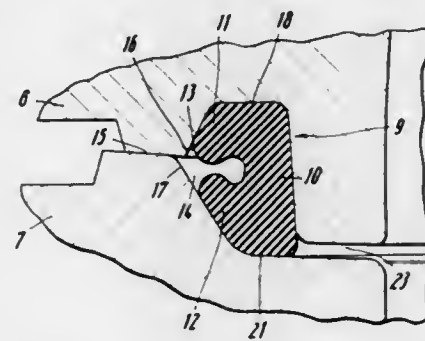
Filed Jan. 8, 1973, Ser. No. 322,093

Claims priority, application Germany, Jan. 11, 1972, 2201131

Int. Cl. F16I 23/00

U.S. Cl. 285-336

3 Claims



1. A sealing arrangement comprising two components each having a flange portion with a surface juxtaposed with a surface of the respective other flange; a first annular recess in one of said surfaces and being bounded by a first annular bottom face and at its radially outer side by an outwardly inclined first annular surface portion; a second annular recess in the other of said surfaces and being bounded by a second annular bottom face and at its radially outer side by an outwardly inclined second annular surface portion, and at its radially inner side by an annular bead projecting beyond the general plane of said other surface toward said first annular bottom face, said recesses together defining an annular space when said components are connected with one another in sealing relationship in which the surface of one flange abuts against the surface of the other flange and said bead extends into said first recess and is slightly spaced from said first annular bottom face and an annular sealing ring of elastomeric material embracing said annular bead under tension, the outer surface of said bead engaging and supporting said sealing ring throughout approximately its entire axial length, said sealing ring being in axial section of substantially strip-shaped configuration and having two axially spaced radially outwardly directed annular ridges each of which contacts one of said annular surface portions and the annular bottom face associated therewith, means to secure the components together, said sealing ring being compressed in axial direction when said components are connected in said sealing relationship without, however, completely filling said annular space, and said annular ridges being

deflected toward one another in said axial direction by their contact with the respective surface portion and bottom faces.

3,854,762

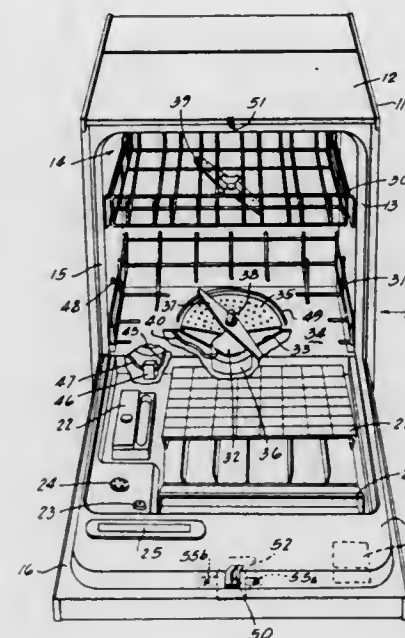
ROTARY HANDLE DOOR LATCH FOR DISHWASHERS
Ray W. Spiegel, Stevensville; Chester W. Wassilak, Benton Harbor, and Adolph D. Corn, Stevensville, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1973, Ser. No. 385,051

Int. Cl. E05c 3/06

U.S. Cl. 292-197

17 Claims



1. In a dishwasher having means for defining an opening, and a closure for selectively closing said opening, latching means for holding said closure in a position sealing said opening, said latching means comprising:
 - a strike defining an edge portion of said opening;
 - a bolt having a surface means for contacting said strike, said bolt mounted on the closure for pivotal movement of said surface means in a first plane to draw the closure into a sealing position in the opening and to release the closure from the sealing position, and said bolt being deflectable for movement of said surface means in a second plane to move the bolt into and out of alignment for engagement with the strike; and
 - an operating lever interconnected to said bolt and being rotatable through a given arc, said lever pivoting said bolt in said first plane during rotation in one portion of the arc and deflecting said bolt in the second plane during rotation in the remaining portion of the arc so that rotation of the lever in one direction through the arc releases the closure from the sealing position and then disengages the bolt from the strike to allow moving the closure away from the opening and rotation in the opposite direction causes the bolt after alignment with the strike to draw the closure into the sealing position.

3,854,763

ELECTRICAL AND MECHANICAL DOGGING DEVICE
George Z. Zawadzki, and Maksimiljan Godec, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed July 18, 1973, Ser. No. 380,504

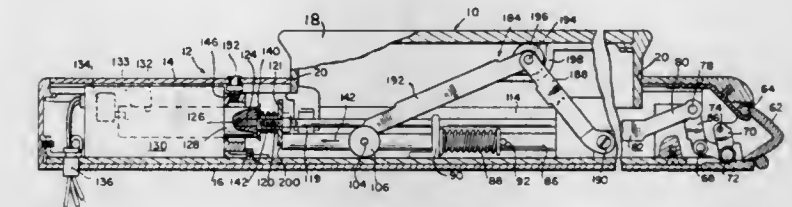
Int. Cl. E05c 3/06

U.S. Cl. 292-201

11 Claims

1. A panic exit latch and actuator assembly comprising a latch bolt movable between a projected position and a retracted position, spring means yieldably urging said bolt to its projected position, an actuator element, means supporting said actuator element for movement between a first position and a second position, first means providing an operative connection between said actuator element and said latch bolt to move said latch bolt to its retracted position in response to movement of said actuator element from its first position to its

second position, a panic bar for moving said actuator element from its first position to its second position, a control member movable between a first position and a second position, said control member being operatively connected to said latch bolt to move said latch bolt to its retracted position in response to movement of said control member from its first position to its second position, said first connection means including a lost-motion connection permitting movement of said latch bolt to its retracted position by said control member without moving said actuator element from its first position to its second position, and solenoid means for moving said control member



from its first position to its second position, said solenoid means including an armature movable between a projected position corresponding to the first position of said control member and a retracted position corresponding to the second position of said control member, means providing a connection between said armature and control member, and field coil means through which current flows to retract said armature and hold it in its retracted position, said solenoid means being electro-magnetically arranged such that it requires significantly less current to hold said armature in its retracted position against the urging of said spring means than to retract it against such urging.

3,854,764

SAFETY LOCK

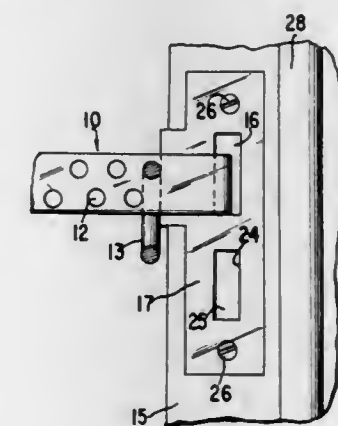
John D. Corrigan, 148 E. 48th St., New York, N.Y. 10017

Filed Nov. 1, 1973, Ser. No. 411,835

Int. Cl. E05c 19/18

U.S. Cl. 292-289

8 Claims



1. In a readily installable and removable safety lock device for locking in closed position a closure for an opening in a frame which closure when in place so as to close said opening is received within said opening with a margin of said closure in proximate abutting spaced relation with respect to a surface of said frame, said device comprising an elongated plate having at least a portion thereof at and adjacent one end of said plate that is sufficiently thin to permit said portion of said plate to be disposed between said surface of said frame and said margin of said closure when said closure is in position to close said opening, the length of said plate being such that when said portion of said plate is disposed as aforesaid and with the longitudinal extent of said plate disposed substantially normally with respect to the plane of said closure the other end of said plate is clear of said frame and said margin of said closure leaving a substantial portion of said plate exposed, a holding hook adjacent said one end of said plate and integral therewith which is adapted to project into a recess in said surface of said frame and which when so positioned is adapted

to hold said plate against withdrawal of said plate when said closure is in position to close said opening, said plate having at least one aperture in the portion of said plate that is exposed as aforesaid when said closure is in closed position and a stop member which passes through said aperture and protrudes laterally substantially from said plate so as to obstruct said margin of said closure and prevent removal of said closure from closed position with respect to said frame, the improvement according to which said stop member is in the form of a ring having an opening therein defined by ring ends which are separated from each other so as to clear said plate in close proximity thereto for permitting said ring to be readily moved into position for its passage through said aperture, said ring ends being substantially parallel to the respective surfaces of said plate when said plate is inserted therebetween and being offset so as to be in substantial non-alignment with each other.

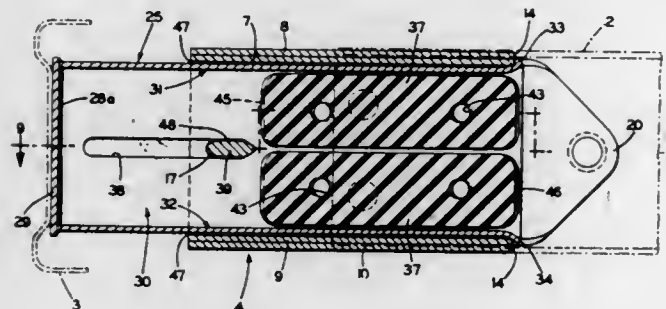
3,854,765

HEAVY-DUTY VEHICLE BUMPER MOUNT CONSTRUCTION

Herman S. Church, Cuyahoga Falls; James L. Hagener, Canton, and Zach M. Scifres, III, Hartville, all of Ohio, assignors to Teledyne Mid-America Corporation, Hartville, Ohio
Filed Apr. 26, 1973, Ser. No. 354,485
Int. Cl. B60r 19/06

U.S. Cl. 293-88

4 Claims



1. In vehicle energy absorbing bumper mount construction of a type including an elongated housing having top and bottom walls and opposite side walls and open at front and rear ends, an elongated beam of generally H-shaped cross section located within the housing, and having a web portion spaced between the opposite housing side walls, and top and bottom flanges spaced closely adjacent to the housing top and bottom walls respectively, a front portion of the H-beam extending outward from the housing interior from the front open end of the housing, the rear end of the H-beam being located adjacent to the rear open end of the housing, and energy absorbing elastic members bonded to opposite surfaces of the web portion and connected to the housing side walls to hold the H-beam within the housing; the combination of the housing top and bottom walls having rear edges which form part of the housing open rear end; ramp formations being formed on the rear end of at least one of the H-beam top and bottom flanges; longitudinally extending slot means formed in the H-beam web portion; anti-pull-out pin means mounted on and extending transversely between the housing side walls and through said slot means preventing the H-beam from being pulled out of the front end of the housing; and the elastic members being prestressed to hold the pin means engaged with the beam web at the rear end of the slot means, and to hold the ramp formations in contact against the housing top and bottom wall rear edges located adjacent said ramp formations to prevent rattle between the H-beam and housing when the H-beam is in usual no-load condition.

3,854,766

LOG GRAPPLE DEVICE

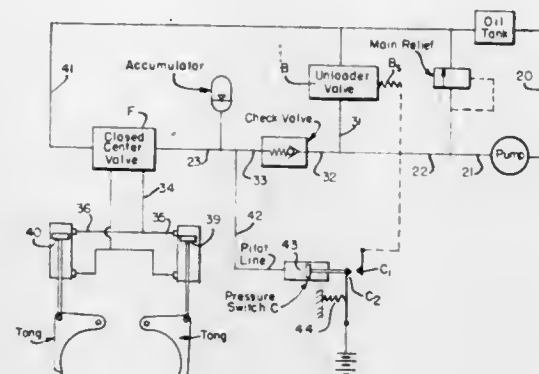
Bertram L. Jordan, Lewiston, N.C. 27849

Filed Apr. 13, 1973, Ser. No. 350,878

Int. Cl. B66c 3/16

U.S. Cl. 294-88

2 Claims



1. A log grapple mounted on a vehicle, said log grapple comprising two tongs that are mounted on said vehicle so as to be movable toward and away from each other, at least one hydraulic cylinder for moving said tongs toward and away from each other, a hydraulic circuit including a hydraulic pump for supplying hydraulic power to said at least one hydraulic cylinder, said hydraulic circuit including:

- an unloader valve means for unloading the hydraulic pump after the tongs have initially obtained a firm grip on a group of logs,
- means for thereafter sensing any pressure drop in said at least one cylinder that may be due to a slippage or shifting of the logs within the grasp of the grapple,
- means for automatically and substantially instantaneously restoring the pressure in said at least one hydraulic cylinder to the pressure which existed in said at least one hydraulic cylinder at the time that it attained its initial firm grip on said group of logs.

3,854,767

ROPE ASSEMBLY

Ralph G. Burnett, Kenosha, Wis., assignor to Burnett Company Ltd., Kenosha, Wis.

Filed Aug. 31, 1973, Ser. No. 393,499

Int. Cl. B66c 1/12; F16g 1/100

U.S. Cl. 294-74

8 Claims



1. A rope assembly which comprises a flexible, hollow, braided rope and a rope end portion inserted into the center of the hollow rope along the longitudinal axis of the hollow rope, the rope end portion being partially retained in the

center of the hollow rope against pullout by the rope braids of the hollow rope gripping the rope end portion within the hollow rope when tension is applied to the hollow rope, and a retaining ring rigidly affixed to a portion of the rope within the hollow rope, said retaining ring comprising retention means for rigidly engaging the ring and rope end portion and barb means for internally engaging the braids of the hollow rope when the rope end portion is pulled relative to the hollow rope to prevent pullout, said retention means comprising first barbs extending inwardly from each end of the retaining ring and said barb means comprising second barbs extending outwardly from one end of the retaining ring.

3,854,768

PIPE PULLING DEVICE

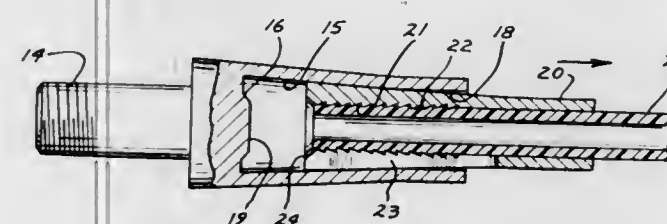
Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343

Filed Jan. 2, 1974, Ser. No. 430,204

Int. Cl. B66c 1/48

U.S. Cl. 294-102 R

3 Claims



1. A pipe pulling device having in combination a housing having a closed end, a holding means extending from said closed end, said housing having a bore therein extending from the closed end thereof and tapering in the direction of the open other end of said housing, a tapered boss projecting into said bore from the closed end thereof, a tubular holding member disposed in said bore and extending outwardly thereof, said holding member having a plurality of elongated slots therein spaced about the portion thereof disposed within said bore, said holding member having a bore having non-smooth inner surface, and said boss being received within the adjacent slotted end portion of said holding member within said bore thereof, said boss having a diameter such as to spread said adjacent end of said last-mentioned bore.

3,854,769

DRAG REDUCER FOR LAND VEHICLES

Walter Selden Saunders, Rt. No. 1, Box 0155, Dillwyn, Va. 23936

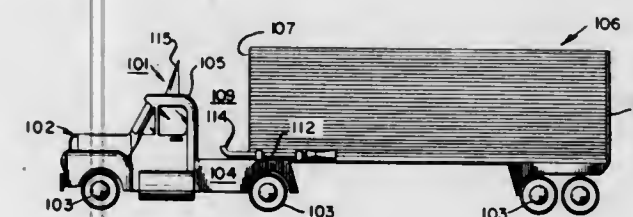
Division of Ser. No. 873,234, Nov. 3, 1969, Pat. No. 3,697,120.

This application Aug. 25, 1972, Ser. No. 283,774

Int. Cl. B62d 35/00

U.S. Cl. 296-1 S

3 Claims



1. A vehicle having a gap formed by a first set of facing sides oriented perpendicular to the line of motion of the vehicle defined by a leading panel of a trailing element of said vehicle and a trailing panel of a leading element of said vehicle, and a second set of facing sides defined by slip streams along the line of motion of the vehicle; drag reducing apparatus comprising a fluid conduit for stabilizing a vortex, the periphery of

which is defined by a portion of said first set of facing sides and said slip stream along at least one of said second sets of facing sides when the vehicle is moving through a fluid, one end of said conduit adapted to be located in the center of said vortex and the other end of said conduit adapted to be located in the slip stream alongside the vehicle facing towards the rear of the vehicle.

3,854,770

TRUCK COVER

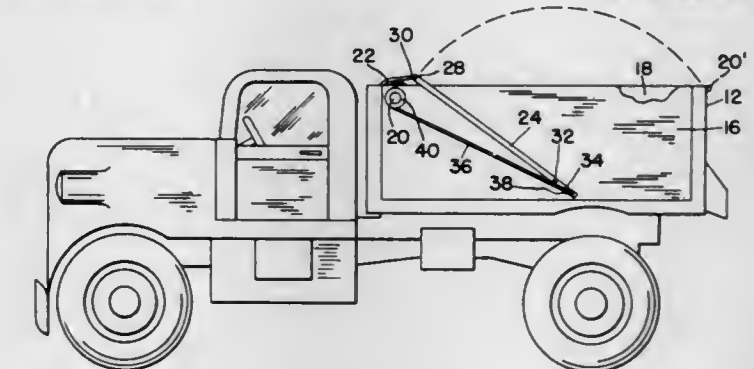
Frederick G. J. Grise, East Falmouth, and Walter Lovell, North Wilbraham, both of Mass., assignors to Pioneer Coveralls, Inc., North Oxford, Mass.

Filed Nov. 20, 1972, Ser. No. 308,255

Int. Cl. B60p 7/02

U.S. Cl. 296-98

10 Claims



1. The combination with a container having a bottom, side and end walls and an open top, and a cover therefor, a rotary shaft extending transversely of said container adjacent an end thereof, the cover being rolled about said shaft and having leading end, means to turn the shaft in both directions, a bow, said bow including a pair of side members, means pivoting the side members on an axis intermediate the ends thereof to the side walls of the container, said bow including a cross member parallel to the shaft, the leading end of the cover on the shaft being connected to said cross member, a cable having an end connected to wrap on said shaft, at least one of said bow side members including an extension beyond the pivot axis, the pivot axis being intermediate the ends of the arm of the bow, the other end of the cable being connected to the extending end of said bow side member, rotation of the shaft in one direction tensioning the cable and pivoting the bow in one direction extending the cover over the truck body, rotation of said shaft in the opposite direction drawing the bow back and wrapping the cover onto the shaft.

3,854,771

COVER FOR TRAILERS

Robert DuWayne Anderson, Murdock, Minn., assignor to TCI, Inc., Benson, Minn.

Filed Nov. 13, 1972, Ser. No. 305,840

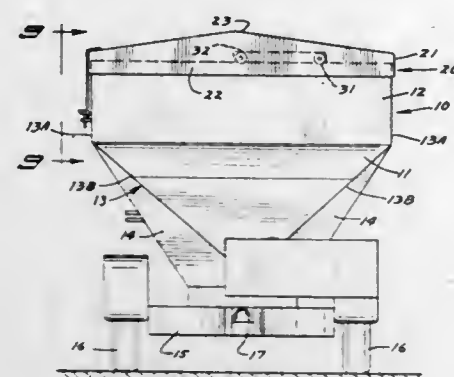
Int. Cl. B60j 7/02

U.S. Cl. 296-137 B

14 Claims

1. A removable cover for an open topped storage box having upright walls that are spaced apart, comprising carriage means, track means on the upright walls to mount said carriage means for substantially planar movement transverse to the storage box and along the top of said box, a unitary, one piece cover member, means to pivotally mount said cover member to said carriage means about a single pivotal axis, said track means mounting said carriage means permitting movement of said cover member and carriage means in a transverse direction to position wherein the means to pivotally mount said cover member to said carriage means is positioned with respect to one lateral side wall of said box so that the pivotal axis is adjacent the top of the box and along said one lateral side thereof to permit said cover member to tilt about said

pivotal axis into a substantially vertical position along said one lateral side of said box and on the outside thereof with por-



rest has free sliding adjustment relative to the support member when said cam locking surfaces are out of contact with said support member slot side walls, means for selectively pivoting said cam lock member about said axis relative to said housing, and means for guiding the movement of said housing longitudinally of said slot when said cam locking surfaces are free of binding engagement with said slot side walls.

3,854,773

BEDSIDE COMMODE DEVICE

Morton I. Thomas, Monroe, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed June 21, 1973, Ser. No. 372,347

Int. Cl. B60n 1/06; A47k 11/04

U.S. Cl. 297-417

2 Claims

tions of the cover member extending to a height above the top of the box and other portions of the cover member extending below the top of the box.

3,854,772

BACKREST HEIGHT ADJUSTMENT DEVICE FOR OFFICE FURNITURE CHAIRS

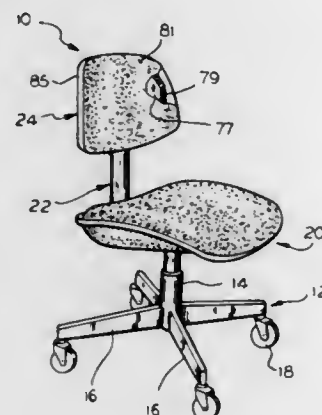
Dean W. Abrahamson, Aurora, and James W. Lannert, Oswego, both of Ill., assignors to All-Steel Inc., Aurora, Ill.

Filed May 25, 1973, Ser. No. 364,101

Int. Cl. A47c 1/00

U.S. Cl. 297-353

8 Claims



1. In a backrest for office chairs including a support member having its lower end adapted for securement to the chair and a backrest mounted on the upper end of the support member, a device for adjusting the backrest vertically of said support member, said device comprising:

a housing positioned on said support member adjacent the upper end thereof for movement vertically thereof and having the backrest secured thereto, said support member upper end having an elongated slot formed therein, said slot extending longitudinally of said support member and being rectilinear in longitudinal configuration, said slot defining spaced parallel sidewalls extending longitudinally of said support member, and a cam lock member journaled in said housing, said cam lock member being journaled for pivotal movement about an axis extending transversely of said support member and said slot and defining a cam lock portion concentric with said axis and received in said slot, said cam lock portion defining a pair of oppositely disposed cam locking surfaces proportioned transversely of said axis to have equal but opposite binding engagement with said slot side walls within said slot when in contact therewith at points lying on radii extending from said axis that make an angle with the horizontal having a tangent that is less than the coefficient of static friction between said cam lock portion and said slot side walls, said cam locking surfaces being separated by opposed cam surfaces proportioned transversely of said axis to have slip fit relation with said slot side walls whereby the back-

1. A bedside commode device for use adjacent either side of a bed, said device comprising frame means, said frame means comprising a front pair of laterally related and vertically disposed tubular members, a rear pair of laterally related and vertically disposed tubular members, a front inverted U shaped member having a horizontal portion and short depending arm portions interconnecting upper end portions of said front pair of tubular members, a second inverted U shaped member having a horizontal portion and short depending arm portions interconnecting upper end portions of said rear pair of tubular members, seat means mounted on the horizontal portions of said inverted U shaped members, and a pair of laterally spaced side arm support means, each of said side arm means comprising an inverted U shaped member having a horizontal support portion and long depending arm portions, the lower ends of said long arm portions being telescopically mounted in the upper ends of said associated vertically disposed tubular members for raised and lowered movement relative thereto, and latch means for holding said side arm means in a given slidable position, whereby the side arm means immediately adjacent a side of said bed may be independently lowered to a position allowing the occupant of the bed to move laterally between the bed and the seat means while the other side arm means may be maintained in its raised position.

3,854,774

SWING-AWAY FOOTREST FOR INVALID WHEELCHAIRS

Paul D. Limpach, Napoleon, Ohio, assignor to Gendron-Diemer, Inc., Archbold, Ohio

Filed Aug. 6, 1973, Ser. No. 386,043

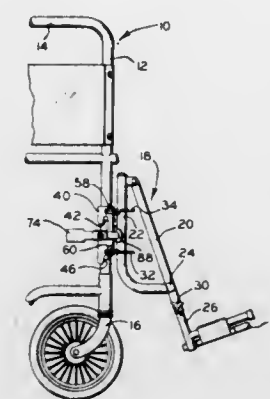
Int. Cl. A47c 7/50

U.S. Cl. 297-429

5 Claims

1. A latching mechanism for releasable locking a swinging footrest assembly to an adjacent part of a wheelchair upon which the footrest is pivotally supported to swing about a vertical axis comprising:

a plunger affixed to said part normally biased to a latching position, said plunger mounted to reciprocate along an axis;



a washer-like means affixed to said footrest for selective engagement with said plunger; and lever means pivotally mounted on said part for reciprocating said plunger out of latching position.

3,854,775

MINERAL MINING MACHINE STEERING MEANS

Forrest Symington Anderson, Carlisle, Scotland, assignor to Anderson Mavor Limited, Motherwell, Lanarkshire, Scotland

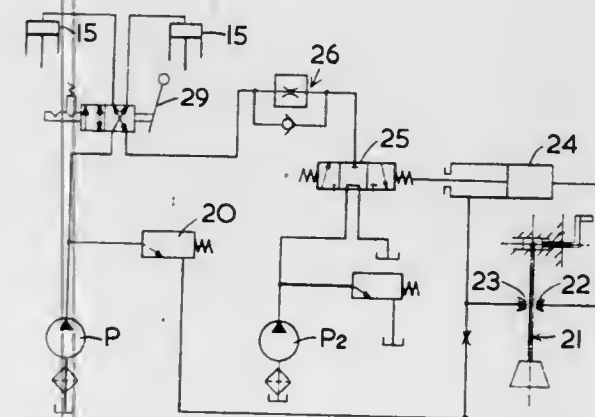
Filed Apr. 6, 1973, Ser. No. 348,538

Claims priority, application Great Britain, Apr. 21, 1972, 18569/72

Int. Cl. E21c 35/06

U.S. Cl. 299-1

4 Claims



1. A mineral mining machine of the type referred to including steering means comprising hydraulic servo control means in a hydraulic circuit operatively connectible to a hydraulic jack for a leading support member on the face side of the machine, adjustable pendulum means oscillatable about an axis parallel to the longitudinal axis of the machine to detect transverse tilting of the machine from a predetermined position and responsive to said tilting to operate a valve member in the hydraulic circuit to provide a pressure differential, said pressure differential applied to an intensifier, said valve member comprising a pair of nozzles aligned with the open ends of a pair of conduits, said conduits connected to opposite ends of said intensifier, a jet disturbing member operatively connected to said pendulum and interposed between said nozzles and said conduits and movable between one extreme position in which the jet disturbing member cuts-off the supply of hydraulic fluid from one nozzle to its associated conduit to another extreme position in which the supply of hydraulic fluid from the other nozzle to its associated conduit is cut-off, said intensifier comprising a double acting piston to actuate valve means, said valve means operable to actuate said leading hydraulic jack to maintain the machine in said predetermined position.

3,854,776

IMPACT MINING MACHINE HAVING CONVEYOR EXTENDING ON FRONT AND SIDE

Thomas Pollard, Chorley, England, assignor to Dobson Park Industries Limited, Nottingham, Nottinghamshire, England

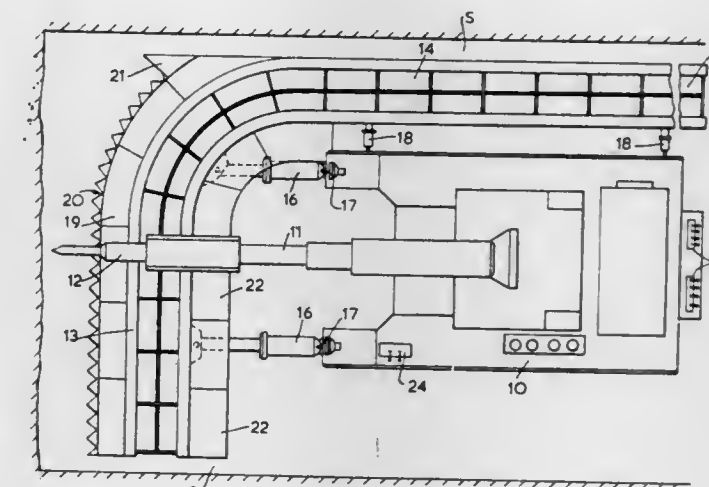
Filed June 29, 1973, Ser. No. 375,148

Claims priority, application Great Britain, Oct. 27, 1972, 49618/72

Int. Cl. E21c 27/28

U.S. Cl. 299-67

7 Claims



1. A mining or excavating machine comprising a carriage, a turntable mounted on said carriage, an extensible boom pivotally mounted on said turntable so as to turn therewith and for raising and lowering movement relatively thereto, a mineral working tool mounted on said boom for manipulation thereby in relation to a mineral face to be worked, conveyor-pan-means having a first portion which extends across the front of the carriage and is mounted thereon by means which provide for advance movement of said first portion of the conveyor-pan-means relatively to the carriage, and a second portion which curves rearwardly, with respect to the carriage, from and as a continuation of said first portion and extends alongside the carriage, a scraper-chain-conveyor having a single and centrally located chain positioned in and extending continuously along said first and second portions of the conveyor-pan-means, pressure fluid ram means, connected between the carriage and the first portion of the conveyor-pan-means, for effecting said advance movement of said first portion of the conveyor-pan-means, and collecting means on the front of the first portion of the conveyor-pan-means for advance movement therewith thereby to collect mined or excavated mineral from the front of the machine and directing it into said first portion of the conveyor-pan-means.

3,854,777

SPOKE MOUNTABLE BRACKET ASSEMBLY

James D. Kennedy, Streamwood, Ill., assignor to Beatrice Foods Company, Elgin, Ill.

Filed May 21, 1973, Ser. No. 362,301

Int. Cl. B60b 7/00

U.S. Cl. 301-37 SA

6 Claims

1. A display device for mounting on a cycle-type vehicle spoke member comprising a bracket member and a generally flattened body member,

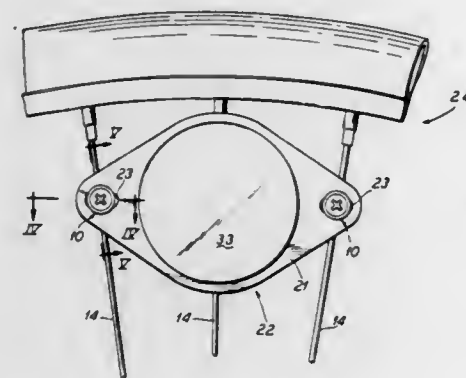
A. said bracket member comprising:

1. a rivet-like means having a longitudinally slotted shank, said shank having a generally uniform cross-sectional configuration, said slot being capable of receiving therein a spoke member, said rivet-like means being formed of rigid but deformable material,
2. a sleeve for mounting circumferentially about said slotted shank and adapted to resist radially outward movements thereof,

3. a screw having a tapered shank which is adapted to engage the outer end portion of said slot of said slotted shank, the length of said tapered shank being less than the length of said slotted shank, the circumferential outer wall of said slotted shank being radially expanded against the inside wall of said sleeve when said screw is turned into said slot and said sleeve is engaged about said slotted shank,

B. said flattened body member having:

1. an aperture transversely defined therein whose size permits said slotted shank to extend therethrough and further permits the head of said rivet-like means to abut against the aperture adjacent portions of said flattened body member, and



2. a central portion adapted for holding a display panel, C. the interrelationship between the length of each of said shanks, the longitudinal length of said sleeve and the thickness of said adjacent portions of said flattened body member being such that when said bracket member and said flattened body member are engaged with a said spoke member between said flattened body member and said rivet head, the length of said slotted shank is slightly less than the combined thicknesses of said spoke, said sleeve longitudinal length and said flattened body member.

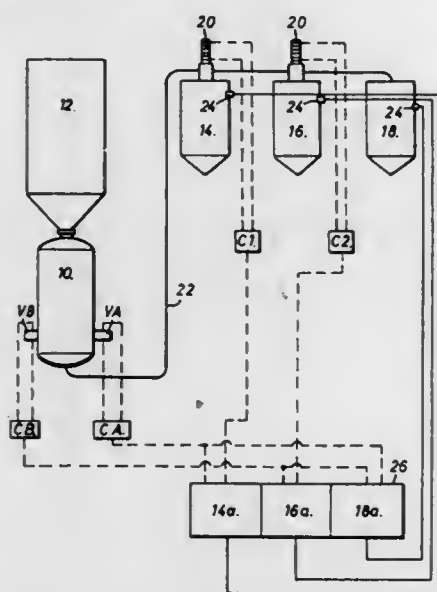
3,854,778

MATERIAL HANDLING PLANTS

William John Courtney Trythall, Whitley Bay, England, assignor to Trythall Design & Development Limited, East Mill, Morpeth, Northumberland, England
Filed Oct. 26, 1973, Ser. No. 409,968
Int. Cl. B65g 53/14

U.S. Cl. 302-27

11 Claims



1. A material handling plant for conveying powder or granular material by a compressed fluid to a selected one of a plurality of receiving points, the plant comprising a hopper, a material conveying apparatus for receiving material from the hop-

per, a plurality of material receiving points at different distances from said apparatus and in communication with said apparatus via a pipe system, a plurality of material diverter valves each disposed in the pipe system to control the flow of material to a respective one of the receiving points, and means for automatically producing a plurality of different predetermined amounts of compressed fluid whereby in plant use an appropriate one of said amounts of compressed fluid can be employed to enable said apparatus to convey material to a selected one of said receiving points.

3,854,779

ANTI-LOCK VEHICLE BRAKE SYSTEMS

Derek R. Skoyles, and Denis Sharp, both of Salfords, nr. Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

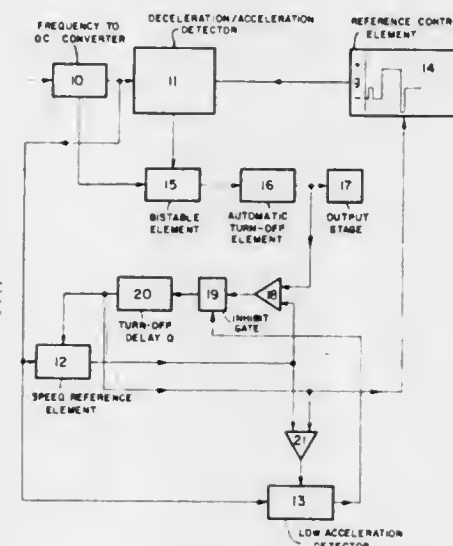
Filed Apr. 19, 1973, Ser. No. 352,586

Claims priority, application Great Britain, May 1, 1972, 20105/72

Int. Cl. B60t 8/12

U.S. Cl. 303-21 P

17 Claims



1. An electronic control circuit for an anti-lock vehicle brake system, said control circuit comprising, means responsive to an input signal having a quantity which is a function of wheel speed to produce an output signal for causing energisation of a solenoid valve when said quantity has changed at a rate in excess of a first reference rate and by an amount which is greater by a given percentage than its amount of change would have been had its change continued at that first reference rate, the latter corresponding to a first value of wheel deceleration, means for establishing said first reference rate within said control circuit, means for replacing said first reference rate by a second reference rate following the production of said output signal, said second reference rate corresponding to a second value of wheel deceleration that is more negative than said first value, means for replacing said second reference rate by a third reference rate after said second reference rate has persisted for a predetermined period of time, said third reference rate corresponding to a first value of wheel acceleration, and means responsive to said input signal for terminating said output signal to cause solenoid valve deenergization when the rate of change of said quantity attains either said second reference rate or said third reference rate, whichever prevails at the time, the prevailing reference rate being replaced by said first reference rate when said output signal is terminated.

3,854,780

MULTI-STAGE BRAKE VALVE

Wilfred E. Boehringer, Fullerton, and James V. Walker, Redondo Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

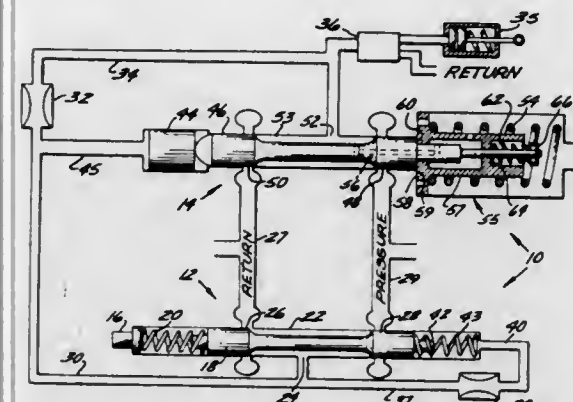
Division of Ser. No. 170,782, Aug. 11, 1971, This application

June 8, 1973, Ser. No. 368,089

Int. Cl. B60t 11/28

U.S. Cl. 303-21 F

12 Claims



1. A valve for controlling the operation of at least one hydraulic brake actuator, said valve including:
a connection to a source of pressurized hydraulic fluid;
a connection to a return of hydraulic fluid;
an output connection for conducting hydraulic fluid to and from said brake actuator;
a first valve stage in communication with said source connection, said return connection, and said output connection, said first valve stage including means to feed inputs thereto and means responsive to the inputs fed thereto to predeterminately conduct the pressurized hydraulic fluid from said source connection to said output connection, to predeterminately conduct the pressurized hydraulic fluid from said output connection to said return connection, and to predeterminately block flow of the hydraulic fluid between said output connection and said source and return connection;
flow restrictor means connected between said first valve stage and said output connection to the brake actuator to generate differential pressures thereacross when said first valve stage is conducting flow of pressurized hydraulic fluid between said source connection and said output connection; and
a second valve stage in communication with said source connection, said return connection and said output connection, said second valve stage including means in communication with the differential pressures generated by said flow restrictor means and responsive thereto to augment the flow of pressurized hydraulic fluid from said first valve stage when a predetermined differential pressure in present across said flow restrictor means.

3,854,781

COMBINED HYDROSTATIC BEARING AND ROLLING BEARING

Sven Christian Bildtsen, Lerum, Sweden, assignor to SKF Industrial Trading and Development Company B. V., Jutphaas, Netherlands

Filed Mar. 16, 1973, Ser. No. 342,278

Claims priority, application Sweden, Apr. 27, 1972, 5548/72

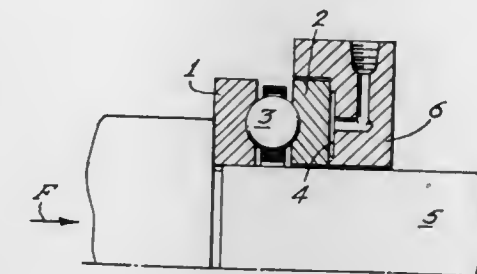
Int. Cl. F16c 32/00

U.S. Cl. 308-35

2 Claims

1. A thrust bearing for supporting at least first and second members for movement relative to one another comprising a rolling bearing assembly including at least a pair of spaced apart rings having confronting raceways and a plurality of rolling elements in the annular space between said rings, one of said rings being mounted on one of said members, and a

hydrostatic bearing assembly cooperatively associated with said rolling bearing assembly and including an element mounted on said other member having a surface confronting said other ring, means defining at least one chamber for a fluid medium under pressure formed by at least one pocket in said surface of said hydrostatic bearing element and the outer surface of said other ring whereby in operation of the bearing under applied thrust load, when said chamber is pressurized,



pressurization of said chamber operates to produce a force acting in a line containing the rings and rolling elements and in a direction to counterbalance the applied thrust load and the rings rotate at substantially the same angular rate due to the fact that the friction in the rolling bearing is higher than in said hydrostatic bearing and said other ring engages the surface of said hydrostatic bearing when said chamber is not pressurized whereby said rings rotate relative to one another.

3,854,782

RESILIENT JOURNAL BOX STOP BLOCK

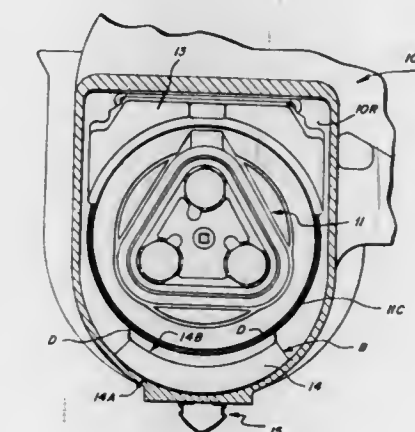
Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.

Filed Dec. 18, 1972, Ser. No. 316,279

Int. Cl. B60b 35/16; F16c 13/02, 35/00

U.S. Cl. 308-38

3 Claims



1. In an integral journal box arrangement that is modified to accommodate a roller bearing for cooperation with a journal axle, said box having vertical side walls and having a bottom wall provided with a central hole for anchoring a stop block in predetermined position against said bottom wall and having an access hole for a stop block assembly tool and said roller bearing having an external cage normally disposed in clearance relation to said stop block and to said vertical side walls, an improved stop block assembly comprising a stop block of elastomeric material, said block having a downwardly stepped vertical hole centrally thereof defining a central lower step portion of said block for registry with the central hole of said bottom wall, said block having a generally arcuate configuration in lengthwise profile to present, when at said predetermined position, corner portions in limited clearance relation to said cage, said corner portions, during impact conditions tending to produce upward and lateral relative movement between said journal box and said roller bearing, undergoing limited deformation in cushioning and restraining movement of the cage sufficiently to prevent contact between the cage

and said box and to limit potential damage to said cage to thereby avoid impairment of said roller bearing, and means disposed in said stepped vertical hole and reacting externally against said bottom wall for anchoring said block into stationary position against the bottom wall of said box, said anchoring means resiliently engaging said stepped vertical hole and the bottom wall of said box such that said block and said box are maintained in engagement when said block assembly is vibrated.

3,854,783

AN ARRANGING SHELF

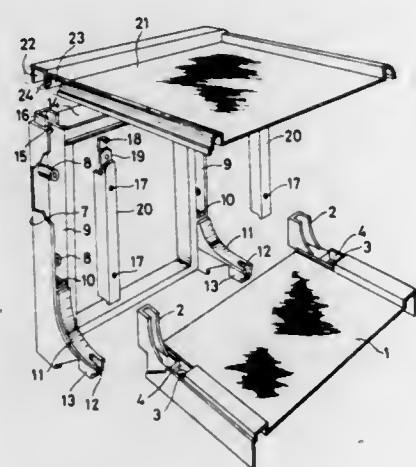
Takeo Teranishi, Fujidara, Japan, assignor to Kabushiki Kaisha Tadapura, Fujiidara City, Prefecture of Osaka, Japan
Filed Oct. 16, 1972, Ser. No. 297,706

Claims priority, application Japan, Mar. 3, 1972, 47-26240; Apr. 18, 1972, 47-41924

Int. Cl. A47b 87/00

U.S. Cl. 312-108

2 Claims



1. An improved shelf which may be easily assembled and disassembled and wherein a plurality of units may be vertically and horizontally arranged as shelf space is required and which presents a pleasing appearance, comprising:

at least one bottom board, a plurality of pillars upwardly extending from each corner of said bottom board and formed integrally therewith, each said pillar having a downwardly curved side extending toward a downwardly curved side of another of said pillars, said bottom board having a hollow region therein adjacent the curved side of each pillar, the portion of the bottom board forming the hollow region having an aperture therein, said bottom board further having an indented region in the bottom thereof and integrally formed therewith, said indented region adapted for vertical stacking of shelf units;

a plurality of side boards having a first set of vertically extending grooves integrally formed therein along the vertical sides thereof, a first set of internally threaded sleeves positioned within said first set of grooves and integrally formed with each side board, a first set of downwardly extending curved members integrally formed with said side boards, one of said members extending from each groove of said first set of grooves, said curved members corresponding in shape to said downwardly curved side of said pillars and having a leg portion at the free ends thereof, said leg portion adapted to fit within the hollow region adjacent each said pillar and having an aperture therein adapted to overlay the aperture in the hollow region of said bottom board through which a fastening member may be inserted, a first set of integrally formed support members extending upwardly from the top of each side board coaxially of each groove, and having an aperture therein on the same side as each groove, and a first plurality of cover members adapted to fit over each of said grooves and having apertures therein corresponding to said internally threaded sleeves, each said cover member having a hook member extending

from an end thereof and adapted to be positioned within one of said support members, said hook member extending from the said first set of support members through the apertures; and

at least one top board having regions in the bottom portion thereof adapted to receive said first set of upwardly extending members, said region further having an indented section adapted to receive said hook member therein.

3,854,784

INFORMATION MEDIA HANDLING SYSTEM

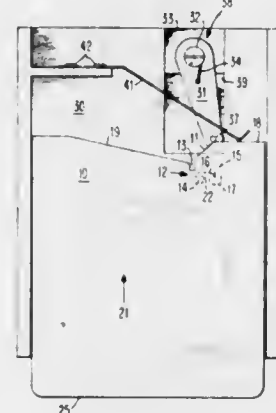
Ronald Eugene Hunt, and William Melchior Jenkins, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,314

Int. Cl. E05c 19/06; A47b 81/06

U.S. Cl. 312-319

11 Claims



1. An information media handling system comprising in combination:

a hopper for insertion of an information media container therein;

said container including a side having a recessed lock engaging means for engaging an automatic locking means of said hopper, said automatic locking means including a substantially rigid locking arm rotatable in two axes of rotation, so that said container is locked into said hopper by application of a first force in a first direction to said container and released from said hopper by application of a second force to said container in said first direction.

3,854,785

ACTUATING DEVICE

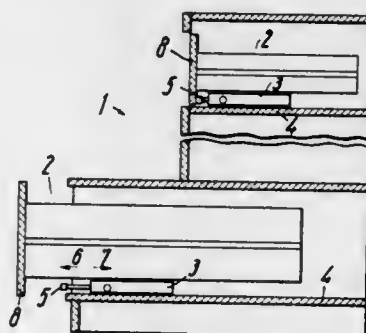
Roland Manner, Weilheim/Teck, and Peter Hueber, Owen/Teck, both of Germany, assignors to Robert Krause KG Zweigniederlassung Weilheim/Teck, Weilheim/Teck, Germany

Filed Sept. 17, 1973, Ser. No. 397,657

Int. Cl. E05c 7/06; A47b 88/00

U.S. Cl. 312-319

18 Claims



1. A device for causing outward movement of a member such as a drawer or the like from closed position, said device comprising: a frame adjacent the member, a push rod in the frame extending in the direction of movement of said member

and reciprocable in said direction between an inner retracted position and an outward position and having the outer end adapted to engage the member in closed position of the member, a latch bar parallel to and adjacent one side of the push rod and pivoted in the frame, a latch pin extending outwardly from the push rod on the latch bar side, a first spring in the frame biasing the push rod in outward direction, said latch bar having a first control surface along one edge, a first inwardly facing abutment region at the forward end of said first control surface engageable by the side of said latch pin in outward position of said push rod, said first control surface also having an incline leading rearwardly from said first abutment region and along which said latch pin slides as the push rod moves in retracting direction in said frame, a second inwardly facing abutment region at the rearward end of said incline remote engageable with the side of said latch pin to hold the push rod in retracted position, a second control surface on said latch bar engageable with the end of said latch pin upon inward movement of the push rod from retracted position and operable to release said latch pin from said second abutment region, a running surface extending along said latch bar generally parallel to said first control surface and from near said second abutment region to said first abutment region, said running surface adapted for engagement with the end of the latch pin, said latch pin being slidable along said running surface when disengaged from said second abutment region, and a second spring biasing said latch bar about the axis of the pivotal support thereof on said frame in a direction toward said first control surface.

3,854,786

METHOD OF MANUFACTURING A-HALOGEN INCANDESCENT LAMP

Victor Rosalie Notelteirs, and Ferdinandus Maria Josephus Van Beek, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

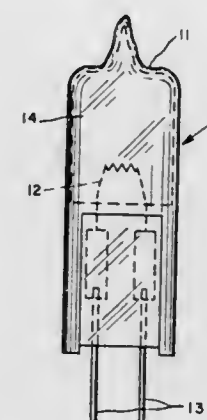
Filed Apr. 30, 1973, Ser. No. 355,906

Claims priority, application Netherlands, May 31, 1972, 7207324

Int. Cl. H01j 9/38

U.S. Cl. 316-20

3 Claims



1. A method for manufacturing a halogen incandescent lamp comprising:

providing a generally translucent envelope having a filament disposed therein and external terminals connected to said filament;

forcing a gas mixture comprising an inert gas and at least one hydrocarbon halide compound into the envelope;

sealing the envelope;

cooling said lamp to a temperature below the condensation temperature of the inert gas present in the gas mixture; and

immediately operating the lamp comprising said sealed envelope, filament and terminals to decompose the hydrocarbon halide compound into carbon and hydrogen halide.

3,854,787

INTEGRAL HOUSING AND STRAIN RELIEF

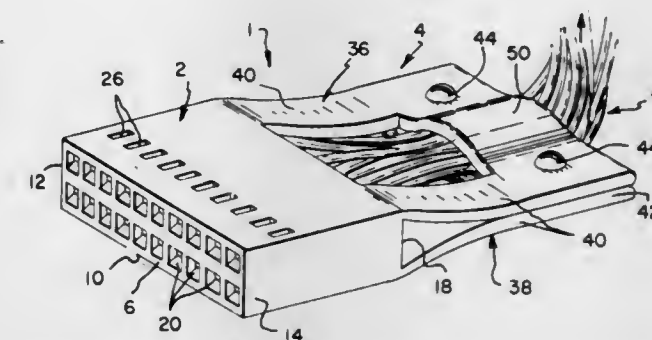
Clair Wilson Snyder, Jr., Hellam, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 313,021, Dec. 7, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 337,774

Int. Cl. H01r 13/58

U.S. Cl. 339-103 R

8 Claims



1. In a connector having a plurality of electrical terminals electrically connected respectively to a plurality of conductors and received within a housing of insulation material, a strain relief for the conductors, comprising: first and second arms on said housing receiving said conductors, said arms being relatively thin and flexible substantially along their lengths, said arms further being flexibly deflected toward each other to grip said conductors therebetween, and said arms being joined together and abutting at their free ends to form a non-flexible and non-deflectable triangular truss connected to said housing and extending outwardly from said housing in gripping relationship on said conductors at a location spaced from said housing, thereby providing a strain relief resisting twisting and bending of said conductors with respect to said terminals and said housing.

3,854,788

ELECTRICAL CONNECTOR ASSEMBLY

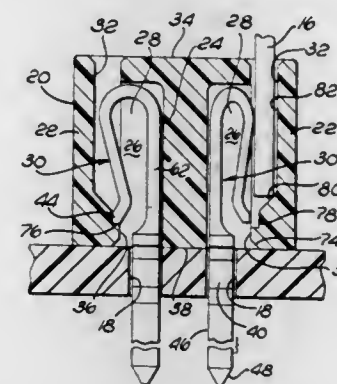
David S. Goodman, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,694

Int. Cl. H01r 13/42; H05k 1/04

U.S. Cl. 339-176 M

3 Claims



1. An electrical connector assembly for receiving an electrical circuit element having electrical leads extending therefrom comprising:

a planar mounting member having openings therein;

an electrical contact mounted in each of said openings, said contact having a mounting section press-fit into said opening, a generally hook-shaped blade section extending upwardly from said mounting section and terminating in a free end, and a lower end section extending downwardly from said mounting section, said hook-shaped blade section including an upper reverse bent portion and a convex contacting portion between said reverse bent portion and said free end;

an insulated housing member on said mounting member having a plurality of compartments receiving said hook-

shaped blade sections of said contacts, said compartments opening at the bottom of said housing member and being dimensioned to slidably receive said contact hook-shaped blade sections thereinto from said bottom thereby permitting said housing member to be mounted over said contacts onto said mounting member, said housing member having a side wall adjacent to said contacting portions of said contacts and an upper wall, said upper wall extending over said reverse bent portions of said contacts, slots in said upper wall adjacent to said side wall opening into said compartments above said contacting portions for receiving the electrical leads of said electrical circuit element, and abutment means in each of said compartments engaging each of said free ends to preload said contacts and to retain said contacts within said compartments whereby said housing member is retained on said mounting member by said contacts, said abutment means comprising a ledge formed on said side wall adjacent to the bottom of said housing member, said ledge providing an upwardly facing horizontal surface and an upstanding shoulder in each said compartment engaged by said free end of said contact.

3,854,789

CONNECTOR FOR COAXIAL CABLE

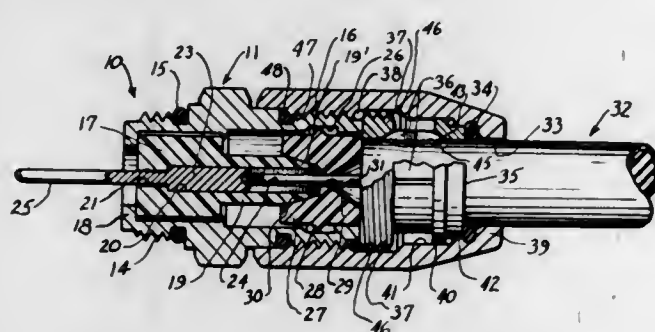
Eric S. Kaplan, 20 Beach Tree Rd., West Caldwell, N.J. 07006

Filed Oct. 2, 1972, Ser. No. 294,237

Int. Cl. H01r 17/04

U.S. Cl. 339—177 R

2 Claims



1. A connector for coaxial cable having an outer shield and a central insulated conductor with a portion extending from the shield comprising

- a hollow body having an externally threaded portion on one end thereof,
- slotted tubular insulating means within the said housing having a tapered end portion,
- a slotted female receptacle within the slotted tubular insulating means for receiving said extending central conductor portion,
- the other end of said body including an externally threaded portion and said receptacle including a conductive pin extending from said other end of said body,
- a collet within said body with at least one end of the opening in said collet being tapered and in engagement with the tapered portion of said insulating means,
- a nut threadably engaging said body and including cable gripping means through which said coaxial cable extends and means carried by said nut for sealing said cable in said nut and sealing means carried by said body for forming a seal between said body and said nut,
- said gripping means gripping said outer cable shield when said cable is inserted through the nut and the conductor portion is in engagement with said receptacle,
- whereby the inward displacement of the nut upon being tightened urges the end of said cable against said collet and displaces said collet inwardly,
- the inward movement of the collet forcing its tapered portion into tight engagement with the tapered portion of said insulating means thus reducing the diameter thereof and urging the walls of said receptacle into tight engage-

ment with said conductor portion, and said gripping means in said nut further including a split metal collet having externally tapered end portion of the opening therein tapered to receive an end of said metal collet, said collars and metal collet being slidably retained with said nut, one of said collars engaging the end of said body when said nut is placed in threaded engagement therewith whereby tightening said nut decreases the distance between said collars and thereby effects a reduction in diameter of said split collet causing it to firmly grip the coaxial cable and make electrical contact therewith.

3,854,790

ELECTRICAL CONNECTOR ASSEMBLY

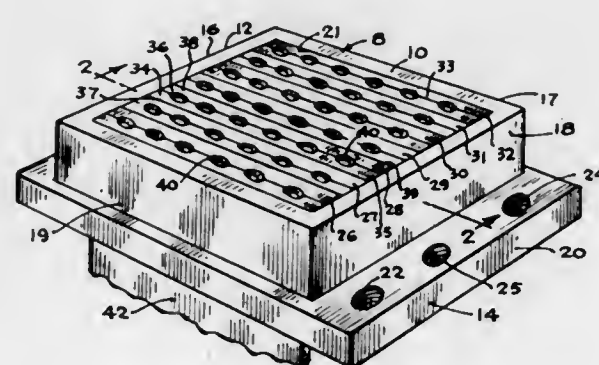
Jerry Provinsky, Westmont, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 17, 1973, Ser. No. 397,994

Int. Cl. H01r 9/00

U.S. Cl. 339—198 GA

16 Claims



1. An electrical connector assembly comprising a box-like housing with upper and lower open ends and at least one pair of opposite outer sides,

a plurality of electrical connectors including a plurality of multi-piece dielectric inserts with opposite ends disposed adjacent said pair of opposite sides of said housing to form two sets of retention members, and a plurality of electrical contacts arranged in a row between said ends and retained in each of said inserts, said connectors being disposed in side-by-side relation within said sides, facing said upper end for engagement with mating connectors and including lower portions for electrical engagement with electrical conductors, each of said connectors being capable of rearwardly receiving a flat multi-conductor cable with an end having a plurality of apertures, a portion thereof providing electrical access to the conductors, each of said inserts including a lower portion with an elongated opening sized for entry of said cable into said insert, and each of said contacts including a lower tail formed as a hook to engage one of said apertures and thereby provide electrical engagement with one of said conductors, and

means for releasably retaining said connectors individually in said housing including a row of integrally-formed, individually yieldable latching elements and spaced apart shoulder means to form grooves therebetween on one of said retention members in each of said two sets, projection means with upper and lower shoulders on the other of said retention members to ride over the latching elements and snap into said grooves, and access means in at least one of said retention members for release of said latching elements.

3,854,791

HOLOGRAPHIC MEMORY WITH RANDOM PHASE ILLUMINATION HOLOGRAM

Yasutsugu Takeda, Kokubunji, and Yoshitada Oshida, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 118,617, Feb. 25, 1971, Pat.

No. 3,744,871. This application Apr. 21, 1972, Ser. No.

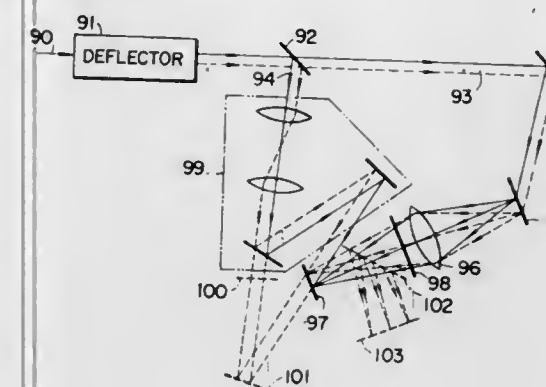
246,412

Claims priority, application Japan, Apr. 22, 1971, 46-26365; Sept. 11, 1971, 46-60298 The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

3 Claims



1. A Fourier transform holographic memory apparatus comprising:

first means for providing a first beam of coherent light; second means for providing a second beam of coherent light, said second means comprising:

a beam splitter disposed to receive said first light beam provided by said first means and to extract a portion of the light in said first beam as said second beam, and further including means for directing said second beam along an optical path separate from said first beam;

third means, disposed in the path of said first beam, for modifying said first beam and comprising:

a light modulator having a plurality of elements arranged in matrix form, for modulating said first beam in accordance with information supplied thereto,

a lens, and

a random phase illumination hologram which provides at least three random step-wise phase shifts to light passing therethrough, including a plurality of elements arranged in the same manner as the elements of said light modulator and having at least three different step-wise varying optical path lengths distributed at random, each of which corresponds to an individual information element and is substantially constant, so that light waves diffracted by the elements of the light modulator have at least three different phases, and wherein said random phase illumination hologram, said light modulator and said lens are disposed optically in series; and

fourth means, disposed to receive both said modified first beam and said second beam, for recording the interference pattern resulting from the impingement of said modified first beam and said second beam thereon, said fourth means comprising a recording medium disposed at the back focal plane of said lens.

3,854,792

FIBER OPTIC SECURITY SEAL

Alfred R. Koelle, Los Alamos, N. Mex., assignor to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Mar. 22, 1973, Ser. No. 343,988

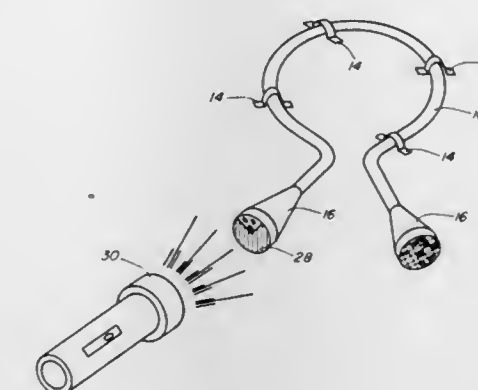
Int. Cl. G02b 5/16

U.S. Cl. 350—96 B

5 Claims

1. A security seal installable through a seal receiving means comprising:

a fiber optic bundle passable through said seal receiving means; first means for securing all fibers in said bundle in fixed relation to one another at one end of said bundle, said first securing means being of a configuration incapable of being passed through said receiving means; second means for securing all fibers in said bundle in fixed relation to one another at the other end of said bundle,



said second securing means being of a configuration incapable of being passed through said receiving means; said fibers in said bundle being randomly distributed such that the relative position of said fibers is different at each cross-section along the length of said bundle; and means for masking one of said ends so that upon illumination of said one end, a pattern of illuminated fiber ends appears at said other end.

3,854,793

LIQUID CRYSTAL CELLS

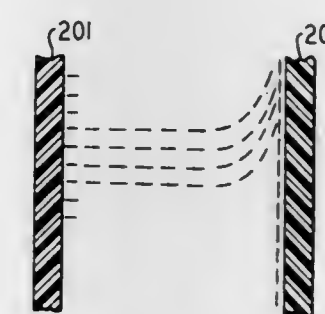
Frederic Jay Kahn, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 27, 1972, Ser. No. 266,587

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC

4 Claims



1. In combination a thin film of liquid crystal material, first and second substrates, spacing means positioned between said substrates, said substrates and spacing means thereby defining an envelope surrounding said thin film, a layer of bonding material chemically bonded to at least one of said substrates and positioned substantially contiguous with said thin film wherein said bonding material is N,N-dimethyl-N-octadecyl-3-aminopropyltrimethoxysilyl chloride.

3,854,794

IMAGE DISPLAY CELL

Hendrik Tajapko Van Dam; Johannes Jacobus Ponjee, and Cornelis Johannes Schoot, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

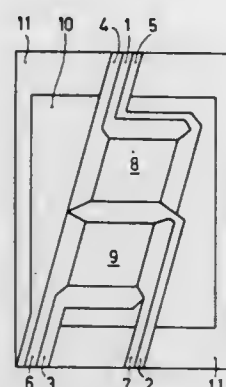
Filed Dec. 11, 1972, Ser. No. 313,822

Claims priority, application Netherlands, Dec. 23, 1971, 7117713

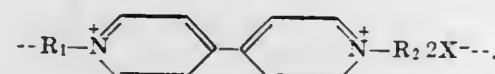
Int. Cl. G02f 1/28

U.S. Cl. 350-160 R

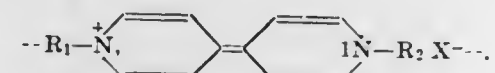
8 Claims



1. An image display cell comprising a casing having a transparent wall part a reducible redox substance and an oxidizable redox substance in water within said casing and at least two inert electrodes in contact with said water, both the reducible redox substance and the oxidizable redox substance being present in the cell, said reducible redox substance having a solubility in water in excess of 10^{-2} mole/liter and being a compound of the formula I



said oxidizable redox substance having a solubility product in water of less than 5×10^{-5} mole/liter and being a compound of the formula II



R₁ and R₂ in said formulae are each moieties selected from the group consisting of alkyl, alkenyl, alkoxyalkyl and phenylalkyl of one to 10 carbon atoms, halogen substitution products thereof, nitrile substitution products thereof and morpholinocarbonylmethyl substituted with up to two methyl groups in the morpholine moiety and X⁻ is a monovalent anion.

3,854,795

LIGHT MODULATION DEVICE

Masanori Honda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 26, 1973, Ser. No. 326,950

Claims priority, application Japan, Feb. 1, 1972, 47-11719; Feb. 4, 1972, 47-12648; Feb. 4, 1972, 47-12649

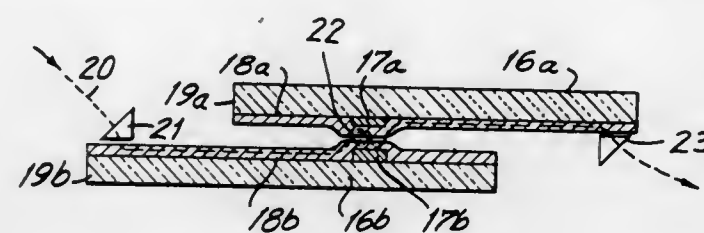
Int. Cl. G02f 1/28

U.S. Cl. 350-160 R

14 Claims

1. A light modulation element, comprising a pair of substrates; a pair of electrodes each on a corresponding one of the substrates; and a pair of layers of semiconductor material having the Franz-Keldysh effect each covering a corresponding one of the electrodes, the substrates being positioned in overlapping

relation with each other with the semiconductor layers facing each other, the semiconductor layers being independent from each other and in loose removable abutment with each other.



3,854,796

REFLECTION-REDUCING COATING

Alfred Thelen, Triesen, Liechtenstein, assignor to Balzers Patent- und Beteiligungs-Aktiengesellschaft, Balzers, Fürstentum, Liechtenstein

Filed Sept. 17, 1973, Ser. No. 397,851

Claims priority, application Switzerland, Oct. 19, 1972, 015336/72

Int. Cl. G02b 5/28

U.S. Cl. 350-164

7 Claims

n	1.0	$\lambda/4$
1.38	26b	26
1.98	26a	24
2.08	24b	500nm
1.62	24a	22
1.38	22b	20
1.44	22a	1.52

1. A reflection-reducing coating for a substrate comprising a plurality of layers wherein, in the order of enumeration starting from the substrate, there are, three groups of at least two $\lambda/4$ layers, the successive layers of the first group having a refractive index decreasing below the refractive index of the substrate, the layers of the second group having an increasing refractive index and the layers of the third group having a refractive index decreasing below the refractive index of the substrate.

3,854,797

METHOD FOR FOCUSING TELEPHOTO TYPE OPTICAL SYSTEM

Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

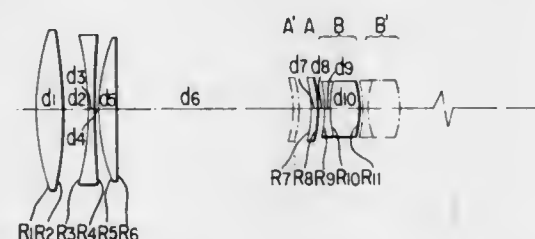
Filed Apr. 26, 1973, Ser. No. 354,704

Claims priority, application Japan, June 7, 1972, 47-56076

Int. Cl. G02b 9/00, 9/64, 9/60

U.S. Cl. 350-214

15 Claims



1. In a method for focusing, on an image plane, a telephoto type objective lens system having front and rear lens groups disposed in rearward succession along an optical axis between an object and the image plane, the front lens group being of positive power and the rear lens group having at least two lens members, the improvement which comprises the step of simul-

taneously moving the frontmost and rearmost members of the rear lens group in respectively opposite axial directions while the front lens group is held stationary.

3,854,798

REPRODUCTION LENS SYSTEM

Miloslav Paukert, Prerov, and Marie Vasicova, Rokytice U Prerova, both of Czechoslovakia, assignors to MEOPTA, narodni podnik, Prerov, Czechoslovakia

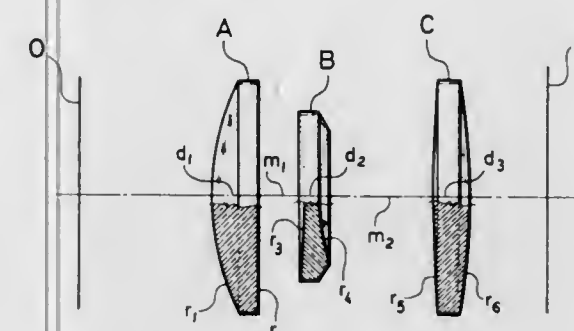
Filed June 7, 1973, Ser. No. 367,848

Claims priority, application Czechoslovakia, June 8, 1972, 3961-72

Int. Cl. G02b 9/16

U.S. Cl. 350-226

1 Claim



1. An objective lens system for reproduction comprising three components spaced one from another by an airspace and arranged in such a manner that the outer component on the image-plane side is a simple concave-convex element and the outer component on the object-plane side is a simple biconvex element while the middle component is a simple biconcave element, said system having the following parameters:

	r_i	d_i	m_i	n_d	ν
$r_1 = +$	25.11				
$r_2 = +$	2844.42	$d_1 =$	5.14	1.65844	50.8
$r_3 = -$	79.796	$m_1 =$	4.75	air	
$r_4 = +$	24.54	$d_2 =$	1.36	1.66680	33.1
$r_5 = +$	142.77	$m_2 =$	11.74	air	
$r_6 = -$	64.56	$d_3 =$	3.88	1.65844	50.8

where $r_1 - r_6$ are the radii of curvature of the individual refracting surfaces, $d_1 - d_3$ are the axial thicknesses of the individual components, m_1 and m_2 are the airspaces between the individual components, n_d is the refracting index for the D-line of the spectrum and ν is the Abbe number, the focal length F having a value of 100, and the measurements taken in mm.

3,854,799

REFLECTING DEVICE CONSTRUCTION

Angelo J. Sciacca, Juno, and Thomas B. Milam, Jupiter, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 26, 1973, Ser. No. 327,024

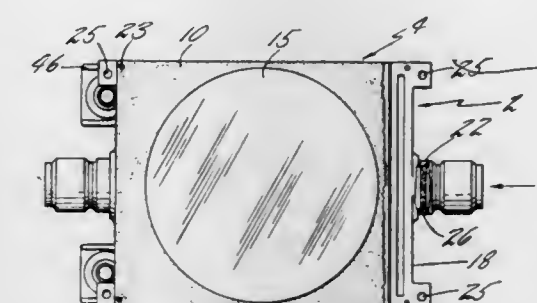
Int. Cl. G02b 5/08

U.S. Cl. 350-310

7 Claims

1. A laser mirror including first means having a reflecting surface on one side and a mounting surface on the other side, a mount block for supporting said first means, a mounting pad means for connecting said mounting surface of said first means to said mount block, said mounting pad means having pads thereon, said pads being interconnected to properly locate them in relation to the mounting surface and to accommodate thermal movements between the mounting pad means and first means, said pads having surfaces fixed to the mount-

ing surface, three mounting projections extend from said mounting pad means towards said mount block, said mount block having three seats for receiving the three mounting projections of said mounting pad means, said mount block being formed having two arms for preventing a transfer of excess force between the mount block and said first means,



one of said seats for receiving the mounting projections being located adjacent the end of each of the two arms, the third seat being located on the other part of the mount block, each of said mounting projections being positioned in its cooperating seat and attached to said mount block, said two arms being formed to limit the amount of force transmitted between the mount block and the first means.

3,854,800

REFLECTING DEVICE CONSTRUCTION

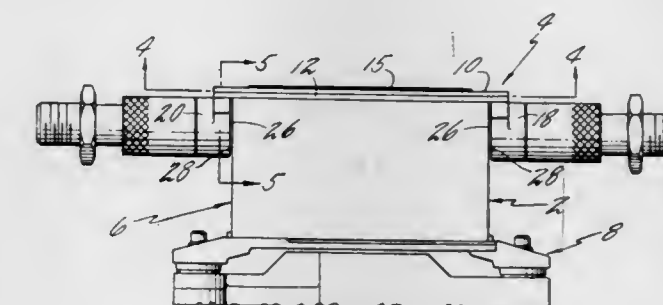
John A. Dye, Lake Park, and Joe F. Arnold, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 26, 1973, Ser. No. 326,913

Int. Cl. G02b 5/08

U.S. Cl. 350-310

3 Claims



1. A laser mirror including means for reflecting a high-power high-quality beam while maintaining a high quality, said means including a face plate, a closure plate fixed thereto, one of said plates having a plurality of grooves therein facing the other plate, one of said plates having a first slot connecting the grooves at one end, one of said plates having a second slot connecting the grooves at the other end, a first manifold connected to said plate containing said first slot for directing a coolant to said first slot, said first manifold extending away from said plate to which it is connected, a second manifold connected to said plate containing said second slot for directing a coolant away from said second slot, said second manifold extending away from said plate to which it is connected, a backing member being located between said first and second manifolds, said backing member having a flat surface, said closure plate having a bottom surface bonded to said flat surface of said backing member, said backing member having mounting means fixed thereto, said first and second manifolds extending away from said closure plate in a cantilevered manner, said manifolds being spaced from the sides of the backing member, a reflecting surface being located on said face plate.

3,854,801

ADJUSTABLE EYEGLASS TEMPLE

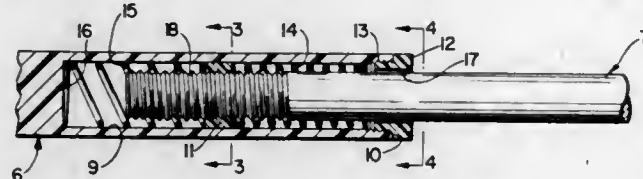
Neil A. Hoke, Federal Hwy. 224, Bloomville, Ohio 44818

Filed July 11, 1973, Ser. No. 378,193

Int. Cl. G02c 5/20, 5/16

U.S. Cl. 351-118

2 Claims



1. An eyeglass temple comprising a rear section and a front section having a forward and a rear end and provided with an elongated recess opening outwardly of said rear end, a nut slidably and non-rotatably engaging in said recess, a cap detachably connected to the rear end of said front section, a compression spring confined between the nut and cap, said rear section having a forward and a rear end, said cap having a bore slidably and rotatably receiving said forward portion of said rear section, said forward portion extending through said spring and including a threaded forward end threadedly engaging in said nut and rotatable therein for varying the overall length of the temple, and said rear section having a rear end adapted to engage behind the ear of the user.

3,854,802

IMAGE RECORDING AND PROJECTION METHOD AND APPARATUS

Midhat Joseph Gazale, 96 Quai Louis Bleriot, Paris 16 eme, France

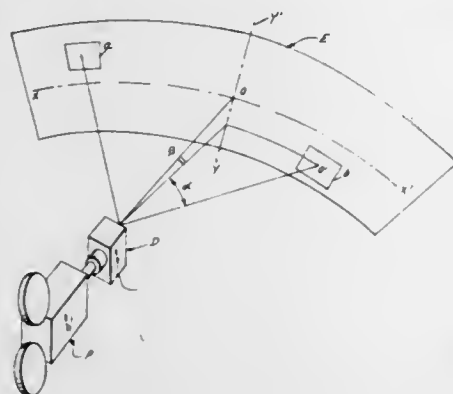
Filed July 30, 1973, Ser. No. 383,813

Claims priority, application France, Aug. 2, 1972, 72.27938

Int. Cl. G03b 37/02

U.S. Cl. 352-40

63 Claims



1. A method for recording and subsequently projecting pictures successively onto various areas of a substantially oversized screen in a predetermined pattern comprising the steps of:

- recording on a storage medium a pictorial image;
- recording on a storage medium an indicator in site-azimuth code of the relative projection position to be associated with the image, the orientation of the image recording apparatus being recorded in real time in the course of image recording as the associated indicator;
- reading the storage medium containing the associated indicator and adjusting the projection orientation of a projection system exclusively in accordance with information contained in the associated indicator; and
- reading the storage medium containing the image and projecting the image through the projection system onto a screen substantially oversized relative to the projected image;

whereby upon projection of the image according to the associated indicator the image is projected onto a region

of the screen corresponding to the real time position of the image during recording.

3,854,803

PHOTOGRAPHIC APPARATUS FOR PROVIDING AUTOMATIC CASSETTE OPERATION

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

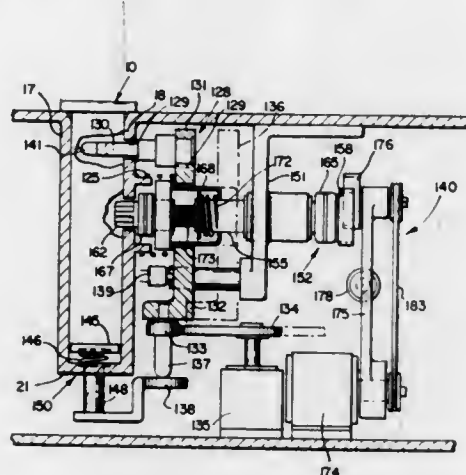
Continuation of Ser. No. 227,093, Feb. 17, 1972, abandoned.

This application Jan. 2, 1974, Ser. No. 429,725

Int. Cl. G03b 23/02

U.S. Cl. 352-72

22 Claims



1. Photographic apparatus for use with a photographic cassette including a housing configured to retain a strip of photographic film and means responsive to external drive means for advancing such film strip within such cassette, said apparatus comprising:

- means for receiving such cassette in operative relation with said apparatus for purposes of actuating such cassette through a predetermined program, said receiving means including a cassette-receiving well;
- means for latching such cassette in said well, said latching means including a shaft member configured for displacement from a first position alongside said well to a second position extending at least partially across said well and into engagement with such cassette;
- selectively operable means for operating such cassette through a preprogrammed sequence, said operating means including drive means independent of said latching means, said drive means being mounted for displacement from a first position alongside said well to a second position within said well and in engagement with the advancing means of such cassette when such cassette is operatively located in said well; and
- means responsive to location of said latching means in other than its said second position for preventing operation of said operating means including preventing displacement of said drive means to its said second position.

3,854,804

FILM CARTRIDGE

Clarence O. McMaster, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 26, 1973, Ser. No. 326,885

Int. Cl. G03b 23/02

U.S. Cl. 352-78 R

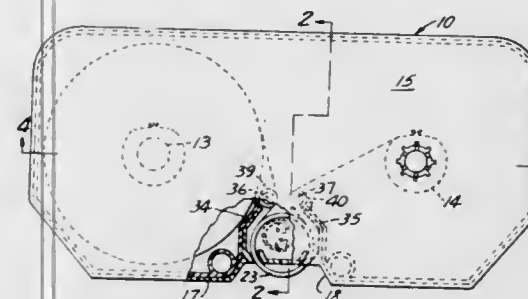
4 Claims

1. A film cartridge for use with a document camera which will permit insertion and removal of the cartridge after the cartridge is initially inserted and prior to exposure of the entire film without complete rewinding, said cartridge comprising

- a housing formed of interfitting plastic part means for producing a light-tight compartment having large-area sidewalls and edge walls extending substantially around the periphery of said sidewalls to join said sidewalls with the discontinuity of said edge walls defining a rectangular

opening along one edge of the housing extending between said sidewalls, means defining a pair of spools disposed within said compartment between said sidewalls for supporting a length of film and said spools being capable of receiving an exterior driving force, a roller positioned within said compartment and having a hollow cylindrical portion and an outer cylindrical periphery which defines a film supporting surface, said roller being positioned with the axis thereof extending in a direction between said sidewalls and with the periphery projecting through said opening in said edge wall, said

to the shutter blade, and a switch means for selectively operating said transmission means to intermittently or continuously transmit the rotation of the driving gear to the shutter blade, said transmission means comprising two projections fixed on said driving gear and a pin fixed on said shutter blade to be engaged with said projections, said switch means comprising a movable switch member which is movable between two positions and operably associated with said transmission means, in one of said positions said pin being continuously engaged with one of said projections and the rotation of the driving gear being continuously transmitted to the shutter blade, and in the other of said positions said pin being alternately engaged with said two projections and the rotation of the driving gear being intermittently transmitted to the shutter blade.



roller also having a stub shaft coaxial with said cylindrical portion and supported from a support positioned within said cylindrical portion, a pin supported by one said sidewall and projecting toward the other sidewall and into said hollow cylindrical portion of said roller, and a spring secured to said stub shaft and to said pin for biasing said stub shaft and said roller outwardly of said compartment toward said opening and into contact with said edge walls defining said opening to lock the film when the cartridge is not in a camera and to align the roller with a pair of capstans when in a camera.

3,854,805

EXPOSURE TIME CONTROL MECHANISM FOR MOTION PICTURE CAMERA

Takashi Tobioka, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya-shi, Japan

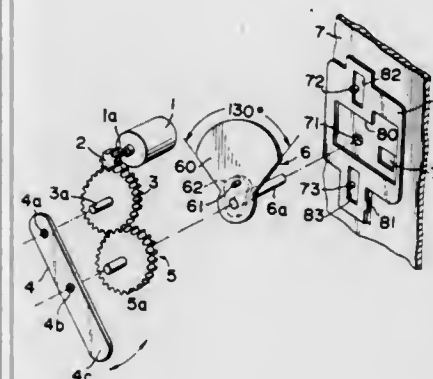
Filed Sept. 13, 1973, Ser. No. 396,892

Claims priority, application Japan, Sept. 14, 1972, 47-92505

U.S. Cl. 352-121

Int. Cl. G03b 17/46

6 Claims



1. An exposure time control mechanism for a motion picture camera comprising a rotary shutter blade having a sector portion for closing and opening an aperture of the camera by rotation thereof, a vertically slidable claw plate having a film feed claw and a cam follower portion, a cam means provided on said rotary shutter blade and engaged with said cam follower portion of said claw plate to move said claw plate up and down as the shutter blade rotates, a driving gear driven by a driving source provided in the camera, a transmission means provided in association with said driving gear and said rotary shutter blade for transmitting the rotation of the driving gear

1. Motion picture apparatus comprising: an apparatus housing; means in said apparatus housing for receiving and supporting a multi-purpose film handling cassette at an operative position within said apparatus housing, the cassette being of the type including a cassette housing, a length of photographic film strip stored on a reel within the cassette housing; means providing access into the cassette housing for light to be directed toward an incremental section of the film strip as the film strip is transported, in an intermittent manner, past the access means to facilitate film exposure or projection operations, a processing station in the cassette housing past which the film strip is transported, in a continuous manner, during a processing mode of operation for coating at least an elongated portion of the film strip with a fluid processing composition and film strip tension regulating means movably mounted within the cassette housing and being engagable by the film strip for movement along a path of travel between initial and energized positions, in response to intermittently transporting the film strip past the access means, for forming and continuously maintaining a feed loop of film strip between the reel and the access means to isolate that portion of the film strip near the access means from an inertial drag of the reel, the tension regulating means also being movable, by the film strip, along the path of travel from the initial position past the energized position as the film strip is transported in a continuous manner during a film processing mode of operation, for guiding the fluid coated film strip towards the reel; said motion picture apparatus further including film transport means in said apparatus housing for transporting the film strip in the cassette housing past the access means of the cassette, in an intermittent manner, to facilitate exposure or projection operations and for transporting the film strip past the processing

station of the cassette, in a continuous manner, to facilitate the application of the coating of fluid processing composition to the film strip; and stop means in said apparatus housing positionable in the path of travel of the film tension regulating means of the cassette for stopping movement of the film tension regulating means when the film tension regulating means moves past its energized position during the film processing mode of operation to assure that the film tension regulating means is stabilized and does not adversely affect the fluid coating applied to the film strip.

3,854,807

SLIDE TRAY POSITIONING MECHANISM FOR A REAR-SCREEN PROJECTOR

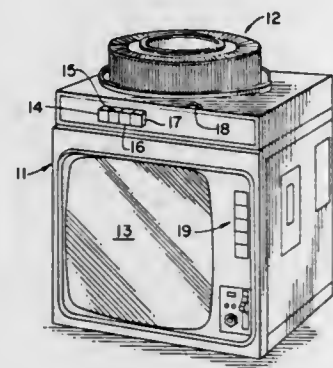
Roy E. Hickey, Honeoye Falls, N.Y., assignor to The Singer Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,469

Int. Cl. G03b 21/14; G03b 23/06

U.S. Cl. 353-78

8 Claims



1. Apparatus for positioning a slide tray comprising: a slide projector including a gate; a slide tray including a plurality of indexing pins depending therefrom and adapted to contain a plurality of slides for projection by said projector; indexing means adapted to rotate said slide tray relative to said gate for successively bringing slides in said slide tray, one at a time, into substantially vertical register with said projector gate; said indexing means including: a driven indexing bar having a slide tray indexing element at one end thereof; pivoted means including a rotatably pivoted, substantially flat, member having a slot therein a distance from said pivot; coupled to said indexing bar by means of a pin depending from said driven indexing bar and extending into said slot in said pivoted member; said pivoted means guiding said indexing element to a position between two adjacent pins depending from said slide tray and then rotating said indexing bar around the pivot of said pivoted means to rotate said slide tray as said indexing bar is driven.

3,854,808

METHOD AND DEVICE FOR PRODUCING PRINTS AND THE LIKE

Horst Germer, Braunschweig, Germany, assignor to Triumph Werke Nurnberg Aktiengesellschaft, Nurnberg, Germany
Continuation of Ser. No. 59,134, July 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 405,330, Oct. 13, 1964, abandoned. This application Jan. 26, 1973, Ser. No. 326,864

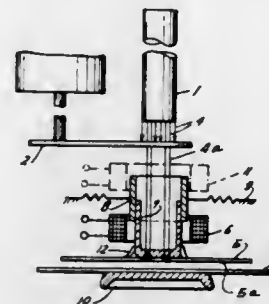
Int. Cl. B41b 13/00

U.S. Cl. 354-5

13 Claims

1. A method of producing selected visible characters on successive portions of at least one recording area, comprising the steps of operating a selected one of a plurality of key means for positioning a selected one of a plurality of character forming masks adjacent a selected portion of the recording

area; influencing a beam of thermal radiation by the selected character forming mask so as to project a modified beam of radiation having an outline corresponding to the selected character to be produced toward colored particles which soften when irradiated and which are connected to one face of a band facing said recording area; moving said band in a first direction substantially parallel to and spaced from said



3,854,809

PHOTOGRAPHIC APPARATUS

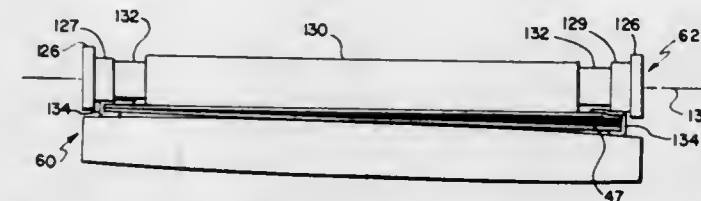
John J. Driscoll, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 229,669, Oct. 24, 1972, abandoned. This application July 2, 1973, Ser. No. 375,339

Int. Cl. G03b 17/50

U.S. Cl. 354-86

35 Claims



1. Photographic apparatus for spreading a processing composition across a photosensitive layer of an exposed film unit comprising: pressure-applying means adapted to engage opposite sides of an exposed film unit for spreading a processing composition across a photosensitive layer of the exposed film unit in a layer having an asymmetrical thickness, as measured in a plane transverse to the direction of movement of the film unit relative to said pressure-applying means, said pressure-applying means including means defining a longitudinally extending, asymmetrically configured gap when the film unit is being advanced therebetween, said gap tapering from a maximum thickness at one end to a minimum thickness at a point more than halfway toward its opposite end.

3,854,810

SYNCHRONIZING MECHANISM FOR FLASH AND SHUTTER ACTUATION

Helmut Ettischer, Ruit, and Peter Huschle, Boblingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1973, Ser. No. 366,399

Claims priority, application Germany, July 24, 1972, 2236183

Int. Cl. G03b 15/04

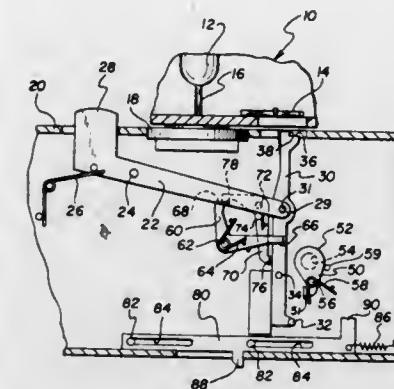
U.S. Cl. 354-142

6 Claims

1. For use with flash units of the type having at least one lamp fireable by striking and at least one pre-energized striker

releasable to effect such striking, photographic apparatus comprising: a shutter;

k. switch means actuated at the termination of the operation of said delay means for instantaneously operating said photometry system.



3,854,812

PHOTOGRAPHIC PROCESSOR FOR LARGE FORMAT FILM UNITS

Duncan C. Sorli, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,489

Int. Cl. G03d 9/02

U.S. Cl. 354-312

8 Claims

means for receiving such a flash unit; and means for releasing a pre-energized striker of a received flash unit and for actuating said shutter in response to receipt of a force from the released pre-energized striker during movement to effect such striking.

3,854,811

DELAY MECHANISM FOR A SINGLE LENS REFLEX CAMERA MIRROR DRIVE

Kunihiko Araki, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

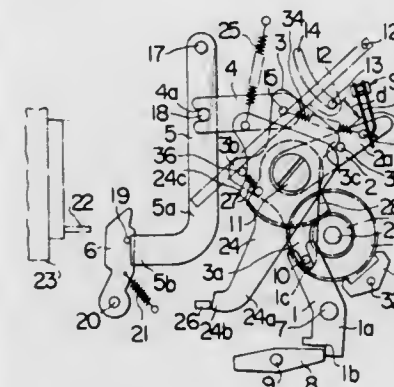
Filed Nov. 21, 1973, Ser. No. 417,933

Claims priority, application Japan, Nov. 30, 1972, 47-120444; Nov. 30, 1972, 47-120445

Int. Cl. G03b 19/12

U.S. Cl. 354-153

10 Claims



1. In a single-lens reflex camera having:
 - a. an optical system with a focussing light path to a finder and a taking light path to the film;
 - b. a diaphragm for setting the opening of said light paths;
 - c. a photometry system for sensing incoming light on the focussing light path to said finder;
 - d. a shutter for opening the taking light path to the film;
 - e. a shutter release;
 - f. a reflecting mirror disposed in said light paths for directing the incoming light to said focussing light path and said photometry system and movable to close said focussing light path and open said taking light path to the film upon the actuation of said shutter release; and
 - g. a film winding mechanism; wherein the improvement comprises:
 - h. diaphragm operating means for setting the opening of said diaphragm upon the actuation of said shutter release;
 - i. mirror drive means operatively coupled to said diaphragm operating means for moving said mirror out of the taking light path in response to the setting of said diaphragm;
 - j. delay means for delaying the operation of said mirror drive means until the setting of said diaphragm is stabilized; and

1. A processor for providing a lighttight environment for a film unit including photosensitive and image-receiving layers and for distributing a fluid processing composition between predetermined layers of the film unit, such a film unit being of the type including a film unit tab extending forwardly of a leading end of the film unit, said processor comprising:
 - a. a housing having a lighttight chamber therein and film entry and withdrawal slots on one side of said housing through which such a film unit may be respectively inserted into and withdrawn from said lighttight chamber;
 - b. processing means in said lighttight chamber for effecting the distribution of the fluid between the predetermined layers of such a film unit inserted, leading end first, into said lighttight chamber through said film entry slot and for advancing the film unit within said lighttight chamber; and
 - c. guide means for guiding the film unit as it is advanced within said lighttight chamber from said processing means to said withdrawal slot, said guide means including a curved member defining a curved path of travel for the film unit of a predetermined length, said predetermined length being at least equal to the length of the film unit but less than the combined length of the film unit and the film unit tab extending forwardly of the leading end of the film unit, to cause at least a portion of the film unit tab to extend through said withdrawal slot, while the photosensitive and image-receiving layers of the film unit remain in the lighttight environment of said chamber, to give the user a visual signal that the fluid has been completely distributed and an imbibition period following distribution has started, wherein said guide means supports such a film unit in the lighttight environment of said chamber during the imbibition period.

3,854,813

ELECTROSTATIC PRINTING APPARATUS USING CHARGE INDUCED TONING

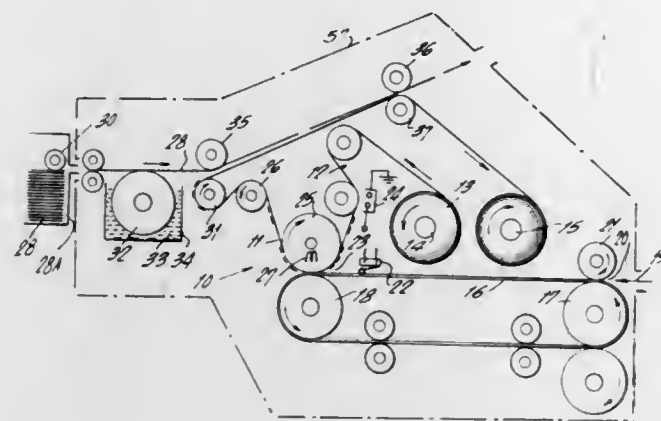
Arthur L. Kaufman, 26 High Point Rd., Westport, Conn. 06880

Continuation of Ser. No. 221,646, Jan. 28, 1972. This application Sept. 10, 1973, Ser. No. 395,525

Int. Cl. G03g 9/04, 13/10

U.S. Cl. 355-10

16 Claims



1. An electrostatic printing apparatus comprising a housing, a latent charge image receiving member within said housing, means to create a latent charge image upon the latent charge image receiving member, a source of sheet-like record material, a source of liquid toner, means to (wet) apply a thin film of said toner to at least one major surface of the record material (with the liquid toner), feed means to bring the latent image bearing member and record member together in an initially gapped relationship with one wetted surfaced of the record member facing a surface of the latent image bearing member, means to transport the said wetted record member and latent image bearing member synchronously and along a converging path with the liquid toner on the record member in contact with the surface of the latent image bearing member until an image is induced in the record member and a visible image is formed upon the record member by the said toner and means adjacent the end of said converging path for separating the toned record member from the latent image bearing member.

3,854,814

TRANSLATING DWELL CLEANING SYSTEM

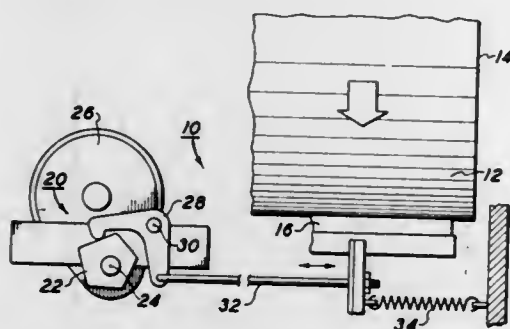
Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1973, Ser. No. 391,195

Int. Cl. G03g 15/00

U.S. Cl. 355-15

2 Claims



1. An electrostatographic imaging surface blade cleaning system in which a cleaning blade is cyclically oscillated laterally of the normal direction of motion of the imaging surface between two substantially spaced apart translation end dwell positions of said blade on said imaging surface, wherein the improvement comprises a blade drive means for cyclic lateral oscillation of said cleaning blade and for automatically multiply slightly shifting the positions on said imaging surface of

said two blade translation end dwell positions without stopping the blade motion between said two translation end dwell positions,

wherein said blade drive means comprises a multi-lobe cam rotatably driven about an axis of rotation and a cam follower driven by said multi-lobe cam, said cam follower being drivingly connected to said blade for cyclic translation of said blade by said cam, and wherein said multi-lobe cam has a plurality of cam lobes having different maximum and minimum radii of revolution about said axis for said automatic shifting of said two blade translation end dwell positions at each said cyclic translation of said blade by said cam.

3,854,815

GRAPHIC ARTS CAMERA FLASHING ATTACHMENTS

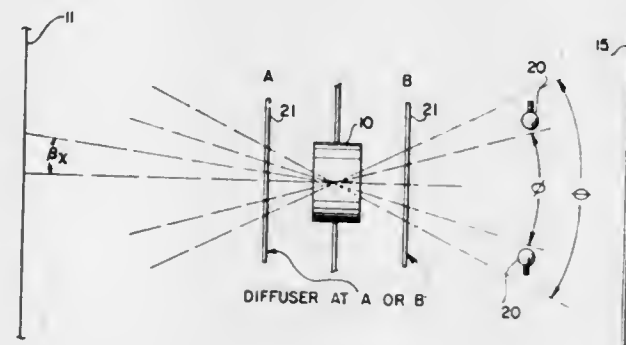
Walter L. McIntosh, Woodbridge, Va., assignor to Log Etronics Inc., Springfield, Va.

Filed Nov. 9, 1973, Ser. No. 414,478

Int. Cl. G03b 27/54

U.S. Cl. 355-67

10 Claims



1. A flashing attachment for a Graphic Arts process camera of the type comprising a lens structure the optical axis of which is at right angles to a film plane structure disposed on one side of said lens structure and at right angles to a copy-board structure disposed on the other side of said lens structure, said attachment comprising a flashing light source located within the light acceptance angle of said lens structure and outside the image acceptance angle of said lens structure for selectively projecting flashing light toward said film plane structure, and translucent light diffusing material disposed between said flashing light source and said film plane structure for controlling the intensity of flashing light incident on said film plane structure to produce illuminance of substantially uniform intensity throughout a predetermined area of a sheet of photosensitive material supported by said film plane structure, said diffusing material comprising a non-Lambertian radiator the diffusion characteristics of which, when using a measuring light beam having a divergence of substantially 2° and incident perpendicular to the diffusing material, are defined by a polar curve of light intensity versus viewing angle exhibiting a light intensity 10° off-axis not more than 82 percent and not less than 60 percent of the intensity on-axis, exhibiting a light intensity 20° off-axis not more than 53 percent and not less than 26 percent of the intensity on-axis, exhibiting an intensity 30° off-axis not more than 36 percent and not less than 14 percent of the intensity on-axis, exhibiting an intensity 40° off-axis not more than 26 percent and not less than 9 percent the intensity on-axis, and exhibiting an intensity 50° off-axis not more than 18.5 percent and not less than 7 percent the intensity on-axis.

3,854,816

PHOTOGRAPHIC PRINTING APPARATUS

Ikuro Fujimura, Minamiasagigara-machi, Japan, assignor to Fuji Shashin Film Kabushiki, Minamiasagigara-machi, Ashigarakami-gun, Kanagawa-ken, Japan

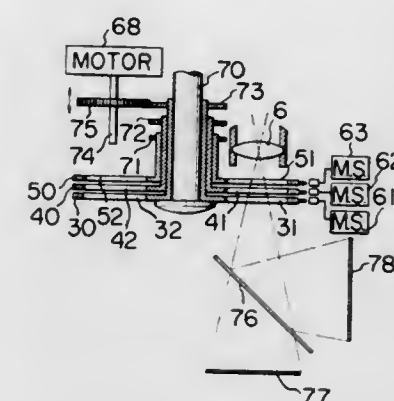
Continuation-in-part of Ser. No. 128,487, March 26, 1971, which is a division of Ser. No. 887,281, Dec. 22, 1969, which is a continuation-in-part of Ser. No. 446,032, April 6, 1965.

This application Jan. 29, 1973, Ser. No. 327,398

Int. Cl. G03b 27/76

U.S. Cl. 355-71

8 Claims



1. An apparatus for producing a photographic image and for producing the desired gradation from one kind of printing paper comprising a high intensity light source capable of producing a latent image on sensitized printing paper by an exposure of 0.01 second to 1 second, an electric power source for adjusting and effective light-up time of the light source connected thereto, means for varying the intensity of the light, in inverse proportion to the exposure time, at least one shutter for varying the exposure time between 1 second and 0.01 second and means for controlling the intensity of the light to adjust the density of the image produced and for varying the exposure time inversely proportionally to the light intensity, a lens and a light sensitive material containing silver halide.

3,854,817

APPARATUS FOR CONTINUOUS CONTACT DUPLICATION

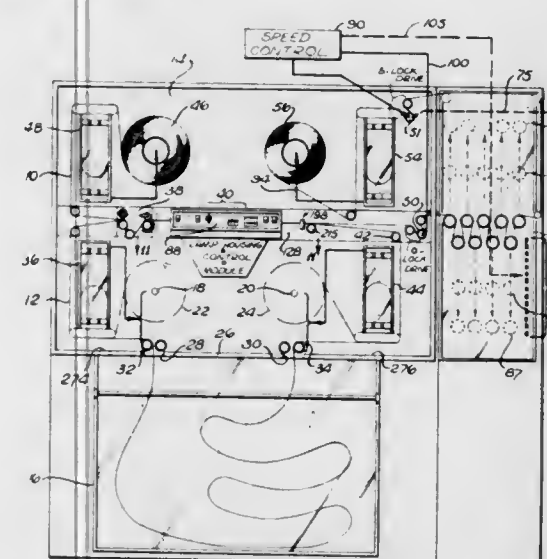
Roger A. Erech, 1980 Meadow View Ct., Thousand Oaks, Calif. 91360; Charles H. Dietz, 18833 Killoch Way, Northridge, Calif. 91324, and Markvard Hauerbach, 19649 Green Mountain Dr., Newhall, Calif. 91321

Division of Ser. No. 170,186, Aug. 9, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,383

Int. Cl. G03b 27/10

U.S. Cl. 355-84

1 Claim



1. In apparatus for contact duplicating information carried by a continuously moving master strip onto a continuously moving light sensitive duplicate strip, comprising an exposure zone and means for moving said master and duplicate strips in close contact through said exposure zone, the provision of:

a lamp assembly in said exposure zone for exposing said master and duplicate strips, said lamp assembly comprising a lamp and reflector for said lamp, said reflector having a substantially greater length dimension than width dimension, and means for securing said reflector with its length dimension along the line of travel of said strips thereat, to define a beam of light of first width in said line of travel, and for rotating said reflector and securing said reflector with its width dimension along said line of travel to define a beam of light of second width in said line of travel.

3,854,818

SIGNAL PEAK DETECTION ARRANGMENT FOR ATOMIC ABSORPTION SPECTROMETRY

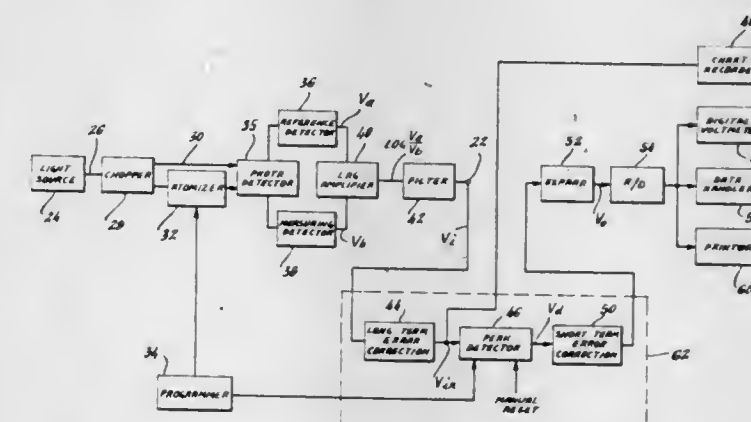
Walter Bohler, Norwalk, and Duane L. Smith, Fairfield, both of Conn., assignors to The Perkin Elmer Corporation, Norwalk, Conn.

Filed Mar. 2, 1973, Ser. No. 337,566

Int. Cl. G01j 3/42

U.S. Cl. 356-85

8 Claims



1. An atomic absorption spectrometer, said spectrometer providing an output information signal representative of the absorbance of a sample material under test, said information signal accompanied by repeatable, relatively short-term, substantially constant amplitude error signal components which cause a deviation of said information signal from a desired reference level, an electrical signal amplitude peak detecting means, means for applying said signal representative of the absorbance of said sample material to said peak detecting means, a signal combining circuit means, means for applying an output signal from said peak detecting means to said signal combining circuit means, a storage circuit means for storing the magnitude of an electrical signal applied thereto, means coupling said storage means to said signal combining means for combining a phase-opposed stored signal with an output signal from said peak detector, and, means for selectively coupling an output from said signal combining circuit to said storage means.

3,854,819

LASER GYROSCOPE

Keimpe Andringa, 8 Course Brook Rd., Sherborn, Mass. 01770

Continuation-in-part of Ser. No. 120,581, March 3, 1971, Pat. No. 3,741,657. This application Oct. 2, 1972, Ser. No. 294,394

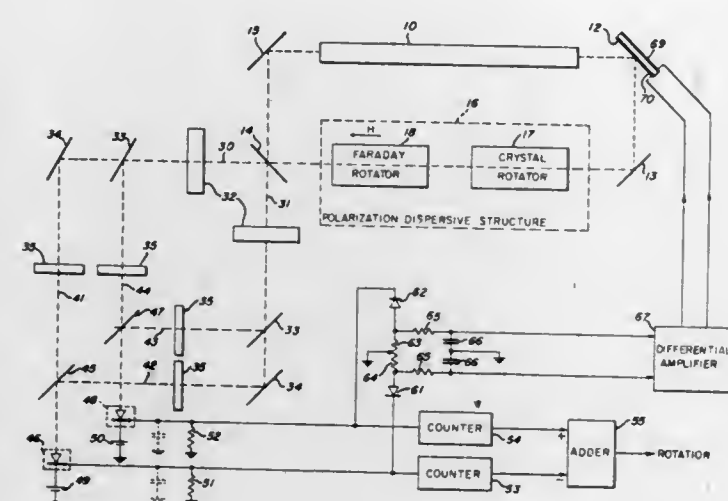
Int. Cl. G01b 9/02

U.S. Cl. 356-106 LR

19 Claims

1. In combination:
means for simultaneously directing a plurality of radiant energy waves having at least a plurality of substantially coherent frequencies in opposite directions through a polarization dispersive medium;
means comprising a medium common to at least a portion of the path of each of said waves for amplifying said waves;

frequency responsive reflecting filter means in said path; and



means for varying said frequencies comprising means for moving said medium.

3,854,820

LIGHT REFERENCE SYSTEM FOR AIDING OPERATOR POSITIONING OF LOAD HANDLING DEVICES AND THE LIKE

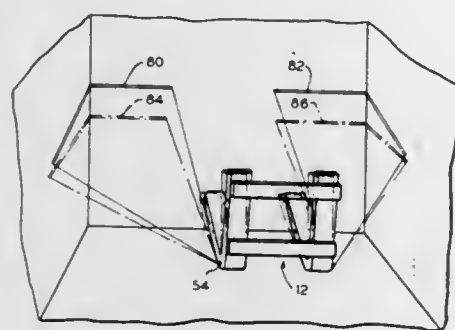
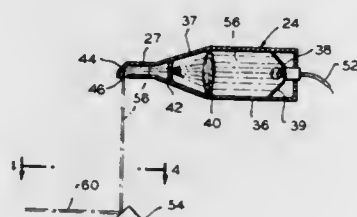
Howard C. Hansen, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 288,607, Sept. 13, 1972, which is a continuation-in-part of Ser. No. 84,703, Oct. 28, 1970, abandoned. This application Feb. 11, 1974, Ser. No. 441,683

Int. Cl. G01b 11/26

U.S. Cl. 356-138

31 Claims



1. In a vehicle having a manipulatable load handling device, a light optical means mounted on the handling device being so constructed and arranged as to provide a substantially collimated light beam and to project said light beam from said load handling device as a diverging plane of light collimated in one dimension and in a predetermined attitude in relation to the load handling device such that a visual reference of the position of the load handling device appears in the form of a distinctly perceivable line of light on surfaces in the path of the projected diverging plane of light.

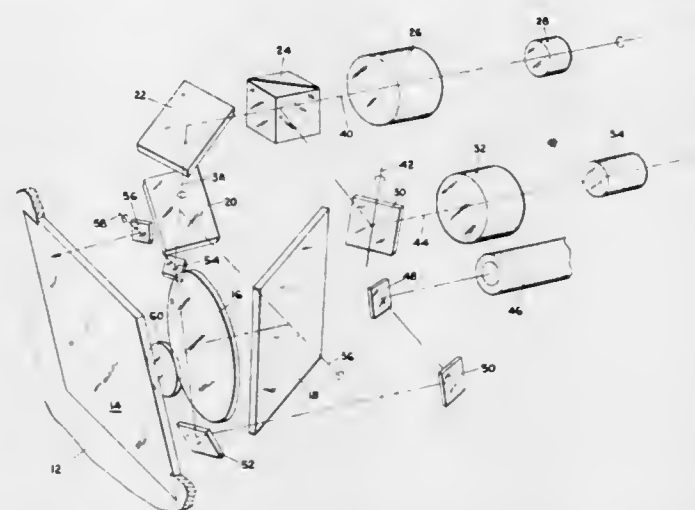
OPTICAL SYSTEM FOR WIDE BAND LIGHT ENERGY John W. Thompson, Timonium, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,944

Int. Cl. G01j 1/20

U.S. Cl. 356-152

2 Claims



1. An optical system for tracking a target from an airborne platform, said optical system comprising:

a positive refractive element positioned within an aircraft for receiving a beam of spectral energy containing visual and IR wave lengths from said target, said refractive element having characteristics permitting passage of visual and IR spectral energy, said refractive element forming an image plane for said visual energy a first optical distance from said refractive element, and forming an image plane for said visual energy a second optical distance from said refractive element;

means mounting said refractive element for movement about an elevation axis and an azimuth axis for tracking said target;

means for splitting said refracted beam of spectral energy into a band containing said visual energy and a band containing substantially said IR light energy;

a first sensing means positioned in the path of said visual energy band for detecting the image formed by visual energy;

means mounting said first sensing means for rotation about a central axis of said path of said visual energy band for derotation of said visual image corresponding to rotation of said refractive element about said elevation and azimuth axes;

a second sensing means positioned in the path of said IR light energy for detecting the image formed by said IR light energy; and

means mounting said second sensing means for rotation about a central axis of said path of said IR energy band for derotation of said IR image corresponding to rotation of said refractive element about said elevation and azimuth axes.

3,854,822

ELECTRO-OPTICAL SCANNING SYSTEM FOR DIMENSIONAL GAUGING OF PARTS

Norman G. Altman, White Plains, N.Y., and Marc G. Dreyfus, Stamford, Conn., assignors to BAI Corporation, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,113

Int. Cl. G01b 11/00

U.S. Cl. 356-156

14 Claims

1. An electro-optical scanning system for gauging the dimensions of a machined part and other fabricated objects and assemblies to determine whether the part meets predetermined manufacturing standards, said system comprising:

A. an electro-optical scanner having a light sensitive face;

B. optical means including a fixed high intensity light

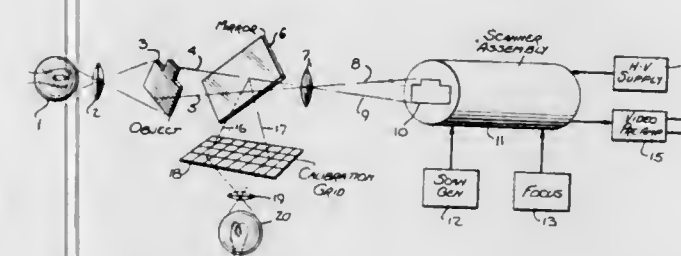
source illuminating a part to be measured to project an outline of said part to be measured onto said face;

C. a scan generator operatively coupled to said scanner to produce scan voltages generating a scan whose position and length are controllable to define a scan path which traverses those edges of the image of the part outline that constitute the terminal points of a dimension to be measured, whereby the scanner yields a video signal representing said dimension;

D. an electronic clock generating periodic pulses at a constant rate;

E. means to apply said video signal to said clock to gate the operation thereof to produce a train of pulses in the time interval between said terminal points;

F. a counter coupled to said gated clock to count the number of pulses in said train to produce a test count representing said time interval;



G. a reference-value storage register;

H. an input information matrix coupled to said controllable scan generator and to said register to supply, in regard to each of the several part dimensions to be measured, information to said scan generator for producing a scan along a scan path appropriate to each part dimension and to supply to said register information regarding the counts appropriate to the nominal dimensions of each part dimension; and

I. means comparing the test count yielded by the counter for each measuring scan with the reference count in said register representing the related nominal dimension, to produce an output signal indicative of the disparity between the part dimension measured and the nominal dimension.

3,854,823

MEASURING AND COUNTING SYSTEMS

John Loxham, Bletchley, England, assignor to Cranfield Institute of Technology, Cranfield, Bedfordshire, England

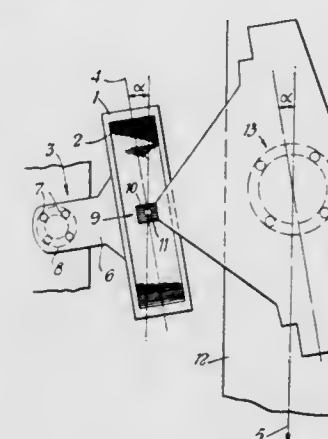
Filed Mar. 3, 1972, Ser. No. 231,674

Claims priority, application Great Britain, Mar. 5, 1971, 6194/71

Int. Cl. G01b 11/04

U.S. Cl. 356-169

9 Claims



1. A mechanism having two relatively movable parts and a digital displacement sensing device for detecting the relative linear motion of the two parts of the mechanism, the device including: a first member which comprises a linear scale carried by one of said parts and having a plurality of digital indi-

cators; a second member which comprises a scale reading element mounted on the other of said two parts so that said scale reading head can traverse relative to the linear scale; and means for selectively adjusting the angle between the length direction of said linear scale and the intended direction of the relative motion of said two parts of a mechanism, whereby the extent of the relative motion in said direction and corresponding to the distance between two of said digital indicators of said scale can be adjusted finely.

3,854,824

MECHANICAL PENCIL

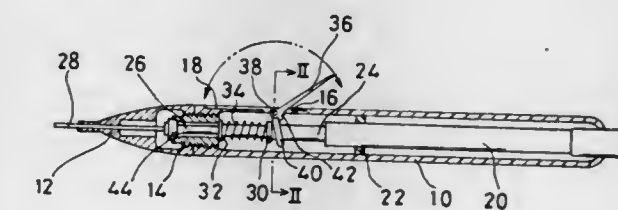
Mitsunori Kamo, Hiroshima, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,384

Int. Cl. B43k 21/22

U.S. Cl. 401-65

4 Claims



1. A lead storage pencil comprising an outer body casing formed at its side portion with an opening and an aligned recess contiguous to said opening, said casing terminating in a threaded end portion, a threaded, axially apertured, element threadedly engaging said threaded end portion of said casing and having a length to provide a threaded section extending beyond said end of the casing, said threaded element having an end face adjacent said recess, intermediate tube means coaxially disposed within and fixed to said outer body casing, a lead tube coaxially disposed relative to said casing and to said tube means for sliding movement relative to the latter and within and through the aperture in said element and being integrally formed at the projecting end thereof with lead chucking means for selectively chucking or releasing lead from the lead tube and with first and second flange means, one of which is in the region of said opening in the body casing for providing an abutment surface, said lead tube being slidably supported by said intermediate tube means, spring means mounted between said abutment surface of said one of said flange means and the other of said flange means for normally urging the lead tube in a first direction, said other of said flange means normally engaging said end face of said element, force translating means for translating a radially applied manual force to an axially directed force and comprising a manually operable lever and a ring formation each being pivoted to a common pivot traversing said opening in the side portion of the casing, said ring formation, on depression of said lever, acting on said one of said flange means to urge the lead tube in a second direction opposite to said first direction against the bias of said spring, said lever when a writing operation is terminated being movable for positioning within said recess on movement of said lever in a direction opposite to its direction of depression for moving said lead in said second direction, and a cap nozzle threadedly engaging said threaded extension of said element and provided with an end opening through which an end of lead is projectable on release of the lead by the chucking means on depression of said lever against said bias of said spring.

3,854,825

REFILLABLE PENCIL

Albert Girella, Geneva, Switzerland, assignor to Fabrique Suisse De Crayons Caran D'Ache S.A., Geneva, Switzerland
Filed Apr. 3, 1973, Ser. No. 347,472

Claims priority, application Switzerland, Oct. 3, 1972, 14402/72

Int. Cl. B43k 21/16

U.S. Cl. 401-94

2 Claims



1. A mechanical lead pencil comprising a hollow body including a bored lead receiving end, return spring within said body, a sliding tubular lead holding member within said body and having a portion thereof surrounded by said spring, said body and said lead holding member both made of plastic material possessing limited resilience, said lead holding member including at one end a plurality of clamping tongues to clamp the lead and at the opposite end a pushbutton projecting out of the end of said body opposite said lead receiving end to permit the user to move the sliding lead holding member against the action of said return spring, a wedge shaped annular member disposed between said tongues and the inner wall of said hollow body, first and second stop means above and below said annular member, the engagement of said annular member with said second stop means ensuring the clamping of said tongues and simultaneously locking said lead holding member against the action of said spring, the engagement of said annular member with said first stop means ensuring the release of said tongues, braking tongues in said hollow body exerting friction against said lead, the inner wall of said hollow body provided with an annular rib, the outer wall of said sliding lead holding member also provided with an annular rib so as to keep said sliding member in place against the action of said spring in the absence of a lead in said pencil, said lead holding member being integral with said clamping tongues, said push button also integral with said lead holding member, said lead holding member being of reduced outer diameter near said clamping tongues and including a shoulder separating the reduced diameter portion from the larger portion, said spring having one of its ends abutting said shoulder, the opposite end of said spring abutting said second stop means, whereby, when lead is removed from said sliding member said sliding member and spring may be withdrawn completely from said body by axially pulling said push-button away from said body to force said sliding member rib to pass said body rib.

3,854,826

FLUID APPLICATOR PRESSURE CONTROL DEVICE

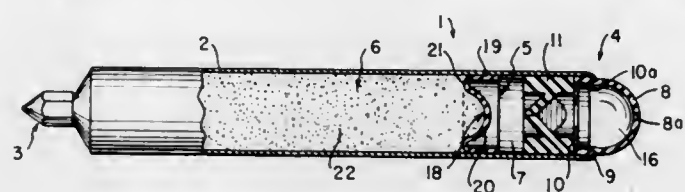
Patrick J. Adams, Bellefontaine, Ohio, assignor to Artex Hobby Products, Inc., Lima, Ohio

Filed Dec. 26, 1973, Ser. No. 427,660

Int. Cl. B43k 5/02, 7/10

U.S. Cl. 401-188

7 Claims



1. In a fluid applicator having a hollow elongated body, a marking fluid chamber within the body for containing a quantity of the marking fluid, a pumped fluid chamber within the body, separator means for separating the chambers, a pump in communication with the pumped fluid chamber and a tip in communication with the marking fluid chamber, an improvement comprising separator means including a deformable plug means having:

- a wall bearing section proportioned to be substantially in sealed engagement with the interior walls of said body for sealing said marking fluid chamber from said pumped fluid chamber;
- a pressure transfer section connected to and movable relative to said wall bearing section for transferring pressures to and from fluids in said fluid chambers, the wall bearing and pressure transfer sections being formed so that changes in pressure cause said pressure transfer section to move prior to movement of said wall bearing section in response to pressure changes.

3,854,827

METAL-TO-CERAMIC LEADTHROUGH

Josef Merz, Hamburg, Germany; Johannes Van Esdonk, and Joannes Franciscus Maria Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

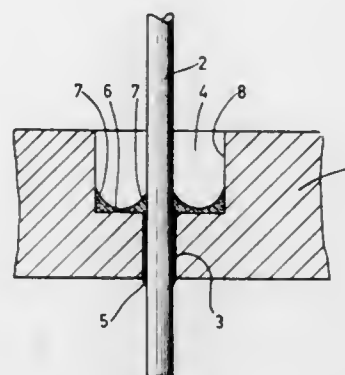
Filed Nov. 22, 1972, Ser. No. 308,685

Claims priority, application Germany, Dec. 1, 1971, 2159531

Int. Cl. F16b 11/00; C03c 27/02

U.S. Cl. 403-29

2 Claims



1. A metal-to-ceramic leadthrough, comprising: a ceramic wall portion that has a thickness of more than 2 mm and that includes an aperture comprising a narrow portion which changes in a step-wise manner into a wider portion, said narrow portion having a length that is at most about 2 mm; a metal conductor disposed in said aperture and spaced by a gap from the aperture wall; and a body of glass-like material disposed at and entirely filling the gap between the conductor and the inner wall of the narrow portion of the aperture, said body forming a relatively thin layer on the bottom of the wide portion of the aperture and said thin layer forming a meniscus both against the conductor and against the inner wall of the

wide portion of the aperture, said conductor consisting of a material having a coefficient of thermal expansion which is lower than that of the ceramic portion.

3,854,828

THREADED MOUNTING SLEEVE WITH RELATIVELY PIVOTABLE END SECTIONS

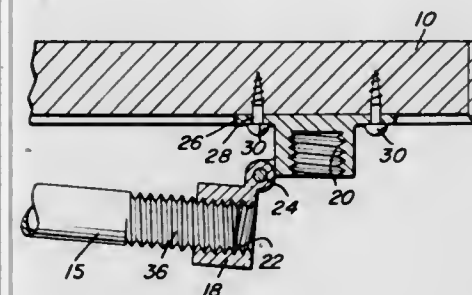
John P. Jones, 900 Saturn Dr., Apt. 304, Colorado Springs, Colo. 80906

Filed Mar. 21, 1973, Ser. No. 343,483

Int. Cl. F16l 27/0

U.S. Cl. 403-100

6 Claims



1. A connecting assembly comprising first and second sections pivotally supported from each other for relative angular displacement about a predetermined pivot axis between first and second relative positions, said sections defining coaxial threaded bores when said sections are in said first position with said axis extending transversely and disposed to one side of said bores closely adjacent the adjacent ends thereof, and a threaded elongated member removably threadably engageable through said through bore and into the bore in the other section when said sections are in said first positions, the other of said sections including abutment means engageable by the terminal end of said threaded member limiting threaded penetration of said threaded member into the bore in said other section.

3,854,829

JOURNALLING JOINT FOR CONNECTING ARMS TO EACH OTHER

Ryuzo Nakano, Aichi, and Takeo Yamazaki, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

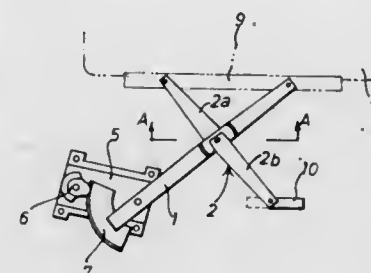
Filed Apr. 6, 1973, Ser. No. 348,699

Claims priority, application Japan, Apr. 7, 1972, 47-41519[U]

Int. Cl. F16c 11/00; F16d 27/00

U.S. Cl. 403-162

7 Claims



1. A journalling joint for use in raising and lowering a vehicle door window, or the like, comprising first and second arms, a circular through-hole provided in said first arm, a metal disc rotatably seated in said through-hole, said disc having opposed faces substantially parallel with the respective face portions of the first arm which surround the through-hole, said second arm being formed of two sections, each of said sections having a base end and an outer end, and the base ends of said sections of said second arm being welded to the

3,854,830

QUICK-RELEASE MECHANISM FOR CLAMPING A TOOL ON A HUB

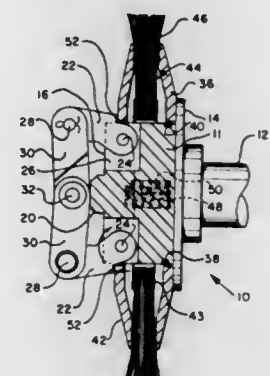
Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Nov. 12, 1973, Ser. No. 415,089

Int. Cl. F16d 1/06

U.S. Cl. 403-252

4 Claims



1. A quick-release mechanism for clamping a tool on a hub comprising: a back flange mounted to the hub; a front flange removably mounted to the hub for forward-rearward movement on the hub and located forwardly on the back flange; a first finger pivoted to the hub for inward-outward swinging movement about a first axis and extending away from said first axis and said front flange; a second finger pivoted to the hub for inward-outward swinging movement about a second axis and extending away from said second axis and said front flange; a detent on each of said fingers bearing against the front of the front flange; a first toggle arm pivoted to the front of the first finger for swinging movement about a third axis and extending inwardly of the first finger and forwardly of the hub; a second toggle arm pivoted to the front of the second finger for swinging movement about a fourth axis and extending inwardly of the second finger and forwardly of the hub; and means pivoting the inner ends of the toggle arms to each other for swinging movement about a fifth axis; whereby the tool may be located on the hub between the back and front flanges and clamped between the flanges when the fifth axis is rearward of the straight line extending between the third and fourth axes pursuant to a yieldable forward force applied against the front flange which causes the inner ends of the toggle arms to bear against the front of the hub.

3,854,831

CORNER CONNECTOR FOR TUBULAR MEMBERS

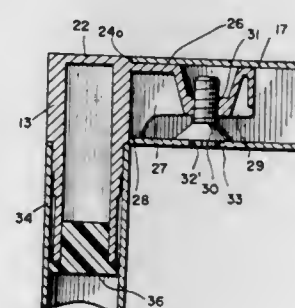
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Filed Aug. 31, 1970, Ser. No. 68,403

Int. Cl. F16b 7/04

U.S. Cl. 403-292

4 Claims



1. In combination, a fitting for interconnecting tubular members of generally square cross-section, comprising a unitary body having at least two integral projections extending away therefrom and adapted to be ensleeved within a tubular

member, at least one projection being an arm having, at its root, cross-sectional dimensions sized to snugly fit said arm to its associated tubular member, the height dimension of said one arm being reduced adjacent the end of said arm, said arm being equipped with a tapped bore for receiving a bolt to fix said associated tubular member relative to a given arm, a bolt and tubular member, said bolt having a raised head portion operative upon withdrawal to engage an opening in said tubular member to cinch said tubular member in place on said fitting.

3,854,832

HANDLING ROD ASSEMBLY FOR INVESTMENT CASTING MOLD

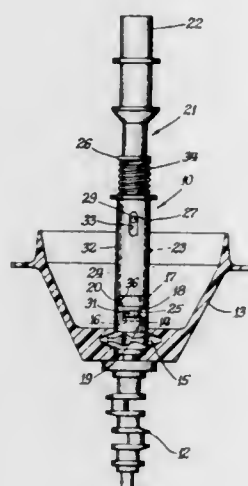
Glenn Sherwin Cowper, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1973, Ser. No. 323,937

Int. Cl. B25g 3/28; B22c 7/00

U.S. Cl. 403-349

7 Claims



1. An investment casting handling rod assembly adapted for use in making an investment casting mold comprising a rod having attachment means on its upper end adapted to attach the rod assembly to mold handling apparatus, a casting connecting lug having an irregularly shaped head, coupling means detachably connecting said lug to a lower end of said rod assembly and for preventing axial movement of said lug relative to said rod, and anti-rotation means for preventing both clockwise and counter-clockwise rotation of said lug relative to said rod.

3,854,833

EXPANDABLE RING CONNECTING DEVICE

David Samiran, 148 Northwest Rd., and Arthur H. Moore, 46 Northwest Rd., both of Westfield, Mass. 01085

Filed Dec. 11, 1973, Ser. No. 423,738

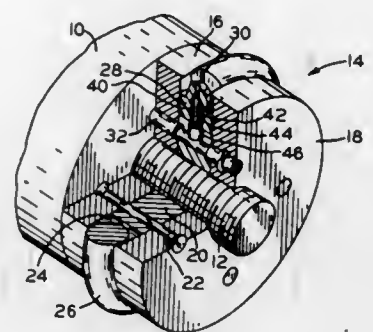
Int. Cl. F16b 7/04

U.S. Cl. 403-377

14 Claims

1. In combination; a cylindrical member, a radially outwardly opening annular groove in said member, at least one split ring of stiff wire in said groove having the ends thereof in opposed relation, radial plunger means in said member having a radially outer end portion disposed between and in engagement with the opposed ends of said wire ring, said radially outer end portion of said plunger means tapering inwardly in the radially outer direction, and actuating means moveably carried by said member and operatively engaging the radially inner end of said plunger means and adjustable for moving said plunger means radially outwardly in said member to cause said radially outer end of said plunger means to force said ends

of said wire ring away from each other and thereby expand the diameter of said wire ring, said wire ring protruding radially



outwardly from said groove in at least the expanded condition thereof.

3,854,834

LAWN MOWER HANDLE MOUNTING DEVICE

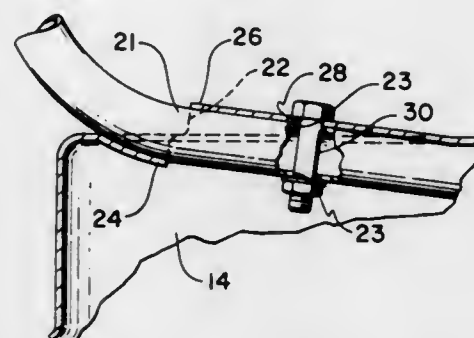
Joseph J. Lane, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.

Filed Oct. 9, 1973, Ser. No. 404,391

Int. Cl. F16b 7/00

U.S. Cl. 403-386

4 Claims



1. In a powered lawn mower assembly, improved structure for securing a substantially upright handle assembly to said lawn mower assembly, improvement comprising, in combination, a pair of elongated substantially upright arms defined on said handle assembly and having frontwardly directed, unitary lower end portions, each of said end portions having a front section and a rear section, a top deck for said lawn mower assembly, a pair of laterally spaced means deformed from said deck for receiving each of said end portions, said receiving means each including a forward portion elevated above the plane of said deck and having a linear axis and a rear portion depressed below the plane of said deck and having a curved axis, a rearwardly facing opening at the juncture between each of said elevated and depressed portions, each said opening receiving each said end portion, each said front section bearing directly against the inner surface of each said elevated portion, each said rear section bearing directly against the outer surface of each said depressed portion, and a fastener for rigidly interconnecting each said front section and each said elevated portion.

3,854,835

EXPANSION JOINT

Wilhelm Stog, Waltrop, Germany, assignor to W. Stog KG Industrie- und Rohrleitungsbau, Waltrop, Germany

Filed May 4, 1972, Ser. No. 250,329

Claims priority, application Germany, Nov. 9, 1971, 2155651

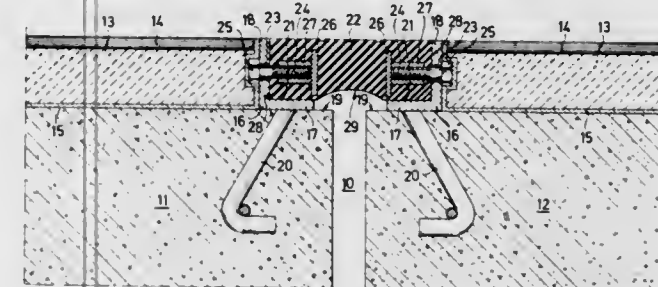
Int. Cl. E01c 11/12

U.S. Cl. 404-68

8 Claims

1. An expansion joint for adjacent roadway sections having a gap therebetween to allow expansion of said sections, said sections being recessed along their adjacent edges to form a groove along both sides of said gap, said joint comprising in

combination a plate structure fixed to each section along the bottom of said groove, each of said plate structures having a support projection parallel to and spaced from said gap, said recessed sections supporting an expansion member extending into said grooves, said expansion member consisting of a joint strip of elastic material having free side surfaces, retaining ribs inset in said strip, said ribs each comprising a series of individual sections running in the longitudinal direction of the strip and each of individual sections being provided with at least one threaded bush, said bush having an axis arranged trans-



versely to the expansion gap, said bushes each engaging with a tensioning bolt which bears freely and rotatably against a corresponding support projection in said groove, said plate structures having a support projection being fixed in the recessed sections comprising inlaid angle-irons having the horizontal flanges thereof mounted on the floor of the recess, adjacent the expansion gap, and vertical flanges of angle-irons having holes for the tensioning bolts to pass through, said retaining ribs being arranged to be divergent towards the floor of the recess in relation to the vertical flanges of the angle-iron.

3,854,836

DRILLING MACHINE FOR PLASTER CASTS OR MODELS

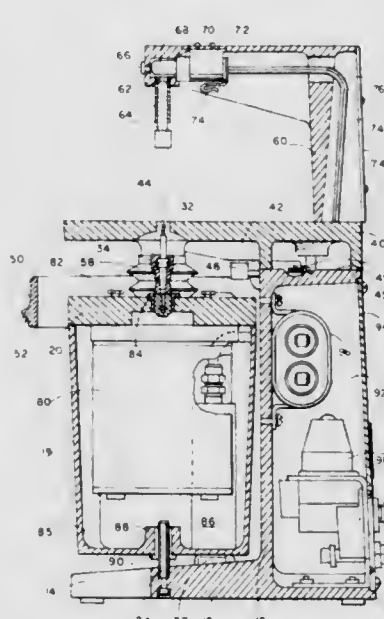
Bernard Weissman, 236 Fifth Ave., New York, N.Y. 10001

Filed Jan. 2, 1973, Ser. No. 320,275

Int. Cl. B23b 41/00, 47/22

U.S. Cl. 408-14

13 Claims



1. A drilling machine for drilling holes in a plaster cast comprising a frame having a stationary horizontal drilling platform, said drilling platform having an opening there-through and a top surface adapted to support a cast which is positionable over said opening, drilling means mounted on said frame and positioned below said drilling platform and vertically movable between two spaced vertical positions, said drilling means being adapted to receive and support a drill bit, said drill means being arranged to maintain the drill bit below

said top surface in one of said positions while passing the drill bit through said opening and above said top surface in the other of said spaced positions to thereby drill a hole in the plaster cast positioned on said top surface covering said opening; and actuating means for moving said drilling means from one of said positions to the other of said positions, said actuating means comprising a handle pivotally connected to said frame and engageable with said drilling means, said handle extending adjacent to and substantially along the length of the periphery of said drilling platform, whereby both said handle and the plaster cast to be drilled can be simultaneously manually gripped with both hands and said drilling means can be moved by moving said handle while securing the position of the plaster cast during drilling of the latter.

3,854,837

APPARATUS AND MEANS FOR PERFORMING A METHOD FOR CONTROLLED DEEP HOLE DRILLING

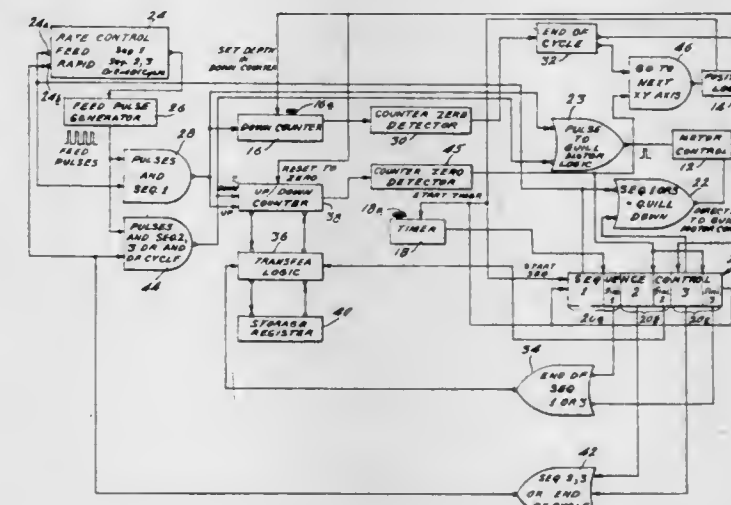
Marvin L. Kreithen, Huntington Valley, and John J. Lawler, Newportville, both of Pa., assignors to Textron Inc., Providence, R.I.

Filed Feb. 23, 1973, Ser. No. 335,075

Int. Cl. B23b 47/18

U.S. Cl. 408-17

18 Claims



1. The means for performing a method of drilling deep holes using a step motor drive quill comprising a pulse rate control for supplying pulses to the step motor providing at least two pulse rates, a slower rate for drilling and a faster rate for advance to work, withdrawal and reinsertions of the drill, a direction control controlling the direction of rotation of the step motor, a sequence control in which a predetermined pattern of drilling a hole is established and which at appropriate times acts upon the direction control and the pulse rate control to change direction and change pulse rates, respectively, and position control consisting of at least two counters responding to pulses from the step motor and including a down counter counting cumulatively actual hole depth achieved from pulses at the slow rate, an up/down counter counting pulses down as positive and pulses up as negative and being capable of modification in accordance with program from the sequence control whereby the sequence control determines the order in which action occurs, the step motor advances the quill a predetermined amount into the work from a starting point at said slower rate appropriate for drilling into the work, both counters accumulate a count of pulses used to drive said step motor representative of the hole depth drilled until a predetermined depth is reached, the sequence control reverses direction and speed of the step motor for withdrawing the quill away from the work, the up/down counter counts pulses driving the motor to

the starting point at the more rapid rate a distance represented by said accumulated count,
 at the start point the sequence control reverses motor direction for returning the quill at said more rapid rate to the point of furthest drilling advance as represented by said accumulated count,
 at the furthest drilling advance the sequence control changes speed for advancing the quill at said drilling rate adding to the accumulated count in the counters as drilling proceeds until either a predetermined depth or the full desired depth of the hole is reached,
 the sequence is repeated adding a predetermined drilling depth each cycle until full hole depth is achieved, and when the full desired depth is reached by comparison with the down counter the quill is withdrawn to the starting point.

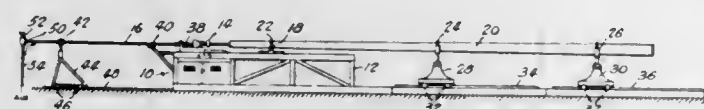
3,854,838 POLE CORER

George J. Barnett, La Prairie, Quebec; Mark Stanoy, Montreal, Quebec, and Robert L. Watson, St. Leonard, Quebec, all of Canada, assignors to Domtar Limited, Montreal, Canada

Filed Dec. 5, 1972, Ser. No. 312,364
 Int. Cl. B23b 41/02

U.S. Cl. 408—59

6 Claims



1. An apparatus for substantially axially coring poles comprising a tubular drill casing extending along a longitudinal axis and having a cutting end provided with a plurality of cutting teeth arranged in an annular ring lying in a plane transverse to said axis, said cutting teeth having an inside and an outside set, spaces between said teeth, means for rotating said drill casing, means for relatively axially moving said casing and said pole to be drilled, means to correlate the rotation of said drill with the relative axial movement between said drill and said pole thereby to form in said pole a core surrounded by an annular hole while producing wood particles having at least one dimension less than a preset length, means for introducing air under pressure into said tubular casing and forcing said air to pass between said core and the inside of said casing through said spaces between said teeth and back between the outside of said casing and the surface of said annular hole, said spaces between said teeth being of sufficient size to receive a plurality of said wood particles and permit same to be contacted by said air and delivered out of said annular hole in the clearance space formed by said outside set between the outer periphery of said casing and the outer periphery of said annular hole, guiding surfaces projecting radially from said casing a distance substantially equal to said outside set and extending substantially helically around said casing, some of said guiding surfaces trailing in a spiral path one from each of said teeth and further of said guiding surfaces positioned at spaced locations along said casing.

3,854,839 BOTTLE BORING TOOL

Herbert R. Gottelt, Mount Prospect, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

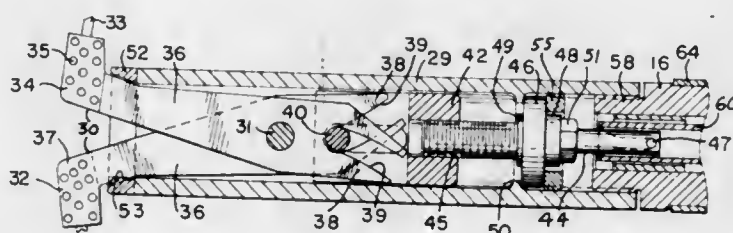
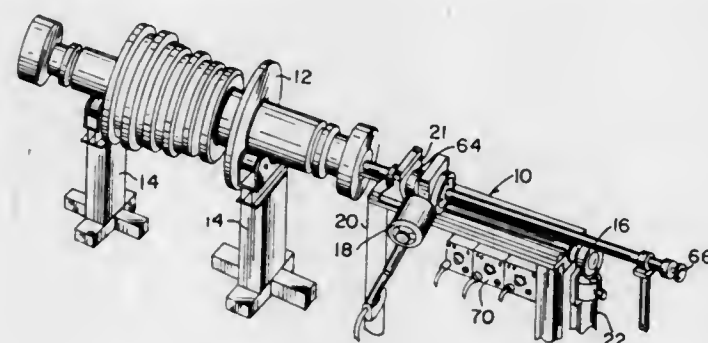
Filed Mar. 2, 1973, Ser. No. 337,671
 Int. Cl. B23b 27/00, 3/26

U.S. Cl. 408—129

20 Claims

1. A boring head particularly adapted for use in a boring assembly to enlarge the diameter of an existing bore within a turbine shaft or the like along a desired linear portion of the shaft, including shell means having a central axis and formed to allow its insertion within the existing bore of the shaft, said

shell means being rotatable about said central axis within said bore, at least one cutting tool means mounted within said shell means and rotatable therewith about said central axis, said tool means being mounted within said shell means for pivoting movement relative thereto, said tool means having a cutting portion extensible linearly beyond a forward end of said shell means and being movable radially with respect to the central axis of said shell means, cam assembly means mounted within said shell means, said cam assembly means including a cam means, disposed transversely to the central axis of said shell means and along a diametrical axis thereof, said cam means being mounted between opposite, axially extending slots formed in said shell means for axial travel therealong, said cam means engaging a cam follower portion of said tool means to radially move said cutting portion of said tool means by pivoting said tool means in response to the axial movement of said cam means along said central axis of said shell means, said



cam assembly means also including a yoke member to transmit such axial movement to said cam means, said yoke member having a forked portion mounted on said cam means and a body portion integrally formed with said forked portion and disposed at an end of said yoke means opposite said cam means, said body portion adapted to threadedly engage transmission means mounted in stationary axial position with respect to said boring head, said transmission means being rotatable about a central axis thereof to move said yoke means and thereby said cam means to a precise, selected position relative to said shell means thereby providing selected radial positioning of said cutting portion of said cutting tool means to allow, upon rotation of said shell means and said cutting tool means and cam assembly means therewith, said boring head to cut an enlarged bore of pre-selected diameter in the turbine shaft to selectively eliminate undesirable inclusions and stress points within such shaft.

3,854,840 CORE DRILL

Masaaki Miyahara, 5-15-109 Matsuhama-cho, Ashiya, Japan

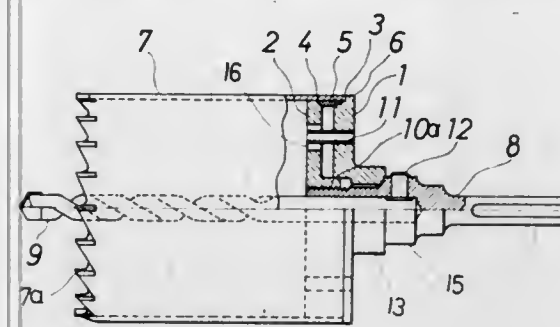
Filed Feb. 15, 1974, Ser. No. 442,903
 Int. Cl. B23b 51/04

U.S. Cl. 408—204

3 Claims

1. A core drill comprising a shank having a drill receiving recess in the lower end thereof, a shoulder thereon and a threaded portion between said shoulder and said lower end, a fixed disk around said shank between said shoulder and said threaded portion and against said shoulder, a movable disk threaded on said threaded portion, said disks having tapered edge portions on the peripheral edges thereof which taper

toward each other, a split ring having a cross-section with tapered edges engaging said tapered edge portions, and a



drilling cylinder around said ring with the inside surface of the drilling cylinder closely fitted to the outer surface of said ring.

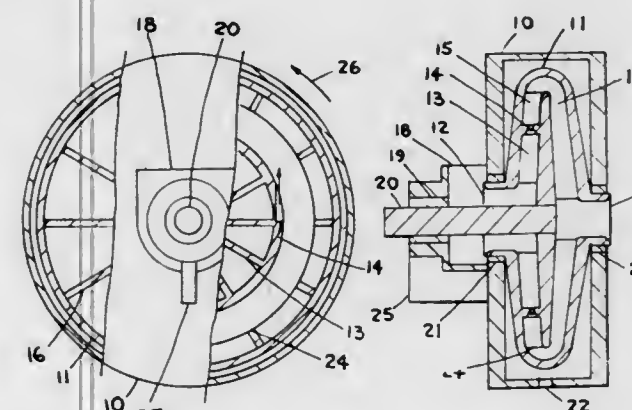
3,854,841 TURBINE

Michael Eskeli, 7994-41 Locke Lee, Dallas, Tex. 77042

Filed Oct. 9, 1973, Ser. No. 404,406
 Int. Cl. F01d 11/16, 5/08, 25/08

U.S. Cl. 415—81

6 Claims



1. A turbine for generating power comprising:

- a casing for supporting a shaft;
- a shaft journaled in bearings for rotation and supported by said casing;
- a rotating rotor mounted on said shaft so as to rotate in unison therewith; said rotor having an entry port disposed near the center of said rotor for entry of a working fluid with said entry port communicating with radially outward extending passageways for passing said working fluid; said outward extending passageways having vanes therewithin for ensuring that said working fluid will rotate with said rotor for acceleration and for pressurizing said working fluid; said radially extending passageways being provided with nozzles at their outward ends for passing said working fluid with said nozzles being oriented to discharge said working fluid forward in the direction of rotation thus increasing the absolute tangential velocity of said working fluid to a value greater than the tangential velocity of said nozzles; said nozzles discharging said working fluid to a first peripheral cavity of said rotor; said working fluid being then passed from said first peripheral cavity to rotor inward extending passageways with said inward extending passageways being provided with vanes for assuring that said working fluid will rotate with said rotor and for generation of power associated with the deceleration of said working fluid; the outward ends of said vanes within said inward extending working fluid passageways being at radial distance greater from rotor center than the discharge ends of said nozzles; said inward extending passageways being connected with an exit port being disposed near the center of said rotor for discharge of said working fluid;
- a fluid being flowed through said rotor; said fluid being flowed into said inlet of said rotor and being pressurized by centrifugal compression therewithin and discharged

outwardly and substantially tangentially in said forward direction at a tangential velocity that is substantially higher than said tangential velocity of said nozzles; said fluid having high said tangential velocity because of the additive effects of the pressure velocity of the fluid under the differential pressure existing between the entry and exit ends of said nozzles plus the tangential velocity due to the tangential velocity of said nozzles.

3,854,842

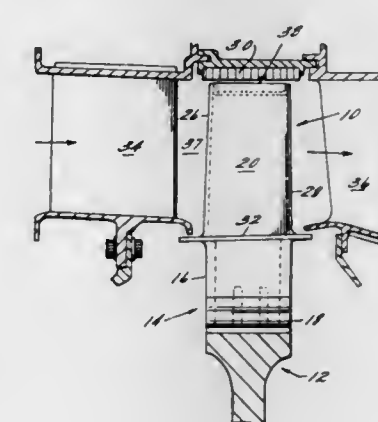
ROTOR BLADE HAVING IMPROVED TIP CAP
 Corbett D. Caudill, Franklin, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 30, 1973, Ser. No. 355,313

Int. Cl. F04d 29/08; F01d 5/00

U.S. Cl. 415—116

12 Claims



1. In a partially hollow turbomachinery blade having an upstream end, a downstream end and spaced radially extending sidewalls defining a partially open radially outward end, the blade used in cooperation with a circumscribing shroud disposed near the radial extremities of said sidewalls, a tip cap for cooperating with the open blade end, the tip cap comprising:

- a generally axially extending closure plate for providing a partial seal between the blade interior and the blade environment, the closure plate recessed from the radial extremities of said sidewalls and defining therewith and with the shroud a tip space; and
- a rib extending radially outwardly from the closure plate and generally axially from the upstream to the downstream end of said blade for partially dividing the tip space.

3,854,843

COMPOSITE ELONGATE MEMBER HAVING A
 PREDETERMINED EFFECTIVE COEFFICIENT OF
 LINEAR EXPANSION

Robert Noel Penny, 12 Alderbrook Rd., Solihull, England

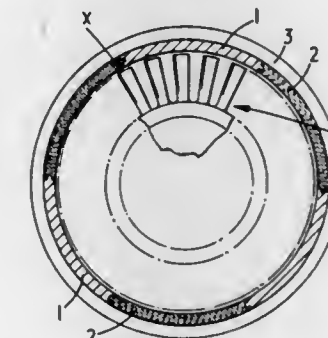
Filed Nov. 27, 1972, Ser. No. 309,790

Claims priority, application Great Britain, Dec. 1, 1971, 55665/71

Int. Cl. F04d 19/00, 29/02

U.S. Cl. 415—197

6 Claims



1. A stator shroud ring assembly in which a turbine of a gas turbine engine is to be positioned with an annular gap of

predetermined radial distance between the stator shroud ring and the periphery of the turbine rotor, the stator shroud ring assembly including a stator shroud ring constructed from at least one arcuate portion made of one material and at least one arcuate portion made of another material, the arcuate portions being assembled end-to-end and the co-efficients of linear expansion of the material employed and the total arcuate length employed of each material being such that the circumferential length of the whole shroud ring will change with temperature, within the range of working temperature for which the engine has been designed, by an amount corresponding to a predetermined effective co-efficient of linear expansion, whereby the total change in circumferential length of the stator shroud ring will substantially correspond to the alteration in diameter of the rotor, the radial dimension of said annular gap thereby being maintained at substantially the aforesaid predetermined value.

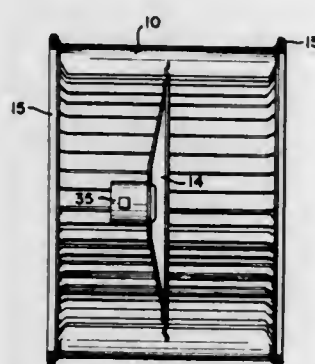
3,854,844 BLOWER WHEEL

James R. Ranz, Wilmington, Ohio, assignor to Philips Industries Inc., Dayton, Ohio

Division of Ser. No. 106,021, Jan. 13, 1971, Pat. No. 3,737,966. This application May 14, 1973, Ser. No. 359,905
Int. Cl. F04d 29/28

U.S. Cl. 416-184

2 Claims



1. A direct drive bladed blower wheel comprising a pair of roll-formed sheet metal end rings formed of strip material, said end rings each having ends which are overlapped and welded to form a continuous ring, a series of generally axially aligned and peripherally spaced blades having ends supported on said end rings, a single sheet metal center drive disk received axially within said blades and having a series of peripheral tabs defining slots engaging and supporting each blade at a location axially spaced between said end rings, the gauge thickness of said drive disk being substantially greater than that of said end rings.

3,854,845

PROPELLER HAVING ANGULARLY DISPOSED TIP
Frank Van De Water, 28604 Covecrest Dr., Palos Verdes, Calif. 90274

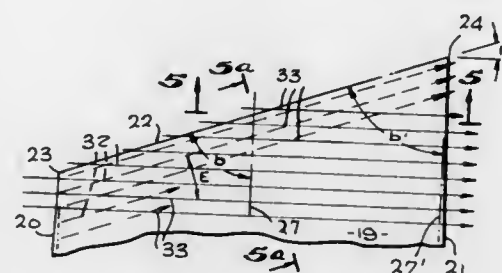
Continuation-in-part of Ser. No. 159,184, July 2, 1971, abandoned. This application May 7, 1973, Ser. No. 357,835
Int. Cl. B64c 11/18

U.S. Cl. 416-228

3 Claims

1. A propeller which is to be power driven rotatively about a predetermined generally horizontal axis and in a predetermined direction to cause horizontal advancement of an airplane: said propeller having a blade projecting generally radially outwardly away from said axis and which has a leading edge, and a trailing edge, and a tip edge extending therebetween; said tip edge being disposed at a pitch angle with respect to a plane extending perpendicular to said axis of the propeller; said leading and trailing edges having outer portions at substantially their outermost ends which extend approximately radially with respect to said axis and which essentially meet opposite ends of said tip edge; said tip edge being so

shaped that, as it advances generally circularly from said approximately radial outer portion of the leading edge to said approximately radial outer portion of said trailing edge, the tip edge also advances progressively radially outwardly away from said axis, throughout essentially the entire circular distance between said approximately radial outer portions of said leading and trailing edges, and at an angle of 71.5° with respect to a line extending directly radially outwardly from said axis and intersecting the tip edge; said blade in extending



between said tip edge and said trailing edge having an airfoil cross section in all planes perpendicular to a radial line and intersecting both the tip edge and trailing edge, which airfoil cross section is defined by a convexly curved forward face of the blade and a substantially flat rear face following a straight line between said tip edge and said trailing edge; said airfoil cross section, in all of said planes, tapering to thin substantially sharp shapes at both the tip edge and trailing edge of the blade.

3,854,846 OIL WELL PUMPOFF CONTROL SYSTEM UTILIZING INTEGRATION TIMER

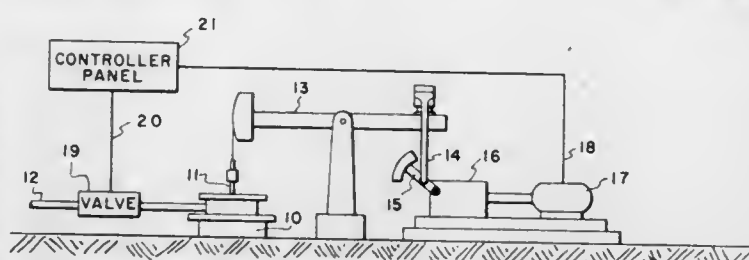
Bobby L. Douglas, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 1, 1973, Ser. No. 365,881

Int. Cl. F04b 49/00

U.S. Cl. 417-12

13 Claims



1. A system for controlling the operation of a well pumping installation including a pump, a motor for operating said pump, and a pumped fluid flowpipe, comprising:
means responsive to the flow of fluid through said flowpipe;
signal means for generating signals indicative of said response;
means to determine whether said signals are occurring less than a predetermined percentage of time during a given time interval; and
means to terminate the pumping operation in the event of said lesser determination.

3,854,847

APPARATUS FOR DAMPING THE PRESSURE INCREASE OF HYDROSTATIC DRIVES

Karl Schlecht, Bernhausen Stuttgart, Germany, assignor to Pulzmeister Interholding GmbH, Zurich, Switzerland
Filed Feb. 20, 1973, Ser. No. 333,652

Claims priority, application Germany, Feb. 22, 1972, 2208172

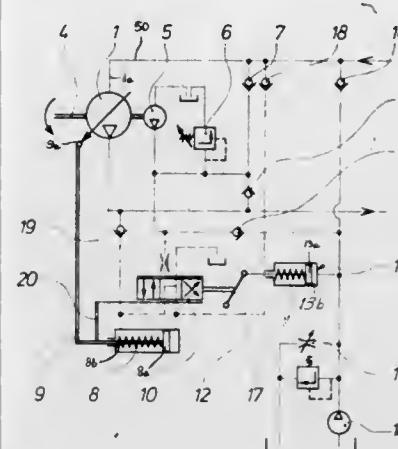
Int. Cl. F04b 49/00; F15b 15/18

U.S. Cl. 417-212

4 Claims

1. An apparatus for damping the pressure increase of hydrostatic drives, especially axial piston pumps with swash plate control and pre-biased oil circulation system, the improve-

ment comprising an adjustment cylinder having a pressurized oil compartment, a pump, an oil infeed means including an oil infeed line for the pump, a check valve, the pressurized oil compartment of the adjustment cylinder being flow connected with the low pressure side of the oil infeed line of the pump via the check valve, said check valve opening in the direction



of the low pressure infeed line, an internal hydraulic servo-adjustment means, said adjustment cylinder defining an external adjustment cylinder, an internal adjustment cylinder, said servo-adjustment means incorporating an external adjustment lever hingedly connected with the external adjustment cylinder, and a further check valve for flow connecting the internal adjustment cylinder with the low pressure infeed line.

3,854,848

DEVICE FOR PREVENTING BACK-FLOW IN CENTRIFUGAL PUMPS OPERATING IN PARALLEL
Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

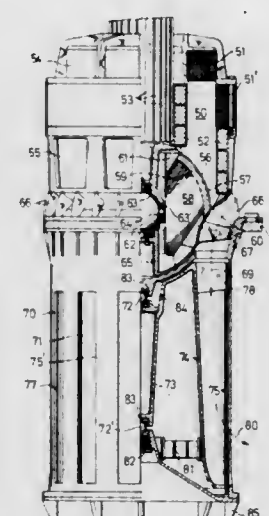
Filed Sept. 28, 1972, Ser. No. 293,141

Claims priority, application Austria, Oct. 7, 1971, 8658/71

Int. Cl. F04b 17/00

U.S. Cl. 417-424

4 Claims



1. A flow responsive valve device for preventing back-flow of fluid through a centrifugal pump when the pump is not operating and when said pump creates a fluid swirl in a pump discharge area when the pump is operating, said valve device comprising a fixed valve member in the discharge area having apertures therein, a rotatable valve member in the discharge area having apertures therein adapted in a first rotatable position thereof to overlie the apertures in said fixed member to allow fluid flow through the apertures and in a second rotatable position thereof to be masked by the space between the apertures of said fixed member to prevent fluid flow through the apertures, spring means urging said rotatable valve member towards said second rotatable position, and blading on said rotatable member located in said discharge area adapted to be contacted by the fluid swirl when said

pump is operating to urge said rotatable member to the first position against the force of the spring means such that the apertures of the first and second members overlie each other when the pump is operating.

3,854,849

DISTRIBUTION OF VALVE-GEAR SYSTEMS FOR ROTARY MACHINES

Maurice G. Brille, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

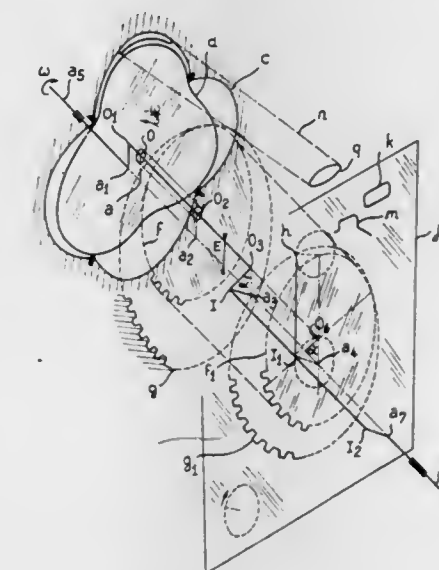
Filed Feb. 1, 1973, Ser. No. 328,599

Claims priority, application France, Feb. 8, 1972, 72.04093

Int. Cl. F01c 1/02; F04c 1/02, 17/02

U.S. Cl. 418-61 B

10 Claims



1. A rotary machine comprising:
a rotor with N lobes,
a pinion with KN teeth rigidly fixed on said rotor (K being a whole number),
a stator having N + 1 chambers,
a crown wheel with K (N + 1) teeth fixed on said stator,
a centrally disposed rotatable shaft coupled to said rotor by a first eccentric crank pin on which said rotor is rotatable, said rotor being driven in rotation by said pinion, said pinion being concentric with an eccentric bearing and engaging said crown wheel,
said stator having the same axis as the rotatable shaft,
a distributor disc supported against a friction face of a side plate, said disc being rotatably mounted on a second eccentric crank pin on said rotatable shaft,
a toothed crown wheel rigidly fixed on said distributor disc and centered on the axis of said second pin, and
said disc crown wheel being driven by said pinion.

3,854,850

ROTARY MEANS FOR FORMING SOLID GRANULES FROM LIQUID SUPPLY MEANS

Kouzo Ueda, Kyoto, and Zitumi Kimoto, Takarazuka, both of Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Filed Apr. 11, 1972, Ser. No. 242,926

Claims priority, application Japan, Apr. 14, 1971, 46-24089

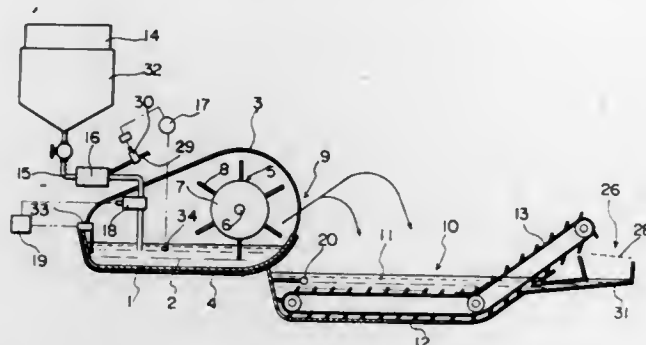
Int. Cl. B22d 23/08

U.S. Cl. 425-8

12 Claims

1. An apparatus for reducing molten material to substantially uniform granular form comprising a supply means of meltable material, means for maintaining the meltable material at a predetermined flowable temperature, conduit means associated with said last-named means for transporting the flowable material to a bath in a substantially closed chamber, rotary means positioned in said chamber, a plurality of pin members extending radially from said rotary means and having respective end portions thereof operatively positioned for scooping up limited, substantial uniform, separate portions of

said molten material from said bath and for flinging off separately said limited portions of molten material scooped up through space and thence into a trough-like member positioned adjacent to said chamber, a coolant in said trough-like member for cooling said portions of material to solidify same



in form of substantially uniform spheres, and means for advancing the granular material through said coolant to a means for separating the granules from the coolant, whereby the granules of substantially uniform diameter and relatively large size are produced.

3,854,851

METHOD FOR SEPARATING NICKEL FROM COBALT IN AQUEOUS SOLUTION

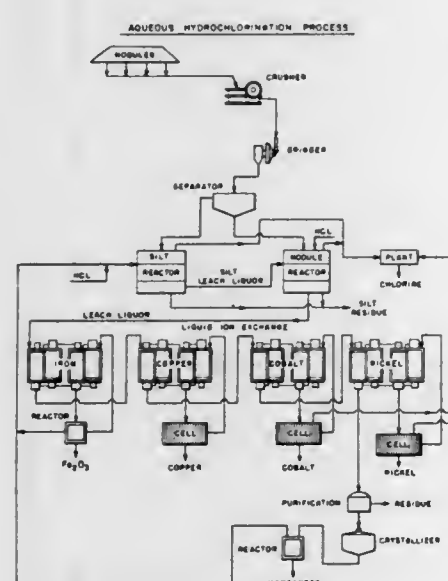
Paul H. Cardwell, Zanol, Va. 23191, and James A. Olander, P.O. Box 36, Gloucester Point, Va. 23062

Continuation-in-part of Ser. No. 40,564, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,565, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,587, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,590, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,586, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,585, May 26, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,693

Int. Cl. C01g 3/00, 51/02, 53/00, 45/00

U.S. Cl. 423-24

11 Claims



1. A process for the separation of individual metal values from an aqueous solution comprising a mixture of dissolved metal values, as the halides, the solution comprising as the primary metal value, manganese, and as secondary metal values, cobalt and nickel, the process comprising: (1) extracting cobalt halide from the aqueous solution with an organic amine solution, the amine being selected from the group consisting of secondary amines, tertiary amines and quaternary amines, so as to form an organic amine solution extract

containing cobalt tetrahalide complex and some manganese, and an aqueous first raffinate, substantially depleted in cobalt halide; (2) separating the cobalt and manganese values from the organic amine extract into individual aqueous solutions by selectively stripping the manganese value from the extract with from about 1 to about 12N HCl aqueous solution to form an aqueous solution of manganese halide and an organic solution substantially depleted in manganese value and then stripping the cobalt value from the organic solution using an aqueous solution having a pH of not greater than about 5, to form an aqueous solution of cobalt halide; (3) extracting the nickel from the first raffinate with a liquid ion exchange agent to form an aqueous second raffinate containing manganese halide and substantially depleted in nickel value and an organic extract containing the nickel value; and (4) stripping the nickel value from the organic extract with an acidic aqueous solution.

3,854,852

METHOD AND APPARATUS FOR FORMING A TIRE

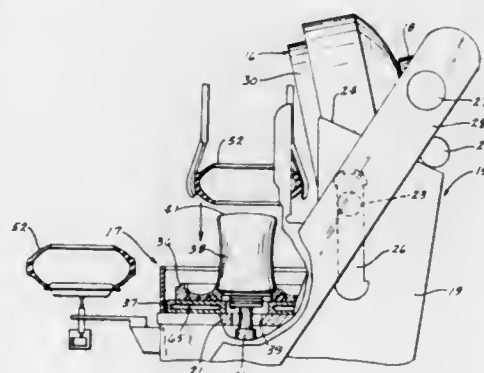
Russell W. Carter, Des Moines, Iowa, assignor to Corn States Metal Fabricators, Inc., Des Moines, Iowa

Division of Ser. No. 323,041, Jan. 12, 1973. This application May 22, 1974, Ser. No. 472,001

Int. Cl. B29h 5/02

U.S. Cl. 425-40

3 Claims



1. Tire forming apparatus for shaping and curing a pre-formed tire band within separable upper and lower mold members wherein an inflatable shaping mechanism is located axially of the lower mold member comprising:

- means for moving the upper mold member to a closed position relative to the lower mold member, said upper mold member in the closed position therefor forming a tire cavity with the lower mold member,
- fluid passage systems in said mold members including a plurality of passage ways having terminal end portions open to said tire cavity and spaced circumferentially in the side wall of said tire cavity,
- valve units corresponding to said passageways, each valve unit including a stem member reciprocally movable within an associated terminal end portion for movement to a retracted position to open an associated passageway and to an extended position to close said passageway, said stem member having an end face flush with the cavity side wall to form a continuous surface therewith when the stem member is in the extended position therefor,
- means for inflating said shaping mechanism under an initial pressure to provide for the expansion of the tire band to a first position adjacent to but spaced from the side wall of the tire cavity, to form an air chamber about said tire band,
- means for evacuating air from said air chamber through said passageways when the stem members are in the retracted positions therefor to produce a sub-atmospheric pressure in said air chamber,
- means for moving said stem members to the extended positions therefor when the sub-atmospheric pressure in the air chamber is at a predetermined value,

- means for heating and inflating said shaping mechanism to a predetermined curing temperature and pressure to expand the tire band into conforming engagement with the cavity side wall, and
- means for moving said upper mold member to the open position therefor when the tire has been cured.

3,854,853

SEGMENTAL MOLD

Henri J. Mirtain, Compiègne, France, assignor to Uniroyal, a Societe Anonyme, Clairoux, France

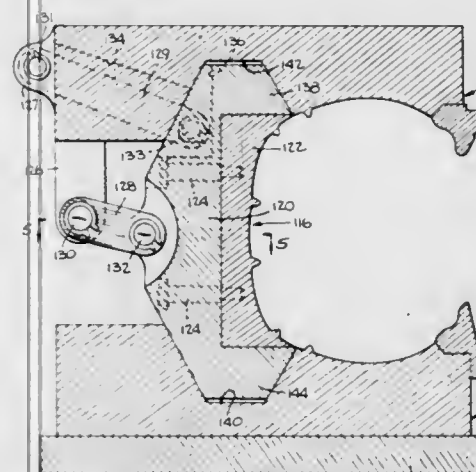
Filed July 12, 1973, Ser. No. 378,456

Claims priority, application France, Aug. 25, 1972, 72.30386

Int. Cl. B29h 5/04

U.S. Cl. 425-47

8 Claims



1. A segmental mold comprising: a pair of vertically spaced annular sidewall-shaping members coaxially confronting one another; means for moving one of said members axially relative to the other; an annular array of tread-shaping segments concentrically interposed between said members; and linkage means for pivotally connecting respective ones of said segments to one of said members, said linkage means cooperating with said segments for effecting displacement of the latter radially from an open annular array wherein said segments are spaced from one another to a closed annular array of reduced extent wherein said segments abut one another and define a tire-curing mold cavity with said members, the upper sidewall-shaping member including wedge means operatively associated with a corresponding axial end portion each of said segments for initially assisting in radially displacing said segments simultaneously and subsequently removably constraining each of the latter against movement relative to one another in said closed annular array, said linkage means including a plurality of pairs of links each of which at one end is pivotally articulated to the upper sidewall-shaping member and at the other end to a corresponding one of said segments, one link of each said pair being longer than the other and cooperating with the latter to limit gravitational displacement of its corresponding segment by swinging the latter into engagement with a lower portion of said wedge means upon axial separation of said sidewall-shaping members from one another.

3,854,854

HIGH PRESSURE PRODUCING APPARATUS

Leonid Fedorovich Vereschagin, Kutuzovskiy prospekt, 1/2, kv. 231, Moscow, and Lev Grigorievich Khvostantsev, ulitsa Shkolnaya, 4, kv. 62, Moskovskaya oblast, Podolsky raion, Akademgorodok, both of U.S.S.R.

Filed Oct. 2, 1973, Ser. No. 402,858

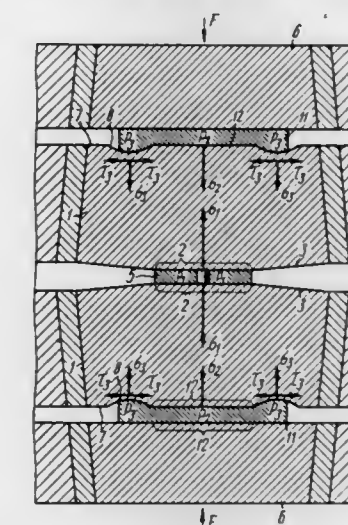
Int. Cl. B30b 11/32

U.S. Cl. 425-77

5 Claims

1. An apparatus for producing high pressure, comprising a pair of similar coaxially arranged opposing dies, a test sample received intermediate the central portions of the respective

faces of said dies, facing each other, said test sample being surrounded by a medium that is plastic under pressure and capable of transmitting to said test sample the pressure produced as said dies are being driven toward each other under the action of an external effort, each said die having in the face thereof, adapted to be acted upon by said external effort, an annular groove of which the external and internal edges relative to the centre of said face extend along respective



concentric imaginary circles of which the centre is said centre of said face; means driving said dies together by exerting thereupon said external effort; a solid medium placed intermediate of said driving means and said face of each said die, facing said means, said last-mentioned medium being solid and plastic under pressure and adjoining said respective faces at the central portion thereof defined by said groove, said medium overlying said groove along the entire length thereof and at least partly in cross-section.

3,854,855

METHOD AND APPARATUS FOR MULTIPLE BLOW MOLDING WITH ROTARY TURNTABLE

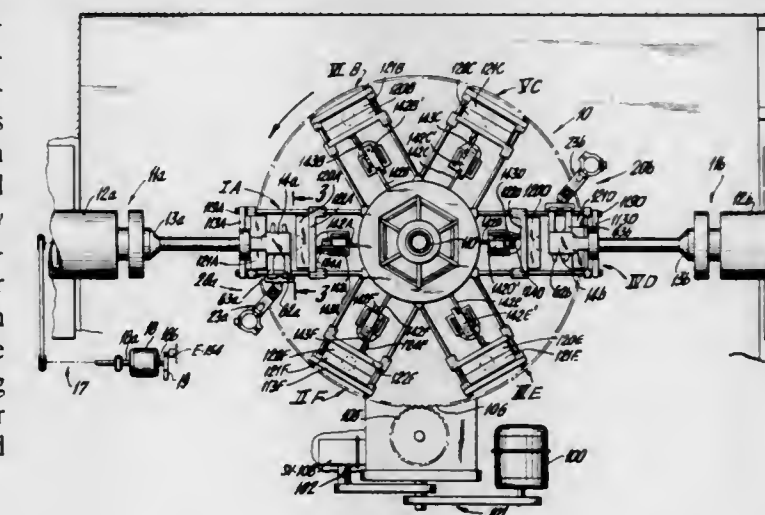
Donald M. Pollock, Morristown, and Fulton W. Hollowell, Rumson, both of N.J., assignors to Consupak, Inc., Morristown, N.J.

Filed June 8, 1973, Ser. No. 368,249

Int. Cl. B28b 17/00; B29c; B29f

U.S. Cl. 425-142

3 Claims



1. A blow molding apparatus comprising a rotary indexing turntable, means to rotatably index the turntable at a predetermined number of circumferentially spaced stations, said turntable having at least one partible mold mounted therewith for each of first and second indexing stations, means to provide opened molds at said first and second stations, first means to form a first parison operatively positioned at said first station, and second means to form a second parison operatively positioned at said second station circumferentially spaced from said first station, said first and second parisons being formed at about the same time, means to position said first parison and means to position said second parison be-

tween the parted sections of each of the respective molds at the respective first and second stations, means to close said opened molds on said extruded and positioned parisons at the respective first and second stations, first means and second means to introduce air under pressure to the interior of each of the respective parisons to expand the parisons to conform to the interior of the respective molds so as to form hollow objects therein, means to cool each of said objects during rotation of the turntable and circumferential transfer of the molds from said respective first and second stations, and means for removing the formed objects from the opened molds so as to permit other extruded parisons to be positioned therebetween, and wherein said first parison forming means comprises a first extruder and first die means and wherein said second parison forming means comprises a second extruder and second die means, said die means being spaced from said respective molds, and wherein said rate of first extrusion is about equal to the rate of said second extrusion, and means to interconnect the first extruder to each of said means to position said parisons between the respective opened molds, so as to simultaneously position said first and second parisons, said means to simultaneously position said first and second parisons comprising cam means mounted with said interconnecting means and switch means operatively mounted with said cam means to be actuated thereby, whereby the first extrusion rate is proportional to the rate of actuating said switch means, said switch means being interconnected to first parison severing and gripping means and first parison lowering means and to second parison severing and gripping means and second parison lowering means, so that upon actuation of said switch means said first parison and said second parison are simultaneously severed from the respective extruder die means, gripped and then lowered into position between the opened partible molds.

3,854,856

INJECTION MOLDING MACHINE WITH ACCESSIBLE EJECTOR ASSEMBLY

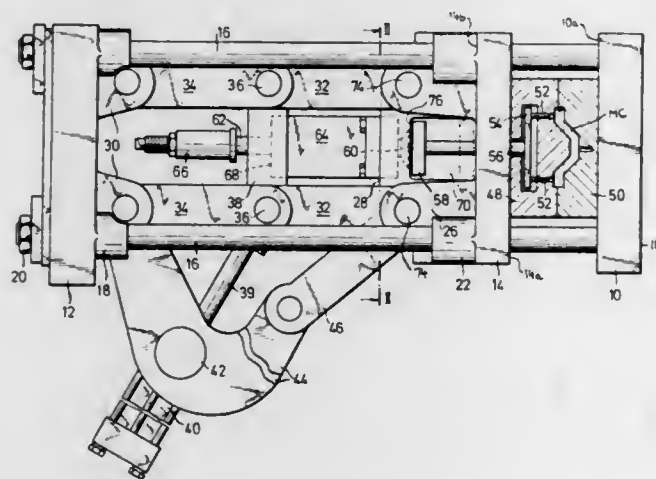
Richard Herbst, Munich; Erwin Meingast, Treuchtlingen, and Ernst Wuerl, Weissenburg, all of Germany, assignors to Krauss Maffei Aktiengesellschaft, Munich, Germany
Filed Aug. 15, 1972, Ser. No. 280,901

Claims priority, application Germany, Sept. 15, 1971, 2146147

Int. Cl. B29f 1/14

U.S. Cl. 425-173

6 Claims



1. In an injection molding machine, a combination comprising a first platen; a second platen movable toward and away from said first platen, said platens having first sides facing each other and second sides facing away from each other and one of said platens having at said second side thereof reinforcing means defining a compartment and two lateral windows located opposite each other, communicating with and affording access to said compartment; and ejector means including at least one knockout element movable relative to said one platen, and coupling means connecting said knockout element

with said actuating means, said coupling means comprising a crosshead having a portion located in said compartment and further portions extending into and movable relative to said lateral windows in response to operation of said actuating means.

3,854,857

MOLD OPENING AND CLOSING DEVICE FOR AN APPARATUS MAKING HOLLOW BODIES FROM THERMOPLASTIC MATERIAL

Stefan Fischer, Lohmar; Peter Galden, Cologne-Ehrenfeld; Helmut Scharrenbroich, Neuenhaus/Siegburg, and Dieter Wollschlager, Oberpleis, all of Germany, assignors to Zinpro Corporation, Excelsior, Minn.

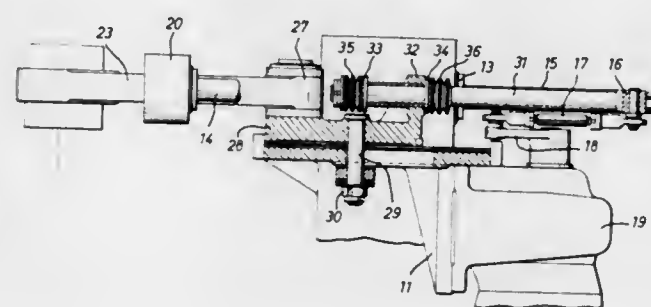
Continuation of Ser. No. 142,523, May 12, 1971, abandoned.

This application Sept. 4, 1973, Ser. No. 394,080
Claims priority, application Germany, May 12, 1970, 2023094

Int. Cl. B29c 5/06

U.S. Cl. 425-214

6 Claims



1. A device for opening and closing mold halves held in a pair of tong-like arm holding elements and for moving same back and forth with respect to a machine frame between a receiving position for a moldable pre-form to another position for shaping or blowing same, comprising: first and second carriage means mounted on said machine frame and being adapted to reciprocate in said machine frame; a single drive means adapted to respectively reciprocate both of said first and second carriage means; the second carriage means carrying said mold halves and having brake means for restraining the motion of said second carriage means with respect to said machine frame; said first carriage means being connected to said second carriage means and being provided with resilient stop means for arresting the motion of said first carriage means with respect to said second carriage means at the open and closed positions of said arm holding elements, and said second carriage means moving from one position to another position upon the continued respective motion of said drive means overcoming said resilient stop means.

3,854,858

ARRANGEMENT FOR PROCESSING BANDS OF SYNTHETIC MATERIAL IN DEFORMABLE STATE

Helmut Bacher, Neugermring, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Jan. 26, 1973, Ser. No. 327,218

Claims priority, application Germany, Jan. 29, 1972, 2204215

Int. Cl. B29c 15/00

U.S. Cl. 425-367

7 Claims

1. An arrangement for processing bands of synthetic plastic material in deformable state, comprising a pair of cooperating rollers mounted for rotation about at least substantially parallel axes and having respective circumferential surfaces defining with one another a gap through which the bands are to pass; drive means for driving at least one of said rollers in rotation; and varying means for periodically varying the width of said gap, including a shaft extending through one of said rollers and mounted for eccentric movement relative to the axis associated with said one roller, and cam means including

3,854,860

APPARATUS FOR FORMING PLASTIC ARTICLES FROM SHEET MATERIALS

John Henry Haag, Evansville, Ind., assignor to Kent Plastics Corporation, Evansville, Ind.

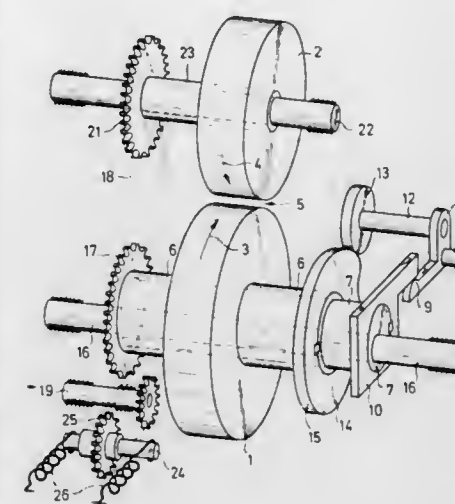
Continuation of Ser. No. 103,545, Jan. 4, 1971, abandoned.

This application Apr. 9, 1973, Ser. No. 349,142

Int. Cl. B29c 17/04, 27/00

U.S. Cl. 425-502

4 Claims



eccentric movement, and a lever mounted on and projecting laterally from said shaft and engaging said arm from above and in direction of rotation of said shaft.

3,854,859

SHAPING HEAD FOR PLASTIC MOLDING MACHINES

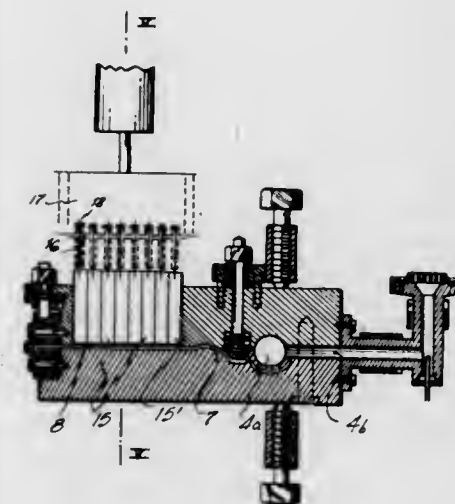
Manuel Mamerto Sola, Billingham 1850, piso 5, dto. B. Buenos Aires, Argentina

Filed Oct. 19, 1972, Ser. No. 298,011

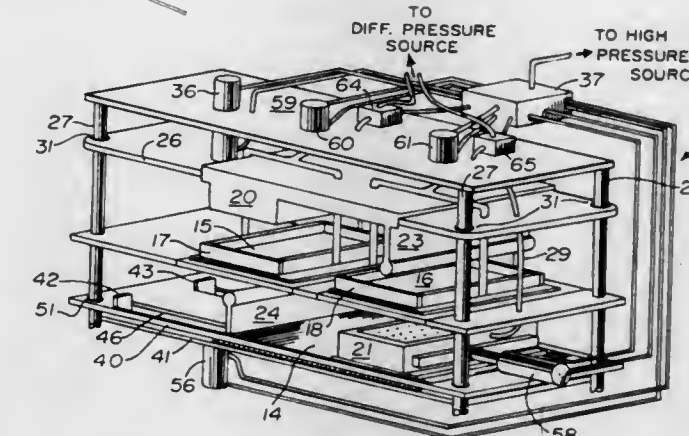
Int. Cl. B29f 3/04

U.S. Cl. 425-466

5 Claims



1. In a shaping head for extrusion molding plastic articles an inner channel having a rectangular section and substantially flat faced walls, a number of longitudinally oriented, spaced slots through at least one of the faces of said inner channel, a plate of a width to sealingly fit the slot being arranged in each one of said slots, said plate being adapted to be displaced between a first position in which the slot has its maximum height to a second position in which said slot is inoperative because said plate's edge engages the opposite face of said channel, and wherein each one of said plates is comprised of several mutually independent plate sections which are engaged at their edges, and each one of said plate sections is associated with a common control that enables each unit to resiliently and separately yield.



1. Apparatus for forming hollow plastic articles from sheet material, said apparatus comprising: a supporting frame structure, first and second cooperable forming members each of which include a die face of predetermined contour, said forming members being movably mounted to said supporting frame to permit relative reciprocal movement therebetween in two substantially perpendicular directions, the first of said directions being to bring said die faces together and apart, at least one plug assist means comprising a rod having a rounded ball section connected thereon, said rod fixedly mounted to one of said forming members and disposed from the die face of that forming member in the second of said directions of reciprocal movement, said rounded ball section of said rod defining an engaging surface for contact along being substantially smaller than the total surface of said sheet material, means for positioning plastic sheet material adjacent each of said die faces, means for urging the forming members to one extreme of the reciprocal movement in the second direction and aligning the at least one rod opposite the die face of the other forming member, means for urging the forming members and attached die faces and said rod attached thereto together and apart through the reciprocal movement in said first direction thereby urging the sheet material against at least one die face by means of said engaging surface of said rod, means for releasably securing the sheet material to the die faces, means for urging forming members to the other extreme of reciprocal movement in the second direction and aligning the opposed die faces and means for bringing the die faces and sheet material together whereby a hollow plastic article is formed.

3,854,861

ROLLERS FOR SHAPING SHEET MATERIAL

Geoffrey Worrall, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 4, 1972, Ser. No. 311,529

Claims priority, application Great Britain, Feb. 22, 1972, 8086/72

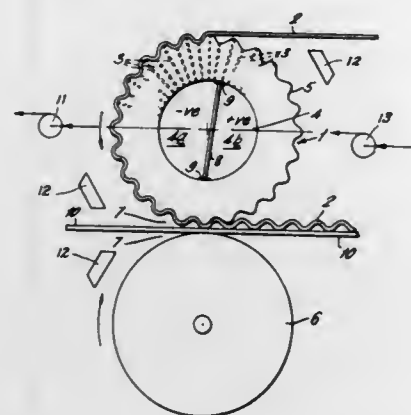
Int. Cl. B29d 9/00

U.S. Cl. 425-504

4 Claims

1. Apparatus comprising a pair of rollers defining a nip through which superimposed sheets of thermoplastic material may be passed so as to be welded together to form bandoleer-like articles, one of said pair of rollers having a corrugated periphery and the other roller having a plain periphery, the corrugated roller also having a hollow center, a plurality of airflow passageways extending between the hollow center and the corrugated periphery, stationary partition means for dividing the hollow center into two separate compartments which, at the interior surface of the hollow roller, are located on opposite sides of a plane through the nip and the centers of the

two rollers such that as the corrugated roller rotates, passageways on opposite sides of the said plane through the nip are connected to different of said compartments, air suction means for connecting to suction the compartment from which,



as the corrugated roller rotates, the passageways on the entry side of the nip extend, air discharge means for connecting to a pressure source the compartment from which, as the corrugated roller rotates, the passageways on the exit side of the nip extend and means for heating the rollers.

3,854,862

DISPOSABLE LIGHTER

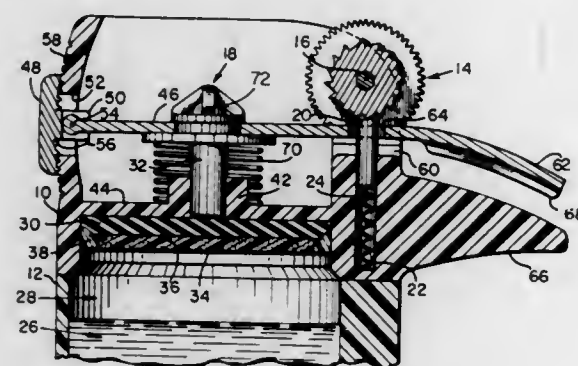
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 30, 1973, Ser. No. 392,943

Int. Cl. F23q 1/04

U.S. Cl. 431-254

12 Claims



12. A gas lighter chargeable with a liquid fuel supply comprising in combination a body forming in part a fuel chamber, a fuel outlet, a fuel flow control assembly between said fuel chamber and said fuel outlet, said fuel flow control assembly comprising a pierced, flexible sheet member of elastomeric material, a thin gas porous but liquid impermeable sheet membrane, and a layer of foam material between said sheet member and said sheet membrane in sandwich relation therewith, said fuel flow control assembly adapted when flexed downwardly to release a supply of fuel from said fuel chamber to said fuel outlet, means to flex said fuel flow control assembly downwardly, and ignition means adjacent said fuel outlet.

3,854,863

FURNACE ASSEMBLY AND METHOD FOR HEATING WORKPIECES

Harvey C. Lubold, Jr., R.D. No. 1, and Glenn H. Roberts, R.D. No. 1, Box 118, both of Towanda, Pa. 18848

Filed Jan. 23, 1974, Ser. No. 435,664

Int. Cl. F27b 9/14

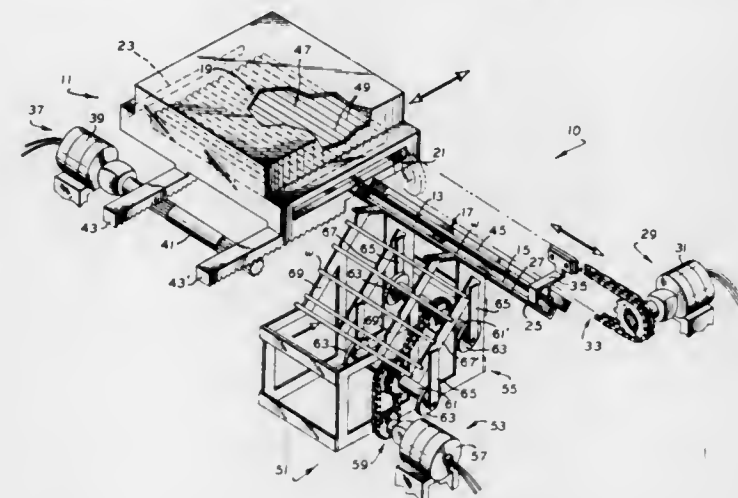
U.S. Cl. 432-11

9 Claims

1. A furnace assembly comprising:
a movable furnace adapted for sequentially moving in a substantially rectilinear direction, said furnace including a heating chamber therein, a serrated hearth member positioned substantially within said heating chamber, an inlet through which at least one workpiece may enter said heating chamber, and an outlet through which said work-

piece may exit said heating chamber; and an outlet through which said workpiece may exit said heating chamber;

a stationary elongated receiving means positioned relative to said inlet of said furnace for receiving said workpiece; a first driven elongated bar member positioned relative to said elongated receiving means for engaging at one end thereof said workpiece within said elongated receiving means and feeding said workpiece through said inlet into



said heating chamber of said furnace whereby said workpiece will be positioned within one of said serrations in said hearth member; and

a second driven elongated bar member oriented in a juxtaposed relationship to said first elongated bar member, said second elongated bar member substantially longer than said first bar member and adapted for engaging at one end thereof said workpiece within said hearth member of said heating chamber and causing said workpiece to exit said furnace through said outlet.

3,854,864

OVEN ARRANGEMENT

Fausto Celorio Mendoza, Cumbres de Acultzingo No. 185, Lomas de Chapultepec, Mexico 10, D. F., Mexico

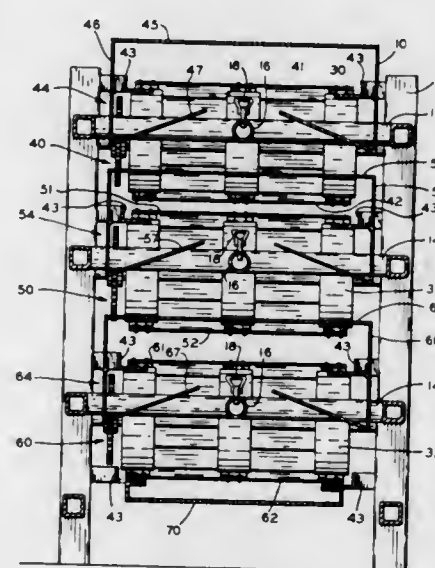
Filed Dec. 5, 1973, Ser. No. 421,778

Claims priority, application Mexico, June 26, 1973, 144536

Int. Cl. F27b 9/02

U.S. Cl. 432-130

13 Claims



1. A multiple pass oven comprising:
a frame, a plurality of superposed conveyors in said frame each having upper and lower reaches and the lower reach of each conveyor facing the upper reach of the conveyor next therebeneath, heating means beneath the upper reach of each conveyor for supplying heat thereto, means forming tunnels in said frame with each tunnel having a top wall extending over the top of the upper reach of a respective conveyor and side walls extending downwardly

from the side edges of the top wall, said side walls having bottom edges upwardly from the top wall of the tunnel next therebeneath to provide a space for flow of air to said heating means, each conveyor comprising a series of plates extending transversely to the direction of travel of the conveyors, and hinges interconnecting the adjacent plates of each conveyor, said frame including rollers about which said conveyors pass at the reversing points thereof, the upper reach of each conveyor having a receiving end and a discharge end and adapted to receive articles to be baked at the receiving end and to discharge articles from the discharge end.

3,854,865

KILN FOR CERAMIC PRODUCTS

Gordon C. Fay, Pittsburgh, Pa., assignor to Hendryx Engineers Incorporated, Pittsburgh, Pa.

Filed Nov. 9, 1973, Ser. No. 414,444

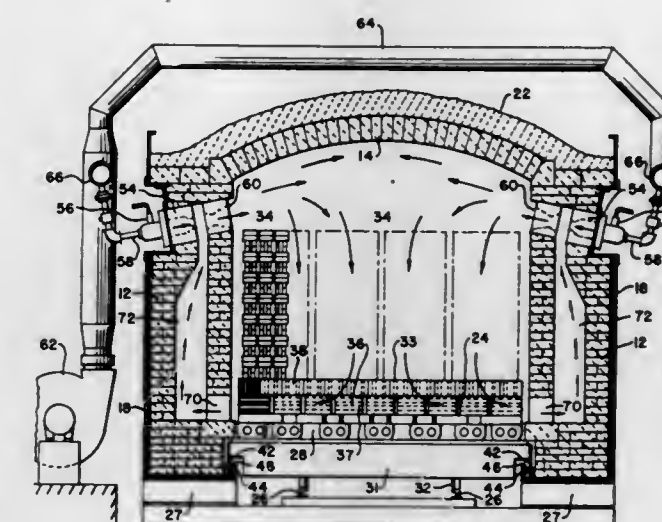
Int. Cl. F27b 9/00

U.S. Cl. 432-137

12 Claims

1. A kiln for firing ceramic ware comprising a generally rectangular enclosure having movable floor means for supporting the ware and closing the bottom of the enclosure, said floor means being movable into and out of the kiln and having openings for flow of gas therethrough, means for inducing a recirculating flow of hot gases downward through the ware including a plurality of burners in the upper part of the kiln,

means for supplying at least sufficient air to said burners for complete combustion to induce high velocity flow of combustion gases, said burners constituting the sole source of heat for the kiln, and means for exhausting gas flowing downward



through said openings in the floor means and directing at least a part of said gas back to the burners for mixing with the combustion gases from the burners for recirculation downward through the ware.

3,854,866

RECURABLE CROSSLINKED CELLULOSE FABRICS FROM METHYLOL REAGENTS AND POLYCARBOXYLIC ACIDS AND METHOD OF MAKING

William E. Franklin, and Stanley P. Rowland, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 248,200, April 27, 1972, Pat. No. 3,776,692. This application Oct. 16, 1972, Ser. No. 298,167

Int. Cl. D06m 1/00

U.S. Cl. 8-116 R

3 Claims

1. An improvement in the process of impregnating a cellulosic textile with a solution of a methylolated cellulose cross-linking reagent and a polycarboxylic acid having at least three carboxylic acid groups, curing the textile and thermally reforming the cured textile, the improvement comprising including from about 0.25 to 1.0 weight percent of a latent acid catalyst in said solution.

3,854,867

PROCESS FOR REACTING SULTONES WITH CELLULOSIC MATERIALS TO PRODUCE CELLULOSIC MATERIALS HAVING BOTH BASIC AND ACIDIC GROUPS AND PRODUCT PRODUCED

Truman W. Ward; Ruth R. Benerito, both of New Orleans; Ralph J. Berni, and Donald M. Soignet, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 15, 1972, Ser. No. 306,771

Int. Cl. D06m 1/00

U.S. Cl. 8-116 R

6 Claims

1. A process for imparting Zwitterion-exchange properties to diethylaminoethyl cellulose, the process comprising contacting said diethylaminoethyl cellulose with an organic solvent solution of about from 5 to 20 percent hydrocarbon sultone at 25°C. to 75°C. for about 1 to 24 hours.

3,854,868

NON-AQUEOUS PROCESS FOR REACTING SULTONES WITH CELLULOSIC MATERIALS AND THE PRODUCT PRODUCED

Truman L. Ward; Ruth R. Benerito, both of New Orleans, and Ralph J. Berni, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 15, 1972, Ser. No. 306,770

Int. Cl. D06m 1/00

U.S. Cl. 8-116 R

10 Claims

1. A process for producing sultone celluloses having ion-exchange properties with acid character, the process comprising reacting, in a non-aqueous solvent, washed alkali earth cellulose with sultone so as to yield a fibrous sultone cellulose.

3,854,869

METHOD OF IMPARTING CREASE RESISTANCE TO CELLULOSIC FIBERS BY TREATING THEM WITH TETRAOXYMETHYLENE

Yuichi Yanai, Okazaki, Japan, assignor to Nisshin Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1972, Ser. No. 279,362

Int. Cl. D06m 13/12, 13/14

U.S. Cl. 8-116.4

4 Claims

1. A method for imparting crease resistance and soft touch to a material selected from cellulosic fibers, and textile fabrics and knitted goods containing cellulosic fibers comprising treating said material at a temperature of about 120°C to 130°C with 0.1 to 10% tetraoxymethylene in the presence of a cata-

lytic mixture of 0.02 to 10% of a metal-boron fluoride and 0.02 to 10% of an organic carboxylic acid, said percentages being by weight of said material.

3,854,870

PROCESS FOR TREATING CONTINUOUS FILAMENTS

Robert Allan Boyer, and Anthony Hing Chen, both of Columbus, Ohio, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 19, 1973, Ser. No. 342,731

Int. Cl. D061 1/12

U.S. Cl. 8-139

8 Claims

1. A process for treating a tow of continuous protein filaments with a treating liquid which comprises immersing the tow of continuous protein filaments in the treating liquid and concurrently passing the tow of continuous protein filaments and the treating liquid longitudinally and substantially horizontally along a conduit while simultaneously passing a plurality of fluid streams transversely through the tow of continuous protein filaments to agitate the protein filaments and enable the treating liquid to contact all the protein filaments, the amount and flow rate of said treating liquid being such as to completely cover the protein filaments.

3,854,871

TEXTILE CLEANING PROCESS FOR SIMULTANEOUS DRY CLEANING AND FINISHING WITH STAIN REPELLENT

Albert Robert Eanzel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1973, Ser. No. 328,382

Int. Cl. D061 1/04, 1/08

U.S. Cl. 8-142

3 Claims

1. A process for simultaneous cleaning and finishing of soiled textile materials in which the textile is

A. treated at from about 0° to about 100°C. for from about 1 minute to about 30 minutes with a composition consisting essentially of

a major amount of a textile dry cleaning solvent;

a minor amount of water;

an amount sufficient to give add-on of 0.05 to 0.5 percent, based on the dry weight of textile of a polyfluoroalkyl substituted stain repellent; and

5 to 20 percent, based on the weight of stain repellent, of an emulsifying agent which does not negate the stain repellency; and then

B. the treated material is dried.

3,854,872

PROCESS FOR DYEING OF POLYACRYLONITRILE FIBERS

Jean Balland, Chateaufort, France, assignor to Societe d'ite: Manufacture de Produits Chimiques PROTEX Societe Francaise a Responsabilite Limitee Siege, Paris, France

Filed Mar. 29, 1973, Ser. No. 345,850

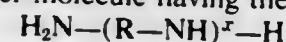
Claims priority, application France, Apr. 7, 1972, 72.12861

Int. Cl. D06p 5/06

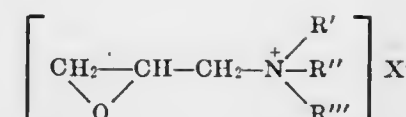
U.S. Cl. 8-169

4 Claims

1. A process for dyeing polyacrylonitrile fabrics in an aqueous bath containing a cationic colorant comprising adding to the bath as a retarding and equalization of dyeing agent, a quaternized polyamino amide obtained by the condensation of a fatty diacid with a polyamide having at least four reactive hydrogen atoms per molecule having the formula



in which x is at least equal to 1 and R is an alkylene radical containing one to five carbon atoms, the polyamino amide then being quaternized by a salt of epoxy propyl trialkyl ammonium of the formula



in which R', R'' and R''' are alkyl radicals, identical or different, having one to three carbon atoms, and X is a radical selected from the group consisting of Cl⁻, NO₃⁻ and SO₄²⁻.

3,854,873

USE OF SODIUM BISULFITE IN AN IMPROVED PROCESS FOR THE TREATMENT OF CELLULOSE TEXTILE MATERIALS WITH CARBAMATE FINISHING AGENTS AND SULFUROUS ACID

John D. Reid; Robert M. Reinhardt, both of New Orleans; Russell M. H. Kullman, and Norton A. Cashen, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,651

Int. Cl. D06p 1/00

U.S. Cl. 8-187

6 Claims

1. An improved process in the treatment of cellulose-containing fabrics with a methylolated carbamate-sulfurous acid formulation which process comprises adding a minor amount of sodium bisulfite to said formulation, impregnating the cellulose-containing textile with said formulation and curing the impregnated fabric to impart durable press properties with improved strength-to-wrinkle recovery relationship to the treated fabric.

3,854,874

APPARATUS FOR CONTROLLING THE ATMOSPHERE OF THE STERILE CHAMBER IN AN ASEPTIC PACKAGING MACHINE

Willi Loliger, and Rudolf Schmied, both of Konolfingen, Switzerland, assignors to Alpura Koreco A. G., Konolfingen, Switzerland

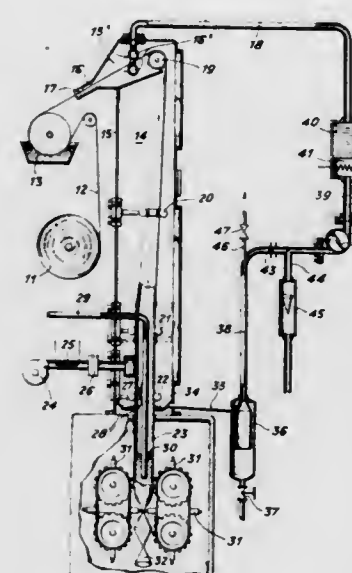
Filed July 7, 1972, Ser. No. 269,518

Claims priority, application Switzerland, July 9, 1971, 10096/71

Int. Cl. A611 3/00; B65b 61/00

U.S. Cl. 21-91

13 Claims



1. In combination with an aseptic packaging machine having a sterile chamber in which a packaging material is formed into a flexible tube; an apparatus for controlling the atmosphere of said sterile chamber comprising

a flow circuit including said sterile chamber for a flow of a mixture of chamber air and sterilizing agent vapor forming the chamber atmosphere, a conveying means in said flow circuit for recirculating the flow, a throttle means between said chamber and said conveying means for generating an above-ambient pressure in said chamber, and means for limiting the concentration of the sterilizing agent in the atmosphere filling said chamber.

3,854,875

PLANT FOR TREATING WATER, IN PARTICULAR SEWAGE OR SLUDGE

Ernst Bosshardt, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

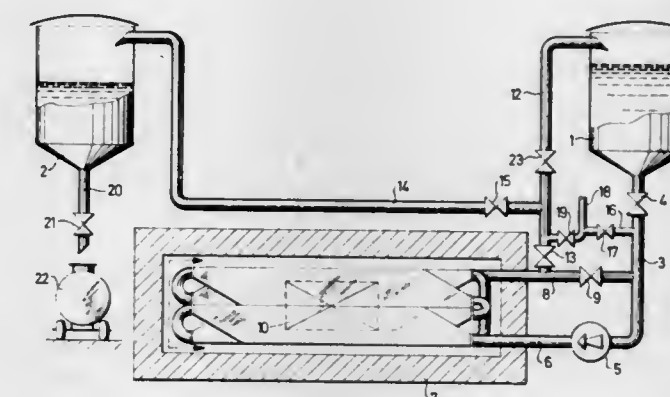
Filed Oct. 7, 1971, Ser. No. 187,326

Claims priority, application Switzerland, Oct. 7, 1970, 14848/70

Int. Cl. A611 3/00

U.S. Cl. 21-102 R

5 Claims



1. A sewage sludge treatment plant comprising a source of gamma radiation; duct means disposed about said source of gamma radiation to provide a closed loop for the sludge, said duct means having at least two sections exposed to different sides of said source and defining an unencumbered flow path for the sludge; means for forming a batch of sludge from a supply of sludge to be irradiated, said means being connected to said duct means to deliver said batch of sludge to said duct means; and a pump connected within and to said duct means for repeatedly circulating a delivered batch of sludge through said closed loop of said duct means from a delivery side of said pump through said unencumbered path in said sections of said duct means to an input side of said pump.

3,854,876

METHOD FOR MONITORING AND CONTROLLING THE EFFICIENCY OF A CHEMICAL PROCESS

Robin Patrick Rankine; David George Earl, and Roger Mellor, all of Calgary, Alberta, Canada, assignors to Western Research & Development Ltd., Calgary, Alberta, Canada

Filed Aug. 7, 1972, Ser. No. 278,241

Int. Cl. G01n 21/34, 31/12

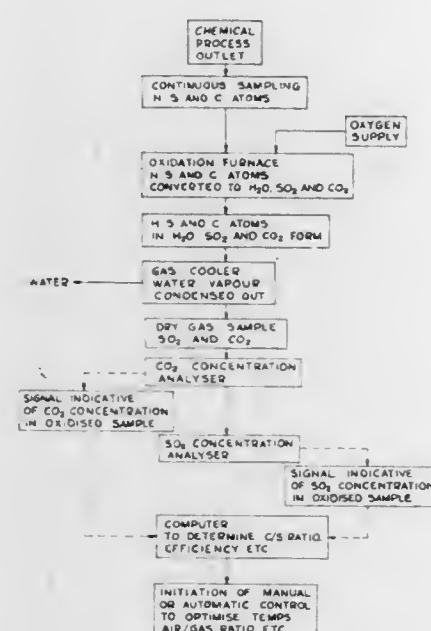
U.S. Cl. 23-230 R

11 Claims

1. A method for monitoring and controlling the production of a chemical substance by a chemical process, which method comprises:

obtaining a sample from an outlet of the chemical process; chemically treating the sample to convert all the sample components, containing a first chemical element which is also a constituent of the chemical substance, into one chemical compound, without the addition to the sample of said element, and to convert all the sample components containing a second chemical element, which is not

a constituent of the chemical substance and the flow rate of which is substantially the same at the outlet of the chemical process as it is at the inlet of the chemical process, into one chemical compound, without the addition to the sample of said second chemical element; measuring the ratio of the concentrations of the two chemical compounds and determining therefrom a ratio of the



number of atoms of the two chemical elements existing in the sample; and altering a controllable variable in the chemical process using the magnitude of the so determined ratio to minimize the disparity between the actual quantity of the chemical substance produced and recovered and the desired quantity thereof.

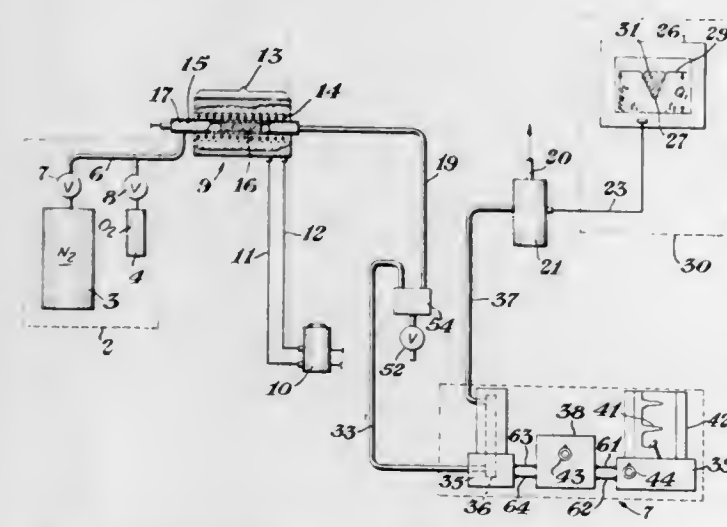
3,854,877

COMBINATION TOD-TC ANALYSIS METHOD
Ernoe Csaky, Midland, Mich., and C. Hugh Thompson, Falls Church, Va., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 7, 1972, Ser. No. 278,531
Int. Cl. G01n 31/12

U.S. Cl. 23—230 PC

4 Claims



1. A process for simultaneously measuring the total oxygen demand and total carbon of an aqueous dispersion of combustible material which comprises the steps of:

1. flowing a feed gas stream containing a relatively small amount of oxygen at a constant rate through a confined combustion zone heated at a combustion supporting temperature within the range from about 600° to about 1200°C. and, within the combustion zone, flowing the

feed gas stream through a combustion supporting catalyst bed,

2. flowing the effluent gas from the combustion zone into a continuous analyzer for quantitatively indicating the carbon dioxide in the gaseous product,
3. flowing the effluent gas from the combustion zone after passing through the carbon dioxide detector of step (2) above, into a continuous quantitative detector for gaseous oxygen and while continuing to flow the feed gas stream, injecting a small amount of the aqueous dispersion of a combustible material into the combustion zone upstream from the catalyst bed, whereby electrical signals correlative with the carbon content of the aqueous sample and its total oxygen demand are produced by the carbon dioxide and oxygen detectors, respectively.

3,854,878

METHOD AND APPARATUS FOR DERIVING OXYGEN ASSOCIATION RATE CURVES FOR BLOOD SAMPLES

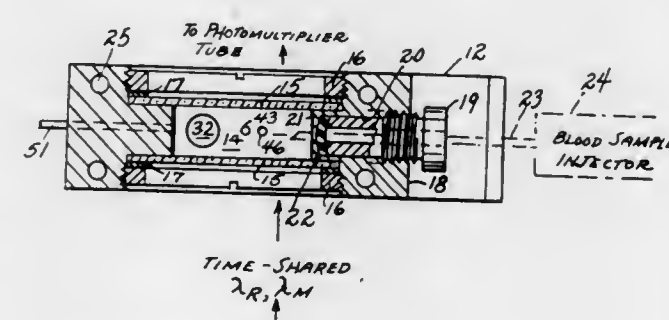
Lutz A. Kiesow, Bethesda, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Apr. 13, 1973, Ser. No. 351,014

Int. Cl. G01n 21/24, 33/16

U.S. Cl. 23—230 B

5 Claims



1. A method of deriving an oxygen association rate curve for a blood sample comprising deoxygenating the sample, introducing an oxygenating agent into the sample, passing two respective monochromatic wavelengths through the sample while it is being oxygenated, one wavelength at which there is substantially no change in absorbance as between oxygenated and deoxygenated blood and the other wavelength at which there is a relatively large change in absorbance as between oxygenated and deoxygenated blood, and plotting the difference in absorbance for the two wavelengths with time as the sample is being oxygenated.

3,854,879

SAMPLE IDENTIFICATION AND TEST DATA CORRELATION METHOD AND APPARATUS

David Richard Figueroa, Pembroke Pines, and Guenter Ginsberg, Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 27, 1973, Ser. No. 383,437

Int. Cl. G01n 1/18

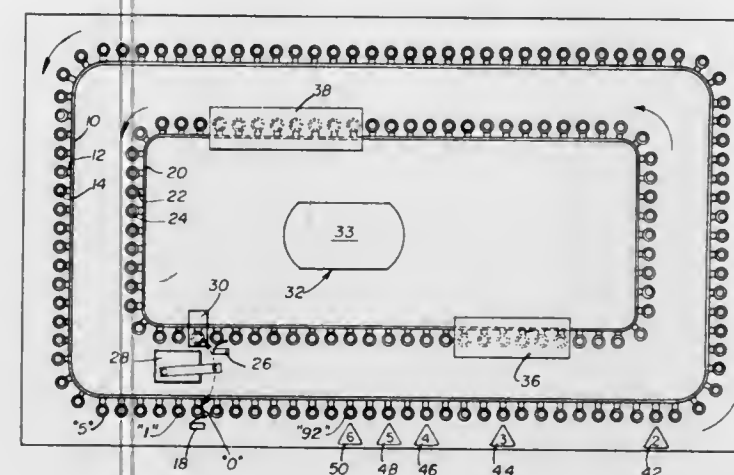
U.S. Cl. 23—230 R

30 Claims

1. A method for the semi-automatic correlation of the identification of a sample and test data derived from the sample in the environment of a system in which each of a plurality of the samples is in a sample receiver which incrementally advances along a first path passing a first datum point, and test portions obtained from each sample incrementally advance along a second path passing a second datum point to a testing station, the incremental distance between the second datum point and the testing station being known; the steps comprising:

- defining the number of tests to be performed on each sample;
- establishing a ratio between the rates of the incremental advancing along the second and first paths to be the same as the number of tests per sample;

locating a third datum point along the first path; providing a progression of indicia on the sample receivers; presetting a stepping register, having the same progression of indicia as the sample receivers, to the indicia of the sample receiver positioned at said third datum point, prior to start-up of the system; and



synchronizing the stepping of the register with the incremental advancing of the sample receivers along the first path;

whereby, after the start-up of the system, all of the sample test portions will reach the testing station at the same time that the register will step to the indicia of the sample receiver from which the test portions were obtained, so that the sample identity and test portion derived data is correlated.

3,854,880

REAGENT FOR THE DETERMINATION OF CALCIUM
Werner Rathje, Berlin, Germany, assignor to Boehringer Mannheim GMBH, Mannheim-Waldhof, Germany

Filed Aug. 27, 1973, Ser. No. 392,160

Claims priority, application Germany, Aug. 30, 1972, 2242966; July 25, 1973, 2337811

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

11 Claims

1. Reagent for calcium determination comprising a solution of murexide in at least one polyvalent alcohol containing sufficient alkali metal alcoholate to have a pH value of from 10.5 to 13 in aqueous solution.

3,854,881

APPARATUS FOR DETERMINING ORGANIC CARBON CONTENT OF POLLUTED LIQUIDS

Alfred Cohen, 71 Joyce Ln., Woodbury, N.Y. 11797

Filed Sept. 13, 1971, Ser. No. 179,964

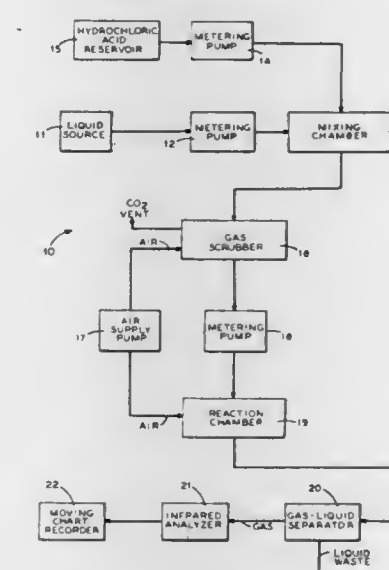
Int. Cl. B01j 9/02; G01n 31/12, 33/18

U.S. Cl. 23—253 PC

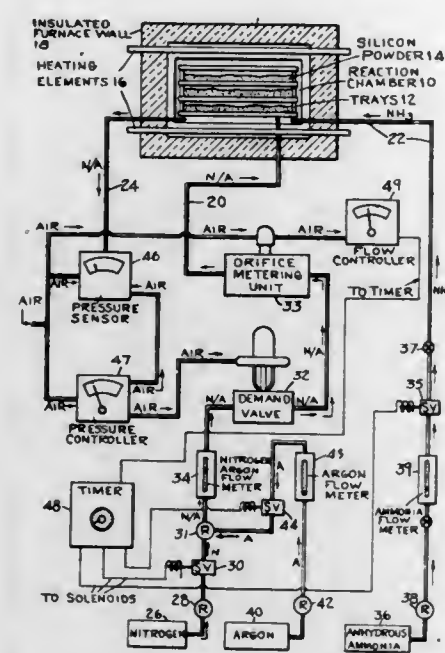
5 Claims

1. In an analytical apparatus for determining the total quantity of organic carbon as a pollutant in an aqueous stream by vaporizing a sample taken from the stream and oxidizing to carbon dioxide the total organic carbon in the sample, the improvement which comprises a mixing chamber, a first metering pump disposed to deliver into said mixing chamber a continuous flow sample taken from the stream, a second metering pump disposed to deliver into said mixing chamber a continuous flow of liquid reagent for reaction therein with the sample to remove the inorganic carbon content thereof as carbon dioxide; a reaction chamber, means connected to said mixing chamber and to said reaction chamber to deliver from said mixing chamber into said reaction chamber a continuous flow aqueous sample to be analyzed and which is substantially free of inorganic carbon and carbon dioxide, said reaction chamber having an inlet for introducing the aqueous sample to be analyzed and an outlet for the exit of gaseous and vapor products formed from such sample, means for introducing air into

said reaction chamber to establish an oxidizing atmosphere therein, a packing material disposed within said reaction chamber for heating the sample introduced, and means for heating said packing material to a temperature at which the organic carbon in the sample is oxidized to carbon dioxide by said atmosphere, said packing material being disposed to define within the reaction chamber an inlet plenum zone



- c. to actuate said timing means, said timing means being effective after a predetermined interval, to reopen the



second valve means and to close the first valve means to reduce the flow of inert gas.

3,854,883

ANALYSIS VESSEL ENCLOSING AN ANCHORED RING OF SOLID REAGENT

Paul A. F. Montagnon, Le Balme-les-Grottes (Isere), France, assignor to Analytab Products Inc., Carle Place, New York, N.Y.

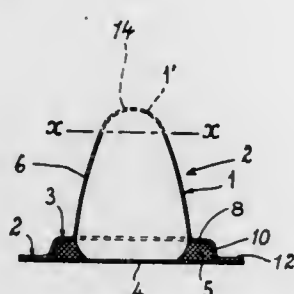
Filed Apr. 27, 1973, Ser. No. 355,088

Claims priority, application France, May 18, 1972, 72.18387

Int. Cl. G01n 21/06

U.S. Cl. 23-253 R

6 Claims



1. A method for preparing a solid portion of material containing a reagent disposed within a vessel and anchored therein, said vessel having sidewalls, a bottom, and a relieved annular channel portion about its periphery near its bottom, said channel portion being dimensioned to cause liquid to be drawn thereinto by capillary action, said method comprising the steps of:

- introducing a liquid containing the reagent into the vessel in an amount sufficient to cause a quantity of said liquid to enter the channel portion and to be retained therein by capillary action, and
- dessicating the liquid containing said reagent, whereby the material containing the reagent forms a solid mass which is disposed in the channel portion and thereby becomes anchored in the vessel.

1. A process control system comprising: first means for connection with apparatus confining the flow of a fluid, a portion or all of said fluid at least sometimes being hydrogen sulfide gas, said first means having an outlet conduit and being actuable to supply a flow of a sample of said fluid through said outlet conduit; a scrubber having an inlet conduit connected from said first means outlet conduit to receive a first portion of said fluid sample having its own outlet conduit, said scrubber being chargeable with a solution such that said scrubber passes hydrogen sulfide, whenever it is or is carried in said first fluid sample portion, through said inlet conduit thereof to said outlet conduit thereof while said scrubber removes sulfur dioxide from said first fluid sample portion whenever said first fluid sample portion is or carries sulfur dioxide; first and second coulometric titrators having first and second inlet conduits, respectively, and first and second electrical output leads, respectively, said first titrator inlet conduit being connected from said first means outlet conduit to receive a second portion of said fluid sample, said first titrator producing an electrical output signal on said first lead thereof of a magnitude directly proportional to the sum of the concentrations of hydrogen sulfide and sulfur dioxide in said sample fluid, respectively, said second titrator inlet conduit being connected from said scrubber outlet conduit to receive the fluid which passes through said scrubber outlet conduit, said second titrator producing an electrical output signal on said second output lead thereof of a magnitude directly proportional to the concentration of hydrogen sulfide but not sulfur dioxide in said sample fluid; and second means connected from said first and second output leads of said first and second titrators, respectively, for connection with said flow confining apparatus at a location upstream of the connection of said first means therewith, and responsive to said titrator output signals and the magnitudes thereof for introducing oxygen in pure form or in a fluid mixture into said fluid confining apparatus at a variable flow rate and at a temperature to oxidize hydrogen sulfide therein; flow of fluid in said flow confining apparatus, said first means, said scrubber, said first and second titrators, and said second means each forming a link in a closed loop null seeking servo-mechanism in which said second means is actuable to vary or maintain constant said oxygen flow rate in a manner to drive the magnitudes of the output signals of said titrators

3,854,884

CLAUS PROCESS CONTROL SYSTEM

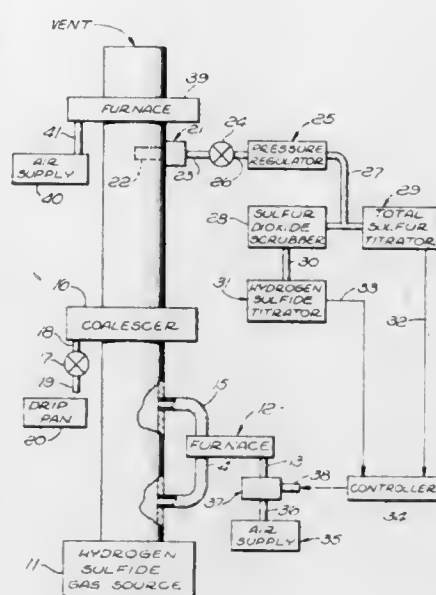
James Ray Robison, La Mirada, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,379

Int. Cl. G01n 33/16; C01b 17/04

U.S. Cl. 23-253 A

42 Claims



to values indicating that there are concentrations larger than zero of both hydrogen sulfide and sulfur dioxide in said sample fluid and values indicating that the concentration of hydrogen sulfide in said sample fluid times the molecular ratio 64/34 is approximately twice as large as the concentration of sulfur dioxide in said sample fluid.

3,854,885

TOXIC AGENT LEAK DETECTOR

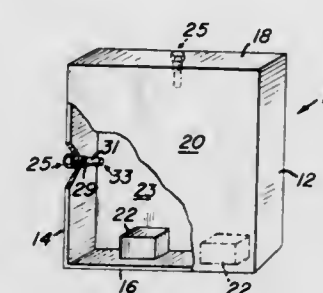
Bernard W. Fromm, Baltimore; Achille Silvestri, Bel Air, and Arthur R. Jones, Jr., Elkton, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 3, 1970, Ser. No. 78,316

Int. Cl. G01n 31/22

U.S. Cl. 23-254 R

3 Claims



1. A structure comprising a sealed outer receptacle enclosing at least one inner container containing a vaporizable toxic chemical warfare agent selected from the group consisting of nerve agent and vesicant, and at least one solid transparent threaded detector plug sealingly projecting through at least one threaded aperture in a wall of said receptacle, said plug comprising a solid one-piece transparent material in the shape of a bolt having an enlarged head means for assembling and sealing same and an elongated cylindrical shaped partially threaded body extending therefrom with the end portion of said body containing a coating of chemical detecting material from the group consisting of [(C₂H₅)₂NC₆H₄]₂CNOH with zinc thiocyanate, [(C₂H₅)₂NC₆H₄]₂CNOH with mercuric bromide, disodium salt of diisonitrosacetone, sodium salt of m-(p-anilinophenylazo) benzene sulfonic acid, and silica gel containing nickel chloride, which changes color upon contact of said chemical warfare agent whereby if agent leakage occurs the change in color of the said detecting material is visible through the said head means and the said body from outside the said sealed outer receptacle.

3,854,886

APPARATUS FOR PREPARING CHLORINE PENTAFLUORIDE

John A. Pursley, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 374,886, June 9, 1964, This application

Nov. 30, 1967, Ser. No. 705,871

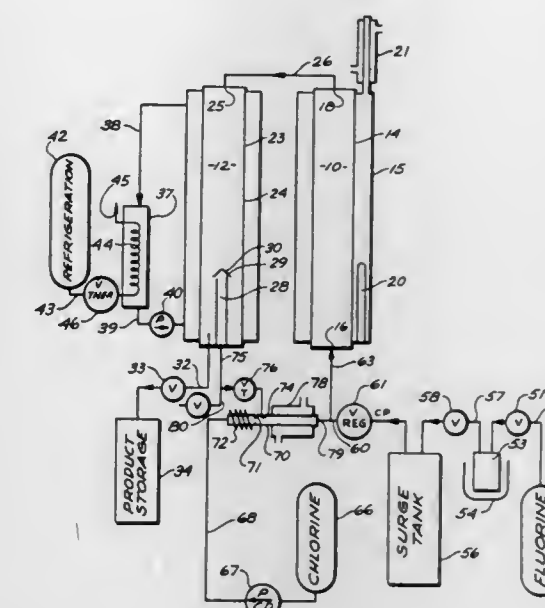
Int. Cl. B01b 5/00

U.S. Cl. 23-260

8 Claims

1. Apparatus for producing chlorine pentafluoride comprising a reaction chamber; conduit means for passing fluorine as one gaseous reactant and at least one member of the group consisting of chlorine, chlorine monofluoride and chlorine trifluoride as another gaseous reactant into the chamber adjacent the lower end of the chamber; means for maintaining the contents of the reaction chamber at a temperature sufficiently high to effect reaction between said reactants to form gaseous chlorine pentafluoride in a mixture with gaseous fluorine; a condensing chamber; conduit means for passing said mixture from the reaction chamber at a place adjacent the upper end of the reaction chamber to the condensing chamber at a place adjacent the upper end of the condensing chamber; means for maintaining the temperature in said condensing chamber

sufficiently low to effect condensation of chlorine pentafluoride from said mixture; means for withdrawing condensed chlorine pentafluoride from said condensing chamber, and means for recirculating the uncondensed gas from the condensing chamber at a place remote from the upper end of the



condensing chamber to the reaction chamber at a place adjacent the lower end of the reaction chamber, said means for recirculating comprising means to provide a temperature and density differential of gases in the respective chambers sufficient to be a driving force to recirculate the uncondensed gas.

3,854,887

REACTOR SYSTEM FOR GRAVITY-FLOWING CATALYST PARTICLES

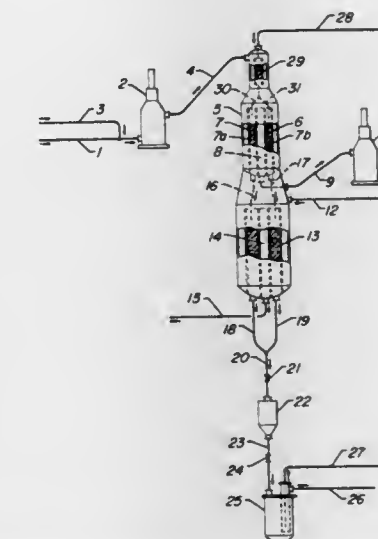
Walter W. Heinze, Chicago, and Edward Schnitta, Bensenville, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 20, 1973, Ser. No. 333,933

Int. Cl. B01j 9/12

U.S. Cl. 23-288 G

7 Claims



1. A catalytic reactor system for reacting a reactant stream to obtain a product stream by contact of the reactant stream with catalyst particles movable through said system by gravity flow, which system comprises, in combination:

- an elongated, vertically-disposed reaction chamber having an inlet in the upper portion thereof for said reactant stream, an outlet in the lower portion thereof for said product stream, an inlet in the upper portion thereof for said catalyst particles, and an outlet in the lower portion thereof for said catalyst particles, said chamber having disposed therein;
- a tubular-form catalyst-retaining screen having a ring flange at its lower end, coaxially distended substantially

3,854,895

PROCESS FOR PRODUCING A METHANE-RICH GAS USABLE IN PLACE OF NATURAL GAS

Wolf-Dieter Muller, Nieder-Eschbach, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Reuteweg, Germany

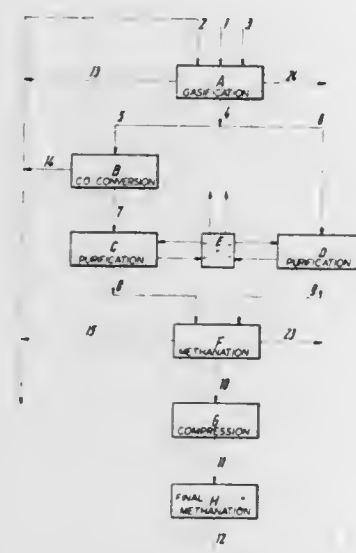
Filed Nov. 15, 1972, Ser. No. 306,651

Claims priority, application Germany, Mar. 16, 1972, 2212700

Int. Cl. C10j 3/16

U.S. Cl. 48-206

13 Claims



1. Process for manufacturing a methane-rich gas usable in place of natural gas which comprises:
 - a. producing a primary gas by the pressure gasification of coal with steam and oxygen;
 - b. dividing the primary gas into two streams;
 - c. converting the carbon monoxide content of one of said streams with steam to carbon dioxide and hydrogen and thereafter washing out the carbon dioxide;
 - d. purifying said streams by removing catalyst poisons;
 - e. passing said washed, purified and converted stream through a first methanation stage;
 - f. dividing the unconverted gas stream from (b) in at least two streams;
 - g. cooling the product gas from said first methanation stage (e) and passing it in admixture with the first stream of the unconverted gas stream from (f) through a second methanation stage;
 - h. cooling the product gas from said second methanation stage (g) and passing it in admixture with the second stream of the unconverted gas stream from (f) through a third methanation stage.

3,854,896

METHOD OF CONVERTING COAL TO PIPELINE QUALITY GAS

George W. Switzer, Wyomissing, and Carl A. Bolez, Allentown, both of Pa., assignors to Gilbert Associates, Inc., Reading, Pa.

Filed Jan. 29, 1973, Ser. No. 327,873

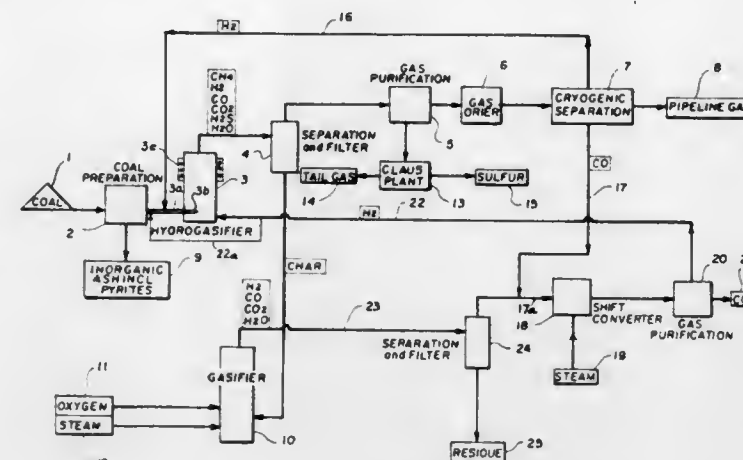
Int. Cl. C10j 3/06

U.S. Cl. 48-210

14 Claims

1. The method of converting coal to gas comprising introducing coal particles of a size of about 4 microns and smaller into a reactor, rapidly heating said coal particles in said reactor, in the presence of pressurized hydrogen, to between about 700° to about 1,000°C to effect explosive devolatilization and comminution of said coal particles to form gaseous hydrocar-

bon and highly active char of a size of the order of one one-hundredth micron, and reacting said char directly with said



hydrogen in said reactor to form a product gas containing methane.

3,854,897

HAND GRINDER WITH A DRIVE MOTOR, DESIGNED AS A COMPRESSED-AIR MOTOR

Karl Attinger, Seestr. 21, Holzmaden, Germany

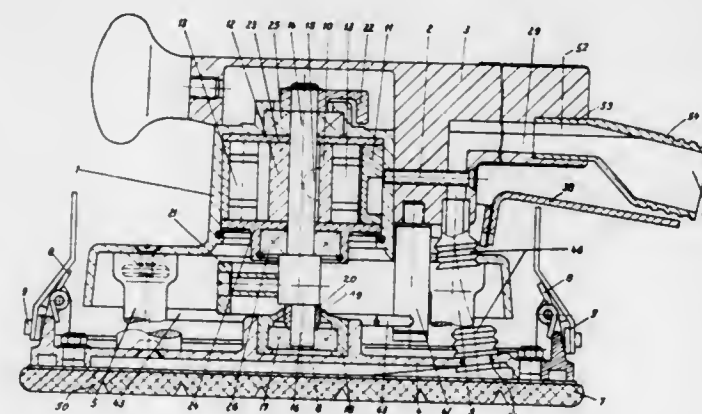
Filed Oct. 2, 1972, Ser. No. 294,206

Claims priority, application Germany, Oct. 1, 1971, 7137280[U]

Int. Cl. B24b 23/04

U.S. Cl. 51-170 TL

3 Claims



1. A hand grinder comprising a casing, a work plate, means movably supporting the work plate on the casing for oscillating movement with respect thereto substantially in a single plane, a compressed air motor carried by the casing and connected to the work plate for imparting such movement thereto, said work plate having secured on its under side a cover plate, means to secure a grinding means on the underside of the cover plate, the casing having an upper part constituting a handle, means forming a suction passage in the casing for sucking out waste produced by the grinding means, said passage extending to the outside of the casing for connection to a separate suction device driving independently of the grinder, the cover plate having a plurality of openings therethrough opening through the bottom thereof and upwardly into the area of the work plate, the work plate having a hollow on the underside thereof extending substantially over its entire surface area and communicating with the openings in the cover plate, and the hollow space having a suction opening connected to the suction passage, and partition walls extending longitudinally along the plate dividing the hollow into ducts, apertures in the partition walls connecting said ducts, the central region of the plate containing said suction opening and a flexible hose (46) connecting the suction opening to the suction passage (29).

3,854,898

A METHOD FOR PRODUCING ARMORED ROD AND WIRE SAWS

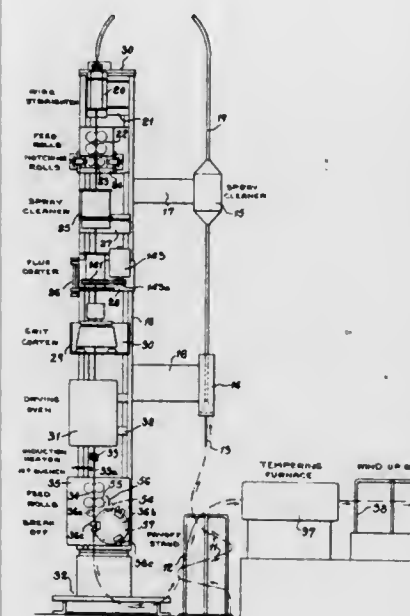
Paul V. Whitney, Jr., Victoria, Tex.; Robert J. Bolen, Bridgeport, and William W. Cotter, Jr., Stratford, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 12,724, Feb. 19, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,294

Int. Cl. B24d 3/08

U.S. Cl. 51-295

9 Claims



1. The method of progressively applying an abrasive armor coating to a long length of a base metal, wire substrate, which comprises: continuously feeding said wire in a downward direction through a continuously stirred slurry comprising a homogenous admixture of a flux adhesive and brazing metal powders and thence through a die with a converging orifice of minimum diameter exceeding that of the wire substrate such as to apply thereto a selected coating thickness of said slurry, passing the so coated substrate thence downwardly through a downwardly moving and vibratory fed mass of abrasive particles directed to converge about said substrate thus to apply thereto an overcoating of said abrasive particles, thence progressively drying said coating and inductively heating the coated substrate to temperature sufficiently high to fuse said brazing metal powders in said coating and to partially immerse said abrasive particles therein, thence progressively cooling the so heated, coated substrate to temperature sufficiently low to solidify said brazing metal in the coating and permanently bond the same to said substrate and to partially embed and anchor said abrasive particles therein, said brazing metal having a melting point below said base metal and said abrasive particles, and said flux adhesive being selected from the group consisting of organic adhesives and soluble boron containing fluxing agents in volatile solvent.

3,854,899

AUTOMATIC MOLD CLEANING

Andrew Gerald Germain, Itasca; William George Dressel, Elk Grove Village, both of Ill., and Louis Sandor, Hammond, Ind., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed June 4, 1973, Ser. No. 367,355

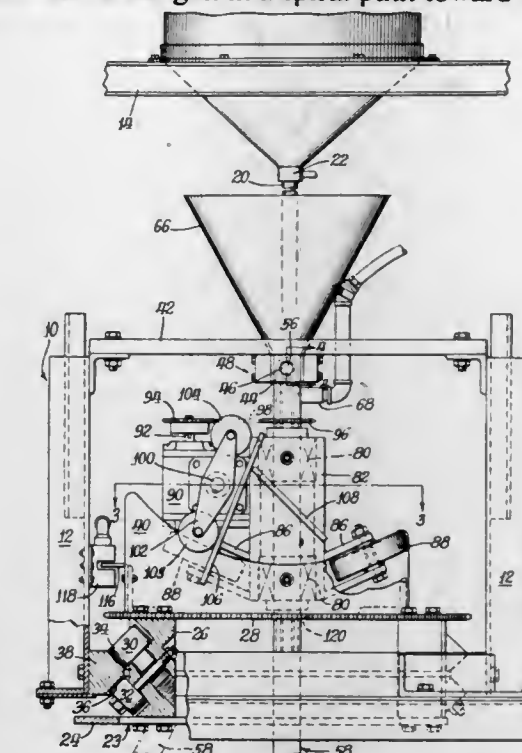
Int. Cl. B24c 1/00

U.S. Cl. 51-319

7 Claims

1. A method of removing a foreign material from the surface of a graphite mold, comprising the steps of: suspending a sand spray gun from a universal joint over the axis of the mold with the lower end of the gun spaced from the mold; then dropping sand through an inner gun passage and forcing

air through an outer gun passage so that sand is forcefully ejected against the mold surface, while simultaneously moving the lower end of the gun in a spiral path toward the periphery



of the mold, the rate of speed of the circular component of said path being constant and the rate of speed of the radial component of said path being at a decreasing rate.

3,854,900

SEPARATION OF MIXTURES OF CHLORINE DIOXIDE AND CHLORINE

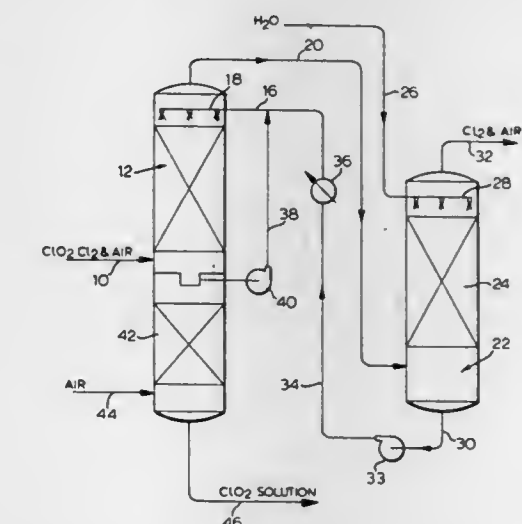
Guntars I. Upatnieks, and Gerald Cowley, both of Mississauga, Ontario, Canada, assignors to ERCO Industries Limited, Islington, Canada

Filed Nov. 20, 1973, Ser. No. 417,613

Int. Cl. B01d 55/14

U.S. Cl. 55-51

10 Claims



1. A method for the separation of gaseous mixtures of chlorine dioxide and chlorine which comprises: feeding a gaseous mixture containing chlorine dioxide and chlorine to a first contacting zone, subjecting said gaseous mixture to countercurrent contact in said first contacting zone with an aqueous solution of chlorine dioxide and chlorine substantially saturated with respect to chlorine and having a temperature above that of said gaseous mixture to dissolve chlorine dioxide from said gaseous mixture in said aqueous solution, recovering an aqueous solution of chlorine dioxide and chlorine having an increased proportion of chlorine dioxide from said first contacting zone, passing the gaseous mixture having a decreased proportion of chlorine dioxide and an increased proportion of chlo-

rine resulting from said countercurrent contact in said first contacting zone to a second contacting zone, subjecting said latter gaseous mixture to counter-current contact with water to dissolve substantially all the chlorine dioxide and part only of the chlorine, from said latter gaseous mixture, removing from said second contacting zone a gaseous material containing chlorine and being substantially free of chlorine dioxide, removing from said contacting zone an aqueous solution of chlorine dioxide and chlorine, heating said latter aqueous solution to a temperature greater than that of said gaseous mixture and to the substantial saturation point of chlorine therein and passing said heated solution to said first contacting zone as said aqueous solution countercurrently contacting said gaseous mixture.

3,854,901

SEPARATION OF GASEOUS MIXTURES OF CHLORINE DIOXIDE AND CHLORINE AND RECOVERY OF AQUEOUS SOLUTION OF CHLORINE DIOXIDE

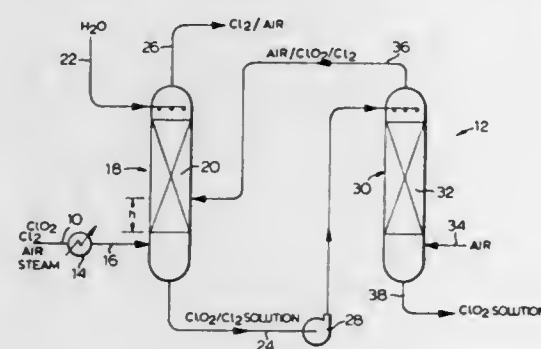
Gerald Cowley, Mississauga, Ontario, Canada, assignor to ERCO Industries Limited, Islington, Ontario, Canada

Filed Nov. 20, 1973, Ser. No. 417,614

Int. Cl. B01d 53/14

U.S. Cl. 55—51.

7 Claims



1. A method for the separation of gaseous mixtures of chlorine dioxide and chlorine which comprises: feeding a gaseous mixture of chlorine dioxide, chlorine, steam and an inert gas to a first gas-liquid contacting zone, subjecting said gaseous mixture to countercurrent contact in said first contacting zone with a first aqueous solution of chlorine dioxide and chlorine, condensing said steam by said countercurrent contact and thereby heating said first aqueous solution of chlorine dioxide and chlorine, dissolving part of the chlorine dioxide from said gas mixture in said aqueous solution and the water formed by condensation of said steam, thereby providing second aqueous solution of chlorine dioxide and chlorine having an increased proportion of chlorine dioxide as compared to said first aqueous solution of chlorine dioxide and chlorine, and a first gaseous mixture of chlorine dioxide, chlorine and inert gas having a decreased proportion of chlorine dioxide as compared with said gaseous mixture of chlorine dioxide, chlorine, steam and inert gas, removing said second aqueous solution of chlorine dioxide and chlorine from said first contacting zone, passing said second aqueous solution of chlorine dioxide and chlorine to a second gas-liquid contacting zone, subjecting said second aqueous solution of chlorine dioxide and chlorine to countercurrent contact with an inert gas in said second contacting zone to remove chlorine and chlorine dioxide therefrom at a temperature greater than the temperature of said first contacting zone thereby forming a second gaseous mixture of chlorine dioxide, chlorine and inert gas and a third aqueous solution of

chlorine dioxide and chlorine having a reduced proportion of chlorine as compared to that of the second aqueous solution of chlorine dioxide and chlorine, the quantity of chlorine dioxide removed exceeding the quantity of chlorine removed from said second aqueous solution of chlorine dioxide and chlorine, removing the second gaseous mixture of chlorine dioxide and chlorine and inert gas from said second gas-liquid contacting zone, mixing said second gaseous mixture of chlorine dioxide, chlorine and inert gas with said first gaseous mixture of chlorine dioxide, chlorine and inert gas, the proportion of chlorine dioxide present in said first gaseous mixture and in said second gaseous mixture being substantially the same, subjecting the resulting third gaseous mixture of chlorine dioxide, chlorine and inert gas to countercurrent contact with water in a third gas-liquid contacting zone to dissolve substantially all the chlorine dioxide and part of the chlorine from said third gaseous mixture thereby forming a fourth aqueous solution of chlorine dioxide and chlorine, and a gaseous mixture containing chlorine and an inert gas and being substantially free from chlorine dioxide, passing said fourth aqueous solution of chlorine dioxide and chlorine from said third contacting zone to said first contacting zone as said first aqueous solution of chlorine dioxide and chlorine, recovering said gaseous mixture of chlorine and inert gas from said third contacting zone, and recovering said third aqueous solution of chlorine dioxide and chlorine from said second contacting zone.

3,854,902

METHOD OF FILTERING GAS

Bodo Kalen, Long Island, N.Y., assignor to The Ducon Company, Inc., Mineola, N.Y.

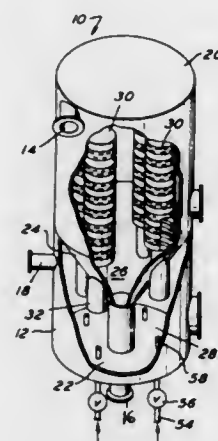
Division of Ser. No. 184,395, Sept. 28, 1971. This application

Aug. 22, 1973, Ser. No. 390,669

Int. Cl. B01d 46/30

U.S. Cl. 55—96

8 Claims



1. A method of filtering high temperature dirty gas comprising the steps of passing the dirty gas radially inwardly through discrete inlet screens coaxial with a center chamber to discrete superimposed annular filter chambers containing granular material occupying less than the total volume of the annular filter chambers so as to leave an unoccupied space at the top of each filter chamber, minimizing the effect of the angle of repose of the granular material by using horizontal filter beds whose radial width is between 1/5 and 1/6 of the outer diameter of the filter chambers, filtering out particulate from the dirty gas by passing the gas in an axial direction with respect to the filter chambers through the granular material, collecting the cleaned gas within the central chamber radially inwardly of the filter chambers, discharging the cleaned gas from the center chamber in an axial direction thereof, and backwashing said granular material in each filter chamber into the unoccupied space above each filter chamber by introducing pulses of high pressure air into said center chamber with

the high pressure air discharging through said screens, and preventing loss of the granular material by using screens having transverse dimensions which are less than the transverse dimensions of the granular material.

3,854,903

ELECTROSTATIC AIR CLEANER

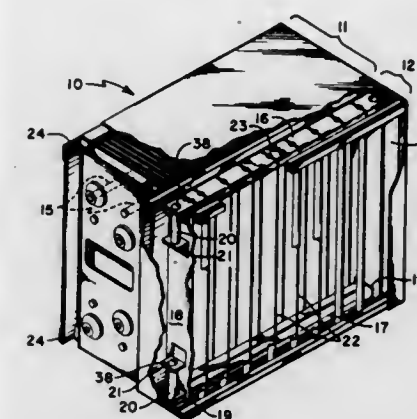
Milos Tomaides, Brooklyn Park, Minn., assignor to Chemtool, Inc., Minnetonka, Minn.

Filed Mar. 6, 1973, Ser. No. 338,605

Int. Cl. B03c 3/12, 3/38, 3/41

U.S. Cl. 55—147

8 Claims



1. An ionizer assembly for an electrostatic air cleaning apparatus comprising first and second spaced ionization wire support members, said support members having a forward and a rear edge respectively with respect to airflow therebetween, a plurality of ionization wires extending between said first and second support members at the forward and at the rear edges thereof to define a plurality of couples of ionizer wires, said couples being generally aligned in the direction of airflow, grounded ionizer tubes forming an array of tubes upstream of and generally parallel to the upstream ionizer wires and a second array of grounded ionizer tubes downstream of and generally parallel to the downstream ionizer wires.

3,854,904

APPARATUS FOR SEPARATING FLUIDS

Bruno Jamet, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

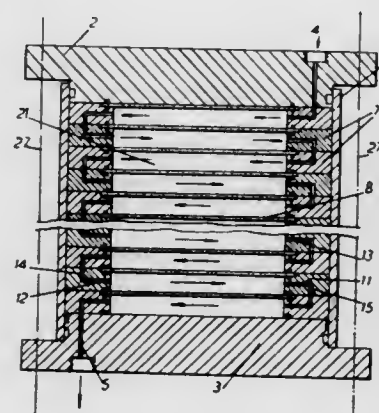
Filed Nov. 23, 1973, Ser. No. 418,201

Claims priority, application France, Nov. 24, 1972, 72.41822

Int. Cl. B01d 53/22

U.S. Cl. 55—158

7 Claims



1. Apparatus for separating fluids, such apparatus comprising, in combination:

- a jacket;
- two end walls, at least one of which is removable, defining with said jacket a chamber;
- a stack of rings positioned within said chamber, said rings each having end faces abutting the end face of at least one adjacent ring in the stack and an internal annular face;

- means defining a recess in at least one end face of a pair of abutting rings adjacent the annular face;
- porous discs positioned in said recesses, whereby a compartment is defined within each ring by the annular wall and two adjacent porous discs;
- a membrane lining opposite faces of each disc;
- a first passage in each ring providing communication between one end face of the ring and the internal annular face of the ring;
- a second passage in each ring, providing communication between the other end face of the ring and the internal annular face of the ring, the second passage opening onto the internal face at a point generally opposite to the point at which the first passage opens thereonto, the first passage of each ring communicating with the second passage of the adjacent ring;
- a fluid inlet duct in one end wall communicating with the first passage of the ring at the adjacent end of the stack;
- a fluid outlet duct in the other end wall communicating with the second passage of the ring at the other end of the stack; and
- means for removing fluid which has passed through the membranes into each porous disc.

3,854,905

STORAGE SYSTEM FOR TWO PHASE FLUIDS

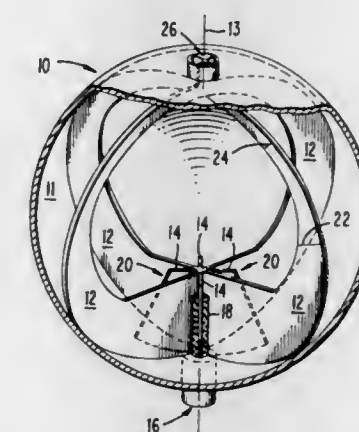
Daniel Lee Balzer, Hamilton Square, and Ralph Jones Lake, Jr., Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,525

Int. Cl. B01d 53/00

U.S. Cl. 55—159

13 Claims



1. A storage apparatus for providing a selected one of two fluids from the storage apparatus continuously on demand until the selected fluid is substantially depleted, said selected fluid being a liquid, comprising: a closed storage container having an inner surface; a first opening for admitting fluids into said container; a second opening for withdrawing said selected fluid from said container; and means for providing a continuous flow path of said selected fluid to said second opening, said means including a generally planar elongated member in said container disposed adjacent said inner surface and extending toward said second opening, said member being positioned along said inner surface to form a corner with a portion of the surface of said member and a portion of the inner surface to support a flow path of fillets of liquid as liquid in said container is depleted, said inner surface and the surface of said member being formed of a material that is preferentially wetted by said selected fluid whereby said flow path only of said selected fluid is continuously maintained to said second opening as said selected liquid is depleted from said apparatus, said selected fluid flowing to said second opening along a fillet

path formed by capillary action in said corner of said member and said inner surface, the respective densities of said two fluids being selected such that the flow of said selected fluid is substantially independent of body forces on said apparatus subjected to acceleration fields.

3,854,906

DEVICE FOR VENTING AND AERATING CLOSED CIRCULATORY WATER FLOW SYSTEMS

Franciscus Roffelsen, NL-Helmond, Netherlands, assignor to N.V. Spiro Research, Helmond, Netherlands

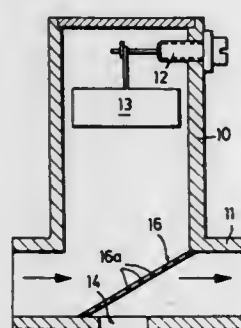
Filed Jan. 8, 1973, Ser. No. 321,970

Claims priority, application Germany, Dec. 9, 1972, 2260349; Jan. 8, 1972, 2200904

Int. Cl. B01d 19/00

U.S. Cl. 55-159

17 Claims



1. In combination with a horizontally extending conduit of a closed flow system, wherein water of fluctuating temperature is pumped and circulated through conduit means and the system is operatively connected to a pressurized water source, a venting and aerating tap comprising:

- a vent casing extending upwardly from said horizontally extending conduit and defining a collecting chamber;
- means connecting said chamber and the flow passage of said conduit to form a junction between said conduit flow passage and said casing chamber;
- a vent valve arranged on said casing and being capable of establishing communication between said chamber and the outside;
- a float member operatively connected to said valve and located within said chamber and opening and closing the valve in response to the water level in said chamber; and
- a grid positioned in said junction and extending over at least a portion of the cross-sectional area of said flow passage, said grid being formed from rod or wire means which, as distinguished from fine-mesh sieves, define comparatively large size gaps.

3,854,907

VENTED FILTER HOLDER

Donald B. Rising, Stow, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Dec. 10, 1973, Ser. No. 424,602

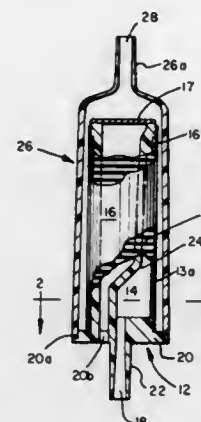
Int. Cl. B01d 19/00, 23/00

U.S. Cl. 55-159

11 Claims

- A vented filter holder comprising, in combination:
 - a hollow tubular support member having means forming a filter underdrain support on its surface, said support member including an opening to the interior thereof;
 - a sheet of liquid-wettable filter material supported on the underdrain support formed on the outer surface of said tubular support member;
 - means forming a liquid outlet port;
 - means providing a first closed fluid path from said underdrain support to said outlet port;
 - a non-liquid wettable filter material sealed across the opening to the interior of said hollow support member;

- means forming a fluid passage from the interior of said support member through said support member to the exterior of said filter holder, said passage being separated from said first closed passage; and



3,854,908

APPARATUS FOR DISCHARGING FLUE GASES FROM BLAST FURNACES AND THE LIKE

Gerhard Hausberg, Essen-Bredeney, and Karl-Rudolf Hege-mann, Essen-Bergerhausen, both of Germany, assignors to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasser-ruckkulanlagen Kommanditgesellschaft, Essen, Germany

Continuation-in-part of Ser. No. 235,208, March 15, 1972.

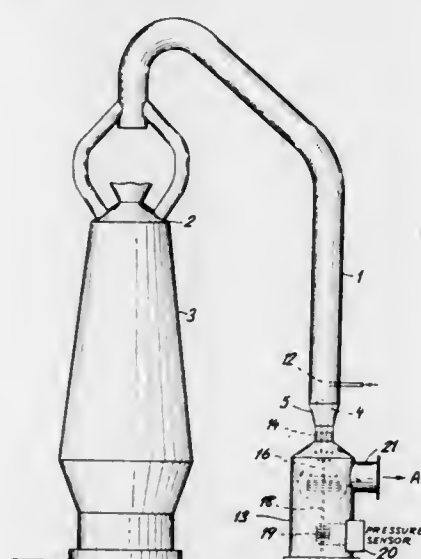
This application Mar. 28, 1973, Ser. No. 345,762

Claims priority, application Germany, Mar. 16, 1971, 2112541; May 11, 1971, 2123338; Mar. 30, 1972, 2215565

Int. Cl. B01d 47/06

U.S. Cl. 55-210

9 Claims



- An apparatus for depressurizing high-pressure waste gases, comprising:

- a separating compartment provided with an exit port;
- a duct having an inlet connected to a source of waste gases to be depressurized, said duct terminating in a nozzle with a first section converging toward an outlet which opens into said compartment and an elongated second section of substantially constant cross-section between said first section and said outlet;
- an insert extending coaxially with all-around clearance into said nozzle from said compartment, said insert having a tapering portion with a wider upstream end and a narrower downstream end defining with said first section a regulating gap of a width depending upon the relative axial position of said insert and said nozzle, said insert further having a substantially straight part axially adjoining said narrower downstream end of said tapering por-

tion and defining with said second section a restricted passage of substantially constant width exerting upon said gases a throttling effect substantially independent of said axial position; turbulence-generating means surrounding said insert straight section downstream of said gap; and control means for varying said relative axial position, said turbulence-generating means comprising a perforated barrier with several levels of relatively offset perforations in said passage.

3,854,909

HEAT EXCHANGER FOR POWER PLANTS

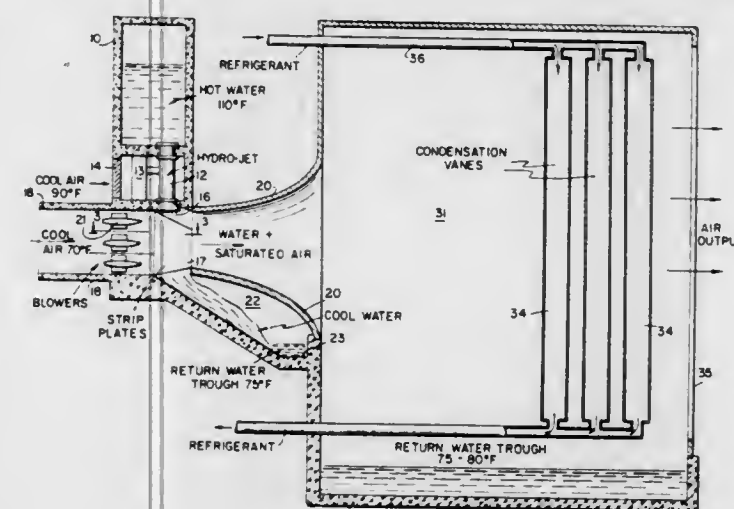
Perry M. Hoisington, Coral Gables, Fla., and Austin G. Bol-bridge, Jr., Freehold, N.J., assignors to HB2 Inc., New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,700

Int. Cl. F28c 3/08

U.S. Cl. 55-241

12 Claims



1. A heat exchanger for disposing of the heat present in water derived from a power plant condenser comprising: a hydrojet mixer for mixing the hot water from the condenser with ambient air to produce an emulsion-like mixture and for saturating the air in the mixture; a separation chamber adjoining the mixer for separating the water from the air in said mixture, said chamber including a set of strip plates for collecting the water in said mixture and for diverting it to a recycling trough, and a set of blowers for applying a stream of ambient air to the plates and for blowing saturated air from the chamber; and a condensation chamber including a plurality of refrigerated vanes for receiving the saturated air and for condensing the water in the air, a return water trough for collecting the water from the vanes for recycling in the condenser, and an exit port for directing the cooled and dehumidified air into the atmosphere.

3,854,910

APPARATUS FOR REMOVING PARTICLES FROM AN AIRSTREAM

Peter A. Hammerquist, 3419 S.W. Knollwood, Corvallis, Ore. 97330

Filed Sept. 21, 1972, Ser. No. 290,798

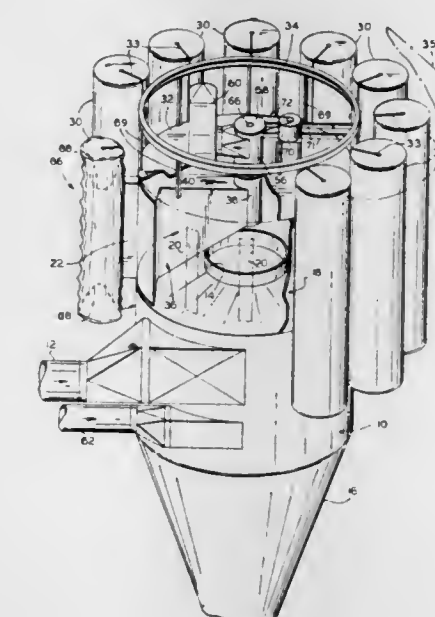
Int. Cl. B01d 46/04, 50/00

U.S. Cl. 55-287

18 Claims

- An apparatus for removing fine dust particles from an airstream, said apparatus comprising:
 - a substantially continuously operating funnel shaped centrifugal dust collector mounted at an exterior building location and initially receiving said airstream, and including fan means for forcing air through said centrifugal dust collector, said centrifugal dust collector also having an outlet;
 - a plurality of bags each having an opening, said bags being pervious but closed except for said openings and through which a flow of air passes,

a vertical, substantially cylindrical chamber having a long cylindrical wall, and said chamber having chamber openings, means individually connecting the openings of said bags to said chamber openings, said chamber having an entrance, coupling means providing a connection between the outlet of said centrifugal dust collector and said entrance of said chamber for receiving said airstream from the outlet of said centrifugal dust collector into said chamber so that said airstream passes through said chamber, through said bag openings via said chamber openings, into said bags, and through said bags to atmospheric pressure, with said chamber and bags being located in an environment for exposing said bags to said atmospheric



3,854,911

PRESSURE FUEL TANK EVAPORATION CONTROL

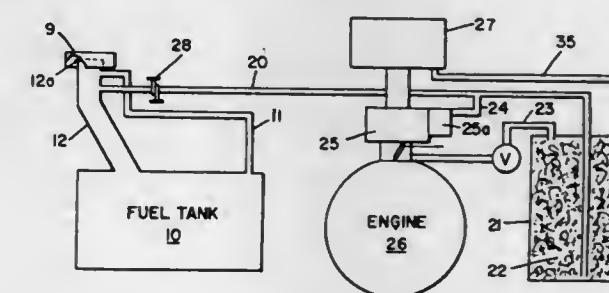
Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Apr. 13, 1971, Ser. No. 133,537

Int. Cl. B01d 53/00

U.S. Cl. 55-387

7 Claims



- In a fuel system of an internal combustion engine for capturing the vapors normally escaping from a tank containing vaporizable fuel when the tank is opened,

said tank having a filler neck extending upwardly from the upper end of the tank and open at its free end for entry of fuel to refill the tank,
a cap for sealing the open end of the filler neck against the escape of vapor under pressure generated by the fuel in the tank,
a container having means therein for absorbing said vapors when directed thereinto,
means forming with a portion of the neck a passageway leading from the interior of the tank to the interior of the container.
Manually movable valve means alternately movable, while the cap seals the filler neck opening, to block said passageway for permitting build-up of vapor pressure in the tank and for unblocking said passageway to release any vapor pressure in excess of atmospheric pressure from said tank to said container.

3,854,912

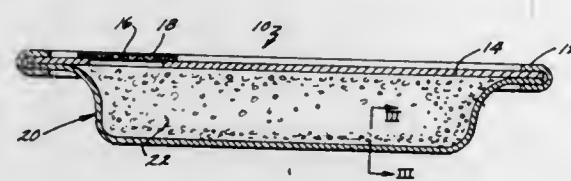
COMBINED GREASE TRAP AND AIR FILTER FOR RANGE HOODS

Gordon R. Terrel; Robert T. Hause; Alex J. Hancox, and Fredrick J. McCulley, all of Kitchener, Ontario, Canada, assignors to Lau Products, Ltd., Kitchener, Ontario, Canada

Filed Sept. 11, 1972, Ser. No. 287,681
Int. Cl. B01d 50/00

U.S. Cl. 55-479

12 Claims



1. A combination grease trap and air filter, comprising: a perforate grease trap structure having apertured layers sandwiched together such that the apertures in different ones of said layers are non-aligned to thereby define a plurality of at least partially obstructed air passages therethrough, said grease trap structure being of a dish configuration formed of said sandwiched layers and having a predetermined depth and having side and bottom portions defining a receptacle; and a layer of air filtration media disposed and retained within said receptacle.

3,854,913

RECOVERY OF NEON AND HELIUM FROM AIR BY ADSORPTION AND CLOSED CYCLE HELIUM REFRIGERATION

Evgeni Iliev Leyarovski; Borislav Vassilev Nicolov, and Yordan Kretev Gueorguiev, all of Sofia, Bulgaria, assignors to Physicheski Institut s Aneb pri Ban, Sofia, Bulgaria

Filed Jan. 27, 1972, Ser. No. 221,265
Claims priority, application Bulgaria, Feb. 25, 1971, 1600171

Int. Cl. F25j 5/00

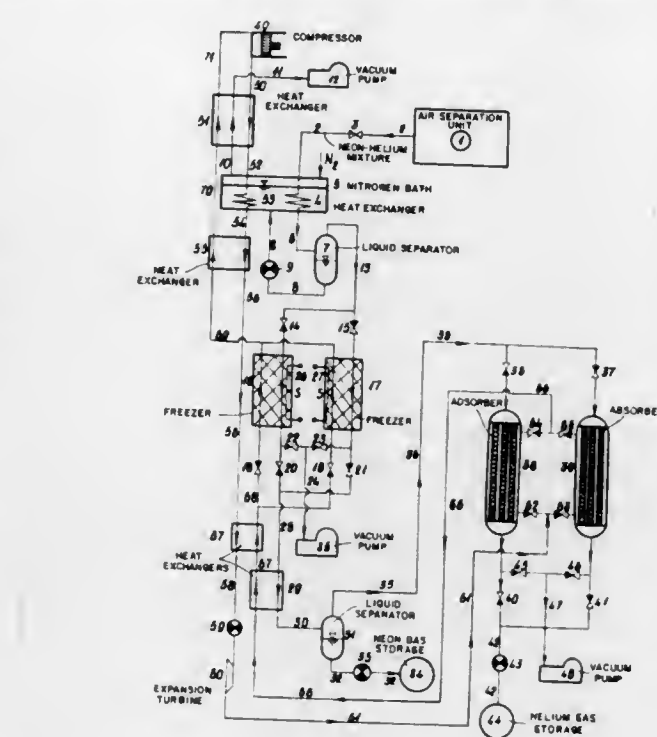
U.S. Cl. 62-12

2 Claims

1. A method of separating neon from helium in a neon-helium mixture and producing pure neon and helium, comprising the steps of:

- cooling said neon-helium mixture by heat exchange with cold helium formed in a closed helium-circulating cycle by expansion of helium to a temperature below substantially 25°K to condense neon from said mixture and produce a noncondensed gas consisting predominantly of helium but containing residual neon;
- adsorbing neon from said noncondensed gas in a molecular sieve adsorber at a temperature between 5.2°K and 22°K to remove said residual neon;
- desorbing neon from said adsorber under vacuum while cooling at a temperature below 22°K said gas to said

temperature between 22°K and the critical temperature point of helium at least in part by abstracting from said gas all of the latent heat of desorption of the neon, said mixture prior to step (a) containing at least one high-boiling component selected from the group which consists of nitrogen and oxygen; and



boiling component selected from the group which consists of nitrogen and oxygen; and
d. prior to step (a), subjecting said mixture to a low temperature sufficient to freeze said high-boiling component and remove it from said mixture.

3,854,914

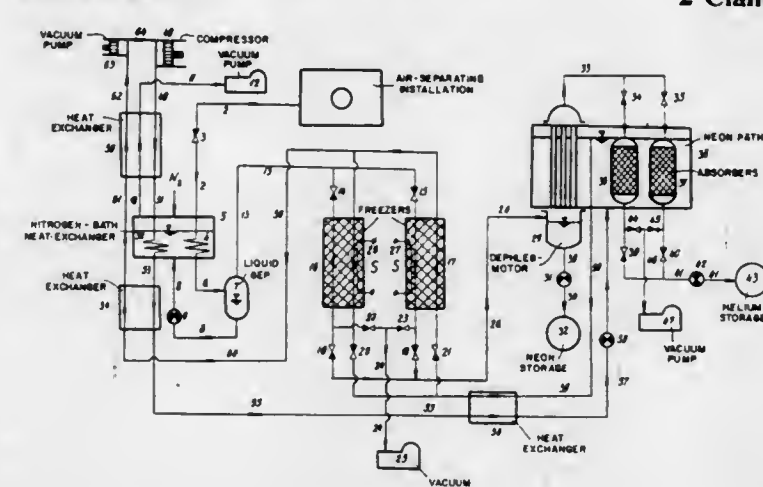
RECOVERY OF NEON AND HELIUM FROM AIR BY ADSORPTION AND CLOSED CYCLE NEON REFRIGERATION

Evgeni Iliev Leyarovski; Borislav Vassilev Nicolov, and Yordan Kretev Gueorguiev, all of Sofia, Bulgaria, assignors to Physicheski Institut s Aneb pri Ban, Sofia, Bulgaria

Filed Jan. 27, 1972, Ser. No. 221,260
Claims priority, application Bulgaria, Feb. 25, 1971, 16000
Int. Cl. F25j 5/00

U.S. Cl. 62-12

2 Claims



1. A method of obtaining neon and helium from the air, comprising the steps of:

- separating nitrogen and oxygen from the air and producing a neon and helium gas mixture;
- cooling said neon and helium gas mixture by heat exchange with a circulating neon coolant in a closed auxiliary cooling cycle, thereby condensing neon with absorbed hydrogen from said mixture while producing a helium-rich gas containing neon and hydrogen;
- passing said helium-rich gas through an adsorbent retaining neon and hydrogen and recovering substantially pure helium continuously therefrom;

- desorbing neon and hydrogen from said adsorbent while using the latent heat of desorption to partly cool said gas mixture;
- throttling the condensed neon with absorbed hydrogen to atmospheric pressure thereby forming hydrogen vapor and discharging the same; and
- removing hydrogen from the neon and helium subsequent to step (a) but prior to the recovery of pure helium in step (c).

3,854,915

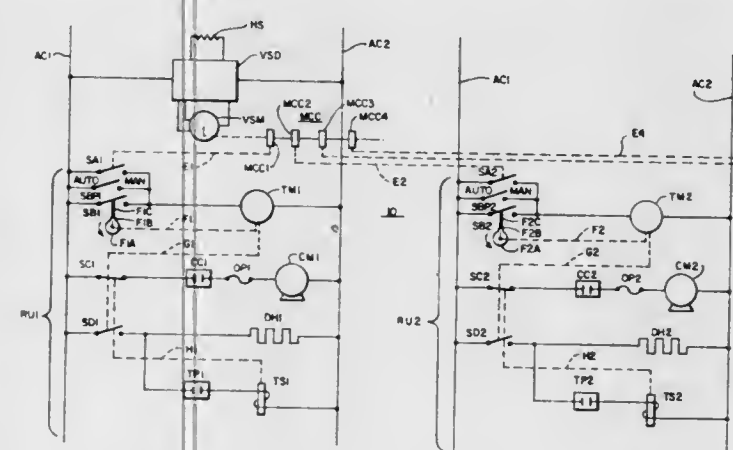
DEMAND DEFROST CONTROL SYSTEM

Karl J. Schulze-Berge, Manitowoc, and John Joseph Allard, Mishicot, both of Wis., assignors to AMF Incorporated, White Plains, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,690
Int. Cl. F25d 21/06

U.S. Cl. 62-155

48 Claims



1. Means controlling defrost cycles of at least one refrigeration unit having defrost and refrigeration means in response to the demand constraint of an ambient parameter, comprising: transducer means sensing said ambient parameter and providing a variable speed drive output as a function thereof; control means driven by said drive output; constant speed drive means; first means responsive to said control means energizing said constant speed drive means for a first predetermined interval; second means responsive to said constant speed drive means maintaining the latter energized for a second predetermined interval; and third means responsive to said constant speed drive means actuating said defrost means and precluding actuation of said refrigeration means for a third predetermined interval.

3,854,916

SYSTEM USING MOTOR DRIVEN CONTROL DEVICE

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

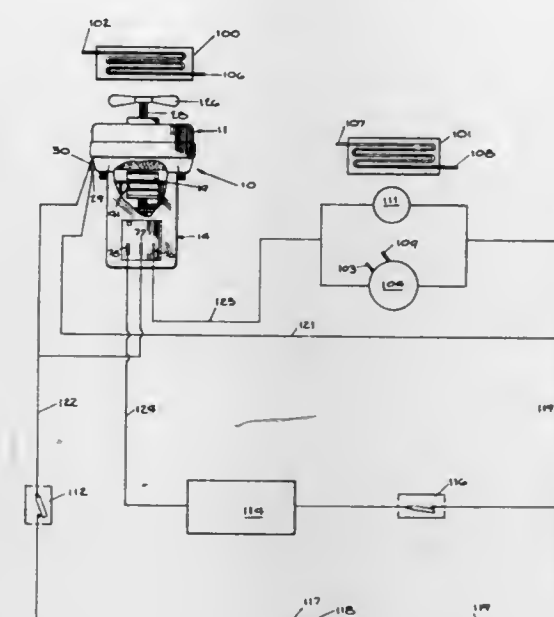
Continuation-in-part of Ser. No. 223,916, Feb. 7, 1972, Pat. No. 3,743,872. This application June 29, 1973, Ser. No. 374,970

Int. Cl. F25d 17/00

U.S. Cl. 62-180

3 Claims

1. A refrigeration system including refrigeration heat transfer means comprising condenser and evaporator coils, a motor driven compressor interconnected with the condenser and evaporator coils, an electric fan motor drivingly coupled with fan means for forcing air past at least some of the coils, and a control device including switching means for selectively providing excitation voltage for the compressor motor; said fan motor including a magnetic power output member and said control device including a magnetic power input member, said fan motor and control device being magnetically coupled through the output and input members so that the control



device is driven by the fan motor during normal operation of the system and so that fan motor operation is not adversely affected during excitation of the compressor motor by malfunctions of the control device.

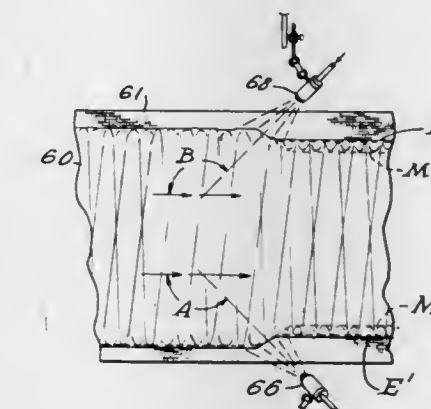
3,854,917

METHOD OF AND APPARATUS FOR PROCESSING FLEXIBLE SHEET MATERIAL

C. Daniel McKinney, Anderson, and Forrest C. Vickery, Williamston, both of S.C., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Oct. 16, 1972, Ser. No. 298,069
Int. Cl. C03b 37/02; C03c 27/10; B32b 17/04
U.S. Cl. 65-3

9 Claims



1. The method of producing a sheet-like body of glass strand comprising:

forming on a surface a sheet-like fibrous body capable of being folded without fold lines including glass strands disposed in strips oriented in overlapping relation back and forth across the body with the strands in each of the strips disposed in generally parallel and closely positioned courses and loops of the strands extending laterally across a substantial portion of the strip in interleaving relation with loops of other strands of the same strip advancing the surface along a linear generally horizontal path; and directing a single stream of gaseous fluid against a marginal region of the sheet-like body from an outlet located in a position above and outwardly of the marginal region such that the stream is directed obliquely downwardly and inwardly of the fibrous body in a direction generally opposed to the direction of advancement of the surface to effectively move the body in such region into underlying folded relation to form an edge.

3,854,918

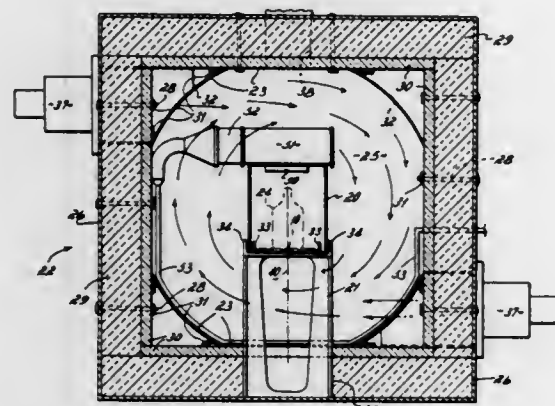
METHOD FOR CONTINUOUS HEAT TREATING OF GLASS ARTICLES

Richard G. McKinstry, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 238,355, March 27, 1972, Pat. No. 3,807,943, which is a continuation-in-part of Ser. No. 62,489, Aug. 10, 1970, Pat. No. 3,659,551. This application Nov. 19, 1973, Ser. No. 416,983

Int. Cl. C03c 21/00; C03b 25/04

U.S. Cl. 65—30

5 Claims



1. A method of treating glass articles comprising, placing the articles in lineal arrangement on a conveyor, moving the conveyor in the horizontal direction, with the articles on it, through an open ended muffle while heating at least a portion of said muffle, said heating being carried out by directing hot gasses tangentially to the exterior of said muffle and causing said gasses to flow in the longitudinal direction as a helix around the outside of said muffle.

3,854,919

METHOD OF FORMING TRANSPARENT GLASS CERAMIC WITH COMPRESSION LAYER

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 165,744, July 23, 1971, Pat. No. 3,779,856. This application Mar. 1, 1973, Ser. No. 337,223

Int. Cl. C03b 29/00

U.S. Cl. 65—32

11 Claims

1. A method of forming a transparent glass ceramic body having a compressive stress layer on the surface thereof and whereby there is imparted to said body a high mechanical strength of at least 20,000 psi and whereby said body when broken will shatter into very small particles instead of large, jagged pieces, said method consisting essentially of

a. subjecting a thermally crystallizable glass body consisting essentially of the following composition:

Ingredient	Weight Percent
SiO ₂	54 - 76
Al ₂ O ₃	18 - 33
Li ₂ O	2 - 6.4
Nucleating Agent	3 - 8
Copper Oxide (as CuO)	0.5 - 6

wherein the molar ratio of SiO₂/Al₂O₃ is from 3 to 6, the molar ratio of Li₂O/Al₂O₃ is from 0.3 to about 0.9 and the nucleating agent is selected from the group consisting of TiO₂, ZrO₂ and mixture thereof and if TiO₂ or ZrO₂ is the sole nucleating agent it is present in an amount of from 3 to 6 percent and wherein at least 90 percent by weight of said body consists of said SiO₂, Al₂O₃, Li₂O, CuO and nucleating agent, to the nucleating temperature for said glass.

b. maintaining said glass body in a reducing atmosphere while subjecting it to said nucleating temperature for a period of time sufficient to increase the rate of nucleation in the surface of said glass body and said body has a higher degree of nucleation in its surface than in the interior thereof, and then

c. further subjecting said glass body to a temperature sufficient to crystallize said body to a glass-ceramic having a higher degree of crystallization in and below the surface of the body than in the interior of said body, the portion of said glass ceramic body having a higher degree of crystallinity forming a compressive stress layer on the surface of said glass-ceramic body, to a depth of at least about 100 microns on the surface of said body said glass ceramic body having a coefficient of thermal expansion of from about +12 to -12 × 10⁻⁷/°C. (0°-300°C) said expansion coefficient being lower than that of the expansion coefficient of said glass body by 20 × 10⁻⁷/°C.

3,854,920

HIGH TEMPERATURE BENDING

Soloman Elijah Kay, Solihull, and John Pickard, Studley, both of England, assignors to Triplex Safety Glass Company, Limited, London, England

Continuation-in-part of Ser. Nos. 92,255, Nov. 23, 1970, abandoned, and Ser. No. 755,270, Aug. 26, 1968, abandoned, said Ser. No. 92,255, is a continuation of Ser. No. 755,270.

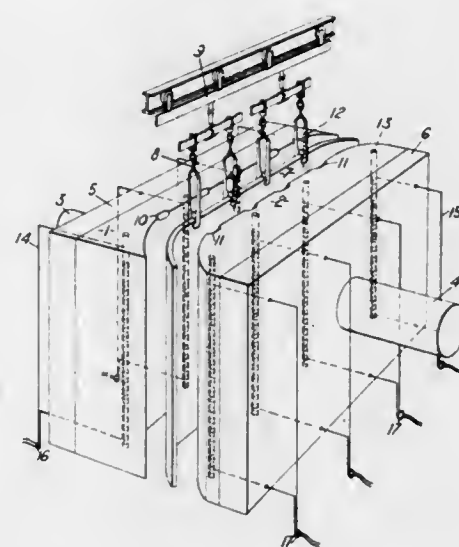
This application Oct. 11, 1973, Ser. No. 405,543

Claims priority, application Great Britain, Sept. 5, 1967, 40600/67

Int. Cl. C03b 23/02

U.S. Cl. 65—106

18 Claims



1. A method of manufacturing a curved glass sheet which comprises the steps of:

a. heating a glass sheet substantially to a selected temperature within the bending temperature range of the glass;
b. heating complementary bending surfaces to said selected bending temperature;

c. applying the bending surfaces while heated to the temperature of step (b) to the opposite side surfaces of the glass sheet heated to the temperature of step (a) to conform the sheet to the curvature of said bending surfaces;
d. continuing step (c) for a time sufficient to consolidate the shape of the sheet at said curvature and to establish a thermal condition of the sheet at the temperature of said bending surfaces to assure close retention of said curvature on withdrawal of the bending surfaces from both surfaces of the glass sheet;

e. withdrawing said bending surfaces from both surfaces of the glass sheet at the end of said time, and then

f. uniformly cooling both surfaces of the curved sheet from the thermal condition established by step (d).

3,854,921

GLASS MOLD COOLING SYSTEMS

Stanley Peter Jones, Doncaster, England, assignor to Emhart Corporation, Bloomfield, Conn.

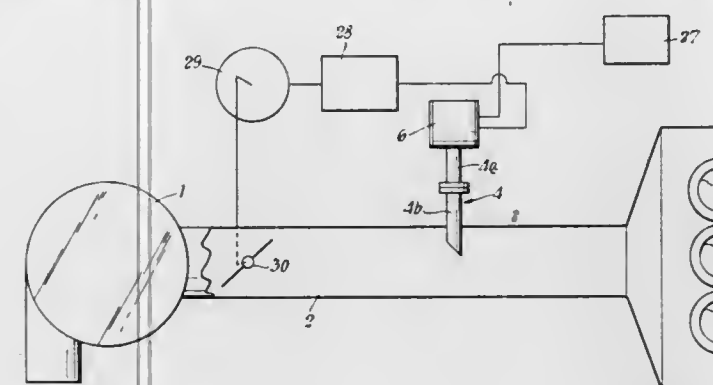
Filed Sept. 4, 1973, Ser. No. 394,218

Claims priority, application Great Britain, Sept. 5, 1972, 41121/72

Int. Cl. C03b 9/38

U.S. Cl. 65—161

7 Claims



1. A system for controlling the rate of cooling of a first body to which heat is supplied during a manufacturing process, the system comprising means for generating a flow of cooling air to pass over a surface of the first body during the process, a second body which has similar cooling characteristics to the first body, means for causing a portion of said cooling air to pass over a surface of said second body, means for maintaining a regular flow of heat to said second body to maintain said second body at a temperature near a desired operating temperature of the first body during the process, and control means dependent upon the temperature of said second body for so controlling said means for generating the flow of air as to compensate for fluctuations in temperature of said second body, whereby the rate at which the cooling air cools the first body is maintained substantially constant.

3,854,922

THRESHOLD MOUNTED IN A MOLTEN GLASS DELIVERY APPARATUS

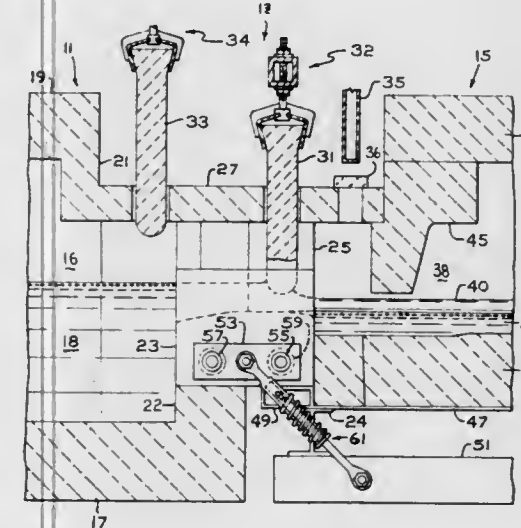
John E. Sensi, Arnold, and George O. Wehner, Bethel Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,429

Int. Cl. C03o 18/02

U.S. Cl. 65—172

11 Claims



1. In a glass forming apparatus comprising a chamber having an inlet end and an outlet end and including a bottom for containing a pool of molten metal, a top roof portion for enclosing a space extending above the pool of molten metal, a lift-off assembly in the outlet end of the glass forming chamber for removing a continuous sheet of glass from the chamber, means for sealing the enclosed chamber from the outside

environment and means at the inlet end of the glass forming chamber for connecting the glass forming chamber to a glass-making furnace for delivering molten glass therefrom to the glass forming chamber, the improvement comprising:

a. an impervious structure connected to an impervious casing extending from the inlet end of the glass forming chamber beneath the bottom portion of the glass forming chamber;
b. a threshold member resting on the impervious structure and disposed transversely across the inlet end of the glass forming chamber, wherein the threshold member extends above the level for molten metal; and
c. means for urging the threshold member against the bottom portion of the glass forming chamber.

3,854,923

PROCESS FOR PRODUCING AMMONIACAL SOLUTIONS OF ZINC ALKANOATES

Louis E. Ott, St. John, Ind., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 198,963, Nov. 15, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 404,366

Int. Cl. C05d 9/02

U.S. Cl. 71—1

3 Claims

1. The method of preparing a liquid zinc micronutrient composition consisting of an aqueous ammoniacal ionic solution of a zinc alkanolate containing at least two mols of C₁₋₆ alkanolic acid anion per mol of zinc, at least about 4 mols of ammonia per mol of zinc, and at least 10 weight percent of water which comprises reacting zinc oxide, in an amount sufficient to provide from about 5 to about 15 weight percent zinc in said composition, with an ammonia-basic aqueous ammonium alkanolate solution consisting of at least two mols of C₁₋₆ alkanolic acid anion per mol of zinc, at least 4 mols of ammonia per mol of zinc provided by zinc oxide, and at least 10 weight percent water.

3,854,924

1,3,4-THIADIAZINE HERBICIDES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 103,814, Jan. 4, 1971; Pat. No. 3,779,736.

This application May 17, 1973, Ser. No. 361,366

Int. Cl. A01n 9/12

U.S. Cl. 71—90

1 Claim

1. The method of combating undesired vegetation comprising applying to the locus of the undesired vegetation a herbicidally effective amount of methyl N-(5-tert-butyl-6H-1,3,4-thiadiazin-2-yl)-N-methylcarbamate.

3,854,925

1,3-DISUBSTITUTED-5-(SUBSTITUTED THIO) IMINO-2,4-IMIDAZOLIDINE DIONES AND THE 4-THIO ANALOGS

Malcolm Scott Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 142,756, May 12, 1971, Pat. No. 3,766,202, which is a continuation-in-part of Ser. No. 56,899,

July 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 852,509, Aug. 22, 1961, Pat. No. 3,655,689, which is

a continuation-in-part of Ser. No. 745,417, July 17, 1968,

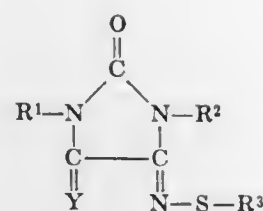
abandoned. This application July 5, 1973, Ser. No. 376,870

Int. Cl. A01n 9/22

U.S. Cl. 71—92

25 Claims

1. A method for post-emergent control of undesirable vegetation which comprises applying to said vegetation an herbicidally effective amount of a compound of the formula



wherein Y and O or S; R¹ and R² are individually alkyl of 1 to 10 carbon atoms substituted with 0 to 6 halogens of atomic number 9 to 35, alkenyl of 2 to 10 carbon atoms substituted with 0 to 6 halogens of atomic number 9 to 35, propargyl or cycloalkyl of 3 to 10 carbon atoms substituted with 0 to 6 halogens of atomic number 9 to 35, or phenyl substituted with 0 to 5 halogens of atomic number 9 to 35, 0 to 5 nitro groups, 0 to 5 alkoxy groups individually of 1 to 4 carbon atoms or 0 to 5 alkyl groups individually of 1 to 4 carbon atoms, or 0 to 1 trichloromethyl; and R³ is alkyl of 1 to 6 carbon atoms substituted with 0 to 6 halogen atoms of atomic number 9 to 35, alkenyl of 2 to 6 carbon atoms substituted with 0 to 6 halogen atoms of atomic number 9 to 35, or phenyl substituted with 0 to 5 halogen atoms of atomic number 9 to 35 or alkyl groups of 1 to 4 carbon atoms.

3,854,926

METHOD OF CONTROLLING UNDESIRABLE VEGETATION WITH 2H-PYRIDO (3,2-B)-1,4-OXAZIN-3(4H) ONES

Herman O. Senkbeil, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

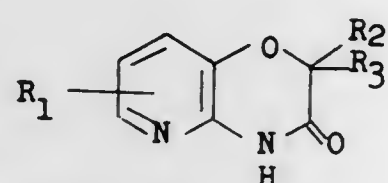
Filed June 4, 1973, Ser. No. 366,896

Int. Cl. A01n 9/22

U.S. Cl. 71-94

12 Claims

1. The method of controlling undesired plants which comprises applying to the locus of seeds of undesired plants a herbicidally-effective amount of a compound corresponding to the formula:



wherein R₁ is hydrogen, methyl or halo, and R₂ and R₃ each independently represent hydrogen or a lower alkyl group of from 1 to 3 carbon atoms.

3,854,927

PROCESS FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

Karl Kiehs; Karl-Heinz Koenig, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Continuation-in-part of Ser. No. 92,190, Nov. 23, 1970, abandoned, which is a division of Ser. No. 784,247, Dec. 16, 1968, Pat. No. 3,681,425. This application May 11, 1973, Ser. No. 359,242

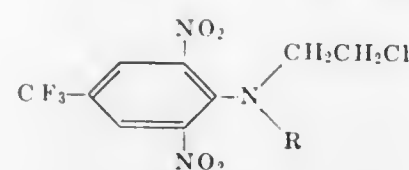
Claims priority, application Germany, Dec. 21, 1967, 1643719

Int. Cl. A01n 9/20

U.S. Cl. 71-121

2 Claims

1. A process for controlling the growth of unwanted plants in crops wherein the soil in which the growth of the unwanted plants is to be prevented is treated with a phytotoxic quantity of a compound having the formula



where R denotes lower alkyl.

3,854,928

METHOD FOR INCREASING YIELD OF SUGARCANE

Stanley J. Buckman, and Miguel L. Pulido, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Nov. 14, 1973, Ser. No. 415,698

Int. Cl. A01n 9/20

U.S. Cl. 71-121

5 Claims

1. A method of increasing the sucrose content of growing sugarcane comprising applying to the foliage of the sugarcane plant prior to harvest, an effective amount of the compound poly[oxyethylene(dimethyliminio)ethylene-(dimethyliminio)ethylene dichloride].

3,854,929

PROCESS OF BENEFICIATING TITANIFEROUS ORES IN THE PRESENCE OF HYDROGEN CHLORIDE

Donald Fergusson Stewart, Doncaster, and Leslie John Pollard, Lower Templestowe, both of Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

Continuation-in-part of Ser. No. 242,804, April 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 228,315, Feb. 22, 1972, This application Mar. 22, 1973, Ser. No. 343,664

Claims priority, application Australia, Mar. 1, 1971, 4156/71; Mar. 1, 1971, 4157/71; Mar. 1, 1971, 4158/71; Mar. 1, 1971, 4159/71

Int. Cl. C21b 1/00; C01g 23/04

U.S. Cl. 75-1

22 Claims

1. A process for producing metallic iron concentrates and titanium oxide concentrates from titaniferous ores which process comprises adding a flux to the ore to form a reaction mixture wherein the weight ratio of ore to flux is in the range from 5:1 to 1.2:1, heating the reaction mixture in an atmosphere comprising hydrogen chloride and in the presence of a reducing agent to a temperature below that at which a slag is formed so as to cause formation of metallic iron and separating the metallic iron formed thereby from the titanium oxide by physical means.

3,854,930

PROCESS FOR THE REMOVAL OF LEAD FROM MOLYBDENITE

Dan M. Kentro, Greenwich, Conn., assignor to Molybdenum Corporation of America, White Plains, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,584

Int. Cl. C22b 1/00, 49/00

U.S. Cl. 75-1

5 Claims

1. The process for reducing the lead content of molybdenite concentrate which comprises heating the concentrate at a temperature between about 150°-450° C for a period of about ½ to 3 hours with from about .5-30 percent by weight of ammonium chloride, and leaching the treated concentrate with hydrochloric or nitric acid to convert lead in the concentrate to a soluble lead compound.

3,854,931

ROASTING, COARSENING AND HARDENING OF IRON SULFIDE MATERIALS

Karl Goran Gorling, Lidingo, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 135,116, April 19, 1971, abandoned.

This application Feb. 20, 1973, Ser. No. 333,480

Claims priority, application Sweden, Apr. 20, 1970, 5391/70

Int. Cl. C20b 1/10

U.S. Cl. 75-3

5 Claims

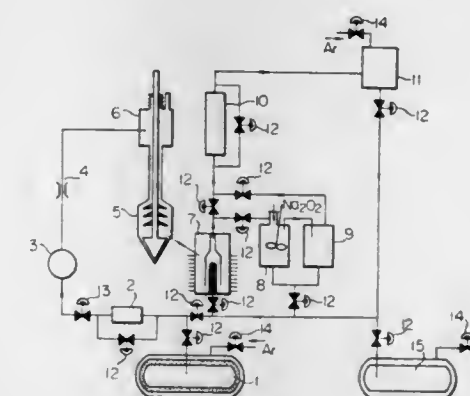
1. Process for the production of a hardened, coarse roasted product from iron sulphide, characterized in supplying the iron sulphide to the bed of a fluidized bed furnace where the iron sulphide is roasted and substantially the whole amount of roasted goods is entrained by the roasting gas,

that the roasted fine grained product is separated from the gas in a gas cleaning apparatus,

that the separated material is agglomerated to a particle size distribution suitable for fluidizing,

that the agglomerates formed in a substantially dry state are charged to said roasting furnace and therein subjected to hardening and further roasting under influence by the heat developed at said roasting of the iron sulphide at a temperature of between 600° and 1,100° C, and

that the hardened roasted and substantially sulphur-free agglomerates are removed from the bed.



3,854,932

PROCESS FOR PRODUCTION OF STAINLESS STEEL

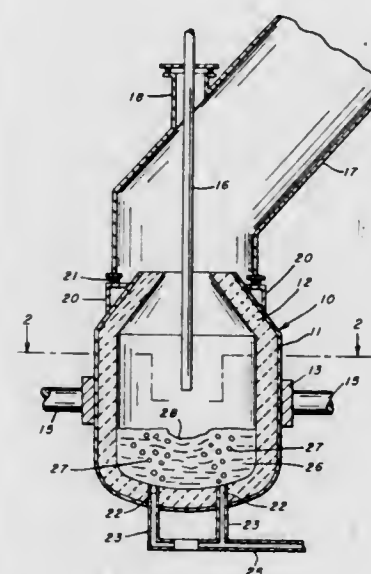
Harry L. Bishop, Jr., Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed June 18, 1973, Ser. No. 370,904

Int. Cl. C21c 5/34, 7/10

U.S. Cl. 75-60

13 Claims



1. A method of purifying sodium metal used as nuclear reactor coolant and contaminated with damaged nuclear fuel and nuclear fission products comprising elements selected from the group consisting of O, N, S, Sr, Ba, Sb, Sm, Pr, La, Ce, Ni, Si, Sn, Zn, Ti, Th, Pu, Rh, and Pb which comprises dissolving at least one species of metallic additives selected from the group consisting of calcium, magnesium or an alloy thereof in molten contaminated sodium at a temperature of about 450°-850° C and cooling the molten mixture to a temperature a little higher than the melting point of sodium metal to separate the metallic additives and the impurities chemically bonded therewith, dissolved, occluded or absorbed therein.

3,854,934

PURIFICATION OF MOLTEN ALUMINUM AND ALLOYS

James E. Dore, Milford; Peter E. Sevier, Woodbridge, and John C. Yarwood, Madison, all of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed June 18, 1973, Ser. No. 371,127

Int. Cl. C22b 21/06

U.S. Cl. 75-68 R

22 Claims

1. A process for purifying aluminum base alloys by removing gaseous and solid particulate impurities therefrom which comprises: providing a molten aluminum base alloy containing gaseous and solid particulate impurities therein; providing over said molten alloy a supernatant layer of a molten mixture of at least two halide salts, wherein the cation is selected from the group consisting of an alkali metal and an alkaline earth metal, bubbling a treating gas through said molten alloy, said gas consisting essentially of an inert carrier gas and an effective amount of a fully halogenated lower hydrocarbon containing one to six carbon atoms, which is free of hydrogen and contains at least one fluorine atom, said gas containing up to 10 percent by volume of said hydrocarbon, thereby transferring solid particulate impurities to the supernatant layer and removing gaseous impurities therefrom; and separating the said alloy in purified condition.

1. A process for producing stainless steel comprising:

A. providing a charge that is at least partly liquid and suitable for producing a chromium-containing stainless steel in an oxygen steel converter having a tuyere in its bottom section,

B. introducing oxygen through a lance onto or beneath the surface of said charge,

C. introducing an inert gas or an endothermic gas through said tuyere,

D. maintaining a subatmospheric pressure in said converter, and

E. recovering a stainless steel product.

3,854,935

GRAIN REFINING COMPOSITIONS AND METHOD OF REFINING ALUMINUM THEREWITH

George Snow, Birmingham, England, assignor to Foseco International Limited, Birmingham, England
Continuation-in-part of Ser. No. 359,756, May 14, 1973, abandoned. This application Aug. 9, 1973, Ser. No. 386,880
Claims priority, application Great Britain, May 17, 1972, 23219/72; Aug. 8, 1972, 36979/72
Int. Cl. C22b 21/06

U.S. Cl. 75-68 R

5 Claims

1. A composition for the grain refinement of aluminum or aluminum alloys consisting essentially of
- 15 - 85 percent by weight of a material selected from the class consisting of metallic titanium and titanium alloys containing not less than 85 percent titanium,
 - 2.5 - 70 percent by weight of at least one component selected from the class consisting of sodium borofluoride, potassium borofluoride, sodium titanofluoride, potassium titanofluoride, sodium zirconium fluoride and potassium zirconium fluoride, and
 - 0 - 46 percent by weight of a metal having a density greater than 4.5 g/cm³,
- the content of said metal not exceeding the content of said component i), the content of component ii) being at least 12 percent of the content of said component i), said component i) having a particle size not greater than 500 microns, and said composition having a density of at least 2.4 g/cm³.

3,854,936

SMELTING OF NICKEL OXIDE ORES TO PRODUCE FERRONICKEL

Willard L. Hunter; Danton L. Paulson, and William A. Stickney, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 26, 1973, Ser. No. 401,004

Int. Cl. C22b 23/00

U.S. Cl. 75-82

4 Claims

1. A process for producing ferronickel from nickel oxide ores which comprises:
- heating in a furnace a first charge comprising nickel oxide ore with a carbon reductant in an amount sufficient to provide at least 35 percent of the carbon stoichiometrically required to reduce the nickel oxide (NiO) and iron oxide (Fe₂O₃) contained in the ore charge to metal to form a liquid slag depleted in nickel and a liquid ferronickel phase rich in iron;
 - tapping from the furnace a substantial portion of the nickel-depleted slag;
 - adding to the furnace, still containing the liquid ferronickel phase, a second charge comprising nickel oxide ore and a carbon reductant in an amount less than 25 percent of the carbon stoichiometrically required to reduce the nickel oxide (NiO) and iron oxide (Fe₂O₃) contained in the second ore charge to metal;
 - heating the second charge to form a liquid slag rich in nickel and a nickel-rich, ferronickel phase, and
 - tapping from the furnace a substantial portion of the nickel-rich, ferronickel phase.

3,854,937

PITTING CORROSION RESISTANT AUSTENITE STAINLESS STEEL

Tohru Muta; Hideo Abo, and Sakae Noguchi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

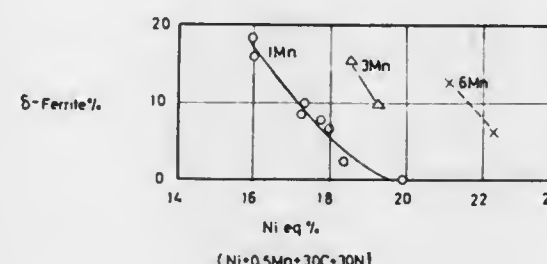
Filed Dec. 13, 1971, Ser. No. 207,021

Claims priority, application Japan, Dec. 14, 1970, 45-110594

Int. Cl. C22c 39/30

U.S. Cl. 75-128 N

1 Claim



1. A pitting corrosion resistant austenite stainless steel consisting essentially of
- 0.08 percent by weight of carbon,
 - silicon in an amount not exceeding 4.0 percent by weight,
 - manganese in an amount not exceeding 5.0 percent by weight,
 - phosphorus in an amount not exceeding 0.04 percent by weight,
 - sulfur in an amount not exceeding 0.03 percent by weight,
 - 10 to 18 percent by weight of nickel,
 - 23 to 30 percent by weight of chromium,
 - 0.30 to 0.45 percent by weight of nitrogen, and
 - 0.1 to 4.0 percent by weight of molybdenum,
- the balance being iron and unavoidable impurities, said steel satisfying the condition of $Ni \% + 30 (C \% + N \%) \geq 20\%$.

3,854,938

AUSTENITIC STAINLESS STEEL

Howard E. Baybrook, Leechburg, and Joseph A. Chivinsky, Sarver, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 137,957, April 27, 1971, Pat. No. 3,716,691. This application Oct. 16, 1972, Ser. No. 298,055

Int. Cl. C22c 39/20

U.S. Cl. 75-128

8 Claims

1. An austenitic stainless steel filler metal for use in gas shielded arc welding, consisting essentially of, in weight percent, up to 0.1 percent carbon, 8.5-14.0 percent manganese, up to 0.6 percent silicon, 18.5-23.0 percent chromium, 10.0-16.0 percent nickel, 2.0-3.0 percent molybdenum, 0.2-0.38 percent nitrogen, balance iron and incidental impurities; wherein the ratio of austenitizing elements to ferritizing elements is in excess of 1 in accordance with the following expression:
- $$\frac{[\%Ni + 30 (\%C + \%N) + 0.5 (\%Mn)]}{[\%Cr + \%Mo + 1.5 (\%Si)]} > 1$$
- wherein said manganese and nitrogen contents are balanced in accordance with the following expression:
- $$\frac{\%Mn}{\%N} \geq 42$$
- and wherein the sum of said chromium, manganese, nickel and molybdenum contents are in accordance with the following expression:
- $$\%Mn + \%Cr + \%Ni + \%Mo \geq 38.$$

3,854,939

METHOD FOR INOCULATING MOLTEN METAL WITH AN INOCULATING MATERIAL

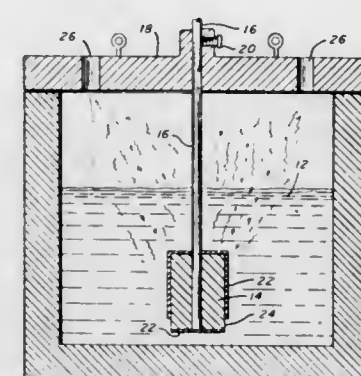
John G. Mezzoff, Tulsa, Okla., assignor to American Magnesium Company, Tulsa, Okla.

Filed Apr. 17, 1972, Ser. No. 244,611

Int. Cl. C22c 37/02

U.S. Cl. 75-130 B

4 Claims



1. The method of inoculating a volume of molten ferrosilicon with magnesium at a controlled rate, comprising the steps of:
- coating substantially all of the exterior surface of an ingot of magnesium with a ceramic thermal insulating material except for a small selected uncoated area;
 - immersing the coated ingot in the said molten ferrosilicon metal.

3,854,940

ELECTROCONDUCTIVE, CORROSION RESISTANT HIGH SILICON ALLOY

Howard H. Hoekje, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 260,790, June 8, 1970, and a continuation-in-part of Ser. No. 336,288, Feb. 27, 1973, and a continuation-in-part of Ser. No. 356,972, May 3, 1974, said Ser. No. 336,288, which is a continuation-in-part of Ser. No. 260,790, said Ser. No. 356,972, which is a continuation-in-part of Ser. Nos. 336,288, and Ser. No. 260,790. This application Aug. 27, 1973, Ser. No. 391,118

Int. Cl. B01k 3/06; C01d 1/08; C01b 11/25

U.S. Cl. 75-134 S

16 Claims

1. A silicon base alloy having an electroconductivity greater than 100 (ohm-centimeters)⁻¹, consisting essentially of silicon, a dopant, and transition metal present as the silicide thereof, and comprising:
- a predominant, discontinuous silicon rich phase;
 - discrete nodules of a dopant rich phase;
 - and substantially continuous rivulets of a transition metal silicide rich phase surrounding the silicon rich phase and forming the boundaries thereof.

3,854,941

HIGH TEMPERATURE ALLOY

Hugh Morrow, III, and David L. Sponseller, both of Ann Arbor, Mich., assignors to Americal Metal Climax, Inc., New York, N.Y.

Filed Mar. 15, 1974, Ser. No. 451,439

Int. Cl. C22c 19/00

U.S. Cl. 75-171

6 Claims

1. A nickel-base superalloy consisting essentially of about 5 to about 7% chromium, about 12 to about 20% molybdenum, about 0.5 to about 1.5% hafnium, about 6.5 to about 7.5% aluminum, about 0.01 to about 0.20% carbon, up to about 15% cobalt and the balance consisting essentially of nickel together with normal residuals and incidental impurities present in conventional amounts.

3,854,942

TRANSPARENCY FOR MULTI-COLOR ELECTROSTATIC COPYING

Alptekin Akman, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. Nos. 236,585, March 21, 1972, which is a continuation-in-part of Ser. No. 194,547, Nov. 1, 1972. This application Jan. 8, 1973, Ser. No. 321,511

Int. Cl. G03g 13/16; B44d 1/24

U.S. Cl. 96-1.2

17 Claims

1. A transparency for the formation of an adherent electrostatic image thereon comprising a thermoplastic film sheet, said sheet having at least one surface coated with a mixture which comprises an acrylic resin, and a vinyl chlorideacetate copolymer resin in a weight ratio of between about 6:4 and 7:3, a wetting agent in an amount of between about 2.5 to 25% by weight of said mixture with an effective amount of a particulate material in said mixture to reduce the static properties of said sheet.

3,854,943

MANIFOLD IMAGING METHOD AND MEMBER EMPLOYING FUNDAMENTAL PARTICLES OF ALPHA METAL-FREE PHTHALOCYANINE

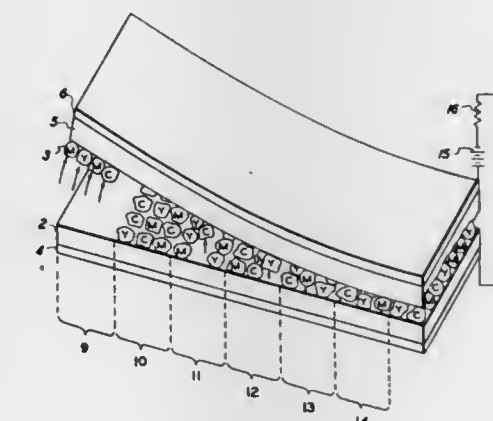
Ray Henry Luebke, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. Nos. 846,262, July 30, 1969, and Ser. No. 222,619, Feb. 1, 1972, abandoned. This application Feb. 1, 1972, Ser. No. 222,622

Int. Cl. G03g 5/00, 13/00, 17/00

U.S. Cl. 96-1.5

36 Claims



1. A method of imaging comprising providing an imaging layer sandwiched between a donor member and a receiver member, at least one of said members being at least partially transparent to electromagnetic radiation to which said imaging layer is sensitive, said imaging layer comprising electrically photosensitive fundamental particles of alpha metal-free phthalocyanine in the range of from greater than 1 micron to about 25 microns in size and substantially of uniform size; exposing said imaging layer to a pattern of electromagnetic radiation to which said particles are sensitive while applying an electric field across said imaging layer; and during the application of said field separating said receiver member from said donor member whereby exposed particles are removed from said imaging layer in imagewise configuration forming an image conforming to the original on at least one of said members.

3,854,944

PRODUCTION OF A SOUND TRACK WITH ANTI-FOGGANT IN THE REDEVELOPER SOLUTION
Camille Angelina Vandeputte, Mortsel; Roger Joseph Huybrechts, Brussel, both of Belgium; Daniel Jean Gallois, Paris, France, and Roland Gaston Verbrugghe, Mechelen, Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium
Filed Nov. 24, 1972, Ser. No. 309,120

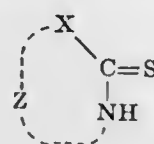
Claims priority, application Great Britain, Nov. 26, 1971, 55093/71

Int. Cl. G03c 4/24, 5/14

U.S. Cl. 96—4

4 Claims

1. In a method for producing a sound track on a photographic silver halide type color material wherein after bleaching the silver contained in the color-developed material, only the sound track area of the material is treated with a redeveloper composition and then the entire material is rinsed and subjected to a fixing treatment to remove the silver compounds remaining after bleaching, the improvement of using a redeveloper composition comprising a developing agent and a fog-inhibiting organic heterocyclic compound having the following structural formula or a tautomeric form thereof:



wherein X is —NH—, —O—, or —S—, and Z represents the atoms necessary to close a 5- or 6-membered ring having only hydrogen, =S, =O, amino and lower alkyl substituents thereon.

3,854,945

SHIFTED INDOPHENOL DYE DEVELOPERS

Walter Monroe Bush, Victor, and Daniel Francis Reardon, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,113

Int. Cl. G03c 7/00, 5/54, 1/40, 1/10

U.S. Cl. 96—29 D

39 Claims

1. A photographic element comprising a support and at least one layer thereon containing a photographic silver halide having associated therewith a dye developer which is diffusible in an alkaline processing medium and has the general formula:

D-(SID)

wherein D- is an aromatic nucleus polysubstituted with hydroxy groups, amino groups or alkylamino groups to provide a group which is capable of developing silver halide, and (SID) is an indophenol dye moiety.

3,854,946

PROCESS FOR CHEMICALLY BONDING A DYESTUFF TO A POLYMERIC SUBSTRATE

Adnan A. R. Sayigh; Fred A. Stuber, both of North Haven, and Henri Ulrich, North Branford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

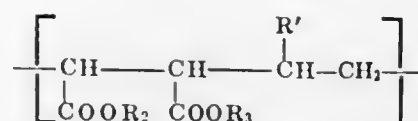
Division of Ser. No. 93,446, Nov. 27, 1970, Pat. No. 3,784,527, which is a continuation-in-part of Ser. No. 15,852, March 2, 1970, abandoned. This application Sept. 14, 1973, Ser. No. 397,230

Int. Cl. G03c 1/70, 5/16

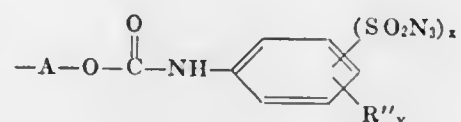
U.S. Cl. 96—35.1

12 Claims

1. A process for chemically bonding a basic dye to a substrate containing a plurality of C-H bonds which substrate is not normally receptive to dyestuffs which process comprises: a. applying to the said substrate a radiation sensitive polymer characterized by the recurring unit:



wherein R' is selected from the class consisting of lower-alkoxy and phenyl and wherein one of R₂ and R₃ represents hydrogen and the other of R₂ and R₃ represents a group having the formula:



wherein A is alkylene having from 2 to 6 carbon atoms separating the valencies and a total carbon atom content of from 2 to 10, R'' is selected from the class consisting of lower-alkyl and halogen, x is an integer from 1 to 2, y is an integer from 0 to 2, provided that x + y is not greater than 3, and the SO₂N₃ group is in any of the positions 3, 4, and 5 in the phenyl nucleus to which it is attached, and at least one of the said positions 3, 4, and 5 is unsubstituted;

- exposing the treated substrate to appropriate radiation to activate said light and heat-sensitive polymer; and
- contacting the treated polymer with a basic dye.

3,854,947

PROCESS AND SOLUTION FOR FIXING AN IMAGE ON SILVER HALIDE PRINTS

Edward R. Ritchey, 303 S. 5th St., St. Joseph, Mo. 64501

Filed May 16, 1973, Ser. No. 360,652

Int. Cl. G03c 5/38, 5/26

U.S. Cl. 96—61 R

30 Claims

1. A rapid process for producing a stable visible image in a photographic silver halide emulsion layer containing a latent image,

- developing said layer in a photographic silver halide developing solution,
 - fixing said silver halide forming the resultant image by immersing said layer in a fixing solution having a major proportion of, (1) a first solution comprising a compound selected from the group consisting of alkali metal thiocyanate, ammonium thiocyanate, alkali metal thiosulfate and ammonium thiosulfate, and, (2) a minor proportion of a second solution including an anionic synthetic detergent having a carbon chain length in the range of about 7 to about 18 carbon atoms per molecule and selected from the group consisting of ammonium lauryl sulfate, sodium lauryl sulfate, potassium lauryl sulfate, alkylated aromatic sulfonic acids, and mixtures thereof, and a water softening agent selected from the group consisting of sodium hexametaphosphate, sodium pyrophosphate, sodium tetrakisphosphate, and mixtures thereof, wherein said second solution and said first solution are mixed at a ratio of between about 1 ounce to about 20 ounces of said second solution to about 1 gallon of said first solution, and
 - rinsing the resultant image layer in a moving water bath.
18. A fixing solution for fixing a stable visible image on a developed photographic silver halide emulsion layer, comprising: known solution; resultant
- a major proportion of a first solution including a first compound selected from the group consisting of alkali metal thiocyanate, ammonium thiocyanate, alkali metal thiosulfate and ammonium thiosulfate, and
 - a minor proportion of a second solution including an anionic synthetic detergent having a carbon chain length in the range of between about 7 to about 18 carbon atoms per molecule and selected from the group consisting of ammonium lauryl sulfate, sodium lauryl sulfate, and po-

tassium lauryl sulfate, alkylated aromatic sulfonic acids, and mixtures thereof, and a water softening agent selected from sodium hexametaphosphate, sodium pyrophosphate, sodium tetrakisphosphate, and mixtures thereof, wherein said second solution and said first solution are mixed at a ratio of between about 1 ounce to about 20 ounces of said second solution to about 1 gallon of said first solution.

3,854,948

NEW DEVELOPMENT COMPOSITION FOR RADIOGRAPHIC FILM

Walfredo Versorese, Savona, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 15, 1972, Ser. No. 253,428

Claims priority, application Italy, May 15, 1971, 50368/71

Int. Cl. G03c 5/30

U.S. Cl. 96—66 R

10 Claims

1. A liquid photographic developer having a pH of from about 10 to about 11 and comprising about 10 to about 30 grams per liter of hydroquinone and from about 0.3 to about 0.9 grams per liter of phenidone, said developer further comprising a source of thiosulfate ions in an amount equivalent, in thiosulfate ion, to from about 0.1 to about 1.0 grams per liter of sodium thiosulfate.

3,854,949

SILVER HALIDE PHOTOGRAPHIC COMPOSITIONS AND PROCESSES FOR OBTAINING POSITIVE IMAGES

Paul Brewster Gilman, Jr., Rochester; Ronald George Raleigh, Brockport, and Joseph Andrew Merrigan, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 123,007, March 10, 1971, Pat. No. 3,761,267. This application Jan. 18, 1973, Ser. No. 324,609

Int. Cl. G03c 1/48

U.S. Cl. 96—76 R

10 Claims

1. In an image transfer film unit which comprises an image-receiving layer, at least one layer of a photosensitive composition and a processing composition which can be discharged to facilitate development of a photosensitive composition by passing said unit between a pair of juxtaposed pressure-applying members, the improvement comprising 1) at least one layer of a photosensitive composition of said film unit comprising

- silver halide grains having polyvalent metal ions occluded therein, said grains containing only minimal developable surface latent images wherein processing for 5 minutes at 27°C in Kodak Developer DK-50 will provide a density of less than 0.25 when coated at a coverage of between about 300 to 400 mg. of silver per square foot and (b) at least one sensitizing dye used at a concentration which would lower the blue-speed sensitivity of an undoped, control sulfur and gold surface-sensitized silver bromide emulsion, containing 6 mole percent iodide, of similar grain size and distribution at least 0.3 log E when developed at 25°C in a surface developer and 2) a fogging agent located in said film unit whereby it will contact said photosensitive composition upon discharge of the processing composition.

3,854,950

HALATION PROTECTION FOR MULTILAYER IMAGING OF PHOTOPOLYMERS

Robert Paul Held, Englishtown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 9, 1972, Ser. No. 261,204

Int. Cl. G03c 1/92, 7/16, 5/24, 1/84, 1/68

U.S. Cl. 96—82

19 Claims

1. A substantially clear and colorless photosensitive composition comprising (a) a photohardenable material having ethylenically unsaturated or benzophenone type groups, (b) a

3,854,951

METHOD FOR MAKING A RADIATION SENSITIVE RECORDING MATERIAL CONTAINING A SPIROPYRAN COMPOUND, AN HX-DONOR A BINDER, AND ETHYL ACETATE AS SOLVENT

Gunther Arnold, and Hans-Peter Vollmer, both of Ulm/Donau, Germany, assignors to Lincenia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 17, 1972, Ser. No. 235,792

Claims priority, application Germany, Mar. 17, 1971, 2112836

Int. Cl. G03c 1/52

U.S. Cl. 96—90 PC

4 Claims

1. In a method for making a radiation-sensitive recording material from a spiropyran compound, an HX-donor for giving off HX when irradiated by light of predetermined energy, X indicating a halogen atom, and a binder therefor, wherein the spiropyran compound and the HX-donor are distributed through said binder in a solvent, the improvement wherein the spiran fraction of the spiropyran compound is reduced by having an ester means in said solvent in the proportion of at least 10 mols of said ester means to each mol of said HX-donor, the ester means being ethyl acetate.

3,854,952

PHOTOSENSITIVE SILVER HALIDE COMPOSITION

John Thomas Kenney, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,719

Int. Cl. G03c 1/02

U.S. Cl. 96—94 BF

11 Claims

1. A photosensitive silver halide composition comprising a silver halide deposited on colloidal particles of a hydrous oxide of an element selected from the group consisting of Be, Mg, Ti, Zr, V, Cr, Mo, W, Mn, Fe, Co, Ni, Cu, Zn, Cd, Hg, Al, In, Tl, Si, Ge, Sn, Bi, Th, and mixtures thereof.

3,854,953

DIRECT POSITIVE-TYPE MULTI-LAYER LIGHT-SENSITIVE MATERIAL

Keisuke Shiba; Hiroyuki Amano; Hirozo Ueda, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Apr. 20, 1972, Ser. No. 246,074

Claims priority, application Japan, Apr. 20, 1971, 46-24967

Int. Cl. G03c 1/36

U.S. Cl. 96—101

32 Claims

1. A direct positive-type multi-layer light-sensitive silver halide material having high information packing capacity comprising a support having thereon at least two emulsion layers selected from the group consisting of (A) a chemically fogged direct positive-type light-sensitive silver halide emulsion in which at least one of a halogen acceptor and an electron acceptor is adsorbed on the silver halide grains, and grains having free electron trapping nuclei therein, (B) a chemically fogged direct positive-type light-sensitive halide emulsion in which at least an electron acceptor is adsorbed on the silver halide grains, said grains being substantially free from positive hole trapping nuclei therein and (C) a chemically fogged direct positive-type light-sensitive silver halide emulsion in which at least a halogen acceptor is adsorbed on the silver halide grains, said grains having free electron trapping nuclei therein but being substantially free from positive hole trapping nuclei therein, said emulsions each having a

different sensitized wavelength region, said emulsion layers being the same type emulsion layers or different type emulsion layers having therebetween an intermediate layer preventing diffusion or interaction of said electron acceptor or halogen acceptor between said emulsion layers, the halogen acceptor or electron acceptor in an emulsion layer differing from the halogen acceptor or electron acceptor in an emulsion layer sensitized to a different wavelength region, said intermediate layer illustrating substantially no desensitizing effect on said emulsion layers.

3,854,954

SILVER HALIDE EMULSION CONTAINING A STABILIZING COMBINATION OF AN AZAIDENE AND A N,N-DIALKYL-DITHIOCARBAMIC ACID ESTER

Wolfgang Himmelmann, Opladen; Anita Von Konig; Franz Moll, both of Leverkusen, and Wilhelm Saleck, Schildgen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 176,326, Aug. 30, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 392,024
Claims priority, application Germany, Sept. 1, 1970, 2043205

Int. Cl. G03c 1/34

U.S. Cl. 96—109

3 Claims

1. A photographic element having at least one light-sensitive silver halide emulsion layer which a stabilizing amount of an azaidene selected from the group consisting of tetra or penta azaidene substituted with hydroxyl or amino groups and a N,N-dialkylthiocarbamic acid ester of the following formula:



wherein

R₁ represents (1) a phenyl ring, which may be substituted with an alkyl, alkoxy, alkylthio, nitro, halogen or cyano group; or (2) a s-triazine ring, which may be substituted with a halogen, aryl, alkylamino, arylamino, alkoxy, aroxy and the dialkylaminodithiocarbamic acid group;

R₂ represents a straight chained or branched alkyl wherein the light-sensitive silver halide emulsion layer contains the dialkylthiocarbamic acid ester in quantities of 5 to 10 milligrams per kilogram of emulsion.

3,854,955

SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Keisuke Shiba; Masanao Hinata; Akira Sato; Akira Ogawa, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 5, 1973, Ser. No. 321,423

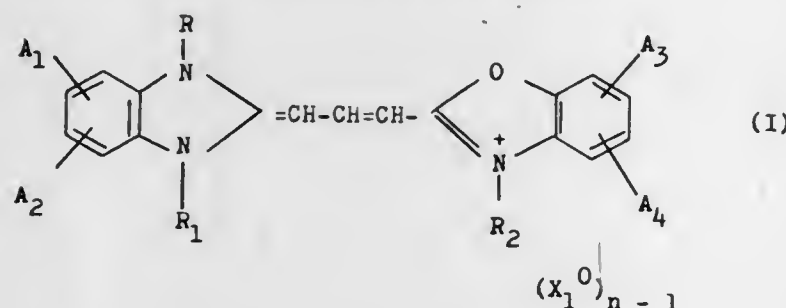
Claims priority, application Japan, Jan. 14, 1972, 47-6315

Int. Cl. G03c 1/14

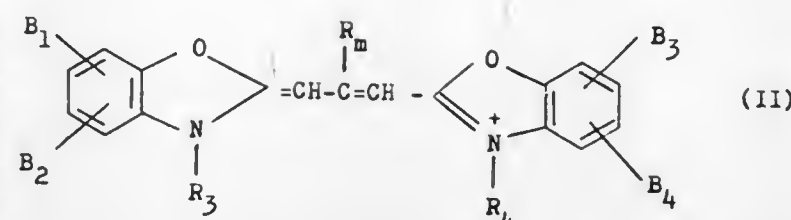
U.S. Cl. 96—124

17 Claims

1. A silver halide photographic emulsion comprising a supersensitizing amount of at least one benzimidazole-oxocarbocyanine dye represented by general formula (I)



and at least one oxocarbocyanine dye represented by general formula (II)



wherein A₁ and A₂ each represents a hydrogen atom, a halogen atom, a hydroxyl group, an alkoxy group, an amino group, an acylamido group, an acyloxy group, an alkoxy-carbonylamino group, a cyano group, a trifluoromethyl group, an alkoxy-carbonyl group, an alkylsulfonyl group, a sulfamyl group, an alkylaminosulfonyl group, a morpholinosulfonyl group, a morpholinocarbonyl group, a piperidinosulfonyl group, a carbamoyl group, or an alkylcarbamoyl group; A₃ and A₄ represent the atomic groups necessary to form a benzene ring together; B₁, B₂, B₃, and B₄ are selected from the group consisting of a hydrogen atom, a lower alkyl group, a halogen atom, an alkoxy group, a hydroxyl group, a phenyl group, a carboxyl group, an alkoxy-carbonyl group, a cyano group, a trifluoromethyl group, an amino group, an acyl group, an acyloxy group, an alkoxy-carbonylamino group or a carbalkoxy group; R₁, R₂, and R₃ each represents an alkyl group; at least one of R₁ and R₂ being a sulfoalkyl group or a carboxyalkyl group; R_m represents a hydrogen atom, an alkyl group or an aryl group; R₃ and R₄ have the same meaning as R₁ and R₂; X₁ represents an anion; m and n each represents 1 or 2; said dyes forming an intramolecular salt when m and n are 1; and X₂ represents an anion.

3,854,956

DYESTUFFS AND SPECTRAL SENSITIZERS FOR SILVER HALIDE

Lewis L. Lincoln, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,707

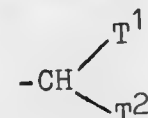
Int. Cl. G03c 1/16, 1/18, 1/20

U.S. Cl. 96—131

17 Claims

1. A light-sensitive photographic silver halide emulsion comprising a hydrophilic colloid, silver halide grains and a sensitizing amount of a polymethine dye comprising two terminal nuclei including at least one heterocyclic nucleus having in said nucleus at least one nitrogen atom and optionally containing another atom selected from the group consisting of oxygen, sulfur and selenium, and having the nitrogen atom joined to a polymethine chain intervening said terminal nuclei and including at least one nuclear carbon of said heterocyclic nucleus, said nitrogen atom having substituted thereon a number selected from the group consisting of (A) a member having the formula $-(CH_2)_n-R$ wherein:

1. n represents a positive integer of from 2 to 6 and
2. R represents a member selected from the group consisting of:
 - a. an acyl radical,
 - b. a radical having the formula



wherein T¹ and T², when taken alone, each represents a member selected from the group consisting of an alkoxy radical and an alkylthio radical, and T¹ and T², when taken together, represent the atoms necessary to complete a cyclic acetal selected from the group consisting of cyclic oxyacetals and cyclic thi-oacetals containing from 5 to 6 atoms in the hetero-cyclic acetal ring,

- c. a 1-hydroxy-1-sulfoalkyl radical, and
- d. a 1-hydrazonalkyl radical, and

(B) in dyes having an α -methine carbon atom, a member having the formula $-CH_2-CH=CH-$, linking said nitrogen atom to α -methine carbon atom.

3,854,957

METALLIZATIONS COMPRISING NICKEL OXIDE

John Robert Larry, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1973, Ser. No. 392,240

Int. Cl. C23c 3/04

U.S. Cl. 106—1

16 Claims

1. In finely divided powders comprising noble metals useful in forming conductor patterns on dielectric substrates, the improvement of adding to such powders finely divided nickel oxide, in an amount effective to increase the adhesion of the resultant noble metal conductor pattern to the substrate.

3,854,958

STABILIZATION OF ETHYL CELLULOSE WITH SODIUM OMICRON AND RHO NITROBENZOATES

Philip M. Sarnacke, and Wesley L. Archer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 289,005, Sept. 14, 1972, abandoned. This application July 23, 1973, Ser. No. 381,943

Int. Cl. C09d 5/08; C08b 27/48, 27/36

U.S. Cl. 106—14

6 Claims

1. An ethyl cellulose composition stabilizer against corrosive discoloration in the presence of iron and moisture consisting essentially of:

- A. An ethyl cellulose having an apparent pH greater than about 5.7 measured as a 5 weight percent solution in 80:20 toluene:2B ethanol, and
- B. A small but sufficient amount of sodium o-nitrobenzoate or sodium p-nitrobenzoate or a mixture thereof to inhibit the discoloration of said ethyl cellulose in contact with iron and moisture.

3,854,959

INHIBITION OF CORROSION

Winston Costain, and Bernard William Hugh Terry, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 6, 1973, Ser. No. 338,526

Claims priority, application Great Britain, Mar. 8, 1972, 010724/72

Int. Cl. C09d 5/08

U.S. Cl. 106—14

3 Claims

1. A method of inhibiting the corrosion of steel by acidic compounds which comprises adding to the acidic compound a corrosion inhibiting amount of a mixture of a nitrile and an oxime in which the nitrile group or oxime group, or both, form part of a conjugated unsaturated system, or a mixture of a compound selected from said nitriles and oximes with at least one compound selected from aliphatic and aromatic aldehydes and ketones and organic amines.

3,854,960

ANTI-FOULING PAINTS

Hans Plum, Heessen; Friedrich Runggas, Dortmund; Manfred Von Haaren, Unna-Afferde, and Horst Krase, Kamen, all of Germany, assignors to Schering AG, Berlin & Bergkamen, Germany

Filed Aug. 13, 1973, Ser. No. 387,589

Claims priority, application Germany, Aug. 17, 1972, 2240487

Int. Cl. C09d 5/16

U.S. Cl. 106—15 AF

4 Claims

1. In an anti-fouling paint comprising tributyl tin oxide as the anti-fouling agent present in a paint vehicle, the improvement wherein said tributyl tin oxide is present in combination

with from about 5 to about 50 percent, by weight of said tributyl tin oxide, of at least one member selected from the group consisting of colloidal silicic acid prepared by the flame hydrolysis of silicon tetrachloride and montmorillonite modified with a quaternary amine salt.

3,854,961

PREPARATION OF HIGH TEMPERATURE SHELL MOLDS

John Robert Flasch, Adrian, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 102,907, Dec. 30, 1970, This application Apr. 9, 1973, Ser. No. 349,148

Int. Cl. B28b 7/34

U.S. Cl. 106—38.3

9 Claims

1. In a method for preparing shell molds for precision casting which comprises precoating an expendable pattern with a slurry containing a refractory material, a zirconium compound and an organic solvent, stuccoing the coated pattern, contacting the coated pattern with a gelling agent selected from the class consisting of ammonia and amines having up to 10 carbon atoms and thereafter applying a backup coat comprising a refractory material, an acid hydrolyzed orthosilicate binder and an organic solvent to said precoat, the improvement which comprises contacting said gelled precoat with an organic solvent having a boiling point below about 250°C. and containing sufficient acid to provide a hydrogen ion concentration of from 0.001 mole to 0.1 mole per liter of solvent, said solvent is selected from the class consisting of aliphatic and aromatic hydrocarbons, chlorinated hydrocarbons, alcohols, ketones, esters, ethers, glycols and glycol ethers.

3,854,962

POLYHYDROXY FILLERS FOR PATTERN MATERIALS

Fred B. Speyer, Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 250,492, May 5, 1972, abandoned.

This application May 17, 1973, Ser. No. 361,247

Int. Cl. C08h 9/00; B28b 7/34

U.S. Cl. 106—38.7

7 Claims

1. In a pattern composition for producing investment casting molds, said pattern composition evidencing good oxidation resistance, being devoid of noxious fumes on melting, having quick setting properties, having low ductility, and having low shrinkage properties, said pattern consisting essentially of a natural wax, a synthetic wax, or a mixture thereof in an amount of at least 40 percent by weight, a fatty acid containing from 12 to 22 carbon atoms per molecule in an amount of 1 to 25 percent by weight and a filler; the improvement comprising, as said filler, a polyhydric alcohol having a melting point above the melting point of said wax in an amount of from 5 to 50 percent by weight.

3,854,963

AGCL-NUCLEATED GLASS-CERAMIC ARTICLES

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 11, 1973, Ser. No. 359,431

Int. Cl. C03c 3/22

U.S. Cl. 106—39.6

5 Claims

1. A glass-ceramic article essentially free from alkali metal oxides and the alkaline earth metal oxides MgO, CaO, and SrO which exhibits a coefficient of thermal expansion over the range 25°-900°C. of between about $0-25 \times 10^{-7}/^\circ\text{C.}$ and a dense white opacity in cross sections thinner than $\frac{1}{8}$ inch, said dense white opacity resulting from a crystal content greater than 75% by weight wherein said crystal content consists essentially of crystals having diameters not exceeding about 1 μm and being selected primarily from the group consisting of zinc petalite solid solution and beta-quartz solid solution, the composition of said article being substantially the same throughout and consisting essentially, by weight on the oxide basis, of

about 10–20% ZnO, 10–20% Al₂O₃, 50–75% SiO₂, and at least 0.1% by weight of AgCl effective to nucleate said crystals.

3,854,964

LEAD SILICATE HIGH VOLTAGE VACUUM TUBE GLASS ENVELOPE

George L. Thomas, Chesterland, and Leonard M. Reitz, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 234,349, March 13, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 399,942

Int. Cl. C03c 3/10, 3/24, 3/30

U.S. Cl. 106—53

4 Claims

1. In a high voltage vacuum tube having a glass envelope, the improvement in which said glass envelope is a glass which is highly absorbent to X-radiation in the wavelength range from 0.3–0.7 Å consisting of, by weight: 30–40% SiO₂, 3–7% K₂O, 0–2% Na₂O, 0–3% Al₂O₃, 35–50% PbO, 0–15% BaO, 0–15% Sb₂O₃, and 0–15% CdO wherein the aggregate total of BaO + Sb₂O₃ + CdO is greater than 10% and the aggregate total of PbO + BaO + Sb₂O₃ + CdO is greater than 55%, said glass having an average coefficient of thermal expansion over the range 0° to 300°C from 85 to 93 × 10⁻⁷ cm/cm/°C and a working range greater than 240°C.

3,854,965

METHOD OF MANUFACTURE OF ALUMINA SUBSTRATE WITH IMPROVED SMOOTHNESS AND ELECTRICAL PROPERTIES

Koichi Niwa; Yoshiharu Anzai, both of Tokyo; Kaoru Hashimoto, Kawasaki, and Hiromi Yokoyama, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 22, 1973, Ser. No. 334,615

Claims priority, application Japan, Mar. 3, 1972, 47-22112

Int. Cl. C04b 35/10

U.S. Cl. 106—62

7 Claims

1. A method of manufacture of an alumina substrate with improved surface smoothness and electrical properties, comprising the steps of

making a mixture powder containing magnesium oxide of 0.1 to 0.4 wt %, chromium oxide of 0.001 to 0.05 wt % and a remainder of alumina powder; producing a slip from the mixture powder; forming a green sheet by casting the slip; and firing the green sheet at a temperature in the range of 1550 to 1670°C.

3,854,966

CASTABLE REFRACTORIES FOR THE USE OF AN IMPELLER TO STIR MOLTEN PIG IRON TO WHICH AN ALKALINE ADDITIVE IS ADDED

Kenjiro Kanbara; Satoshi Nagai, and Hiroki Yanagi, all of Hyogo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 26, 1972, Ser. No. 318,676

Claims priority, application Japan, Dec. 29, 1971, 47-2839

Int. Cl. C04b 35/02

U.S. Cl. 106—64

4 Claims

1. Castable refractories for use as an impeller to stir molten pig iron to which an alkaline additive is added consisting essentially of chamotte and aluminous cement, said chamotte being obtained by burning fire clay consisting essentially of kaolinite, the amount of said aluminous cement being 12–25% by weight per total amount of the refractories, in which said castable refractories contain 5–25% by weight of chamotte having a particle size of 0.8–5.0 cm³ in volume.

3,854,967 HIGH TEMPERATURE- AND CORROSION-RESISTANT MATERIAL

Klaus Reinmuth, Durath, Germany, assignor to Elektroschmelzwerk Kempton GmbH, Munchen, Germany

Filed June 27, 1973, Ser. No. 374,012

Claims priority, application Germany, July 7, 1972, 2236437

Int. Cl. C04b 35/58

U.S. Cl. 106—65

2 Claims

1. Process for the production of refractory, corrosion-resistant articles which comprises compressing at temperatures of the order of 1,500°–2,200°C and pressures of the order of 30–200 kg/cm² a mixture of 10–60 percent, by weight, of aluminum nitride and 90–40 percent, by weight, of boron nitride containing 5–25 percent, by weight, of boron oxide.

3,854,968

LIME-FLY ASH CEMENTITIOUS MIXTURE WITH IMPROVED HARDENING AND EXPANSION CHARACTERISTICS

Leonard John Minnick, Cheltenham; William C. Webster, Warminster, and Charles L. Smith, Conshohocken, all of Pa., assignors to I U Conversion Systems, Inc., Philadelphia, Pa.

Division of Ser. No. 42,024, June 1, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,506

Int. Cl. C04b 11/00, 7/12

U.S. Cl. 106—109

4 Claims

1. A method of producing a highly reactive sulfated lime product comprising

I. contacting quicklime with

- sulfuric acid, the quantity of said sulfuric acid being limited so that the mole ratio of sulfuric acid to quicklime does not exceed 3.3 : 4.3, and
- water in an amount sufficient to hydrate that portion of the quicklime not converted to sulfate compounds by reaction with the sulfuric acid,

II. and permitting said materials to remain in contact until reaction therebetween is substantially complete and any excess water is substantially removed by volatilization.

3,854,969

DYESTUFF PREPARATIONS AND PRINTING INKS

Guenther Zwahlen, Dornach, Switzerland, assignor to Ciba-Geigy, Basel, Switzerland

Continuation of Ser. No. 99,678, Dec. 18, 1970, abandoned, which is a continuation-in-part of Ser. No. 743,287, July 9, 1968, abandoned. This application Apr. 27, 1973, Ser. No. 354,978

Claims priority, application Switzerland, July 24, 1967, 10436/67; Nov. 2, 1967, 15343/67

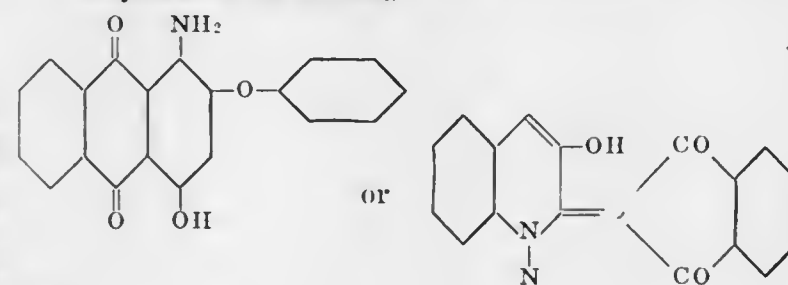
Int. Cl. C08b 27/76, 27/52

U.S. Cl. 106—176

3 Claims

1. A dyestuff preparation consisting essentially of:

1. a dyestuff of the formula



and

2. ethyl cellulose,

the ratio of the dyestuff to ethyl cellulose being between 9:1 and 1:4.

3,854,970

CATIONIC STARCH AND CONDENSATES FOR MAKING THE SAME

Thomas Aitken, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 13, 1973, Ser. No. 387,828

Int. Cl. C08b 25/02

U.S. Cl. 106—210

8 Claims

1. A method of making a cationic starch suitable for wet-end papermaking which comprises producing gelatinous starch from granular starch, treating said starch with alkaline agent, and adding to said starch 1–7% of a condensate of generally equimolar quantities of epichlorohydrin and dimethylamine wherein the percentage of said condensate is calculated from granular starch.

3,854,971

SATIN WHITE-CLAY COMPOSITIONS AND METHODS OF MANUFACTURE

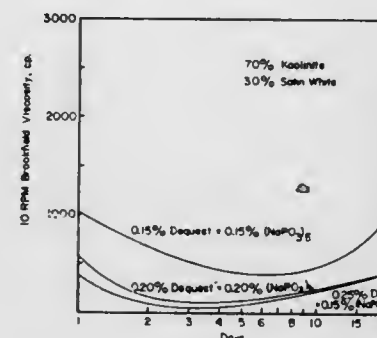
Robert F. Conley, Elizabeth, N.J.; Billy Reid Catherwood, Macon, Ga., and Mary Kate Lloyd, Elizabeth, N.J., assignors to Georgia Kaolin Company, Elizabeth, N.J.

Filed Apr. 17, 1968, Ser. No. 721,955

Int. Cl. C08b 27/02

U.S. Cl. 106—214

9 Claims



1. The method of producing an improved dry particulate coating pigment containing satin white and kaolin which after drying may subsequently be made up into aqueous coating compositions the steps of:

- forming a satin white composition in aqueous suspension;
- adding a kaolinite to said aqueous suspension of satin white in sufficient amount to retain the effectiveness of satin white as a paper coating pigment on rewetting after
- removing water from the aqueous suspension to form a free flowing powder.

3,854,972

LIGHT-WEIGHT AGGREGATES

Miroslav Kratochvil, Bondi Junction, New South Wales, Australia

Filed May 7, 1973, Ser. No. 358,042

Int. Cl. C09c 1/00

U.S. Cl. 106—288 B

11 Claims

1. In a process for treating a coarse grained mud or soil having a relatively large quantity of material with a grain size larger than the order of 5 to 7 microns and containing organic or mineral detritus or waste that is gasifiable during firing of the dry crushed mud or soil in a kiln at a firing temperature sufficient to sinter the mud or soil and to cause gasification of said organic or mineral detritus or waste with bloating of the mud or soil to produce voids therein to form a light weight aggregate, the improvement comprising:

forming voids within said mud or soil prior to or during said firing which voids are in addition to voids formed through gasification of said organic or mineral detritus or waste, whereby said coarse grained mud or soil is made usable in the formation of a light weight aggregate.

3,854,973

METHOD OF MAKING ADDITIVE PRINTED CIRCUIT BOARDS

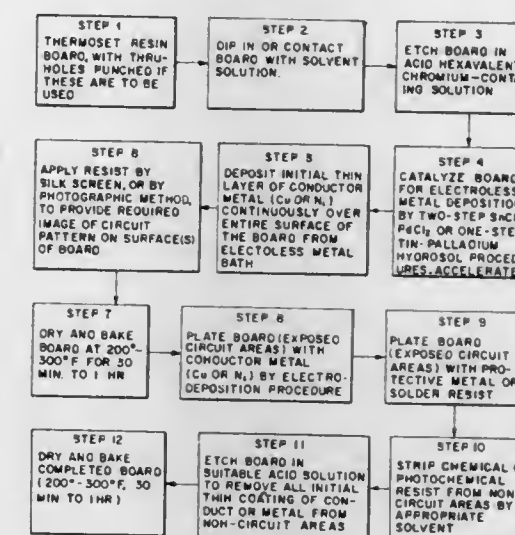
Mark Mersereau, Cheshire; Harold L. Rhodenizer, Bethlehem; John J. Grunwald, New Haven, and William P. Innes, Cheshire, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Division of Ser. No. 5,881, Jan. 26, 1970, Pat. No. 3,698,940, which is a continuation-in-part of Ser. No. 834,982, June 20, 1969, abandoned. This application Aug. 16, 1972, Ser. No. 280,956

Int. Cl. C23c 3/00

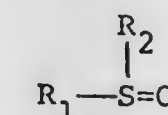
U.S. Cl. 117—47 A

1 Claim

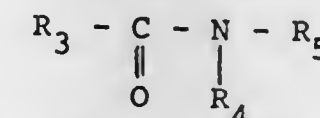


1. An article of manufacture comprising a substrate member activated for direct plating with metal by immersion in an electroless metal plating bath to provide an adherent metal deposit thereon, wherein said substrate member is composed of a molded polymerized thermoset resin, said member being prepared by:

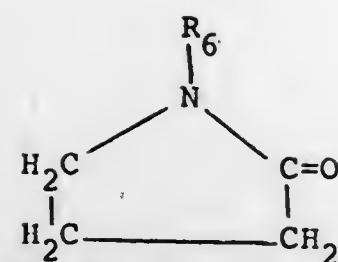
- contacting the surface of the substrate member with a dipolar aprotic organic liquid solvent of the group consisting of Compositions I, II and III, wherein Compositions I are those having the formula:



wherein R₁ is selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms, and R₂ is alkyl of from 1 to 5 inclusive carbon atoms; Compositions II are those having the formula:



wherein R₃ is selected from the group consisting of hydrogen and alkyl of from 1 to 3 inclusive carbon atoms, R₄ is selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms, and R₅ is selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms; and Compositions III are those having the formula:



- wherein R_6 is alkyl of from 1 to 5 inclusive carbon atom;
- contacting the solvent-treated surface of the substrate member with an aqueous hexavalent chromic acid solution;
 - contacting the surface of the member with an aqueous solution of a precious metal to catalyze said surface; and
 - heating the catalyzed substrate member at a temperature above ambient but substantially below that at which charring of the resin occurs.

3,854,974

METHOD FOR TRANSFERRING A TONER IMAGE
 Masamichi Sato, Tucson, Ariz., and Osamu Fukushima, Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

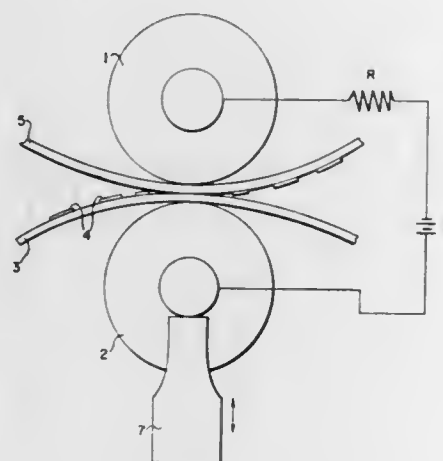
Filed Feb. 20, 1973, Ser. No. 333,825

Claims priority, application Japan, Aug. 28, 1970, 45-75321

Int. Cl. G03g 13/16, 15/16

U.S. Cl. 117-17

9 Claims



1. A method of transferring a toner image from a toner substrate to a transfer sheet which comprises bringing the toner substrate bearing the toner image and the transfer sheet together into face to face contact, vibrating said substrate and said sheet while they are in contact with each other and simultaneously applying a transfer means to effect the transfer of said toner image to said transfer sheet.

3,854,975

PRESSURE FIXING OF TONERS

Richard S. Brenneman, Natick; David W. Lovering, Needham, both of Mass., and Frederick E. Barr, Vermillion, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 51,089, June 30, 1971, abandoned, which is a continuation of Ser. No. 694,515, Dec. 29, 1967, abandoned. This application Mar. 12, 1973, Ser. No. 340,600

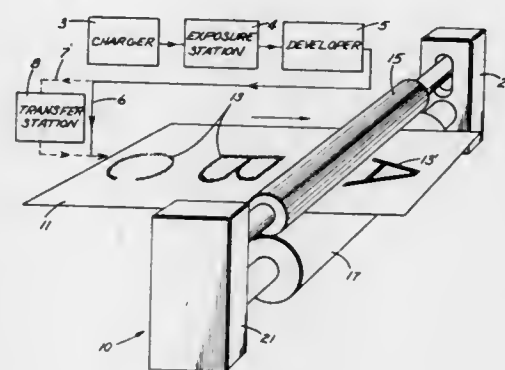
Int. Cl. G03g 13/20, 15/20

U.S. Cl. 117-21

21 Claims

1. The method of providing a permanent image on a substrate of substantial width, wherein the image is a fixed powder image of electroscopic toner powder having a predetermined threshold pressure, comprising the steps of creating an electrostatic charge pattern in image configuration; depositing electroscopic toner powder upon said substrate to form an image pattern configuration under the electrical control of said charge pattern to create a workpiece having thickness

variations; and fixing the toner powder image to said substrate, wherein the last mentioned step includes providing two unheated elastic pressure members which progressively contact each other along a narrow band defining a nip, said members possessing moduli of elasticity compression permitting, when said members are loaded sufficiently to provide a calculated peak nip pressure in excess of the threshold pres-



sure for the toner, deformation at said nip in an amount corresponding to a substantial multiple of the thickness variation of said workpiece; and loading said pressure members to an extent providing a calculated peak nip pressure in excess of said threshold pressure for the toner when said workpiece is disposed between said members, and passing said workpiece through said nip between the pressure members to pressure fix said powder image upon said substrate.

3,854,976

APPLICATOR AND METHOD FOR MAKING A PRINTING FORM

Gerhard Ritzerfeld, 1000 Berlin 33 (Dahlem), Germany

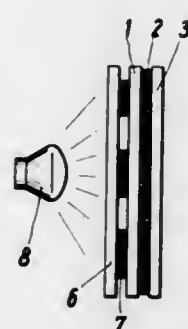
Filed Sept. 23, 1971, Ser. No. 182,983

Claims priority, application Germany, Sept. 25, 1970, 2049019

Int. Cl. B41m 5/10; C04b 35/00

U.S. Cl. 117-36.1

10 Claims



1. A method of making a printing form, comprising the steps of providing a printing sheet having a face on which a printable outline of an image is to be formed; providing a carrier sheet having a surface provided with a layer, said layer including microcapsules containing a fast drying oleophilic lacquer comprising a mixture of at least one resin and at least one liquid solvent which is to be transferred at least in part to said face to form said outline, said lacquer including a mixture of at least one thermoplastic resin and at least one liquid solvent; contacting said layer with said face; releasing said lacquer from at least some of said microcapsules by transmitting energy to regions of said layer corresponding to said outline so that the released lacquer contacts said face along said outline thereby enabling an adherent coating to be formed on said face along said outline; and separating said sheets; whereby a printing form having said outline is obtained.

3,854,977

ELECTROPHOTOGRAPHIC DEVELOPING METHOD AND APPARATUS

Osamu Fukushima, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

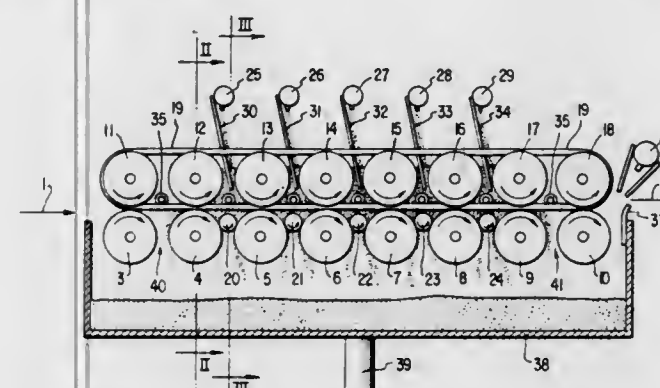
Filed Dec. 30, 1971, Ser. No. 214,247

Claims priority, application Japan, Dec. 30, 1970, 45-122800

Int. Cl. G03g 13/10, 15/10

U.S. Cl. 117-37 LE

5 Claims



1. A method for developing an electrostatic latent image characterized by passing an electrostatic latent image bearing sheet between a plurality of electroconductive rollers provided between a pair of side plates and a plurality of spaced driving rollers disposed in contact with and beneath said electroconductive rollers, the approximate ends of said electroconductive rollers and said driving rollers extending between said side plates, said driving rollers carrying said latent image bearing sheet by frictionally holding it between the driving rollers and said electroconductive rollers, applying liquid developer to said electrostatic latent image from above the electroconductive rollers, and providing in the spaces between said driving rollers other rollers which are disposed between both side plates so that the developer applied from overhead is prevented from freely falling down but is temporarily restrained in a liquid reservoir formed by said driving rollers and said other rollers, said liquid reservoir being formed over the length of the passage of said latent image bearing sheet, so as to effect development of the latent image when the sheet is passed through said reservoir of developer.

3,854,978

METHOD FOR MANUFACTURING A NON-SLIP WAISTBAND PRODUCT

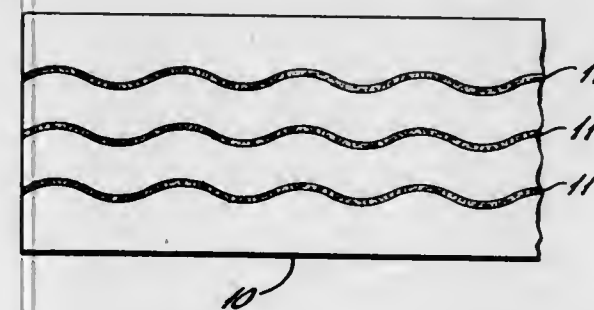
Roger G. Campbell, Sr.; Richard E. Goff, Jr., both of Barrington, and Thomas L. Staffier, Pawtucket, all of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 24, 1972, Ser. No. 309,382

Int. Cl. B05c 3/20

U.S. Cl. 117-44

2 Claims



1. A method for producing a product suitable for use in the manufacture of non-slip waistbands comprising: applying to one surface of a permeable base fabric in a pattern an elastomeric silicone compound, said silicone compound having a viscosity of between 12,000 and 25,000 centipoises, and a tack-free time of less than 40 minutes, gelling said compound to allow it to seep in and adhere to the permeable portions of

said fabric, curing said compound at a temperature of from 90°F. to 185°F. in an atmosphere containing at least 7 grains of water per cubic foot for a period of time of from 5 to 30 minutes and aging said cured compound and fabric for a period of at least 1 hour to remove volatile toxic material from the compound and fabric whereby a dry cleanable, washable, color fast product is produced.

3,854,979

PROCESS FOR APPLYING GLASSY CARBON COATINGS
 Ronald C. Rossi, Torrance, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed June 29, 1972, Ser. No. 267,436

Int. Cl. B44d 1/20

U.S. Cl. 117-46 CC

9 Claims

1. The process of glazing an article formed from carbon or ceramic material said process comprising:

- a. first heating a mass of an organic glassy-carbon precursor material selected from the group comprising halogenated linear polymers and natural organic polymers in an inert atmosphere until decomposition to a pitch-like compound having the approximate empirical formula C_nH_n , where n is a whole number,
- b. blending the resultant compound with an aromatic solvent to form a slurry,
- c. coating the article with the slurry, and
- d. baking the article at an elevated temperature in an inert atmosphere until the coating is transformed to glassy carbon.

3,854,980

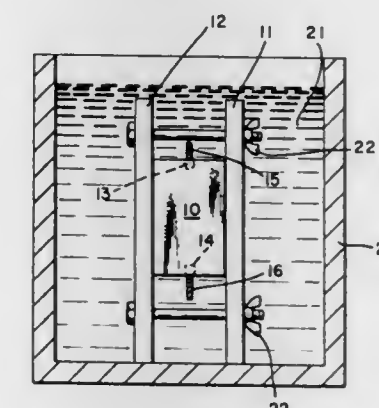
SOLID DIELECTRIC CAPACITORS AND METHOD
 John Burnham, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 252,121, May 10, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,393

Int. Cl. B44d 1/36; B32b 27/38

U.S. Cl. 117-61

4 Claims



1. A method of producing an improved dielectric high voltage capacitor comprising the steps of:

- a. mounting a prefabricated hot-dry capacitor section between a pair of adjustable pressure plates in a container;
- b. evacuating said container to remove substantially all of the entrapped air;
- c. submerging said capacitor section in a liquid composition of a polymerizable resin having a shrinkage factor of less than 2 percent and a curing agent while under vacuum whereby said section is impregnated with said liquid composition;
- d. returning said container to atmospheric pressure and applying an inert gas pressure of the order of 90 to 1,000 psig until resin is completely driven into the section;
- e. returning the container to atmospheric pressure and pressing the section while still submerged in the resin to an appropriate capacitance;
- f. reapplying an inert gas pressure of from 90 to 1,000 psig and heating the resin to polymerize until hard;

- g. reducing pressure slowly to atmospheric pressure; and
h. breaking out excess resin from the section and postcuring at an elevated temperature until the maximum mechanical modulus and strength is developed in the resin.

3,854,981

PROCESS FOR EMBEDDING OR ENVELOPING SOLID MATERIALS

Nikolaus Schon, Leverkusen; Hildegard Schnoring, Wuppertal-Elberfeld, and Gottfried Pampus, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 24,803, April 1, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,938

Claims priority, application Germany, Apr. 5, 1969, 1917738

Int. Cl. B44d 1/44

U.S. Cl. 117-62.1

8 Claims

1. Process for embedding or enveloping a solid or liquid in a polymer containing carboxy or carboxylate groups, said process comprising dispersing or dissolving said solid or liquid in an aqueous solution of said polymer, atomizing the resulting dispersion or solution to thereby form small spherical particles thereof and introducing said atomized particles into an aqueous solution of an aluminum salt to thereby crosslink said polymer and form solid envelopes about said particles and recovering resulting particles as a microgranulate.

3,854,982

METHOD FOR PREPARING HYDROPHILIC POLYMER GRAFTS INCLUDING IRRADIATION

Rene Aelion, Concord, and Edward Ferezy, Merrick, both of Mass., assignors to Hydroplastics, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,622

Int. Cl. B44d 1/50; C08f 3/50

U.S. Cl. 117-68

3 Claims

1. A process for forming a hydrophilic polymeric surface on a substrate comprising coating a first surface of said substrate with a first monomer system comprising a hydroxyalkyl methacrylate and a crosslinking agent, coating a second surface of said substrate with a second monomer system then irradiating said coated substrate with high energy radiation whereby said first monomer system is grafted onto said substrate and forms a hydrophilic surface.

3,854,983

FLAMEPROOF COVERING MATERIAL, SUCH AS TICKING

John G. Brodnyan, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 255,880, May 10, 1972, abandoned. This application June 1, 1972, Ser. No. 258,758

Int. Cl. B05c 9/04

U.S. Cl. 117-68

12 Claims

1. A cover fabric of composite-layer type comprising a light-weight woven or damask fabric, a soft, flexible layer adhered thereto formed of a crushed foam of a polymeric material and a metal-containing coating of about 0.5 to 4 oz./square yard composed of metal particles in a polymeric binder wherein the proportion of metal is at least 25 percent by weight of the binder on the crushed foam layer, the metal content of which serves to conduct heat rapidly through this layer.

3,854,984

VACUUM DEPOSITION OF MULTI-ELEMENT COATINGS AND FILMS WITH A SINGLE SOURCE

Harvey W. Schadler, Scotia, and John R. Rajrden, III, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 209,359, Dec. 17, 1971, abandoned. This application Nov. 27, 1973, Ser. No. 419,285

Int. Cl. C23c 13/02

U.S. Cl. 117-93.3

8 Claims

1. The method of vacuum evaporating and depositing on the surface of a turbine engine metal part a multi-element protective coating of substantially the composition of a single metallic alloy source, which comprises the steps of cutting a section from an ingot of said alloy and placing the ingot section in a chamber evacuated to a pressure of 10^{-3} to 10^{-4} torr, sweeping a focused electron beam of power density from 10^4 to 10^{10} watts per square inch back and forth across the surface of the ingot section at 60 cycles per second along a line on the ingot section surface one-half inch long, and exposing the turbine engine part to the combined evaporated components.

3,854,985

METHOD FOR APPLYING MASTIC PAINT COMPOSITIONS TO CONCRETE BASES

Yoshinori Suzuki, and Yukio Iwasaki, both of Tokyo, Japan, assignors to Kowa Chemical Industry Ltd., Tokyo, Japan

Filed June 9, 1972, Ser. No. 261,297

Int. Cl. B44d 1/02; C04b 7/02

U.S. Cl. 117-11 D

10 Claims

1. Method for applying a mastic coating to a concrete base which comprises applying to said concrete base, with a porous hand roller in a one coat finish, a pasty paint composition comprising a mixture of (a) Portland cement, (b) an aggregate, (c) from about 1 to about 3 parts by weight of calcium chloride, (d) from about 0.4 to about 2 parts by weight of naphthalene sulfonic acid formalin condensate, (e) from about 1 to about 2 parts by weight of alkyl cellulose having a viscosity of about 4,000 cps, (f) from about 2 to about 5 parts by weight of propylene glycol, (g) from about 0.5 to about 10 parts by weight of calcium sulfoaluminate, (h) from about 5 to about 15 parts by weight of an efflorescence preventing agent consisting essentially of zeolite, (i) from about 0.1 to about 5 parts by weight of calcium stearate, and (j) from about 0.01 to about 0.2 part by weight of tributyl phosphate, all of said parts being based upon 100 parts of said Portland cement, and said aggregate being present in an amount of from about 100 to about 150 parts by weight.

3,854,986

METHOD OF MAKING MINERAL FIBERS OF HIGH CORROSION RESISTANCE AND FIBERS PRODUCED

Vaclav Chvalovsky, Praha; Lumir Mach, and Helena Machova, both of Ostrava, all of Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Praha, Czechoslovakia

Continuation-in-part of Ser. No. 762,615, Sept. 25, 1968, abandoned. This application Sept. 26, 1969, Ser. No. 861,471

Claims priority, application Czechoslovakia, Sept. 26, 1967, 6819-67

Int. Cl. C03c 25/02

U.S. Cl. 117-126 GS

12 Claims

1. Glass fibers coated with a polysiloxane resin wherein said glass fibers are formed of a glass having the following composition:

SiO ₂	35-47%
Al ₂ O ₃	5-18%
FeO + Fe ₂ O ₃	2-15%
CaO	2-23%
MgO	1-30%
MnO	0-10%
Na ₂ O + K ₂ O	below 5%
TiO ₂	1.5-10%
ZrO ₂	0-5%
ZnO	0-5%
CaF ₂	0-2%

the sum of CaO and MgO being between 14 and 38 percent and the sum of CaO, MgO, Al₂O₃ and SiO₂ being up to 90 percent of the total composition.

3,854,987

COATED STRUCTURAL UNITS HAVING IMPROVED PHYSICAL PROPERTIES

David H. Michael, deceased, late of 3210 Five Oaks Place, Louisville, Ky. 40207 (by Margaret C. Michael, legal representative)

Filed Jan. 2, 1973, Ser. No. 320,189

Int. Cl. C09d 1/02; B32b 13/04

U.S. Cl. 117-123 A

3 Claims

1. A structural unit of concrete or cinder block coated with a composition consisting essentially of an aqueous solution of an alkali metal silicate containing at least about 1.5 moles SiO₂ per mole Na₂O, a filler and a sodium tripolyphosphate wetting agent, wherein said filler is present in an amount of about one to about 100 percent by weight, based on the weight of said silicate and said wetting agent is present in an amount of about 0.5 to about 10 percent by weight, based on the weight of said silicate.

3,854,988

TREATMENT OF GLASS FIBRES

Ronald James Ashall, "Underly," Lime Vale Rd., Wigan, and David Ronald Bartlett, 89 Broadway, Eccleston St., Helens, both of England

Continuation of Ser. No. 161,344, July 9, 1971, abandoned.

This application Mar. 7, 1973, Ser. No. 339,388

Int. Cl. C03c 25/00; C08g 51/24

U.S. Cl. 117-126 R

8 Claims

1. A method of bonding mineral wool products using a copolymer resin binder composition formed by
a. reacting urea with formaldehyde in an aqueous medium for between 30-75 minutes at an alkaline pH value and at a temperature of about 63°C to 67°C in the presence of an amine as a catalyst to form a composition containing a urea-formaldehyde reaction product;
b. acidifying the composition to an acid pH value by the addition of an acid;
c. adding furfuryl alcohol and polyethylene glycol to the acidified composition and reacting said alcohol and glycol with the urea formaldehyde reaction product for 2 to 5 hours to form the copolymer resin solution;
d. adjusting the pH of the solution to substantially neutral;
e. diluting the solution with water to such an extent that the composition does not take more than 150 seconds to gel at 150°C; and
f. contacting the mineral wool fibers with the diluted resin solution.

3,854,989

PROCESS FOR IMPARTING FLAME RESISTANCE TO TEXTILE MATERIAL

Peter Golborn, Lewiston, N.Y.

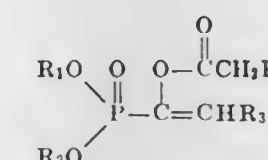
Division of Ser. No. 155,296, June 21, 1971. This application Dec. 1, 1972, Ser. No. 311,177

Int. Cl. C09k 3/28; C09d 5/18

U.S. Cl. 117-136

5 Claims

1. A flame resistant textile material comprising a textile material selected from the group consisting of cellulosic and proteinaceous material having applied thereto a flame retarding amount of a compound of the formula:



wherein

R₁ and R₂ are independently lower alkyl groups of one to eight carbon atoms;

R₃ is —H or a lower alkyl group of one to eight carbon atoms; and

R₄ is —H, —Cl or a lower alkyl group of one to eight carbon atoms.

3,854,990

PROCESS FOR SIZING TEXTILE MATERIALS

Albert E. Corey, East Longmeadow; Donald D. Donermeyer; Joe Fantl, both of Springfield, all of Mass., and Charles R. Williams, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 98,915, Dec. 16, 1970, Pat. No. 3,723,381. This application Feb. 5, 1973, Ser. No. 329,495

Int. Cl. C08j 1/44

U.S. Cl. 117-139.5 A

13 Claims

1. A method for sizing textile yarns to provide a water-resistant coating which comprises coating the textile yarn with a solution comprising the interpolymerization product of from 83 to 95 percent by weight of vinyl acetate, from 2 to 10 percent by weight of a dialkyl maleate selected from the group consisting of dimethyl maleate and diethyl maleate and from 3 to 7 percent by weight of acrylic acid based on the total weight of the monomers, and drying the coated textile yarn to remove solvent.

3,854,991

COATED CEMENTED CARBIDE PRODUCTS

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,667

Int. Cl. C23c 11/14

U.S. Cl. 117-169 R

6 Claims

1. A coated cemented carbide product comprising a cemented carbide substrate and a fully dense coating selected from the group consisting of hafnium carbonitride, zirconium carbonitride and mixtures of the two, said coating firmly and adherently bonded to said substrate, the hafnium carbonitride coating and the hafnium and zirconium carbonitride coatings having an X-ray diffraction lattice parameter within the range of about 4.570 to 4.630 angstrom units and the zirconium carbonitride coating having an X-ray diffraction parameter within the range of about 4.600 to 4.620 angstrom units.

3,854,992

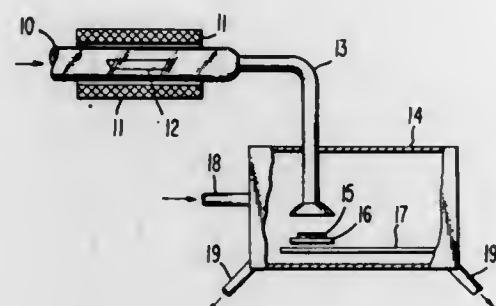
PROCESS FOR DEPOSITING ELECTRICALLY CONDUCTIVE INDIUM OXIDE COATINGS ON A SUBSTRATE

James Kane, Affolter am Albis, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,693

Int. Cl. C23c 11/08; C03c 17/22

U.S. Cl. 117—201



1. A process of depositing a film of indium oxide on an inert substrate that does not decompose during deposition of said film which comprises

- vaporizing the indium chelate of 2,2,6,6-tetramethylheptane-3,5-dione at a temperature of from about 180°-250° C.,
- heating said substrate to a temperature of from about 350°-550° C., and
- contacting said substrate with the chelate vapor in an oxygen-containing or water-containing atmosphere until a film of indium oxide is formed.

3,854,993

MICROWAVE CIRCULATOR

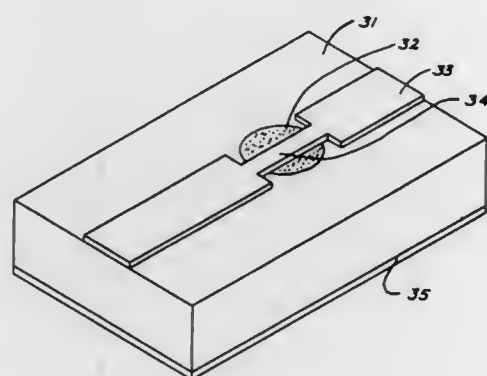
Douglas H. Harris, and Harold M. Correll, both of Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Division of Ser. No. 205,875, Dec. 8, 1971., This application Apr. 30, 1973, Ser. No. 356,255

Int. Cl. H01f 10/04

U.S. Cl. 117—122

4 Claims



1. A microwave circulator comprising a co-planar substrate of

- a dielectric substrate having a cavity therein, and
- a magnetic material deposited by arc-plasma spraying techniques filling the cavity, and a metal coating on said coplanar substrate.

3,854,994

GAS ELECTRODES

Horst Binder, Heitzhoferstr. 6, Petterweil/Taunus; Alfons Kohling, Muhlstrasse 44, Niederhochstadt/Taunus, and Wolfgang Kuhn, Ahornstr. 44, Frankfurt-Griesheim, all of Germany

Filed Aug. 23, 1973, Ser. No. 390,841

Int. Cl. B44d 1/18, 1/16

7 Claims U.S. Cl. 117—216

19 Claims

1. A method of making a porous electrode having an electrically conductive electrocatalytically active layer and a contiguous gas permeable hydrophobic layer comprising

filtering a first suspension comprising essentially polytetrafluoroethylene powder in propanol-(1), isopropanol, butanol, or dichloromethane, and withdrawing liquid therefrom to form a first porous layer comprising a matted and damp polytetrafluoroethylene filter cake,

placing a metal screen on the filter cake, filtering a second suspension comprising essentially carbon powder, graphite fibers, and polytetrafluoroethylene powder in propanol-(1), isopropanol, butanol, or dichloromethane, by withdrawing liquid therefrom through the screen and the first layer to form a second porous layer on said screen and said first layer, and heating the two-layer structure to at least about 330° C.

3,854,995

PROCESS FOR THE RECOVERY OF SUGARS FROM SPENT SULFITE LIQUOR

Jiro Okabe; Akira Machihara; Mutsumi Kaneyasu, and Kojiro Kato, all of Iwakuni, Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,729

Int. Cl. C13k 1/00, 9/00

U.S. Cl. 127—43

3 Claims

1. A process for the recovery of sugars from spent sulphite liquor, comprising (a) incorporating a calcium base selected from the group consisting of calcium oxide and calcium hydroxide into a spent sulfite liquor in powder form, said base being in such an amount that a 5% aqueous solution of the resulting mixture will exhibit a pH of 7.6-11.0, (b) forming said aqueous solvent and (c) extracting the resulting aqueous solution containing said calcium base with a solvent selected from the group consisting of 75-96% C₁-C₄ alcohols and 75-96% C₁-C₄ ketones to recover sugars from said mixture.

3,854,996

METHOD FOR REMOVING MAGNETITE SCALE

Jack G. Frost; John A. Knox, and Larry D. Martin, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 27, 1972, Ser. No. 248,278

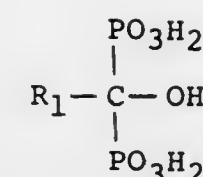
Int. Cl. C02b 5/06; C23g 1/06

U.S. Cl. 134—2

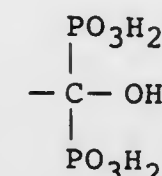
14 Claims

1. A method for removing iron and copper containing scale from ferrous metal substrates comprising contacting for a period of at least one hour, at a temperature of from about 180°F to about 300°F, and at a pH of from about 9 to about 10.25, the scale bearing substrate with an aqueous solution consisting essentially of water and at least 0.5 weight percent of at least one compound selected from the class consisting of polyphosphonic acids (1) and (2), the amine salts of said polyphosphonic acids and the alkali metal salts of said polyphosphonic acids, acids (1) and (2) being structurally defined as follows:

(1)

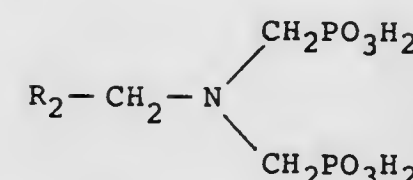


where R₁ is selected from the class consisting of C₁-C₁₂ alkyl groups, and the group

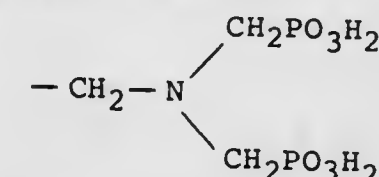


and

(2)



where R₂ is selected from the class consisting of —H, —PO₃H₂, C₁-C₁₂ alkyl groups, and the group



said aqueous solution further including an oxidant compound capable of oxidizing ferrous ions to ferric ions and capable of oxidizing copper to cupric ions, said oxidant compound being present in said aqueous solution in an amount effective to oxidize all ferrous ions present in the solution to ferric ions, and all copper contacted by the solution to cupric ions.

3,854,997

JET FLAME CLEANING

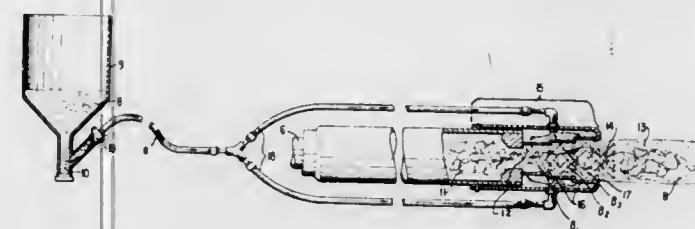
Clifford S. Peck, Elberton, Ga., and Clarence A. Garrison, Monroe, La., assignors to C. S. Peck Co., Inc., Elberton, Ga. Division of Ser. No. 97,553, Dec. 14, 1970, Pat. No. 3,741,792.

This application Apr. 10, 1973, Ser. No. 349,821

Int. Cl. B08b 5/02; B24c 5/02, 7/00

U.S. Cl. 134—7

4 Claims



1. A method of cleaning a surface with abrasive material including the steps of:

- producing a supersonic jet flame by combusting a fuel within a combustion chamber;
- passing said flame through a venturi element positioned exteriorly of said combustion chamber, said element being in communication with a supply of said abrasive material;
- introducing said abrasive material into said flame at circumferentially and axially spaced points relative to the flame passage and from a nonpressurized container by means of the vacuum created in said venturi element acting on said supply by the passage of said flame through said venturi element; and,
- directing said abrasive material-carrying flame onto the surface to be cleaned.

3,854,998

FLUID POWERED ULTRASONIC WASHING, RINSING, AND DRYING SYSTEM FOR A DISHWASHER

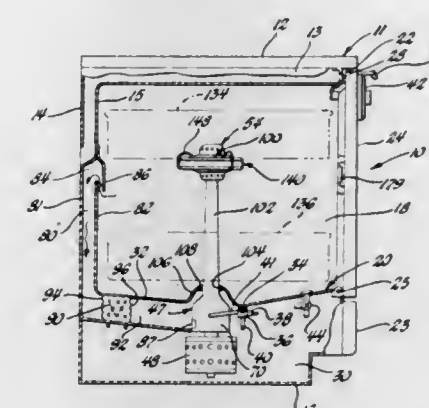
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1973, Ser. No. 392,932

Int. Cl. B08b 3/02

U.S. Cl. 134—191

4 Claims



1. A dishwasher comprising; a casing defining a washing chamber having a sump and an access opening, a plurality of utensil supporting rack means secured to said dishwasher casing, a combination vapor-air blower and liquid supply pump including an inner liquid pump housing and outer vapor blower housing concentrically spaced therefrom so as to extend vertically upwardly from said sump, said inner housing enclosing a liquid circulating impeller and said outer housing enclosing vapor-air impeller, motive means for driving both said impellers, liquid passage means connecting said sump with said inner pump housing, vapor-air passage means connecting said washing chamber with said outer blower housing, means for distributing liquid in said chamber for washing dishes or the like, said liquid distributing means including a vertical column mounted on said blower outer housing and in fluid communication therewith, said column extending upwardly to a central part of said chamber, said column having an ultrasonic generator supported thereon, said generator including a lower dish-shaped plate having a concave surface facing upwardly, and an upper inverted dish-shaped plate positioned in concentric spaced relation above said lower plate, whereby a 360° Venturi nozzle opening is provided between the adjacent perimeters of said plates; a vertical liquid supply tube positioned within said column such that its lower end is in communication with said pump inner housing, upper and lower cup-shaped liquid distributor heads having their open ends in sealed contact with the central portion of said upper and lower plates respectively, providing upper and lower liquid distributing cavities; said upper and lower heads concentrically supported on said upper and lower plates respectively, the curved outer surfaces of which form secondary dome-like reflecting surfaces, means for supplying liquid to each of said distributor cavities from said liquid supply tube, each said distributor head having apertures therein for directing liquid spray into said washing chamber, a ring fixedly mounted in outwardly spaced concentric relation with respect to said upper and lower plates such that said ring is symmetrically located with respect to a horizontal plane bisecting said Venturi nozzle, said ring having its inner annular face providing a primary reflecting surface in opposed facing relation with said Venturi nozzle such that ultrasonic vapor-air waves emitted by said Venturi nozzle are reflected from said ring primary surface onto said secondary upper and lower reflecting surfaces whereby ultrasonic vapor-air waves are directed outwardly in conjunction with said liquid spray into said washing chamber for impinging on utensils being cleaned in said racks.

3,854,999

MERCURIC OXIDE ELECTRODE AND METHOD OF FORMING

Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,798

Int. Cl. H01m 35/02

U.S. Cl. 136—20

5 Claims

1. A method of forming a mercuric oxide electrode comprises mixing together mercuric oxide powder and silver powder, prepressing the powder mixture, grinding the mixture adding 0.5 to 2.0 parts by weight of wax to the mercuric oxide-silver powder mixture, placing the mixture in a pressing die, positioning at least one mesh current collector on the mixture, and compacting the mixture against the collector thereby forming an electrode.

3,855,000

AIR DEPOLARIZATION PRIMARY CELL AND PROCESS FOR PRODUCTION THEREOF

Jean Jammet, Poitiers, France, assignor to Saft-Societe Des Accumulateurs Fixes et de Traction, Romainville, France

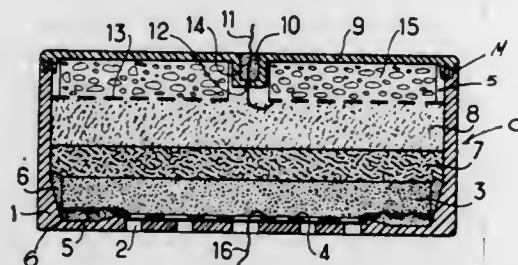
Filed Oct. 26, 1972, Ser. No. 300,907

Claims priority, application France, Oct. 29, 1971, 71.39027

Int. Cl. H01m 29/04

U.S. Cl. 136—86 A

23 Claims



1. An air depolarization unitary primary cell of the type comprising a tubular casing of non-conductive material, a porous positive electrode, an immobilized alkaline electrolyte and an expandable negative electrode based on zinc arranged in superposed layers and disposed in said tubular casing, all of said layers extending transversely of the longitudinal axis of said casing, means for sealing said cell in fluid-tight manner relative to liquids within the cell at one end thereof, said means comprising a hydrophobic impregnant in pores of said positive electrode, said positive electrode being adhesively secured in said container adjacent said one end, said one end having at least one opening for providing access of air to the positive electrode while blocking exit of said liquids via said positive electrode, means at the opposite end of said casing including a cover carrying a negative terminal, means connecting said terminal with said negative electrode, said cover being securely sealed to said casing at said opposite end, said layers being disposed in said casing to provide a space for expansion of the negative electrode between the latter and the cover, means within said space between said cover and said negative electrode to maintain said layers under pressure and in intimate surface contact irrespective of expansion of the negative electrode during use of the cell.

3,855,001

FUEL CELL WITH AIR PURIFIER

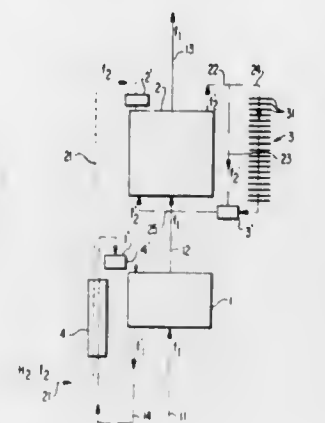
Jacques Cheron, Versailles, France, assignor to Institut Francais du Pétrole des Carburants et Lubrifiants, Rueil-Malmaison (Hauts-de-Seine), France

Continuation-in-part of Ser. No. 125,208, March 17, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,350 Claims priority, application France, Mar. 26, 1970, 70.11082

Int. Cl. H01m 27/14

U.S. Cl. 136—86 C

11 Claims



1. A fuel cell comprising a cell block forming the hot part of the fuel cell, said cell block having inlet and outlet means for the purpose of introducing into said fuel cell block and evacuating therefrom at least one combustor, one fuel, and an electrolyte, duct means connected to said inlet means for supplying respectively said cell block with combustor, fuel and electrolyte, a combustor purifier constituting the cold part of said fuel cell, said cell block being placed above and substantially straight above said combustor purifier, said combustor purifier comprising a housing in which there are placed a plurality of vertical tubes having predetermined inside diameters and lengths, and whose inside surfaces are covered with a porous material, the upper ends of these tubes being located at the same level in said housing which forms around said tubes a reservoir for containing a liquid for purifying the combustor, said housing being provided at the lower part thereof, with means for introducing the combustor exclusively into said tubes and, at the upper part thereof, with means for evacuating the purified combustor and putting in communication the upper ends of said tubes with said duct means for supplying said fuel cell block with combustor, said duct means being substantially rectilinear and placed vertically so as to directly connect the means for evacuating said combustor purifier and the means for introducing said combustor into said cell block, said housing comprising at the upper part thereof means for introducing a combustor-purifying liquid whose level is maintained even with the upper ends of said tubes and comprising, at the lower part thereof, means for evacuating the used purifying liquid after passage through said tubes.

3,855,002

LIQUID ELECTROLYTE FUEL CELL WITH GAS SEAL

Craig R. Schroll, West Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 21, 1973, Ser. No. 427,181

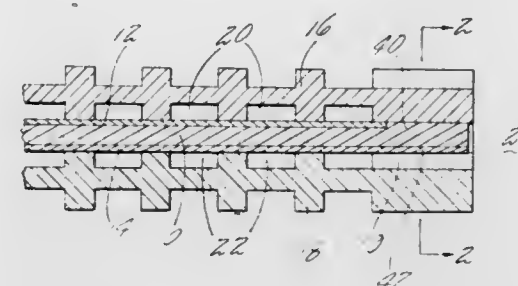
Int. Cl. H01m 27/02

U.S. Cl. 136—86 R

2 Claims

1. A fuel cell assembly for fuel cells utilizing gaseous reactants and a liquid electrolyte which comprises: a pair of gas-porous fuel cell electrodes each having an inner and outer surface, the inner surface comprising a catalytic layer, one electrode being positioned to extend beyond the other; an electrolyte-saturated matrix sandwiched between the inner surfaces of the electrodes and in contact therewith, the matrix having an end portion substantially coexten-

sive in length with a first of the electrodes and extending beyond the second of the electrodes; and a pair of gas separators, one positioned outwardly of each electrode defining a first gas space between the first of the electrodes and one separator and a second gas space between the second of the electrodes and the other separator, the surface of the separator confronting the first of the electrodes being formed with a gas passageway



therein between the first gas space and the exterior of the cell assembly, the matrix being sandwiched between the ends of the separators in direct contact with the separator adjacent the second electrode, the first electrode being interposed between the matrix and the other separator; the electrolyte in the matrix forming a wet seal between the matrix and the separator adjacent the second electrode preventing the escape of gas thereby.

3,855,003

THERMAL SENSING, FIRE SAFING DEVICE FOR A THERMAL BATTERY

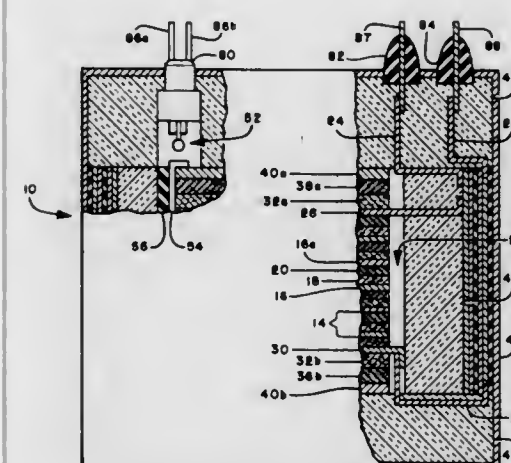
Donald M. Bush, Tijeras, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 2, 1974, Ser. No. 430,313

Int. Cl. H01m 21/14

U.S. Cl. 136—83 T

10 Claims



1. In a thermal battery comprising a casing; a plurality of electrical battery cells within said casing, thermal insulation positioned about said battery cells between said battery cells and said casing and a pair of terminals normally electrically isolated from each other, the improvement in combination therewith comprising a heat sensing means for preventing thermal battery electrical output in response to application of external heat, said heat sensing means comprising short circuiting means having low melting temperature material disposed between said thermal insulation and said casing for melting and electrically interconnecting portions of said terminals upon application of sufficient heat from exterior of said thermal battery.

3,855,004

METHOD OF PRODUCING CURRENT WITH CERAMIC FERROELECTRIC DEVICE

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 411,853

Int. Cl. H01l 15/02

U.S. Cl. 136—89

2 Claims

1. A method for producing current in direct proportion to intensity of light comprising applying an electric voltage of predetermined magnitude to a polycrystalline ferroelectric ceramic for a predetermined time to pole the polycrystalline ferroelectric ceramic, removing the applied voltage, disposing two electrodes in conductive contact with the polycrystalline ferroelectric ceramic, attaching an electrical lead to each electrode, connecting a low resistance between the two leads, impinging light having a certain intensity upon the polycrystalline ferroelectric ceramic, and producing current through the resistance which is in direct proportion to the intensity of the light impinging upon the polycrystalline ferroelectric ceramic.

3,855,005

DEVICE IN A GALVANIC BATTERY FOR REMOVING AIR FROM THE ELECTROLYTE AND WATER SUPPLY DUCTS AND FROM THE ELECTROLYTE TANK WHEN THE BATTERY IS STARTED

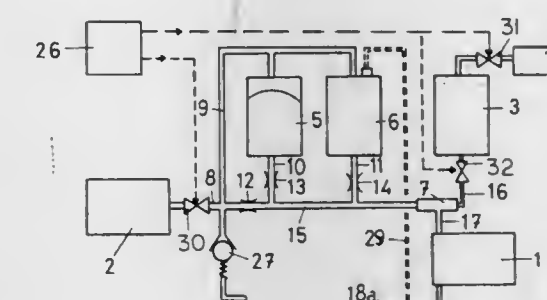
Esko Ensio Huhta-Koivisto, Helsinki, Finland, assignor to Puolustusministerio, Helsinki, Finland

Filed Oct. 16, 1972, Ser. No. 297,954

Int. Cl. H01m 1/06

U.S. Cl. 136—100 R

6 Claims



1. In combination with a galvanic battery having a cell system consisting of bipolar electrode plates, a device for removing air from the battery, said device comprising an electrolyte inlet duct connected with said cell system, a venting valve connected with said inlet duct, a second duct connected to one side of said venting valve, a third duct connected to another side of said venting valve, a first valve connected with said third duct, an initial electrolyte tank connected with said first valve, a second valve connected with said initial electrolyte tank, a pressure source connected with said second valve, a second electrolyte tank, means connecting said second and third tanks at a spaced interval to said second duct, a water supply duct connected with the second and third tanks, whereby electrolyte consisting of water and an electrolyte component is supplied to said cell system, and a two-position valve device connected with said second duct, said water supply duct and said first and second valves and having movable valve members movable under initial electrolyte pressure into a first position wherein initial electrolyte flow passes through said inlet duct and said first and second valves open into said second duct, said movable valve members being movable under electrolyte pressure into a second position wherein said third duct and said first and second

valves are closed and electrolyte proper flows through the inlet duct.

3,855,006

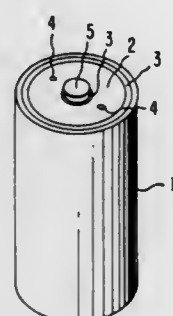
HIGH ENERGY DENSITY BATTERY HEAT FUSIBLE VENTING MEANS

Matthew Roland Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 180,379, Sept. 14, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,500 Int. Cl. H01m 1/06

U.S. Cl. 136—177

4 Claims



1. In a galvanic battery comprising a lithium anode, a depolarizing cathode in an oxidation state high in relation to lithium and an electrolyte comprising a combustible organic solvent and a solute enclosed in an atmospherically sealed battery case, the improvement comprising at least one electrolyte expulsion vent incorporated into the sealed battery case having a thermally fusible metal vent plug that melts at a preselected temperature below the temperature at which the battery case would violently rupture due to heat and pressure, whereby the electrolyte is vented from the battery case.

3,855,007

BIPOLAR TRANSISTOR STRUCTURE HAVING ION IMPLANTED REGION AND METHOD

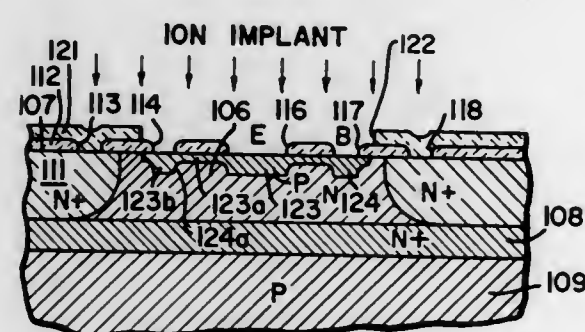
Bohumil Polata, Los Altos; James A. Marley, Jr., Saratoga, and John T. Kerr, Cupertino, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif. and Corning Glass Works, Corning, N.Y., part interest to each

Division of Ser. No. 89,193, Nov. 13, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,340

Int. Cl. H01L 7/54

U.S. Cl. 148.1.5

3 Claims



1. In a method for fabricating a semiconductor device within a semiconductor body of one conductivity type having a planar surface and using ion implantation, forming an insulating layer on said surface, forming simultaneously a plurality of spaced openings in said insulating layer and exposing said surface in said openings with at least one openings for the base and at least one opening for the emitter, covering the emitter opening and the portions of insulating material surrounding the base but with portions of the insulating material overlying the base being exposed with a protective material of sufficient thickness to prevent any substantial penetration by the ion beam used for ion implantation, uncovering the base opening,

implanting ions of an impurity of opposite conductivity type through the uncovered opening to form a base region of opposite conductivity type extending to said surface and having portions extending to different depths from said surface, covering the base opening with a protective material to prevent any substantial penetration by the ion beam, removing the protective material from the emitter opening, implanting ions of an impurity of said one conductivity type into said emitter opening from which the protective material has been removed to form an emitter region of said one conductivity type extending to the surface within the base region and with the outer perimeter of the emitter region in close proximity to a portion of the base region of lesser depth and forming contact elements on said layer of insulating material and extending through said layer of insulating material to make contact with said base and emitter regions.

3,855,008

MOS INTEGRATED CIRCUIT PROCESS

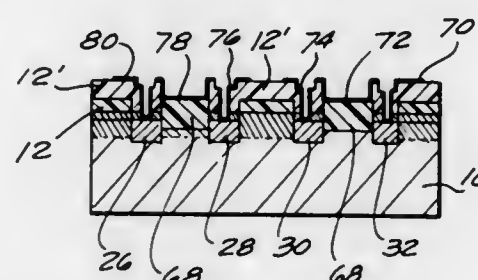
Robert J. Huber, Bountiful; James N. Fordemwalt, and Kent F. Smith, both of Salt Lake City, all of Utah, assignors to General Instrument Corporation, Newark, N.J.

Filed Aug. 30, 1973, Ser. No. 392,971

Int. Cl. H01L 7/54

U.S. Cl. 148—1.5

4 Claims



1. In a method of simultaneously forming a pair of transistors, one of which is operative in a first mode and the second of which is operative in a second mode, on a single substrate of a first conductivity type wherein each of the transistors has a pair of second conductivity type source and drain regions separated by a channel region at a surface of said substrate and where an insulating layer is present on said surface of the substrate, the improvement comprising the steps of introducing a first conductivity type impurity in the substrate at the surface except in certain regions therein, reducing the amount of impurity in selected portions of the impurity containing regions to form a first set of regions having no impurity therein, a second set of regions having a reduced concentration of impurity therein and a third set of regions having a nonreduced concentration of impurity therein, producing contact holes in the insulating layer of the respective source and drain regions, and forming the respective gate, source and drain electrodes.

3,855,009

ION-IMPLANTATION AND CONVENTIONAL EPITAXY TO PRODUCE DIELECTRICALLY ISOLATED SILICON LAYERS

William W. Lloyd, and Richard J. Dexter, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 20, 1973, Ser. No. 399,034

Int. Cl. H01L 7/54

U.S. Cl. 148—1.5

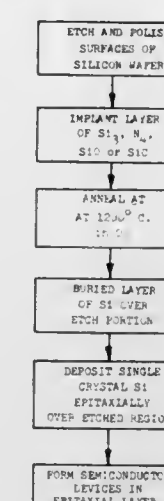
18 Claims

1. A method of dielectrically isolating silicon layers which comprises the steps of:

- providing a wafer of single crystal silicon,
- implanting ions taken from the class consisting of oxygen, nitrogen and carbon at a predetermined depth in said wafer,

- forming a layer of a compound of said implanted ions with the silicon of said wafer within said wafer, leaving single crystal silicon above said layer, and

a jet of gas on the heated portion, generating a swirling annular sheet or film of liquid coolant about the jet of gas and directing said sheet or film of coolant onto the metal work-



- epitaxially depositing single crystal silicon over said layer.

3,855,010

COMPOSITION AND METHOD FOR COLOR PASSIVATION OF ZINC AND CADMIUM

Romas Romovitch Sharmaitis, ulitsa Antakalne, 93, kv. 24; Valentina Alexeevna Vilitene, ulitsa Zhvaigzhdju 4, kv. 243, and Juozas Juozovich Matulis, ulitsa Maloneii 11, kv. 1, all of Vilnius, U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,391

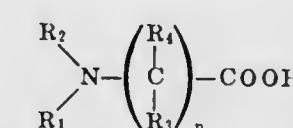
Claims priority, application U.S.S.R., Apr. 5, 1972, 1762901

Int. Cl. C23f 7/26

U.S. Cl. 148—6.21

12 Claims

1. A composition for the color passivation of zinc and cadmium consisting essentially of a mixture of hexavalent chromium compounds selected from the group consisting of chromic anhydride and soluble chromates, and soluble nitrate compounds, soluble sulphate compounds, soluble boron compounds, and an amino acid of the general formula:



where $R_1, R_2, R_3, R_4 = -H$, alkyl (C_1-C_8), phenyl, substituted alkyls and phenyls, containing substituents $-OH$, $-R$, $-COR$, $-COOH$, $-COOR$, $-CONH_2$, $-CN$, $-NH_2$, $-NHR$, $-RNR$, ($R = \text{alkyl, and aryl}$), $n = 1-5$, said composition having the following content of the above components (in weight parts):

hexavalent chromium compound (calculated as chromium)	1.7-70.0
nitrate compound (calculated as NO_3^-)	1.0-45.0
sulphate compound (calculated as SO_4^{2-})	1.0-25.0
boron compound (calculated as boron)	0.5-10.0
amino acid	0.05-6.0

3,855,011

METHOD FOR CONTROLLING HEAT EFFECT IN METAL CUTTING OPERATIONS

Charles A. Van Horn, Country Club Hills, Ill., assignor to Chemetron Corporation, Chicago, Ill.

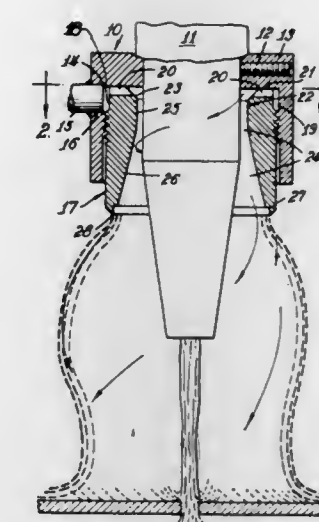
Division of Ser. No. 211,217, Dec. 23, 1971, Pat. No. 3,815,883. This application Nov. 14, 1973, Ser. No. 415,839

Int. Cl. B23k 7/00

U.S. Cl. 148—9 R

3 Claims

1. A method of cutting a metal workpiece comprising the steps of heating a portion of the metal workpiece, impinging



piece about the locus of the impingement of the jet of gas, so that the sheet or film of coolant spreads intact outwardly over the surface of the metal workpiece.

3,855,012

PROCESSING COPPER BASE ALLOYS

Stanley Shapiro, New Haven, and Ronald N. Caron, Branford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 1, 1973, Ser. No. 402,127

Int. Cl. C22f 1/08

U.S. Cl. 148—11.5 R

6 Claims

1. A method for improved yield strength characteristics in copper or copper base alloys which comprises:

- providing a copper base alloy selected from the group consisting of the phosphor bronzes and copper alloys containing from 1-5% iron, in plate form having a thickness of from 0.300 to 1.800 inches;
- cold rolling said material in at least three cold rolling cycles to a total reduction of at least 70% with an intermediate heat treatment of from 100° to 350°C for from 1 to 4 hours between each cold rolling cycle, provided that the rolling reduction in each cold rolling cycle is at least 25% and
- subjecting said material to a final heat treatment after the last cold rolling cycle, said final heat treatment being at 100° to 350°C for from 30 minutes to 8 hours.

3,855,013

QUICK HEAT TREATMENT OF STEELS

Janos Prohaszka; Rudolf Welesz, and Andor Mandoki, all of Budapest, Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat

Filed Mar. 5, 1973, Ser. No. 337,910

Claims priority, application Hungary, Mar. 7, 1972, PO 510

Int. Cl. C21d 1/40

U.S. Cl. 148—12 R

6 Claims

1. A process for the rapid heat treatment of cold worked steel, comprising heating the steel at the rate of at least 50°C. per second to a temperature above the austenitic transformation temperature, holding the steel at said temperature for a time at most 300 seconds to recrystallize the ferrite without substantial dissolution of the carbides present in the steel, and quenching the steel from said temperature to a temperature below the austenitic transformation temperature to prevent the occurrence of austenitic transformation and carbide precipitation.

3,855,014

QUENCHING OIL COMPOSITION AND METHOD OF QUENCHING METAL

Donald L. De Vries, South Holland, and Barnard C. Creech, Homewood, both of Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

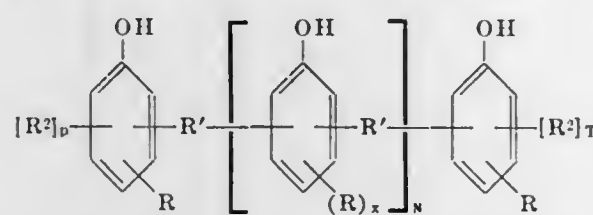
Filed June 25, 1973, Ser. No. 373,530

Int. Cl. B23k 35/24

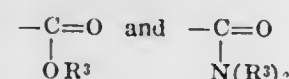
U.S. Cl. 148—28

19 Claims

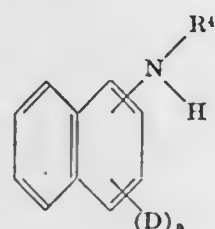
1. A quenching oil composition comprising a major amount of quench oil of lubricating viscosity having a minimum flash point of at least about 250°F., a minor amount sufficient to improve the anti-staining properties of said composition of at least one metal phenate compound of a phenolic component having the following structure



wherein each R is independently selected from the group consisting of monovalent essentially hydrocarbon radicals containing from about 3 to about 20 carbon atoms, each R' is independently selected from the group consisting of divalent essentially hydrocarbon radicals containing from 1 to 5 carbon atoms and a carbonyl group, each R² is independently selected from the group consisting of non-interfering hydrocarbon radicals containing up to about 20 carbon atoms, non-interfering non-hydrocarbon radicals,



wherein R² is selected from the group consisting of hydrogen and monovalent essentially hydrocarbon radicals containing up to about 5 carbon atoms and mixtures thereof, n is an integer from zero to about 6 and P, X and T are each integers from zero to 3; and a minor amount sufficient to improve the resistance to oxidation of said composition of at least one naphthyl amine having the following structure



wherein R⁴ is selected from the group consisting of hydrogen and monovalent hydrocarbon radicals containing from 1 to about 30 carbon atoms, a is an integer from zero to 7, and D is a monovalent hydrocarbon radical containing from 1 to about 30 carbon atoms.

3,855,015

WORK ROLL FOR HOT ROLLING

Tadashi Nemoto, Takahagi; Kiyoshi Watanabe, Hitachi; Tadaaki Kobayashi, Hitachi; Joo Ishihara, Hitachi; Kenji Ono, Tokyo, and Kazuhiko Sonomoto, Kitakyushu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 66,406, Nov. 3, 1970, abandoned. This application May 4, 1972, Ser. No. 250,186

Claims priority, application Japan, Nov. 4, 1969, 44-87559

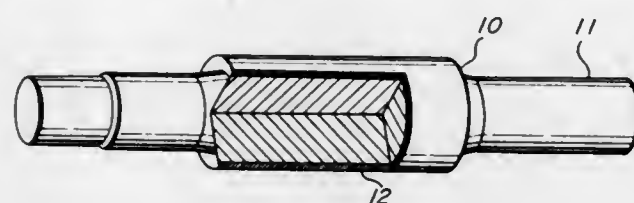
Int. Cl. C04b 35/00; B32b 15/00

U.S. Cl. 148—34

9 Claims

1. A work roll for use in hot rolling of a steel comprising a body portion composed of a steel having a ferrite structure

and having a yield strength of at least 40 Kg/mm², and a working layer of weld metal welded by submerged arc welding on the surface of said body portion, said working layer having a smooth surface and having a thickness of 7 to 50 mm, said working layer consisting essentially of 0.2 to 0.8 wt% of C, 4 to 10 wt% of Cr, 1 to 4 wt% of Mo, 0.5 to 5 wt% of V, 0.1 to 1.5 wt% of Si, 0.1 to 3 wt% of Mn, up to 0.5 wt% of Ni, up to 0.015 wt% of P, up to 0.015 wt% of S, at least one of 0.01 to 0.5 wt% of Ti and 0.05 to 1 wt% of Al, and the balance of



substantially Fe, said components other than Ti and Al showing a hot crack sensitivity value of 2.7 or less when calculated according to the formula,

$$C(P+S+Si/25+Ni/30)/3Mn+Cr+Mo+V \times 10^3$$

and said working layer having a structure comprising carbide particles distributed in a martensite matrix produced by maintaining said working layer at a temperature at which it is capable of forming an austenite structure and thereafter cooling said working layer.

3,855,016

ACICULAR COBALT POWDERS HAVING HIGH SQUARENESS RATIOS

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

Continuation of Ser. No. 127,514, March 24, 1971, abandoned. This application June 28, 1973, Ser. No. 374,337

Int. Cl. H01f 1/04

U.S. Cl. 148—31.57

4 Claims

1. A ferromagnetic composition formed of a mass of acicular metallic particles having an average minimum length of 0.1 microns and a maximum average diameter of 2 microns and comprising at least 43 percent by weight of cobalt, said mass having a coercive force of at least 600 oersteds; a sigma value of from 75 to 120 e.m.u. per gram; and a squareness characteristic of from 0.4 to 0.5.

3,855,017

POWDERIZED COBALT RARE EARTH METAL COMPOUNDS AND PROCESS FOR MAKING SUCH COMPOUNDS

Claus Schueler, Widen, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed May 2, 1972, Ser. No. 249,538

Claims priority, application Switzerland, June 15, 1971, 8686/71

Int. Cl. H01f 1/02

U.S. Cl. 148—105

5 Claims

1. In a process for producing powdered SmCo₅ from a mixture of reaction components of cobalt and samarium by a gas transport reaction in a reaction vessel; the improvement comprising introducing into said reaction vessel as a reaction material powdered cobalt having a grain size of up to 100μ and samarium comminuted to pieces of up to and including millimeter size, whereby the proportions of samarium and cobalt are such that the stoichiometric ratio of 5:1 in the end product SmCo₅ is assured, introducing grinding weights of suitable size into said reaction vessel, said grinding weights being of a material selected from the group consisting of W, Mo and Ta, evacuating and sealing the reaction vessel, keeping said reaction vessel in motion for a period of from a few hours to several days while simultaneously heating the reaction material and grinding weights to a temperature within the

range of about 750° to 1150°C, and then cooling and opening said reaction vessel to obtain said powdered SmCo₅.

3,855,018

METHOD FOR PRODUCING GRAIN ORIENTED SILICON STEEL COMPRISING COPPER

James A. Salsgiver; Gerald L. Houze, Jr., and Stuart L. Ames, all of Sarver, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 293,194, Sept. 28, 1972, abandoned. This application May 7, 1973, Ser. No. 357,969

Int. Cl. H01f 1/04

U.S. Cl. 148—112

5 Claims

1. In a process for producing oriented silicon steel including the step of preparing a melt of steel and casting same into ingots, hot rolling said ingots to hot rolled band gauge and subsequently cold rolling and annealing, as desired to produce silicon steel with cube-on-edge orientation, the improvement which comprises preparing a melt of steel having a composition consisting essentially of:

Carbon	.02 — .07%
Manganese equivalent (%Mn + (0.1 to 0.25) × %Cu)	.05 — .24%
Sulfur	.01 — .05%
Silicon	2.5 — 3.5%
Aluminum	.015 — .04%
Nitrogen	+ 90 parts per million
Copper	0.1 to 0.3%
Iron	Balance

and wherein the ratio of manganese equivalent to sulfur, by weight, is in the range of 2.0 to 4.75, and thereafter processing said steel to produce grain oriented steel with cube-on-edge texture whereby said oriented steel has a permeability of at least 1850 at 10 oersteds due to a duplex sulfide and nitride primary grain growth inhibition system, said system resulting from the aforementioned chemistry of the steel processed; said processing including the step of subjecting said hot rolled band to a temperature above 1400°F for 10 seconds to 30 minutes, said hot rolled band heat treatment contributing to the attainment of said high permeability for said oriented silicon steel.

3,855,019

PROCESSING FOR HIGH PERMEABILITY SILICON STEEL COMPRISING COPPER

James A. Salsgiver, Sarver, and Frank A. Malagari, Freeport, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed May 7, 1973, Ser. No. 357,973

Int. Cl. H01f 1/04

U.S. Cl. 148—112

6 Claims

1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a permeability of at least 1850 (G/O_e) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel consisting essentially of, by weight, up to 0.07% carbon, from 2.60 to 4.0% silicon, from 0.03 to 0.24% manganese, from 0.01 to 0.07% sulfur, from 0.015 to 0.04% aluminum, up to 0.02% nitrogen, from 0.1 to 0.5% copper and the balance iron; casting said steel; hot rolling said steel into a hot rolled band; annealing said hot rolled band; cold rolling said annealed hot rolled band; decarburizing said steel; and final texture annealing said steel; the improvement comprising the steps of annealing the hot rolled band at a temperature of from 1400° to 1700°F for a period of from 15 seconds to 2 hours; cooling said annealed hot rolled band at a rate equivalent to a steel air cool, said cool including those wherein the steel is cooled in a static atmosphere or in a continuous processing line where there is some relative motion between the atmosphere and the steel, and excluding furnace cools and those where relative motion is deliberately induced for cooling purposes and cold rolling the

3,855,020

PROCESSING FOR HIGH PERMEABILITY SILICON STEEL COMPRISING COPPER

James A. Salsgiver, Sarver, and Frank A. Malagari, Freeport, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed May 7, 1973, Ser. No. 357,974

Int. Cl. H01f 1/04

U.S. Cl. 148—112

18 Claims

1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a permeability of at least 1850 (G/O_e) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel; casting said steel; hot rolling said steel into a hot rolled band; subjecting said steel to at least one cold rolling; subjecting said steel to a final annealing prior to the final cold rolling; decarburizing said steel; and final texture annealing said steel; the improvement comprising the steps of carrying out said final anneal prior to the final cold rolling at a temperature of from 1400° to 2150°F for a period of from 15 seconds to 2 hours; cooling said steel from a temperature below 1700°F and above 750°F to a temperature at least as low as 500°F with a liquid quenching medium or gaseous stream and from its maximum annealing temperature to said temperature below 1700°F and above 750°F at a rate which is no faster than one wherein the steel is cooled in a static atmosphere or in a continuous processing line where there is some relative motion between the atmosphere and the steel, although the only deliberate motion is that imparted to the steel; and cold rolling the cooled steel at a reduction of at least 80 percent; said melt consisting essentially of, by weight, up to 0.07% carbon, from 2.60 to 4.0% silicon, from 0.03 to 0.24% manganese, from 0.01 to 0.07% sulfur, from 0.015 to 0.04% aluminum, up to 0.02% nitrogen, from 0.1 to 0.5% and the balance iron.

3,855,021

PROCESSING FOR HIGH PERMEABILITY SILICON STEEL COMPRISING COPPER

James A. Salsgiver, Sarver, and Frank A. Malagari, Freeport, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed May 7, 1973, Ser. No. 358,238

Int. Cl. H01f 1/04

U.S. Cl. 148—112

12 Claims

1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a permeability of at least 1850 (G/O_e) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel consisting essentially of, by weight, up to 0.07% carbon, from 2.60 to 4.0% silicon, from 0.03 to 0.24% manganese, from 0.01 to 0.07% sulfur, from 0.015 to 0.04% aluminum, up to 0.02% nitrogen, from 0.1 to 0.5% copper and the balance iron; casting said steel; hot rolling said steel into a hot rolled band; cold rolling said hot rolled band with or without an intermediate anneal between said hot rolling and said cold rolling, said intermediate anneal being at a maximum temperature of 1700°F; subjecting said band to at least one additional cold rolling; subjecting said band to a final annealing prior to the final cold rolling; decarburizing said steel; and final texture annealing said steel; the improvement comprising the steps of carrying out said final anneal prior to the final cold rolling at a temperature of from 1400° to 1700°F for a period of from 15 seconds to 2 hours; cooling said annealed steel at a rate equivalent to a still air cool, said cool including those wherein the steel is cooled in a static atmosphere or in a continuous processing line where there is some relative motion between the atmosphere and the steel, and excluding furnace cools and those where relative motion is deliberately induced for cooling purposes; and cold rolling said cooled steel at a reduction of at least 80 percent.

3,855,022

PARTICULATE ALUMINUM HYDRIDE WITH NITROCELLULOSE COATING SUITABLE FOR USE IN SOLID PROPELLANTS

James P. Flynn, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 14, 1965, Ser. No. 457,252

Int. Cl. C06d 5/06

U.S. Cl. 149-8

3 Claims

1. A substantially non-solvated particulate aluminum hydride having a surface coating of nitrocellulose.

3,855,023

MANUFACTURE OF MASKS

Denis F. Spicer, and Andrew C. Rodger, both of Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 180,776, Sept. 15, 1971, abandoned.

This application Aug. 21, 1973, Ser. No. 390,275

Int. Cl. C23f 1/07

U.S. Cl. 156-11

9 Claims



1. A method for generating metal patterns on substrates comprising the steps of:

- forming reference markings at a surface of a substrate;
- coating said surface and said markings with a layer of electron beam sensitive resist;
- scanning the reference markings in a first controlled manner with an electron beam to generate correction signals for alignment;
- deflecting said electron beam in response to deflection signals representing the desired metal pattern, said deflection of the electron beam being positionally corrected by said correction signals for alignment to scan the electron beam sensitive resist in a second controlled manner with said electron beam to effect electron beam exposure of selected portions of said electron beam sensitive resist such that said exposed portions thereof are aligned with respect to said reference markings;
- removing said exposed portions of electron beam resist to define a pattern therein corresponding with said desired metal patterns aligned with respect to said reference markings;
- coating said patterned electron beam resist with a metal layer; and
- removing the unexposed portions of said electron beam resist together with portions of said metal layer of mask material overlying said unexposed portions of resist thereby leaving a desired metal pattern defined in said metal layer.

3,855,024

METHOD OF VAPOR-PHASE POLISHING A SURFACE OF A SEMICONDUCTOR

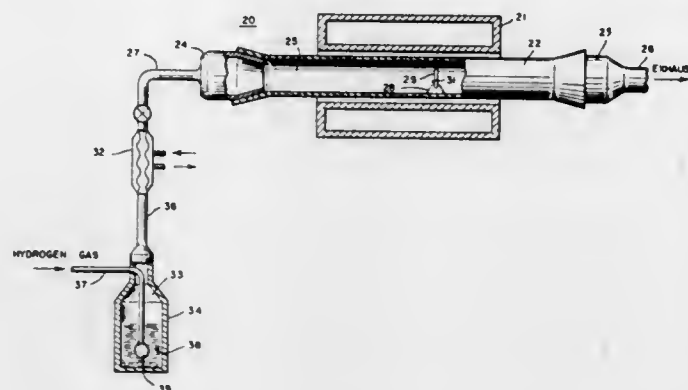
Mahn-Jick Lim, Lower Makefield Township, Bucks Cty., Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 194,324, Nov. 1, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,746

Int. Cl. H01l 7/50; C09k 3/00

U.S. Cl. 156-17

8 Claims



1. A method of polishing a surface of a substrate comprising a semiconductor material, which comprises, contacting the surface of the substrate, maintained at a suitable temperature, with a gaseous mixture comprising a carrier gas and water vapor for a period of time sufficient to polish the surface.

3,855,025

WELDING CYLINDER WITH PERIPHERALLY EXTENDING WELDING BAND

Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

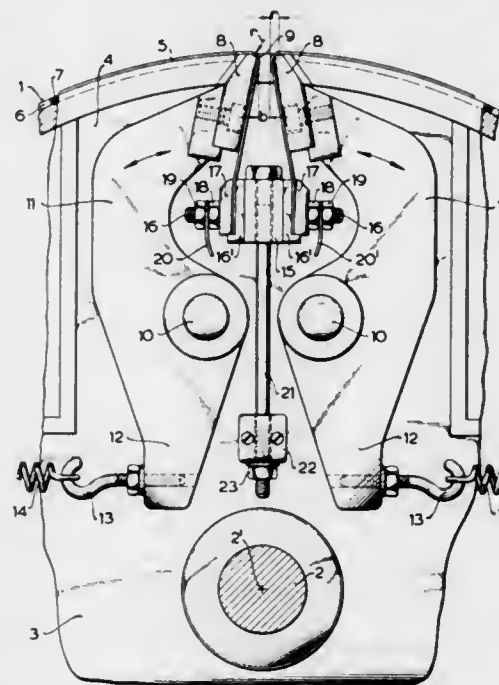
Filed May 10, 1973, Ser. No. 359,001

Claims priority, application Germany, May 18, 1972, 2224317

Int. Cl. B32b 31/00; H05b 1/00

U.S. Cl. 156-582

4 Claims



1. A rotary welding cylinder for welding thermoplastic film passed thereabout along a seam extending circumferentially of the cylinder, comprising a cylinder mounted for rotation, a welding band extending around said cylinder, rotatable therewith and held on the periphery of said cylinder under tension, said cylinder defining a radially extending recess with the ends of said band extending into said recess, the transition between said cylinder periphery and said recess being defined by rounded-off edges, a pivotally mounted tensioning jaw defining at least one of said rounded-off edges and being movable

in the circumferential direction of the cylinder, means securing the ends of said band in said recess to be non-yieldable radially of the cylinder, and resilient means biasing said tensioning jaw to maintain said band under tension on the periphery of said cylinder.

3,855,026

METHOD OF MANUFACTURING CONTAINER END WITH PROTECTIVE BEAD

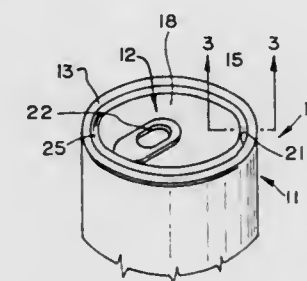
James D. Fox, Darlington; Earl P. Norman, Jr., and Jerry F. Sansbury, both of Hartsville, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 162,379, July 14, 1971, Pat. No. 3,754,678. This application Feb. 26, 1973, Ser. No. 335,992

Int. Cl. B29c 27/00

U.S. Cl. 156-69

4 Claims



1. The method of making a container comprising: forming a container end of the easy opening type; applying a compound to said end for sealing thereof to a container body; pressing said end to form the tab and score line; preheating said end; applying hot melt material across said score line; building a container body; and seaming said end to said body; whereby a container is provided which has a protective shield on both the sharp edge of the removed portion and the residual lip portion remaining after removal of the removable portion.

3,855,027

ON-SITE FABRICATION OF ANTENNAS

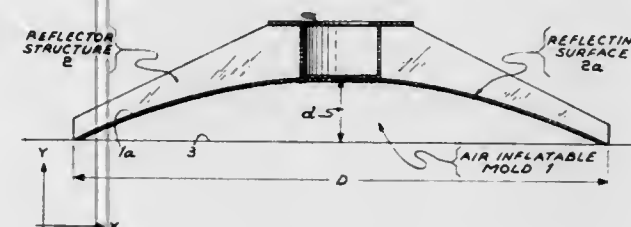
Manfred O. Erdmann, and John J. Dolan, both of Denville, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 22, 1972, Ser. No. 265,365

Int. Cl. B29d 27/04; B29g 7/02; B32b 31/12

U.S. Cl. 156-79

24 Claims



1. A method for fabricating an antenna reflector having a reflector surface of predetermined parameters, comprising the steps of:

- applying to a mold surface having a curvature corresponding to the predetermined parameters of the reflector surface a continuous layer of polyester material of predetermined thickness;
- applying a first layer of material comprising a fiber-reinforced resinous laminate to a predetermined thickness;
- embedding into place individual pieces of an internal reinforcement ribbing structure of predetermined arrangement in a continuous foamable casting material;

- applying a second layer of material comprising a fiber-reinforced resinous laminate; and
- applying to the fabricated reflector surface a continuous layer of a reflecting agent.

3,855,028

METHOD OF FABRICATING STRUCTURES

Donald J. Larson, 527 W. Algonquin Rd., Arlington Heights, Ill. 60005

Filed Nov. 8, 1972, Ser. No. 304,628

U.S. Cl. 156-79

8 Claims



1. A method of fabricating insulated structures such as duct work, pipe and housings and the like from sheet or strip material, comprising the steps of:

- applying a thin film of expandable plastic to at least one side of a sheet or strip of material;
- said plastic comprising a foamable vinyl chloride polymer which can be at least partially cured without noticeable expansion when heated to a temperature not exceeding 350°F for 60 seconds or less;
- heating the strip or sheet of material in a first stage curing operation for approximately 60 seconds to at least partially cure the plastic and cause it to be bonded to the sheet or strip but insufficient to cause noticeable expansion of the plastic;
- forming the sheet or strip of material into a desired structure; and
- heating the structure in a second stage curing operation for a predetermined period of time sufficient to cause said plastic film to expand at least several times in thickness.

3,855,029

METHOD FOR RE-INFORCING CAST-METAL OBJECTS, PARTICULARLY THIN PLATES OF HARD AND BRITTLE CAST STEEL

Erik Arne Sabel, Box 128, S-940 20 Ojebyn, Sweden

Continuation of Ser. No. 829,559, June 2, 1969, abandoned.

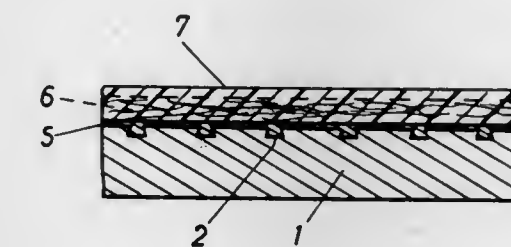
This application Mar. 14, 1973, Ser. No. 340,995

Claims priority, application Sweden, Mar. 12, 1969, 3384/69

Int. Cl. B32b 7/00

U.S. Cl. 156-92

3 Claims



1. A method of making re-inforced thin plates of brittle metal comprising the steps of: casting a thin plate of steel having a hardness in excess of 400 Brinell and having recesses distributed on a major surface thereof for receiving anchors therein, bonding spaced-apart anchors in said recesses and disposed upstanding and projecting from said major surface of said plate, placing on said major surface of said plate a layer of net armouring with said anchors extending into said net armouring, anchoring said net armouring with said anchors, diffusing synthetic resin through said net armouring around said anchors and in contact with said major surface, and curing said synthetic resin to intimately bond said net armouring

to said major surface of said plate and said anchors for reinforcing said steel plate.

3,855,030

METHOD AND APPARATUS FOR APPLYING A TREAD STRIP TO A CARCASS

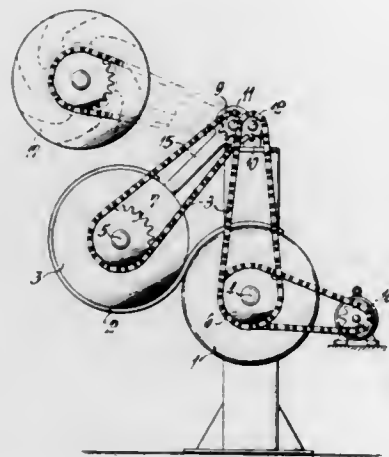
Wilhelm Schelkmann, Witten, Germany, assignor to Vakuum Vulk Holdings Ltd., Nassau, Bahamas

Filed Apr. 12, 1972, Ser. No. 243,202

Int. Cl. B29h 17/37

U.S. Cl. 156—130

15 Claims



1. A method of applying a tread strip with a repeating pattern to the circumference of a carcass comprising the steps of cutting from an elongated tread strip a portion having a length approximately equal to the length of the outer circumference of the carcass in such a manner that the profile of the tread pattern at one end of the cut off portion matches the profile at the other end; placing the cut off tread strip portion around the peripheral surface of a drum which is rotatable about its axis with the tread pattern engaging the peripheral drum surface over the whole circumference thereof; bringing the surface of the cut off strip portion opposite to the pattern surface at one end of the cut off strip portion into engagement with the peripheral surface of a carcass rotatable about an axis parallel to the drum axis; and rotating the drum and the carcass with equal angular velocities and respectively in opposite directions so as to evenly distribute and adhere said strip portion onto the periphery of the carcass regardless whether the length of the cut off strip portion corresponds exactly to the length of the outer periphery of the carcass or not.

3,855,031

METHOD AND APPARATUS FOR LAMINATING, IMPREGNATING AND CURING CONTINUOUS TUBES

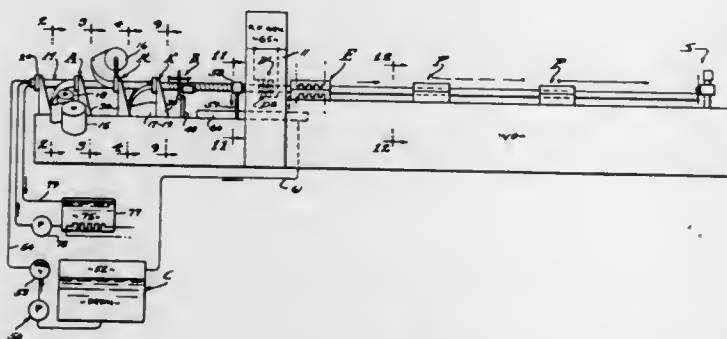
Arthur O. McNeely, Redondo Beach; Wiley T. Kennedy, Santa Ana, and Paul Huska, Los Angeles, all of Calif., assignors to Mackenhus Corporation, Santa Ana, Calif.

Filed Feb. 16, 1972, Ser. No. 226,811

Int. Cl. B31f 1/00

U.S. Cl. 156—190

6 Claims



1. The method of laminating, impregnating and curing continuous unlimited length tubing composite of laminiform profile, and including; anchoring the one rear end of an elon-

gated mandrel having a cross sectional configuration to establish the inner profile of the composite, dry forming at least one strip-shaped lamina over the mandrel and into encompassing conformity with said configuration thereof by wrapping the same longitudinally over the rear portion of the mandrel establishing a laminiform thereof while continuously advancing the same forwardly by traction applied thereto ahead of the front end of the mandrel, impregnating the previously dry laminiform with curable thermosetting liquid resin during its continuous advancement over the intermediate portion of the mandrel, and accelerating final cure of the liquid impregnated laminiform by applying heat during its continuous advancement over the front portion of the mandrel.

3,855,032

PRODUCTION OF TOBACCO-SMOKE FILTERS

John A. Luke, Southampton, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

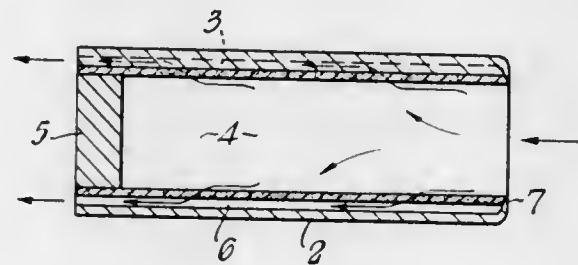
Filed Mar. 8, 1972, Ser. No. 232,669

Claims priority, application Great Britain, Mar. 12, 1971, 6693/71

Int. Cl. B31f 1/00

U.S. Cl. 156—201

14 Claims



1. A method of continuously producing tobacco smoke filter components comprising:

- depositing lengths of smoke-impermeable plug material upon a strip of filter material at predetermined intervals so that the lengths of plug material are spaced a substantially greater distance apart than their individual lengths;
- forming a tube of the strip about said plug lengths;
- disposing an outer smoke-impermeable tubular casing around the tube;
- providing means between said filter material and said tubular casing to retain at least portions of said casing and filter material in spaced relation to provide a longitudinal smoke flow between said filter material and plug assembly and said smoke-impermeable tubular casing;
- forming a circumferential seal between said casing and said tube at desired spaced positions from said plugs to prevent the passage of smoke between the casing and tube at the point of said seal; and
- cutting said tube into individual filter smoke components each having a circumferential seal at one end thereof.

3,855,033

METHOD OF MAKING EMBOSSABLE MONOLITHIC IDENTIFICATION CREDIT CARD

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed June 19, 1972, Ser. No. 263,934

Int. Cl. B31f 1/08

U.S. Cl. 156—220

8 Claims

1. A method for making an embossable identification credit card having thereon an overlaminated photograph and signature, said method comprising:

- providing a metal plate having a portion cut out from it and inserting said photograph therein;
- folding a data sheet having a heat-reactivable adhesive therein around said metal plate, said data sheet having a cut-out portion corresponding to said cut-out portion of said metal plate and a signature thereon;

3,855,035

IMAGE INTENSIFIER PLATE AND METHOD AND COMPOSITIONS FOR MANUFACTURING SAME

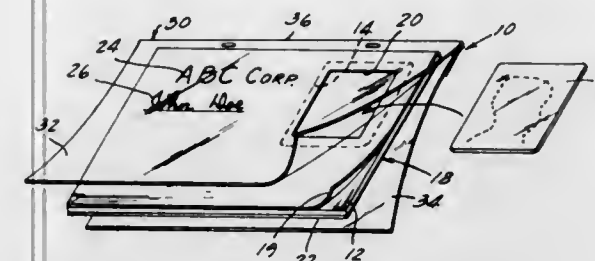
Clayton W. Bates, Jr., San Francisco, and John C. Eidson, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 22, 1972, Ser. No. 265,316

Int. Cl. C09j 5/00; B32b 31/12

U.S. Cl. 156—306

11 Claims



sheet to both sides of said metal plate and around the edges of said photograph, and said clear pouch to said data sheet over said photograph and signature and to itself around the edges of said sheet, whereby a monolithic identification credit card is produced which can be embossed with stable, raised indicia.

3,855,034

METHOD AND APPARATUS FOR BONDING IN MINIATURIZED ELECTRICAL CIRCUITS

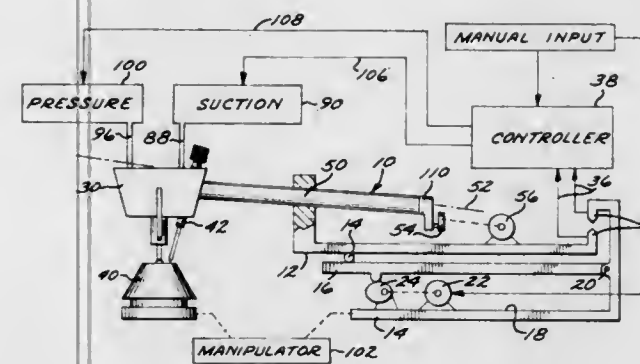
Charles Frederick Miller, 2165 North Glassell St., Orange, Calif. 92665

Filed Dec. 10, 1973, Ser. No. 423,321

Int. Cl. B31f 5/00; B65c 11/04; H01r 43/00

U.S. Cl. 156—297

10 Claims



1. The method of bonding one element to another element using a tool holder apparatus which includes a suction pick-up opening and an adhesive dispensing opening, said openings being separated by a distance and opening in like direction, the holder apparatus being rotatable to place both of said openings, one at a time, in a line extending in said direction and to move the opening so placed in the direction of said line, which method comprises the steps of:

- rotating said apparatus to place the adhesive dispensing opening in said line and moving said apparatus to move said adhesive dispensing opening along said line;
- causing a quantity of adhesive to be dispensed from said adhesive dispensing opening; and
- while applying suction at said suction pick-up opening, rotating said apparatus to place said suction pick-up opening in said line and moving said apparatus such that said suction pick-up opening is moved in the direction of that line toward the point at which said quantity of adhesive was dispensed; and
- ending application of suction to said suction pick-up opening.

3,855,036

MACHINE FOR PRODUCING NON-WOVEN NETTINGS

Erik Solbeck, No. 342 Vedhaek Strandvej, 2950 Vedbaek, Denmark

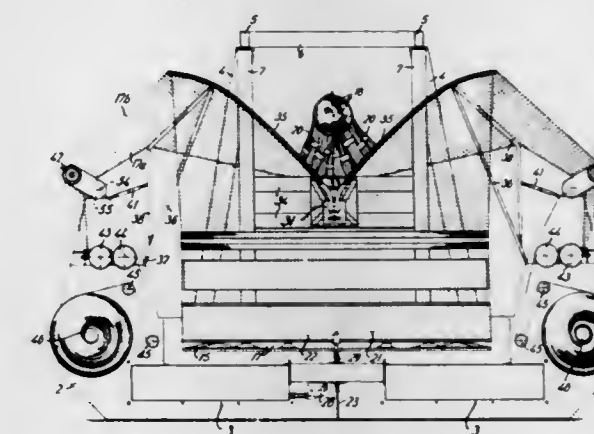
Filed Feb. 1, 1973, Ser. No. 328,589

Claims priority, application Denmark, Feb. 9, 1972, 578/72

Int. Cl. B65h 81/00

U.S. Cl. 156—426

9 Claims



1. In a machine for producing a non-woven netting comprising crossing warp and transverse threads connected together at their points of crossover, said machine including

- a stationary frame having support means of at least substantially circular cross section for supporting a plurality of parallel warp threads in the form of a cylindrical thread layer;
- means for jointly advancing said warp threads in their longitudinal direction;
- at least one rotary thread guide for laying a transverse thread in a helical configuration around said layer of warp threads to form a hose-like web;
- drive means for rotating said thread guide;
- means for longitudinally slitting said hose-like web into at least two individual nettings;
- at least two rotatably supported rollers spaced from said support means and having rectilinear axes, and guide

means between said slitting means and each of said rollers for reshaping each netting into a flat shape, the improvement wherein said guide means comprises

- a. a stationary guide member formed with a curvilinear guiding edge located adjacent the path of said hose-like web with its ends located downstream of the associated slitting means and extending from said ends symmetrically outwardly relative to a line connecting the slitting means and forwardly in the direction of advance of said hose-like web whereby the center point of said edge is located furthest away from said connecting line, the axes of said rotatable rollers being located rearwardly of said center point of the guiding edge, as seen in the direction of travel of said hose-like fabric, and
- b. two stationary guide bars each located between said guiding edge and an associated roller, which bars issue symmetrically from two points intermediate the ends of the guiding edge and extend outwardly towards the ends of the roller.

3,855,037

MANUFACTURE OR CLOSING OF SACKS BY WELDING CUT LENGTHS OF TUBE OF THERMOPLASTICS

Karl-Heinz Imhagen, Limburgerhof; Werner Kasper, Frankenthal; Gernot Manhart, Limburgerhof, and Werner Weidner, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

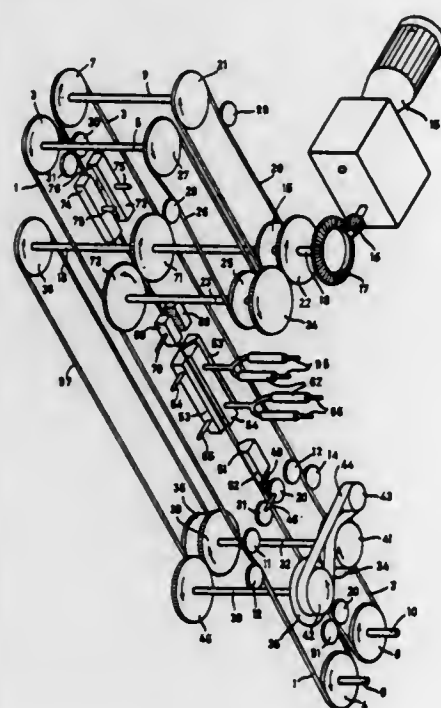
Filed July 30, 1970, Ser. No. 59,529

Claims priority, application Germany, Aug. 4, 1969, 1939571

Int. Cl. B32b 31/00

U.S. Cl. 156-497

10 Claims



1. Apparatus for welding cut lengths of a thermoplastic film tube in the manufacture of sealed sacks which comprises:

- motor-driven guide members facing one another to grip a flat length of the tube, which is cut open at one end transversely to the front and rear side edges thereof, in such a way that said front and rear side edges project from the guide members by an amount approximately equal to the intended breadth of the weld, said guide members being adapted to advance the resulting projecting two-layer strip formed by the exposed end-face edges through the welding apparatus;
- a resistance member mounted laterally in the path of the projecting two-layer strip to contact the front side edge thereof as the strip is being advanced by said guide members and to fold open said front side edge of said strip;
- knife means mounted next to the resistance member in the path of the advancing strip with its point of cutting en-

gagement set at a position between said resistance member and said guide members to first cut the projecting two-layer strip at its folded open front side edge and subsequently at its rear side edge;

guide plate means following said knife means in the path of the advancing strip to fold apart the two-layer strip;

heating means following said guide plate means in the path of the advancing strip to heat the inner surfaces thereof after they are folded apart to a fusing temperature; and

means to press the heated two-layer strip back together and to cool and strip to complete the weld.

3,855,038

METHOD AND ARRANGEMENT FOR JOINING THE ENDS OF THERMOPLASTIC PROFILES BY HEAT-WELDING

Otto Anschutz, Im Rosental, 547 Andernach, Germany

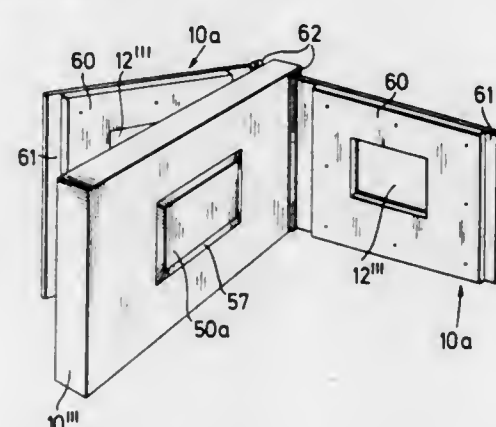
Filed Feb. 8, 1973, Ser. No. 330,862

Claims priority, application Germany, Mar. 10, 1972, 2211548

Int. Cl. B32b 31/20

U.S. Cl. 156-499

12 Claims



1. An arrangement for joining the ends of thermoplastic workpieces by heat-welding, comprising a heated element having two opposite sides each provided with a recess whose contour corresponds to the exterior contour of the ends to be joined; a welding jig also having two opposite sides and provided with a passage which connects the same and whose contour also corresponds to the exterior contour of the ends to be joined; and operating means for holding the workpieces to be joined and for moving said ends first into the respective recesses and into contact with said heated element so that the thermoplastic material of said ends softens in response to such contact, then retracting the ends from said recesses so that said welding jig may be substituted for said heated element, and thereupon abutting said ends in said passage of said welding jig so that the softened material joins the abutted ends in response to its hardening while said ends are located in said passage of said welding jig.

3,855,039

APPARATUS FOR HEAT-SEALING SUPERIMPOSED LAYERS OF SHEET MATERIAL

Winfried Boettcher, Leipzig, Germany, assignor to VEB Polygraph Leipzig, Kombinat Fuer Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Division of Ser. No. 164,307, July 20, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,259

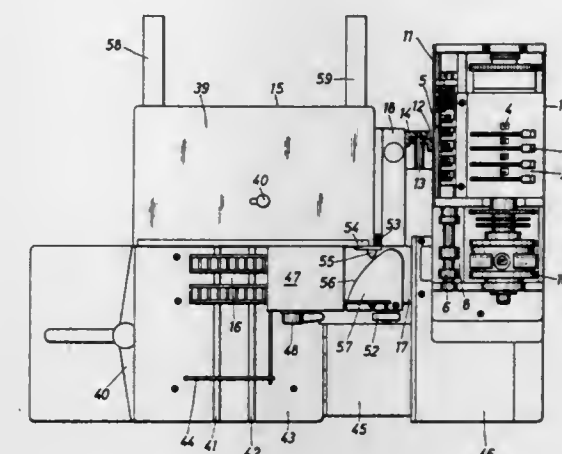
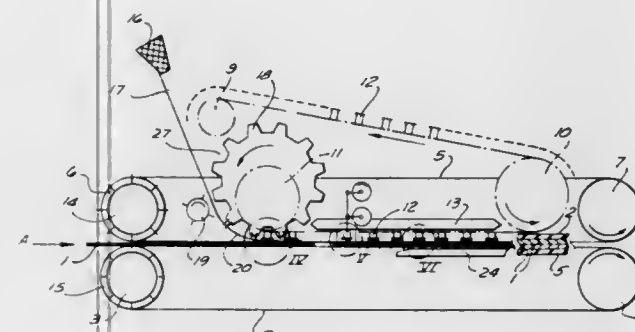
Int. Cl. B32b 7/04

U.S. Cl. 156-521

6 Claims

1. In an apparatus for connecting superimposed layers of sheet material, in combination, advancing means for continuously advancing a stack of superimposed sheet material layers at a predetermined speed and in a predetermined path; supply means for engaging a thread and for moving the same at least intermittently at said speed; cutting means for severing at least one predetermined length of said thread per stack from the remainder of said thread, said length having spaced end portions engaged by said supply means and sharing said move-

ment of the latter to a position along said path adjacent one major surface of said advancing stack; pressing means for pressing said length, when in said position, intermediate said end portions thereof against said major surface with a force sufficient to disengage said end portions from said supply means, said pressing means mounted mounded for movement at said speed in a different path having a path portion extending along said predetermined path in close proximity thereof so as to press said length against said major surface during said



independent structural unit, adapted to be shifted relative to the entrance slot of the franking machine.

3,855,042

PRESSURE POLISHED EXTRUDED POLYCARBONATE OR POLYSULFONE SHEET

Richard E. Moore, R.D. 1, Locust Grove Rd., West Chester, Pa. 19380

Division of Ser. No. 54,185, July 13, 1970, Pat. No. 3,681,483.

This application Mar. 8, 1972, Ser. No. 232,725

Int. Cl. B29d 7/22

U.S. Cl. 161-1

1 Claim

1. A pressure polished sheet of extruded, transparent unfilled polycarbonate whose opposed surfaces are substantially free of ripples, wiggles, extrusion die lines and stresses and whose luminous transmittance is greater than, its percentage haze less than and its distortion less than the as extruded sheet, said luminous transmittance being 0.900, said percentage haze being 0.7 and an index of refraction of 1.62, as measured with 1/8 inch extruded sheet, said sheet being made by first preheating the as extruded sheet between a pair of mirror polished plates at a pressure of zero to a maximum of 50 psi to the heat distortion temperature of the sheet to expel air entrapped between the sheet and the plates, then increasing the pressure to about 300 to 500 psi while allowing the temperature to rise to about 310°-330°F to transfer the mirror finish of the plates to the sheet surfaces while substantially eliminating the ripples, wiggles and extrusion die lines and stresses, and then cooling the sheet while reducing the pressure to fix the mirror finish in the sheet surfaces as the sheet contracts and solidifies.

3,855,043

BEADED ARTICLE

Minoru Kuroda, Hyogo-ken, Japan, assignor to Nishizawa Shoji Co. Ltd., Osaka, Japan and The Dimension Weld International Corporation, New York, N.Y., part interest to each

Continuation of Ser. No. 80,385, Oct. 13, 1970, abandoned, which is a division of Ser. No. 808,128, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 662,902, Aug. 24, 1967, abandoned. This application July 7, 1972, Ser. No. 269,563

Int. Cl. B29c 3/00; B32b 3/00

U.S. Cl. 161-5

7 Claims

1. A beaded article, comprising, in combination, a support; a plurality of spaced-apart discrete beads, each bead comprising a bottom layer of synthetic plastic sheet material superimposed upon said support and a top layer of light-transmitting synthetic plastic sheet material on said bottom layer and unitary therewith at least along a narrow circumferentially complete annular zone coinciding with the marginal zones of said layers, said layers being adhered to one another and to said support along said narrow annular zone by a heat-welded

3,855,040

ANAEROBIC COMPOSITIONS

Bernard M. Malofsky, West Hartford, Conn., assignor to Locite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 268,233, July 3, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 347,280

Int. Cl. C09j 5/04; C08f 3/62; B32b 7/10

U.S. Cl. 156-310

39 Claims

1. A polymerizable anaerobic composition comprising a polymerizable acrylate ester monomer; hydroperoxide or a perester polymerization initiator capable of polymerizing said monomer in the substantial absence of oxygen; and an effective amount for rapid polymerization of the acrylate ester monomer of an activator comprising an organic compound containing a ferrocene moiety.

3,855,041

FRANKING MACHINE WITH A LETTER FEEDING AND A TAPE FEEDING DEVICE

Alfred Kunisch, Berlin, Germany, assignor to Francoty GmbH, Berlin, Germany

Filed Apr. 18, 1973, Ser. No. 352,129

Claims priority, application Germany, Apr. 20, 1972, 2219270

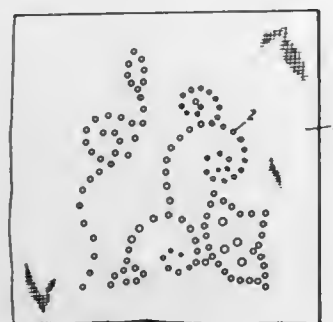
Int. Cl. B43m 5/00

U.S. Cl. 156-442.2

9 Claims

1. Franking machine of the type alternately printing on letters or tapes having an entrance slot and having a common electromechanical drive for letter-feeding and tape-feeding devices which, depending on the manner of operation, can be

seam, and said top layer having within the confines of said zone a hollow self-supporting bead-like prominence; and



particulate matter confined and visible within said bead-like prominence at least partly filling the same.

3,855,044

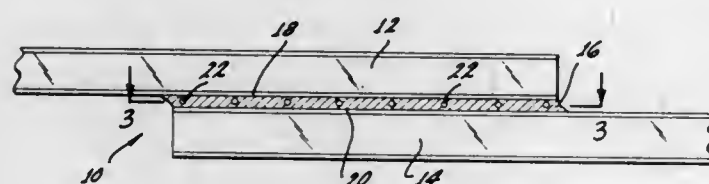
CORROSION RESISTANT ADHESIVE BONDING SYSTEM
Frank J. Riel, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 6, 1973, Ser. No. 386,040

Int. Cl. B32b 15/02, 15/08

U.S. Cl. 161—89

3 Claims



1. A corrosion resistant joint for joining at least two structural metal parts, comprising metal to adhesive interfaces, wherein said adhesive comprises an epoxy resin containing a metal reducing agent interspersed within the body of said adhesive said reducing agent comprising a metal higher on the electronegativity scale than the metals being bonded, said reducing agent being a sacrificial material whereby said material substantially corrodes prior to the metals along the interfaces thereof corroding.

3,855,045

SELF-SIZED PATTERNED BONDED CONTINUOUS FILAMENT WEB

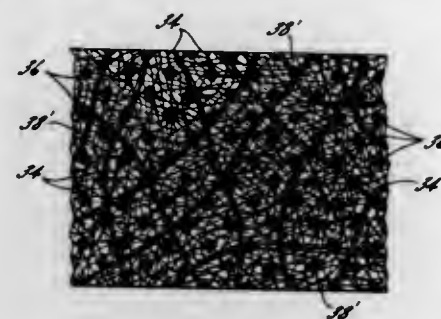
Robert J. Brock, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 21, 1972, Ser. No. 219,751

Int. Cl. B32b 31/20, 3/00

U.S. Cl. 161—146

8 Claims



1. A nonwoven web having a basis weight of about 1 oz./yd.² - 3 oz./yd.² consisting essentially of substantially identically prepared continuous and randomly deposited, molecularly oriented filaments of a thermoplastic polymer having a denier of about 0.5-10, said web having a multiplicity of discrete compacted areas of autogenous filament bonds distributed in an intermittent pattern on the surfaces in a density of about 100-500 per square inch and occupying about 10-25 percent of web surface area with the web filaments disposed adjacent to the web surfaces in regions between compacted areas being

secured together at cross-over points with autogenous bonds of lower intensity than within the compacted areas, said web having a cantilever stiffness length of at least about 1 1/2 inches, basis weight normalized tensile strength of at least about 6, and exhibiting at least about a 30 percent reduction in cantilever stiffness length after a single wash cycle.

3,855,046

PATTERN BONDED CONTINUOUS FILAMENT WEB
Paul Bernard Hansen, Neenah, and Leon Benjamin Pennings, Little Chute, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

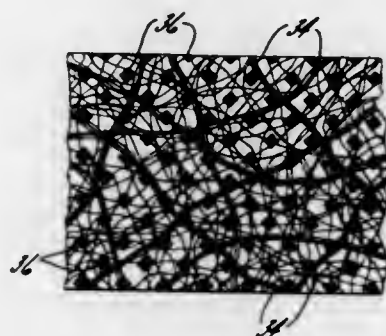
Continuation-in-part of Ser. Nos. 15,034, Feb. 27, 1970, abandoned, and Ser. No. 121,880, March 8, 1971, abandoned.

This application Sept. 1, 1971, Ser. No. 177,077

Int. Cl. D04h 1/04

U.S. Cl. 161—150

20 Claims



1. A soft, drapable nonwoven web consisting essentially of a plurality of substantially identically prepared continuous and randomly deposited, molecularly oriented filaments of a thermoplastic polymer, said web having a multiplicity of discrete, compacted areas of autogenous releasable filament bonds extending through a major portion of the thickness of the web, said compacted areas being distributed in an intermittent regular pattern providing unbonded filament spans therebetween which align in a direction of strain to enhance strain distribution throughout the web, said releasable filament bonds serving to hold the filaments which are on, and adjacent to, the web surfaces for stabilizing the web and for rendering the surfaces thereof abrasion resistant and said releasable bonds having an intensity approaching but less than the breaking strength of the filaments such that the bonded filaments pull free from one another before fracturing when the web is subjected to strain.

3,855,047

SHEET-LIKE NONWOVEN WEB AND FLEXIBLE ARTICLE OF POLYESTER AND AROMATIC POLYAMIDE STAPLE FIBERS

Gaylord L. Groff, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Division of Ser. No. 152,591, June 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 53,120, July 8, 1970, abandoned. This application Jan. 5, 1973, Ser. No. 321,444

Int. Cl. D04h 1/04; B32b 7/04

U.S. Cl. 161—150

5 Claims

1. A sheet-like nonwoven web impregnated with an electrically insulative, moisture-insensitive thermoset resin, said sheet-like nonwoven web being formed from a fiber blend comprising between 15 and 60 weight % undrawn polyester staple fibers at least partially heat softenable at temperatures below 200° C. 0 up to 60 weight percent drawn polyester staple fiber, and, in intimate admixture with said undrawn polyester staple fibers, at least 10 but no more than about 75 weight % discontinuous aromatic polyamide staple fibers.

3,855,048

FOAM LAMINATES

Raymond Bagnall, Cheadle, England, assignor to Caligen Foam Limited, Lancashire, England

Filed Jan. 5, 1973, Ser. No. 321,172

Claims priority, application Great Britain, Jan. 19, 1972, 2463/72

Int. Cl. B32b 31/20, 31/26

U.S. Cl. 161—159

9 Claims

1. A process of laminating cloth to opposite sides of polyurethane foam, comprising the steps of:
a. providing a sheet of polyurethane foam,
b. heating one side of the foam sheet to at least 400°C,
c. pressing a cloth layer against said one side to laminate the cloth and foam,
d. heating the other side of the foam-sheet to no higher than 360°C and
e. pressing another cloth layer against said other side of the foam to laminate the another cloth layer and the foam, thereby producing a laminate comprising the polyurethane foam sheet sandwiched between the two cloth layers.

3,855,049

COMPOSITE POLYMER PRODUCTS FOR THAT

Max Klein, New Shrewsbury, N.J., assignor to Normac, Inc., Matawan, N.J.

Filed Mar. 2, 1971, Ser. No. 120,346

Int. Cl. C08g 41/04; B32b 5/20

U.S. Cl. 161—160

8 Claims

1. A rigid, light weight structural composite polymer, overall stably adherent unitary solid block which comprises discrete, relatively fully expanded styrene-polymer bit-pieces adhesively enmeshed in a thermoset foam polyurethane matrix, wherein said styrene-polymer bit-pieces are by weight from about 3.38 to about 7.73 percent of the sum of said bit-pieces and the starting polyurethane-providing components.

3,855,050

METAL STRUCTURES WHICH ARE

SELF-DESTRUCTIBLE BY CHEMICAL CORROSION
Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

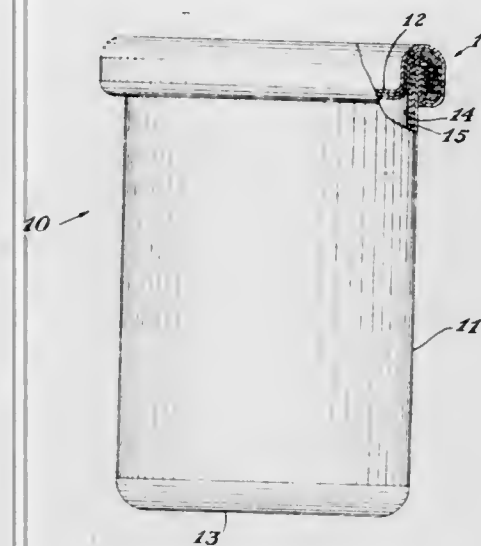
Division of Ser. No. 16,725, March 5, 1970, Pat. No. 3,744,664. This application Feb. 22, 1973, Ser. No. 334,892

The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl. B32b 15/04, 15/12; B65d 7/22

U.S. Cl. 161—165

9 Claims



1. A metal structural laminate comprising:
a. at least two metal layers; and
b. at least one layer of a metal-corroding composition positioned between the metal layers, said composition being

capable, when contacted with moisture, of chemically corroding each of the metal layers.

3,855,051

THERMAL BARRIER TAPE

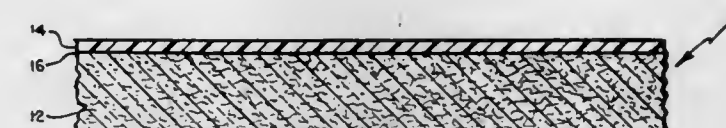
Anthony R. Lania, Lexington; Edward L. Chase, Brockton; Francis M. Chase, Cohasset; Leonard P. Graham, Canton, and James E. Murray, Norwood, all of Mass., assignors to Chase Corporation, Randolph, Mass.

Continuation-in-part of Ser. No. 77,248, Oct. 1, 1970, abandoned. This application Mar. 16, 1973, Ser. No. 341,934

Int. Cl. B32b 17/10

U.S. Cl. 161—165

6 Claims



1. A flexible heat insulating tape suitable for use in making an electrical cable by placement between the primary conducting members thereof and a hot-melt thermoplastic sheathing, and consisting of (a) a polymer component, formed of a thermoplastic resin having a breakdown voltage of at least 7,000 and a heat-distortion temperature of at least 200° F. and which component is from 1 to 3 mils in thickness and (b) a glass paper ply on one side of, or sandwiched between two sheets forming said polymer component, and characterized by a thermal conductivity of about 0.3 BTU-inch per hr-ft²-F°, and not over about 10% organic binder, said paper ply being from 3 to 20 mils in thickness and forming the major portion of the thickness of said tape.

3,855,052

ADHESIVE TAPE COATED WITH A CONTROLLED RELEASE COATING COMPOSITION

Thomas S. Mestetsky, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 166,568, July 27, 1971, Pat. No. 3,770,687. This application Oct. 12, 1973, Ser. No. 405,764

Int. Cl. C08f 35/02; B44d 1/02

U.S. Cl. 161—167

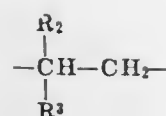
11 Claims

1. A base sheet material, one surface of which carries an outer adhesive layer, the other surface of said sheet material carrying an outer layer formed by depositing and curing on said other surface a controlled self-release coating composition comprising an organic solvent solution containing 0.5 to 50 weight percent of a resin mixture comprising, by weight:
a. 5 to 95 percent of a solvent soluble polyorganosiloxane anti-stick release polymer, and
b. 95 to 5 percent of an organic solvent soluble polymer having a relative viscosity of at least 0.1 and containing at least 15 mole percent of recurring units of the following formula:



wherein each R is OR' or N(R'')₂, R' being individually H, C₁₋₂₂ alkyl, aryl, alkaryl, amine, metal or ammonium cation, or the two R groups taken together form an oxo or imide group, R'' being hydrogen or a non-olefinic hydrocarbon moiety, with the remaining units being recurring units of the formula:

(11)



wherein R^2 is hydrogen or methyl and R^3 is $COOR'$, OR' , CN, aryl, alkyl or halo, provided that at least one of the R and R^3 moieties in said units comprises a non olefinic C_{4-22} hydrocarbon radical, said polyorganosiloxane polymer being operative to impart self-releasing properties and a non-adherent surface.

3,855,053

IMPROVED PACKING MATERIAL

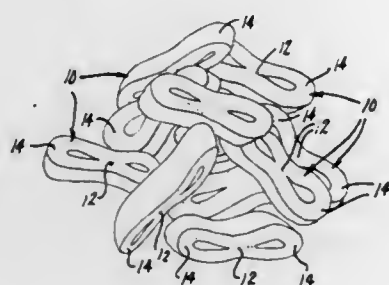
Gunter G. Fuss, Daly City, Calif., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 221,974, Jan. 31, 1972, This application Jan. 8, 1973, Ser. No. 321,657

Int. Cl. B32b 3/26, 5/18

U.S. Cl. 161-168

7 Claims



1. A free flow interlocking packing material of low bulk density in which the packing material comprises a plurality of individual packing units formed of a foamed semi-rigid expanded plastic material, such plastic material possessing sufficient internal strength to be self-sustaining under normal handling but capable of permanent shock-absorbing deformation in response to a potentially destructive external force, each of the individual packing units comprising a transversely severed segment of longitudinally stretched hollow crimped flattened tube formed of said foamed expanded plastic material, said segments presenting a generally bow shaped configuration having a central portion and two end portions wherein the foam structure is longitudinally stretched as respects the transverse dimension of said segments, said end portions of the segments being in the form of oppositely extending relatively flat loops, said central portion being in the form of two self-adhered layers of said foamed expanded plastic material, such structure imparting to the individual units an enhanced resistance to permanent deformation in the presence of potentially damaging static and dynamic loading without loss of ability to permanently deform and collapse in the presence of a potentially destructive external force.

7. A free flow interlocking packing material of low bulk density in which the packing material comprises a plurality of individual packing units formed of a foamed semirigid expanded plastic material, such plastic material possessing sufficient internal strength to be self-sustaining under normal handling but capable of permanent shock-absorbing deformation in response to potentially destructive external force, each of the individual packing units comprising a transversely severed segment of a pair of contiguous longitudinally stretched hollow tubes of foamed expanded plastic material which have been externally adhered to one another along their length, said segments presenting a generally bow shaped configuration having a central adhered portion and two oppositely extending flat loop portions wherein the foam structure is longitudinally stretched as respects the transverse dimension of said segments, such structure imparting to the individual units an enhanced resistance to permanent deformation in the presence of potentially damaging static and dynamic loading

without loss of ability to permanently deform and collapse in the presence of a potentially destructive external force.

3,855,054

SULFUR ADHESIVE FOR WOOD LAMINATE

Hymen Shapiro; Albert P. Giraitis, and Robert N. Sanders, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed July 5, 1972, Ser. No. 269,198

Int. Cl. B32b 21/04, 9/04

U.S. Cl. 161-182

4 Claims

1. An article of manufacture in which at least a portion of an adherend surface is bonded to at least a portion of another adherend surface by means of a solidified sulfur adhesive, the bonded surfaces being of wood and the solidified sulfur containing up to about 25 percent by weight of a plasticizer selected from the group consisting of polyethylene tetrasulfide, polydiacetic tetrasulfide, di-mercaptobutane, diallyl tetrasulfide, mercaptoethylene and cyclohexanethiols.

3,855,055

LAMINATED SAFETY GLASS AND INTERLAYER THEREFOR

Isawo Kanno, Kyoto; Toshiyuki Takashima, and Yoshiyuki Bokuda, both of Shiga, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 238,612, March 27, 1972, Pat. No. 3,838,091. This application Jan. 22, 1974, Ser. No. 435,579

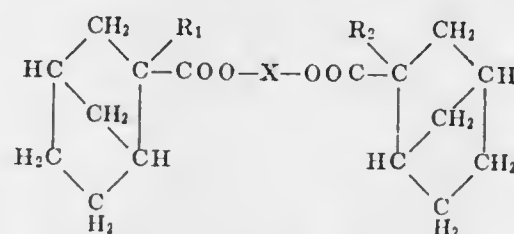
Claims priority, application Japan, Mar. 30, 1971, 46-19491

Int. Cl. B32b 17/06, 17/10

U.S. Cl. 161-199

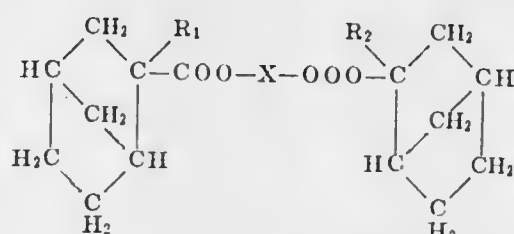
14 Claims

1. A laminated safety glass comprising at least two sheets of glass bonded together with an interlayer consisting of a mixture of a plasticized polyvinyl acetal resin and 0.005 - 0.5 percent by weight, based on the weight of the polyvinyl acetal resin, of a norbornane compound of the formula



wherein R_1 and R_2 are each an alkyl group of 1 to 10 carbon atoms and X is a bivalent metal selected from the group consisting of cadmium, barium, zinc and magnesium.

8. A laminated safety glass comprising at least two sheets of glass bonded together with an interlayer, said interlayer consisting of a sheet of plasticized polyvinyl acetal resin, to the surface of which has been adhered between 20-150 mg per square meter of the sheet of a norbornane compound of the formula



wherein R_1 and R_2 are each an alkyl group of 1 to 10 carbon atoms and X is a bivalent metal selected from the group consisting of cadmium, barium, zinc and magnesium.

3,855,056

PROCESS FOR PRODUCING SYNTHETIC PULP-LIKE MATERIALS AND PRODUCING SYNTHETIC PAPERS THEREFROM

Yo Maeda; Masao Asaoka; Toshiro Okamura; Sigenori Nagahama; Yutaka Yamaguchi; Ikuo Hoshi; Kiyoshi Takaki; Yoritoku Masubuchi, all of Shimodate; Haruo Iigaya, Yuki, and Mineo Nakano, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

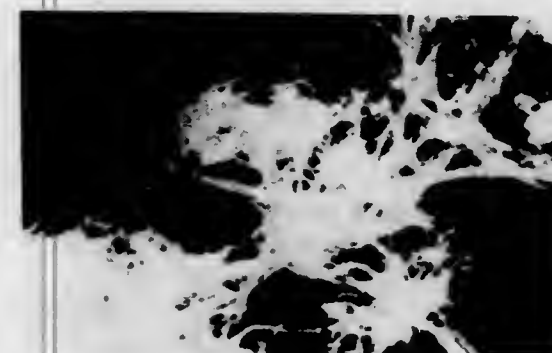
Filed Mar. 17, 1970, Ser. No. 20,219

Claims priority, application Japan, Mar. 19, 1969, 44-20358; Oct. 31, 1969, 44-86844; Mar. 19, 1969, 44-20359; Mar. 19, 1969, 44-20360; Oct. 31, 1969, 44-86842

Int. Cl. D21h 5/12

U.S. Cl. 162-157 R

14 Claims



1. A process for producing a pulp-like material, which comprises forming into a film a mixed resin comprising at least one orientable thermoplastic resin and at least one thermoplastic resin incompatible or poorly compatible with said orientable thermoplastic resin, highly stretching the resultant film at a temperature ranging from the softening point of the film to the melting point thereof, then cutting the resultant stretched film to a length of 0.2 to 5 cm in the stretch direction to form flinders, and then fibrillating the flinders in an inactive liquid by applying a mechanical force to said flinders with a paper beater means.

3,855,057

PAPER FORMATION UTILIZING A LARGE DIAMETER SUCTION ROLL

Lester M. Hill, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

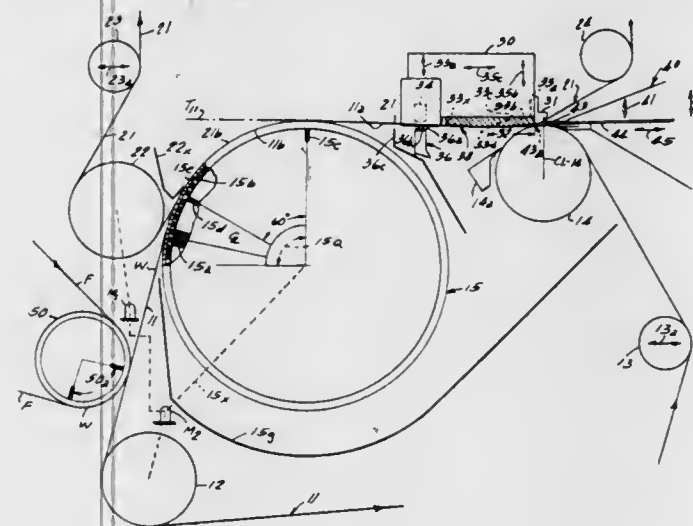
Continuation of Ser. No. 680,173, Nov. 2, 1967, abandoned.

This application Aug. 20, 1973, Ser. No. 65,689

Int. Cl. D21f 1/00, 2/00

U.S. Cl. 162-301

2 Claims



1. An apparatus for forming fibrous webs comprising; first and second continuous looped foraminous forming wires which are arranged to converge and provide an entrance nip for the reception of web-forming stock;

an elongated convexly contoured stationary unyielding surface positioned adjacent said entrance nip and in running contact with said second wire; means for supporting said wires within their respective loops and moving said wires into said entrance nip; said forming wires being arranged to travel over said stationary surface downstream of said entrance nip while having stock therebetween; a relatively large diameter suction roll positioned downstream of said stationary surface and in running contact with said first wire, said suction roll having suction gland means substantially commensurate with its upper down-running quadrant; said wires traveling around the top of said suction roll and along a down-running surface substantially commensurate with said upper down-running quadrant while having stock therebetween so as to dewater the same and form a web; and a first guide roll positioned just before the off-running end of said upper down-running quadrant of said suction roll in running contact with said second wire for separating said second wire from the web traveling on said first wire.

3,855,058

METHOD AND DEVICE FOR DISCRIMINATING BETWEEN AND SORTING FUEL ELEMENTS OF NUCLEAR REACTORS

Ekkehard Groos, Julich, and Hans Ragoss, Stettin, both of Germany, assignors to Hochttemperatur-Reaktorbau GmbH, Cologne, Germany

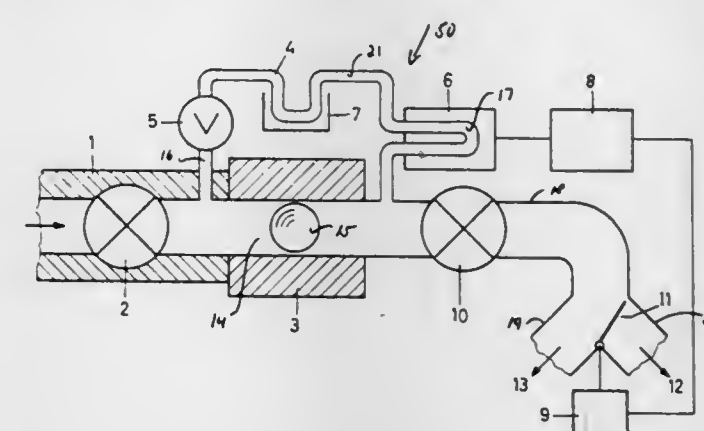
Filed Mar. 19, 1973, Ser. No. 342,126

Claims priority, application Germany, Mar. 18, 1972, 2213238

Int. Cl. G21c 17/00, 19/00

U.S. Cl. 176-19 R

21 Claims



1. In a method of discriminating between and sorting fuel elements of nuclear reactors, wherein the fuel is in the form of coated fuel particles, such as spherical fuel elements, which are sluiced through the core of a high temperature nuclear reactor, and wherein the activity of the fuel elements is measured outside the core at a predetermined temperature whereupon, in dependence on the measured activity value, the fuel elements are either returned to the core or are separated, the improvement which comprises:

- maintaining each fuel element individually outside the core at a predetermined elevated temperature and for a predetermined dwell period in a measuring space;
- contacting each fuel element within said measuring space during said dwell period with a predetermined amount of inert gas, whereby liberated fission gas products from said fuel element intermingle with said inert gas;
- measuring the activity of the gas mixture thus obtained; and,
- in dependence on the measured value thus obtained, either returning the fuel element to the core of the reactor or discharging the fuel element.

3,855,059

HYDRAULIC SYSTEM FOR NUCLEAR REACTORS WITH HYDRAULICALLY DRIVEN CONTROL RODS

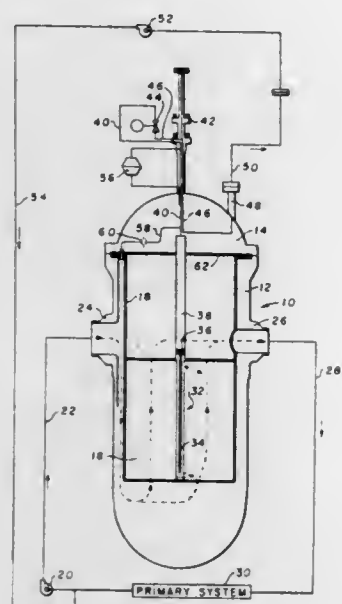
Malcolm Duane Groves, 14 Musket Tr., Simsbury, Conn. 06070; Frank Bevilacqua, 155 Alcott Dr., Windsor, Conn. 06095, and Daniel Ernest Ferris, Star Route, North Canton, Conn. 06059

Filed May 11, 1972, Ser. No. 252,435

Int. Cl. G21c 7/16, 17/10

U.S. Cl. 176—36 R

17 Claims



1. In a nuclear reactor including fissionable fuel elements, neutron absorber elements movable with respect to said fuel elements and fluid responsive actuators for positioning said absorber elements, said fuel elements, absorber elements and actuators all being positioned within reactor vessel having a main portion and a removable head, the improvement comprising:

- a. housing means attached to the exterior of said reactor vessel;
- b. aperture means in said reactor vessel providing communication between the inside of said housing means and the inside of said reactor vessel;
- c. a plurality of valves attached to said housing means;
- d. a first plurality of conduit means commensurate in number with said plurality of valves each of said conduit means connecting one of said valves to at least one of said actuators and comprising:
 - i. a first conduit having a first and second end, the first end of said first conduit connected to at least one of said actuators, said first conduit extending through said aperture means into said housing means; and
 - ii. means in said housing means connecting the second end of said first conduit to one side of said one valve;
- e. a common conduit means connected to the other side of said plurality of valves;
- f. means for applying fluid lift forces; and
- g. means connecting said common conduit means to said means for applying fluid lift forces.

3,855,060

BOTTOM ACTUATED REACTOR CONTROL ROD DEVICES

Joseph R. Dietrich, West Hartford, and Malcolm D. Groves, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 10, 1972, Ser. No. 270,470

Int. Cl. G21c 7/16

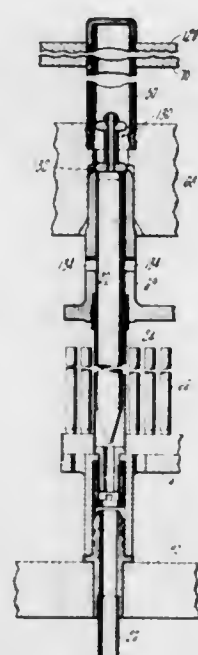
U.S. Cl. 176—36 R

2 Claims

1. In a nuclear reactor, the reactor comprising a vessel for containing a circulating coolant under pressure and having a

fuel assembly disposed therein, the fuel assembly including a plurality of fuel elements contained fissionable material, an improved control system comprising:

- a plurality of substantially vertically oriented guide tubes extending through the reactor fuel assembly, each of said guide tubes comprising an elongated tubular member open at both ends;
- extension means for each of said guide tubes, said guide tube extensions each comprising an elongated tubular member axially aligned with its associated guide tube and having an open lower end and a closed upper end, said guide tube extensions extending upwardly with respect to the reactor fuel assembly and terminating within the reactor vessel;



means coupling the open lower end of each of said guide tube extensions to the upper end of an associated guide tube whereby said guide tubes, coupling means and guide tube extensions cooperate to define hydraulic cylinders, said coupling means comprising end fittings which define internal passages coaxial with the aligned tubes and guide tube extensions, said end fitting internal passages at least in part having an annular portion of smaller diameter than said guide tube extensions whereby said smaller diameter portion of said end fittings define shoulder means within said hydraulic cylinders;

neutron absorber element means disposed for movement in said hydraulic cylinders relative to the reactor fuel assembly;

a source of coolant at a lift pressure in excess of the coolant pressure normally maintained within the reactor vessel, said lift pressure source being located exteriorly of the reactor vessel;

means for selectively coupling the lower ends of said guide tubes to said lift pressure source whereby said absorber element means may be raised by application of lift pressure to the lower ends of said hydraulic cylinders, said selective coupling means penetrating the reactor vessel; piston means mechanically connected to said neutron absorber element means, said piston means each comprising a piston extending from the upper end of its associated absorber element means into an associated guide tube extension, said pistons each being at least in part smaller in cross-sectional area than and complimentary in shape to the inner wall of its associated guide tube extension so as to define a restricted flow path to limit the rate at which fluid can flow downwardly past the piston out of the guide tube extension from above said absorber element means whereby pressure transients will not raise the absorber element means from their normal position assumed in said guide tubes when lift pressure is not applied thereto, said pistons further being at least in part larger in cross-sectional area than the smallest diameter portion of

said end fitting internal passages whereby said pistons may be supported on said shoulder means when the absorber element means are in their normal position inserted in said guide tubes; and means including a flow orifice in the wall of each of said end fittings for providing communication between the interior of the pressure vessel and the interior of said hydraulic cylinders, said flow orifice permitting the flow of pressure vessel coolant into said hydraulic cylinders when lift pressure is not applied thereto from said lift pressure source and permitting flow of pressure vessel coolant out of said hydraulic cylinders from above said pistons when lift pressure is applied thereto.

3,855,061

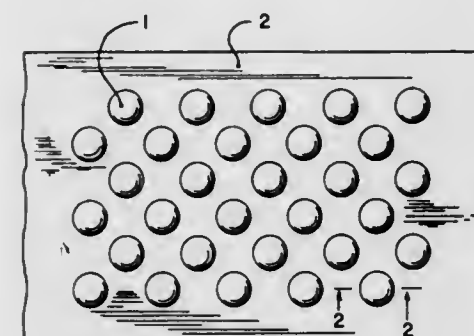
NUCLEAR REACTOR FUEL PLATE

Leonard Vincent Triggiani, Silver Spring; Moises Gali Sanchez, Severna Park, and George Elliott Ashby, Highland, all of Md., assignors to W. R. Grace & Co., Columbia, Md. Continuation-in-part of Ser. No. 710,709, Feb. 28, 1968, Pat. No. 3,586,746. This application June 21, 1971, Ser. No. 155,014

Int. Cl. G21c 3/30

U.S. Cl. 176—75

5 Claims



1. A nuclear reactor fuel element comprising:

- a. at least one filler plate with a series of cells, said cells having a diameter of 10 - 3,000 microns and arranged in an ordered array;
- b. at least one microsphere of fissile material located in said cells; the ratio of said cell volume to said microsphere volume being at least 1.5;
- c. cladding plates secured to said filler plates and cooperating therewith to completely enclose said fissile material in said fuel element.

3,855,062

PROCESS FOR PREPARATION OF DERIVATIVES OF L-TYROSINE

Ernst-Otto Renth; Kurt Schromm, and Anton Mentrup, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed July 19, 1972, Ser. No. 273,202

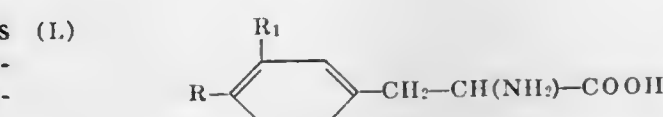
Claims priority, application Germany, July 22, 1971, 2136675; Jan. 3, 1972, 2200041; Apr. 1, 1972, 2216097

Int. Cl. C12d 13/06

U.S. Cl. 195—2

3 Claims

1. The process for the preparation of a derivative of L-tyrosine of the formula

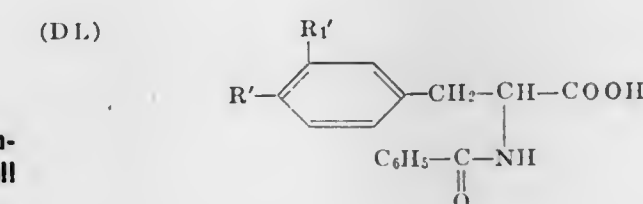


wherein R

is hydrogen, hydroxyl or lower alkoxy, and

R₁ is hydroxyl or lower alkoxy,

provided, however, that at least one of R and R₁ is hydroxyl, which consists essentially of treating a derivative of DL-N-benzoyl-tyrosine of the formula



wherein

R' is hydrogen, hydroxyl or lower alkoxy, and

R₁' is hydroxyl or lower alkoxy,

with aniline or a ring-substituted aniline in a buffered aqueous solution having a pH of 5.6 to 6.2 and in the presence of a protease which is effective within this pH range to precipitate a correspondingly substituted L-N-benzoyl-m- or p-tyrosyl-anilide, separating said L-tyrosyl-anilide and hydrolyzing it with a mineral acid of suitable strength.

3,855,063

PROCESS FOR PRODUCING A MICROBIAL PROTEINOUS SUBSTANCE

Taro Nagasawa, Tokyo; Joji Ono, Chiba; Tutomu Kudo, Kawasaki, and Yoshitugu Harada, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd.

Filed May 12, 1971, Ser. No. 142,530

Claims priority, application Japan, July 3, 1970, 45-57783; Nov. 20, 1970, 45-102408

Int. Cl. C12b 1/00

U.S. Cl. 195—28 R

17 Claims

1. A process for producing a microbial proteinous substance, comprising the steps of:

1. mutating a hydrocarbon-assimilating yeast of genus Candida to mutants by chemical mutagenic agents or physical mutagenic means;
2. inoculating a suspension containing said mutants on a solid culture medium and incubating to form colonies;
3. selecting mutant strains totally deprived of cell wall integrity and lacking mannan from cells of said colonies by selecting colonies the surface of which is rough; selecting cells of circular form from said colonies by an optical microscopic inspection; staining said cells by Gram stain; in which mannan content is lower than 70% that in the parent strains incubated under the same conditions from said colonies;
4. proliferating said mutant strains in a culture medium, and
5. harvesting the proliferated cell mass for protein ingredients in food, feed or medicament.

3,855,064

PREPARATION OF A PROTEOLYTIC ENZYME

Albert Joseph Vroemen, Schipluiden, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

Filed Oct. 3, 1972, Ser. No. 294,602

Claims priority, application Great Britain, Oct. 6, 1971, 46508/71

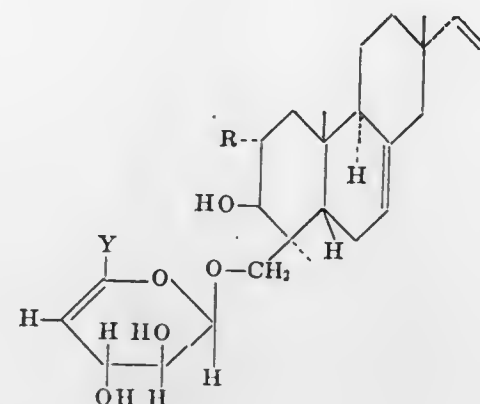
Int. Cl. C12d 13/10

U.S. Cl. 195—65

12 Claims

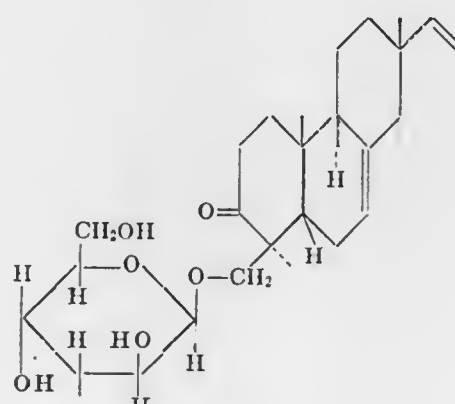
1. In a process for the preparation of a proteolytic enzyme of aerobically cultivating a *Bacillus alcalophilus* strain in a culture medium containing assimilable carbon and nitrogen sources and conventional compounds used in trace of small amounts in microorganism fermentation media, while maintaining the pH of the medium between about 7 and about 11 during the cultivation, and recovering the proteolytic enzyme produced, the improvement comprising maintaining a SO_4^{--} content of less than 15 mg per liter in the culture medium.

wherein R can be hydrogen or hydroxyl and X can be a carboxyl group or a $-\text{CH}_2\text{OH}$ group



wherein R has the meaning given above and Y is $-\text{CHO}$ or $-\text{CH}_2\text{OH}$ with the proviso that when Y is $-\text{CH}_2\text{OH}$, R is hydrogen and

c.



which comprises cultivating a glycoside-producing strain of *Oospora virescens* (Link) Wallr in aqueous glucose-organic decoction media at a temperature from 10° to 25°C . for a period of at least 10 days in stationary culture, said organic decoction selected from the group consisting of malt, glucose-yeast, glucose-carrot, glucose-wheat kernels, glucose-corn kernels, glucose-kidney bean seeds, glucose-pea seeds and glucose-lentil seeds and having a basic pH, lyophilizing and extracting with ethanol, cooling the ethanol solution to form a precipitate, filtering the solution, separating the compounds in the filtrate from each other on a chromatography column, acidifying the precipitate reserved from the filtering step and separating the remaining compounds on a chromatograph column.

3,855,068

APPARATUS FOR INTER-BED MIXING OF A FLUID QUENCH MEDIUM AND A VAPOR-LIQUID MIXTURE

Norman P. Lieberman, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

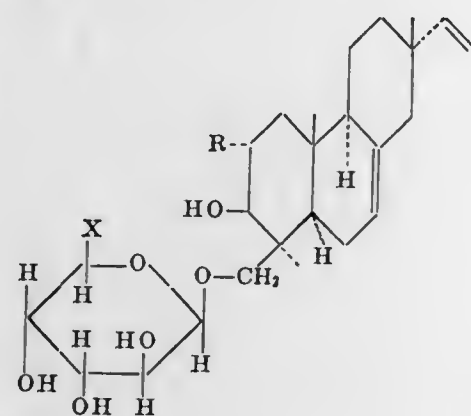
Filed Oct. 2, 1972, Ser. No. 294,478

Int. Cl. C10g 11/10; B01j 9/04

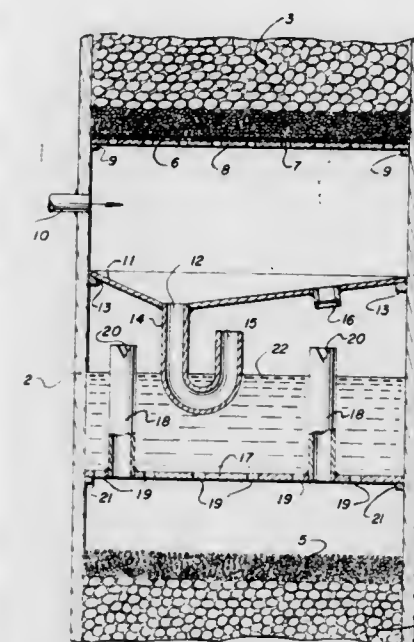
U.S. Cl. 196—155

11 Claims

1. Apparatus for inter-bed mixing of a fluid quench medium and a vapor-liquid mixture in a vessel containing at least two adjacent beds of solid contact material and having an inlet for said fluid quench medium between said beds of solid contact material, said apparatus being designed for use in said vessel at a location in said vessel such that said apparatus is between said beds of solid contact material and below said inlet, which



apparatus comprises: a horizontal vapor-liquid collection plate having an aperture, said collection plate contacting and being sealed to the vertical walls of said vessel; a U-shaped pipe, a first end of said U-shaped pipe being appended to the bottom side of said collection plate at said aperture and the opening at the second end of said U-shaped pipe being below said bottom side of said collection plate and being positioned such that a fluid stream passing through said U-shaped pipe and emanating from said opening at said second end of said U-shaped pipe is directed toward and against a means for



breaking up said fluid stream, said means comprising the bottom side of said collection plate; and a horizontal chimney tray having open vertical tubular chimneys extending above the normal liquid level on the tray and holes at the bottom of the tray for distribution of liquid there through, said chimney tray being suspended from and supported by the vertical walls of said vessel and being located below said collection plate at a distance that is sufficient to permit on said chimney tray a liquid level that will provide substantially uniform distribution rates of liquid through said holes at variable liquid rates to said chimney

3,855,069

FORMATION REDUCTION IN PRESSURE COKING EQUIPMENT

Howard V. Hess, Glenham; William F. Franz, Gardiner, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,554

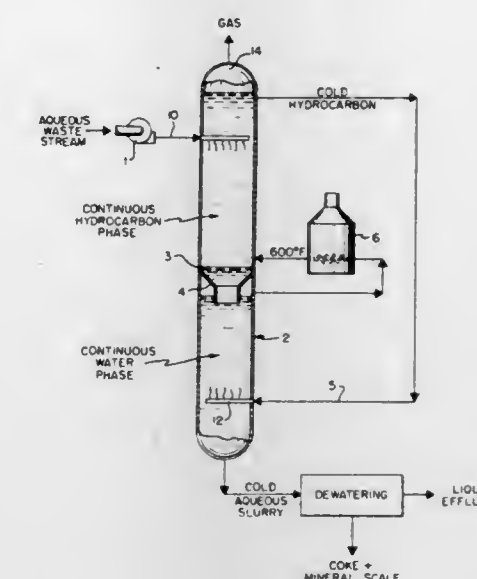
Int. Cl. C10b 43/14

U.S. Cl. 201—2.5

7 Claims

1. In a process for preventing the formation of scale on the walls of a pressure coking tower used for coking cokable aqueous waste materials in the liquid phase, the steps of: passing relatively cool aqueous waste into direct counter-current contact with a relatively hot liquid hydrocarbon in the upper part of said coking tower whereby said hydrocarbon portion is cooled and said aqueous waste is heated at a temperature of 400° to 750°F under a pressure of 300 to 3500 psig to coke cokable materials in said waste and to precipitate scale to form a dispersed aqueous slurry, flowing the aqueous slurry downwardly into the lower part of said tower, withdrawing at least a part of said cooled hydrocarbon from the upper part of said tower and passing the same in direct counter-current contact with said downwardly flowing aqueous slurry in said lower part of said tower thereby cooling said slurry, withdrawing said slurry including said scale from the lower part of said tower, and withdrawing cooled hydrocarbon liquid which has contacted said slurry from the

lower part of said tower, the passage of the liquid hydrocarbon in said upper and lower parts of said tower being



effective to wet the walls of said tower and prevent scale from adhering thereto.

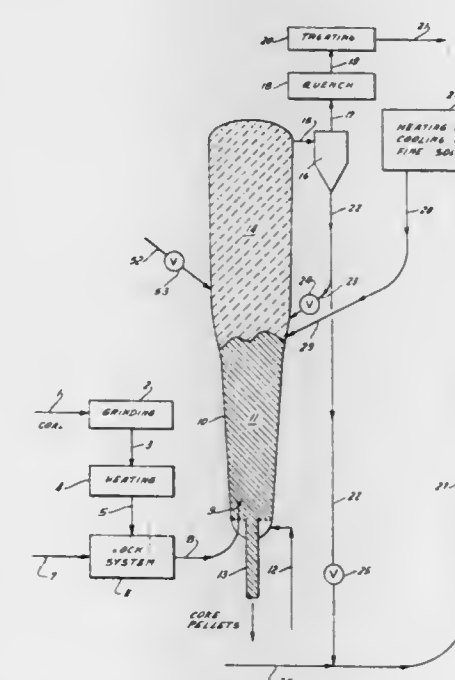
3,855,070

HYDROLYSIS OF HYDROCARBONACEOUS FUEL AT SHORT REACTION TIMESArthur M. Squires, 245 W. 104th St., New York, N.Y. 10025
Continuation of Ser. No. 167,686, July 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 812,786, April 2, 1969, Pat. No. 3,597,327. This application Oct. 26, 1973, Ser. No. 410,070

Int. Cl. C10b 49/22

U.S. Cl. 201—23

7 Claims



1. A process for hydrolyzing a solid or liquid hydrocarbonaceous fuel at short reaction times, comprising: providing a fluidized bed at a temperature between about 1100° and 1800°F and at a pressure greater than about 20 atmospheres, said fluidized bed comprising coke pellets larger than about one sixty-fourth inch and displaying at least a substantially five-fold range in diameter;

supplying fluidizing gas to said bed at a superficial velocity greater than about 5 feet per second, said gas containing hydrogen;

charging a solid or liquid hydrocarbonaceous fuel to said fluidized bed, the solid product of the hydrolysis of said fuel within said bed accreting upon said coke pellets;

providing a space situated above said fluidized bed to receive gaseous products of said hydropyrolysis including unreacted hydrogen, the dimension of said bed and said space being such that the residence of said gaseous products in said bed and said space is less than about 10 seconds, the diameter of said space being such that the superficial velocity of said gaseous products in said space is greater than about 4 feet per second; supplying solid particles substantially smaller than 100 microns to said space at a temperature and rate of flow to maintain said temperature of said fluidized bed substantially constant, said rate of flow being sufficient to establish the fast-fluidized state in said space; withdrawing said gaseous products and said solid particles from the top of said space; and, withdrawing coke pellets from said fluidized bed.

3,855,071

CARBONIZATION APPARATUS HAVING LOUVERS ON INTERNAL DUCT

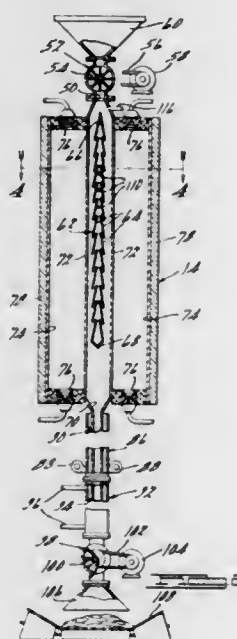
Edward Koppelman, Encino, Calif., assignor to Continental Energy Corporation

Filed Dec. 8, 1971, Ser. No. 205,783

Int. Cl. C01k 3/00

U.S. Cl. 202—121

4 Claims



1. A reactor comprising a substantially upright reaction chamber formed with an inlet through which a carbonaceous feed material is introduced and an outlet through which a carbonized char is discharged, means for heating said chamber around the exterior thereof and for progressively heating the material therein inwardly toward the center of said chamber to effect a progressive carbonization thereof during the course of its travel from said inlet to said outlet, venting means comprising a foraminous duct comprised of a plurality of louvers angularly disposed in a downwardly and outwardly extending direction thereby defining a plurality of slots communicating between said chamber and the interior of said duct, said duct extending substantially centrally of said reaction chamber and for a major portion of the length thereof and said slots disposed at locations along the path of travel of the material for withdrawing the vapors and gaseous products in a direction substantially transversely of the direction of travel of the material as the vapors and gaseous products are formed during the carbonization of the material in the chamber, purging means disposed adjacent to said inlet for introducing a nonoxidizing gas into the interior of said reaction chamber for facilitating the purging of any entrapped air in said feed material and for sweeping said vapors and gaseous products out through said venting means, feed control means for control-

ling the quantity of feed material entering said inlet, outlet control means for controlling the quantity of carbonized char discharging from said outlet, and cooling means for cooling the carbonized char prior to its discharge from said reactor.

3,855,072

MULTI-STAGE FLASH EVAPORATOR

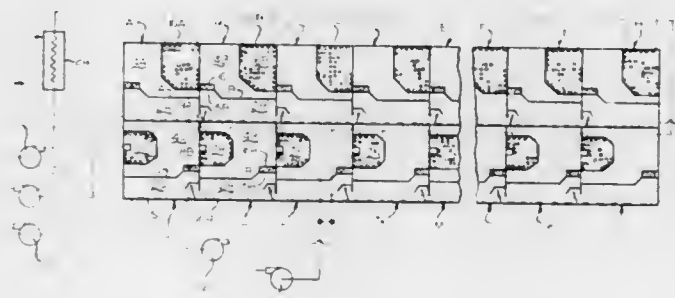
Philip J. P. Liu, Waukesha, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed July 28, 1972, Ser. No. 276,034

Int. Cl. B01d 3/02

U.S. Cl. 202—173

16 Claims



1. A flash evaporator having means defining an enclosure, first means dividing said enclosure into an evaporating space adjacent a lower end thereof and a condensing space adjacent an upper end thereof, said first means having a passageway therein interconnecting said spaces,

spaced apart entrance and exit openings formed in said enclosure defining means and each opening into said evaporating space for respectively receiving and discharging feed liquid with respect thereto,

said evaporator being constructed and arranged to vaporize at least a portion of the feed liquid in said evaporating space and for passage of the resulting vapor upwardly through said passageway into said condensing space,

a vent port formed in said enclosure defining means and opening into said condensing space,

heat exchange tube bundle means disposed in said condensing space and between said passageway and said vent port, said heat exchange tube bundle means comprising a plurality of generally parallel unbaffled heat exchange tubes arranged generally horizontally and transversely to the flow of vapor through said condensing space and toward said vent port,

a first substantially vertical plurality of said heat exchange tubes defining a first marginal side of said heat exchange tube bundle and being disposed contiguously adjacent said enclosure defining means, a substantially vertical wall of said vent port opening into said first marginal side, a second plurality of said heat exchange tubes defining a second marginal side of said heat exchange tube bundle displaced from said vent port and being exposed to the vapors emanating from said evaporating space and passing into said condensing space through said passageway and a third marginal side of said heat exchange bundle spaced below and generally parallel to the upper wall of said enclosure to define therewith a third space,

means within said third space for preventing the flow of vapor to said vent port, said second plurality of tubes being substantially equidistant from said vent port.

3,855,073

EMISSION PREVENTION IN COKING OVENS

Werner Kucharzyk, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

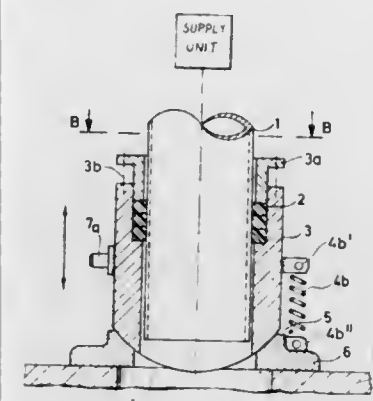
Filed June 11, 1973, Ser. No. 368,626

Claims priority, application Germany, June 10, 1972, 7221796

Int. Cl. C10b 31/04

U.S. Cl. 202—262

4 Claims



1. In an oven, particularly a coking oven, a combination comprising wall means having an inlet through which material is to be admitted into said oven; supply means for supplying material to be so admitted; a filler pipe having a lower end portion and extending downwardly from said supply means toward said inlet in substantial registry therewith when said supply means is located above said inlet; and a terminal section on said lower end portion for tightly connecting the interior of said filler pipe with said inlet, said terminal section comprising a tubular member coaxial with said lower end portion, projecting from and being surrounded by the same and having a part-spherical free lower end, sealing means between and in sealing engagement with said terminal section and said lower end portion; an annular member located downwardly adjacent the lower end and having a surface in mating engagement with said part-spherical free lower end so that said annular member is tiltable relative to said tubular member said lower end portion and said annular member being provided with respective angularly spaced connecting lugs; and spring means connecting said annular member with said tubular member, comprising contraction springs extending axially of said filler pipe and each having opposite end portions which are respectively connected to one of said lugs on said pipe and one of said lugs on said annular member.

3,855,074

PLURAL TEMPERATURE CONTROLS OF DISTILLATION

Henry A. Mosler, and Richard Weber, both of Morristown, N.J., assignors to Esso Research & Engineering Company, Linden, N.J.

Filed Sept. 10, 1973, Ser. No. 395,929

Int. Cl. B01d 3/42

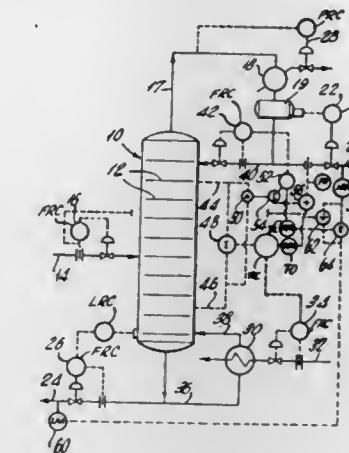
U.S. Cl. 203—2

20 Claims

1. A method of controlling a one-feed, two-product multi-component distillation column to maintain the desired split between light and heavy key components and the overhead and bottoms product purities, said column having product withdrawals above and below the feed tray and including reboiler heat supply and overhead condenser heat removal facilities comprising the steps of:

- sensing the temperature on at least one tray above the feed tray between 20—40 percent of the distance between said top tray and the feed tray;
- sensing the temperature on at least one tray below the feed tray between 20—40 percent of the distance between said bottom tray and the feed tray;

- adding said sensed temperatures of (a) and (b) and thereby obtaining an index of the split between light and heavy components;
- controlling a first operating variable of the column according to the summed temperatures of (c);



- subtracting said sensed temperature of (a) from said sensed temperature of (b) and adding thereto a correction factor proportional to the ratio of overhead product rate to feed rate and thereby obtaining an index of the product purities;
- controlling a second operating variable of the column according to the index of (e).

3,855,075

METHOD OF PURIFICATION OF ACRYLAMIDE BY DISTILLATION WITH A POLYMER INHIBITOR

Guenter Willi Nachtigall, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 3, 1972, Ser. No. 240,813

Int. Cl. B01d 3/34; C07c 103/18

U.S. Cl. 203—8

5 Claims

1. A process of purifying a crude acrylamide mixture which consists of at least 90 percent by wt. of acrylamide with the remainder of impurities not volatile at the boiling point of the crude mixture, said process consisting essentially of melting and boiling said mixture, with about 0.1 to about 0.5 percent by wt. of a polymerization inhibitor which is not volatile at the boiling point of the crude mixture in the liquid phase of said mixture, at distillation temperature in the range from about 88°C. to about 120°C. at pressure reduced sufficiently to boil the liquid crude mixture at such temperature and with a polymerization inhibiting gas present as carrier gas and polymerization inhibitor in the vapor phase, and condensing purified acrylamide from the vapor phase.

3,855,076

PROCESS AND DEVICE FOR PURIFICATION OF EFFLUENTS CONTAINING PHENOLS AND AMMONIUM SALTS

Paul Marecaux, Ville d'Avray, France, assignor to Societe Pour L'Equipe Des Industries Chimiques Speichim, Paris, France

Filed June 6, 1973, Ser. No. 367,511

Claims priority, application France, June 12, 1972, 72.21047

Int. Cl. B01d 3/00, 1/00, 1/14, 1/26

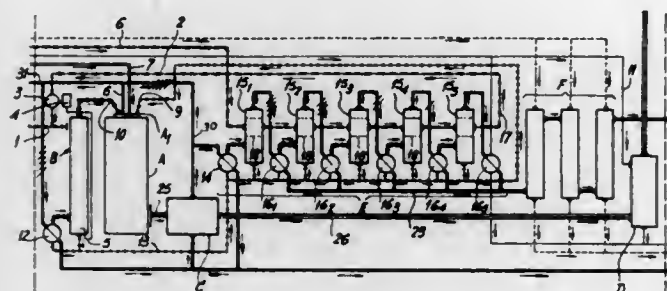
U.S. Cl. 203—11

5 Claims

1. A method for continuously destroying polluting components of waste water, namely effluents from coke ovens, containing among other impurities phenolic materials, ammonia and ammonium salts of various acids, including strong acids, which comprises:

continuously adding an aqueous solution of caustic alkali to the waste water to substantially neutralize the same and to convert ammonium salts of strong acids in the waste water into ammonia and neutral salts;

stripping the neutralized waste water to separate volatile constituents in the gaseous state;
continuously stage distilling the stripped waste water and scrubbing the vapor from each stage with an aqueous solution containing caustic alkali;
continuously supplying an aqueous solution of caustic alkali to the first stage of the distillation process and circulating said caustic alkali solution from said first stage through



each stage to the last one to provide the scrubbing solution and then feeding the caustic alkali solution from the last stage to entering waste water for neutralizing the same as called for in the first step;
condensing and discharging said scrubbed vapor from the distilling stages; and,
continuously and simultaneously burning said volatile constituents released in the neutralization step and the concentrate resulting from said distillation step.

3,855,077

DISTILLATION DRYING PROCESS

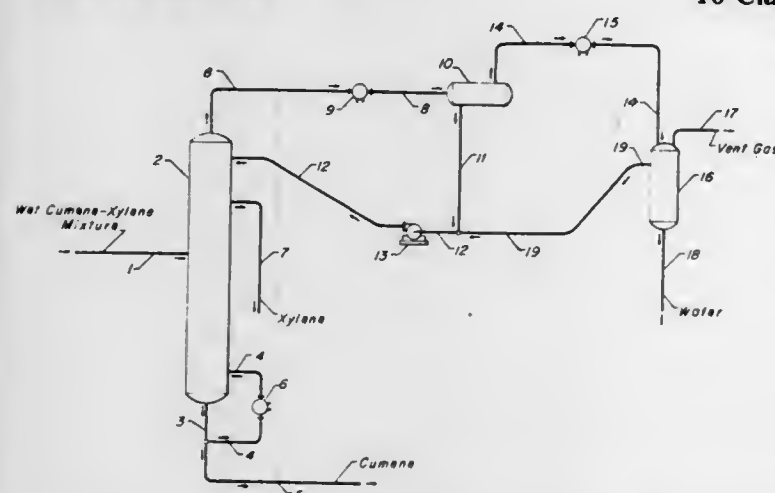
Herbert J. Bieser, Des Plaines, and Kenneth D. Uitti, Bensenville, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 30, 1972, Ser. No. 310,730

Int. Cl. C07c 7/04

U.S. Cl. 203-14

10 Claims



1. A process for the removal of a low dew point substance from a fractionation zone processing a feed stream comprised of a mixture of two high dew point materials in which the low dew point substance is immiscible at high concentrations, which process comprises the steps of:

- passing the mixture of the high dew point materials and the low dew point substance into a fractionation zone;
- withdrawing from said fractionation zone at the appropriate locations two desired liquid fractions of the high dew point materials;
- withdrawing from said fractionation zone a first vapor phase comprising the lightest of said high dew point materials and the low dew point substance;
- cooling this first vapor phase in a first condensation stage to a temperature which causes the formation of a liquid phase of the high dew point material and prevents formation of a liquid phase of the low dew point substance, and thereby also forming a second vapor phase which is rich in the low dew point substance;

- separating said second vapor phase from the high dew point liquid formed in step (d);
- returning high dew point liquid formed in step (d) to said fractionation zone as a reflux stream;
- condensing essentially all of the high and low dew point material contained in said second vapor phase in a second condensation stage; and,
- collecting the liquid formed in step (g) in a second receiving vessel to allow its separation into a liquid phase of the low dew point substance, and a liquid phase of the high dew point material equal to that fraction of the high dew point liquid not condensed in step (d) less the high dew point material dissolved in said low dew point liquid.

3,855,078

SEPARATION OF MIXTURES OF VINYL ACETATE AND METHANOL CONTAINING MINOR AMOUNTS OF METHYL ACETATE AND ACETALDEHYDE BY EXTRACTION DISTILLATION WITH AN AROMATIC HYDROCARBON

Gerhard Friedrich; Gunter Heck, both of Diedenbergen-Taunus, and Adolf Schmidt, Hofheim-Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

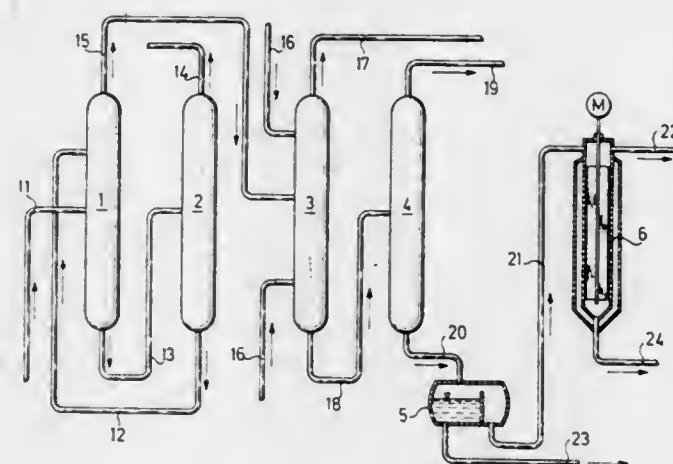
Filed Oct. 23, 1973, Ser. No. 408,645

Claims priority, application Germany, Oct. 25, 1972, 2252276; Aug. 21, 1973, 2342144

Int. Cl. B01d 3/40; C07c 67/06

U.S. Cl. 203-37

6 Claims



1. A process for separating by extractive distillation a mixture which is largely composed of vinyl acetate and methanol and contains minor amounts of methyl acetate and acetaldehyde as impurities and which may contain a small amount of water, which process comprises fractionally distilling said mixture in a first stage in the presence of an extracting agent to produce an overhead product largely composed of methanol, methyl acetate, acetaldehyde, small amounts of extracting agent and vinyl acetate and a small amount of water if present in the mixture, and a bottom product largely composed of extracting agent and vinyl acetate, said extracting agent being an aromatic hydrocarbon having an atmospheric pressure boiling point above 100°C., and fractionally distilling the bottom product of said first stage distillation in a second stage to produce vinyl acetate as an overhead product and the extracting agent as a bottom product.

3,855,079

PROCESS AND APPARATUS FOR RECOVERING RESIDUAL OIL FROM SOLIDS DEHYDRATED IN AN OIL MEDIUM AND GROSSLY DEOILED

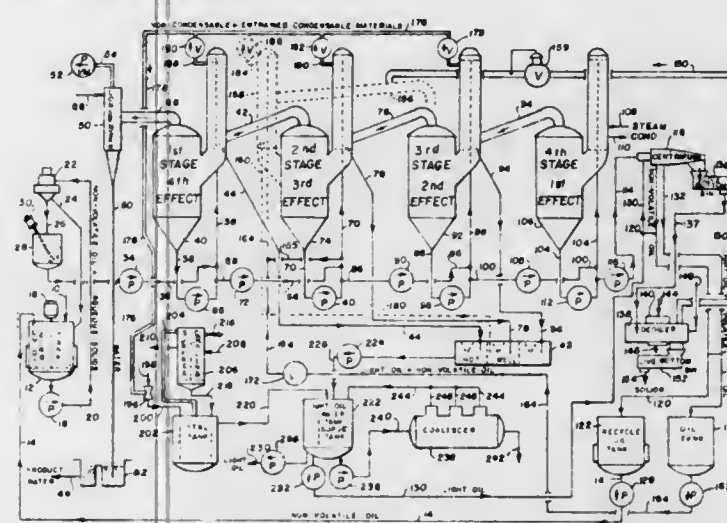
Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, Hanover, N.J.

Filed Dec. 26, 1972, Ser. No. 318,424

Int. Cl. B01d 21/00, 1/22, 1/26, 1/00; F26b 7/00

U.S. Cl. 203-47

7 Claims



1. An apparatus for recovering clean water from water-insoluble aqueous solids, said apparatus comprising (1) a tank adapted to receive a stream of said aqueous solids and provided with a stirring or mixing mechanism, (2) a fluidizing oil reservoir, (3) a conduit for transmitting fluidizing oil from said oil reservoir to said tank wherein fluidizing oil and aqueous solids may be mixed, (4) a multi-stage evaporator comprising at least first and second stages, (5) a conduit extending from said tank to the second stage of said evaporator where through may flow a stream of aqueous solids admixed with fluidizing oil from said tank into the evaporating region of said evaporator, (6) a vapor duct extending from the vapor chamber of said second evaporator stage to the evaporating region of the first evaporator stage through which may flow water vapor formed as a result of heat evaporation to thereby act as a source of evaporative heat in said first evaporator stage, (7) a first liquid-solid separating means, (8) a conduit extending from the final stage of said evaporator to said first liquid-solid separating means where through may flow a stream of a substantially anhydrous slurry of water-insoluble solids in fluidizing oil, (9) a first repulping tank provided with a mixing or stirring device, (10) a conduit extending from said first liquid-solid separating means to said first repulping tank through which may flow solids containing residual fluidizing oil, (11) a source of a relatively light oil, (12) a conduit extending from said source of light oil to said first repulping tank where through may flow light oil to be mixed with fluidizing oil-laden solids in said first repulping tank, (13) a second liquid-solid separating means, (14) a conduit extending from said first repulping tank to said second liquid-solid separating means where through may flow a slurry of water-insoluble solids in light oil containing extracted residual fluidizing oil, (15) a second repulping tank provided with a mixing or stirring device, (16) a conduit extending from said second liquid-solid separating means to said second repulping tank through which may flow solids containing residual light oil, (17) a water reservoir, (18) a conduit extending from said water reservoir to said second repulping tank where through may flow water to be admixed with light oil-laden solids in said second repulping tank, (19) a conduit extending from said second repulping tank to the first stage of the multi-stage evaporator where through may flow a slurry of light oil-laden water-insoluble solids in water from said second repulping tank into the evaporating region of said first stage of the evaporator, (20) a condenser, (21) a conduit extending from said first stage of the evaporator to said condenser through which may flow water vapor and light oil vapor formed as a result of heating said slurry of light oil-laden solids in water, (22) a scalping tank,

(23) means for withdrawing mixed water vapor condensate and light oil condensate from said condenser to said scalping tank wherein said mixed condensate is separated into a clean water product and light oil, (24) a settling tank, and (25) a conduit extending from said first evaporator stage to said settling tank where through may flow a slurry of light oil-free water-insoluble solids in water from said first evaporator stage to said settling tank wherein said slurry is separated into wet solids and supernatant water.

3,855,080

RECOVERY OF CAPROLACTAM FROM OLIGOMERS BY HEATING AND FILM DISTILLATION

Lothar Becker, Ludwigshafen; Kurt Kahr, Neustadt; Guenther Rapp, Ludwigshafen, and Otto Waschka, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 6, 1972, Ser. No. 269,456

Claims priority, application Germany, July 14, 1971, 2135085

Int. Cl. B01d 1/22; C07d 41/06

U.S. Cl. 203-89

2 Claims

1. A continuous process for separating caprolactam from a mixture containing from about 70 to 85 percent of caprolactam and from 15 to 30 percent of oligomers of caprolactam which comprises heating said mixture of caprolactam and oligomers to a temperature of from 250° to 350° C to obtain a melt; feeding said melt to a falling film evaporator held at atmospheric pressure or slightly above atmospheric pressure, whereby caprolactam is distilled off, and continuously removing said oligomers from said evaporator as bottoms.

3,855,081

CHEMICAL PROCESS

Christopher John Brown, Tadworth, and Roderick F. Neale, Great Boykham, both of England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 135,744, April 20, 1971, abandoned.

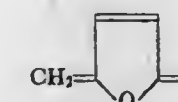
This application Sept. 10, 1973, Ser. No. 395,981

Int. Cl. B01d 3/10; C07c 57/04

U.S. Cl. 203-91

3 Claims

1. A method for improving the quality of acrylic acid monomer containing more than 20 ppm of protoanemonin having the structure



which comprises removing protoanemonin from the monomer by fractional distillation in a column having at least 10 distillation trays and operating with return of reflux to the column, and removing acrylic acid monomer substantially free from protoanemonin as a fraction boiling in the range of about 53° to 57°C at 20-22 mmHg from the upper part of the column.

3,855,082

METHOD FOR MEASURING THE CHEMICAL CARBON AND/OR NITROGEN ACTIVITIES IN LIQUID METALS

Gerhard Hofer, Rottenbach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 26, 1971, Ser. No. 119,156

Claims priority, application Germany, Mar. 4, 1970, 2010056

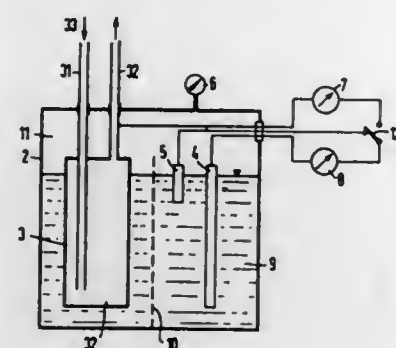
Int. Cl. G01n 27/46

U.S. Cl. 204-1 T

2 Claims

1. The method of determining the chemical activities of carbon and/or nitrogen, in liquid metal, such as in metallic coolants for nuclear reactors, with the aid of galvanic cells having an electrolyte connecting several electrodes; said method comprising the steps of: flowing said liquid metal through a measuring electrode disposed in a container and immersed in said electrolyte whereby the carbon and/or nitro-

gen content of said liquid metal is brought by diffusion into substantial equilibrium with that of the measuring electrode material; measuring the electrical potential difference between said measuring electrode and a reference electrode immersed in said electrolyte; measuring the electrical poten-



tial difference between a control electrode similarly immersed in said electrolyte, and said reference electrode; and evaluating said potential differences as a measure of the activity differences in said respective electrodes and hence indirectly also of the liquid metal and said electrolyte in a virtually currentless manner.

3,855,083

METHOD FOR THE UNIFORM ELECTROPLATING OF SHEET AND STRIP

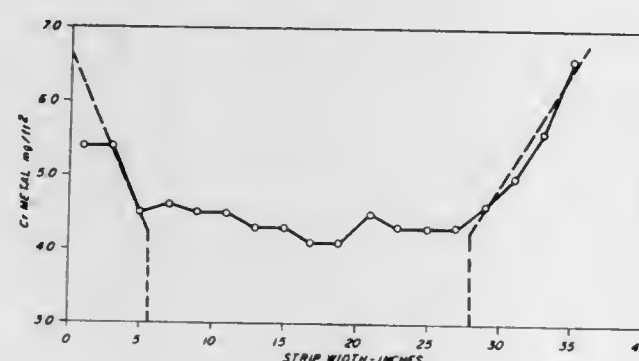
Ralph F. Hoeckelman, Irwin Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,644

Int. Cl. C23b 5/58

U.S. Cl. 204—28

7 Claims



1. In the method for the continuous electroplating of a principally metallic coating onto a metal strip, which includes a. through a plating electrolyte, passing the strip in parallel relation to a generally rectangular face of an anode form having a length L and a width Wa, wherein Wa is approximately equal to the width of said strip, and

b. applying a current density between said anode form and said strip, at a magnitude and for a time, sufficient to effect the deposition of a substantially uniform desired coating weight along a width of said strip, said coating exhibiting an edge effect,

the improvement for substantially eliminating said edge effect, which comprises employing an anode configuration composed of two tandemly aligned fractions: the first fraction having a face which is generally rectangular, said first fraction face having a width, Wa, and a length varying from about L/3 to 2L/3; the second fraction having a face which is generally trapezoidal, said second fraction face having a corresponding length of 2L/3 to L/3 respectively, and a width tapering approximately linearly and decreasing from a width Wa to a width Wb, wherein Wb is approximately equal to the predetermined width of uniform coating weight produced by said rectangular anode form.

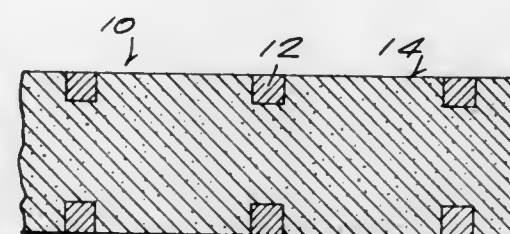
3,855,084
METHOD OF PRODUCING A COATED ANODE
Norman G. Feige, Jr., Ridgefield Ave., R.F.D. No. 1, South Salem, N.Y. 10590

Filed July 18, 1973, Ser. No. 380,325

Int. Cl. B01k 3/06; C23b 11/00; C01b 7/06

U.S. Cl. 204—38 R

14 Claims



1. A method of manufacturing an electrode comprising the steps of:

first, cold compacting metal particles chosen from the group consisting of titanium and lead to form an electrode having an extensively interconnected pore system between the particles;
second, depositing a first layer of manganese dioxide on the exterior surface of the compact and within the pores between particles by thermal decomposition of a solution of Mn(NO₃)₂;
and third, electrodepositing a layer of manganese dioxide on said first layer.

3,855,085

ACID ZINC ELECTROPLATING ELECTROLYTE, PROCESS AND ADDITIVE

John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1973, Ser. No. 369,815

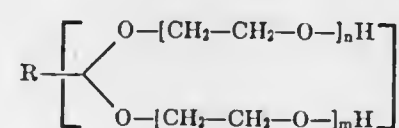
Int. Cl. C23b 5/12, 5/46

U.S. Cl. 204—55 R

30 Claims

1. A composition for providing bright zinc electrode deposits which comprises an aqueous acidic electrolyte composition containing at least one zinc compound providing zinc ions for electroplating zinc, a source of chloride ion, 0.05 to 20 g./l. of at least one nonionic polyoxyethylene compound, 0.05 to 2 g./l. of at least one ketone, and 0.05 to 20 g./l. of at least one carboxylic acid,

said polyoxyethylene compound being selected from compounds of the formula:



wherein $n + m \geq 10$, $x = 1$ or 2 , derived from a reaction of oxyethylene with a polyol selected from the group consisting of

2,4,7,9-tetramethyl-5-decyne-4,7 diol,
polyoxypropylene glycol of molecular weight at least about 900, and

N,N,N',N'-tetrakis(polyoxypropylene glycol) ethylene diamine of molecular weight at least about 500, and wherein R is defined by the selected polyol;

said ketone being selected from the group consisting of 4-phenyl-3-buten-2-one,

4-(4-methoxyphenyl)-3-buten-2-one,

4-(3,4-dimethoxyphenyl)-3-buten-2-one,

4-(3,4-methylenedioxyphenyl)-3-buten-2-one, and

4-(2-furyl)-3-buten-2-one; and

said carboxylic acid being selected from the group consisting of benzoic acid, cinnamic acid, 2-furylacrylic acid, and nicotinic acid.

3,855,086

CARBON ANODE PROTECTION IN ALUMINUM SMELTING CELLS

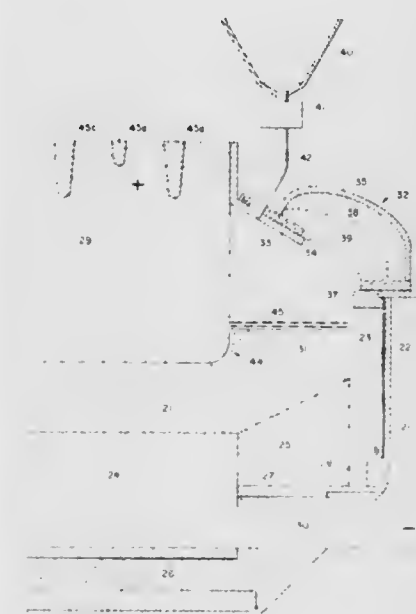
William C. Sleppy, Belleville, Ill., and Ronald J. Campbell, Apollo, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 28, 1973, Ser. No. 374,803

Int. Cl. C22d 3/12

U.S. Cl. 204—67

4 Claims



1. In the operation of a cell for the electrolytic reduction of Al₂O₃ dissolved in a cryolite bath to aluminum metal utilizing a carbon anode, the improvement comprising providing at the anode an atmosphere containing water in amounts effective for preventing anode dusting.

3,855,087

METHOD FOR PRODUCING RARE EARTH METAL-CONTAINING ALLOYS

Yoshio Yamanaka; Takashi Toide, and Hiromi Yamamoto, all of Takefu, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 402,887

Claims priority, application Japan, Oct. 11, 1972. 47-101786

Int. Cl. C22d 3/20

U.S. Cl. 204—71

16 Claims

1. Method of producing an alloy compound of a rare earth metal and a light metal selected from the group consisting of magnesium and aluminum, which comprises formulating a salt bath by melting in molten state a composition of fluorides of a rare earth metal and lithium, introducing into said composition an oxide of the same light metal in said alloy and an oxide of the same rare earth metal in said alloy, and thereafter contacting with a cathode and subjecting the oxides of said light metal and the said rare earth metal to simultaneous electrolytic reduction, whereby the said alloy is deposited on the cathode in contact with said salt bath.

3,855,088
PROCESS FOR REMOVING CLUSTER ADHERING TO CATHODE DURING ELECTROLYSIS OF MANGANOUS SULFATE

Tetsuji Kosaka, Takehara, Japan, assignor to Mitsui Mining & Smelting, Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,804

Int. Cl. C01b 13/14

U.S. Cl. 204—96

5 Claims

1. A process for removing cluster comprising alkaline earth metal sulfates, which cluster is deposited on a cathode during electrolysis of an aqueous sulfuric acid-manganous sulfate solution containing the alkali earth metal salts in the production of electrolytic manganese dioxide, which process comprises effecting the electrolysis of an aqueous sulfuric acid-manganous sulfate solution by use of the cathode having the cluster deposited on its surface as an anode to deposit the electrolytic manganese dioxide on the cluster, and giving an impact to the deposited manganese dioxide so that the cluster is peeled off together with the manganese dioxide.

3,855,089

PROCESS FOR THE ELECTROLYTIC REFINING OF HEAVY METALS

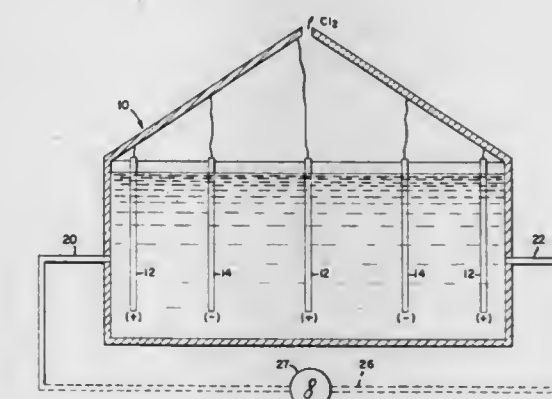
Hugh L. McCutchen, Gloucester Point, and Paul H. Cardwell, Zanolini, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Nov. 27, 1972, Ser. No. 309,899

Int. Cl. C22d 1/24, 1/14, 1/18

U.S. Cl. 204—105 M

28 Claims



1. In a process for refining by cathodically electrodepositing a heavy metal at the cathode while simultaneously evolving an elemental halogen at the insoluble anode from an aqueous electrolyte solution containing dissolved therein a halide of the heavy metal, the heavy metal being selected from the group consisting of cobalt, nickel, zinc, iron, tin and manganese, the improvement which comprises the presence in the electrolyte solution of a halide of a second metal selected from the group consisting of alkali metal and alkaline earth metal, the concentration of the halide of the second metal being at least about 60% of its saturation concentration in the electrolyte solution, whereby a hard, dense and smooth deposit of the heavy metal can be deposited at the cathode, in the absence of a buffering agent.

3,855,090

PROCESS FOR RECOVERING NICKEL SELECTIVELY

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 266,981

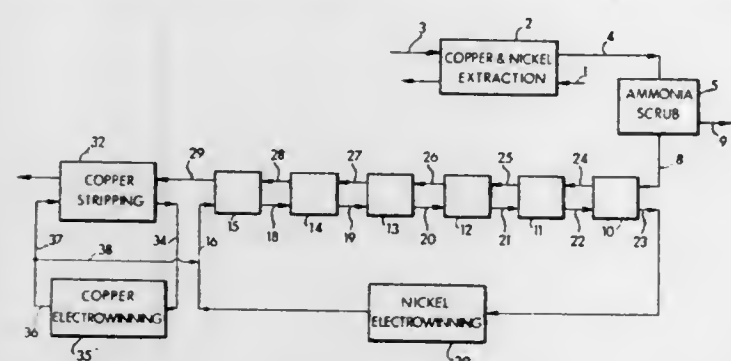
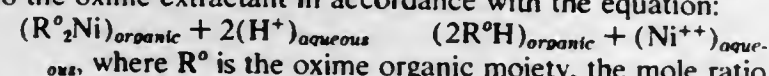
Int. Cl. C22d 1/14, 1/16; B01d 11/00; B01i 1/04

U.S. Cl. 204—106

10 Claims

1. A process for recovering pure copper and pure nickel from a water immiscible oxime extractant which comprises stripping an oxime extractant containing copper with an acid stream in a copper stripping step, said acid stream containing an acid of the type which forms a water soluble nickel salt or

a water soluble copper salt when reacted with nickel or copper, cycling a copper-rich stream from the copper stripping step to a copper electrowinning step, stripping an oxime extractant containing nickel in a nickel stripping step by contacting the oxime extractant with an aqueous acid solution said contacting of said extractant and said acid solution causing nickel ion transfer from the oxime extractant to the aqueous solution and hydrogen ion transfer from the aqueous solution to the oxime extractant in accordance with the equation:



of hydrogen ion in the fresh aqueous acid solution to nickel ion in the fresh oxime extractant being maintained between about 1.8 and 2.2, cycling a nickel-rich stream from the nickel stripping step to a nickel electrowinning step and directing a portion of a copper depleted acid stream from said copper electrowinning step to said copper stripping step and the remainder of said copper depleted acid stream to said nickel stripping step at a rate sufficient to maintain the nickel concentration in said copper electrowinning step below about 10 grams per liter.

3,855,091

METHOD OF SEPARATING CHLORINE FROM CHLORINE-ANOLYTE LIQUOR FROTH OF AN ELECTROLYTIC CELL

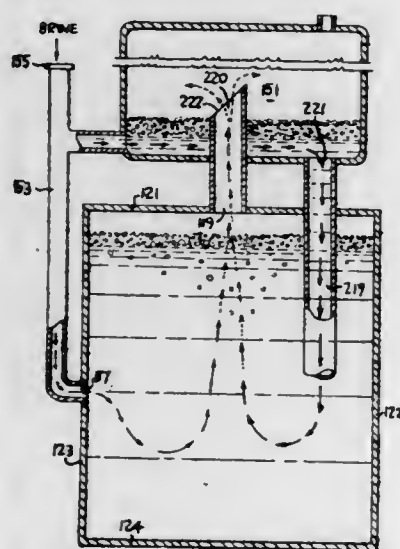
Lloyd W. Piester, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 219,096, Jan. 19, 1972, abandoned. This application July 2, 1973, Ser. No. 376,087

Int. Cl. C01b 7/06

U.S. Cl. 204-128

4 Claims



1. In the process of electrolyzing a brine in an electrolytic cell at a current above 2,500 amperes per square foot of cell horizontal area whereby a froth of chlorine and electrolyte is generated, the improvement comprising: removing the froth from the electrolytic cell through froth removal means having a cross-sectional area of less than 0.10 square feet per thousand amperes to a disengaging tank;

changing the direction of flow of the froth prior to discharging the froth into the disengaging tank; thereafter discharging the froth into the disengaging tank above the level of liquid therein, thereby separating the froth into liquid and gas fractions; and returning the liquid so separated to the electrolytic cell below the surface of the electrolyte therein.

3,855,092

NOVEL ELECTROLYSIS METHOD

Kevin J. O'Leary, Cleveland Heights, Ohio, assignor to Electron Corporation, Panama City, Panama

Continuation-in-part of Ser. No. 257,717, May 30, 1972, Pat. No. 3,776,834, which is a continuation-in-part of Ser. No. 104,740, Jan. 7, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,707. The portion of the term of this patent subsequent to Dec. 4, 1990 has been disclaimed.

Int. Cl. C01b 7/06; B01k 3/06

U.S. Cl. 204-128

3 Claims

1. A method of electrolysis comprising passing an electric current through an aqueous electrolyte containing chloride ions between an anode and a cathode whereby chlorine gas is formed at the anode and the cation is reacted at the cathode, the anode comprising an electrically conductive substrate bearing on at least a portion of the surface thereof a solid solution-type coating consisting essentially of:

- titanium dioxide,
- ruthenium dioxide and
- tin dioxide,

the mole ratio of $TiO_2:RuO_2 + SnO_2$ being within the range of 1.5 to 2.5:1 and the tin dioxide representing from 35 to 50 mole percent of the combined ruthenium and tin dioxide.

3,855,093

RADIATION CURABLE POLYENE-POLYTHIOL COATING COMPOSITIONS

James L. Guthrie, Ashton, and Francis J. Rendulic, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 209,369, Dec. 17, 1971, Pat. No. 3,787,303. This application Aug. 16, 1973, Ser. No. 388,860

Int. Cl. B01j 1/10, 1/12

U.S. Cl. 204-159.15

8 Claims

1. A photocurable lacquer composition comprising (A) a polythiol component containing at least 2 —SH groups per molecule (B) the adduct of 2 moles of diallyl malate per mole of toluene diisocyanate as polyene; the relative amounts of polyene to polythiol being selected such that the mole ratio of ene to thiol is from about 0.2:1 to about 5:1; (C) from about 0.0005 to about 50 percent by weight of the composition of a photocuring rate accelerator component; (D) from about 1 to about 50 parts by weight per 100 parts by weight of the polyene-polythiol combination of a polyester-polyene prepared by reacting (a) phthalic anhydride and (b) ethylene glycol to form a polyester resin and capping said polyester resin with (c) trimethylolpropane diallyl ether, the mole ratio of (a): (b): (c) being about 3.1:3.1:0.02.

3,855,094

METHOD IN THE QUANTITATIVE AND QUALITATIVE DETERMINATION OF MOLECULES HAVING ANTIGENIC PROPERTIES BY IMMUNOELECTROPHORESIS

Anna Maija Teppo, Haukilahti, Finland, assignor to Orion-Yhtymä Oy, Helsinki, Finland

Filed Sept. 19, 1972, Ser. No. 290,381

Claims priority, application Finland, Sept. 24, 1971, 2678/71; Sweden, Dec. 30, 1971, 16888/71

Int. Cl. B01k 5/00

U.S. Cl. 204-180 G

7 Claims

1. An immunoelectrophoretic method of quantitatively and qualitatively determining the presence in a gel matrix of mole-

cules which possess antigenic properties and contain free amino groups, comprising:

providing a gel matrix containing molecules whose properties are to be determined, said matrix comprising an environment which is stabilized against uncontrolled liquid convection in space, the electrochemical properties of said molecules being such that their net mobility does not appreciably deviate from the net mobility of antigens directed against antibodies in said matrix, adding to said gel matrix containing said molecules a compound selected from the group consisting of:



where R is hydrogen or alkyl having not more than two carbon atoms,

and then passing an electric current through said gel matrix to transport immunoglobulins and therewith form precipitation zones.

3,855,095

ELECTROCHEMICAL ELECTRODE ASSEMBLY AND METHOD OF MAKING SAME

Lynn B. Leonard, Fullerton, and Arne J. Petersen, Balboa, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

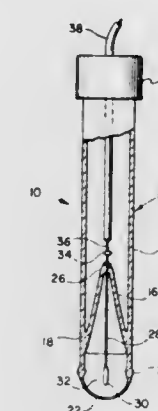
Continuation of Ser. No. 518,247, Jan. 3, 1966, abandoned.

This application Jan. 13, 1969, Ser. No. 791,881

Int. Cl. C03b 23/00; G01n 27/36

U.S. Cl. 204-195 G

7 Claims



1. An electrochemical electrode assembly comprising: inner and outer glass tubes spaced apart to define an annular chamber; a glass ring seal sealing said tubes to each other adjacent one end thereof; an ion sensitive bulb sealed to at least one of said tubes at said one end; an electrolyte filling said bulb; said inner tube having a constriction therein intermediate said glass ring seal and the other end of said outer tube; an internal half-cell immersed in said electrolyte; a wire extending through said constriction and being connected to said half-cell; a second glass seal sealing said wire in said constriction; and said outer glass tube being devoid of a concentric glass ring seal between said glass ring seal and the other end of said outer tube.

3,855,096

ELECTROCHEMICAL CELLS

Immanuel Bergman, Sheffield, England, assignor to National Research Development Corporation, London, England

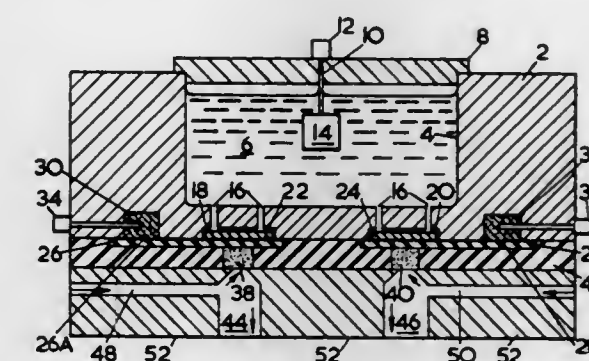
Filed May 4, 1972, Ser. No. 250,246

Claims priority, application Great Britain, May 6, 1971, 13463/71

Int. Cl. G01n 27/46

U.S. Cl. 204-195 P

11 Claims



1. An electrochemical monitoring system for detecting the presence of active substance in a fluid, consisting of an electrochemical cell having first and second metalized membrane working electrodes, a counter electrode and, in use, an electrolyte, the first and second working electrodes and the counter electrode adapted to contact the electrolyte, the first working electrode also capable of being exposed to said fluid, whereby in the absence of an active substance substantially identical background currents flow between the counter electrode and the first working electrode and between the counter electrode and the second working electrode, electrical measuring means for measuring the electrical current through said first working electrode, and electrical feedback means for automatically adjusting the potential of the counter electrode such that the current through the second working electrode is maintained at a substantially constant magnitude, the background current through the first working electrode also maintained at a substantially constant magnitude.

3,855,097

ION-SELECTIVE ELECTRODE

Michael Sharp, Tallvagen 43A, 902 39 Umea, and Gillis Johansson, Trastvagen 4 A, 902 37 Umea, both of Sweden

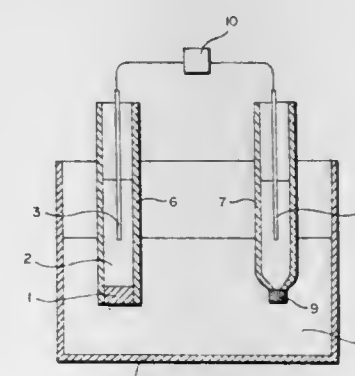
Filed June 19, 1972, Ser. No. 264,390

Claims priority, application Sweden, June 17, 1971, 7856/71

Int. Cl. G01n 27/46

U.S. Cl. 204-195 M

18 Claims



1. An ion-selective electrode for the analysis of the concentration of inorganic, organic and metal-organic ions in a solution, comprising an electrically insulating electrode holder, an electroactive plate in said electrode holder, and an electric conductor connected to said electroactive plate, characterized in that the electroactive plate consists of a salt in which

one ion is a radical-ion possessing an electron which is not spin-paired.

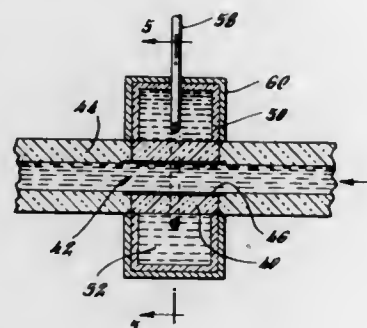
3,855,098

ION-RESPONSIVE ELECTRODE CONSTRUCTION
Kenneth S. Fletcher, III, Norfolk, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 064,952, Aug. 19, 1970. This application Jan. 24, 1973, Ser. No. 326,520
Int. Cl. G01n 27/36, 27/46

U.S. Cl. 204—195 G

1 Claim



1. In an electrode for use in measuring the activity or concentration of a predetermined ion in a test solution, said electrode being of the type including a container holding an electrolyte solution and having at one wall portion thereof a thin ion-sensitive membrane exposed at its inner surface to said electrolyte and adapted to be exposed at its outer surface to the test solution for the purpose of developing an electrical potential responsive to the activity or concentration of the predetermined ion;

that improvement in the foregoing type of electrode which comprises:

a rigid member of porous inert material serving as part of said wall portion of said container and arranged for exposure at one surface thereof to said electrolyte, said rigid member having a higher melting temperature than said ion-sensitive membrane;

said rigid member carrying on a surface thereof opposite said one surface said thin ion-sensitive membrane in the form of a separate member fused to said rigid member with the ion-sensitive membrane material interengaged with pores of the rigid member to effect a tight-locking seal engagement between said two members;

the porosity of said inert material providing continuous channels through which said electrolyte can travel to contact the material of said membrane in pores at the interface between said two members;

the opposite surface of said membrane being arranged for exposure to said test solution;

said porous material being substantially thicker and mechanically stronger than said membrane.

3,855,099

ELECTRODE FOR ANODIC STRIPPING VOLTAMMETRY
Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Burlington, Mass.

Continuation-in-part of Ser. No. 168,161, Aug. 7, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,788
Int. Cl. G01n 27/26; B01k 3/04, 3/06

U.S. Cl. 204—195 F

10 Claims

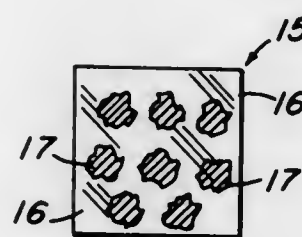
1. An electrode for anodic stripping voltammetry adapted for testing for at least one predetermined ion in an aqueous sample comprising

a porous, electrically conducting rod having an active lateral electrode surface of measured predetermined area across which essentially the entire aqueous sample can be circulated, said lateral surface being adapted to be positioned essentially vertically when the electrode is employed in a working mode,

said rod comprising particles of an average size between about 0.2 and about 2 microns adhering together to form said rod,

an impregnated film forming material sealing the pores of said rod and preventing penetration thereof by said aqueous sample;

the electrode surface being polished and having a structurally smooth surface comprising a surface whose area comprises a continuous surface of said film forming material and a multiplicity of islands of said electrically conducting rod material each having an average area less than about 1×10^{-12} square centimeters,



and deposited on said islands a multiplicity of islands of metal lower in the electro-motive series than the ion to be tested and acting to retain said ion upon electrolytic reduction and to release said ion in response to measured electrolytic oxidation;

the potential at which said release is brought about thus being an identification of said ion, and the quantity of electrolytic current flow accompanying said release being a measure of the quantity of said ion,

said electrode metal being selected from the group consisting of gold, silver, bismuth and platinum.

3,855,100

ELECTROCHEMICAL ELECTRODE STRUCTURE

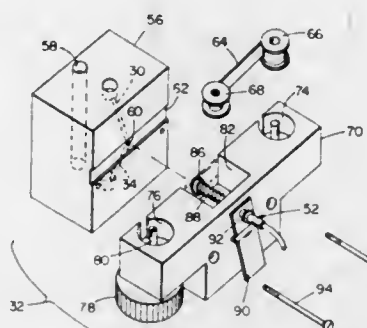
Ihsan A. Haddad, Bedford, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Apr. 13, 1973, Ser. No. 350,774

Int. Cl. G01n 27/36, 27/40, 27/46

U.S. Cl. 204—195 F

13 Claims



1. An electrochemical electrode system including a sensing electrode system that includes a first chamber adapted to contain a sample to be analyzed and a sensing electrode in communication with said first chamber,

a reference electrode system that includes a second chamber adapted to contain an electrolyte and a reference electrode in communication with said second chamber, and an ionic junction structure including first passage structure connected to said first chamber, said first passage structure having an opening therein, second passage structure connected to said second chamber, said second passage structure having an opening therein, said openings being in juxtaposed relation, and a porous member having a section disposed between said openings to permit restricted flow between said openings, said member being movable to remove said one section from between said openings and concurrently to place another section between said openings.

3,855,101

DYNAMIC ANALYZER

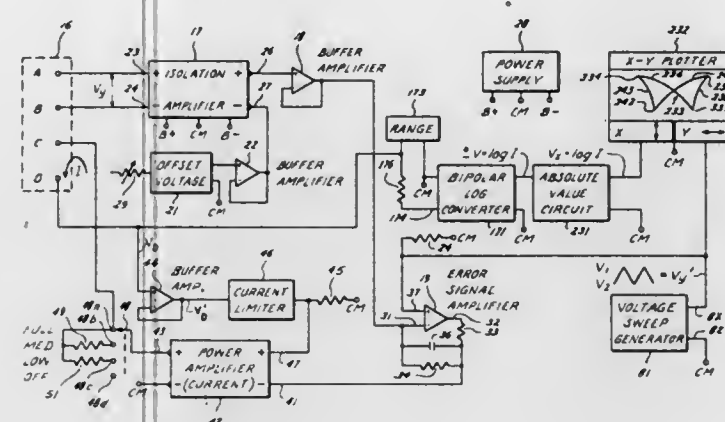
Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jan. 24, 1974, Ser. No. 436,250

Int. Cl. B01k 3/00; G01n 27/42

U.S. Cl. 204—195 R

39 Claims



1. A dynamic analyzer comprising:

a. a plurality of terminals forming an interface between the analyzer and an external system having voltage-current related properties;

b. an input circuit including a pair of said terminals and an output means for producing a first voltage signal representative of the potential difference between said terminal pair;

c. voltage sweep generator means providing a linear sweep voltage signal from a first magnitude to a second magnitude;

d. current source means having an output circuit for passing bidirectional output current between a pair of said terminals whereby a polarization voltage is induced at said first mentioned terminal pair, and said current source means having an input circuit for receiving an input voltage signal for controlling the magnitude of said output current in said output circuit;

e. error signal amplifier means for generating a second voltage signal indicating the difference between said first voltage signal from said output circuit and said linear sweep voltage signal in an input circuit of said error signal amplifier; said second voltage signal being applied to said input circuit of said current source means for effecting a bidirectional flow of output current in the output circuit thereof whereby said potential difference between said first mentioned terminal pair precisely tracks said linear sweep voltage signal;

f. log converter means sensing said output current in said output circuit of said current source means and providing a continuous potential signal having a polarity representative of the flow direction of the output current and said potential signal having a magnitude representative of the logarithm of the magnitude of the output current, and said potential signal changing polarity upon a change in the flow direction of said output current; and

g. readout means for providing a readout of said linear sweep voltage signal with said potential signal for a selected period of time.

3,855,102

WATER TANK ANODE SUSPENSION

James D. Palmer, 15 Westmorland Ct., London, Canada

Filed Sept. 6, 1973, Ser. No. 394,565

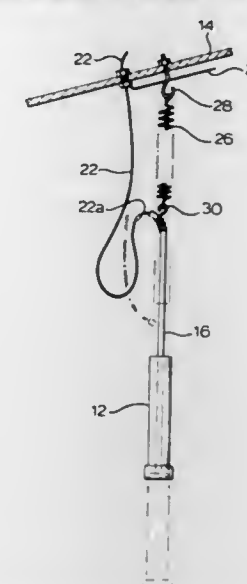
Int. Cl. C23f 13/00

U.S. Cl. 204—196

5 Claims

1. In an outdoor water storage tank having cathodic protection means for inhibiting corrosion which includes anode means disposed in the tank, the improvement of anode suspension means having one end rigidly secured to the tank and anode means secured at the other end thereof, and metal coil

tension spring means secure to said anode suspension means and disposed intermediate the ends thereof to permit movement of said anode means with respect to said rigidly secured end of said suspension means.



ment of said anode means with respect to said rigidly secured end of said suspension means.

3,855,103

ELECTRICAL TREATER SYSTEM FOR PRODUCING A COMBUSTIBLE FUEL

Theron D. McLaren, Houston, and Jack T. Sawdy, Pasadena, both of Tex., assignors to Petrolite Corporation, St. Louis, Mo.

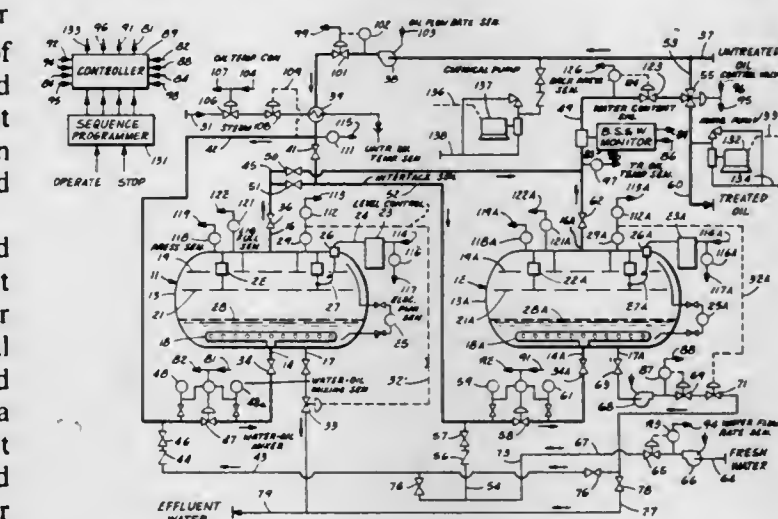
Continuation of Ser. No. 199,447, Nov. 17, 1971, abandoned.

This application Jan. 10, 1974, Ser. No. 432,381

Int. Cl. B03c 5/02; G05d 11/00

U.S. Cl. 204—306

15 Claims



1. An electrical treater system for producing a low sodium ion content combustible fuel comprising:

a. vessel means having emulsion inlet means, oil phase outlet means and water phase outlet means, and said vessel means containing electrode means energizable from an external power source to create an electrical field for resolving water-in-oil emulsion into a treated oil phase and an effluent water phase;

b. Supply means for providing streams of untreated oil having a high sodium ion content and a preset amount of fresh water to a mixing means positioned upstream of said vessel in said emulsion inlet means, said mixing means adjusted for intermixing of the fresh water in a preset finely divided state into the untreated oil to produce the emulsion applied to said emulsion inlet means on said vessel means for introduction of the emulsion into a substantially unseparated state into the electrical field, and the emulsion having the oil as the external phase and dispersed fresh water as the internal phase;

c. a plurality of monitoring means for generating a plurality of signals indicating respectively, the preset amount of fresh water supplied to said mixing means for intermixing of the fresh water in the preset finely dispersed state into

the untreated oil and the water content of the treated oil removed from said oil phase outlet means of said vessel means;

- d. said oil phase outlet means connected to a control valve having a first position to direct the treated oil to a subsequent utilization as a combustible fuel, and said control valve having a second position to divert the treated oil from said subsequent utilization; and
- e. controller means receiving said plurality of signals from said plurality of monitoring means, and said controller means adjusting said control valve from the second position to the first position only when said signals indicate the amount of fresh water intermixed in the finely dispersed state into the untreated oil to produce the emulsion and the water content of the treated oil are within preset operational limits to produce a combustible fuel with reduced sodium ion content.

3,855,104

PROCESS AND APPARATUS FOR THE ELECTROLYSIS OF HCL CONTAINING SOLUTIONS WITH GRAPHITE ELECTRODES WHICH KEEP THE CHLORINE AND HYDROGEN GASES SEPARATE

Georg Messner, Munich, Germany, assignor to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy

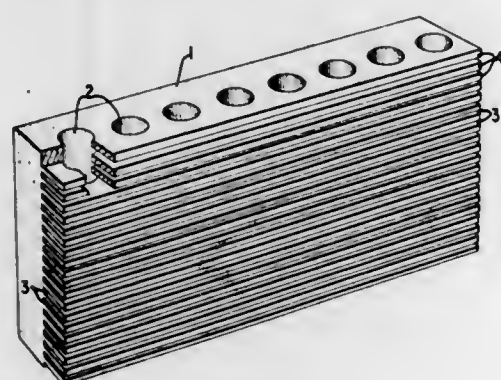
Filed Mar. 15, 1973, Ser. No. 341,593

Claims priority, application Germany, Mar. 21, 1972, 2213603

Int. Cl. B01k 3/04, 3/10

U.S. Cl. 204—129

18 Claims



1. In a hydrochloric acid electrolyzer, means to feed acid to be electrolyzed to said electrolyzer, means to conduct electrolyzing current to said electrolyzer, spaced graphite electrodes in said electrolyzer, slots and blades on the faces of said electrodes, two separated sets of bore holes in the interior of each of said electrodes, connections between the slots and one set of bore holes by which hydrogen produced on one face of the electrodes and depleted acid are conveyed to one set of bore holes and connections between the slots and another set of bore holes by which chlorine produced on another face of the electrodes and depleted acid are conveyed to another set of bore holes and means to conduct hydrogen and depleted acid from one set of bore holes and chlorine and depleted acid from another set of bore holes to the outside of the electrolyzer.

3,855,105

THIOPHOSPHORYLATING A SATURATED HYDROCARBON GROUP

William R. Diveley, Oakwood Hills, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 514,652, Dec. 17, 1965, abandoned. This application June 16, 1969, Ser. No. 833,741

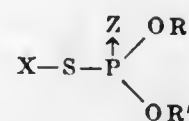
Int. Cl. B01j 1/10

U.S. Cl. 204—162 R

24 Claims

1. A process for thiophosphorylating a saturated carbon of an organic compound, which carbon is characterized by at least one hydrogen radical replaceable under free radical conditions, which comprises effecting by free radical catalysis at about 0°–150°C. reaction of said organic compound and a

halothiophosphate of the formula



wherein X is a halo radical, Z is selected from the group consisting of the oxo and thioxo radicals, and R and R' are organic radicals.

3,855,106

PROCESS FOR ELECTRODEPOSITION OF PAINT

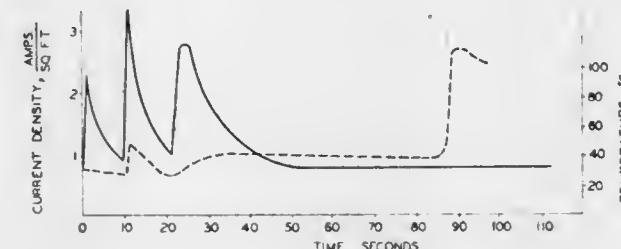
Gregory A. Campbell, Romeo, and William B. Brown, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 4, 1973, Ser. No. 366,580

Int. Cl. C23b 13/00

U.S. Cl. 204—181

4 Claims



1. In the method of depositing a base solubilized, resinous, polycarboxylic acid material from an aqueous dispersion thereof onto an electrically conductive, anodic substrate immersed in said dispersion by passing a direct electric current through said dispersion and substrate whereby a resinous film of predetermined thickness is deposited on said substrate, there being two discernible stages in the process of depositing said film: (a) a first stage in which the current density increases due to an initially fixed or increasing voltage, below the nominal rupture voltage of said material, and relatively low film resistance and (b) a second stage in which the current density decreases to a low generally constant value because of increased resistance of the growing film, the improvement comprising

maintaining said current density during said second stage of the film deposition process at a predetermined value greater than said low value by increasing the deposition voltage to above said nominal rupture voltage as required to maintain said current density value for a time sufficient to complete the film deposition, said predetermined current density value being a maximum value found experimentally to be suitable for obtaining maximum film throw without damaging the film by boiling aqueous or cosolvent liquid therein.

3,855,107

CLEANING AND PLATING APPARATUS

Robert McInnes, 2601 Davison Rd., Flint, Mich. 48506

Continuation-in-part of Ser. No. 89,409, Nov. 13, 1970, abandoned. This application May 10, 1972, Ser. No. 252,313

Int. Cl. B65g 49/02

U.S. Cl. 204—201

25 Claims

1. In an apparatus for cleaning and plating articles, the combination comprising

a plurality of containers adapted to contain liquid treating material,

a barrel adapted to be at least partially submerged in liquid in each said container,

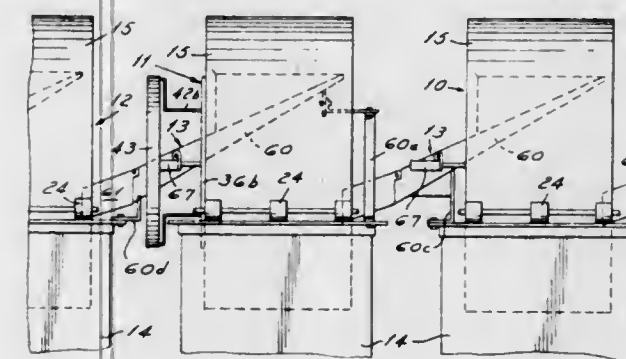
each said barrel having a longitudinal axis,

means for supporting each said barrel rotatably about a fixed generally horizontal axis so that a portion of the barrel is submerged in liquid in said container when liquid is in the container,

each said barrel comprising a cylindrical plastic wall, each said barrel having radial plastic end walls, each end wall having an opening therethrough along the longitudinal axis of the barrel,

each said barrel having a plurality of circumferentially spaced baffles on the inner periphery thereof extending axially between the end walls,

said baffles extending generally radially inwardly and forming an acute angle with the inner periphery of the barrel and spaced from said openings such that when the barrel is rotated in one direction, said baffles agitate the articles, and when said barrel is rotated in the opposite direction, said baffles elevate the articles and the cause them to drop,



and chute means extending at an angle from the interior of one said barrel adjacent one end wall through the other end wall to the interior of the succeeding barrel such as to guide articles dropped by the baffles by gravity to the succeeding barrel,

means for mounting said chute means in fixed relationship independently of said barrels,

and means associated with at least one of said barrels for providing an electrical circuit for plating,

each said chute means comprising a first portion and a second portion,

said portions forming progressively decreasing angles with the horizontal as the chute extends from one said barrel to the adjacent said barrel.

3,855,108

CONTINUOUS STRIP ELECTROPLATING APPARATUS

Walter Bolz, Mutschelbach; Horst Herzog, Kleinsteinbach; Alfred Herzog, Singen, and Hans J. Neese, Eisingen, all of Germany, assignors to Dr. Eugene Durrwachter Doduco, Pforzheim, Germany

Filed Jan. 24, 1974, Ser. No. 436,116

Claims priority, application Germany, May 17, 1973, 2324834

Int. Cl. C23b 5/58, 5/68, 5/72

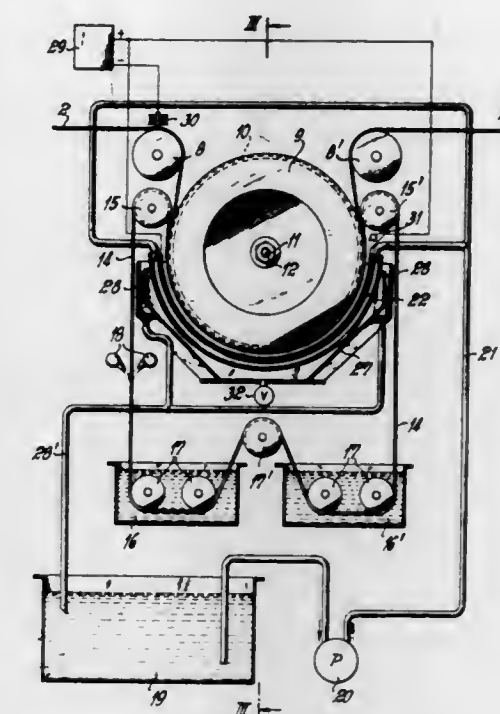
U.S. Cl. 204—206

6 Claims

1. Apparatus for continuously electroplating a longitudinally moving elongated strip having a conductive surface comprising, in combination:

- a support;
 - a wheel mounted on said support for rotation about an axis and having a circumferential face of insulating material;
 - guide means for guiding said moving strip into engagement with said face over a predetermined arc;
 - a tubular anode carrier mounted on said support and extending about said wheel and said strip substantially in said arc;
 - a conductive anode member mounted on said carrier spacedly opposite said face,
1. said carrier and said anode member being formed with respective aligned discharge orifices communicating with the interior of said carrier and directed toward said axis;

f. conductive means for connecting said strip and said anode member to respective terminals of a source of electroplating current; and



g. a conduit communicating with said interior for supplying electrolyte to said carrier.

3,855,109

APPARATUS FOR HIGH SPEED RESISTOR TRIMMING

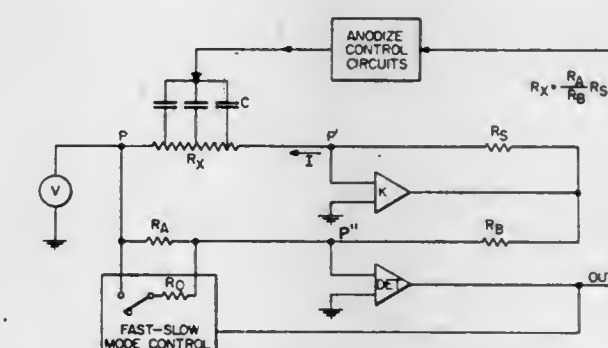
Malcolm C. Holtje, Concord, Mass., assignor to General Radio Company, Concord, Mass.

Filed Apr. 9, 1973, Ser. No. 349,061

Int. Cl. B01k 3/00

U.S. Cl. 204—228

9 Claims



1. A thin film resistor anodizing apparatus having, in combination, a bridge circuit containing as arms the resistor-to-be-anodized and standard and ratio-arm-resistances, with the said resistor being continuously connected between a grounded voltage source and a virtual ground terminal provided by operational amplifier means connected to provide feedback across said standard resistance; means for supplying anodizing current to said resistor to vary its value; means responsive to the bridge measuring current for comparing the values of said resistor and said standard resistance; means for cyclically and alternately applying said anodizing current from said supplying means to said resistor and monitoring the comparing means, with the cycle being proportioned to apply anodizing current during a period that is most of the cycle, for rapid trimming of the resistor, and to provide circuit settling and monitoring of the comparing means during a period that is a minor portion of said cycle, for determining whether the value of the resistor has reached the predetermined by the standard resistance; and means operable when the resistor value approaches that determined by the standard resistance for reducing the period of applied anodizing current to a minor portion of the said cycle, for slow trimming while permitting increasing the settling period.

hydrocarbons under a pressure sufficiently high to maintain the mixture in the liquid phase and at a temperature in the range -50° – 200° C.

3,855,118

WELL SAMPLE WASHER

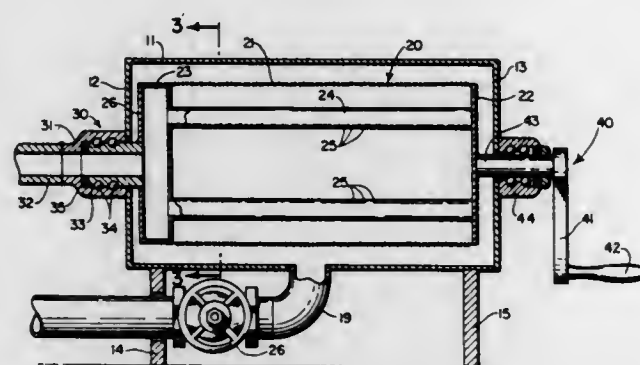
Raymond F. Mikolajczyk, 6153 Carlisle Ct., Orleans Parish, La. 70114

Filed Dec. 6, 1971, Ser. No. 204,978

Int. Cl. B07b 1/22

U.S. Cl. 209—270

2 Claims



1. Well sample washer means comprising:
 - a. stationary cylindrical case means having an access opening and a drain opening;
 - b. horizontally mounted cylindrical foraminous cage means rotatably mounted within said stationary case; said cage means having an access opening provided with a sliding door slidably attached to said cage means;
 - c. wash and spray manifold means having a main distribution chamber portion and being further defined as comprising four oblong perforated tube portions extending essentially along the longitudinal axis of said manifold means and which are spaced essentially equidistant on about 90° centers and in open communication therewith, said cylindrical foraminous cage means being affixed to and mounted upon said manifold means and said oblong perforated tube portions which extend lengthwise of said cage means, said tube portions being oriented whereby the perforations therein face inward of said cage means such that sample material when caused to move over the inner peripheral surface of said cage means is contacted by said tube portions which serve as mixing baffles;
 - d. means for rotating said cage means comprising a hand crank whereby an operator can rotate said cage means by hand; and
 - e. swivel joint means affixed to said cage means and operably connected to said manifold means and a source of pressurized liquid whereby said manifold means can be rotated within said cage means while liquid under pressure is forced through said manifold means and into said cage means through the perforations in said tubes such that well sample means contained within said cage means are impinged upon and washed while being agitated by said perforated tube portion.

3,855,119

GOLD PAN

Russell D. Stephenson, 155 W. Snell St., Sonora, Calif. 95370

Filed Aug. 15, 1973, Ser. No. 388,549

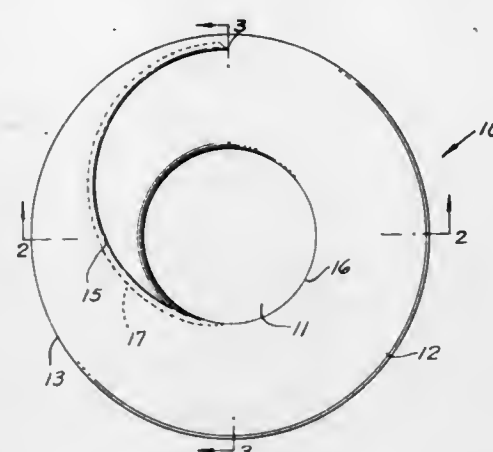
Int. Cl. B03b 3/00

U.S. Cl. 209—447

2 Claims

1. In a gold pan, a circular generally flat bottom wall and an upwardly and outwardly sloping side wall integrally secured to the bottom wall along the peripheral edge thereof, said side wall having an outer peripheral edge, a deep spiral riffle integrally formed in said side wall and extending spirally inwardly and downwardly from points adjacent the peripheral edge of said side wall to a point adjacent the peripheral edge of said

bottom wall, and said riffle having an overhang opening toward the center of the gold pan, said riffle being formed by a



portion of the side wall that is of gradually increasing thickness adjacent said riffle.

3,855,120

OXYGENATION OF WASTE WATER

Paul W. Garbo, 48 Lester Ave., Freeport, N.Y. 11520

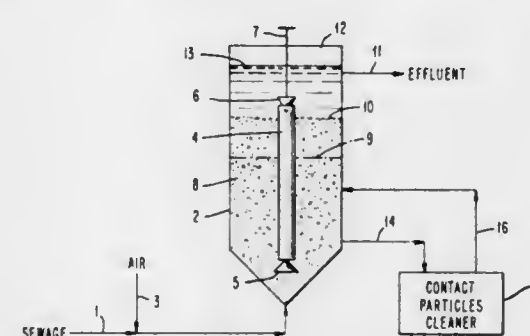
Continuation of Ser. No. 161,167, July 9, 1971, abandoned.

This application July 5, 1973, Ser. No. 376,607

Int. Cl. C02c 1/02

U.S. Cl. 210—3

19 Claims



1. The improved process for treating BOD-containing water by biochemical oxygenation which comprises flowing said BOD-containing water and oxygenating gas simultaneously up through an elongate mass of solid contact particles having a maximum dimension not exceeding 10 millimeters, said mass containing active biomass, regulating the upflow of said BOD-containing water and said oxygenating gas to effect expansion and turbulence of said mass without effecting transport of said solid contact particles away from the expanded and turbulent mass, said expansion of said mass increasing the volume of said mass when in a settled state by at least about 10% but the expanded volume of said mass being not more than double the volume of the settled mass, and said turbulence of said mass causing uniform dispersion of said oxygenating gas as tiny bubbles in said BOD-containing water whereby biochemical oxygenation is achieved, and withdrawing treated water rising above the top of said expanded and turbulent mass of solid contact particles.

3,855,121

BIOCHEMICAL PROCESS

Alfredo A. Gough, 509 Granada, El Paso, Tex. 79912

Continuation-in-part of Ser. No. 194,476, Nov. 1, 1971, abandoned, which is a continuation of Ser. No. 5,908, Jan. 26, 1970, abandoned. This application May 8, 1972, Ser. No.

251,056

Int. Cl. C02c 1/00, 5/00

U.S. Cl. 210—11

25 Claims

1. A process for making a biologically active composition comprising:
 1. forming in a fermentation zone a liquid composition comprising about 6 to 33% cow manure containing colos-

- trum by volume of said liquid composition, 0.2 to .52 ounces of a fungus cell source per square foot of zone cross-sectional area, 0.003 to 0.052 ounces casein of milk for each 2 feet or part thereof of zone diameter, a protozoa inhibitor in an amount sufficient to inhibit protozoa formation in said zone and water, said liquid composition being maintained at a level of about 12 to 16 feet in height;
2. allowing said composition to ferment for at least 14 days until a milky-green biologically active composition forms at the top of said liquid composition;
3. transferring said milky-green composition from said fermentation zone to a first digestion zone;
4. diluting said composition in the first digestion zone with water to a concentration of 0.25 to 4 parts milky-green composition for each 10 parts water, said diluted composition in said first digestion zone being maintained at a level of about 3 to 7 feet in height;
5. digesting said diluted milky-green composition for at least 20 days until a brilliant green liquid layer forms at the top of said composition in said first digestion zone; and
6. removing said brilliant green liquid layer.

3,855,122

PROCESS FOR THE PREPARATION OF ANISOTROPIC SEMI-PERMEABLE MEMBRANES OF POLYARYL ETHER/SULPHONES

Jack Bourgalet, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed May 19, 1972, Ser. No. 254,885

Claims priority, application France, May 24, 1971, 71.18634

Int. Cl. B01d 13/00

U.S. Cl. 210—23

23 Claims

1. Process for preparing an anisotropic sulphonated polyaryl ether/sulphone membrane which comprises the following steps, in sequence:
 - i. casting a solution containing from about 0.1 to 10% by weight of an amine salt and having a concentration between about 5 and 605 w/v of solution of a sulphonated polyaryl ether/sulphone possessing between about 0.1 and 2 meq/g of sulphonic acid groups and a reduced specific viscosity of between about 40 and 200 cm³/g (measured as a 2 g/l solution in dimethylformamide at 25° C), on a support;
 - ii. gelling the polymer layer formed on the support in the step (i);
 - iii. immersing the supported film from step (ii) in water, as a coagulation bath, said bath having a temperature between about 0° C. and 100° C., for between about 30 seconds and 60 minutes; and
 - iv. recovering the membrane produced from step (iii).

3,855,123

UPFLOW-DOWNFLOW SORPTION PROCESS

George E. Strudgeon, Erie, Pa., and Andrew W. Loven, Vienna, Va., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Nov. 8, 1972, Ser. No. 304,601

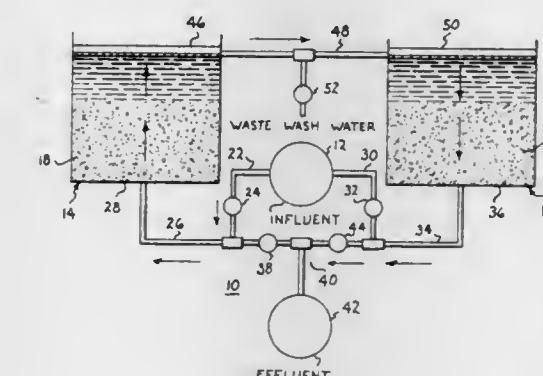
Int. Cl. B01d 15/06

U.S. Cl. 210—31

3 Claims

1. A process for treating liquid by passing the liquid through beds of granular solid, activated carbon comprising the steps of:
 - a. providing at least first and second series-connected columns, each column containing a bed of granular solid, activated carbon;
 - b. passing influent liquid to the lower end of the first column;
 - c. forcing the liquid to pass upwardly through the bed of activated carbon contained in the first column;
 - d. passing the liquid from the upper end of the first column to the upper end of the second column;

- e. receiving the effluent liquid from the lower end of the second column after the liquid has passed through the bed of the second column in the downward direction;
 - f. periodically backwashing each of the columns after liquid has been treated in the columns;
 - g. detecting the occurrence of a breakthrough with respect to the effluent liquid of the second column;
 - h. removing the bed of activated carbon of only the first series-connected column from the treatment process after breakthrough is detected;
 - i. providing a bed of fresh activated carbon in a column; thereafter, passing the influent liquid to the lower end of the second column and forcing the liquid to pass upwardly through the bed of activated carbon contained in the second column;
 - j. passing the liquid from the upper end of the second column to the upper end of the column having fresh activated carbon; and
 - k. receiving the effluent liquid from the lower end of the column containing the fresh activated carbon after the liquid has passed through the bed of this material in a downward direction.
3. A process for purifying liquid by passing through granular solid beds of activated carbon comprising the steps of:



- a. providing at least first and second series-connected columns, each containing a bed of granular solid, activated carbon;
- b. passing influent to the lower end of the first column;
- c. forcing the liquid to percolate upwardly through the bed of activated carbon contained in the first column;
- d. passing the liquid from the upper end of the first column to the upper end of the second column;
- e. percolating the liquid in a downward direction through the bed of activated carbon contained in the second column;
- f. periodically backwashing each of the columns after liquid has been treated in the columns;
- g. detecting the occurrence of a breakthrough with respect to the effluent liquid of the last-downstream series-connected column;
- h. removing the bed of activated carbon of only the first column from the purification process after breakthrough is detected;
- i. providing a bed of fresh granular solid activated carbon in a column;
- j. thereafter, passing the influent liquid to the lower end of the second column and forcing the liquid to pass upwardly through the bed of activated carbon contained in the second column; and
- k. percolating the liquid through the bed of fresh activated carbon as the last downstream, series-connected column.

3,855,124

PROCESS AND APPARATUS FOR THE PURIFICATION OF AN AQUEOUS WASTE STREAM FROM A SILICONE-POLYMER PRODUCING PLANT

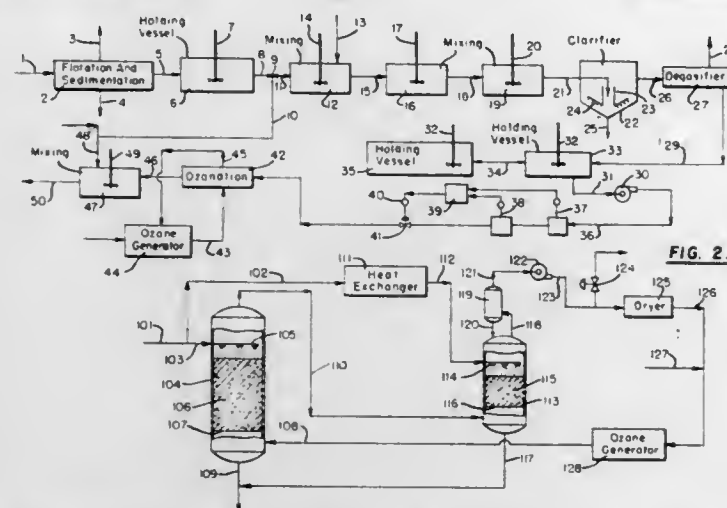
Heine Lapidot, Latham, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,704

Int. Cl. B01d 21/10; C02c 1/28

U.S. Cl. 210-44

20 Claims



1. Process for the purification of aqueous waste material from a silicone-polymer producing plant which comprises:

- conducting an aqueous waste stream to a flotation and sedimentation zone, wherein water-insoluble materials of densities lower than water are removed from said waste stream as the upper layer in said zone, and wherein water-insoluble materials with densities higher than water are removed from the waste stream as the bottoms from said zone;
- removing said aqueous waste stream from said flotation and sedimentation zone and adjusting the pH of said aqueous waste stream to a value of at least about 12;
- conducting said waste stream to a clarification zone wherein solid material having a density greater than water is removed from the aqueous waste stream as bottoms from the clarification zone;
- removing said aqueous waste stream from said clarification zone and conducting said stream having a pH of at least about 12 to an ozonation zone at a controlled rate so as to achieve a predetermined amount of C.O.D. of organics per unit time entering said ozonation zone;
- conducting said aqueous waste stream to at least one holding zone prior to the ozonation zone and subsequent to the flotation and sedimentation zone;
- removing said aqueous waste stream from said at least one holding zone at said controlled rate; and
- obtaining a purified aqueous waste stream.

3,855,125

IMPROVED PROCESS FOR TREATING WATER AND WASTEWATER

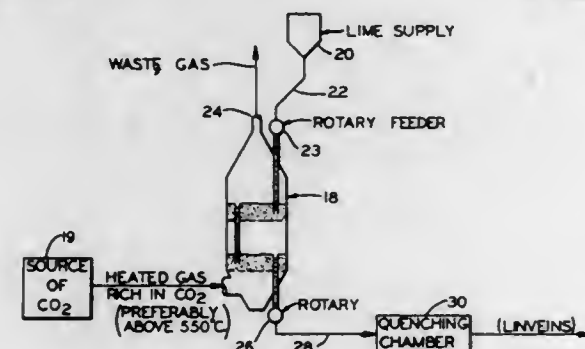
Ping-Wha Lin, 506 S. Darling, Angola, Ind. 46702

Filed Nov. 9, 1972, Ser. No. 305,148

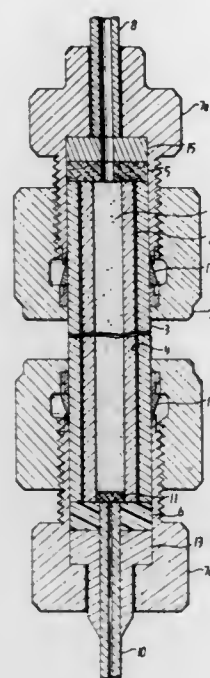
Int. Cl. C02b 1/30

U.S. Cl. 210-46

6 Claims



restricted fluid communication with the interior of the glass pipe at the inlet end of the column, said fluid communication



being provided by a porous annular packing ring press fitted against the inlet ends of both the glass pipe and the steel pipe.

3,855,131

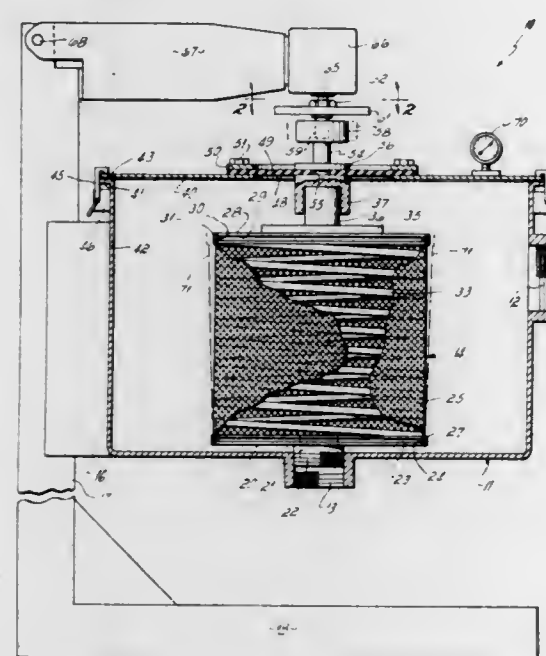
GYRATORY FILTER

Harold C. Thumberger, 1031 Belle Ave., Hamilton, Ohio 45015

Filed June 5, 1973, Ser. No. 367,166
Int. Cl. B01d 33/00

U.S. Cl. 210—383

7 Claims



1. Filtering apparatus comprising a closed container having an inlet and an outlet a filter mounted in said container between said inlet and outlet and comprising a bottom plate fixed to said outlet and having a hole communicating with said outlet a top plate a helical spring mounted between said top and bottom plates, a screen surrounding said spring and secured to said top and bottom plates, and means for moving said top plate through a substantially horizontal orbital path of movement as fluid passes from said inlet to said outlet.

3,855,132

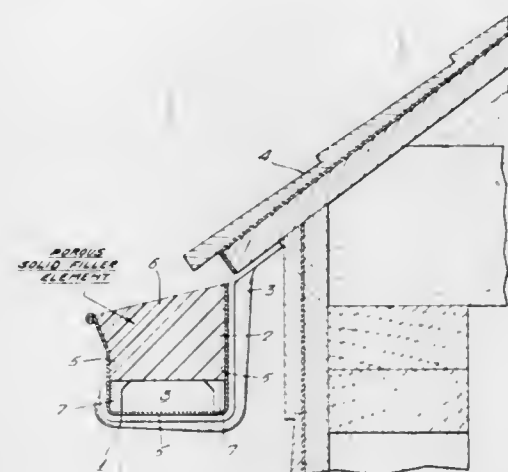
OPEN TROUGH FILLER

William P. Dugan, Media, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation of Ser. No. 387,398, Aug. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 275,679, July, 1972, abandoned. This application Apr. 30, 1974, Ser. No. 465,468
Int. Cl. B01d 35/02

U.S. Cl. 210—455

9 Claims



1. A rain gutter in combination with a roof comprising an upper inlet and a lower outlet through which a liquid passes, and a filler element made of a reticulated porous solid material positioned within the volume defined by the interior walls of said rain gutter whereby liquid may enter said inlet and flow through said filler and said outlet and foreign debris will be trapped on the surface of said filler.

3,855,133

MULTI-LAYER FILTER MEMBRANE

Karl Gustav Roehsler, Goettingen-Nikolausberg, Germany, assignor to Sartorius-Membranfilter GmbH, Gottingen, Germany

Filed Dec. 20, 1972, Ser. No. 316,649

Claims priority, application Germany, Dec. 28, 1971, 2165073

Int. Cl. B01d 25/16

U.S. Cl. 210—490

35 Claims

1. A multiple layer filter membrane comprising:
 - a. an osmotic skin composed of at least one closed continuous film about 0.05 to about 0.1 μm thick of a selectively permeable high polymer selected from the group consisting of an inelastic selectively permeable high polymer, an elastic selectively permeable high polymer and an elastified selectively permeable high polymer; and
 - b. a porous base containing finely divided filler material therein, the base composed of a gel film which swells in contact with and is insoluble in water, the gel layer backed by a relatively thicker cellulose acetate sponge layer impregnated on the side remote from both the gel layer and osmotic skin (a) having a pore size which increases continuously from the gel through out the sponge layer to the back thereof.

3,855,134

INTUMESCENT COMPOSITION

Joseph Green, East Brunswick, and Shirley H. Roth, Highland Park, both of N.J., assignors to Cities Service Company, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,959

Int. Cl. C09d 5/18

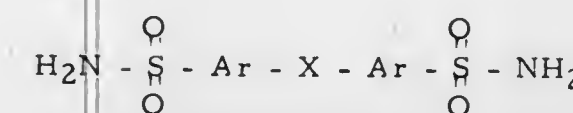
U.S. Cl. 252—8.1

12 Claims

1. A non-flaming intumescent composition consisting essentially of:

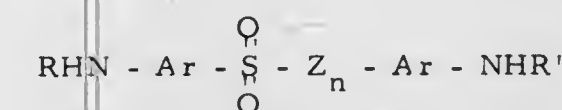
- A. a normally self-extinguishing intumescent agent selected from the group consisting of:

1. self-extinguishing compounds corresponding to the formula:

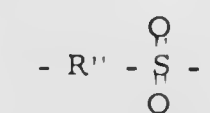


wherein Ar is a divalent aromatic residue and X is a divalent functional group.

2. self-extinguishing compounds corresponding to the formula:

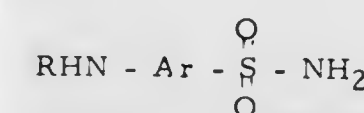


wherein Ar is a divalent aromatic residue; R and R' are hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical; Z is $-\text{O}-$, $-\text{S}-$, or



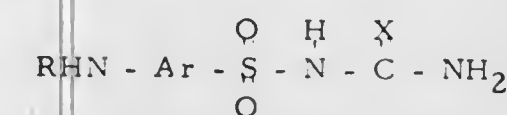
in which R'' is an alkylene radical containing 1-5 carbon atoms; and n is 0 or 1.

3. self-extinguishing compounds corresponding to the formula:



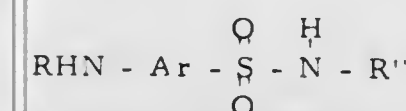
wherein Ar is a divalent aromatic residue and R is hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical.

4. self-extinguishing compounds corresponding to the formula:



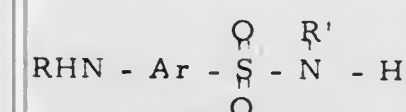
wherein Ar is a divalent aromatic residue, R is hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical, and X is oxygen or sulfur.

5. self-extinguishing compounds corresponding to the formula:



wherein Ar is a divalent aromatic residue; R is hydrogen, hydrocarbon, halohydrocarbon, or acyl; and R'' is a substituted or unsubstituted pyridyl, pyrimidyl, pyridazyl, pyrazyl, pyrazolyl, imidazolyl, thiazolyl, oxadiazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, or aromatic hydrocarbon radical, and

6. self-extinguishing compounds corresponding to the formula:



wherein Ar is a divalent aromatic residue, R is a substituted or unsubstituted pyridyl, pyrimidyl, pyrazyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, or triazolyl radical, and R' is hydrogen, hydrocarbon, substituted hydrocarbon, or acyl and

- B. about 0.5-250%, based on the weight of the intumescent agent, of a haloorganophosphorus compound.

3,855,135

MIST LUBRICANT

Thomas D. Newingham, Broomall; James R. Amaroso, Newton Square; Walter J. Coppock, Wallingford, all of Pa., and Edward S. Williams, Claymont, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 140,398, May 5, 1971, and Ser. No. 178,193, Sept. 7, 1971. This application Apr. 24, 1972, Ser. No. 246,997

Int. Cl. C10m 1/28, 1/18, 9/00

U.S. Cl. 252—15

7 Claims

1. A process of lubrication which comprises:
 - a. converting into an aerosol a mixture of a mineral lubricating oil having an SUS viscosity in the range of 100 to 3000 at 100°F. with an effective amount of a polymeric additive selected from a polystyrene and a polystyrene in admixture with a member of the group consisting of polyacrylates and polybutenes, said polymeric additive having a viscosity average molecular weight in the range of 10,000 to 2,000,000 and said effective amount being in the range of 0.01 to 2 weight percent as based on said mineral lubricating oil and sufficient to reduce the stray fogging and permit adequate reclassification of said mineral lubricating oil,
 - b. pneumatically conducting said aerosol to a zone where lubrication occurs, and
 - c. reclassifying said aerosol in said zone whereby the oil droplets of the aerosol are coalesced within said lubrication zone.

3,855,136

DISPERSION FOR HOT ROLLING ALUMINUM PRODUCTS

Ewell E. McDole, Danville, Calif., and Frank L. Howard, Bountiful, Utah, assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 198,898, Nov. 15, 1971, Pat. No. 3,770,636. This application Sept. 13, 1973, Ser. No. 396,813

Int. Cl. C10m 1/22

U.S. Cl. 252—49.5

13 Claims

1. A nonstaining neat oil composition for hot rolling aluminum products suitable for dispersion in water consisting essentially of about 5 to 50% by weight of at least one fatty alcohol selected from the group consisting of monohydric, saturated primary fatty alcohols having from 8 to 20 carbon atoms, about 20 to 60% by weight polybutene having an average molecular weight greater than about 500 and a viscosity from about 2400 to about 10,000 SSU at 100°F. and about 20 to 75% by weight of an additional hydrocarbon lubricating oil having a distillation range from about 500° to 725°F at one atmosphere, which distillation range is below that of the polybutene wherein at least 90% of said hydrocarbon oil is distilled within said temperature range.

3,855,137

HYDROCARBON GELS

Thomas A. Whitney, Roselle, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

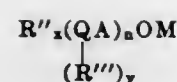
Continuation-in-part of Ser. No. 231,746, March 3, 1972, Pat. No. 3,775,069. This application Aug. 9, 1973, Ser. No. 386,950

Int. Cl. H01f 1/28

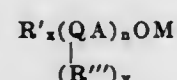
U.S. Cl. 252—62.52

3 Claims

1. A magnetic composition of matter comprising a gelatinous hydrocarbon containing an amount ranging from ¼ to 5 % by weight of said hydrocarbon, of a compound having either the formula MOR or



in combination with a compound having the formula $\text{M}'(\text{OR}')_3$ in a molar ratio ranging from 3:1 to 1:3 equivalents of either MOR or



to $\text{M}'(\text{OR}')_3$, wherein M is one selected from the group consisting of Group IA metals; M' is one selected from the group consisting of Group IIIA metals; R and R' are independently selected from the group consisting of C_1 - C_{25} straight or branched hydrocarbyl radicals; R'' and R''' are the same or different wherein each is a C_1 - C_{16} straight or branched hydrocarbyl radical; Q is O or N; A is a hydrocarbyl group containing from 2 to 4 methylenic carbon atoms having 0 to 2 substituents, said substituents being one selected from the group consisting of C_1 - C_6 cycloalkyl, phenyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, Cl, Br, I; n is an integer ranging from 1 to 10 inclusive; x is an integer and is either 1 or 2 depending on the valence of Q; y is either 0 or 1 depending on the valence of Q; in combination with an iron powder or other ferromagnetic material to provide the composition with magnetic properties.

3,855,138

INTUMESCENT COMPOSITION

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,719

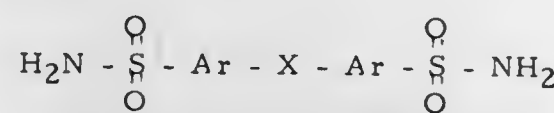
U.S. Cl. 252-81

10 Claims

1. A non-flaming intumescent composition consisting essentially of:

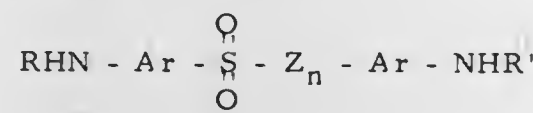
A. a normally self-extinguishing intumescent agent selected from the group consisting of:

1. self-extinguishing compounds corresponding to the formula:

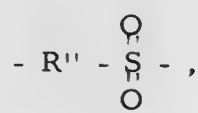


wherein Ar is a divalent aromatic residue and X is a divalent functional group.

2. self-extinguishing compounds corresponding to the formula:

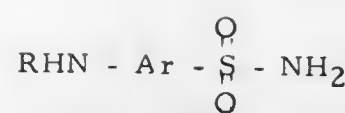


wherein Ar is a divalent aromatic residue; R and R' are hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical; Z is —O—, —S—, or



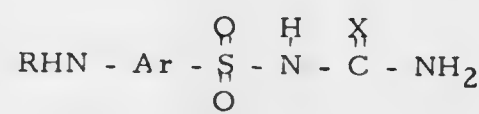
in which R' is an alkylene radical containing 1-5 carbon atoms; and n is 0 or 1.

3. self-extinguishing compounds corresponding to the formula:



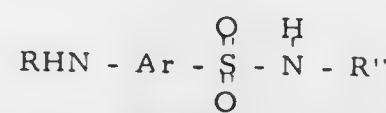
wherein Ar is a divalent aromatic residue and R is hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical.

4. self-extinguishing compounds corresponding to the formula:



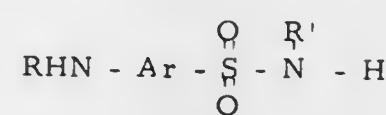
wherein Ar is a divalent aromatic residue, R is hydrogen or a hydrocarbon, halohydrocarbon, or acyl radical, and X is oxygen or sulfur.

5. self-extinguishing compounds corresponding to the formula:



wherein Ar is a divalent aromatic residue; R is hydrogen, hydrocarbon, halohydrocarbon, or acyl; and R'' is a substituted or unsubstituted pyridyl, pyrimidyl, pyridazyl, pyrazyl, pyrazolyl, imidazolyl, thiazolyl, oxadiazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, or aromatic hydrocarbon radical, and

6. self-extinguishing compounds corresponding to the formula:



wherein Ar is a divalent aromatic residue, R is a substituted or unsubstituted pyridyl, pyrimidyl, pyrazyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, or triazolyl radical, and R' is hydrogen, hydrocarbon, substituted hydrocarbon, or acyl and

B. about 0.5-250%, based on the weight of the intumescent agent, of a nitrogen compound selected from the group consisting of amines, imines, amides, and imides having a nitrogen content of at least about 30% by weight or a combined nitrogen-halogen content of at least about 30% by weight.

3,855,139

MACHINE DISHWASHING FORMULATIONS CONTAINING A METAL TETRACARBOXYLATE

Robert P. Langguth, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 4, 1972, Ser. No. 312,238

Int. Cl. C11d 7/56

U.S. Cl. 252-99

7 Claims

1. A machine dishwashing formulation comprising

- a. from 0.5 to 5% by weight of a surfactant selected from the group consisting of low-foaming anionic and nonionic surfactants and mixtures thereof,
- b. an active chlorine providing material selected from the group consisting of potassium dichlorocyanurate; sodium dichlorocyanurate; [(mono-trichloro) tetra-(monopotassium dichloro)] penta-isocyanurate; (mono-trichloro) (mono-potassium dichloro) di-iso-cyanurate;

and chlorinated trisodium phosphate, said active chlorine providing material constituting from 10 to 30% by weight of the formulation when said material is chlorinated trisodium phosphate and from 0.5 to 5% by weight of the formulation when said material is a chlorocyanurate, and c. from 20% to 90% of a tetra alkali metal ethane-1,1,2,2-tetracarboxylate.

3,855,140

CLEANSING COMPOSITIONS

Michael Royston Billany; Arthur Raymond Longworth, and John Shatwell, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1972, Ser. No. 253,102

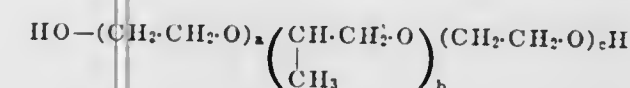
Claims priority, application Great Britain, June 18, 1971, 28764/71

Int. Cl. C11d 1/72, 3/48

U.S. Cl. 252-106

6 Claims

1. A skin-cleansing composition which consists essentially of from 0.5 to 10.0 percent w/v of a salt of chlorhexidine which is soluble to the extent of at least 0.5 percent w/v in water at ambient temperature, selected from the group consisting of the gluconate, isethionate, formate, acetate, glutamate, succinamate, mono-diglycollate, di-methanesulphonate, lactate, di-isobutyrate and glucoheptonate salt, a polyoxyethylene-polyoxypropylene block copolymer of the formula



wherein a, b and c are integers, such that said copolymer consists of 70 percent of polyoxyethylene and wherein the molecular weight of the polyoxypropylene content is about 2250, and water.

3,855,141

METHOD OF PROCESSING A SPENT COPPER ETCHING SOLUTION FOR REUSE IN AN ELECTROLESS COPPER RECOVERY BATHS

Claus Werner Ruff, Lichtenfels, Germany, assignor to Loewe-Opta GmbH, Berlin, Germany

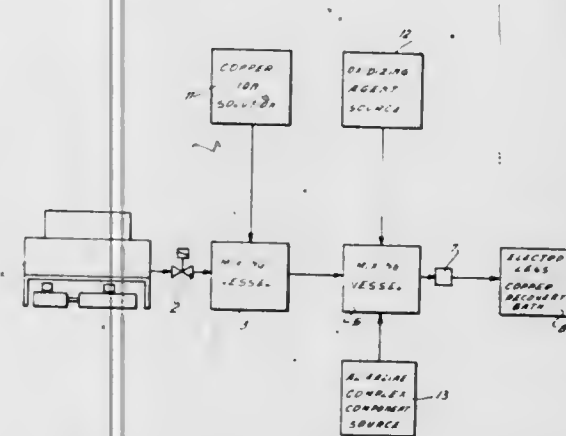
Filed Aug. 22, 1973, Ser. No. 390,553

Claims priority, application Germany, Sept. 9, 1972, 2244307

Int. Cl. C09k 3/00; C23b 3/00

U.S. Cl. 252-79.2

4 Claims



1. For use in the recovery of copper that is etched with the use of an acidic solution containing CuCl_2 wherein a portion of the CuCl_2 is converted into CuCl during such etching operation as the solution becomes spent, a method of preparing the spent etching solution for reuse in the separation of the etched copper by electroless means which comprises the steps of: adding copper ions to the spent solution to a predetermined copper concentration suitable for electroless copper separation; and thereafter adding to the enriched solution an oxidizing agent and an alkaline complex component in

amounts respectively effective to (1) oxidize the added copper to increase the concentration of CuCl_2 in the solution and correspondingly decrease the concentration of CuCl, and (2) to convert the etching solution into an alkaline bath.

3,855,142

ENZYMATIC DENTURE CLEANSER

Morton Pader, Teaneck, and Carl G. Richberg, Cresskill, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 163,103, July 15, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,534

Int. Cl. C11d 3/06

U.S. Cl. 252-135

16 Claims

1. A denture cleanser composition comprising a lipolytic enzyme at a concentration to provide lipolytic activity of about 20 to about 50,000 lipase units in 100 ml of a solution of said composition, admixed with a buffering agent, said buffering agent being capable of providing a pH of about 4.5 to about 10 and being inert with respect to the lipolytic action of the enzyme.

3,855,143

LUMINESCENT LITHIUM SILICATE ACTIVATED WITH TRIVALENT CERIU

Roelof Egbert Schuil, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 14, 1972, Ser. No. 271,833

Claims priority, application Netherlands, July 24, 1971, 7110248

Int. Cl. C09k 1/54

U.S. Cl. 252-301.4 F

3 Claims

1. A luminescent silicate having the olivine crystal structure, said silicate being activated by trivalent cerium and having the formula $\text{Li}_{1-x}\text{Na}_x\text{Y}_{1-p}\text{Ce}_p\text{SiO}_4$ wherein $0.50 \leq x \leq 0.80$ and $0.0001 \leq p \leq 0.25$.

3,855,144

LUMINESCENT DEVICE, PROCESS, COMPOSITION, AND ARTICLE

Stephen W. Barber, Toledo, Ohio, and William F. Nelson, Port Washington, N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 41,455, May 28, 1970, Pat. No. 3,634,711, which is a division of Ser. No. 841,690, July 1, 1970, Pat. No. 3,527,711, which is a continuation-in-part of Ser. Nos. 355,248, March 27, 1964, and Ser. No. 355,251, March 27, 1964, and Ser. No. 355,253, March 27, 1964, and Ser. No. 355,407, March 27, 1964, and Ser. No. 355,408, March 27, 1964, and Ser. No. 355,409, March 27, 1964, and Ser. No. 355,421, March 27, 1964, and Ser. No. 355,422, March 27, 1964, and Ser. No. 355,444, March 27, 1964, and Ser. No. 355,469, March 27, 1964, and Ser. No. 355,470, March 27, 1964, and Ser. No. 355,471, March 27, 1964, said Ser. No. 841,690, is a continuation of Ser. No. 641,264, May 25, 1967, which is a continuation-in-part of Ser. No. 355,248, and Ser. No. 355,251, and Ser. No. 355,253, and Ser. No. 355,407, and Ser. No. 355,408, and Ser. No. 355,409, and Ser. No. 355,421, and Ser. No. 355,422, and Ser. No. 355,444, and Ser. No. 355,445, and Ser. No. 355,469, and Ser. No. 355,470, and Ser. No. 355,471, This application Nov. 30, 1971, Ser. No. 203,495

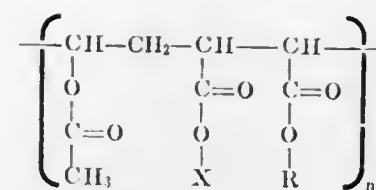
Int. Cl. C09k 1/10; C09k 1/54; C03c 3/28

U.S. Cl. 252-301.4 F

3 Claims

1. A substantially transparent, homogeneous luminescent glass consisting essentially of silica and oxides of the rare earths europium and terbium wherein the total number of such rare earth atoms per million silicon atoms is from 10 to 5,000, and the number of each of said rare earth atoms per million silicon atoms is at least five, said silica glass, exclusive

of said rare earth oxides, being at least 99 weight percent silica.



3,855,145 PREPARATION OF CONCENTRATED SILICA ORGANOSOLS

Peter H. Vossos, Lisle, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 110,582, Jan. 28, 1971, abandoned. This application Oct. 31, 1972, Ser. No. 302,631
Int. Cl. B01j 13/00

U.S. Cl. 252-309

5 Claims

1. A method of preparing a concentrated silica organosol which comprises the steps of:

- passing a silica sol containing 20-60 percent colloidal particles of amorphous silica through a cation exchange resin in the hydrogen form and a strong base anion exchange resin in the hydroxide form to produce a single deionized sol and after a holding time of 12-24 hours passing said single deionized sol through a cation exchange resin and an anion exchange resin to produce a double deionized silica sol having a SiO₂ content of from 50 to 70 percent by weight;
- adding said double deionized silica sol to a reaction vessel containing a water-miscible organic alcohol; feeding additional water-miscible organic alcohol as a water alcohol azeotrope is removed by vacuum distillation at a temperature below about 100°C; and recovering the silica organosol product.

3,855,146 PROCESS FOR PREPARING MICROSCOPIC CAPSULES CONTAINING HYDROPHOBIC OIL DROPLETS THEREIN

Keiso Saeki, and Hiroharu Matsukawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 29, 1972, Ser. No. 230,465

Claims priority, application Japan, Mar. 3, 1971, 46-11077; Mar. 12, 1971, 46-13361; Apr. 28, 1971, 46-28383

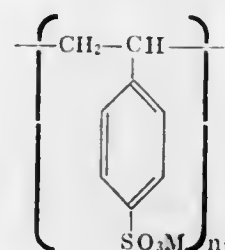
Int. Cl. B01j 13/02; B44d 1/44

U.S. Cl. 252-316

19 Claims

- In a process for preparing microscopic capsules containing hydrophobic oil droplets therein comprising:
 - emulsifying a water-immiscible oil in an aqueous solution of at least one hydrophilic colloid which is ionizable in water to obtain a first sol, and then mixing said first sol with an aqueous solution of a hydrophilic colloid which is ionizable in water and has an electric charge opposite that of said first sol, one of said sols being positively charged, or emulsifying a water-immiscible oil in an aqueous solution of hydrophilic colloids which are ionizable in water and at least one of which is positively charged, one of the hydrophilic colloids being relatively negatively charged;
 - adding water thereto, adjusting pH thereof, or adding water thereto and adjusting the pH thereof, to obtain coacervates wherein complex colloids are deposited around individual oil droplets;
 - cooling to gel the resulting coacervates;
 - adjusting the pH thereof to from 9 to 11, and
 - hardening said coacervate,
- the improvement comprising adding prior to step (3) a compound selected from the group consisting of (a) a vinyl acetate-maleic acid copolymer and derivatives thereof having the following repeating units:

wherein R represents a hydrogen atom, an alkyl group or an alkali metal atom, and X represents a hydrogen atom or an alkali metal atom, except that when R is an alkyl group X is an alkali metal atom and n represents the degree of polymerization and ranges such that the average molecular weight of the copolymer is about 500 to about 500,000 (b) a polyvinyl benzene sulfonate having repeating units of the following general formula:



wherein M represents an alkali metal atom and wherein n₁ represents the degree of polymerization and ranges such that the average molecular weight of the copolymer is from about 1,000 to about 3,000,000, or a copolymer of vinylbenzene sulfonate and a member selected from the group consisting of acryloylmorpholine, morpholino alkyl acrylamide, acrylamide, vinyl-pyrrolidone and alkoxyalkyl acrylamide and (c) a copolymer of acrylic acid or methacrylic acid and a member selected from the group consisting of acryloyl morpholine, morpholino-alkyl acrylamide, acrylamide, vinyl-pyrrolidone and alkoxyalkyl acrylamide or the salts of said copolymers of acrylic or methacrylic acid,

said compound selected from among (a), (b) and (c) being present in an amount sufficient to induce coacervation without becoming a predominant part of the main wall membrane of said microcapsules to prepare microscopic capsules encapsulated with a thick wall membrane having a low degree of porosity.

3,855,147 SYNTHETIC SMECTITE COMPOSITIONS, THEIR PREPARATION, AND THEIR USE AS THICKENERS IN AQUEOUS SYSTEMS

William T. Granquist, Houston, Tex., assignor to N L Industries, Inc., New York, N.Y.

Filed May 26, 1972, Ser. No. 257,303

Int. Cl. B01j 13/00

U.S. Cl. 252-317

16 Claims

- A synthetic mineral composition having the following formula per unit cell:

$$[(\text{Mg}_x\text{Al}_y\text{Si}_{4-x-y}\text{O}_{20}(\text{OH}_{4-n}\text{F}_n)]^{z-} \cdot (x\text{M}^2/z) + y\text{Mg}(\text{O},\text{OH})$$
 in which the contents of the braces constitutes said unit cell of a smectite and in which the contents of the square brackets represents the fixed lattice portion of the unit cell, said fixed lattice portion having a negative charge; and in which M represents cations balancing said negative charge, and wherein z is the valence of said M, and in which said M is selected from the group of cations consisting of alkali metal cations, alkaline earth metal cations, ammonium ions, and mixtures thereof; and in which y Mg(O,OH) is an accessory phase occluded with said smectite and consisting of hydrous magnesium oxide selected from the class consisting of magnesium oxide, magnesium hydroxide, hydrous magnesium oxide species intermediate therebetween, and mixtures thereof; and in which said x, said y, said z, and said a have values within the following ranges:

$$\begin{aligned} 0.1 &\leq x \leq 1.5 \\ 0.1 &\leq y \leq 2 \\ 0 &\leq a \leq 2 \\ 1 &\leq z \leq 2. \end{aligned}$$

3,855,148 SPRAYING AND SMOKE-LAYING APPARATUS

Otto Locher, Franz Haag, and Paul Bongartz, all of Isny, Germany, assignors to Heimo Geraetebau Gesellschaft mit beschränkter Haftung, Isny, Germany

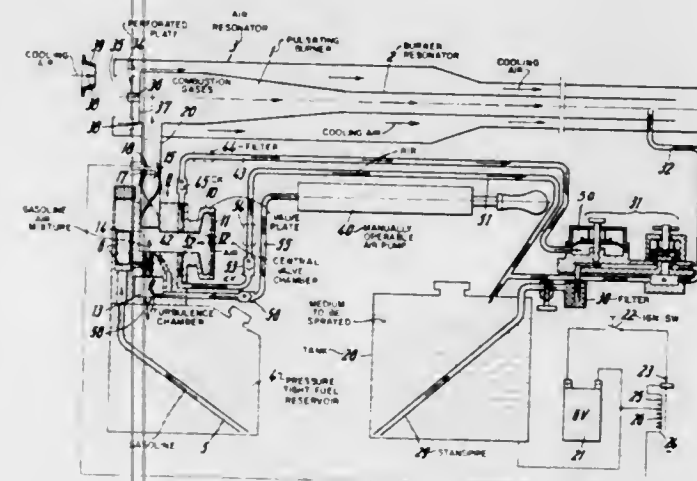
Filed Apr. 25, 1972, Ser. No. 247,296

Claims priority, application Germany, Apr. 28, 1971, 2120749

Int. Cl. B01d : B01f : B01j 13/00

U.S. Cl. 252-359 CG

16 Claims



- In an apparatus for fuel consumption and ejecting a flowable medium, as for spraying or smoke laying: a container for said medium, a pulsating burner having an intake end for admission of a combustible mixture and a discharge end, and a burner resonator having one end connected to the burner discharge end and the other end open to form a discharge orifice, conduit means leading from said medium container to said burner resonator to supply said medium thereto, an air resonator tube coaxial with and surrounding said burner and burner resonator and having an air inlet upstream of the intake end of said burner resonator and open at the other end to form a discharge orifice adjacent the discharge end of said burner resonator, an air inlet connected to said burner, valve forming means connected to the air inlet end of said air resonator tube, said burner including an end section forming a mixing passage leading substantially at right angles into said one end of said resonator, the length of said passage bearing a predetermined ratio to the length of said air resonator tube, said conduit means leading from said medium container to said burner resonator being connected to the latter near the discharge end thereof, said burner including a carburetor having a turbulence chamber spaced from the end of said mixing passage opposite the burner end of the passage, a fuel nozzle coaxial with the mixing passage and interposed between the mixing passage and turbulence chamber and spaced from the adjacent end of the mixing passage, a helical strip in the end of said end section, and a baffle plate at the downstream end of said strip defining an annular space with said mixing passage, said air inlet communicating with the space between said mixing passage and said nozzle, and ignition means on the downstream side of said baffle plate for igniting the fuel-air mixture in said passage.

3,855,149 METHOD OF INCREASING COLD WATER SOLUBILITY OF LOCUST BEAN GUM

Edward C. Bielskis, Chicago, Ill., assignor to C. J. Patterson Company, Kansas City, Mo.

Filed Nov. 13, 1972, Ser. No. 305,929

Int. Cl. B01f 3/12; B01j 13/00

U.S. Cl. 252-363.5

18 Claims

- A method of increasing the water-solubility of locust bean gum comprising the steps of:
 - passing sugar free locust bean gum through a processing zone for a period of time from about 15 seconds to 3 minutes, sufficient water being provided in the gum to cause the moisture content thereof to be at least at a level of from about 10 to 65 parts by weight of water for each 100 parts by weight of dry gum;
 - applying high compressive and shear forces to said gum while in said zone;
 - increasing the temperature of the gum in said zone while said compressive and shear forces are applied thereto; and
 - extruding the gum from said zone, the temperature of the gum being increased sufficiently in said zone such that gum exits therefrom at a temperature of from 160°-300° F.

3,855,150 STABILIZATION OF HYDROQUINONE SOLUTIONS WITH CITRIC ACID

Arthur P. Weris, III, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 46,521, June 15, 1970, abandoned.

This application Mar. 26, 1973, Ser. No. 344,806

Int. Cl. C07c 49/74; B01j 1/18

U.S. Cl. 252-404

5 Claims

- The method of stabilizing hydroquinone solutions comprising hydroquinone and a solvent therefor, said solvent being substantially free from impurities, against the formation of undesirable color and odor during storage which comprises adding to said solution from about 0.0025 percent to about 1 percent by weight of the solution of citric acid.

3,855,151 REACTIVATION OF SPENT CHROMIC FLUORIDE CATALYSTS

Wesley Gerald Schindel, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 24, 1973, Ser. No. 400,042

Int. Cl. B01j 11/02

U.S. Cl. 252-415

10 Claims

- A process for reactivating a spent chromic (Cr III) fluoride halogen-exchange catalyst comprising reacting the spent catalyst, at a temperature from about 300° to 500°C., with a chlorine-source selected from:
 - a saturated organic compound containing 1 or 2 carbon atoms, from 2 to 6 chlorine atoms and no hydrogen atoms, capable of dissociation at reaction temperatures to produce chlorine, and
 - a saturated organic compound containing 1 or 2 carbon atoms and from 2 to 6 chlorine atoms, not capable of dissociation at reaction temperatures to produce chlorine, and chlorine,
 thereby converting at least a part of the chromic fluoride to chromic (Cr III) chloride.

3,855,152

PREPARATION OF PERLITE-ASPHALT-FIBER COMPOSITIONS FOR SEPARATING HYDROCARBONS FROM WATER

Paul Preus, Toms River, N.J. 08753

Division of Ser. No. 83,640, Oct. 24, 1970, abandoned. This application Sept. 28, 1972, Ser. No. 292,886

Int. Cl. B01j 11/32

U.S. Cl. 252-430

2 Claims

1. The process of producing an oleophilic-hydrophobic-lighter than water composition for the separation of water immiscible organic liquid from water produced by:

forming an aqueous mix of a major proportion of expanded perlite, asphalt, and fibrous material to produce a coherent member;

removing the moisture from said member;

comminuting the demineralized member to produce a loose mass of particles having an average particle size with one dimension of at least about 1/8 inch in length, whereby said mass, when introduced into an organic liquid-water system, selectively absorbs the organic liquid from the water and remains buoyant.

3,855,153

UNSUPPORTED CATALYST FOR THE OXIDATION OF METHANOL TO FORMALDEHYDE

Gerald M. Chang, Orting, Wash., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed July 26, 1973, Ser. No. 383,037

Int. Cl. B01j 11/22

U.S. Cl. 252-470

6 Claims

1. In a method for producing an oxidation catalyst for the production of formaldehyde from methanol comprising:

I. forming an iron oxide-molybdenum oxide catalyst precursor by reacting a water soluble iron salt having a pH of between 1.5 and 2.1 with water soluble molybdate salt having a pH of between 2.25 and 5 to form a precipitate having a molar ratio of MoO_3 to Fe_2O_3 of from about 3.3:1 to 11.2:1 and

II. recovering the precipitate and

III. dehydrating the precipitate to a moisture content of from about 5 percent to about 30 percent by weight, followed by

IV. comminuting the precipitate and continued dehydrating to a moisture content of from about 2 percent to about 25 percent by weight, and

V. activating the comminuted precipitate prior to contact with methanol by placing the precipitate in a formaldehyde converter or a suitable oven and passing a mild stream of air through the converter or an oven while the temperature is raised to from about 300° to about 495°C and maintained until substantially all traces of moisture and gasifiable matter are removed; the improvement consisting of the following steps: (A) prior to activating, the dehydrated comminuted precipitate is ground to particle size ranging from about 0.033 inches to about 0.007 inches and then (B) balling the finely ground particles into spherical agglomerates while (C) simultaneously applying to the spherical agglomerates while they are forming a mixture of ammonium heptamolybdate and a cobalt containing compound selected from the group consisting of metallic cobalt, cobalt oxide, cobalt salts and ammonium 6-molybdocobaltate (III) so that the final balled catalyst precursor contains from 0.001 percent to about 0.20 percent cobalt by weight, and from 0.01 percent to about 2 percent ammonium molybdate by weight, and (D) dehydrating the spherical agglomerates to a moisture content of about 2 percent to about 10 percent by weight.

3,855,154

CATALYST FOR CONVERSION OF NON-CYCLIC C_3 - C_5 ALKANES TO AROMATIC HYDROCARBONS

Maurice M. Mitchell, Jr., Wallingford, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,720

Int. Cl. B01j 11/06, 11/32

U.S. Cl. 252-456

4 Claims

1. A method for the production of supported bismuth oxide dehydrodimerization particles of from 20 to 50 mesh size and having substantially the same density as particles of a chromia-alumina catalyst containing from 10 to 25 mole per cent chromia in the same size range for use in a non-segregating admixture with said chromia-alumina particles at a weight ratio of supported bismuth oxide to chromia-alumina of about 1:1 for the conversion of non-cyclic C_3 - C_5 alkanes to aromatic hydrocarbons of twice the number of carbon atoms as the alkane converted, which comprises dissolving bismuth nitrate in dilute nitric acid, contacting the resulting solution with silica gel particles in the 20 to 50 mesh range, U.S. Sieve, to deposit the bismuth nitrate on the silica gel surface, the ratio of bismuth nitrate to silica gel being adjusted such that after the bismuth nitrate is converted to the bismuth oxide, the bismuth oxide on the silica gel will range from about 12 weight per cent to 22 weight per cent based on the combined weight of the bismuth oxide and silica gel, drying the coated particles, contacting the coated particles with a dilute solution of ammonium hydroxide until the final pH of the wash solution is about 10, recovering the solids by filtration, drying the recovered solids at from about 100°C. to 150°C. calcining the dried solids by gradually increasing the calcination temperature over a period of about 6 to 8 hours to a final temperature in the range of 575°C. to 625°C. and finishing the calcination by holding the particles at the final calcination temperature for about 1 hour.

3,855,155

BARIUM PROMOTED IRON OXIDE CATALYST SUITED FOR USE IN STEAM-IRON PROCESS FOR PRODUCING HYDROGEN

Harlin D. Johnston, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 78,566, Oct. 6, 1970, Pat. No. 3,726,966.

This application Jan. 24, 1973, Ser. No. 326,320

Int. Cl. B01j 11/22

U.S. Cl. 252-473

9 Claims

1. A catalyst suitable for use in a steam-iron process for producing hydrogen consisting essentially of iron oxide promoted with a minor amount of barium intimately and uniformly distributed throughout the iron oxide, said catalyst having a surface area of at least about 1 square meter per gram and a pore volume of at least 0.5 ml/g in pores larger than about 200 Å.

3,855,156

NEW DETERGENT COMPOSITION

Hideo Marumo, 5-4 Nishikubo, 3 Chome, Tokyo, Japan

Filed May 5, 1972, Ser. No. 250,653

Claims priority, application Japan, May 10, 1971, 46-30391; Jan. 26, 1972, 47-9019

Int. Cl. C11d 1/18, 3/26

U.S. Cl. 252-547

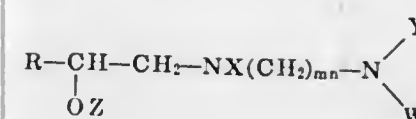
8 Claims

1. A detergent composition consisting essentially of at least one surface active agent of the formula:

DECEMBER 17, 1974

CHEMICAL

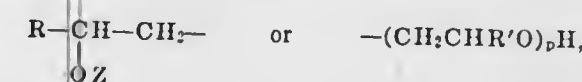
1213



wherein R is a hydrocarbon of 4 to 30 carbon atoms; Z is hydrogen or $-(\text{CH}_2\text{CHR}'\text{O})_p\text{H}$,

wherein R' is hydrogen or methyl and p is an integer from 1 to 100;

X, Y and W are independently hydrogen,



wherein Z and P are as defined above;

m is an integer from 2 to 10;

n is an integer from 0 to 5;

and salts thereof.

3,855,157

CURABLE MIXTURES OF EPOXIDE RESINS AND PIPERIDINE DERIVATIVES

Helmut Zondler, Allschwil, Switzerland, and Wolfgang Pfeiderer, Konstanz, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 325,462, Jan. 22, 1973, abandoned, which is a continuation of Ser. No. 133,445, April 12, 1971, abandoned. This application Sept. 6, 1973, Ser. No. 394,956

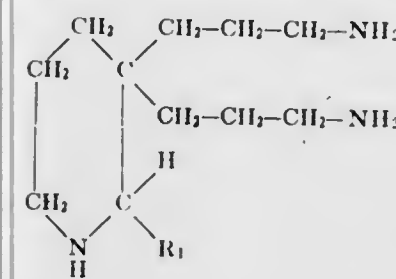
Claims priority, application Switzerland, Apr. 13, 1970, 5452/70

Int. Cl. C08g 30/14

U.S. Cl. 260-2 N

9 Claims

1. A composition of matter which comprises (a) a 1,2-polyepoxide compound with an average of more than one epoxide group in the molecule and (b) as the curing agent, a 3,3-bis-(γ -aminopropyl)-piperidine of the general formula



wherein R₁ represents a hydrogen atom or a methyl group.

3,855,158

RESINOUS REACTION PRODUCTS

John P. Petrovich, and David L. Taylor, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1972, Ser. No. 318,820

Int. Cl. C08g 33/06

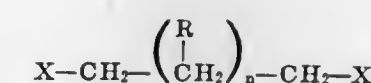
U.S. Cl. 260-2 BP

13 Claims

1. A cationic resinous composition comprising the reaction product of

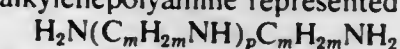
A. an adduct of

1. a dihaloalkane represented by the formula



wherein X represents chloro, bromo, or iodo, R is hydrogen, hydroxy or alkyl group having 1 to 4 carbon atoms, and n is 0 or 1 and

2. a polyalkylenepolyamine represented by the formula



wherein m is an integer of from 4 to about 15 and p is 0 or 1 in a mole ratio of from about 0.5:1 to about 0.95:1 and

B. an epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin, and epiodohydrin, in a mole ratio of from about 1.25 to about 2.5 moles of epihalohydrin per mole of amine group in said adduct.

3,855,159

POLYURETHANE FOAM SYSTEM

Donald H. Russell, Cherry Hill, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 7, 1973, Ser. No. 367,987

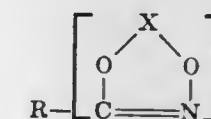
Int. Cl. C08d 13/08

U.S. Cl. 260-2.5 AM

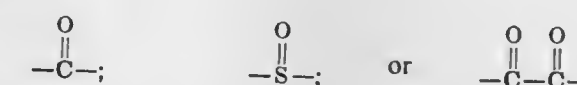
13 Claims

1. A unitary polyurethane system comprised of two separately contained components which, when brought together, rapidly react without external heat to form polyurethane foam comprising:

1. A first component comprised of a cyclic nitrile compound having the structural formula



wherein X is



R is an organic radical containing 2 to 200,000 carbon atoms free from reactive hydrogens as determined by the Zerewitinoff test; and n is at least 2, and

2. A second component comprised of a first organic compound having at least 2 hydroxyl groups per molecule and a second organic compound having a total of at least 2 primary or secondary amine groups or mixtures of these per molecule, said first and second organic compounds each containing 2 to 100,000 carbon atoms and said cyclic nitrile carbonate and said first and second organic compounds being free of substituents which interfere with the desired reaction between the cyclic nitrile carbonate and said organic compounds.

3,855,160

THERMOSETTING FOAMABLE RESINOUS COMPOSITION

Tatsuzo Shiotsu, and Toshio Adachi, both of Osaka, Japan, assignors to Leben Utility Co., Ltd., Osaka-shi, Japan

Continuation of Ser. No. 192,892, Oct. 27, 1971, abandoned.

This application June 12, 1973, Ser. No. 369,143

Claims priority, application Japan, Oct. 27, 1970, 45-93920

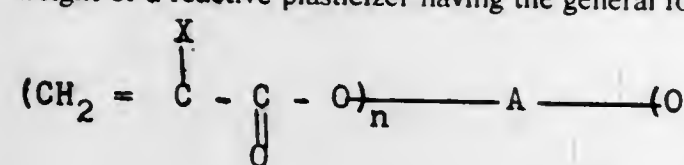
Int. Cl. C08g 53/10

U.S. Cl. 260-2.5 N

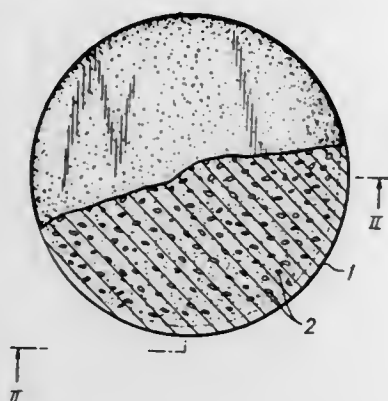
11 Claims

1. A thermosetting foamable resinous composition which consists essentially of (1) 5-70 percent by weight of a vinyl chloride resin having an average degree of polymerization of 500 to 2500 and a particle size of 0.05 - 50 microns, (2) 5-70 percent by weight of an unsaturated polyester resin having an average condensation degree of at least 4 and a number average molecular weight of 1,000 or more, (3) 2-60 percent by

weight of a reactive plasticizer having the general formula,



wherein A is a residue of a compound having at least two hydroxy group at molecule ends, or a compound having at least one ester or ether linkage in a molecule and at least two



terminal hydroxy groups; X stands for a hydrogen or halogen atom, or an alkyl group such as methyl and ethyl; and n and m are an integer of 1 to 3, (4) 0.02 - 3 percent by weight of a polymerization initiator, and 1 - 80 percent by weight of a bubbling material selected from the group consisting of: (a) hollow fine particles (b) microcapsules or resins and (c) fine particles of molecular sieve type adsorbents, said material containing a gas or a substance capable of releasing a gas at a temperature lower than the curing temperature of the composition.

3,855,161

METHOD OF NEUTRALIZING A CATALYZED ALDEHYDE CONDENSATION RESIN FOAM

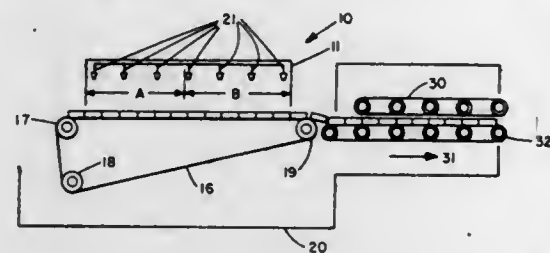
William H. Bauer, Medway, Mass., assignor to Filfast Corporation, Holliston, Mass.

Filed June 14, 1973, Ser. No. 369,809

Int. Cl. C08g 53/08

U.S. Cl. 260-2.5 F

8 Claims



1. A method of treating a self-supporting mass of an acid catalyzed urea-formaldehyde foam to increase the pH of the foam and remove unwanted materials therefrom, said method comprising forming a foam mass with the use of an excess of acid catalyst, allowing said foam mass to react to a self-supporting mass having a pH of from about pH 1 to pH 3, and subjecting a surface of said foam mass to a hot aqueous liquid containing a treating material selected from the group consisting essentially of a cationic wetting agent and an anionic wetting agent, at a temperature of from about 120°F to about 212°F under conditions which permit said treating material containing liquid to enter cells of said mass and wash said mass to bring it to a pH of from about 6 to 8.

3,855,162 POLYMERIZATION OF VINYL CHLORIDE MONOMER IN THE PRESENCE OF SILICEOUS FILLERS

Jean-Pierre Durand, Chatou; Claude Fabre, Montrouge, and Maseh Osgan, Paris, all of France, assignors to Gerdec, Paris, France

Filed Apr. 20, 1973, Ser. No. 352,949

Claims priority, application France, Apr. 24, 1972, 72.14391

Int. Cl. C08f 45/04

U.S. Cl. 260-17.4 SG

25 Claims

1. In a process for producing reinforced polymers comprising the step of polymerizing vinyl chloride in the presence of a phyllosilicate filler and a polymerization, said polymerizing being either bulk polymerization, solvent polymerization, or precipitation polymerization in the presence of non-aqueous diluent,

the improvement wherein said polymerizing is conducted in a polymerization medium in the controlled presence of 1-20 percent by weight water based on the weight of the phyllosilicate filler the water content of the polymerization medium being adjusted by the addition of water thereto.

3,855,163

MALEINIZED FATTY ACID ESTERS OF 9-OXATETRACYCLO-4.4.1 O O UNDECAN-4-OL

George W. Bussell, Dearborn, Mich., assignor to Inmont Corporation, New York, N.Y.

Continuation of Ser. No. 339,289, March 8, 1973, abandoned, which is a division of Ser. No. 179,168, Sept. 9, 1971. This application Mar. 4, 1974, Ser. No. 447,553

Int. Cl. C08g 30/00

U.S. Cl. 260-18 EP

5 Claims

1. A water-reducible resin useful for coating substrates by electrodeposition, said resin corresponding to the reaction product obtained by heating a mixture consisting of 15 to 20 percent maleic anhydride and 85 to 90 percent of a synthetic oil containing alicyclic rings comprised of the esterification product of one mole 9-oxatetracyclo-4.4.1^{2,5}O^{1,6}O^{8,10} undecan-4-ol with three moles of unsaturated long chain fatty acid, said esterification product being prepared in the presence of an esterification catalyst, and said heating of the maleic anhydride and synthetic oil being at a temperature of 205 to 240°C. until substantially all of the maleic anhydride has reacted and the acid number is 50 to 90 based on non-volatiles.

3,855,164

STABILIZED POLYBUTADIENE COMPOSITIONS

Delmar F. Lohr, Jr., Bedford Heights, and Joseph A. Beckman, Franklin Township, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 25, 1972, Ser. No. 257,028

Int. Cl. C08c 11/72; C08d 9/14

U.S. Cl. 260-23.7 R

16 Claims

1. Process of producing a heat-stabilized resin which comprises subjecting to curing temperatures a composition containing

Parts by Weight

A butadiene polymer or copolymer resin	100
A tri(hydrocarbyl)trithiophosphite	0.5-4.0
A calcium soap	0.5-4.0
A peroxidecuring agent	0.5-6.0

the hydrocarbyl groups in said tri(hydrocarbyl)trithiophosphite containing 1-25 carbon atoms and being selected from the group consisting of aliphatic, cycloaliphatic, aromatic and aralkyl radicals, the resin being a homopolymer of butadiene or a copolymer of butadiene and styrene with an average molecular weight of at least 12,500, at least 50 percent of the resin having a molecular weight above 10,000 and at least 95 percent of the resin having a molecular weight above 2,000, and containing at least 40 percent by weight of butadiene with at least 80 percent of butadiene repeating units in the homopolymer or copolymer being in the 1,2 configuration, the calcium soap being a salt of abietic acid or a fatty acid containing 8 to 26 carbon atoms and the peroxide being one which gives radicals of the structure $R_2(\text{CH}_2\text{CO})$ in which R represents a hydrocarbon radical of 1 to 20 carbon atoms.

3,855,165

NOVEL PROCESSING AIDS FOR RUBBER COMPOUNDS

Erwin Aron, 106 Railroad Ave., Clifton, N.J. 07509

Continuation-in-part of Ser. No. 128,549, March 26, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,357

Int. Cl. C08c 11/72; C08d 9/14

U.S. Cl. 260-23.7 M

15 Claims

1. A composition comprising:

- From about 5 percent to about 15 percent of aromatic esters selected from the group consisting of (1) di-aryl- and di-arylalkyl phthalates; (2) di-aryl- and arylalkyl mono-glycol ether phthalates; (3) phthalates from polyglycol monoethers of aryl and arylalkyl compounds wherein the polyglycol chain contains from 2 to 6 ethylene oxide groups in the chain; (4) di-benzoates of glycol, and propyleneglycol, and their di- and trimers; and (5) mixtures of the above.
- From about 5% to about 30% of compounds with alcoholic or glycolic hydroxyl groups selected from the group consisting of (1) straight or branched chain aliphatic alcohols having from about 8 to 20 carbons in the chain; (2) alkyl-phenoxy ethers of glycols or polyglycols wherein the alkyl group is limited to about 12 carbons in the chain, and the polyglycol grouping does not contain more than about 6 $(\text{CH}_2-\text{CH}_2-\text{O}-)$ groups; (3) polypropylene glycol of approximately three propylene oxide groups in the molecule; and (4) mixtures of the above.
- From about 5% to about 15% of potassium or sodium soaps made from commercial mixtures of fats or fatty acids containing from about 12 to about 18 carbons in the chain, said chains having only a small degree of unsaturation with more than 50% of them having 18 carbons in the chain.
- From about 10% to about 30% of fatty acids having from about 12 to about 18 carbon atoms in the chain, said chains having only a small degree of unsaturation, with more than 50% of them having 18 carbon atoms in the chain.
- From about 5% to about 10% of a metal soap where the metal is selected from the group consisting of zinc, magnesium, calcium or barium, and the fatty acid part of the soap has from about 12 to 18 carbon atoms in the chain and contains a high percentage of chains with a single double bond in the chain.

f. From about 15% to about 60% of hydrocarbons selected from the group consisting of mineral oil, mineral waxes, and petrolatum, or mixtures of them.

3,855,166

BINDER RESINS FOR ELECTRON PHOTOGRAPHY AND THE LIKE AND METHOD OF PRODUCTIVE THEREOF

Makoto Fukuda, Sagami-hara; Tatsuo Nakano, and Ikuji Kishi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha and Denki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 26, 1973, Ser. No. 409,787

Int. Cl. C08f 45/52; G03g 9/02

U.S. Cl. 260-28.5 R

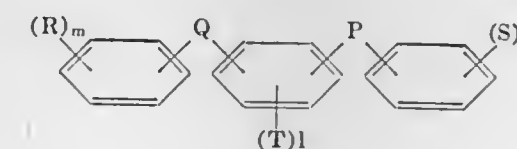
22 Claims

1. A resin composition comprising 30 to 85% by weight of at least one polymer selected from the group consisting of polystyrene and copolymers of styrene-vinyl unsaturated monomers, 5 to 68% by weight of chlorinated paraffins having at least 30% by weight bound chlorine content, and 2 to 24% by weight of at least one aromatic compound represented by the formula:



(I)

and aromatic compounds represented by the formula:



(II)

wherein P and Q are an alkylene group; R, S and T are hydrogen or an alkyl group; and l, m and n are a positive integer.

3,855,167

PAVING COMPOSITIONS AND METHODS OF MAKING SAME

Harold M. Bowman, 475 Humiston Dr., Bay Village, Ohio 44140

Filed Sept. 29, 1969, Ser. No. 862,021

Int. Cl. C08g 51/52; C08h 13/00; C08k 1/62

U.S. Cl. 260-28

17 Claims

1. In a method of making an asphalt pavement in which hot asphalt is mixed with a mineral aggregate to provide a paving composition that is formed into pavement relatively soon after mixing, the improvement comprising the steps of:

- mixing (1) about 4 to 10%, by weight, of the paving compositions of hot asphalt having a penetration of about 60 to 90 with (2) a finely divided mineral aggregate having a mesh size of about 4 to 200 mesh in which each particle has a size not substantially larger than about one-sixteenth inch, the aggregate including (A) particles of uncoated sand and (B) about 2 to 60%, by weight, of the composition of particles of sand coated with an oil-soluble curable thermoplastic resin that is compatible with the asphalt and (3) sufficient amount of a hardening agent for curing the resin when contacted with the hot asphalt, and
- forming the mixture of step (1) and hardening the same into asphalt pavement having high stability and good flow properties, the pavement having a stability of at least about 1,200 pounds by the Marshall stability test and a flow of about 7 to 15 as measured by the inclined glass plate flow test in which millimeters of flow of a 0.5 gram tablet of the resin heated to 125°C are recorded when the plate is inclined 65° from the horizontal.

3,855,168

ADHESIVE COMPOSITION FOR BONDING POLYESTER FIBER TO RUBBER

Takao Ozeki; Kazuo Ito, both of Ohtake; Yutaka Maeda, Iwakuni, and Takeshi Kudo, Ohtake, all of Japan, assignors to Mitsubishi Rayon, Ltd., Tokyo, Japan

Filed Aug. 1, 1972, Ser. No. 277,127

Claims priority, application Japan, Aug. 3, 1971, 46-58510; Aug. 6, 1971, 46-59470

Int. Cl. C08g 51/24

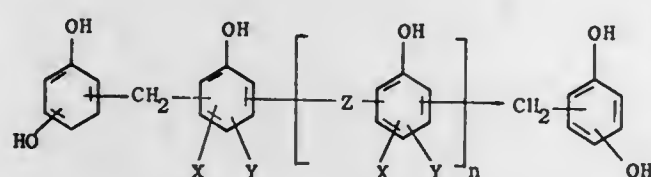
U.S. Cl. 260—29.3

11 Claims

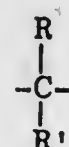
1. In an adhesive composition for bonding polyester fiber to rubber, which composition comprises:

- a polynucleus halophenol compound,
- a thermosetting resin which is obtained by the reaction of resorcinol with formaldehyde in a molar ratio of resorcinol to formaldehyde within the range 1/0.7 to 1/3.0 in the presence of an alkali catalyst, and
- a rubber latex;

and wherein the solids weight ratio of (i)/(ii) is 10/1 to 1/10 and the solids weight ratio of ((i)+(ii))/(iii) is 2/1 to 1/10; the improvement which comprises employing as the polynucleus halophenol compound (i), a compound of the formula:



where X is chlorine or bromine, Y is chlorine, bromine, hydrogen, hydroxyl, or alkyl of 1 to 4 carbon atoms, Z is $-S_x-$ in which x is an integer of 1 to 4, $-S(O)_y-$ in which y is 1 or 2, or



in which R and R' may be the same or different and are hydrogen, C_{1-4} alkyl, C_{6-10} aryl, C_{7-18} aralkyl, C_{1-8} haloalkyl or furyl, and n is an integer of 1 to 6.

3,855,169

ELECTROCOATING COMPOSITIONS AND METHOD FOR MAKING SAME

John H. Lupinski, Scotia, and Wilson J. Barnes, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 23, 1972, Ser. No. 265,533

Int. Cl. C08g 20/32

U.S. Cl. 260—29.2 N

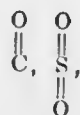
4 Claims

1. Polyamide acid base mixtures having from about 0.05 to about 1.0 meq of base per gram of polyamide acid, comprising by weight,

- 2 to 15% of a dispersed phase of a particulated polyamide acid having less than about 25 ppm of titratable chloride based on the weight of polyamide acid, which prior to being at least partially base neutralized is the product of reaction of substantially equal molar amounts of an organic diamine of the formula, NH_2RNH_2 , and chloroformylphthalic anhydride,

- 85 to 98% of a solvent phase containing as essential ingredients,
 - water and
 - organic solvent selected from a class consisting of N,N-dimethylformamide, N,N-dimethylacetamide, N,N-diethylformamide, N,N-diethylacetamide, N,N-dimethylmethoxyacetamide, N-methylcaprolactam, dimethylsulfoxide, N-methyl-2-pyrrolidone, tetra-

thylurea, pyridine, dimethylsulfoxide, tetramethylenesulfone, N-methylformamide, and N-acetyl-2-pyrrolidone, where the ratio of i/ii has a value of from 3.75 to 1.0, R is selected from the class consisting of a divalent aromatic hydrocarbon radical having from 6 to 18 carbon atoms, and R'QR', R' is a divalent aromatic selected from the class R radicals and Q is a member selected from O,



C_{12-18} alkylene, Si and S.

3,855,170

POWDER-RESISTANT ACRYLIC POLYMER FLOOR FINISHES

James H. Junkin, Oakland, Calif.; Martin E. Ginn, Park Forest, and Ernest T. Fronczak, Crystal Lake, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 331,238, Feb. 9, 1973, abandoned. This application Dec. 14, 1973, Ser. No. 424,698

Int. Cl. C08f 37/18

U.S. Cl. 260—29.6 RW

12 Claims

1. An aqueous emulsion floor finish containing as the principal film forming polymer a zinc crosslinked acrylic polymer having a Knoop Hardness Number (KHN) of about 14 to 18, said principal polymer being suitable for use in a floor finish and having been prepared by the emulsion polymerization of a mixture of monomers selected from the group consisting of lower alkyl esters of acrylic acid, methacrylic acid, or mixtures thereof, or at least one of said esters together with a minor proportion of acrylic acid, methacrylic acid or mixtures thereof, said floor finish having incorporated therein in combination with said principal polymer the following modifying polymers:

- from 1 to 10 parts by weight per 100 parts of said principal polymer of a hard acrylic polymer having a KHN of 19 to 25, said hard acrylic polymer having been prepared by emulsion polymerization of at least one lower alkyl ester of methacrylic acid; and
- from 1 to 10 parts by weight per 100 parts of said principal polymer of a soft acrylic polymer having a KHN of not over 5.0, said soft acrylic polymer having been prepared by emulsion polymerization of acrylate monomers selected from (i) at least one lower alkyl ester of acrylic acid and (ii) a mixture of (i) with at least one monomer selected from methacrylic acid, acrylic acid, and lower alkyl esters of methacrylic acid;

said hard polymer being present in relative proportions by weight of from 0.5 to 2 parts per each part of said soft polymer.

3,855,171

ORGANOPOLYSILOXANE COMPOSITIONS

Karl-Heinrich Wegehaupt, Burghausen; Gunther Kratel, Sankt Mang, and Manfred Leiser, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 1, 1972, Ser. No. 248,998

Int. Cl. C08g 51/04

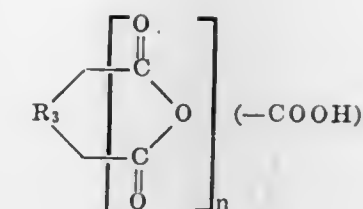
U.S. Cl. 260—37 SB

16 Claims

1. A composition comprising an organopolysiloxane in which at least about 80 percent by weight of the organopolysiloxane is a diorganopolysiloxane of the formula $(HO)_x(SiR_yO_{4-y/2})_nH$

in which R is selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, n is an integer of at least 3, x has an average value of from 0.99 to 1.01, y has an average

age value of from 1.99 to 2.01, and the sum of x + y is 3 and pyrogenically produced mixed oxides of boron and an element selected from the class consisting of silicon, aluminum, titanium and iron, said mixed oxides containing from 2 to 20 percent by weight of boron calculated as elemental boron, said mixed oxides being present in an amount of from 0.005 to 20 percent by weight of boron based on the weight of the organopolysiloxane.



3,855,172

UNIFORM OXIDE MICROSPHERES AND A PROCESS FOR THEIR MANUFACTURE

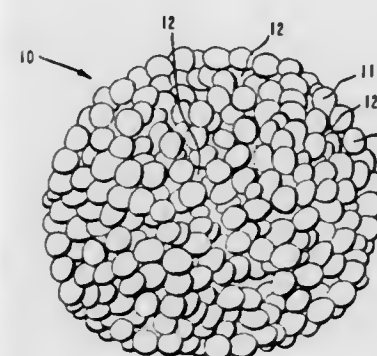
Ralph K. Iler, and Herbert J. McQuestion, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 7, 1972, Ser. No. 242,039

Int. Cl. 260 395 B; C08g 51/04

U.S. Cl. 260—39 R

22 Claims



1. A process for forming uniform-sized inorganic microparticles comprising the steps of:

- forming a sol of uniform-sized inorganic colloidal particles in a polar liquid, said colloidal particles having a hydroxylated surface and being dispersible in said polar liquid, said colloidal particles being isodimensional or rod shaped particles with at least two dimensions in the range of 5 to 500 millimicrons and the third dimension in the range of 5 to 1,000 millimicrons;
- forming a homogeneous solution of said sol with a polymerizable organic material comprising formaldehyde and a second organic material selected from the group consisting of urea and melamine
- initiating polymerization of the organic material in said solution to cause coacervation of said organic material and said colloidal particles into substantially spherical microparticles having a diameter of about 0.5 to about 20 microns;
- solidifying the microparticles so formed; and
- collecting, washing and drying said microparticles.

3,855,173

HIGH TEMPERATURE STABLE MODIFIED AROMATIC AMINE-ALDEHYDE MOLDING POWDERS MODIFIED WITH AROMATIC POLYCARBOXYLIC ACID, AND MOLDED ARTICLE

Rodney M. Huck, Longmeadow, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 302,342, Oct. 30, 1972, Pat. No. 3,792,020, which is a continuation-in-part of Ser. No. 119,536, March 1, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,868

Int. Cl. C08g 9/06, 15/00

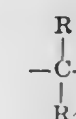
U.S. Cl. 260—39 R

7 Claims

1. An article of manufacture molded from a molding powder comprising a blend of: A. an aromatic polycarboxylic compound of general formula:

in which R_3 is an aromatic radical of three, four, five, or six valences and containing from 6 to 24 carbon atoms; n is an integer of from 0 through 3; m is an integer of from 0 through 6; and the sum of $2n + m$ is always equal to the valence of R_3 ; B. an aromatic amine-aldehyde resin characterized by having:

1. a number average molecular weight of from 200 to 1,000,
2. at least two aryl moieties per molecule, the aryl nucleus of each aryl moiety containing from 6 through 10 carbon atoms each,
3. at least one divalent bridging moiety of the formula:



wherein R_1 and R_2 are each individually selected from the group consisting of hydrogen, lower alkyl, lower alkylene, lower haloalkyl aryl of from 6 through 12 carbon atoms, haloaryl of 6 through 12 carbon atoms, and heterocyclic structures containing rings with 5 or 6 members, each heterocyclic ring containing an oxygen, a sulfur or a nitrogen atom, such heterocyclic structures being bonded to the carbon atom of said bridging moiety and wherein said bridging moiety has the unsatisfied valences of its carbon atom each bonded to a different one of said aryl moieties,

4. either at least one $-NH$ group or at least one $-NH_2$, or both, per each resin molecule, one bond of which is directly attached to one of said aryl nuclei and the other bond of which is attached to another of said aryl nuclei or to a radical R_1 as defined above,
5. a number average of primary amine groups per said aryl moiety of less than about 0.99, and
6. a percent nitrogen acetyl of from about 3 to 30; wherein the relative proportions of aromatic polycarboxylic compound and aromatic amine-aldehyde resin are such that the blend is thermosettable; and wherein the blend has been advanced at a temperature in the range of 300° to 600°F., and the volatiles generated by further heating to 600°F. for 10 minutes, have been reduced to less than 2 percent of the initial weight of the blend.

3,855,174

METHOD OF MANUFACTURE OF COMPOSITE MATERIALS CONSISTING OF CARBON FIBERS AND RESIN AND MATERIALS THUS OBTAINED

Michel Brie, Orsay, and Gerard Riess, Mulhouse, both of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Continuation of Ser. No. 235,302, March 16, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,553 Claims priority, application France, Mar. 19, 1971, 71.09822

Int. Cl. C08g 51/08

U.S. Cl. 260—40 R

13 Claims

1. A method of manufacture of a composite material of carbon fibers and resin comprising the steps of oxidizing and salifying the carbon fibers, then fixing on the treated carbon fibers by an ionic bond a block or graft copolymer of two different polymers which are incompatible with each other, the first of these polymers being an elastomer selected from

the group consisting of polyisoprene, polybutadiene, poly (butadiene-co-acrylic acid), poly (butadiene-co-methacrylic acid), polyisobutylene, polysiloxanes and polyacrylates, the second polymer being selected from the group consisting vinyl acetate-vinyl chloride copolymer, alternate maleic anhydride-styrene copolymer, maleic anhydride-polyethylene copolymer and polyvinylpyridine copolymer, the ionic bond being selected from the group consisting of a hydrogen bond, a dipole-dipole bond and a saline bond and then incorporating the fibers thus treated in a resin compatible with the second polymer of the copolymers.

3,855,175

PROCESS FOR PREPARING NOVEL GLASS FIBER REINFORCED THERMOPLASTIC COMPOSITION

Tetsuji Kakizaki, c/o Jushikenkyujo Mitsubishi Petrochemical Co., Ltd., Yokkaichi, Japan

Continuation-in-part of Ser. No. 338,535, March 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 175,355, Aug. 26, 1971, abandoned. This application Oct. 24, 1973, Ser. No. 409,065

Claims priority, application Japan, Sept. 1, 1970, 45-76488; Great Britain, Sept. 3, 1971, 40776/71

Int. Cl. C08f 45/10

U.S. Cl. 260—42.15

9 Claims

1. A process for preparing a glass fiber reinforced thermoplastic composition which comprises

treating 5–60 percent by weight of glass fibers with 0.01–1.0 percent by weight based on the weight of said fibers, of an organosilane selected from the group consisting of bis-(β -hydroxyethyl)- γ -aminopropyltriethoxysilane, β -(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, γ -glycidyloxypropyltrimethoxysilane, γ -aminopropyltriethoxysilane, N- β -(aminoethyl)- γ -aminopropyltriethoxysilane, and n-(dimethoxymethyl silylpropyl) ethylene diamine,

admixing said treated fibers with 95 to 40 weight percent of polypropylene, and 0.01–0.5 percent by weight of a peroxide, and 0.1 to 5.0 percent by weight of an organosilane coupling agent selected from the group consisting of vinyltriethoxysilane, vinyltrichlorosilane, vinyl-tris (β -methoxyethoxy)silane, γ -methacryloxypropyltrimethoxysilane, β -(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, γ -glycidyloxypropyl-trimethoxysilane, γ -aminopropyltriethoxysilane, N- β -(aminoethyl)- γ -aminopropyltrimethoxysilane, bis (γ -hydroxyethyl)- γ -aminopropyltriethoxysilane, γ -chloropropylmethoxysilane, γ -mercaptopyltrimethoxysilane, n-(dimethoxymethyl silylpropyl) ethylene diamine, γ -chloroisobutyltriethoxysilane, β -cyclohexylethyltrimethoxysilane, phenyltriethoxysilane, amyltrimethoxysilane, vinyltrimethoxysilane, and mixtures thereof, and melt-shaping the resulting mixture.

3,855,176

LINER COMPOSITION FOR ROCKET MOTORS COMPRISING CROSSLINKED CARBOXY TERMINATED POLYBUTADIENE WITH INERT FILLER

Paul H. Skidmore, Frostburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 16, 1970, Ser. No. 14,831

Int. Cl. C08f 45/04, 45/08

U.S. Cl. 260—42.28

7 Claims

1. A liner composition for rocket motors consisting of a carboxy terminated polybutadiene; an organo-metallic salt catalyst; a tri epoxy resin curing agent selected from the group consisting of the trifunctional epoxide of epichlorohydrin and p-aminophenol, the triglycidyl ether of epichlorohydrin and phenol-formaldehyde novolac and the triglycidyl ether of epichlorohydrin and glycerol; and a reinforcing inert filler

material selected from the group consisting of colloidal silica, bentonite, carbon black and magnesium silicate; and wherein said carboxy terminated polybutadiene is present in an amount of from about 91 to 96 weight percent, said tri epoxy resin curing agent is present in an amount of from about 3 to about 5 weight percent and said inert filler is present in an amount from about 1.5 to about 3.5 weight percent.

3,855,177

PNEUMATIC TIRE TREADS AND THEIR PRODUCTION

Joseph C. Sanda, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed June 8, 1972, Ser. No. 260,869

Int. Cl. 260 859R; C08g 51/04; B60c 1/00

U.S. Cl. 260—42.47

3 Claims

1. A tread for a pneumatic tire composed of (a) an elastomeric polyisocyanate reaction product of an amino-terminated polyoxyalkylene in which each alkylene group contains 2 to 4 carbon atoms or (b) a diisocyanate reaction product of a blend of polyhydroxy butadiene-styrene copolymer and amino-terminated polyoxypropylene, and containing at least 30 parts of reinforcing pigment per 100 parts of the reaction product, the ratio of NCO/(OH+NH₂) being at least 1.15.

3,855,178

METHOD FOR MAKING POLYETHERIMIDES

Dwain M. White, Schenectady, and Frank J. Williams, III, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,220

Int. Cl. C08f 45/54

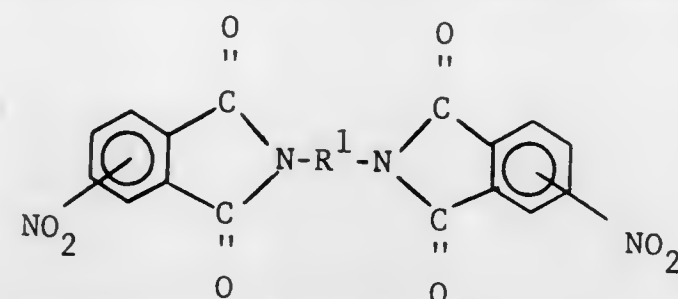
U.S. Cl. 260—45.7 S

10 Claims

1. A method for stabilizing polyetherimide which comprises heating an organic solvent solution of said polyetherimide containing at least 1–10 percent by weight based on the weight of said polyetherimide of an alkali metal organic stabilizer of the formula,

R²X'M

to a temperature of up to about 60°C for a time at least sufficient to stabilize such polyetherimide so that it will be substantially free of a tendency to gel at temperatures up to 315°C, where said polyetherimide has an intrinsic viscosity of at least 0.1 and is made by effecting reaction in a dipolar aprotic solvent at temperatures up to about 80°C between substantially equal molar amounts of a dinitro-bisimide of the formula



and an alkali diphenoxide of the formula

MO—R—OM

where R is an aromatic organic radical having from 6–30 carbon atoms, R¹ is an organic radical having from 1–20 carbon atoms, and R² is a monovalent organic radical selected from C_(1–4) alkyl radical and aromatic organic radicals having from 6–20 carbon atoms, X' is a member selected from the class consisting of —O— and —S—, and M is an alkali metal ion selected from the class consisting of sodium, potassium and lithium.

3,855,179

STABILIZATION OF VINYL CHLORIDE POLYMERS

Anthony James Wilkins, and Peter Albert Theodore Hoyer, both of Stourbridge, England, assignors to Albright & Wilson Limited, Oldbury, England

Continuation-in-part of Ser. No. 379,742, July 16, 1973, abandoned, which is a continuation of Ser. No. 839,072, July 3, 1969, abandoned. This application Sept. 21, 1973, Ser. No. 399,410

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 K

2 Claims

1. A vinyl chloride polymer composition stabilized against the deteriorative effects of heat wherein the vinyl chloride polymer contains between 80 and 100 percent by weight of repeating units derived from vinyl chloride, the remaining 0–20 percent being derived from ethylenically unsaturated monomers copolymerizable with vinyl chloride, and wherein a two-component stabilizer is present in an amount between 0.5 and 5 percent, based on the weight of vinyl chloride polymer, said stabilizer consisting of between 50 and 95 percent, based on the total stabilizer weight, of di-n-butyltin-S,S'-bis(isooctyl mercaptoacetate) or di-n-octyltin-S,S'-bis(isooctyl mercaptoacetate), the remaining portion of said stabilizer consisting of di-n-butyltin-S,O-mercaptoacetate or di-n-octyltin-S,O-mercaptoacetate, with the proviso that the concentration of diorganotin S,O-mercaptoacetate does not exceed 1 percent, based on the weight of vinyl chloride polymer.

3,855,181

ARYL METHYLENE POLYMERS PREPARED FROM CHLORAL, BROMAL OR GLYOXALIC ACID

Tohru Takekoshi, Scotia, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

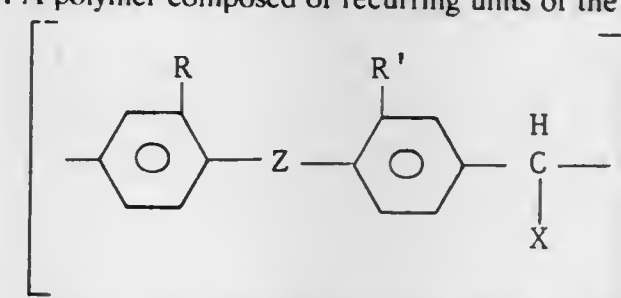
Filed Mar. 20, 1973, Ser. No. 343,138

Int. Cl. C08g 5/02, 7/00, 1/12

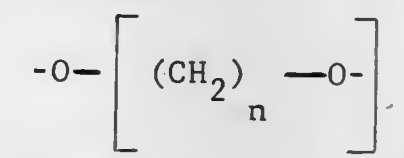
U.S. Cl. 260—49

7 Claims

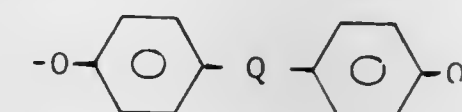
1. A polymer composed of recurring units of the formula



where R and R' are members selected from the class consisting of hydrogen, halogen, and the methyl radical, X is a member selected from the class of —COOH and —CY₂ radicals, Z is a direct bond or is a member selected from the class consisting of —O—, —S—, the



radical, and divalent radicals of the general formula



where Y is chlorine or bromine, Q is a member of the class of —O—, —S—, —SO₂—,

$$\text{>C=O}$$

and divalent alkyl radicals of from 1 to 4 carbon atoms, m is a whole number in excess of 1, and n and q are whole numbers from 1 to 2, inclusive.

3,855,180

CURABLE COMPOSITIONS FROM BLEND OF MALEIMIDO COMPOUND AND VINYL ETHER

Siegfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

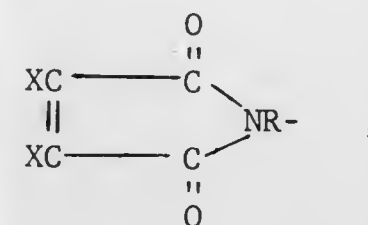
Division of Ser. No. 164,818, July 21, 1971, Pat. No. 3,742,089. This application Apr. 9, 1973, Ser. No. 349,640

Int. Cl. C08g 20/20

U.S. Cl. 260—47 UA

3 Claims

1. Solventless blend which consists essentially of, (A) a maleimido methyl substituted toluene having an average of 3 toluene rings and at least two chemically combined maleimido radicals of the formula,



and

(B) a vinyl ether of the formula,

$$\text{CH=CH}_2\text{OY,}$$

where there is utilized in such blends a proportion of (A) to (B) which is sufficient to provide a ratio of maleimido radicals of (A), to vinyl radicals of (B) having a value between 1 and 10 inclusive, R is an alkylene radical, X is selected from the group consisting of hydrogen, alkyl, halogen and mixtures thereof, and Y is a monovalent organo radical.

3,855,182

PROCESS FOR OBTAINING POLYAMIDES FROM LACTAMS

M. Philippe Potin, and M. Michel Biesan, both of Billiere, France, assignors to Societe Aquitaine-Total-Organico Tour Aquitaine, Courbevoie, France

Filed Aug. 16, 1972, Ser. No. 281,225

Claims priority, application France, Aug. 25, 1971, 71.30754

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

9 Claims

1. A process for obtaining high molecular weight polyamides which comprises anionically polymerizing at least one lactam having at least 4 carbon atoms in the ring in the presence of an alkali catalyst and mixing the resulting polymer with at least one compound of the formula:

the group consisting of polyisoprene, polybutadiene, poly (butadiene-co-acrylic acid), poly (butadiene-co-methacrylic acid), polyisobutylene, polysiloxanes and polyacrylates, the second polymer being selected from the group consisting vinyl acetate-vinyl chloride copolymer, alternate maleic anhydride-styrene copolymer, maleic anhydride-polyethylene copolymer and polyvinylpyridine copolymer, the ionic bond being selected from the group consisting of a hydrogen bond, a dipole-dipole bond and a saline bond and then incorporating the fibers thus treated in a resin compatible with the second polymer of the copolymers.

3,855,175

PROCESS FOR PREPARING NOVEL GLASS FIBER REINFORCED THERMOPLASTIC COMPOSITION

Tetsuji Kakizaki, c/o Jushikenkyujo Mitsubishi Petrochemical Co., Ltd., Yokkaichi, Japan

Continuation-in-part of Ser. No. 338,535, March 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 175,355, Aug. 26, 1971, abandoned. This application Oct. 24, 1973, Ser. No. 409,065

Claims priority, application Japan, Sept. 1, 1970, 45-76488; Great Britain, Sept. 3, 1971, 40776/71

Int. Cl. C08f 45/10

U.S. Cl. 260—42.15

9 Claims

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admixing said treated fibers with 95 to 40 weight percent of polypropylene, and 0.01—0.5 percent by weight of a peroxide, and 0.1 to 5.0 percent by weight of an organosilane coupling agent selected from the group consisting of vinyltriethoxysilane, vinyltrichlorosilane, vinyl-tris (β -methoxyethoxy)silane, γ -methacryloxypropyltrimethoxysilane, β -(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, γ -glycidyloxypropyl-trimethoxysilane, γ -aminopropyltriethoxysilane, N- β -(aminoethyl)- γ -aminopropyltriethoxysilane, bis (γ -hydroxyethyl)- γ -aminopropyltriethoxysilane, γ -chloropropylmethoxysilane, γ -mercaptopropyltrimethoxysilane, n-(dimethoxymethyl silylpropyl) ethylene diamine, γ -chloroisobutyltriethoxysilane, β -cyclohexylethyltrimethoxysilane, phenyltriethoxysilane, amyltriethoxysilane, vinyltrimethoxysilane, and mixtures thereof, and melt-shaping the resulting mixture.

3,855,176

LINER COMPOSITION FOR ROCKET MOTORS COMPRISING CROSSLINKED CARBOXY TERMINATED POLYBUTADIENE WITH INERT FILLER

Paul H. Skidmore, Frostburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 16, 1970, Ser. No. 14,831

Int. Cl. C08f 45/04, 45/08

U.S. Cl. 260—42.28

7 Claims

1. A liner composition for rocket motors consisting of a carboxy terminated polybutadiene; an organo-metallic salt catalyst; a tri epoxy resin curing agent selected from the group consisting of the trifunctional epoxide of epichlorohydrin and p-aminophenol, the triglycidyl ether of epichlorohydrin and phenol-formaldehyde novolac and the triglycidyl ether of epichlorohydrin and glycerol; and a reinforcing inert filler

material selected from the group consisting of colloidal silica, bentonite, carbon black and magnesium silicate; and wherein said carboxy terminated polybutadiene is present in an amount of from about 91 to 96 weight percent, said tri epoxy resin curing agent is present in an amount of from about 3 to about 5 weight percent and said inert filler is present in an amount from about 1.5 to about 3.5 weight percent.

3,855,177

PNEUMATIC TIRE TREADS AND THEIR PRODUCTION

Joseph C. Sanda, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed June 8, 1972, Ser. No. 260,869

Int. Cl. 260 859 R; C08g 51/04; B60c 1/00

U.S. Cl. 260—42.47

3 Claims

1. A tread for a pneumatic tire composed of (a) an elastomeric polyisocyanate reaction product of an amino-terminated polyoxyalkylene in which each alkylene group contains 2 to 4 carbon atoms or (b) a diisocyanate reaction product of a blend of polyhydroxy butadiene-styrene copolymer and amino-terminated polyoxypropylene, and containing at least 30 parts of reinforcing pigment per 100 parts of the reaction product, the ratio of NCO/(OH+NH₂) being at least 1.15.

3,855,178

METHOD FOR MAKING POLYETHERIMIDES

Dwain M. White, Schenectady, and Frank J. Williams, III, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

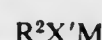
Filed Dec. 3, 1973, Ser. No. 421,220

Int. Cl. C08f 45/54

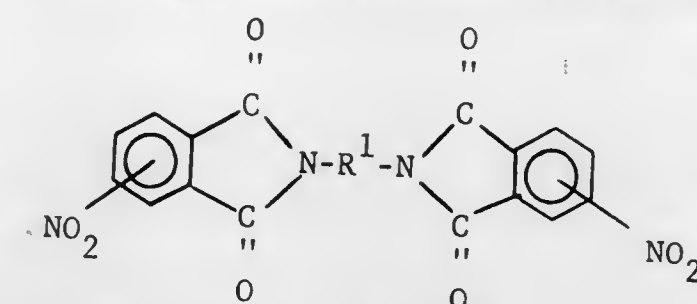
U.S. Cl. 260—45.7 S

10 Claims

1. A method for stabilizing polyetherimide which comprises heating an organic solvent solution of said polyetherimide containing at least 1-10 percent by weight based on the weight of said polyetherimide of an alkali metal organic stabilizer of the formula,



to a temperature of up to about 60°C for a time at least sufficient to stabilize such polyetherimide so that it will be substantially free of a tendency to gel at temperatures up to 315°C, where said polyetherimide has an intrinsic viscosity of at least 0.1 and is made by effecting reaction in a dipolar aprotic solvent at temperatures up to about 80°C between substantially equal molar amounts of a dinitro-bisimide of the formula



and an alkali diphenoxide of the formula



where R is an aromatic organic radical having from 6-30 carbon atoms, R' is an organic radical having from 1-20 carbon atoms, and R² is a monovalent organic radical selected from C₍₁₋₈₎ alkyl radical and aromatic organic radicals having from 6-20 carbon atoms, X' is a member selected from the class consisting of —O— and —S—, and M is an alkali metal ion selected from the class consisting of sodium, potassium and lithium.

3,855,179

STABILIZATION OF VINYL CHLORIDE POLYMERS

Anthony James Wilkins, and Peter Albert Theodore Hoyer, both of Stourbridge, England, assignors to Albright & Wilson Limited, Oldbury, England

Continuation-in-part of Ser. No. 379,742, July 16, 1973, abandoned, which is a continuation of Ser. No. 839,072, July 3, 1969, abandoned. This application Sept. 21, 1973, Ser. No. 399,410

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 K

2 Claims

1. A vinyl chloride polymer composition stabilized against the deteriorative effects of heat wherein the vinyl chloride polymer contains between 80 and 100 percent by weight of repeating units derived from vinyl chloride, the remaining 0-20 percent being derived from ethylenically unsaturated monomers copolymerizable with vinyl chloride, and wherein a two-component stabilizer is present in an amount between 0.5 and 5 percent, based on the weight of vinyl chloride polymer, said stabilizer consisting of between 50 and 95 percent, based on the total stabilizer weight, of di-n-butyltin-S,S'-bis(isooctyl mercaptoacetate) or di-n-octyltin-S,S'-bis(isooctyl mercaptoacetate), the remaining portion of said stabilizer consisting of di-n-butyltin-S,O-mercaptoacetate or di-n-octyltin-S,O-mercaptoacetate, with the proviso that the concentration of diorganotin S,O-mercaptoacetate does not exceed 1 percent, based on the weight of vinyl chloride polymer.

3,855,181

ARYL METHYLENE POLYMERS PREPARED FROM CHLORAL, BROMAL OR GLYOXALIC ACID

Tohru Takekoshi, Scotia, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

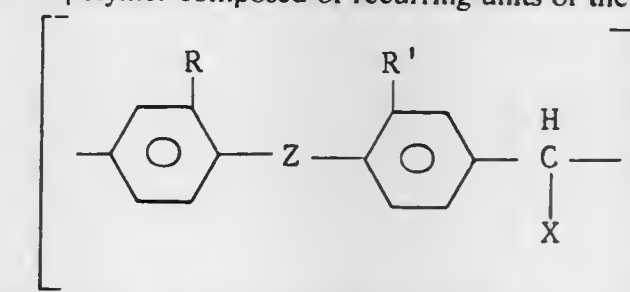
Filed Mar. 20, 1973, Ser. No. 343,138

Int. Cl. C08g 5/02, 7/00, 1/12

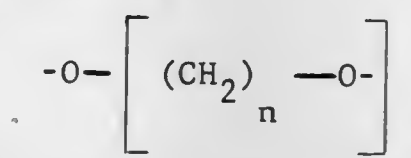
U.S. Cl. 260—49

7 Claims

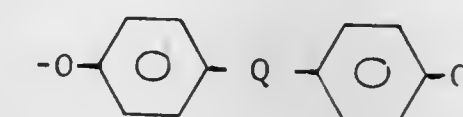
1. A polymer composed of recurring units of the formula



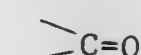
where R and R' are members selected from the class consisting of hydrogen, halogen, and the methyl radical, X is a member selected from the class of —COOH and —CY₃ radicals, Z is a direct bond or is a member selected from the class consisting of —O—, —S—, the



radical, and divalent radicals of the general formula



where Y is chlorine or bromine, Q is a member of the class of —O—, —S—, —SO₂—,



and divalent alkyl radicals of from 1 to 4 carbon atoms, m is a whole number in excess of 1, and n and q are whole numbers from 1 to 2, inclusive.

3,855,180

CURABLE COMPOSITIONS FROM BLEND OF MALEIMIDO COMPOUND AND VINYL ETHER

Siegfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

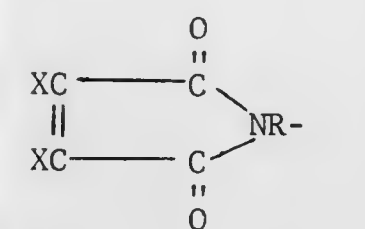
Division of Ser. No. 164,818, July 21, 1971, Pat. No. 3,742,089. This application Apr. 9, 1973, Ser. No. 349,640

Int. Cl. C08g 20/20

U.S. Cl. 260—47 UA

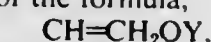
3 Claims

1. Solventless blend which consists essentially of, (A) a maleimido methyl substituted toluene having an average of 3 toluene rings and at least two chemically combined maleimido radicals of the formula,



and

(B) a vinyl ether of the formula,



where there is utilized in such blends a proportion of (A) to (B) which is sufficient to provide a ratio of maleimido radicals of (A), to vinyl radicals of (B) having a value between 1 and 10 inclusive, R is an alkylene radical, X is selected from the group consisting of hydrogen, alkyl, halogen and mixtures thereof, and Y is a monovalent organo radical.

3,855,182

PROCESS FOR OBTAINING POLYAMIDES FROM LACTAMS

M. Philippe Potin, and M. Michel Biesan, both of Billiere, France, assignors to Societe Aquitaine-Total-Organico Tour Aquitaine, Courbevoie, France

Filed Aug. 16, 1972, Ser. No. 281,225

Claims priority, application France, Aug. 25, 1971, 71.30754

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

9 Claims

1. A process for obtaining high molecular weight polyamides which comprises anionically polymerizing at least one lactam having at least 4 carbon atoms in the ring in the presence of an alkali catalyst and mixing the resulting polymer with at least one compound of the formula:



wherein R₁ and R₂ are each lower alkyl and R is hydrogen or lower alkyl.

3,855,183

1,2,5-THIA DIAZOLE POLYMERS

Robert Neal MacDonald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

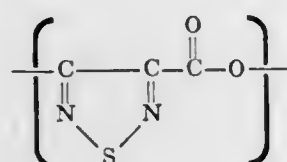
Division of Ser. No. 237,555, March 23, 1972, Pat. No. 3,786,028, which is a continuation-in-part of Ser. No. 866,401, Oct. 14, 1969, Pat. No. 3,664,986. This application Aug. 27, 1973, Ser. No. 391,526

Int. Cl. C08g 17/02

U.S. Cl. 260—78.3 R

3 Claims

1. A fiber- and film-forming polymeric 1,2,5-thiadiazole consisting essentially of recurring units of the formula



3,855,184

CROSSLINKING OF AROMATIC POLYMERS WITH ORGANIC POLYSULFONAZIDES

Edgar E. Bostick, 47 Saratoga Dr., Scotia, N.Y. 12302, and Alfred R. Gilbert, 1394 Dean St., Schenectady, N.Y. 12309

Division of Ser. No. 110,266, Jan. 27, 1971, Pat. No. 3,770,696. This application Aug. 1, 1973, Ser. No. 384,591

Int. Cl. C08f 7/02, 27/06

U.S. Cl. 260—79.3 R

1 Claim

1. A composition of matter comprising (a) polystyrene and (b) an amount of aromatic polysulfonazide sufficient to effect crosslinking of (a).

3,855,185

HYDROGENATION CATALYST

Frederick C. Loveless, Oakland, N.J., and Don H. Miller, Warren, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,977

Int. Cl. C07b 1/00; C08d 5/00; C08f 27/25

U.S. Cl. 260—80.78

21 Claims

1. A process for hydrogenating an organic compound which is a hydrocarbon having an olefinic double comprising contacting, under hydrogenation conditions, said organic compound with hydrogen in presence of a hydrogenation catalyst in amount effective to catalyze hydrogenation of said organic compound, in an organic solvent medium selected from the group consisting of (i) inert saturated hydrocarbon solvent, (ii) inert aromatic hydrocarbon solvent, and (iii) the said organic compound to be hydrogenated when that compound is a liquid, the said hydrogenation catalyst being produced by the steps of:

- a first forming a hydrocarbon-soluble organometallic complex by contacting, in a hydrocarbon solvent medium,
 - an organic chelate compound of a transition metal selected from the group consisting of nickel, cobalt and iron with a chelating agent selected from the group consisting of beta-diketone and beta-ketoester, with
 - a phenolic substance selected from the group consisting of phenol, 2-alkylphenol, 4-alkylphenol, 2,4-dialkylphenol and 2,6-dialkylphenol wherein each alkyl group contains 1 to 10 carbon atoms,

the amount of (a) being from 1/2 to 2 moles, per mole of (b); and thereafter

- mixing the resulting solution of hydrocarbonsoluble organometallic complex provided in step (A) with
- an organometallic reducing agent of the formula MR_n, where M is a metal selected from the group consisting of lithium, magnesium and aluminum, R is a hydrocarbon radical selected from the group consisting of saturated acyclic hydrocarbon radical having 1 to 12 carbon atoms, saturated cyclic hydrocarbon radical having 5 to 12 carbon atoms and aromatic hydrocarbon radical having 6 to 12 carbon atoms, and n is the valence of the metal M,

the amount of (c) being from 1 to 5 moles per combined moles of said organic chelate compound (a) plus said phenolic substance (b), whereby the said hydrogenation catalyst is produced in highly active form as a dispersion of said transition metal in reduced form.

3,855,186

PHOSPHORUS-CONTAINING POLYMERS

Kurt Moedritzer, Webster Grove, Mo., assignor to Monsanto Company, St. Louis, Mo.

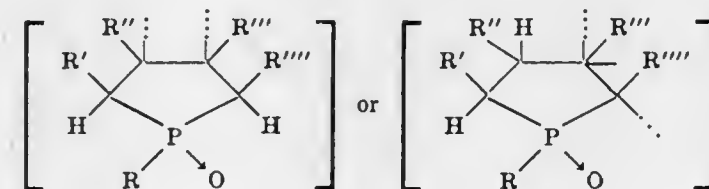
Filed July 17, 1972, Ser. No. 272,249

Int. Cl. C08f 5/00, 45/00, 41/00

U.S. Cl. 260—80 PS

4 Claims

1. A phospholene oxide homopolymer characterized by the repeating units



and mixtures thereof in which R is hydrocarbyl of 1–20 carbon atoms and R', R'', R''', R'''' are hydrogen or hydrocarbyl groups of 1–20 carbon atoms with the polymer having a molecular weight ranging from 200 to 1 million.

3,855,187

METHOD FOR PREPARING RESIN FEED

John C. Winkler, and Corley P. Senyard, both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 63,311, Aug. 12, 1970, Pat. No. 3,676,412, which is a continuation of Ser. No. 800,803, Jan. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 462,886, June 10, 1965, abandoned. This application June 13, 1972, Ser. No. 262,217The portion of the term of this patent subsequent to July 11, 1999, has been disclaimed.

Int. Cl. C08f 15/04

U.S. Cl. 260—82

5 Claims

1. A process for preparing petroleum resins which comprises:

- obtaining a naphtha fraction having a boiling point range of 200° to 500°F. by cracking a light gas oil having a boiling point range of about 185° to 1000°F. at a temperature of 1,100° to 1,550°F. in the presence of 0–95 mole percent steam for a time between 0.05 and 30 seconds;
- removing naphthalenes and other condensed ring aromatics from said naphtha fraction and cracking any cyclodiene polymer present in said fraction to its monomer by distilling said naphtha fraction into a first overhead fraction boiling below 410°F. and a first bottoms containing naphthalenes and other condensed ring aromatics;
- removing cyclodiene monomer present in said first overhead fraction by subjecting said first overhead fraction to a second distillation to separate a second overhead fraction boiling below 290°F. and containing said cyclodiene

monomer and a second bottoms boiling between 290°–410°F.;

- subjecting said second overhead fraction to a third distillation to separate a third overhead fraction comprising C₅ and C₆ cyclodienes and a third bottoms containing C₇ and higher hydrocarbons, and
- polymerizing said third bottoms by contacting with a Friedel-Crafts catalyst at a temperature between –20° and 200°F.

3,855,188

EMULSION POLYMERIZATION PROCESS UTILIZING ORGANOSULFUR MOLECULAR WEIGHT MODIFIER PREMIXED WITH EMULSIFIER AND REDUCING AGENT

Carl A. Uranek, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 16, 1973, Ser. No. 360,968

Int. Cl. C08f 1/13, 19/08

U.S. Cl. 260—84.3

20 Claims

1. In a process of aqueous emulsion polymerization wherein at least one polymerizable monomer polymerizable with a redox or free radical initiator is polymerized under aqueous emulsion polymerization conditions in the presence of a redox or free radical initiator, aqueous emulsifier solution, organosulfur compound as molecular weight modifier, and aqueous medium, the steps comprising:

- treating said aqueous emulsifier solution by admixing therewith with at least one reducing agent,
- admixing said treated aqueous emulsifier with said organosulfur molecular weight compound modifier,
- coagitating the resulting admixture sufficiently to increase the reactivity of said organosulfur compound as said modifier,
- admixing said coagitated admixture of treated aqueous emulsifier and organosulfur molecular weight modifier with said polymerizable monomer and initiator and polymerizing the resulting polymerization admixture under aqueous emulsion polymerization conditions, under wherein said polymerizable monomer is a polymerizable conjugated diene, polymerizable monovinyl-substituted aromatic compound, or both, and can further include copolymerizable monoethylenically unsaturated materials, and said polymerization can include the presence of an unsaturated elastomer,
- wherein said reducing agent is hydroxylamine, hydrazine, a substituted hydrazine, hydroquinone, aldehyde, paraldehyde, alkyl nitrile, or a Group IA alkali metal or ammonium sulfide, sulfite, dithionite, nitrite, hypophosphite, orthophosphite, or mixture, and wherein said reducing agent is employed in a minor amount effective to substantially prevent loss of said organosulfur compound molecular weight modifier during said coagitation;
- wherein said emulsifier in said aqueous emulsifier solution is a nonionic or anionic emulsifier; and wherein said organosulfur compound molecular weight modifier is a mercaptan, dialkyldixanthogen, diaryldisulfide, tetraalkylthiuram monosulfide, tetraalkylthiuram disulfide, or mercaptothiazol.

3,855,189

POLAR COMPOUNDS IMPROVE EFFECTIVENESS OF POLYVINYL AROMATIC COMPOUNDS

Ralph C. Farrar, and Alvin C. Rothlisberger, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 11, 1972, Ser. No. 225,622

Int. Cl. C08d 5/02, 5/04

U.S. Cl. 260—85.1

11 Claims

1. A polymerization process which comprises

- introducing into a polymerization zone at least one polymerizable monomer selected from the group consisting of polymerizable conjugated dienes, polymerizable monovi-

nyl-substituted aromatic compounds, and mixtures, under polymerization conditions employing an organolithium initiator,

- polymerizing said polymerizable monomer with said organolithium initiator, thereby forming polymer-lithium moieties,
- treating the resulting polymerization mixture with at least one polar compound in minor amount effective to improve coupling of said polymer-lithium, wherein said polar organic compound is ether, thioether, tertiary amine, or triazine, or mixture,
- treating said polymerization reaction system with at least one polyvinyl aromatic compound in minor amount effective to couple said polymer-lithium moieties, wherein said polar compound is added to said polymerization mixture prior to or coincidentally with said polyvinyl aromatic compound.

3,855,190

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE WITH LOW POLYMER DEPOSITION

Kieter Kurz; Johann Bauer; Thomas Balwe, all of Burghausen; Kurt Fendel, Leverkusen-Schildgen, and Alex Sabel, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Mar. 15, 1974, Ser. No. 451,502

Claims priority, application Germany, Mar. 16, 1973, 2313277

Int. Cl. C08f 3/30, 15/30

U.S. Cl. 260—87.1

8 Claims

1. In the suspension polymerization process for the production of polymerizates selected from the group consisting of polyvinyl chloride and copolymerizates containing at least 80% of polyvinyl chloride, with low polymer deposits, which comprises the steps of mixing (1) monomers selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 20% by weight of olefinically mono-unsaturated compounds copolymerizable with vinyl chloride, (2) an oil-soluble free-radical-forming polymerization catalyst, (3) suspension stabilizers including protective colloids, and, optionally, other polymerization aids, and (4) water, heating said mixture under agitation to a polymerization temperature of between 0°C to 80°C, and recovering said polymerizate, the improvement which consists in using 0.001 to 1% by weight, based on the monomers, of at least one percompound selected from the group consisting of an unbranched dialkanoylperoxide having from 12 to 18 carbon atoms in each alkanoyl and an unbranched dialkylperoxy dicarbonate having 12 to 18 carbon atoms in the alkyl, as said oil-soluble free-radical-forming polymerization catalyst, adding from 5 to 35 ppm, based on the monomers, of a Wurster's salt to the polymerization charge, and conducting said polymerization at a pH of from 3.5 to 7, whereby a polymerizate is recovered with low polymer deposits.

3,855,191

POLYTETRAFLUOROETHYLENE MOLDING POWDERS OF TETRAFLUOROETHYLENE AND PERFLUORO (ALKYL VINYL ETHER) COPOLYMER

Thomas Russell Doughty, Jr., Philadelphia, Pa.; Carleton Angelo Sperati, Parkersburg, W. Va., and Howard Ho-Wei Un, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1973, Ser. No. 347,548

Int. Cl. C08f 15/02

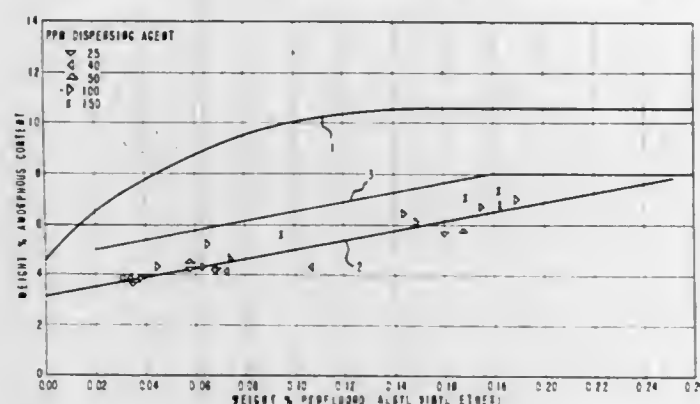
U.S. Cl. 260—87.5 A

5 Claims

1. Polytetrafluoroethylene molding powder comprising a copolymer consisting of tetrafluoroethylene with from 0.02 to 0.26% by wt. of perfluoro(alkyl vinyl ether) wherein the alkyl group contains from 1 to 5 carbon atoms, said copolymer

having an amorphous content no greater than 8% by weight, provided that when the vinyl ether content is between 0.02%

EFFECT OF DISPERSING AGENT ON AMORPHOUS CONTENT OF
TETRAFLUOROETHYLENE/PERFLUORO(ALKYL VINYL ETHER) COPOLYMER



and 0.18% by wt., the maximum amorphous content is calculated from the equation:

$$\text{Wt. \% Amorphous Content} = (18.4 \times \text{wt. \% vinyl ether}) + 4.6\%$$

3,855,192

INHIBITING PREMATURE VULCANIZATION OF W-TYPE POLYCHLOROPRENE RUBBER WITH N-HYDROCARBYL-THIOIMIDES

Edward Raymond Rodger, Akron, Ohio, assignor to Monsanto Chemicals Limited, London, England

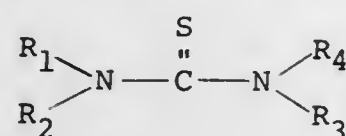
Continuation-in-part of Ser. No. 150,830, June 7, 1971, abandoned. This application Oct. 12, 1972, Ser. No. 299,875
Claims priority, application Great Britain, Oct. 26, 1971, 49699/71

Int. Cl. C08d 9/14; C08c 11/06; C08c 11/54

U.S. Cl. 260—92.3

23 Claims

1. A process for inhibiting the prevulcanization of a W-type polychloroprene rubber composition comprising vulcanizing agent consisting of a metal oxide and a vulcanization accelerator which is a thiourea derivative having the formula



where (a) each of R_1 and R_4 independently is a hydrogen atom or is alkyl, chloroalkyl or cyanoalkyl of 1 to 20 carbon atoms, alkenyl of 3 to 20 carbon atoms, cycloalkyl or alkylcycloalkyl of 5 to 10 carbon atoms, or aralkyl of 7 to 10 carbon atoms, and each of R_2 and R_3 is alkyl, chloroalkyl or cyanoalkyl of 1 to 20 carbon atoms, alkenyl of 3 to 20 carbon atoms, cycloalkyl or alkylcycloalkyl of 5 to 10 carbon atoms, or aralkyl of 7 to 10 carbon atoms, or (b) R_1 and R_2 together with the nitrogen atom to which they are attached form a saturated cyclic group of 4 to 10 carbon atoms and R_3 and R_4 are the same as before, or (c) R_1 and R_2 together with the nitrogen atom to which they are attached form a saturated cyclic group of 4 to 10 carbon atoms and R_3 and R_4 together with the nitrogen atom which they are attached form a saturated cyclic group of 4 to 10 carbon atoms, which comprises incorporating into the unvulcanized rubber, in addition to the vulcanizing agent and the vulcanization accelerator, an N-substituted carboxylic imide in which the N-substituent is a group-S—R where R is alkyl of 1 to 20 carbon atoms, aryl of 6 to 10 carbon atoms or cycloalkyl of 5 to 12 carbon atoms.

3,855,193 PROCESS FOR SEPARATING AMORPHOUS POLYOLEFINS INTO FRACTIONS HAVING DIFFERENT MELT VISCOSITIES

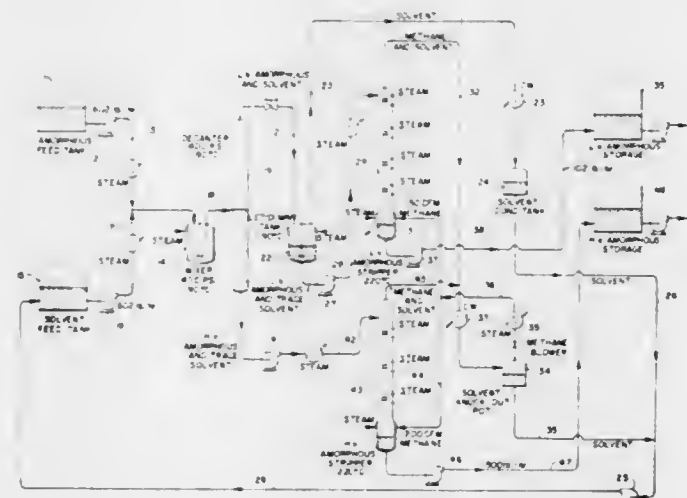
James S. Robinson, and Paul D. Folzenlogen, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,032

Int. Cl. C08f 47/00, 3/08; C08f 1/94

U.S. Cl. 260—93.7

8 Claims



1. A process for separating amorphous olefin polymer into at least two fractions having different melt viscosities which comprises mixing said amorphous polymer at a temperature of 150° to 250°C. with solvent selected from acetone, methanol, ethanol, propanol, isopropanol or mixtures thereof at a pressure of at least the vapor pressure of acetone at the mixing temperature to form at least two separate layers, separating said separate layers and recovering the amorphous polymer contained in said layers to obtain amorphous polymer fractions having different melt viscosities than that of said amorphous polymer.

3,855,194

CURING RESINOUS HOMOPOLYMERS AND COPOLYMERS OF BUTADIENE OF HIGH 1,2-CONFIGURATION

Wendell Reed Conard, Kent, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio

Filed Oct. 16, 1973, Ser. No. 406,792

Int. Cl. C08d 5/02, 11/04, 13/28

U.S. Cl. 260—94.7 A

1 Claim

1. The improvement in the two stage process of peroxide-curing a polymer of the class consisting of resinous homopolymers of butadiene and copolymers of butadiene and styrene, with and without solution in styrene-type monomers, said resin comprising at least 40% of butadiene and at least 80% of the repeating butadiene units being of the 1,2-configuration, which improvement comprises curing, in the first stage, with 0.2 to 5 parts per 100 parts of the resin of a lower-temperature-curing peroxide at 50° to 150° F. of a mixture of cobalt and iron naphthenates and 10 to 30 parts of pentanediol, using cobalt and iron naphthenates in the ratio of 3 to 50 parts by weight of cobalt naphthenate to 1 part of iron naphthenate, 0.2 to 2 parts by weight of cobalt being used per 100 parts of the peroxide and in the second stage, post-curing with a high-temperature curing peroxide at 250° to 400° F.

3,855,195

METHOD FOR PRODUCING PURE M-CRESOL

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Hirokazu Hosaka, Minoo, and Kazunari Ebara, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed July 22, 1971, Ser. No. 165,364

Claims priority, application Japan, July 22, 1970, 45-64636; Dec. 8, 1970, 45-10997; Dec. 8, 1970, 45-10998

Int. Cl. C07b 21/00

U.S. Cl. 260—96.5 C

12 Claims

1. In a method for the recovery of m-cresol from a mixture consisting essentially of m-cresol and p-cresol which comprises treating the said mixture with urea to form a solid molecular compound of m-cresol and urea, separating the molecular compound from the resulting mixture, decomposing the molecular compound by heating to m-cresol and urea and separating m-cresol from the resultant mixture, the improvement wherein the formation of the molecular compound is carried out in a solvent selected from the group consisting of benzene, benzene substituted with 1 to 3 alkyl groups of 1 to 4 carbon atoms and/or 1 or 2 halogen atoms, dialkyl ethers of which the alkyl moiety has 2 to 5 carbon atoms, tetrahydrofuran and dioxane.

3,855,196

BIOLOGICALLY ACTIVE PEPTIDE AND METHOD OF PREPARING THE SAME

Hidehiko Matsukawa, c/o Tsukasa Sasaki, No. 139 Suwamachi, Shinjuku-ku; Haruo Ito, Kumegawa Jutaka Kodan, No. 1-4 Misumicho, Higashimurayama-shi, and Taneko Suzuki, 18-13, 7-chome, Nishi-Shinjuku, Shinjuku-Ku, all of Tokyo, Japan

Division of Ser. No. 240,485, April 3, 1972, Pat. No. 3,794,561. This application Sept. 10, 1973, Ser. No. 395,881
Claims priority, application Japan, Sept. 30, 1971, 46-76596; Sept. 30, 1971, 46-76597; Sept. 30, 1971, 46-76598; Sept. 30, 1971, 46-76599; Sept. 30, 1971, 46-76600

Int. Cl. C07g 7/00

U.S. Cl. 260—112 R

1 Claim

1. The biologically active peptide prepared by the method which comprises decomposing enzymatically the skeletal muscles or the visceral muscles of an animal of the family Cervoidae with a protease to provide low molecular weight peptide product, collecting the soluble portion of the product in a water-containing hydrophilic solvent, subjecting the solution of the product thus collected to a separation procedure using a gel-type molecular sieve or an ion-exchange resin, and collecting the effective fractions thus separated.

3,855,197

GLYCOPROTEINS EXTRACTED FROM MICROORGANISMS

Jean Hirsch, Paris, and Jean Pierre Buret, Osny, both of France, assignors to Laboratoires Cassenne, Paris, France

Continuation-in-part of Ser. No. 38,482, May 18, 1970, abandoned. This application Feb. 7, 1973, Ser. No. 330,403

Claims priority, application France, May 20, 1969, 72,016,297; Feb. 15, 1972, 72,005,016

Int. Cl. C07g 7/00; C12d 13/06

U.S. Cl. 260—112 R

14 Claims

1. Glycoproteins extracted from at least one type of microbial bodies selected from the group consisting of *Pneumococci*, *Streptococci*, *Neisseria*, *Micrococci*, *Staphylococci*, *Klebsellia pneumoniae* and *Hemophilus influenzae* and from a mixture of at least 2 of the said strains or an association of different types of the same microbial species, said glycoproteins having a molecular weight of at least 1,000,000, being thermo stable and soluble in perchloric acid, phytic acid, ammonium sulfate and trichloroacetic acid, having a content of at least 50 percent, preferably 60 to 65 percent, of combined hexoses, a biuretogenic substance content of about 10 percent, a ratio of combined hexoses to protides of about 7, a molecular volume V_e/V_0 as determined through Sephadex

G 200 gel of 1.0 to 1.2 in relation to a buffer with a pH of 8, an α -amine nitrogen content of 1 to 2 percent and a migration by electrophoretic density gradient comprised between α -proteins and β -proteins and acid hydrolysis under reduced pressure shows the presence of glucose, galactose and mannose but not ribose.

3,855,198

NOVEL INTERMEDIATES FOR SYNTHESIS OF—L-(5- OXOPROLYL)-L-HISTIDYL-L-TRYPTOPHYL-L-SERYL- L-TYROSYL-L-GLYCYL-L-LEUCYL-L-ARGINYL-L- PROLYL-GLYCINE AMIDE

Dimitrios Sarantakis, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

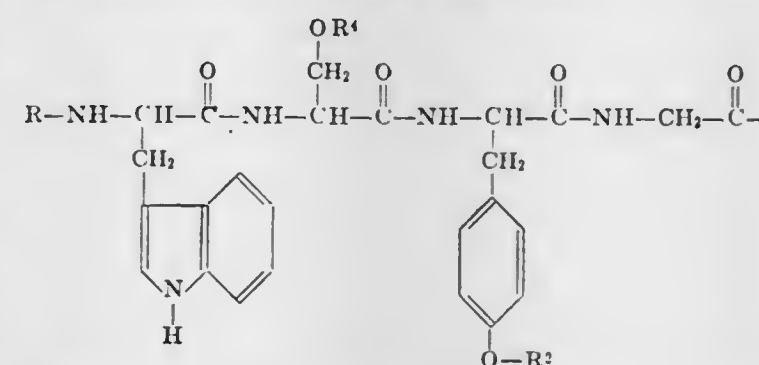
Filed Sept. 29, 1972, Ser. No. 293,715

Int. Cl. C07c 103/52; A61k 27/00

U.S. Cl. 260—112.5

24 Claims

1. A tetrapeptide compound of the formula



19. A process for preparing L-(5-oxoprolyl)-L-histidyl-L-tryptophyl-L-seryl-L-tyrosyl-glycyl-L-leucyl-L-arginyl-L-prolyl-glycine amide which comprises the steps of:

- reacting $\text{R}-\text{Trp}-\text{OH}$ with a carboxyl group activating reagent;
- reacting the activated compound obtained in step (a) with $\text{H}-\text{Ser}(\text{R}^4)-\text{OR}^5$ to form the dipeptide $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{OR}^5$;
- reacting said dipeptide obtained in step (b) with hydrazine to obtain $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{NHNH}_2$;
- reacting said dipeptide obtained in step (c) with a reagent yielding nitrous acid in the presence of a strong acid to form $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{N}_3$;
- reacting $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{N}_3$ with $\text{H}-\text{Tyr}(\text{R}^2)-\text{Gly}-\text{OR}^5$ to form the tetrapeptide $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{Tyr}(\text{R}^2)-\text{Gly}-\text{OR}^5$;
- reacting the tetrapeptide of step (e) with hydrazine to obtain $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{Tyr}(\text{R}^2)-\text{Gly}-\text{NHNH}_2$;
- reacting $\text{R}-\text{Arg}(\text{N}^6-\text{R}^3)-\text{OH}$ with a carboxyl group activating reagent;
- reacting the activated compound obtained in step (g) with $\text{H}-\text{Pro}-\text{OR}^5$;
- cleaving the α -amino protecting groups from said dipeptide obtained in step (h), said cleaving reagent being one to which said R^3 and R^5 groups are stable;
- reacting the dipeptide $\text{H}-\text{Arg}(\text{N}^6-\text{R}^3)-\text{Pro}-\text{OR}^5$ with a compound of the formula $\text{R}-\text{Leu}-\text{OH}$ having its carboxyl group activated, to form the tripeptide $\text{R}-\text{Leu}-\text{Arg}(\text{N}^6-\text{R}^3)-\text{Pro}-\text{OR}^5$;
- hydrolyzing the tripeptide obtained in step (j) to split off the carboxylic acid ester group and obtain the tripeptide $\text{R}-\text{Leu}-\text{Arg}(\text{N}^6-\text{R}^3)-\text{Pro}-\text{OH}$;
- reacting said tripeptide obtained in step (k) with a carboxyl group activating reagent and reacting the resulting activated compound with glycineamide to obtain the tetrapeptide $\text{R}-\text{Leu}-\text{Arg}(\text{N}^6-\text{R}^3)-\text{Pro}-\text{Gly}-\text{NH}_2$;
- cleaving the α -amino protecting group from the tetrapeptide obtained in step (l);
- reacting the tetrapeptide $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-\text{Tyr}(\text{R}^2)-\text{Gly}-\text{NHNH}_2$ with a reagent yielding nitrous acid in the presence of a strong acid to form $\text{R}-\text{Trp}-\text{Ser}(\text{R}^4)-$

Tyr(R²)-Gly-N₃ and reacting said tetrapeptide with H-Leu-Arg(N⁶-R³)-Pro-Gly-NH₂ to form the octapeptide R-Trp-Ser(R⁴)-Tyr(R²)-Gly-Leu-Arg(N⁶-R³)-Pro-Gly-NH₂;

c. cleaving the α-amino and side chain protecting groups from the octapeptide formed in step (n) and reacting the deprotected octapeptide with p-Gly-His-N₃; wherein:

R is an α-amino protecting group characterized by not being split off during the coupling of the amino acid residues which form said octapeptide and capable of being split off under reaction conditions which will not result in cleavage of the peptide chain;

R² is selected from the class consisting of acetyl, tosyl, benzoyl, benzyl, tert-butyl, trityl and benzyloxycarbonyl;

R³ is selected from the class consisting of nitro, tosyl, adamantyloxycarbonyl, benzyloxycarbonyl and tosyl;

R⁴ is selected from the class consisting of the hydrogen atom on the alcoholic hydroxyl group of serine and a protecting group on the hydroxyl group of serine selected from the class consisting of acetyl, tosyl, benzoyl, benzyl, tert-butyl, trityl, and benzyloxycarbonyl;

R⁵ is selected from the class consisting of lower alkyl, benzyl, phenacyl, phthalimidomethyl, β-methylthiomethyl, 4-picolyl, 4-(methylthio)phenyl and substituted benzyl, said substituent being selected from the class consisting of methoxy, methyl and nitro; and with the proviso that R is not the same as R², R³, or R⁴.

3,855,199

P-GLU-D-PHE-T

RP-SER-TYR-D-ALA-LEU-ARG-PRO-GLY-NH₂-AND INTERMEDIATES

Theodore J. Foell, and John P. Yardley, both of King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 3, 1973, Ser. No. 402,958

Int. Cl. C07c 103/52; C07g 7/00; A61k 27/00

U.S. Cl. 260-112.5

8 Claims

1. A compound selected from the group consisting of L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-D-Ala-L-Leu-L-Arg-L-Pro-Gly-NH₂

and R⁴-L-P-Glu-D-Phe-L-Trp-L-Ser(R⁵)-L-Tyr-(R²)-D-Ala-L-Leu-L-Arg-(N⁶-R³)-L-Pro-Gly-R

and its non-toxic salts; wherein R is selected from the class consisting of NH₂, OH, O-(lower)-alkyl and O-benzyl; R¹ is a protecting group for the N⁶, N^ω and N^{ω'} nitrogen atoms of arginine selected from the class consisting of nitro, tosyl, benzyloxycarbonyl, and adamantyloxycarbonyl; or R¹ is hydrogen;

R² is a protecting group for the phenolic hydroxyl group of tyrosine selected from the class consisting of acetyl, tosyl, benzoyl, tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,4-dichlorobenzyl and benzyloxycarbonyl or R² is hydrogen; R³ is a protecting group for the alcoholic hydroxyl group of serine and is selected from the class consisting of acetyl, tosyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,4-dichlorobenzyl, benzyl and benzyloxycarbonyl; or R³ is hydrogen;

R⁴ is selected from the class consisting of hydrogen or an α-amino protection group, with the proviso that at least one of R¹, R² and R³ is a protecting group.

3,855,200

PROCESS FOR PREPARING

8-HYDROXYERYTHROMYCIN A AND INTERMEDIATES THEREFOR

Krzysztof Krowicki, and Aleksander Zamojski, both of War-

saw, Poland, assignors to Polska Akademia Nauk, Warsaw, Poland

Filed Apr. 23, 1973, Ser. No. 353,929

Int. Cl. C07c 47/18

U.S. Cl. 260-210 E

12 Claims

1. The process which consisting essentially of reacting 8,9-anhydroerythromycin A 6,9-hemiketal with m-chloroperbenzoic acid in a mixture of ethyl acetate and water to form the N-oxide of 8-hydroxyerythromycin A 6,9-hemiketal and then reducing said N-oxide with hydrogen in the presence of a platinum or palladium catalyst to produce 8-hydroxyerythromycin A.

3,855,201

METHOD OF PRODUCING GLUCOFRANGULIN OF TECHNICAL PURITY

Stanislaus Buchner, Birsfelden, and Dragica Fischer, Basel, both of Switzerland, assignors to Solco Basel AG, Basel, Switzerland

Filed July 12, 1971, Ser. No. 161,524

Claims priority, application Luxembourg, July 13, 1970, 61323; June 22, 1971, 63400

Int. Cl. C07c 47/18

U.S. Cl. 260-210 F

5 Claims

1. A continuous method for producing technically pure glucofrangulin from an aqueous alcoholic raw extract of alder buckthorn bark containing impurities comprising frangulin and emodin which consists essentially of the steps of:

- precipitating impurities poorly soluble in water from said raw extract by treating it with water;
- removing said impurities poorly soluble in water by filtration to produce a prepurified glucofrangulin containing raw extract;
- subjecting said prepurified raw extract to countercurrent liquid-liquid extraction with a binary solvent system consisting of (1) an organic phase consisting of water-saturated butanol or higher aliphatic alcohol, methyl ethyl ketone, methylisobutyl ketone or water saturated mixture thereof and (2) an aqueous phase saturated with the organic phase adjusted to a pH of about 5.5, to effect preferential transfer of said glucofrangulin into said organic phase;
- countercurrently contacting the thus obtained glucofrangulin-containing organic phase from step (c) with an aqueous phase adjusted to a pH of about 4 to effect preferential transfer of glucofrangulin from said organic phase into said aqueous phase;
- evaporating said glucofrangulin-containing aqueous phase from step (d) to recover glucofrangulin of technical purity;
- countercurrently contacting the organic phase from step (d) with an aqueous phase adjusted to pH of about 6.5 or above, to effect preferential transfer of impurities into said aqueous phase with retention of glucofrangulin in said organic phase;
- discarding said aqueous phase from step (f);
- evaporating said organic phase from step (f) to recover organic solvent therefrom, thereby producing a residue containing glucofrangulin, emodin and frangulin and
- adding said residue of step (h) along with a new portion of prepurified raw extract to step (c).

3,855,202

ONE STEP PROCESS FOR THE PRODUCTION OF A MONOESTER OF MACROLIDE ANTIBIOTICS

Shoji Omoto, Tokyo; Shigeharu Inoue, and Taro Niida, both of Yokohama, all of Japan, assignors to Meiji Seika Karsha, Ltd., Tokyo, Japan

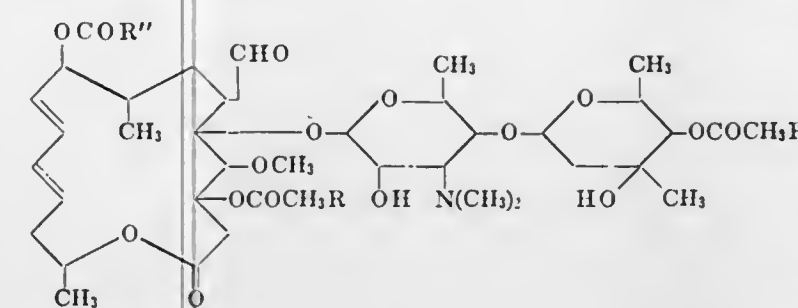
Filed June 15, 1972, Ser. No. 262,967

Int. Cl. C07c 129/18

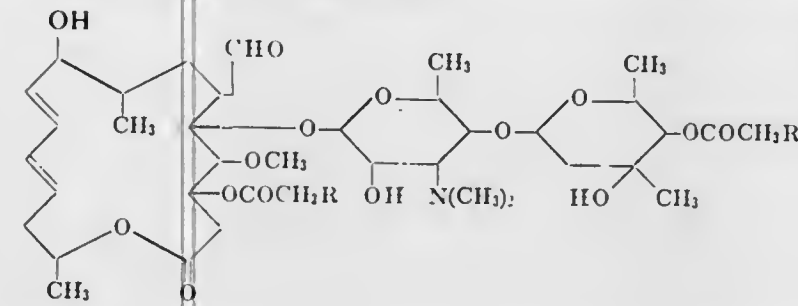
U.S. Cl. 260-210 AB

5 Claims

1. A process for the production of a mono-ester of the SF-837 substance of the formula:



wherein R is a methyl group, R' is a methyl group, and R'' is an alkyl group of 1-4 carbon atoms; an alkyl group of 1-4 carbon atoms substituted with phenyl, trimethyl, carboxyl, phenoxy or bromo; an alkenyl group of 1-4 carbon atoms; styryl; phenyl or pyridyl group, which comprises reacting the SF-837 substance of the formula:



wherein both R and R' are methyl groups with an acyl halide of the formula

R''COX

wherein R'' is as defined above and X is a chlorine or bromine atom in solution in a solvent selected from benzene, toluene, ethyl acetate and methyl isobutyl ketone and in the presence of a quantity of an acid-binding agent selected from pyridine and picoline.

3,855,203

4'-O-SULFONYL ERYTHROMYCIN-9-O-OXIME DERIVATIVES

Robert Hallas, Waukegan; John Solomon Tadanier, Chicago, and Anne Mary Von Esch, North Chicago, all of Ill., assignors to Abbott Laboratories, Chicago, Ill.

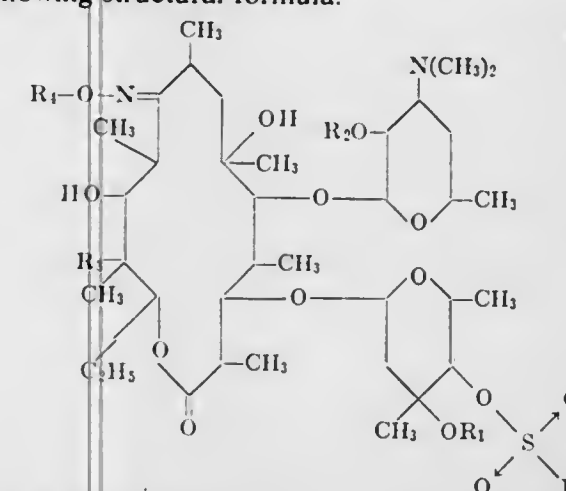
Filed May 3, 1973, Ser. No. 356,987

Int. Cl. C07c 129/18

U.S. Cl. 260-210 E

4 Claims

1. A 4'-O-sulfonyl erythromycin-9-O-oxime derivative of the following structural formula:



where R is selected from the group consisting of loweralkyl or loweralkenyl, R₁ is hydrogen or methyl, R₂ is hydrogen or loweralkenyl, R₃ is hydrogen or hydroxyl, and R₄ is selected from the group consisting of loweralkyl or lower cycloalkyl.

3,855,204

PROCESS FOR PREPARING

ADENOSINE-5'-CARBOXYLIC ACID, ETHYL ESTER
Raj Nandan Prasad, Pierrefonds, Quebec, Canada, assignor to Abbott Laboratories, Chicago, Ill.

Filed Oct. 27, 1972, Ser. No. 301,693

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

1 Claim

1. A method of synthesizing adenosine-5'-carboxylic acid,

ethyl ester, consisting essentially of the steps of reacting 2',3'-isopropylidene adenosine-5'-carboxylic acid with ethanol in N-ethoxycarbonyl-2-ethoxy-1,2-dihydroquinoline at a temperature of from 20° to 30° C. for from 6 to 32 hours, and cleaving the isopropylidene protecting group by suspending the resulting compound in a weak acid selected from the group consisting of formic acid and acetic acid at a temperature of about 40° C.

3,855,205

PROCESS FOR PREPARING ADENOSINE-5'-CARBOXYLATES

Raj Nandan Prasad, Pierrefonds, Quebec, Canada, and Francis Elmer Fischer, Waukegan, Ill., assignors to Abbott Laboratories, Chicago, Ill.

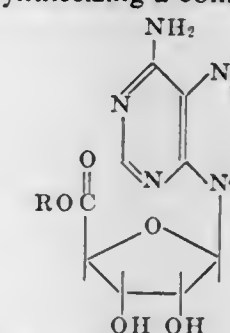
Filed Oct. 3, 1972, Ser. No. 294,699

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

3 Claims

1. A method of synthesizing a compound of the formula:



wherein R is loweralkyl, haloloweralkyl, hydroxyloweralkyl, lower cycloalkyl, loweralkenyl, loweralkynyl, loweralkylcycloalkyl or alkoxyalkyl, comprising the steps of reacting adenosine-5'-carboxylic acid with thionyl chloride and an alcohol of the formula ROH wherein R is as defined above at a temperature of from 0° C. to -20° C.

3,855,206

ADENOSINE-5'-CARBOHYDROXAMIC ESTERS

Raj Nandan Prasad, Pierrefonds, Quebec, Canada, and Herman Hal Stein, Skokie, Ill., assignors to Abbott Laboratories, Chicago, Ill.

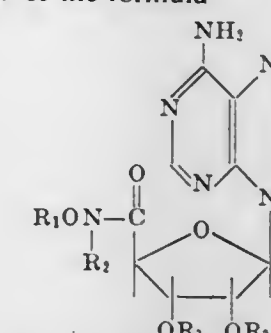
Filed Apr. 11, 1973, Ser. No. 350,233

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

9 Claims

1. A compound of the formula



wherein R₁ and R₂ each are selected from the group consisting of hydrogen, loweralkyl, haloloweralkyl, hydroxyloweralkyl, loweralkylcycloalkyl, loweralkylcycloalkyl, loweralkenyl, loweralkynyl, an alkoxy loweralkyl having from one to six carbon atoms or a lowercycloalkyl having from three to six carbon atoms, with the limitation that when R₁ is hydrogen, R₂ cannot be hydrogen; wherein each R₃ is hydrogen or when taken together form an isopropylidene or benzyldiene moiety, and the pharmaceutically acceptable acid addition salts thereof.

3,855,207

9ALPHA,11ALPHA-EPOXY SPIROLACTONES, SPIROLACTOLS AND LACTOL ETHERS

CORRESPONDING

Edward A. Brown, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

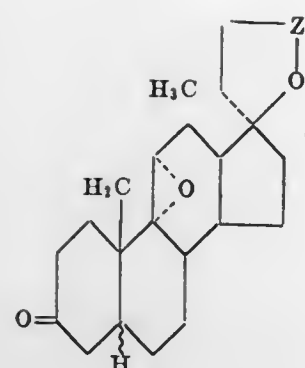
Continuation-in-part of Ser. No. 220,441, Jan. 24, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,376

Int. Cl. C07c 173/00

U.S. Cl. 260-239.55 R

9 Claims

1. A compound formula



wherein Z is selected from the group consisting of carbonyl, hydroxymethylene and (lower alkoxy)methylene radicals and the wavy line represents the α or β configuration.

3,855,208

DERIVATIVES OF DIGOXIGENIN

Herman Rutner, Hackensack, N.J.; Raul Rapun, Suffern, and Nathan Lewin, New York, both of N.Y., assignors to Becton Dickinson and Company, East Rutherford, N.J.

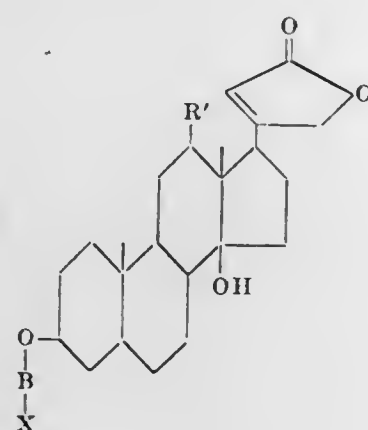
Filed May 24, 1971, Ser. No. 146,545

Int. Cl. C07c 173/00

U.S. Cl. 260—239.57

36 Claims

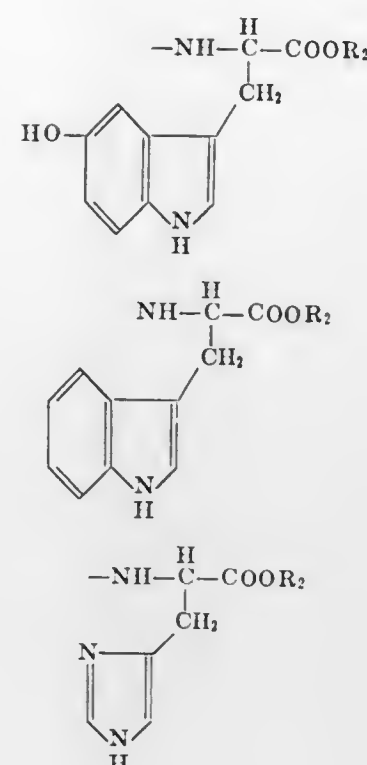
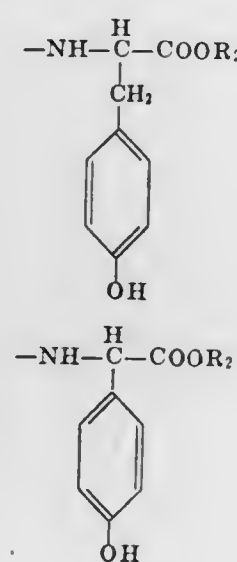
1. A composition of matter comprising a compound having the following structural formula:



wherein R' is selected from the group consisting of —OH and OCOCH₃;

B is selected from the group consisting of succinyl, maleyl, fumaryl and o-phthaloyl; and

X is an amino acid radical selected from the group consisting of unlabeled and radiolabeled amino acid radicals having the following structural formulae:



wherein R₂ is selected from the group consisting of hydrogen and lower alkyl.

3,855,209

SYNTHESIS OF INDOLINIUM METHINE DYES

Vinton A. Hoyle, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,033

Int. Cl. C07d 27/56

U.S. Cl. 260—240 E

10 Claims

1. Process for the preparation of a cationic indolinium methine dye compound having the formula



which comprises contacting a preformed solution of a Vilsmeier adduct, formed by contacting an amine having the formula H—B with POCl₃ or phosgene and a di-lower alkylformamide, with a 2-methylindolinium salt having the formula A—CH₃⁺ X⁻, wherein

A is the residue of a 2-indolinium component of a cationic methine dye compound;

B is the residue of an aniline, 1,2,3,4-tetrahydroquinoline or indole component of a cationic or disperse methine dye compound; and

X is a colorless anion.

3,855,210

IMPROVED BIS(HYDROXYALKYL) STYRYL DYE COMPOUNDS AND PHOTSENSITIVE MEDIA CONTAINING SUCH COMPOUNDS

Juergen H. H. Keller, Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 3, 1969, Ser. No. 796,167

Int. Cl. C09b 23/14

U.S. Cl. 260—240.9

5 Claims

1. 2-[p-Di(hydroxyethyl)aminostyryl]-5-methyl-3-hydroxyethylthiadiazolium chloride.

3,855,211

DITHIOCARBONYLAMINOACETYL CEPHALOSPORINS

Hermann Bruer, Burgweinting, and Uwe D. Treuner, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

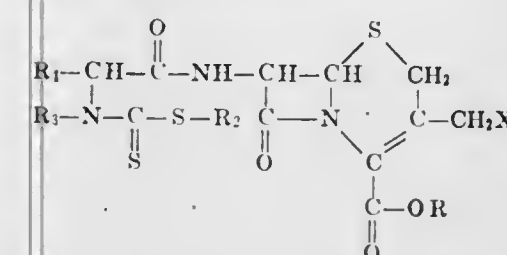
Filed June 9, 1972, Ser. No. 261,195

Int. Cl. C07d 99/24

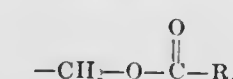
U.S. Cl. 260—243 C

10 Claims

1. A compound of the formula



wherein R is hydrogen, lower alkyl,



alkali metal, alkaline earth metal or triethylamine; R₁ is hydrogen, lower alkyl, cyclopentyl, cyclohexyl, cyclohexenyl, cyclohexadienyl, R₂-phenyl, thienyl or furyl; R₂ and R₄ each is lower alkyl, phenyl or phenyl-lower alkyl; R₃ is hydrogen, lower alkyl or phenyl; R₅ is hydrogen, halogen, lower alkyl or lower alkoxy; and X is hydrogen, hydroxy, lower alkanoyloxy, lower alkylthio or lower alkoxy.

3,855,213

3-HETEROCYCLIC THIOMETHYL-CEPHALOSPORINS

George L. Dunn, Wayne, and John R. E. Hoover, Glenside, both of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 116,599, Feb. 18, 1971, and

Ser. No. 262,903, June 14, 1972, which is a continuation-in-part of Ser. No. 116,598, Feb. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 99,296, Dec. 17, 1970, abandoned, said Ser. No. 116,599, is a continuation-in-part of Ser. No. 99,296. This application Sept. 15, 1972, Ser. No. 289,499

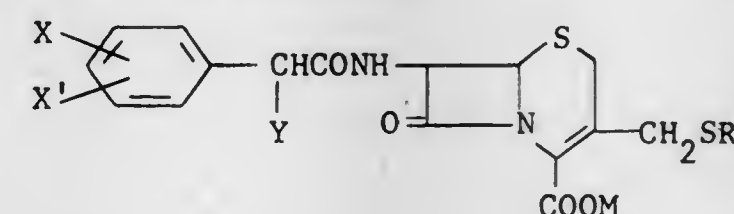
Claims priority, application South Africa, Nov. 8, 1971, 71/7457

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

12 Claims

1. A compound of the formula



in which:

X and X' are each hydrogen, lower alkyl of 1-4 carbon atoms, lower alkoxy of 1-4 carbon atoms, hydroxy, hydroxymethyl, halo, nitro, amino, mercapto, lower alkylthio of 1-4 carbon atoms, aminomethyl or trifluoromethyl;

Y is OH,

R¹ is triazolyl which is unsubstituted or substituted with 1 or 2 R² groups selected from the group consisting of lower alkyl or alkoxy of up to 4 carbon atoms, cycloalkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, lower alkoxyalkyl of 2 to 8 carbon atoms, trifluoromethyl, amino, alkylamino, dialkylamino, lower alkylthio of up to 4 carbon atoms, phenyl, and halo; and M is hydrogen or an alkali metal.

3,855,212

CYANOMETHYLTHIOACETYLCEPHALOSPORINS

Hermann Breuer, and Uwe Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

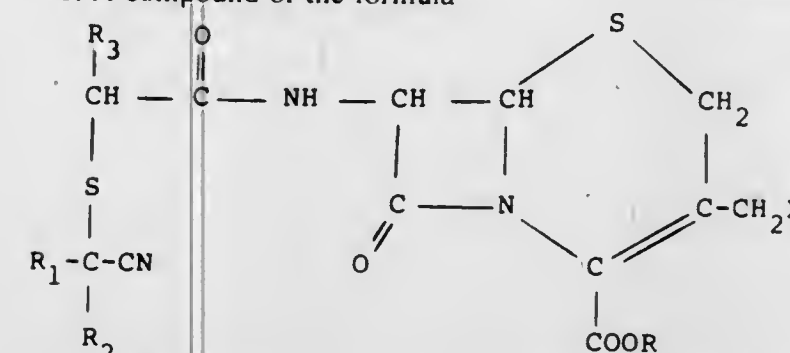
Filed Aug. 4, 1972, Ser. No. 278,168

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

7 Claims

1. A compound of the formula



wherein R is hydrogen or a salt forming ion of the group consisting of aluminum, alkali metal, alkaline earth metal, lower alkylamine, phenyl-lower alkylamine, N,N'-dibenzylethylenediamine, procaine or lower alkylpiperidine, R₁ and R₂ each is hydrogen, lower alkyl, lower alkenyl, phenyl, hydroxyphenyl, chlorophenyl, benzyl, phenethyl, or R₁ and R₂ together complete a cyclopentyl or cyclohexyl group, R₃ is hydrogen, lower alkyl or lower alkenyl, and X is hydrogen, lower alkanoyloxy or pyridinium.

3,855,214

2,3-DIHYDRO-1H-PYRIDINO[2,3-b][1,4]-THIAZINE-2-ONE-4-OXIDE

William Rodney Roderick, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 151,483, June 9, 1971, Pat. No. 3,733,411. This application Sept. 28, 1972, Ser. No. 293,253

Int. Cl. C07d 93/12

U.S. Cl. 260—243 R

1 Claim

1. 2,3-Dihydro-1H-pyridino-[2,3-b][1,4]-thiazin-2-one 4-oxide.

3,855,215

METHINE COMPOUNDS

John G. Fisher, and Curtis E. Diebert, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

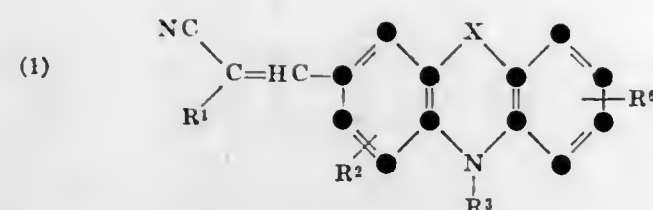
Continuation-in-part of Ser. No. 215,440, Jan. 4, 1972, abandoned. This application Feb. 7, 1973, Ser. No. 330,357

Int. Cl. C09b 23/00

U.S. Cl. 260—243 A

7 Claims

1. A compound of the general formula



wherein

X is oxygen or sulfur;

R¹ is cyano; alkoxycarbonyl containing from one to about nine carbon atoms; alkoxycarbonyl containing 3-5 carbon atoms substituted on the beta, gamma or delta carbon atom with one substituent selected from the group consisting of lower alkoxy, hydroxy, cyano, halogen; lower alkylsulfonyl; arylsulfonyl; or the group —CONR⁵R⁶ in which R⁴ is hydrogen, lower alkyl, aryl or, when R⁵ is hydrogen, R⁴ also can be lower alkanoyl or lower alkoxycarbonyl and R⁵ is hydrogen or lower alkyl; R² is hydrogen, lower alkyl or lower alkoxy;

R³ is aryl; andR⁶ is hydrogen, lower alkyl or lower alkoxy;

in which each aryl moiety is phenyl, lower alkylphenyl, lower alkoxyphenyl or halophenyl.

3,855,216

SUBSTITUTED PYRANO(3,2-C)(1,2)BENZOTHIADIAZINE 6,6-DIOXIDES

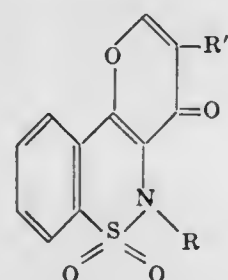
Daniel Kaminsky, Parsippany; Sylvester Klutchko, Hackettstown, and Maximilian Von Strandtmann, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 29, 1973, Ser. No. 365,399

Int. Cl. C07d 99/10

U.S. Cl. 260—243 R

1. A compound of the formula I:



wherein R represents hydrogen and lower alkyl and R' represents lower alkyl, hydroxymethyl, and carboxaldehyde and the thiosemicarbazone of the carboxaldehyde.

3,855,217

IMPROVED PROCESS FOR PREPARING N-BENZYLICALLY SUBSTITUTED AZIRIDINES

Bruce P. Thill, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1972, Ser. No. 246,873

Int. Cl. C07d 23/06

U.S. Cl. 260—239 E

10 Claims

1. In the process of preparing N-benzylallyl substituted aziridines comprising reacting by contacting (a) a benzyl chloride, bromide or iodide which may bear one or more substituents on the ring which are inert in the process, with (b) a non-N-substituted aziridine at a temperature of from about 0°C. to about 100°C. and in the presence of (c) an acid acceptor, the improvement consisting of conducting said process in a liquid aromatic hydrocarbon reaction medium.

5-ARYL-1,2,4-THIAZIAZINE 1,1-DIOXIDES AND 5,6-DIHYDRO-ARYL-1,2,4-THIAZIAZINE 1,1-DIOXIDES

William L. Matier, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

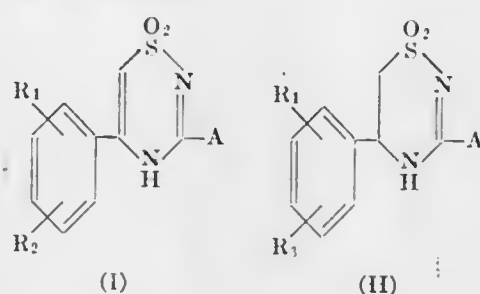
Filed June 11, 1973, Ser. No. 368,549

Int. Cl. C07d 93/22

U.S. Cl. 260—243 R

11 Claims

1. A compound selected from the group consisting of 1,2,4-thiadiazines of the formula



and a pharmaceutically acceptable metal salt thereof wherein R₁ is selected from hydrogen or halogen;

R₂ is selected from hydrogen, halogen, lower alkyl of from 1 to 4 carbon atoms inclusive, nitro, or sulfamoyl;

R₃ is selected from hydrogen, halogen, cyclohexyl or lower alkyl of 1 to 4 carbon atoms inclusive; and

A is selected from lower alkyl of 1 to 3 carbon atoms inclusive, phenyl or benzyl.

3,855,219

1,3,5-TRIAZINEDIONES

Julius Jakob Fuchs, Wilmington, and Kang Lin, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

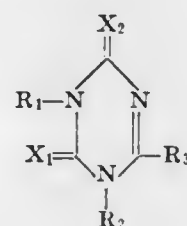
Continuation-in-part of Ser. No. 268,767, July 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,202, Sept. 16, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 301,853

Int. Cl. C07d 55/50

U.S. Cl. 260—248 NS

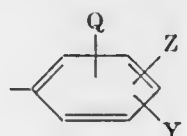
1. A compound of the formula

19 Claims



wherein

R₁ is alkyl of 1 through 8 carbon atoms, cycloalkyl of 3 through 8 carbon atoms, cycloalkylalkyl of 4 through 7 carbon atoms, alkenyl of 3 through 4 carbon atoms, alkynyl of 3 through 4 carbon atoms, benzyl or



where

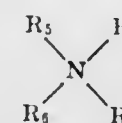
Y is hydrogen, halogen, alkyl of 1 through 4 carbon atoms, nitro, alkoxy of 1 through 4 carbon atoms, alkylthio of 1 through 4 carbon atoms, cyano or trifluoromethyl, and

Z is hydrogen, halogen, methyl, ethyl, nitro, alkoxy of 1 through 4 carbon atoms, or alkylthio of 1 through 4 carbon atoms; and

Q is hydrogen, halogen or methyl;
R₂ is hydrogen, or a group



where A is alkyl of 1 through 3 carbon atoms or alkoxy or alkylthio of 1 through 4 carbon atoms, or a cation selected from lithium, sodium, potassium, calcium, magnesium, barium, or



where

R₅, R₆ and R₇ can be the same or different and each can be hydrogen, alkyl of 1 through 4 carbon atoms, or hydroxy alkyl of 2 through 4 carbon atoms; and R₈ is hydrogen, alkyl of 1 through 12 carbon atoms, or benzyl; R₅ and R₆ can be taken together to form a ring that is —(CH₂)₂—O—(CH₂)₂— or —(CH₂)_n— where n is 4-6 and R₇ and R₈ are H;

R₃ is SR₄ or OR₄ where

R₄ is alkyl of 1 through 6 carbon atoms, cycloalkyl of 3 through 6 carbon atoms, alkenyl of 3 through 4 carbon atoms, alkynyl of 3 through 4 carbon atoms, or benzyl, and

X₁ and X₂ are oxygen or sulfur.

3,855,220

PYRIDILIUM-S-TRIAZINES

Hans Peter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,948

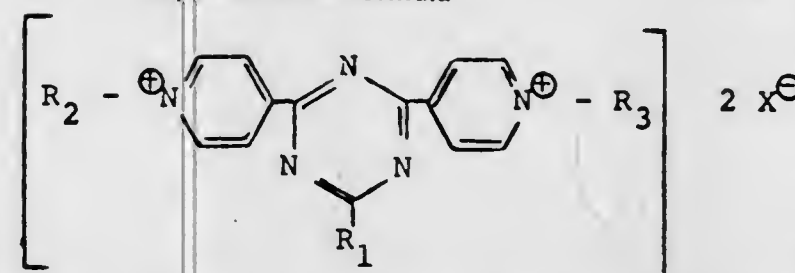
Claims priority, application Switzerland, Dec. 22, 1971, 18819/71

Int. Cl. C07d 55/18, 55/50

U.S. Cl. 260—248 CS

1. A compound of the formula

13 Claims



in which R₁ is hydrogen, alkyl of from one to eight carbon atoms, haloalkyl of from one to four carbon atoms, NH₂, OH, phenyl, 4-pyridyl or N'-methyl-4-pyridyl; each of R₂ and R₃ independently represents alkyl of from one to eight carbon atoms, alkenyl of from three to seven carbon atoms, haloalkyl of from one to four carbon atoms, alkoxy of from one to four carbon atoms, alkylthio of from one to four carbon atoms, cyano or alkoxycarbonyl in which the alkoxy moiety has from one to four carbon atoms; and X⁻ is the anion of an acid selected from the group consisting of hydrochloric, hydrobromic, hydroiodic, phosphoric, thiophosphoric, sulphuric, fluoroboric, perchloric, methylsulphuric, ethylsulphuric, benzenesulphonic, p-toluenesulphonic, naphthoic, benzoic, halo-benzoic, acetic, haloacetic, aminoacetic, propionic, halopropionic, butyric, lactic, stearic, oxalic, tartaric and fluorosulphuric.

3,855,221

HYDROXYPHENYL HYDROXYETHYLAMINOALKYL THEOPHYLLINES

Karl-Heinz Klingler, Langen, Germany, assignor to Deutsche Gold- und Silber-Schmiedeanstalt Vormal's Roessler, Frankfurt, Germany

Filed Aug. 30, 1972, Ser. No. 284,911

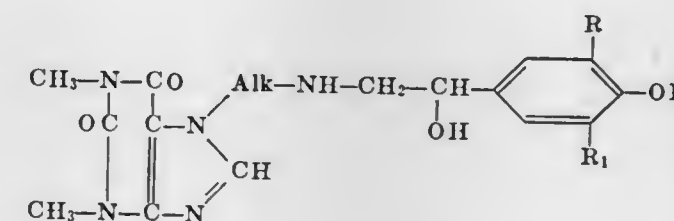
Claims priority, application Austria, Sept. 6, 1971, 7745/71

Int. Cl. C07d 51/48

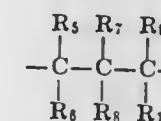
U.S. Cl. 260—256

14 Claims

1. A compound having the formula



where R is methyl or hydroxymethyl, R₁ is hydrogen or methyl, Alk is a group having the formula



where R₅, R₆, R₇, R₈, R₉ and R₁₀ are hydrogen or alkyl groups with one to three carbon atoms or a pharmacologically acceptable salt thereof.

3,855,222

2,4-DIAMINO-5-(3,4,5-TRIMETHOXYBENZYL)-6-ARYLSULFONYLPYRIMIDINES

Berislav Gluncic, and Krunoslav Kovacevic, both of Zagreb, Yugoslavia, assignors to Pliva Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

Filed Sept. 21, 1972, Ser. No. 290,839

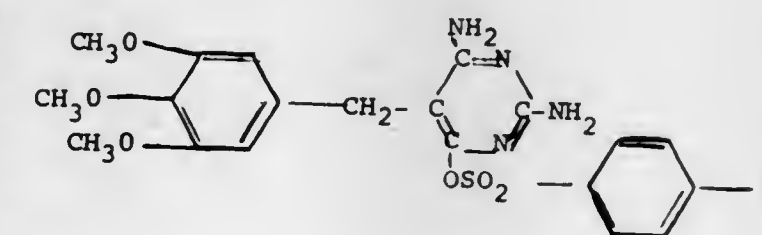
Claims priority, application Yugoslavia, Oct. 4, 1971, 2501/71

Int. Cl. C07d 51/42

U.S. Cl. 260—256.5 R

1 Claim

1. 2,4-Diamino-5-(3,4,5-trimethoxybenzyl)-6-arylsulphonyloxypyrimidines of the formula:



wherein R is a radical of the group consisting of H, CH₃, Cl, Br, NHCOCH₃, and NHCOCH₂CH₃.

3,855,223

BASICALLY SUBSTITUTED

(1H,3H)-QUINAZOLINE-2-THION-4-ONE DERIVATIVES
Rudi Beyerle, Bruchkobel, Germany; Adolf Stachel, deceased, late of Offenbach, Germany (by Ingeburg Lydia Katharina Stachel, executrix); Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt-Fechenheim, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 187,562, Oct. 7, 1971, Pat. No. 3,455,223.

This application Apr. 17, 1973, Ser. No. 351,830

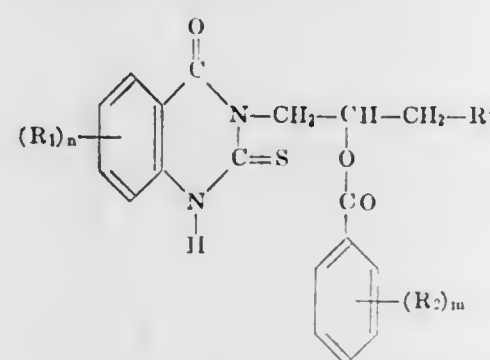
Claims priority, application Germany, Oct. 15, 1970, 2050640

Int. Cl. C07d 51/48

U.S. Cl. 260—256.5 R

8 Claims

1. Basically substituted (1H,3H)-quinazoline-2-thion-4-one derivatives having the structural formula



wherein

R' is a radical selected from the group consisting of N,N-dilower-alkylamino, N-lower alkyl-N-allyl-amino, and N-lower alkyl-N-benzylamino, lower alkyl meaning alkyl having 1-4 carbon atoms;

R₁ is an alkoxy group having 1-4 carbon atoms attached to positions 6,7 or 6,7,8;

R₂ is an alkoxy group having 1-4 carbon atoms;

m is an integer selected from the group consisting of 1,2 and 3;

n is an integer selected from the group consisting of 2 and 3; or the pharmaceutically acceptable salts thereof.

3,855,224

BASICALLY SUBSTITUTED

(1H,3H)-QUINAZOLINE-2-THION-4-ONE DERIVATIVES
Rudi Beyerle, Bruchkobel, Germany; Adolf Stachel, deceased, late of Frankfurt-Fechenheim, Germany (by Ingeburg Lydia Katharina Stachel, executrix); Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt-Fechenheim, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 187,562, Oct. 7, 1971, Pat. No. 3,793,320.

This application Apr. 17, 1973, Ser. No. 351,831

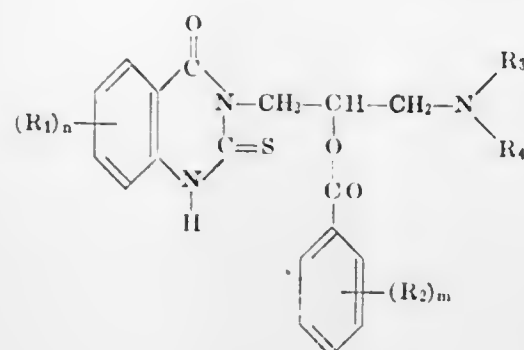
Claims priority, application Germany, Oct. 15, 1970, 2050640

Int. Cl. C07d 51/48

U.S. Cl. 260—256.5 R

4 Claims

1. Basically substituted (1H,3H)-quinazoline-2-thion-4-one derivatives having the structural formula



wherein

R₁ is an alkoxy group having 1-4 carbon atoms attached to positions 6,7 or 6,7,8;

R₂ is an alkoxy group having 1-4 carbon atoms;

R₃ is an alkyl group having 1-4 carbon atoms;

R₄ is a cycloalkyl group having 4-6 carbon atoms;

m is an integer selected from the group consisting of 1,2 and 3;

n is an integer selected from the group consisting of 2 and 3;

or the pharmaceutically acceptable salts thereof.

3,855,225

BASICALLY SUBSTITUTED

(1H,3H)-QUINAZOLINE-2-THION-4-ONE DERIVATIVES
Rudi Beyerle, Bruchkobel, Germany; Adolf Stachel, deceased, late of Offenbach, Germany (by Ingeburg Lydia Katharina Stachel, executrix); Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt-Fechenheim, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 187,562, Oct. 7, 1971, Pat. No. 3,793,320.

This application Apr. 17, 1973, Ser. No. 351,832

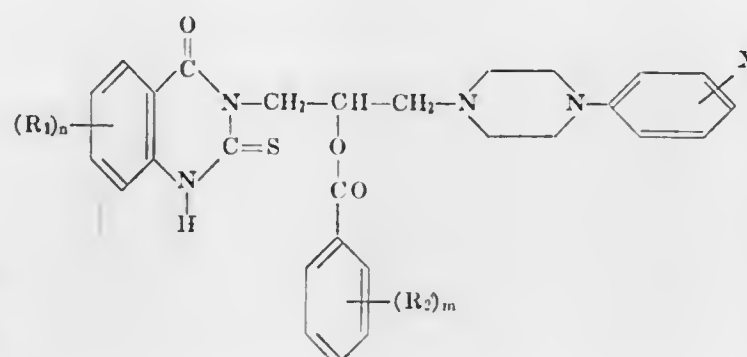
Claims priority, application Germany, Oct. 15, 1970, 2050640

Int. Cl. C07d 51/48

U.S. Cl. 260—256.5 R

5 Claims

1. A compound of the structural formula



wherein

R₁ is an alkoxy group having 1-4 carbon atoms attached to position 6,7 or 6,7,8;

R₂ is an alkoxy group having 1-4 carbon atoms;

X stands for a radical selected from the group consisting of 4-chloro and 3,4-dimethoxy;

m is an integer selected from the group consisting of 1,2 and 3;

n is an integer selected from the group consisting of 2 and 3 or the pharmaceutically acceptable salts thereof.

3,855,226

PROCESS OF PREPARING NOVEL PIPERAZINYLETHYL CARBAMATES

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

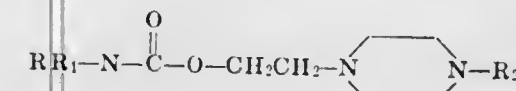
Division of Ser. No. 15,878, March 2, 1970, Pat. No. 3,721,674. This application Dec. 22, 1972, Ser. No. 317,607

Int. Cl. C07d 51/70

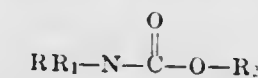
U.S. Cl. 260—268 R

2 Claims

1. A process for preparing a compound of the formula:



wherein R is selected from the group consisting of methyl, ethyl, n-propyl and n-butyl, R₁ is phenyl and R₂ is selected from the group consisting of methyl and ethyl; which comprises the step of reacting a carbamate of the formula:



wherein R, R₁ and R₂ are as hereinbefore defined, with triethylenediamine at a temperature of about 80° C. to about 250° C. in the presence of an inert solvent which is a liquid at room temperature.

3,855,227

(-)-DI-O-ISOPROPYLIDENE-2-KETO-L-GULONATES

Charles William Den Hollander, 116 Maltbie Ave., Midland Park, N.J. 07432; Willy Leimgruber, 166 Highland Ave., Montclair, N.J. 07042, and Ernest Mohacsi, 640 Franklin Ave., Nutley, N.J. 07110

Filed May 8, 1972, Ser. No. 251,134

Int. Cl. C07d 35/32

U.S. Cl. 260—286 R

4 Claims

1. A (-)-di-O-isopropylidene-2-keto-L-gulonate salt of an amine selected from the group consisting of isoquinoline or hydroisoquinoline each of which may be substituted by a substituent selected from the group consisting of methoxy, phenyl or p-methoxybenzyl, said amine having at least one chiral center as part of the ring system and whose endocyclic amino group is not directly substituted by the phenyl moiety.

3,855,228

3,4-DIHYDRO-1-OR

3-(POLYFLUOROALKYL)-2(1H)-ISOQUINOLINECARBOXAMIDOXIMES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,266

Int. Cl. C07d 35/10

U.S. Cl. 260—288 R

4 Claims

1. A compound selected from the group consisting of 3,4-dihydro-1-(pentafluoroethyl)-2(1H)-isoquinolinecarboxamidoxime, 1-(heptafluoropropyl)-3,4-dihydro-2(1H)-isoquinolinecarboxamidoxime and 3,4-dihydro-3-(trifluoromethyl)-2(1H)-isoquinolinecarboxamidoxime.

3,855,229

BENZOPYRAN-5-OLS

Raj K. Razdan, 76 Lawrence Ln., Belmont, Mass. 02178, and William R. Thompson, 77 Sacramento St., Somerville, Mass. 02143

Continuation of Ser. No. 164,145, July 19, 1971, abandoned.

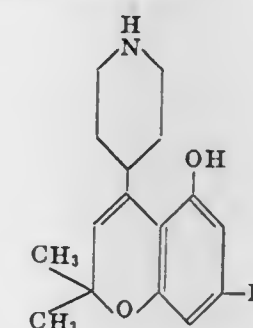
This application Feb. 28, 1973, Ser. No. 336,877

Int. Cl. C07d 29/16

U.S. Cl. 260—293.58

3 Claims

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R₄ is n-pentyl, n-hexyl, n-heptyl, n-nonyl, 2-heptyl, 3-methyl-2-octyl, 2-nonyl, decyl, dodecyl, 2-tetradecyl, n-hexadecyl or 2-eicosanyl.

3,855,230

2-(3'-TRIFLUOROMETHYLTHIO-ANILINO)-BENZOIC ACID AND SALTS THEREOF WITH PHARMACEUTICALLY ACCEPTABLE BASES

Henry Najer, and Jean-Francois Giudicelli, both of Paris, France, assignors to Synthelabo, Paris, France

Filed July 17, 1972, Ser. No. 272,141

Claims priority, application France, July 15, 1971, 71.25856

Int. Cl. C07d 31/34

U.S. Cl. 260—294.8 G

2 Claims

1. 2-(3'-trifluoromethylthio-anilino)-benzoic acid and salts which it forms with pharmaceutically acceptable bases.

3,855,231

2,6-DIAMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1973, Ser. No. 336,483

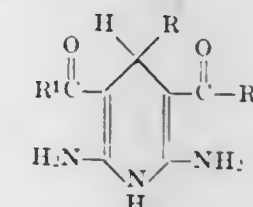
Claims priority, application Germany, Mar. 6, 1972, 2210687

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 G

22 Claims

1. A compound of the formula



wherein

R is hydrogen; lower alkyl; alkenyl of 2 to 4 carbon atoms; alkynyl of 2 to 4 carbon atoms; substituted phenyl in which the substituents are one to three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno, nitro, cyano, trifluoromethyl, azido, carbo(lower alkoxy), lower alkylsulfonyl, lower alkylsulfinyl, lower alkylthio or phenyl; or naphthyl; and each of R¹ and R², taken independently of the other, is, lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino.

3,855,232

PREPARATION OF 1-(LOWER-ALKYL)-1,4-DIHYDRO-7-ETHYL-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLATE

R. Pauline Brundage, and George Y. Leshner, Shodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 263,788, June 19, 1972, Pat. No. 3,786,043. This application June 8, 1973, Ser. No. 368,455

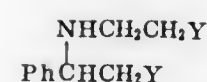
Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 B

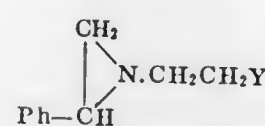
5 Claims

1. The process consisting essentially of heating at about 70°–250°C. in the absence or presence of a suitable solvent inert under the reaction conditions, where the solvent is selected from a polar, dipolar aprotic, and non-polar solvent, lower-alkyl

4-chloro-7-methyl-1,8-naphthyridine-3-carboxylate with alkali metal lower-alkoxide to produce lower-alkyl 1-(lower-alkyl)-1,4-dihydro-7-methyl-4-oxo-1,8-naphthyridine-3-carboxylate.



VII



VIII

with water, and in the presence of an acid in the case of the compound of the formula VIII., and wherein pH stands for phenyl, Y stands for a halogen atom, and H_nZ stands for an acid wherein Z is an anion of valency n.

3,855,233

6-SUBSTITUTED PENICILLANIC ACID AND DERIVATIVES THEREOF

Joseph Edward Dolfini, Princeton; Ekkehard Bohme, Hightstown, and William A. Slusarchyk, Belle Mead, all of N.J., assignors to E. R. Squibb and Sons, Inc., Princeton, N.J.

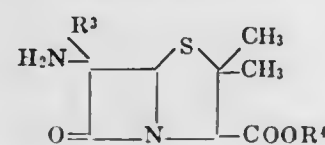
Filed Sept. 24, 1971, Ser. No. 183,642

Int. Cl. C07d 99/14

U.S. Cl. 260—306.7 C

3 Claims

1. A compound having the formula:



where R³ is lower alkylthio; and R⁴ is selected from the group consisting of hydrogen, lower alkyl, trimethylsilyl, benzyl, benzhydryl, methoxybenzyl, and trichloroethyl; and pharmaceutically acceptable salts thereof.

3,855,234

MANUFACTURE OF TETRAMISOLE

Thomas Paterson Roy, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 12, 1972, Ser. No. 261,992

Claims priority, application Great Britain, July 9, 1971, 32330/71; Apr. 6, 1972, 15849/72

Int. Cl. C07d 99/10

U.S. Cl. 260—306.7 T

11 Claims

1. In a process for the manufacture of a compound selected from the group consisting of tetramisole and 2-imino-3-(2-hydroxy-2-phenylethyl)-thiazolidine and acid-addition salts thereof, and involving the conversion of a compound of the formula:



IX

into the said 2-imino-thiazolidine derivative or an acid-addition salt thereof, and the optional conversion of the said 2-imino-thiazolidine derivative or an acid-addition salt thereof into tetramisole or an acid-addition salt thereof, the step which comprises reacting a compound which is selected from the group consisting of ethylamine derivatives of the formulae:

V

and

3,855,235

QUATERNARY AMMONIUM DERIVATIVES OF BISIMIDAZOLINE COMPOUNDS

Robert B. McConnell, Janesville, Wis., assignor to Ashland Oil, Inc., Ashland, Ky.

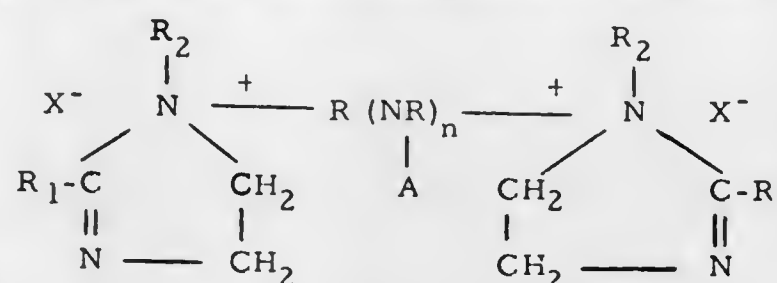
Filed July 16, 1973, Ser. No. 379,574

Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

14 Claims

1. A quaternary ammonium compound having the formula:



wherein R₁ is a C₅–C₂₃ hydrocarbyl group; n is an integer of from 0–4; R₂ is lower alkyl; R is a C₂–C₄ alkylene group; A represents hydrogen or an acyl group of the formula R₁C(O)– in which R₁ has the meaning as aforesaid; and X represents a chloro or a lower alkyl sulfate anion.

3,855,236

MULTI-STEP PROCESS FOR PREPARING 1-(SUBSTITUTED-HYDROCARBYL)-3,4,5-TRIBROMOPYRAZOLES

Gabriel Kornis, and Eldon G. Nidy, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 23, 1972, Ser. No. 228,770

Int. Cl. C07d 49/18

U.S. Cl. 260—310 R

17 Claims

1. The process which comprises reacting a mineral acid addition salt of hydrazine hydrate with 1,1,3,3-tetraalkoxypropane in a substantially aqueous medium to obtain a corresponding aqueous reaction mixture comprising pyrazole; reacting the pyrazole thus produced in situ with bromine in the presence of aqueous alkali metal hydroxide until bromination is complete and 3,4,5-tribromopyrazole is obtained; reacting the said tribromo product, in situ, with an α, β, γ, or Δ-monohalogenated alkanamide or -alkanoic acid in the presence of substantially equivalent amounts of an alkali metal hydroxide, and thence recovering the desired 1-(substituted-hydrocarbyl)-3,4,5-tribromopyrazole of the formula:

3,855,238

PROCESS FOR PREPARING

N-TERTIARY-BUTOXYCARBONYL AMINO ACIDS
Donald C. Batesky, and William C. Schultz, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

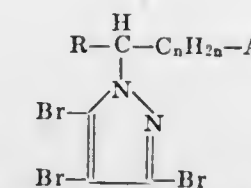
Continuation-in-part of Ser. No. 80,797, Oct. 14, 1970, abandoned. This application June 28, 1971, Ser. No. 157,606

Int. Cl. C07d 27/60

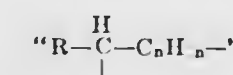
U.S. Cl. 260—326.14 T

20 Claims

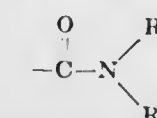
1. A process for preparing an N-tertiarybutoxycarbonyl amino acid which comprises the step of reacting a base addition salt of an amino acid with O-tertiary-butyl S-phenyl thio-carbonate to form thereby the corresponding N-tertiarybutoxycarbonyl amino acid.



wherein n is an integer 0, 1, 2, or 3; R is hydrogen, alkyl of from 1 to 5 carbon atoms, inclusive, the sum of carbon atoms in the group

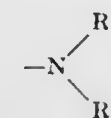


being not more than 9; and A is the carboxyl group or a carboxylic amide group of the formula



wherein R₁ and R₂ are hydrogen atoms or substituent groups more fully described as follows:

Individually, R₁ and R₂ are lower-alkyl of from 1 to 8 carbon atoms, inclusive; alkenyl of from 3 to 8 carbon atoms, inclusive; alkynyl of from 3 to 8 carbon atoms, inclusive; aralkyl of from 7 to 13 carbon atoms, inclusive; aryl of from 6 to 10 carbon atoms, inclusive (provided both R₁ and R₂ are not aryl at the same time); cycloalkyl of from 3 to 8 carbon atoms, inclusive; cycloalkenyl of from 4 to 8 carbon atoms, inclusive; cycloalkenyl of from 4 to 8 carbon atoms, inclusive; and Collectively, the



group is a saturated heterocyclic amino group of from 3 to 7 ring atoms, inclusive, having a total of not more than 15 carbon atoms.

3,855,237

PROCESS OF MAKING HEXAHYDRO-1H-FURO(3,4-C)PYRROLE

George C. Gatos, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

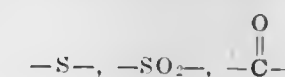
Filed June 14, 1973, Ser. No. 370,009

Int. Cl. C07d 59/00

U.S. Cl. 260—326.8

3 Claims

1. A process of making hexahydro-1H-furo(3,4-c)pyrrole comprising (a) reacting 3,4-bis(hydroxymethyl)furan with a ketone or aldehyde to form 3,4-bis(hydroxymethyl)furan-ketal or -acetal or reacting 3,4-bis(hydroxymethyl)furan with a low molecular weight ketal or acetal by a ketal or acetal interchange reaction to form the corresponding 3,4-bis(hydroxymethyl)furan-ketal or -acetal; (b) hydrogenating the product of step (a) to form the corresponding cis 3,4-bis(hydroxymethyl)tetrahydrofuran-ketal or -acetal; (c) hydrolyzing the product of step (b) to form cis 3,4-bis(hydroxymethyl)tetrahydrofuran; (d) reacting the product of step (c) with a compound so as to replace the two hydroxyl groups of the product of step (c) with two groups selected from the group consisting of sulfonyl groups or halogens; and then (e) reacting the product of step (d) with ammonia to yield the named product or reacting the product of step (d) with an alkylamine or aralkylamine to form the corresponding cyclized product which in turn is dealkylated or dearalkylated to yield the named product.



and —O—.

where the R's can be the same or different divalent organic radicals selected from the class consisting of (1) divalent saturated alkylene radicals of from 1 to 10 carbon atoms, (2) the phenylene radical and (3) divalent groups consisting of two unsubstituted phenylene radicals attached to each other through the medium of a member selected from the class consisting of an alkylene radical of from 1 to 10 carbon atoms,

3,855,240

SULFUR CONTAINING HETEROCYCLES

Wolfgang H. Mueller, Elizabeth, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 28, 1969, Ser. No. 819,944

Int. Cl. C07d 73/00

U.S. Cl. 260—327 P

14 Claims

1. A process for the preparation of heterocyclic dithianes and dithienes which comprises reacting, in the liquid phase, 1,2-disulfonyl halide with an acetylenic compound and thereafter recovering said sulfur containing heterocyclic compound.

3,855,241

ARYL KETONE CONTAINING ORGANOSILICON MATERIALS

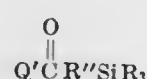
Edward V. Wilkus, Monroe, Conn., and Abe Berger, Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 56,632, July 20, 1970, Pat. No. 3,715,370, which is a division of Ser. No. 724,300, Feb. 2, 1968, Pat. No. 3,544,595. This application Mar. 17, 1972, Ser. No. 235,811 Int. Cl. C07d 63/24

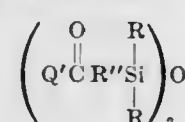
U.S. Cl. 260—329.3

3 Claims

1. An aryl ketone containing organosilicon compound selected from the class consisting of (A) monomers of the formula,



and (B) disiloxanes of the formula,



where R is a member selected from the class consisting of aryl of up to eight carbon atoms, haloaryl of up to eight carbon atoms, alkyl of up to eight carbon atoms, alkyl of up to four carbon atoms, alkenyl of up to three carbon atoms, cycloalkyl of up to six carbon atoms, haloalkyl of up to four carbon atoms, cyanoalkyl of up to four carbon atoms, halo and alkoxy of up to four carbon atoms; R' is a member selected from the class consisting of alkylene of up to 10 carbon atoms, haloalkylene of up to 10 carbon atoms, arylene of up to seven carbon atoms and haloarylene of up to seven carbon atoms; and Q' is a member selected from the class consisting of dibenzothiophene and dibenzofuran.

3,855,242

BENZO[B]THIENYL-ALKYL-GUANIDINES

Norman Bellamy Chapman; Kenneth Clarke, both of East Yorkshire, and John William James, Buckinghamshire, all of England, assignors to Aspro-Nicholas Limited, Slough, Berkshire, England, by said James

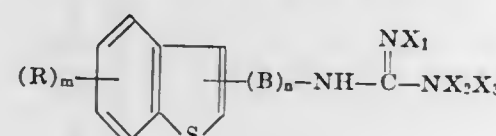
Continuation-in-part of Ser. Nos. 157,775, June 28, 1971, abandoned, and Ser. No. 144,334, May 17, 1971, abandoned, and Ser. No. 782,003, Dec. 6, 1968, abandoned. This application Oct. 26, 1971, Ser. No. 192,320

Int. Cl. A61k 27/00; C07d 63/22

U.S. Cl. 260—330.5

8 Claims

1. A benzo[b] thiophen having the formula: v,



wherein

X₁ is selected from the group consisting of hydrogen and alkyl having from one to six carbon atoms;

X₂ is selected from the group consisting of hydrogen and alkyl having from one to six carbon atoms;

X₃ is selected from the group consisting of hydrogen and alkyl having from one to six carbon atoms, phenyl and the group —C(=NH).NH₂;

R is selected from the group consisting of halogen, alkyl having from one to six carbon atoms, and alkoxy having from one to six carbon atoms attached to the 3- or 5-positions of the benzothiophenyl nucleus;

B is an alkylene chain having from one to four carbon atoms attached to the 2-, 3-, on 5-positions of the benzothiophenyl nucleus;

n is zero or one; and

m is 0, 1, or 2;

or an acid addition salt or quaternary ammonium salt thereof.

3,855,243

3-AMINOACYLAMINO THIOPHENES

Heinrich Ruschig, Bad Soden, Taunus; Manfred Schorr; Roman Muschawek, both of Frankfurt am Main, and Robert Rippel, Hofheim, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormal Meister Lucius & Bruning, Frankfurt, Germany

Continuation-in-part of Ser. No. 105,991, Jan. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 750,399, July 2, 1968, abandoned. This application Oct. 1, 1973, Ser. No. 402,382

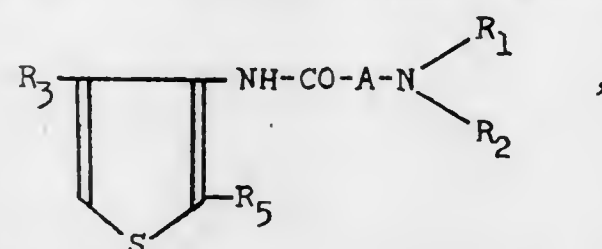
Claims priority, application Germany, July 7, 1967, 1643325

Int. Cl. A61k 27/00; C07d 63/16, 63/12

U.S. Cl. 260—332.2 C

6 Claims

1. a substituted 3-aminoacylamino-thiophene of the formula



and physiologically tolerated salts thereof, wherein R₁, taken alone, is hydrogen or alkyl having up to four carbon atoms; R₂, taken alone, is alkyl having up to four carbon atoms; R₁ and R₂, taken together with the nitrogen atom to which they are attached, are piperidino, pyrrolidino, morpholino, or N-methyl piperazino; one of R₃ and R₅ is methyl and the other is carbomethoxy or carbethoxy; and A is alkylene having one or two carbon atoms.

3,855,244

XANTHEN DERIVATIVES

Stewart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of 1 Thame Rd. West, Nottingham, England

Continuation-in-part of Ser. No. 191,110, Oct. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 662,587, Aug. 23, 1967, Pat. No. 3,644,420. This application Mar. 26, 1973, Ser. No. 344,570

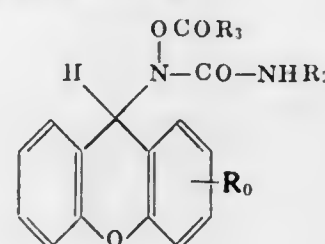
Claims priority, application Great Britain, Sept. 2, 1966, 39384/66; Apr. 5, 1967, 15692/67

Int. Cl. C07d 7/42

U.S. Cl. 260—335

8 Claims

1. A compound of the formula



in which

R₀ is hydrogen, halogen, alkoxy or alkyl;

R₂ is hydrogen, alkyl, alkanoyloxyalkyl or alkoxyalkyl; and

R₃ is hydrogen; alkyl containing 1–17 carbon atoms; alkyl containing a single substituent selected from alkoxy, alkylthio, phenoxy, phenyl, cycloalkyl and alkoxy-carbonyl; alkenyl; cycloalkyl; alkoxy-carbonyl; alkoxy; alkoxy containing a single substituent selected from alkoxy, phenoxy, cycloalkyl, alkoxy-carbonyl, halogen, cyano, alkoxyalkoxy, nitro and phenyl; phenoxy; alkenyloxy; alkenyloxy or cycloalkoxy;

wherein the terms "alkyl," "cycloalkyl," "alkoxy," "alkylthio," "alkenyl," "alkenyloxy," "alkenyloxy," "cycloalkoxy" and "alkanoxyloxy," indicate such groups containing up to seven carbon atoms (unless otherwise specified).

3,855,245

PROCESS FOR THE MANUFACTURE OF DERIVATIVES OF BETA-PHENYLPYRUVIC ACID

Hiroyasu Koyama, Tokyo, and Kunio Nakagawa, Kawagoe, both of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed May 23, 1972, Ser. No. 256,118

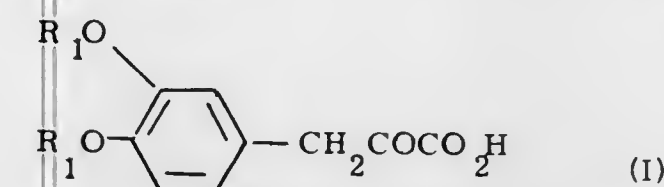
Claims priority, application Japan, June 16, 1971, 46-42575

Int. Cl. C07d 13/10

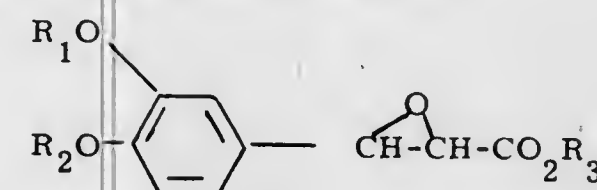
U.S. Cl. 260—340.5

8 Claims

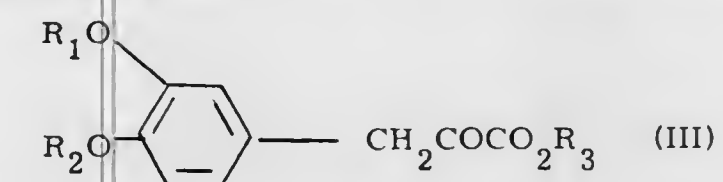
1. A process for the manufacture of β-phenyl pyruvic acid represented by the formula:



wherein R₁ and R₂ are same or are different and each is a lower alkyl having from 1 to 3 carbon atoms or R₁ and R₂ together may form methylene, characterized in that β-phenyl glycidic ester represented by the formula:



wherein R₁ and R₂ have the same meanings as above and R₃ stands for lower alkyl are rearranged by an anhydrous acid taken from the group consisting of hydrogen chloride, sulfuric acid, or a Lewis acid to form β-phenyl pyruvic ester represented by the formula:



wherein R₁, R₂ and R₃ have the same meaning as above and then the β-phenyl pyruvic ester is hydrolyzed by a concentrated hydrohalic acid to give the β-phenyl pyruvic acid.

3,855,246

ALKYL-SUBSTITUTED 3,6-DIHYDRO-O-DIOXIN DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Kiyosi Kondo, Yamato; Masakatsu Matsumoto, Sagami-hara, and Miyako Hatsutani, Zushi, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,504

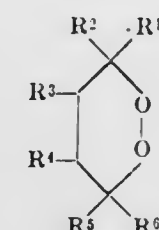
Claims priority, application Japan, Dec. 21, 1971, 46-103210; July 21, 1972, 47-72470

Int. Cl. C07d 15/00

U.S. Cl. 122—340.6

8 Claims

1. An alkyl-substituted 3,6-dihydro-o-dioxin having the formula:



wherein R¹, R², R³, R⁴, R⁵ and R⁶ may be the same or different, wherein R¹, R² and R⁴ are hydrogen, methyl or phenyl; R³ is hydrogen, alkyl having one to four carbon atoms or benzyl; R⁵ and R⁶ are hydrogen or methyl, provided that at least one of R¹ to R⁶ is alkyl or benzyl.

3,855,247

PRODUCTION OF UNSATURATED CARBOCYCLIC KETONES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Palo Alto, Calif.

Division of Ser. No. 773,320, Nov. 4, 1968, Pat. No. 3,652,596, which is a continuation-in-part of Ser. Nos. 747,465, July 25, 1968, and Ser. No. 687,502, Dec. 4, 1967, Pat. No. 3,639,428. This application Nov. 12, 1971, Ser. No. 198,476

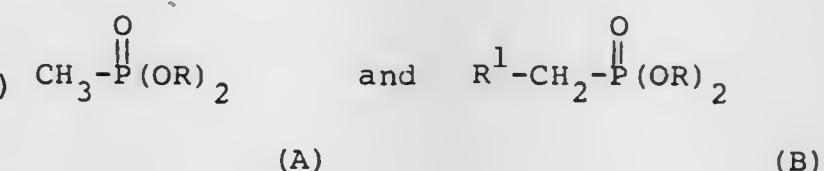
Int. Cl. C07d 13/08

U.S. Cl. 260—340.9

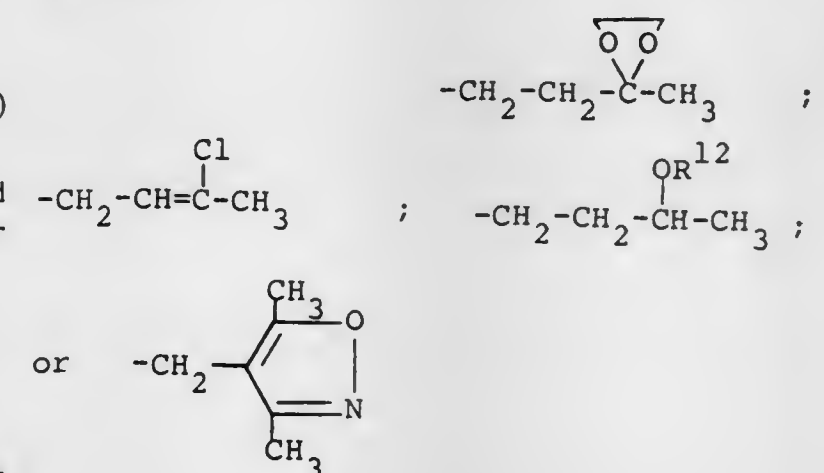
10 Claims

1. A process for preparing α,β-unsaturated carbocyclic ketones which comprises the steps of:

a. reacting at temperatures in the range of from -150° to -20°C under anhydrous conditions in an organic solvent, inert to the reaction, a base selected from the group consisting of alkali metal hydrides, alkali metal amides, and organo alkali metal compounds selected from the group consisting of n-butyl lithium, phenyl lithium, methyl sodium, sodium acetylide, methyl potassium, methyl lithium, tolyl lithium and methyl potassium lithium pyridide, with about an equal molar amount of a phosphonate selected from the group having the formulas:

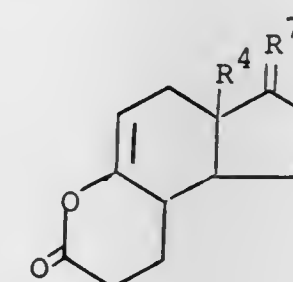


wherein R is selected from the group consisting of lower alkyl having from one to six carbon atoms, cyclohexyl, phenyl, tolyl, trichlorophenyl and benzyl, and wherein R¹ is a group having the formula:

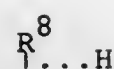


wherein —OR¹² is an acid labile ether group selected from the group consisting of tetrahydrofuran-2'-yloxy, tetrahydropyran-2'-yloxy, t-butoxy and methoxy, thereby generating the corresponding carbanion; and

b. reacting in situ with said carbanion about an equal molar amount of an enol lactone having the formula:



wherein R⁴ is methyl or ethyl and R⁷ is oxo or a lower alkyl-lenedioxy having one to six carbon atoms thereof or the group



in which R^8 is hydroxy, a carboxylic ester having less than 12 carbon atoms, or an acid labile ether selected from the group consisting of t-butoxy, tetrahydropyran-2-yloxy, tetrahydrofuran-2-yloxy, methoxy, ethoxy and methoxymethyleneoxy, thereby producing the corresponding α,β -unsaturated carbocyclic ketone.

3,855,248

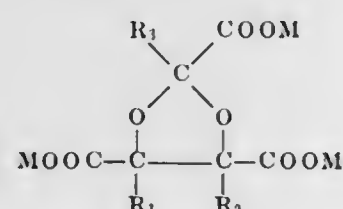
DIOXOLANE POLYCARBOXYLATES

Kent P. Lannert, Freeburg, Ill., and Russel D. Harken, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed May 8, 1972, Ser. No. 251,160

Int. Cl. C07d 13/04

U.S. Cl. 260—340.9

1. A compound represented by the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen, methyl, $-\text{COOX}$, and $-\text{CH}_2\text{COOX}$; R_3 is selected from the group consisting of hydrogen, methyl and $-\text{COOX}$; and X is selected from the group consisting of hydrogen, methyl, ethyl, alkali metal, and ammonium.

3,855,249

4-PHENOXY-3-HYDROXY-BUTYRAMIDINE DERIVATIVES

Louis Lafon, Paris, France, assignor to Societe anonyme dite: Orsymonde, Paris, France

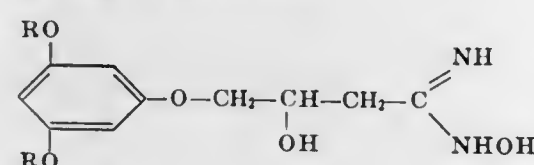
Filed Aug. 9, 1972, Ser. No. 278,944

Claims priority, application France, Aug. 13, 1971, 71.29685

Int. Cl. C07d 5/12

U.S. Cl. 260—343.7

1. A compound of the formula



in which R represents hydrogen or alkyl of one to five carbon atoms or a salt thereof of a pharmaceutically acceptable acid.

3,855,250

CERTAIN 2-OXO-2H-CYCLOPENTA (B)-FURANS

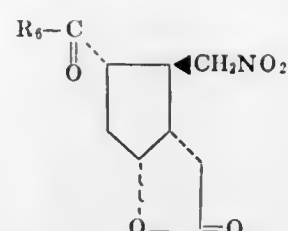
Jane Liu Jernow, Verona, and Perry Rosen, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 317,589, Dec. 22, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,528

Int. Cl. C07d 5/06

U.S. Cl. 260—343.3

1. A compound of the formula:



wherein R_6 is methyl or halogen; or enantiomers or racemates thereof.

3,855,251

ALKENYL-SUBSTITUTED SUCCINIC ANHYDRIDE

Paul J. Cahill, Lombard, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 22, 1972, Ser. No. 317,671

Int. Cl. C07c 55/10

U.S. Cl. 260—346.8 R

3 Claims

1. An alkenyl-substituted succinic anhydride composition, wherein the alkenyl-substituent is derived from butene polymer hydrocarbon having M_n in the range of 200 to 900 and wherein such substituted succinic anhydride the molecular entities have at least 50% of the alkenylsuccinic anhydride adduct isomer having the tetra-substituted double bond illustrated in the formula $(\text{CH}_3)_2\text{C}=\text{C}(\text{R})\text{P}-\text{SA}$ wherein R is the branched hydrocarbon chain of the butylene polymer whose back-bone chain comprises repeating butyl units and whose side chains are either butyl or repeating butyl units and wherein SA is the succinic anhydride ring.

3,855,252

LIQUID PHASE OXIDATION OF CONDENSED-RING AROMATIC HYDROCARBONS

Kenneth R. Robinson, Russell, and Joseph E. Willis, Ashland, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 744,768, July 15, 1968, abandoned.

This application Sept. 15, 1971, Ser. No. 180,228

Int. Cl. C07c 49/68

U.S. Cl. 260—385

9 Claims

1. A method for producing anthraquinone from a mixture of aromatic hydrocarbons boiling between about 630°F and about 680°F and consisting essentially of phenanthrene and anthracene comprising:

- oxidizing with molecular oxygen the anthracene in said hydrocarbon mixture to anthraquinone by contacting said hydrocarbon mixture with a molecular oxygen-containing gas and a catalyst consisting essentially of manganese acetate, cobalt acetate or a combination of manganese acetate and cobalt acetate, and optionally a bromine compound selected from the group consisting of bromine and potassium bromide;
- while maintaining the reaction mixture in a liquid phase by adding thereto a solvent medium, at least a part of which is an acid selected from the group consisting of mineral acids and lower carboxylic acids wherein at least one part by weight of said acid per part of anthracene in the mixture of aromatic hydrocarbons is utilized;
- while maintaining a temperature between about 155°F and about 380°F and a pressure between about atmospheric and about 800 psig, said temperature and pressure being mutually adjusted to maintain said reaction mixture in a liquid phase and;
- separating anthraquinone from the reaction product formed.

3,855,253

4'-[(DIHODOMETHYL)SULFONYL] ACETANILIDE

Aldo Joseph Croveti, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

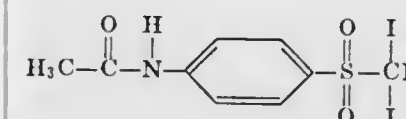
Continuation of Ser. No. 215,949, Dec. 16, 1971, abandoned, which is a division of Ser. No. 805,846, March 10, 1969, Pat. No. 3,632,859. This application Aug. 7, 1973, Ser. No.

386,233

Int. Cl. C07c 147/00

U.S. Cl. 260—397.6

1. A compound of the formula



3,855,254

INTERESTERIFICATION PROCESS

Adolf Johan Haighton, and Hans Robert Kattenberg, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,240

Int. Cl. C11c 3/10; A23d 3/02

U.S. Cl. 260—410.7

7 Claims

1. Process for accelerating the directed interesterification reaction of a mixture of glycerides containing fatty acid radicals with 2 to 26 carbon atoms, in which the reaction is carried out at temperatures from -30° to 60°C in the presence of 0.01 to 0.5% by weight of alkali metals or their catalytically active derivatives under conditions at which the glyceride mixture is alternately subjected for 5 to 60 minutes to a temperature of 1° to 15°C below the cloud point of a randomized mixture of the same glycerides and for 15 to 300 minutes to a temperature of at least the cloud point of said randomized mixture, whereby the temperature is cycled at least three times until the cloud point of the mixture obtained is at least 5°C above the cloud point of the randomized mixture.

3,855,255

PROCESS FOR THE PRODUCTION OF HIGHER, POLYUNSATURATED CARBOXYLIC ACID ESTER AND FREE ACIDS

Manfred Dohr, Dusseldorf-Holthausen; Helmut Singer, Dusseldorf-Wersten, and Wilfried Umbach, Langenfeld, all of Germany, assignors to Henkel and Cie GmbH, Dusseldorf, Germany

Filed May 25, 1971, Ser. No. 146,780

Claims priority, application Germany, May 27, 1970, 2025830

Int. Cl. C07c 67/00

U.S. Cl. 260—410.9 R

12 Claims

1. In the process for the preparation of higher, polyunsaturated carboxylic acid esters comprising the steps of reacting a conjugated diolefin with a lower alkyl methacrylate in a ratio of at least 4 mols of diolefin per mol of methacrylate, in the presence of an organo-metal complex of zero-valent nickel and of an electron donor, and recovering a higher, polyunsaturated carboxylic acid ester having more than 19 carbon atoms in the acid moiety, the improvement consisting of employing an electron donor selected from the group consisting of phosphorous acid triamides, morpholine, N-methylmorpholine, piperidine, pyridine, the picolines, collidine, quinoline, pyrrole, aliphatic sulfides, triaryl-arsines and triaryl-stibines.

3,855,256

OIL OF TEMPEH

Paul Gyorgy, 201 Curwen Rd., Rosemont, Pa. 19010

Division of Ser. No. 155,252, June 21, 1971, Pat. No.

3,762,933. This application June 27, 1973, Ser. No. 374,074

Int. Cl. C11b 1/10

U.S. Cl. 260—412.8

1 Claim

1. Oil of tempeh useful as an antioxidant or stabilizing agent for edible oils and fats prepared by extracting tempeh, a fermented soybean product, with a liquid solvent consisting essentially of a low molecular weight aliphatic hydrocarbon, said aliphatic hydrocarbon containing four to 12 carbon atoms per molecule, and a low molecular weight oxygen-containing polar aliphatic organic compound, said polar organic compound containing from one to 10 carbon atoms per molecule, recovering the resulting liquid solvent extract phase and separating therefrom the solvent consisting essentially of said aliphatic hydrocarbon and polar organic compound to produce said oil of tempeh.

3,855,257

PREPARATION OF CARBOXYLIC ACIDS BY THE OXIDATION OF VICINAL GLYCOLS

Edmund P. Pultinas, Jr., Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 51,023, June 29, 1970, abandoned. This application June 23, 1971, Ser. No. 156,053

Int. Cl. C08h 17/36

U.S. Cl. 260—413

8 Claims

1. A process for preparing carboxylic acids comprising oxidizing an internal vicinal glycol in the presence of a catalytic amount of a mixture comprising a cobalt (II) salt of an organic acid and a compound selected from the group consisting of peroxidized tungstic acid, peroxidized tungstic oxide, peroxidized molybdic acid and peroxidized molybdic oxide in a polar, aprotic solvent.

3,855,258

PREPARATION OF TRANSITION METAL COMPLEXES

Alexander Joseph Peter Pioli, Runcorn, England, assignor to Imperial Chemical Industries, Limited, London, England

Filed July 6, 1973, Ser. No. 377,104

Claims priority, application Great Britain, July 13, 1972, 32808/72

Int. Cl. C07f 7/00

U.S. Cl. 260—429.3

5 Claims

1. A process for the production of a tetraabenzyl of a metal of Group IVa of the Periodic Table by reaction of a Group IVa metal salt with an ethereal solution of a benzylic compound of magnesium in which, after completion of the reaction, the ethereal solution is treated with a liquid hydrocarbon which is miscible with the ether, is a solvent for the product tetraabenzyl and is a non-solvent for the magnesium compounds present in the reaction system and has a boiling point at least 50°C higher than that of the ether, the process being performed under substantially dry, oxygen-free conditions and the ether being subsequently removed by stripping or distillation.

3,855,259

METHOD OF PREPARING PHENYLCHLOROSILANES

Minoru Takamizawa, and Mitsuo Umemura, both of Annaka, Japan, assignors to Shinetsu Chemical Company

Filed Feb. 21, 1973, Ser. No. 334,277

Claims priority, application Japan, Feb. 23, 1972, 47-18665

Int. Cl. C07f 7/16

U.S. Cl. 260—448.2 T

9 Claims

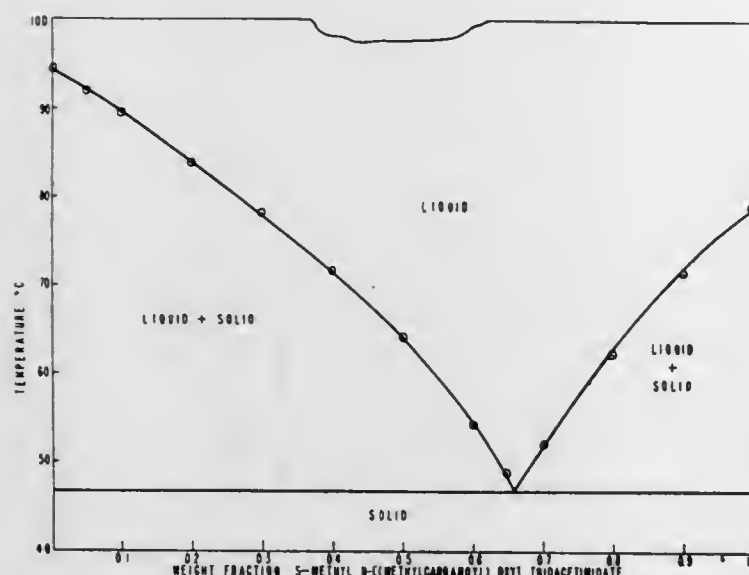
1. Method of preparing phenylchlorosilanes which comprises contact-reacting chlorobenzene with a mass composed of metallic silicon and a catalyst comprising a major portion of copper and a minor portion of an iron oxide in an amount of from about 0.5 percent to about 5 percent by weight based

on the weight of said mass at a temperature in the range of from about 400° to about 500°C.

3,855,260

MELT PREPARATION OF S-METHYL N-[(METHYL-CARBAMOXY)OXY]THIOACETIMIDATE
Robert J. Vollkommer, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 22, 1972, Ser. No. 317,803
Int. Cl. C07c 119/16
U.S. Cl. 260—453 R

8 Claims

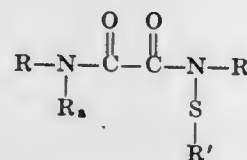


1. In the method of making S-methyl N-[(methylcarbamoyl)oxy]thioacetimidate by reacting methylisocyanate with S-methyl N-hydroxythioacetimidate in the absence of solvent, the improvement which comprises contacting the reactants under conditions such that for at least a terminal portion of the reaction the reaction mass is maintained as a continuous liquid phase.

3,855,261

(HYDROCARBONTHIO)OXAMIDE VULCANIZATION RETARDERS
Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Division of Ser. No. 238,653, March 27, 1972, Pat. No. 3,780,001. This application July 30, 1973, Ser. No. 383,770
Int. Cl. C07c 119/118
U.S. Cl. 260—453 R

7 Claims



wherein R is selected from the group consisting of hydrogen, alkyl radicals containing 1 to 18 carbon atoms, and a phenyl radical, R_a is the same as R or is a —SR' radical, and R' is hydrocarbon radical selected from the group consisting of alkyl radicals containing 1 to 18 carbon atoms, cyclobutyl, cyclopentyl, cyclohexyl, cyclooctyl, and phenyl radicals.

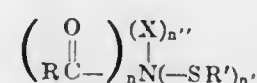
3,855,262

N-(HYDROCARBYLTHIO) AMIDES

Aubert Yaucher Coran, and Joseph Edward Kerwood, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 208,447, Dec. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 29,717, March 27, 1970, Pat. No. 3,752,824, which is a division of Ser. No. 714,445, March 20, 1968, Pat. No. 3,546,185. This application Sept. 6, 1973, Ser. No. 394,558
Int. Cl. C07c 119/18, 119/20
U.S. Cl. 260—453 R

16 Claims

1. A compound of the formula



where n, n' and n'' are integers, the sum of which is three, n and n' being one or two, and n'' being zero or one, R is lower alkyl or phenyl, R' is hydrocarbyl which is phenyl, benzyl or cycloalkyl of 5-8 carbon atoms and X is hydrogen or R.

3,855,263

TETRAHYDRO-2-NAPHTHYL ESTER DERIVATIVES OF TINONOCARBANILIC ACIDS

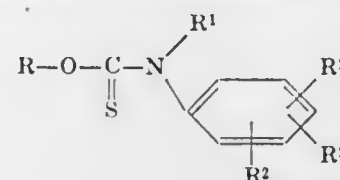
Piero Melloni; Raffaella Metelli; Vittorio Vecchiotti; Willy Logeman; Ivo De Carneri; Silvana Castellino, and Gisella Monti, all of Milan, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Filed Mar. 13, 1973, Ser. No. 340,932
Claims priority, application Italy, Mar. 20, 1972, 22102/72
Int. Cl. C07c 155/00

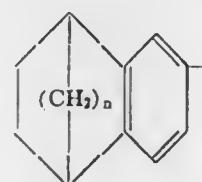
U.S. Cl. 260—455 A

34 Claims

1. A compound of general formula (I)



wherein R is a 5,6,7,8-tetrahydro-2-naphthyl group or a group of general formula



wherein n is 1, 2 or 3; R¹ is a hydrogen atom or a C₁₋₈ alkyl group; and each of the groups R² which may be the same or different, is a hydrogen or halogen atom, a nitro, cyano, trihalomethyl, phenyl, C₁₋₈ alkyl or C₁₋₈ alkoxy group or a group of formula —SR³, —COR³ or —NHCOR³ wherein R³ is a C₁₋₈ alkyl group.

3,855,264

PREPARATION OF HALOGENATED BENZONITRILE

Lewis William Watts, Jr.; Ernest Leon Yeakey, and Philip Hotchkiss Moss, all of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed May 18, 1970, Ser. No. 38,478
Int. Cl. C07c 121/52

U.S. Cl. 260—465 G

3 Claims

1. A process for preparing chlorinated benzonitrile by reacting in a vapor phase chlorine and benzonitrile or partially chlorinated derivatives of benzonitrile, which comprises: contacting the chlorine with the benzonitrile in an open tubular reactor heated to a temperature of from about 650°C. to about 850°C.

3,855,265

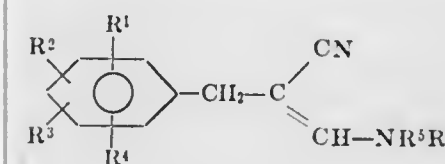
5-BENZYL PYRIMIDINES INTERMEDIATES THEREFORE, AND METHOD

Ronald M. Cresswell, Raleigh; John W. Mentha, Washington, and Russell L. Seaman, Chapel Hill, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.
Division of Ser. No. 16,606, March 4, 1970, Pat. No. 3,697,512. This application July 25, 1972, Ser. No. 274,855
Claims priority, application Great Britain, Mar. 6, 1969, 11908/69; Mar. 6, 1969, 11909/69; May 16, 1969, 25171/69; June 13, 1969, 30247/69
Int. Cl. C07c 121/42

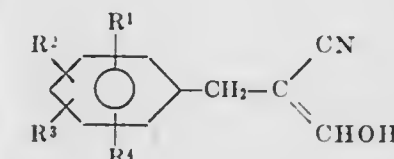
U.S. Cl. 260—465 E

4 Claims

1. In the method of preparing a compound of the formula



the step of combining the compound of the formula II



(II)

and aniline and permitting them to react, in the above formulas R¹—R⁴ are the same or different and each is a hydrogen or halogen atom, loweralkyl, loweralkoxy or benzyloxy, or R³ and R⁴ taken together may be a methylenedioxy group when both R¹ and R² are hydrogen atoms, and NR⁵H⁶ is anilino in Formula I.

3,855,266

PREPARATION OF GAMMA-CYANOBUTYRALDEHYDE

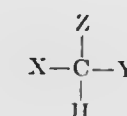
Gerrit E. Beekhuis, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands
Filed June 12, 1973, Ser. No. 369,390
Claims priority, application Netherlands, June 12, 1972, 7207939

Int. Cl. C07c 121/02

U.S. Cl. 260—465.1

9 Claims

1. A process for recovering γ-cyanobutyraldehyde from the acid hydrolysis mixture obtained by the acid hydrolysis of an N-substituted γ-cyanobutyraldimine, wherein the N-substituent is an alkyl group of 1 to 10 carbon atoms, said hydrolysis forming the corresponding amine and said γ-cyanobutyraldehyde, said process comprising extracting γ-cyanobutyraldehyde from the acid hydrolysis mixture using an extracting amount of at least one extracting agent of the formula

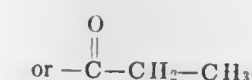


Wherein:

X=H or Cl

Z=Cl or H

Y=Cl or, when X is H and Z is Cl, Y may also be —CH₂Cl, or, when X and Z are H, Y is nitro or



3,855,267

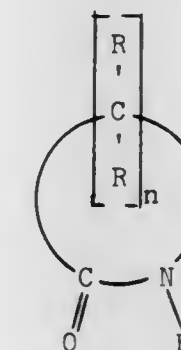
ALUMINUM PHOSPHATE-PROMOTED CATALYSTS FOR THE AMMONIOLYTIC CLEAVAGE OF LACTAMS

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 859,555, Sept. 19, 1969, abandoned. This application Aug. 31, 1973, Ser. No. 393,494
Int. Cl. C07c 121/12, 121/02

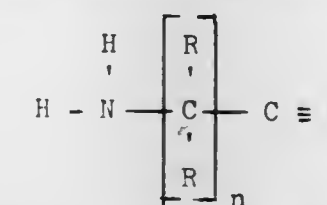
U.S. Cl. 260—465.2

9 Claims

1. A method for the conversion of a lactam represented by the formula



to an ω-aminonitrile represented by the formula



wherein n is an integer of from 3 to 9, and R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, and combinations thereof, having up to about 8 carbon atoms per R group and a maximum of about 10 carbon atoms in all R groups of said lactam, which comprises

contacting said lactam with ammonia under suitable reaction conditions in the presence of a catalyst consisting essentially of aluminum phosphate on a substrate, wherein said substrate is selected from the group consisting of α-alumina and zeolites, said reaction conditions comprising a temperature in the range of about 250° to about 75° C, a pressure in the range of about 0.1 to about 1,000 atmospheres, an ammonia to lactam mole ratio in the range of about 1 to about 1,000, and a time in the range of about 0.1 second to about 10 hours, and said aluminum phosphate being in the range of from about 0.05 to about 50 weight percent on said substrate.

3,855,268

OXYDEHYDROGENATION OF ORGANIC NITRILES

Roy B. Duke, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

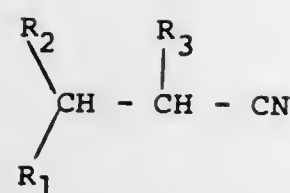
Filed July 3, 1969, Ser. No. 839,045

Int. Cl. C07c 121/02

U.S. Cl. 260—465.3

16 Claims

1. A process for oxydehydrogenating nitriles of the general formula:



where R_1 , R_2 , and R_3 are selected from the group consisting of hydrogen, alkyl, alkenyl, aryl and mixtures thereof, and wherein the nitrile contains from 3 to 30 carbon atoms, said process being conducted in the vapor phase by forming a reaction mixture of the nitrile, iodine, and oxygen, the iodine and oxygen being present in an amount of about 0.001 to about 0.1 mole and at least 0.01 mole, respectively, per mole of nitrile, passing said reaction mixture through a reactor containing two zones, the first zone being substantially inert with respect to iodine, and the second zone comprising a catalytic mass of a chromite of a metal of Groups IIa, IVa, Va, Ib through VIIb, and VIII of the Periodic Table of Elements, said reaction mixture being passed through the two zones at temperatures of from about 300 to about 1300°F and gaseous hourly space velocities of about 5 to about 1500 hrs⁻¹.

3,855,269

APPARATUS AND METHOD FOR SEPARATING TETRAALKYLAMMONIUM SALT

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 27, 1972, Ser. No. 275,555

Int. Cl. C07c 121/32; B01k 1/00; C07c 85/16

U.S. Cl. 260—465.9

6 Claims

1. A method for separating tetraalkylammonium salts from a stream in the form of an emulsion, said emulsion stream being a product of an electrohydrodimerization process for converting acrylonitrile into adiponitrile, said emulsion stream consisting essentially of adiponitrile, acrylonitrile, other organics, inorganic salts, water and a small amount of a dissolved catalytic tetraalkylammonium salt, said method comprising:

passing said emulsion stream through a cooling zone and thus lowering the temperature thereof to a temperature in the range of about 70° to 50°F;

separating said first stream into a first organic phase stream and a first aqueous phase stream;

recovering said first aqueous phase;

passing said thus separated first organic phase stream through a refrigeration zone and thus lowering the temperature thereof to a temperature in the range of about 30° to 50°F;

separating said first organic phase stream into a second organic phase stream and a second aqueous phase stream containing a portion of said tetraalkylammonium salt; and recovering said second aqueous phase.

3,855,270

15-ALKYL PROSTAGLANDINS F

John E. Pike, Kalamazoo, and William P. Schneider, Kalamazoo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

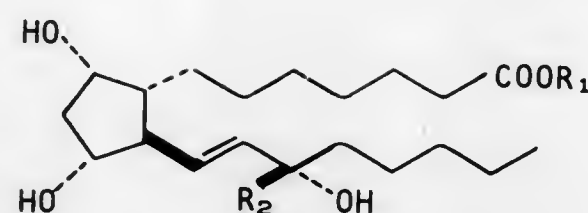
Continuation of Ser. No. 37,308, May 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 648,992, June 26, 1967, abandoned. This application Sept. 13, 1972, Ser. No. 288,618

Int. Cl. C07c 61/32, 69/74

U.S. Cl. 260—468 D

6 Claims

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 is methyl or ethyl.

3,855,271

2-AMINO-2-ALLENYLMALONIC ESTERS

Robert D. Dillard, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

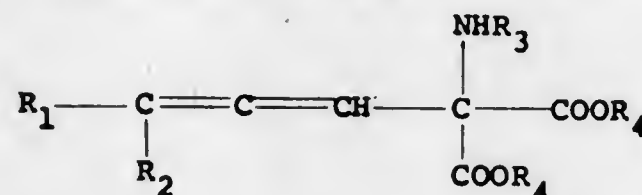
Filed Dec. 20, 1973, Ser. No. 426,860

Int. Cl. C07c 101/20

U.S. Cl. 260—468 J

7 Claims

1. A compound of the following general formula:



wherein

R_1 and R_2 are independently-selected C_1 - C_5 alkyl groups, or R_1 and R_2 taken together constitute a divalent polymethylene group having either 4 or 5 carbon atoms, which, together with the carbon atom to which it is attached, completes a five- or six-membered carbocyclic ring;

R_3 is either hydrogen or methyl, with the proviso that when R_1 and R_2 both are methyl, R_3 must be methyl; and R_4 is monovalent C_1 - C_6 alkyl group.

3,855,272

1-ALKOXYCARBONYL-2-ALKYL CARBAMOYL METHYL-3-(2-ACYLAMIDO-PHENYL)ISOTHIOUREA

Raymond Giraudon, Seine-et-Marne, France, assignor to Rhone-Poulenc, S.A., Paris, France

Filed May 29, 1973, Ser. No. 364,333

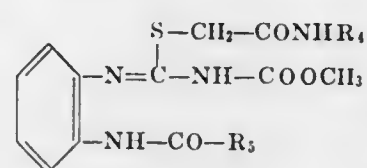
Claims priority, application France, May 30, 1972, 72.19321

Int. Cl. C07c 157/14

U.S. Cl. 260—470

6 Claims

1. An isothiourea of the formula:



wherein R_4 is alkyl of 1 through 4 carbon atoms and R_3 is hydrogen, alkyl of 1 through 4 carbon atoms, or phenyl.

3,855,273

POLYAMIC ACIDS AND ESTERS

Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

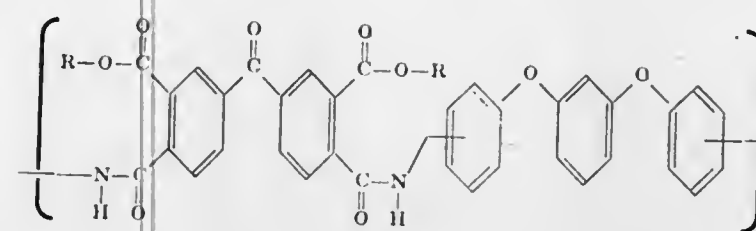
Continuation-in-part of Ser. No. 211,431, Dec. 23, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 275,676

Int. Cl. C07c 103/30

U.S. Cl. 260—471 R

8 Claims

1. A polyimide precursor consisting essentially of the following recurring unit:



drides, and (5) hydrolyzing said carboxylate esters of (beta-hydroxyethyl) terephthalate after steps (3) and (4).

3,855,276

PHENANTHRYL ETHYLIDENE CARBAZIC ACID ESTERS

John Paul Dusza, Nanuet; Harry Lee Lindsay, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

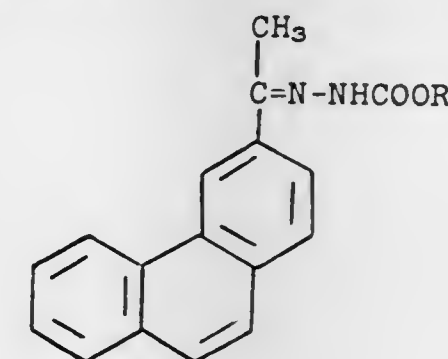
Filed Dec. 17, 1973, Ser. No. 425,421

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

3 Claims

1. A compound of the formula:



wherein R is lower alkyl C_1 to C_6 .

3,855,277

FLAME RETARDANT COMPOUNDS AND THERMOPLASTIC COMPOSITIONS CONTAINING THE SAME

Daniel W. Fox, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1971, Ser. No. 194,518

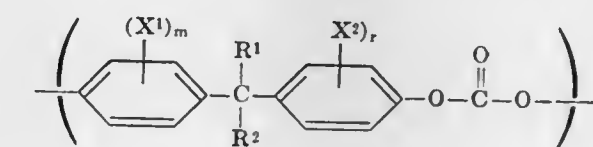
Int. Cl. C08g 39/02

U.S. Cl. 260—45.7 R

12 Claims

1. A flame retardant thermoplastic composition comprising a. a normally flammable thermoplastic resin selected from the group consisting of

- a polymerization product of a vinyl monomer;
- a polymerization product of an olefin monomer;
- a polymerization product of an acrylic or methacrylic monomer;
- a polymerization product of an allyl monomer;
- a polyamide;
- a cellulose ester;
- an aromatic polycarbonate;
- a polyphenylene ether or a mixture thereof with a polystyrene resins; and
- a mixture of at least two of the foregoing; and
- b. a flame retardant amount of either
 - i. a low molecular weight polymer of a carbonate of a halogenated dihydric phenol, said polymer containing from 2 to 10 repeating units of the formula



wherein R^1 and R^2 are hydrogen, (lower) alkyl, or phenyl, X^1 and X^2 are bromo or chloro and m and r are from 1 to 4, said lower molecular weight polymer (i) being terminated with halogenated aromatic substituents of the formula:

3,855,274

PROCESS FOR PREPARING DIALKYL (ETHYLENEDIOXY) BIS-BENZOATE

Toshio Kato, Omiya, and Chisei Shibuya, Tokyo, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 14, 1971, Ser. No. 180,452

Int. Cl. C07c 69/78

U.S. Cl. 260—473 R

8 Claims

1. A process for preparing a dialkyl (ethylenedioxy)bis-benzoate comprising reacting an alkali salt of an alkyl hydroxybenzoate having one to eight carbon atoms in the alkyl group with ethylene dichloride in the presence of a saturated alcohol as a solvent, the improvement which comprises:

- a. the alkali salt of the C_1 to C_8 alkyl hydroxybenzoate being dissolved in a concentration of 18 to 80 percent in a saturated alcohol which is an alkanol having one to six atoms or cyclohexanol or a mixture thereof, and
- b. effecting the reaction at a temperature between 100° and 280° C. in the presence of 5 to 500 mole % of C_1 to C_8 alkyl hydroxybenzoate based on the amount of the alkali salt of said C_1 to C_8 alkyl hydroxybenzoate.

3,855,275

TREATMENT OF TEREPHTHALIC ACID REACTION

Charles N. Winnick, Teaneck, and Judd Posner, Hackensack, both of N.J., assignors to Halcon International, Inc., New York, N.Y.

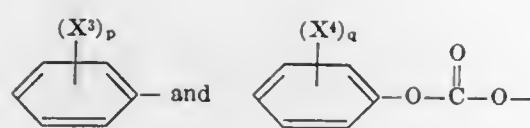
Filed Apr. 30, 1971, Ser. No. 139,083

Int. Cl. C07c 69/82

U.S. Cl. 260—475 PR

12 Claims

1. A process of producing polyester precursors convertible into polyesters suitable for fiber and film formation which comprises (1) establishing a body of lower carboxylate esters of (beta-hydroxyethyl) terephthalate in admixture with components more volatile than said lower carboxylate esters and with components less volatile than said lower carboxylate esters, and containing deleterious amounts of color-producing impurities comprising 4-carboxy benzaldehyde and other compounds normally associated with terephthalic acid produced by catalytic oxidation and their lower carboxylate ester derivatives. (2) distilling said mixture to separate more volatile components therefrom and to leave a non-volatilized mixture comprising said lower carboxylate esters of (beta-hydroxyethyl) terephthalate, (3) distilling the non-volatilized mixture obtained from said first distillation to volatilize said lower carboxylate esters of (beta-hydroxyethyl) terephthalate away from less volatile materials, and thereby to produce a mixture comprising said lower carboxylate esters of (beta-hydroxyethyl) terephthalate, (4) reacting the mixture comprising said lower carboxylate esters of (beta-hydroxyethyl) terephthalate present in one of the preceding steps with at least one of an oxidizing agent effective to oxidize carbonyl groups and selected from the group consisting of molecular oxygen, peroxides, peracids, chromic acid, potassium permanganate, and nitric acid and a reducing agent effective to reduce carbonyl groups and selected from the group consisting of molecular hydrogen and alkali metal hydrides and borohy-



wherein X^3 and X^4 are bromo or chloro and p and q are each from 1 to 5, said polymer having low volatility when heated above about 200°C., and a softening point of less than about 300°C. or

ii. a combination of said polymer (i) and an inorganic or organic antimony-containing compound.

3,855,278

POLYBASIC UNSATURATED CARBOXYLIC ACID ESTERS

Helmut Singer, Dusseldorf-Wersten, Germany, assignor to Henkel and Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Aug. 7, 1972, Ser. No. 278,564

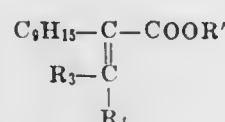
Claims priority, application Germany, Aug. 25, 1971, 2142444

Int. Cl. C07c 69/52, 69/60

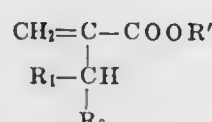
U.S. Cl. 260—485 R

7 Claims

1. A higher polybasic polyunsaturated carboxylic acid ester of the formula



in which R_2 is $-(\text{CH}_2)_n-\text{COOR}''$, R_1 is selected from the group consisting of hydrogen and R_2 , n is 0 or 1, and R' and R'' are each alkyl of 1 to 12 carbon atoms, produced by reacting butadiene with a carboxylic acid ester of the formula



in which R_1 , R_2 , R' , R'' and n have the same meanings as defined above, in a ratio of at least 2 mols of butadiene per mol of carboxylic acid ester in the presence of an organometal catalyst complex comprising zero-valent nickel and an electron donor selected from the group consisting of phosphorous acid trimorpholide, phosphorous acid-tri-N-methylanilide, tri-N,N-dialkylamides of phosphorous acid, hexylamine, dibutylamine, triethylamine, morpholine, N-methylmorpholine, piperidine, pyridine, picoline, collidine, quinoline, pyrrole, diphenylamine, triphenylamine, benzylamine, dimethylaniline, toluidine, acetonitrile, benzonitrile, triphenylphosphine, tritolylphosphine, triphenyl arsine, trinaphthyl arsine, tri-*o*-tolylarsine, triphenyl stibine, trinaphthyl stibine, and tri-*o*-tolylstibine, in the ratio of about 1 mol of electron donor per gram-atom of nickel; and recovering the said carboxylic acid ester.

3,855,279

CATALYTIC PROCESS FOR THE MANUFACTURE OF UNSATURATED ACIDS AND ESTERS

Windell C. Watkins, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

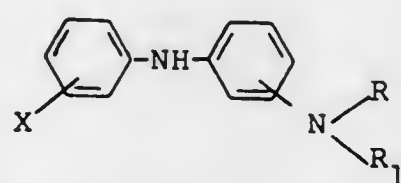
Filed Oct. 26, 1973, Ser. No. 409,823

Int. Cl. C07c 69/54, 57/04

U.S. Cl. 260—486 D

11 Claims

1. A process for making unsaturated acids and esters by dehydrogenation of a compound defined by the formula



in which X is hydrogen, chloro, trichloromethyl, trifluoromethyl, nitro, lower alkyl, lower alkoxy, or phenoxy and R and R_1 are lower alkyl or when X is hydrogen, R may be hydrogen when R_1 is tertiary alkyl or R and R_1 together with the nitrogen

wherein each of R_1 , R_2 , R_3 and R_4 is selected from hydrogen and lower alkyl groups containing 1-4 carbon atoms, which process comprises contacting a feed-gas mixture comprising said compound and oxygen at a temperature in the range of from about 250°C. to about 600°C. with a solid catalyst consisting of the calcined residue of a mixture of iron phosphate and lead phosphate wherein the atomic ratio of the metals is defined by 1 Fe/x Pb where x has a value of from about 0.1 to about 10.

3,855,280

PROCESS FOR PRODUCING AN ALKENYL ALKANOATE FROM AN OLEFIN AND A CARBOXYLIC ACID

Glen Maurice Severs, Jr., Pasadena, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,299

Int. Cl. C07c 67/04, 69/14

U.S. Cl. 260—497 A

8 Claims

1. In a process for preparing vinyl acetate by passing a gaseous reactant mixture comprising molecular oxygen, ethylene, and acetic acid through a reaction zone maintained at a pressure between about 5 and about 15 atmospheres absolute and containing a catalyst comprising a Group VIII noble metal and reacting said ethylene, oxygen, and acetic acid in the presence of said solid catalyst to form vinyl acetate, the composition of said gaseous reaction mixture being controlled on the fuel-rich side of the range of potentially explosive mixtures of oxygen with the remaining components of said reaction mixture, the degree of conversion of the reactants within said reaction zone being limited by the necessity of maintaining the concentration of oxygen therein below the lower explosive limit, the improvement which comprises:

raising the lower explosive limit of oxygen in said reactant gas mixture, and so facilitating safe operation at an increased oxygen concentration, by incorporating from about 0.1 to about 0.8 moles per mole of ethylene of a diluent gas consisting essentially of a lower alkane which is free of secondary and tertiary hydrogen atoms into said reactant gas mixture prior to passing it through said reaction zone.

3,855,281

STABLE COMPOSITIONS FOR INHIBITING POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID ESTERS

Alfred Bax Sullivan, Wadsworth, and Gene Ray Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

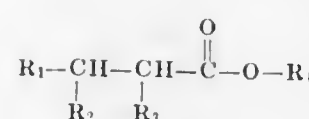
Filed Sept. 21, 1973, Ser. No. 399,437

Int. Cl. C07c 69/54, 69/52

U.S. Cl. 260—486 R

12 Claims

1. A monomer composition consisting essentially of unsaturated carboxylic acid ester and, in amount effective to inhibit polymerization of the ester, an inhibitor of the formula



atom is a heterocyclic radical selected from the group consisting of pyrrolidinyl, 2,5-dimethylpyrrolidinyl, piperidino and hexahydro-1H-azepin-1-yl.

3,855,282

STABILIZED CHOLINE SALICYLATE COMPOUNDS

William Kelly, deceased, late of Liverpool (by Monica Kelly); John Kelly, Great Sankey near Warrington, England, and Alfred Halpern, Lake Success, N.Y., assignors to Mundipharma AG, Rheinfelden, Switzerland

Filed Mar. 24, 1972, Ser. No. 237,927

Claims priority, application Great Britain, July 26, 1971, 34941/71

Int. Cl. C07c 91/00

U.S. Cl. 260—501.15

3 Claims

1. The method for the preparation of choline salicylate salt-sulfur dioxide complex comprising the steps of:

- cooling an aqueous solution of choline salicylate salt to about 0°C.,
- passing gaseous sulfur dioxide through said solution at a rate sufficient to maintain the temperature between 0°C. and 5°C. and until the gain in weight of said solution is a molar equivalent of sulfur dioxide, equivalent to the molar quantity of choline salicylate used in step (a) above,
- stirring, while warming to room temperature, and
- recovering the formed choline salicylate salt-sulfur dioxide complex therefrom.

3,855,283

LEVO 1-AMINO-3-CHLORO-2-PROPANOL AND ACID ADDITION SALTS THEREOF

Elliott Cohen, Pearl River, N.Y., and Paul Rolf, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 845,491, July 29, 1969, abandoned. This application June 19, 1970, Ser. No. 47,873

Int. Cl. C07c 91/02, 91/04

U.S. Cl. 260—501.17

4 Claims

1. A compound selected from the group consisting of levo 1-amino-3-chloro-2-propanol and the non-toxic pharmaceutically acceptable acid-addition salts thereof.

3,855,284

PROCESS FOR THE MANUFACTURE OF PHOSPHONIC ACIDS AND PHOSPHONATES HAVING AT LEAST TWO PHOSPHORUS ATOMS

Hans Gunther Gernscheid, Dusseldorf, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Continuation-in-part of Ser. No. 860,124, Sept. 22, 1969, abandoned, which is a continuation of Ser. No. 793,219, Jan. 10, 1969, abandoned, which is a continuation of Ser. No. 397,027, Sept. 16, 1964, abandoned. This application July 28, 1971, Ser. No. 167,044

Claims priority, application Germany, Nov. 2, 1963, 50724

Int. Cl. C07f 9/38

U.S. Cl. 260—502.4 A

2 Claims

1. A process for the manufacture of uniform, readily crystallizable phosphonic acids having at least two carbon and at least two phosphorus atoms in their molecules which consists of the steps of acylating PCl_3 with an excess up to 2 mols per mol of PCl_3 of acylating agents selected from the group consisting of alkanolic acids having two to 18 carbon atoms and benzoic acid in the presence of about 1½ mols of water per mol of PCl_3 at elevated temperatures up to the reaction boiling point, cooling the reaction mixture to a temperature from room temperature to below the boiling point of the alcohol added and adding thereto an alcohol selected from the group consisting of methanol and ethanol, said alcohol being added in amounts of from 1.1 to 20 times the stoichiometrical quantity, calculated on said excess of acylating agent, thoroughly mixing the reaction mixture while maintaining said tempera-

ture whereby volatile components having a lower boiling point than said acylating agent are formed, distilling said volatile components from said reaction mixture and recovering said phosphonic acids free from impurities.

3,855,285

ACYLMETHYLTHIO-TRIFLUOROMETHYL-BENZOIC ACIDS

Gerald Fagan Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

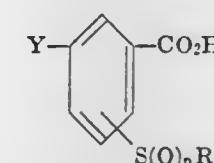
Filed June 21, 1971, Ser. No. 155,209

Int. Cl. C07c 149/40

U.S. Cl. 260—516

2 Claims

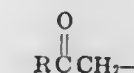
1. A compound selected from the group consisting of those of the formula:



and the pharmaceutically acceptable basic salts thereof, wherein:

Y is trifluoromethyl;

R_2 acylmethyl of the formula



wherein R is selected from the group consisting of alkyl containing from 1 to 4 carbon atoms and phenyl and substituted phenyl wherein said substituent is selected from the group consisting of fluorine, chlorine, methyl, trifluoromethyl and methoxy; and

n is an integer from 0 to 2.

3,855,286

N-CARBOXYMETHYL-N-(2-HYDROXYBENZYL) ASPARTIC ACID AND DERIVATIVES THEREOF

Peter Baccini, Kriens, and Werner Fory, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 27, 1972, Ser. No. 292,708

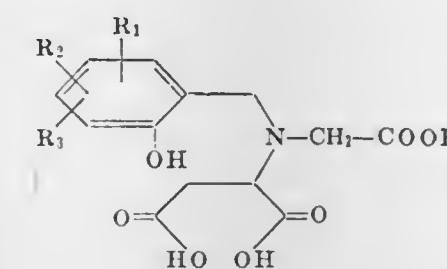
Claims priority, application Switzerland, Oct. 1, 1971, 14347/71

Int. Cl. C07c 101/72

U.S. Cl. 260—519

6 Claims

1. Asparagic acid derivatives of formula I and their alkali metal and ammonium salts



(1)

wherein

R_1 represents hydrogen, hydroxy, halogen, sulfo, carbonyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 halogenoalkyl, di- $(\text{C}_1-\text{C}_6$ alkyl)amino, C_2-C_4 alkanoyl or phenyl,

R_2 represents hydrogen, hydroxy, halogen, C_1-C_6 alkyl or C_1-C_6 alkoxy, and

R_3 represents hydrogen or C_1-C_6 alkyl.

3,855,287

PROCESS FOR THE PRODUCTION OF 4,4-DIBROMOBENZIL

Ward H. Oliver, Mobile, Ala., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,400

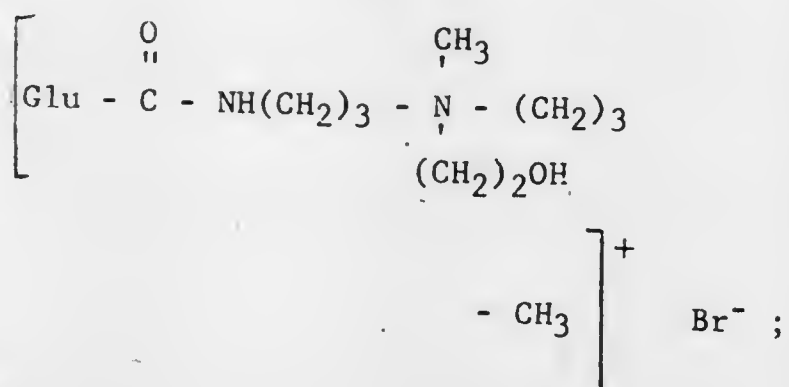
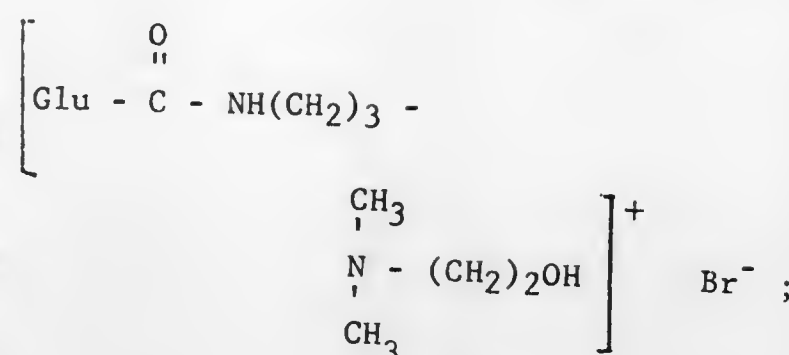
Int. Cl. C07c 63/12, 49/80, 45/00

U.S. Cl. 260—523 R

4 Claims

1. A process for the production of 4,4'-dibromobenzil, which comprises

- reacting benzene with cyanuric chloride in the presence of aluminum chloride at reflux temperatures,
- reducing the resulting triphenyl-s-triazine in the presence of zinc at reflux temperatures,
- brominating the resulting 2,4,5-triphenylimidazol with bromine,
- oxidizing the bromination product with nitric acid and
- recovering 4,4'-dibromobenzil from a mixture of 4,4'-dibromobenzil and p-bromobenzoic acid.



3,855,288

METHYLOLPHOSPHORIC TRIAMIDES

Patrick Michael Burke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

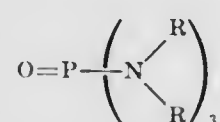
Filed June 12, 1972, Ser. No. 261,813

Int. Cl. C07f 9/22

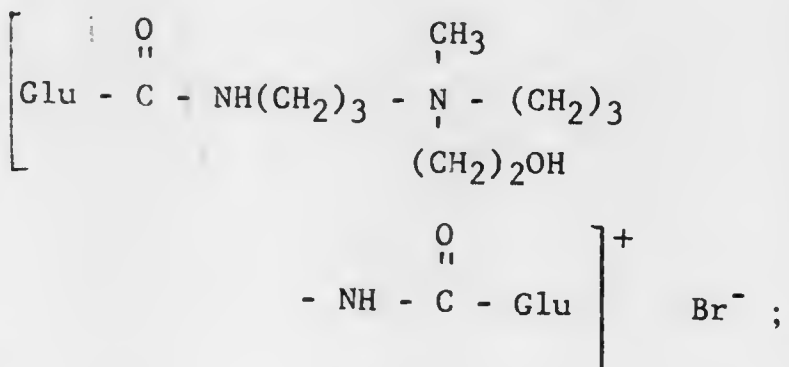
U.S. Cl. 260—551 P

6 Claims

1. Methylolphosphoric triamide having the formula



wherein at least one of the six R groups is CH₂OH and the remainder if any are H, said triamide being characterized by the presence in its P-31 nuclear magnetic resonance spectrum of a band in the range 15–20 ppm. downfield from 85 percent aqueous phosphoric acid as external standard.



3,855,289

1-NAPHTHOIC ACID, 2,2-DIMETHYLHYDRAZIDE

Gerhard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 30, 1973, Ser. No. 365,336

Int. Cl. C07c 109/10

U.S. Cl. 260—558 H

1 Claim

1. 1-Napthoic acid, 2,2-dimethylhydrazide.

3,855,290

QUATERNARY HALIDES OF GLUCONAMIDES

Henry Zak, Great Notch, and Donald E. Conner, Clifton, both of N.J., assignors to Van Dyk & Company, Incorporated, Belleville, N.J.

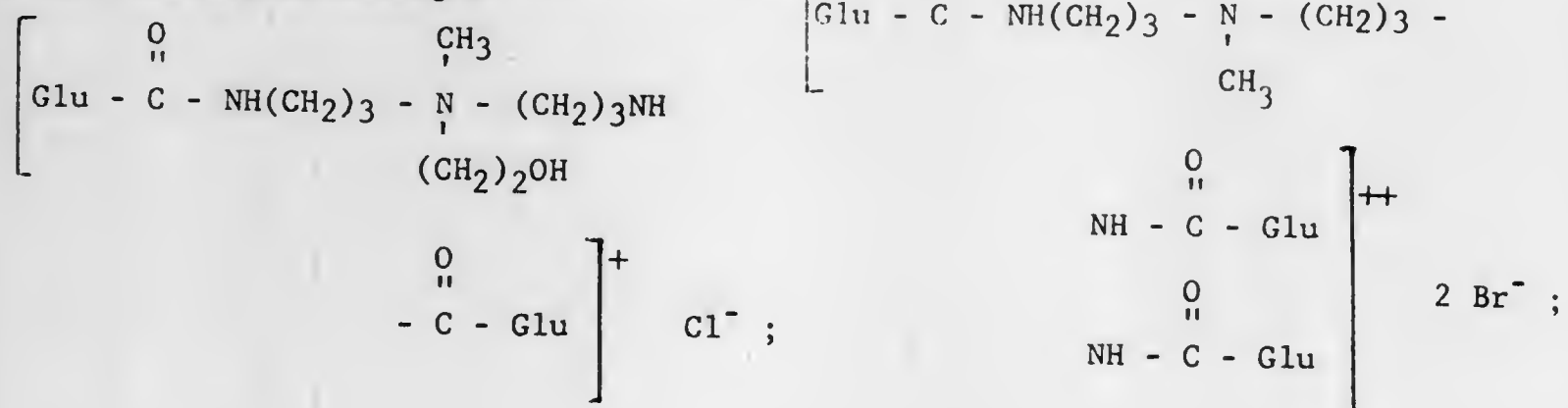
Continuation-in-part of Ser. No. 120,733, March 3, 1971, Pat. No. 3,766,267. This application June 27, 1973, Ser. No. 373,970

Int. Cl. C07c 103/30

U.S. Cl. 260—561 B

4 Claims

1. A quaternary halide salt of gluconamides, the salt being selected from the group consisting of:



and the butyl bromide quaternary ammonium salt of Gamma Dimethylaminopropyl Gluconamide.

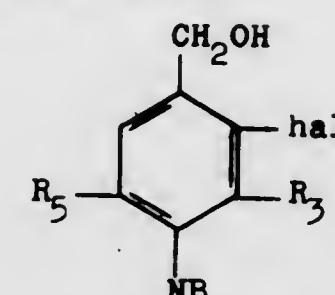
3,855,291

2-HALO-4-(AMINOACETAMIDO)-BENZYL ALCOHOLS
Sydney Archer, Bethlehem, and David Rosi, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Division of Ser. No. 221,047, Jan. 26, 1972, which is a continuation-in-part of Ser. No. 42,876, June 2, 1970, Pat. No. 3,714,167, which is a continuation-in-part of Ser. No. 664,628, Aug. 31, 1967, Pat. No. 3,558,629, which is a continuation-in-part of Ser. No. 444,848, April 1, 1965, Pat. No. 3,379,629. This application June 8, 1973, Ser. No. 368,183

Int. Cl. C07c 103/38

U.S. Cl. 260—562 N

1. A compound of the formula:



where hal is halo; R₃ and R₅ are each hydrogen or lower-alkyl; NB is N(R)₂—Y—NR₂; R is hydrogen or lower-alkyl; Y is C(=O)CH₂; R₁ and R₂ are each hydrogen, lower-alkyl, lower-alkenyl having from three to six carbon atoms or lower-hydroxyalkyl having from two to six carbon atoms and having its connecting linkage and the hydroxyl group on different carbon atoms, or R₁ and R₂ taken with N comprehend saturated N-heteromonocyclic radicals having from 5 to 6 ring atoms and selected from piperidino, pyrrolidino, morpholino, piperazino, hexamethyleneimino or such radicals having attached to available ring-atoms from one to three lower-alkyl groups; lower-alkyl in each instance having from one to six carbon atoms and being primary or secondary.

3,855,292

NEW AMINOPHENYLAMIDINES, THEIR PRODUCTION AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal-Elberfeld, Germany, and Winfried Flucke, Beenleigh, Australia, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 9, 1971, Ser. No. 151,575

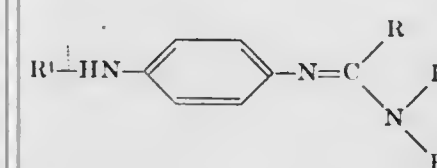
Claims priority, application Germany, June 13, 1970, 2029299

Int. Cl. C07c 123/00

U.S. Cl. 260—564 RF

6 Claims

1. A compound of the formula:



wherein:

- R¹ is hydrogen, alkyl of 1 to 5 carbon atoms;
- R is alkyl of 1 to 5 carbon atoms;
- R⁵ is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms; and
- R⁶ is hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms, or a salt thereof of a pharmaceutically acceptable acid.

3,855,293

NOVEL AMINE COMPOUNDS

Heinz Gunter Viehe, and Zdenek Janousek, Leuven, both of Belgium, assignors to Roussel UCLAF, Paris, France

Filed Aug. 3, 1973, Ser. No. 385,452

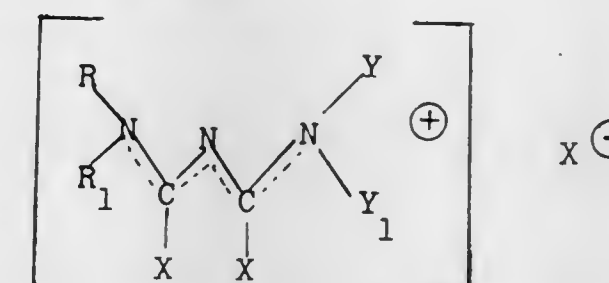
Claims priority, application France, Aug. 9, 1972, 72.28726

Int. Cl. C07c 123/00

U.S. Cl. 260—564 R

7 Claims

1. A compound of the formula



wherein R, R₁, Y and Y₁ are individually alkyl of 1 to 5 carbon atoms and X is a halogen and the dotted lines represent 2 conjugated double bonds.

3,855,294

SUBSTITUTED 1-AMINOADAMANTANES

Citrad Podesva, and Carola Solomon, both of Montreal, Quebec, Canada, assignors to Delmar Chemicals Limited, Montreal, Quebec, Canada

Filed Oct. 2, 1967, Ser. No. 671,935

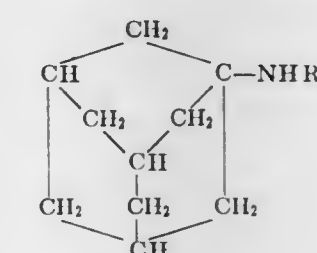
Claims priority, application Great Britain, Oct. 18, 1966, 46575/66

Int. Cl. C07c 87/28

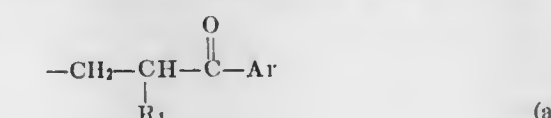
U.S. Cl. 260—570 R

10 Claims

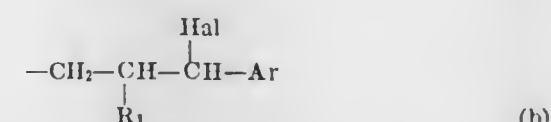
1. A 1-aminoadamantane derivative of formula I



or a pharmaceutically acceptable acid addition salt thereof wherein R represents a radical selected from the group consisting of



and



wherein Ar represents an unsubstituted or a mono nitro-substituted or mono halo-substituted or mono lower alkoxy-substituted or mono lower alkyl-substituted phenyl, R₁ represents hydrogen or a lower alkyl group, and Hal represents a halogen.

3,855,295

6-[SPIRO-4'-(OPTIONALLY SUBSTITUTED AMINO) CYCLOHEXYL]-1,1a,6,10b-TETRAHYDRODIBENZO [a,e]CYCLOPROPA[c]CYCLOHEPTENES

John W. Cusic, Skokie, and Charles R. Ellefson, Chicago, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

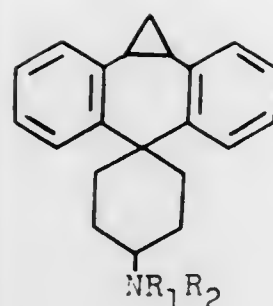
Filed June 15, 1973, Ser. No. 370,462

Int. Cl. C07c 87/40

U.S. Cl. 260—570.5 CA

6 Claims

1. A compound of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl radicals.

3,855,296

CYCLO-SUBSTITUTED-1-p(AMINOALKOXY)PHENYL CYCLOHEXANES

Rudolf G. Griot, Basel-Stadt, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 725,198, April 29, 1968.

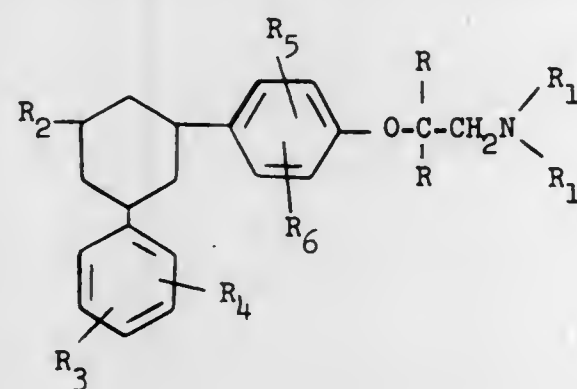
This application Apr. 3, 1969, Ser. No. 813,324

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

8 Claims

1. A compound from the group of: (A) compounds of the formula:



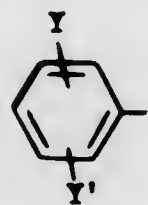
wherein each of

R is, independently, hydrogen or lower alkyl;

each of

R_1 is, independently, lower alkyl,

R_2 is hydrogen, phenyl or substituted phenyl of the formula:



each of

Y , Y' , R_3 and R_4 is, independently, hydrogen, halo of atomic weight not exceeding 80, lower alkyl or lower alkoxy, provided R_3 and R_4 are hydrogen when R_2 is hydrogen and providing that R_3 , R_4 , Y and Y' together represent no more than a total of two alkyl and alkoxy substituents, and

each of

R_5 and R_6 is, independently, hydrogen or lower alkyl;

B. N-oxides of said compounds; and

C. the pharmaceutically acceptable acid addition salts of (A) and (B), above.

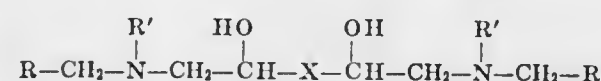
3,855,297
1,1'-BRIDGED-BIS[N-(ALKYL)-2-AMINOETHANOLS]
Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake,
both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Mar. 10, 1971, Ser. No. 123,096

Int. Cl. C07c 95/00, 97/00

U.S. Cl. 260—584 R

18 Claims

1. 1,1'-(X)-bis[2-[(R-CH₂)(R')amino]ethanol] of the formula



wherein:

R is hydrogen, alkyl of one to 15 carbon atoms or cycloalkyl of four to seven ring carbon atoms;

R' is hydrogen or tertiary alkyl of one to four carbon atoms;

X is a direct linkage, methylene or alkylene of two to 12 carbon atoms with bonds to the adjacent carbon atoms at different carbon atoms; or acid-addition salts thereof.

3,855,298

METHOD OF PURIFICATION OF TRIAURYLAMINE

Andre Bathellier, Sceaux, and Michel Germain, Boulogne, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed June 3, 1968, Ser. No. 734,024

Claims priority, application France, June 6, 1967, 67.109351

Int. Cl. C07c 85/16

U.S. Cl. 260—583 N

7 Claims

1. A method for the purification of a triaurylamine-containing dodecane diluent and the removal of dilaurylamine therefrom which comprises precipitating the dilaurylamine by adding to said diluent (1) an acid selected from the group consisting of HF, HCl, HNO₃, H₃PO₄, H₂SO₄, HClO₄, HSO₃NH₂, HCOOH, CH₃COOH, HOOC-COOH, ClCH₂COOH and C₁₁H₂₃COOH or (2) an acid salt of triaurylamine selected from the group consisting of inorganic hydric acid salts, inorganic oxacid salts, sulfonic acid salts and carboxylic acid salts in a quantity which is stoichiometric with respect to the amount of dilaurylamine contained in said diluent, thereby forming a salt of the dilaurylamine which is insoluble in said diluent, and separating the resultant precipitate from the diluent.

3,855,299

WATER SOLUBLE REACTION PRODUCT OF EPIHALOHYDRIN AND ALKYLAMINES

Edward Witt, Framingham, Mass., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 11, 1973, Ser. No. 368,968

Int. Cl. C07c 91/02

U.S. Cl. 260—584 R

11 Claims

1. A water soluble product prepared by: (a) admixing in an aqueous medium; (i) a member selected from a first group consisting dimethylamine and diethylamine; and (ii) a member selected from a second group consisting of dimethylaminopropylamine, dimethylaminobutylamine, and ammonia; (b) adding thereto a member selected from a third group consisting of epichlorohydrin, epibromohydrin, CH₂ClCHClCH₂OH,

CH₂ClCH₂(OH)CH₂Cl,
CH₃CHClCHClCH₂OH, and
CH₃CHClCH(OH)CH₂Cl

while maintaining the temperature of the resulting reacting mixture at 25°-125°C., and (c) maintaining the temperature of the mixture at 25°-125°C until its viscosity reaches 20-20,000 centipoises, the equivalent ratio of third group member to second group member being 1:0.009-0.5, the

equivalent ratio of third group member to first group member being 1:0.22-1.3, the equivalent ratio of first group member to second group member being greater than 1, and the mole ratio of first group member to water being 1:1-100.

3,855,300

PROCESS FOR THE PRODUCTION OF 2-AMINO-1-BUTANOL

Makoto Takahashi, Tsunetoshi Shioya, Takashi Kobayashi, Tatsuji Fujii, and Masakuni Nishimura, all of Kamakura, Japan, assignors to Sankyo Chemical Industries, Ltd., Tokyo, Japan

Filed Sept. 5, 1973, Ser. No. 394,540

Int. Cl. C07c 89/00

U.S. Cl. 260—584 R

3 Claims

1. A process for the production of 2-amino-1-butanol, which comprises reacting 1-butene with chlorine and a nitrile compound and then hydrolyzing the resulting reaction product.

3,855,301

NOVEL DIHYDROCHALCONE AND PROCESS

George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 28, 1971, Ser. No. 157,682

Int. Cl. C07c 49/82

U.S. Cl. 260—590

4 Claims

1. 3-(m-hydroxyphenyl)phloropropiophenone.

3,855,302

INTRODUCTION OF ORGANIC GROUPS INTO
ETHYLENICALLY UNSATURATED ALDEHYDES OR
KETONES USING A GROUP VIII METAL SALT
Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

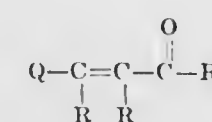
Continuation of Ser. No. 883,287, Dec. 8, 1969, abandoned, which is a division of Ser. No. 479,665, Aug. 13, 1965, Pat. No. 3,527,794. This application May 4, 1972, Ser. No. 250,461

Int. Cl. C07c 49/76, 49/82, 47/56

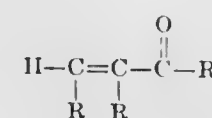
U.S. Cl. 260—590

7 Claims

1. The process of producing a carbonyl compound of the formula



which comprises contacting and reacting an ethylenically unsaturated aldehyde or ketone of the formula



with an organometallic compound of the formula QPdX at a temperature in the range of 0°C. to about 200°C., in which formulae R is a member of the group consisting of hydrogen, methyl and monovalent aromatic hydrocarbon groups, the total number of carbons in the ethylenically unsaturated aldehyde or ketone being no more than 10, X is an anion of the group consisting of halides, cyano, nitrate, sulfates, perchlorate, fluoroborate, benzoate, acetate, trifluoroacetate and acetylacetonate, and Q is the organo group of said organometallic compound QPdX, Q in said organometallic compound being bonded to the palladium by a carbon to metal linkage and being selected from the group consisting of aryl radicals and methoxy-, chloro-, bromo-, fluoro-, nitro-, hydroxy, formyl-, benzoyl-, phenyl- and methyl-substituted aryl radicals,

3,855,303

ISOMERIZATION OF ALPH-EPOXIDES

Clyde E. Bishop, Indianapolis, Ind., assignor to Continental Oil Company, Ponca City, Okla.

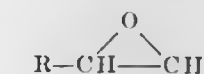
Continuation-in-part of Ser. No. 46,515, June 15, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,857

Int. Cl. C0c7 49/04

U.S. Cl. 260—593 R

12 Claims

1. A process of isomerizing an α -epoxide having the formula



wherein R is an alkyl, aryl, cycloalkyl, aralkyl, alkaryl, cycloalkylalkyl, or alkylcycloalkyl radical having 1 to 30 carbon atoms per radical, to yield predominantly n-aldehydes, said process comprising contacting the α -epoxide at a temperature of about 50°C to about 250°C with a catalyst system consisting essentially of a compound having the formula R'_3PO , where R' is an alkyl or aryl radical having 2 to 12 carbon atoms per radical, and an alkali metal perchlorate compound, said catalyst system containing said first-mentioned compound and said perchlorate compound in a weight ratio to each other of 1:1 to 10:1

3,855,304

PROCESS FOR PRODUCING ACETONE

Kozo Sakakibara, and Kiyoshi Yasuda, both of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Division of Ser. No. 199,716, Nov. 17, 1971, Pat. No. 3,804,902

Filed Aug. 3, 1973, Ser. No. 385,594

Claims priority, application Japan, Nov. 21, 1970, 45-103046; Dec. 30, 1970, 45-122246

Int. Cl. C07c 49/08

U.S. Cl. 260—593 R

8 Claims

1. A process for producing acetone, which comprises contacting gaseous isobutyl aldehyde and a mixture of oxygen and inert diluent gas, with a catalyst consisting of manganese oxide and alkali metal hydroxide supported on activated alumina as a carrier, at a reaction temperature of from 150 to 250°C, for a contact time of from 0.5 to 10 seconds.

3,855,305

METHOD FOR PREPARING AROMATIC ALDEHYDES

Walter A. Gay, Cheshire, and Maurice A. Raymond, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 7, 1972, Ser. No. 224,272

Int. Cl. C07c 45/16

U.S. Cl. 260—600

10 Claims

1. A method for the preparation of an aromatic aldehyde comprising:

a. reacting benzyl alcohol or substituted benzyl alcohol having a substituent selected from the group consisting of alkyl, aryl, alkoxy, hydroxyl, halogen, and nitro groups, with oxygen in the presence of a primary amine of the formula:



where R is an aliphatic or aromatic hydrocarbon of up to 12 carbon atoms or an anisyl group

at a temperature of from about 20° to about 500°C. and wherein a molar ratio of said amine to said benzyl alcohol or substituted benzyl alcohol of from about 0.1:1 to about 100:1 is used, and

b. hydrolyzing the resulting product with acid to form the respective aldehyde compound.

3,855,306

PROCESS FOR THE PREPARATION OF
2,4,5-TRIMETHOXYBENZALDEHYDE

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 27, 1972, Ser. No. 238,629

Int. Cl. C07c 45/00

U.S. Cl. 260—600

22 Claims

1. A process for the preparation of 3,4,5-trimethoxybenzaldehyde which comprises:

- adding a solution of vanillin in an acidic solvent medium selected from the group consisting of concentrated aqueous mineral acids and glacial acetic acid to bromine at a temperature about 0° and about 5°C to afford 5-bromovanillin;
- contacting the 5-bromovanillin prepared in (a) with an alkali metal hydroxide and from about 1 to about 10 mole % of copper powder, in water at a temperature of from about 50° to about 120° C to afford 5-hydroxyvanillin; and
- contacting the 5-hydroxyvanillin prepared in (b) with a 15 to 25% excess of dimethyl sulfate, and a powdered alkali metal carbonate, in an organic medium selected from the group consisting of acetone, methyl ethyl ketone, tetrahydrofuran, dioxane, hexane, heptane, benzene and toluene.

3,855,307

CATALYSIS

Peter R. Rony, St. Louis, and James F. Roth, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo. Continuation-in-part of Ser. No. 617,338, Feb. 20, 1967, abandoned. This application Feb. 6, 1968, Ser. No. 703,382

Int. Cl. C07c 45/08

U.S. Cl. 260—604 HF

2 Claims

1. Process for the hydroformylation of unsaturated hydrocarbons having from 2 to 6 carbon atoms which comprises contacting the said unsaturated hydrocarbons in gaseous form at a temperature of from 25°C to 300°C and a pressure in the range of from atmospheric to 3,000 psig in the presence of carbon monoxide and hydrogen with a multiphase catalyst comprising a porous, solid carrier having dispersed thereon a liquid catalytic component including a solvent having a vapor pressure at 100°C of from 10⁻¹² to 10 millimeters, and an aryl phosphine complex of rhodium, and being characterized by a liquid loading of the said multiphase catalyst in the range of from 0.10 to 0.80 cm³ of the said liquid catalytic component per cm³ pore volume of the said porous solid carrier.

3,855,308

PROCESS FOR THE PREPARATION OF UNSATURATED
CARBONYL COMPOUNDS

Michio Ueshima, Nishinomiya; Isao Yanagisawa, Ikeda; Masahiro Takata, Toyonaka, and Michikazu Ninomiya, Kobe, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed June 6, 1972, Ser. No. 260,222

Claims priority, application Japan, June 9, 1971, 46-40128

Int. Cl. C07c 45/04

U.S. Cl. 260—604 R

10 Claims

1. A process for the preparation of unsaturated carbonyl compounds which comprises carrying out the catalytic vapor phase oxidation of an olefin selected from the group consisting of propylene and isobutylene, in the presence of molecular oxygen, and in the presence of a catalytic oxide in which the atomic ratio among the constituent catalytic elements, Co:Fe:Bi:W:Mo:Si:Ti:Z ranges 2.0–20.0 : 0.1–10.0 : 0.1–10.0 : 0.5–10.0 : 2.0–11.5 : 0.5–15.0 : 0.005–3.0 : 0–3.0, with the proviso that W plus Mo equals 12.0, and Z stands for a metal selected from the group consisting of the alkali metals and alkaline earth metals, at temperatures ranging from 250° to 450°C. and pressures ranging from normal pressure to 10 atmospheres.

3,855,309

PROCESS FOR THE MANUFACTURE OF
PHOSPHORUS-CONTAINING CONDENSATION
PRODUCTS, THE PRODUCTS AND THEIR USE AS
FLAMEPROOFING AGENTS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwill, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 31, 1972, Ser. No. 285,418

Claims priority, application Switzerland, Jan. 14, 1972, 522/72

Int. Cl. C07f 9/28

U.S. Cl. 260—606.5 P

10 Claims

1. A process for the manufacture of water-soluble condensation products, comprising the step of reacting a tetrakis-(hydroxymethyl)-phosphonium compound with triglycidylisocyanurate, at a temperature in the range of 40° to 120°C, and in a molar ratio of 1:0.02 to 1:0.5.

3,855,310

METHOD FOR PREPARING PHOSPHORUS COMPOUNDS

Vilas M. Chopdekar, Parlin, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

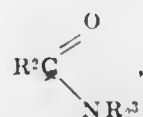
Filed Sept. 4, 1973, Ser. No. 394,174

Int. Cl. C07j 9/52

U.S. Cl. 260—606.5 P

5 Claims

1. A method for preparing trihydrocarbon phosphorus dihalides, R₃PY₂ said method consisting of the following steps: 1. reacting substantially equimolar quantities of a phosphorus trihalide, PX₃, an elemental halogen, Y₂, and a trihydrocarbon phosphine oxide, R₃P=O, in the presence of a halobenzene diluent having a melting point of less than about 55°C. and boiling point below about 250°C., the reaction being carried out at a temperature of between ambient and 100°C. and in the presence of between 0.01 and 10%, based on the weight of the phosphine oxide of a N,N'-dialkyl amide catalyst of the general formula



wherein R¹ represents an alkyl, cycloalkyl, aryl, alkaryl or aralkyl hydrocarbon radical containing between 1 and 20 carbon atoms, inclusive; R² and R³ are individually selected from the group consisting of alkyl radicals containing between 1 and 20 carbon atoms, inclusive, and X and Y are individually selected from chlorine, bromine and iodine,

- removing the phosphorus oxyhalide formed as a by-product of the reaction, and
- separating the resultant trihydrocarbon phosphorus dihalide from said halobenzene diluent.

3,855,311

PRODUCTION OF DIALKYLPHOSPHINES

Horst Staendeke, Bruehl, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Nov. 8, 1973, Ser. No. 413,850

Claims priority, application Germany, Nov. 11, 1972, 2255395

Int. Cl. C07f 9/50

U.S. Cl. 260—606.5 P

18 Claims

1. A process for the manufacture of dialkylphosphines of the general formula R₂PH, in which each R stands for an alkyl group having from 1 to 3 carbon atoms, comprising in a first step flowing a gaseous mixture of phosphorus and an alkyl halide having from 1 to 3 carbon atoms in the alkyl radical by means of a carrier gas, in the absence of oxygen and at a temperature between 300° and 450°C, over an active carbon catalyst; subjecting the resulting gaseous reaction mixture to fractional condensation so as to initially isolate trialkylphos-

3,855,314

METHOD OF SYNTHESIZING ISOPENTANE
HYDROPEROXIDE

Claude Dubois, Martigues, and Jean Maurin, Seine Maritime, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Mar. 25, 1971, Ser. No. 127,958

Claims priority, application France, Mar. 27, 1970, 70.11121

Int. Cl. C07c 73/06

U.S. Cl. 260—610 B

3 Claims

1. In the method of noncatalyzed synthesis of isopentane hydroperoxide from isopentane in a liquid reaction medium by action of molecular oxygen, the improvement consisting essentially of hydroperoxidizing isopentane at a temperature between 100° and 200°C by adding to the liquid reaction medium tertiary alcohol selected from the group consisting of tertiary butyl alcohol, 2-methyl 2-butanol, 2-methyl 2-butanol, 2-methyl 2-pentanol, and 3-methyl 3-pentanol in an amount between 0.75 per cent and 8 per cent of the total number of gram molecules constituting the liquid reaction medium.

3,855,312

PRODUCTION OF DI-4-CHLOROPHENYL SULPHONE

Patrick James Horner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 112,892, Feb. 5, 1971, abandoned. This application Oct. 25, 1972, Ser. No. 300,871 Claims priority, application Great Britain, Feb. 6, 1970, 5793/70; Jan. 15, 1971, 2112/71; Oct. 16, 1972, 47547/72

Int. Cl. C07c 147/08

U.S. Cl. 260—607 A

15 Claims

1. A process for the preparation of di-4-chlorophenyl sulphone in which (1) a reaction mixture containing 4-chlorobenzenesulphonic acid, itself formed by the reaction of chlorobenzene with sulphur trioxide in sulphuric acid, and chlorobenzene is kept at a temperature lying between 220°C and 260°C at a superatmospheric pressure lying between 30 and 1100 kN/m², (2) the reaction mixture is (A) sparged with an inert gas or (B) kept boiling at a temperature lying between 220°C and 260°C at a superatmospheric pressure lying between 30 and 1100 kN/m² by (i) progressively reducing the pressure as the reaction proceeds or (ii) adding further quantities of chlorobenzene to the reaction mixture as the reaction proceeds so that water is removed as vapour continuously as it is formed, and (3) the water vapour and accompanying chlorobenzene vapour are condensed and separated and the chlorobenzene is returned to the reaction mixture.

3,855,313

INSECTICIDAL BIODEGRADABLE METHYLTHIO
ANALOGS OF DDT

Robert L. Metcalf, Inder Kapoor, and Asha Hirwe, all of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

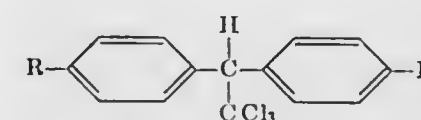
Division of Ser. No. 147,247, May 26, 1971, Pat. No. 3,787,505. This application Sept. 6, 1973, Ser. No. 394,567

Int. Cl. C07c 149/30

U.S. Cl. 260—609 E

2 Claims

1. Asymmetrical, biodegradable insecticides having the formula:



where R and R' are different and R is selected from the group consisting of —CH₃, CH₃O, —C₂H₅O, —C₃H₇O, and R' is —SCH₃.

3,855,315

NOVEL DIACYL PEROXIDES

Donald L. Deardorff, 43 Colony Rd., Riverside; Edwin T. Chesler, 118 Crown Ave., East Providence, both of R.I. 02915, and Joseph Fath, 20 Clarke Rd., Barrington, R.I. 02806

Division of Ser. No. 729,451, May 15, 1968, Pat. No. 3,728,402. This application Nov. 2, 1972, Ser. No. 303,039

Int. Cl. C07c 73/02

U.S. Cl. 260—610 D

5 Claims

1. A di 3-(alkoxy) propionyl peroxide selected from the group consisting of di 3-(2-ethylhexoxy) propionyl peroxide, di 3-(isohexoxy) propionyl peroxide, di 3-(isobutoxy) propionyl peroxide, and di 3-(n-butoxy) propionyl peroxide.

3,855,316

ARALKYL ALKYL ETHERS OF POLYMETHYLENE
GLYCOLS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 7, 1972, Ser. No. 278,336

Int. Cl. C07c 43/20

U.S. Cl. 260—611 A

6 Claims

1. An aralkyl alkyl ether of a polymethylene glycol having the formula:



in which R is an unsubstituted aralkyl hydrocarbon radical, R' is an alkyl radical of from 1 to about 4 carbon atoms, and n is an integer of from 2 to about 20.

3,855,317

2-4-HALOBENZYL PHENOLS AND PREPARATION
THEREOF

Jacques Debat, Paris, France, assignor to Societe a Responsabilite Limitee dite: Institut de Recherches Chimiques et Biologiques Appliquees (I.R.C.E.B.A.), Paris, France

Continuation of Ser. No. 755,232, Aug. 26, 1968, abandoned.

This application June 28, 1972, Ser. No. 267,073 Claims priority, application Great Britain, Aug. 31, 1967, 39816/67

Int. Cl. C07c 39/12, 39/24

U.S. Cl. 260—619 R

4 Claims

1. The compound 2-(2', 4'-dichlorobenzyl)-4-ter. butylphenol.

3,855,318

SELECTIVE METHYLATION OF PHENOLS

Hitoshi Nakajima, Saitamaken; Fujio Nomura, and Shinichi Iszwa, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

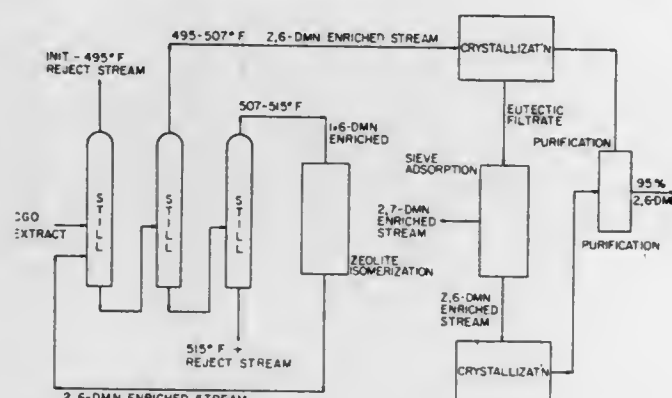
Filed Dec. 13, 1971, Ser. No. 207,546

Claims priority, application Japan, Dec. 11, 1970, 45-109385; Dec. 17, 1970, 45-112490; Dec. 17, 1970, 45-112491

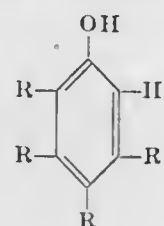
Int. Cl. C07c 37/16

U.S. Cl. 260-621 R

18 Claims



1. A process of methylating a phenol in the ortho position which comprises reacting methanol with a phenol having the formula



wherein each R is a monovalent substituent selected from the group consisting of hydrogen, methyl, phenyl, and methyl substituted phenyl in the vapor phase in the presence of a vanadium oxide catalyst at a temperature of from about 250°C. to 450°C.

3,855,319

PRODUCTION OF HYDROXY COMPOUNDS BY HYDROGENOLYSIS OF BUFFERED CARBOXYLATE SALTS

Charles C. Hobbs, and John A. Bedford, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 64,665, Aug. 17, 1970, Pat. No. 3,752,861. This application Dec. 15, 1972, Ser. No. 315,385

Int. Cl. C07c 29/00

U.S. Cl. 260-635 D

5 Claims

1. In a process for converting a feedstock comprising predominantly at least one member of the group consisting of carboxyalkanes, dicarboxyalkanes, hydroxycarboxyalkanes, and lactones of hydroxycarboxyalkanes having at least four carbon atoms in the molecule to a corresponding hydroxymethyl-substituted derivative by the hydrogenolysis of the carboxy moiety of said feedstock in the presence of a rhenium black catalyst or a catalyst having a catalytically active metallic cobalt surface, the improvement which comprises:

preparing an alkali metal salt of said feedstock in aqueous solution;

buffering said solution of said salt to a pH between about 6.0 and about 7.0;

hydrogenolyzing said salt in said buffered solution in the presence of said catalyst at a temperature of 150°C to 300°C and at a pressure of about 5 to 500 atmospheres to form a liquid reaction product comprising said hydroxymethyl-substituted compound; and

recovering said hydroxymethyl-substituted compound from said reaction product.

3,855,320

PURIFICATION OF ZIEGLER ALCOHOLS

Bruce E. Leach, and Kaye L. Motz, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 2, 1973, Ser. No. 385,217

Int. Cl. C07c 29/24, 33/02

U.S. Cl. 260-643 F

5 Claims

1. An improved method for treating primary alcohols obtained by hydrolyzing an air-oxidized mixture of aluminum alkyls prepared by growing aluminum triethyl in the presence of ethylene to provide an alcohol product essentially free of dihydroxy compounds wherein the improvement comprises contacting said primary alcohols in the liquid phase with a calcium oxide on alumina catalyst at a temperature between about 170° and 275° C.

3,855,321

CONVERSION OF OLEFINS TO ALLYLIC CHLORIDES

Hartwig C. Bach, and Helmuth E. Hinderer, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

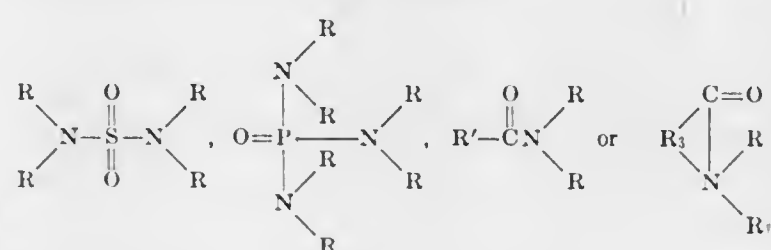
Filed Jan. 12, 1970, Ser. No. 2,356

Int. Cl. C07c 21/00

U.S. Cl. 260-654 R

8 Claims

1. A process for the preparation of allyl chloride by catalytic chlorination of propylene in a homogeneous liquid phase catalyst system comprising dissolving and reacting at a temperature between about 0° and 180°C. propylene, palladium chloride and cupric chloride in a solvent consisting of at least one N,N-dialkylamide of the formula



where R represents an alkyl radical, R' represents a hydrogen, alkyl or alkaryl radical Rⁿ represents $(\text{CH}_2)_n$ in which n is an integer from 3 to 12.

3,855,322

ALIPHATIC DI-OLEFINIC HALIDES

Clive A. Henrick, Palo Alto, Calif., assignor to Zicon Corporation, Palo Alto, Calif.

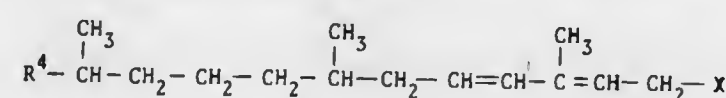
Continuation-in-part of Ser. Nos. 187,898, Oct. 8, 1971, Pat. No. 3,752,843, and Ser. No. 111,673, Feb. 1, 1971, abandoned. This application Dec. 10, 1971, Ser. No. 206,918

Int. Cl. C07c 21/04

U.S. Cl. 260-654 R

3 Claims

1. A compound of the formula:



wherein,

R⁴ is methyl or ethyl and X is bromo or chloro.

3,855,323

OLEFIN ISOMERIZATION CATALYSTS AND PROCESS

James E. Lyons, Wallingford, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

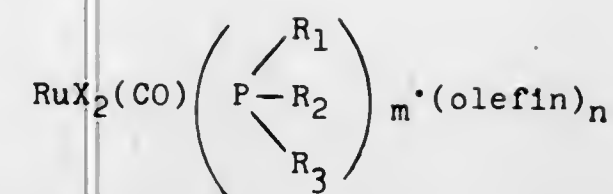
Continuation-in-part of Ser. No. 80,750, Oct. 14, 1970, abandoned. This application May 10, 1972, Ser. No. 251,986

Int. Cl. C07c 5/00, 5/22, 15/00

U.S. Cl. 260-666 A

11 Claims

1. A process for the isomerization of olefins which comprises contacting said olefins under an inert atmosphere with a catalyst consisting essentially of a metal carbonyl of the formula



wherein X is halogen; R₁, R₂ and R₃ are lower alkyl groups having from 1 to 6 carbon atoms, cycloalkyl or aryl, and each of R₁, R₂ and R₃ may be the same or different; m is 2 or 3; and n is 0 or 1.

3,855,324

HYDROGENATION OF ORGANIC COMPOUNDS

Joseph K. Mertzweiller, and Horace M. Tenney, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 880,933, Nov. 28, 1969, Pat. No. 3,711,423, which is a continuation-in-part of Ser. No. 674,098, Oct. 10, 1967, abandoned. This application May 16, 1972, Ser. No. 253,765

Int. Cl. C07c 5/00

U.S. Cl. 260-666 P

16 Claims

1. A process for the hydrogenation of a feed containing cyclododecatriene comprising the steps of:

forming a catalyst by

impregnating a support containing at least about 0.1 millimole of hydroxyl groups per gram of support, said support comprising alumina with an aqueous solution of a transition metal salt comprising nickel acetate;

heat treating the impregnated support at a temperature of at least about 500°F;

activating the heat-treated impregnated support by contacting same with an organometallic compound having the formula: QR_n , wherein Q is selected from Group I, II or III metals of the Periodic Chart of the Elements, R is selected from the group consisting of hydride and alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals containing from 1 to about 20 carbon atoms and wherein n ranges from 1 to 3 and satisfies the valence of Q;

treating the activated supported metal complex in the presence of hydrogen at a temperature of at least about 300°F;

and thereafter contacting said catalyst with said feed in the presence of a hydrogen-containing gas, thereby producing a hydrogenation reaction.

3,855,325

ALKYLATION OF SATURATED HYDROCARBONS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 212,721, Dec. 27, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,696

Int. Cl. C07c 3/54

U.S. Cl. 260-666 P

10 Claims

1. A process for the alkylation of a saturated hydrocarbon containing from about 3 to about 12 carbon atoms per molecule which consists essentially of reacting said hydrocarbon with an olefinic hydrocarbon containing from 2 to about 10 carbon atoms per molecule in contact with free hydrogen chloride and an oxygen-containing gas present in an amount of from about 0.001:1 up to about 1:1 moles of oxygen per mole of saturated hydrocarbon at reaction conditions, including a temperature of from about 160°C. to about 260°C. and recovering the resultant alkylated saturated hydrocarbon.

3,855,326

PRODUCTION OF OLEFINIC HYDROCARBONS

David Richard Joy, and Pannalal Sohanlal Jhavar, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 136,547, April 22, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 420,092

Claims priority, application Great Britain, May 8, 1970, 22348/70

Int. Cl. C07c 5/24

U.S. Cl. 260-666 PY

15 Claims

1. In a process for the production of a mixture of olefinic hydrocarbons suitable for copolymerisation with ethylene and propylene the following steps in combination,

a. distilling a pyrolysis gasoline fraction derived from a cracked hydrocarbon feedstock to produce a distillate boiling in the range 10° to 80°C comprising piperylene, isoprene and at least one member of the group consisting of cyclopentadiene, dicyclopentadiene, n-pentane, isopentane, pentene-1, trans-pentene-2, 2-methylbutene-2, cyclopentene, cyclopentane and benzene,

b. redistilling said distillate to produce an isoprene concentrate and a piperylene concentrate, the latter including piperylene and at least one hydrocarbon selected from the group consisting of cyclopentadiene, dicyclopentadiene, n-pentane, trans-pentene-2, 2-methylbutene-2, cyclopentene, cyclopentane and benzene,

c. heating said piperylene concentrate at a temperature of at least 150°C for a period of time up to 24 hours with added cyclopentadiene or dicyclopentadiene if one or other of these latter is not present in sufficient amount so as to codimerise said piperylene and cyclopentadiene and produce a mixture of olefinic hydrocarbons including 2-propen-1-yl-norbornene-5, said mixture being suitable for polymerisation with ethylene and propylene.

3,855,327

HYDROGENATION OF UNSATURATED COMPOUNDS

William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 8, 1971, Ser. No. 160,886

Int. Cl. C07c 5/18, 5/04

U.S. Cl. 260-668 D

5 Claims

1. A process for converting 4-vinylcyclohexene-1 to ethylcyclohexene and ethylbenzene which comprises contacting same with hydrogen in the presence of a pyridine-organocopper catalyst product which is a solid crystalline precipitate separated from the reaction product obtained by reacting cuprous halide, pyridine, and a weak organic acid in the presence of carbon monoxide.

3,855,328

ISOMERIZATION AND/OR TRANSALKYLATION AND/OR DISPROPORTIONATION OF ALKYLNAPHTHALENES

John A. Hedge, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Dec. 14, 1971, Ser. No. 207,870

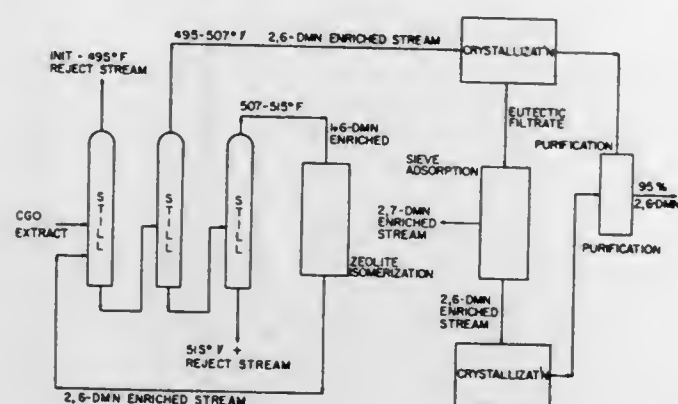
Int. Cl. C07c 5/24, 3/62

U.S. Cl. 260-668 A

13 Claims

1. Process for isomerization, disproportionation or transalkylation of a feed consisting essentially of methyl naphthalenes comprising contacting said feed, at a conversion temperature, with a crystalline zeolite catalyst containing cations of

lanthanum or at least one rare earth metal, said zeolite catalyst having a framework with an atomic ratio Al/Si in the range of



0.35-1.0 and containing in the range of 2-12 wt. percent water which can be evolved on ignition analysis at 1,900°F.

3,855,329

OLEFIN COUPLING IN THE PRESENCE OF PALLADIUM CARBOXYLATES

Robert S. Shue, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 214,399, Dec. 30, 1971, Pat. No. 3,775,511. This application Mar. 8, 1973, Ser. No. 338,809 Int. Cl. C07c 15/12

U.S. Cl. 260-668 R

4 Claims

1. A process for olefin coupling comprising contacting styrene with a palladium(II) carboxylate coupling promoter in the presence of an inert solvent and oxygen wherein the pressure of said oxygen is at least about 50 psig.

3,855,330

PRODUCTION OF STYRENE

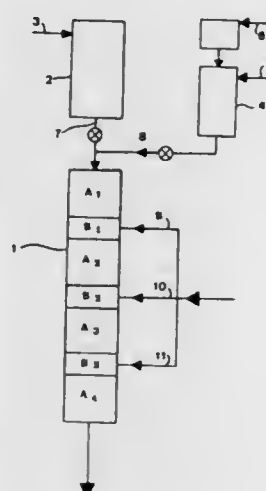
Jean Claude Mendelsohn, Sauveterre De Bearn, and Jean Henri Blanc, Pau, both of France, assignors to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Filed Sept. 20, 1972, Ser. No. 290,440 Claims priority, application France, Sept. 23, 1971, 71.34180; Sept. 8, 1972, 72.31869

Int. Cl. C07c 5/18

U.S. Cl. 260-669 R

9 Claims



1. In a process for the production of styrene by contacting gaseous ethylbenzene with a dehydrogenation catalyst selected from the group consisting of iron oxide; cobalt oxide; mixture of iron oxide or cobalt oxide with an alkaline compound of potassium or chromium oxide; mixture of iron oxide with an alkali metal oxide; mixture of iron oxide with an alkali metal oxide and chromium oxide; mixture of iron oxide, chromium oxide, potassium carbonate and a phosphate of an alkali metal or alkaline earth metal; mixture of iron oxide, zinc oxide or magnesium oxide with chromium or copper salt and potas-

sium oxide or potassium carbonate; mixture of iron oxide, zinc oxide or magnesium oxide with a chromium or copper salt, and potassium oxide or potassium carbonate, and a vanadium compound and an oxidation catalyst selected from the group consisting of palladium, platinum, mixture of palladium and platinum, salts of palladium and platinum, and oxides of palladium and platinum, and introducing oxygen into the reaction medium, the improvement which comprises disposing the oxidation catalyst in a zone between zones containing the dehydrogenation catalyst, and introducing oxygen only into the oxidation catalyst zone.

3,855,331

VINYL XYLENES AND METHOD

James H. Moss, Jr.; Calvin L. Daniels, and Cleve H. Forward, all of Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Feb. 5, 1973, Ser. No. 329,831

Int. Cl. C07c 5/18, 3/52

U.S. Cl. 260-669 R

6 Claims

1. The method of forming ethyl xylenes with the ethyl group predominantly attaching non-adjacent in its ring position to the methyl groups on the benzene ring comprising alkylating a xylene selected from the group consisting of ortho-xylene, meta-xylene, mixtures thereof and mixtures thereof containing para-xylene, with ethylene in the presence of an anhydrous aluminum chloride Friedel-Crafts catalyst promoted with hydrochloric acid or its water equivalent at a temperature in the range of about 75° to 100°C.

3,855,332

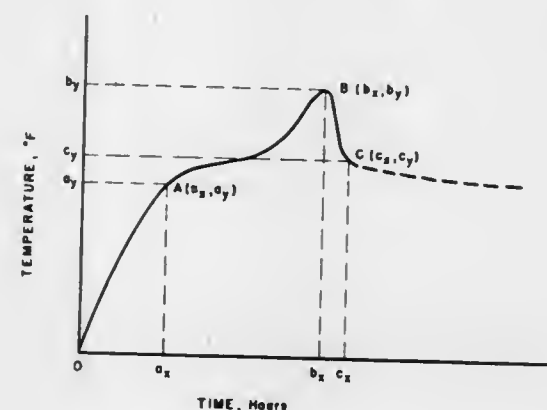
PROCESS FOR PRODUCTION OF POLYARYLENES

Chen-Shen Wang, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 169,367, Aug. 5, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,424 Int. Cl. C07c 15/12

U.S. Cl. 260-670

12 Claims



1. A process for the preparation of branched polyarylenes which comprises treating an aromatic hydrocarbon, a partially hydrogenated aromatic hydrocarbon, or a mixture of an aromatic hydrocarbon and a partially hydrogenated aromatic hydrocarbon with an active carbon whose surface area is at least about 1500 m²/g in the presence of hydrogen and at a temperature of at least 800°F.

3,855,333

ADSORPTIVE SEPARATION OF AROMATIC ISOMERS WITH ADSORBENTS CONTAINING AN ALCOHOL SUBSTRATE

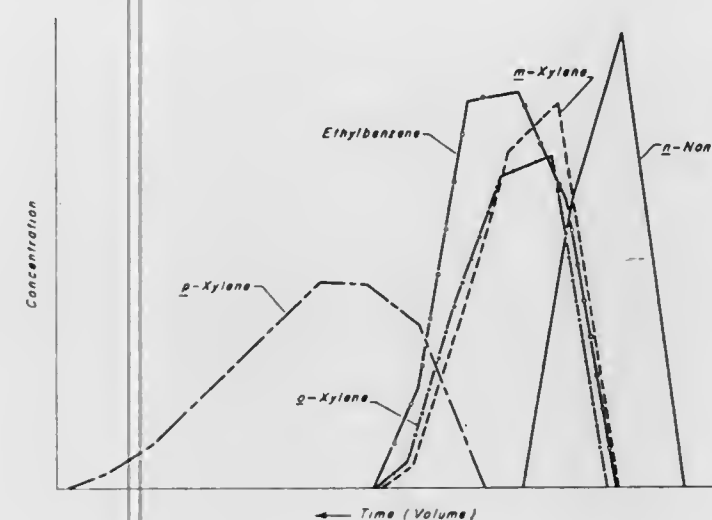
Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 19, 1973, Ser. No. 342,658

Int. Cl. C07c 7/12

U.S. Cl. 260-674 SA

19 Claims



1. A process for separating the para-isomer from a feed comprising a mixture of bi-alkyl substituted monocyclic aromatic isomers, including the para-isomer, which process comprises contacting said mixture with a crystalline aluminosilicate adsorbent containing barium at exchangeable cationic sites within the adsorbent crystalline structure and additionally containing, during said contacting, from about 0.1 to about 8.0 wt. percent of an alcohol at adsorption conditions to effect the selective adsorption of said para-isomer by said adsorbent and recovering from said adsorbent a stream concentrated in said para-isomer.

3,855,334

SEPARATION OF 2,6-DIMETHYLNAPHTHALENE BY COMPLEXATION

Howard P. Angstadt, Media, Pa., assignor to Sun Ventures, Inc., St. Davis, Pa.

Filed Oct. 29, 1973, Ser. No. 410,649

Int. Cl. C07c 7/02

U.S. Cl. 260-674 N

8 Claims

1. Method of separating 2,6-DMN from a liquid mixture of 2,6-DMN and at least one other alkylnaphthalene which comprises

- contacting said mixture with 2-cyano-6-methylnaphthalene for a time sufficient for the latter to selectively complex with the 2,6-DMN,
- recovering the 2,6-DMN:2-cyano-6-methylnaphthalene complex, and
- recovering 2,6-DMN from the complex in a higher purity than in said liquid mixture.

3,855,335

METHOD OF STEAM DEALKYLATION

John H. Estes; Edwin R. Kerr, and Tansukhlal G. Dorawala, all of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,980

Int. Cl. C07c 3/58

U.S. Cl. 260-672 R

19 Claims

1. The method of steam dealkylating an alkylaromatic hydrocarbon charge which comprises passing a mixture of steam and an alkylaromatic hydrocarbon, at steam dealkylating conditions, into contact with an activated catalyst consisting essentially of a massive metal screen containing at least about 50 percent nickel

thereby forming a product gas containing dealkylated alkylaromatic hydrocarbon; and recovering said product gas.

3,855,336

PROCESS FOR THE PRODUCTION OF SYNTHESIS GAS, CRACKED HYDROCARBON AND CALCINED COAL

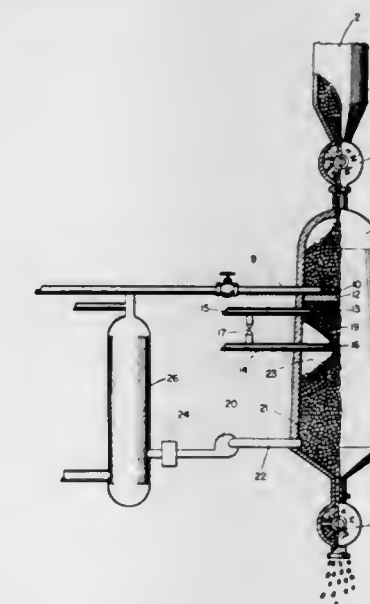
La Vaun S. Merrill, Jr., Englewood, and Robert E. Schilson, Littleton, both of Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 265,915, June 23, 1972, abandoned, which is a continuation-in-part of Ser. No. 857,517, Sept. 12, 1969, Pat. No. 3,676,517. This application Aug. 23, 1973, Ser. No. 391,000 The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.

Int. Cl. C07c 11/24

U.S. Cl. 260-679 R

19 Claims



1. In a calcination process comprising passing coal through a combustion zone in the presence of an oxidant wherein about 2 to about 25 weight percent of the coal is permitted to oxidize, thereby heating the remaining coal to an average temperature within the range of about 2000°F. to about 2500°F. and producing combustion gases comprising N₂, Ar, CO₂, H₂O and CO, and then passing the heated coal through a calcination zone to obtain calcined coal, the step comprising passing at least a portion of the combustion gases through the heated coal and simultaneously introducing steam, hydrocarbon, or steam and hydrocarbon into the heated coal at a temperature sufficient to obtain cracking of the hydrocarbon and removing the resulting synthesis gases, cracked hydrocarbons, and the calcined coal.

3,855,337

METHOD OF REMOVING AND RECOVERING AROMATIC HYDROCARBONS AND WATER FROM A GAS STREAM

Adolph J. Foral, Jr., and Phillip N. Batdorf, both of Houston, Tex., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed Oct. 17, 1973, Ser. No. 407,077

Int. Cl. C07c 7/00

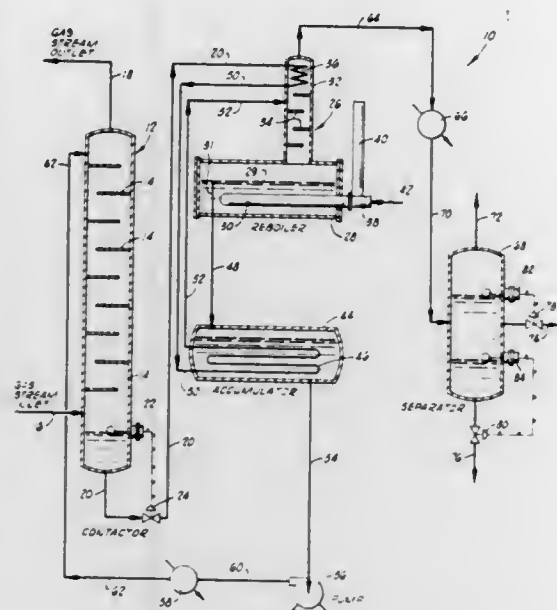
U.S. Cl. 260-674 R

20 Claims

1. A method of removing and recovering aromatic hydrocarbons and water from a gas stream which comprises the steps of:

- intimately contacting said gas stream with a stream of liquid absorbent so that aromatic hydrocarbons and water contained therein are selectively and simultaneously absorbed and removed therefrom;
- heating the resultant stream of water and aromatic hydrocarbon rich liquid absorbent in a reboiler so that the absorbed aromatic hydrocarbons and water are vaporized

- and separated therefrom and the stream of liquid absorbent is reconcentrated;
- c. withdrawing the separated aromatic hydrocarbons and water vapor;
- d. recycling the reconcentrated liquid absorbent stream into intimate contact with said gas stream;



- e. condensing the withdrawn aromatic hydrocarbons and water vapors of step (c); and
- f. separating the condensed aromatic hydrocarbons from the water.

3,855,338

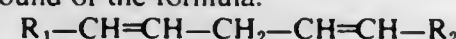
PREPARATION OF 6-METHYL-1,5-HEPTADIENE

Peter Fitton, Pequannock, N.J., and Thomas Whitesides, Madison, Wis., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.
Filed Oct. 24, 1973, Ser. No. 409,122
Int. Cl. C07c 3/62

U.S. Cl. 260—680 R

11 Claims

1. A process for preparing 6-methyl-1,5-heptadiene comprising reacting isobutene with an olefin component containing a compound of the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl or $R_3-CH=CH-CH_2-CH=$ or taken together form lower alkylene or $-CH_2-CH_2-CH=CH-CH_2-CH_2-$; and R_3 is lower alkyl;

or mixtures of said compounds in the presence of a catalyst system containing activated rhenium oxide on alumina and tetra(lower alkyl)metal wherein the metal is a Group IV-A metal.

3,855,339

PROCESS FOR THE THERMAL CRACKING OF HYDROCARBONS

Takuji Hosoi, 4-513, Hyakunin-cho, Shinjuku-ku, Tokyo; Masaaki Kanbayashi, 154-1, Harada, Nishiki-machi; Koichi Washimi, 1-6, Ochiai, Nishiki-machi, both of Iwaki-shi, Fukushima-ken, and Shimpei Gomi, 1-6, Nakamura, Nerima-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 163,420, July 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 792,170, Jan. 17, 1969, abandoned. This application Aug. 14, 1973, Ser. No. 388,174

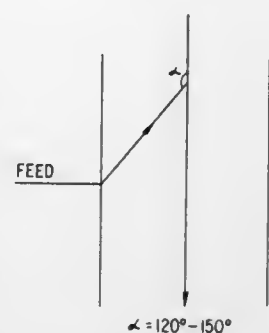
Claims priority, application Japan, Jan. 25, 1968, 43-4035
Int. Cl. C07c 3/30

U.S. Cl. 260—683 R

3 Claims

1. A process for the thermal cracking of hydrocarbons in a vertical, cylindrical cracking reactor comprising introducing a raw hydrocarbon material of, or containing components of, low volatility into the reactor in the form of a spray of liquid droplets in such a manner that the material is injected linearly

in the radial direction toward the center axis of the reactor and counter-current at an angle of 120° to 150° to the passing



direction of heat medium stream which is of steam heated to a temperature of 1,600°–2,300°C.

3,855,340

METHOD OF DISMUTATION OF OLEFINS, CATALYST EMPLOYED AND PRODUCTS OBTAINED

Hubert Knoche, Meyzieu, France, assignor to Entreprise De Recherches Et D'Activites Petrolieres Elf, Paris, France
Continuation of Ser. No. 38,490, May 18, 1970, abandoned.
This application Jan. 23, 1973, Ser. No. 326,073

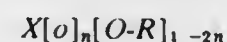
Claims priority, application France, May 22, 1969, 69.16711

Int. Cl. C07c 3/62

U.S. Cl. 260—683 D

4 Claims

1. A method of dismutation of olefins, the reaction being carried out in homogeneous phase by contact of said olefin with a catalyst consisting of a mixture of an alcolate having the formula:



where X is tungsten or molybdenum, R a remainder of alkyl or aryl hydrocarbide, n being equal to 0 or 1 and 1 being equal to 5 or 6 with halogenated aluminum organometallic compound as a metal organic reducing agent, the relative molar proportions of metal organic reducing agent and alcolate being between 6 and 12 for the ratio Al/Mo and Al/W.

3,855,341

PROPYLENE OLIGOMERIZATION PROCESS

John F. Motier, Dolton, and Jin Sun Yoo, South Holland, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,302

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

2 Claims

1. In a process for polymerizing propylene to dimers through tetramers, the improvement which comprises conducting said polymerization in contact with a catalyst comprising a complex of

A. zirconium acetylacetonate;

B. an electron donor ligand phosphine of the formula R_3P wherein each R is a hydrocarbon of up to 20 carbon atoms selected from the group consisting of alkyl, aryl, alkaryl, aralkyl and cycloalkyl, with

C. a combination of a reducing agent capable of reducing zirconium acetylacetonate to an oxidation state of less than 4 and a non-protonic Lewis acid capable of forming a coordination bond with zirconium selected from a compound represented by the formula



wherein R' is alkyl of 2 to about 6 carbon atoms, X is chlorine, M is a metallic element of coordination number n' whose halides are Lewis acids selected from aluminum, magnesium, beryllium, lead, zinc and tin and y is a number having a value of from greater than 0 to n' ; the molar ratio of (B) to (A) being about 2 to 7:1 and the molar ratio of (C) to (A) being about 10 to 20:1, said components (C) and (A) being combined to reduce zirconium represented by (A) to an oxidation state of less than 4, and form a coordination bond with (A),

and recovery of a polymerized propylene hydrocarbon product containing at least one dimer through tetramer.

3,855,342

ISOPARAFFIN-OLEFIN ALKYLATION WITH A COMPLEX OF A MACRORETICULAR ACID CATION EXCHANGE RESIN AND BF_3

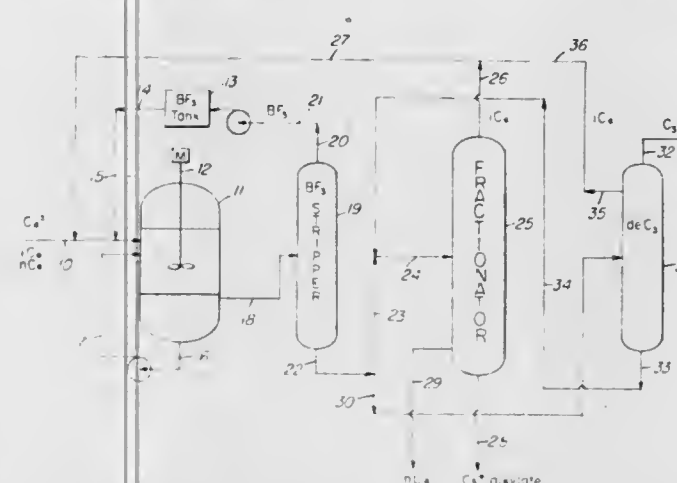
Tracy J. Huang, Trenton, N.J., and Sergei Yurchak, Washington Crossing, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,563

Int. Cl. C07c 3/56

U.S. Cl. 260—683.44

20 Claims



1. In a process for alkylating an isoparaffin having from 4 to 8 carbon atoms with an olefin containing from 2 to 12 carbon atoms by contacting said isoparaffin and said olefin in the liquid state in an alkylation reaction zone maintained at a temperature between about -20° and 150°C. with a catalyst comprising a cation exchange resin containing acid groups and boron trifluoride, said boron trifluoride being present in said reaction zone in an amount in excess of that needed to saturate said resin to form the resin. BF_3 complex, the molar ratio of said isoparaffin to said olefin being between about 2 and 50, withdrawing a hydrocarbon product mixture from said reaction zone and separating an alkylate hydrocarbon product from said mixture, the improvement wherein said resin consists essentially of a macroreticular acid cation exchange resin characterized by a water content between about 0.5 and about 20 weight percent, a surface area of at least 30 square meters per gram and a surface acid concentration of between 0.001 and about 0.5 milliequivalents of hydrogen ion per square meter surface area.

3,855,343

ISOPARAFFIN-OLEFIN ALKYLATION WITH REGENERATION OF RESIN/BORON TRIFLUORIDE CATALYST

Tracy J. Huang, Trenton, N.J., and Sergei Yurchak, Washington Crossing, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,248

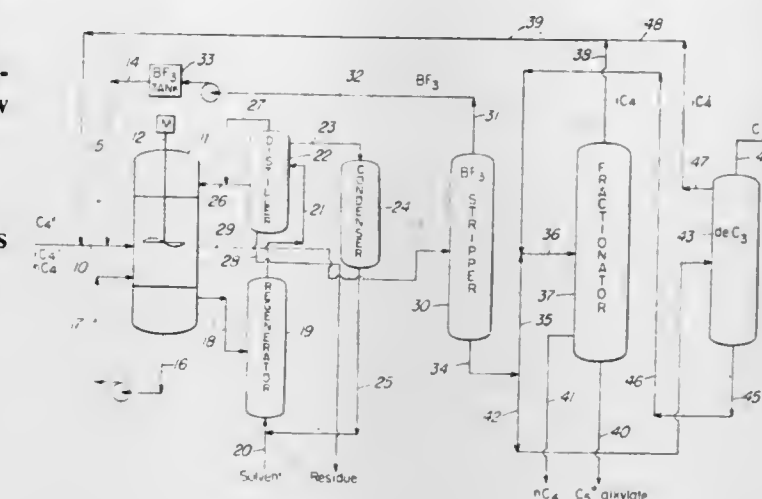
Int. Cl. C07c 3/52

U.S. Cl. 260—683.44

20 Claims

1. An alkylation process which includes regeneration of a spent macroreticular acid cation exchange resin characterized by a water content between about 0.5 and about 20 weight percent and a surface acid concentration of between 0.001 and about 0.5 milliequivalents of hydrogen ion per square meter surface area which comprises extracting said resin with a polar solvent, separating the spent resin so regenerated from said solvent and reusing the regenerated resin in the process which led to its deactivation, said process comprising alkylating an isoparaffin having from 4 to 8 carbon atoms with an olefin containing from 2 to 12 carbon atoms by contacting said isoparaffin and said olefin, in the liquid state with a catalyst in an alkylation reaction zone maintained at a temperature between about -20°C. and 150°C., said catalyst comprising a

complex of said resin and boron trifluoride, said boron trifluoride being present in an amount in excess of that needed to saturate the resin to form said complex, the molar ratio of said



isoparaffin to said olefin being between about 2 and 50, withdrawing a hydrocarbon product mixture from said reacting zone and separating an alkylate hydrocarbon product from said mixture.

3,855,344

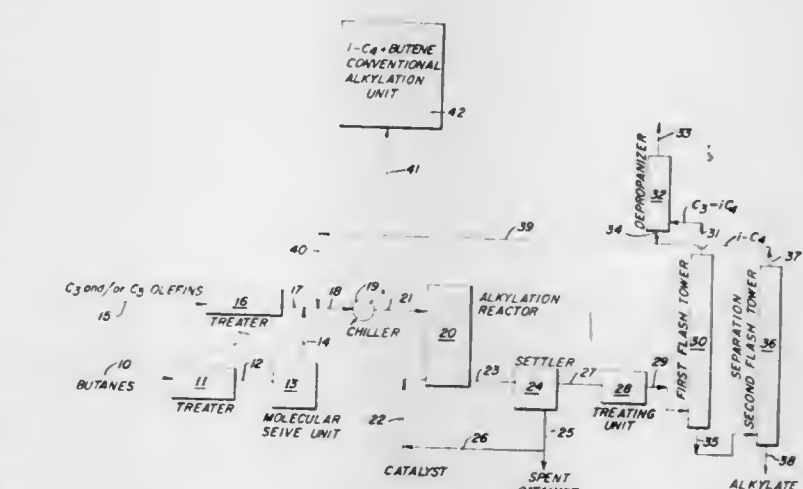
ISOBUTANE FLASHING IN THE ALKYLATION OF C_2 - C_5 OLEFIN HYDROCARBONS WITH ISOBUTANE

Edwin K. Jones, 350 Melrose Ave., Kenilworth, Ill. 60043
Filed Feb. 2, 1973, Ser. No. 328,903

Int. Cl. C07c 3/54, 3/56

U.S. Cl. 260—683.46

16 Claims



1. In the alkylation of isobutane with C_2 , C_3 and/or C_5 olefins, the improvement comprising, removing n-butane from a paraffin feed stock containing a major proportion of isobutane, alkylating said isobutane-containing feed stock, containing essentially no n-butane, with an olefin alkylating agent, essentially free of n-butane, selected from the class consisting of ethylene, propylene, amylene and mixtures thereof, in the presence of an acid catalyst, separating the catalyst from the alkylation reaction mixture, flashing the catalyst-free alkylation reaction mixture to remove a portion of the unreacted isobutane as an overhead fraction and to separate the alkylate and the remaining unreacted isobutane as a bottom fraction, flashing said alkylate and said remaining unreacted isobutane to remove a major proportion of said remaining unreacted isobutane as an overhead fraction, withdrawing said alkylate, and recycling the recovered isobutane.

3,855,345

ALKYLATION OF ISOBUTANE WITH ETHYLENE AND WITH ALUMINUM HALIDE HYDROCARBON COMPLEX CATALYST USING TWO REACTORS IN SERIES

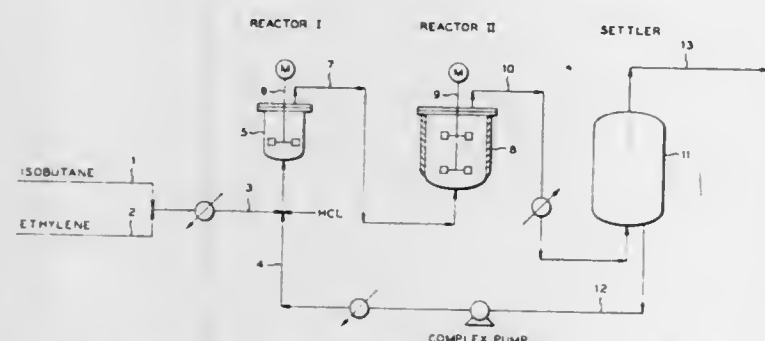
Thomas Hutson, Jr., and Donald J. Makovec, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 11, 1972, Ser. No. 287,736

Int. Cl. C07c 3/56

U.S. Cl. 260—683.45

3 Claims



1. A method for producing diisopropyl-containing alkylate by the alkylation of isobutane and ethylene feedstock in the presence of an aluminum halide hydrocarbon complex catalyst while maintaining a balance of maximum product research octane number (RON) and maximum ethylene feed conversion efficiency said method comprising:

- feeding isobutane, ethylene and aluminum halide into a first agitated reactor wherein the feedstock and catalyst are intimately mixed with high agitation wherein the contact energy of the agitator is maintained in the range of 15 to 30 horsepower per 1,000 gallons of reactor content during the contact time between said agitator and said content,
- feeding the effluent stream from said first reactor to a second agitated reactor wherein the effluent is subjected to agitation maintained between 0.1 and 50 percent of said contact energy in said first reactor and with the contact time in said second reactor maintained in the range of 2 to 6 times greater than said contact time in said first reactor, and
- collecting the diisopropyl-containing alkylate effluent from said second reactor.

3,855,346

ISOMERIZATION OF PARAFFINIC HYDROCARBONS WITH TRIFLUOROMETHANESULFONIC ACID

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1972, Ser. No. 221,777

Int. Cl. C07c 5/30

U.S. Cl. 260—683.68

3 Claims

1. A process for the isomerization of paraffinic hydrocarbons which comprises contacting a feed comprising paraffinic hydrocarbons in a conversion zone at isomerization conditions with a catalyst consisting of trifluoromethanesulfonic acid.

3,855,347

PROCESS FOR HYDROGENATING HALOGENATED HYDROCARBONS

F. Frederick Oricchio, Duxbury, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Division of Ser. No. 289,243, Sept. 15, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,405

Int. Cl. C07c 1/26

U.S. Cl. 260—683.9

12 Claims

1. A process for hydrogenating halogenated hydrocarbons by contacting the same, in admixture with hydrogen and under hydrogenation conditions, with a catalyst, the preparation of which comprises (1) impregnating the particles of a silica-

alumina powder with a hydrogen halide acid - water solution of a Group VIII metal halide, (2) heating the resulting particles to a temperature between about 175° and 300°F for a period sufficient to evaporate excess solution and dry said particles, placing said dried particles in a reactor so as to form a bed and (3) activating said dried particles by fluidizing said bed with a gas stream that comprises hydrogen and an inert gas at a temperature between about 550° and 900°F, for a period sufficient to reduce the metal halide on said dried particles.

3,855,348

METHOD FOR THE CHEMICAL MODIFICATION OF ETHYLENICALLY UNSATURATED POLYMERS AND PRODUCTS OBTAINED THEREBY

Rene Pautrat, and Jacques Marteau, both of Courbevoie, France, assignors to ANVAR Agence Nationale de Valorisation de la Recherche, Tour Aurore, Courbevoie, France

Filed Apr. 5, 1972, Ser. No. 241,438

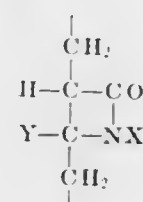
Claims priority, application France, Apr. 8, 1971, 71.12504

Int. Cl. C08f 27/08

U.S. Cl. 260—79.3 R

4 Claims

1. A modified non vulcanized or vulcanized polymer consisting essentially of units with the formula



(1)

wherein Y is a hydrogen atom, a halogen atom, an alkyl group or an aryl group, and X is sulfochloride group SO_2Cl , as produced by the method comprising reacting an ethylenically unsaturated polymer containing $-\text{CH}_2-\text{C}(\text{Y})=\text{CH}-\text{CH}_2-$ units, wherein Y is a hydrogen atom, a halogen atom, an alkyl group or an aryl group, with chlorosulfonyl isocyanate, $\text{ClO}_2\text{S}-\text{N}=\text{C}=\text{O}$, in the absence of oxygen and moisture, at temperatures between -20°C and $+150^\circ\text{C}$, in a dry solvent or mixture of solvents inert towards chlorosulfonyl isocyanate, the concentration of the said unsaturated polymer in the solution being 1% to 15% by weight, without a catalyst.

3,855,349

METHOD AND COMPOSITION FOR IMPARTING FIRE-ROOFNESS TO SYNTHETIC SHAPED ARTICLES

Masakazu Date, and Shigeki Fukuoka, both of Takatsuki, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Mar. 17, 1972, Ser. No. 235,861

Claims priority, application Japan, Mar. 22, 1971, 46-16614; Dec. 21, 1971, 46-104421

Int. Cl. D06m 13/28, 13/44

U.S. Cl. 260—849

1 Claim

1. A composition for imparting fire-proofness to a shaped article of a synthetic resin, which comprises 100 parts by weight of (1) (a) a water-soluble precondensate of a tetrakis hydroxymethyl phosphonium compound and urea or (b) a water-soluble precondensate of a tetrakis hydroxymethyl phosphonium compound, urea and melamine or guanidine in which the ratio of the amount of the methylol groups in the tetrakis hydroxymethyl phosphonium compound to the total amount of the amino groups in the urea, melamine and guanidine is an equivalent ratio of 1:0.1 to 0.5, (2) 2 to 20 parts by weight of a compound selected from the group consisting of urea, thiourea, guanidine carbonate, guanidine phosphate and guanidine hydrochloride and (3) 2 to 15 parts by weight of a methylol resin precondensate having at least one methylol group in the molecule selected from the group consisting of

methylolmelamine resin, methylolurea resin, methyloluron resin, methyloltriazone resin, methylolethyleneurea resin, methylolpropyleneurea resin and methylolhydroxyethyleneurea resin.

3,855,350

POLYAMIDES AND POLYOXAMIDES COPOLYMERIZED IN THE PRESENCE OF A GLYCOL

Joseph Oldham, Blackley, England, and Frederick Keith Duxbury, deceased, late of Blackley, England (by Jean Duxbury, administratrix), assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 22, 1971, Ser. No. 211,122

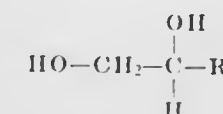
Claims priority, application Great Britain, Dec. 22, 1970, 60902/70

Int. Cl. C08g 41/04

U.S. Cl. 260—857 TW

29 Claims

1. A process for the manufacture of a high molecular weight composition which comprises condensing a diamine with an ester of oxalic acid in the presence of a glycol, and in the presence of from 10% to 80% by weight of a polyamide said polyamide being in solution in said glycol, the glycol having the following formula:



wherein R represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms or a hydroxymethyl group by heating at a temperature sufficient for copolymerization of said polyamide with said glycol, but in any event at a temperature not greater than 180°C , said polyamide being a polyamide obtained by polymerizing an amino carboxylic acid or its derivative lactam in which there are at least two carbon atoms between the amino and carboxylic acid group, or by condensing substantially equimolecular proportions of a diamine which contains at least two carbon atoms between the amino groups with a dicarboxylic acid other than oxalic, the proportion of glycol to the total of said polyamide and said ester of oxalic acid being between 30:1 and 2:1 by weight acid.

3,855,351

DI (2-PHENOXYETHYL) PEROXYDICARBONATE

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 209,435, Dec. 17, 1971. This application Oct. 24, 1973, Ser. No. 409,128

Int. Cl. C08f 21/00

U.S. Cl. 260—861

3 Claims

1. In a process for curing a mixture of an unsaturated polyester of a dicarboxylic or polycarboxylic acid or its anhydride and an ethylenically unsaturated monomer by heating at a curing temperature in the presence of a curing catalyst, the improvement which comprises employing di-(2-phenoxyethyl) peroxydicarbonate as the curing catalyst.

3,855,352

PHOSPHORUS-CONTAINING POLYMERS

Kurt Moedritzer, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 17, 1972, Ser. No. 272,239

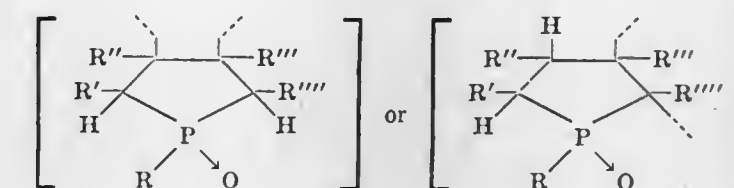
Int. Cl. C08g 39/10

U.S. Cl. 260—873

6 Claims

1. A composition of matter consisting essentially of a polymer of the class consisting of polyhexamethylene adipamide, poly-epsilon caproamides, polyhexamethylene sebacamide, polyethylene terephthalate, acrylonitrile, styrene, butadiene-styrene, vinylchloride, vinylidene chloride, vinyl acetate and isobutylene having incorporated therewith a phospholene

oxide polymer characterized by the repeating units



in which R is hydrocarbyl of 1-20 carbon atoms and R', R'', R''', R'''' are hydrogen or hydrocarbyl groups of 1-20 carbon atoms with the said phospholene oxide polymer having a molecular weight ranging from 200 to 1 million.

3,855,353

GRAFT POLYMERS BASED ON ETHYLENE COPOLYMERS

Heinrich Alberts, Cologne; Herbert Bartl, Odenthal-Hahnenberg, and Rainer Kuhn, Berg, Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1973, Ser. No. 344,544

Claims priority, application Germany, Mar. 30, 1972, 2215588

Int. Cl. C08f 15/00

U.S. Cl. 260—878 R

11 Claims

1. A process for the production of a graft polymer from ethylene-vinyl ester copolymers and olefinically unsaturated compounds in the presence of a radical former in homogeneous or heterogeneous phase, wherein a mixture of acrylonitrile, methacrylonitrile or a mixture thereof, at least one aromatic monovinyl compound, at least one monoolefin containing 2 to 18 carbon atoms, 0-30% by weight of another vinyl compound selected from the group consisting of acrylic acid esters and methacrylic acid esters with 1 to 8 carbon atoms in the alcohol component, acrylamide, methacrylamide, acrylic acid, methacrylic acid, vinyl esters of organic saturated monocarboxylic acids containing 2 to 18 carbon atoms and mixtures thereof and 0-15% by weight of an allyl compound selected from the group consisting of allyl alcohol, allyl acetate, isobutene diacetate and mixtures thereof is polymerized in the presence of a copolymer of ethylene with a vinyl ester of an organic monocarboxylic acid.

3,855,354

PROCESS FOR THE PREPARATION OF THERMOPLASTIC POLYMERS

Hidehiko Takizawa, and Mituto Hisashige, both of Chiba, Japan, assignors to Denki Kogaku Kogyo Kabushiki Kaishi, Tokyo, Japan

Filed Nov. 14, 1972, Ser. No. 306,486

Claims priority, application Japan, Nov. 16, 1971, 46-91806

Int. Cl. C08f 1/60; C08f 19/08; C08f 1/04

U.S. Cl. 260—880 R

7 Claims

1. In a two step process for the preparation of styrene type thermoplastic polymers from a composition comprising 2 to 15 percent of an elastomer, 5 to 35 percent of acrylonitrile and 50 to 93 percent of an aromatic vinyl compound or a mixture of said aromatic vinyl compound with up to 15 percent of another compound other than acrylonitrile copolymerizable with said aromatic vinyl compound, said per cents being by weight, utilizing an organic peroxide catalyst in the first step and azo-compound catalyst in the second step, by carrying out the first step of polymerization until the polymerization rate becomes any value within a range of 10 to 40 percent and subsequently carrying out the second step of polymerization, the improvement comprising in carrying out the first step of polymerization by adding to the polymerization system 0.01 to 0.15 percent by weight of the organic peroxide catalyst, said amount of organic peroxide catalyst being all of the or-

ganic peroxide catalyst used during said polymerization, based on the feed at any time when the polymerization rate is within a range of 0 to 15 percent, and then continuing said polymerization by adding to the system in said second step 0.01 percent by weight or more of the azo-compound catalyst, said amount being all of the azo-compound catalyst used during said polymerization, based on the feed at any time when the polymerization rate is within a range of more than 15 percent and not more than 40 percent.

3,855,355

PROCESS FOR PREPARING GRAFT COPOLYMERS IN AQUEOUS EMULSION

John David Moore, Southampton, England, assignor to The International Synthetic Rubber Company Limited, Southampton, England

Filed May 11, 1972, Ser. No. 252,225

Claims priority, application Great Britain, May 14, 1971, 15073/71

Int. Cl. C08f 19/08, 19/18, 1/13

U.S. Cl. 260—880 R

11 Claims

1. A process for preparing an acrylonitrile-butadiene-styrene (ABS) graft copolymer from a rubbery polybutadiene latex characterized by the steps of:

1. admixing some or all of the styrene to be grafted, with the latex in the absence of acrylonitrile, the amount of styrene being at least 30 parts by weight per 100 parts of rubber,
2. contacting the mixture so formed after an imbibing time of from 5 minutes to 20 hours before reaction is initiated with acrylonitrile and the balance, if any, of the styrene, and
3. then initiating and continuing aqueous emulsion graft polymerization of the styrene and acrylonitrile in said mixture on to the polybutadiene steps (1) and (2) taking place before the initiation of graft polymerization in step (3).

3,855,356

FLAME RETARDANT POLYMER COMPOSITION

John B. Luce, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 215,155, Jan. 3, 1972, Pat. No. 3,796,772.

This application Oct. 15, 1973, Ser. No. 406,603

Int. Cl. C08d 7/10; C08f 45/56

U.S. Cl. 260—881

2 Claims

1. A flame retardant polymer composition comprising in admixture, a vinyl aromatic-acrylonitrile-butadiene terpolymer, 5–30 weight percent of a halogen containing flame retardant additive and 0.01 to about 20.0 weight percent of a titanate selected from calcium and nickel titanates, and mixtures of these titanates; said halogen being selected from the group consisting of bromine and chlorine.

3,855,357

WIRE AND CABLE INSULATION COMPRISING VINYL CHLORIDE POLYMER AND LACTONE GRAFT COPOLYMER

Edward B. Harris, Spring Valley, N.Y., and David B. Braun, Ridgefield, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,303

Int. Cl. C08f 29/24

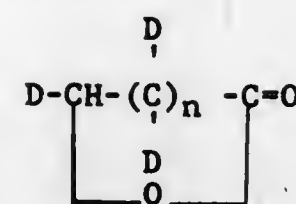
U.S. Cl. 260—897 C

10 Claims

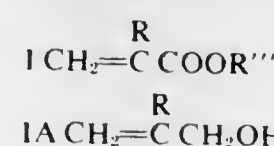
1. Wire and cable insulation having enhanced abrasion, oil and solvent resistance comprising:

1. A normally solid vinyl chloride polymer containing at least about 80 percent by weight of vinyl chloride polymerized therein and from 0 to about 20 percent by weight of an ethylenically unsaturated comonomer capable of copolymerizing with vinyl chloride; and

2. about 40 to about 80 parts by weight per hundred parts of vinyl chloride polymer of a graft copolymer of a lactone having the formula:



wherein n is an integer having values of from about 3 to about 6 wherein at least n + 2 D's are hydrogen and wherein the remaining D's are lower alkyl groups having up to about 8 carbon atoms, said lactone being graft polymerized onto a reactive organic polymer backbone of ethylenically unsaturated monomers, said polymer backbone containing from about 0.1 mol percent to about 100 mol percent of polymerized monomer selected from monomers represented by the formulae:



R being hydrogen, alkyl having from 1 to about 3 carbon atoms or CH_2COOH and R'' being $-\text{OH}$, $\text{OC}_p\text{H}_{2p}\text{OH}$ in which p has a value of from 1 to about 5 or higher, $-\text{C}_p\text{H}_{2p}\text{NH}_2$, $-\text{OC}_p\text{H}_{2p}\text{COOH}$, $-\text{NH}_p\text{H}_{2p}\text{OH}$, $-\text{NHC}_p\text{H}_{2p}\text{NH}_2$, $-\text{NHC}_p\text{H}_{2p}\text{COOH}$, $-\text{OC}_p\text{H}_{2p}\text{NHR}''''$ or $-\text{NHC}_p\text{H}_{2p}\text{NHR}''''$ wheel R'''' is alkyl having up to about 10 carbon atoms or more.

3,855,358

PVC-HEXACHLOROCYCLOPENTADIENE/CYCLO OLEFIN COPOLYMER RESIN BLENDS

William A. Watts, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1973, Ser. No. 407,350

Int. Cl. C08f 29/24

U.S. Cl. 260—899

11 Claims

1. Polyvinyl chloride and copolymers of vinyl chloride containing from about 1–99 weight percent of a copolymer resin resulting from the polymerization of (a) 5 to 95 percent by weight of an adduct of hexachlorocyclopentadiene and a cyclic olefin with two or more double bonds, with (b) 95 to 5 percent by weight cyclic olefins.

3,855,359

COPOLYCONDENSED VINYLPHOSPHONATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 153,075, June 14, 1971, This application Oct. 7, 1971, Ser. No. 187,575

Int. Cl. C07f 9/40

U.S. Cl. 260—928

19 Claims

1. A copolycondensed vinylphosphonate consisting essentially of the product resulting from the reaction, in stoichiometric ratio of from about 1:10 to 10:1, between a bis(2-haloalkyl) vinylphosphonate and at least one pentavalent phosphorus ester of the structure $\text{ROP}(\text{=O})\text{XY}$ where R is selected from the class consisting of $\text{C}_1\text{--C}_{20}$ alkyl and $\text{C}_1\text{--C}_{20}$ chloro- or bromoalkyl groups and X and Y are groups selected from the class consisting of RO- , $\text{C}_1\text{--C}_{20}$ alkyl, $\text{C}_2\text{--C}_{20}$ alkenyl, phenyl, phenoxy, amino, $\text{C}_1\text{--C}_{20}$ alkyl substituted amino, phenyl substituted amino, $\text{C}_2\text{--C}_{20}$ alkylene bonded to the same or to another $\text{ROP}(\text{=O})$ moiety and $\text{C}_2\text{--C}_{20}$ alkyleneoxy and $\text{C}_2\text{--C}_{20}$ alkyleneedioxy bonded to the same or to another $\text{ROP}(\text{=O})$ moiety, wherein said reaction is carried out at an elevated temperature for a period of time which is sufficient to evolve R-halide as a by-product and to form a $\text{P}(\text{O})\text{O-alkylene-O-P}(\text{O})$ linkage, with the proviso that said product is not the homopolycondensed product of said bis(2-haloalkyl) vinylphosphonate.

3,855,360

POLYALKYLENE GLYCOL ALKYL OR HALOALKYL POLY-PHOSPHONATES

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

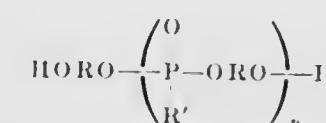
Filed Aug. 21, 1972, Ser. No. 282,642

Int. Cl. C07f 9/40; C08g 22/44

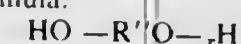
U.S. Cl. 260—929

5 Claims

1. A polyalkyl glycol alkyl or haloalkyl polyphosphonate composition characterized by an acid number in water of below 15 mg. of KOH per gram of sample and having the formula:



wherein R is the residue of a polyalkyl glycol having the formula:



wherein R'' is an alkylene radical of 2 to 20 carbon atoms and x is a number from 2 to about 20, R' is alkyl or haloalkyl and n is a number in the range from about 1 to about 100.

3,855,361

TRANS-1,5-POLYPENTENAMER WITH IMPROVED PROCESSING PROPERTIES

Dieter Maertens, Leverkusen; Josef Witte, Cologne, and Manfred Beck, Odenthal-Gloebusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 198,430, Nov. 12, 1971, abandoned.

This application Apr. 25, 1973, Ser. No. 354,180

Claims priority, application Germany, Nov. 14, 1970, 2056178

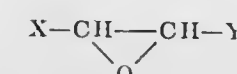
Int. Cl. C08f 1/28, 7/02

U.S. Cl. 260—93.1

3 Claims

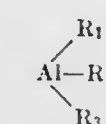
1. A process for producing a predominantly transpolyalkenamer which comprises polymerizing a cyclomonoolefin having four, five or seven to 18 carbon atoms and dissolved in a hydrocarbon solvent in the presence of hydrogen chloride and a catalytic amount of a catalyst comprising

- a tungsten halide or oxyhalide,
- a cocatalyst which is selected from the group consisting of di-2-chloro-ethyl formal, diethyl formal and an epoxide of the formula



wherein X is hydrogen, alkyl having one to six carbon atoms, phenyl, tolyl, naphthyl, benzyl or one of said carbon atom containing substituents substituted by methyl or chlorine and Y is hydrogen, alkyl having one to six carbon atoms, phenyl, tolyl, naphthyl, benzyl, or one of said carbon atom containing substituents substituted by methyl or chlorine or $\text{CH}_2\text{-Hal}$ wherein Hal is halogen and

- c. an organoaluminum compound of the formula



wherein R₁ is alkyl having one to six carbon atoms and R₂ and R₃ are halogen or alkyl or alkoxy having one to six carbon atoms, the molar ratio of (a):(b):(c) being 1:0.3 to 10:0.5 to 15 and the molar ratio of hydrogen chloride to tungsten being 0.1:1 to 10:1.

3,855,362

PHOSPHORIC ACID PHENYLSULFONAMIDE ESTERS

Jozef Drabek, Allschwil, and Denis Varsanyi, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,507

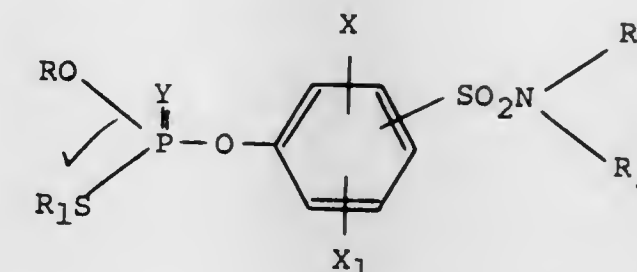
Claims priority, application Switzerland, Dec. 3, 1971, 17619/71; Sept. 22, 1972, 13869/72

Int. Cl. C07f 9/18

U.S. Cl. 260—944

12 Claims

1. A compound of the formula



wherein R represents methyl or ethyl, R₁ represents propyl, n-butyl n-pentyl or $\text{C}_2\text{H}_5\text{OCH}_2\text{CH}_2-$, R₂ represents hydrogen, methyl or ethyl, R₃ represents methyl or ethyl, X and X₁ each represents hydrogen or chlorine, and Y represents oxygen or sulphur.

3,855,363

CYCLOALKANE, CYCLOALKENE, AND CYCLOALKANONE PHOSPHONATES

Curtis P. Smith, Cheshire, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

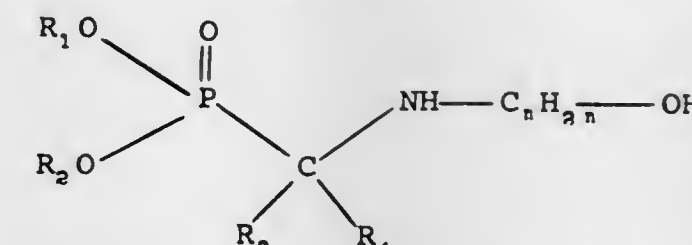
Filed Aug. 8, 1973, Ser. No. 386,520

Int. Cl. C07f 9/40

U.S. Cl. 260—944

3 Claims

1. A compound having the formula:



wherein R₁ and R₂ are each selected from the class consisting of hydrocarbyl from 1 to 12 carbon atoms, inclusive, and halo-substituted hydrocarbyl from 1 to 12 carbon atoms, inclusive;

C_nH_{2n} represents alkylene from 2 to 8 carbon atoms, inclusive, having at least 2 carbon atoms separating the valencies; and

R₃ and R₄, taken together with the carbon atom to which they are attached, represent the residue of a cyclic member selected from the class consisting of a cycloalkane, a cycloalkene and a cycloalkanone each of said cycloalkane, cycloalkene and cycloalkanone having from 4 to 8 ring carbon atoms, inclusive, and having from 0 to 4 lower-alkyl substituents.

3,855,364

PHOSPHATE ESTERS OF HYDROXYALKYL ACRYLATES AND HYDROXYALKYL METHACRYLATES

Robert Steckler, Crofton, Md., assignor to Alcolac Inc., Baltimore, Md.

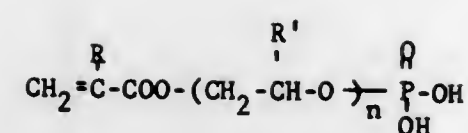
Filed Jan. 5, 1973, Ser. No. 321,229

Int. Cl. C07f 9/08

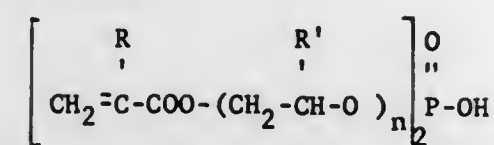
U.S. Cl. 260—952

7 Claims

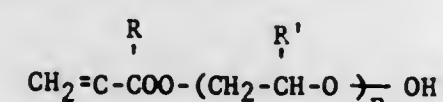
1. The method of making a polymerizable composition of matter comprising essentially of a mixture containing from about 55 percent to about 75 percent of phosphate monoester of the formula:



from about 10 percent to about 25 percent of a phosphate diester of the formula:

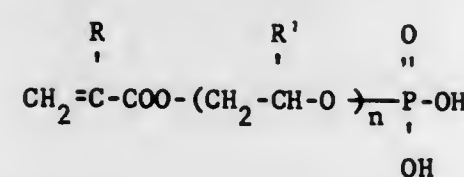


about 3 percent to about 6 percent of unreacted hydroxyalkyl acrylate or methacrylate of the formula:

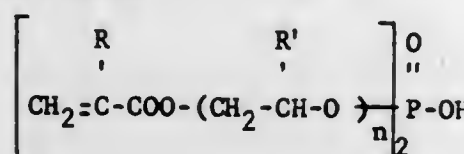


wherein R is selected from the class consisting of hydrogen and methyl, R' is selected from the class consisting of hydrogen and alkyl of from 1 to 22 carbon atoms, and n is a positive integer of from 1 to 3, and from about 4 percent to about 20 percent of free phosphoric acid; which comprises reacting at a temperature of from 40° to 80°C., in the presence of a small amount of polymerization inhibitor, about 1 to 2 moles of a hydroxyalkyl acrylate or methacrylate of the formula given above, with an amount of polyphosphoric acid equivalent to about 1 mole of P₂O₅.

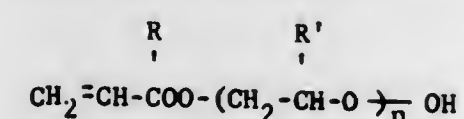
2. Polymerizable composition of matter, when made by the method defined in claim 1, comprising essentially of a mixture containing from about 55 percent to about 75 percent of phosphate monoester of the formula:



from about 10 percent to about 25 percent of a phosphate diester of the formula:



about 3 percent to about 6 percent of unreacted hydroxyalkyl acrylate or methacrylate of the formula:



wherein R is selected from the class consisting of hydrogen and methyl, R' is selected from the class consisting of hydrogen and alkyl of from 1 to 22 carbon atoms, and n is a positive integer of from 1 to 3; and from about 4 percent to about 20 percent of free phosphoric acid.

3,855,365

HALOBENZYLPHENYL PHOSPHATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 13,783, June 27, 1972, abandoned.

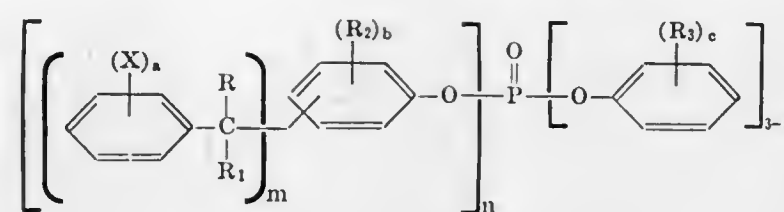
This application Sept. 18, 1972, Ser. No. 289,921

Int. Cl. C07f 9/12

U.S. Cl. 260-966

13 Claims

1. Halobenzylphenyl phosphate having a structure corresponding to the formula:



wherein n is a number between 0.5 and 2 inclusive; m is a number between 1 and 3 inclusive; X is a halogen selected from the group consisting of chlorine and bromine; R and R₁ are each selected from the group consisting of hydrogen and methyl; R₂ and R₃ are each lower alkyl having 1 to 8 carbon atoms; a is a number between 1 and 5 inclusive; b is a number between 0 and 4 inclusive; and c is a number between 0 and 5 inclusive.

3,855,366

CARBURETOR

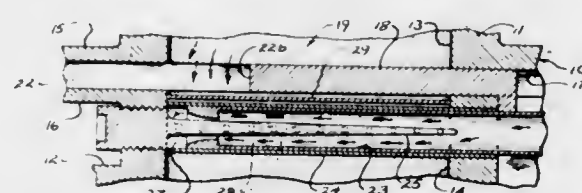
Donald L. Chapman, 191 Osceola Ave., Tallmadge, Ohio 44278

Filed Oct. 16, 1972, Ser. No. 298,187

Int. Cl. F02m 9/06

U.S. Cl. 261-41 B

3 Claims



1. A carburetor as for a gasoline engine, comprising: a housing having connecting air-intake and gas-mixing chambers, a slide-valve member, adjustably mounted between said chambers, and having a venturi-aperture means of variable flow area therethrough, for passage of air from said air-intake chamber to said gas-mixing chamber with correspondingly varying venturi effect on said air; means for adjusting said slide-valve member to vary the flow area of said venturi aperture means, and a gas metering device presented within said gas-mixing chamber, for supplying gas to said gas-mixing chamber for convergence with said air passed through said venturi aperture means; said gas metering device including relatively movable parts to vary the supply of gas to said chamber, said relatively movable parts of the gas metering device including a relatively fixed tube having therein a plurality of gas metering holes, and a gas supply tube relatively movable with reference to said relatively fixed tube, to open and close one or more said gas metering holes to said gas mixing chamber, said gas supply tube having a gas outlet orifice in a free end thereof presented within said gas mixing chamber; and a tapered stem being affixed to said housing to extend into said gas supply tube through said outlet orifice to vary the effective gas flow area thereof in proportion to relative movement of the supply tube.

3,855,367

VENTURI ANTI-SILTATION SYSTEM

William G. Webb, 280 La Vista Ave., Concord, Calif. 94521

Filed Oct. 25, 1972, Ser. No. 300,636

Int. Cl. B01f 3/04

U.S. Cl. 261-77

2 Claims

1. A circulation and aeration column for drawing accumulated silt off the bottom of a body of water to thereby suspend the silt in the body, comprising: an elongated hollow tube; means for maintaining said tube submerged in said body of water in a substantially vertical orientation, said tube including an upper end and a lower end, the lower end thereof having affixed thereto a cylindrically shaped outwardly flared mouth member, said mouth member tapering inwardly and

terminating within the interior of said tube to provide an opening of lesser cross-section than the cross-section of the opening in said tube; and annular ring member in fluid impervious engagement with the inwardly terminating end of said mouth member, said annular ring member further being outwardly flared to peripherally about the inner surface of said tube in fluid impervious engagement therewith, thereby forming an annular chamber defined by a portion of the inner surface of said tube, said annular ring member and portion of

downward adjacent perforated means, wherein the larger apertures are provided with extensions which are disposed tangentially respective to the axis of the enclosed space; and means for bringing the perforated means and said fluid phases into relative reciprocating movement.

3,855,369

LIQUID COOLING APPARATUS

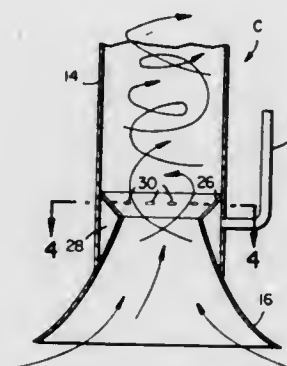
Leonard J. Boler, Minneapolis, Minn., assignor to Cherne Industrial Inc., Edina, Minn.

Filed Jan. 2, 1973, Ser. No. 320,591

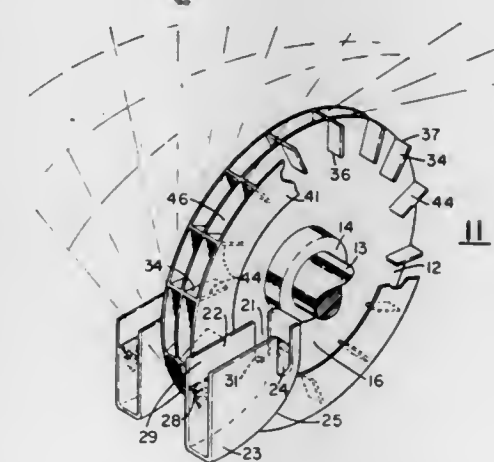
Int. Cl. B01f 3/04

U.S. Cl. 261-90

12 Claims



said tapering mouth member disposed within said tube; said annular ring member including a plurality of peripherally spaced inclined apertures; and means for introducing air from an air supply through the wall of said tube into said chamber, whereby when air is discharged through said plurality of inclined apertures, an upwardly advancing, swirling stream will be created in the lower end of said tube to cause silt-laden water to rise upwardly in said tube and be discharged from said upper end thereof.



1. Liquid cooling apparatus for projection of liquid drops in trajectories, particle sizes, velocities and volume rates effective for improved cooling of the liquid, said apparatus comprising a plurality of parallel disc-like spray members spaced from each other along a common axis of rotation and having peripheries from which liquid is to be sprayed, said axis of rotation being generally horizontal and perpendicular to said spray members, means for feeding liquid to be cooled to at least one surface of each spray member at a limited area spaced inwardly from its periphery and from which the rotation of the spray member causes the liquid to move centrifugally outwardly along said surface and frictionally in the direction of rotation of the surface, said one surface of the spray member having a plurality of circumferentially-spaced liquid guide vanes projecting axially therefrom and extending generally radially at only the outer portions of said surface between the limited area at which liquid is fed to the surface and the periphery of the spray member for engaging the liquid after it has been fed to said limited area and started to move outwardly along said surface, and a shield member having a splash shield surface extending parallel to said one spray member surface immediately adjacent said vanes over an area extending outwardly from said limited area at which liquid is fed to the spray member surface to that portion of the spray member periphery at which the liquid is projected from the spray member.

3,855,370

MIXER FOR ALGAE PONDS

Joseph C. Dodd, 1150 Alcoa Bldg., Walnut Creek, Calif. 94111

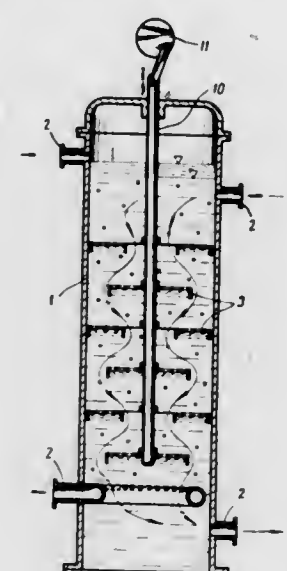
Filed Mar. 16, 1973, Ser. No. 341,878

Int. Cl. B01d 47/16; C02c 1/10

U.S. Cl. 261-92

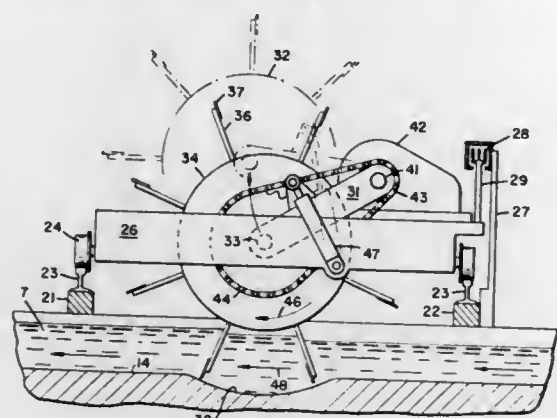
3 Claims

1. A mixer for algae ponds comprising a plurality of adjacent parallel flow channels separated by upstanding walls; a support extending transversely across said channels, over said walls, a carriage selectively movable along said support to positions over each of said channels; a paddle wheel device mounted on said carriage in a position to extend into a channel over which said carriage is



1. Apparatus for bringing fluid phases into mutual contact, comprising, in combination, confining means for confining a fluid phase or phases in an enclosed space; feed means and withdrawing means provided on two opposite sides of said enclosed space for supplying and discharging fluid phases thereto and thereout, respectively; at least two perforated means disposed above one another in said enclosed space and provided each with alternately spaced apart apertures of two different sizes for passing said fluid phases, the smaller of them designed for passing a dispersed phase or phases, being positioned in one perforated means opposite the larger apertures designed for passing a continuous phase, in both upward and

positioned and being rotatable about an axis transverse to said channels; means on said carriage for rotating said paddle wheel to induce liquid in said channels to flow therealong; each of said channels having a concavely curved bottom surface portion extending transversely thereof parallel to



portion located downstream beyond said opening when the mounting plate is positioned in covering relation to the opening, a spray discharge nozzle coupled through a valve to a water source and located within the tunnel adjacent its upstream end for discharging a mistlike spray pattern of water droplets in a downstream direction within the tunnel, and an evaporation screen supported within said tunnel downstream of said nozzle in the path of said water droplets to collect droplets thereon and evaporate them into the air flowing through the tunnel.

3,855,372

LIQUID VAPORIZER

Christian Koch, Erlangen, Germany, assignor to Sumens Aktiengesellschaft, Munich, Germany

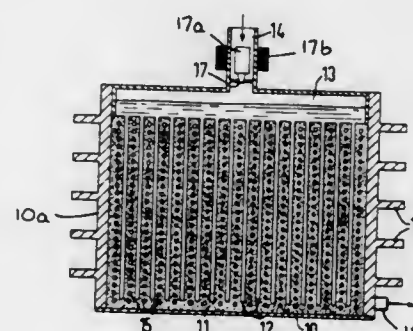
Filed Mar. 15, 1973, Ser. No. 341,473

Claims priority, application Germany, Apr. 4, 1972, 2216196

Int. Cl. F02m 17/28

U.S. Cl. 261-131

12 Claims



3,855,371

HUMIDIFYING APPARATUS FOR WARM AIR DUCTS AND THE LIKE

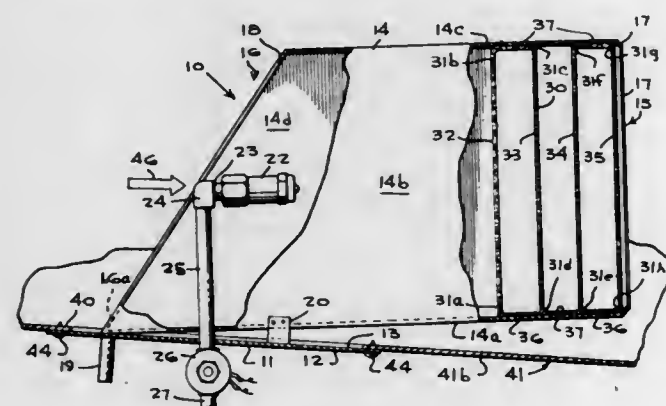
William B. Morrow, Winston-Salem, and Gary H. Anders, Rural Hall, both of N.C., assignors to Aqua Mist, Incorporated, Winston-Salem, N.C.

Filed Jan. 3, 1973, Ser. No. 320,818

Int. Cl. B01f 3/04

U.S. Cl. 261-100

13 Claims



1. A humidifier assembly for use in association with a forced circulation warm air heating system including a horizontal heated air supply duct section communicating with a furnace and having a flat duct wall portion having an insertion opening formed therein, the humidifier assembly comprising a rigid planar mounting plate of a size to cover said insertion opening having edge portions to overlie the duct wall portions bounding said opening and be fastened thereto, an elongated tunnel duct member of four flat solid sheet metal tunnel walls of greater length than the dimension of the insertion opening along the direction of air flow in the duct section joined together along their longitudinal edges and defining an elongated humidifier tunnel of rectangular cross-section extending along a rectilinear tunnel axis inclined at a sharp angle to the plane of said mounting plate and having opposite open ends forming upstream and downstream end portions of the tunnel, means fixing said duct member to said mounting plate to locate the tunnel wholly within the duct section with a wall of the duct member supported against the mounting plate for flow of heated duct air therethrough with the downstream end

1. A liquid vaporizer comprising:
 - a. a porous body with a porosity in the range of 20 to 60 percent having essentially flat parallel front and rear sides and essentially flat parallel top and bottom sides;
 - b. a plurality of evenly distributed spaced gas passages extending through said body from said front to said rear side; and
 - c. a plurality of spaced liquid passages extending from said top side to at least near said bottom side, essentially normal to said gas passages and arranged so that each gas passage has a liquid passage in close proximity thereto.

3,855,373

NEW PROCESS FOR MAKING NITROCELLULOSE BASE PROPELLANTS

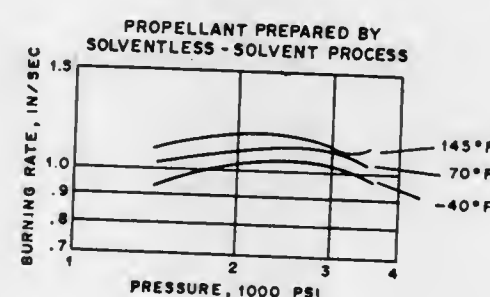
Jacob M. Swotinsky, Morris Plains; Olindo A. Colitti, Parsippany, both of N.J., and James J. Confides, Chambersburg, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 290,286, Sept. 19, 1972, abandoned, which is a continuation of Ser. No. 80,611, Oct. 14, 1970, abandoned. This application Nov. 28, 1973, Ser. No. 419,828

Int. Cl. C06b 21/02

U.S. Cl. 264-3 B

4 Claims



1. A process for preparing a propellant of high structural strength, which comprises:

- a. preparing a colloided propellant composition by the solventless process comprising forming a slurry of nitrocellulose double base propellant ingredients in water, drying said aqueous slurry and subjecting the dried slurry to heated differential rolling to produce said colloided propellant composition;
- b. contacting said colloided propellant composition with a liquid organic solvent consisting essentially of a mixture of one part by weight of acetone and between about one and six parts by weight of benzene, the amount of said solvent ranging from about 10 to 80 percent by weight of said propellant ingredients, until said propellant composition is essentially completely gelatinized;
- c. mixing the gelatinized propellant composition until a mass of semi-dry, crumbly, extrudable particles is obtained;
- d. extruding the particles to the desired shape; and
- e. drying the extruded propellant to substantially remove the solvent, whereby a propellant of high structural strength is obtained.

3,855,374

METHOD OF MAKING MAGNETICALLY-ANISOTROPIC PERMANENT MAGNETS

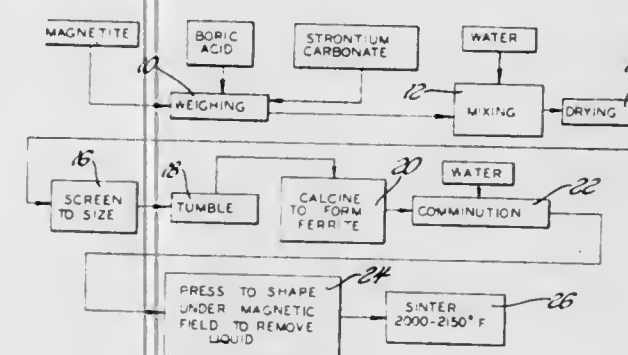
Vladimir Brailowsky, Birmingham, and Erwin A. Alson, Fraser, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 51,751, July 2, 1970, abandoned. This application Dec. 22, 1972, Ser. No. 317,785

Int. Cl. C04b 35/26

U.S. Cl. 264-24

5 Claims



1. A method of making a permanent magnet of the hard ferrite type having a hexagonal crystalline lattice with a magnetoplumbite structure and a formula $\text{SrO} \cdot 6\text{Fe}_2\text{O}_3$, comprising the steps of mixing and milling magnetite with a source of SrO and about 0.3 to 1.5 percent, by weight, of a compound selected from the group consisting of boric acid and boric oxide to form a homogeneous mixture thereof, calcining said mixture, comminuting said calcined mixture to form particles thereof having an average size of about 1 to 2 microns, orienting and forming said particles into a body and sintering said body at a temperature in the range of 2000° to 2150° F.

3,855,375

FLOOR BUILDING SYSTEM

Joseph F. Boux, Burlington, Ontario, Canada, assignor to General Concrete of Canada Limited, Hamilton, Ontario, Canada

Filed Mar. 21, 1973, Ser. No. 343,551

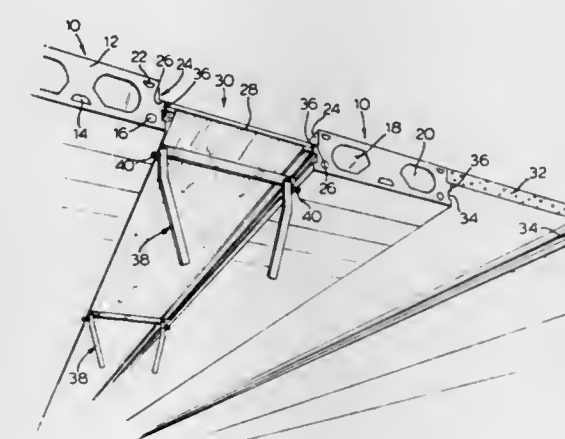
Int. Cl. E04b 1/16

U.S. Cl. 264-35

4 Claims

1. A method of constructing a floor which comprises positioning a plurality of prestressed concrete slabs having upper, lower and side faces in spaced apart locations, each of said slabs having a longitudinally-extending groove in each side face thereof adjacent the lower face thereof, each said groove defining with said lower face a shoulder, supporting each of said slabs in said spaced-apart locations at each end thereof, positioning at least one removable form between each pair of slabs and above said grooves to define therebetween a shallow

elongated channel, for each said at least one form positioning at least two bracket supports in longitudinally spaced-apart positions beneath said form, each of said bracket supports having a beam member contacting said form and two arm members pivotally mounted to said beam member one adjacent each end thereof, positioning the ends of said beam member in the opposed grooves of an adjacent pair of slabs, locking the ends of said beam member in said opposed grooves with said arm members depending generally downwardly from said beam member by moving flange elements on each of said arm members into engagement with said lower face of the



slabs cooperatively with the ends of the beam member to grip said shoulders thereby temporarily supporting each of said forms from below on an adjacent pair of slabs, pouring concrete into each of said channels at least to the depth thereof to define with the prestressed slabs a substantially flat floor surface, allowing the concrete to cure, moving said flange elements out of said engagement thereby releasing each of said bracket supports from said locked position, removing said ends of said beam members from said grooves, removing said beam members from engagement with said forms thereby releasing said temporary support, and separately removing said forms.

3,855,376

PROCESS FOR MAKING STRUCTURAL MATERIAL HAVING A FOAMED INNER LAYER

Kazuo Ono; Tadao Tsuchiya; Akio Kawamoto, all of Tokyo, Japan, and Jun Nakada, Tokorozawa, Japan, assignors to Mitsubishi Rayon Company Ltd. and Shin-Kobe Electric Machinery Company Limited, both of Tokyo, Japan

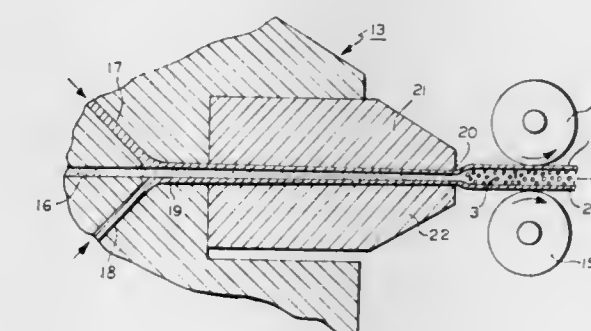
Division of Ser. No. 134,312, April 15, 1971, This application Dec. 8, 1972, Ser. No. 313,261

Claims priority, application Japan, Apr. 24, 1971, 46-39407

Int. Cl. B29d 27/00; B29f 3/00

U.S. Cl. 264-46.1

10 Claims



7. The product of the process of claim 1.

3,855,377

METHOD FOR IMPROVING INTERNAL FOAM FUSION OF MOLDED STYRENE POLYMER FOAM BILLETS

James J. Uebelhart, Beaver, and John P. Spicuzza, Jr., Pittsburgh, both of Pa., assignors to Arco Polymers, Inc., Glenolden, Pa.

Filed Oct. 24, 1972, Ser. No. 300,293

Int. Cl. B29d 7/00

U.S. Cl. 264—51

10 Claims

1. A method of forming a shaped foamed styrene polymer article from partially expanded styrene polymer particles capable of further expansion comprising:

- filling a cold mold that defines the shape of the article with partially expanded styrene polymer particles;
- presteaming the particles to a temperature just below the fusion temperature of the particles by introducing a mixture of 20–50 psig. steam and 30–60 psig. air into the filled mold in a ratio of steam to air pressures of between 20 to 60 and 50 to 40, for a time of between 15 and 40 seconds, whereby the particles are uniformly heated throughout the mold;
- fusing the presteamed particles by introducing 20–50 psig. steam into the mold whereby the particles are caused to further expand and fuse together to form a foamed article conforming to the shape of the mold;
- cooling the mold; and
- removing said shaped, fused article from the mold.

3,855,378

PROCESS FOR PREPARING CELLULAR RUBBER

Barry Topcik, Somerville, N.J., assignor to Cities Service Company, Tulsa, Okla.

Filed June 28, 1973, Ser. No. 374,717

Int. Cl. B29h 7/20

U.S. Cl. 264—54

5 Claims

1. In a process for preparing a cellular rubber by heating a composition comprising (A) a vulcanizable rubber selected from the group consisting of butyl rubber, chlorinated butyl rubber, brominated butyl rubber, ethylene-propylene copolymer, ethylene-propylene diene terpolymer, chlorosulfonated polyethylene, natural rubber, synthetic polyisoprene, polybutadiene, butadiene-styrene copolymer, butadiene-acrylonitrile copolymer, polychloroprene, polyacrylate, polyepichlorohydrin, epichlorohydrin-ethylene oxide copolymer, and mixtures thereof, (B) a vulcanizing agent, and (C) a blowing agent to cure and expand the rubber, the improvement which comprises initiating cure of the rubber by heating the composition under a pressure of about 1,000–2,000 psi in a mold at a temperature within the range of about 220°–400°F. which is lower than that at which substantial decomposition of the blowing agent occurs, removing the partially cured rubber composition from the mold, and completing cure of the rubber at a higher temperature within the range of about 300°–420°F. which permits substantial decomposition of the blowing agent and expansion of the composition.

3,855,379

NOVEL POLYBUTADIENE DERIVATIVE CURABLE WITH IONIZING RADIATION

Kunio Araki, Takashi Sasaki, and Keiji Nishio, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,486

Claims priority, application Japan, Mar. 4, 1971, 46-10964

Int. Cl. C08g 22/00

U.S. Cl. 260—77.5 CR

8 Claims

1. A process for preparing a polybutadiene derivative curable by means of an ionizing radiation, which comprises reacting a polymeric butadiene selected from a butadiene homopolymer, a butadiene copolymer and a mixture thereof, said polymeric butadiene having a number-average molecular weight of about 200–100,000 and containing a functional group having an active hydrogen and not less than about 30

percent of the butadiene units in said polymeric butadiene being 1,2-bond, with an isocyanate compound having an unsubstituted or substituted vinyl group, in the proportion of said isocyanate compound providing not less than about 0.5 equivalent of the isocyanate group per said polymeric butadiene providing 1 equivalent of the active hydrogen.

3,855,380

METHOD FOR MANUFACTURING UNITARY, SEAMLESS, COLLAPSIBLE THERMOPLASTIC TUBES

James O. Gordon, Wheeling, Ohio; Bruce T. Cleavelly, Pittsburgh, Pa., and William B. Niemi, East Longmeadow, Mass., assignors to Wheeling Stamping Co., Wheeling, W. Va.

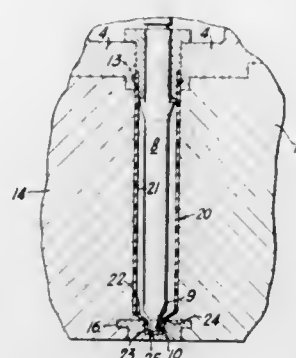
Continuation of Ser. No. 151,281, June 9, 1971, abandoned.

This application Nov. 6, 1973, Ser. No. 413,194

Int. Cl. B29c 17/07, 17/10

U.S. Cl. 264—97

12 Claims



1. A method for injection-blow molding a unitary, seamless, collapsible thermoplastic tube of a predetermined configuration, the tube having a body portion, a shoulder portion, and an externally threaded neck, comprising:

- forming a parison by injection of thermoplastic material into an injection mold cavity, the cavity being defined by separable mold wall sections and an axially disposed parison pin therebetween, said parison pin having a body portion and a shoulder portion, which shoulder portion terminates as a narrow neck, the parison pin terminating in a flared portion at the end opposite the narrow neck portion, said flared portion arranged within a sealing ring whereby a groove is formed, with thermoplastic material filling said groove to form a rib around the parison, during forming of said parison;
- transferring the parison pin with the resultant parison to a blow-mold cavity, the confines of the blow-mold cavity corresponding to the predetermined configuration of the tube and having a threaded neck portion therein;
- injecting fluid through the parison pin to expand the parison to the confines of the mold to shape the parison to the predetermined configuration and form a threaded neck on the tube, while said parison is retained on the parison pin adjacent said flared portion thereof by retention of the rib thereon within said grooves; and
- ejecting the expanded and shaped tube having the desired configuration from the blow-mold cavity.

3,855,381

METHOD OF MAKING PLASTIC CARTRIDGE CASING

George R. Eckstein, Fairfield, and William G. Moyher, Stratford, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Division of Ser. No. 199,913, Nov. 18, 1971, Pat. No. 3,786,755. This application June 28, 1973, Ser. No. 374,336

Int. Cl. B29c 27/30

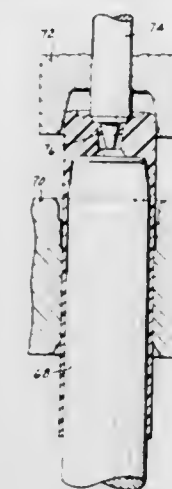
U.S. Cl. 264—138

6 Claims

1. A method of making a cartridge casing comprising the following steps:

- Forming a slug of thermoplastic material having a tubular, thick-walled construction;

- Expanding the slug radially to increase the inner and outer diameters of the tubular slug and to flare one of the ends of the slug outwardly;
- Positioning the non-flared end of said radially expanded slug into the bore of an extrusion die and impacting said slug so as to form a highly oriented tube having an externally flanged end portion;
- Trimming the plastic tube at the end opposite to the externally flanged end portion;
- Forming the flanged end portion of the slug to change the profile thereof and prepare the section for proper finished dimensions and profile control, said profile changes comprising decreasing the outer diameter to a predetermined dimension in order to permit it to be inserted into the die for the following step, repositioning and thickening the externally flanged portion so that the flange is on the inside of the tube and defining a central opening which is of predetermined diameter for the next step, said plastic



slug at this point resembling a roughly formed cartridge casing;

- Pre-heading the roughly formed cartridge casing by inserting the flanged slug into a die and compressing the flanged end into approximate final dimensions and including an extruded, continuous, annular lip means which extends rearwardly from the periphery of the central opening;
- Pushing the shell mouth first through a sizing die in order to decrease the outer diameter of the shell and to correct irregularities in the processing;
- Washing the plastic casings in hot fluid at the desired temperature to relax the stresses in the casing and to stabilize the dimensions at or below that temperature;
- Inserting the pre-headed casing into a metallic cup means and heading the casing to final dimensions including the forcing of said annular extruded lip into the primer opening to form an oriented, continuous, gas sealing ring integral with the inside of the final primer opening.

3,855,382

PROCESS FOR PRODUCING FLAME-RETARDANT ACRYLIC FIBERS

Kenji Takeya, Okayama; Toshiyuki Kobashi, and Kenichi Masuhara, both of Okayama-ken, all of Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Mar. 13, 1973, Ser. No. 340,888

Claims priority, application Japan, Mar. 21, 1972, 47-28295

Int. Cl. D01f 3/10

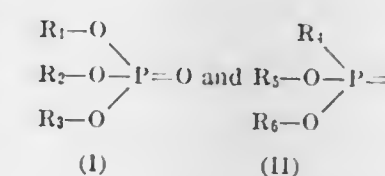
U.S. Cl. 264—210 F

10 Claims

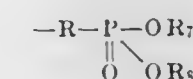
1. An improved process for producing flame-retardant acrylic fibers which comprises

- preparing acrylic fibers in a hydrogel condition by wet-spinning a spinning solution, which consists of acrylonitrile homo- or co-polymers and a concentrated aqueous solution of thiocyanate, containing finely dispersed particles of a halogen-containing polymer selected from the group of homo- and co-polymers of vinyl halide and homo- and co-polymers of vinylidene halide,

- treating said acrylic fibers in a hydrogel condition with at least one organic compound, which can dissolve, swell or plasticize the halogen-containing polymer, selected from the group of an organic phosphate and an organic phosphonate respectively represented by the following general formulas (I) and (II)



wherein R_1, R_2, R_3, R_4, R_5 and R_6 each are alkyl group having one to 20 carbon atoms, haloalkyl group having one to 20 carbon atoms, alkenyl group having one to 20 carbon atoms, arylalkyl group having seven to 20 carbon atoms, alkylaryl group having seven to 20 carbon atoms, or aryl group and may be the same with or different from each other and R_4 may be hydrogen atom or



wherein R is alkylene group having one to six carbon atoms or haloalkylene group having one to six carbon atoms, and R_7 and R_8 each are a same group as R_1 to R_6 , and

- thereafter stretching at least three times its initial length in hot water above 90°C.

3,855,383

SEALING LOCK WASHER AND METHOD OF MANUFACTURING

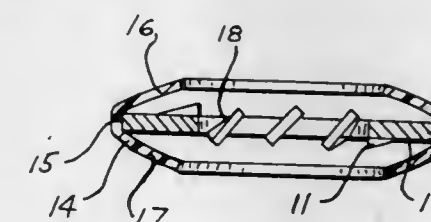
John Victor Stanley Dahlgren, c/o Essdee Products, 98 Ocean Blvd., Atlantic Highlands, N.J. 07716

Filed Apr. 24, 1972, Ser. No. 246,568

Int. Cl. B21d 53/22; B29c 13/00; F16b 39/24

U.S. Cl. 264—230

3 Claims



1. The method of making a self-sealing radial tooth lock washer, which comprises

- supplying a radial tooth lock washer having teeth thereon being twisted to extend beyond opposed axial end faces of the washer,
- positioning over said washer in generally concentric relation thereto a tubular section of heat-shrinkable elastomeric material,
- positioning said tubular section with its axial ends projecting substantially axially beyond the principal surfaces of said washer formed by its axial end faces, and
- subjecting said washer to heat thereby constricting the tubular section by effecting radial shrinkage thereof, whereby portions of said tubular section intermediate its ends are brought into tightly constricted radially compressing relation to the outer peripheral edges of the washer,
- and constricting the radially shrunk tubular section end portions during the heating, thereby causing said end portions to overly in juxtaposition the opposed axial faces of the washer.

3,855,384

PROCESS FOR WINNING COPPER USING CARBON MONOXIDE

Michael Dubeck, Birmingham, and Suk Joong Im, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed June 28, 1972, Ser. No. 267,241

Int. Cl. C019 3/00; C22b 15/12; C01g 1/04

U.S. Cl. 423-42

6 Claims

1. A process for recovering copper values from an acidic solution containing copper ions, iron ions and chloride ions which comprises

1. treating said solution with a carbon monoxide containing gas at elevated temperatures of from about 80° to about 300°C. and pressures of from about 10 psia to about 5,000 psia for a time sufficient to form a copper containing complex as a precipitate, and
2. separating said precipitated complex from said solution, whereby copper values substantially free from iron are obtained.

3,855,385

RECOVERY OF RHENIUM FROM A SPENT CATALYST

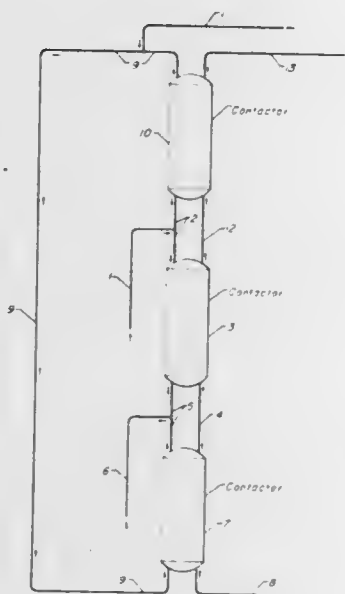
Armand J. Derosset, Clarendon Hills, and Kenneth A. Morgan, Hoffman Estates, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 12, 1973, Ser. No. 415,063

Int. Cl. C01g 47/00, 39/00

U.S. Cl. 423-49

7 Claims



1. A process for the recovery of rhenium from a molybdenum-containing alum solution resulting from the digestion of a spent platinum-rhenium-alumina catalyst in concentrated sulfuric acid, with a platinum-containing residue having been separated by filtration which comprises

- a. charging said alum solution downwardly through a first contactor column in contact with an amine solution charged upwardly therethrough at conditions to maintain an amine/rhenium mole ratio of from about 1.4 to about 1.8 in the lower portion of said column and extracting substantially all of the rhenium contained in said alum solution;
- b. charging the resulting rhenium-containing amine solution upwardly through a second contactor column in contact with an alum solution charged downwardly therethrough and containing sufficient added rhenium to maintain an amine/rhenium mole ratio in the upper portion of said column of from about 0.1 to about 1.2, and stripping substantially all of the molybdenum from said rhenium-containing amine solution, and extracting a major portion of the rhenium contained in said alum solution;

- c. charging the resulting molybdenum-containing alum solution downwardly through the first contactor column in admixture with the first mentioned alum solution charged thereto, and separating and recovering the molybdenum-free rhenium-containing amine solution;
- d. discharging a portion of the molybdenum-containing alum solution passing downwardly through said first contactor column, and charging the remaining portion downwardly through a third contactor column in contact with an amine solution charged upwardly therethrough, extracting substantially all of the molybdenum contained in said alum solution, and charging the resulting alum solution and added rhenium downwardly through said second contactor column in accordance with step (a), and charging the resulting amine solution upwardly through the second contact column in accordance with step (a).

3,855,386

CATALYTIC FUSED SALT EXTRACTION PROCESS FOR REMOVAL OF SULFUR OXIDES FROM FLUE OR OTHER GASES

Raymond H. Moore, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 201,275, Nov. 23, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,471

Int. Cl. B01d 47/00; B01j 9/04; C01b 17/00

U.S. Cl. 423-210.5

7 Claims

1. A process for removing sulfur dioxide from a gaseous stream, comprising the steps of:

- contacting the gaseous stream with a molten liquid homogeneous catalyst extraction salt mixture at a temperature between 400° C. and 500° C. having (1) a dissolved oxygen compound of vanadium to catalytically oxidize the sulfur dioxide to sulfur trioxide and (2) a dissolved potassium normal sulfate to solvate the sulfur trioxide to extract the sulfur trioxide from the gaseous stream and form a sulfur dioxide depleted gaseous stream and a sulfur trioxide loaded molten liquid salt mixture;
- separating the sulfur trioxide loaded molten liquid salt mixture and the sulfur dioxide depleted gaseous stream before the molten salt mixture becomes saturated with sulfur trioxide; and
- electrolytically disassociating the separated sulfur trioxide loaded molten liquid salt mixture to produce a gaseous effluent of sulfur trioxide and to regenerate at least a portion of the potassium normal sulfate.

3,855,387

METHOD FOR REMOVING MERCURY FROM INDUSTRIAL GASES

Charles Anthony Brockmiller; Robert E. Lund, and John Edward Fitzsimmons, all of Monaca, Pa., assignors to St. Joe Minerals Corporation, New York, N.Y.

Filed Sept. 5, 1973, Ser. No. 394,514

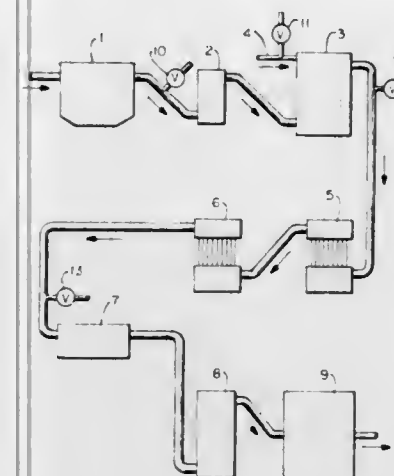
Int. Cl. B01d 53/34

U.S. Cl. 423-210

4 Claims

1. The method of removing mercury from sulfur dioxide containing industrial gas preparatory to catalytic oxidation of

the sulfur dioxide which comprises admixing hydrogen sulfide with the gas and thereafter subjecting the gas to a suspended



solids removal operation prior to the catalytic oxidation of the sulfur dioxide.

3,855,388

METHOD OF PREPARING AN OXIDATION CATALYST FOR PARTIALLY COMBUSTED GASES

Edward J. Rosinski, Deptford, N.J., assignor to Mobil Oil Company, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,743

Int. Cl. B01j 11/22

U.S. Cl. 423-213.2

5 Claims

1. A method of preparing a catalyst containing from about 10 to 30 percent by weight copper chromite, this method comprising intimately admixing in the solid state (1) a support comprising primarily alumina at least 20 percent of which is in the hydrated state and (2) a source of copper chromite, said copper chromite being of the formula $\text{CuO}/\text{Cr}_2\text{O}_3$ wherein the molar ratio of CuO to Cr_2O_3 is from 0.3-3:1, said source of copper chromite being selected from the group consisting of copper chromite and a mixture of a copper-containing compound and a chromium-containing compound, which mixture on calcination yields copper chromite, said copper-containing compound being selected from the group consisting of CuO , $\text{Cu}_2(\text{OH})_2\text{O}$, $\text{Cu}(\text{OH})_2$, and mixtures thereof, and said chromium-containing compound being selected from the group consisting of Cr_2O_3 , $\text{Cr}_2(\text{OH})_2\text{O}$, $\text{Cr}(\text{OH})_3$, $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$, $(\text{NH}_4)_2\text{CrO}_4$, and mixtures thereof, the proportions of said support and said source of copper chromite being such as to provide from 10 to 30 percent by weight of copper chromite in the final dried catalyst, shaping the resulting product, drying said product to remove substantially all of the water therefrom and calcining said product.

3,855,389

METHOD OF TREATING EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Richard L. Klimisch, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1972, Ser. No. 318,680

Int. Cl. B01d 53/34

U.S. Cl. 423-213.5

3 Claims

1. A method for catalytically reducing nitrogen oxides contained in internal combustion engine exhaust gases while minimizing the formation of residual ammonia comprising, passing said exhaust gases at temperatures above about 650° C into contact with a catalyst consisting essentially of alumina having a surface area from 10 to 300 square meters per gram containing, by weight, about 5 to 25 percent nickel and a small, but catalytically effective amount up to about 1 percent of palladium.

3,855,390

PROCESS FOR PURIFYING A GAS CONTAINING HYDROGEN CYANIDE

Mitsuaki Matumoto, and Tadayoshi Aono, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

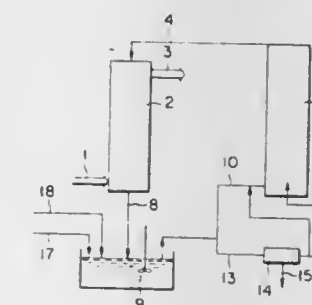
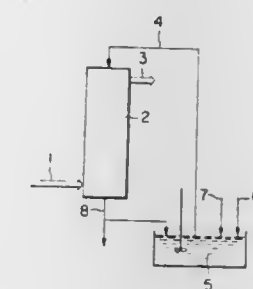
Filed Oct. 13, 1972, Ser. No. 297,264

Claims priority, application Japan, Oct. 18, 1971, 46-82233

Int. Cl. C01b 3/04, 3/20; C02b 1/28; C01f 11/46

U.S. Cl. 423-236

5 Claims



1. A method for reducing the COD level of an aqueous solution containing thiocyanate comprising oxidizing the thiocyanate present by mixing the solution with a gas containing free oxygen such that there are more than two moles of free oxygen present for each mole of thiocyanate in the solution and heating the mixture at a temperature of at least 150°C and a pressure sufficient to maintain the reaction mixture in the liquid phase.

3,855,391

SLUDGE STABILIZATION WITH GYPSUM

Joseph G. Selmecki, Pittsburgh, and Daniel W. Kestner, Coraopolis, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1973, Ser. No. 326,020

Int. Cl. C01b 17/60; C04b 11/02

U.S. Cl. 423-242

4 Claims

1. Method of disposing of wastes from a sulfur-fuel burning power plant utilizing a sulfur dioxide scrubber which generates finely divided calcium-sulfur compound containing waste products which are disposed in an aqueous sludge which is collected for disposal, the method comprising:

- a. incorporating 0.1-1000 parts per million of finely divided oxidizing catalyst selected from the group comprising manganese, ferric, nickel, cobalt and copper oxides, and sulfate, nitrate and chloride salts of nickel, cobalt and copper, in the scrubbing liquor, which catalyst is selected to ensure that a high percentage of calcium sulfate is formed in the scrubber;
- b. separating a portion of between 1-20 percent of the discharged calcium sulfate containing sludge from the remainder, drying said portion and treating the dried calcium sulfate at from 260°-360°F for a time sufficient to convert the calcium sulfate to plaster of paris;
- c. admixing the plaster of paris with the remainder of the generated sludge, and
- d. dewatering and curing the admixed sludge to stabilize the solids therein as a landfill material.

3,855,392

METHOD OF REMOVING BORIC ACID AND BORIC ACID SALTS FROM AQUEOUS MAGNESIUM CHLORIDE SOLUTIONS

Finn Enok Folkestad, Heistad, Norway; Kjell Olav Loiten; Glor Thorvald Mejdell, and Asbjorn Torvund, all of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway
Filed Sept. 24, 1971, Ser. No. 183,683

Claims priority, application Norway, Sept. 29, 1970, 3686/70

Int. Cl. C01b 35/00; B01d 11/04

U.S. Cl. 423—497

7 Claims

1. A method of removing boric acid and salts thereof from an aqueous magnesium chloride solution by liquid-liquid extraction using an organic extractant, followed by re-extraction of boron from the organic phase, consisting essentially of employing as extractant at least one univalent aliphatic alcohol having 7 to 12 carbon atoms in the molecule diluted with petrol ether in the ratio of 1 part by volume of alcohol in 1 to 20 parts by volume of petrol ether, the extraction being effected at a pH not above 7, while the subsequent re-extraction of boron from the organic phase is effected at a pH not below 7.

3,855,393

PROCESS FOR PRODUCING LOW THERMAL CONDUCTIVITY HIGH STRENGTH SILICA FOAM

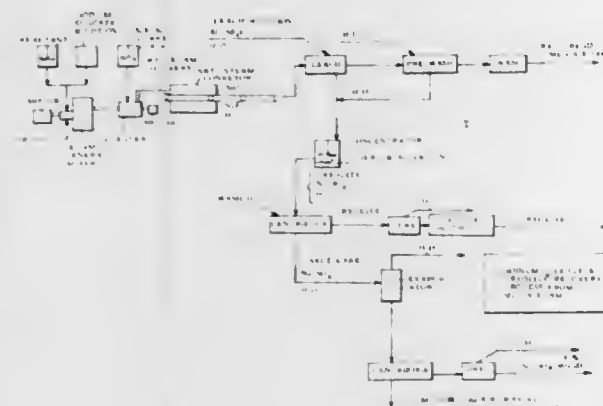
Ramesh P. Rao, San Antonio, Tex., assignor to Fiberglas Canada Limited, Ontario, Canada

Filed Dec. 9, 1971, Ser. No. 206,438

Int. Cl. C01b 33/12

U.S. Cl. 423—339

4 Claims



1. In a process for the preparation of inorganic silica foam wherein an aqueous alkali metal silicate chosen from sodium and potassium silicates is foamed and said foam is cured in the presence of an alkali metal or alkaline earth metal silico-fluoride insolubilizer, resulting in a rigid foamed structure having cell walls formed of silica, and containing interstitial alkali metal fluoride reaction product, and treating said cured foam for the removal of alkali metal fluoride, the improvement which comprises preventing degradation and weakening of the strength and insulation properties of the foamed mass by carrying out said leaching step prior to the occurrence of substantial damaging crystal growth of alkali metal fluoride in the wet foamed mass, and by leaching the cured, wet foam with an aqueous solution or colloidal aqueous suspension of an acid or acidic salt leaching agent, said leaching agent being non-reactive with respect to silica, said leaching agent having the ability to form water soluble or water dispersible fluoride compounds or complexes having reduced affinity for the silica structure.

3,855,394

SILICA PIGMENTS AND PREPARATION THEREOF

Oliver W. Burke, Jr., P.O. Box 2266, Fort Lauderdale, Fla. 33061
Division of Ser. No. 864,954, Oct. 3, 1968, Pat. No. 3,719,741, which is a continuation of Ser. No. 698,358, Jan. 16, 1968, abandoned. This application Nov. 16, 1972, Ser. No. 307,083
Int. Cl. C01b 33/12, 33/17, 33/18

U.S. Cl. 423—339

7 Claims

1. A process for the production of silica pigment which comprises

- maintaining an aqueous solution of alkali metal silicate at a first average temperature within the liquid range of water during a first stage of acidulation while feeding carbon dioxide into the solution in an amount sufficient to form primary silica particles in colloidal suspension in the solution and to provide the appearance of a Tyndall effect in the solution, the time span from the commencing of the feeding of carbon dioxide until the appearance of the Tyndall effect being 30 to 300 minutes
- maintaining the composition produced by step (a) at a second, higher average temperature within the liquid range of water during a second stage of acidulation while continuing the feeding of carbon dioxide into the composition, said second stage of acidulation beginning with the appearance of the Tyndall effect and ending when sufficient carbon dioxide has been fed to effect precipitation as pigment of about 10 percent of the silica content of the composition, said second average temperature being at least 10° C. higher than said first average temperature, and the duration of said second stage being about 30 to 300 minutes,
- continuing the precipitation of the silica by continuing the feeding of carbon dioxide into the composition produced by step (b) until at least 90 percent of the silica has precipitated as pigment, while maintaining the temperature of the composition within the liquid range of water,
- continuing the feeding of carbon dioxide into the composition produced by step (c) until at least enough thereof has been fed to convert substantially all of the Na₂O content of the composition to Na₂CO₃, and
- recovering the precipitated silica pigment from the mother liquor.

3,855,395

PRODUCTION OF SILICON NITRIDE FROM RICE HULLS

Ivan B. Cutler, Penn, England, assignor to University of Utah, Salt Lake City, Utah
Filed Sept. 6, 1972, Ser. No. 286,641 The portion of the term of this patent subsequent to Aug. 21, 1990, has been disclaimed.

Int. Cl. C01b 21/06; B01j 17/00

U.S. Cl. 423—344

4 Claims

1. A method for producing silicon nitride from rice hulls, comprising the steps of:

- placing rice hulls within an enclosure having an oxygen free atmosphere;
- heating the rice hulls to a temperature within the range on the order of about 1100°C to 1350°C; and simultaneously exposing the heated rice hulls to gaseous nitrogen until the silicon in the rice hulls is changed to silicon nitride; and
- separating the silicon nitride.

3,855,396

METHOD OF CONTINUOUSLY PRODUCING COBALT CARBONYL HYDRIDE

Wilhelm Kniese, Limburgerhof; Juergen Plueckhan, Beindersheim; Rudolf Kummer, Frankenthal; Hans Juergen Nienburg, Ludwigshafen, and Peter Tavs, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda Fabrik Aktiengesellschaft, Rhenland, Pfalz, Germany
Filed Jan. 24, 1972, Ser. No. 220,442

Claims priority, application Germany, Jan. 26, 1971, 2103454

Int. Cl. C01g 1/04, 51/02

U.S. Cl. 423—417

6 Claims

1. In an improved process for the continuous production of cobalt carbonyl hydride by treatment of an aqueous solution of a cobalt salt selected from the group consisting of cobalt sulfate, cobalt chloride, cobalt nitrate, and a lower fatty acid salt of cobalt with an excess of carbon monoxide and hydrogen at a temperature of from 50° to 200°C and a pressure of from 50 to 500 atmospheres gauge in the presence of cobalt carbonyl, wherein the improvement comprises carrying out the treatment in the presence of an activated carbon, a zeolite or a basic ion exchanger which has been loaded with cobalt carbonyl, and maintaining during the treatment a loading of 0.5 to 50 grams of cobalt in the form of one of said cobalt salts per hour per kilogram of said activated carbon, said zeolite, or said basic ion exchanger.

3,855,397

METHOD OF PRODUCING SODIUM CARBONATE AND BICARBONATE SPHERULES FROM BRINE

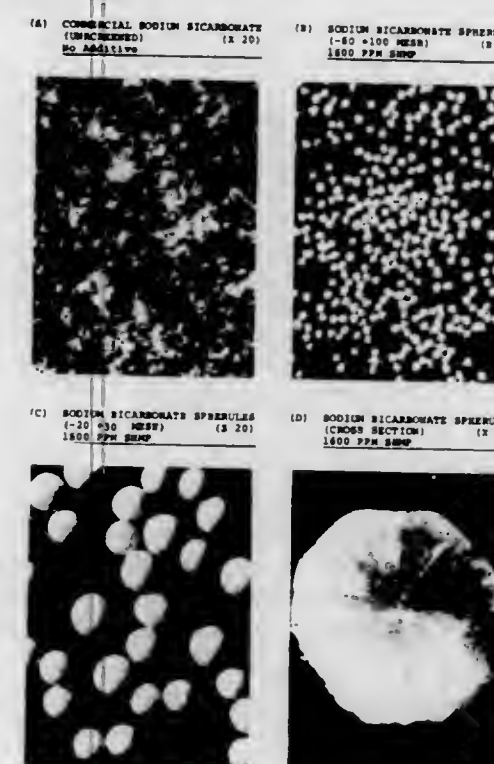
Robert J. Hoffman, Liverpool, and Alan G. Follows, Camillus, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,453

Int. Cl. C01d 7/10, 7/40, 7/12

U.S. Cl. 423—422

8 Claims



1. A process for making sodium bicarbonate in the form of crystalline spherules from a solution containing between about 15 to 25 percent of sodium salt selected from the group consisting of sodium chloride and sodium carbonate, which comprises adding from 200 to 2500 parts per million by weight of the solution of a water-soluble alkaline phosphorus-containing compound selected from the group consisting of alkali metal and alkaline earth metal phosphate, hypophosphates, phosphites, hypophosphites and phosphides, and carbonating the solution under condition to effect conversion of the sodium salt to sodium bicarbonate, and recovering the sodium bicarbonate substantially in the form of crystalline spherules.

3,855,398

SODIUM CARBONATE AND BICARBONATE SPERULITES FROM CHLORINE ELECTROLYTIC CELL LIQUORS

Robert J. Hoffman, Liverpool, and Alan G. Follows, Camillus, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,454

Int. Cl. C01d 7/100, 7/12, 7/40

U.S. Cl. 423—422

7 Claims

1. A process for producing sodium bicarbonate in the form of crystalline spherules from a sodium hydroxide/sodium chloride solution comprising:

- carbonating the solution under conditions sufficient to form sodium carbonate;
- introducing 200 to 2,500 parts per million (ppm) by weight of a water-soluble alkaline phosphorus-containing compound selected from the group consisting of alkali metal and alkaline earth metal phosphates, hypophosphates, phosphites, hypophosphites and phosphides;
- continuing the carbonation of the solution until substantially all of the sodium carbonate present in the solution has been converted to sodium bicarbonate; and
- recovering the resulting sodium bicarbonate from the carbonated solution.

3,855,399

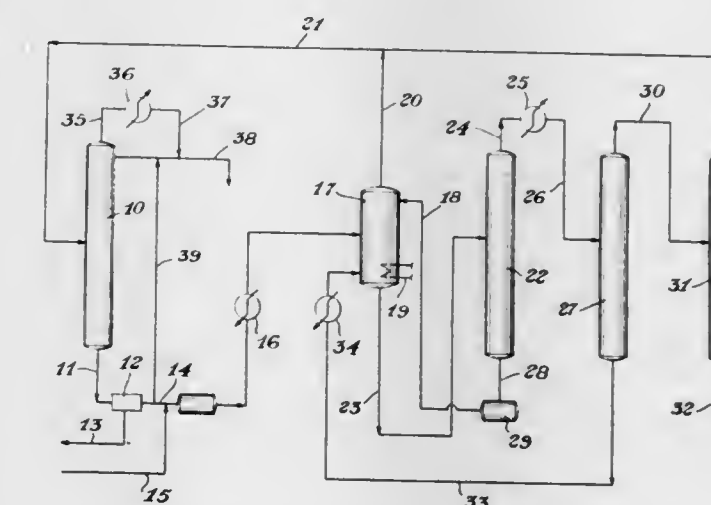
PROCESS OF PRODUCING HYDROGEN FLUORIDE FROM FLUOSILICIC ACID

A. Theodorus van Eiji, Terneuzen, Netherlands, assignor to Dow Chemical (Nederland) B.V., Terneuzen, Netherlands
Filed Aug. 16, 1973, Ser. No. 389,100

Int. Cl. C01b 7/22

U.S. Cl. 423—483

7 Claims



1. A method of preparing hydrofluoric acid from fluosilicic acid comprising

- commingling in an absorber at least one glycol of the group consisting of ethylene glycol, propylene glycol or diethylene glycol with aqueous fluosilicic acid or a mixture of aqueous fluosilicic acid and a minor quantity of aqueous hydrofluoric acid while maintaining a temperature of from about 120° to about 130°C. at the top of the absorber, and from about 175° to about 190°C. in the bottom portion, thereby disproportionating the fluosilicic acid into silicon tetrafluoride and hydrofluoric acid,
- removing an overhead stream containing substantially all of the silicon tetrafluoride and some water from the top of the absorber,
- feeding the silicon tetrafluoride and water to a reactor and thereby convert the silicon tetrafluoride to aqueous fluosilicic acid and silicon dioxide, and recycling the fluosilicic acid to step a,
- passing the glycol enriched with aqueous hydrofluoric acid from step a into a distillation column,

- e. distilling substantially all of the hydrofluoric acid from the glycol,
- f. recycling the glycol to the absorber of step a,
- g. converting the hydrofluoric acid of step e into aqueous and anhydrous fractions and returning the aqueous fraction of step g to the absorber of step a.

3,855,400

PURIFICATION OF HYDROCHLORIC ACID

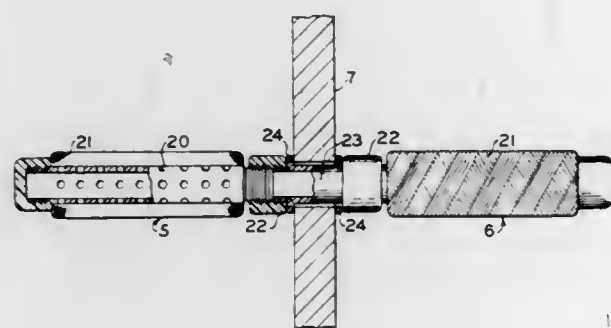
Roberto Paolieri, Youngstown; Todd A. Pitts, Snyder, and James W. McCloskey, Buffalo, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,221

Int. Cl. B01j 9/04

U.S. Cl. 423-488

14 Claims



1. A system for the purification of crude aqueous hydrochloric acid containing insoluble organic material suspended therein and chlorine and soluble organic material dissolved therein comprising a coalescer and a stripper:

said coalescer comprising a vessel provided with an inlet for said crude hydrochloric acid and an outlet for partially purified hydrochloric acid, a porous coalescing means disposed in horizontal arrangement within said coalescer between said inlet and said outlet said coalescing means consisting essentially of a bank of coalescing units each consisting of a filter element and a coalescing element attached on opposite sides of a solid tube sheet said elements being of substantially identical design and comprising a perforated pipe section the perforations of which being covered with a porous winding of acid resistant material, said coalescing means being disposed so as to form two separate compartments within said coalescer whereby all the liquid introduced into the coalescer passes through the coalescing means before exiting from the coalescer, a discharge port disposed in the coalescer in the lower portion thereof at a point downstream from said coalescing means for discharge of coalesced organic material;

said stripper comprising a vertical column having an inlet for partially purified hydrochloric acid in the upper portion thereof and an outlet in the lower portion thereof for discharging purified hydrochloric acid, an inlet in the lower portion of the stripper for admitting inert gas and an outlet in the upper portion of the stripper for exiting inert gas containing desorbed chlorine and soluble organic material;

and means for conveying partially purified hydrochloric acid from the outlet of the coalescer to the inlet in the upper portion of the stripper.

3,855,401 PROCESS FOR MANUFACTURING ALUMINUM FLUORIDE

Hiroshi Aiso, Kawanishi; Takumi Takemura, and Toshinobu Takeuchi, both of Osaka, all of Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka-shi, Japan

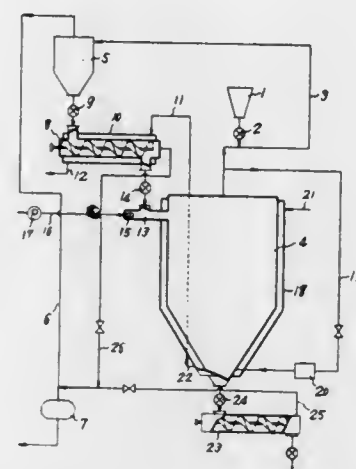
Filed Dec. 20, 1971, Ser. No. 209,731

Claims priority, application Japan, Dec. 23, 1970, 45-128265

Int. Cl. C01f 7/50

U.S. Cl. 423-489

8 Claims



1. A process for manufacturing aluminum fluoride, which comprises contacting at 300° to 550°C particulate alumina hydrate with hydrogen fluoride to produce aluminum fluoride by continuously introducing particulate alumina hydrate preheated to a temperature of from 250° to 450°C into a reaction zone and continuously spraying at least stoichiometric amounts of hydrogen fluoride in the liquid state or hydrofluoric acid having a concentration of more than 80 percent by weight onto the particulate alumina hydrate continuously fed and separating the resulting aluminum fluoride in the form of particles from gaseous substances.

3,855,402

PROCESS FOR PRODUCTION OF TRIBASIC LEAD SULPHATE MONOHYDRATE

Geoffrey Charles Bratt, West Moonah, Tasmania, Australia, assignor to Electrolytic Zinc Company of Australasia Limited, Melbourne, Victoria, Australia

Filed Oct. 8, 1971, Ser. No. 187,809

Claims priority, application Australia, Oct. 12, 1970, 2824/70

Int. Cl. C01g 21/20

U.S. Cl. 423-559

3 Claims

1. A process for the production of tribasic lead sulphate monohydrate comprising reacting lead sulphate with a reagent selected from the group consisting of aqueous ammonia, mixtures of aqueous ammonia and solid ammonium sulphate, and solutions containing aqueous ammonia and ammonium sulphate, the reagent containing a minimum of 0.24 ml 35% aqueous ammonia per gram of lead sulphate, and the temperature of the reaction being maintained between ambient and 200°C, with agitation.

3,855,403

OXYGEN ENRICHMENT PROCESS

Jack Huebler, Deerfield, Ill.; Lester G. Massey, Moreland Hills, Ohio, and Paul B. Tarman, Elmhurst, Ill., assignors to Consolidated Natural Gas Service Co., Cleveland, Ohio

Division of Ser. No. 242,153, April 7, 1972, Pat. No. 3,773,680. This application July 30, 1973, Ser. No. 383,815

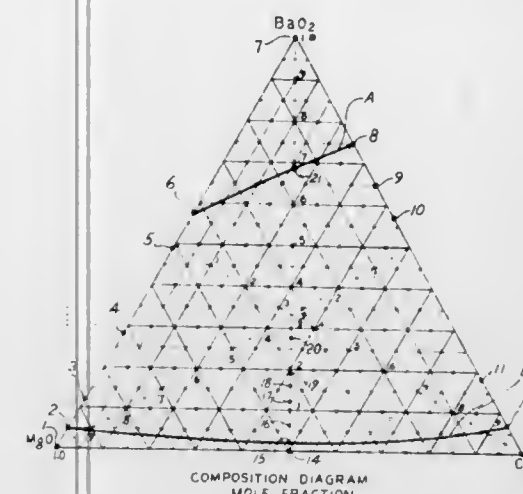
Int. Cl. C01b 13/08, 15/04

U.S. Cl. 423-579

21 Claims

1. In a method of producing oxygen by alternately contacting air with an oxygen acceptor composition and thereafter

stripping said oxygen from said composition, under conditions effecting reversible acceptance and removal of oxygen therefrom.



the improvement which comprises using as said acceptor composition a mixture of BaO₂, MgO, and CaO in which the mole ratio of CO₂ to BaO₂ is less than 1.0, and the mole percentages of CaO, BaO₂ and MgO lie between the curves A and B in FIG. 1.

3,855,404

PROCESS AND APPARATUS FOR THE CONTACTING OF TWO OR MORE PHASES

Cornel-Constantin N. Rotaru, Savinesti-Piatra Neamt, Romania, assignor to Centrala Industriala De Fibre Chimice, Savinesti, Romania

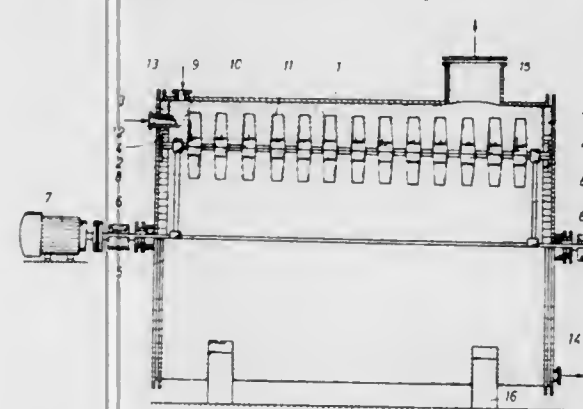
Filed Sept. 15, 1972, Ser. No. 289,223

Claims priority, application Romania, Sept. 24, 1971, 68277

Int. Cl. B01f 3/04, 7/14; B01j 1/00

U.S. Cl. 423-659

6 Claims



1. An apparatus for the continuous contacting of at least two different reaction phases comprising:
 - a housing having a generally horizontal axis;
 - at least one inlet for reactants opening into said housing;
 - at least one outlet for products leading from said housing;
 - a central axial shaft rotatable in said housing;
 - at least one planetary agitator in said housing, said agitator comprising:
 - a planetary gear within said housing,
 - a planetary shaft within said housing operatively connected to said gear, and
 - a plurality of axially spaced radially projecting blades mounted on said planetary shaft and orbiting short of said central shaft;
 - a pair of generally radial arms fixed to said central shaft and projecting therefrom;
 - means for journaling said planetary shaft on the free ends of said arms and radially spaced from said central shaft;
 - a gear fixed in said housing meshing with said planetary gear for rotating said planetary shaft upon orbital motion of the planetary gear; and

means for rotating relatively said housing and said central shaft to cause said planetary shaft to rotate about its axis and simultaneously to orbit said central shaft.

3,855,405

RADIOGRAPHIC CONTRAST COMPOSITION CONTAINING 2',6'-DIIDO-DL-THYRONINE AND METHODS OF USE THEREOF

Glenn D. Dobben, South Holland, Ill., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,406

Int. Cl. A61k 27/08

U.S. Cl. 424-5

8 Claims

1. An encephalomyelographic, bronchographic or lymphangiographic composition for radiography comprising about 200 to 500 mg./ml. of 2',6'-diiodo-dl-thyronine in a sterile physiologically acceptable vehicle for injection or instillation.

3,855,406

THIAXANTHENE DERIVATIVES

Stuart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of Nottingham, England, assignors to The Boots Company, Limited, Nottingham, England

Division of Ser. No. 191,111, Oct. 20, 1971, Pat. No. 3,754,005, which is a continuation-in-part of Ser. No. 662,587,

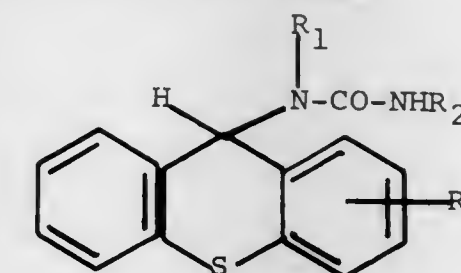
Aug. 23, 1967, Pat. No. 3,644,420. This application Apr. 19, 1973, Ser. No. 352,504

Int. Cl. A61k 27/00

U.S. Cl. 424-35

13 Claims

1. A therapeutic composition useful for treating peptic ulcers which comprises an effective anti-secretory amount of a thioxanthene compound of the formula



in which R₁ is a member selected from the group consisting of hydrogen, halogen, alkyl containing up to 7 carbon atoms and alkoxy containing up to 7 carbon atoms;

R₂ is a member selected from the group consisting of hydroxy and alkanoyloxy containing up to 7 carbon atoms; and

R₂ is a member selected from the group consisting of hydrogen and alkyl containing up to 7 carbon atoms; in association with a pharmaceutically acceptable excipient.

3,855,407

METHOD OF PROTECTING THE SKIN WITH 5-(3,3-DIMETHYL-2-NORBORNYLIDENE)-3-PENTENE-2-ONE

Erich Klein, Holzminden, Germany, assignor to Dragoco Spezialfabrik konz. Riech- und Aromastoffe Gerberding & Co. GmbH, Holzminden, Germany

Continuation-in-part of Ser. No. 791,781, Jan. 16, 1969, abandoned. This application Jan. 11, 1972, Ser. No. 216,923

Claims priority, application Austria, Aug. 8, 1968, 7757/68

Int. Cl. A61k 9/06; A61l 23/00

U.S. Cl. 424-59

2 Claims

1. A method of protecting the human skin against the action of erythema-producing irradiation, said method comprising applying to the human skin an effective amount of a preparation comprising a cosmetically acceptable carrier and from about 0.005 to 5.0% of 5-(3,3-dimethyl-2-norbornylidene)-3-pentene-2-one incorporated in said carrier.

3,855,408 POULTRY VACCINE

S. K. Maheswaran, Minneapolis, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed July 16, 1973, Ser. No. 379,356
Int. Cl. A61k 23/00

U.S. Cl. 424-92

4 Claims

1. A method for prophylactic treatment of fowl cholera which comprises administering to poultry a vaccine comprising a small but effective amount of live stable avirulent anti-bacterial encapsulated *Pasteurella multocida* mutant strain M-2283.

3,855,409

METHOD FOR TREATING HYPERCHOLESTEROLEMIA
Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Schmid Laboratories, Inc., Little Falls, N.J.

Division of Ser. No. 24,797, April 1, 1970, abandoned, which is a continuation of Ser. No. 627,313, March 31, 1967, Pat. No. 3,627,879. This application Sept. 2, 1971, Ser. No. 177,512

Int. Cl. A611 21/00

U.S. Cl. 424-121

3 Claims

1. A process for treating hypercholesterolemia in a large mammal afflicted with hypercholesterolemia which comprises orally administering an effective dose for treating hypercholesterolemia of filipin to said mammal.

3,855,410

METHOD FOR THE PRODUCTION AND ISOLATION OF ANTIBIOTIC AV290 SULFATE

Murray Dann; Joseph Daniel Korshalla, both of Pearl River, and Ping Shu, Pomona, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 4, 1972, Ser. No. 250,222

Int. Cl. A61k 21/00

U.S. Cl. 424-124

4 Claims

1. A process of recovering highly purified antibiotic AV290 sulfate from a fermentation whole harvest mash containing antibiotic AV290 which comprises the steps of:

- producing a fermentation liquor by clarifying the whole harvest mash,

- adjusting the pH of the fermentation liquor to about 6 with sulfuric acid,
- feeding the fermentation liquor to a bed of carboxymethyl substituted cross-linked dextran gel grains having an average diameter in the dry state within the range of from about 0.05 to about 0.5 mm., immersed in an aqueous medium, the said fermentation liquor being supplied to the bed in a volume corresponding to from about 0.1 gram to about 1.0 gram of antibiotic AV290 per gram of a dry gel,
- displacing liquid from the bed by the said fermentation liquor,
- thereafter feeding pH 1.4-2.0 aqueous sulfuric acid eluant to the bed to displace a further amount of liquid from the bed,
- collecting a fraction of the eluate containing antibiotic AV290 sulfate,
- adjusting the pH of the eluate fraction to about 6 with barium hydroxide,
- removing the precipitated barium sulfate,
- adsorbing the antibiotic activity onto granular activated carbon from the clarified eluate fraction,
- eluting the antibiotic activity from the granular activated carbon with acetone:water (2:3) solution, and
- isolating antibiotic AV290 sulfate from the acetone:water eluate;

steps (a) through (j) being carried out at a temperature of from about 15° C. to about 30° C.

3,855,411

METHOD OF STABILIZATION OF 6-(1-AMINOCYCLOHEXANECARBOXAMIDO) PENICILLANIC ACID AND RESULTANT COMPOSITIONS

Surendra M. Bahal, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,562

Int. Cl. A61k 21/00

U.S. Cl. 424-176

3 Claims

1. A stabilized aqueous suspension comprising:

- At least 2.5 to 10 percent w/v of anhydrous 6-(1-aminocyclohexanecarboxamido) penicillanic acid;
- about 70-86 percent w/v of sucrose; and
- A buffer adjusting the pH to a range between about 4 to 6.5.

ELECTRICAL

3,855,412

CURRENT EQUALIZATION MEANS AND METHOD FOR UNEQUALLY LOADED CABLES IN AN ELECTRIC GLASS MELTING FURNACE

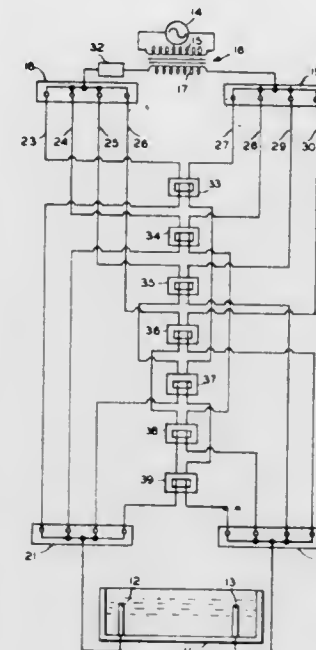
John F. Maddux, Heath, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Oct. 29, 1973, Ser. No. 410,865

Int. Cl. C03b 5/02

U.S. Cl. 13-6

13 Claims



1. An electric furnace for resistive heating of a molten material having a negative temperature coefficient of resistance, comprising:

- a chamber for containing said material;
- a pair of electrodes immersed in said material;
- a source of alternating current;
- current carrying means comprising plural paths connected between each of said pair of electrodes and said source; and
- magnetic coupling means for inductive coupling of a magnetic field generated by each current path of said current carrying means in opposition to at least one other magnetic field generated by another current path of said current carrying means.

3,855,413

WIRE PROTECTOR FOR MOBILE HOMES AND THE LIKE

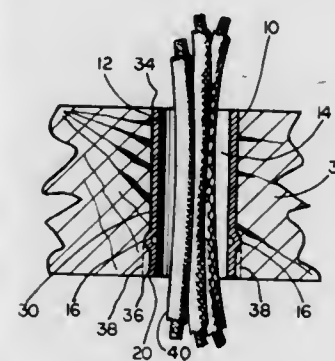
William R. Baillie, Hoffman Estates, Ill., assignor to Blue Ribbon Industries, Inc., Arlington Heights, Ill.

Filed Mar. 15, 1973, Ser. No. 341,476

Int. Cl. H02g 3/04

U.S. Cl. 174-48

4 Claims



1. An electrical wire protecting installation in a mobile home or the like including:

- a wooden structural member forming a support for a partition or the like and through which electrically conductive wires are adapted to be passed,
- a cylindrical passageway in the structural member passing fully through the same, the walls defining said passageway consisting of the raw wood of said structural member and
- a metal wire protector tightly wedged in said passageway and comprising:
 - a hollow right cylindrical tubular body member formed of rolled sheet steel and
 - having a closed axially extending seam formed at abutting ends of the sheet member from which the body is formed,
 - the outer diameter of the body member being the same as the inner diameter of the passageway and the axial length of the body member being substantially the same as the axial length of the passageway,
 - the axial ends of the body member being open,
 - and there being a plurality of circumferentially spaced generally spherical upset protrusions formed on the exterior of the body member,

the wire protector adapted to be installed by driving the same into the passageway so that the protrusions dig into the wooden walls defining the passageway to wedge the protector in place without substantial tearing of fibers and provide a protected metal passageway for electric wires through the structural member.

3,855,414

CABLE ARMOR CLAMP

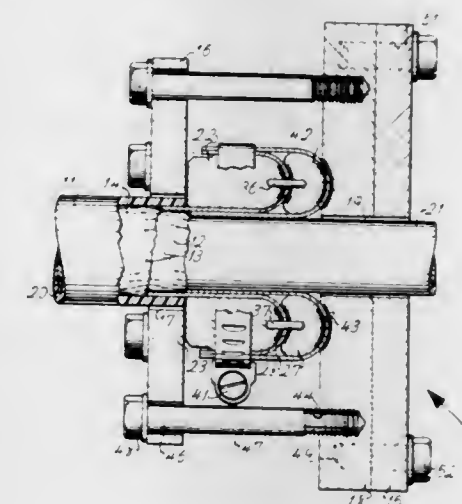
Leon L. Alleva, and Ralph G. D'Ascoli, both of Yonkers, N.Y., assignors to The Anaconda Company, New York, N.Y.

Filed Apr. 24, 1973, Ser. No. 354,063

Int. Cl. H02g 15/08

U.S. Cl. 174-89

6 Claims



1. Apparatus for securing inner and outer overlying layers of cable armor wires to a bulkhead, comprising:

- a first heavy metal plate having a passageway for said cable, said cable being covered by said layers of armor wires,
- a second heavy metal plate having a passageway for said cable absent said armor wires, said second plate having a concave area surrounding said passageway,
- a first heavy metal ring fitting around the outer layer of said armor wires, said ring being positioned between said first and said second plates and having a flat surface facing toward said first plate and a convex surface facing away from said first plate and toward said second plate,
- a second heavy metal ring positioned between said first and said second plates fitting around the inner layer of said armor wires, said second ring being concentric to and

axially displaced from said first ring, said second ring having a concave surface matchingly facing toward said convex surface of said first ring and also having a convex surface facing away from said first ring matching said concave area of said second plate,

E. means clampingly urging together said first and said second plates, thereby securing said armor wires of said outer layer between said convex surface of said first ring and said concave surface of said second ring, said armor wires of said outer layer being folded radially around said first ring, and securing said armor wires of said inner layer between said convex surface of said second ring and said concave area of said second plate, said armor wires of said inner layer being folded radially around said second ring, and

F. means for securing said second plate to said bulkhead.

3,855,415

COMMUNICATION SOUND SYSTEM CONTINUOUSLY MONITORED

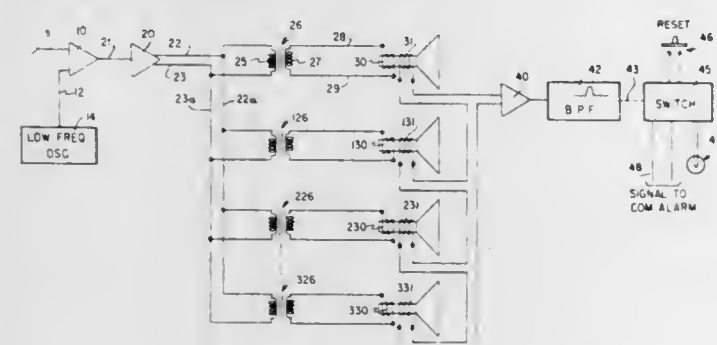
Robert C. Fox, Batavia; James S. Altman, Hinsdale, and Charles W. King, St. Charles, all of Ill., assignors to Du Kane Corp., St. Charles, Ill.

Filed July 20, 1973, Ser. No. 380,995

Int. Cl. H04r 29/00

U.S. Cl. 179-1 MN

5 Claims



4. A method of monitoring a sound system communication channel terminating in a loudspeaker of the dynamic type having a voice coil axially movable within an annular magnetic air gap, said method comprising injecting into said channel signal currents at a fixed frequency and at a low energy level compared to sound currents at different frequencies in said channel, feeding said signal currents to said speaker to produce air waves below audibility, deriving potentials incident to voice coil motion in said speaker at frequencies of voice coil vibrations, filtering said derived potentials to suppress frequencies outside of said signal frequency and feeding such potentials to an alarm system of the type whose condition is responsive to the presence or absence of signal frequency potentials.

3,855,416

METHOD AND APPARATUS FOR PHONATION ANALYSIS LEADING TO VALID TRUTH/LIE DECISIONS BY FUNDAMENTAL SPEECH-ENERGY WEIGHTED VIBRATTO COMPONENT ASSESSMENT

Fred H. Fuller, 4450 S. Park St., Chevy Chase, Md. 20014

Filed Dec. 1, 1972, Ser. No. 311,422

Int. Cl. G101 1/04

U.S. Cl. 179-1 SA

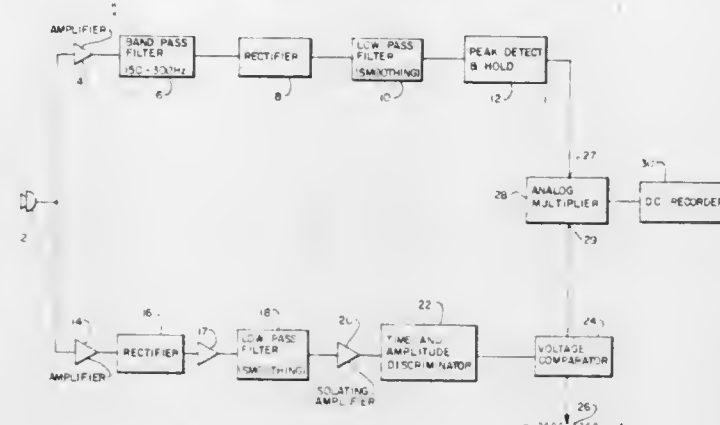
14 Claims

1. A method for detecting emotional stress in the utterance of an individual comprising:

converting said utterance to an electrical signal;
selecting a frequency band of said electrical signals;
detecting the peak amplitude of said selected frequency band;

simultaneously with said frequency selecting and peak detecting, smoothing said electrical signals to form an envelope, detecting rapid aperiodic amplitude modulation on

said envelope, and selecting detected modulation exceeding a preselected amplitude;
weighting said selected modulating with said detected peak amplitude; and



displaying said weighted signal which is indicative of emotional stress.

3,855,417

METHOD AND APPARATUS FOR PHONATION ANALYSIS LEADING TO VALID TRUTH/LIE DECISIONS BY SPECTRAL ENERGY REGION COMPARISON

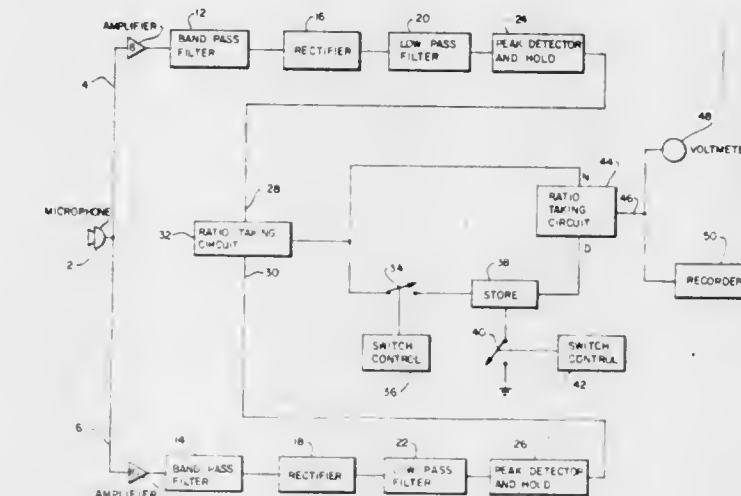
Fred H. Fuller, 4450 S. Park St., Rockville, Md. 20014

Filed Dec. 1, 1972, Ser. No. 311,391

Int. Cl. G101 1/04

U.S. Cl. 179-1 SA

9 Claims



1. A method for detecting emotional stress in the utterance of an individual comprising:

converting said utterance to an electrical signal;
selecting two different frequency bands of said electrical signal;
detecting and holding the peak amplitude of each frequency band for the duration of the utterance;
computing the ratio of the held peak amplitude of one frequency band with the other;
storing a previously computed ratio of said peak amplitudes;
comparing subsequent ratios with said stored ratios; and
displaying the compared results which would be indicative of emotional stress.

3,855,418

METHOD AND APPARATUS FOR PHONATION ANALYSIS LEADING TO VALID TRUTH/LIE DECISIONS BY VIBRATTO COMPONENT ASSESSMENT

Fred H. Fuller, 4450 S. Park St., Chevy Chase, Md. 20014

Filed Dec. 1, 1972, Ser. No. 311,392

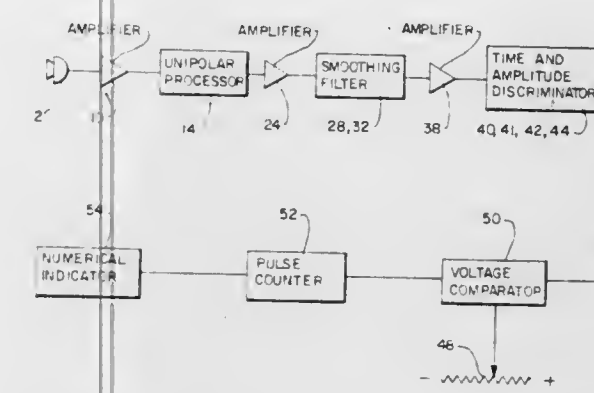
Int. Cl. G101 1/04

U.S. Cl. 179-1 SA

13 Claims

1. A method to detect emotional stress in the speech of an individual comprising:

converting said speech to an electrical signal;
smoothing said electrical signal to produce an envelope;
isolating any rapid aperiodic amplitude modulations present on said smoothed envelope;



counting the number of said rapid aperiodic modulations; and
indicating the count per utterance which is indicative of emotional stress.

3,855,419

PWN MULTIPLEX SYSTEM

Winslow Leroy Hurford, Cape Coral, Fla., assignor to RCA Corporation, New York, N.Y.

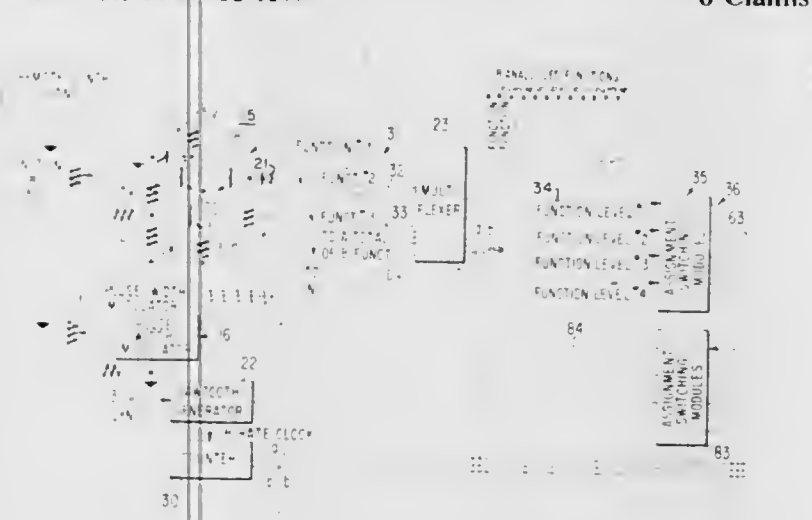
Continuation of Ser. No. 206,487, Dec. 9, 1971, abandoned.

This application Aug. 22, 1973, Ser. No. 390,433

Int. Cl. H04j 7/00

U.S. Cl. 179-15 AW

6 Claims



1. Apparatus for transmitting a plurality of individual information signals related to the status of a number of control function devices located at a first location and each indicative of a predetermined level necessary to perform a desired control function at a location remote from said first, by multiplexing said information signal levels and transmitting the same via a common linkage between said first location and said remote location, comprising:

a. multiplexing means at said first location, having a plurality of input terminals and a single output terminal coupled to said common linkage, each of said input terminals being coupled to separate ones of said control function devices and responsive to said information signal levels for providing a single series of pulses at said output terminal, with the width of each pulse of said series being indicative of the status of individual ones of said control function devices such that each control function to be performed is represented by the position and width of a single pulse in said series, and with said series of pulses having a given periodicity,

b. demultiplexing means at said remote location, having a single input terminal coupled to said common linkage and a plurality of output terminals, said demultiplexing means

being responsive to individual pulses within said single series of pulses at its input terminal to generate a plurality of pulse series, one for each output terminal, with the width of each pulse in individual ones of said plurality of series corresponding to the width of that pulse in said single series which generated it to indicate only the status of that one of said control devices governing the function to be performed and with each of said plurality of pulse series having a periodicity less than said given periodicity by a factor equal to the number of said control function devices,

c. a plurality of pulse stretching means, each having an input and an output terminal, with said input terminal being coupled solely to one separate output terminal of said demultiplexing means, for providing at the output terminal of each stretching means one of said plurality of pulse series at an increased periodicity up to but not exceeding that provided by said multiplexing means, and

d. means coupled to the output terminals of said pulse stretching means for generating control signals from said plurality of pulse series which correspond in level to said information signals indicative of the status of each control function device at said first location.

3,855,420

SUPERVISORY CIRCUIT

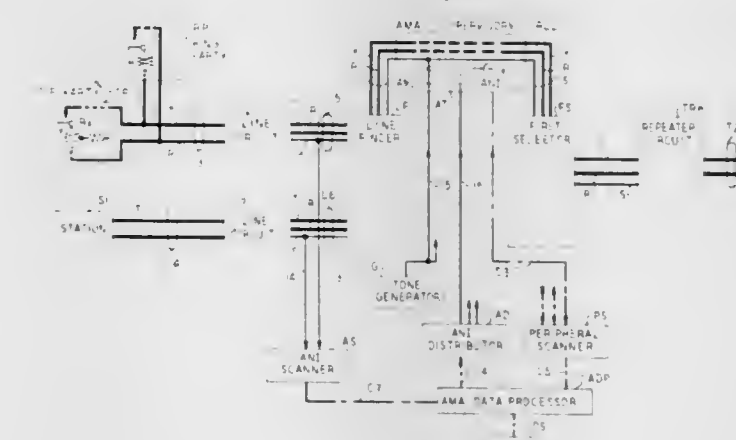
Robert Elling Steidl, Columbus, Ohio, assignor to Bell Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1973, Ser. No. 344,995

Int. Cl. H04q 3/18

U.S. Cl. 179-17 A

10 Claims



3. In a telephone system wherein a calling station is identified as active by current flow in one direction through a signaling loop comprising two transmission conductors which are connected together at said calling station while said calling station remains active and wherein a called station is identified as active by current flow in the opposite direction through said signaling loop,

a supervisory circuit for connection in said loop comprising first sensing means connected in one of said conductors for detecting current flow through said loop only in said one direction,

second sensing means connected in the other of said conductors for detecting current flow through said loop only in said opposite direction, and

logic means responsive to said first and second sensing means in combination for indicating

1. an active calling station when only said first sensing means detects current flow,
2. a call destination signal when neither said first and second sensing means detects current flow, and
3. an active called station when only said second sensing means detects current flow.

3,855,421

TELEPHONE SUBSCRIBER LINE CIRCUIT

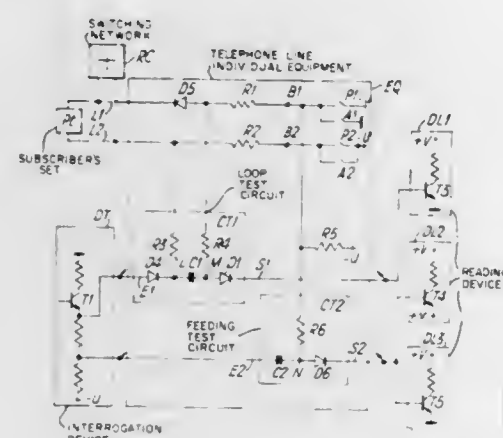
Harold William Cliff Pilling, Madrid, Spain, and Gerard Marcel Le Cardonnel, Neuilly sur-Seine (Hauts-de-Seine), France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,987

Int. Cl. H04m 3/22

U.S. Cl. 179—18 FA

4 Claims



1. Telephone line individual equipment for use in a telephone exchange comprising first and second line terminals, a feeding potential source, a feeding circuit including first and second feeding terminals coupled to the respective line terminals, switching means provided to connect the feeding potential source to the feeding terminals to supply potentials to the individual equipment when it is not connected through an exchange, a loop test circuit coupled to detect and signal whether a line coupled to the first and second line terminals is looped or not, a first diode connected in series between a first line terminal and the corresponding first feeding terminal, said diode being rendered conductive by potential supplied over the first feeding terminal, a resistive bias circuit connected to the first feeding terminal, a feeding test circuit coupled to said first feeding terminal to enable potential existing on said first feeding terminal to be evaluated and signalled, the feeding test circuit including means determinative that the line is fed by its individual equipment when said first feeding terminal is connected to the potential source and the potential existing on the terminal is that of this source, said feeding test circuit including means determining when the line is connected in the exchange that the potential of the feeding terminal is the one applied by the bias circuit, so that the information provided by the feeding test circuit indicates the line condition and enables the information provided by the loop test circuit to be interpreted to identify the particular condition of the line.

3,855,422

TIME DIVISION MULTIPLEXER WITH EACH FRAME CONSISTING OF A FIXED LENGTH BIT ORIENTED ADDRESS FIELD AND A VARIABLE LENGTH CHARACTER ORIENTED DATA FIELD

Jean Jacques Cadiou, Vence; Georges Rene Guerin, La Colles/Loup, and Paul Raymond Callens, Cagnes/Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1973, Ser. No. 376,783

Claims priority, application France, July 10, 1972, 72.25775

Int. Cl. H04j 3/08

U.S. Cl. 179—15 AL

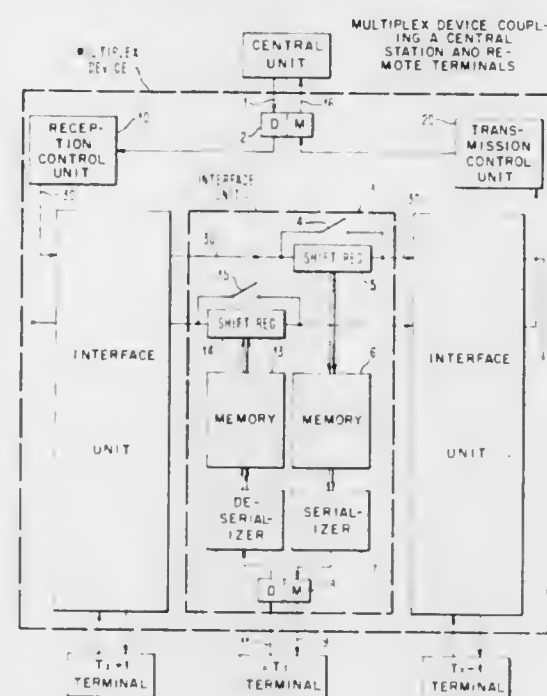
3 Claims

1. A multiplexing device for controlling the transmission of data characters between a central station and selectively chosen ones of a plurality of terminal stations wherein:

the data characters are multiplexed into frames containing not more than one character for each terminal station with each frame consisting of a frame identifying charac-

ter, an address character identifying the terminal stations for which frame data characters are present in the frame and a variable number of data characters, said device including:

a receiving and a transmitting shift register for each terminal, means connecting each shift register to its associated terminal for data transfer, circuits for connecting all of said receiving shift registers into a serial train of shift registers, other circuits for connecting said transmitting shift registers into a second serial train of shift registers, a normally closed switch for each shift register to bypass said circuits around the associated register, a reception control unit to store the data in said address field as received from a central station,



means in said reception control unit to open selected ones of said switches for said receiving shift registers in accordance with the data in a received address field,

means in said reception control unit for thereafter passing received signals representing said variable length data field to said receiving shift registers having opened switches,

means at each terminal to store signals representing a data character to be transmitted into its associated transmitting shift register and to open the corresponding switch for said shift register, and

a transmission control unit activated by storage of a data character in one or more of said transmission shift registers to control transmission to said central unit of a frame of data including the characters stored in said transmitting shift registers having opened switches.

3,855,423

NOISE SPECTRUM EQUALIZER

Henry Tzvi Brendzel, Parsippany, Morris County, and Richard Allan Smith, Mount Olive Twp., Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 3, 1973, Ser. No. 356,918

Int. Cl. H04b 1/66

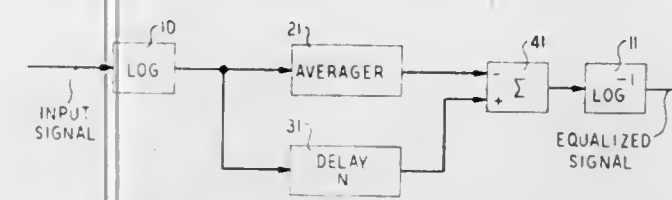
U.S. Cl. 179—15.55 R

16 Claims

1. The method of equalizing applied power spectrum samples representative of functions containing periodic signals embedded in noise comprising the steps of:

preconditioning each of said applied power spectrum samples to reduce the effects of strong periodic signals; obtaining a neighborhood-mean equalizing signal associated with each of said applied power spectrum samples by forming an amplitude average of a predetermined num-

ber of said preconditioned spectrum samples in the vicinity of said preconditioned power spectrum samples; and equalizing each of said applied power spectrum samples



by arithmetically combining each of said preconditioned power spectrum samples with each of said associated neighborhood-mean equalizing signals.

3,855,424

INFORMATION PROCESSOR FOR CHANGING TEMPO OF PLAYBACK FROM THE RECORDED TEMPO

Poothathamby Tharmaratnam, Mollenhutsfeg, and Johannes Meijer Cluwen, Emmasingel, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

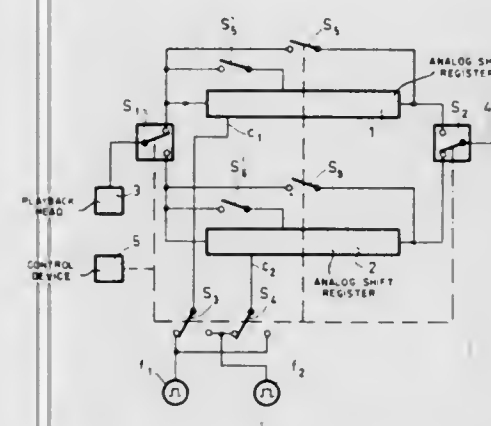
Filed Jan. 30, 1973, Ser. No. 328,019

Claims priority, application Netherlands, Feb. 15, 1972, 72/1920

Int. Cl. H04b 1/66; G11b 15/20

U.S. Cl. 179—15.55 T

8 Claims



1. A circuit arrangement for playing back recorded information in a tempo which differs from the original recording tempo, and particularly for playing back retarded or accelerated speech while maintaining the correct pitch, said circuit arrangement comprising:

a first shift register having an input, an output, and an auxiliary output;

a second shift register having an input, an output, and an auxiliary output;

means for supplying information in a desired tempo to said registers;

a first electronic switch disposed between said registers and said information supplying means to alternately apply said information to said registers;

a second electronic switch operated in phase opposition to said first switch, said second electronic switch connected to said registers for alternatively deriving an output signal therefrom;

means for supplying said registers with clock pulses for advancing information therethrough;

first switching means disposed between said registers and said clock pulse supplying means, for alternately, but in phase opposition, applying said clock pulses to said registers, frequencies of said clock pulses jumping from one value to another at each change-over of said switching means, a ratio of these frequencies being equal to a speed ratio between the speed at which said information is applied to the shift registers and the speed at which said information is recorded; and

second switching means connected to respective registers, for connecting the respective auxiliary output of each

register to the input of said respective register, said respective auxiliary outputs being partway along said registers between said inputs and said outputs such that said information at said auxiliary output is less advanced in said register than that corresponding to said respective output signal.

3,855,425

DELAY LINE TIME COMPRESSOR AND EXPANDER

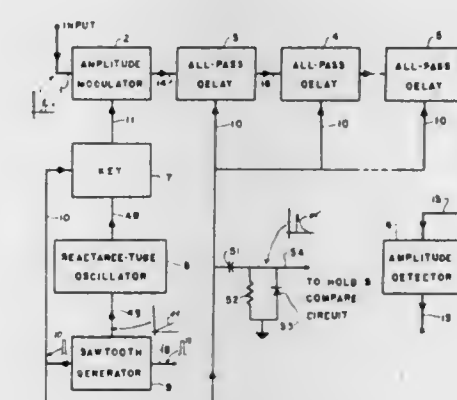
Bernhard E. Keiser, 2046 Carrhill Rd., Vienna, Va. 22180

Continuation-in-part of Ser. No. 191,010, Oct. 20, 1971, abandoned. This application June 14, 1973, Ser. No. 369,810

Int. Cl. H04b 1/66

U.S. Cl. 179—15.55 T

6 Claims



1. A delay line time expander and a delay line time compressor for compressing an information signal into a narrow bandwidth, and subsequently expanding it to the original bandwidth, comprising:

a delay line time expander which requires only a time expansion means and which consists of:

a first amplitude modulator for impressing said information signal on a first carrier signal to produce a first amplitude modulated signal;

a first series of identical all-pass delay networks, having a predetermined phase versus frequency characteristic, responsive to the first amplitude modulated signal produced by said first amplitude modulator;

a first key for gating said first carrier signal to said first amplitude modulator;

a first sawtooth-controlled reactance-tube oscillator for producing said first carrier signal and for sweeping, with a first sawtooth waveform, the frequency of said first carrier signal, said first carrier signal then being sent through said first key at all times, except during said first sawtooth waveform's flyback, to said first amplitude modulator and thence to said first series of all-pass delay networks to impart a first variable time delay to said first amplitude modulated signal as obtained at the output of said first series of all-pass delay networks;

a first amplitude detector responsive to said first series of all-pass delay networks to produce a time expanded information signal; and,

a delay line time compressor which requires only a time compression means and a cycle repetition means, said delay line time compressor consisting of:

a second amplitude modulator for impressing said time-expanded information signal on a second carrier signal to produce a second amplitude modulated signal;

a second series of identical all-pass delay networks constructed with the same phase vs. frequency characteristics as said first series, and responsive to the second amplitude modulated signal produced by said second amplitude modulator;

a second key for gating said second carrier signal to said second amplitude modulator;

a second sawtooth-controlled reactance-tube oscillator for producing said second carrier signal and for sweeping, with a second sawtooth waveform, whose repetition rate is the same as that of said first sawtooth waveform, the

frequency of said second carrier signal, said second carrier signal then being sent through said second key at all times, except during said second sawtooth waveform's flyback, to said second amplitude modulator and thence to said second series of identical all-pass delay networks to impart a second variable time delay to said second amplitude-modulated signal as obtained at the output of said second series of all-pass delay networks, said second variable time delay being maximum when said first variable time delay is minimum, and vice versa;

a second amplitude detector responsive to said second series of all-pass delay networks to produce a time-compressed signal; and,

a cycle repetition means connected to the output of said delayline time compressor providing an output in which each portion of the signal from said second amplitude detector is repeated a plurality of times to reconstruct the original signal.

3,855,426

VIDEO DISC RECORDING AND OPTICAL PLAYBACK SYSTEM THEREFOR

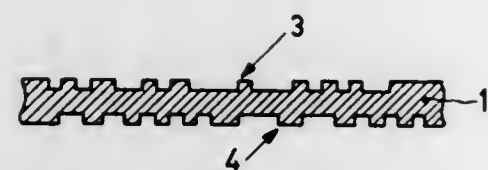
Gijbertus Bouwhuis, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 227,210, Feb. 17, 1972, abandoned.

This application July 25, 1973, Ser. No. 382,482
Claims priority, application Netherlands, Mar. 11, 1971, 7103233

Int. Cl. H04n 5/76; G11b 7/24, 23/18
U.S. Cl. 179—100.3 V

4 Claims



1. An information carrier comprising a transparent disc-shaped carrier, a first planar spiral shaped information track in said carrier, a second planar spiral shaped information track in said carrier parallel to said first track, said first spiral track decreasing in distance from the center of the carrier in one rotational direction viewed from one side of said carrier, said second spiral track increasing in distance from the center of the carrier in said one rotational direction viewed from one side of said carrier, information signal successively recorded along said first information track from the outer portion of said first information track to the inner portion thereof, information signals successively recorded along said second information track from the inner portion of said second information track toward the outer portion thereof, said information being recorded in each track in the form of a plurality of spaced areas of optically transparent material, all of the areas of each track having a coplanar surface, the coplanar surface of said first track being spaced from the coplanar areas of said second track and parallel thereto, all the material in the disc between the coplanar surface of each area in each information track and the next following information track in the disc being optically transparent, whereby a converging beam of radiation from one side of the disc passes through the coplanar surfaces of the information tracks and may be focussed on said first track until all the information recorded thereon is scanned, and then immediately refocussed through said first track, scanning the information of said second track maintaining the rotational direction of said carrier without the necessity of turning said carrier over or displacing said beam rapidly to the outer portion of said second track.

3,855,427 MAIN DISTRIBUTION FRAME INTERCONNECTION WIRING TECHNIQUE AND APPARATUS

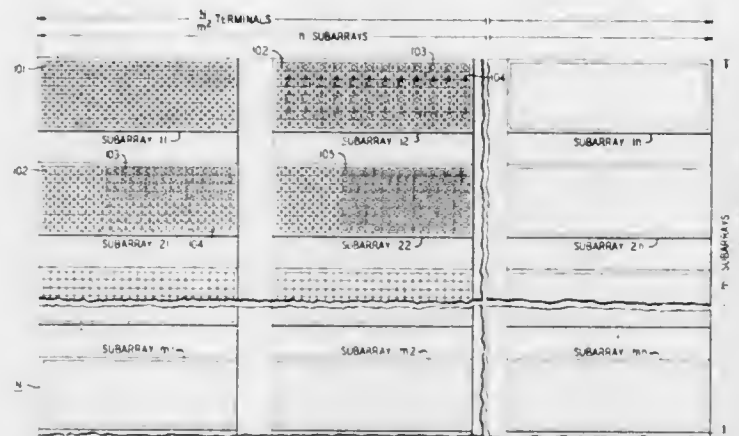
Frank William Sinden, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1973, Ser. No. 410,561

Int. Cl. H04q 1/06

U.S. Cl. 179—98

11 Claims



8. A main distribution frame used for effecting cross connections between subscriber line cables and switching equipment cables with jumper cables comprising

a frame support structure,

a plurality of connector blocks affixed to said frame support structure, each of said connector blocks having a plurality of electrical terminal pairs uniformly distributed thereon with a first portion of said terminal pairs designated as subscriber line terminal pairs, a second portion of said terminal pairs designated as switching equipment terminal pairs, and a third portion of said terminal pairs designated as long jump terminal pairs, the size of each of said connector blocks being a function of an interconnection success rate that is to be achieved, said interconnection success rate being defined as the probability of completing connections between specified subscriber line terminal pairs and specified switching equipment terminal pairs with a single cross connecting jumper cable,

means for terminating said subscriber line cables and said switching equipment cables on said subscriber line terminal pairs and said switching equipment terminal pairs, respectively, on said connector blocks, and

means for terminating said cross connecting jumper cables on said subscriber line terminal pairs and said switching equipment terminal pairs.

3,855,428

SPEAKER DIAPHRAGM

Tadasi Itagaki, Tokorozawa, Japan, assignor to Pioneer Electric Corporation, Tokyo and Tokorozawa Electronics Corporation, Tokorozawa-shi, Saitama, Japan

Filed Oct. 30, 1972, Ser. No. 301,930

Claims priority, application Japan, Oct. 29, 1971, 46-100611

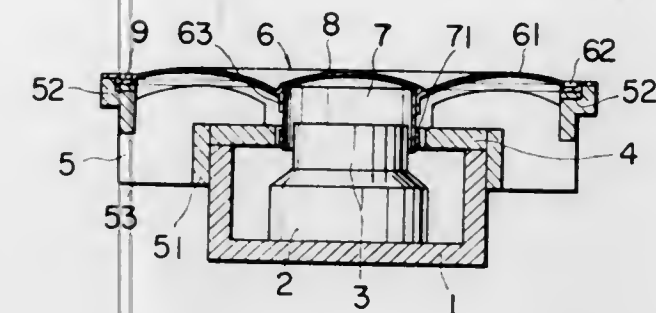
Int. Cl. H04r 7/14, 7/16, 9/06

U.S. Cl. 179—115.5 ES

2 Claims

1. In a loudspeaker having an annular thin film diaphragm, an annular frame concentrically surrounding an axially movable voice coil, said diaphragm including an annular portion with its inner peripheral edge supporting a rearwardly directed cylindrical bobbin holding said voice coil and its outer peripheral edge fixed to said frame, the improvement wherein: said frame includes an annular, right angle recess within the forward end face of the same at its inner periphery, said diaphragm includes a right angle, U-shaped annular indentation inwardly of its outer peripheral edge at a radial position corresponding to said frame recess, said indentation forming a reinforcing rib,

and a right angle flange portion radially outward thereof, the radially outer sidewall of said indentation is fixed to the radially inner sidewall of said frame recess, and



the right angle flange portion of said outer peripheral edge of said diaphragm, radially outwards of said radially outer sidewall, is fixed to the forward end face of said frame with the forward surface of said diaphragm free of said frame.

3,855,429

LOUDSPEAKER FIXTURE

Gunter Krainhofer, Solms, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

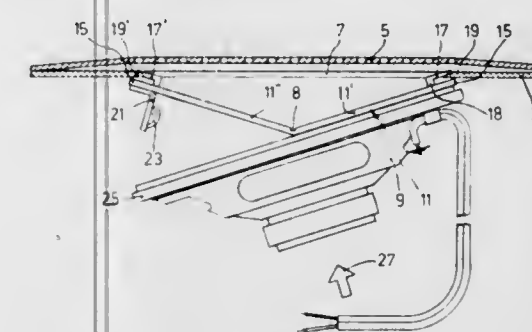
Filed Apr. 6, 1973, Ser. No. 348,685

Claims priority, application Germany, June 19, 1972, 2229679

Int. Cl. H04r 1/02

U.S. Cl. 179—146 R

10 Claims



1. A loudspeaker fixture for mounting a loudspeaker to the rear of a loudspeaker baffle by means of a clamping plate which engages with the fixing flange of the loudspeaker and which does not obstruct the loudspeaker aperture, characterized in that the clamping plate consists of two parts which can be pivoted relative to each other, and one of which is secured to the loudspeaker chassis, and that insertion hooks have been provided near those edges of the clamping plate parts which face away from the hinge, by means of which hooks said edges can be attached to the edges of the loudspeaker aperture, and that the axial distance between the hooks is slightly smaller than the distance between the associated clamping plate edges and the edges of the loudspeaker aperture respectively, so that when the bent clamping plate is depressed into the plane of the loudspeaker baffle the entire plate is compressed axially between the hooks, thus securing the loudspeaker.

3,855,430

ELECTRONIC HYBRID CIRCUIT FOR TWO-WIRE TO FOUR-WIRE INTERCONNECTION

Joel Serge Colardelle, Cretell; Pierre Girard, Paris, and Paul Henri Lerouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,595

Claims priority, application France, Nov. 19, 1971, 71.41460

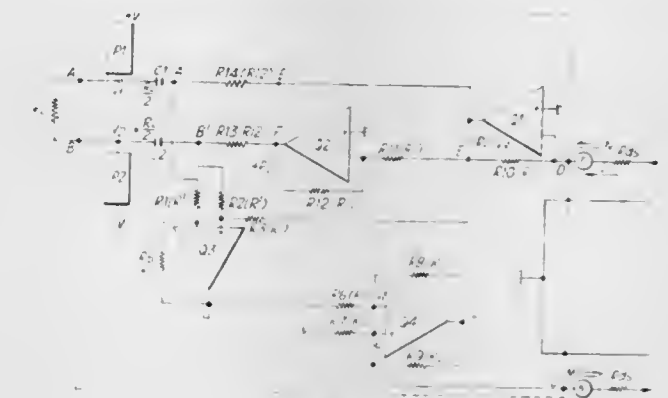
Int. Cl. H04b 1/58

U.S. Cl. 179—170 NC

8 Claims

1. An electronic two-wire to four-wire conversion circuit comprising a pair of input terminals connected to a balanced

subscriber's line which provides a first variable voltage for data transmission in a first direction and which receives a second variable voltage for data transmission in the reverse direction, a receive terminal pair connected via first transmission means to said input terminals to transmit data signals toward the reverse direction, said first transmission means including first and second operational amplifiers connected to the receive terminal pair and to each other to convert unbalanced data signals applied to the receive terminal pair into balanced signals appearing across the input terminals, a trans-



mit terminal pair connected via second transmission means to said input terminals to transmit data signals toward the first direction, said second transmission means including a differential amplifier connected across the pair of input terminals and connected in series with a current generator having an output connected to the transmit terminal pair, said second transmission means converting balanced input signals into unbalanced signals, and third means coupled between the output of the first operational amplifier and the non-inverting input of the differential amplifier for preventing signal reflections from the reverse direction to the first direction.

3,855,431

ELECTRONIC HYBRID AMPLIFIER

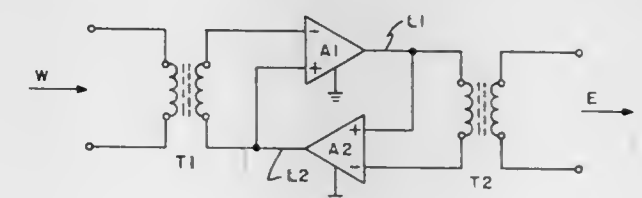
Alan Stewart, Elk Grove Village, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,160

Int. Cl. H04b 3/36; H04m 9/08

U.S. Cl. 179—170 NC

7 Claims



1. A two wire transmission system having individual legs across the output of a transformer coupled to a balanced load, wherein AC signals received across the input of the transformer are inverted relative to one another in the respective legs; the invention comprising a first and a second difference amplifier, each having two input terminals and an output terminal, means coupling one input terminal of said first amplifier to one output leg of said transformer to receive signals therefrom, means coupling the other input terminal of said first amplifier to the other output leg of said transformer to receive inverted signals therefrom whereby to algebraically subtract in said first amplifier signals received from said transformer, and said second difference amplifier in said second leg with its output terminal coupled to the other leg of said transformer; the input terminals of said second amplifier coupled to the output of said first amplifier to attenuate signals reflected from the output of said first amplifier.

3,855,432

DRAWER POSITION SENSING LATCH OPERATED SWITCH ASSEMBLY

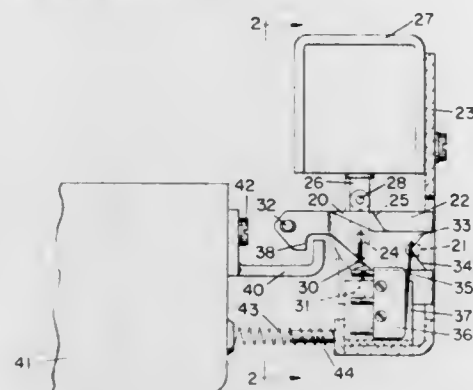
James E. Kelly, Cambridge; Kenneth L. Shooter, Senecaville, and Ray L. Lawter, Zanesville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 25, 1974, Ser. No. 445,194

Int. Cl. H01h 3/16

U.S. Cl. 200—61.61

12 Claims



1. In combination with an enclosure structure including a slidably mounted drawer having an engaging member secured thereto, a latch apparatus for generating a signal upon latching of the drawer in a closed position within the enclosure structure comprising:

- latching means movably secured to said enclosure structure and positioned in the plane of movement of the drawer engaging member, said latching means being moved to an operating position, by the engaging member upon movement of the drawer in a drawer closing direction, conditioning the engaging member to be latched by said latching means when the engaging member is moved in a drawer open direction;
- signal generating means mounted on said enclosure structure for generating a signal when operated, said signal generating means includes an actuating member for operating said signal generating means when actuated;
- actuating means operably associated with said latching means and engageable with said actuating member, said actuating means includes a latching portion for engaging the engaging member upon movement of the drawer in a drawer closing direction, said actuating means actuating said actuating member when moved by said engaging member in a drawer open direction;
- and means engaging the drawer for normally urging the drawer in a drawer open direction, said urging means moving the drawer in a drawer open direction upon engaging of said engaging member by said actuating means whereby the engaging member is latched by said latching means and the signal generating means is operated by said actuating member.

3,855,433

HIGH VOLTAGE SWITCH ARRANGEMENT

Joseph Bernatt, Arlington Heights, and Edward J. Rogers, Chicago, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Dec. 10, 1973, Ser. No. 423,545

Int. Cl. H01h 1/44

U.S. Cl. 200—48 R

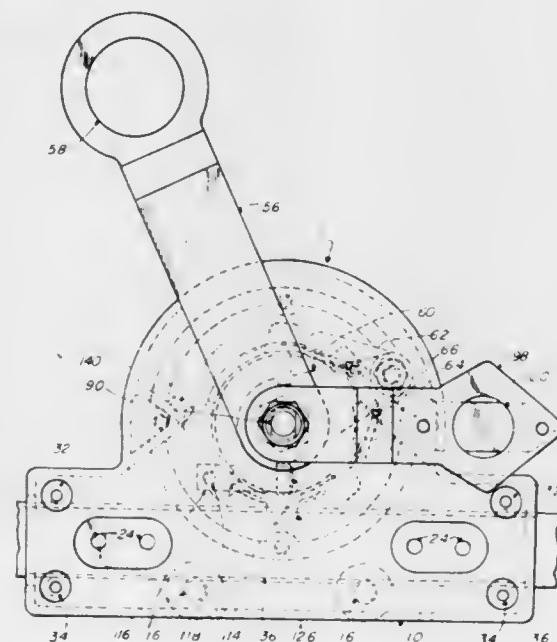
14 Claims

1. A high voltage electrical switch arrangement comprising: a remote electrical contact connected to a portion of an electrical circuit;

- an electrically conductive switch blade for engaging said remote electrical contact and having gear engaging means substantially the length of said blade;
- an actuating means connected to another portion of an electrical circuit for linearly moving said switch blade to engage and disengage the switch blade with the remote electrical contact to open and close the electrical circuit;

said actuating means comprising:

- an idler shaft;
- a direction selecting lever connected to said idler shaft;
- a hollow drive shaft mounted for rotation around said idler shaft;
- an actuating lever mounted on said drive shaft;
- a drive lever having a first and second end mounted at a first end to said drive shaft;
- first and second oppositely directed drive pawls mounted on the second end of said drive lever;
- a drive cam means for being engaged by said first and second drive pawls and being rotated by said first and second pawls in response to movement of said actuating lever;



- a rotatably mounted gear connected to said drive cam, said gear having regularly spaced teeth to engage said engaging means to move said switch blade linearly in response to rotation of said gear and drive cam;
- directional cam means connected to said idler shaft, said directional cam means for placing said first drive pawl into contact with said drive cam in response to positioning of said direction selecting lever in a first selected direction so that said switch blade will move in the first selected direction in response to ratcheting movement of said actuating lever and for placing said second drive pawl into contact with said drive cam in response to positioning of said direction selecting lever in a second selected direction so that said switch blade will move in the second selected direction in response to ratcheting movement of said actuating lever.

3,855,434

SHORTING DEVICE FOR GENERATOR OUTPUT LINES

Gerhard Grunert, and Erwin Hartmann, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 12, 1973, Ser. No. 369,228

Claims priority, application Germany, June 23, 1972, 2030900

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

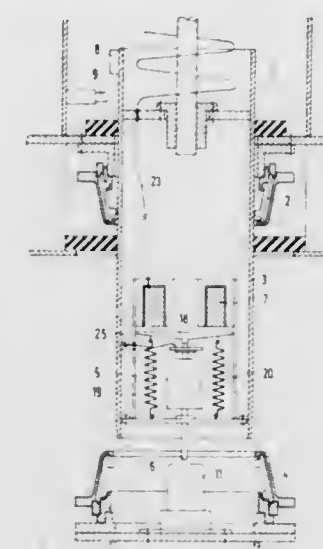
4 Claims

1. A shorting device for shorting an output bus bar of 1 generator to a shorting bar comprising:

- a contact arm electrically connected to the shorting bar;
- a mating contact electrically connected to the output bus bar;
- means to permit said contact arm to move in and out of engagement with said mating contact;
- a vacuum switching tube having a set of contacts in an evacuated chamber one of which is connected to said contact arm and another connected to an extending

contact, said switching tube mounted for motion along with said contact arm;

- an advance contact electrically coupled to said mating contact and arranged to mate with said extending contact, the arrangement being such that upon moving said contact arm from an open to a closed position, said extending contact will engage said advance contact before said contact arm engages said mating contact; and



- means to operate said set of contacts in said evacuated chamber such that said contacts are open over the portion of movement during engaging and disengaging corresponding to that just prior to engagement and just before disengagement of said extending contact with said advance contact and closed during the portion of remaining movement where said extending contact is engaging said advance contact but said contact arm is not engaging said mating contact.

3,855,435

SOLID INSULATED BREAKER OF A SMALL SIZE

Hitoshi Himi, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

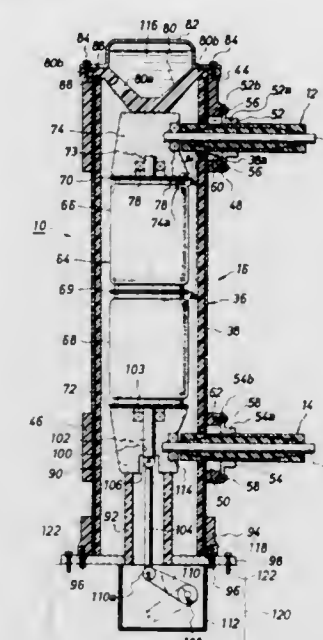
Filed Oct. 30, 1973, Ser. No. 411,068

Claims priority, application Japan, Nov. 1, 1972, 47-109670

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

20 Claims



- A solid state material insulated breaker of a small size comprising a main cylinder of electrically insulating solid state material and sealed at the first and second ends thereof, said main cylinder having two openings longitudinally spaced from each other in the wall thereof, a breaker unit enclosed in said main cylinder and having a movable and a fixed contacts therein, means for fixing said breaker unit in said main cylinder,

der, two insulated electric conductors inserted through said two openings of said main cylinder, one ends of which conductors are electrically connected respectively to said fixed and movable contacts of said breaker unit, each insulated conductor including an elongated, electric conductor and a solid insulating material layer formed around thereof in a fixed thickness, means for attaching said insulated conductors, respectively, to said main cylinder and a insulating material filled into the space between said sealed main cylinder and said breaker enclosed therein.

3,855,436

COMPRESSED-GAS CIRCUIT BREAKER

Heiner Marin, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

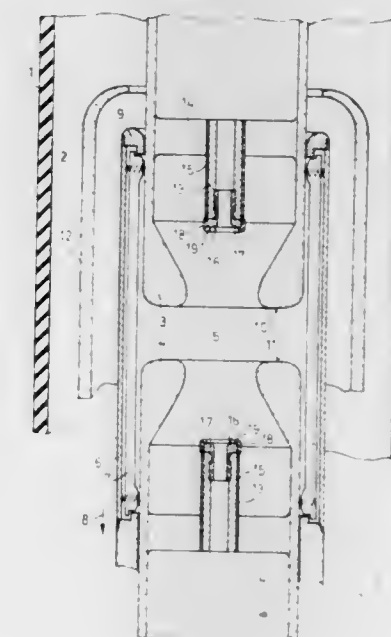
Filed Feb. 1, 1973, Ser. No. 328,676

Claims priority, application Germany, Feb. 17, 1972, 2208035

Int. Cl. H01h 33/80

U.S. Cl. 200—148 R

4 Claims



1. In a compressed-gas circuit breaker wherein a flow of quenching medium is directed toward the arc developed when the breaker is switched to the off position, a switching contact arrangement comprising: two hollow, nozzle-shaped contacts disposed on a common axis, said contacts being spaced from each other to conjointly define a gap therebetween across which the arc is drawn; and a substantially cylindrical arcing electrode centrally mounted in at least one of the hollow contact and set back from the nozzle opening of the hollow contacts, the arcing electrode defining an end-face contact surface for receiving the foot point of the arc driven thereon by the action of the quenching medium during the switch-off operation, said arcing electrode being covered with insulating material on the outer surface thereof up to said end-face contact surface thereby confining the action of the arc on said arcing electrode to said contact surface.

3,855,437

ELECTRIC COMPRESSED-GAS CIRCUIT BREAKER

Heiko Goedecke; Klaus-Peter Rolf, and Friedrich Richter, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 22, 1973, Ser. No. 344,043

Claims priority, application Germany, Mar. 27, 1972, 2215656

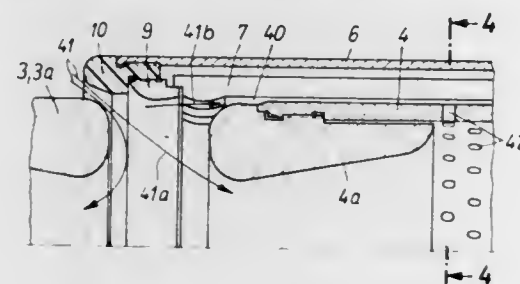
Int. Cl. H01h 33/82

U.S. Cl. 200—148 R

22 Claims

1. In an electric compressed-gas circuit breaker, a contact arrangement comprising: two stationary mutually adjacent

contact pieces; a bridging switching unit movable between closed and open positions for electrically bridging said contact pieces in the closed position and for electrically disconnecting said contact pieces in the open position whereby an arc develops when said switching unit is moved to the open position, said switching unit being mounted on one of said contact pieces so as to define a gap between said switching unit and the other one of said contact pieces when said switching unit is moved to said open position; a slide contact ring of arc-resistant material mounted on said bridging switching unit for slideably engaging said other contact piece in the closed position and for being in spaced relation to said contact piece across said gap when said switching unit is moved to the open



position; compressed-gas chamber means for blasting compressed-gas through said gap when said switching unit separates from said other contact piece during the movement thereof to said open position; at least said one contact piece being hollow to define a flow path for conducting the gas away from the gap; said one contact piece and said switching unit conjointly defining, during the movement of said switching unit to said open position, a region at least partially shielded from the flow of the gas through said gap; and, auxiliary passage means communicating with said region for causing at least a portion of the compressed-gas to flow through said region when said switching unit separates from said other contact piece during the movement thereof to said open position whereby flow stagnation of gas in said region is prevented.

3,855,438

ARRANGEMENT FOR THE OPERATION OF SWITCHING DEVICES IN TELEPHONE EQUIPMENT

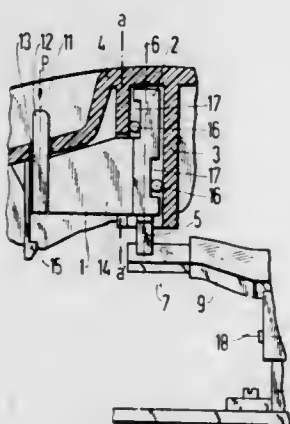
Karl-Jan Breu; Herbert Hoher, both of Munich, and Hans-Joachim Schinke, Bocholt, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 20, 1973, Ser. No. 399,270

Claims priority, application Germany, Sept. 25, 1972, 2246993

Int. Cl. H01h 3/00

U.S. Cl. 200—153 R

2 Claims



1. In apparatus for mechanically transmitting an externally applied force to switching means placed within a housing or the like through intermediate member means connecting the point of application of said force to said switching means and moving rectilinearly in a guideway between two extreme positions, said intermediate member means extending through at least one opening in said housing, the improvement comprising:

first and second areas on said intermediate member means for absorbing said externally applied force, and transmitting it, said first and second areas being physically separated from each other, said first and second areas having axes of rotation, respectively in a laterally staggered spatial relationship with respect to each other.

3,855,439

KEY SWITCH

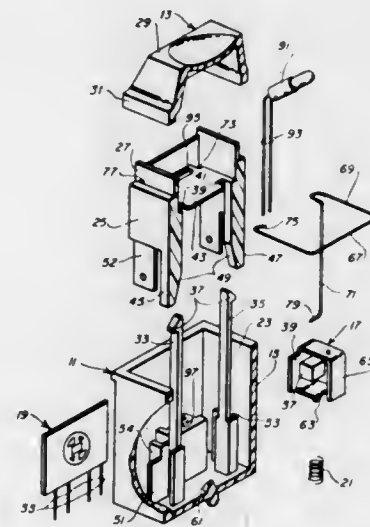
Hans Hermann, Nuernberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany
Filed July 6, 1973, Ser. No. 377,038

Claims priority, application Germany, July 6, 1972, 2233170

Int. Cl. H01h 13/64

U.S. Cl. 200—159 R

5 Claims



1. A key switch construction convertible from a momentary to a latching switch comprising an upwardly open box-like housing,

a downwardly open box-like plunger telescopically mountable for movement in said housing,

said plunger and housing having cooperating switching elements mounted thereon, operable to effect switching when said plunger is depressed,

a spring mounted in said housing acting on said plunger to maintain it in a raised position and return said plunger following a depression and release of said plunger,

means on said housing and plunger for limiting depression of said plunger and releasably latching said plunger against withdrawal from said housing,

a resilient plunger latching element removably mountable on said plunger whenever conversion from a momentary to a latching switch is desired,

said latching element having an end depending into said housing,

a removable cap on said plunger providing for access into the interior of said plunger for releasing said plunger from said housing for withdrawal therefrom and for mounting said latch element, and

a slot in said housing for guiding the end of said mounted resilient plunger latch element into and out of a detented position respectively in response to a first depression of said plunger to latch the plunger down and to a second depression to release said plunger.

3,855,440

MICROWAVE OVEN HAVING PREFERRED MODES

James E. Staats, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 4, 1974, Ser. No. 430,730

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 F

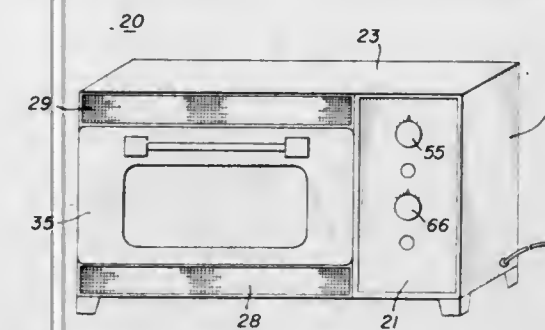
21 Claims

1. Electronic heating apparatus comprising a metal enclosure including six rectangular walls arranged to form a rectangular parallelepiped defining a heating cavity for receiving

therein a body to be heated, and source means for transmitting microwave energy of a predetermined wavelength through one of said walls into said heating cavity for exciting therein a predetermined electromagnetic field mode, said one wall having an electrical dimension D such that

$$D = 1.1 n \lambda / 2$$

wherein n is any integer and λ is said predetermined wave-



length, said predetermined electromagnetic field mode having the fields thereof constant in directions normal to said one wall with power flow being parallel to the direction of the dimension D , whereby there is established in said heating cavity an electromagnetic field pattern providing uniform heating of an associated body.

3,855,441

METHOD AND APPARATUS FOR ACTIVATION OF AN ABRASIVE SLURRY BY AN ELECTRIC ARC

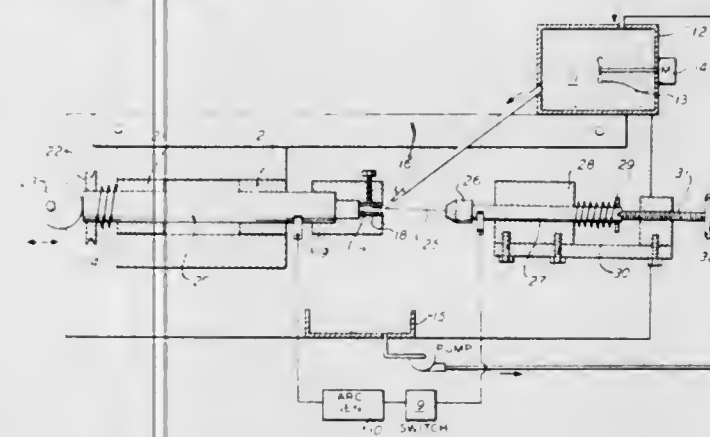
Carl E. Kimmelman, White Twp., Warren County, N.J., assignor to David B. Braelow, West Orange, N.J., a part interest

Filed Apr. 8, 1974, Ser. No. 459,080

Int. Cl. B23p 1/00

U.S. Cl. 219—68

16 Claims



1. A method for reducing a surface of a workpiece comprising:

- supplying a dielectric, abrasive slurry to a portion of a workpiece to be reduced;
- generating successive electric arcs in the slurry to move it at the portion of the workpiece to be reduced;
- reducing the surface of the workpiece by the movement of the abrasive slurry.

3,855,442

ELECTRODE SUPPORTING CARTRIDGE ASSEMBLY FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Division of Ser. No. 113,410, Feb. 8, 1971, Pat. No. 3,729,609.

This application Feb. 13, 1973, Ser. No. 332,073

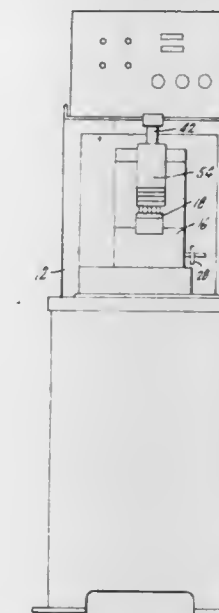
Int. Cl. B23p 1/08

U.S. Cl. 219—69 E

6 Claims

1. An electrode supporting cartridge assembly for electrical discharge machining apparatus comprising a cartridge member having substantially parallel grooves therein, a plurality of

substantially parallel electrodes slidably mounted in a side-by-side relation in said grooves, electrode retainer means mounted on said cartridge member and engaged with said electrodes so as to retain said electrodes in said grooves, and



electrode guide means located at one end of said cartridge member in close proximity thereto and disposed in a guiding relation with said electrodes.

3,855,443

GAP SENSING CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

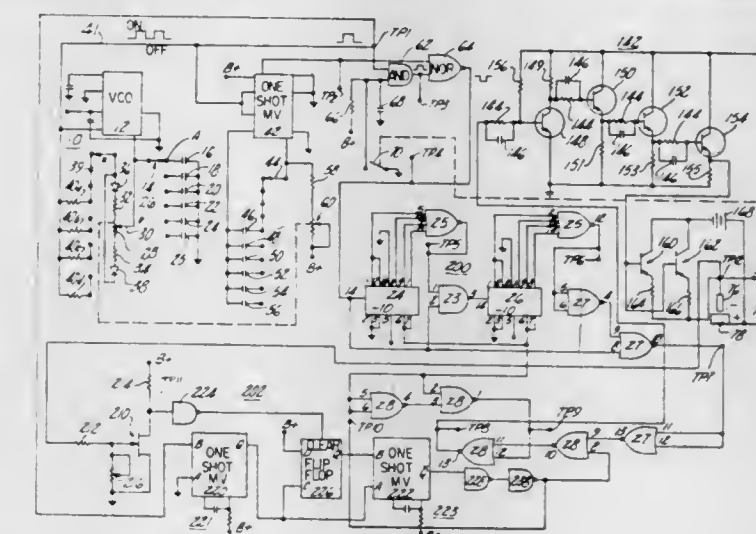
Oliver A. Bell, Jr., Mooresville, and Randall C. Gilleland, Statesville, both of N.C., assignors to Colt Industries Operating, New York, N.Y.

Continuation-in-part of Ser. No. 373,377, June 25, 1973, Pat. No. 3,832,511. This application Oct. 1, 1973, Ser. No. 402,314

Int. Cl. B23p 1/08

U.S. Cl. 219—696

9 Claims



1. In an electrical discharge machining power supply having an electronic output switch connected to the output of a pulse generator and operatively connected to a DC source and the gap for providing machining power pulses thereto, a gap short circuit protection system comprising:

- a normally non-conductive electronic switch having its control electrode operatively connected with the gap for triggering into conduction responsive to abnormal gap voltage level and providing an output signal representative of gap short circuit; and
- a gating means responsive to said signal for passing a series of machining power pulses from said pulse generator during gap short circuit condition, said pulses of said series of the same duty cycle and frequency as the normal machining power pulses supplied to the gap, said gating means further operable to interrupt machining power pulses between each different series for a relatively long

interval for the continued duration of the gap short circuit condition.

3,855,444

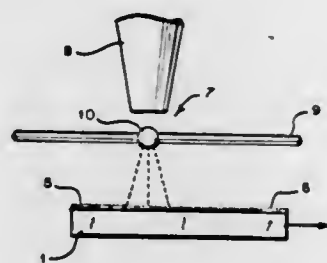
METAL BONDED NON-SKID COATING AND METHOD OF MAKING SAME

Maximilian Palena, 1000 Wayne Rd., Haddonfield, N.J. 08033
Filed Dec. 16, 1968, Ser. No. 783,901 The portion of the term of this patent subsequent to Mar. 17, 1987, has been disclaimed.

Int. Cl. B23k 9/04

U.S. Cl. 219-76

6 Claims



1. A method of producing a non-skid, or anti-slip, surface on a sheet of metal which comprises the steps of depositing a loose layer of grit particles on a surface of the sheet, projecting droplets of metal in a softened condition onto the particles of grit without substantially displacing said particles with respect to each other or with respect to said sheet so as to establish an incomplete and partially fused metallic bond between the particles of grit and said sheet, and thereafter forcibly projecting hot molten metal against the upper surface of said incompletely bonded particles of grit with a velocity and at a temperature sufficient to at least partially remelt the metal initially applied to said grit and establish a secure bond between said particles and said sheet of metal.

3,855,445

DEVICE FOR INTERCONNECTING TWO PLATES

Nils Ake Curt Jungle, Goteborg, Sweden, assignor to AB Gota-
verken, Goteborg, Sweden

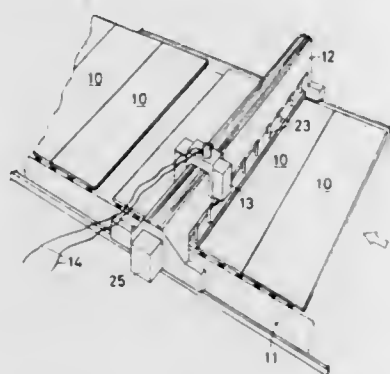
Filed Nov. 14, 1973, Ser. No. 415,903

Claims priority, application Sweden, Dec. 7, 1972, 15931/72

Int. Cl. B23k 15/00, 9/16

U.S. Cl. 219-121 EB

3 Claims



1. In a device for interconnecting two horizontally arranged plates including a carrier straddling the plates, a welding apparatus having a main part and a head piece movable along said carrier, a channel shaped member for covering the welding seam on top of, as well as below the plates and an air extractor connected to the space between the channel shaped members, the improvement that the channel shaped member to be used on top of the plates includes first and second parallel beams located at some distance from each other, as well as a laterally directed fin or pliable material at each beam, said fins overlapping each other to fully cover the distance between the beams and being sufficiently deformable to permit

the head piece of the welding apparatus to move longitudinally between the beams, without causing any noticeable entrance of air, the head piece forming part of an electron beam welding apparatus and being carried by the second beam, and first and second sets of pressure fluid operated rams fitted at the carrier for moving each of said beams towards and away from the plates.

3,855,446

DEVICE FOR DIRECTING THE MOVEMENT OF WELDING ELECTRODE ALONG THE BUTT OF JOINING PARTS

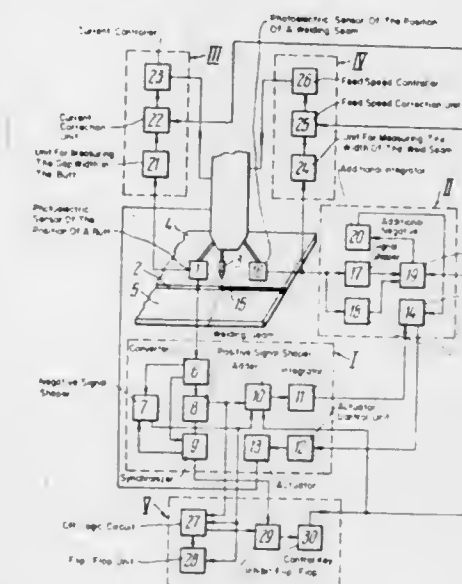
Valentina Georgievna Kotova, ulitsa V. Vasilievskoi, 17, kv. 89; Gretel Artashesovna Akopian, Bulvar L. Ukrainki, 12, kv. 130; Anatoly Ivanovich Galitsky, ulitsa Serafimovicha, 13a kv. 13; Jury Petrovich Golin, Bulvar Verkhovogo Soveta 94a. kv. 72; Valery Grigorievich Snezhko, ulitsa, 13/14, kv. 64; Leonid Georgievich Kolesnichenko, Obruschskaya ulitsa 13/14, kv. 64; Larisa Akimovna Ivanenko, Brest-Litovskiy prospekt, 78. kv. 69, and Jury Fedorovich Nekrasov, Polovetskaya ulitsa, 18, kv. 1, all of Kiev, U.S.S.R.

Filed Nov. 17, 1972, Ser. No. 307,533

Int. Cl. B23k 9/10

U.S. Cl. 219-125 PL

5 Claims



1. A device for directing the movement of a welding electrode along the joint of parts being welded, comprising:

a first photoelectric sensor indicating the position of said joint and located along the path of the welding process ahead of said welding electrode, the position of said first sensor corresponding to a predetermined position of the electrode;

a follow-up system for tracing the direction of movement of said welding electrode relative to said joint of said parts being welded, said system being connected to said sensor; a converter in said follow-up system to convert the output signal of said photoelectric sensor into a train of rectangular pulses, the input of said converter being connected to the output of said photoelectric sensor;

a negative signal wave shaper in said follow-up system corresponding to the right-hand position of said photoelectric sensor relative to the axis of said joint of said parts being welded, when viewed in the direction of the welding process, the input of said shaper being connected to the output of said converter;

a positive signal wave shaper in said follow-up system, corresponding to the left-hand position of said photoelectric sensor relative to the axis of said joint of said parts being welded, when viewed in the direction of the welding process, the input of said shaper being connected to the output of said converter;

a synchronizer in said follow-up system and having an input connected to said output of said converter, the output of said synchronizer being connected, respectively, to the

other inputs of said positive and negative signal shapers; an adder in said follow-up system and having inputs connected to respective outputs of said positive and negative signal shapers;

an integrator in said follow-up system and having an input connected to the output of said adder;

a second photoelectric sensor indicating the position of the weld seam and arranged behind said electrode when viewed in the direction of the welding process, said second photoelectric sensor being rigidly connected to said electrode;

a control system to control the movement of said welding electrode relative to the axis of said weld seam, said control system being connected to said second photoelectric sensor indicating the position of the weld seam;

auxiliary wave shapers in said control system to shape positive and negative signals corresponding to the right-hand and left-hand positions of said second photoelectric weld seam position sensor relative to the axis of the weld seam when viewed in the direction of the welding process, the inputs of said auxiliary shapers being connected to the output of said second photoelectric weld seam position sensor;

an auxiliary adder in said control system and having inputs connected to respective outputs of said auxiliary shapers; an auxiliary integrator in said control system and having an input connected to the output of said auxiliary adder; a logic coincidence circuit in said control system and having a first input connected to the output of said auxiliary integrator and having a second input connected to the output of said integrator in said follow-up system;

actuating means in said follow-up system, for moving said welding electrode; a control unit to control said actuating means and having an input connected to the output of said logic coincidence circuit, the output of said control unit being connected to the input of said actuating means.

3,855,447

WELD ADDITIVE FOR ELECTRIC-ARC DEPOSIT WELDING

Frithjof Ernst Josef Kilp, Viersen, Germany, assignor to Herman C. Starck, Berlin, Germany

Filed May 21, 1973, Ser. No. 296,654

Int. Cl. B23k 35/00

U.S. Cl. 219-145

3 Claims

1. In a welding rod or wire, an improved weld additive for electric-arc deposition welding consisting essentially of the stoichiometric chromium carbide Cr_3C_2 with superstoichiometric quantities of elemental carbon distributed in the lattice of the Cr_3C_2 to ensure a carbon content of 15 to 25 percent by weight in the additive.

3,855,448

RECORDING APPARATUS

Takayoshi Hanagata, Yokohama, and Suminobu Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1973, Ser. No. 343,866

Claims priority, application Japan, Mar. 27, 1972, 47-30462

Int. Cl. H05b 1/100

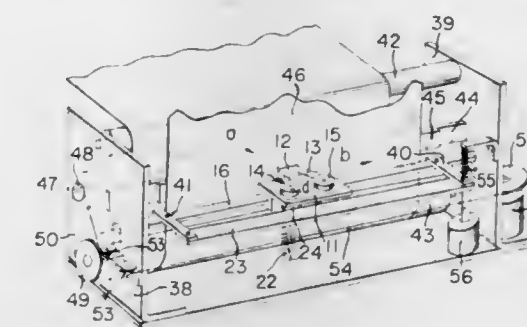
U.S. Cl. 219-216

10 Claims

1. A recording apparatus comprising:
a thermal head having a plurality of islands generally disposed in a common plane, said islands being thermally independent of one another and capable of heating separately and selectively by electrical signals;
a print member, disposed opposite to said islands, comprising a heat-resistant back-up layer and a thin film formed of an adhesive resin of low melting point disposed over said back-up layer;

recording paper disposed to face the thin film of said print member and being free of any material which is thermosensitive for coloring;

means for urging said thermal head against said print member for bringing all of said plurality of islands into intimate contact with said heat-resistant back-up layer and



said film into intimate contact with said recording paper; and means for producing said electrical signals to selectively heat said plurality of islands so as to melt the corresponding part of said adhesive resin to transfer it onto said recording paper.

3,855,449

ARRANGEMENT FOR PRODUCING HEAT

Karl Heinz Schneider, Hauptstrasse 174, 5628 Heiligenhaus, Germany

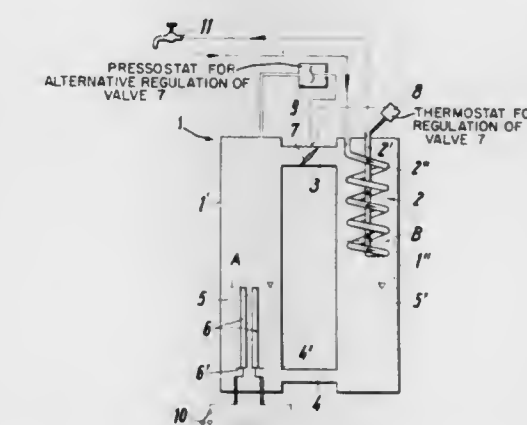
Filed Dec. 20, 1972, Ser. No. 316,714

Claims priority, application Germany, Dec. 28, 1971, 2164956

Int. Cl. H05b 3/60; F24h 1/16

U.S. Cl. 219-287

12 Claims



1. An arrangement for producing heat, comprising two closed vessels each of which contains a quantity of electrolyte in liquid phase and a quantity of electrolyte in vapor phase; at least one heat exchanger in one of said vessels arranged to have admitted therein a medium to be heated, at least part of said one heat exchanger being located in the electrolyte vapor of said one vessel; electrodes in the other of said vessels and being at least in part located in the liquid electrolyte of said other vessel, said electrodes being adapted to be connected with a source of electrical energy for vaporizing the liquid electrolyte in said other vessel; a first flow connection between said vessels for vaporized electrolyte to flow from said other vessel to said one vessel; a second flow connection between said vessels for liquid electrolyte to flow between said vessels; and valve means interposed in at least said first flow connection for regulating the flow of electrolyte in either phase between said vessels, said valve means having an open position for permitting vaporized electrolyte to flow from said other vessel to said one vessel and a closed position for preventing the flow of vaporized electrolyte from said other vessel to said one vessel, and means for actuating said valve means to said open position so as to permit the vaporized electrolyte to flow into said one vessel and contact said part

of said one heat exchanger to thereby heat the medium in said one heat exchanger.

3,855,450

LOCOMOTIVE ELECTRIC CAB HEATER AND DEFROSTING UNIT

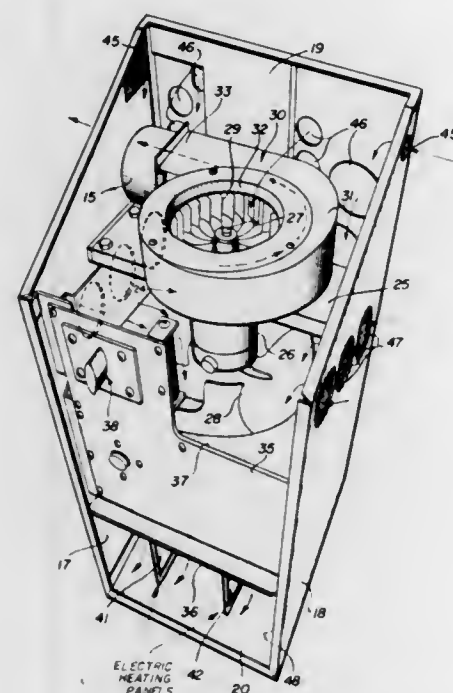
Jon F. O'Connor, Evanston, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Oct. 1, 1973, Ser. No. 402,371

Int. Cl. H05b 1/02; F24h 3/04; B60h 1/22

U.S. Cl. 219-367

8 Claims



1. A locomotive electric cab heater and window defroster unit for a locomotive cab comprising an upright housing, an air inlet means adjacent the upper end of the housing for receiving recirculating air, a centrifugal blower adjacent the air inlet means having an intake communicating with the interior of the housing and a discharge connected to a defroster conduit leading from the housing, a fan below the blower for driving air downwardly through the housing, a common motor driving the blower and fan, electric heating panels mounted within the housing below the fan, an outlet at the lower end of the housing for discharging heated air into the cab, and control means for said unit including means for reducing power to the heating panels in the event the motor falls whereby convective air movement upwardly through the housing between the lower opening and the upper intake continues to provide heat to the cab.

3,855,451

FOOD HEATING AND WARMING CABINET

Robert E. Lee, Huntington, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed May 2, 1974, Ser. No. 466,270

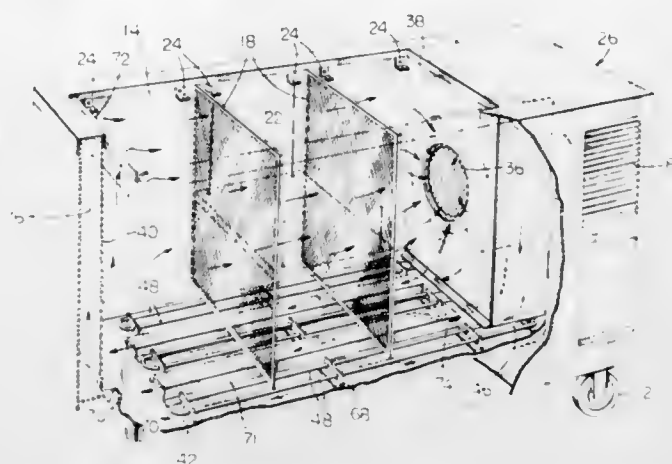
Int. Cl. A21b 1/22; F27d 1/02

U.S. Cl. 219-400

12 Claims

1. In an electrically heated insulated cabinet for heating packets of foodstuff preparatory to serving; a frame, an upwardly opening well formed in said frame having vertical side walls and end walls and a horizontal bottom wall, laterally extending perforated vertical partition means removably mounted in said well and dividing the well into compartments, lid means for closing the well, a blower in said frame outside one end wall of said well having an inlet opening into said well through said one end wall for circulating the air within the well to heat the packets of foodstuff, outlet means for said blower at the bottom of said one end wall whereby said blower expels air horizontally over the bottom wall of the well toward the other end wall of the well, electric heaters extending longitudinally above said bottom wall in laterally spaced relation and

within the range of the air discharged by said blower, and tunnel members mounted on said bottom wall between said



heaters and extending longitudinally along said bottom wall and having open ends spaced inwardly from said end walls.

3,855,452

KILN HEATING CONTROL SYSTEM

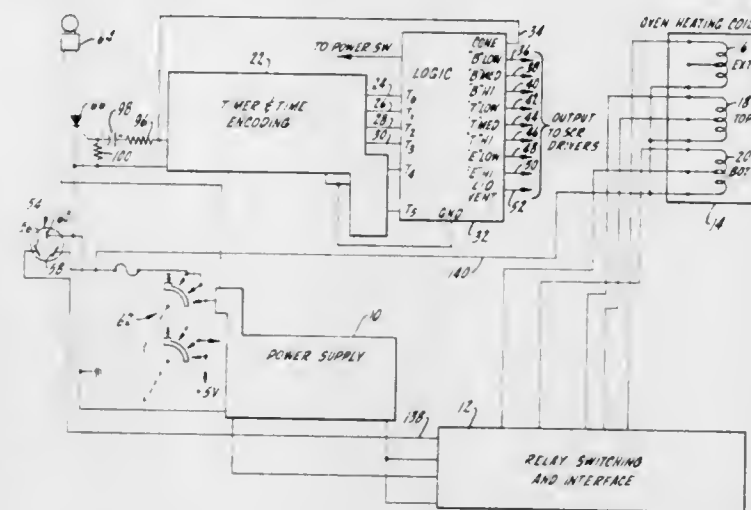
Michael D. Flasz, 3302 S. 59th Ave., Cicero, Ill. 60650, and Leonard Osuch, 3077 N. Elbridge Ave., Chicago, Ill. 60618

Filed Nov. 29, 1973, Ser. No. 420,151

Int. Cl. H05b 1/02

U.S. Cl. 219-486

7 Claims



1. A control system for an electrically heated ceramic kiln including a plurality of heating coils, a plurality of switching elements connected to said coils, there being at least two switching elements for each coil to provide at least two heating levels for each coil,

timing means for providing periodic controlled output time signals, and logic means connected to said timing means and to said switching elements, with sequential time signals providing predetermined outputs from said logic means to cause the operation of predetermined switching elements.

3,855,453

APPARATUS FOR CONTROLLED QUENCHING OF MELT EXTRUDED FILAMENTS

Don P. Manning, and Thomas A. Flower, both of Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 836,553, June 25, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,717

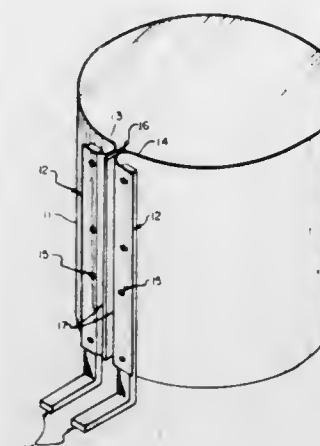
Int. Cl. H05b 3/10

U.S. Cl. 219-553

6 Claims

1. An improved apparatus for critically controlling the rate of cooling melt extruded filaments which comprises a sleeve constructed from a material having an electrical resistivity of 60 to 675 ohms per circular mil-foot, axial length of the sleeve being about 1 to 12 inches, diameter of the sleeve being about

3 to 20 inches, and thickness of the material from which the sleeve is constructed being about 0.001 to 0.125 inch, said sleeve being equipped with an electrical power supply input



means for heating said sleeve to provide a heated environment within said sleeve, whereby the temperature of said sleeve is maintained at about 200° to 525°C. thereby creating said heated environment within said sleeve at about 175° to 450°C.

3,855,454

VALIDATING SYSTEM AND METHOD

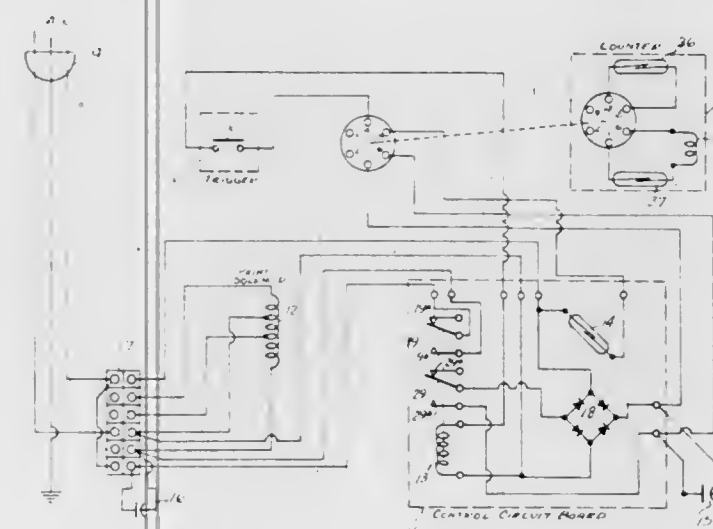
Irving A. Eisen, 9516 Clement Rd., Silver Spring, Md. 20904, and Gerard Maresca, 823 Sixth Ave., New York, N.Y. 10009

Filed Dec. 12, 1972, Ser. No. 314,330

Int. Cl. G06m 3/02

U.S. Cl. 235-92 CT

14 Claims



1. A validating system for parking tickets and the like comprising in combination:

a. a validator adapted to receive tickets to be validated, including:

i - means for impressing validating indicia on said tickets; ii - normally open first switch means for rendering said impressing means inoperative; and iii - trigger means for actuating said validating means when a ticket is inserted in said validator;

b. socket means mounted in said validator for pluggably receiving a counter; and

c. counter means charged with a predetermined number of validation units, mounted in said socket means for enabling said impressing means, including:

i - means for registering a count representative of said predetermined number of units comprising a plurality of rotatably mounted geared number wheels; ii - means for reducing said count by one unit each time a validation is made; iii - means for closing said first switch means when said counter means is inserted in said socket means;

iv - second magnetically responsive switch means in circuit with said trigger means for rendering said trigger means inoperative when said predetermined number of validation units have been exhausted;

v - third magnetically responsive switch means for rendering said reducing means inoperative when said predetermined number of validation units have been exhausted; and

vi - rotatably mounted magnetic means actuated by said count registering means and means for rotating said magnetic means 90° with respect to said second and third switch means in response to a predetermined rotation of one of said number wheels for causing said second and third switch means to open when said predetermined number of validation units have been exhausted.

3,855,455

SIGNAL ANALYZER

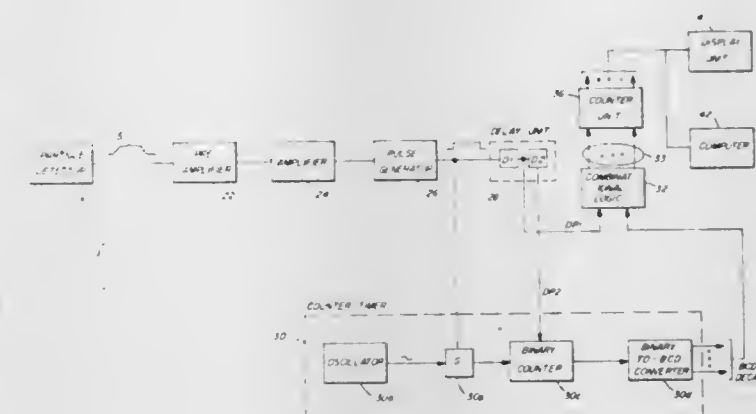
Hubert B. Allinger; Glen G. Gray; Robert S. Indre, and Robert J. Kelly, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,634

Int. Cl. G06m 11/04

U.S. Cl. 235-92 PC

3 Claims



1. A signal analyzer for automatically generating data related to the distribution of lengths of fibers suspended in a liquid medium, said analyzer comprising:

detector means comprising means adapted for immersion in said medium and having an orifice for detecting the passage of fibers therethrough and for generating a train of detector output pulses in accordance therewith, the duration of said pulses being proportional to the length and velocity of said detected fibers through said orifice, and to the thickness of said orifice;

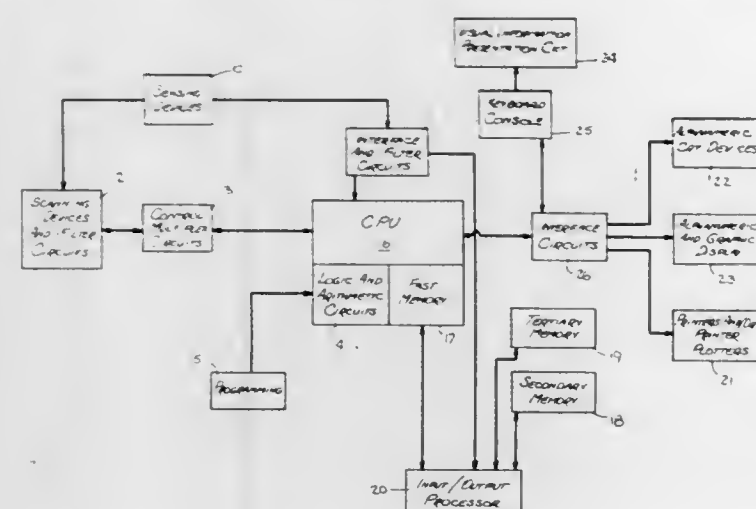
means responsive to said detector output pulses for determining the time duration of each pulse, each of said durations being representative of weighted mean fiber length, and said means comprising oscillator means for generating a signal of predetermined frequency, gating means for controlling the transmission of said predetermined frequency signal in accordance with the duration of said output pulses, counter means for counting the number of cycles in each of the output signals of said gating means, and means for converting the output of said counter means into corresponding digital coded signals; counter means responsive to said coded signals for counting the number of digital codes representing values within each of a plurality of value ranges; and

means for converting the counts in said counting means into data representing a distribution of lengths of fibers suspended in said liquid medium.

3,855,456

MONITOR AND RESULTS COMPUTER SYSTEM
 William A. Summers, North Haledon; Betty L. Christy, Radburn, both of N.J., and Joseph V. Sweeney, Manhasset, N.Y., assignors to Ebasco Services Incorporated, New York, N.Y.
 Filed Nov. 22, 1972, Ser. No. 308,770
 Int. Cl. G06f 15/46
 U.S. Cl. 235-151.3

95 Claims



1. A method of producing at least one log of data containing at least one line having provision for at least one value representing a bit of data to be logged in a monitoring and operations display system, the method comprising:

- receiving signals for monitoring devices corresponding to bits of data to be logged;
- providing a format for storing representations of the signals in memory means, each portion of the format corresponding to a different log;
- allocating at least one portion of the format for storing therein representations of the signals corresponding to a predetermined log;
- storing representations of the signals in the allocated portion of the format;
- requesting a predetermined log to be produced;
- retrieving representations stored in a selected portion for the format, the representations corresponding to the predetermined log to be produced; and
- presenting on an output display means the data of the retrieved representations in the form of a log.

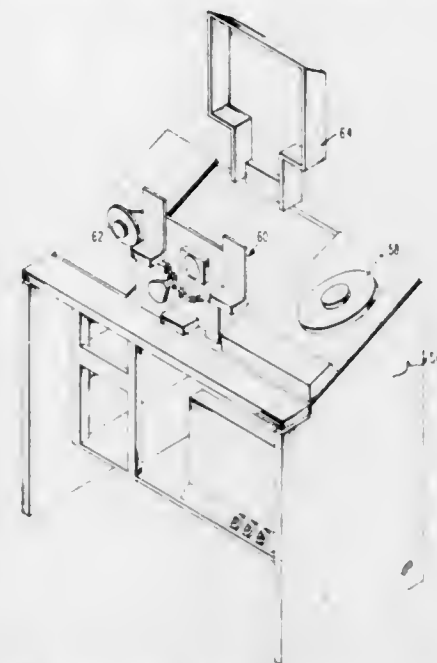
3,855,457

MACHINE FOR PROCESSING MERCHANDISING TICKETS IN BOTH ROLL AND INDIVIDUAL FORM
 Ronald Lloyd Amundson, Rochester; Wallace Eric Beuch, Pine Island; Charles Donald Green, and William John Harris, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed June 18, 1973, Ser. No. 371,319
 Int. Cl. G06k 7/08; B22d 13/00; B30b 1/00; C10g 37/02; B65g 3/04

6 Claims

1. In a machine for processing merchandise tickets in both connected or roll form and separate or individual ticket form, means defining a main ticket path, an encoding head in said path for encoding information on a ticket moving in said path, a read head in said path located downstream in the direction of ticket movement in said path with respect to said write head for reading encoded information on a ticket in said path, a hopper for individual tickets, a supply reel for a roll of tickets, means defining a first supply path connecting said reel with said main path for supplying connected tickets to said main path, means defining a second supply path connecting said hopper with said main path for supplying individual tickets to said main path, a stacker for individual tickets, a take-up reel for tickets in connected form, means defining a connected ticket delivery path connecting said main path with said take-up reel for delivering tickets in connected form from said main

path to said reel, means defining an individual ticket delivery path connecting said main path with said stacker for delivering individual tickets from said main path to said stacker, means defining an auxiliary individual ticket delivery path connected with said first named individual ticket delivery path for delivering individual tickets to a discard chute, means defining an auxiliary connected ticket delivery path connected with said first named connected ticket delivery path for delivering con-

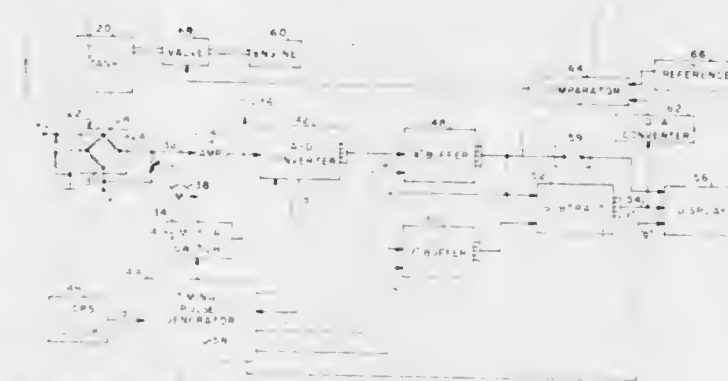


nected tickets exclusive of said take-up reel, a selectively operable ticket deflector for routing tickets from said main path to either said first named individual ticket delivery path or to said first named connected ticket delivery path, a selectively operable ticket deflector for routing individual tickets from said first named individual ticket delivery path to said auxiliary individual ticket delivery path, and a selectively operable ticket deflector for routing connected tickets from said first named connected ticket delivery path to said auxiliary connected ticket delivery path.

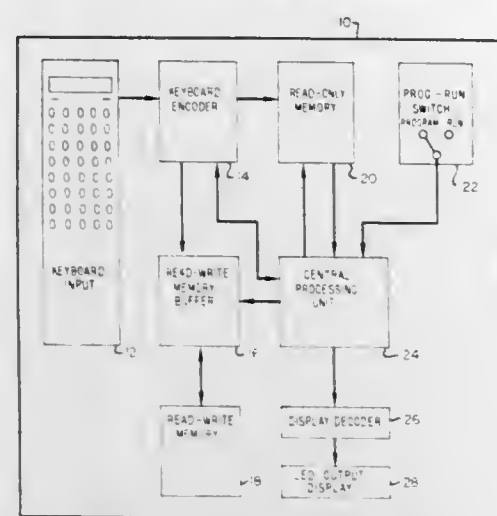
3,855,458
FLOW METER

James W. Motter, and Connie A. Allen, both of Huntsville, Ala., assignors to Toroid Corporation, Huntsville, Ala.
 Filed Aug. 21, 1973, Ser. No. 390,201
 Int. Cl. G01g 17/04; G06j 3/00
 U.S. Cl. 235-151.34

8 Claims



displaying the results of operations performed by the calculator and for displaying key codes;



said computing unit being responsive to actuation of a control element for causing the key code of the last key actuated to be displayed by the output display means.

3,855,462

HEAD LIGHT ARRANGEMENT FOR A VEHICLE

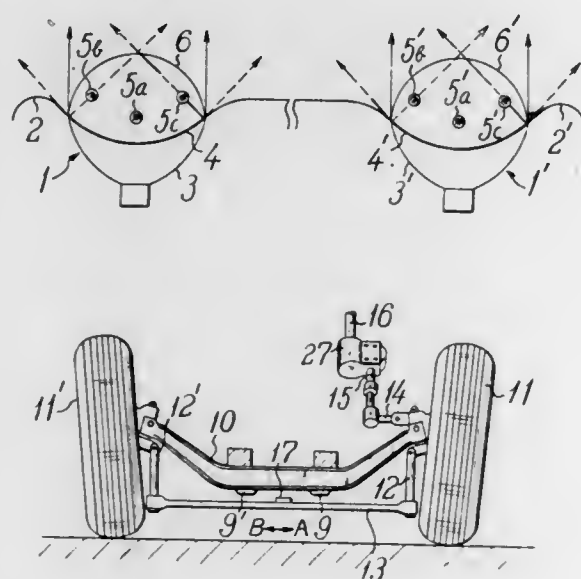
Takasi Kondo, No. 25-5 Narita-Nisi, 1-Chome, Tokyo, Japan

Filed Jan. 23, 1973, Ser. No. 326,035

Int. Cl. B60q 1/12

U.S. Cl. 240-8.24

3 Claims



1. A head light arrangement for a vehicle having a steering system including a front axle and a tie rod, comprising a pair of headlights each including a central light bulb and right-hand and left-hand light bulbs disposed laterally of said central light bulb and reflector means for each of said headlights, said reflector means each arranged so that illumination from each of said central light bulb is directed in a straightforward direction, and illumination from one of said right-hand and left-hand light bulbs of each of said headlights is directed in a rightward direction, and illumination from the other of each of said right-hand and left-hand light bulbs of each of said headlights is directed in a leftward direction; a power source to energize said head lights; selective switching means to select the energization of said right-hand and left-hand light bulbs of each of said headlights; and an actuator for actuating said selective switching means to effect the selection of said right-hand and left-hand light bulbs of each of said headlights responsive to steering movement of a steering system of said vehicle said selective switching means comprises two magnetically operated switches mounted on a front axle of said steering system in a spaced relationship to each other and wherein said actuator comprises a permanent magnet mounted on a tie rod of said steering system intermediate of said spaced mag-

netically operated switches, said spaced relationship to each other of said two magnetically operated switches being so that one of said switches is operated by said permanent magnet when the latter together with said tie rod moves a sufficient distance for said vehicle to turn the corner of the road on which said vehicle is running.

3,855,463

TRANSILLUMINATED PYRAMIDAL-SHAPED SUPERSTRUCTURE

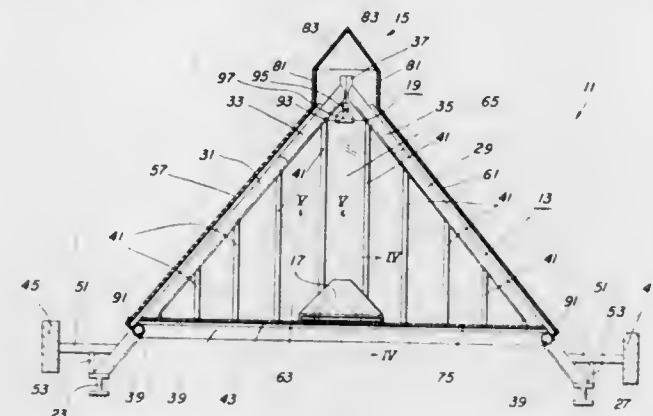
Joe W. Fowler, B2 Box 39, Reidsville, N.C. 27320

Filed Mar. 9, 1970, Ser. No. 17,793

Int. Cl. F21v 33/00, 5/02; E04d 13/03

U.S. Cl. 240-9 A

7 Claims



1. A transilluminated superstructure for a building comprising means providing an upwardly facing reflective surface, open frame means disposed above said reflective surface, a plurality of translucent panels, means supporting said panels from said frame means with said panels establishing a large enclosure over said reflective surface, said enclosure having a plurality of sloping sides with the interior surfaces thereof defining plenum means for redirecting a portion of the light striking said interior surfaces and passing the remaining portion through said sides, and high intensity discharge type light source means mounted in said enclosure centrally of said reflective surface for providing light to said plenum means; said panels including flanges along their opposite side edges; and said panels being arranged side-by-side with a side flange on one panel being adjacent a said flange on an adjacent panel, and said means supporting said panels including means holding pairs of said adjacent flanges together.

3,855,464

ELECTRIC LIGHT-TO-CANDLE LIGHT CONVERTER

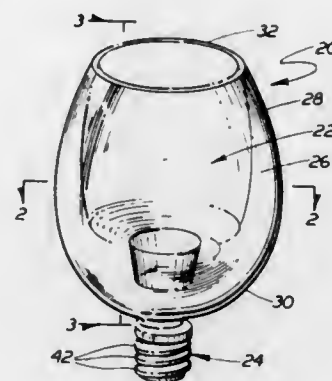
Stanley J. Angelo, Valmont Towers, Apt. 311, 7600 Roosevelt Blvd., Philadelphia, Pa. 19152

Filed June 4, 1973, Ser. No. 367,035

Int. Cl. F21v 21/00

U.S. Cl. 240-53

5 Claims



1. In combination with a conventional electric light fixture including a conventional threaded electric light socket for

holding a conventional electrically operated threaded bulb therein, a converter for converting said fixture into a candle holding fixture without requiring the removal of any electrical or mechanical portion of the fixture other than the bulb, said converter comprising candle-holding means having a recess supporting a candle therein, said means including a base portion having threads thereon, with said base being directly screwed into the threaded mouth of the socket of said fixture.

3,855,465

APPARATUS FOR INSPECTING TUBULAR GOODS

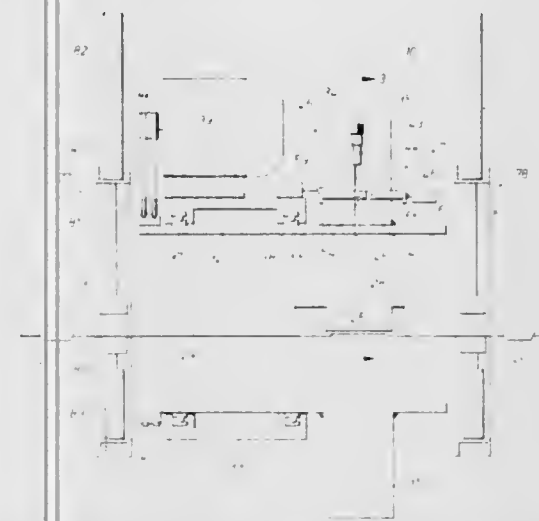
David R. Tompkins, Houston, Tex., assignor to Plastic Applicators, Inc., Houston, Tex.

Filed Oct. 14, 1971, Ser. No. 189,306

Int. Cl. G01t 1/20

U.S. Cl. 250-71.5 R

16 Claims



1. An inspection system comprising: radiation-emitting means adapted to direct a radiation beam through a test specimen along a selected axis for producing a uniform radiation pattern of known dimensions on a distant transverse plane intersecting said beam axis; and radiation-detecting means including a radiation-sensitive element having an active portion and adapted for movement along said plane between a normal position uniformly located in relation to said radiation pattern and at least one other position spaced from said normal position and located eccentrically in relation to said radiation pattern, said active portion of said radiation-sensitive element being cooperatively shaped for producing uniform output signals representative of at least one radiation-responsive characteristic of such a test specimen upon movements of said radiation-sensitive element between said spaced positions.

3,855,466

CIRCUIT ARRANGEMENT FOR LINEARIZATION OF THE CHARACTERISTIC OF A SENSOR

Karlhans Schwarz, Owingen, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Überlingen/Bodensee, Germany

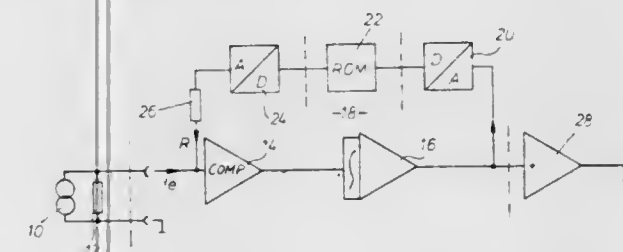
Filed Jan. 23, 1974, Ser. No. 435,879

Claims priority, application Germany, Apr. 5, 1973, 2317023

Int. Cl. H01j 39/12

U.S. Cl. 250-212

3 Claims



1. In an electronic apparatus for linearization of the output signal of a sensor having a given characteristic, which appara-

tus comprises an amplifier channel having an input and an output and a non-linear feedback loop around said channel, the improvement wherein said feedback loop comprises:

- a) an analog-to-digital converter connected to said output to convert the signals from the channel output to digital form;
- b) a read-only memory having the characteristic of said sensor stored therein, said memory being connected to said converter to receive said signals in digital form and to produce digital output signals corrected for temperature; and
- c) a digital-to-analog converter connected to said memory to convert said corrected signals to analog form, said digital-to-analog converter being connected to said channel input to apply said corrected signals in analog form to said input.

3,855,467

SYSTEM FOR EFFECTIVELY ENLARGING A DETECTOR WINDOW

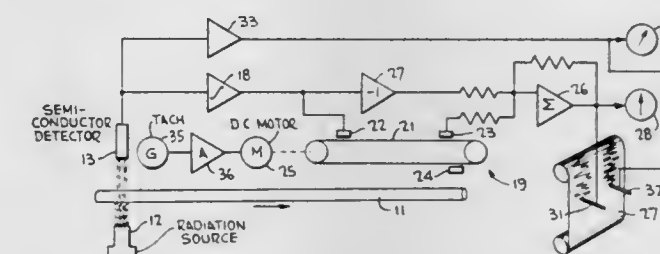
Henry Roy Chope, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Apr. 11, 1968, Ser. No. 720,688

Int. Cl. G01b 7/06

U.S. Cl. 250-572

25 Claims



1. A combination of apparatus utilizing only a single detector for a property of physical matter, said property varying as a function of time and displacement, said detector and matter being moved relative to each other as a function of time, said detector being responsive simultaneously to said property in different portions of said matter which are spaced from each other over a continuum having a limited displacement spread for deriving a signal indicative, at any time, of the value of the property over said limited displacement spread, and means for converting said signal to an output signal which is responsive simultaneously to variations in said property occurring in different portions of said matter which are spaced from each other over a continuum having a displacement spread larger than said limited displacement spread.

3,855,468

WELL LOGGING METHOD AND MEANS USING AN ARMORED MULTICONDUCTOR COAXIAL CABLE

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,156

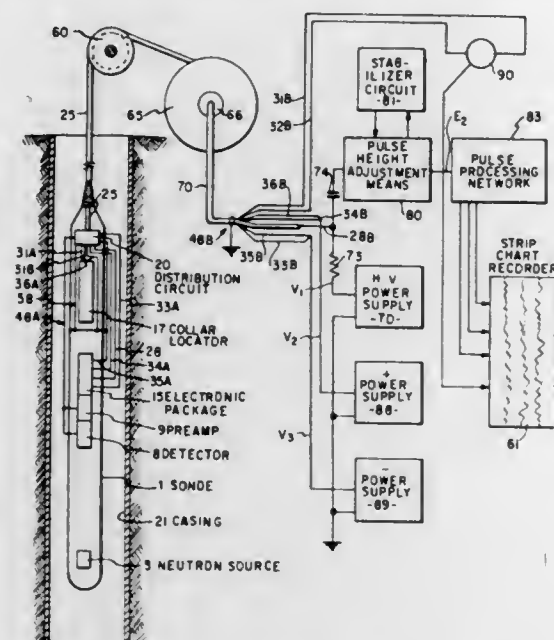
Int. Cl. G01t 1/16

U.S. Cl. 250-262

7 Claims

1. A nuclear well logging system comprising a logging tool adapted to be passed through a borehole in an earth formation, said logging tool includes detecting means responsive to penetration radiation in the borehole for providing data pulses corresponding in number and amplitude to the detected penetration radiation, means for detecting another condition in the borehole and providing a low frequency signal corresponding thereto; a transmission system including an armored multiconductor coaxial cable which comprises an inner conductor, a coaxial first insulator, groups of conductors arranged in a predetermined relationship to said inner conductor and separated from said inner conductor by said coaxial insulator, means for separating the conductor groups so as to insulate each conductor group from any other conductor group of the groups of conductors, a second coaxial insulator, and an outer armor of conductive material separated from said groups of

conductors by said second coaxial insulator; the logging tool also includes means connected to the sensing means, to the detecting means, and to the transmission system for applying the data pulses from the detecting means to the inner conductor and to the groups of conductors of the cable and for applying



ing the signal from the sensing means to one conductor of the plurality of conductors and to the outer armor of the conductive material; and surface electronics adjacent to the borehole for processing the data pulses and the condition signal transmitted by the transmission system to provide outputs corresponding to the detected radiation and the sensed condition.

3,855,469

DEVICE FOR THE DISPLAY OF LOCAL DISORIENTATIONS IN SINGLE CRYSTALS

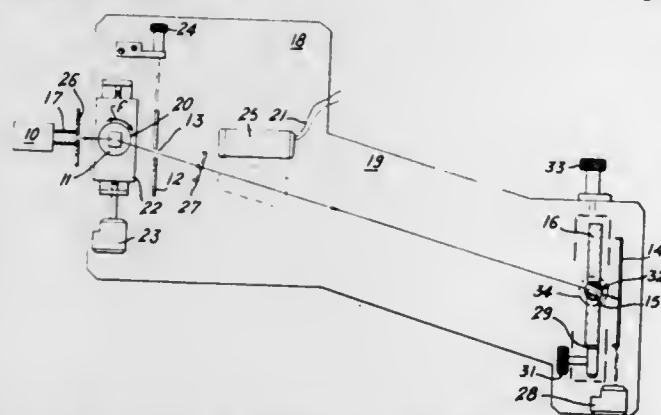
Max Pluchery, Grenoble, and Claude Roughon, Fontaine, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Continuation of Ser. No. 222,634, Feb. 1, 1972, abandoned. This application Aug. 29, 1973, Ser. No. 392,439

Claims priority, application France, Feb. 3, 1971, 71.03560 Int. Cl. G01n 23/22

U.S. Cl. 250—272

3 Claims



1. A device for the display of local disorientations in single crystals comprising a monochromatic X-radiation source, means for directing a beam of incident X-rays from said source onto the single crystal, means for detecting the intensity of the diffraction emergent X-ray beam from the crystal, means for displacing the single crystal, said X-ray source being seen from the single crystal at a substantial solid angle on the order of $1'$ to 1° and said beam of incident X-ray being substantially divergent with an aperture angle of from $1'$ to 1° , said means for displacing the single crystal including a rotatable goniometric clamp supporting the crystal, a carriage supporting said clamp, means for moving said clamp substantially at right angles to the direction of the incident X-ray beam, said means for detecting the intensity of the diffracted emergent beam including a stationary screen having a selecting slit downstream of the crystal for passage of said diffracted beam.

3,855,470 PROCESS AND APPARATUS FOR X-RAY CRYSTALLOGRAPHY

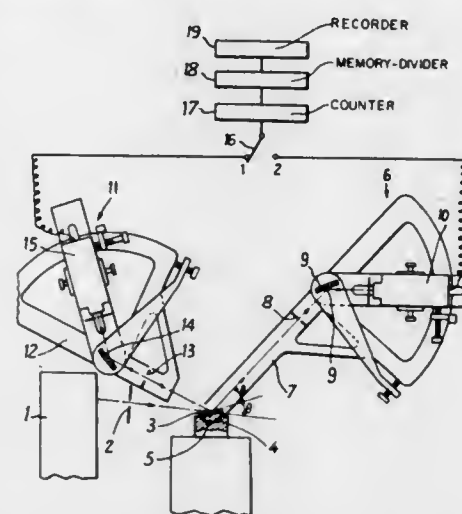
Jean Sahores, Buros, and Henri Ducasse, Lescar, both of France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed Jan. 22, 1973, Ser. No. 325,353

Int. Cl. G01n 23/00

U.S. Cl. 250—273

9 Claims



1. An x-ray crystallographic process comprising, measuring the intensity of the radiation (I_d) diffracted by each constituent element of a sample, identified qualitatively by its angle of diffraction, measuring the intensity of the Compton radiation (I_c) scattered by the whole sample, and determining the content C of each element as the ratio of the intensity I_d with respect to the intensity I_c .

3,855,471

RADIOGRAPH RECORDING APPARATUS

Yoshizo Ikegami, Amagasaki, Japan, assignor to Konan Camera Research Institute, Nishinomiya, Hyogo, Japan

Filed Apr. 20, 1973, Ser. No. 352,990

Int. Cl. G01n 21/34

U.S. Cl. 250—320

8 Claims



1. A radiograph recording apparatus for obtaining a continuous series of radiographs produced on the surface of a photosensitive recording paper comprising:

an X-ray generator means for generating X-rays toward an object to be examined,

an image multiplier tube which produces an image on a fluorescent screen of said image multiplier tube in response to said X-rays received from said object,

a platform structure including an upper platform portion supporting said X-ray generator means and a lower platform portion supporting at least said image multiplier tube, said upper and lower platform portions being connected in said platform structure with a cross-section which is approximately rectangular, said object being placed between said upper and lower platform portions, wherein said platform structure includes wheels for providing relative movement between said object and said X-ray generator and image multiplier tube,

a television camera tube means being arranged in connection with the image multiplier tube in such a manner that said television camera tube means continuously scans a line on said fluorescent screen of said image multiplier tube, said line scan being in the direction perpendicular

to the direction of relative movement between said object and said X-ray generator and image multiplier tube, an image reproducing means for converting a video signal from said television camera tube into image reproducing signals which scan linearly on a front plate of said image reproducing means, and a photosensitive recording material which is moved in a direction parallel to the linear scan image reproducing signals of said image reproducing means.

3,855,472

DEVICE AND A PHOTOGRAPHIC FILM PACKAGE FOR USE IN AUTOMATIC RADIOGRAPHY

Jacques Robert Philippe Removille, Luxembourg, and Francois Schmit, Bascharage, both of Luxembourg, assignors to European Atomic Energy Community (Euratom), Luxembourg, Luxembourg

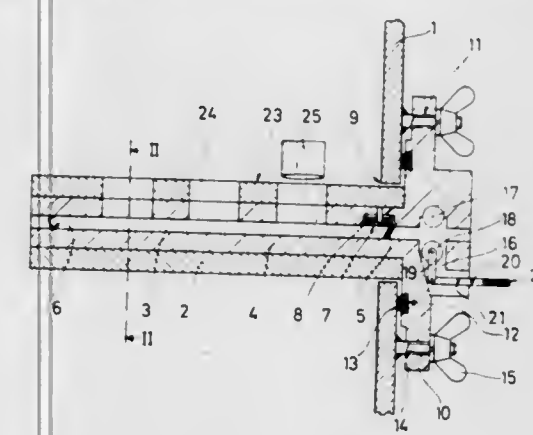
Filed Jan. 16, 1973, Ser. No. 324,175

Claims priority, application Luxembourg, Jan. 19, 1972, 64613

Int. Cl. G03b 41/16

U.S. Cl. 250—321

4 Claims



1. A device for automatically radiographing radioactive or X-ray emitting samples inside a radiation shielding enclosure, said device comprising:

means for supporting a photographic plate including a plate holder having a passage therein, said passage being lined with a radiation shielding material and having a plate inlet and a plate outlet,

a seal disposed in said passage at said inlet,

plate retaining means disposed in said passage at said outlet, said holder having one or more recess means adjacent said passage between said inlet and outlet for holding said samples to be radiographed,

and means for securing said holder in a sealing-tight manner to the inner wall of said enclosure,

whereby when said device is in use said passage receives a photographic plate through said inlet and holds said plate between said inlet and outlet.

3,855,473

RADIOACTIVITY MEASURING DEVICE WITH A MOVABLE DETECTOR HEAD

John E. Burgess, Arlington Heights; Kenneth C. Dieball, Barrington, and Raymond F. Obrycki, Mt. Prospect, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 273,768, July 21, 1972, abandoned.

This application June 4, 1973, Ser. No. 366,676

Int. Cl. G01t 7/02

U.S. Cl. 250—328

22 Claims

1. A radiation measuring device for measuring radioactivity of a multiplicity of discrete samples comprising:

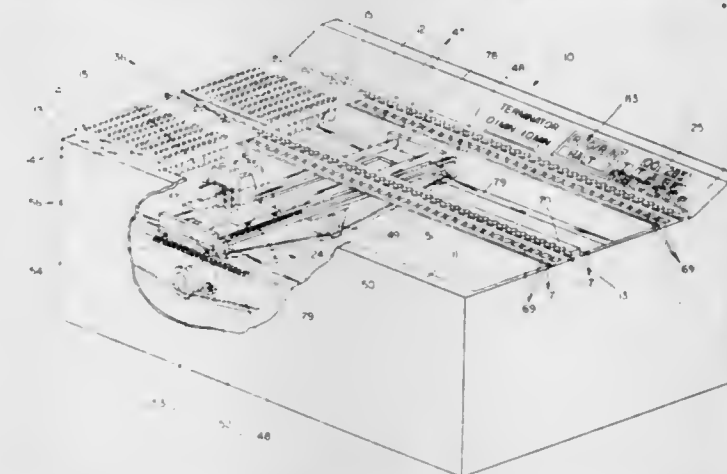
a. a mounting frame,

b. sample bearing means supported by said mounting frame for positioning a multiplicity of discrete samples at predetermined intervals from each other in a lateral array with samples depending from said sample bearing means,

c. a detector head containing at least one photodetector that generates electrical pulses of energy proportional to

the energy in scintillations received, protected by a shielding means that defines an aperture extending proximate to each photodetector,

d. translation inducing means coupled to said detector head for moving said detector head laterally beneath the aforesaid samples to traverse the aforesaid array of samples and for moving the detector head vertically alternately between a lowered position located beneath the aforesaid samples and a raised position with a substantial portion of at least one depending sample extending into one of the



aforesaid apertures in said shielding means proximate to a photodetector,

e. a scintillator sensitive to radioactive events located proximate to said photodetector and to samples extending into said apertures when said detector head is in the aforesaid raised position, and

f. pulse counting means connected to said photodetectors for receiving and tabulating pulses generated as a result of radioactive events occurring in the samples extending into said apertures in the shielding of said detector head.

3,855,474

NON-SCANNING OBJECT POSITION INDICATING RADIOMETRIC DEVICE INDEPENDENT OF OBJECT IRRADIANCE VARIATIONS

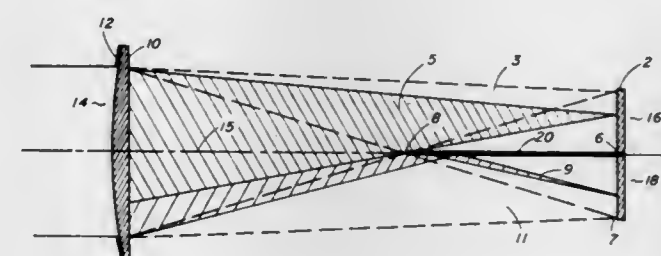
Kenneth A. Ward, Greenwich, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed June 28, 1973, Ser. No. 374,718

Int. Cl. G01j 3/02

U.S. Cl. 250—349

6 Claims



1. A non-scanning extended-source position-indicating device for determining the position of an edge of an extended source within a rectangular field of view which is independent of source irradiance and relatively independent of variation of radiation along the extended source comprising, in combination,

a. an objective lens having a rectangular aperture and a rectangular field of view,

b. radiation detector means optically positioned at the focal plane of said objective lens,

c. obstruction means for splitting the radiation from said rectangular field of view falling on said detector means, said obstruction means extending at the optical axis to a point at which a ray of radiation from the lower edge of the aperture crosses the optical axis in reaching the upper edge of said detector means.

3,855,475

UV-SPECTROGRAPHIC ANALYSIS OF BERYLLIUM AND CARBON FOR DETERMINING NUCLEAR REACTOR FUEL ELEMENT CONSUMPTION

Martin Demmeler, Grosshesselohe, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung, Julich, Germany

Filed Dec. 18, 1972, Ser. No. 316,257

Claims priority, application Germany, Dec. 23, 1971, 2164098

Int. Cl. G03b 27/04

U.S. Cl. 250—372

2 Claims

1. A spectral analytic method of determining the consumption of fuel elements for nuclear reactors, according to which the fuel is contained in a graphite covering, which includes in combination the steps of:

- establishing an electric arc;
- volatizing traces of the component parts of the surface of a fuel element in said electric arc;
- splitting up the thus formed arc light;
- scattering the characterizing lines of the graphite and of the beryllium formed during irradiation in said reactor; and
- comparing the intensity proportions of at least one of the lines of said beryllium lying in the UV region and at least one of the lines of said graphite lying in the UV region.

3,855,476

FILM TRANSFER DEVICE

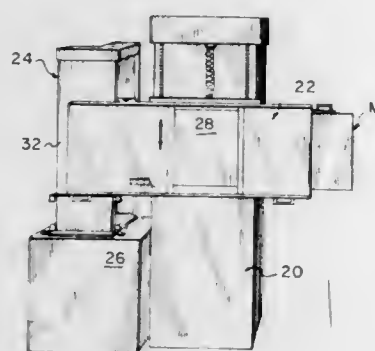
Robert B. Farmer, Boulder, Colo., assignor to Katum Corporation, Boulder, Colo.

Filed Apr. 13, 1973, Ser. No. 350,891

Int. Cl. G01n 23/00

U.S. Cl. 250—470

9 Claims



1. For use in combination with an x-ray unit having a vertically adjustable film exposure unit operable to discharge an exposed film from a film discharge slot at one side thereof throughout the entire range of vertically adjustable movement of the exposure unit, and a stationary film processing unit having an upwardly opening film receiving slot, a film transfer unit for transferring exposed film from the discharge slot of said exposure unit to the receiving slot of said processing unit comprising a vertically elongate housing having an opening at its lower end adapted to overlie said receiving slot, mounting means at the lower end of said housing for mounting said housing upon said processing unit with said film receiving slot encompassed by said opening, said housing having a vertically elongate slot in one side thereof extending along the entire range of movement of said discharge slot of said vertically adjustable exposure unit when said housing is mounted upon said processing unit, first light seal means on the exterior of said housing extending along opposite sides of said vertically elongate slot slidably engageable with said exposure unit on opposite sides of said discharge slot, second light seal means on the interior of said housing extending along opposite sides of said vertically elongate slot, an upper and a lower curtain

section spanning said vertically elongate slot and slidably engaged along their opposite side edges by said second light seal means, and third light seal means for securing the lower end of said upper curtain section to said exposure unit above said discharge slot and for receiving the upper end of said lower curtain section to said exposure unit below said discharge slot, said third light seal means extending transversely across said first light seal means to slidably engage said first light seal means at opposite sides of said vertically elongate slot.

3,855,477

DETECTION AND MEASUREMENT OF RADIATION DAMAGE BY POLARIZED LIGHT

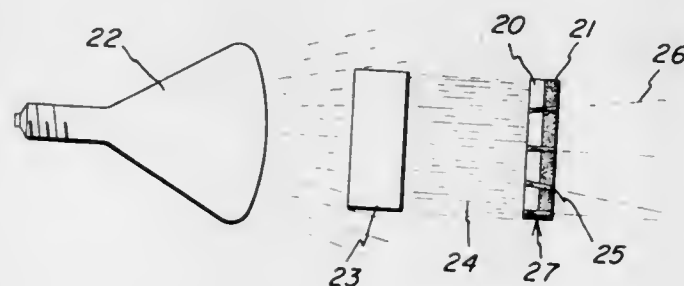
Robert L. Fleischer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,428

Int. Cl. G01t 5/10

U.S. Cl. 250—473

6 Claims



1. A process for detecting and measuring radiation damage which comprises providing a sheet of dielectric polarizing material having a thickness of at least about 1 micron, exposing said dielectric polarizing sheet to radiation to produce tracks of radiation damaged material therein extending from one surface through the opposite surface thereof, contacting said sheet with an etchant to selectively dissolve and remove said tracks of damaged material to form holes therein passing from one surface through the opposite surface thereof, said holes in the resulting etched polarizing sheet not being visible to the unaided eye, irradiating unpolarized visible light on a side of a polarizer which polarizes the light by selective absorption to transmit visible light polarized in a single plane, irradiating said visible light polarized in a single plane on one side of said etched polarizing sheet, and while said visible polarized light is irradiated on one side of said etched polarizing sheet positioning said sheet until it substantially blocks transmission of said visible polarized light and appears substantially opaque in said polarized light resulting in passage of said visible polarized light only through said holes in said sheet, said visible polarized light emerging from said holes on the opposite side of said sheet indicating the presence of said holes.

3,855,478

Patent Not Issued For This Number

3,855,479

RAY DIAGNOSIS APPARATUS

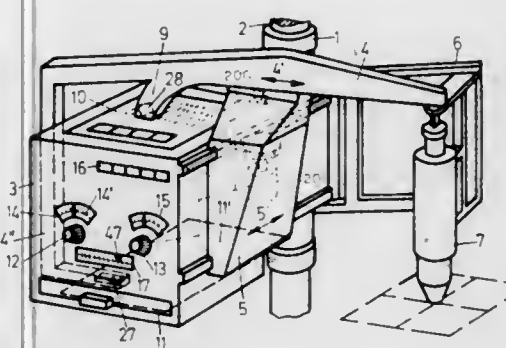
Jobst V. Harsdorf, and Edgar Tschunt, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Continuation-in-part of Ser. No. 788,722, Jan. 3, 1969, abandoned. This application Apr. 12, 1971, Ser. No. 132,997

Int. Cl. G01t 1/20; A61b 6/00

U.S. Cl. 250—369

3 Claims



1. An apparatus for determining the distribution of radioactive substances in a body, comprising a radioactive substance measuring head, means for moving the measuring head for a line-wise scanning of said body, impulse producing means connected with said head, means for producing a synchronous movement of the measuring head and a light actuated writer for the distribution of radioactive substances, adjusting means for adjusting the impulse rate of n of the impulse producing means, adjusting means for adjusting the scanning speed v of the measuring head, a calculating means interconnecting the two adjusting means and providing the quotient n/v , a setting means for setting the flash duration of said writer connected with said interconnecting means and said writer for setting flash duration corresponding to the quotient n/v , and an electrical circuit means connecting said writer with said impulse producing means.

3,855,480

FAULT-INDICATING CIRCUIT FOR A FLOW-METERING SYSTEM

Gyorgy Striker, and Bela Gyurusi, both of Budapest, Hungary, assignors to Meresteknikai Kozponti Kutató Laboratorium, Budapest, Hungary

Continuation-in-part of Ser. No. 251,749, May 9, 1972, abandoned. This application Nov. 14, 1973, Ser. No. 415,805

Claims priority, application Hungary, May 21, 1971, ME 1362

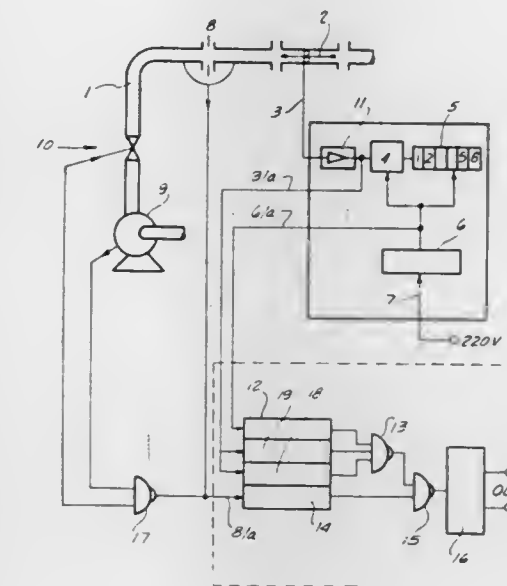
Int. Cl. G01f 15/00

U.S. Cl. 307—118

3 Claims

1. In a flow metering system comprised of a fluid conduit, means for establishing a flow of fluid through said conduit, means for generating an electrical flow velocity signal indicative of the velocity of fluid flow through said conduit, means for registering the value of said electrical flow velocity signal over a period of time in order to determine the quantity of fluid passing through said conduit during such period of time, a source of biasing voltage for said means for registering, and means for detecting the existence or non-existence of fluid flow in said conduit, in combination therewith, a fault-indicating circuit including a first transistor, means for applying to the base of said first transistor a voltage corresponding

to said electrical flow velocity signal, a second transistor having a base connected to the collector of said first transistor, means for applying to the collectors of said transistors a biasing voltage corresponding to the output voltage of said source of biasing voltage, a third transistor having an emitter connected to the emitter of said first transistor, a parallel RC circuit comprised of the parallel connection of a resistor and a capacitor connected across the base-emitter junction of said third transistor, a first charging circuit branch connected



between the emitter of said second transistor and the base of said third transistor and operative for charging said capacitor with current flowing through the collector-emitter path of said second transistor, means including a second charging circuit branch connected to the base of said third transistor and connected to said means for determining the existence or non-existence of fluid flow and operative for charging said capacitor with current by applying to the input of said second charging circuit branch a predetermined voltage when said means for detecting the existence or nonexistence of fluid flow in said conduit detects the existence of fluid flow in said conduit, and warning means comprising a fourth transistor having a base-emitter junction connected across the collector-emitter path of said third transistor, an indicating lamp connected between the collectors of said second and fourth transistors, means connecting the base of said fourth transistor to the collector of said second transistor, and a relay connected across the collector-emitter path of said fourth transistor.

3,855,481

N-STATE LOGIC CIRCUIT

Archibald James DeMone, 515 Bernardo Ave., Apt. 10, Sunnyvale, Calif. 94086

Filed Apr. 9, 1973, Ser. No. 349,144

Int. Cl. H03k 23/08, 3/29

U.S. Cl. 307—225 R

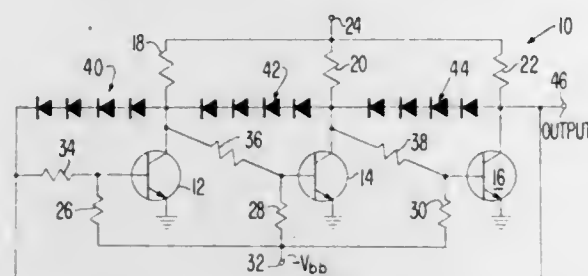
10 Claims

1. An electronic circuit for generating an output signal having N discrete levels each representative of a different stable state where $N \geq 3$, said circuit comprising:

- N bistable elements each having first and second terminals adapted to be coupled to first and second reference voltage sources and a control input terminal adapted to be coupled to an actuating signal;
- a plurality of unidirectional conducting devices for coupling together the first terminals of adjacent ones of said bista-

ble elements, one of said first terminals serving as an output terminal for manifesting said N level output signal; and

means for coupling said first terminal of individual ones of said bistable elements to the control input terminal of an adjacent one of said bistable elements so that actuation of one of said bistable elements by the application to the



control input terminal thereof of an actuating signal maintains the control input terminal of the adjacent bistable element at a signal level sufficient to hold said adjacent bistable element in an non-actuated state, the remaining ones of said bistable elements being held in the non-actuated state by said unidirectional conducting devices.

3,855,482

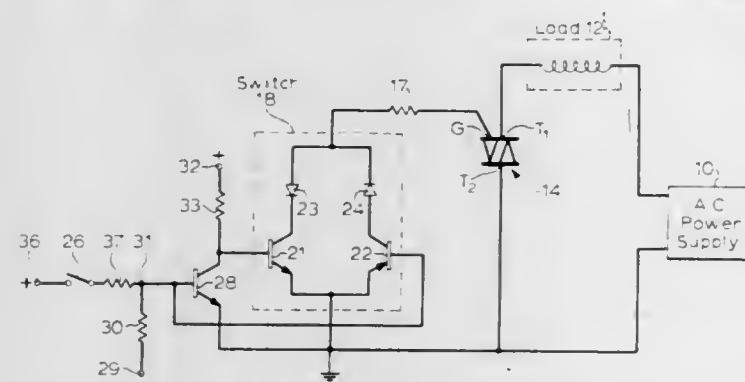
SOLID STATE SWITCHING SYSTEM FOR COUPLING AN AC POWER SUPPLY TO A LOAD

Frank E. Wills, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 285,960
Int. Cl. H03k 17/72

U.S. Cl. 307-252 B

1 Claim



1. A solid state switching system for controlling the application to a load of an alternating voltage provided by a two-terminal AC power supply, comprising:
a triac having first and second main terminals and a gate terminal;

means for connecting one of the power supply terminals through the load to said first main terminal and for connecting the other power supply terminal directly to said second main terminal;

a triggering circuit coupled between said gate terminal and said second main terminal and including a series-connected resistor and a series-connected electronic switch having a complementary pair of parallel-connected transistors, the emitters of which are joined together and connected directly to said second main terminal, and in which the collectors of said transistors are connected through respective ones of a pair of oppositely-poled diodes to one terminal of said resistor, the other terminal of said resistor being connected to said gate terminal;

and control means for establishing and maintaining said transistors forward biased to permit conduction thereof in alternation in response to polarity changes of the alternating voltage in order to close said electronic switch and effect bidirectional current flow between said gate terminal and said second main terminal to trigger said triac into

conduction at the beginning of each half cycle of the alternating voltage, thereby effectively applying that voltage continuously to the load via the conducting triac while at the same time deriving the bidirectional triggering current entirely from the AC power supply so that no loading is placed on said control means.

3,855,483

MEMORY SYSTEM INCORPORATING A MEMORY CELL AND TIMING MEANS ON A SINGLE SEMICONDUCTOR SUBSTRATE

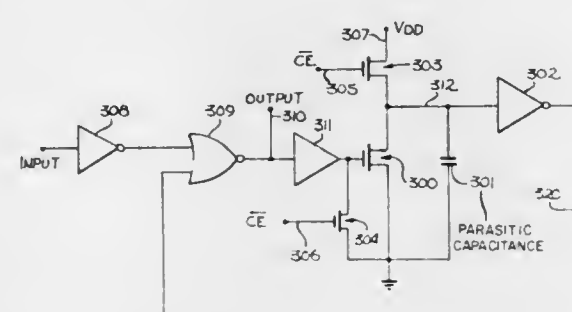
Joel A. Karp, and William M. Regitz, both of Cupertino, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 225,829, Feb. 14, 1972, Pat. No. 3,778,784. This application Mar. 15, 1973, Ser. No. 341,565

Int. Cl. H03k 17/00

U.S. Cl. 307-279

5 Claims



1. A timing circuit comprising:

a field effect transistor having at least two terminals and a gate;

capacitance means having one terminal coupled to one terminal of said transistor;

charging means for selectively charging said capacitor means coupled to said capacitor means;

logic circuit means for providing a logic output signal upon predetermined conditions;

Schmitt trigger means having its input coupled to said one terminal of said capacitor and said one terminal of said transistor, and its output coupled to said logic circuit means;

whereby the output of said Schmitt trigger shall be a function of the rate at which said capacitor means discharges.

3,855,484

ELECTRONIC CIRCUIT ARRANGEMENT

Hendrik Arie Van Essen; Arie Slob, and Johannes Paulus Lambertus Lagerberg, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

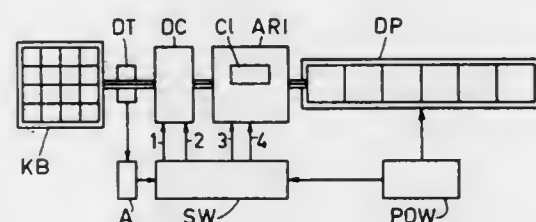
Filed Mar. 14, 1973, Ser. No. 340,958

Claims priority, application Netherlands, Mar. 25, 1972, 7204035

Int. Cl. H03k 17/00

U.S. Cl. 307-296

2 Claims



1. An integrated circuit arrangement for processing an information signal at a reduced power consumption comprising:

a power supply; an injection logic circuit including logic gates, a clock for controlling the speed of operation of the gates, and connections for current sources for current injectors of the circuit;

3,855,486

STEP MOTOR

Wilhelm Binder; Rudolf Hauer, both of Villingen, and Edmund Bausch, Kirchen-Hausen, all of Germany, assignors to Binder Magrete GmbH, Villingen, Germany

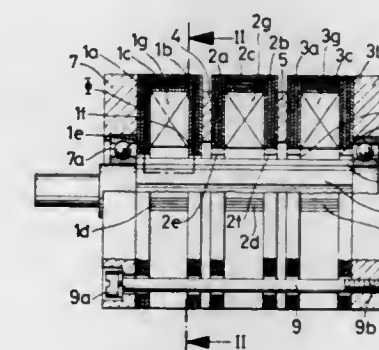
Filed Oct. 11, 1973, Ser. No. 405,645

Claims priority, application Germany, Oct. 11, 1972, 2249729

Int. Cl. H02k 37/00

U.S. Cl. 310-49

19 Claims



3,855,485

GROUND COIL ASSEMBLY OF A LINEAR INDUCTION MOTOR WITH D.C. LEVITATING ARMATURE FOR HIGH SPEED VEHICLE

Kazumi Matsui; Takashi Umemori, both of Tokyo; Masahiko Toyoshima, Hitachi; Kozo Katakami, Hitachi, and Susumu Osawa, Hitachi, all of Japan, assignors to Hitachi Cable Limited and Japanese National Railway, both of Tokyo, Japan

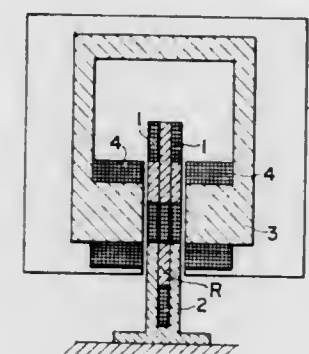
Filed June 11, 1973, Ser. No. 368,929

Claims priority, application Japan, June 10, 1972, 47-57347; July 28, 1972, 47-75034

Int. Cl. H02k 41/02

U.S. Cl. 310-13

3 Claims



1. In a ground coil assembly of a D. C. linear motor for a high speed vehicle, wherein said linear motor is of the type wherein the vehicle has movable magnetic fields disposed such that the magnetic flux generated is perpendicular to the current loop of the fixed armature windings of the ground coil assembly and cuts across vertical and horizontal conductors of the fixed armature windings, and wherein the fixed armature windings consist of rectangular current loops having vertical and horizontal conductors, aligned continuously along the path of travel of the moving vehicle, and a relative lift is developed between the horizontal conductors of the fixed armature windings and the movable magnetic field and at the same time a relative drive is developed between the vertical conductors of the fixed armature windings and the moving magnetic field to thereby cause the vehicle to be suspended and propelled along the path, the improvement wherein:

the fixed armature windings of the ground coil assembly comprises a coil which includes a multiplicity of coil elements of at least two electrical phases arranged with a conductor for respective phases of $2\pi/n$ relative to each other, and said ground coil assembly further comprises a fixed induction coil which includes a multiplicity of coil elements of the same winding pitch as that of the coil elements of the fixed armature coil, with the coil elements of the fixed induction coil having a conductor pitch of $2\pi/2n$, wherein n is the number of phases of said armature coil.

3,855,487

VIBRATION GENERATOR FOR STUDYING STRUCTURES

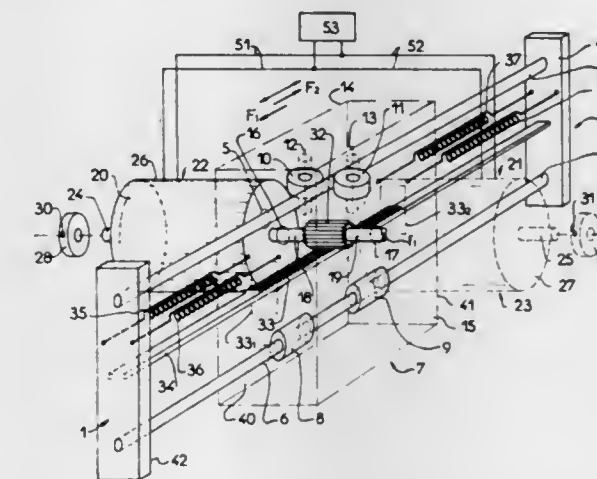
Jean-Francois Boisseau, Paris, France, assignor to Office National D'Etudes Et De Recherches Aerospatiales (par abbreviation D.N.E.R.A.), Chatillon-sous-Bagneux, France

Filed Feb. 12, 1973, Ser. No. 331,487

Int. Cl. H02k 7/06

U.S. Cl. 310-80

19 Claims



1. A vibration generator for attachment to a structure to be studied comprising: a frame element having means for attachment to said structure, a weighted mass mounted for rectilin-

ear reciprocation upon said frame element, rotary motor means capable of rotation in either of two opposite rotational directions having a motion output shaft carried by said frame element, and means interconnecting said motion output shaft and said mass whereby rotational motion of said motor is converted to linear motion of said mass, and cyclic operation of said motor results in the impartation of a vibration to said frame.

3,855,488

PUSH BUTTON PULSE SIGNAL GENERATOR

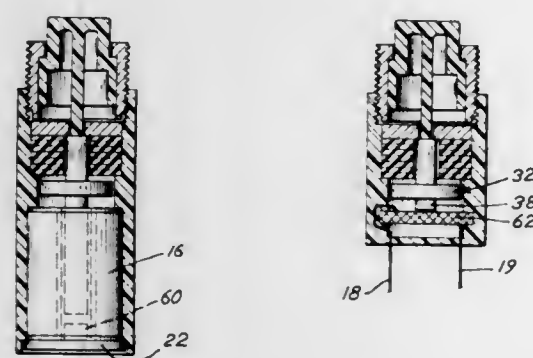
Leon R. Britton, Chicago; Frank S. Vojir, Berwyn, and William W. Wright, Wheaton, all of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Continuation of Ser. No. 240,161, March 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 170,729, Aug. 11, 1971, Pat. No. 3,718,828. This application Sept. 17, 1973, Ser. No. 398,065

Int. Cl. H04r 17/00; H03k 3/00

U.S. Cl. 310—8.3

2 Claims



1. A push button signal generator comprising, in combination:

- a. a housing having a longitudinal axis and having mounted therein the following:
 - a. a piezoelectric plate mounted in one end of said housing, said plate having signal leads;
 - b. A movable plunger of magnetic material including an extension at one end engageable with said plate, said plunger also including an intermediate flange portion and a projection at the other end;
 - c. A fixed magnet adjacent said flange portion for magnetically attracting said plunger in a first direction to a first position not engaging said plate;
 - d. a keeper plate for engaging said projection to limit the travel of said plunger in said first direction and prevent said flange from engaging said magnet; and
 - e. push button means including an extension for engaging said plunger and driving said plunger in a direction opposite the first direction against the force of said magnet and into engagement with said plate to thereby generate an electrical signal across said leads, said magnet acting to return said plunger to said first position upon release of said push button means.

2. A push button signal generator comprising, in combination a housing having a longitudinal axis and having mounted therein the following:

- a. a coil with a center opening substantially parallel to the longitudinal axis;
- b. a movable plunger of magnetic material including a portion movable in the coil opening, a flange portion outside one end of the coil and a projection extending from said flange portion;
- c. a fixed magnet adjacent said flange portion for magnetically attracting said flange portion in a first direction;
- d. a keeper plate on said magnet for engaging said projection from said plunger to limit the travel of said plunger in said first direction;

- e. push button means including means for engaging said plunger and driving said plunger from said keeper plate in a direction opposite the first direction; and
- f. magnetically conductive material positioned on the opposite end of said coil opposite said plunger and extending at least partially into said coil.

3,855,489

DYNAMOELECTRIC MACHINE HAVING IMPROVED LINT GUARD MEANS

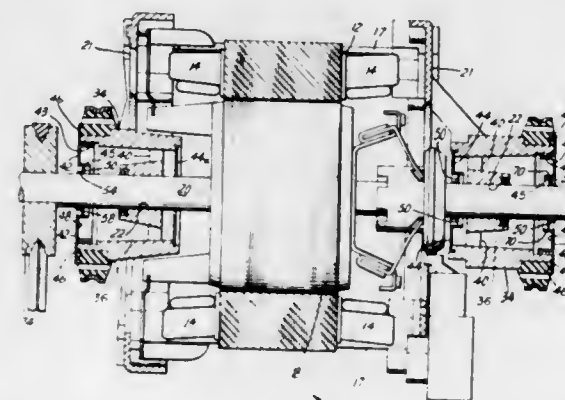
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 14, 1973, Ser. No. 360,046

Int. Cl. H02k 5/10

U.S. Cl. 310—85

13 Claims



1. A dynamoelectric machine adapted for operation in an atmosphere having foreign particles therein comprising a stator with a bore therein, at least one end frame having a chamber for lubricant therein, a rotor mounted for rotation within the bore and adapted to be axially movable within predetermined limits, a bearing in the end frame for lubricating communication with the chamber, an aperture in the end frame connected between the chamber and the atmosphere, a shaft extending through the aperture into the chamber and received by the bearing and the shaft also being secured to the rotor for conjoint movement therewith, a generally annular lint guard secured to the shaft and disposed in close spaced relation with a portion of the end frame about the aperture, a narrow generally annular gap between the lint guard and the portion of the end frame about the aperture for preventing entry into the chamber of foreign particles which may accumulate along the shaft adjacent the aperture, and at least one of the end frame portion and the lint guard being generally axially overlapping with the other thereof a distance at least great enough to accommodate the axial movement of the rotor.

3,855,490

SYNCHRONOUS MOTOR WITH FLUX CONDUCTOR

Philip A. Sidell, West Hartford, Conn., assignor to McGraw-Edison Company, Elgin, Ill.

Continuation of Ser. No. 175,664, Aug. 27, 1971, This application Feb. 28, 1973, Ser. No. 336,837

Int. Cl. H02k 21/18

U.S. Cl. 310—162

10 Claims

1. A synchronous motor comprising a stator including a field portion and a coil portion disposed about the field portion, the field portion including a pair of spaced flux conducting stator pole projections having a gap therebetween, the coil portion being energizable from an alternating current source to produce instantaneous opposite polarity between the stator pole projections, an annular ceramic permanent magnet rotor supported for rotation about an axis perpendicular to a plane extending between the stator pole projections and with peripheral edge portions of the rotor adjacent the stator pole projections, individual permanent magnetic poles being formed about the periphery of the annular ceramic permanent magnet rotor and circumferentially disposed about the periph-

ery of the rotor in fixed relation to the rotor with adjacent permanent magnetic poles being of opposite polarity, and a flux conductor member fixed in the gap and extending in



magnetic series relation between at least one pair of permanent magnetic poles of opposite polarity and in series with the stator pole projections.

3,855,491

HOLLOW CATHODE DISCHARGE LAMP FOR GENERATING RADIATION CHARACTERISTIC OF THE GAS FILL WITHIN THE ENVELOPE

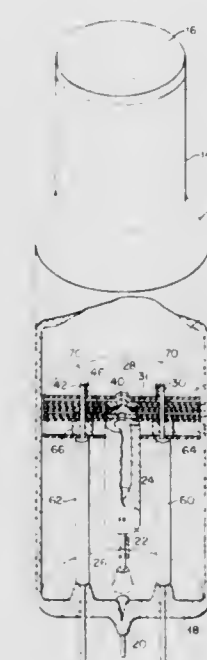
George K. Yamasaki, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1970, Ser. No. 58,790

Int. Cl. H01j 61/06

U.S. Cl. 313—193

1 Claim



1. A hollow cathode light source comprising an envelope, said envelope including an anode and a cathode disposed in spaced relationship for maintaining an electron discharge therebetween, said cathode having a hollow portion therein and made of a material having the property of establishing an electron discharge between said cathode and said anode, a baffle electrode positioned between said cathode and said anode and having an aperture therein of a smaller diameter than the aperture in said hollow cathode, said envelope containing hydrogen gas which is ionizable, and radiation characteristic of the hydrogen is generated and passed through the aperture in said baffle electrode in response to an electron discharge between said cathode and anode, the aperture in said baffle electrode being substantially smaller than the aperture in said cathode to restrict the passage of light generated within said hollow portion due to material of said cathode.

3,855,492

VIBRATION REDUCED X-RAY ANODE

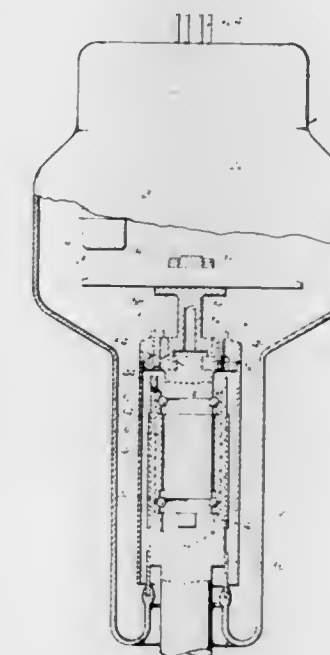
Helmut Langer, Springdale, and Vincent Sollima, Stamford, both of Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Nov. 19, 1973, Ser. No. 417,464

Int. Cl. H01j 35/10

U.S. Cl. 313—60

5 Claims



1. An x-ray tube comprising an envelope containing a rigid anode supporting structure, a rotor structure rotatably mounted on said supporting structure, and an anode structure having a portion engaging and secured to a portion of said rotor structure for rotation therewith, said portion of said anode structure being titanium-zirconium-molybdenum alloy containing about 99.5% molybdenum, and the engaged portion of the rotor structure being of material in the Fe-Ni-Co family.

3,855,493

SHADOW MASK AND PROCESS FOR MANUFACTURE

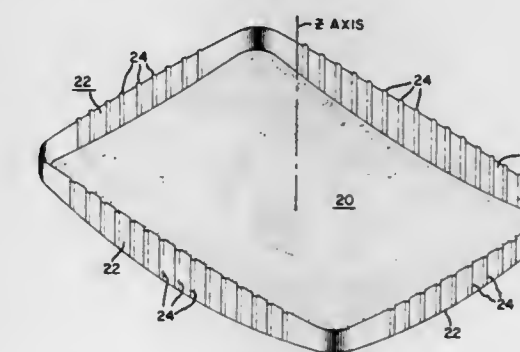
Ernest R. Snook, East Syracuse, and William H. Nicklas, North Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 302,071, Oct. 30, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,845

Int. Cl. H01j 29/06

U.S. Cl. 313—402

8 Claims



1. A shadow mask adapted to be mounted within a color television picture tube having a plurality of electron guns therein such that a Z axis extending between the center of the electron guns and the center of said mask is oriented normal to the plane of the incremental area of said mask where said axis intersects said mask, said mask comprising:

- a dome-shaped face;
- a skirt extending from the periphery of the dome-shaped face substantially parallel to said Z axis; and

a plurality of ribs formed in said skirt, each of said ribs extending longitudinally along the general direction of the Z axis and extending away from said skirt by no more than 0.025 inch.

3,855,494

CERAMIC ARC LAMP CONSTRUCTION

Vernon L. Plagge, East Orange, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1973, Ser. No. 392,692

Int. Cl. H01j 17/04

U.S. Cl. 313-184

4 Claims



1. An arc discharge lamp of the ceramic arc tube type comprising:

- a base,
- an outer envelope sealed to said base,
- a pair of lead-in conductors electrically connected to said base and extending into said outer envelope,
- an arc tube mounting frame mounted within said outer envelope on one of said lead-in conductors and electrically connected thereto,
- a ceramic arc tube having refractory metal end closure members closing off the ends thereof and refractory metal exhaust and fill tubulation extending from at least one end closure member, said ceramic arc tube supported at its upper end on said mounting frame, and
- a refractory metal looped lead-in connector, said looped lead-in connector including a looped portion and a pair of leg portions, said looped portion surrounding said tubulation and brazed thereto adjacent said end closure member and said leg portions electrically connected to said other lead-in conductor.

3,855,495

FLASH TUBE WITH INSULATOR END CAP

John A. Pappas, Winthrop; Robert J. Cosco, Amesbury, and Charles C. Kokinos, Lynn, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 5, 1973, Ser. No. 412,814

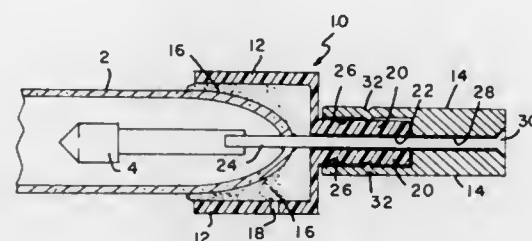
Int. Cl. H01j 5/56

U.S. Cl. 313-318

6 Claims

1. An injection-triggered flash tube comprising: an elongated, light-transmitting envelope which is hermetically sealed; a rare gas in said envelope; a pair of electrodes in said envelope, one disposed at each end thereof; a respective lead-in conductor sealed through each end of said envelope and connected to the electrode thereat; and an end cap at each end of said envelope, each of said end caps having a shoulder portion comprising a substantially tubular piece of

insulating material coaxially disposed about and secured to the exterior of a respective end of said envelope, and an exterior terminal portion comprising a substantially tubular metal conductor secured to and coaxially projecting from said insulating shoulder, the piece of insulating material from which said shoulder is formed further including a coaxially extending tubular portion of substantially smaller diameter than said shoulder and having an axial bore through which said respective lead-in conductor passes, said metal terminal portion



containing a cylindrical cavity within which the extended tubular portion of said insulating material is fitted and secured, and said terminal portion having an axial bore aligned with the bore in the extended tubular portion of said insulating material and through which said respective lead-in conductor passes and is electrically secured to said metal terminal portion, whereby said terminal portion is electrically connected to the electrode disposed within said respective end of the envelope.

3,855,496

ANTI-PAIRING SYSTEM FOR A TELEVISION RECEIVER

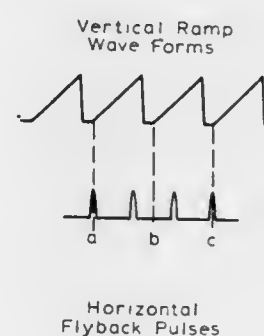
Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 7, 1972, Ser. No. 304,431

Int. Cl. H01j 29/70

U.S. Cl. 315-393

15 Claims



1. A method for improving interlace between the horizontal scan lines of the two alternate raster fields of a television receiver in which vertical and horizontal deflection systems control the scan of an electron beam on a cathode-ray tube and in which a horizontal flyback pulse is generated during the horizontal retrace period, comprising:

- generating a train of vertical ramp waveforms to be applied to the vertical deflection system of the television receiver for causing the electron beam to be vertically deflected in synchronism with a received television signal; and
- delaying the start of the vertical ramp waveforms with respect to the horizontal flyback pulses by a predetermined interval effective to insure that the beginnings of the vertical ramp waveforms for either field are not overlapped by a horizontal flyback pulse, whereby any components of the horizontal flyback pulse which are induced into a vertical ramp waveform occur at a time when their inclusion does not cause the lines of one field to pair with the lines of the alternate field.

3,855,497

DUAL BIAS CONTROLLED STORAGE TUBES

Denis Peter Dorsey, Levittown, Pa., and William E. Rodda, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

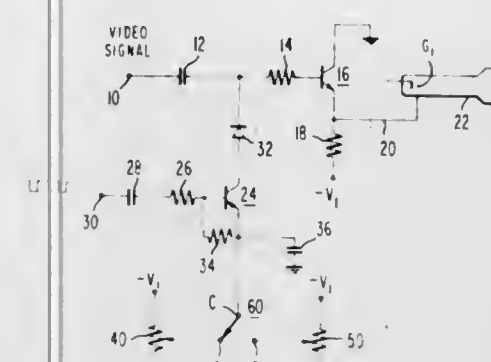
Filed Mar. 1, 1973, Ser. No. 337,012

Claims priority, application Great Britain, Apr. 24, 1972, 19020/72

Int. Cl. H01j 29/70

U.S. Cl. 315-30

5 Claims



1. In a television image transmission system of the type wherein a single storage tube having an electron beam scanning a target is employed both for the selection of a particular frame of television information for transmission to a remote receiver location by an audio communications link and for the reception and re-creation of frame information so transmitted, and further of the type wherein image representative television information video or pulse signals are applied to the control grid of said storage tube for the selection or re-creation of said information dependent upon whether said tube is operating in the transmitting or in the receiving mode, the combination therewith of:

- first and second sources of operating potential;
- means for applying a bias voltage to the control grid of said storage tube; and
- control means for coupling said first source of operating potential into circuit connection with said aforementioned means to bias the control grid of said tube to a direct current level to unblank the unmodulated scanning beam thereof when said storage tube is employed to re-create a television frame received along said audio communications link, thereby enabling amplitude modulations of said pulse signals to drive said tube into its operating region for re-creation of the pulse informations received;
- with said control means being actuated for the coupling of said first or said second sources of operating potential depending upon whether said storage tube is to operate in its transmitting or receiving mode, respectively.

3,855,498

CENTER-POLE MAGNETIC CIRCUIT

George H. MacMaster, Lexington, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 411,617

Int. Cl. H01j 25/50

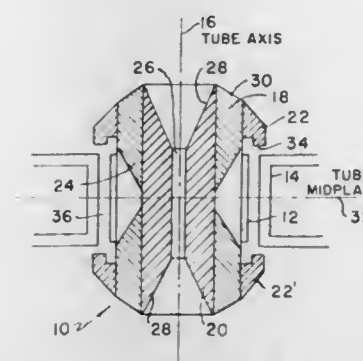
U.S. Cl. 315-39.71

10 Claims

1. A magnet comprising:

a middle section formed in a cylindrical shape with an inwardly tapered central portion, said middle section being formed from a material which is permanently magnetized and is radially gaussed;

an inner section formed in a cylindrical shape and placed radially inward of and abutting said middle section, said inner section being fabricated from a high-magnetic-



permeability material and forming a flux return path; and an outer section comprising two rings fabricated from a high-magnetic-permeability material, each ring comprising a pole piece, said rings being placed abutting the outer surface of said middle section, one ring near the top thereof and one near the bottom, so that said pole pieces face each other and a substantially uniform magnetic field extends therebetween.

3,855,499

COLOR DISPLAY DEVICE

Yahiko Yamada, Kodaira; Hiroshi Okano, Kokubunji, and Mikiya Yamane, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

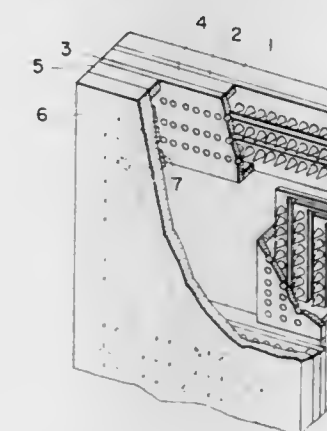
Filed Feb. 26, 1973, Ser. No. 335,755

Claims priority, application Japan, Feb. 25, 1972, 47-18950

Int. Cl. H05b 37/02

U.S. Cl. 315-169 R

4 Claims



1. A color display device comprising an insulating substrate, a transparent insulator defining a vacuum space along with said substrate, a plurality of groups of field emission type electron sources formed in respective patterns on said substrate and serving as cathodes, a plurality of groups of phosphor dots applied on the surface of said transparent insulator on the inside of said vacuum space in positions to oppose said electron sources and having predetermined colors of light emission, means to commonly connect said electron sources of each group into a number of constituent elements forming patterns of identical configuration equal to the number of colors of phosphor dots so that those of said phosphor dots opposing each group of electron sources and which have the same color of light emission oppose one constituent element of said group of electron sources forming a respective pattern, anodes arranged respectively between each opposing group of phosphor dots and electron sources in order to draw out electrons from the commonly connected cathodes by field

emission, apertures provided in said anodes in a manner to oppose said electron sources, a transparent electrode provided between said transparent insulator and said phosphor dots, first selector means to selectively connect said commonly connected cathodes to energizing potential, and second selector means to selectively connect said anodes to energizing potential, whereby said electrons drawn out from said cathodes by voltages applied between said cathodes and anodes by said first and second selector means are accelerated by a voltage impressed on said transparent electrode and impinge on said phosphor dots of the same color of light emission.

3,855,500

GASEOUS GLOW-DISCHARGE INDICATOR SYSTEM
Yuzuru Yanagisawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 172,855, Aug. 18, 1971, abandoned.

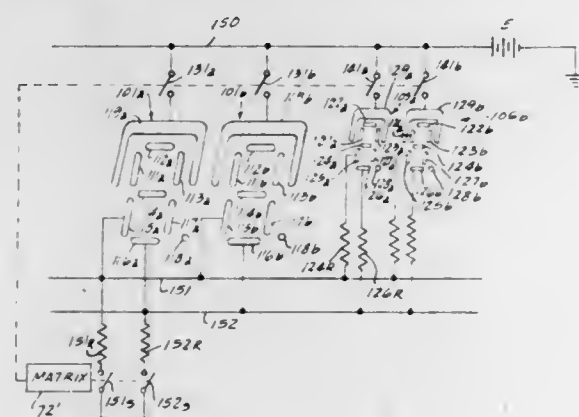
This application June 27, 1973, Ser. No. 374,133

Claims priority, application Japan, Sept. 1, 1970, 45-87014; Apr. 26, 1971, 46-27396

Int. Cl. H01j 61/66; H05b 41/38

U.S. Cl. 315-169 TV

9 Claims



1. A gaseous glow indicator tube comprising a base plate of insulating material, a transparent cap sealed to said base plate and forming a gas tight chamber therewith, an ionizing gas in said chamber, a sheet of insulating material within said chamber and disposed on said base plate, a plurality of main similarly segmented indicator units within said chamber on the outer face of said sheet, each of said segmented units including a like number of cathode segments similarly located in a predetermined pattern in each indicator unit, at least one anode segment forming a part of each indicator unit and each located on said insulated sheet in the same plane as said cathode segments, a plurality of energizing leads on said insulating sheet corresponding in number to the maximum number of cathode segments in a single indicator unit, secondary leads on the underside of said insulating sheet connected respectively to said cathode energizing leads; means connecting said secondary leads to said cathode segments through said insulating sheet, at least one anode energizing lead for each indicator unit, a secondary lead for each indicator unit connecting the anodes of each indicator unit to an anode energizing lead respectively, a secondary indicator unit in said chamber including at least one cathode segment and one anode segment disposed on said insulating sheet, each cathode segment of said secondary indicator unit being smaller in area than the area of any one of said cathode segments of said main indicator units, an energizing lead for each cathode segment of said secondary indicator unit located on said outer face of said insulating sheet, circuit connections between each of said cathode energizing leads of said secondary indicator unit and associated cathode segment, energizing leads for said anodes of said secondary indicator units connected to their associated anodes respectively, and means for connecting successively said anode energizing circuits to a positive source of potential on a time sharing basis and simultaneously connecting selected ones of said cathode segments of each indicator unit to

the negative side of the same source of potential on the same time sharing basis, thereby to cause selected segments of each indicator unit to glow and in which there is provided a resistor element in each cathode segment energizing circuit of said secondary indicator unit, thereby to reduce the current density in each such cathode segment when energized, the resistive value of each resistance element being sufficient to reduce the glow of its associated cathode segment only to a point where the cathode segment is still brighter than the cathode segments of said main indicator units.

3,855,501

MULTIPLE VEHICLE SPARK ELIMINATION SYSTEM FOR EXPLOSIVE ATMOSPHERES

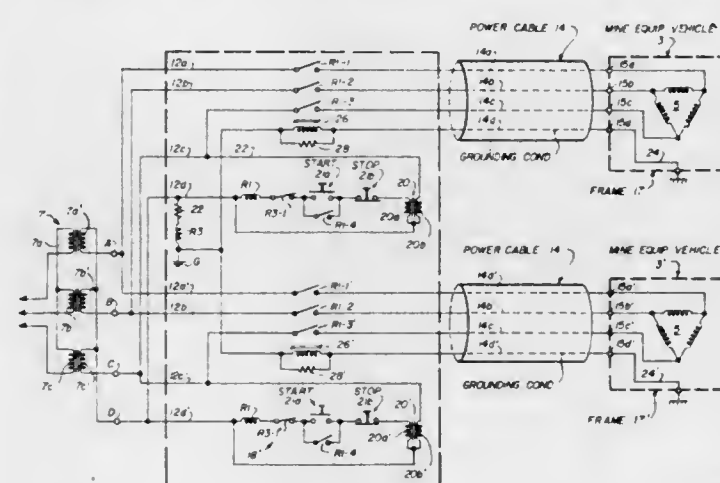
Thomas I. Agnew, Irwin, Pa., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Mar. 15, 1974, Ser. No. 451,518

Int. Cl. H02h 3/16

U.S. Cl. 317-18 C

4 Claims



1. In a power system which delivers electrical power from a main source of power to at least two separately movable vehicles in an explosive atmosphere, each vehicle including a conductive frame and electrically operated equipment, the electrically operated equipment on each vehicle having at least one pair of energizing input terminals, a separate power cable for each vehicle extending between said vehicle and said main source of power, each cable having at least one pair of power conductors coupled to said energizing input terminals of the electrically operated equipment on the associated vehicle and a grounding conductor connected to the frame of the associated vehicle, the electrical field developed by the flow of current through said power conductors in each of said cables inducing an unbalanced voltage in the associated grounding conductor so there is the possibility of an induced voltage difference in the grounding conductors of a pair of said cables which can reach a given maximum value, interrupter contact means connected between said main source of power and at least one of said power cable conductors, and vehicle frame hazard protection means for operating said interrupter contact means to terminate the flow of power from said main source of power to the electrical equipment of the associated vehicle when at least one of said power conductors of each cable becomes electrically shorted to the associated grounding conductor or vehicle frame, the improvement comprising arc-preventing means for preventing the development of an arc in said explosive atmosphere when the frames of two of said vehicles come into contact with one another due to an unbalanced voltage or voltages induced in the grounding conductor of one or more of said cables, said arc-preventing means comprising saturable core reactor means in series with said grounding conductors which saturable core reactor means being unsaturated to present a high impedance to current flow under modest applied voltage conditions reaching said given magnitude and being saturated to present a negligible impedance to current flow under the voltage conditions when any of said cable power conductors becomes

shorted to the associated cable grounding conductor or vehicle frame.

3,855,502

GROUND FAULT INTERRUPTER DEVICE

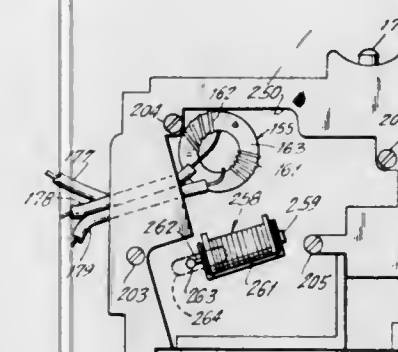
Von G. Pardue, Lawrenceville, Ga., and John B. Cataido, Moorestown, N.J., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Feb. 22, 1973, Ser. No. 334,840

Int. Cl. H02h 1/02

U.S. Cl. 317-18 D

3 Claims



1. Electrical protective equipment including housing means defining first and second compartments; a circuit breaker within said first compartment including a set of cooperating contacts, an operating means connected to said set of contacts and including an operating handle extending outside of said housing means and a latchable member, latch means for maintaining said member in latched position wherein said operating means through manual operation of said handle is effective to open and close said set of contacts, first pivot means mounting said latch means, overload sensing means for automatically moving said latch means about said first pivot means to release said latch means upon the occurrence of predetermined overload conditions; fault sensing means within said second compartment including a fault detecting means and an electromagnet that is energized by said fault detecting means upon the occurrence of predetermined fault conditions; said electromagnet including a relatively stationary magnetic yoke and an armature movable relative to said yoke; means extending between said compartments and operated by said armature upon attraction thereof by said yoke to move said latch means and thereby release said latchable member, whereby said operating means opens said set of contacts; said armature being mounted for movement along its axis and the means extending between said compartments projecting radially from the axis of said armature; said housing means including first and second housing modules defining the respective first and second compartments; said housing modules being generally of equal width and being secured together in adjacent side-by-side relationship; said first housing module having a first sidewall adjacent said second housing module; said first sidewall having an elongated slot extending parallel to the axis of the armature; said means extending between said compartments projecting through said elongated slot with movement of the former being guided by the latter.

3,855,503

REMOTELY MONITORED AND CONTROLLED TRANSFORMER

Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 26, 1973, Ser. No. 401,097

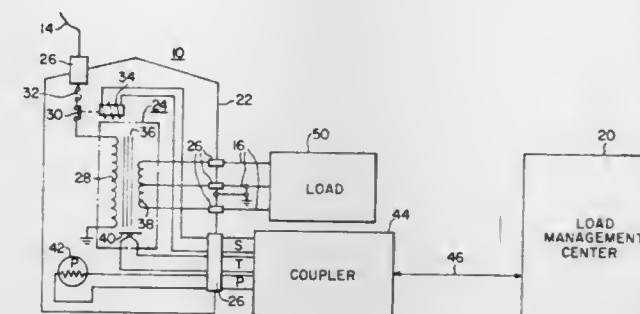
Int. Cl. H02h 3/28

U.S. Cl. 317-27 R

10 Claims

1. Electrical apparatus comprising: an enclosure;

a core and coil assembly disposed within said enclosure; temperature sensing means which electrically responds to the temperature of said core and coil assembly to provide a temperature signal which is detectable outside said enclosure;



pressure sensing means which electrically responds to the pressure within said enclosure to provide a pressure signal which is detectable outside said enclosure; and switching means for disconnecting the coil from an energizing voltage, said switching means being responsive to an electrical switching signal which is originated from outside said enclosure.

3,855,504

SWITCHBOARD WITH IMPROVED HORIZONTAL BUSBAR MOUNTING PROVISIONS

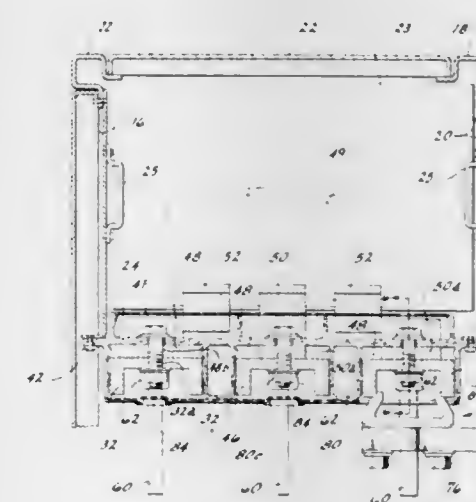
William Francis Olashaw, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,245

Int. Cl. H02b 1/20

U.S. Cl. 317-120

10 Claims



1. An electrical switchboard consisting of at least two side-by-side switchboard sections for distributing polyphase electrical power to a plurality of loads via respective electrical devices accommodated in compartments stacked vertically in each switchboard section, said switchboard comprising, in combination:

- A. a frame;
- B. a plurality of vertical busbars in each switchboard section, one for each phase;
- C. means insulatively mounting said vertical busbars to said frame;
- D. connectors electrically connecting said vertical busbars to the electrical devices and the electrical devices to their respective loads;
- E. a plurality of horizontal busbars, one for each phase, each said horizontal busbar being made up of several horizontal busbar sections; and
- F. common means at each crossing location in each switchboard section of correspondingly phased horizontal and vertical busbars

1. serially joining two of said horizontal busbar sections end-to-end,
 2. mounting said horizontal busbars respectively to said vertical busbars, and
 3. electrically connecting said horizontal busbars respectively to said vertical busbars; and
- G. one horizontal busbar section of each said horizontal busbar extending in continuous, uninterrupted fashion between adjacent switchboard sections and having opposite ends terminating at said crossing locations in each of the switchboard sections.

3,855,505

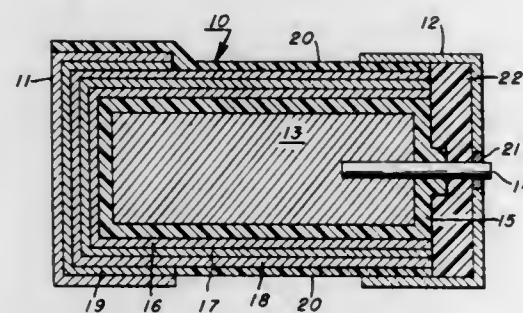
SOLID ELECTROLYTE CAPACITOR

Steven Karlik, Jr., Palm Beach Gardens; William J. Hyland, Riviera Beach; Edward A. Souza, North Palm Beach, and Ernest D. Ganz, Palm Beach Gardens, all of Fla., assignors to National Components Industries, Inc., West Palm Beach, Fla.

Filed Apr. 3, 1972, Ser. No. 240,454
Int. Cl. H01g 9/05

U.S. Cl. 317-230

5 Claims



1. In a capacitor comprising a body formed of a valve metal anode and a solid electrolyte, said body having a stem extending therefrom; the improvement wherein the terminal electrodes of the capacitor are U-shaped metallic caps, wherein the negative polarity end cap is secured to one end of the body by an electrically-conductive adhesive, wherein the positive polarity end cap has an opening formed therein and includes a portion spaced from the other end of the body, wherein the said stem extends into the said opening and is electrically connected to the positive polarity end cap, wherein the space between the said portion of the positive polarity end cap and the end of the body is filled with a high temperature, non-conducting material, and wherein the said body is coated with a high temperature non-conducting coating which is intimately bonded thereto.

3,855,506

SOLID ELECTROLYTE COULOMETER

Andrew Halasz, Laval, Quebec; John D. Childs, Dorval, Quebec, and George H. Fraser, Saint Laurent, Quebec, all of Canada, assignors to Unican Security Systems, Ltd., Montreal, Quebec, Canada

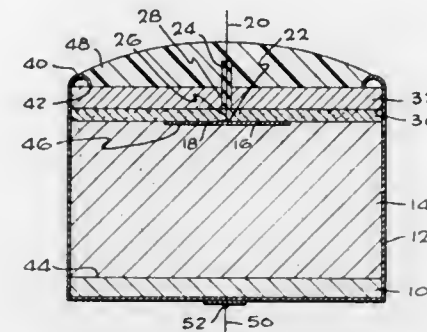
Filed Jan. 26, 1973, Ser. No. 326,976
Int. Cl. H01g 9/05

U.S. Cl. 317-230

29 Claims

1. An electrochemical timer device comprising a container, an assembly of a pair of electrodes of opposite polarity and a solid electrolyte disposed between said electrodes, said assembly positioned within said container, the upper edge portion of said container being crimped inwardly, with the crimped upper edge of said container in operative engagement with said assembly and compressing said electrodes and solid electrolyte together with a substantial pressure, said electrodes

and said solid electrolyte maintained in substantially complete uniform interfacial contact, the materials of said electrodes



and said electrolyte approaching their respective theoretical densities.

3,855,507

SELF HEATING CAPACITORS

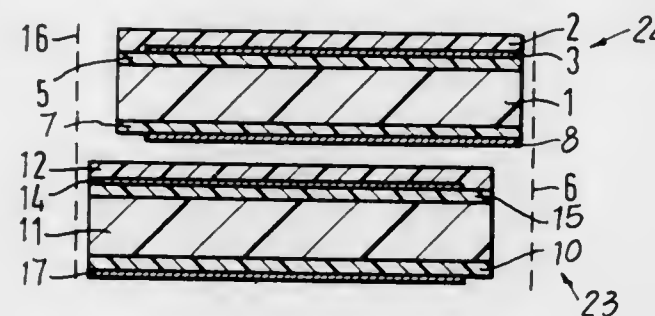
Gerhard Hoyler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 4, 1973, Ser. No. 366,556

Claims priority, application Germany, June 7, 1972, 2227751

Int. Cl. H01g 3/15

U.S. Cl. 317-258

1 Claim



1. A capacitor comprising a dielectric layer consisting of at least one thin film of insulating material from the group consisting of silicone resins and varnishes and capacitor electrodes located respectively on either side of said dielectric layer each of said electrodes being formed of metallic layers of zinc or aluminum having a thickness of not more than .1 microns said metallic layers located on opposite sides of a carrier of polyamide film, the metal layers serving as the first electrode being end contacted by a metal layer and extending to a first end of the capacitor, but not to the second end, the metal layers serving as the second electrode being end contacted by a metal layer and extending to the second end of the capacitor, but not to the first end, said polyamide film serving as a support for the capacitor having a higher modulus of elasticity than the dielectric layer and being located outside the electrical field of the capacitor and covering and contacting each major side of said polyamide film an intermediate film said intermediate film being the same material as said dielectric layer.

3,855,508

ELECTRICAL CAPACITORS HAVING SUBSTITUTED ESTER IMPREGNANTS

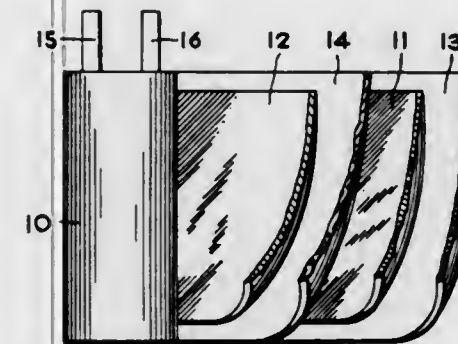
Sidney D. Ross, Williamstown, and Manuel Finkelstein, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 195,856, Nov. 4, 1971, Pat. No. 3,740,625. This application June 13, 1973, Ser. No. 369,677. The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.

Int. Cl. H01g 3/21

U.S. Cl. 317-259

8 Claims



1. An electrical capacitor comprising a capacitance section having at least a pair of electrodes with a dielectric spacer between said electrodes, said section being impregnated with a liquid dielectric comprising at least one ester having a substituent on a position selected from the group consisting of a) on the acid side, only alkyl chains substituted on the carbon atom α to the ester carbonyl group; and b) on the alcohol side, alkyl chains substituted on at least two positions on the carbon atom β to the ester ether linkage.

3,855,509

CONTROL SYSTEM FOR INDUCTION MOTORS

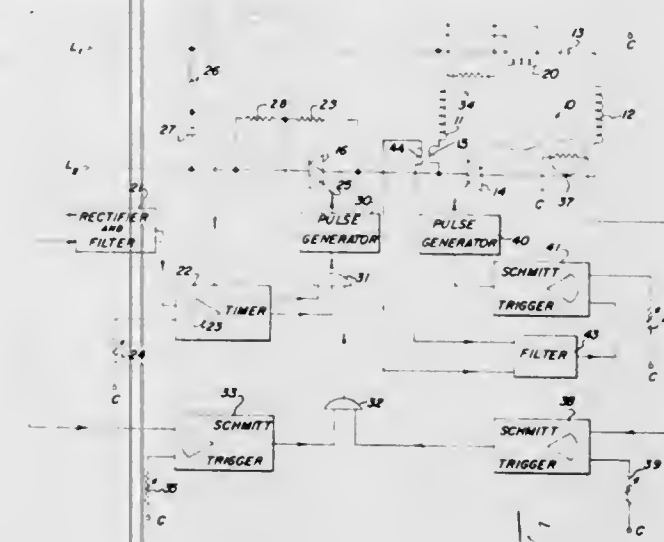
Floyd H. Wright, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 245,146, April 18, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,282

Int. Cl. H02p 5/40

U.S. Cl. 318-227

22 Claims



1. A control system for an induction motor having a main winding and an auxiliary winding adapted for excitation by an alternating-current source, the system comprising: measuring means incorporated in said motor for developing a control signal proportional to the level of magnetic flux present in the air gap of said motor; a solid-state gate-operated bidirectional switch for controllably delivering power from the source to said main winding in an amount proportional to the conduction angle established by its gate;

regulating means responsive to said control signal and to the instantaneous phase angle of the alternating current for initiating a control pulse timed after a zero crossing of the alternating current by an amount representing said control signal; and trigger means responsive to said control pulse and to the conduction state of said switch for applying a firing pulse to said gate in correspondence with said control pulse and only in the absence of conduction by said switch.

3,855,510

HIGH STABILITY MULTIPLE SPEED MOTOR POWER SUPPLY FOR FACSIMILE

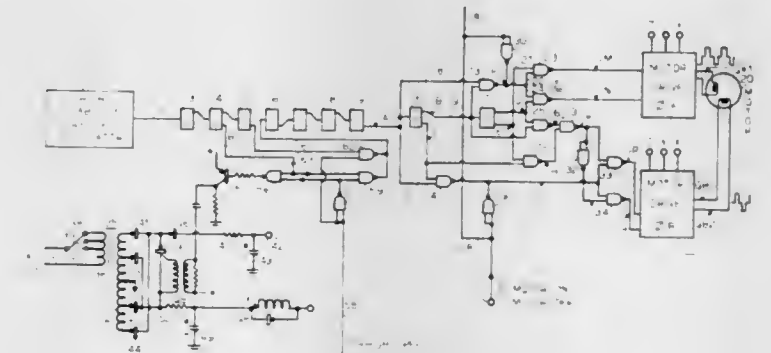
Deward J. Houck, Mastic Beach, N.Y., assignor to International Scanatron Systems Corp., Wyandanch, N.Y.

Continuation of Ser. No. 196,343, Nov. 8, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,853

Int. Cl. H02p 7/42

U.S. Cl. 318-171

3 Claims



1. In a synchronous motor drive system, the combination of: a synchronous two phase motor including two sets of windings, one for each phase; a crystal controlled high frequency oscillator; means for dividing the frequency of said oscillator down to predetermined lower frequency signals; means for providing two phase symmetrical bidirectional pulses at a predetermined rate phased 90 degrees apart from said lower frequency signals; logic and motor power control means directly coupled between said latter means and the windings of said motor for applying power determined by said pulses to said two phase windings of said motor for rotating said motor in a predetermined direction at a predetermined speed.

3,855,511

TRACTION MOTOR CONTROLLER CIRCUIT AND METHOD

Stephen Hagar Smith, San Pedro, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed July 11, 1973, Ser. No. 378,044

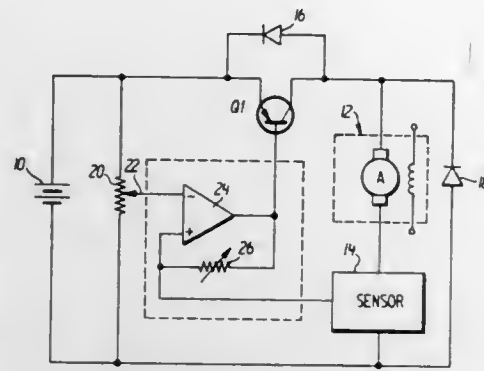
Int. Cl. H02p 7/00

U.S. Cl. 318-317

11 Claims

1. A controller circuit for a traction vehicle comprising: a battery; an electronic switch having a control terminal; a direct current motor; a diode; circuit means connecting said battery, said electronic switch and said direct current motor in series and connecting said diode in parallel with said motor opposing the flow of direct current from said battery through said electronic switch; means for continuously sensing the instantaneous direct

current flowing through said motor; and, means operatively connected and responsive to said sensing



means for controlling the conduction of said electronic switch.

3,855,512

BRAKING-MODE DETECTION CIRCUIT

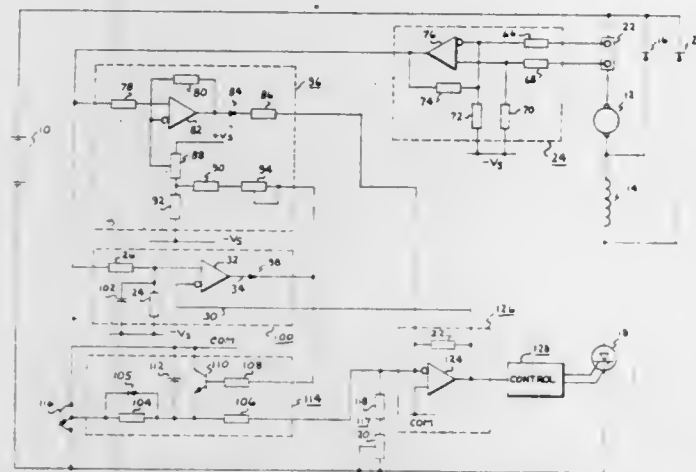
Charles Edward Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed June 11, 1973, Ser. No. 368,973

Int. Cl. H02p 3/08

U.S. Cl. 318—366

19 Claims



1. A circuit for sensing operation of a direct current motor having an armature and a field winding in a braking mode comprising:

first sensing means for sensing the magnitude of armature current and outputting a first signal representative thereof;

second sensing means for outputting a second signal representative of motor terminal voltage;

output means responsive to said first and said second signals to produce an output signal when the ratio of armature current to motor terminal voltage attains a predetermined value.

3,855,513

PERFORATED-TAPE READER DRIVE SYSTEM

Julius Brunner, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1973, Ser. No. 349,699

Claims priority, application Germany, Apr. 11, 1972, 2217383

Int. Cl. G05b 13/00

U.S. Cl. 318—561

6 Claims

1. A drive system for a perforated tape reader in which the tape is driven by a sprocket comprising:

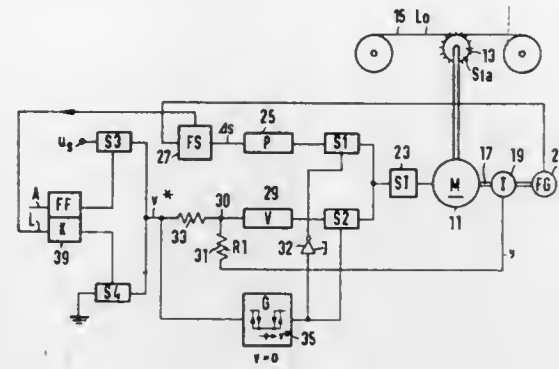
a. a speed controllable dc motor coupled to the sprocket;

b. means to develop a position control signal;

c. means to develop a velocity control signal;

d. means to selectively couple one of said position and velocity control signals to said motor in response to an input level, said velocity signal being coupled in response

to an input level above a predetermined value and said position signal in response to an input level below said predetermined level, and



e. means to provide an input level to said coupling means.

3,855,514

BIDIRECTIONAL VCO FOR A CLOSED LOOP POSITION MEASURING SYSTEM

Thomas M. Zwitter, Newbury, and Ronnie G. Walters, Mayfield Heights, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

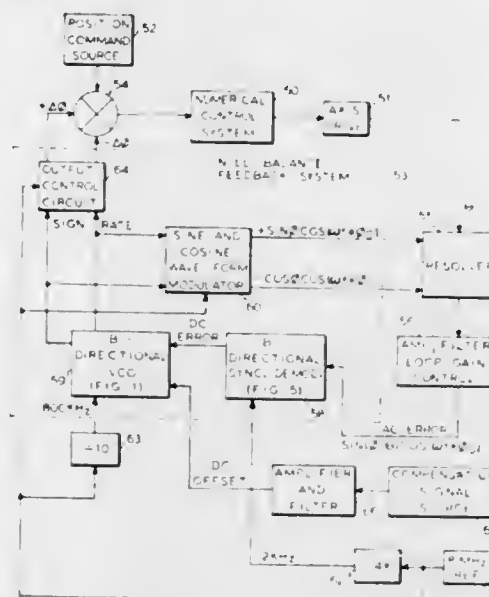
Division of Ser. No. 194,426, Nov. 1, 1971, Pat. No. 3,764,831.

This application June 25, 1973, Ser. No. 372,967

Int. Cl. G06f 15/46

U.S. Cl. 318—660

10 Claims



1. In a closed loop position measuring system of a numerical control servomechanism having position follow-up feedback through a mechanical coupling to a moving coil of a three-terminal position feedback device selected from a group consisting of a resolver and an Inductosyn, and having the respective orthogonal stationary coils of said device excited with a carrier signal maintained at a stable frequency and amplitude modulated in accordance with values of $\sin \phi$ and $\cos \phi$, where ϕ is a phase angle of the closed loop position measuring system continually updated by a single train of pulses in a direction indicated by a binary sign signal to null the amplitude modulation of the output of said moving coil, said amplitude modulation being a trigonometric function of $(\phi - \theta)$, where θ is the position angle of said mechanical coupling, and where said amplitude modulation of said output is detected by a synchronous demodulator receiving a signal from said moving coil to obtain a bipolar DC error signal, the combination of a bidirectional voltage controlled oscillator responsive to said DC error signal for producing said single train of pulses at a frequency proportional to the amplitude of said DC error signal, and for further producing said binary sign signal representing the polarity of said DC error signal, said bidirectional voltage controlled oscillator being comprised of

an analog bipolar integrator responsive to said bipolar DC error signal for producing a ramp output signal having a slope proportional to the amplitude of said DC error signal and a polarity corresponding to the polarity of said DC error signal,

a pair of voltage comparators connected to receive said ramp signal, one comparator for determining when said ramp signal exceeds a predetermined threshold level of a given polarity and the other comparator for determining when said ramp signal exceeds a predetermined threshold level of a polarity opposite said given polarity,

a pulse generating means coupled to said pair of comparators for producing an output pulse of said single pulse train each time said ramp signal crosses one of said threshold levels of either polarity from a level closer to zero,

means responsive to said output pulse for resetting said integrator, thereby causing said integrator, pair of comparators and pulse generating means to operate in combination to produce a train of pulses at a rate proportional to the amplitude of said DC error signal, and

a flip-flop having a first input terminal connected to said one comparator for setting said flip-flop to a given state when said ramp signal exceeds said threshold level of said one polarity, and a second input terminal connected to said other comparator for setting said flip-flop to a state opposite said given state when said ramp signal exceeds said threshold level of said other polarity, thereby continually and correctly determining and storing polarity information of said DC error signal for use with said train of pulses.

3,855,515

MOTOR CONTROL CIRCUIT

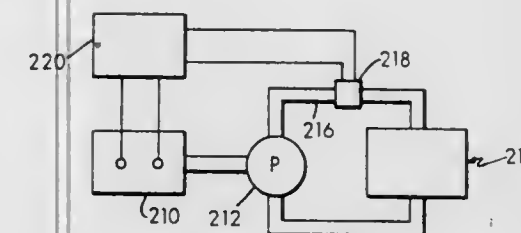
Burleigh M. Hutchins, Jr., Mansfield, Mass., assignor to Waters Associates, Inc., Framingham, Mass.

Filed Mar. 6, 1972, Ser. No. 232,076

Int. Cl. H02k 37/00

U.S. Cl. 318—685

22 Claims



1. A motor control circuit whereby a bifilar stepping motor is adapted for operation through a large speed range without resonance, comprising

A. means for monitoring a load which is driven by said bifilar stepping motor;

B. means for continuously supplying driven current to said motor; and

C. control means responsive to said monitoring means for limiting the continuous driving current in accordance with the load being monitored; and wherein said circuit also comprises

A. means for sensing the current supplied to said motor;

B. means associated with said monitoring means for providing an output current proportional to the load being monitored; and

C. current summing means providing an output dependent on the difference between the motor current and the monitor current for controlling the driving current supply means.

3,855,516

BATTERY CHARGER

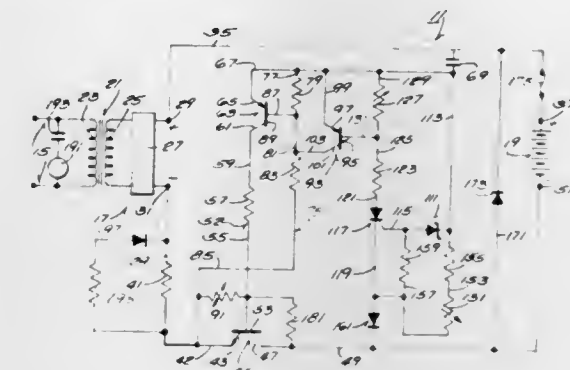
Harold W. Fairchild, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 6, 1973, Ser. No. 385,986

Int. Cl. H02j 7/10

U.S. Cl. 320—22

11 Claims



1. A circuit for charging a battery from an alternating current source comprising rectifying means for converting a source of alternating current to direct current, positive and negative battery charging terminals adapted to be respectively connected to like terminals of a battery to be charged, and means connected to said rectifying means and to said battery charging terminals for charging the battery and including a main transistor having an emitter-collector path connected between said rectifying means and one of said battery terminals and also having a base, said battery charging means also including a timer including normally open switch means, means for manually closing said switch means, and means for opening said switch means after expiration of a given time period unrelated to the battery voltage level, said battery charging means also including means subject to said switch means being closed and connected to said transistor base for applying the direct current to said battery charging terminals at a high current level to provide a high charging rate, said battery charging means also including means subject to said switch means being closed and connected to said transistor base for applying the direct current to said battery charging terminals at a reduced current level below said high current level after charging of the battery to a predetermined voltage level, and said battery charging means also including means connected to said transistor base for applying the direct current to said battery charging terminals at a trickle current level lower than said reduced current level when said switch means is open.

3,855,517

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

Maurice James Allport, Stourbridge, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

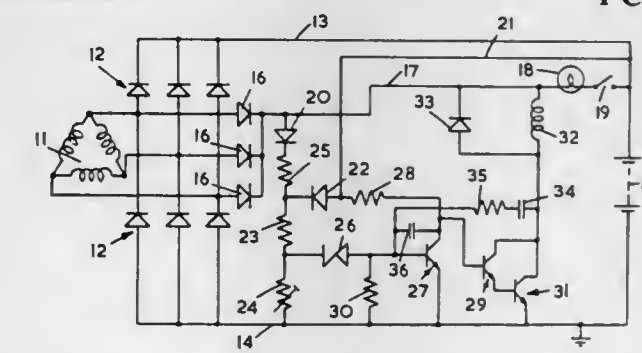
Filed May 1, 1973, Ser. No. 356,129

Claims priority, application Great Britain, May 10, 1972, 21689/70

Int. Cl. H02j 7/24

U.S. Cl. 320—64

1 Claim



1. A battery charging system for a road vehicle, comprising in combination a battery having an earth terminal and a live

terminal, an alternator and associated rectifier producing a d.c. voltage between a first output lead and earth, and also between a second output lead and earth, the first output lead being connected directly to the live battery terminal and the second output lead being connected to the live battery terminal through a warning lamp and the vehicle ignition switch in series, a voltage sensing lead having one end connected to the live battery terminal and its other end connected to earth through a first diode and a resistance chain in series, a Zener diode coupling a point on said resistance chain to the base of an input transistor, an output transistor connected in circuit with the field winding of the alternator between the second output lead and earth, a first resistor coupling the collector of the input transistor and the base of the output transistor to said voltage sensing lead so that the input transistor controls the output transistor to regulate the output of the alternator, said voltage sensing lead connected at the junction of said first diode and said first resistor, and a second resistor and a second diode connected in series between the junction of the first diode and the resistance chain and the second output lead, the arrangement being such that normally current flows through the first diode and the alternator is regulated in accordance with the voltage of the battery, but if the voltage between the second output lead and earth rises above a predetermined value, current flows through the second diode and the alternator is regulated in accordance with the voltage between the second output lead and earth.

3,855,518

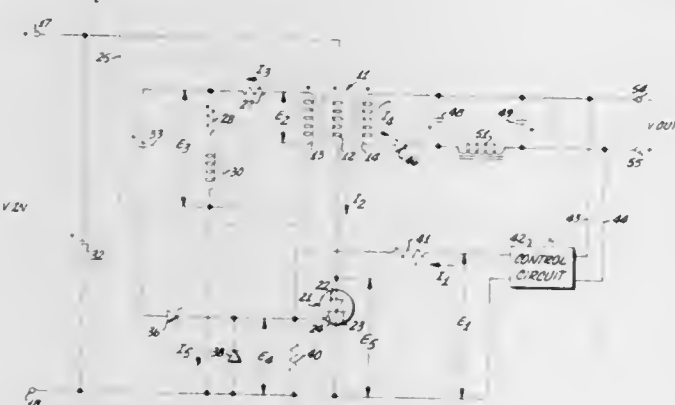
SWITCHING REGULATOR USING GATE-TURN-OFF SCR
Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 26, 1973, Ser. No. 427,779

Int. Cl. H02m 3/32

U.S. Cl. 321-2

8 Claims



1. A switching regulator for use with an automatically controlled signal source and a power supply having a positive terminal and a negative terminal, said regulator comprising: a transformer having a primary winding and first and second secondary windings; a gate-turn-off silicon controlled rectifier having an anode, a cathode and a gate, said primary winding of said transformer being connected between said anode of said rectifier and said positive terminal, said cathode of said rectifier being connected to said negative terminal, said signal source being connected between said gate and said cathode of said rectifier; a timing circuit, said circuit being connected between a first and a second end of said first secondary winding of said transformer, said circuit being connected between said gate and said cathode of said rectifier; a diode having an anode and a cathode, said anode of said diode being connected to a first end of said second secondary winding of said transformer; and a first capacitor, said first capacitor being connected between said cathode of said diode and a second end of said second secondary winding of said transformer.

3,855,519

VOLTAGE CONTROLLER FOR SYNCHRONOUS ELECTRIC MACHINES

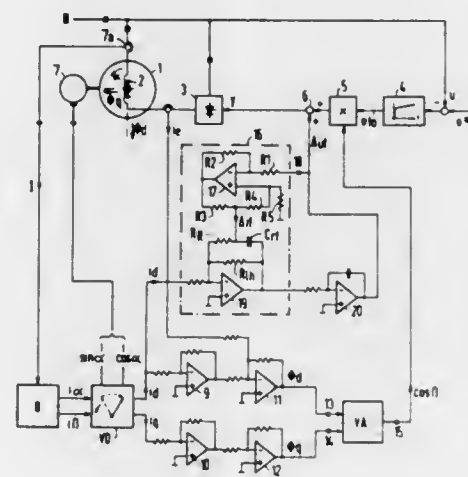
Hermann Waldmann, Weiher b. Erlangen, Wiesentra 14, Germany, assignor to Siemens Aktiengesellschaft, Germany
Filed May 2, 1973, Ser. No. 356,297

Claims priority, application Germany, May 4, 1972, 2221877

Int. Cl. H02p 7/28

U.S. Cl. 322-20

8 Claims



1. In a synchronous electric machine, of the type including a stator winding, an excitation winding, and a voltage controller including a controlled rectifier coupled thereto, which is optimally matched to the parameters of the machine for its non-loaded condition, the improvement comprising: modulating means, coupled to the excitation winding and controller, for generating a control signal proportional to the cosine of the load angle of the synchronous machine and modulating an output signal generated by the voltage controller according to said generated control signal; and compensating means, coupled to said modulating means, for generating a voltage compensation signal which is proportional to the current induced in the stator winding of the machine by the load applied thereto and adding said compensation signal to the modulated output signal of the controller, said modulated and compensation signals in combination forming an input signal to the rectifier for increasing the excitation winding current in response to a load applied to the machine.

3,855,520

CONTROL HAVING CONDUCTION LIMIT MEANS TO VARY DUTY CYCLE OF POWER SWITCH

Frederick A. Stich, Milwaukee, Wis., assignor to Allis-Chambers Corporation, Milwaukee, Wis.

Filed Dec. 22, 1972, Ser. No. 317,596

Int. Cl. H02p 7/14

U.S. Cl. 323-19

27 Claims

1. A control for supplying variable duty cycle pulses from an electrical power source to a load including, in combination, means for providing a succession of control pulses, means for selectively varying the duty cycle of said control pulses, a power switch regulated by said control pulses for connecting said power source to said load, conduction limit means for sensing the voltage across said power switch and for generating a conduction limit signal when said voltage exceeds a predetermined magnitude,

and means responsive to said conduction limit signal for overriding said duty cycle varying means and reducing the duty cycle of said control pulses.



3,855,521

TRANSFORMER HAVING SWITCH MEANS FOR CAUSING SERIES OR PARALLEL CONNECTION BETWEEN PLURAL PRIMARY OR SECONDARY WINDING

Masao Kiuchi, Saitama-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

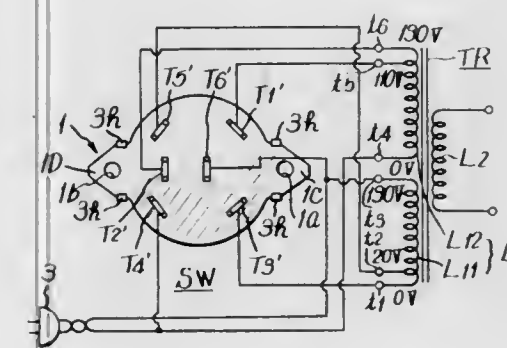
Filed May 21, 1973, Ser. No. 362,061

Claims priority, application Japan, May 24, 1972, 47-60771[U]

Int. Cl. G05f 3/04

U.S. Cl. 323-49

6 Claims



1. A voltage selecting apparatus, comprising: a transformer having a primary winding and a secondary winding, one of which includes a plurality of separate windings, each of said separate windings having a plurality of taps; housing means having a plurality of fixed terminals predetermined ones of said fixed terminals being disposed about the periphery of at least two individual coaxial circles and one of said fixed terminals being disposed at the center of said coaxial circles; conducting means for connecting each of said fixed terminals to a tap; means for supplying an AC voltage from an external source to said transformer; and rotary button means mounted for rotation with respect to said housing and having at least two short-circuit members supported in said rotary button means and rotatable therewith, a first of said short-circuit members defining a chord of one of said coaxial circles to thereby selectively short-circuit a pair of said fixed contacts disposed about the periphery of said one coaxial circle in accordance with the rotary position of said button means, and a second of said short-circuit members being in contact with said one fixed terminal disposed at said center of said coaxial circles and being substantially pivotable thereabout to thereby selectively short-circuit said one fixed

terminal and a selected fixed terminal disposed about the periphery of another of said coaxial circles in accordance with said rotary position of said button means, such that preselected ones of said taps are electrically interconnected in predetermined circuit configurations whereby a single predetermined output voltage is derived from said transformer when said button means is rotated into corresponding rotary positions associated with different AC voltage magnitudes supplied to said transformer.

3,855,522

ELECTROMAGNETIC TYPE MEASURING APPARATUS FOR DIGITALLY MEASURING ELECTRIC CONDUCTIVITY

Goro Kobayashi, Oiso-Machi, Japan, assignor to Oki Electric Industry Co., Ltd. and Japan Society for the Promotion of Machine Industry, both of Tokyo, Japan, part interest to each

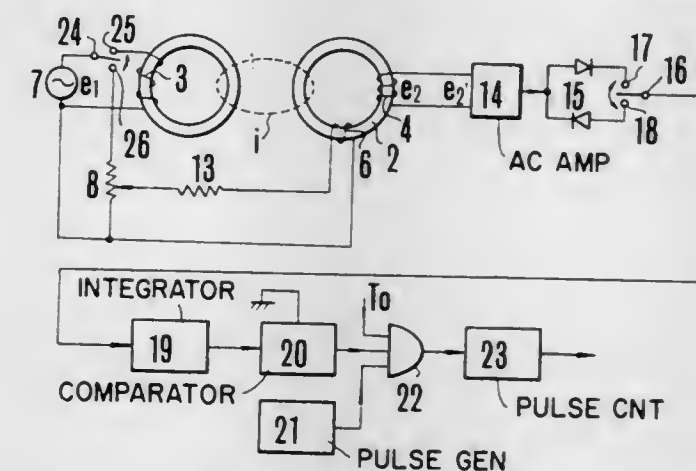
Filed May 11, 1973, Ser. No. 359,316

Claims priority, application Japan, May 18, 1972, 47-57231

Int. Cl. G01n 27/42

U.S. Cl. 324-30 A

6 Claims



1. In an electromagnetic induction type conductivity measuring apparatus of the type comprising a first magnetic core, a first coil wound on said first magnetic core, a source of alternating current, first switch means for supplying an exciting current to said first coil, a second magnetic core, a second coil wound on said second core, a voltage divider connected across said source for impressing a predetermined proportion of the voltage of said source across said second coil, and an output coil wound on said second core, said first and second cores being adapted to be immersed in conductive liquid whose conductivity is to be measured, the improvement which comprises rectifier means coupled to said output coil through the same signal channel for rectifying the voltage induced in said output coil to produce rectified outputs of positive and negative polarities, an integrator, second switch means for selectively supplying the positive or negative rectified output to said integrator, a comparator operable in response to successive opposite polarity intervals of said rectified output applied to said integrator for comparing the output from said integrator with a zero potential, and a pulse counter controlled by the output from said comparator whereby to provide a digital output corresponding to the conductivity of said liquid.

3,855,523

A METHOD AND AN APPARATUS FOR MEASURING THE CAMBER OF A ROLL

Robert Alfred Pirlet, Angleur, Belgium, assignor to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Oct. 12, 1971, Ser. No. 188,012

Claims priority, application Belgium, Oct. 22, 1970, 757893

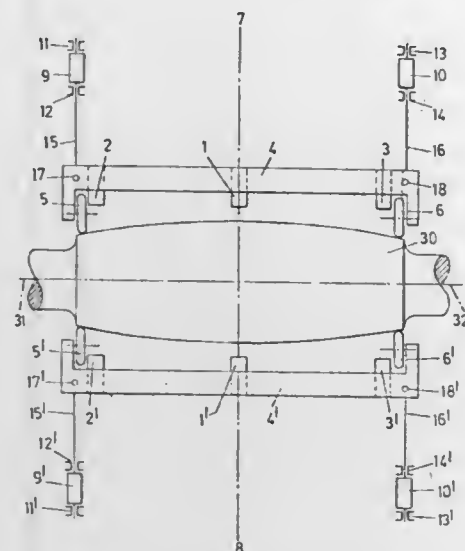
Int. Cl. G01r 33/00

U.S. Cl. 324-34 D

30 Claims

1. A method of measuring the camber of a roll, comprising the steps of: providing at least two pairs of distance measuring elements at spaced positions along the roll, the distance mea-

surrounding elements of each pair being diametrically opposed with respect to the cross-section of the roll, with their measuring axes lying substantially on the prolongation of a given diameter of the roll, each of the elements being contactlessly spaced from the surface of the roll, constraining the elements to



follow the translational movements of the roll so that the elements of each pair remain diametrically opposed at a substantially constant distance apart, measuring the distance of each element from the surface of the roll along the diameter thereof, and calculating a value representing the camber from the measured distances.

3,855,524

MEASURING GAUGE WITH AIR BEARING AND RESISTANT TO TILT

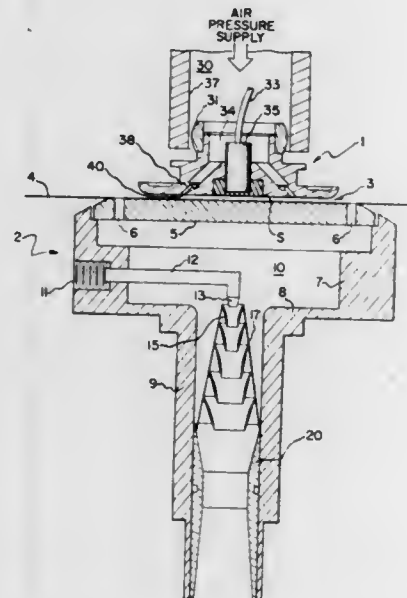
Juan Hamilton Crawford, Dublin, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Sept. 5, 1972, Ser. No. 286,076

Int. Cl. G01r 33/00

U.S. Cl. 324—34 TK

5 Claims



1. In an apparatus for measuring a property of a material sheet, including a member connected to a mount means allowing movement of said member relative to said sheet, said member comprising a sensor means for responding to said sheet property and a substantially flat surface which is to be maintained at a constant distance from said sheet by means including a gas film interposed between said surface and said sheet, said gas film being maintained by a flow of gas from gas-directing means in said member connecting a gas-confining chamber in said member with said surface and maintaining said member substantially in a state of equilibrium with respect to said sheet but subject to tilting movement relative to said sheet, the improvement wherein said gas-

directing means comprises at least one gas-discharging opening in said surface located at a position that is slightly greater than halfway towards the periphery of said surface along a line between the center and the periphery of said surface, the distance across said opening along said line being at least an order of magnitude smaller than the length of said line, said surface being impermeable to the flow of said gas except at the location of said opening, said gas-directing means comprising at least one channel inclined relative to said sheet for directing the flow of gas through said opening towards said sheet in the direction of said surface periphery with a resultant momentum comprising a first momentum component normal to said sheet and a second momentum component parallel to said sheet in the direction of the periphery that is adjacent said opening, said flow of gas being of a magnitude sufficient to maintain said member at said constant distance from said sheet when said member is in said state of equilibrium relative to said sheet, the inclination of said at least one channel and the location of said at least one opening being so related to the flow of gas from said opening to the periphery that substantially maximum variations in gas pressure occur at different points on said surface when said member is tilted relative to said sheet to produce a substantially maximum restorative action tending to restore said member to said state of equilibrium, while for the same inclination and location the amount of said restorative action first increases in a substantially linear relationship with an increase in the angle at which said member is tilted, tilted relative to said sheet and then increases more markedly in a substantially nonlinear relationship as said member further approaches contact with said sheet.

3,855,525

ANGULAR VELOCITY SENSOR

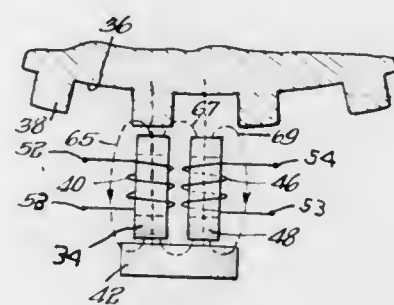
Victor Maurice Bernin, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 5, 1973, Ser. No. 404,062

Int. Cl. G01p 3/48

U.S. Cl. 324—34 D

4 Claims



1. A velocity sensing device comprising a sensing means, a rotating member having teeth on its periphery which are capable of conducting magnetic flux to create a time-varying magnetic field with respect to said sensing means, said sensing means comprising a pair of magnetic cores positioned adjacent the periphery of said rotating member, a winding on each of said cores, excitation generator means coupled to supply a carrier signal of a first phase to one of said windings and a carrier signal of a second phase to the other of said windings, said second phase being 180° out of phase with respect to said first phase, and a pair of impedances which are not effected by said magnetic field connected together and to said windings to form a four-arm bridge circuit having a pair of output terminals at which a composite signal results due to said carrier signals and to the rotation of said member, the centerlines of said cores being spaced such that when the centerline of one core is aligned with the centerline of a tooth, the centerline of the other core is approximately aligned with the centerline of the space between said tooth and the next adjacent tooth.

3,855,526

METHOD OF MAGNETIC PARTICLE TESTING USING STRIPPABLE COATINGS

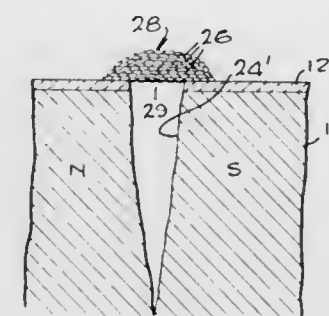
Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1973, Ser. No. 360,988

Int. Cl. G01r 33/12

U.S. Cl. 324—38

4 Claims



1. A method for nondestructive magnetic inspection of an object, for detection of defects and discontinuities in the surface of said object, which comprises applying a strippable coating containing a coloring material to said object, said colored coating contrasting with the color of said object, establishing a field of magnetic flux lines relative to said object so that lines of flux pass at an angle to said defects and discontinuities in the surface of said object, applying a suspension of non-fluorescent magnetic particles in a liquid medium over said colored coating, said suspension consisting essentially of a liquid hydrocarbon vehicle, a water soluble surfactant and said magnetic particles, and causing said magnetic particles to agglomerate on said coating adjacent to said defects and discontinuities, said magnetic particles having a color which contrasts with the color of said coating, to provide magnetic particle indications of said defects and discontinuities, gently treating said coated surface containing said magnetic particle indications in a solvent, said magnetic particle indications being maintained in their initial agglomerated positions, applying over said strippable coating and over said magnetic particle indications, a second clear, strippable coating, and stripping the coating system including said colored coating containing said magnetic particle indications and said clear coating from the surface of said object, to provide a record of said defects and discontinuities in the surface of said object.

3,855,527

METHOD AND SYSTEM FOR DETERMINING THE RESISTANCE OF THE DIELECTRIC IN A CAPACITOR

Otto T. Masopust, Jr., Bolingbrook, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,174

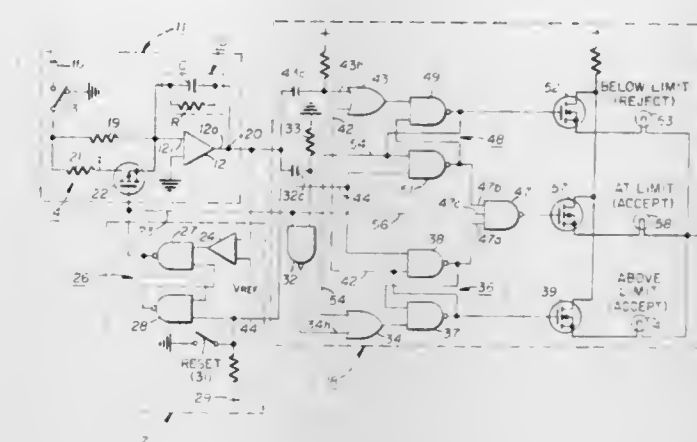
Int. Cl. G01r 27/26

U.S. Cl. 324—60 C

16 Claims

1. The method of determining the dielectric resistance of a capacitor with respect to a limit value, which comprises: applying charging potential through a selectively variable resistance network to charge the capacitor; detecting when the capacitor has attained a set charge which is equal to the charge that would be accumulated on a capacitor having dielectric resistance equal to the limit value if fully charged through a resistance of predetermined value; initially setting the variable resistance network at a low resistance level so that the capacitor is rapidly charged when the charging potential is applied through the variable resistance network; subsequently increasing the resistance value of the variable resistance network to the predetermined value upon detecting that the capacitor has attained the set charge; and

ascertaining whether the capacitor is stable, still charging or discharging, to determine whether the dielectric resis-



tance of the capacitor is at, above or below the limit value, respectively.

3,855,528

D-C CURRENT MEASURING CIRCUIT

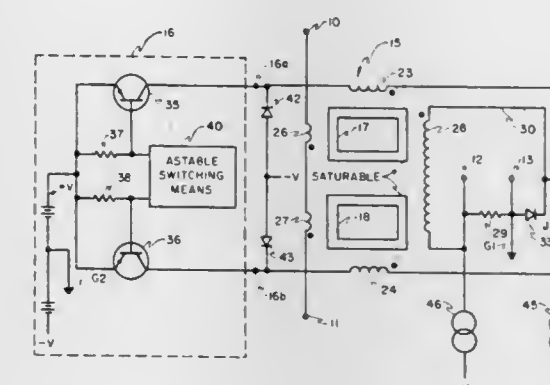
Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Apr. 6, 1973, Ser. No. 348,498

Int. Cl. G01r 1/22, 19/00

U.S. Cl. 324—117 R

11 Claims



1. In a circuit for establishing a current indication which varies in accordance with the magnitude of a d-c command current, in combination, first and second saturable cores each having a gate winding and a command winding, a control winding linking said first and second cores, means for connecting said command windings in series, means for connecting first respective ends of said gate windings, means for connecting a first end of said control winding to said connected ends of said gate windings, a first path for conducting current flow through either of said gate windings and through said control winding, a second path for conducting a circulating current through said control winding when no appreciable current flows through either of said gate windings, current indicating means for indicating the amplitude of current flow through said control winding, means for connecting said current indicating means to said control winding, and means for applying a chopped d-c voltage to the second end of one of said gate windings and for applying a complementary chopped d-c voltage to the second end of the other of said gate windings.

3,855,529

MEASURING ARRANGEMENT FOR DETERMINING THE AIR-GAP FLUX OF A ROTATING-FIELD MACHINE

Frank Langweiler, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

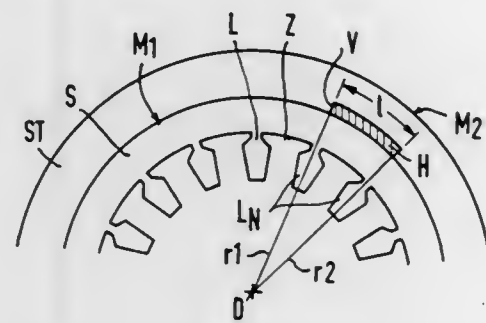
Filed June 14, 1972, Ser. No. 262,731

Claims priority, application Germany, June 19, 1971, 2130556

Int. Cl. G01r 33/02, 33/06

U.S. Cl. 324-158 MG

5 Claims



1. Arrangement for determining the air-gap flux of a rotating-field machine having a laminated stator and a rotor having a plurality of slots, the inner surface of the stator and the rotor conjointly defining a working air-gap, comprising recess means formed in the inner surface of the stator, and a semiconductor arrangement responsive to a magnetic field disposed in said recess means and having a sensitive region extending in the circumferential direction of the stator a distance corresponding approximately to the projection of the rotor slot pitch onto the inner surface of the stator.

3,855,530

MAGNETIC METAL DEFECT-DETECTING APPARATUS
Takashi Fuji, and Yasuhide Otsuka, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

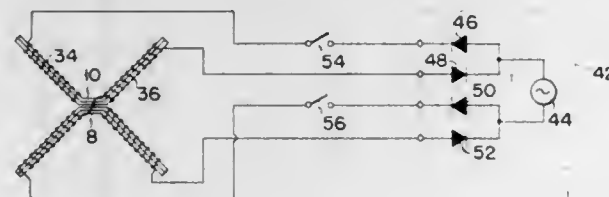
Filed Sept. 17, 1973, Ser. No. 397,655

Claims priority, application Japan, Sept. 19, 1972, 47-93845

Int. Cl. G01r 33/12

U.S. Cl. 324-37

6 Claims



1. A magnetic metal defect-detecting apparatus comprising: a cross-shaped magnetic core assembly including two pairs of magnetic pole members providing two pairs of magnetic poles intersecting each other;
a first and a second coil wound about the two pairs of magnetic pole members;
a power supply device including a source of single phase alternating current;
at least one first rectifier connected in series between the source of single phase alternating current and the first coil in the forward direction with respect to the positive half wave of the single phase alternating current for supplying the first coil with single phase alternating current of positive half wave; and
at least one second rectifier connected in series between the source of single phase alternating current and the second coil in the forward direction with respect to the negative half wave of the single phase alternating current for supplying the second coil with single phase alternating current of negative half wave;

thereby alternately applying each of two magnetic fluxes in intersecting directions.

3,855,531

METHOD OF TESTING THE SEALS OF FOOD CONTAINERS AND CONTAINERS SUITABLE THEREFOR

Jozef Frans Fielibert, Zevenaar, and Adrianus Van Rooijen, Didam, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

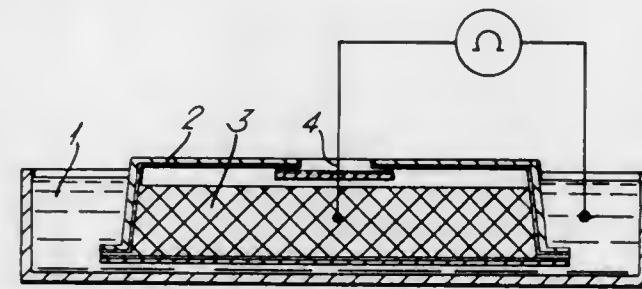
Filed June 28, 1972, Ser. No. 266,939

Claims priority, application Netherlands, July 1, 1971, 7109071

Int. Cl. G01r 27/02

U.S. Cl. 324-65 R

2 Claims



1. A method of testing the effectiveness of the seal of a free-standing thin-walled container containing therein an electrically conductive food product said container providing an electrically insulated barrier between the food product and the exterior of the container comprising the steps of inserting an electrode in a wall of the container, the electrode being in electrical contact at one portion thereof with the food product and in electrical contact at another portion thereof with a point outside of the container while being electrically insulated from the container immersing the container in an electrolyte, connecting the portion of the electrode outside of the container with a source of electrical current while maintaining electrical insulation between said electrode and the electrolyte, removing the container from the electrolyte and removing the electrode from the wall of the container.

3,855,532

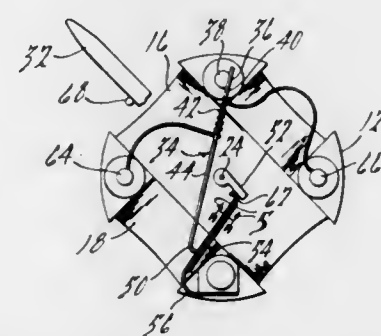
ELECTRICAL GAUGE INDICATOR RETURN DEVICE
Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1973, Ser. No. 422,112

Int. Cl. G01r 1/00, 5/16, 5/26

U.S. Cl. 324-154

3 Claims



1. An indicator return device for an electrical gauge having a frame and an indicator attached to a shaft pivotally mounted in said frame, said indicator return device being designed to move said indicator to a predetermined position upon the cessation of the supply of electrical power to said gauge and comprising: a cam attached to said gauge shaft, a bimetallic strip attached to said frame and extending therefrom, a leaf spring attached to said frame and extending therefrom, said

leaf spring and bimetallic strip being in contact with one another and said leaf spring urging said bimetallic strip in a direction away from said shaft and cam mounted thereon, said bimetallic strip having a first position when said gauge is not connected to a source of electrical energy wherein one end of said bimetallic strip is in contact with said leaf spring at a point thereon located intermediate the ends of said leaf spring and said bimetallic strip having a second position when said gauge is connected to a source of electrical energy wherein one end of said leaf spring is in contact with said bimetallic strip at a point thereon located intermediate the ends of said bimetallic strip.

3,855,533

SYSTEM INCLUDING A TRANSMITTER AND A RECEIVER FOR THE TRANSMISSION OF BINARY SIGNALS LOCATED IN PERIODICAL CLOCK INTERVALS

Alexander Alfred Schueli, Neuhausen, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

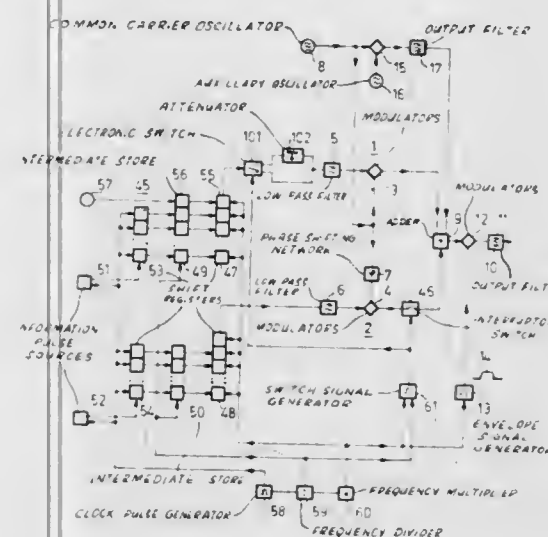
Filed June 1, 1973, Ser. No. 366,059

Claims priority, application Netherlands, June 28, 1972, 7208875

Int. Cl. H04h 3/00

U.S. Cl. 325-60

12 Claims



1. A system of the type including a transmitter and a receiver for the transmission of binary pulse signals located in periodic intervals by means of phase modulation, comprising at the transmitter end a phase modulator provided with at least two parallel-arranged channels on an input side thereof, each channel incorporating a modulator, a combination device, and with a common carrier oscillator which feeds the two modulators with carrier oscillations which are mutually shifted 90° in phase, the outputs of the two modulators being combined in the combination device for transmission through a transmission path, while the receiver includes a phase demodulator which is provided with at least two parallel-arranged channels connected on the input side to the transmission path and each incorporating a modulator, and with an arrangement for local carrier recovery which is stabilized on the transmitter carrier oscillations for demodulation of the transmitted binary pulse signals and which feeds the two modulators with carrier oscillations which are mutually shifted 90° in phase, the pulse signals derived from each of the outputs of the two modulators being applied through a pulse regenerator to a user, the improvement wherein a synchronizing interval having a duration of at least one clock interval is reserved for phase stabilization in the rhythm of a periodic cycle period corresponding to an integral number of clock intervals, a synchronizing signal generator being connected at a transmitter end to the modulator in the first of the two transmission channels, said generator comprising means for applying a predetermined pulse signal as a synchronizing signal to the input of the modulator incorporated in said channel during the synchronizing intervals, the

second of the two channels incorporating an interruptor switch means connected to said synchronizing signal generator for interrupting the second transmission channel at the instants of the synchronizing intervals, while in the receiver the arrangement for local carrier recovery comprises blocking arrangement means for selectively phase reversing the received carrier signal, a synchronizing interval selection means for selecting the synchronizing intervals of a lower signal level, a phase stabilization channel means for connecting the output of the modulator in the receiver channel corresponding to the second transmission channel to the blocking arrangement which for the purpose of phase stabilization is released by a switching signal at synchronizing intervals originating from the synchronizing interval selector means which is fed by the received phase-modulated oscillations.

3,855,534

APPARATUS FOR PROVIDING POWER TO PORTABLE RADIO TRANSMITTERS

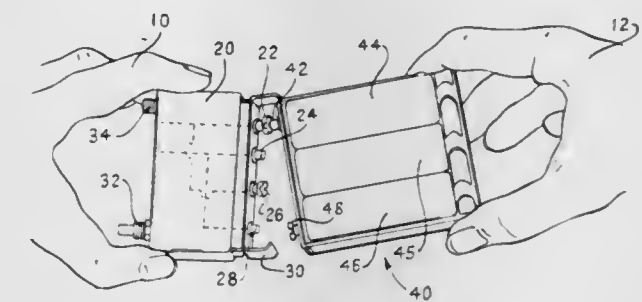
Jack N. Holcomb, Galt Towers, Ocean Dr., and Hans D. Sylten, both of Fort Lauderdale, Fla., assignors to said Holcomb, by said Sylten

Filed Apr. 23, 1973, Ser. No. 353,495

Int. Cl. H04b 5/06

U.S. Cl. 325-118

2 Claims



1. The combination of an attachable power supply with portable radio apparatus, comprising:
a. a battery receptacle case having a plurality of batteries,
b. a portable radio apparatus having a battery attachment section with a plurality of parallel connected positive terminals and parallel connected negative terminals,
c. the battery receptacle case having means for attachment to the radio apparatus adjacent the positive and negative terminals,
d. positive electrical connecting means mounted on the battery receptacle case for providing direct attachment to one of the positive terminals of the radio apparatus,
e. negative electrical connecting means mounted on the battery receptacle case for providing direct attachment to one of the negative terminals of the radio apparatus,
f. electrical connecting means integral with the battery case for interconnecting said plurality of batteries electrically with the positive and negative electrical connecting means on the battery receptacle case,
g. the electrical connecting means including switch means having a first position for electrically connecting the plurality of batteries in parallel with the positive and negative electrical means of the battery receptacle case,
h. the switch means having a second position for alternately electrically connecting the plurality of batteries in series with the positive and negative electrical connecting means of the battery case, whereby the signal emanating from the radio apparatus can be maintained at a satisfactory signal level for a limited period of time after the batteries become weak and supply insufficient power to the radio apparatus when they are connected in parallel.

3,855,535

PROGRAMMING SYSTEM FOR A MOTOR-DRIVEN TELEVISION RECEIVER TUNING APPARATUS

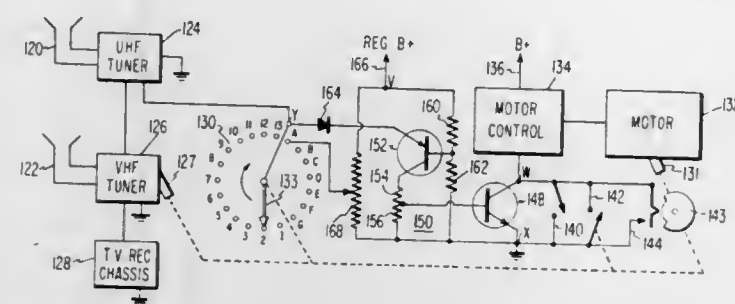
James Courtland Marsh, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 22, 1973, Ser. No. 362,713

Int. Cl. H04b 1/16

U.S. Cl. 325-471

5 Claims



1. In a motor driven television receiving tuning apparatus employing a voltage tunable tuner capable of processing signals associated with each of a plurality of signal channels in a band of frequencies, a system for providing selective bypassing of positions of a channel selector switch employed to provide for reception of selected ones of said plurality of signal channels, comprising:

a plurality of potentiometers each having an adjustable contact providing a preset voltage;

a channel selector switch including at least a plurality of stator contacts corresponding in number to said plurality of potentiometers, each connected to one of said adjustable contacts and rotor contacts connected to said voltage tunable tuner, said channel selector switch thereby providing for coupling of one of said preset voltages to said voltage tunable tuner at each of said plurality of stator contacts;

a motor having a shaft coupled to said rotor contact of said channel selector switch;

a motor control coupled to said motor for providing energization of said motor; and

means coupled to said rotor contact of said channel selector switch for sensing a select range of voltage supplied from said plurality of potentiometers via said rotor and for providing a switching signal only when said select range is being sensed, said switching signal being coupled to said motor control to maintain energization of said motor.

3,855,536

UNIVERSAL PROGRAMMABLE LOGIC FUNCTION

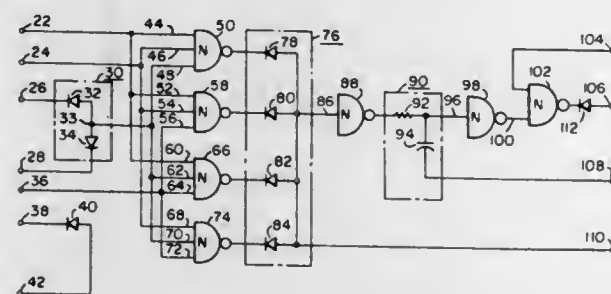
James A. Neuner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 241,038

Int. Cl. H03k 19/08, 19/36, 19/44

U.S. Cl. 328-92

31 Claims



1. A programmable, universal logic module comprising: logic means having a number of p input means where p is an integer greater than or equal to one, and a first output means, each of said input and output means capable of assuming either a first or second logical state, respectively, said logic means including a plurality of NAND gates, an AND gate having a plurality of inputs from the

respective outputs of said NAND gates and an inverter having an input from said AND gate output and wherein the output of said inverter forms said first output means; n signal means, where n is an integer less than or equal to p , operably connected to n of said p input means, so as to provide at least one logical input signal to said logic means; and

the remainder of said p minus n input means operably arranged so as to provide an output signal of said first state at said first output means whenever at least m of said n signal means assume said first state, where m is a predetermined integer less than or equal to n .

3,855,537

BAND-SEPARATION FILTER WITH REDUCED PATH CROSS-CONNECTIONS

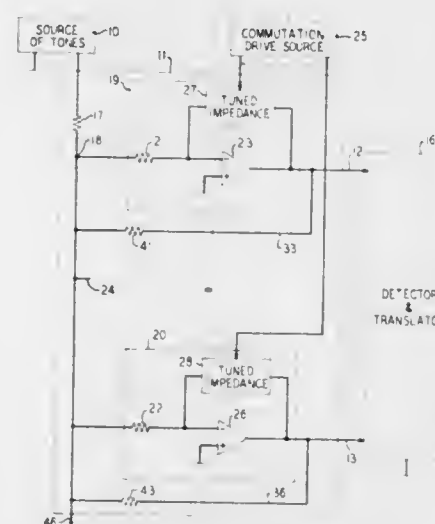
Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1973, Ser. No. 387,126

Int. Cl. H03b 1/04

U.S. Cl. 328-167

10 Claims



1. An electrical frequency filter apparatus comprising a plurality of bandpass frequency filter units covering different frequency bands and connected to be fed electrical signals from a common input connection, means, in each filter unit, for degeneratively feeding back an output of such unit to an input thereof for all but a different one of said bands, and means for degeneratively feeding back outputs of all of said units back to said common input connection to effect substantially complete cancellation of said different bands in such input for producing a degenerated input.

3,855,538

MEANS AND METHOD FOR PROVIDING HIGHLY STABLE REFERENCE

John M. Jones, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,074

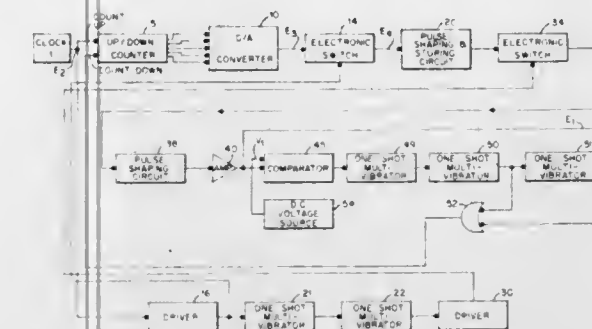
Int. Cl. H03b 3/02; H03k 5/00

U.S. Cl. 328-175

8 Claims

1. A network for providing reference pulses comprising means for providing a pulse train, clock means for providing clock pulses at a predetermined frequency, means connecting the clock means to the pulse train means for changing the amplitude of a pulse in the pulse train by a predetermined amount in response to a clock pulse from the clock means, means for providing a reference voltage, means connected to the pulse train means, to the reference voltage means and to the changing means for controlling the amplitude of a next subsequent pulse in the pulse train in a manner so that the next subsequent pulse amplitude is changed by the predetermined amount in one direction when the amplitude of a current pulse in the pulse train does not exceed the reference voltage and

the next subsequent pulse amplitude is changed in an opposite direction by the predetermined amount when the current pulse amplitude exceeds the reference voltage so that the



amplitude of the pulses in the pulse train are maintained at a substantially constant level, and means connected to the pulse train means for providing the pulses of the pulse train as the reference pulse.

3,855,539

METHOD AND APPARATUS FOR NOISE REDUCTION IN DISCRETE PHASE MODULATED SIGNALS

Alain Croisier, Cagnes sur Mer, France, assignor to International Business Machines Corporation, Armonk, N.Y.

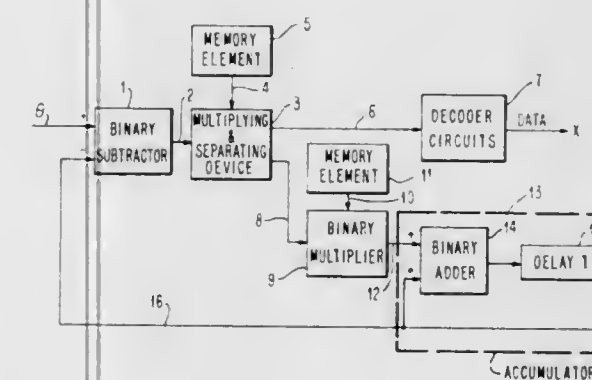
Filed Mar. 16, 1973, Ser. No. 342,005

Claims priority, application France, Apr. 4, 1972, 72.12014

Int. Cl. H04b 1/10; H03k 5/01

U.S. Cl. 329-104

8 Claims



1. A method for demodulating discrete phase modulated signals and for selectively reducing the phase shift contributions thereto caused by one or more types of transmission impairments such as white noise, frequency shift, phase distortion, or jitter, the method comprising the steps of:

forming a difference signal from each discrete signal of phase magnitude θ and reference value R ;

multiplying the difference signal by a first coefficient of the value $M/2\pi$, M being the total number of distinct values that can be used to phase encode the data;

partitioning the product into an integral valued portion thereof X representing the phase modulation of the data and a fractional valued portion F representing the phase modulation of the transmission impairments, the phase shift contribution of the impairments being less than π/M radians;

multiplying the fractional valued portion F by a second coefficient α , α lying within the range $0 < \alpha < 2$; and integrating the product αF to derive the said reference value R which constitutes a prediction of the phase shift contribution due to the transmission impairments for each discrete phase signal θ .

3,855,540

PUSH-PULL TRANSISTOR AMPLIFIER WITH DRIVER CIRCUITS PROVIDING OVER-CURRENT PROTECTION

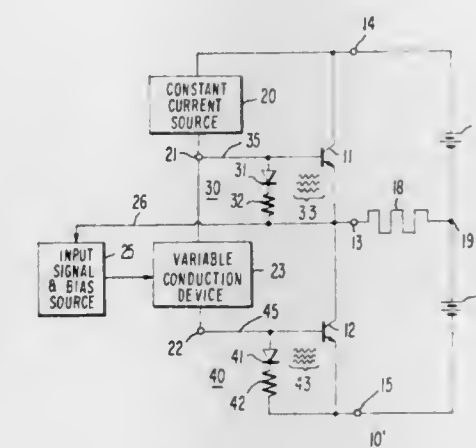
Arthur John Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,418

Int. Cl. H03f 3/26

U.S. Cl. 330-14

24 Claims



13. An amplifier comprising:

first and second bipolar transistors, each having emitter and collector electrodes with a collector-to-emitter path therebetween and each having a base electrode and a base-emitter junction between its said emitter and said base electrode;

first and second semiconductor junction diodes;

first and second linear resistive elements;

a serial combination of said first semiconductor junction diode and said first linear resistive element connected in a first parallel combination with said first transistor base-emitter junction, with said first semiconductor junction being poled for concurrent forward conduction with said first transistor base-emitter junction;

a serial combination of said second semiconductor junction diode and said second linear resistive element connected in a second parallel combination with said second transistor base-emitter junction, with said second semiconductor junction being poled for concurrent forward conduction with said second transistor base-emitter junction;

means responsive to input signal thereto applied to supply first and second signal currents which are in push-pull relationship to each other and to said first and said second parallel combinations, respectively; and

means for connecting the collector-to-emitter paths of said first and said second transistors in series for application of operating potential and in push-pull for supplying an output signal responsive to said first and second signal currents.

21. An amplifier comprising, in combination:

a pair of terminals between which an operating voltage may be applied;

two semiconductor devices, each having a conduction path and a control electrode for controlling the conductance of said path, said conduction paths connected in series between said terminals;

a current source providing a constant current at a level lower than that which will damage either device;

and means including a signal responsive variable conductance means receptive of the current provided by said source, for supplying one portion of said current to one control electrode and the other to the other control electrode, in accordance with the value of a parameter of said signal.

3,855,541

CURRENT PROPORTIONING CIRCUIT

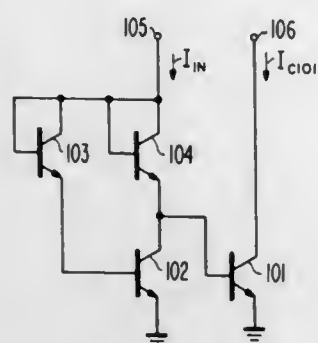
Arthur John Leidich, Flemington, N.J.

Filed Oct. 5, 1973, Ser. No. 404,123

Int. Cl. H03f 3/04

U.S. Cl. 330-22

9 Claims



1. A circuit for conditioning a first transistor to have an output current flow in its emitter-to-collector path which is a fraction of the current flowing in the emitter-to-collector path of a second transistor, each of said first and second transistors also having a base-to-emitter path and a base electrode, said conditioning circuit comprising, in combination:

- an input terminal for an input current;
- an output terminal for said output current to which said first transistor collector electrode is connected;
- a common terminal to which the emitter electrodes of said first and said second transistors are connected;
- two non-linear circuit means having substantially the same current versus voltage characteristics each of said non-linear circuits maintaining an offset potential thereacross logarithmically related to the current flow therethrough, one said non-linear circuit means connected between said input terminal and said collector electrode of said second transistor for conducting a first portion of said input current flowing as the collector current of said second transistor and the other such non-linear circuit means connected between said input terminal and the base electrode of said second transistor for conducting a second portion of said input current flowing as the base current of said second transistor; and
- means for maintaining the potential across the base-to-emitter path of said first transistor at the potential appearing across the collector-to-emitter path of said second transistor.

3,855,542

BROAD BAND HIGH FREQUENCY DIODE AMPLIFIER

Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,119

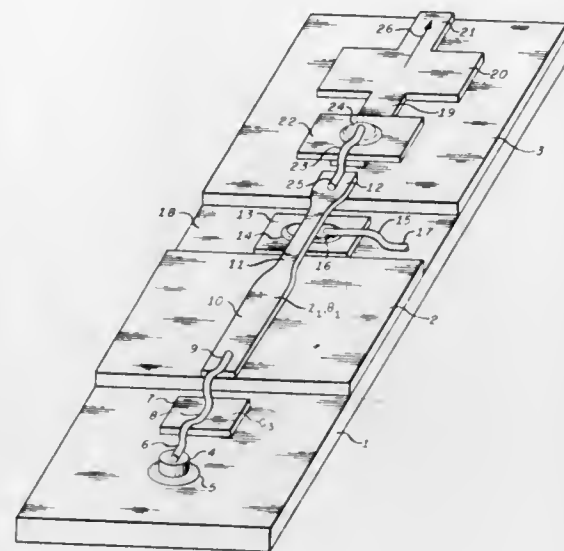
Int. Cl. H03b 7/14

U.S. Cl. 330-34

8 Claims

1. A high frequency signal amplifier comprising: transmission line means having first and second high frequency signal conducting means, said first high frequency signal conducting means including first and second signal conducting portions supported in substantially parallel relation with respect to said second high frequency signal conducting means, first series resonant circuit means including diode means coupled between said second high frequency signal conducting means and a first end of said first signal conducting portion, second series resonant circuit means coupled between the second end of said first signal conducting portion and the first end of said second signal conducting portion, shunt resonant circuit means coupled to said first signal conducting portion and to said second high frequency signal conducting means intermediate said first and second ends of said first signal conducting portion,

bias circuit means connected to said second end of said second signal conducting portion and said second high



frequency signal conducting means for supplying a bias signal through said diode means.

3,855,543

DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION

Abraham Timmermans, and Robertus Laurentius Clemens de Vaan, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

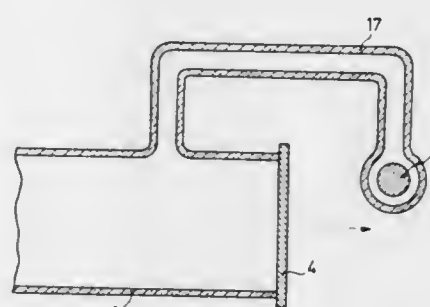
Filed Jan. 22, 1973, Ser. No. 325,882

Claims priority, application Netherlands, Feb. 21, 1972, 7202271

Int. Cl. H01s 3/22

U.S. Cl. 331-94.5 T

8 Claims



1. In an iraser for producing stimulated infrared emission: a discharge tube containing at least a mixture of carbon dioxide and water vapor; electric discharge means supported by said discharge tube for producing an iraser beam; and means for maintaining the stimulated infrared emission substantially at the most efficient level for said tube by maintaining the pressure of said water vapor in said tube at a predetermined value, said means comprising a quantity of zeolite that contains water vapor and is disposed within said tube and is thermally coupled to said beam to be heated thereby to give off water vapor, the thermal coupling between said zeolite and said beam being such that said zeolite is heated to a predetermined temperature to give off enough water vapor to maintain said water vapor at said predetermined value when the stimulated emission is at substantially its maximum efficiency, the efficiency of said emission dropping when said water vapor exceeds said predetermined value.

3,855,544

FREQUENCY SELECTIVE OUTPUT COUPLING FOR LASERS

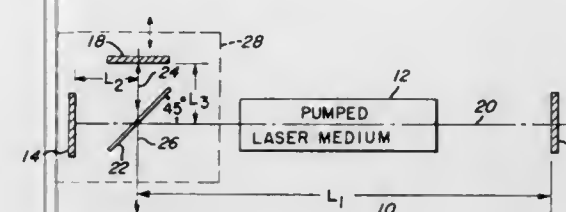
Colin Bowness, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 28, 1966, Ser. No. 590,350

Int. Cl. H01s 3/08

U.S. Cl. 331-94.5

8 Claims



1. A frequency selective output coupling for coupling the output beams of a plurality of laser resonant cavities into a single output beam, said plurality of laser resonant cavities each including a laser medium, a cavity axis and end reflectors, wherein said laser cavities are positioned in parallel, said coupling comprising:

- partial reflecting means positioned adjacent each of the laser mediums at a selected angle to each cavity axis for coupling energy out in two coaxial oppositely directed beams, and
- an adjustable reflecting means positioned in one of said beams to reflect it back along itself and back through the partial reflecting means to superimpose said two beams to form a single output beam.

3,855,545

LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2 , BaO , Li_2O

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 373,922

Int. Cl. H01s 3/00; C03c 3/12, 3/30

U.S. Cl. 331-94.5 E

10 Claims

1. A laser glass host composition comprising TeO_2 , BaO and Li_2O in which the proportions in molar amounts of TeO_2 , BaO and Li_2O are defined by the areas within the heavy lines connecting the points ABCDEF of the ternary diagram of the FIGURE of the drawings, the laser glass composition being a host for an effective lasing amount of Nd_2O_3 .

3,855,546

FOLDED LOBE LARGE OPTICAL CAVITY LASER DIODE

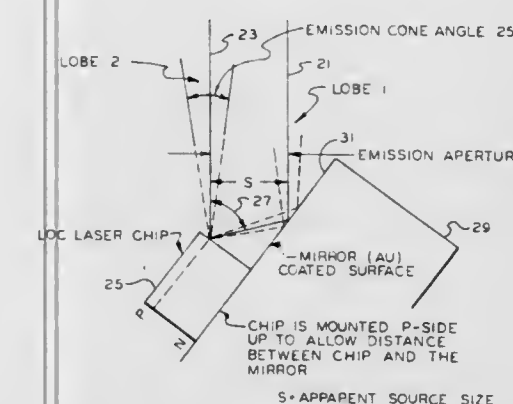
David L. Carr, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 21, 1973, Ser. No. 399,565

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 H

8 Claims



1. An improved large optical cavity laser diode arrangement comprising: a) means having at least one plane surface which

is light reflecting; and b) an optical cavity laser diode mounted on said plane surface such that one of the two major lobes emitted by the laser diode is reflected so as to have its major axis parallel to the major axis of the other lobe.

3,855,547

OPTICAL CAVITY FOR A LASER

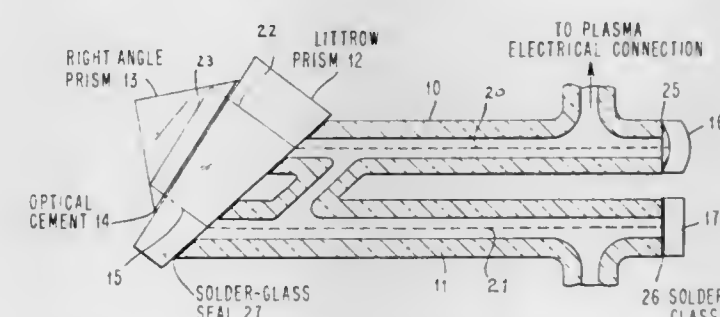
Joseph Pennell Kirk, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,354

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 C

5 Claims



1. A laser with a single critical surface Brewster window, comprising:

- a laser cavity having a principal optical axis along which is propagated the laser beam;
- a Littrow prism having a first planar face located on said principal optical axis, oriented at Brewster's angle with respect thereto, and mounted as a window in contact with said laser cavity, for admitting a refracted, plane polarized component of said laser beam incident along said principal axis;
- said Littrow prism having a second substantially planar face which intersects said first face along a line perpendicular to said principal axis, at an angle with respect to said first face such that said second face is substantially perpendicular to said refracted component of said laser beam;
- a reflecting means in contact with said second face and normal to the direction of propagation of said refracted, plane polarized component for reflecting said component back upon itself and out of said first planar face of said prism along said principal axis;
- whereby laser action is sustained generating a polarized laser beam, with a Brewster window having only one critical surface.

3,855,548

ULTRA HIGH FREQUENCY SINGLE MODE OSCILLATION CONTROLLED BY A SURFACE ACOUSTIC WAVE CRYSTAL

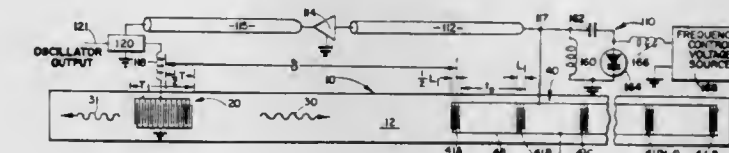
Arabinda K. Nandi, Anaheim; Sam T. Costanza, Santa Ana, and Charles E. Wheatley, III, Newport Beach, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 18, 1973, Ser. No. 407,695

Int. Cl. H03b 5/32

U.S. Cl. 331-107 A

7 Claims



1. An oscillator comprising an amplifier having a surface acoustic wave delay line in a feedback path, wherein the delay line comprises: a substrate capable of supporting surface acoustic waves; and

first and second transducers each disposed in coupling relation to said substrate;
said first transducer comprised of a plurality of taps connected in parallel,
each said tap comprising an interdigital transducer;
said taps being spaced center-to-center by an integral multiple of the wave length of a desired oscillation frequency so that each tap will produce an in-phase output signal at said desired frequency; and
said second transducer comprising an interdigital transducer.

3,855,549

CIRCUIT, SUCH AS CMOS CRYSTAL OSCILLATOR, WITH REDUCED POWER CONSUMPTION

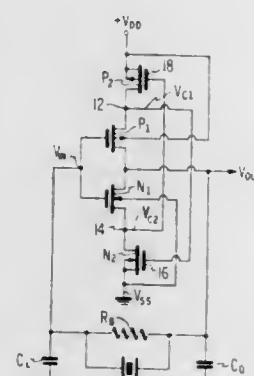
Robert Charles Huener, Bound Brook, and Richard Plumb Fillmore, Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,357

Int. Cl. H03b 5/36

U.S. Cl. 331—108 D

26 Claims



20. In combination:

first and second controllable impedance means;
two operating voltage terminals;
an input terminal;
an output terminal;

first and second semiconductor devices of different conductivity types, each having a conduction path and a control electrode for controlling the conductivity of its conduction path, both control electrodes connected to said input terminal, the conduction path of said first device connected in series with said first controllable impedance means between said output terminal and one of said operating voltage terminals and the conduction path of said second device connected in series with said second controllable impedance means between said output terminal and the other operating voltage terminal; and
first and second feedback paths, the first coupled between said first device and said second controllable impedance means and the second coupled between said second device and said first controllable impedance means.

3,855,550

TRANSISTOR OSCILLATOR WITH DIODE IN FEEDBACK CIRCUIT PROVIDING AMPLITUDE STABILIZATION

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,417

Int. Cl. H03b 3/02, 5/12

U.S. Cl. 331—109

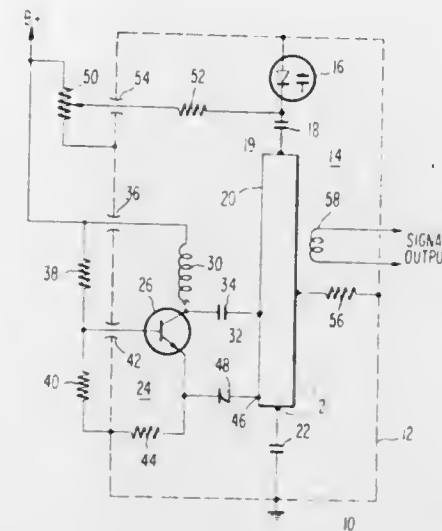
12 Claims

1. An oscillator comprising:

a resonant circuit including at least an inductance element and a capacitance element;
an amplifying device having first, second and third electrodes;

biasing means coupled between said second and third electrodes for conditioning said amplifying device for conduction;

means for coupling said resonant circuit to said first electrode; and



rectifier means coupling said resonant circuit to said third electrode of said amplifying device for sustaining oscillations in said resonant circuit, said rectifier means further providing charging of said capacitance element and reducing of the amplitude of oscillations fed back to said third electrode upon an increase of a first polarity portion of said oscillations beyond a predetermined level.

3,855,551

MULTIVIBRATOR CIRCUIT

Yoshio Ishigaki, and Masayuki Hongu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

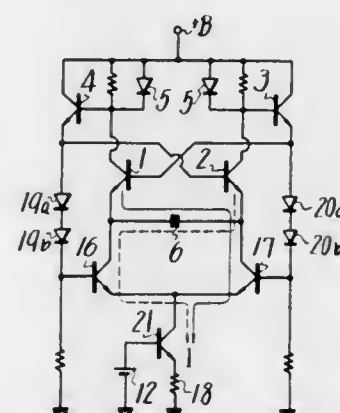
Filed Dec. 14, 1973, Ser. No. 424,782

Claims priority, application Japan, Dec. 22, 1972, 47-129099

Int. Cl. H03k 3/282

U.S. Cl. 331—113 R

10 Claims



1. A multivibrator circuit comprising:

first and second transistors each having a base electrode, an emitter electrode and a collector electrode;
voltage supply means;

first and second load elements connecting the respective collector electrodes of said first and second transistors to said voltage supply means, said collector electrodes of said first and second transistors being coupled to said base electrodes of said second and first transistors, respectively;

a capacitor connected between the emitter electrodes of said first and second transistors;

a pair of current controlling devices each having input, output and common electrodes, the output electrodes of said current controlling devices being connected to separate emitter electrodes of said first and second transistors, the common electrodes of said current controlling de-

vices being connected to a constant current source, and said pair of current controlling devices being controlled by the application of said input electrodes of the output signal produced by said first and second transistors, whereby said emitter electrodes of said first and second transistors are alternately connected to said constant current source through said current controlling devices to provide a constant duty ratio.

3,855,552

OSCILLATOR UTILIZING COMPLEMENTARY TRANSISTORS IN A PUSH-PULL CIRCUIT

Gerhard Thanhaeuser, Mering, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

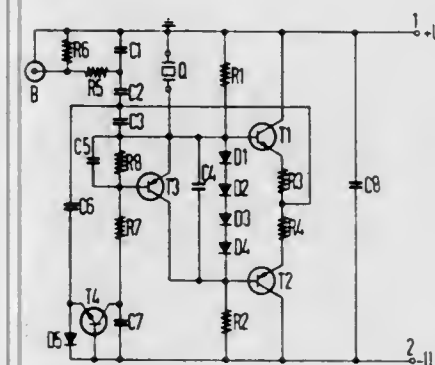
Filed Dec. 17, 1973, Ser. No. 424,928

Claims priority, application Germany, Dec. 21, 1973, 2262782

Int. Cl. H03b 5/36

U.S. Cl. 331—116 R

6 Claims



1. An oscillator circuit comprising an oscillatory circuit, first and second complementary transistors connected in a push-pull configuration and each having a base and connected to said oscillatory circuit, and a variable voltage divider connected between said bases for adjusting the working points of said first and second complementary transistors, said variable voltage divider comprising a third transistor including a base connected to said oscillatory circuit and an emitter and a collector connected to respective bases of said first and second complementary transistors and a collector-emitter region driven toward progressively lower and lower resistance in response to increasing amplitude of oscillation.

3,855,553

MODULATED TRANSISTOR OSCILLATORS

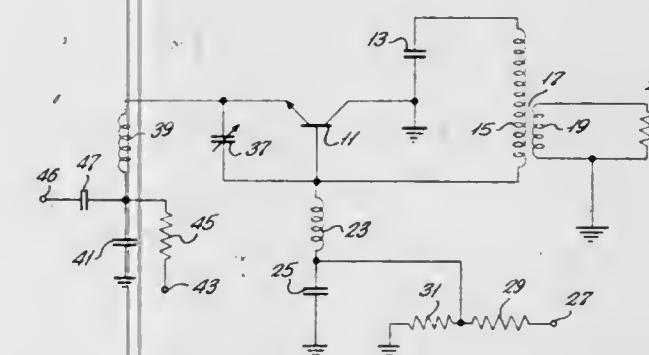
John E. Cronin, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 3, 1966, Ser. No. 593,262

Int. Cl. H03b 5/12

U.S. Cl. 331—117 R

3 Claims



1. A modulated transistor oscillator comprising a junction transistor having a base, collector and emitter means connected to said transistor for biasing said transistor in a Class C mode, at a frequency such that the transistor reactance

forms an appreciable part of the reactance of said biasing means, with the angle of conduction of said transistor in each cycle of oscillation being less than 180°, said biasing means comprising a first inductor and first capacitor serially connected between the base terminal of the junction transistor and ground, a resonant tank circuit including a second capacitance and second inductance serially connected between the collector and base of said transistor, said second capacitance and second inductance having values such that the inherent capacitance between the collector and base of said transistor forms an appreciable part of the reactance of the resonant tank circuit means; and means to apply a modulating signal to said transistor to simultaneously vary the average emitter current of said transistor and the average collector-to-base voltage of said transistor.

3,855,554

OSCILLATOR CIRCUIT FOR TESTING INDUCTORS

Gerhard Muller, and Rolf Bondiek, both of Backnang, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

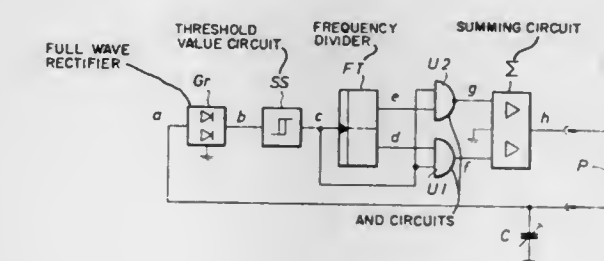
Filed Oct. 30, 1973, Ser. No. 411,173

Claims priority, application Germany, Oct. 31, 1972, 2253296

Int. Cl. H03b 5/08

U.S. Cl. 331—167

2 Claims



1. In a generator arrangement for producing electrical oscillations for testing an inductor and measuring its quality factor, the arrangement including a pair of terminals for connections to such a test inductor, a capacitor connected to one such terminal to be in series with the test inductor, with this series connection of the test inductor and the capacitor determining the frequency of the electrical oscillations, and feedback means having its input connected to such one terminal and its output connected to the other such terminals, the improvement wherein the feedback means comprises: full wave rectifier means connected to said one terminal for rectifying the oscillating voltage appearing across said capacitor; threshold value means connected to the output of said rectifier means for producing rectangular pulses in response to the peaks of the output signal emitted by said rectifier means; frequency divider means connected to the output of said threshold value means for dividing the frequencies of the rectangular pulses in half and producing first and second output signals having opposite phases with respect to each other; an AND circuit having its first input connected to said frequency divider means to receive the first output signal and its second input connected to the output of said threshold value means; a negated AND circuit having its first input connected to said frequency divider means to receive the second output signal and its second input connected to the output of said threshold value means; and summing means connected to the outputs of said AND circuit and said negated AND circuit for summing the output signals of said circuits, said summing means having its output connected to said other terminal.

3,855,555

DELTA MODULATOR HAVING LOW-LEVEL RANDOM NOISE CHARACTERISTIC

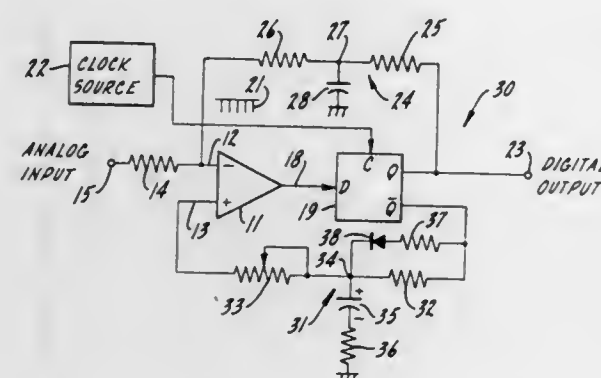
Mahlon D. Burkhard, Hinsdale, and Richard W. Peters, Algonquin, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 69,524, Sept. 4, 1970, Pat. No. 3,681,531. This application Aug. 25, 1972, Ser. No. 283,925

Int. Cl. H03k 13/22, 7/00

U.S. Cl. 332-11 D

6 Claims



1. A delta modulator, suitable for audio signal processing, which provides a subjectively tolerable low-level, random idling noise in the demodulated output of the modulator, comprising:

high-gain comparator amplifier means having two inputs and an output;

input means for applying an initial analog signal to one input of the comparator amplifier means;

a sampling gate comprising a flip-flop circuit having a main input, a sampling input, and first and second outputs, one of the gate outputs comprising the modulator output, the main input of the sampling gate being connected to the output of the comparator amplifier means;

clock means for applying a high-frequency clock signal to the sampling input of the gate to control actuation of the gate between two alternate operating conditions and generate two output pulse signals of inverse polarity at the gate outputs;

a principal integrating negative feedback circuit, having a short time constant, connected from one output of the sampling gate to one input of the comparator amplifier means, for integrating one pulse signal from the gate to develop a replica analog signal and for applying that replica signal to the comparator amplifier means in bucking relation to the initial analog signal;

and a self-bias feedback circuit, comprising an integrating circuit having a long time constant, connected from one output of the sampling gate to one input of the comparator amplifier means, for applying a self-bias reference to the comparator amplifier means, the self-bias feedback circuit also transmitting a negative feedback A.C. signal of limited amplitude to introduce a limited broad-band noise content into the output signal of the modulator; one of the feedback circuits being connected to the other input of the comparator amplifier means.

3,855,556

SELECTABLE FREQUENCY BANDPASS FILTER

Clinton J. Hartmann, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 2, 1973, Ser. No. 347,115

Int. Cl. H03h 9/26, 9/30, 9/32

U.S. Cl. 333-72

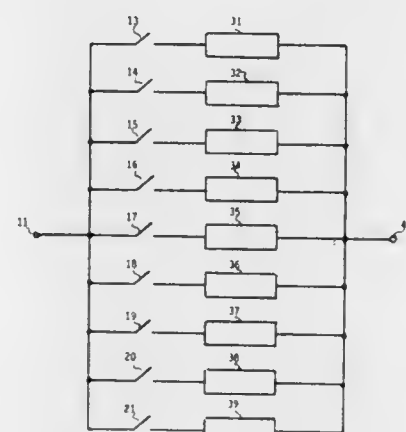
8 Claims

1. A selectable frequency filter comprising: substrate means defining at least a substrate surface layer of piezoelectric material capable of propagating acoustic surface waves,

a plurality of electrical filters disposed on the piezoelectric surface of said substrate means,

each of said electrical filters comprising input and output acoustic surface wave transducers so constructed and arranged to provide a frequency response including at least one relatively narrow passband centered at a frequency chosen from a pre-determined set of discrete frequencies and effectively zero transmission elsewhere, the frequency responses of the respective input and output acoustic surface wave transducers comprising the individual electrical filters differing from each other,

at least one set of input and output acoustic surface wave transducers providing a frequency response including a plurality of relatively narrow passbands centered at a plurality of frequencies chosen from the pre-determined set of discrete frequencies wherein at least one of said



plurality of relatively narrow passbands coincides with a relatively narrow passband included in a frequency response of another set of input and output acoustic surface wave transducers,

switching means operably associated with each of said plurality of electrical filters and being selectively closed to connect particular electrical filters in parallel between the input and output of the selectable frequency filter, the particular electrical filters connected in parallel including at least two filters having coinciding relatively narrow passbands included in the frequency responses thereof such that reinforcement of duplicated relatively narrow passbands occurs to provide a resultant frequency response having a dominant relatively narrow passband at one frequency of the pre-determined set of discrete frequencies at which the selectable frequency filter passes energy more readily than at any other frequency.

3,855,557

TEST TRIP MEANS FOR CIRCUIT BREAKER

Carl E. Gryetko, Haddon Heights, N.J., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 3, 1973, Ser. No. 421,032

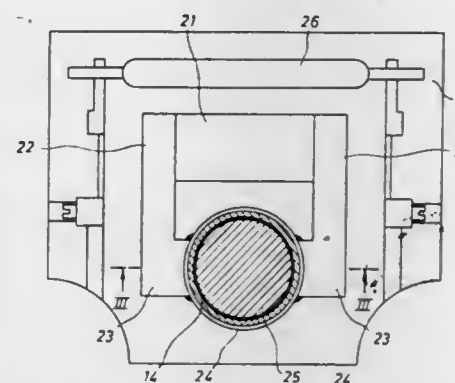
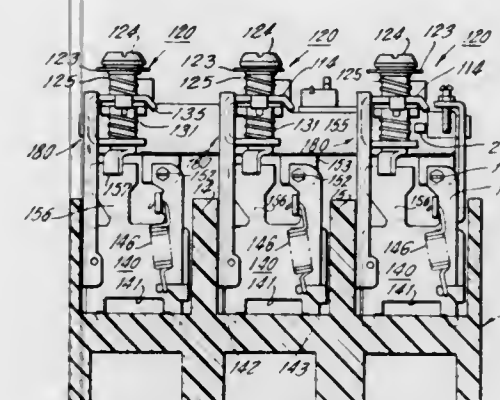
Int. Cl. H01h 71/74

U.S. Cl. 335-42

8 Claims

1. A multipole circuit breaker including cooperating contacts for each pole thereof; releasable contact operating means for opening and closing said cooperating contacts; latch means for maintaining said operating means in a latched position; a common trip bar extending between all poles of said circuit breaker, individual fault current responsive means for each pole of said circuit breaker any one of which is operable, upon sensing a predetermined fault current condition, to act through said trip bar to release said latch means thereby releasing said operating means and opening said cooperating contacts; adjusting means for calibrating said fault current responsive means; housing means wherein the elements previously recited are disposed; said adjusting means including a

portion accessible for pivotal operation from outside of said housing to calibrate said fault current responsive means; said comprising a permanent magnet the poles of which are situated on either side of said tube and a ring of magnetic material



surrounding said tube and integral with the poles of said magnet, and a flexible knife switch located adjacent said magnet.

3,855,560

MULTI POSITION ROTARY DETENT DEVICE

Frank L. Ward, Kensington, N.H., assignor to Clarostat Mfg. Co. Inc., Dover, N.H.

Filed May 14, 1973, Ser. No. 360,138

Int. Cl. H01f 7/02

U.S. Cl. 335-302

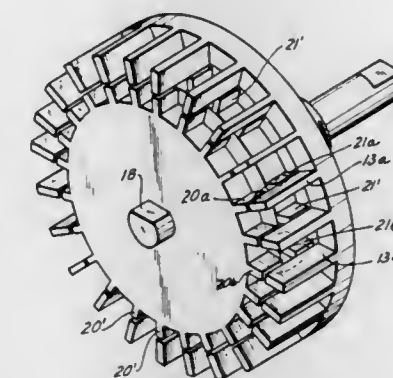
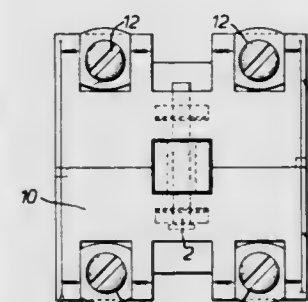
8 Claims

1. An electrical contact unit for attachment to an electromagnetically operated switch, said contact unit comprising: a. a housing divided into parts; b. at least one leg depending from each housing part; c. a hooked end formed on each leg, for engagement of the contact unit with a complementary formation on the switch; d. resilient means holding the two housing parts together and permitting partial separation of the two housing parts against the resilience of said means whereby the contact unit is snap-engageable with said complementary formation; e. relatively movable contact members in the housing; and f. an operating member for said contact members.

U.S. Cl. 335-132

Int. Cl. H01h 67/02

6 Claims



1. A multi position rotary detent device including in combination a first rotary member, a plurality of circularly arranged first pole pieces of said first rotary member, said first pole pieces being formed of a magnetic material, a second rotary member rotatably supported with respect to said first rotary member, a magnet of said second rotary member having first and second surfaces respectively oriented magnetic north and magnetic south, a first pole member of said second rotary member adjacent said first surface and having second pole pieces, a second pole member of said second rotary member adjacent said second surface and having third pole pieces, said pole members being in fixed relation with said magnet and formed of a magnetic material, said second and third pole pieces and said first pole pieces projecting toward each other, and means for relatively rotating said first and second rotary members whereby the relative angular position of said first rotary member with respect to said second rotary member determines the magnetic flux paths between selected second and third pole pieces and selected said first pole pieces.

3,855,559

MAGNETIC POSITION DETECTORS, NOTABLY LEVEL DETECTORS

Jean Paul Lenseigne, Enghien-les-Bains, France, assignor to Societe Anonyme Petrole Service, Paris, France

Filed Dec. 3, 1973, Ser. No. 420,934

Claims priority, application France, Dec. 5, 1972, 72.43172

Int. Cl. H01h 36/00

U.S. Cl. 335-207

11 Claims

1. A magnetic detection device for detecting the position of a movable member comprising a nonmagnetic tube, a piece of magnetic material operatively connected to said member and movable within said tube in accordance with the movement of said member, a detector unit situated external to said tube

3,855,561

HIGH FREQUENCY COIL HAVING AN ADJUSTABLE FERRITE POT CORE

Paul Gottschalt, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 18, 1972, Ser. No. 315,869

Claims priority, application Germany, Dec. 29, 1971, 7149293; Apr. 14, 1972, 2218135

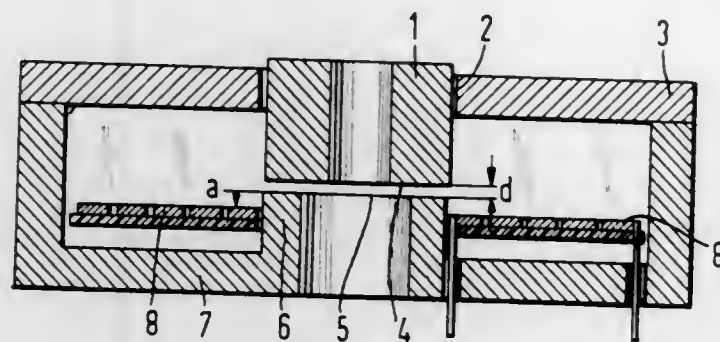
Int. Cl. H01f 21/06

U.S. Cl. 336-83

5 Claims

1. High frequency coil apparatus, comprising: a variable air gap pot core including a first core member having a bore

therein, a second core member having a fixed part with a surface facing said bore, and a movable core member disposed in and movable in said bore and having a surface which with the surface of said fixed part defines a variable air gap; and a planar coil disposed about said fixed part which comprises a plurality of concentric circular conductors each having a



separation therein, and a plurality of radially extending conductor sections, connecting adjacent circular conductors at respective separations and wherein the plane of said coil is parallel to said surface of said fixed part and is disposed at a distance from said surface of said fixed part in the range of from 1/6 of the maximum length to one-half of the minimum length of the variable air gap.

3,855,562

CIRCUIT BREAKER WITH AMBIENT TEMPERATURE COMPENSATION

Hackchan Rhee, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,303

Int. Cl. H01h 71/16, 61/00

U.S. Cl. 337-75

3 Claims



1. In a circuit breaker of the type including a pair of cooperating electrical contacts, an operating means for moving said contacts to their engaged and disengaged positions, responsive to a predetermined fault, an overload responsive trip means for sensing the occurrence of said predetermined fault and initiating movement of said operating means to the contact disengaged position, said trip means including a first bimetal in the current flow path of said circuit breaker and operative to deflect due to the heat generated thereby to actuate said operating means towards the contact disengaged position when the current flow reaches said predetermined fault, and a housing for locating and enclosing the afore-mentioned circuit breaker components, the improvement therewith of:

a second bimetal within said housing, and proximately placed with respect to said first bimetal to be substantially similarly affected whereas by variations in ambient temperature in said circuit breaker which tend to deflect said first bimetal independent of the current flow there-through;

said second bimetal being also operative to deflect due to the heat generated by said variations in ambient temperature, but in a direction to oppose the actuation of said operating means towards the contact disengaged position caused by the deflection of said first bimetal as a result of said ambient temperature variations;

with said first and second bimetals being selected of cross-sectional areas and temperature coefficients of expansion so as to maintain the physical separations between them substantially constant in the presence of ambient temperature changes;

whereby said operating means is actuated to the contact disengaged position upon the sensing of said same predetermined fault current flow, independent of ambient temperature conditions within said circuit breaker.

3,855,563

CIRCUIT INTERRUPTER

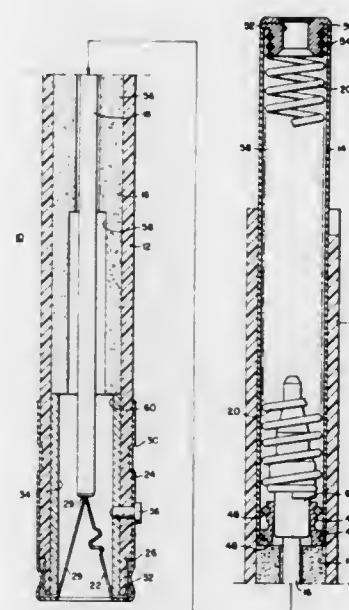
Frank L. Cameron, Irwin, and Harold L. Miller, West Elizabeth, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1973, Ser. No. 418,131

Int. Cl. H01h 85/02

U.S. Cl. 337-221

5 Claims



1. A high voltage circuit interrupter comprising a tubular insulating casing, a body of arc-extinguishing material disposed inside of and spaced from the ends of the casing and having an opening extending axially therethrough, an elongated conducting member axially movable within the opening, terminal means at one end of the casing comprising a tubular conductor within the tubular insulating casing and in the spacing between the end of the body of arc-extinguishing material and said end of the casing, a ferrule on the exterior of the end portion of the casing, fusible means extending between the end of said member and the tubular conductor and comprising an end portion secured between the casing and the ferrule, the ferrule being form-fitted to the casing end portion for retaining the fusible means in place, a tubular conducting casing seated within the other end of the tubular insulating casing and extending outwardly therefrom, an annular conductor between the tubular conducting casing and the elongated conductor member, the tubular conducting member being form-fitted to the periphery of the annular conductor, and a helical spring between the elongated conductor member and the end of the tubular conducting member remote from the tubular insulating casing effective to move the elongated conducting member away from the fusible means upon fusion of the fusible means.

3,855,564

VOLTAGE DIVIDER ASSEMBLY WITH THICK FILM RESISTANCE ELEMENTS

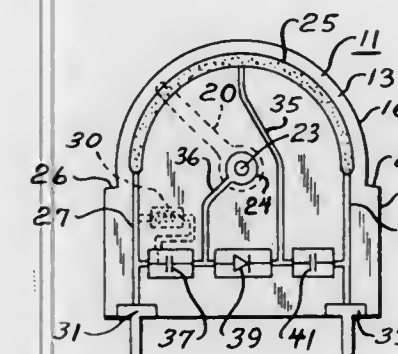
Christ J. Dumas, Forest View, Ill., assignor to American Plastics Company, Chicago, Ill.

Filed July 5, 1973, Ser. No. 376,699

Int. Cl. H01c 9/02

U.S. Cl. 338-48

4 Claims



1. A variable voltage divider comprising an electrically non-conductive substrate, a plurality of conductive terminations supported on a surface of said substrate, a resistive path supported on said surface and electrically connected at its ends to respective conductive terminations, a first conductive connector supported on said surface and having one end electrically connected to an intermediate point on said resistive path, a center conductive collector supported on said surface, adjusting means supported for movement relative to the substrate, a conductive contactor constrained to move with the adjusting means to wipingly engage the resistive path and the conductive collector, a second conductive connector having one end connected to the collector, rectifier means having one electrode connected to said first conductive connector and the other electrode connected to the conductive contactor and the collector to thereby provide a variation in the output voltage and a feedback control voltage bias.

3,855,565

VARIABLE RESISTANCE CONTROL WITH DIFFERENTIALLY RESILIENT CONTACTS

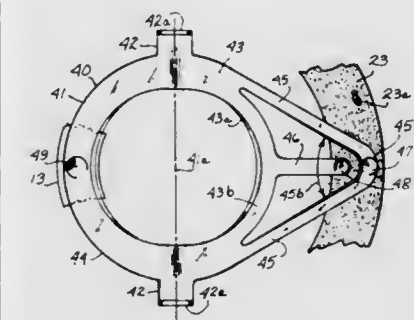
James H. Robinson, and John D. Van Benthuyzen, both of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Apr. 2, 1974, Ser. No. 457,182

Int. Cl. H01c 9/02

U.S. Cl. 338-171

9 Claims



1. A variable resistance control comprising a resistance element, a collector in spaced relationship to the resistance element, an electrically conductive contactor engaging the resistance element and the collector, means for moving the contactor intermediate the ends of the resistance element, said contactor comprising a circular ring, a pair of pivots extending outwardly from the body portion and pivotally supporting the contactor against the resistance element and the collector, each of the pivots being provided with an up-turned end constraining the contactor to move with the above mentioned means, the circular body portion being creased through its pivots and defining a pair of semicircular sections, each of the semicircular sections of the circular body portion being preformed and defining an obtuse angle therebetween,

a pair of outer arms extending tangentially outwardly from one of the semicircular sections and converging toward each other and joined together at the extremities, an outer contact carried by the arms, an inner arm extending radially outwardly from the one of the semicircular sections toward the outer contact, an inner contact carried by the end of the inner arm, and spaced from outer contact, the outer contact and the inner contact wipably engaging the resistance element, the outer arms defining an acute angle, and the inner arm bisecting the acute angle, the length of the outer arms being greater than the length of the inner arm resulting in a different rate for the inner arm and the outer arms, and a main contact carried by the circular body portion and wipably engaging the collector.

3,855,566

HERMAPHRODITIC CONNECTOR FOR SEISMIC CABLES

Jacob C. Richardson, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

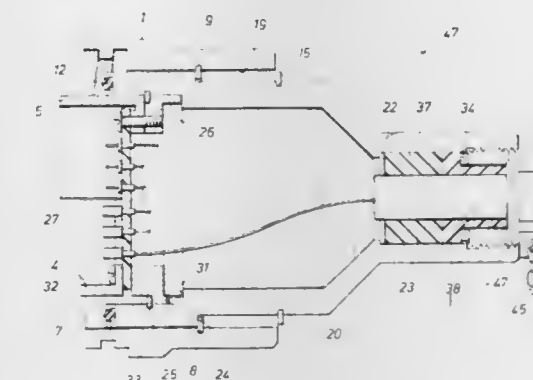
Continuation of Ser. No. 177,718, Sept. 3, 1971.

application Ser. No. 19, 1973, Ser. No. 398,715

Int. Cl. H01r 25/00

U.S. Cl. 339-49 R

4 Claims



1. A hermaphrodite connector for multiconductor seismic cables, each half of the connector being identical and comprising:

a cylindrical body member having one end of reduced diameter for receiving said seismic cable and the other end of enlarged diameter for mounting a connector panel;

a first seal means, said first seal means being disposed in said one end of the body member and adapted to seal said body member to the outer surface of the seismic cable;

a hermaphrodite contact panel having a plurality of male and female contact pins extending from said panel, said contact panel being mounted in said other end of said body member;

a short guide member, said short guide member being mounted in the other end of said body member to surround a portion of the contact, said short guide member having a length that extends beyond said male and female contact pins;

a long guide member, said long guide member being mounted in the other end of said body member and disposed to surround an additional portion of said contact panel, said long guide member having a length that extends beyond said male and female contact pins;

an insert member, said short and long guide members and said contact panel being mounted on said insert member, said insert member having alignment means for engaging co-operating alignment means formed on the inner surface of said enlarged end of said body member, and means for retaining said insert member in said body member with said alignment means engaged;

a removable collar having both interrupted male and female threads in diametrically opposed relationship, said collar being disposed to surround the other end of said body; and

retaining means, said retaining means operably engaging both said body and said collar to retain said collar on said body while permitting limited axial movement for engaging said interrupted male and female threads.

3,855,567

ELECTRICAL CONNECTOR AND METHOD FOR MAKING AN ELECTRICAL CIRCUIT

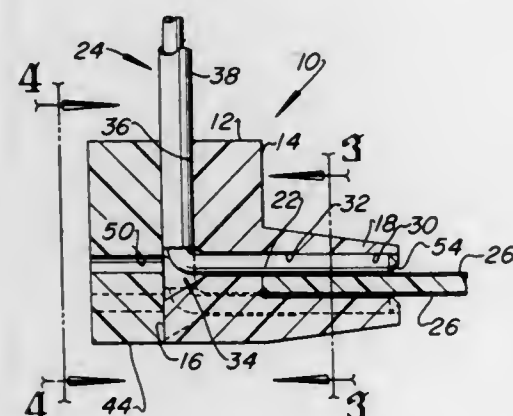
William J. Harms, Nunica, and Fred W. Loy, Whitehall, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Mar. 13, 1973, Ser. No. 340,781

Int. Cl. H05k 1/07; H01r 13/08

U.S. Cl. 339-61 M

2 Claims



1. An electrical connector device for making separable electrical connections between one or more flexible conductor wires and electrical conducting means characterized by: a support member including hole means formed therein for receiving one or more flexible electrical conductor wires, one or more electrical conductor wires disposed in said hole means in such a way that said conductor wires each have an uninsulated end portion the shape of which is substantially unaltered from the as formed condition supported by said support member for separable and electrically conductive engagement with said conducting means;

said connector device includes groove means intersecting said hole means in said support member for supporting insulated portions of said conductor wires which are bent substantially perpendicular to said end portions;

said support member includes separate projecting portions defining one of a pair of spaced apart faces forming slot means for receiving a connector member including said conducting means, at least one of said separate projecting portions including hole means opening laterally to said one face for receiving and supporting an uninsulated end portion of a conductor wire for electrical conductive engagement with said conducting means; and,

a cover member releasably engageable with said support member for retaining said conductor wires in said hole means so that said end portions of said conductor wires can be inserted in and removed from said support member without substantially altering the shape of said end portions, and said conductor wires together with said support member and said cover member can be separated from said conducting means.

3,855,568

FORCED CONTACT ELECTRICAL CONNECTOR

Peter R. Cochrane, Kingston, Mass., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 10, 1973, Ser. No. 405,064

Int. Cl. H01r 9/06

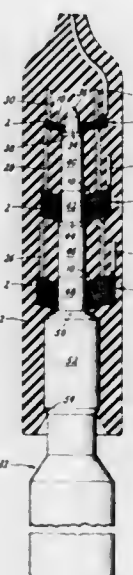
U.S. Cl. 339-95 R

3 Claims

1. An electrical connector comprising a plug and receptacle in which

a. the plug comprises a first circularly cylindrical portion including a contact surface and a second circularly cylindrical portion positioned contiguous and concentric with said first portion and having a greater diameter than said first portion, the second portion thus providing a protruding shoulder of greater diameter than the contact surface contiguous to the contact surface and associated therewith;

b. the receptacle comprises a stack of annular dished washers slotted from their inner periphery to form a plurality of centrally extending contact fingers, the said dished



washers in the stack being stacked against one another with their contact fingers extending in the direction from which the plug is to be inserted;

c. retaining means are provided to retain the plug in the receptacle with the protruding shoulder displacing the contact fingers into contact with the associated contact surface of the plug.

3,855,569

THERMOCOUPLE TERMINAL CONNECTOR

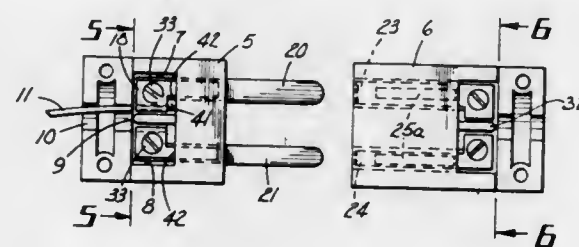
John Tymkewicz, c/o Marlin Mfg. Corp., 12404 Triskett Rd., Fairview Park, Ohio 44111

Filed May 7, 1973, Ser. No. 357,786

Int. Cl. H01r 7/20, 19/02

U.S. Cl. 339-176 T

5 Claims



1. In thermocouple terminal connector construction of the class described in combination, a male contact unit and a female contact unit, a body for each unit, each said unit comprising an upper and lower part, each of said parts including a contact having a contact portion and a connector section spaced apart along the longitudinal axis of said contact, said contact portions being formed to effect electrical contact between the said portions of connected units, said connector section of each unit including a stationary area and an elongated movable area, said movable area being given a partial twist with respect to said longitudinal axis to position at least a part of said movable area away from said stationary area to effect the connecting of the unit with a unitary conductor inserted between said areas, and means to move said movable area of each unit from the twisted position into contact with such conductor and maintain the same so connected in electri-

cal contact in the position as inserted solely by actuation of the means.

3,855,570

ELECTRICAL INTERCONNECT DEVICE

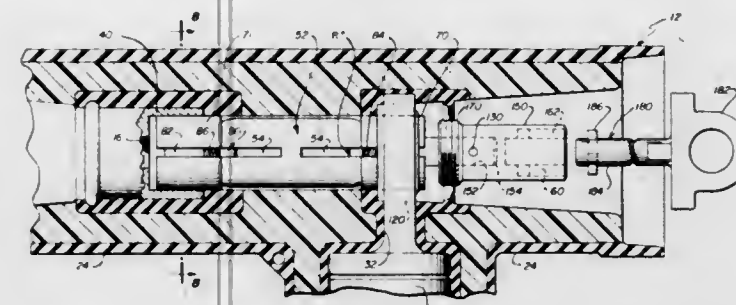
Allen Herbert Fischer, Afton, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,925

Int. Cl. H01r 7/08

U.S. Cl. 339-267

14 Claims



1. An electrical distribution connector interconnecting a first electrical conductor to a second electrical conductor in a connection within an insulating housing, the connection being capable of carrying elevated currents, and in which there are members having spaced-apart walled openings of regular configuration connected to each of said conductors, the invention comprising a single sleeve member, including tubular wall sections, said sleeve member inserted axially into both said openings, means for expanding the wall of said sleeve member radially at said separate sections thereof at essentially the same time to firmly engage both walled openings in compressive surface contact between said member sections and the walls of said openings, means accessible from an end of said sleeve for actuating said expanding means and said sleeve member completing a continuous conductive path between said sections for completing a connection between said first and said second conductors.

3,855,571

AIRCRAFT GROUND TRAFFIC CONTROL SYSTEM

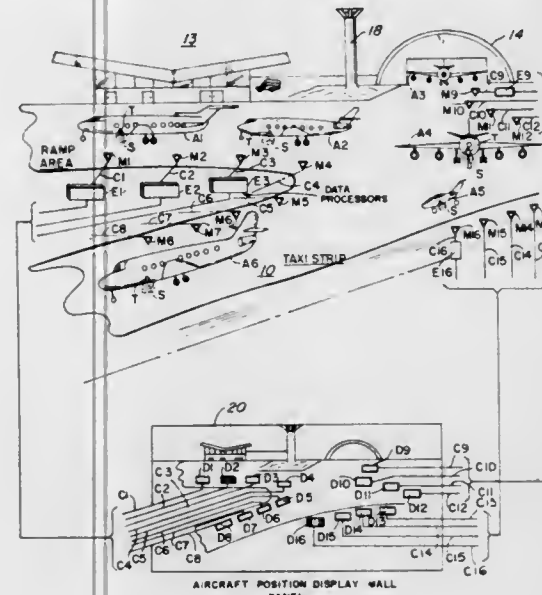
Frank Massa, Cohasset, Mass., assignor to Massa Corporation, Hingham, Mass.

Filed Apr. 13, 1972, Ser. No. 243,656

Int. Cl. G08g 5/00

U.S. Cl. 340-26

6 Claims



1. A system for automatically indicating and continuously displaying the locations of individual airplanes while they are on the ground at an airport, said system comprising a transmitting transducer means mounted on each of said airplanes for sensing a coded aircraft identification signal individually asso-

ciated with each of said airplanes, power activating means for operating said transmitting transducer to send said signal, a plurality of receiving transducer means arranged in a fixed spatial pattern on the airfield, a plurality of communication link means, a plurality of recognition circuit means operated responsive to said identification signal, each of said communication link means connecting a receiving transducer to a corresponding recognition circuit, a plurality of indicator means operated responsive to said identification signals for indicating and continuously displaying both the spatial relationships and the identity of the plurality of receiving transducer means, each of said recognition circuit means being connected to an individually associated indicator means, and means for activating said associated indicator means when the associated receiving transducer is receiving a coded identification signal from an airplane.

3,855,572

TACHOMETER

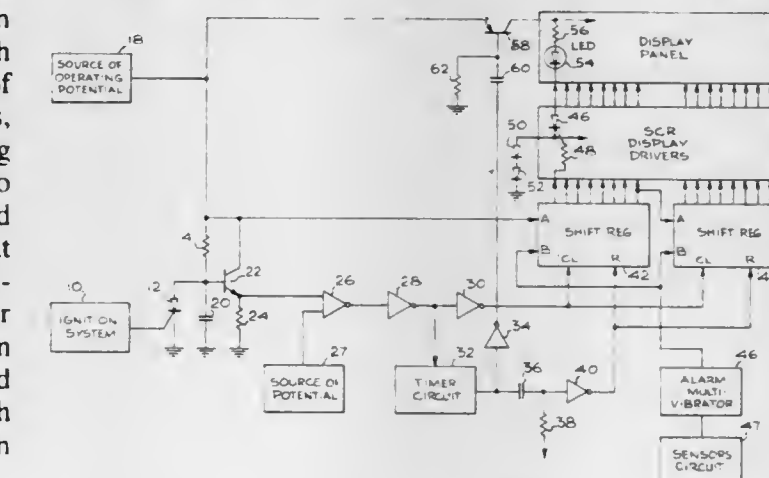
John M. Olson, 1513 7th St., Port Hueneme, Calif. 93041

Filed Apr. 2, 1973, Ser. No. 347,230

Int. Cl. B60q 3/04

U.S. Cl. 340-52 F

10 Claims



1. A tachometer for indicating RPM of an engine from engine revolution representative signals generated by said engine comprising:

a display comprising light-emitting diode means, timer means for establishing a timer pulse signal having a predetermined duration, means responsive to said engine revolution representative signals occurring during said timer pulse signal duration, for illuminating said light-emitting diode means to represent the RPMs of said engine, and means for momentarily quenching said light-emitting diode means at the ending of one of said timer pulse signals.

3,855,573

APPARATUS FOR PREVENTING A DRUNKEN DRIVER FROM OPERATING A MOTORCAR

Soichiro Honda, and Yasuo Satoh, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 300,997

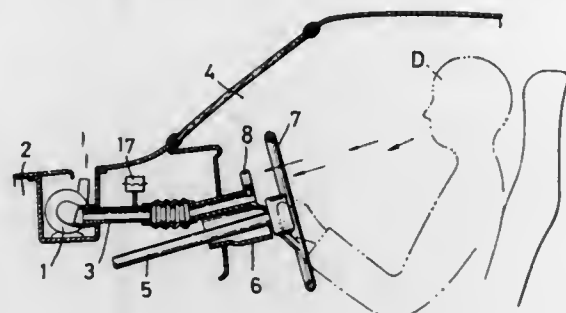
Int. Cl. B60r 27/00

U.S. Cl. 340-53

8 Claims

1. Apparatus for preventing operation of a vehicle by a drunken driver, the vehicle having an electrical power source and an ignition switch, said apparatus comprising a suction pipe having an inlet end which opens into the interior of a passenger compartment of the vehicle and faces the driver's seat of the vehicle, said suction pipe having an opposite end remote from said inlet end, a suction motor connected to said opposite end of said pipe, said suction motor being electrically connected to the electrical power source of the vehicle through the ignition switch whereby the suction motor is operable independently of the operation of the engine of the vehicle, detecting means for detecting the alcohol content in

the air flowing in the suction pipe, further means coupled to the detecting means to render the vehicle inoperative when the detecting means senses the presence of alcohol in excess-



sive amount and means for sensing pressure change in said suction pipe for rendering the vehicle inoperative upon excess pressure change.

3,855,574

VOICE OPERATED ALARM SYSTEM

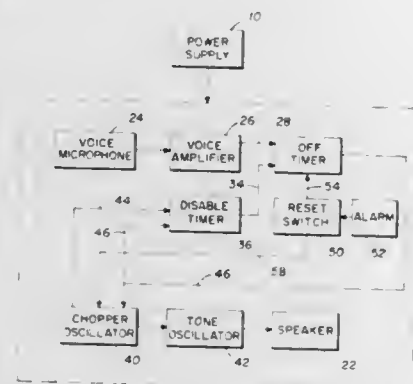
Robert E. Welty, Independence, Iowa, assignor to Vox Industries, Inc., Cedar Rapids, Iowa

Filed June 25, 1973, Ser. No. 373,024

Int. Cl. G08b 21/00; H01h 35/24

U.S. Cl. 340-148

11 Claims



1. A voice-operated alarm system comprising, alarm means for producing an audible alarm, actuating means for actuating said alarm means, detection means for picking up a sound within the normal range of the human voice and converting said sound into an output signal, means coupling said output signal to said alarm means so as to shut off said audible alarm, timing means coupled to and actuated by said output signal to prevent said audible alarm from sounding for a predetermined time interval after which said alarm will again start sounding, and means for selectively disabling said timing means and output signal to prevent said alarm from sounding until actuated by said actuating means.

3,855,575

ULTRASONIC REMOTE CONTROL RECEIVER

Horst Leuschner, Dallas, Tex., and Bruno Gerhard Viereck, Marzling, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1973, Ser. No. 354,025

Claims priority, application Germany, May 3, 1972, 2221559

Int. Cl. H04q 9/00; H04b 1/06

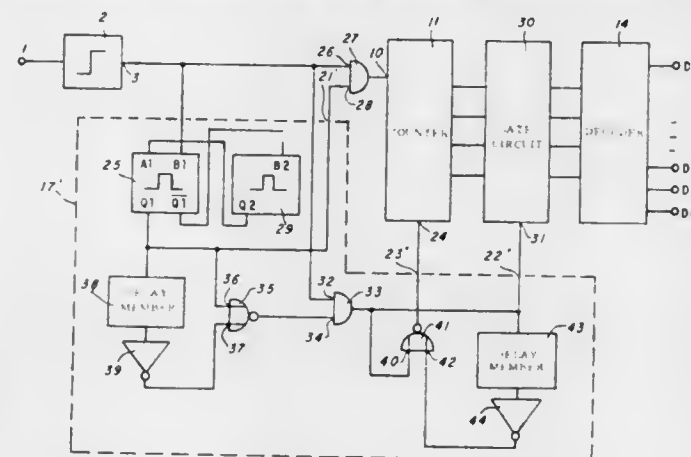
U.S. Cl. 340-167 R

9 Claims

1. An ultrasonic remote control receiver for applying a control signal to a selected one of a plurality of control channels in response to and dependent on the frequency of a received ultrasonic signal comprising:

- pulse forming means producing pulses at a frequency directly related to the frequency of a received ultrasonic signal;

- counter means for counting pulses produced by said pulse forming means and providing a digital indication of the count when activated, said digital indication appearing as a combination of signals on a plurality of counter output lines less in number than said plurality of control channels;
- decoder means for activating one of a plurality of decoder output lines comprising said plurality of control channels in dependence on the digital indication of count receiver at its input;
- transfer means for periodically applying the count indication of said counter on said counter output lines to a



corresponding plurality of lines comprising the input of said decoder; and,

- sequence control means for
 - activating said counter for a predetermined period of time in response to the production of pulses by said pulse forming means;
 - activating said transfer means to apply said indication of count to said corresponding plurality of lines of said decoder means at the end of said predetermined period; and
 - thereafter resetting and reactivating said counter means.

3,855,576

ASYNCHRONOUS INTERNALLY CLOCKED SEQUENTIAL DIGITAL WORD DETECTOR

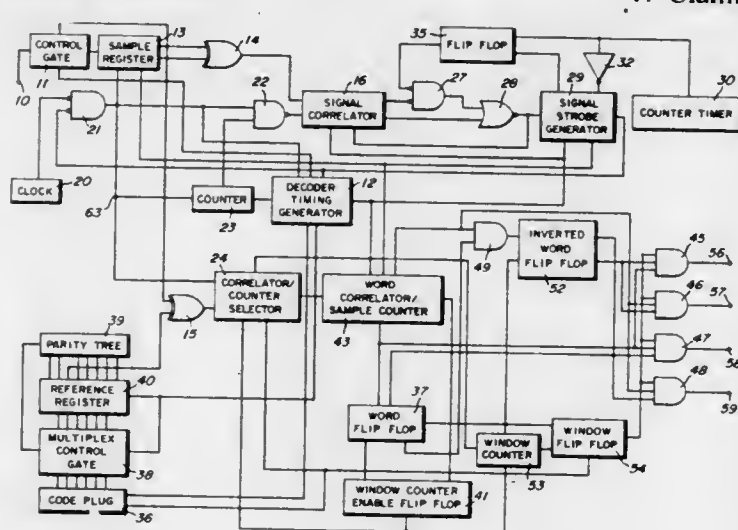
William V. Braun, Lauderhill; Eugene J. Bruckert, Plantation; Gerald L. Giacomino, Coral Springs, and Phillip Partipilo, Lauderdale Lakes, all of Fla., assignors to Motorola, Inc., Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,988

Int. Cl. G06f 7/02, 15/34

U.S. Cl. 340-146.2

47 Claims



1. A detector for detecting first and second predetermined digital words within a train of signals wherein the digits in said words each have a predetermined time period, said detector including in combination; clock means for developing a plurality of first clock pulses during the interval of one of said digit time periods, sample and storage means for receiving said

train of signals, said sample and storage means being coupled to said clock means and responsive to each of said first clock pulses to sample the signals in said train of signals coupled thereto and store a digital signal corresponding to said sampled signal, memory means for storing digital words corresponding to said predetermined digital words, and comparison means coupled to said sample and storage means and said memory means and operative between said first clock pulses to compare said digital signals in said sample and storage means with a first digital word in said memory means, said comparison means being operative in response to a correlation between said digital signals in said sample and storage means and said first digital word to count a first time period at least as long as the time period of the second digital word and develop a first timing signal, said comparison means being further operative in response to said first timing signal to compare the digital signals in said sample and storage means with the second digital word in said memory means and develop a detection signal in response to a correlation therebetween.

3,855,577

POWER SAVING CIRCUIT FOR CALCULATOR SYSTEM

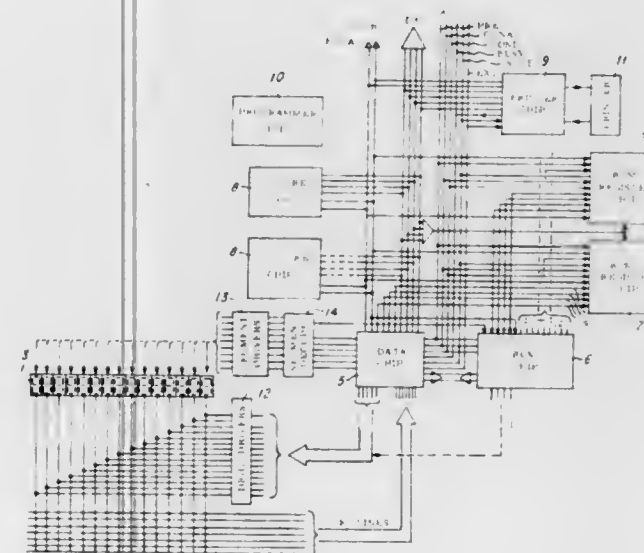
Jerry L. Vandierendonck, Santa Cruz, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 11, 1973, Ser. No. 368,779

Int. Cl. G06f 1/00

U.S. Cl. 340-172.5

7 Claims



1. In a data processing system of the type having an instruction memory for storing and providing instruction words, an arithmetic logic unit and a control unit therefor for processing data in response to instruction words and system timing, data storage for storing data, and means for communicating the stored data to said arithmetic logic unit in response to instruction words, and further having decoder means coupled to the arithmetic logic unit, said decoder means having a plurality of input lines and a plurality of output lines disposed to form a matrix, said output lines coupled to a reference potential for establishing a first logic voltage level thereon, said decoder means further having a first plurality of switching means arrayed at the intersections of said matrix for switching the voltage level on selective output lines from said first logic level to a second logic voltage level in response to signals during a first period on said input lines, the improvement comprising a second switching means for periodically coupling said reference potential to said output lines in response to a gating signal, and means coordinated with said system timing for selectively generating said gating signal to said switching means, whereby the non-selection of said potential inhibits any output signals from said decoder so as to conserve system power.

3,855,578

HOLOPHONE INFORMATION STORING AND/OR PROCESSING DEVICE

Christopher John Hamilton Watson, Oxford, England, assignor to United Kingdom Atomic Energy Authority, London, England

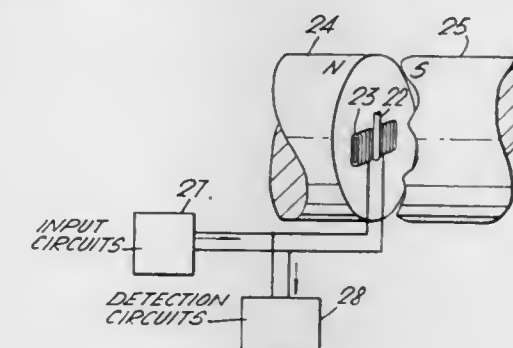
Filed Mar. 8, 1971, Ser. No. 121,920

Claims priority, application Great Britain, Mar. 11, 1971, 11777/70

Int. Cl. G11c 13/00

U.S. Cl. 340-173 NC

7 Claims



1. A holophone information storing and processing device comprising generator means for generating coded signal pulses, representing information, in a form for causing a systematic disturbance to the motion of elements within a holophone material, which elements possess or are caused to acquire a natural periodicity in their motion, control means for controlling the generator means, said control means being operative to cause said generator means to supply to the holophone material a series of coded signals representing a store of information and said control means being further operative to cause the generator means subsequently to supply to the hologram material a series of coded signal pulses representing a portion of information corresponding to a portion of said store of information, and means for detecting subsequent echo waveforms emitted by the holophone material.

3,855,579

METHOD OF USING AN OPTIC RELAY COMPRISING AN ELEMENT OF AN ELECTRO-OPTIC MATERIAL AND A PHOTSENSITIVE ELEMENT

Michel Grenot, Brunoy, and Jean Pergrale, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

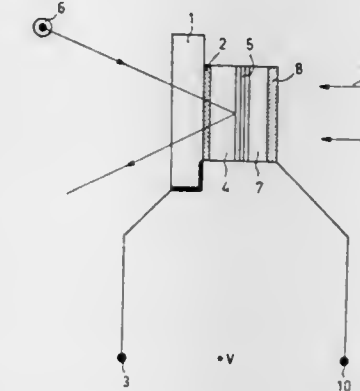
Filed Jan. 15, 1973, Ser. No. 323,848

Claims priority, application France, Jan. 14, 1972, 72.01326

Int. Cl. G11c 13/04

U.S. Cl. 340-173 LM

2 Claims



1. A method of using an optic relay in conjunction with at least a first source of light radiation having a first frequency, means for projecting the said radiation, at least a second source of light radiation having a second frequency, polarization and projection means from said second light radiation on an optic image relay constituted by an evacuated space having at least one window which is transparent to the said light

radiation, a layer which is photosensitive to the said first radiation, a plate having an electro-optic effect maintained at a temperature near its Curie point and presenting a variable double refraction as a function of a potential difference existing between its faces, a first electrode which is electrically conductive and optically transparent to the said second light radiation being disposed against the said plate and a second electrode being placed on the opposite side in the proximity of the said plate, the method comprising displaying an image of electric charges while projecting an image on the photosensitive layer and in the presence of a voltage V between the electrodes, erasing said charges image while illuminating uniformly the photosensitive layer, and simultaneously applying between the two electrodes a voltage $-V'$.

3,855,580

MEMORY SYSTEM INCLUDING ADDRESSING ARRANGEMENT

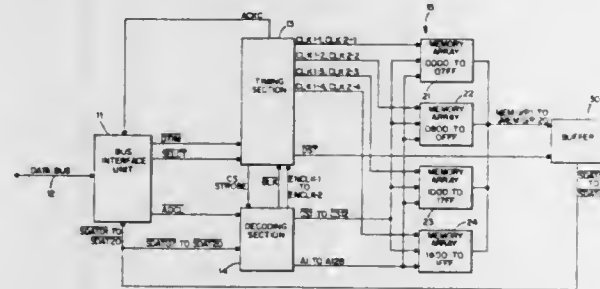
John T. Lighthall, and Harry A. Toy, both of Brockville, Ontario, Canada, assignors to GTE Automatic Electric (Canada) Ltd., Brockville, Ontario, Canada

Filed Jan. 11, 1974, Ser. No. 432,622

Int. Cl. G11c 7/00, 17/00

U.S. Cl. 340—173 R

5 Claims



1. A memory system comprising several arrays of memory elements, each memory element having the capacity for storing a quantity of word segments, each memory element having word segment address input connections for selectively addressing each word segment of said quantity as determined by signals applied thereto, a number of output connections equal to the number of bits of a word segment, a memory element select connection for enabling the memory element in response to a signal applied thereto, and a clock input connection, each memory element being operable in response to a signal at the clock input connection during a signal at the memory element select connection to read out at the output connections the bits of the word segment addressed by the signals at the address input connections;

address receiving means for receiving address information, said address information having a first portion designating a particular one of the word segments of the quantity of word segments in each memory element, a second portion designating a memory element in each array, and a third portion designating an array;

decoding means including a first means coupled to said address receiving means and to the address input connections of all the memory elements of the system for applying signals to the address input connections to address a particular word segment of each of the memory elements as designated by the first portion of the address information;

said decoding means including a second means coupled to said address receiving means and to the memory element select connections of all the memory elements of the system for applying signals to the memory element select connections to enable a particular memory element of each array as designated by the second portion of the address information;

said decoding means including a third means coupled to said address receiving means and having a number of output connections equal to the number of arrays of the system, said third means being operable to produce a signal at a particular one of its output connections as determined by the third portion of the address information; timing means for producing a clock signal during the occurrence of signals from the first, second, and third means of the decoding means; and clock gating means coupled to the output connections of the third means of the decoding means and to the timing means and having a number of output connections equal to the number of arrays, each output connection being connected to the clock input connections of all the memory elements of a different one of the arrays, said clock gating means being operable during a clock signal from the timing means to produce a signal at the clock input connections of all the memory elements of a particular array as designated by the third portion of the address information; whereby the bits of a particular word segment of a particular memory element of a particular array as designated by the address information are read out at the output connection of the particular memory element.

3,855,581

SEMICONDUCTOR DEVICE AND CIRCUITS

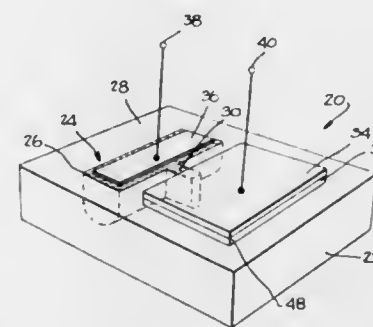
Richard M. Greene, Audubon, Pa., assignor to MOS Technology, Inc., Valley Forge, Pa.

Division of Ser. No. 213,945, Dec. 30, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,456

Int. Cl. G11c 11/40

U.S. Cl. 340—173 R

12 Claims



1. A memory circuit comprising a data translating circuit having input and output circuits, a solid state switch comprising a semiconductive wafer including a substrate of one conductivity type and a surface channel of opposite conductivity type defined in a major surface of the substrate, a first terminal defining a low resistance contact to said surface channel, and an insulated electrode, including a dielectric layer and an outer electrode covering, overlying a portion of said major surface of the substrate, a second terminal defining a low resistance contact to said outer electrode covering of the insulated electrode, said insulated electrode and said surface channel having overlapping areas characterized in that substantially zero capacitance is defined between said first and second terminals when said second terminal is at a voltage below a predetermined threshold voltage relative to said surface channel and a coupling capacitance is defined between said first and second terminals when said second terminal is at or above said threshold voltage, means for connecting said second terminal to the input circuit of said data translating circuit, memory means coupled between said second terminal and a point of reference in said circuit, data input means coupled to said second terminal for supplying data signals for storage in said memory means, some of the stored data signals having a value equal to or greater than said threshold voltage, readout pulse source means, and means for connecting said first terminal to said readout pulse source means.

3,855,582

PARALLEL BIASED PHOTODETECTOR MATRIX

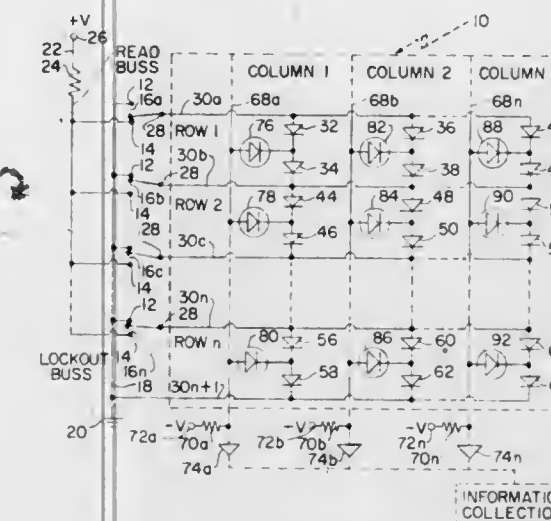
Donald L. Roberts, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed June 1, 1973, Ser. No. 366,178

Int. Cl. G11c 11/42

U.S. Cl. 340—173 LS

6 Claims



1. A parallel biased photoconductor cell comprising: first and second row conductors; a first source potential connected to said first row conductor; a second source of potential connected to said second row conductor; a pair of diodes series connected in forward-biased disposition between said first and second row conductors, said diodes having a common junction therebetween; a column conductor; a photoconductor diode connected between said column conductor and said common junction; and detector means connected to said column conductor for sensing a flow of current through said column conductor and said photoconductor diode and for issuing a signal which is a function of the sensed current.

3,855,583

CONDUCTOR-INSULATOR-JUNCTION (CIJ) OPTICAL MEMORY DEVICE AND A MEMORY SYSTEM DEPENDENT THEREON

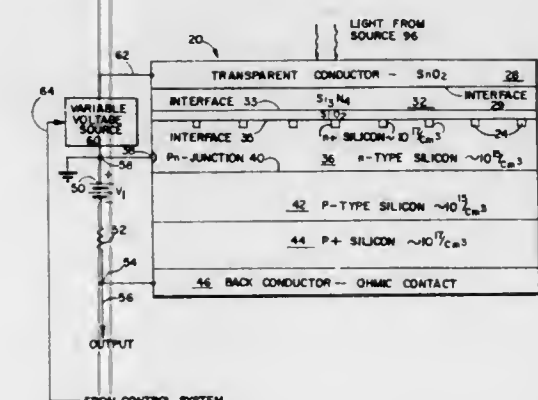
Richard A. Gudmundsen, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 4, 1973, Ser. No. 366,829

Int. Cl. G11c 11/40, 11/42

U.S. Cl. 340—173 LS

21 Claims



1. A long-term-storage CIJ optical memory device comprising: transparent conductor means forming a front surface of the device; insulation means contiguous to the back of the transparent conductor means for storing charges, said insulation

means containing a storage interface capable of trapping charges thereat, said insulation means being susceptible to tunneling between storage interface and a back surface of the insulation means; semiconductor means having a front surface and rectifying junction; said semiconductor means having an inversion stop grid means associated with the front surface thereof; and contact means for connecting external voltages to first and second sides of the rectifying junction for biasing the junction.

3,855,584

IMPROVED REGISTER FOR PROPAGATING MAGNETIC DOMAINS

Claude Battarel, Magagnosc, and Jean-Pierre Nori, Toulouse, both of France, assignors to "TECSI" (Techniques et Systemes Informatiques), Paris, France

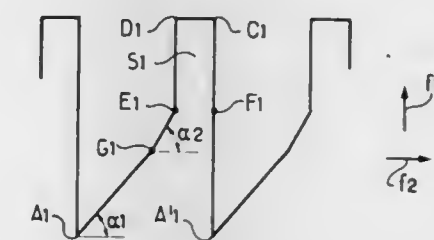
Filed Sept. 13, 1973, Ser. No. 397,052

Claims priority, application France, Sept. 13, 1972, 72.32441

Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 MC

5 Claims



1. In a shift register including thin film magnetizable material defining a first zone of relatively low coercivity surrounded by a second zone of relatively high coercivity with said first zone extending in the direction of the axis of relatively difficult magnetization and at right angles to the axis of relatively easy magnetization and being divided from the second zone on respective opposite sides by first and second boundaries, each boundary being formed by periodically repeating divisions comprising a ridge inclined to the longitudinal difficult axis of the register and being connected to an adjacent chamber in the shape of a finger having a direction parallel to the easy axis, the improvement wherein: said ridge has variations in slope between its two ends.

3,855,585

SYSTEM FOR GENERATING A DIGITAL SIGNAL INDICATIVE OF SHAFT POSITION WITH AUTOMATIC ERROR CORRECTION

George H. Stout, Mt. Prospect, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,312

Int. Cl. H03k 13/34

U.S. Cl. 340—347 AD

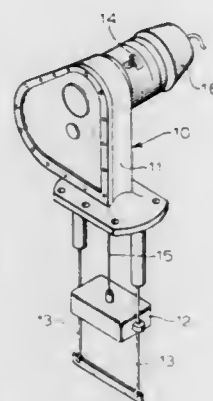
7 Claims

1. In combination, a data transmission system for providing a digital output signal indicative of the cumulative angular position of a rotatable shaft within a predetermined range of movement in terms of predetermined units of measurement, said digital output signal having a most significant portion indicating the cumulative angular position of said shaft in terms of an integral number of said units of measurement, and a least significant portion indicating only the non-cumulative angular position of said shaft in terms of a fractional portion of one of said units of measurement, said system comprising: means comprising a first encoder responsive to the position of said shaft for providing a first analog data signal indicative of

the cumulative position of said shaft within said range of movement;

first conversion means responsive to said first analog data signal for producing a first digital data signal indicative of the cumulative position of said shaft in terms of an integral number and a fractional part of said units of measurement, said indication being subject to an error of one of said units of measurement;

means comprising a second encoder responsive to the position of said shaft for providing a second analog data signal indicative of the non-cumulative position of said shaft; second conversion means responsive to said second analog data signal for producing a second digital data signal indicative of the non-cumulative position of said shaft in



terms of a fractional part of said units of measurement, said indication being subject to an error of less than one of said fractional parts;

utilization means responsive to said first digital data signal for providing said most significant portion of said digital output signal and responsive to said second digital data signal for providing said least significant portion of said digital output signal; and

error correction means for modifying said first digital data signal according to the data signals from said first and second encoders to compensate for said one unit error, if present, in said first digital data signal, such that said digital output signal accurately reflects the cumulative position of said shaft.

3,855,586

NAVIGATIONAL LIGHT SYSTEM

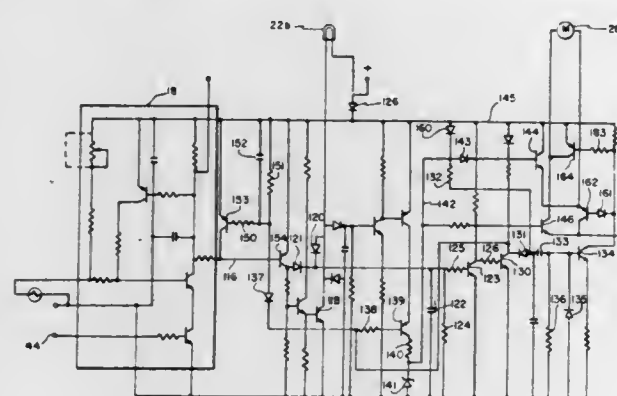
Thomas A. Jacobs, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Division of Ser. No. 211,605, Dec. 23, 1971, Pat. No. 3,781,853. This application Jan. 4, 1973, Ser. No. 320,981

Int. Cl. H05b 39/10

U.S. Cl. 340-251

3 Claims



1. In a navigational light having a timer and a lamp changing circuit and a lamp filament circuit having a series connected power supply and power switch, the improvement in a circuit sensing when the lamp filament in the light is burned out comprising,

switching means for actuating the lamp changing circuit, a first electrical connection between the timer output and the switching means for supplying a signal to the switching means from the timer preventing actuation of the lamp changing circuit during the timing signal.

a second electrical connection connected between the lamp filament and the power switch for supplying a signal to the switching means when the lamp is not powered by the timing signal for preventing actuation of the lamp changing circuit when the filament is unbroken, but causing actuation of the lamp changing circuit if the filament is broken, and said lamp filament circuit having no current sensing resistive components.

3,855,587

NAVIGATIONAL LIGHT SYSTEM

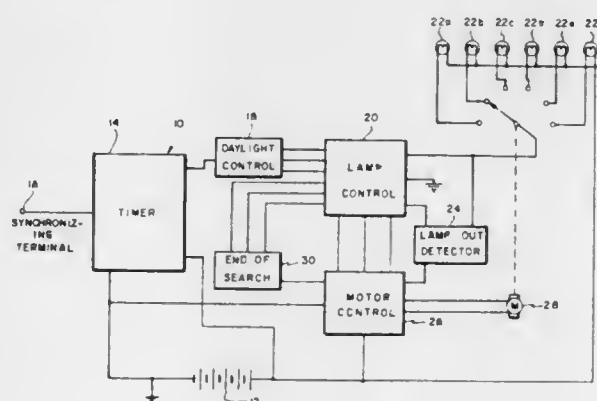
Thomas A. Jacobs, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Division of Ser. No. 211,605, Dec. 23, 1971, Pat. No. 3,781,853. This application Jan. 4, 1973, Ser. No. 320,982

Int. Cl. H05b 39/10

U.S. Cl. 340-251

4 Claims



1. In a navigational light having a power supply, a timer, a lamp-out sensing circuit, a lamp changing circuit having a rotating turret with lamps therein and a power brush which supplies power to contacts connected to the lamps, the improvement in a lamp changing circuit comprising,

switching means connected to and actuated by the lamp changing circuit, said switching means connected between the timer output and the power supply for disabling the timer signal from the lamp when actuated by the lamp changing circuit thereby preventing power from being supplied to the brush while the lamp changing circuit is rotating the turret thereby preventing electrical arcing between the brush and the contacts.

2. In a navigational light having a lamp changing circuit having a rotating turret containing a plurality of lamps and driven by a motor to place one of the lamps in an operative position in which electrical contacts connected to the lamps in the turret include a V-shaped recess and power is supplied to the recesses through a spring brush having a point, the improvement in the lamp changing circuit comprising,

a one-way clutch connected between the motor and the turret for providing a driving force to the turret in the forward direction but disconnecting the driving force of the motor from the turret when the motor is reversed, means connected to the motor for indexing the turret when the lamp in the operative position is burned out to place a new lamp in the operative position, and means for providing a reversing pulse to the motor at the end of the indexing movement for relieving all driving forces of the motor as the one-way clutch is reversed thereby allowing the point of the spring brush to seek the center of the V-shaped recess and accurately align the turret and operative lamp.

3,855,588

TIME REMINDING MACHINE

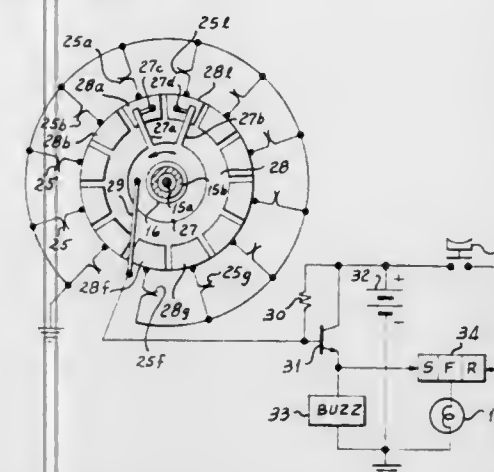
William J. Buckland, Jr., Merrick, and Kevin C. O'Daly, Levittown, both of N.Y., assignors to Product Potentials Inc., Hicksville, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,852

Int. Cl. G08b 7/00

U.S. Cl. 340-309.4

48 Claims



1. A time reminding machine including in combination a plurality of normally-closed manually-operable switches, a time keeping device, an output circuit, and means responsive to the time keeping device for sequentially coupling each switch to the output circuit, said output circuit providing an output signal upon the coupling thereto of a switch which has been manually operated from its normal closed position to an open position.

3,855,589

ANALOG TO DIGITAL CONVERTER WITH VARIABLE QUANTIZATION AND DYNAMIC RANGE

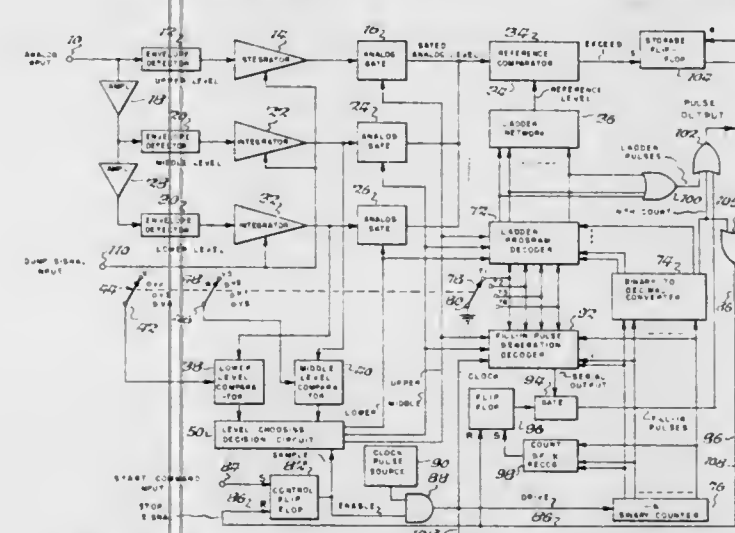
Peter E. Solender, Williamsville, N.Y., assignor to Sylvania Electric Products Inc., Danvers, Mass.

Filed Nov. 25, 1969, Ser. No. 879,709

Int. Cl. H03k 13/04

U.S. Cl. 340-347 AD

10 Claims



1. An analog to digital converter for quantizing an analog signal into a representative number of output pulses comprising, in combination, an analog signal input terminal, a first signal level comparator having first and second inputs, means coupling said analog signal input terminal to the first input of said first comparator, means for generating successive reference voltage levels in equal logarithmic amplitude steps and applying said reference voltage levels to the second input of said first comparator, means for deriving from said reference generating means converter output pulses corresponding in number to the reference voltage steps generated, means for digitally selectively changing the size of said reference voltage amplitude steps, and means coupled to the output of said first comparator for stopping the generation of reference voltage steps in response to an output signal from said first compar-

tor indicating one of said reference voltage levels exceeds the signal level at the first input of said first comparator.

3,855,590

CYCLIC OR MONITORING SYSTEM FOR DISPLAYING THE OUTPUT OF TWO SUBSTANTIALLY SIMILAR TRAINS OF LOGIC

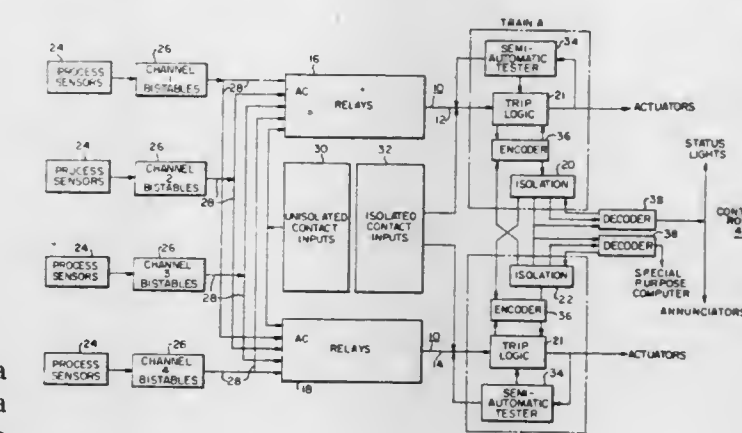
James A. Neuner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 240,939

Int. Cl. G08b 23/00

U.S. Cl. 340-413 R

7 Claims



1. A cyclic monitoring and display system for alternately displaying the outputs of two substantially identical trains of logic comprising:

a clock for generating a continuous train of logic clock pulses;

a first means for gating a first of said two trains of logic having an input from said clock train and providing an output representative of said first logic train upon the occurrence of each clock pulse;

a second means for gating a second of said two trains of logic having an input from said clock train and providing an output representative of said second logic train intermediate of each clock pulse;

means for "OR'ing" the outputs of said first and second gating means; and

means for displaying said "OR'ed" outputs.

3,855,591

SHADOW ANTENNA

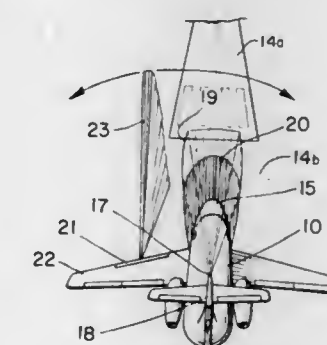
David W. Young, 627 N. Beachwood Dr., Burbank, Calif. 91506

Filed Apr. 27, 1973, Ser. No. 355,019

Int. Cl. G01s 9/02

U.S. Cl. 343-5 LS

7 Claims



1. A method of establishing an elevation relationship to facilitate piloting an aircraft approaching a runway along a precision glide path without the necessity of any ground control approach systems comprising the steps of:

a. positioning a radar antenna on the aircraft at a location such that a physical portion of the aircraft itself intercepts part of the radar beam when the beam is directed towards the runway to thereby cast a shadow of said portion;

- b. displaying the resulting radar picture from the antenna on a screen in the pilot's cockpit so that the pilot can visually observe the resulting elevation relationship of the shadow relative to the outline of the runway; and,
- c. maneuvering the aircraft to maintain the observed shadow in a known elevation relationship to the runway as the aircraft approaches the runway corresponding to that relationship which results when the aircraft is on said precision glide path, whereby a wholly self-contained system on the aircraft provides the resulting elevational relationship.

3,855,592

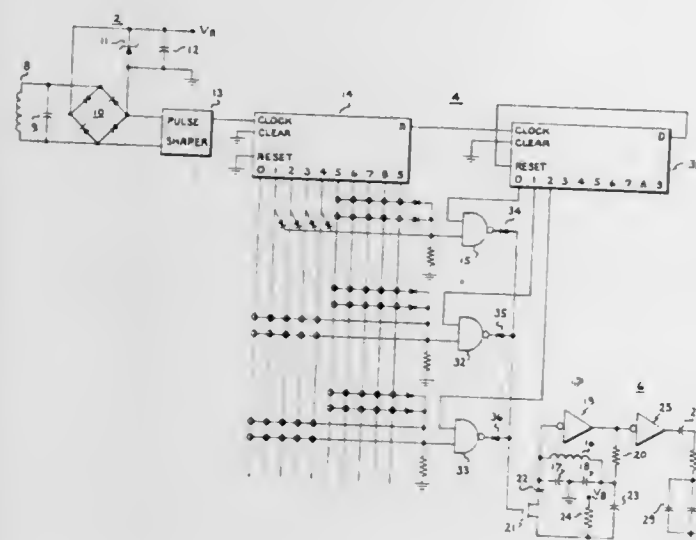
TRANSPONDER HAVING HIGH CHARACTER CAPACITY

Richard K. Davis, Roanoke, and Ronald E. Gareis, Salem, both of Va., assignors to General Electric Company, Salem, Va.
Filed Aug. 20, 1973, Ser. No. 390,122

Int. Cl. G01s 9/56

U.S. Cl. 343-6.8 LC

11 Claims



1. A passive transponder for producing a coded signal in response to the reception of an interrogating signal, comprising:

sensing means for developing a voltage in response to the reception of an interrogating signal;

pulse shaping means coupled to said sensing means for producing a train of pulses;

first encoder means coupled to said pulse shaping means and having a plurality of n output terminals, said encoder means becoming operative in response to said train of pulses for consecutively energizing at a frequency f each of said output terminals in synchronism with the pulses of said train of pulses;

second encoder means coupled to said first encoder means and having a plurality of output terminals, said second encoder means becoming operative in response to pulses produced by said first encoder means at a frequency of f/n for consecutively energizing ones of said output terminals in synchronism with the pulses received from said first encoder means;

a plurality of signal utilization means;

circuit means for coupling ones of said output terminals of said second encoder means to ones of said signal utilization means for sequentially enabling said signal utilization means;

second circuit means coupling predetermined ones of said output terminals of said first encoder means to ones of said signal utilization means; and

transmitter means coupled to said signal utilization means for outputting radio-frequency signals modulated to reflect the operation of said signal utilization means.

3,855,593

PULSE RADAR APPARATUS

Herman Michel Van Hijfte, and Jan Dirk Ehbel, both of Hengelo, Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo (O), Netherlands

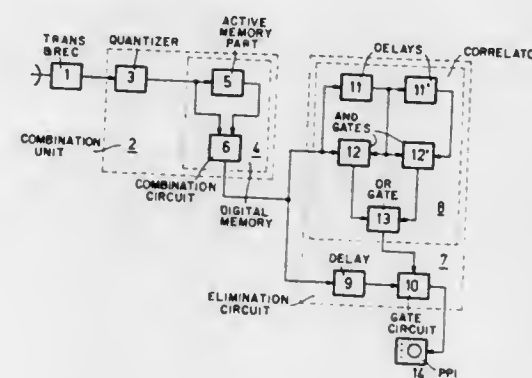
Filed Apr. 17, 1973, Ser. No. 351,838

Claims priority, application Netherlands, Apr. 25, 1972, 7205560

Int. Cl. G01s 9/02, 7/30

U.S. Cl. 343-7 A

6 Claims



1. Pulse radar apparatus comprising a transmitter capable to generate a train of transmitter pulses with at least a double stagger of interpulse periods, a receiver, and means with the aid of which video signals of multiple-time-around target echoes are eliminated from a plan position indicator (PPI), wherein said means comprise at least a (first) combination of a quantizer and a digital memory, and also an elimination circuit, the digital memory containing at least one active memory part and a combination circuit, which is fed, directly as well as via said memory part, with the sequential video signals supplied via the quantizer, whereby the memory part is operative only for a fixed duration, which starts from the moment a transmitter pulse is generated and which is maximally equal to the smallest interpulse period employed, and which memory part imposes upon each quantized video signal supplied, in addition to a delay corresponding with said first duration, a delay which is due to an inoperative state of said memory part, said state occurring during said fixed duration, and whereby the elimination circuit is provided with a delay element, a correlator and a gate circuit, where the video signals, being fed from the digital memory to the elimination circuit, are applied to the delay element and also to the correlator which, on the receipt of each two video signals succeeding each other with an interval equal to the smallest possible time difference between the interpulse periods employed, causes that the gate circuit blocks the access to the PPI for the corresponding video signals supplied via the delay element.

3,855,594

MULTIPLE FREQUENCY CONTINUOUS WAVE RADARS

Stephen Charles Lauder Botcherby, London, England, assignor to DECCA Limited, London, England

Filed May 2, 1973, Ser. No. 356,607

Claims priority, application Great Britain, May 3, 1972, 20636/72

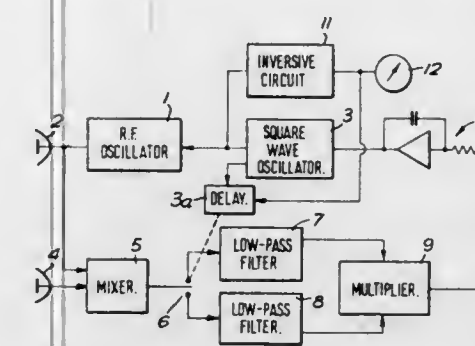
Int. Cl. G01s 9/04

U.S. Cl. 343-7.5

10 Claims

1. A continuous wave radar comprising means for radiating signals of at least two frequencies, means for obtaining Doppler signals associated with each of two transmitted frequencies, multiplying means for receiving the two Doppler signals

and producing a product signal and frequency control means responsive to said product signal for controlling the difference



in frequency between the transmitted frequencies to maintain the two Doppler signals in quadrature.

3,855,595

FREQUENCY SPECTRUM DISPLAY FOR RADAR

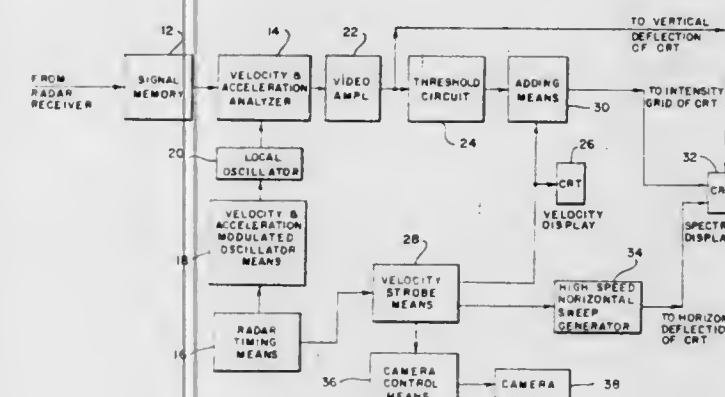
Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1971, Ser. No. 154,232

Int. Cl. G01s 9/44

U.S. Cl. 343-8

4 Claims



1. In a velocity-and-acceleration analyzing radar including means for displaying the velocity parameter of target-return signals, radar timing means, a velocity-and-acceleration analyzer, a video amplifier and a threshold circuit, means for displaying the doppler frequency spectrum of a selected signal comprising:

velocity strobe means triggered by the radar timing means output signal for producing a pulse output which is adjustable as to time of occurrence with respect to the trigger pulse, the strobe pulse also being fed to said means for displaying the velocity parameter so that a particular target may be selected by adjusting the position of the pulse indication to coincide with the target-return indication;

means for generating a high-speed sweep signal, said sweep means being connected to be triggered by the output from said velocity strobe means;

adding means for adding its input signals, said adding means being connected to receive as input signals the thresholded video signal output of said threshold means and the strobe pulse from said velocity strobe means; and

cathode ray tube means (CRT) for displaying the doppler frequency spectrum of said selected target return, said CRT means having the output of said high-speed sweep means connected to its horizontal deflection means, the output of said video amplifier connected to its vertical deflection means and the output of said adding means connected to its beam intensification means.

3,855,596

METHOD FOR THE LOCATION, BY SURFACE WAVES, OF A SOURCE OF ELECTROMAGNETIC RADIATION AND DETERMINATION OF THE POSITION OF A PLACE WITH RESPECT TO ONE OR MORE SOURCES

Jean Duroux, 12 Rye Flatters, Paris 5, France

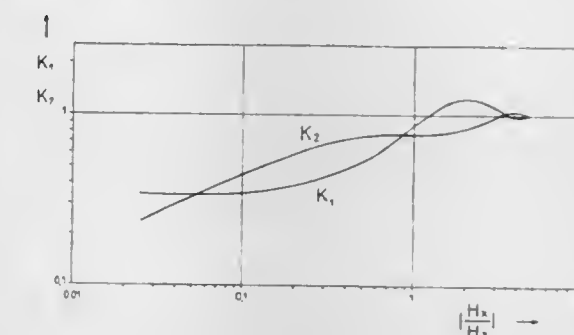
Filed Nov. 2, 1971, Ser. No. 194,960

Claims priority, application France, Feb. 4, 1971, 71.03769

Int. Cl. G01s 3/02

U.S. Cl. 343-112 D

3 Claims



1. A method of locating a source of low frequency electromagnetic radiation by measuring surface waves guided by the subsoil with magnetic and electric field detectors comprising the steps of:

detecting and measuring the values of H_x/H_z for a source that approximates a harmonic magnetic dipole with a vertical axis;

detecting and measuring the values of angular frequency ω of the source, the vertical magnetic field H_z and the transverse electrical field E_y ;

determining the values of the constant $K_1 = H_z/E_y$ (absolute) $\times E_y/H_z$ (approximate) as a function of the measured values of H_x/H_z measured; and

determining the distance of the source from the place of measurement from the Equation $r = 3K_1/\mu\omega \times E_y/H_z$ where μ is the magnetic permeability of the subsoil.

3,855,597

PHASE-SCANNED RADIATING ARRAY

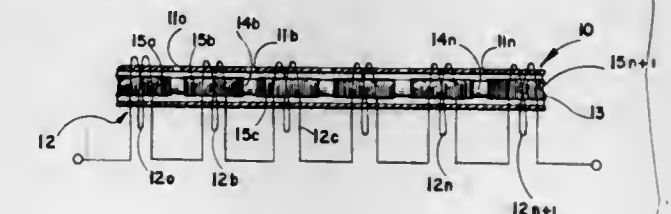
Robert L. Carlise, Irvine, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 250,945, May 8, 1972. This application Oct. 12, 1973, Ser. No. 405,992

Int. Cl. H01q 13/10

U.S. Cl. 343-768

3 Claims



1. A phased-scanned radiating array comprising in combination

an end-fed radiating rectangular waveguide having radiating apertures spaced along the length of a side thereof,

a series interconnected plurality of windings wound about said waveguide and axially spaced intermediate successive areas of said radiating apertures, and

a longitudinal ferrite rod inserted within said waveguide, said rod having regularly spaced magnetic and dielectric interruptions in the ferrite material cross-section thereof, the spacing of said interruptions corresponding to that of said apertures,

said interruptions in said ferrite material cross-section being filled with a dielectric material having a dielectric constant substantially different from that of said ferrite.

3,855,598

MESH ARTICLES PARTICULARLY FOR USE AS REFLECTORS OF ELECTROMAGNETIC WAVES

Leon B. Keller, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

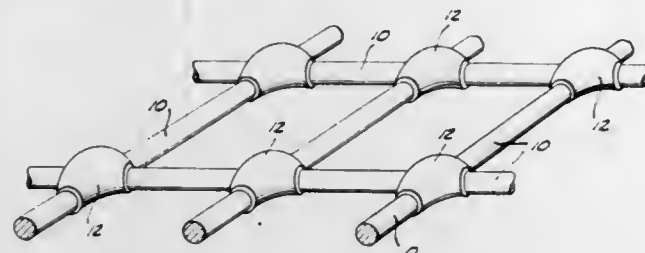
Continuation of Ser. No. 83,375, Oct. 23, 1970, abandoned.

This application Aug. 29, 1972, Ser. No. 284,508

Int. Cl. H01q 15/20

U.S. Cl. 343-840

10 Claims



1. A folded antenna for radio waves comprising a peripheral support, a non-woven preformed flexible relatively inextensible mesh member secured to said support, said mesh member formed of solid, single-strand fibers intersecting one another and bonded together at each point of intersection, said fibers having a modulus of elasticity exceeding 10×10^6 psi and a yield strength exceeding 32×10^3 psi, said fibers selected from the group of materials consisting of beryllium, aluminum, stainless steel type 304, INVAR 36, CHROMEL R, and alloys of the stainless steel and INVAR type.

3,855,599

APPARATUS FOR RECORDING OPERATIONAL CONDITIONS OF A MOTOR CAR

Norbert Helmschrott, Schweningen; Heinz Kelch, Buchenberg; Eduard Schuh, Villingen, and Hans Zimmermann, Schweningen, all of Germany, assignors to Kienzle Apparate GmbH, Villingen Schwarzwald, Germany

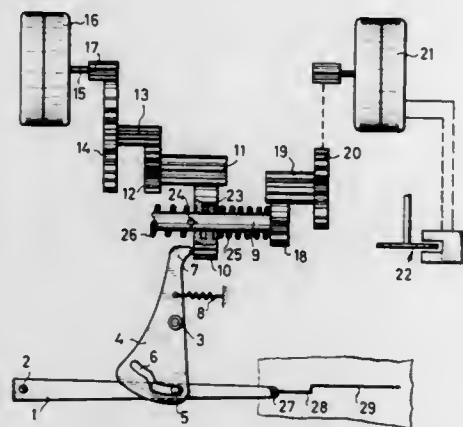
Filed Sept. 24, 1973, Ser. No. 400,320

Claims priority, application Germany, Oct. 11, 1972, 22496282

Int. Cl. G01d 9/32

U.S. Cl. 346-62

18 Claims



1. Apparatus for recording operational conditions of a motorcar, comprising a comparison device including first rotary input means comprising a motor rotating in only one direction and at a constant speed, secondary rotary input means rotating at a varying speed depending on the condition of the motorcar, control means including a movable member movable between first and second control positions, and transmission means connecting said first and said second rotary input means with said control means for placing said control member in said first and second control positions when said second rotary input means operates for selected time periods above and below a predetermined speed, respectively; and recording means and a recording surface movable relative to each other, said recording means being connected with said

control member and placed in first and second recording positions by said control member in said first and second control positions, respectively, for automatically recording on said recording surface first and second graphs representing first and second time periods during which said motorcar operates in different operational conditions, respectively.

3,855,600

PRINTING DEVICE WITH STABILIZED PRINTING ELECTRODE

Theodorus Gerhardus Potma, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

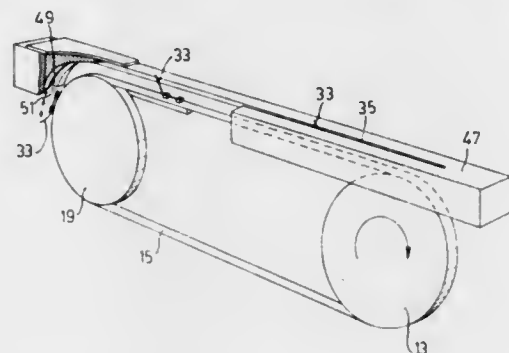
Filed Dec. 21, 1972, Ser. No. 317,412

Claims priority, application Netherlands, Jan. 28, 1972, 7201224

Int. Cl. G01d 15/06, 15/24; G06k 15/10

U.S. Cl. 346-74 ES

10 Claims



1. A printing device for printing images upon an information carrier, said images composed of dot-like or line-like elements, said printing device comprising:

a base member;

a belt supported upon said base member for movement about a plurality of pulleys;

an image electrode comprising a wire-like conductive member extending generally radially from and supported by said belt, said image electrode movable with said belt;

electrode guide means supported by said base member guiding said image electrode in a slot-like aperture during printing;

curved guide path means guiding said image electrode and having a curved guide path feeding the slot-like aperture of said electrode guide means for stabilizing the movement of said image electrode; and

a counter electrode supported by the base member and disposed opposite said belt, said information carrier passing between said belt and said counter electrode, and consequently between said image electrode and said counter electrode, when said image electrode is transported by belt in juxtaposition to said counter electrode, said information carrier thus receiving an electrostatic charge when said electrodes are adjacently disposed towards one another and a predetermined potential exists therebetween.

3,855,601

PHOTOMETER

Takashi Uchiyama, Yokohama; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,933

Claims priority, application Japan, Mar. 13, 1972, 47-25876

Int. Cl. G03b 15/05

U.S. Cl. 354-31

11 Claims

1. Exposure control system for a photo-taking apparatus for operation either in all natural light or with auxiliary synchronized flashlight, in a camera having a focus adjustment, comprising:

a photosensitive circuit including at least two photosensitive elements connected in series and oriented to receive light

from a field of view to be photographed, one of the elements receiving light from a portion of the field of view in which the object to be photographed is located and the other element receiving the light from the remaining portion of the field of view;

a comparator circuit having two inputs for voltages to be compared, one of the inputs being supplied with the output produced at the junction of said elements, the other being supplied with a predetermined voltage;

detecting means connected with said comparator circuit comprising a switching circuit having a predetermined threshold value, by virtue of said predetermined voltage, corresponding to the minimum difference in brightness between said object portion and said remaining portion of

a camera thereon, a first arm connected to the third portion, a second arm, means for connecting the second arm to the first arm, said connecting means enabling pivotal movement of the second arm through an arc which lies in a plane extending parallel to a plane defined by said first, second and third portions, said means for connecting the second arm to the first arm including an element maintaining a constant frictional lock therebetween to maintain the relationship of the arms in any position to which they are pivoted, said first and second arms having means coaxing to provide stops for limiting the pivotal movement of the second arm to a 180° arc, a flash mounting member, and means for rotatably connecting the mounting member onto the second arm so that the flash attachment received on the mounting member can be selectively and adjustably positioned along an arc between a first position disposed over the center of the lens of the camera to a second position which is offset 90° therefrom and the orientation of the flash attachment can be rotated through an angle of at least 180° .

3,855,603

SHUTTER OPERATING CIRCUITS FOR PHOTOGRAPHIC CAMERAS

Osamu Ichihashi, Tokyo, Japan, assignor to Yashica Co., Ltd., Tokyo, Japan

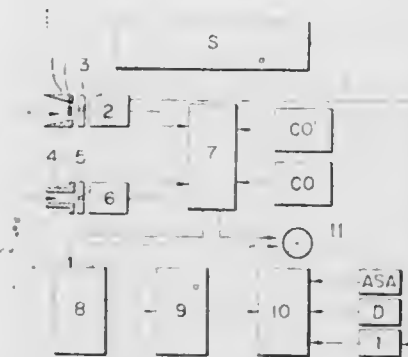
Filed Nov. 13, 1973, Ser. No. 415,316

Claims priority, application Japan, Apr. 13, 1973, 48-41895

Int. Cl. G03b 7/08; G01j 1/46

U.S. Cl. 354-51

9 Claims



said field of view that requires use of auxiliary flash, and change-over means electrically connected with the switching circuit and selectively activated by the output of the switching circuit;

auxiliary shutter-synchronized flash means; and exposure control means responsive to at least one of said photosensitive elements for regulating at least one of the factors of exposure time and exposure aperture, said exposure control means comprising means for adjusting at least one of (1) the timing of said auxiliary flash means and (2) the aperture diaphragm of said phototaking apparatus, in each case in accordance with the distance from the object to be photographed as given by the setting of the focus adjustment.

3,855,602

A CAMERA FLASH BRACKET

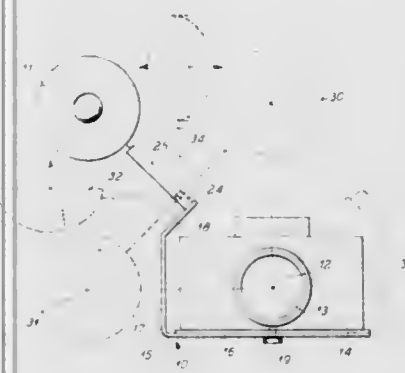
Gerald W. Hoos, 1035 Wesley, Evanston, Ill. 60202

Filed Aug. 23, 1973, Ser. No. 391,028

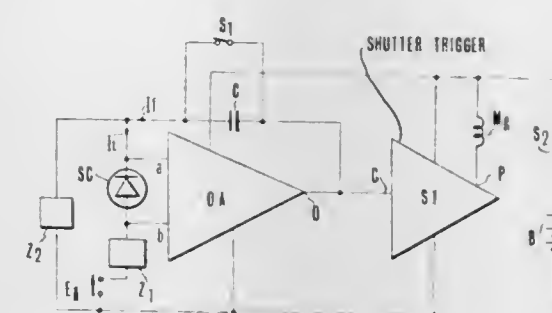
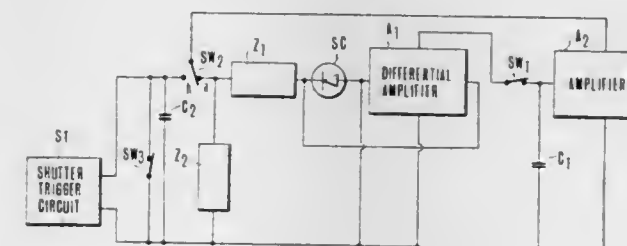
Int. Cl. G03b 17/56

U.S. Cl. 354-293

8 Claims



1. A bracket for attachment to a camera to position a flash attachment at different relative positions to a lens of the camera, comprising a one piece member having a first portion with a second portion extending from one end of the first portion at an angle of approximately 90° thereto, said member having a third portion extending from an end of the second portion over the first portion at an angle of approximately 45° to both of the first and second portions, said first portion providing a base for receiving the camera and having means for attaching



1. A shutter operating circuit for a photographic camera, comprising a photoelectric transducer disposed to receive the light transmitted through the objective lens of said camera, first amplifier means for amplifying the output from said photoelectric transducer, second amplifier means having a high input impedance and operating to generate an output corresponding to the output from said first amplifier means, means for feeding back the output from said second amplifier means to the input of said first amplifier means, a capacitor connected on the input side of said second amplifier means for holding the output from said first amplifier means in accordance with the opening operation of the shutter of said camera, a first impedance element connected in series with said photoelectric transducer, a second impedance element connected in parallel with said series combination of said first impedance element and said photoelectric transducer, an integrating capacitor for integrating the output from said second amplifier means in accordance with the opening operation of said shutter, and a shutter trigger circuit for closing said shutter when the voltage across said integrating capacitor reaches a predetermined value whereby the exposure time is

determined by the output current from said second amplifier means which is proportional to the output from said photoelectric transducer and varied by utilizing the impedance of said first and second impedance elements as parameters.

3,855,604

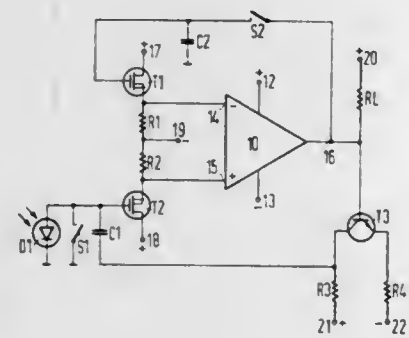
AUTOMATIC EXPOSURE APPARATUS FOR CAMERAS
Gerhard Krause, Ringstrasse 26, 8019 Ebersberg, Germany
Filed July 27, 1973, Ser. No. 383,390

Claims priority, application Germany, Aug. 4, 1972, 2238522

Int. Cl. G01j 1/44; G03b 7/08

U.S. Cl. 354-60

6 Claims



1. An automatic exposure apparatus for a camera, comprising: an opto/electric light transducer for producing an exposure signal; an amplifier having first and second inputs, and an output for connection to a controlled device, said transducer connected to said first input, a feedback circuit connected between said output and said second input and having a variable feedback signal whose value preceding the exposure is large compared with its value during the exposure, said feedback circuit comprising storage means for storing a feedback signal representative of the exposure signal preceding said exposure; means operable to make said exposure signal and said feedback signal effective at their respective inputs to said amplifier during an exposure; and a switch closed before an exposure and connected in parallel with said transducer and opened during an exposure.

3,855,605

CARRIER INJECTED AVALANCHE DEVICE
Hirohisa Kawamoto, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

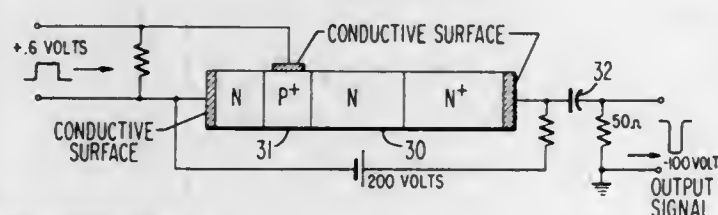
Continuation of Ser. No. 263,991, June 19, 1972, abandoned.

This application July 27, 1973, Ser. No. 383,081

Int. Cl. H01l 1/00, 13/00

U.S. Cl. 357-13

4 Claims



1. In combination, an avalanche diode having at least first, second and third crystalline semiconductor layers, said first and third layers being relatively highly doped semiconductor material and forming junctions with said second layer, said second

layer being relatively lightly doped semiconductor material having a type of doping the same as said third layer but different from said first layer, said diode caused to operate in response to an electric field exceeding a critical magnitude within said second layer and having a magnitude greater than zero at said junction between said second and third layers,

means for applying a reverse bias signal across said first and third layers, said bias signal having a magnitude exceeding punch-through voltage, said bias signal establishing an electric field having a magnitude within said second layer substantially equal to but not exceeding the said critical magnitude of electric field necessary for said diode operation,

said electric field having a magnitude greater than zero at said junction between said second and third semiconductor layers and,

means for injecting carriers into said second semiconductor layer for increasing said electric field magnitude to exceed said critical magnitude for causing said diode operation.

3,855,606

SEMICONDUCTOR ARRANGEMENT

Werner Schoberl, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt/Main, Germany

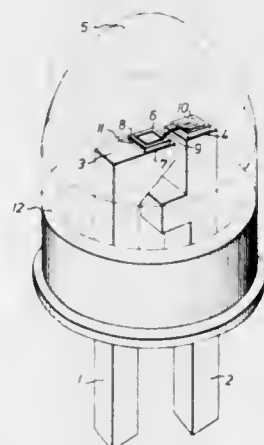
Filed Dec. 12, 1972, Ser. No. 314,446

Claims priority, application Germany, Dec. 23, 1971, 2164092; Dec. 23, 1971, 7148428

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 357-17

10 Claims



1. A semiconductor luminous diode arrangement for connection to voltage supply sources whose output voltage differs from the actual operating voltage of the diode comprising a diode housing having first and second feed lines leading into said housing, a semiconductor luminous diode electrically connected to said first feed line within said housing, electrical resistor means electrically connected to said second feed line within said housing, and means for connecting said resistor means to said diode to connect said diode and a resistance of said resistor means in series between said first and second feed lines.

3,855,607

SEMICONDUCTOR INJECTION LASER WITH REDUCED DIVERGENCE OF EMITTED BEAM

Henry Kressel, Elizabeth, N.J.; Harry Francis Lockwood, New York, N.Y., and Frank Zygmunt Hawrylo, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,665

Int. Cl. H05b 33/00

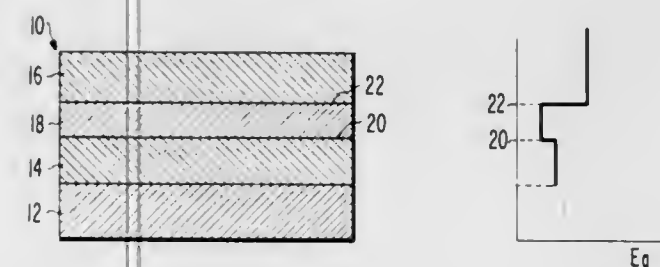
U.S. Cl. 357-18

9 Claims

1. A semiconductor injection laser comprising a body of single crystalline semiconductor material having a first region of one conductivity type, a second region of a conductivity

type opposite to that of the first region and a third region between said first and second regions, said third region having at least a portion thereof of a conductivity type which is capable of generating light when a voltage is placed across said body,

the junctions between said third region and each of said first and second regions being heterojunctions which extend to an edge of the body, and



gate means comprised of semiconductor material of the second conductivity type which is integral with said first surface of said first electrode means and which has a plurality of integral portions each having a U-shaped cross-section, each of said gate portions having a horizontal segment and a plurality of straight, vertical segments which are substantially perpendicular to said horizontal segment;

source-to-drain channel portions defined by adjacent ones of said vertical gate segments and having substantially straight, vertical side walls;

second electrode means comprised of semiconductor material of the first conductivity type which is integral with said gate means and said source-to-drain channel portions; and

said semiconductor materials of said first electrode means and said second electrode means surrounding said gate means.

3,855,609

SPACE CHARGE LIMITED TRANSISTOR HAVING RECESSED DIELECTRIC ISOLATION

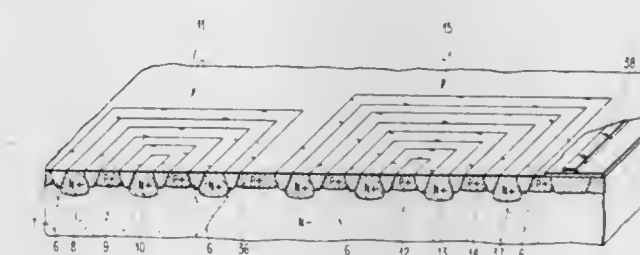
Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,165

Int. Cl. H01l 11/14

U.S. Cl. 357-22

10 Claims



the third region having a bandgap energy which is lower than the bandgap energy of each of the first and second regions with the bandgap energy difference between the third region and the first region being less than the bandgap energy difference between the third region and the second region, such that, the ratio of the difference of the indices of refraction of the third region and the second region to the difference of the indices of refraction of the third region and the first region is in the order of 5 to 1.

3,855,608

VERTICAL CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS AND METHOD OF MANUFACTURE

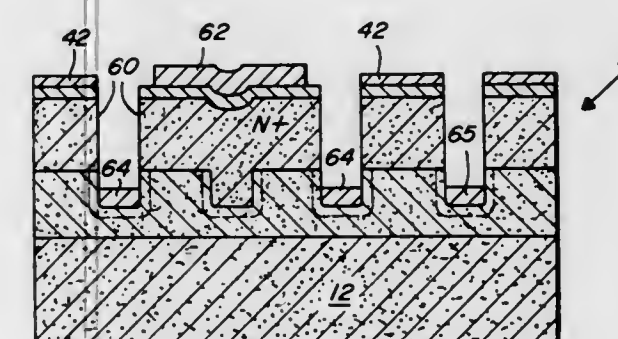
William Lloyd George; Robert Guy Hays, both of Chonokook, and John Rhee, Scottsdale, all of Ariz., assignors to Motorola Inc., Franklin Park, Ill.

Filed Oct. 24, 1972, Ser. No. 301,575

Int. Cl. H01l 11/14, 7/36, 7/50

U.S. Cl. 357-22

12 Claims



1. A field effect transistor having controlled pinch-off characteristics and which is suitable for high frequency operation, including in combination:

first electrode means comprised of semiconductor material of a first conductivity type and having a first surface;

1. A space charge limited transistor comprising: a high resistivity substrate of at least 10,000 ohmcentimeter semiconductor material, a first impurity zone of one conductivity type extending from one surface of said substrate into the interior thereof, a pair of second impurity zones of the other conductivity type extending from said one surface of said substrate into the interior thereof, said first zone being located between said second zones, at least one recessed dielectric region extending from said one surface of said substrate into the interior thereof and separating a respective one of said second zones from said first zone, and means for biasing said zones for transistor operation including means for forward biasing said first zone relative to one of said second zones and for reverse biasing said first zone relative to the other of said second zones, the region of said high resistivity substrate beneath said one zone being characterized by a dielectric relaxation time much larger than the carrier transit time therein.

3,855,610

SEMICONDUCTOR DEVICE

Hiroo Masuda, Kokubunji; Toshiaki Masuhara, Tokorozawa; Minoru Nagata, Kodaira, and Tokinori Kozawa, Hachioji, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed June 26, 1972, Ser. No. 266,043

Claims priority, application Japan, June 25, 1971, 46-45669

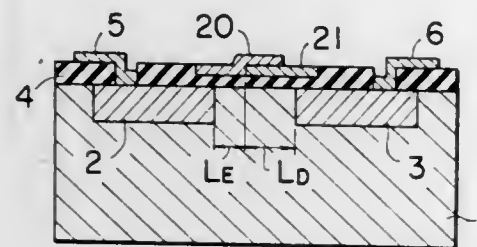
Int. Cl. H01l 11/14

U.S. Cl. 357-23

21 Claims

1. A method of manufacturing a metal-oxide-semiconductor field effect transistor comprising the steps of: forming first and second regions of a first conductivity type a prescribed distance from each other in a major surface of a

semiconductor substrate of a second conductivity type opposite said first conductivity type;
forming a first layer of insulating material over the surface of said substrate and said first and second regions;
providing a first electrode layer having a first prescribed work function on a first preselected portion of said first layer of insulating material between said regions; and



forming a second electrode layer having a second prescribed work function different from said first prescribed work function on a second preselected portion of said first layer of insulating material between said regions and so as to be contiguous with said first electrode layer.

3,855,611

THYRISTOR DEVICES

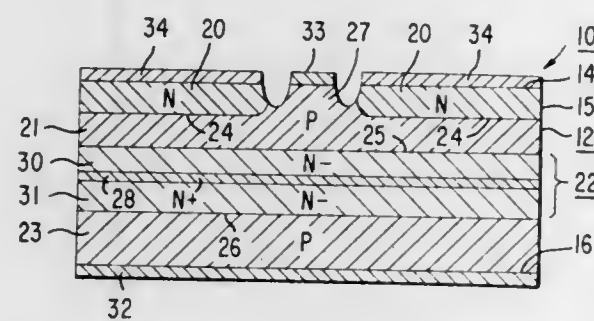
John Manning Savidge Neilson, and Harry Weisberg, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,109

Int. Cl. H01L 1/10

U.S. Cl. 357-38

10 Claims



1. A gated switching device comprising:
a body of semiconductor material having four regions in series with one another, adjacent regions being of opposite type conductivity and having a PN junction therebetween;
one of said regions being bounded by junctions which serve as voltage blocking junctions in the operation of said device;
said one region including a first portion of high conductivity to prevent the spread of a depletion layer from either of said blocking junctions entirely across said one region during operation of said device; and
each of said blocking junctions bordering second portions of said body each having, within a thickness greater than the thickness of said portion of high conductivity, a total number of bound charges insufficient, when uncovered by a depletion layer upon application of a voltage across said device, to cause avalanche breakdown.

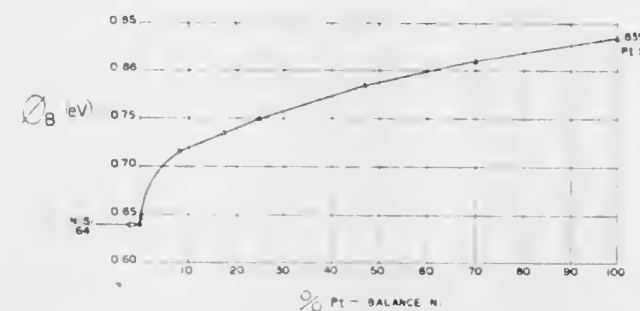
3,855,612 SCHOTTKY BARRIER DIODE SEMICONDUCTOR STRUCTURE AND METHOD

Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 214,590, Jan. 3, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 334,022
Int. Cl. H01L 19/00

U.S. Cl. 357-15

3 Claims



1. In a Schottky barrier diode semiconductor structure, a semiconductor body formed essentially of silicon and having a surface, an insulating layer formed on the surface and having an opening therein exposing a portion of the surface, a ternary alloy formed in said opening, said ternary alloy being formed of platinum and nickel and silicon of the semiconductor body to provide a Schottky barrier diode with a barrier height ranging from approximately .64 to approximately .835 electron volts as determined by the composition of the ternary alloy and in which the ternary alloy is comprised of approximately 50 percent silicon with nickel ranging from approximately 37 1/2 to 45 percent of the alloy and with platinum constituting the balance.

3,855,613

SOLID STATE SWITCH USING AN IMPROVED JUNCTION FIELD EFFECT TRANSISTOR

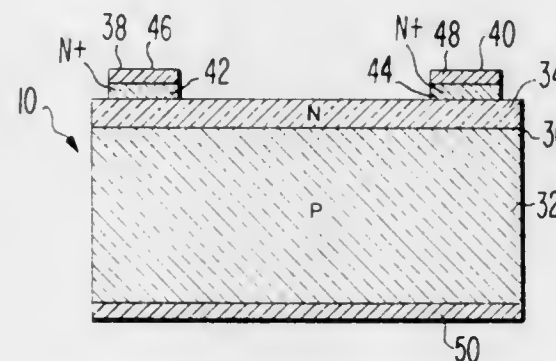
Louis Sebastian Napoli, Hamilton Square, and Raymond Harkless Dean, Lawrenceville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 22, 1973, Ser. No. 372,648

Int. Cl. H01L 11/00, 15/00

U.S. Cl. 357-22

10 Claims



1. A solid state switch comprising:
a. a substrate of a first conductivity type having a resistivity in the order of 10,000 ohm-cm;
b. a layer of a second conductivity type on said substrate forming a PN junction with said substrate, said layer having a sheet resistivity of less than 2,000 ohm/square while having an impurity concentration of less than that of said substrate;
c. at least two ohmic contacts on said layer, and
d. a metallic contact on said substrate.

3,855,614 BEAM CURRENT CONTROL SYSTEM FOR A PICTURE TUBE

Takashi Okada, Yamato, Japan, assignor to Sony Corporation, Tokyo, Japan

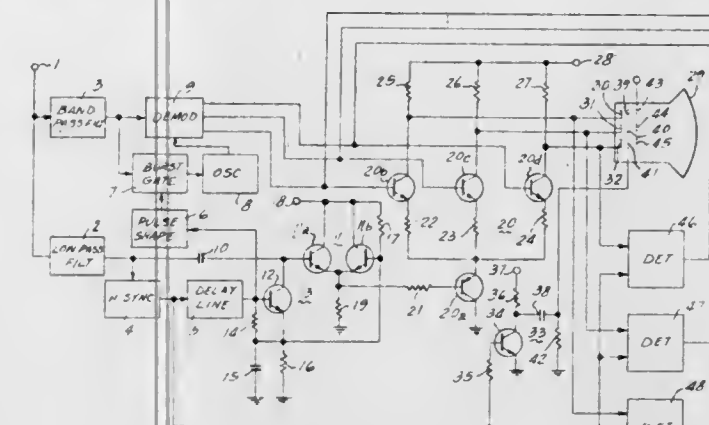
Filed Dec. 22, 1972, Ser. No. 317,730

Claims priority, application Japan, Dec. 24, 1971, 46-2587

Int. Cl. H04N 9/16

U.S. Cl. 358-74

6 Claims



1. A beam current control system for a picture tube comprising a picture tube including at least one cathode electrode and a control electrode, means for applying a video signal to said cathode electrode, means for applying a pulse to said control electrode to cut off said picture tube, differential amplifier means for detecting the difference between a potential of said cathode electrode during each blanking interval and a potential of said cathode electrode when said picture tube is cut off, means for deriving a control signal from said detected difference and means for controlling a beam current of said picture tube in response to said control signal.

3,855,615

NOISE REDUCTION APPARATUS EMPLOYING PARAMETRIC FREQUENCY DIVIDERS WITH LARGE DIVISION FACTORS

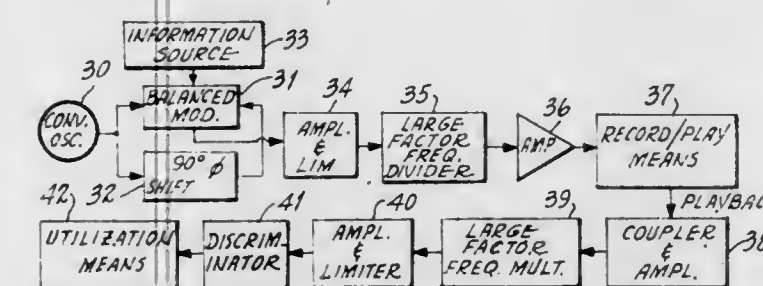
Michael T. Shen, 8 Place Dargent, Eich, Luxembourg

Filed Jan. 22, 1973, Ser. No. 325,673

Int. Cl. G11b 5/04

U.S. Cl. 360-30

10 Claims



1. Apparatus for converting an information bearing signal including components within a given frequency range into a low frequency modulated signal for improved noise operation when applied to an audio magnetic tape, comprising:
a. a conversion oscillator capable of providing at an output a stable signal, having a frequency substantially larger than any frequency component of said information bearing signal;
b. modulating means responsive to said conversion oscillator signal and said information bearing signal to provide at an output a frequency modulated (FM) signal with the carrier of said FM signal at said conversion oscillator frequency and modulated according to said information bearing signal; and
c. a parametric frequency divider having an input responsive to said FM signal to divide said signal by a factor greater than 100 as defined by the ratio of said carrier frequency and a center frequency within said frequency

range of said information bearing signal, to provide at an output a low frequency FM signal capable of being recorded on a audio magnetic tape.

3,855,616

PHASE SHIFT REDUCING DIGITAL SIGNAL RECORDING HAVING NO D.C. COMPONENT

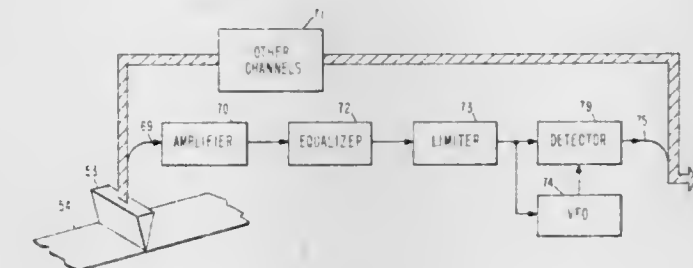
Richard C. Schneider, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,568

Int. Cl. G11b 5/09

U.S. Cl. 360-40

10 Claims



1. The method of recording two data values in a two-level magnetic record having successive bit cells, one cell for recording one data bit of either value,
the improvement including the steps in combination:
representing a first data value in a bit cell as an odd number of transitions between said magnetic levels within a bit cell and none at a bit cell boundary such that the magnetic levels following two successive bit cell boundaries differ;
representing a second data value in a bit cell as an even number of transitions greater than two between said magnetic levels such that the magnetic levels following two successive bit cell boundaries are the same; and
timing said transitions such that the total time duration of each level in each and every bit cell is substantially equal.

3,855,617

UNIVERSAL DIGITAL DATA SYSTEM

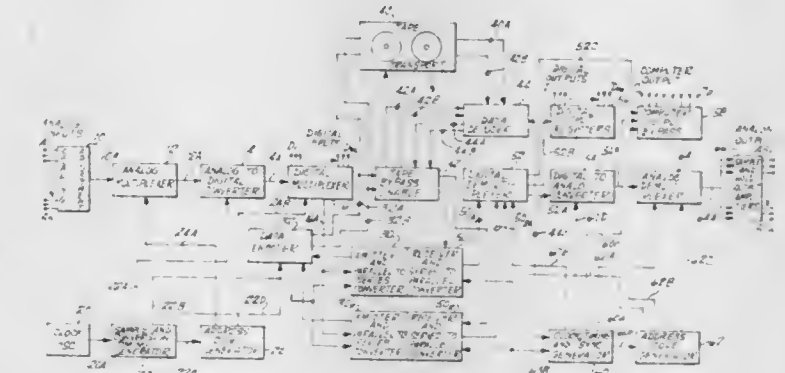
Gene S. Jankowski, and Joseph A. Kibelbeck, both of Bremer-ton, Wash., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 284,663, Aug. 29, 1972.. This application Mar. 18, 1974, Ser. No. 451,922

Int. Cl. G11b 5/62

U.S. Cl. 360-32

4 Claims



1. A system for the acquisition recording and reproduction of digital and analog data derived from a plurality of digital and analog signal sources, comprising:
a. an analog multiplexer connected so as to sample said plurality of analog signals a predetermined number of times during a repetitive multiplexing cycle that defines a predetermined number of slots to provide a serial output signal comprising a train of analog samples lying in some, but not all of, said slots, said predetermined number of times being variable with respect to each of said plurality of analog signals so that at least one of said

- analog signals is sampled at a rate different than the rate said other analog signals are sampled;
- b. an analog-to-digital converter, connected to said analog multiplexer so as to receive said serial output signal comprising a train of analog samples, for converting said analog samples into corresponding parallel format digital words to provide an output signal comprising a sequential train of parallel format digital words, one word being related to each of said analog samples, said sequential train of parallel format digital words having spaces therein determined by the slots of said repetitive multiplexing cycle containing no related analog sample;
 - c. a digital multiplexer connected to sample said plurality of digital signals a predetermined number of times during said repetitive multiplexing cycle to provide parallel format digital words relating to said samples at times in said cycle corresponding to slots containing no analog sample, said predetermined number of times being variable with respect to each of said plurality of digital signals so that said digital signals may be sampled at different rates, said digital multiplexer also connected to receive said sequential train of parallel format digital words from said analog-to-digital converter and to insert said parallel format digital words related to said digital samples into spaces in said sequential train of parallel format digital words received from said analog-to-digital converter containing no related analog sample;
 - d. transmitter and parallel-to-series converter means connected to said digital multiplexer for converting said resultant sequential train of parallel format digital words into a predetermined number of pulse trains of serial digital words suitable for transmission and recording;
 - e. a first timing means connected for controlling said analog multiplexer, said analog-to-digital converter, said digital multiplexer and said transmitter and parallel to series converter means by inserting a sync signal into one slot defined by said repetitive multiplexing cycle
- said timing means also adapted to generate a series of encoding clock pulses having a known period;
- f. a phase encoder connected to said transmitter and parallel-to-series converter means and to said timing means so as to phase encode said pulse trains of serial digital words onto said series of encoding clock pulses having a known period;
 - g. a bandwidth limited magnetic tape transport having a plurality of recording channels at least equal in number to said predetermined number of pulse trains of serial digital words, said bandwidth limited magnetic tape transport being connected to said phase encoder for recording said phase encoded pulse trains of serial digital words on said plurality of channels on a one-to-one basis;
 - h. a phase decoder connected to said bandwidth limited magnetic tape transport so as to receive the phase encoded pulse trains of serial digital words recorded on the tracks of said bandwidth limited magnetic tape transport, said phase decoder including a transition detector which produces an output pulse for every transition in one of said pulse trains of phase encoded serial digital data words;
 - i. receiver and series-to-parallel converter means connected to the output of said phase decoder for converting said pulse trains of serial digital words into a sequential train of parallel format digital words;
 - j. a digital demultiplexer connected to the output of said receiver and series-to-parallel converter means for converting some of the words of said sequential train of parallel format digital words into digital signals equivalent to said sampled digital signals and some of the words of said sequential train of parallel format digital words into a set of parallel format digital words related to said sampled analog signals;
 - k. a digital-to-analog converter connected to said digital multiplexer to receive said set of parallel format digital words related to said sampled analog signals and convert

- said set of parallel format digital words into a serial train of analog signals equivalent to said sampled analog signal;
- l. an analog demultiplexer connected to the output of said digital-to-analog converter for separating said serial train of analog signals into a plurality of analog signals related to said sampled analog signals; and,
 - m. a second timing means connected for receiving said sync signal and controlling said phase decoder, said receiver and series-to-parallel converter means, said digital demultiplexer, said digital-to-analog converter and said analog demultiplexer by:
 1. receiving the output pulses produced by said phase decoder for every transition in one of said pulse trains of serial digital data words and supplying encoding clock pulses back to the phase decoder by:
 - i. starting a clock enable pulse at a time slightly greater than one-half the known period or the encoding clock pulses after a given output pulse produced by said phase decoder for every transition in one of said pulse trains of serial digital data words occurs;
 - ii. terminating the clock enable pulse when the next subsequent output pulse, produced by said phase decoder for every transition in one of said pulse trains of serial digital data words, occurs;
 - iii. extracting encoding clock pulses from the output pulses, produced by said phase decoder for every transition in one of said pulse trains of serial digital data words upon the coincidence of a logic transition in said output pulses and said clock enable pulses; and,
 - iv. supplying the extracted encoding clock pulses back to said phase decoder; and,
 2. controlling the output frequency of a VCO by phase comparing the extracted encoding clock pulses with the output pulses generated by the VCO, the output of the VCO being used for controlling the operation of said digital demultiplexer, said digital-to-analog converter and said analog demultiplexer.

3,855,618

MAGNETIC HEAD HAVING VARIABLE GAP LENGTH

Jacob Koorneef, Jan Antoon Ludolf Potgiesser, and Anthonie Walraven, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

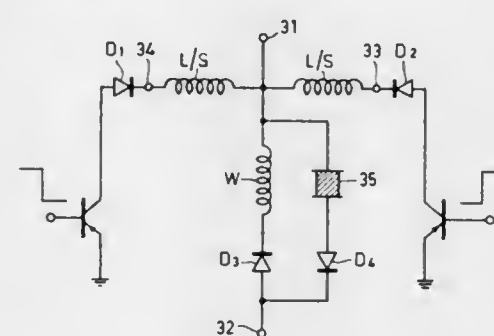
Filed Oct. 9, 1973, Ser. No. 404,357

Claims priority, application Netherlands, Oct. 27, 1972, 7214548

Int. Cl. G11b 15/02, 5/24

U.S. Cl. 360—69

8 Claims



1. A magnetic head for recording and playing back which comprises:
 - a core including first and second magnetizable pole pieces, each magnetizable pole piece having a gap bounding face, said gap bounding faces being disposed in generally opposed relation forming a transducing gap, at least one of said magnetizable pole pieces having secured thereto means for displacing said magnetizable pole piece between a recording position and a playback position thereby changing the gap length between said gap bounding faces, said means comprising an electrostrictive transducer responsive to a control voltage applied thereto, said

control voltage being varied responsive to the recording mode of operation of the head and the playback mode of operation of the head.

3,855,619

MAGNETIC CARD READOUT MACHINE AND CARDS THEREFOR

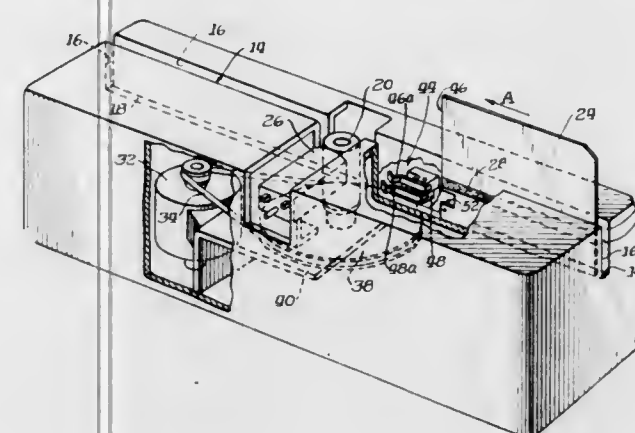
Fred Kral, Lake Villa, and Robert L. Powers, Jr., Palatine, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 8, 1973, Ser. No. 321,902

Int. Cl. G11b 5/80, 15/06, 15/46

U.S. Cl. 360—73

12 Claims



1. The combination of a plural speed card readout machine and cards for use therewith, the machine comprising:
 - plural speed drive means for transporting one of said cards along a card guide path past transducing means;
 - electrical control means for operating said drive means at a plurality of selected pre-set different speeds, including a plurality of switch means at said card guide path for actuation in a plurality of different sequences to determine the operating speed of said drive means; and the card comprising:
 - a support media transportable by said drive means along said card guide path through said machine;
 - magnetic media carried on said support media for being transduced at a selected of a plurality of pre-set drive speeds; and
 - means on said support media for actuating said switch means in a predetermined sequence to operate said drive means at a speed corresponding to the proper transducing speed of the magnetic media on the respective card.

3,855,620

HEAD FEED MEANS FOR MAGNETIC SPIRAL TRACK RECORDER HAVING TWO HEADS

Saburo Kato, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,783

Claims priority, application Japan, May 16, 1972, 47-52619

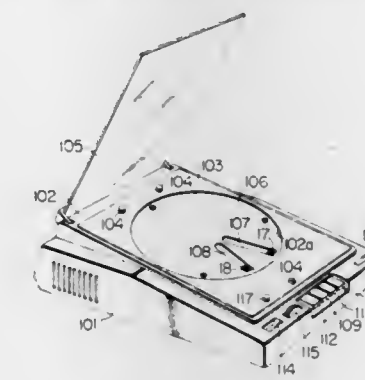
Int. Cl. G11b 21/02

U.S. Cl. 360—101

9 Claims

1. A head feed device for magnetic recording and reproducing apparatus of the spiral track type comprising
 - a. a turntable;
 - b. a head carriage;
 - c. means mounting said head carriage on said turntable for movement of the carriage in a straight line at a constant pitch from the peripheral portion of the turntable to the central portion thereof as the turntable rotates in a predetermined direction;
 - d. a magnetic recording and reproducing head supported by said head carriage for movement from the peripheral portion of the turntable to the central portion thereof while tracing a spiral track of a constant pitch as the turntable rotates in said predetermined direction and the

- head carriage moves in a straight line from the peripheral portion of the turntable to the central portion thereof;
- e. an erasing head supported by said head carriage for movement to trace the same spiral track as the magnetic recording and reproducing head;
 - f. means for guiding said two heads along converging straight lines passing through the center of rotation of the turntable, such that said erasing head precedes said re-



- ording head along said track in movement toward the turntable central portion, while maintaining said erasing head closer than said recording head to the center of turntable rotation by a radial distance equal to $P\theta/360$ wherein P is the pitch of said track and θ is the angle, in degrees, included between said straight lines; and
- g. means driven by rotation of said turntable in said predetermined direction for moving said carriage and heads toward the center of the turntable as aforesaid.

3,855,621

PNEUMATIC NO-CONTACT DOCUMENT READ/WRITE STATION

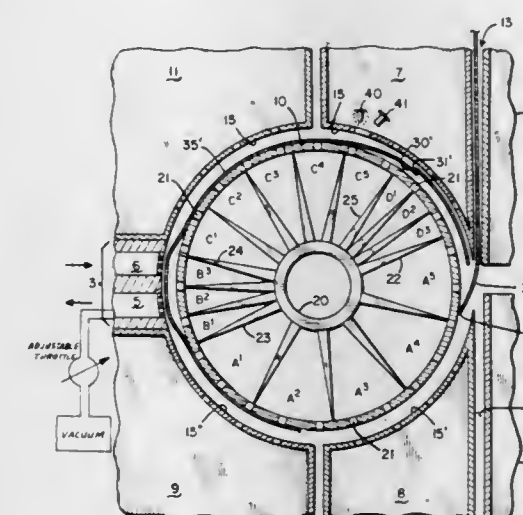
Richard S. Gluskin, Wayne; Eugene B. Barcaro, Norristown; Edwin R. Phillips, Rosemont; Arnold Schonfeld, Norristown, and Joseph Van Reyemersdal, Fairless Hills, all of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,814

Int. Cl. G11b 5/60

U.S. Cl. 360—102

18 Claims



1. A non-contact read/write station comprising:
 - a. a rotating drum means, said drum having raised rims at its extremities;
 - b. a flexible member having a magnetic recording surface wherein the length of said member is greater than the circumference of a rotating drum means;
 - c. means for accurately positioning said member on said drum means such that the members leading and trailing edge overlap;
 - d. a fixed read-record carcass means including a plurality of read/write heads located outside the periphery of said drum means for executing a read/write cycle;

- e. means for removing said member from said rotating drum and additional means in said carcass for allowing it to be brought near said read/write head, such that the magnetic recording surface is positioned immediately next to said read/write head but without contact;
- f. means for returning said member to said rotating drum after said read/write cycle is completed, a bubble configuration being formed in said member in the vicinity of said read/write head.

3,855,622

APPARATUS FOR LOADING AND UNLOADING A HEAD ASSEMBLY IN A DATA STORAGE SYSTEM

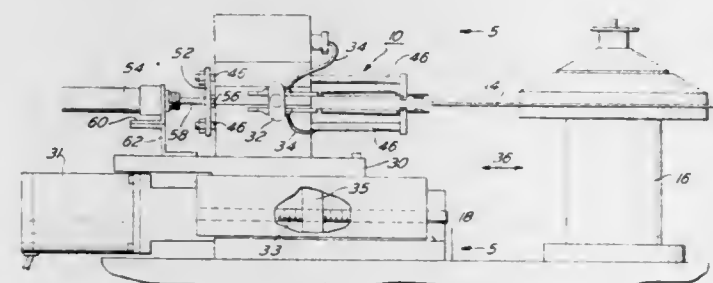
Peter J. Truscetti, Berlin, N.J., and Robert Provasnik, Philadelphia, Pa., assignors to Siemens Corporation, Iselin, N.J.

Filed Jan. 4, 1973, Ser. No. 320,878

Int. Cl. G11b 5/60

U.S. Cl. 360-103

10 Claims



1. Apparatus for loading and unloading into and out of a flying height position respectively, at least one transducer in relation to a rotating disc in a data storage system, comprising:
- head means having said transducer fixedly secured thereto and having an inclined ramp;
 - carriage means moveably mounted to said data storage system for moving said head means in a longitudinal direction with respect to said rotating disc; and
 - driving means moveably secured to said carriage means, said driving means having pin means slideably engaging said inclined ramp for moving said pin means reversibly in said longitudinal direction for displacing said head means into and out of said loaded and unloaded positions in relation to said rotating disc independent of said longitudinal movement of said head means.

3,855,623

MODULAR DISK MEMORY SYSTEM

Sung Pal Chur, Santa Clara, and Leon H. Brown, Jr., San Jose, both of Calif., assignors to Dataflux Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 126,484, March 22, 1971.

This application Apr. 18, 1973, Ser. No. 352,216

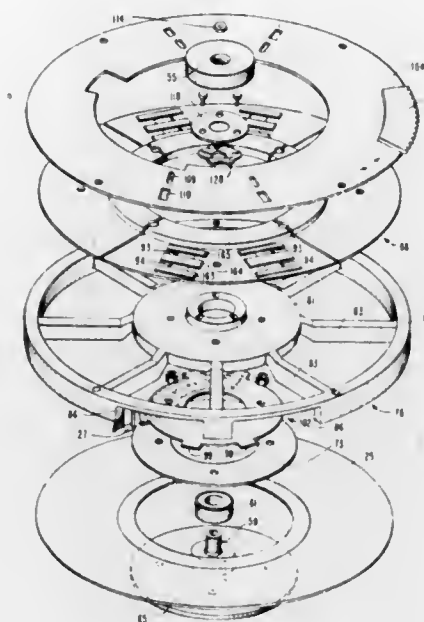
Int. Cl. G11b 5/60

U.S. Cl. 360-103

34 Claims

1. A head per track disk file system comprising:
- a pair of spoked wheel members mounted about a central axis and having abutting rim elements defining a low profile cylinder having a peripheral rim;
 - central shaft means rotatably mounted along said central axis in each of said spoked wheel members;
 - at least one magnetic disk means mounted on said shaft means in a central region therealong between the wheel members and normal to the central axis;
 - a pair of generally flat head support means, each disposed adjacent and parallel to a different one of said wheel members on the opposite side from said disk means and substantially parallel thereto;

and magnetic head assembly means mounted on each of said head support means and extending through spaces



between the spokes of said wheel members into operative relation with the adjacent face of said disk means.

3,855,624

GROOVED AIR BEARING HEAD

Jacobus Pieter Reinhoudt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,395

Int. Cl. G11b 5/60

U.S. Cl. 360-103

4 Claims



1. A device for the processing of data in the form of magnetic recordings on a rotatable recording disc by means of one or more magnetic heads, which are accommodated in a head plate which during operation is spaced at a relatively small distance from the recording disc, the surface of said plate which faces the recording disc being recessed, characterized in that said surface of the head plate comprises at least two groove pattern means, for producing opposite pressures during rotation of the recording disc in a gap which is present between the recording disc and the head plate during operation, the geometry of one of the groove pattern means comprising means for providing a positive bearing capacity which greatly depends on the gap height, and a high rigidity, for one specific direction of rotation one pattern whereas the geometry of the other pattern, having deeper grooves than those of said first pattern, comprises means for providing a negative bearing capacity, which is substantially gap-independent, and a low rigidity for said one direction of rotation, whereby for a specific design gap height the sum of the bearing capacities is zero and a high positive rigidity prevails.

3,855,625

MAGNETIC HEAD SLIDER ASSEMBLY

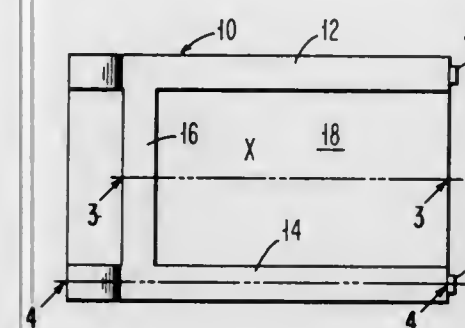
Michael F. Garnier; Tung-Men Tang, both of San Jose, and James W. White, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,382

Int. Cl. G11b 5/60, 21/20

U.S. Cl. 360-103

12 Claims



1. A slider assembly for supporting a transducer in relation to a moving record medium comprising:
- a support structure having leading and trailing edges relative to the motion of said medium and a longitudinal axis disposed along the path of said motion;
 - side rails disposed along the side edges of a surface of said support structure;
 - a cross rail disposed laterally across the surface of said structure joining said side rails;
 - said rails defining a recessed section trailing said cross rail, said recessed section being closed on three sides by said rails;
- so that a negative pressure region is established at such recessed section, while positive pressure regions are established at said side rails, whereby said surface of said support structure flies very closely to the moving record medium at a substantially constant height.

3,855,626

TRANSDUCER HEAD MOUNTING APPARATUS

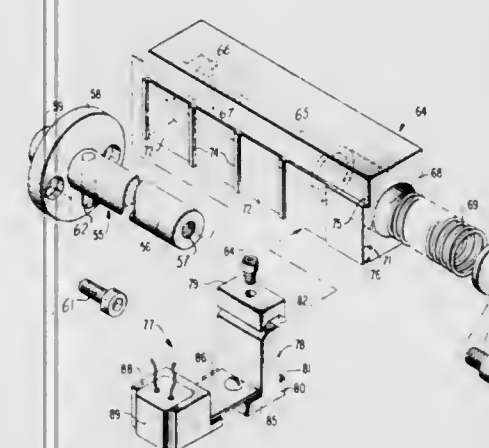
John O. McCarty, Atlanta, and Leary W. Smith, Chamblee, both of Ga., assignors to The Audichron Company, Atlanta, Ga.

Division of Ser. No. 165,902, July 26, 1971, Pat. No. 3,787,637. This application July 30, 1973, Ser. No. 384,011

Int. Cl. G11b 5/50, 15/02

U.S. Cl. 360-104

6 Claims



1. Recording head mounting apparatus for an audio transducing system, comprising:
- a mounting post positioned in spaced apart relation to a movable transducing medium and extending in a transverse relation to the direction of movement of the recording medium;
 - a head mounting bar connected to said mounting post and extending in transverse relation to the recording medium;

locating means on said head mounting bar defining at least one head locating position on said head mounting bar in predetermined position relative to the recording medium;

a head assembly including a transducing head, and positioning means connected to said transducing head;

said positioning means being engagable in predetermined certain alignment with said head locating means on said head mounting bar to dispose said transducing head in positive location contacting the recording medium; and means on said positioning means to releasably interconnect said positioning means in said predetermined certain alignment with said head mounting bar.

3,855,627

PROTECTIVE INTERLOCK CONTROLLING MOVEMENT OF HEAD AND PINCH ROLLER INTO OPERATIVE POSITION

Bruno Vettore, Cornaredo; Ferruccio Enrini, Milano, and Tullio Percali, Settala, all of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

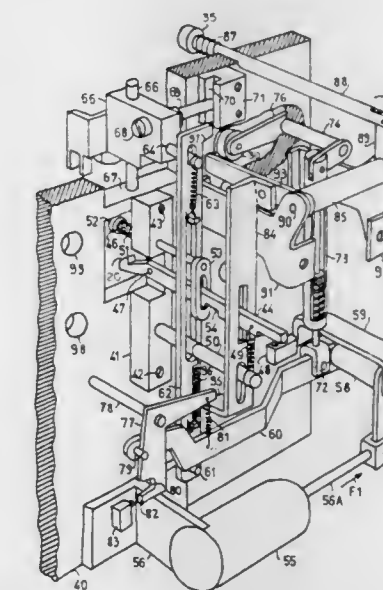
Filed June 14, 1973, Ser. No. 370,097

Claims priority, application Italy, June 23, 1972, 26120/72

Int. Cl. G11b 5/54, 5/56, 21/24

U.S. Cl. 360-105

4 Claims



1. In a tape cassette recorder having a main frame, a magnetic head, means slidably mounting said magnetic head on said frame for movement between an operating position and a retracted position, a pressure roller lever means pivotally mounting said pressure roller on said frame for movement between an operating position and a retracted position, a cover having a pocket for said tape cassette, means pivotally mounting said cover on said frame, for movement between an open and closed position, a device for loading and removing the tape cassette, including:
- a first spring means for biasing said magnetic head to said operating position, a bar, means slidably mounting said bar on said frame for movement between an operating position and a retracted position, a second spring means biasing said bar to said retracted position, means coupling said bar to said means slidably mounting said magnetic head to maintain said magnetic head in said retracted position when said bar is in its retracted position and to leave said magnetic head free to reach its operating position when said bar is in its operating position, a hooking lever, means pivotally mounting said hooking lever on said frame, spring means biasing said hooking lever to a hooking position cooperating with said cover to hook said cover in said closed position, a movable probing member carried by said frame and positioned to be contacted by a tape cassette contained in said cover pocket means mounting said probing member for movement to an operative position when contacted by a cassette, said probing member having means normally engaging said hooking lever and limiting pivoting thereof, and said probing

member means when said probing member is in said operating position allowing a further pivoting of said hooking lever, a switch actuated by said hooking lever when further pivoting of said hooking lever is allowed by said probing member, an electromagnet, mounted on said frame and energized by actuation of said switch leverage means connected to said bar and said lever means for moving both into said operating position upon energization of said electromagnet, a pawl means mounted on said frame for maintaining said leverage means in said operated position even when the electromagnet is de-energized, and release means for disengaging first said pawl means and subsequently said hooking lever to release said cover and allow the opening of said cover.

3,855,628

TAPE HEAD ROTATOR MECHANISM

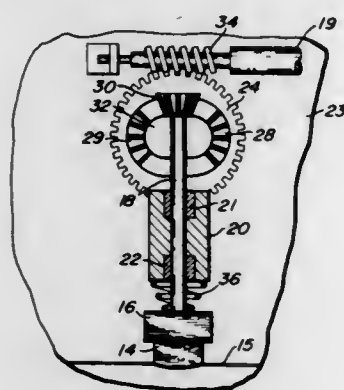
Mario E. Bachmann, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 16, 1973, Ser. No. 333,411

Int. Cl. G11b 21/08

U.S. Cl. 360-106

4 Claims



1. A tape recorder/reproducer utilizing tape having at least two sets of tracks thereon including in combination, a tape head having a pick up portion, actuator means, drive gear means coupled to said actuator means, said drive gear means including a portion having a plurality of gear sections, a cam mounted for rotation by said drive gear means, a shaft having said tape head mounted on one end thereof and gear means mounted on the other end thereof, and means for mounting said shaft for longitudinally slidable movement, whereby said actuator means in response to a predetermined event rotates said drive means to engage said cam with said gear means on the end of said shaft to longitudinally slide the shaft thereby moving said tape head away from the tape, with one of said plurality of gear sections of said drive gear means engaging said gear means on said shaft to rotate said tape head 180°, and resilient means connected between said shaft mounting means and said tape head for re-engaging said tape head with said tape with said tape head being rotated 180°.

3,855,629

COMBINED MAGNETIC HEAD FOR RECORDING AND PLAYBACK HAVING ADJUSTABLE END FACES

Jacob Koorneef; Jan Antoon Ludolf Potgiesser, and Anthonie Walraven, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,281

Claims priority, application Netherlands, July 26, 1972, 7210322

Int. Cl. G11b 5/22

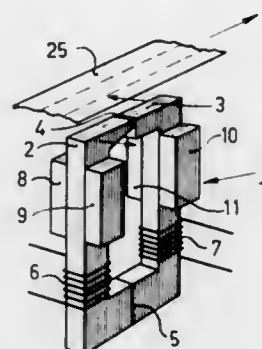
U.S. Cl. 360-113

7 Claims

1. A magnetic head apparatus for recording and playing back information in cooperation with an elongated magnetizable recording medium which may be selectively traversed, the combination which comprises:

a first core part disposed with at least a portion thereof proximate the magnetizable recording medium;

a second core part disposed with at least a portion thereof proximate the magnetizable recording medium, said portion of said first core part and said portion of said second core part being disposed in proximate, opposed, spaced relationships;



means for varying the alignment between said first core part portion and said second core part portion in a direction transverse to the elongated magnetizable recording medium, said means selectively causing said one of said parts to be aligned with a different longitudinal portion of said magnetizable recording means and the other of said parts.

3,855,630

COMBINED MAGNETIC HEAD FOR RECORDING AND PLAYBACK HAVING ADJUSTABLE END FACES

Jacob Koorneef; Jan Antoon Ludolf Potgiesser, and Anthonie Walraven, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

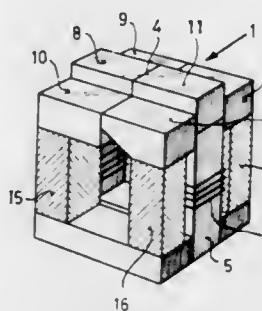
Filed June 25, 1973, Ser. No. 373,509

Claims priority, application Netherlands, July 26, 1972, 721323

Int. Cl. G11b 5/22

U.S. Cl. 360-113

3 Claims



1. A magnetic head for recording information on a track having a first width of a magnetizable recording medium and playing back information on a track having a second smaller width of a magnetizable recording medium, comprising a core of magnetizable material which is provided with an electric winding and which, on the side which is destined for cooperation with a recording medium, is provided with two end members which enclose a recording gap at least one end member comprising three parts extending transverse to the recording gap, said three parts extending transverse to the recording gap comprising a central part and two extreme parts disposed on opposite sides of said central part, means for supporting said extreme parts for movement during playback operation relative to the central part in a direction away from the longitudinal axis of the recording medium, means for moving said extreme parts responsive to an electromotive force selectively during playback operation, relative to the central part in a direction away from the longitudinal axis of a recording medium to be scanned, the overall width of the three parts being equal to the first width, the width of the central part being equal to the said second width.

DESIGNS

DECEMBER 17, 1974

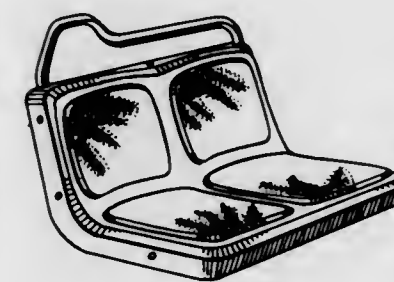
233,918

TRANSIT SEAT

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Continuation-in-part of design application Ser. No. 238,744, Mar. 27, 1972. This application May 11, 1973, Ser. No. 359,304

Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-26



233,920

SEAT FOR A TRANSIT VEHICLE

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed May 14, 1973, Ser. No. 360,018
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-48



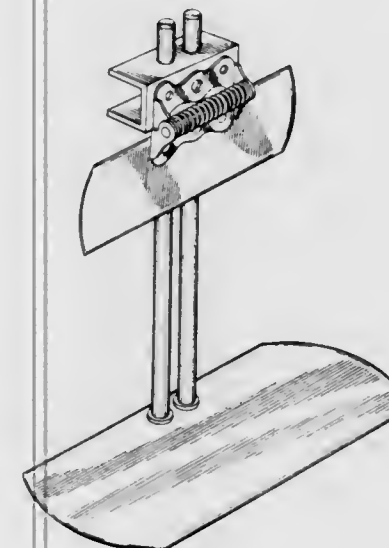
233,919

BINOCULAR HOLDER

Thomas H. Horst, Lafayette, Colo., assignor to Western Sales and Supply Co., Denver, Colo.
Filed Aug. 7, 1972, Ser. No. 278,590

Term of patent 14 years
Int. Cl. D6-99

U.S. Cl. D6-28

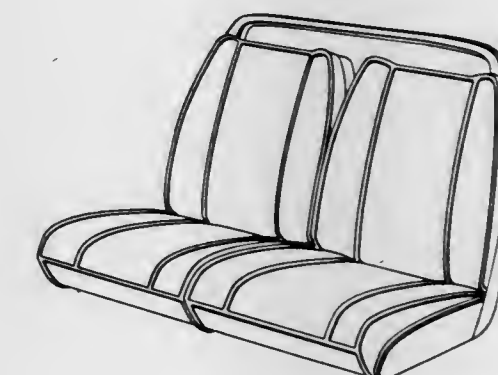


233,921

SEAT FOR A TRANSIT VEHICLE

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed May 14, 1973, Ser. No. 360,020
Term of patent 14 years
Int. Cl. D6-01

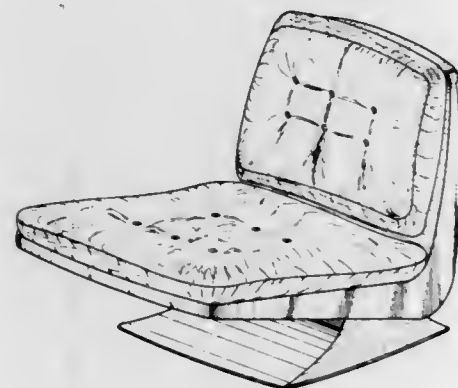
U.S. Cl. D6-48



233,922
CHAIR

Raymond Grosfillex, Arpent, France, assignor to
Grosfillex S.A.R.L., Arpent (Ain), France
Filed May 21, 1973, Ser. No. 362,069
Claims priority, application France Nov. 24, 1972
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—26

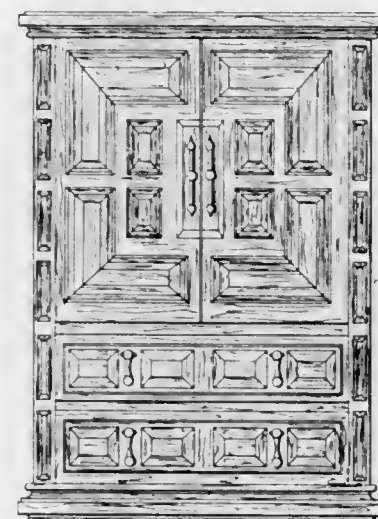


233,924

ARMOIRE OR SIMILAR ARTICLE

Huey T. Keller, 1609 Davidson Road,
High Point, N.C. 27260
Continuation-in-part of design application Ser. No.
125,000, Mar. 16, 1971. This application Dec. 15, 1972,
Ser. No. 315,427

Term of patent 14 years
Int. Cl. D6—04
U.S. Cl. D6—164

233,923
ARMCHAIR

Giovanni Offredi, Milan, Italy, assignor to Fratelli
Saporiti Industria Arredamenti di Saporiti Sergio e
Giorgio S.N.C., Besenato (Varese), Italy
Filed Mar. 20, 1973, Ser. No. 343,008
Claims priority, application Italy Sept. 22, 1972
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—71

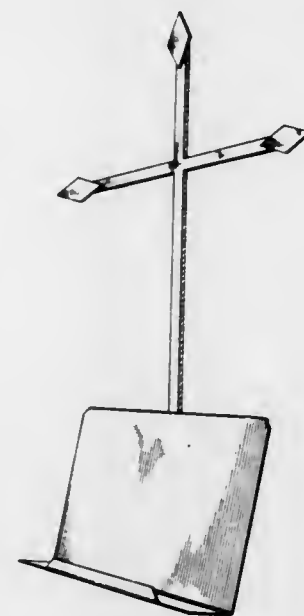


233,925

COMBINED BIBLE RACK AND CROSS

Harley Ammermann, Box 526,
Clara City, Minn. 56222
Filed Apr. 12, 1973, Ser. No. 350,385
Term of patent 14 years
Int. Cl. D6—04

U.S. Cl. D6—184



233,926

FURNITURE BASE

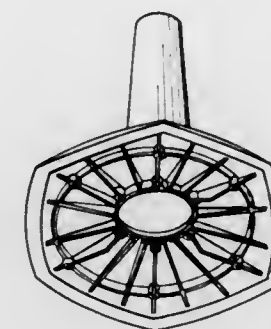
Harry Sebel, Darling Point, New South Wales, Australia
(96 Canterbury Road, Bankstown, New South Wales,
2200 Australia)

Filed Apr. 23, 1973, Ser. No. 353,666

Term of patent 14 years

Int. Cl. D6—06

U.S. Cl. D6—194

233,927
TOASTER

Masatoshi Naito, Ikeda, Fujio Sawamura, Toyonaka,
Kunio Funatsu, Osaka, and Noriharu Furuyabu, Ashiya,
Japan, assignors to Matsushita Electric Industrial Co.,
Ltd., Osaka, Japan

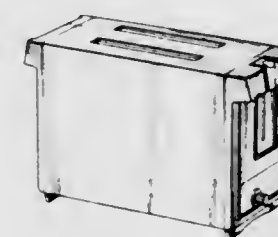
Original design application May 22, 1972, Ser. No.
255,950. Divided and this application Aug. 24, 1973,
Ser. No. 391,310

Claims priority, application Japan Nov. 26, 1971

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—93



233,928

NON-BOIL OVER MILK PAN

Bernard Sams, London, and Albert Edward Cook, Wolver-
hampton, England, assignors to Tower Housewares
Limited

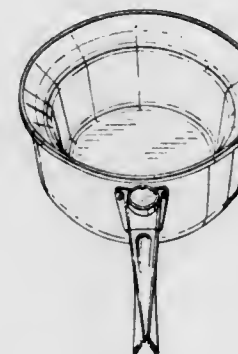
Filed May 7, 1973, Ser. No. 358,162

Claims priority, application Great Britain Nov. 9, 1972

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—95



233,929

COMBINED MIXER AND DISPENSER
FOR LIQUIDS

Se-kit Yuen, 46 Hoi Yuen Road, 4th Floor, Kwun Tong,
Kowloon, Hong Kong

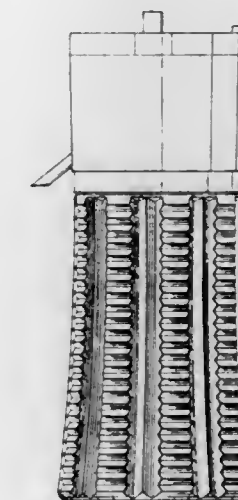
Filed Mar. 6, 1973, Ser. No. 338,623

Claims priority, application Great Britain Oct. 12, 1972

Term of patent 14 years

Int. Cl. D7—04

U.S. Cl. D7—157



233,930

VACUUM CLEANER

Toshihiko Yoshida, Suita, Japan, assignor to Matsushita
Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1973, Ser. No. 406,883

Claims priority, application Japan Apr. 17, 1973

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D7—165



233,931

ULTRASONIC INTRUSION ALARM

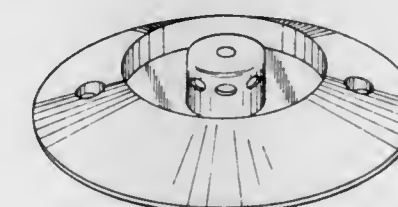
Ralph W. Goble, Eldora, and Kenneth R. Hackett,
Boulder, Colo., assignors to Sontrix, Inc., Boulder,
Colo.

Filed Dec. 21, 1972, Ser. No. 317,267

Term of patent 14 years

Int. Cl. D29—99

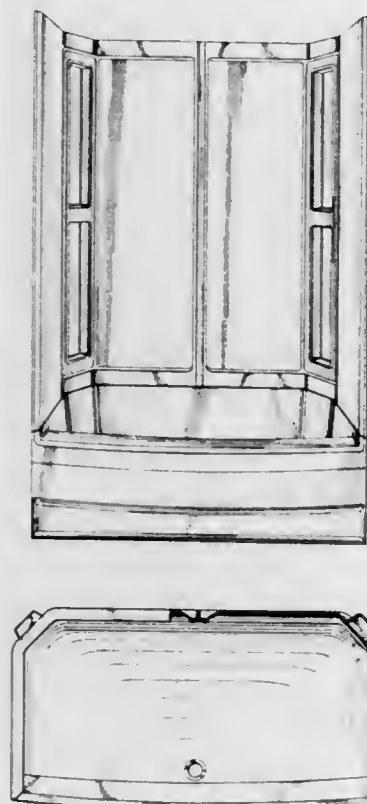
U.S. Cl. D10—106



233,932

COMBINATION BATHTUB AND SHOWER STALL
Merritt W. Seymour, Sylvania, Ohio, assignor to
Owens-Corning Fiberglas Corporation
Filed Apr. 16, 1973, Ser. No. 351,207
Term of patent 14 years
Int. Cl. D23—02

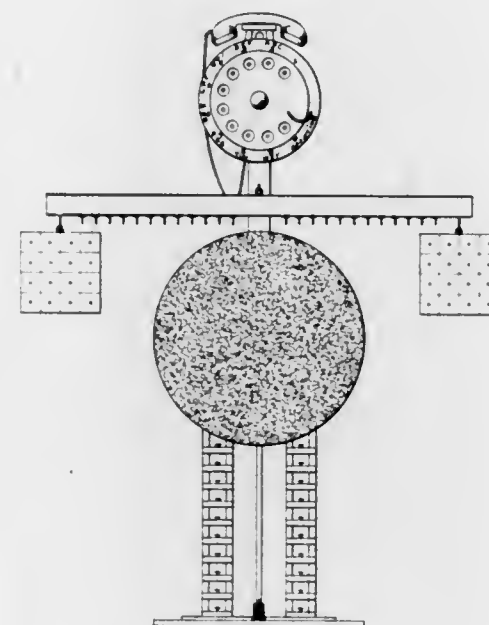
U.S. Cl. D23—49



233,934

**EDUCATIONAL MANNIKIN FOR
MATHEMATICAL CONCEPTS**
Marlene L. Drouin, 289 Pembroke St.,
Concord, N.H. 03301
Filed July 6, 1972, Ser. No. 269,375
Term of patent 14 years
Int. Cl. D19—07

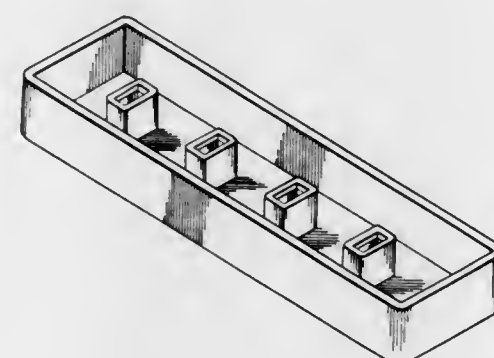
U.S. Cl. D25—1 R



233,935

**EDUCATIONAL DEVICE FOR TEACHING
ARITHMETIC**
Philip J. Schroeder, Wellesley, Mass., assignor to
Xerox Corporation, Stamford, Conn.
Filed Jan. 26, 1973, Ser. No. 326,905
Term of patent 14 years
Int. Cl. D19—07

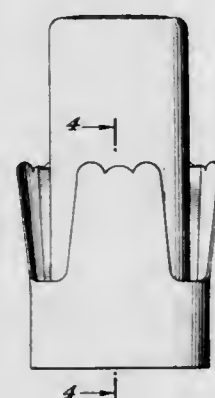
U.S. Cl. D25—1 R



233,933

**DISPENSING CONTAINER FOR DEODORANTS
OR THE LIKE**
David Mahler, 9023 Hopen Place,
Los Angeles, Calif. 90069
Filed June 5, 1972, Ser. No. 260,046
Term of patent 14 years
Int. Cl. D23—04

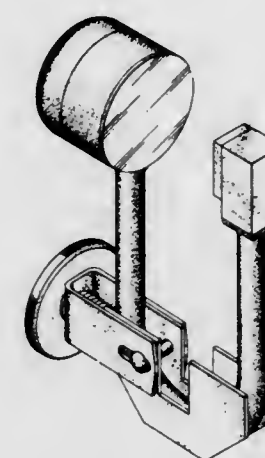
U.S. Cl. D23—150



233,936

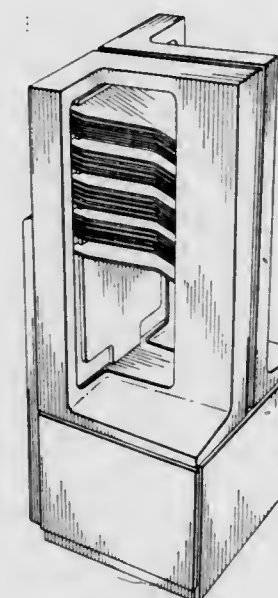
**ELECTRICAL SENSING DEVICE FOR COUNTING
PIECES OF PAPER PASSING THROUGH A
PRINTING PRESS**
Leon Jones, 11332 Pemberton Road,
Los Alamitos, Calif. 90720
Filed Apr. 19, 1972, Ser. No. 245,687
Term of patent 14 years
Int. Cl. D10—04

U.S. Cl. D26—1 Q

233,937
SORTER

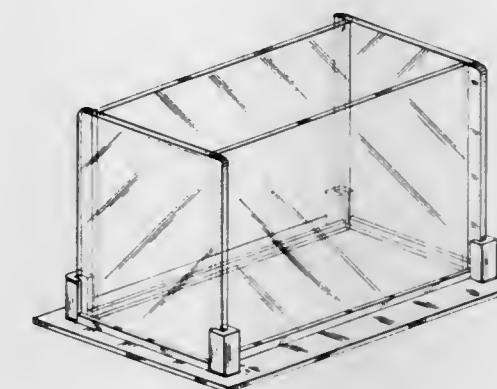
Claude H. Hutcheson, Fairport, N.Y., and John F. Zinni,
London, England, assignors to Xerox Corporation,
Stamford, Conn.
Filed Jan. 5, 1973, Ser. No. 321,492
Term of patent 14 years
Int. Cl. D18—99

U.S. Cl. D26—5 C

233,938
AQUARIUM

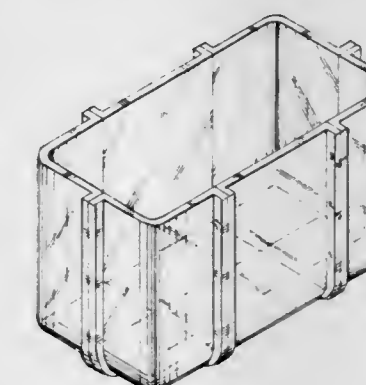
Samuel Shalom, 577 Grand St.,
New York, N.Y. 10002
Filed Nov. 6, 1972, Ser. No. 304,232
Term of patent 14 years
Int. Cl. D30—02

U.S. Cl. D30—6

233,939
AQUARIUM

Samuel Shalom, 577 Grand St.,
New York, N.Y. 10002
Filed Sept. 28, 1972, Ser. No. 293,049
Term of patent 14 years
Int. Cl. D30—02

U.S. Cl. D30—6



233,940

NOVELTY DOLL

Terrance R. Mitchell, 1484 W. Highway 96,
St. Paul, Minn. 55112
Filed Jan. 29, 1973, Ser. No. 327,837
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—4 R



233,941
TOY DOLL

Terrance R. Mitchell, St. Paul, Minn., assignor to Cortez Industries, Inc., Minneapolis, Minn.
Filed Jan. 31, 1973, Ser. No. 328,328
Term of patent 14 years
Int. Cl. D21—01

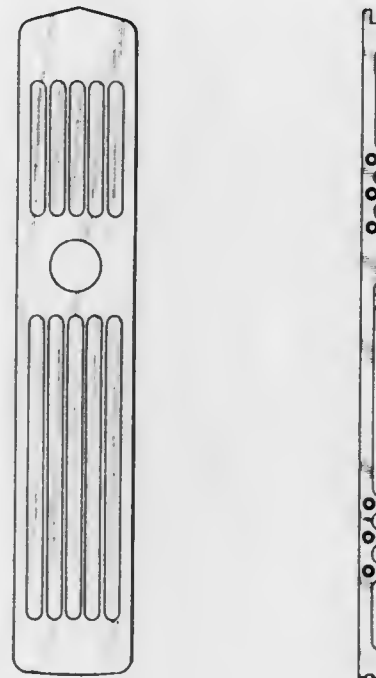
U.S. Cl. D34—4 R



233,943
RELEASE PLATE FOR A SAFETY SKI
BINDING

Ulrich Gertsch, Matten, and Hans Eichenberger, Stuckischaus, Switzerland, assignors to Gertsch A.G., Wengen, Switzerland
Filed May 17, 1973, Ser. No. 361,214
Claims priority, application Switzerland Jan. 12, 1973
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—14 D



233,942
COMBINED GOLF TEE INDICATOR, BALL
WASHER, WASTE RECEPTACLE AND SHOE
SCRAPER

Leslie Leonard Sapier, Vacluse, New South Wales, Australia, assignor to Maria Sapier, Vacluse, New South Wales, Australia
Filed Apr. 12, 1973, Ser. No. 350,478
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D34—5 CB



233,944
CIGARETTE LIGHTER

Pierre Tolseux, Bellegarde-sur-Valserine, France, assignor to Ronson Corporation, Woodbridge, N.J.
Filed July 10, 1972, Ser. No. 270,277
Term of patent 14 years
The term of this patent subsequent to Dec. 26, 1986, has been disclaimed
Int. Cl. D27—05

U.S. Cl. D48—27 R



233,945
JEWELRY FINDING

J. Neale Burns, 2422 22nd St.,
Newport Beach, Calif. 92660
Filed Oct. 10, 1972, Ser. No. 295,856
Term of patent 14 years
Int. Cl. D11—01

U.S. Cl. D45—19 S



233,947
COIN OPERATED PLASTIC LAMINATING
MACHINE OR SIMILAR ARTICLE

William T. Johnson and Sally M. Johnson, both of 1060 E. 46th St., Long Beach, Calif. 90807
Filed Feb. 9, 1973, Ser. No. 330,967
Term of patent 14 years
Int. Cl. D15—99

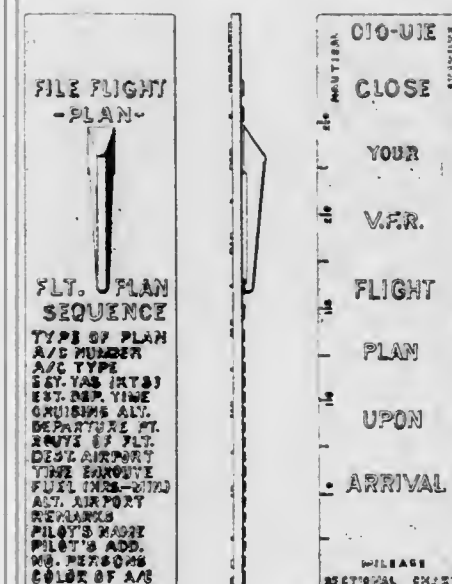
U.S. Cl. D55—1 F



233,946
COMBINED FLIGHT PLAN SEQUENCE
REMINDER AND MILEAGE SCALE

James L. Wallace, Weatherford, Tex.
(501 Coal Bank Road, Doylestown, Ohio 44230)
Filed Apr. 26, 1973, Ser. No. 354,863
Term of patent 14 years
Int. Cl. D10—04

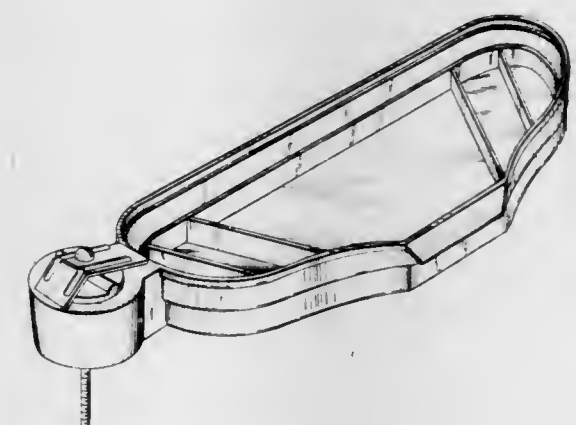
U.S. Cl. D52—6 A



233,948
PIVOTAL TRAY

Samuel M. Seltzer, 85 Athens Road,
Short Hills, N.J. 07078
Filed Oct. 24, 1972, Ser. No. 299,655
Term of patent 14 years
Int. Cl. D8—99, D15—99

U.S. Cl. D55—1 H



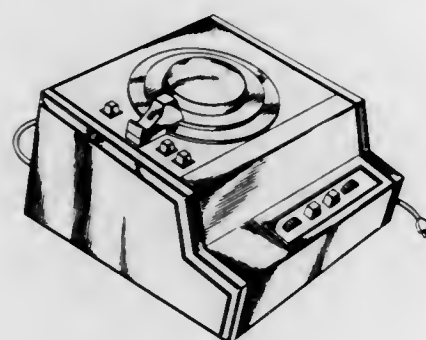
233,949
FOLDED PAPERBOARD OPTICAL VIEWER
 OR THE LIKE
 Charles R. Gretz, Springfield, Mo., assignor to
 CTV Products, Inc., Springfield, Mo.
 Filed Nov. 9, 1972, Ser. No. 305,160
 Term of patent 14 years
 Int. Cl. D16—06

U.S. Cl. D57—1 E



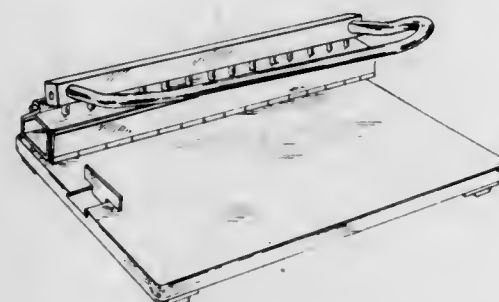
233,950
PRINTER
 Gary R. Bluem, Minneapolis, Minn., assignor to
 Kroy Industries, Inc., Stillwater, Minn.
 Filed Mar. 26, 1973, Ser. No. 345,080
 Term of patent 14 years
 Int. Cl. D18—02

U.S. Cl. D64—11 R



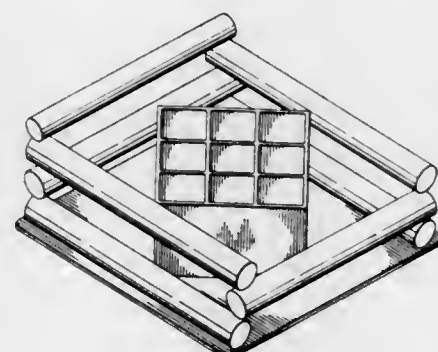
233,951
PAPER PUNCH
 Danilo P. Buan, Pleasanton, Calif., assignor to
 Velo-Bind, Inc., Sunnyvale, Calif.
 Filed Apr. 6, 1973, Ser. No. 348,728
 Term of patent 14 years
 Int. Cl. D19—02

U.S. Cl. D74—1 A



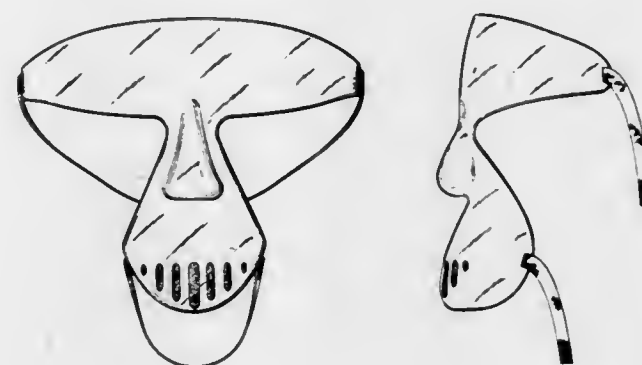
233,952
PENCIL HOLDER
 Weldon W. Shay, 2324 S. Ewing,
 Dallas Tex. 75216
 Filed June 1, 1973, Ser. No. 366,080
 Term of patent 14 years
 Int. Cl. D19—02

U.S. Cl. D74—5 A



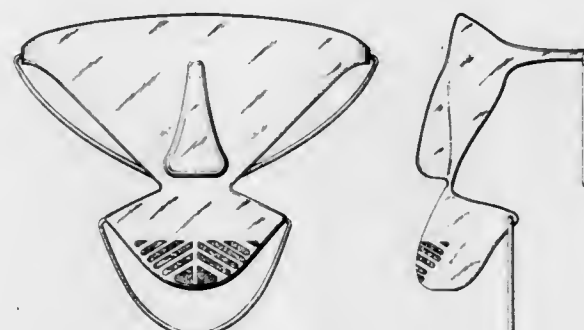
233,953
TRANSPARENT AIR FILTERING MASK
 Robert A. Stegmon, 2151 NE. 124th St.,
 Miami, Fla. 33156
 Filed Jan. 8, 1973, Ser. No. 321,640
 Term of patent 14 years
 Int. Cl. D29—02; D24—99

U.S. Cl. D83—1 K



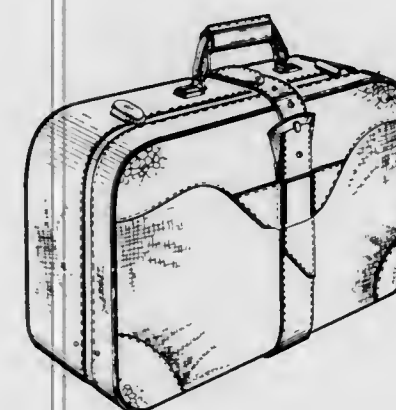
233,954
TRANSPARENT AIR FILTERING MASK
 Robert A. Stegmon, 2151 NE. 124th St.,
 Miami, Fla. 33156
 Filed Jan. 8, 1973, Ser. No. 321,638
 Term of patent 14 years
 Int. Cl. D29—02; D24—99

U.S. Cl. D83—1 K



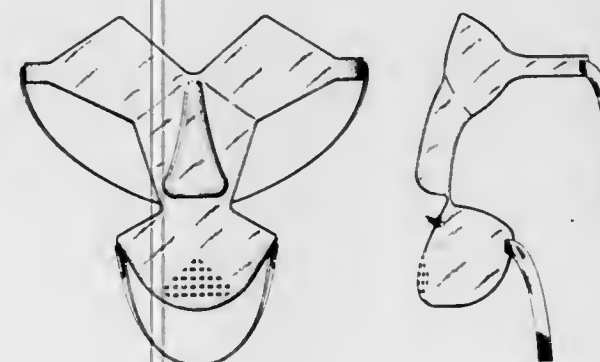
233,955
LUGGAGE CASE
 Walter Bialo, New York, N.Y.
 (32-33 47th Ave., Long Island City, N.Y. 11101)
 Filed June 27, 1972, Ser. No. 266,666
 Term of patent 14 years
 Int. Cl. D3—01

U.S. Cl. D87—5 F



233,956
TRANSPARENT AIR FILTERING MASK
 Robert A. Stegmon, 2151 NE. 124th St.,
 Miami, Fla. 33156
 Filed Jan. 8, 1973, Ser. No. 321,639
 Term of patent 14 years
 Int. Cl. D29—02; D24—99

U.S. Cl. D83—1 K



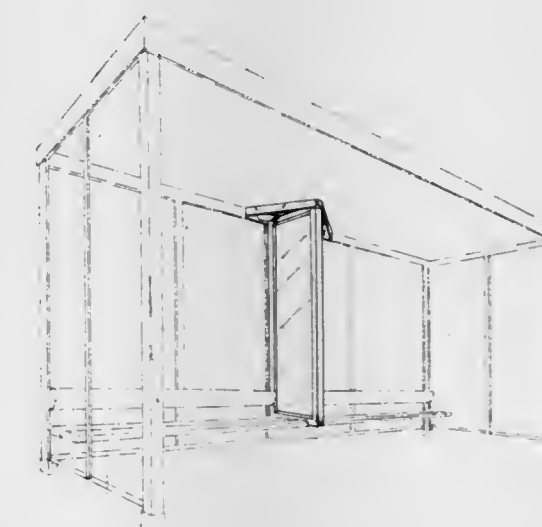
233,957
HAIR CLIPPER
 Charles R. Struck, 125 Arboleda Road,
 Santa Barbara, Calif. 93110
 Filed Feb. 5, 1973, Ser. No. 329,742
 Term of patent 14 years
 Int. Cl. D28—03

U.S. Cl. D95—3 A



233,958
COMBINED ILLUMINATED BUS SCHEDULE
HOLDER AND SEAT PARTITION
 Richard L. Sklaar, 13 Terrace Circle,
 Great Neck, N.Y. 11021
 Filed June 28, 1972, Ser. No. 267,133
 Term of patent 14 years
 Int. Cl. D20—03

U.S. Cl. D96—12 J



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-1 Sewing Center: *See—*
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- A/S Norema: *See—*
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- AB Gotaverken: *See—*
Jungle, Nils Ake Curt, 3,855,445.
- Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Process of preparing novel piperazinyethyl carbamates. 3,855,226, Cl. 260-268.00r
- Abbott Laboratories: *See—*
Crovetto, Aldo Joseph, 3,855,253.
Hallas, Robert; Tadanier, John Solomon; and Von Esch, Anne Mary, 3,855,203.
Prasad, Raj Nandan, 3,855,204.
Prasad, Raj Nandan; and Fischer, Francis Elmer, 3,855,205.
Prasad, Raj Nandan; and Stein, Herman Hal, 3,855,206.
Roderick, William Rodney, 3,855,214.
- Abe, Masahiro: *See—*
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- Aho, Hideo: *See—*
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- Abraham, Paul P. Game board and associated apparatus. 3,854,724, Cl. 273-125.00r.
- Abrahams, Louis; Hutchins, Burleigh M., Jr.; and Waters, James L., to Waters Associates, Inc. Novel pumping apparatus. 3,855,129, Cl. 210-198.00c.
- Abrahamson, Dean W.; and Lannert, James W., to All-Steel Inc. Backrest height adjustment device for office furniture chairs. 3,854,772, Cl. 297-353.000
- Achterwinter, Werner: *See—*
Stark, Karl; Achterwinter, Werner; and Brauer, Karl-Heinz, 3,854,247.
- Ackroyd, Harry Briggs, to Scot Meat Products Limited. Apparatus for use in preparing cooked meat. 3,854,391, Cl. 99-349.000.
- Acme Highway Products Corporation: *See—*
McLean, Ronald L.; and Bartula, Richard J., 3,854,159.
- Adachi, Toshio: *See—*
Shiotsu, Tetsuzo; and Adachi, Toshio, 3,855,160.
- Adam, Helmut; Ortlieb, Alfred; and Traub, Eberhard, to Bosch, Robert, G.m.b.H. Vapor-deposition apparatus. 3,854,442, Cl. 118-49.000.
- Adams, Guy, to Solitron Devices, Inc. Electronic ignition system. 3,854,465, Cl. 123-148.00c.
- Adams, James E.: *See—*
Haas, Werner E. L.; and Adams, James E., 3,854,751.
- Adams, Patrick J., to Artex Hobby Products, Inc. Fluid applicator pressure control device. 3,854,826, Cl. 401-188.000.
- Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent. Xanthene derivatives. 3,855,244, Cl. 260-335.000.
- Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Thioxanthene derivatives useful for treating peptic ulcers. 3,855,406, Cl. 424-35.000.
- Addressograph-Multigraph Corporation: *See—*
Brenneman, Richard S.; Lovering, David W.; and Barr, Frederick E., 3,854,975.
Weber, Charles F.; and Sherman, Carl W., 3,854,661.
- Aelion, Rene; and Ferezy, Edward, to Hydroplastics, Inc. Method for preparing hydrophilic polymer grafts including irradiation. 3,854,982, Cl. 117-68.000.
- Aerospace Corporation, The: *See—*
Rossi, Ronald C., 3,854,979.
- Agatsuma, Takashi: *See—*
Tomozawa, Akihiro; Nakata, Kensuke; Kikuchi, Akira; and Agatsuma, Takashi, 3,855,112.
- AGFA-Gevaert: *See—*
Vandeputte, Camille Angelina; Huybrechts, Roger Joseph; Galois, Daniel Jean; and Verbrugghe, Roland Gaston, 3,854,944.
- AGFA-Gevaert Aktiengesellschaft: *See—*
Himmelmann, Wolfgang; Von Konig, Anita; Moll, Franz; and Saleck, Wilhelm, 3,854,954.
Stievenart, Emile Frans; Deconinck, Hugo Frans; and Muller, Jürgen, 3,854,446.
- Agnew, Thomas I., to Gulton Industries, Inc. Multiple vehicle spark elimination system for explosive atmospheres. 3,855,501, Cl. 317-18.00c.
- Ahlstrom Development GmbH: *See—*
Dorfel, Walter; and Gorner, Bernd, 3,854,646.
- Airport Corporation: *See—*
Wilcox, Lance C., 3,854,557.
- Aisin Seiki Company, Ltd.: *See—*
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- Aisin Seiki Kabushiki Kaisha: *See—*
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Nakano, Ryuzo; and Yamazaki, Takeo, 3,854,829.
- Aiso, Hiroshi; Takemura, Takumi; and Takeuchi, Toshinobu, to Daikin Kogyo Kabushiki Kaisha. Process for manufacturing aluminum fluoride. 3,855,401, Cl. 423-489.000.
- Aitken, Thomas, to Nalco Chemical Company. Cationic starch and condensates for making the same. 3,854,970, Cl. 106-210.000.
- Akamatsu, Akiyuki, to Showa Denko K.K. and Toyo Kako Co., Ltd. Plastic article having a surface consisting of metal plated and colored non-plated portions. 3,854,890, Cl. 29-195.000.
- Akman, Alptekin, to Xerox Corporation. Transparency for multi-color electrostatic copying. 3,854,942, Cl. 96-1.200.
- Akopian, Gretel Artashesovna: *See—*
Kotova, Valentina Georgievna; Akopian, Gretel Artashesovna; Galitsky, Anatoly Ivanovich; Golin, Jury Petrovich; Snezhko, Valery Grigorievich; Kolesnichenko, Leonid Georgievich; Ivanenko, Larisa Akimovna; and Nekrasov, Jury Fedorovich, 3,855,446.
- Alberto-Culver Company: *See—*
Junkin, James H.; Ginn, Martin E.; and Fronczak, Ernest T., 3,855,170.
- Alberts, Heinrich; Bartl, Herbert; and Kuhn, Rainer, to Bayer Aktiengesellschaft. Graft polymers based on ethylene copolymers. 3,855,353, Cl. 260-878.00r.
- Albrecht, Dennis W., to Stetson-Ross Machine Company, Inc. Log feeding and turning machine. 3,854,614, Cl. 214-339.000.
- Albright & Wilson Limited: *See—*
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- Alco Standard Corporation: *See—*
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- Aleolac Inc.: *See—*
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- Aldred, Edward J., to Ransomes Sims & Jefferies Limited. Drive mechanisms. 3,854,271, Cl. 56-7.000.
- Alexander, Ernest H. Combined snow boring tool and ball striking club. 3,854,727, Cl. 273-162.00f.
- Alkan, R., & Cie: *See—*
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Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, 3,854,681.
- All-Steel Inc.: *See—*
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- Allard, John Joseph: *See—*
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- Allegheny Ludlum Industries, Inc.: *See—*
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- Allen, Connie A.: *See—*
Mottet, James W.; and Allen, Connie A., 3,855,458.
- Allen, John W., to Stanray Corporation. End doors for auto rack cars. 3,854,425, Cl. 105-368.00r.
- Allen-Bradley Company: *See—*
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Zwitter, Thomas M.; and Walters, Ronnie G., 3,855,514.
- Alleva, Leon L.; and D'Ascoli, Ralph G., to Anaconda Company, The. Cable armor clamp. 3,855,414, Cl. 174-79.000.
- Allied Chemical Corporation: *See—*
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Hoffman, Robert J.; and Follows, Alan G., 3,855,398.
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- Allied Thermal Corporation: *See—*
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- Allinger, Hubert B.; Gray, Glen G.; Indre, Robert S.; and Kelly, Robert J., to Eastman Kodak Company. Signal analyzer. 3,855,455, Cl. 235-92.0pc.
- Allington, William B., to Instrumentation Specialties Company. Electrophoresis apparatus. 3,855,111, Cl. 204-299.000.
- Allis-Chalmers Corporation: *See—*

- Garnett, Donald P., 3,854,699.
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 Allmanna Svenska Elektriska Aktiebolaget: See—
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 Allport, Maurice James, to Lucas Electrical Company Limited, The. Battery charging system for road vehicles. 3,855,517, Cl. 320-64.000.
 Alps Electric Co., Ltd.: See—
 Matsuoka, Yoshio; and Fujishima, Yukihisa, 3,854,181.
 Alpura Koreco A.G.: See—
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 Alson, Erwin A.: See—
 Brailowsky, Vladimir; and Alson, Erwin A., 3,855,374.
 Alt, Gerhard H., to Monsanto Company. 1-Naphthoic acid 2,2-dimethylhydrazide. 3,855,289, Cl. 260-558.00h.
 Altman, James S.: See—
 Fox, Robert C.; Altman, James S.; and King, Charles W., 3,855,415.
 Altman, Norman G.; and Dreyfus, Marc G., to BAI Corporation. Electro-optical scanning system for dimensional gauging of parts. 3,854,822, Cl. 356-156.000.
 Altshuler, John J.: See—
 Altshuler, Thomas L.; and Altshuler, John J., 3,854,324.
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 Aluminum Company of America: See—
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 Amano, Takehisa: See—
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 Amaroso, James R.: See—
 Newingham, Thomas D.; Amaroso, James R.; Coppock, Walter J.; and Williams, Edward S., 3,855,135.
 Amberg, Stephen W.; and Doherty, Thomas E., to Owens-Illinois, Inc. Nestable fabricated thermoplastic container and method of fabrication same. 3,854,583, Cl. 206-520.000.
 American Cyanamid Company: See—
 Cohen, Elliott; and Paul, Rolf, 3,855,283.
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 American Flange & Manufacturing Co., Inc.: See—
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 American Home Products Corporation: See—
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 Ames, Stuart L.: See—
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 Perkins, Joseph R., III, 3,854,586.
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 Day, John Charles; and Tack, Karl Edward, 3,854,599.
 Germain, Andrew Gerald; Dressel, William George; and Sandor, Louis, 3,854,899.
 Amundson, Donald Lloyd; Beuch, Wallace Eric; Green, Charles Donald; and Harris, William John, to International Business Machines Corporation. Machine for processing merchandising tickets in both roll and individual form. 3,855,457, Cl. 235-61.11d.
 Anaconda Company, The: See—
 Alleva, Leon L.; and D'Ascoli, Ralph G., 3,855,414.
 Analytab Products Inc.: See—
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 Anchor Hocking Corporation: See—
 McKinstry, Richard G., 3,854,918.
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 Anderson, Denver R. Fish stringer and carrier. 3,854,638, Cl. 224-7.00e.
 Anderson, Forrest Symington, to Anderson Mavor Limited. Mineral mining machine steering means. 3,854,775, Cl. 299-1.000.
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 Anderson, Forrest Symington, 3,854,775.
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 Anderson, Robert Du Wayne, to TCI, Inc. Cover for trailers. 3,854,771, Cl. 296-137.00b.
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 Anderson, Richard N., 3,854,245.
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 Anderton, John J.; Dudzic, Max S.; and Whren, Wilmer C., to United States Steel Corporation. Method of assembling a curved roll-rack. 3,854,188, Cl. 29-407.000.
 Andiel, Karl: See—
 Heichlinger, Norbert; and Andiel, Karl, 3,854,313.
 Andringa, Keimpe. Laser gyroscope. 3,854,819, Cl. 356-106.01r.
 Andro, Jean: See—
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 Anefall, Gunnar, to Allmanna Svenska Elektriska Aktiebolaget. Method of punching sheet segments having substantially annular sector shape. 3,854,355, Cl. 83-50.000.
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 Angquist, Torsten F., to Cooper Industries, Inc. Plier type toggle wrench. 3,854,354, Cl. 81-377.000.
 Angstadt, Howard P., to Sun Ventures, Inc. Separation of 2,6-dimethylnaphthalene by complexation. 3,855,334, Cl. 260-674.00n.
 Anschutz, Otto. Method and arrangement for jointing the ends of thermoplastic profiles by heat-welding. 3,855,038, Cl. 156-499.000.
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Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process and apparatus for recovering residual oil from solids dehydrated in an oil medium and grossly deoiled. 3,855,079, Cl. 203-47.000.
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Gulton Industries, Inc.: *See—*
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- Gurley, Derrel G.; and Copeland, Claude T., to Dow Chemical Company, The. Method for forming a consolidated gravel pack in a subterranean formation. 3,854,533, Cl. 166-276.000.
Guthrie, James L.; and Rendulic, Francis J., to Grace, W. R., & Company. Radiation curable polyene-polythiol coating compositions. 3,855,093, Cl. 204-159.150.
Gutner, Kenneth H. Corner bracket for furniture case. 3,854,268, Cl. 52-753.00d.
Gutner, Kenneth H. Corner connector for tubular members. 3,854,831, Cl. 403-292.000.
Gutshall, Charles E., to Elco Industries, Inc. Screw adapted for visible inspection of tightness. 3,854,372, Cl. 85-61.000.
Gyorgy, Paul. Oil of tempeh. 3,855,256, Cl. 260-442.800.
Gyurusi, Bela: *See—*
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Haag, Franz: *See—*
Locher, Otto; Haag, Franz; and Bongartz, Paul, 3,855,148.
Haag, John Henry, to Kent Plastics Corporation. Apparatus for forming plastic articles from sheet materials. 3,854,860, Cl. 425-502.000.
Haas, Werner E. L.; and Adams, James E., to Xerox Corporation. Method for rapidly switching a display by sequential application of orthogonal electric fields to a liquid crystal material having optical properties of the nematic mesophase. 3,854,751, Cl. 35-160.0lc.
Haddad, Ihsan A., to Instrumentation Laboratory, Inc. Electrochemical electrode structure. 3,855,100, Cl. 204-195.00f.
Haedicke, Gerald R.: *See—*
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Hagener, James L.: *See—*
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Hakata, Masayuki, to Casio Computer Co., Ltd. Apparatus for converting data into the same units. 3,855,459, Cl. 235-154.000.
Halasz, Andrew; Childs, John D.; and Fraser, George H., to Unican Security Systems, Ltd. Solid electrolyte coulometer. 3,855,506, Cl. 317-230.000.
Halcomb, Jack N.; d/b/a Audio Intelligence Devices: *See—*
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Hale, Thomas E., to General Electric Company. Coated cemented carbide products. 3,854,991, Cl. 117-169.00r.
Haley, James C., to Arizona Glass and Mirror Co., Inc. Panel door assembly. 3,854,165, Cl. 16-96.00r.
Hall, Arnold M., to Hovermarine Corporation. Air cushion vehicle. 3,854,547, Cl. 180-117.000.
Hallas, Robert; Tadanier, John Solomon; and Von Esch, Anne Mary, to Abbott Laboratories. 4"-O-Sulfonyl erythromycin-9-o-xime derivatives. 3,855,203, Cl. 260-210.000.
Halliburton Company: *See—*
Frost, Jack G.; Knox, John A.; and Martin, Larry D., 3,854,996.
Stephenson, Jack G.; and Mosier, John E., 3,854,596.
Hallock, Robert L., Jr. Adapter for fluid operated driving tool. 3,854,536, Cl. 173-15.000.
Hallowell, Fulton W.: *See—*
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Hamma, Gerhard, to Mayer & Cie. Maschinenfabrik. Multi-system circular knitting machine having a pattern device. 3,854,304, Cl. 66-50.00r.
Hammerquist, Peter A. Apparatus for removing particles from an airstream. 3,854,910, Cl. 55-287.000.
Hanagata, Takayoshi; and Yamada, Suminobu, to Canon Kabushiki Kaisha. Recording apparatus. 3,855,448, Cl. 219-216.000.
Hanaue, Shigeru, to Sony Corporation. Cushion. 3,854,650, Cl. 229-14.00c.
Hancock, John Philip, to British Aluminium Company Limited. The. Connecting means. 3,854,269, Cl. 52-754.000.
Hancox, Alex J.: *See—*
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Hannes, Karl, to Coats & Clark, Inc. Cast hinge. 3,854,166, Cl. 16-171.000.
Hannes, Karl, to Coats & Clark, Inc. Self-contained metal die casting dies. 3,854,521, Cl. 164-347.000.
Hanover Research Corporation: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 3,855,079.
Hansen, Hans Walter. Ski boot attachment frame. 3,854,743, Cl. 280-11.35k.
Hansen, Howard C., to Clark Equipment Company. Light reference system for aiding operator positioning of load handling devices and the like. 3,854,820, Cl. 356-138.000.
Hansen, Paul Bernard; and Pennings, Leon Benjamin, to Kimberly-Clark Corporation. Pattern bonded continuous filament web. 3,855,046, Cl. 161-150.000.

- Hanyu, Susumu, to Janome Sewing Machine Co., Ltd. Zipper foot for use with sewing machine. 3,854,433, Cl. 112-235.000.
- Harada, Yoshitugu: *See—*
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- Hardin, John M. Catfish bait. 3,854,234, Cl. 43-42.060.
- Harken, Russel D.: *See—*
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- Harms, William J.; and Loy, Fred W., to Gardner-Denver Company. Electrical connector and method for making an electrical circuit. 3,855,567, Cl. 339-61.00m.
- Harmuth, Joseph T., to Indian Head Inc., mesne. Bottle spraying apparatus. 3,854,439, Cl. 118-4.000.
- Harris, Douglas H.; and Correll, Harold M., to Monsanto Research Corporation. Microwave circulator. 3,854,993, Cl. 117-212.000.
- Harris, Edward B.; and Braun, David B., to Union Carbide Corporation. Wire and cable insulation comprising vinyl chloride polymer and lactone graft copolymer. 3,855,357, Cl. 260-897.00c.
- Harris, William John: *See—*
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- Harsdorf, Jobst V.; and Tschunt, Edgar, to Siemens Aktiengesellschaft. Ray diagnosis apparatus. 3,855,479, Cl. 250-369.000.
- Hart, Robert J., to Commercial Resins Company. Powder dispenser. 3,854,634, Cl. 222-193.000.
- Hartman, Donn Allan: *See—*
Cloud, Charles E.; and Hartman, Donn Allan, 3,854,270.
- Hartmann, Clinton S., to Texas Instruments, Incorporated. Selectable frequency bandpass filter. 3,855,556, Cl. 333-72.000.
- Hartmann, Erwin: *See—*
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- Hashimoto, Kaoru: *See—*
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- Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, to Alkan, R. & Cie. Device for steadying loads suspended from aircrafts. 3,854,680, Cl. 244-118.09r.
- Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, to Alkan, R. & Cie. Device for steadying loads suspended from aircrafts. 3,854,681, Cl. 244-118.00r.
- Hasselbeck, Richard J.: *See—*
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- Hatanaka, Yoshihiro; Shigemori, Hideto; and Kitagami, Hisashi, to Glory Kogyo Kabushiki Kaisha. Automatic money dispensing machine. 3,854,490, Cl. 133-4.00a.
- Hatanaka, Yoshihiro; Abe, Masahiro; Terada, Hiroshi; and Inoue, Shigejiro, to Glory Kogyo Kabushiki Kaisha. Sheet dispensing machine. 3,854,714, Cl. 271-12.000.
- Hatsutani, Miyako: *See—*
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- Hauer, Rudolf: *See—*
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- Hauerbach, Markvard: *See—*
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- Hauni-Werke Korber & Co. KG: *See—*
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- Hausberg, Gerhard; and Hegemann, Karl-Rudolf, to Gottfried Bischoff Bau Kompl. Gasreinigung- und Wasserruckkulanlagen Kommanditgesellschaft. Apparatus for discharging flue gases from blast furnaces and the like. 3,854,908, Cl. 55-210.000.
- Hause, Robert T.: *See—*
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- Hautier, Claude, to Mimeo S.A. Device for fixing a gear-changer on a frame of cycles. 3,854,753, Cl. 280-236.000.
- Hawrylo, Frank Zygmunt: *See—*
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- Hayes, Charles T.; Faust, Donald M.; and Weinert, Harry F., to Cascade Corporation. Vehicle with material loader. 3,854,606, Cl. 214-77.00r.
- Hays, Robert Guy: *See—*
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- Hayward, William Herbert, to Cutler Hammer Inc. Electrical contact attachment. 3,855,558, Cl. 335-132.000.
- HB2 Inc.: *See—*
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- Hearn, Daniel P.; and Perkins, Thomas K., to Atlantic Richfield Company. Method and apparatus for monitoring the sand concentration in a flowing well. 3,854,323, Cl. 73-61.00r.
- Heathcote, Bernard Vincent: *See—*
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- Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,855,406.
- Heck, Gunter: *See—*
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- Heck, Richard F., to Hercules Incorporated. Introduction of organic groups into ethylenically unsaturated aldehydes or ketones using a group VIII metal salt. 3,855,302, Cl. 260-590.000.
- Hedge, John A., to Sun Research and Development Co. Isomerization and/or transalkylation and/or disproportionation of alkyl-naphthalenes. 3,855,328, Cl. 260-668.00a.
- Hedrick, Warren R., to Allied Thermal Corporation. Air duffusers. 3,854,386, Cl. 98-40.00d.
- Hegemann, Karl-Rudolf: *See—*
Hausberg, Gerhard; and Hegemann, Karl-Rudolf, 3,854,908.
- Heichlinger, Norbert; and Andiel, Karl, to Hoechst Aktiengesellschaft. Process for the manufacture of slub yarns. 3,854,313, Cl. 28-72.120.
- Heimo Geratbau Gesellschaft mit beschränkter Haftung: *See—*
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- Heinze, Walter W.; and Schnitta, Edward, to Universal Oil Products Company. Reactor system for gravity-flowing catalyst particles. 3,854,887, Cl. 23-288.00g.
- Heinze, Otto. Means for forming circular roofs. 3,854,690, Cl. 249-19.000.
- Heitland, Herbert; and Manderscheid, Peter, to Volkswagenwerk Aktiengesellschaft. Arrangement for exhaust gas cleaning. 3,854,288, Cl. 60-300.000.
- Held, Robert Paul, to Du Pont de Nemours, E. I., and Company. Halation protection for multilayer imaging of photopolymers. 3,854,950, Cl. 96-82.000.
- Hellerich, Joseph. Dynamic balancing device for a computer disc memory. 3,854,347, Cl. 74-573.000.
- Helmschrott, Norbert; Kelch, Heinz; Schuh, Eduard; and Zimmermann, Hans, to Kienzle Apparate GmbH. Apparatus for recording operational conditions of a motor car. 3,855,599, Cl. 346-62.000.
- Hemphill, Dean P.: *See—*
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- Hendryx Engineers Incorporated: *See—*
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- Henegar, Hubert B., to Bendix Corporation. The Control system for multiple tape readers in an N/C system. 3,854,660, Cl. 235-61.11r.
- Henkel & Cie GmbH: *See—*
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- Germescheid, Hans Gunther, 3,855,284.
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- Hennessey, Russell J., to Hoerner Waldorf Corporation. Carrier for tumblers, goblets and the like. 3,854,580, Cl. 206-426.000.
- Henrick, Clive A., to Zeecon Corporation. Aliphatic di-olefinic halides. 3,855,322, Cl. 260-654.00r.
- Herbst, Richard; Meingast, Erwin; and Wuerl, Ernst, to Krauss Maffei Aktiengesellschaft. Injection molding machine with accessible ejector assembly. 3,854,856, Cl. 425-173.000.
- Hercules Incorporated: *See—*
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- Heck, Richard F., 3,855,302.
- Trimble, David C., 3,854,157.
- Herger, Zoltan L.; Kavanagh, Thomas S.; Olmsted, Dennis R.; and Campbell, Ronald R., to Storage Technology Corporation. Tape drive unit with offset backplate. 3,854,674, Cl. 242-182.000.
- Herkes, John W. Cleaning apparatus for machine harvested sugar cane. 3,854,585, Cl. 209-3.000.
- Hermann, Hans, to Triumph Werke Nuernberg A.G. Key switch. 3,855,439, Cl. 200-159.00r.
- Herrin, Carlos B., to Monarch Marking Systems, Inc. Scanning apparatus. 3,855,478, Cl. 250-566.000.
- Herrmann, Walter; Geisler, Heinrich; and Hofer, Friedrich-Wilhelm, to Bosch, Robert, G.m.b.H. Hydraulic control apparatus for endgates of trucks or the like. 3,854,289, Cl. 60-423.000.
- Hersberger, Doran D., to General Electric Company. Dynamoelectric machine having improved lint guard means. 3,855,489, Cl. 310-85.000.
- Herter's Inc.: *See—*
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- Herzl, Peter J., to Fischer & Porter Company. Signal recovery system for vortex type flowmeter. 3,854,334, Cl. 73-194.00b.
- Herzog, Alfred: *See—*
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- Herzog, Horst: *See—*
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- Heseltine, Donald W.: *See—*
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- Hess, Howard V.; Franz, William F.; and Cole, Edward L., to Texaco Inc. Formation reduction in pressure coking equipment. 3,855,069, Cl. 201-2.500.
- Hesse, Jack E.: *See—*
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- Hetherington, Matthew James; and Atkinson, Peter, to British Steel Corporation. Rotary ultrasonic testing apparatus. 3,854,326, Cl. 73-67.80s.
- Hewlett-Packard Company: *See—*
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- Heymann, Jorge Augusto: *See—*
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- Heywood, Jack; and Heywood, Roger, to Meiners Optical Devices Limited. Knitting machines and like fabric-producing machines. 3,854,306, Cl. 66-86.00a.
- Heywood, Roger: *See—*
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- Hickey, Roy E., to Singer Company. The. Slide tray positioning mechanism for a rear-screen projector. 3,854,807, Cl. 353-78.000.
- Hiderita, Masao: *See—*
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- Highberger, Grant H., to Republic Steel Corporation. Fluid-cooled panel for furnace hood. 3,854,708, Cl. 266-16.000.
- Hildebrand, Donald L.; Prescott, Ernest F.; and Kirk, Donald G., to Elgin Sweeper Company. Street sweeper with a hydrostatic transmission. 3,854,160, Cl. 15-84.000.
- Hill, Harvey J., to Roberts Consolidated Industries, Inc. Method of cutting flat sheets into strips. 3,854,512, Cl. 144-326.00r.
- Hill, Lester M., to Beloit Corporation. Paper formation utilizing a large diameter suction roll. 3,855,057, Cl. 162-301.000.
- Hill Rom Company, Inc.: *See—*
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- Hillemann, Robert E., 40% to Crane, Harold G. Apparatus for producing liquid coffee. 3,854,389, Cl. 99-295.000.
- Himi, Hitoshi, to Kabushiki Kaisha. Solid insulated breaker of a small size. 3,855,435, Cl. 200-144.00b.
- Himmelmann, Wolfgang; Von Konig, Anita; Moll, Franz; and Saleck, Wilhelm, to AGFA-Gevaert Aktiengesellschaft. Silver halide emulsion containing a stabilizing combination of an azidene and a N,N-dialkyl-dithiocarbamic acid ester. 3,854,954, Cl. 96-109.000.
- Hinata, Masanao: *See—*
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- Hinderer, Helmut E.: *See—*
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- Hinnen, Hermann; and Borgeaud, Gaston, to Schweizerische Lokomotiv- und Maschinenfabrik. Cross-coupling for the trucks of a railroad vehicle. 3,854,420, Cl. 105-176.000.
- Hirahara, Katsuji, to FMC Corporation. Flexible cable dry peeler. 3,854,395, Cl. 99-630.000.
- Hirsch, Jean; and Buret, Jean Pierre, to Laboratoires Cassenne. Glycoproteins extracted from microorganisms. 3,855,197, Cl. 260-112.00r.
- Hirwe, Asha: *See—*
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- Hisashige, Mituto: *See—*
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- Hitachi Cable Limited: *See—*
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- Hitachi Chemical Company, Ltd.: *See—*
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- Hitachi, Ltd.: *See—*
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- Nemoto, Tadashi; Watanabe, Kiyoshi; Kobayashi, Tadaaki; Ishihara, Joo; Ono, Kenji; and Sonomoto, Kazuhiko, 3,855,015.
- Takeda, Yasutsugu; and Oshida, Yoshitada, 3,854,791.
- Tomozawa, Akihiro; Nakata, Kensuke; Kikuchi, Akira; and Agatsuma, Takashi, 3,855,112.
- Yamada, Yahiko; Okano, Hiroshi; and Yamane, Mikiya, 3,855,499.
- Hitachi Metals, Ltd.: *See—*
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- Hobbs, Charles C.; and Bedford, John A., to Celanese Corporation. Production of hydroxy compounds by hydrogenolysis of buffered carboxylate salts. 3,855,319, Cl. 260-635.00d.
- Hobson, John Lester: *See—*
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- Hochtemperatur-Reaktorbau GmbH: *See—*
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- Hoechst Aktiengesellschaft: *See—*
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- Hoechst Aktiengesellschaft, mesne: *See—*
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- Hoeckelman, Ralph F., to United States Steel Corporation. Method for the uniform electroplating of sheet and strip. 3,855,083, Cl. 204-28.000.
- Hoekje, Howard H., to PPG Industries, Inc. Electroconductive, corrosion resistant high silicon alloy. 3,854,940, Cl. 75-134.00s.
- Hoerner Waldorf Corporation: *See—*
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- Hofer, Friedrich-Wilhelm: *See—*
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- Hofer, Gerhard, to Siemens Aktiengesellschaft. Method for measuring the chemical carbon and/or nitrogen activities in liquid metals. 3,855,082, Cl. 204-1.00t.
- Hoffman, Robert J.; and Follows, Alan G., to Allied Chemical Corporation. Method of producing sodium carbonate and bicarbonate spherules from brine. 3,855,397, Cl. 423-422.000.
- Hoffman, Robert J.; and Follows, Alan G., to Allied Chemical Corporation. Sodium carbonate and bicarbonate spherules from chlorine electrolytic cell liquors. 3,855,398, Cl. 423-422.000.
- Hoffmann, Albert: *See—*
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- Hoffmann, Dieter: *See—*
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- Hoffmann-La Roche Inc.: *See—*
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- Jernow, Jane Liu; and Rosen, Perry, 3,855,250.
- Wehrli, Pius Anton, 3,855,306.
- Hofmeister, Russell, to Herter's Inc. Force multiplying type archery bow. 3,854,467, Cl. 124-24.00r.
- Hoher, Herbert: *See—*
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- Hoisington, Perry M.; and Boldridge, Austin G., Jr., to HB2 Inc. Heat exchanger for power plants. 3,854,909, Cl. 55-241.000.
- Hoke, Neil A. Adjustable eyeglass temple. 3,854,801, Cl. 351-118.000.
- Holbrook, Legrand K., to Medical Development Corporation. Method of making fluid collection receptacles. 3,854,191, Cl. 29-453.000.
- Holcomb, Jack N.; and Sylten, Hans D., said Sylten assor, to said Holcomb, Jack N.; d/b/a Audio Intelligence Devices. Apparatus for providing power to portable radio transmitters. 3,855,534, Cl. 325-118.000.
- Holland, Gerald Fagan, to Pfizer Inc. Acylmethylthio-trifluoromethylbenzoic acids. 3,855,285, Cl. 260-516.000.
- Hollandse Signaalapparaten B.V.: *See—*
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- Hollnagel, Harold E. Snowmobile ski suspension assembly with horizontal shock absorber means. 3,854,541, Cl. 180-5.00r.
- Holmstrom, Godfrey A., Jr. Vehicle weighing means. 3,854,540, Cl. 177-136.000.
- Holtje, Malcolm C., to General Radio Company. Apparatus for high speed resistor trimming. 3,855,109, Cl. 204-228.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
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- Honda, Masanori, to Fujitsu Limited. Light modulation device. 3,854,795, Cl. 350-160.00r.
- Honda, Soichiro; and Satoh, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for preventing a drunken driver from operating a motorcar. 3,855,573, Cl. 340-53.000.
- Honeywell Inc.: *See—*
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- Honeywell Information Systems, Inc.: *See—*
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- Genuit, Luther L., 3,855,518.
- Honeywell Information Systems Italia: *See—*
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- Vettore, Bruno; Enrini, Ferruccio; and Percali, Tullio, 3,855,627.
- Hongu, Masayuki: *See—*
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- Honishi, Hideki: *See—*
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- Hooker Chemicals & Plastics Corporation, mesne: *See—*
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- Hoos, Gerald W. Camera flash bracket. 3,855,602, Cl. 354-293.000.
- Hoover Ball and Bearing Company: *See—*
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- Hoover, John R. E.: *See—*
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- Hopkinson, William Ian: *See—*
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- Hoppesch, Joseph P.: *See—*
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- Burroughs, James E.; Seibert, John W.; and Hoppesch, Joseph P., 3,854,320.
- Horacek, Dezideriu: *See—*
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- Horner, Patrick James, to Imperial Chemical Industries Limited. Production of di-4-chlorophenyl sulphone. 3,855,312, Cl. 260-607.00a.
- Hosaka, Hirokazu: *See—*
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- Hoshi, Ikuo: *See—*
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- Katayama, Hajime: See—
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- Katz, Sidney, to Mosstype Corporation. Demountable printing cylinders. 3,854,184, Cl. 29-123,000.
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- Kay, Solomon Elijah; and Pickard, John, to Triplex Safety Glass Company Limited. High temperature bending. 3,854,920, Cl. 65-106,000.
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- Keiser, Bernhard E. Delay line time compressor and expander. 3,855,425, Cl. 179-15,551.
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- Keller, Juergen H. H., to Itek Corporation. Bis(hydroxyalkyl)styryl dye compounds and photosensitive media containing such compounds. 3,855,210, Cl. 260-240,900.
- Keller, Leon B., to Hughes Aircraft Company. Mesh articles particularly for use as reflectors of electromagnetic waves. 3,855,598, Cl. 343-840,000.
- Kelly, James E.; Shooter, Kenneth L.; and Lawter, Ray L., to NCR Corporation. Drawer position sensing latch operated switch assembly. 3,855,432, Cl. 200-61,610.
- Kelly, John: See—
- Kelly, William; and Halpern, Alfred. 3,855,282.
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- Kentiro, Dan M., to Molybdenum Corporation of America. Process for the removal of lead from molybenite. 3,854,930, Cl. 75-1,000.

- Kercher, Dean S.; and Rod, Trygve R., to Xerox Corporation. Quick change labeling head. 3,854,361, Cl. 83-499,000.
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- Kerr, John T.: See—
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- Kinard, William C., to Rulton Corporation. Tennis racket rack. 3,854,588, Cl. 211-13,000.
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- King, Donald E., to Ayr-King Corporation. Range hood air cleaning device. 3,854,388, Cl. 98-115,00k.
- King, Lloyd H., Sr. Pipe pulling device. 3,854,768, Cl. 294-102,00r.
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- Kinoshita, Yoshitaka, to Sumitomo Shipbuilding & Machinery Co., Ltd. Installation for assembling ship hull subassemblies. 3,854,435, Cl. 114-65,00r.
- Kirk, Donald G.: See—
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- Kirk, Joseph Pennell, to International Business Machines Corporation. Optical cavity for a laser. 3,855,547, Cl. 331-94,50c.
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- Klinger, Karl-Heinz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Hydroxyphenyl hydroxyethylaminoalkyl theophyllines. 3,855,221, Cl. 260-256,000.
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- Knight, James T.; and Green Glen R., to Ore-Ida Foods, Inc. Apparatus for producing prepared hash brown potato product. 3,854,393, Cl. 99-443,00c.
- Knights, Richard Northan, to Imperial Metal Industries (Kynoch) Limited. Clamping and transfer device for elongate articles. 3,854,645, Cl. 226-162,000.
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- Koenig, Karl-Heinz: See—
- Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf. 3,854,927.
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- Kohls, Richard S. Article carrier for recreational vehicles. 3,854,641, Cl. 224-29,00r.
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- Ikegami, Yoshizo. 3,855,471.
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- Konrad, Charles Edward, to General Electric Company. Braking-mode detection circuit. 3,855,512, Cl. 317-366,000.
- Konstant, Anthony N., to Speedrack Inc. Cantilever rack. 3,854,686, Cl. 248-243,000.
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- Kornis, Gabriel; and Nidy, Eldon G., to Upjohn Company, The. Multi-step process for preparing 1-(substituted-hydrocarbyl)-3,4,5-tribromopyrazoles. 3,855,236, Cl. 260-310.00r.
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- Korpeinen, Vaino. Forging machine. 3,854,318, Cl. 72-465.000.
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- Kosaka, Tetsuji, to Mitsui Mining & Smelting Co., Ltd. Process for removing cluster adhering to cathode during electrolysis of manganese sulfate. 3,855,088, Cl. 204-96.000.
- Kosonocky, Stephan, to United States of America, Army. Projectile fuze with flexible baffle. 3,854,402, Cl. 102-73.00r.
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- Kratochvil, Miroslav. Light-weight aggregates. 3,854,972, Cl. 106-288.00b.
- Krause, Gerhard. Automatic exposure apparatus for cameras. 3,855,604, Cl. 354-60.000.
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- Krause, Robert, KG: See—
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- Krueger, Harvey R., to Reynolds Products, Inc. Hydromagnetic water control for automatic coffee brewer. 3,854,390, Cl. 99-307.000.
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- Kurz, Kieter; Bauer, Johann; Balwe, Thomas; Fendel, Kurt; and Sabel, Alex, to Wacker-Chemie GmbH. Process for suspension polymerization of vinyl chloride with low polymer deposition. 3,855,190, Cl. 260-87.100.
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- La Rose, Jasper Samuel. Sheet covering means for hair coloring, permanent waving, and hair conditioning. 3,854,148, Cl. 4-159.000.
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- Lagerberg, Johannes Paulus Lambertus: See—
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- Laing, Nikolaus. Device for preventing back-flow in centrifugal pumps operating in parallel. 3,854,848, Cl. 417-424.000.
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- Lamothe, Surguies M. Anchor bolt protective cap. 3,854,371, Cl. 85-1.00r.
- Lampert, Sydney: See—
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- Land, Edwin H., to Polaroid Corporation. Photographic apparatus for providing automatic cassette operation. 3,854,803, Cl. 352-72.000.
- Landahl, Carl D.: See—
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- Landig, Thomas W. Method of making an intricate free-form cast metal art object. 3,854,195, Cl. 29-527.500.
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- Lannert, Kent P.; and Harken, Russel D., to Monsanto Company. Dioxolane polycarboxylates. 3,855,248, Cl. 260-340.900.
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- Lapidot, Heine, to General Electric Company. Process and apparatus for the purification of an aqueous waste stream from a silicone-polymer producing plant. 3,855,124, Cl. 210-44.000.
- Larry, John Robert, to Du Pont de Nemours, E. I., and Company. Metallizations comprising nickel oxide. 3,854,957, Cl. 106-1.000.
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- Yamasaki, George K., to Westinghouse Electric Corporation. Hollow cathode discharge lamp for generating radiation characteristic of the gas fill within the envelope. 3,855,491, Cl. 313-193.000.
- Yamazaki, Shigezo; Wakao, Mitsuru; and Inami, Kenichi, to Japanese National Railways and. Automatic unloading device for rolling stock couplers. 3,854,598, Cl. 213-211.000.
- Yamazaki, Takeo: See—
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- Yanagi, Hiroki: See—
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- Yanai, Yuichi, to Nissin Boseki Kabushiki Kaisha. Method of imparting crease resistance to cellulose fibers by treating them with tetraoxymethylene. 3,854,869, Cl. 116-4.000.
- Yardley, John P.: See—
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- Yarwood, John C.: See—
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- Yokota, Hideo, to Canon Kabushiki Kaisha. Method for focusing telephoto type optical system. 3,854,797, Cl. 350-214.000.
- Yokota, Reizo, to Yodogawa Steel Works, Ltd. Vibration-preventive centrifugal casting apparatus. 3,854,520, Cl. 164-291.000.
- Yokoyama, Hiromi: See—
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- Yoo, Jin Sun: See—
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- Yoshida Kogyo Kabushiki Kaisha: See—
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- Young, David W. Shadow antenna. 3,855,591, Cl. 343-5.0ls.
- Young, Jas., & Cunningham (Newcastle) Limited: See—
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- Huang, Tracy J.; and Yurchak, Sergei, 3,855,343.
- Zaffaroni, Alejandro, to Alza Corporation. Drug-delivery system. 3,854,480, Cl. 128-260.000.
- Zahorsky, John Richard, to Crosby Valve & Gage Company. Safety valve. 3,854,494, Cl. 137-472.000.
- Zak, Henry; and Conner, Donald E., to Van Dyk & Company, Incorporated. Quaternary halides of gluconamides. 3,855,290, Cl. 260-561.00b.
- Zamojski, Aleksander: See—
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- Zawadzki, George Z.; and Godec, Maksimiljan, to Von Duprin, Inc. Electrical and mechanical dogging device. 3,854,763, Cl. 292-201.000.
- Zeigler, Jacob T.: See—
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- Zellweger, Ltd.: See—
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- Zenith Radio Corporation: See—
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- Zentner, Kurt J., Jr.: See—
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- Zimmermann, Friedrich; Seifert, Ernst; Von Freyhold, Helmut; and Saxen, Arnold; deceased (by Carsch, Elke, nee Saxen; executrix). Process for soil improvement. 3,854,241, Cl. 47-58.000.
- Zimmermann, Hans: See—
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- Zinpro Corporation: See—
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- Ziskin, Harold A.: See—
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- Zoecon Corporation: See—
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- Zondler, Helmut; and Pfeleiderer, Wolfgang, to Ciba-Geigy AG. Curable mixtures of epoxide resins and piperidine derivatives. 3,855,157, Cl. 260-2.00n.
- Zurn Industries, Inc.: See—
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- Zwahlen, Guenther, to Ciba-Geigy AG. Dyestuff preparations and printing inks. 3,854,969, Cl. 106-176.000.
- Zwitter, Thomas M.; and Walters, Ronnie G., to Allen-Bradley Company. Bidirectional VCO for a closed loop position measuring system. 3,855,514, Cl. 318-660.000.
- 432381: See—
McLaren, Theron D.; Sawdy, Jack T.; and 432381, 3,855,103.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Altman, Gerald. Low profile episcople projector and opaque materials therefor. Re. 28,274, 12-17-74, Cl. 353-44.
Borse, Anton G., to Borse Plastic Products Corp. Disposable urinal. Re. 28,278, 12-17-74, Cl. 4-110.
Borse Plastic Products Corp.: See—
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Wright, James C., and Nemeth. Re. 28,277.
Farr, Stewart M., to Microlife Technics, Inc. Milk fermenting product and method of making same. Re. 28,276, 12-17-74, Cl. 195-96.
Friendship, Kenneth F. M., to Continental Can Co., Inc. Container filling apparatus. Re. 28,275, 12-17-74, Cl. 141-6.
Microlife Technics, Inc.: See—
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Nemeth, Peter: See—
Wright, James C., and Nemeth. Re. 28,277.
Wright, James C., and P. Nemeth, to Cutler-Hammer, Inc. Method and apparatus for inserting a three-sided wrap. Re. 28,277, 12-17-74, Cl. 53-3.

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Ball, Geo. J., Inc.: See—
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Conard-Pyle Co., The: See—
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Jackson & Perkins Co.: See—
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Warriner, William A. 3,666.
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Melk, Ruth F. Gladiolus plant. 3,669, 12-17-74, Cl. 85.
Meserve, Kathleen K., to The Conard-Pyle Co. Ilex blue angel. 3,662, 12-17-74, Cl. 65.
Meyer, Carl, to Geo. J. Ball, Inc. Rose plant. 3,668, 12-17-74, Cl. 20.
Nobbio, Giacomo. Perpetual flowering carnation plant. 3,663, 12-17-74, Cl. 70.
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Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,665, 12-17-74, Cl. 19.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,666, 12-17-74, Cl. 12.

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Barecki, Chester, J. 233,921.
Ammermann, Harley. Combined bible rack and cross. 233,925, 12-17-74, Cl. D6-184.
Barecki, Chester J., to American Seating Co. Translt seat. 233,918, 12-17-74, Cl. D6-26.
Barecki, Chester J., to American Seating Co. Seat for a transit vehicle. 233,920, 12-17-74, Cl. D6-48.
Barecki, Chester J., to American Seating Co. Seat for a transit vehicle. 233,921, 12-17-74, Cl. D6-48.
Bialo, Walter. Luggage case. 233,955, 12-17-74, Cl. D87-5.
Bluem, Gary R., to Kroy Industries, Inc. Printer. 233,950, 12-17-74, Cl. D64-11.
Buan, Danilo P., to Velo-Blind, Inc. Paper punch. 233,951, 12-17-74, Cl. D74-1.
Burns, J. Neale. Jewelry finding. 233,945, 12-17-74, Cl. D45-195.
CTV Products, Inc.: See—
Gretz, Charles R. 233,949.
Cook, Albert E.: See—
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Furuyabu, Noriharu: See—
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Goble, Ralph W., and K. R. Hackett, to Sontrix, Inc. Ultrasonic intrusion alarm. 233,931, 12-17-74, Cl. D10-106.
Gretz, Charles R., to CTV Products, Inc. Folded paperboard optical viewer or the like. 233,949, 12-17-74, Cl. D51-1.
Grosfillex, Raymond, to Grosfillex S.a.r.l. Chair. 233,922, 12-17-74, Cl. D6-26.
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Johnson, Sally M.: See—
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Johnson, William T., and S. M. Coin operated plastic laminating machine or similar article. 233,947, 12-17-74, Cl. D55-1.
Jones, Leon. Electrical sensing device for counting pieces of paper passing through a printing press. 233,936, 12-17-74, Cl. D26-1.
Keller, Huey T. Armoire or similar article. 233,924, 12-17-74, Cl. D6-164.
Kroy Industries, Inc.: See—
Bluem, Gary R. 233,950.
Mahler, David. Dispensing container for deodorants or the like. 233,933, 12-17-74, Cl. D23-150.
Matsushita Electric Industrial Co., Ltd.: See—
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Mitchell, Terrance R. Novelty doll. 233,940, 12-17-74, Cl. D34-4.
Mitchell, Terrance R., to Cortez Industries, Inc. Toy doll. 233,941, 12-17-74, Cl. D34-4.
Naito, Masatoshi, F. Sawamura, K. Funatsu, and N. Furuyabu, to Matsushita Electric Industrial Co., Ltd. Toaster. 233,927, 12-17-74, Cl. D7-93.
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Sawamura, Fujio: See—
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Schroeder, Philip J., to Xerox Corp. Educational device for teaching arithmetic. 233,935, 12-17-74, Cl. D25-1.
Sebel, Harry. Furniture base. 233,926, 12-17-74, Cl. D6-194.
Seltzer, Samuel M. Pivotal tray. 233,948, 12-17-74, Cl. D55-1.
Seymour, Merritt W., to Owens-Corning Fiberglas Corp. Combination bathtub and shower stall. 233,932, 12-17-74, Cl. D23-49.
Shalom, Samuel. Aquarium. 233,938, 12-17-74, Cl. D30-6.
Shalom, Samuel. Aquarium. 233,939, 12-17-74, Cl. D30-6.
Shay, Weldon W. Pencil holder. 233,952, 12-17-74, Cl. D74-5.
Sklaar, Richard L. Combined illuminated bus schedule holder and seat partition. 233,958, 12-17-74, Cl. D96-12.
Sontrix, Inc.: See—
Goble, Ralph W., and Hackett. 233,931.
Stegmon, Robert A. Transparent air filtering mask. 233,953, 12-17-74, Cl. D83-1.
Stegmon, Robert A. Transparent air filtering mask. 233,954, 12-17-74, Cl. D83-1.
Stegmon, Robert A. Transparent air filtering mask. 233,956, 12-17-74, Cl. D83-1.
Struck, Charles R. Hair clipper. 233,957, 12-17-74, Cl. D95-3.
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Tower Housewares Ltd.: See—
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Velo-Blind, Inc.: See—
Buan, Danilo P. 233,951.
Wallace, James L. Combined flight plan sequence reminder and mileage scale. 233,946, 12-17-74, Cl. D52-6.
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Xerox Corp.: See—
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Yuen, Se-Kit, Combined mixer and dispenser for liquids. 233,929, 12-17-74, Cl. D7-157.
Zinni, John F.: See—
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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 17, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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84	3,854,160	30G	3,854,213	158	3,854,903	370	3,854,317	CLASS 90	109	3,854,968
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340	3,854,164	265	3,854,217	210	3,854,907	1R	3,854,321	414	288B	3,854,972
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184	3,854,167	9	3,854,220	479	3,854,911	61R	3,854,325	1C	7	3,854,429
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127	3,854,169	18A	3,854,223	334	3,854,273	91	3,854,329	1.5	121.11	3,854,430
202	3,854,170	19R	3,854,225	34R	3,854,274	143	3,854,330	4	235	3,854,432
	CLASS 21	31C	3,854,226	39.5	3,854,275	160	3,854,331	29D		3,854,433
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253A	3,854,882	84	3,854,231	CLASS 59	3,854,282	462	3,854,338	101	28R	3,854,438
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260	3,854,886	42.06	3,854,234	CLASS 60	3,854,283	5.7	3,854,341	CLASS 98	21	3,854,975
267C	3,854,176	42.29	3,854,233	39.17	3,854,284	10.5	3,854,342	40D	21	3,854,976
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205.1R	3,854,175	26	3,854,237	524		801	3,854,349	349	62.1	3,854,981
221R	3,854,173	93	3,854,238	CLASS 61				421H	68	3,854,982
	CLASS 28	126	3,854,239	2	3,854,291	CLASS 75	3,854,929	443C		3,854,983
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1.6	3,854,178	CLASS 47		45D	3,854,293	3	3,854,931	630	111D	3,854,985
2	3,854,179	1.4	3,854,240	51	3,854,294	60	3,854,932	CLASS 100	123A	3,854,987
72.12	3,854,313	35	3,854,242	63	3,854,295	66	3,854,933	4	126GS	3,854,986
	CLASS 29	58	3,854,241	69R	3,854,296	68R	3,854,934	41	126R	3,854,988
25.15	3,854,180	CLASS 48		72.3	3,854,297		3,854,935	CLASS 101	136	3,854,989
25.41	3,854,181	195	3,854,894	CLASS 49		82	3,854,936	38	139.5A	3,854,990
25.42	3,854,182	206	3,854,895	131	3,854,298	128N	3,854,937	70R	169R	3,854,991
33P	3,854,889	210	3,854,896		3,854,299	130B	3,854,938	73R	201	3,854,992
96	3,854,183	449	3,854,243	55.5	3,854,298	134S	3,854,939	CLASS 102	212	3,854,993
123	3,854,184	470	3,854,244	58	3,854,299	171	3,854,941	38	216	3,854,994
155R	3,854,185	495	3,854,245	88	3,854,300	CLASS 76	3,854,350	4	CLASS 118	
157.3D	3,854,186	504	3,854,246	101	3,854,301	107R	3,854,351	23FS	4	3,854,439
195	3,854,890			155	3,854,302	CLASS 81	3,854,352	44	7	3,854,440
				180	3,854,303	377	3,854,353	60	34	3,854,441
				282	3,854,304	414	3,854,354	94	49	3,854,442
				426	3,854,305	CLASS 82	3,854,355	112	50	3,854,443
				3	3,854,917	1C	3,854,356	124	62	3,854,444
						21A	3,854,357	130	223	3,854,445
									421	3,854,446
										3,854,447

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505	3,854,448	11.5R	3,855,012	15AL	3,855,422	67	3,855,086	76	3,855,444	40	CLASS 246	85.1	3,855,189	570.7	3,855,296	70	3,854,717	193	3,855,491	103R	3,854,787	73	3,855,619
637	3,854,449	12R	3,855,013	15AW	3,855,419	71	3,855,087	121EB	3,855,445	40	3,854,683	87.1	3,855,190	583N	3,855,298	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 119	28	3,855,014	15.55R	3,855,423	96	3,855,088	125PL	3,855,446			87.5A	3,855,191	584R	3,855,297	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
5	3,854,450	31.57	3,855,016	15.55T	3,855,424	105M	3,855,089	145	3,855,447		CLASS 248	92.3	3,855,192		3,855,299	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
15.5	3,854,451	34	3,855,015		3,855,425	106	3,855,090	216	3,855,448		68R	93.1	3,855,193		3,855,300	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
37	3,854,452	105	3,855,017	17A	3,855,426	128	3,855,091	287	3,855,449		214	93.7	3,855,194		3,855,301	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 122	112	3,855,018	18FA	3,855,427	129	3,855,092	367	3,855,450		243	94.7A	3,855,195		3,855,302	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
32	3,854,453		3,855,019	98	3,855,427	159.15	3,855,093	400	3,855,451		276	96.5C	3,855,196		3,855,303	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
33	3,854,454		3,855,020	100.3V	3,855,428	162R	3,855,094	486	3,855,452		316A	112R	3,855,197		3,855,304	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
340.6	3,855,246		3,855,021	115.5ES	3,855,429	180G	3,855,095	553	3,855,453		340		3,855,198		3,855,305	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
356	3,854,455	8	3,855,022	146R	3,855,430	181	3,855,096				CLASS 249	112.5	3,855,199		3,855,306	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 123			170NC	3,855,431	195F	3,855,099				19		3,855,200		3,855,307	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
8.45	3,854,456		3,855,023				3,855,100				91		3,855,201		3,855,308	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
8.47	3,854,457	158	3,855,024				3,855,101				194		3,855,202		3,855,309	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
32EA	3,854,458	233	3,855,025				3,855,102				210		3,855,203		3,855,310	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
44R	3,854,460	361R	3,855,026				3,855,103				210		3,855,204		3,855,311	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
117A	3,854,461	415	3,855,027				3,855,104				210		3,855,205		3,855,312	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
119R	3,854,462		3,855,028				3,855,105				210		3,855,206		3,855,313	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
133	3,854,463	11	3,855,029				3,855,106				210		3,855,207		3,855,314	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
140R	3,854,464	17	3,855,030				3,855,107				210		3,855,208		3,855,315	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
148E	3,854,465	69	3,855,031				3,855,108				210		3,855,209		3,855,316	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 124	92	3,855,032				3,855,109				210		3,855,210		3,855,317	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 125	130	3,855,033				3,855,110				210		3,855,211		3,855,318	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 126	190	3,855,034				3,855,111				210		3,855,212		3,855,319	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 127	220	3,855,035				3,855,112				210		3,855,213		3,855,320	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 128	297	3,855,036				3,855,113				210		3,855,214		3,855,321	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 129	306	3,855,037				3,855,114				210		3,855,215		3,855,322	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 130	310	3,855,038				3,855,115				210		3,855,216		3,855,323	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 131	422	3,855,039				3,855,116				210		3,855,217		3,855,324	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 132	497	3,855,040				3,855,117				210		3,855,218		3,855,325	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 133	499	3,855,041				3,855,118				210		3,855,219		3,855,326	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 134	521	3,855,042				3,855,119				210		3,855,220		3,855,327	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 135	582	3,855,043				3,855,120				210		3,855,221		3,855,328	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 136	323	3,855,044				3,855,121				210		3,855,222		3,855,329	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 137	1	3,855,045				3,855,122				210		3,855,223		3,855,330	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 138	5	3,855,046				3,855,123				210		3,855,224		3,855,331	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 139	89	3,855,047				3,855,124				210		3,855,225		3,855,332	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 140	146	3,855,048				3,855,125				210		3,855,226		3,855,333	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 141	150	3,855,049				3,855,126				210		3,855,227		3,855,334	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 142		3,855,050				3,855,127				210		3,855,228		3,855,335	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 143	159	3,855,051				3,855,128				210		3,855,229		3,855,336	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 144	160	3,855,052				3,855,129				210		3,855,230		3,855,337	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 145	165	3,855,053				3,855,130				210		3,855,231		3,855,338	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 146	166	3,855,054				3,855,131				210		3,855,232		3,855,339	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 147	167	3,855,055				3,855,132				210		3,855,233		3,855,340	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 148	168	3,855,056				3,855,133				210		3,855,234		3,855,341	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 149	169	3,855,057				3,855,134				210		3,855,235		3,855,342	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 150	170	3,855,058				3,855,135				210		3,855,236		3,855,343	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 151	171	3,855,059				3,855,136				210		3,855,237		3,855,344	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 152	172	3,855,060				3,855,137				210		3,855,238		3,855,345	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 153	173	3,855,061				3,855,138				210		3,855,239		3,855,346	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 154	174	3,855,062				3,855,139				210		3,855,240		3,855,347	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 155	175	3,855,063				3,855,140				210		3,855,241		3,855,348	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 156	176	3,855,064				3,855,141				210		3,855,242		3,855,349	570.7	3,855,296	193	3,855,491	103R	3,854,787	73	3,855,619
	CLASS 157	177	3,855,065				3,855,142				210		3,855,243		3,855,350	570.7	3,855,296	193	3,855,491	103R			

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P. — 12	3,666	P. — 20	3,668	P. — 65	3,662	P. — 70	3,663	P. — 85	3,661	P. —	3,669
P. — 19	3,665	P. — 21	3,664	P. — 68	3,667	P. — 81	3,660				

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D6—	26	233.918		184	233.925	D23—	49	233.932		233.939	D52—	6A	233.946	D83—	1K	233.953
		233.922		194	233.926		150	233.933		233.940	D55—	1F	233.947			233.954
	28	233.919	D7—	93	233.927	D25—	1R	233.934	D34—	4R	233.941		H	233.948		233.956
	48	233.920		95	233.928			233.935		5CB	233.942	D57—	E	233.949	D87—	5F
		233.921		157	233.929	D26—	Q	233.936		14D	233.943	D64—	11R	233.950	D95—	3A
	71	233.923		165	233.930		5C	233.937	D45—	19S	233.945	D74—	1A	233.951	D96—	12J
	164	233.924	D10—	106	233.931	D30—	6	233.938	D48—	27R	233.944		5	233.952		

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PATENTS

1 : 3,854,208	3,854,443	3,855,322	3,854,946	13 : 3,855,576	3,854,632
3,855,287	3,854,460	3,855,367	3,854,973	3,854,630	3,854,636
3,855,458	3,854,476	3,855,370	3,855,002	3,854,679	3,854,637
4 : 3,854,152	3,854,480	3,855,461	3,855,012	3,854,684	3,854,686
3,854,165	3,854,497	3,855,481	3,855,040	3,854,697	3,854,699
3,854,370	3,854,512	3,855,483	3,855,059	3,855,502	3,854,725
3,854,374	3,854,524	3,855,511	3,855,060	3,855,503	3,854,728
3,854,407	3,854,526	3,855,526	3,855,075	3,855,626	3,854,752
3,854,407	3,854,526	3,855,526	3,855,075	3,854,585	3,854,772
3,854,419	3,854,544	3,855,548	3,855,110	3,854,585	3,854,772
3,854,464	3,854,549	3,855,572	3,855,226	3,854,585	3,854,772
3,854,464	3,854,549	3,855,572	3,855,226	3,854,585	3,854,772
3,854,474	3,854,552	3,855,577	3,855,241	3,854,585	3,854,772
3,855,518	3,854,561	3,855,582	3,855,285	3,854,585	3,854,772
3,855,608	3,854,578	3,855,583	3,855,305	3,854,585	3,854,772
5 : 3,854,982	3,854,588	3,855,591	3,855,363	3,854,585	3,854,772
6 : 3,854,156	3,854,610	3,855,597	3,855,474	3,854,585	3,854,772
3,854,168	3,854,616	3,855,598	3,855,490	3,854,585	3,854,772
3,854,170	3,854,620	3,855,612	3,855,492	3,854,585	3,854,772
3,854,194	3,854,625	3,855,623	3,855,504	3,854,585	3,854,772
3,854,195	3,854,631	3,855,625	3,855,504	3,854,585	3,854,772
3,854,204	3,854,639	3,855,625	3,855,504	3,854,585	3,854,772
3,854,206	3,854,640	3,855,625	3,855,504	3,854,585	3,854,772
3,854,214	3,854,664	3,855,625	3,855,504	3,854,585	3,854,772
3,854,221	3,854,665	3,855,625	3,855,504	3,854,585	3,854,772
3,854,231	3,854,678	3,855,625	3,855,504	3,854,585	3,854,772
3,854,235	3,854,706	3,855,625	3,855,504	3,854,585	3,854,772
3,854,242	3,854,721	3,855,625	3,855,504	3,854,585	3,854,772
3,854,243	3,854,729	3,855,625	3,855,504	3,854,585	3,854,772
3,854,244	3,854,780	3,855,625	3,855,504	3,854,585	3,854,772
3,854,252	3,854,788	3,855,625	3,855,504	3,854,585	3,854,772
3,854,282	3,854,817	3,855,625	3,855,504	3,854,585	3,854,772
3,854,303	3,854,845	3,855,625	3,855,504	3,854,585	3,854,772
3,854,316	3,854,884	3,855,625	3,855,504	3,854,585	3,854,772
3,854,325	3,854,886	3,855,625	3,855,504	3,854,585	3,854,772
3,854,328	3,854,911	3,855,625	3,855,504	3,854,585	3,854,772
3,854,332	3,854,925	3,855,625	3,855,504	3,854,585	3,854,772
3,854,335	3,854,979	3,855,625	3,855,504	3,854,585	3,854,772
3,854,340	3,854,980	3,855,625	3,855,504	3,854,585	3,854,772
3,854,346	3,855,007	3,855,625	3,855,504	3,854,585	3,854,772
3,854,347	3,855,031	3,855,625	3,855,504	3,854,585	3,854,772
3,854,348	3,855,034	3,855,625	3,855,504	3,854,585	3,854,772
3,854,352	3,855,035	3,855,625	3,855,504	3,854,585	3,854,772
3,854,360	3,855,044	3,855,625	3,855,504	3,854,585	3,854,772
3,854,366	3,855,053	3,855,625	3,855,504	3,854,585	3,854,772
3,854,376	3,855,071	3,855,625	3,855,504	3,854,585	3,854,772
3,854,395	3,855,095	3,855,625	3,855,504	3,854,585	3,854,772
3,854,398	3,855,113	3,855,625	3,855,504	3,854,585	3,854,772
3,854,408	3,855,119	3,855,625	3,855,504	3,854,585	3,854,772
3,854,414	3,855,136	3,855,625	3,855,504	3,854,585	3,854,772
3,854,427	3,855,170	3,855,625	3,855,504	3,854,585	3,854,772
3,854,434	3,855,247	3,855,625	3,855,504	3,854,585	3,854,772
3,854,436	3,855,273	3,855,625	3,855,504	3,854,585	3,854,772

	3,855,488	3,854,806		3,855,570	3,854,514	3,854,756	3,855,020
	3,855,489	3,854,809	30 :	3,854,396	3,854,521	3,854,765	3,855,021
	3,855,496	3,854,812	31 :	3,854,483	3,854,536	3,854,774	3,855,024
	3,855,516	3,854,819		3,855,111	3,854,566	3,854,801	3,855,042
	3,855,525	3,854,830	32 :	3,854,369	3,854,575	3,854,826	3,855,052
	3,855,527	3,854,833	33 :	3,855,560	3,854,583	3,854,842	3,855,083
	3,855,555	3,854,862	34 :	3,854,147	3,854,589	3,854,844	3,855,123
	3,855,564	3,854,882		3,854,171	3,854,654	3,854,870	3,855,132
	3,855,585	3,854,907		3,854,209	3,854,700	3,854,918	3,855,135
	3,855,602	3,854,975		3,854,210	3,854,701	3,854,919	3,855,154
	3,855,619	3,854,990		3,854,238	3,854,705	3,854,940	3,855,191
	3,855,628	3,855,016		3,854,266	3,854,715	3,854,962	3,855,198
18 :	3,854,200	3,855,051		3,854,267	3,854,716	3,854,964	3,855,199
	3,854,233	3,855,090		3,854,301	3,854,737	3,854,965	3,855,213
	3,854,312	3,855,098		3,854,402	3,854,750	3,854,993	3,855,256
	3,854,389	3,855,099		3,854,431	3,854,751	3,854,998	3,855,323
	3,854,428	3,855,100		3,854,438	3,854,764	3,855,011	3,855,334
	3,854,478	3,855,109		3,854,491	3,854,773	3,855,092	3,855,377
	3,854,763	3,855,126		3,854,504	3,854,807	3,855,114	3,855,387
	3,854,860	3,855,129		3,854,647	3,854,814	3,855,131	3,855,391
	3,854,916	3,855,161		3,854,677	3,854,822	3,855,164	3,855,411
	3,854,923	3,855,173		3,854,704	3,854,836	3,855,167	3,855,464
	3,855,125	3,855,210		3,854,758	3,854,836	3,855,177	3,855,482
	3,855,218	3,855,229		3,854,789	3,854,881	3,855,192	3,855,497
	3,855,271	3,855,277		3,854,793	3,854,892	3,855,194	3,855,501
	3,855,303	3,855,299		3,854,855	3,854,902	3,855,257	3,855,536
	3,855,356	3,855,347		3,854,889	3,854,942	3,855,261	3,855,563
	3,855,451	3,855,495		3,854,893	3,854,943	3,855,262	3,855,581
	3,855,452	3,855,498		3,854,905	3,854,945	3,855,281	3,855,590
	3,855,509	3,855,508		3,854,950	3,854,949	3,855,301	3,855,621
	3,855,535	3,855,515		3,854,952	3,854,956	3,855,358	3,855,637
	3,855,550	3,855,542		3,854,971	3,854,957	3,855,366	3,855,647
	3,855,562	3,855,544		3,855,027	3,854,963	3,855,380	3,855,678
	3,855,565	3,855,568		3,855,049	3,854,984	3,855,412	3,855,715
19 :	3,854,151	3,855,571		3,855,074	3,854,989	3,855,420	3,855,766
	3,854,404	3,854,189		3,855,079	3,854,999	3,855,432	3,855,796
	3,854,559	3,854,299		3,855,081	3,855,069	3,855,467	3,855,849
	3,854,609	3,854,308		3,855,115	3,855,070	3,855,478	3,855,875
	3,854,621	3,854,353		3,855,134	3,855,084	3,855,514	3,855,917
	3,854,852	3,854,386		3,855,137	3,855,120	3,855,524	3,855,926
	3,855,574	3,854,392		3,855,138	3,855,124	3,855,528	3,855,937
20 :	3,854,394	3,854,410		3,855,142	3,855,144	3,855,545	3,855,942
	3,854,429	3,854,424		3,855,151	3,855,169	3,855,569	3,855,950
	3,854,568	3,854,470		3,855,152	3,855,178	3,855,596	3,855,967
	3,854,626	3,854,499		3,855,159	3,855,180	3,854,634	3,854,717
	3,854,651	3,854,542		3,855,165	3,855,181	3,854,685	3,854,754
	3,854,924	3,854,556		3,855,185	3,855,184	3,854,939	3,854,928
21 :	3,854,219	3,854,558		3,855,208	3,855,228	3,854,996	3,855,150
	3,854,245	3,854,576		3,855,216	3,855,232	3,855,155	3,855,209
	3,854,388	3,854,660		3,855,227	3,855,238	3,855,188	3,855,215
	3,854,579	3,854,723		3,855,233	3,855,239	3,855,189	3,855,463
	3,854,601	3,854,734		3,855,246	3,855,276	3,855,267	3,854,211
	3,854,987	3,854,766		3,855,250	3,855,291	3,855,269	3,854,226
	3,855,252	3,854,762		3,855,275	3,855,297	3,855,320	3,854,297
	3,855,440	3,854,820		3,855,283	3,855,335	3,855,327	3,854,323
22 :	3,854,371	3,854,877		3,855,290	3,855,350	3,855,329	3,854,450
	3,854,513	3,854,926		3,855,306	3,855,351	3,855,345	3,854,463
	3,854,533	3,854,941		3,855,310	3,855,357	3,855,346	3,854,474
	3,854,577	3,854,958		3,855,338	3,855,359	3,854,207	3,854,531
	3,854,866	3,854,961		3,855,342	3,855,360	3,854,217	3,854,532
	3,854,867	3,854,991		3,855,343	3,855,365	3,854,393	3,854,538
	3,854,868	3,855,022		3,855,373	3,855,397	3,854,426	3,854,613
	3,854,873	3,855,050		3,855,378	3,855,398	3,854,545	3,854,615
	3,855,054	3,855,106		3,855,383	3,855,400	3,854,606	3,854,656
	3,855,118	3,855,107		3,855,388	3,855,409	3,854,673	3,854,663
	3,855,187	3,855,163		3,855,423	3,855,410	3,854,759	3,854,694
	3,855,324	3,855,217		3,855,427	3,855,414	3,854,910	3,854,695
24 :	3,854,186	3,855,236		3,855,441	3,855,455	3,854,936	3,854,735
	3,854,223	3,855,270		3,855,444	3,855,477	3,854,925	3,854,784
	3,854,232	3,855,289		3,855,456	3,855,491	3,854,150	3,854,841
	3,854,401	3,855,374		3,855,494	3,855,493	3,854,163	3,854,846
	3,854,444	3,855,384		3,855,537	3,855,510	3,854,178	3,855,009
	3,854,535	3,855,389		3,855,540	3,855,588	3,854,188	3,855,101
	3,854,628	3,855,442		3,855,541	3,855,589	3,854,334	3,855,103
	3,854,720	3,855,532		3,855,549	3,855,609	3,854,342	3,855,121
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	3,854,821	3,854,161		3,855,605	3,854,485	3,854,459	3,855,193
	3,854,878	3,854,164		3,855,607	3,854,518	3,854,479	3,855,264
	3,854,885	3,854,216		3,855,611	3,854,519	3,854,489	3,855,279
	3,855,004	3,854,236		3,855,613	3,854,527	3,854,502	3,855,280
	3,855,061	3,854,467		3,855,622	3,854,563	3,854,509	3,855,319
	3,855,093	3,854,471	35 :	3,854,792	3,854,766	3,854,522	3,855,331
	3,855,176	3,854,580		3,855,003	3,855,265	3,854,529	3,855,337
	3,855,364	3,854,584	36 :	3,854,159	3,855,371	3,854,550	3,855,393
	3,855,416	3,854,712		3,854,166	3,855,443	3,854,554	3,855,465
	3,855,417	3,854,727		3,854,184	3,854,446	3,854,574	3,855,468
	3,855,418	3,854,768		3,854,187	3,854,148	3,854,597	3,855,538
	3,855,454	3,854,771		3,854,218	3,854,190	3,854,603	3,855,546
	3,855,547	3,854,804		3,854,222	3,854,229	3,854,623	3,855,556
25 :	Re.28.274	3,854,834		3,854,260	3,854,253	3,854,624	3,855,566
	3,854,250	3,854,903		3,854,279	3,854,254	3,854,666	3,855,575
	3,854,255	3,855,047		3,854,283	3,854,285	3,854,709	3,855,586
	3,854,263	3,855,369		3,854,307	3,854,298	3,854,731	3,855,587
	3,854,284	3,855,408		3,854,311	3,854,314	3,854,787	3,854,191
	3,854,322	3,855,457		3,854,321	3,854,336	3,854,837	3,854,239
	3,854,324	3,854,161	28 :	3,854,341	3,854,445	3,854,863	3,854,251
	3,854,383	3,854,153	29 :	3,854,354	3,854,472	3,854,865	3,854,743
	3,854,441	3,854,162		3,854,357	3,854,581	3,854,891	3,855,008
	3,854,454	3,854,501		3,854,368	3,854,617	3,854,896	3,855,026
	3,854,484	3,854,747		3,854,405	3,854,638	3,854,922	3,854,310
	3,854,494	3,854,947		3,854,449	3,854,661	3,854,932	3,854,586
	3,854,608	3,855,139		3,854,458	3,854,682	3,854,938	3,854,668
	3,854,711	3,855,158		3,854,465	3,854,707	3,854,968	3,854,688
	3,854,755	3,855,186		3,854,469	3,854,708	3,854,983	3,854,769
	3,854,770	3,855,307		3,854,472	3,854,718	3,855,018	3,854,815
	3,854,803	3,855,352		3,854,475	3,854,724	3,855,019	3,854,851

	3,855,089	3,854,286	3,854,641	3,855,091	3,854,537	3,854,915
	3,855,453	3,854,432	3,855,153		3,854,541	3,855,045
	3,855,512	3,854,539	3,855,386	55 :	3,854,551	3,855,046
	3,855,592	3,854,540	3,855,617		3,854,246	3,855,057
	3,855,595	3,854,592			3,854,337	3,855,072
53 :	3,854,215	3,854,614	54 :	3,854,192	3,854,413	3,855,235
		3,854,619		3,854,451	3,854,448	3,855,520

DESIGN PATENTS

6 :	233,933	8 :	233,919	25 :	233,935	233,940	34 :	233,948	37 :	233,958
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	233,945	12 :	233,953		233,920			233,950	39 :	233,932
	233,947		233,954		233,921	29 :		233,949	48 :	233,946
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	233,957									

PLANT PATENTS

6 :	3,664		3,666	36 :	3,661	3,662	39 :	3,668	55 :	3,669
6 :	3,665	17 :	3,667							

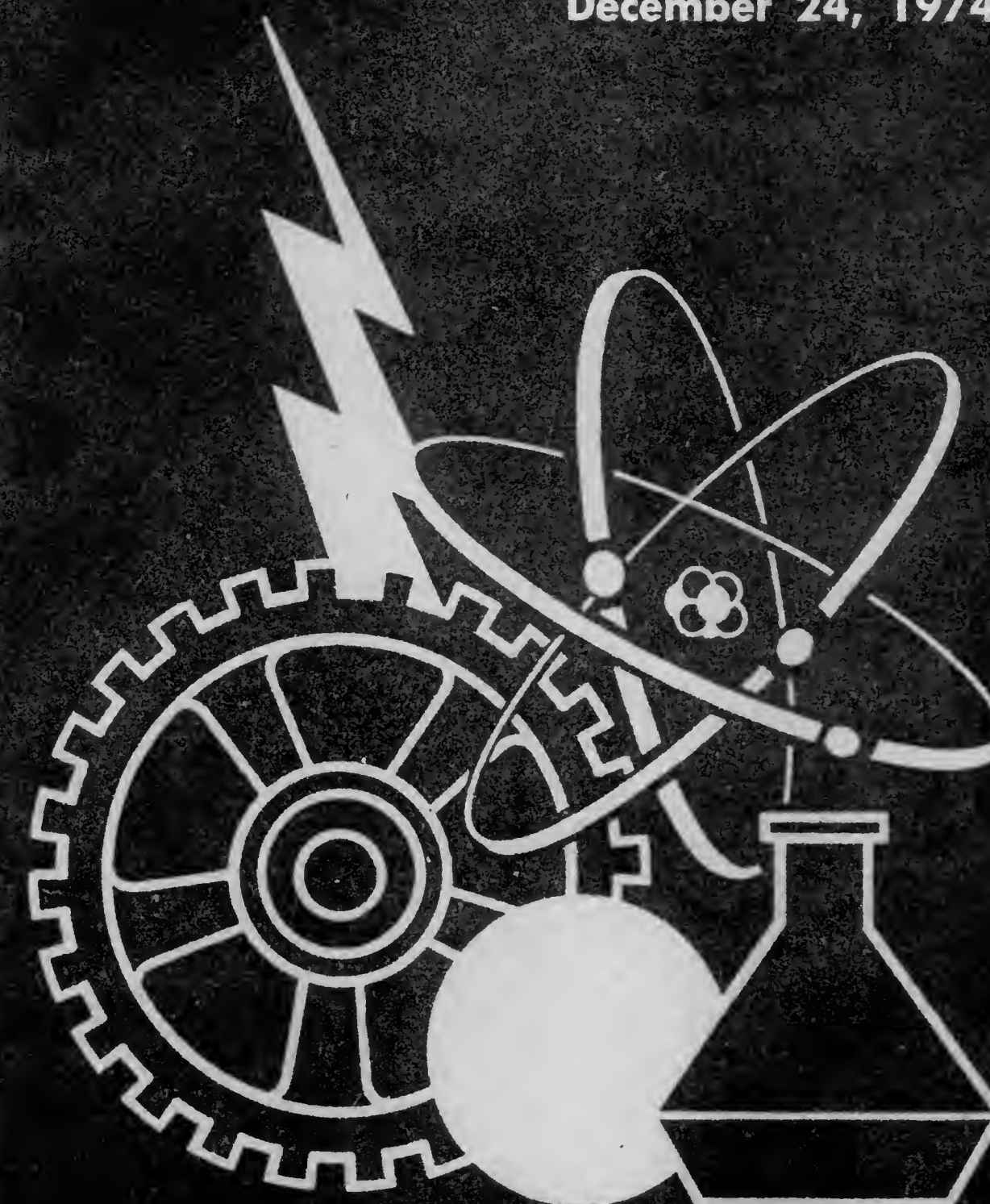
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PATENTS

December 24, 1974



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December 24, 1974

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PATENT OFFICE NOTICES

Publication of Applications Under Trial Voluntary Protest Program

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is \$6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Commissioner of Patents.

Dec. 2, 1974

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,658,472, E. M. Ransburg, ELECTROSTATIC COATING AND APPARATUS; 2,685,536, Ransburg and Starkey, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; 2,794,417, same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; 2,808,343, C. C. Simmons, METHOD AND APPARATUS FOR SPRAY COATING OF ARTICLES; 2,893,893, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; 2,893,894, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING; Re. 24,602, C. C. Simmons, ELECTROSTATIC METHOD AND APPARATUS FOR SPRAY COATING OF ARTICLES, filed Nov. 21, 1957, D.C. Md. (Baltimore), Doc. 10181-C, *Ransburg Electro-Coating Corp. v. Proctor Electric Co., Inc. and Ionic Electro-Static Corp.* Final judgment—plaintiff is owner of 2,685,536, 2,794,417, 2,893,893, 2,893,894, and Re. 24,602, claims 1-11 of the '536 patent, claims 3 and 4 of the '417 patent, claims 1-3, 5, 6, and 8-10 of the '893 patent, claims 1-8 of the '894 patent and claims 1, 6-10, 12, 13 and 15-21 of the '602 patent are valid and have been infringed by defendant. Defendant is hereby permanently enjoined from further acts of infringement. Plaintiff's claim is hereby dismissed with prejudice. All other claims in this action are hereby dismissed with prejudice, May 7, 1974.

2,685,536. (See 2,658,472.)

2,794,417. (See 2,658,472.)

2,808,343. (See 2,658,472.)

2,893,893. (See 2,658,472.)

2,893,894. (See 2,658,472.)

3,051,939, R. W. Gilbert, ANALOG-TO-DIGITAL CONVERTER; 3,316,547, S. K. Ammann, INTEGRATING ANALOG-TO-DIGITAL CONVERTER; 3,713,136, J. Nagy, Jr., same, filed May 23, 1974, D.C., N.D. Calif. (San Francisco), Doc. C-74-1099 CBR, *Weston Instruments Inc. v. Syston-Donner Corp.*

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3,293,663. (See 3,257,668.)

3,316,547. (See 3,051,939.)

3,319,872, Beckman and Beerbohm, MAILER, filed June 28, 1974, D.C.N.J. (Newark), Doc. 74-983, *Jonerger, Inc. v. 2B System Corporation.*

3,325,277, R. A. Huseby, METHOD OF MAKING METAL POWDER; 3,528,081, Huseby and Garner, METHOD OF MAKING STEEL POWDER; 3,668,024, M. Johnson, METHOD OF ANNEALING METAL POWDER; 3,687,654, R. A. Huseby, METHOD OF MAKING ALLOY STEEL POWDER, filed July 10, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1919, A. O. Smith-Inland Corporation v. Hoeganaes Corporation.

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3,399,501, W. E. Rossman, AUDITORIUM INSTALLATIONS, filed May 16, 1974, D.C. Nebr. (Omaha), Doc. CV 74-O-134, *The Macton Corporation v. The Board of Regents of the University of Nebraska.*

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3,687,654. (See 3,325,277.)

3,713,136. (See 3,051,939.)

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3,788,504. (See 3,731,825.)

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3,791,511. (See 3,731,825.)

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3,813,537, G. Lieberman, LAMPSHADE AND LAMP COMBINATION AND MEANS FOR JOINING ONE WITH THE OTHER, filed May 23, 1974, D.C.N.J. (Trenton), Doc. C-74-758, *Stylette Plastics, Inc. v. Softlite, Inc.* Same, filed June 25, 1974, D.C. Md. (Baltimore), Doc. N-74-657, *Softlite, Inc. v. Southeast Zayre, Inc.*

Re. 24,602. (See 2,658,472.)

Re. 27,111, R. E. Wilson, PITCH-BONDED REFRACTORY COMPOSITION, filed Feb. 15, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74-157, *Basic Incorporated v. H. K. Porter Company, Inc.* Order dismissing complaint and counterclaim without prejudice, July 16, 1974.

D. 206,286, J. J. Ostyn, FLUORESCENT LIGHTING FIXTURE OR SIMILAR ARTICLE, filed July 1, 1974, D.C.N.J. (Newark), Doc. 74-986, *American Lighting Corp. v. Bernard McDonald, individually and trading as National Illuminating Company.*

D. 220,174. (See 3,731,825.)

D. 227,352, Meng and Briessen, PACKAGE WITH STAGGERED PRODUCT SLICES, filed Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c47, *L. D. Schreiber Cheese Co., Inc. v. Kraftco Corporation.*

Certificates of Correction for the Week of Dec. 24, 1974

Des. 232,888	3,803,095	3,831,064	3,839,557
3,560,473	3,803,463	3,831,148	3,840,385
3,610,527	3,806,080	3,831,207	3,840,439
3,625,873	3,807,379	3,831,855	3,840,520
3,632,192	3,809,615	3,833,244	3,840,546
3,706,566	3,810,405	3,833,268	3,840,632
3,707,266	3,810,851	3,833,535	3,840,939
3,711,460	3,813,432	3,833,685	3,841,952
3,714,585	3,815,647	3,833,863	3,842,093
3,729,817	3,816,784	3,833,906	3,842,147
3,733,402	3,817,159	3,833,946	3,842,534
3,740,834	3,817,515	3,834,003	3,842,628
3,742,171	3,817,726	3,834,011	3,842,646
3,744,096	3,818,218	3,834,216	3,842,663
3,750,089	3,819,805	3,834,297	3,842,687
3,753,870	3,820,075	3,834,418	3,842,702
3,757,040	3,821,082	3,834,568	3,842,726
3,759,992	3,821,189	3,834,866	3,842,955
3,771,132	3,821,318	3,834,871	3,842,978
3,771,864	3,821,426	3,834,935	3,843,225
3,773,095	3,823,256	3,835,205	3,843,325
3,773,765	3,823,321	3,836,213	3,843,361
3,775,652	3,823,332	3,836,590	3,843,394
3,775,671	3,824,370	3,836,690	3,843,497
3,776,811	3,824,435	3,836,696	3,843,530
3,778,691	3,825,118	3,836,793	3,843,678
3,779,937	3,825,595	3,836,797	3,843,862
3,780,488	3,825,600	3,836,833	3,843,900
3,784,516	3,826,318	3,837,118	3,843,917
3,784,864	3,827,046	3,837,289	3,844,116
3,786,998	3,827,228	3,837,576	3,844,611
3,788,891	3,827,674	3,837,577	3,844,678
3,792,382	3,828,021	3,837,769	3,844,723
3,793,166	3,828,748	3,837,960	3,844,918
3,797,225	3,828,845	3,837,963	3,845,205
3,798,046	3,828,919	3,837,995	3,845,281
3,799,655	3,829,565	3,838,400	3,845,549
3,799,904	3,830,697	3,839,110	3,845,970
3,801,532	3,830,858	3,839,123	

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decision have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,225,017, I. P. Seegman, L. Morris and P. A. Mallard, MODIFIED POLYSULFIDE COMPOSITION, Interference No. 95,894, decided July 17, 1974, claims 1, 2 and 3.

Patent No. 3,547,774, R. W. J. Rebhahn and D. W. Banister, PROCESS FOR FORMING A SOLUBILIZED STILBENE DYE AND A PROCESS FOR FORMING COLORED PAPER THEREWITH, Interference No. 98,132, decided Aug. 15, 1974, claims 1, 2 and 3.

Patent No. 3,554,984, N. J. George, POLYAMIDE-IMIDE RESINS, Interference No. 98,578, decided Aug. 6, 1974, claims 1 and 6.

Patent No. 3,562,810, B. T. Davis, PROTECTIVE MATERIAL AND GARMENTS FORMED THEREFROM, Interference No. 98,239, decided Aug. 26, 1974, claims 1, 2, 6 and 9.

Patent No. 3,600,705, W. Tantraporn, S. P. Yu and P. J. Shaver, HIGHLY EFFICIENT SUBCRITICALLY DOPED ELECTRON-TRANSFER EFFECT DEVICES, Interference No. 98,033, decided June 11, 1974, claims 1, 2, 6, 12 and 15.

Patent No. 3,610,635, M. Schiff and J. Rosen, CARD ADAPTER ATTACHMENT FOR CASSETTE TAPE RECORDER, Interference No. 98,010, decided July 18, 1974, claims 1-4, 8, 10, 12, 13, 20, 21, 23 and 30.

Patent No. 3,614,442, R. S. Brodsky, POCKET ALARM DOSIMETER, Interference No. 98,156, decided July 25, 1974, claims 1-6.

Patent No. 3,670,507, G. E. Mott and J. J. Zieber, MARINE DRILLING STRUCTURE WITH CURVED DRILL CONDUCTOR, Interference No. 98,366, decided Aug. 22, 1974, claims 1 and 2.

Patent No. 3,700,011, G. Walter, TERMINAL STRAIGHTENING METHOD AND MACHINE, Interference No. 98,288, decided Aug. 23, 1974, claims 1, 2 and 3.

Patent No. 3,765,414, M. Arlen, DRUG RELEASE SYSTEM, Interference No. 98,706, decided Aug. 28, 1974, claims 1-6, 10-14, 17, 20-25 and 30-34.

Dedications

2,901,409.—Herbert K. De Long, Midland, Mich. ANODIZING MAGNESIUM. Patent dated Aug. 25, 1959. Dedication filed Aug. 9, 1974, by the assignee, *The Dow Chemical Company*.

Hereby dedicates to the Public the remaining term of said patent.

3,035,918.—Harold A. Sorgenti, Herman Nack, Columbus, and George F. Sachscl, Worthington, Ohio. PROCESS FOR TREATING FOOD. Patent dated May 22, 1962. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,140,183.—Herman Nack, Columbus, Ohio. FLUIDIZED BED COOKING PROCESS. Patent dated July 7, 1964. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,181,945.—Arthur R. Elsea, Columbus, Ohio. HIGH STRENGTH STEEL. Patent dated May 4, 1965. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimers

3,668,580.—Robert Lloyd Barbin, Lancaster, Pa. TOROIDAL DEFLECTION YOKE HAVING ASYMMETRICAL WINDINGS. Patent dated June 6, 1972. Disclaimer filed Oct. 16, 1972, by the assignee, *RCA Corporation*.

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,669,983.—Leo Ralph Swett and James Daniel Ratojczyk, Waukegan, Ill. PYRAZOLOTHIAZEPINES AND ISOXAZOLOTHIAZEPINES. Patent dated June 13, 1972. Disclaimer filed May 2, 1974, by the assignee, *Abbott Laboratories*.

Hereby enters this disclaimer to claims 1-11 inclusive of said patent.

3,679,942.—Francis Patrick Daly, Warwick, R.I. METAL-OXIDE-METAL, THIN-FILM CAPACITORS AND METHOD OF MAKING SAME. Patent dated July 25, 1972. Disclaimer filed Oct. 30, 1972, by the assignee, *RCA Corporation*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,763,250.—Charanjit Rai, Somerset, Alphonso W. Marcellis, Lake Interval, N.J., and Donald E. Pearson, Nashville, Tenn. HALOGENATION PROCESS. Patent dated Oct. 2, 1973. Disclaimer filed Aug. 8, 1974, by the assignee, *Cities Service Oil Company*.

Hereby enters this disclaimer to all claims of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 23, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	11-29-73
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director.....	10-18-73
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	12-26-73
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director.....	2-11-74
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.....	1-3-74
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director.....	4-26-74
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	4-19-73
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	12-3-73
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director.....	3-11-74
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director.....	12-20-73
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	6-4-73
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director.....	12-14-73
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	2-11-74
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.....	12-14-73
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	3-15-74
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	3-22-74
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during November 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 24, 1974

ERRATA

For
CLASS

187-029.....

See
PATENT NO.

28,282

REISSUES

DECEMBER 24, 1974

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,279

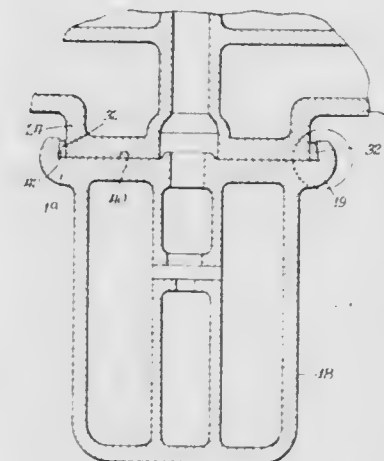
CENTER PLATE WEAR LINER RING

Hugh G. Robertson, Alliance, Ohio, by AMSTED Industries Inc., Chicago, Ill., assignee

Original No. 3,599,574, dated Aug. 17, 1971, Ser. No. 811,984, Apr. 1, 1969. Application for reissue May 29, 1973, Ser. No. 364,490

Int. Cl. B61f 5/14, 5/16; F16c 17/04
U.S. Cl. 105—199 C

2 Claims



1. In a railway vehicle including a car body supported upon a car truck by means of mating center plates on respective bolsters thereof, the center plate of said truck including a circular recess therein having an interior annular wall, and the center plate on the bolster of said body being circular and carried within said recess, the improvement comprising a circular wear ring disposed within said recess and surrounding said body center plate to prevent wear on said interior annular wall, said interior wall being inclined outward from top to bottom, said ring having a gap therein and having an outer surface tapered outward from top to bottom complementary with said interior wall, said ring being expanded at said gap to abut said interior annular wall about its circumference and being welded in expanded position to said annular wall in said gap.

28,280

HANDLE LATCH AND LABEL HOLDER

Vytant P. Aleks, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Rockford, Ill.

Original No. 3,549,228, dated Dec. 22, 1970, Ser. No. 748,083, July 26, 1968. Application for reissue Dec. 7, 1972, Ser. No. 313,092

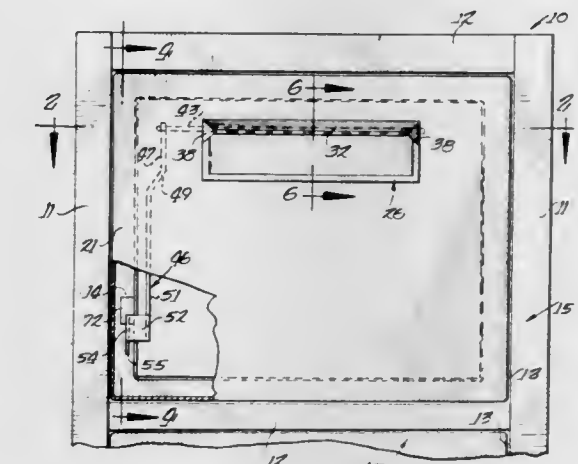
Int. Cl. A47b 88/00

U.S. Cl. 312—320

4 Claims

4. A handle and label holder for a file cabinet drawer having a drawer front including a front panel having an opening therein and a back panel having an opening therein, said front and back panels defining a hollow space therebetween, comprising a hollow handle including an open front defined by a top wall, a bottom wall and integral opposite end walls forming an enclosure received in the opening in the front panel and extending rear-

wardly to the back panel, and an upwardly extending front lip formed at the front edge of the bottom wall, and a label holder including a base conformably received on said handle bottom wall and abutting the upwardly extending lip, and a pair of generally parallel upwardly



and rearwardly inclined spaced walls integral with and intersecting the front edge of the base and adapted to receive a label therebetween, said label holder being formed of a generally transparent material, such as a transparent plastic.

28,281

METHOD OF COATING THE INTERIOR OF A SAUSAGE CASING

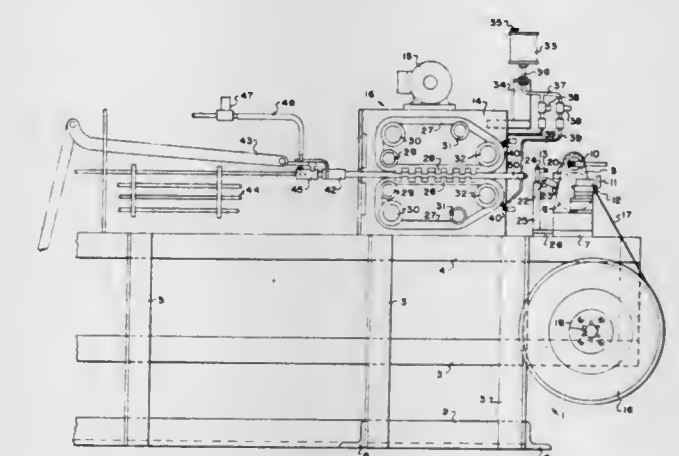
Douglas J. Bridgeford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Original No. 3,451,827, dated June 24, 1969, Ser. No. 509,117, Nov. 22, 1965. Application for reissue June 21, 1971, Ser. No. 155,368

Int. Cl. A22c 13/00

U.S. Cl. 117—96

10 Claims



1. A method of coating the interior of a sausage casing of indefinite length which comprises shirring the casing on a mandrel having a longitudinal passage while introducing a coating composition comprising a solution, emulsion, or dispersion of an adherent coating material

PLANT PATENTS

GRANTED DECEMBER 24, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,670

ROSE PLANT

Arnold W. Ellis, Upland, and Herbert C. Swim, Ontario, Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Sept. 13, 1973, Ser. No. 396,838
Int. Cl. A01h 5/00

U.S. Cl. Plt.—11

1 Claim

1. A rose plant of the hybrid tea rose class, substantially as herein illustrated and described, being of bushy, upright-spreading habit with abundant large dark green leaves, said plant being particularly notable in its large ovoid buds, usually singly supported on strong long purplish stems; in the large size, about five inches across, of the blooms, and by the pastel apricot color of the 40 or 50 petals and 5 to 10 petaloids; the blooms further being notable for their strong spicy or fruity fragrance, and their vase life as cut flowers, being from four to six days.

3,671

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 12, 1973, Ser. No. 415,211
Int. Cl. A01h 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Garland by its yellow flower color.

3,672

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 12, 1973, Ser. No. 415,250
Int. Cl. A01h 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar of chrysanthemum characterized by its anemone form, yellow flower color, and by its reliable and uniform 9 week response for tall treatment pot mum culture on a year around basis.

3,673

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 27, 1973, Ser. No. 419,271
Int. Cl. A01h 5/00

U.S. Cl. Plt.—78

1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Yellow Show-Off by its lack of non-breaking tendencies from a pinch at marginally high temperatures (above 70° F.); approximately 1/2" larger flower size; improved color retention and less reflexing of form resulting in 4-6 days longer bench life and durability under average home conditions; a darker yellow flower color; reduced tendency to show open centers in early spring and late fall flowerings; 2"-3" less vigor, and by its three to five days earlier response.

PATENTS

GRANTED DECEMBER 24, 1974

ERRATA

For CLASS	See PATENT NO.
260-296.....	3,855,675
034-009.....	3,855,719
053-306.....	3,855,749
062-217.....	3,855,836
212-008.....	3,855,954
261-018.....	3,856,901
424-258.....	3,856,909
424-275.....	3,856,910
424-331.....	3,856,911
264-041.....	3,856,914
424-078.....	3,856,919
260-307.....	3,856,923
179-090.....	3,856,982
174-151.....	3,856,983
313-371.....	3,857,037

PATENTS

GRANTED DECEMBER 24, 1974

GENERAL AND MECHANICAL

3,855,631

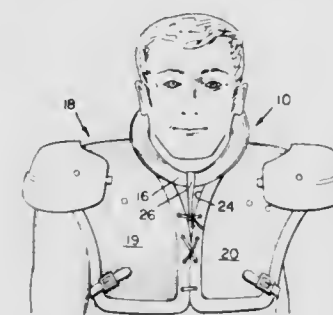
PROTECTIVE NECK COLLAR

Donald N. Ettinger, Saint Louis, Mo., assignor to Hit-Away, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 397,731, Sept. 17, 1973, abandoned. This application Jan. 23, 1974, Ser. No. 435,840
Int. Cl. A41d 13/00

U.S. Cl. 2-2

8 Claims



1. A protective neck collar for use in conjunction with protective athletic shoulder gear which has a head opening formed therethrough, comprising an inflatable annular tube of a pliable material adapted to extend circumferentially about a player's neck between the protective shoulder gear and the player's head, and means for connecting said tube to the protective shoulder gear to prevent displacement of said tube about the player's neck, the size and shape of said tube being such that said tube generally conforms to the front to rear contour of the head opening in the protective shoulder gear and substantially fills the gap between the player's protective shoulder gear and head, said tube forming an air cushion which when inflated encircles the player's neck and compresses slightly with little effort to accommodate normal head and neck movements, and is pinched between the player's head and protective shoulder gear upon sharp blows to the head and neck to absorb said blows and prevent injury due to extreme neck flexion in any direction.

3,855,632

BULLET RESISTANT UNDER GARMENT

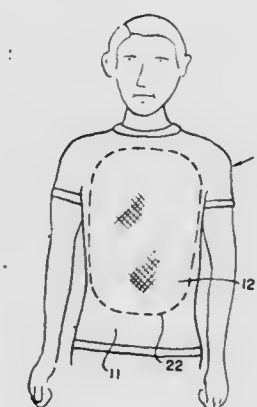
Richard C. Davis, Box 581 Muckle Rd., Central Lake, Mich. 49622

Filed Jan. 7, 1974, Ser. No. 431,379

Int. Cl. F41h 1/02

U.S. Cl. 2-2.5

5 Claims



1. A bullet resistant garment, such as a conventional undershirt for wearing upon and covering a human torso, comprising:
a cloth panel overlapping the front portion of the garment body and arranged to cover generally the chest and abdomen portions of the torso;

a bullet resistant pad arranged between the panel and the overlapped garment portion and formed of a number of sheets of tightly woven fabric formed of a heavy gage nylon type thread;
such sheets being fastened together, as by stitching, generally along their edge areas and otherwise being substantially free of positive securement together for limited individual flexing and planar movement of each sheet relative to the other sheets;
at least one of the sheets having an edge portion extending outwardly of the perimeter of the pad and said edge portion together with the overlapping edge portion of the panel being fastened to the overlapped portions of the garment for thereby securing the panel, pad and garment body together;
whereby said garment is relatively lightweight, flexible, non-bulky and may be concealed within outer garments and is substantially bulletproof at the pad.

3,855,633

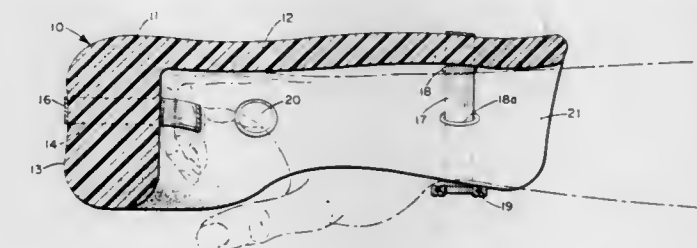
KARATE GLOVE

Jhoon Goo Rhee, 2525 No. Ridgeview Rd., Arlington, Va. 22207

Continuation-in-part of Ser. No. 252,054, May 10, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,034
Int. Cl. A41d 13/08

U.S. Cl. 2-18

9 Claims



1. A protective glove for use in the art of karate and the like comprising casing means, resilient foam means disposed within said casing means, said glove adapted to fit over the back of the hand and fingers of the wearer to protect the hand from injury, said glove having a thickened front end portion, strap means disposed in said front end portion and means extending said strap means through said forward part of said glove, whereby the fingers of the wearer can grasp said strap and maintain said front portion in close contact with the fingers, and retaining means for retaining the rear end portion of said glove on the rearward portion of the hand.

3,855,634

RAIN CAP

Richard C. Gregg, 4007 Nelson Dr. N.W., Huntsville, Ala. 35810

Filed Oct. 16, 1972, Ser. No. 297,963

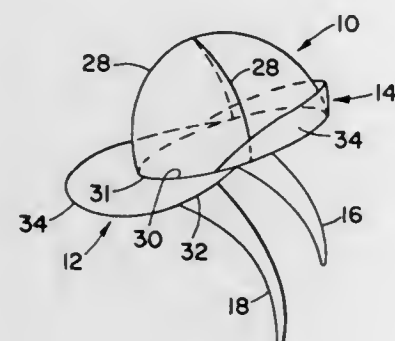
Int. Cl. A42b 1/06

U.S. Cl. 2-172

1 Claim

1. A rain cap comprising:
a generally hemispherical enclosure of thin, water-repellant material adapted to fit over the head and cover the top and portion of the sides and rear of the head of the wearer;
a discrete rear flap of thin, water-repellant material attached to and around substantially the rear half of the lower edge region of said hemispherical enclosure terminated at front edges of said rear flap and said flap being connected and biased to naturally extend rearward sub-

stantially in a plane perpendicular to the vertical axis of the hemispherical enclosure;
a pair of generally triangular elongated tying strips of soft net material, a triangular base end of one tying flap being fixedly connected to a front-bottom edge region of said rear flap, on one side of said rain cap, and the other tying flap being fixedly connected in a like manner to a front-bottom edge region of said rear flap, on the other side of said rain cap, whereby said rain cap may be secured to the head by tying the opposite apex ends of said tying flaps together and thereby pulling said rear flap downward over the rear of the neck of the wearer and thus securing the rain cap to the head;



a discrete front flap of thin, water-repellant material secured to and extending from the bottom edge of substantially the front half of said hemispherical enclosure and terminated on opposite sides of said enclosure, said front flap being connected and biased to naturally extend upward;

whereby the said front flap may be biased upward or downward independent of the biasing of the rear flap; and the ends of said front flap extending above and overlapping ends of said rear flap, whereby rain falling on the front half of said enclosure is caught between said front flap and said enclosure and caused to flow around to the sides of the enclosure and onto the rear flap, and thus rain is prevented from falling down the front of the head and face of the wearer.

3,855,635

TWO PIECE HOSPITAL GOWN

Ceneida Ramirez, 50 N. Second St., Meriden, Conn. 06450

Filed May 17, 1973, Ser. No. 361,358

Int. Cl. A41d 9/00

U.S. Cl. 2-114

2 Claims

1. A hospital gown which is formed of sheet material of two-part construction comprising

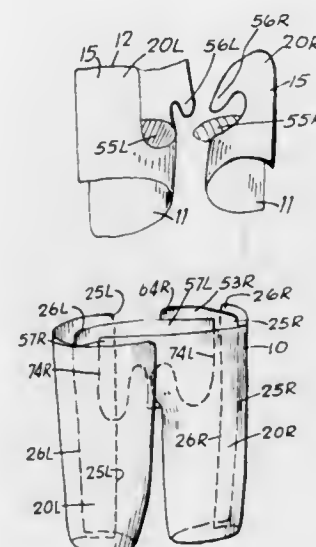
a blouse section which is formed from a sheet of material in which a neck opening is formed together with

a pants section which is formed from two similar rectangular sheets, each of which is cut and shaped to form a pants leg, such that two pants leg sections are joined together in interlocking fashion and without waste of any material to form a completed pants, where

each said rectangular sheet is bound by a top edge, two side edges and a bottom edge, with a slit formed in the sheet that extends from the mid section of the top edge of the sheet to the mid section of the sheet, said slit joining a curved slit which bounds an inverted U-shaped section of sheet that is joined to the rectangular sheet along a crotch line generally parallel to the top and bottom edges of the sheet, said U-shaped section forming a tab when folded about said crotch line, with

each said pants leg section formed by folding a said sheet about an axis parallel to the two side edges of the sheet, with the side ends bounded by the side edges of the said sheet joined together, such that the bottom edge of the sheet is formed in a continuous closed loop and the top edge of the sheet is formed in an open U-shaped configuration;

said pants section being formed by the joining together of a first and a second such pants leg section, with the two joined sections oriented together along their respective crotch lines to form a common crotch line, and with the top edges of both pants leg sections lying on a common plane, and interlocked by the tabs of both sections folded about the common crotch line so that the tab of a first leg section is folded over the common crotch line of both sections with said tab overlying the folded tab of the



second leg section which is bent inside the second leg section, and with the adjacent sides of each pants leg section, that are bounded by the top edges of each pants leg section and by the adjoining edges of the slit in each pants leg section, fastened together in overlapping configuration to form the upper front and upper rear sections of the pants section, with the said upper front and upper rear sections being reinforced by the overlapped sections of sheet.

3,855,636

NECKTIE SHAPING DEVICE

Edward L. Gnys, 315 High St., Central Hills, R.I. 02863

Filed Feb. 4, 1974, Ser. No. 439,595

Int. Cl. A41d 25/08

U.S. Cl. 2-153

3 Claims



1. A tie knot shaping and holding device comprising a flat planar member having an elongated shank, an enlarged integral head at the upper end of said shank, opposite sides of said head having gently rounded lower portions, said sides then

converging to a gently rounded apex at the top of said head, said head being adapted to be pushed upwardly into a tie knot between the front and rear portions of a tie until the convergent upper portion of the head is within the knot while the wider, curved lower portion of the head remains below the knot, spreader means associated with said head and comprising bars extending outwardly from opposite sides of said head at said wider, curved lower portion thereof, said spreader means also being of flat, planar construction and functioning to maintain the tie material below the knot in spread position, and means for holding said device properly positioned with respect to the tie.

3,855,637

BELT REVERSING MECHANISM

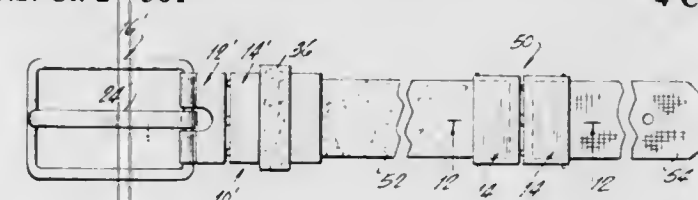
Benjamin Luger, 28-56 210th St., Bayside, L. I., N.Y. 11360

Filed Nov. 5, 1973, Ser. No. 412,731

Int. Cl. A41f 19/00

U.S. Cl. 2-301

4 Claims



1. A reversible and adjustable belt comprising: a buckle; a belt section; a clamping member, said clamping member adjustably connecting said belt section to said buckle, said clamping member including a belt housing, a gripping member pivotally mounted on said belt housing, said gripping member being adapted to pivot between an open position defining a belt receiving slot through which said belt section is adapted to be inserted into said belt housing and a closed position wherein said clamping member is adapted to engage said belt section to secure it within said housing; and means for rotating said belt section at least 180° about its longitudinal axis relative to said buckle so that the inner surface of said belt section will become the outer surface.

3,855,638

SURGICAL PROSTHETIC DEVICE WITH POROUS METAL COATING

Robert M. Pilliar, Toronto, Ontario, Canada, assignor to Ontario Research Foundation, Sheridan Park, Ontario, Canada

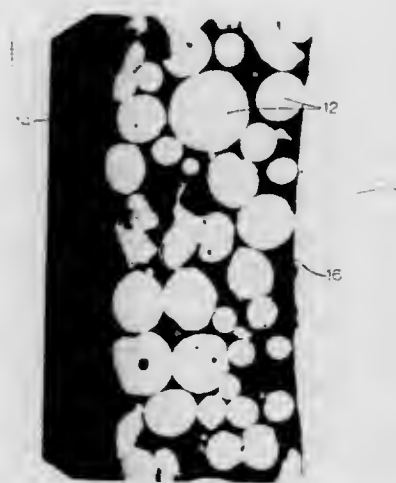
Continuation-in-part of Ser. No. 148,316, June 1, 1971, abandoned. This application May 16, 1973, Ser. No. 360,954

Claims priority, application Great Britain, June 4, 1970, 27110/70; Feb. 4, 1971, 3964/71

Int. Cl. A61f 1/24

U.S. Cl. 3-1

10 Claims



1. A surgical prosthetic device comprising a composite structure consisting of a solid metallic material substrate and a porous coating of said metallic material adhered to and

extending at least partially over the surface of said substrate to a thickness of about 100 microns to about 1,000 microns, said metallic material being substantially non-corrodable and non-degradable by body fluids,

said porous coating consisting of a plurality of small discrete generally ball-shaped particles of said metallic material bonded together at their points of contact with each other and said substrate to define a plurality of connected, interstitial pores uniformly distributed throughout said coating,

said particles being of a size and being spaced from each other to establish an average interstitial pore size of from about 20 microns to about 200 microns substantially uniformly distributed throughout said coating and a coating porosity of between about 10 and about 40 percent.

3,855,639

BEDPAN RINSER APPARATUS

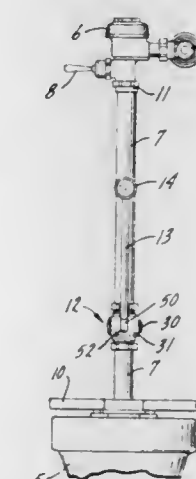
Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Oct. 23, 1973, Ser. No. 408,375

Int. Cl. A47k 3/22, 11/08

U.S. Cl. 4-7

18 Claims



1. In an apparatus for rinsing bedpans, the combination of a toilet bowl, a flush valve, and a flush tube connecting the flush valve with the toilet bowl, together with a diverter valve apparatus interposed in said flush tube, said diverter valve apparatus including a casing having an inlet and an outlet connected in said flush tube, and said flush valve, said casing, and said flush tube all being arranged in vertical alignment with the center line of said toilet bowl, said diverter valve apparatus supported on said casing on the front side of said flush tube, said casing having a horizontal cylinder portion on the front side thereof and a cylindrical valve member rotatable in said casing cylinder, a spray arm for rotating said valve member attached at one end to said valve member and projecting outward through a slot in said casing cylinder, said spray arm movable from a vertical position from the front side of said flush tube to a horizontal position over said toilet bowl for flushing a bedpan therein, said casing cylinder and said valve member having diverter passages therein which are closed in the vertical position of said spray arm and aligned in the horizontal position of said spray arm, whereby a portion of the water flow through said flush tube is diverted into said spray arm when the flush valve is operated.

3,855,640

BEDPAN RINSER APPARATUS

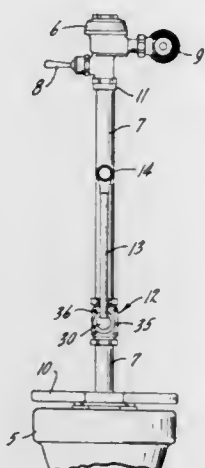
Jacques J. Filling, Chicago; Axel B. Nelson, Mount Prospect, and Henry R. Billeter, Deerfield, all of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.

Filed Oct. 23, 1973, Ser. No. 408,376

Int. Cl. A47k 3/22, 11/08

U.S. Cl. 4—7

14 Claims



1. In an apparatus for rinsing bedpans comprising in combination, a toilet bowl, a flush valve for flushing said toilet bowl and a flush pipe connecting said flush valve with said toilet bowl, said flush valve and said flush pipe being arranged in vertical axial alignment and with the center line of said toilet bowl, a diverter valve mechanism interposed in said flush pipe and having an operating portion arranged on the front side of said flush pipe, said operating portion including a ball type valve having a spray arm projecting therefrom from the front side of said flush pipe and movable between a vertical position from the front side of said flush pipe to a horizontal position directly over the center portion of said toilet bowl, means in said ball valve for diverting a portion of the flushing water through said spray arm when the spray arm is moved into the horizontal position and said flush valve is operated, means in said ball valve for shutting off the flow of water through said spray arm when the spray arm is moved into the vertical position, and means for supporting said operating portion, said spray arm, and said ball valve entirely from the front side of said flush pipe.

3,855,641

RECIRCULATING SEWERAGE SYSTEM

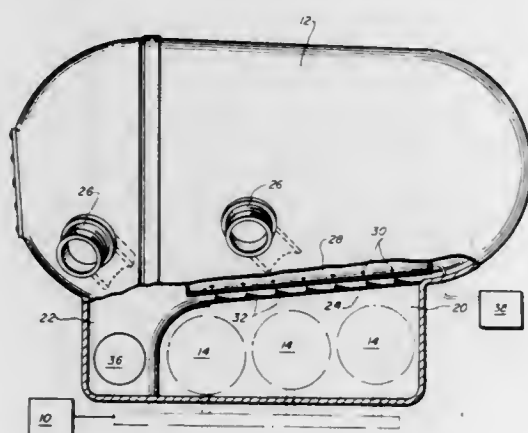
George W. Foster, Los Angeles, and Alexander J. Campbell, Altadena, both of Calif., assignors to Koehler-Dayton, Inc., New Britain, Conn.

Filed Jan. 24, 1973, Ser. No. 326,436

Int. Cl. C02c 1/08; B01d 29/20

U.S. Cl. 4—10

3 Claims



1. A recirculating sewerage system comprising

a recirculating tank including effluent receiving and filtrate compartments separated by a vertically extending common wall, at least one water closet adapted to discharge the effluent flushed therefrom into said receiving chamber, said common wall including filter means for inhibiting the passage of bulk waste from said effluent receiving chamber into said pumping chamber, a rinsing manifold extending adjacent to and along the top of said filter means and including a plurality of apertures opening downwardly proximate said filter means, flush pump means communicating with said filtrate compartment, means for conjointly directing a major portion of the pressurized filtrate discharged from said flush pump means to said water closet to flush same and a minor portion of the pressurized filtrate discharged from said flush pump means to said rinsing manifold.

3,855,642

SPLASH GUARD FOR BATH TUB SHOWERS

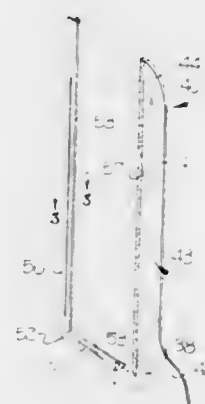
William E. Blitch, Charlotte, N.C., assignor to The Weblene Corporation, Charlotte, N.C.

Filed Oct. 24, 1973, Ser. No. 409,079

Int. Cl. A47k 3/22, 3/14

U.S. Cl. 4—149

36 Claims



1. A shower splash guard adaptable for use with a bath tub especially for preventing water from a wall mounted shower head from splashing between the wall and the adjacent side edge of a suspended shower curtain, said splash guard comprising an elongate, substantially rigid leg portion adapted to occupy an upright position, a heel portion and a toe portion collectively forming a foot portion on one end of said leg portion with said toe portion flaring laterally outwardly on said one end of said leg portion, said splash guard being several feet in length with at least the major portion thereof being of a width of only several inches and also being relatively thin as compared to the width thereof, first flange means connected to and extending along a longitudinal edge of said leg portion remote from said outwardly flaring toe portion, second flange means extending at substantially a right angle to said first flange means and connected to and extending along the lower edge of said foot portion, and said first and second flange means being adapted for adhesive securement thereof to a wall and to the adjacent upper surface of a bath tub, respectively.

3,855,643

SWIMMING POOL COVERING APPARATUS

George N. Sanford, and William H. Sanford, both of 4820 Faculty Ave., Long Beach, Calif. 90808

Filed Nov. 23, 1973, Ser. No. 418,541

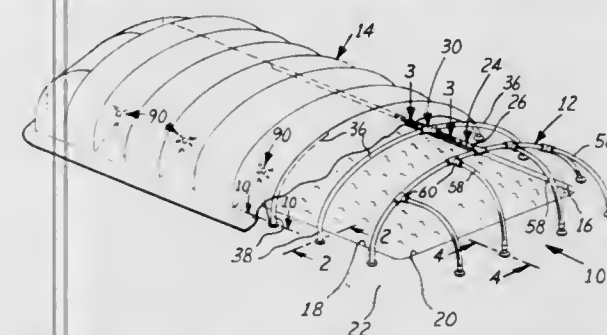
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4—172.12

9 Claims

1. Swimming pool covering apparatus, comprising:

a frame having a longitudinally extending ridge pole; rafters each of which has one end secured to the ridge pole, said rafters being curved downwardly to provide intermediate supporting legs and spacing the ridge pole above the surface of the pool; end rafters extending longitudinally of the pool and laterally from the respective lateral end rafters, said end rafters also curving downwardly; the lower ends of said rafters terminating in substantially the same plane; means for anchoring lower ends of the rafters to the deck of a swimming pool; a cover of flexible sheet material disposed on the frame; fixture devices attached to the cover, said devices being spaced apart marginally of the cover and upwardly of the



lower edge of said cover as well as upwardly of the swimming pool deck; means engageable with said fixture devices for securing same to the deck of a swimming pool for securing the cover in place on the frame; said means for anchoring the lower ends of at least the lateral rafters to the deck of the pool comprise pin anchoring devices having a cylindrical body of resilient compressible material, a lower end of said pin anchoring devices being disposed in bores in a swimming pool deck, said pins having an annular flange intermediate their ends resting on the surface of the deck and said pins having a longitudinally extending bore and a split end portion, said bore tapering toward the lower end and a bolt having an externally threaded lower end portion which tapers at its free end.

3,855,644

DEVICES FOR ASSISTING IN THE BATHING OF BABIES AND INCAPACITATED PERSONS

Donald Cyril Benson, 195 Spoor St., Vryheid, South Africa

Filed Oct. 30, 1973, Ser. No. 410,984

Claims priority, application South Africa, Mar. 21, 1973, 73/1233

Int. Cl. A47k 3/12

U.S. Cl. 4—185 B

3 Claims



1. A device for supporting a person in a bathtub, comprised of a base member including a top surface and a bottom surface for engagement with the bottom interior of the tub, a support member engaged with the said top surface and including an upper surface inclined with respect to the plane of the said bottom surface for supporting the buttocks of the person, a pair of uprights mounted on said top surface and having at their upper ends headrest members, a hook member mounted on each said headrest member and including a curved portion for engaging in the armpit of the person to confine the person

on the device and means supported jointly by said headrest members and extending between said headrest members for supporting the head, neck and shoulder of the person.

3,855,645

INCINERATING COMMODO

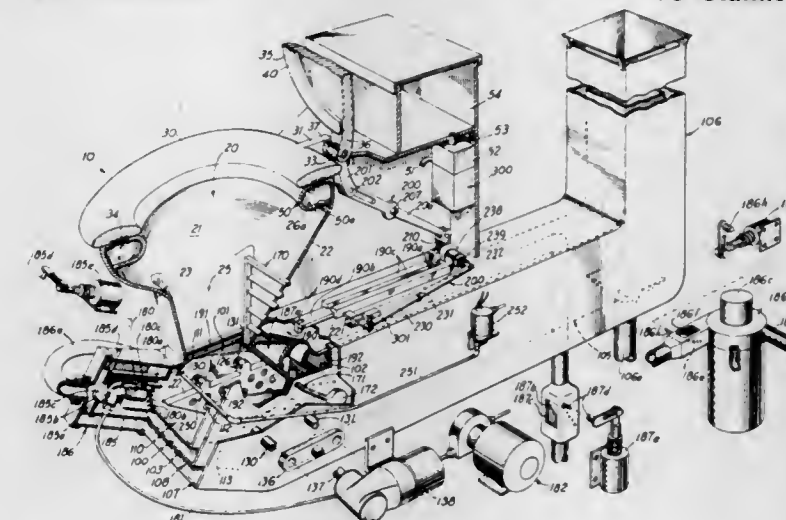
James I. West, Jr., 7856 Fielder Rd., Jonesboro, Ga. 30236

Continuation-in-part of Ser. No. 250,232, May 4, 1972. This application Aug. 10, 1973, Ser. No. 387,237

Int. Cl. A47k 11/02

U.S. Cl. 4—131

13 Claims



1. An incinerating commode for use in disposing of human waste comprising, in combination:

- A commode body defining seat means permitting human waste to be introduced therethrough;
- a combustion chamber located below and operatively associated with said seat means, said combustion chamber including a combustion pot for receiving waste introduced through said seat means;
- Heat source means operatively associated with said combustion chamber for incinerating waste contained therein, said heat source means detailed for developing an incinerating flame into said combustion pot;
- blower means operatively associated with said combustion chamber for directing an air flow therein;
- liquid medium cooling means operatively associated with said combustion chamber for spraying a cooling medium therein after an incinerating operation, said liquid medium spraying being operable to direct a spray into contact with said combustion pot after completion of said heat source means and wherein the amount of spray is controlled to effectively steam clean and simultaneously cool said combustion pot without leaving a residue of said cooling medium; and,
- means for initiating cyclic operation of heat source means, said blower means and said spraying of said liquid medium cooling means.

3,855,646

BATHTUB BENCH

Sophie Glickman, Randolph, Mass. Assignors: said Sophie E. Glickman, Evelyn Thomas, Brockton; Elaine Freedman, Holbrook; and Sandra M. Zeltzer, Randolph, all of Mass., part interest of each

Filed Aug. 6, 1973, Ser. No. 385,889

Int. Cl. A47k 3/12; B60n 1/06

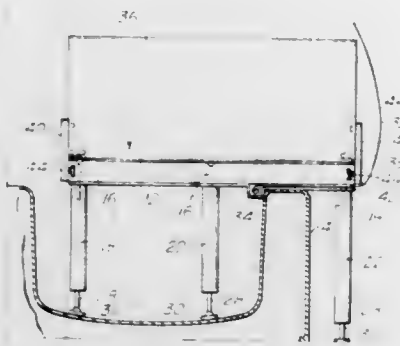
U.S. Cl. 4—185 S

4 Claims

1. A bathtub bench comprising: a seat having opposite ends; at least one leg secured to one end of said seat and extending downwardly therefrom, said leg being adapted to be supported by said tub; at least one intermediate leg mounted to said seat at the underside thereof and being adapted to stand in said tub to support said seat in cooperation with said first mentioned at least one leg;

the other end of said seat being of a length and constructed and arranged to extend transversely and outwardly beyond the periphery of said tub when said first and intermediate legs are disposed within said tub;

said bench further including at least one third leg disposed below said outwardly extending end of said seat and



extending downwardly toward the floor to support said outwardly extending portion of said seat; and means located at the underside of said seat at the exterior end thereof to enable the lower end of a shower curtain to be inserted about the outer end of said seat and along the lower surface thereof thereby to guide water flowing down along said curtain to be returned into said tub.

3,855,647

CUP SINK FOR LABORATORY COUNTER TOPS

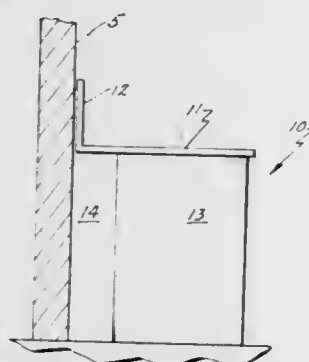
Paul J. Betts, Muskegon, Mich., assignor to Inter Dyne, Spring Lake, Mich.

Filed Nov. 5, 1973, Ser. No. 412,671

Int. Cl. E03c 1/18, 1/182

U.S. Cl. 4—187 A

11 Claims



1. A laboratory cup sink for mounting in a laboratory counter top along a narrow space at the rear thereof so that drain pipes can extend downwardly from the cup sink behind the cabinets of the counter, said cup sink comprising: a bowl of a generally curviform configuration, free of angular corners; a mounting flange projecting laterally from generally the top of said bowl, said mounting flange having rectilinear peripheral edges whereby an aperture for receiving said laboratory cup sink can be provided in a laboratory counter top by making rectilinear cuts through said counter top corresponding to the rectilinear edges of said mounting flange, and said mounting flange sloping downwardly slightly from its peripheral edges towards said bowl.

3,855,648

STRIKER MECHANISM FOR PLUMBING FIXTURES

Gerald Pitman Dunham, Middlesex, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,792

Int. Cl. E03c 1/232

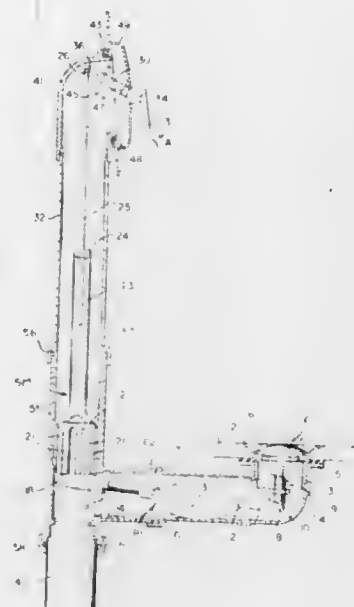
U.S. Cl. 4—199

9 Claims

1. A striker component adapted to be housed within a tubular member on a plumbing fixture and being capable of reciprocation inside the tubular member for controlling a

moveable stopper positioned in the discharge opening of a plumbing fixture comprising:

a unitary member having a plurality of spaced, elongated, flexible, generally parallel cantilever legs; and means interconnecting said legs at one end and having an extension enabling said component to be reciprocated as a unit from a raised to a lowered position within said tubular member;



said legs being spaced a distance apart such that hair and other foreign matter contained in drain water will pass therebetween and said legs being of such length so that said interconnecting means will not enter in the path of the drain water when said striker component is in lowered position thereby preventing hair or other foreign matter from clogging the drain.

3,855,649

WASTE DRAIN CONNECTION FOR PLUMBING FIXTURES

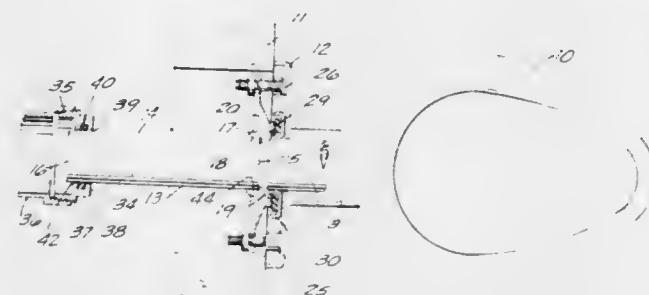
Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, Industry, Calif.

Filed Oct. 10, 1972, Ser. No. 296,044

Int. Cl. E03d 11/00

U.S. Cl. 4—252 R

6 Claims



1. An apparatus for connecting the drain pipe of a plumbing fixture to a waste-receiving pipe, wherein the waste outlet of said drain pipe has a gasket receptacle and a fluid-sealing gasket therein, comprising:

a pipe having at least two open ends; a gasket compression ring and alignment yoke, said ring attached to the body of said pipe so as to effect a structural bond and a fluid seal therebetween; means for adapting said gasket compression ring and alignment yoke to be connectable to a support structure on said fixture whereby said ring is movable towards or away from said gasket;

means for aligning said compression ring with said gasket, said gasket being disposed between said receptacle and said compression ring; means for adjusting the compression force exerted on said gasket in said receptacle by said compression ring and alignment yoke wherein said force may be adjusted to obtain the desired fluid sealing force therebetween; and a sleeve slideably mated to said other pipe end in fluid-sealing relationship therewith, said sleeve adapted to be removably connected to said waste-receiving pipe.

3,855,650

HIGH RISE STUDIO COUCH OR BED

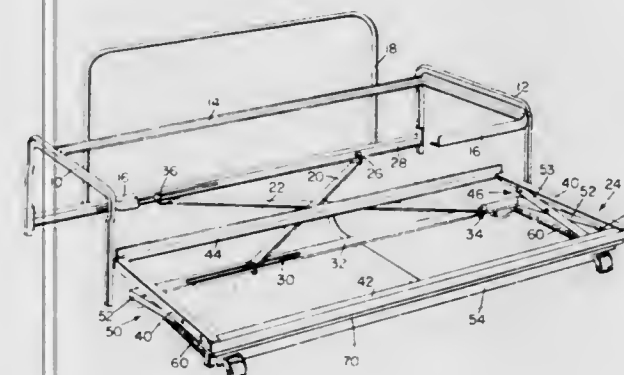
Herbert W. Neunherz; Robert G. Bryant, both of Gardner, and Donald R. Flye, Petersham, all of Mass., assignors to Gem Industries, Inc., Gardner, Mass.

Filed July 30, 1973, Ser. No. 384,125

Int. Cl. A47c 17/14

U.S. Cl. 5—21

9 Claims



2. A bed comprising a mattress supporting frame, means to support the frame, spring biased means to fold the supporting means to reduce the height of the frame from an extended position for use to a low position for storage, and means to lock the frame in both positions against accidental folding or accidental extension due to the spring,

the locking means comprising an arm, a recess in the arm, means to move the arm, a locking element, the recess receiving the latter and applying frictional stress thereto in one position of the arm and releasing the locking element in another position thereof, wherein the locking element moves with the folding-extending of the supporting means, and the recess is inclined relative to the path of motion thereof, the arm being free-ended and abuts the locking member at its free end in said one position of the arm, the arm locking the locking element in two different position of the latter,

a rod for actuating the arm to release the locking member, said rod extending along the mattress support, and a front longitudinal frame member for the mattress support, the rod being located thereunder.

3,855,651

SPRING ASSEMBLIES AND BEDSPRING MADE THEREFROM AND METHODS OF MAKING THE SAME

Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,239

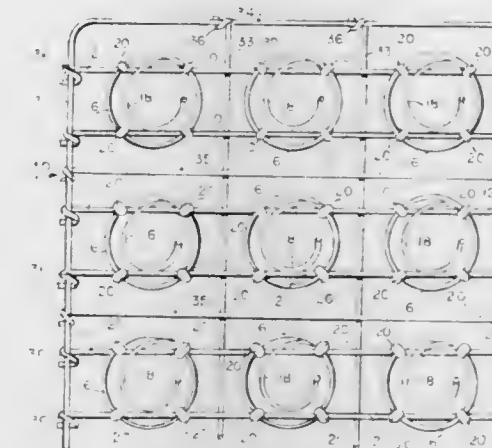
Int. Cl. A47c 23/02

U.S. Cl. 5—248

3 Claims

1. A bedspring comprising a substantially rectangular frame having two pairs of opposite sides; a plurality of longitudinal elongate spring assemblies spaced from each other a predetermined distance and each extending between and connected to one pair of opposite sides while being parallel to the other pair of opposite sides, each spring assembly comprising a pair of spaced substantially parallel wires, a plurality of coil springs uniformly spaced from each other twice said predetermined

distance and mounted on said pair of parallel wires, coil springs of adjacent longitudinal spring assemblies being aligned along lines parallel to said one pair of opposite sides; and a plurality of transverse elongate spring assemblies each extending between and connected to said other pair of opposite sides, said transverse spring assemblies being spaced from each other twice said predetermined distance, each transverse spring assembly being positioned midway between adjacent



corresponding spaced coil springs on said longitudinal spring assemblies, said transverse spring assemblies being provided with coil springs uniformly spaced from each other said predetermined distance and aligned with said coil springs on said longitudinal spring assemblies, whereby the coil springs on both said transverse and longitudinal spring assemblies form an array of spaced springs spaced from each other said predetermined distance in both the longitudinal and transverse directions of the bedspring.

3,855,652

COUCH

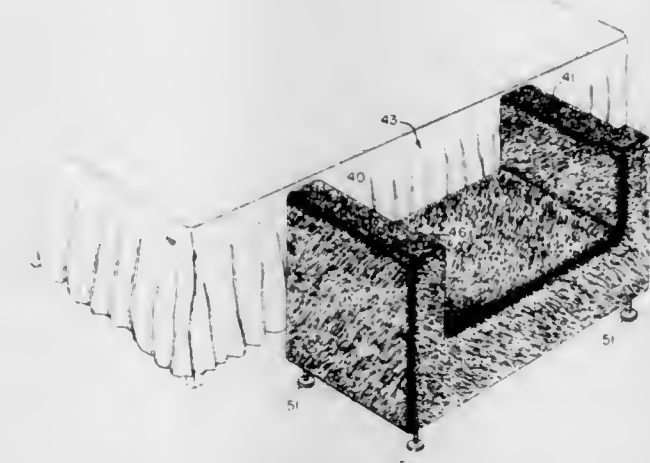
Dana C. Nicholson, 8001 Lakecrest Dr., New Carrollton, Md. 20770

Filed Apr. 10, 1973, Ser. No. 349,760

Int. Cl. A47c 21/00

U.S. Cl. 5—227 R

18 Claims



1. A couch for supporting two person engaging in sexual intercourse, said couch comprising an elongated support structure having a first upper surface portion extending from a point intermediate the ends of said support structure upwardly toward one end of said structure at an angle with respect to the horizontal for supporting the back of one of said persons, and a second upper surface portion connecting with said first upper surface portion, a recess being formed in said support structure and dividing said second upper surface portion into two spaced arms for supporting the legs of said one person, said recess being located and dimensioned in a manner to accommodate and support the other person in a kneeling position between said spaced arms, said recess having a depth selected to accommodate said two persons en-

gaged in sexual intercourse, the height of said support structure adjacent said recess on the side thereof of said first support surface being equal to the height of said arms.

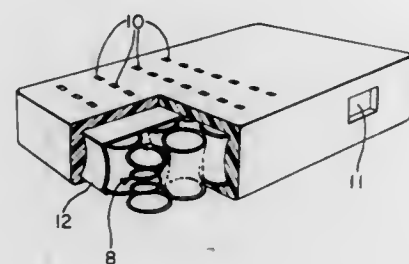
3,855,653

METHOD OF MAKING A MATTRESS AND SAID MATTRESS

Robert J. Stalter, Sr., Bowling Green, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 17, 1973, Ser. No. 397,512
Int. Cl. A47c 23/04, 7/14

U.S. Cl. 5-351

2 Claims



1. A polyurethane foam encapsulated spring mattress assembly, including a set of springs enclosed in a fabric envelope positioned within the mattress and covered with an open celled polyurethane foam, said envelope fitting the set of springs tightly when the mattress is unloaded, said foam being under compression when the springs are unloaded as well as when the springs are loaded.

3,855,654

STORABLE BED RAIL

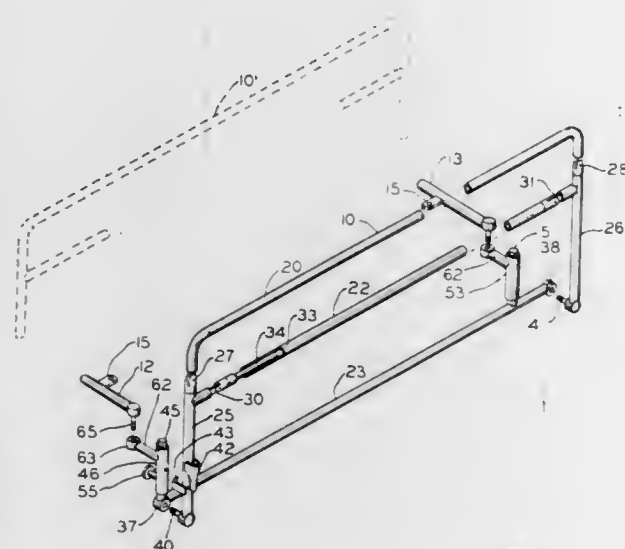
William J. Pivacek, Elyria, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Aug. 2, 1973, Ser. No. 385,172

Int. Cl. A47c 21/00

U.S. Cl. 5-331

11 Claims



1. A bed rail assembly for beds comprising a bed rail movable from an upright position to a lowered position, support means for said bed rail adapted to be mounted on a bed frame, said support means being spaced from said bed rail in a direction transverse to the plane of the bed rail, and means extending between said bed rail and said support means and pivotally connected to each for permitting swinging movement of said bed rail toward said support means, whereby said bed rail is swingable in a plane generally perpendicular to the plane of the bed rail from a first position to a second position spaced from said first position in the direction of said support means.

3,855,655

SELF-MAKING BED

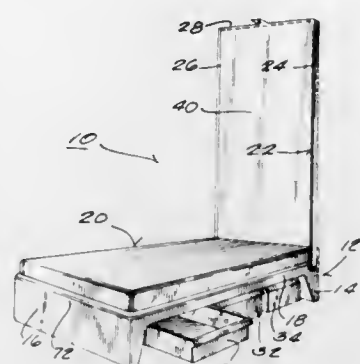
Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller Inc., Zeeland, Mich.

Filed July 12, 1973, Ser. No. 378,649

Int. Cl. A47c 21/00

U.S. Cl. 5-317 R

11 Claims



1. A combination bed and couch comprising, in combination: a support frame; a body support mounted on said support frame; a cover frame pivotally fixed to said support frame; cover means removably anchored to said cover frame, said cover frame being pivotal relative said body support and support frame between a first position wherein said cover frame extends above said support frame and body support generally perpendicular thereto such that said cover means hangs generally vertically from said cover frame and a second position wherein said cover frame lies generally within or parallel to the plane of said body support and said cover means covers said body support, said cover means including a first cover having an end looped around a portion of said cover frame, part of said end having a plurality of resiliently deformable hook-shaped elements and another part having a plurality of loop elements said hook elements being releasably engageable with said loop elements when said end is looped around said portion of said cover frame to releasably anchor said first cover to said cover frame.

3,855,656

UNDERWATER BUOY FOR A RISER PIPE

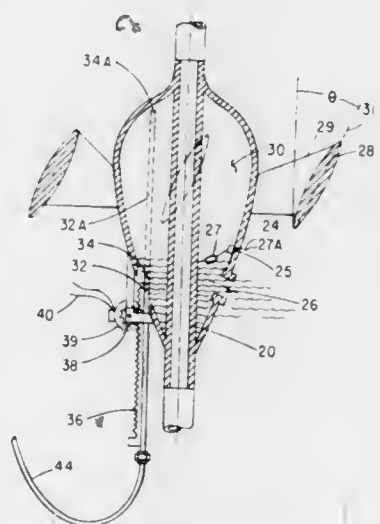
Kenneth A. Blenkarn, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Mar. 30, 1973, Ser. No. 346,529

Int. Cl. E21b 17/00

U.S. Cl. 9-8 R

12 Claims



1. An underwater buoy for a riser pipe which extends from an underwater well to a vessel supported by a body of water which comprises:
a hollow shell attached to said riser to give an upward buoyancy force thereto;

non-vertically directed hydrofoil means attached to said shell for directing said shell upwardly through said water in a non-vertical direction to avoid striking said vessel in event said riser pipe fails below said shell.

3,855,657

SHOE MOULDS

G. James Mazzotta, 40 Waite St. Extension, Malden, Mass. 02148

Filed Nov. 12, 1973, Ser. No. 414,728

Int. Cl. A43d 9/00; A01j 21/00

U.S. Cl. 12-142 RS

11 Claims



1. A shoe sole moulding assembly comprising a mould body having interior side and bottom walls defining at least a portion of a cavity for forming the edge and tread of a sole respectively, a channel formed in the side wall adapted to locate a foxing and vacuum means connected to the channel for retaining the foxing until after sole material has been injected into the cavity.

3,855,658

WINDOW SCREEN CLEANING APPARATUS

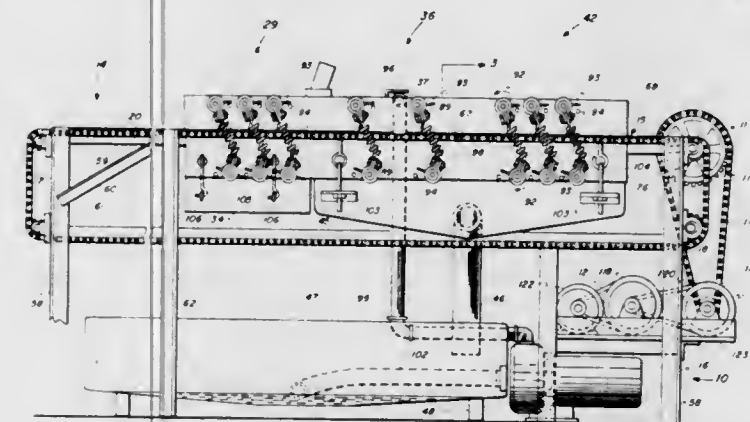
Francis L. Ford, 1110 Raymond Ave., Fort Pierce, Fla. 33450

Filed Nov. 1, 1973, Ser. No. 411,808

Int. Cl. A46b 15/00

U.S. Cl. 15-77

8 Claims



1. A cleaning apparatus for washing generally flat, framed window screens that have opposite side faces and which comprise an elongated rigid open frame that has opposite ends, a conveyor mechanism mounted on said frame for conveying the window screens along a horizontal path of movement which extends from a screen receiving station located at one of said ends to a screen delivery station located at the other of said ends, a first set of spaced apart and longitudinally extending wires which are mounted in a common plane under tension on said frame and which underlie and define said path of movement for supporting the flat screens in generally horizontal positions as they are conveyed along said path by said mechanism, an elongated brush assembly which is mounted of said frame and which generally underlies and extends trans-

versely of said path of movement for brushing the underside face of the window screens that are conveyed along said path by said mechanism, said assembly having bristles and an operating position at which said bristles project upwardly through the spaces between said wires, a second set of spaced apart and longitudinally extending wires which are mounted in a common plane under tension on said frame and which overlie said path for resisting upward movement of the window screens during contact with said bristles, and a spray mechanism for spraying an aqueous detergent solution onto the window screens that are conveyed along said path by said conveyor mechanism, said spray mechanism comprising a header mounted on said frame and having a plurality of orifices arranged to project sprays of the detergent solution through the spaces between the wires of said second set, means for collecting detergent solution projected by said orifices including a trough mounted on said frame and located below said path of movement, and means for recycling the collected detergent solution to said header.

3,855,659

ROTARY BROOMS

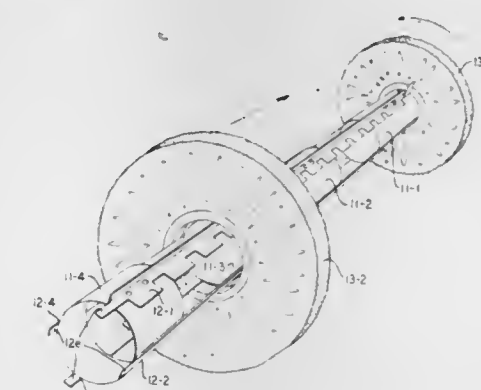
Stanley R. Grambor, 38 Sutton Dr., Berkeley Heights, N.J. 07922

Filed Dec. 4, 1972, Ser. No. 311,531

Int. Cl. A46b 3/08

U.S. Cl. 15-181

15 Claims



1. Apparatus for use with brush segments to form a rotary broom, which comprises an elongated casing having a plurality of support and guide members extending along said casing and positioned about the periphery thereof, each support and guide member having positionable tabs for retaining the brush segments on said casing.

3,855,660

BRUSH SECTION

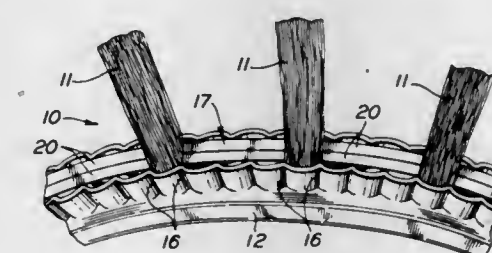
Arthur E. Drumm, Rt. 1, Marysville, Ohio 43040

Filed Aug. 21, 1973, Ser. No. 390,210

Int. Cl. A46b 13/02

U.S. Cl. 15-181

6 Claims



1. A brush section comprising a body of metal of channel cross-section opening outwardly with opposed outwardly extending flanges, a filler channel of deformable material

positioned in said metal channel and also opening outwardly, said filler channel having opposed outwardly extending flanges, said last-named flanges having notches formed therein at spaced intervals to provide pairs of opposed notches to produce bristle-receiving pockets at spaced positions where the flanges of the metal channel are exposed, bunches of bristles of U-form having the U-ends thereof disposed in said pockets, a continuous retainer member disposed in said filler channel and extending through said U-ends of the bristles to retain them in the channel, said flanges of the metal channel and of the filler channel being deformed at a position outwardly of the retainer member so that the flanges of the metal channel engage the outwardly extending bunches of bristles and the outwardly extending opposed flanges of the filler channel are in contact to fill the spaces between the respective spaced bunches of bristles.

3,855,661

AUTOMOTIVE REAR VIEW CLEANING DEVICE

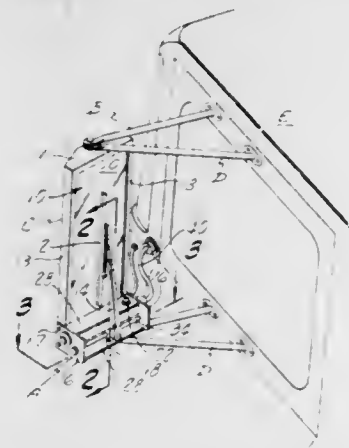
Lawrence R. Prince, 13932 Fairluck Avenue, Paramount, Calif. 90723

Filed Dec. 18, 1972, Ser. No. 315,924

Int. Cl. B60s 1/26

U.S. Cl. 15—250.01

4 Claims



1. A power operated wiper adapted to be removably mounted on a side view mirror of the type that includes an elongate mirror supported in a rigid frame defined by a pair of horizontal end pieces that are connected by first and second vertical side pieces, which frame and mirror are pivotally supported by a pair of horizontal vertically spaced brackets exteriorly of a vehicle and in a position to be viewable by the driver of said vehicle, said wiper when operating removing moisture and dirt from said mirror, said wiper including:

- a. an elongate rigid housing assembly that includes a pair of end pieces that project therefrom, with the projecting portions of the end pieces being disposed in abutting contact with the exterior surface of said first and second side pieces adjacent one of said end pieces of said frame, said housing defining a confined space therein that is in communication with a longitudinal opening formed in said housing that extends between said end pieces;
- b. means for removably securing said end pieces to said first and second vertical side pieces to rigidly support said housing in a fixed position relative said frame and in a non-obstructing position relative to said mirror supported thereon;
- c. a first guide rod disposed in said housing and extending longitudinally between said end pieces;
- d. a second rod rotatably supported inside said housing between said end pieces and laterally spaced from said first rod and parallel thereto, which second rod has first and second longitudinal spiral grooves therein that are angularly disposed to one another and extend in opposite directions, with said first and second grooves connected on the ends thereof;
- e. a carriage in said housing that slidably engages said first and second rods, with said carriage including a first portion that extends outwardly from said opening in said housing;

- f. first means on said carriage that is at all times in engagement with either said first or second grooves;
- g. a spring loaded arm secured to said first portion of said carriage, which arm extends over said mirror, which arm has a free end portion;
- h. a wiper blade supported from said free end portion of said arm, which blade is in pressure contact with said mirror; said an electric motor mounted on said vehicle in a position remote from said side view mirror for selectively rotating said second rod at a desired speed in a first direction, with said carriage, arm, and wiper blade being alternately moved in opposite directions relative to said mirror to wipe moisture and dirt therefrom due to said first means alternately engaging said first and second grooves as said carriage traverses the length of said first and second rods;
- j. a source of electric power;
- k. flexible cable connecting said motor to said second rod to rotate the latter;
- l. an electric circuit that connects said source of power to said motor;
- m. a multi-position electric switch in said circuit that is operable from within said vehicle to control the magnitude of electric power flowing to said motor to regulate the speed at which said motor operates and the rapidity with which said wiper blade is reciprocated across said mirror.

3,855,662

WIPER DEVICE FOR VEHICLE LIGHTING SYSTEMS

Raymond Fortin, Fresnes, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

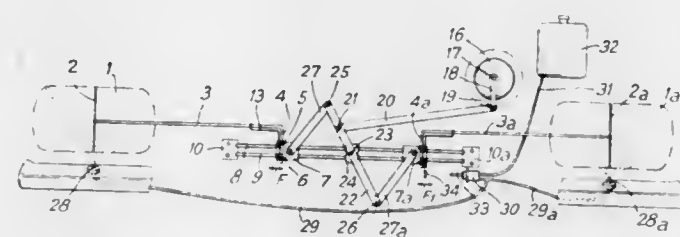
Filed Feb. 9, 1973, Ser. No. 331,109

Claims priority, application France, Mar. 28, 1972, 72.10911

Int. Cl. B60s 1/20, 1/44, 1/46

U.S. Cl. 15—250.01

7 Claims



1. An apparatus for wiping the screens of lighting elements on a vehicle comprising
- a guide means adapted to be fixed to the vehicle,
 - two carriage means movable over the said guide means,
 - a wiper blade rod secured to each carriage means,
 - a wiper blade attached to each wiper blade rod disposed for reciprocating wiping movement over one of said screens as the carriage means moves to and fro on the guide means,
 - a drive means connected to the carriage means for moving it on the guide means comprising a rotatably driven shaft and linkage means comprising a crank attached to the shaft and having a crank pin, a secondary rod pivotally mounted on the guide means between the two carriage means, a main rod connected to the secondary rod and to the crank pin to angularly reciprocate the secondary rod about its pivot point as the shaft rotates, and a pair of rods pivotally connecting the secondary rod with the said carriage means, and means for rotating the shaft.

3,855,663

WIPING AND WASHING DEVICE FOR GLASS SURFACES, THOSE OF VEHICLES IN PARTICULAR

Horst Prange, Planegg, Germany, assignor to Con-Technik GmbH, Worthsee, Germany

Filed Jan. 18, 1973, Ser. No. 324,587

Int. Cl. B60s 1/46

U.S. Cl. 15—250.04

12 Claims



1. Wiping device for a glass, or the like material, surface on a vehicle or the like, wherein the surface has a predetermined length between two ends thereof and the surface has a predetermined width;

said device comprising:

- a slide for supporting a wiper and also for covering the surface to be wiped; said slide having a length of at least said predetermined length; said slide having a width along its entire length of at least said predetermined width of the surface; said slide being generally parallel to the surface when it covers the surface; said slide being impervious to passage therethrough of water and dirt;
- said slide having a leading edge which is movable across the surface from one end of the surface, at which the slide does not cover the surface, across the length of the surface to the opposite ends of the surface, at which the slide covers the surface and blocks passage of materials through the slide to the surface; means for moving said slide across the length of the surface;
- a wiper for said surface carried on said slide and being located in the vicinity of said slide leading edge and being movable with said slide across the surface.

3,855,664

WIPER BLADE REFILL ELEMENT

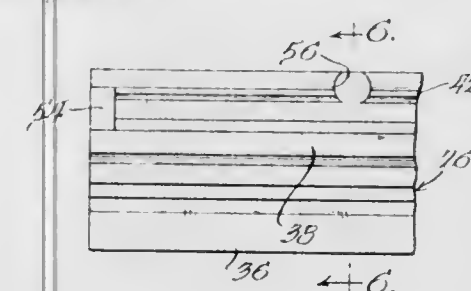
Leo J. Wubbe, Beverly Shores, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Feb. 1, 1973, Ser. No. 328,647

Int. Cl. B60s 1/04, 1/38

U.S. Cl. 15—250.42

4 Claims



1. A windshield wiper element comprising an elongate body of soft resilient material having
- a. a wiper edge,
 - b. a relatively thick intermediate portion,
 - c. a relatively thin neck portion above the intermediate portion,
 - d. a relatively thick continuous retention bead along the upper edge to define a groove in each side wall with the base of the groove being the thin neck portion,

- e. a single recess in the retention bead near at least one end of the body enabling threading of the wiping element into assembled relationship with a backing member, and
- f. abutment means provided in the ends of the grooves for preventing the backing member from sliding axially out of said slot.

3,855,665

REMOTE CONTROL FOR VACUUM CLEANER MOTOR

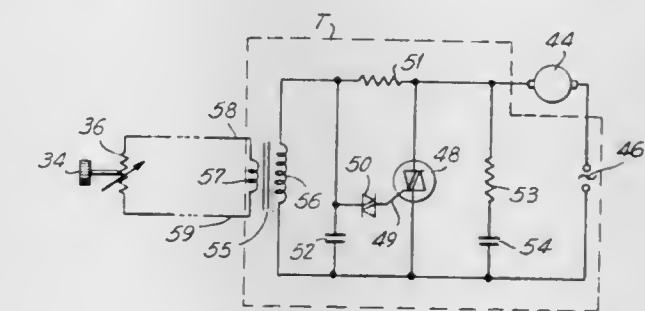
Osten Schwartz, Varmdo, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 15, 1972, Ser. No. 315,438

Int. Cl. A471 9/00

U.S. Cl. 15—339

2 Claims



1. A remote control arrangement for a vacuum cleaner provided with a motor having an electrical energy source, a flexible hose, a cleaning appliance, a coupling means operatively connecting the flexible hose with the cleaning appliance, said coupling means also functioning as a hand grip comprising

- a. an electrical circuit adapted to connect the source of electrical energy to the motor and including
 - 1. a thyristor device provided with a phase shifting network controlling the power input to the motor,
 - 2. a standard type transformer generating a conventional hysteresis curve in which the primary winding thereof is a first variable impedance that is a part of the phase shifting network,
 - 3. a second variable impedance including the secondary winding of the transformer and a variable resistor located at a distance from the motor, an operating member for the variable resistor located on said hand grip, and a low voltage conduit positioned on said hose coupling the variable resistor to the secondary winding of the transformer,
 - 4. the magnitude of the first variable impedance which affects the phase shifting network being dependent upon and changeable by the second variable impedance,
 - 5. said phase shifting network including a capacitor coupled in parallel to the primary winding of said transformer whereby a desirable curve shape of said control pulses of said thyristor is produced.

3,855,666

VACUUM CLEANER

Bolik Anders Erikson, Johanneshov, and Milos Vukotic, Skarholmen, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 25, 1972, Ser. No. 292,172

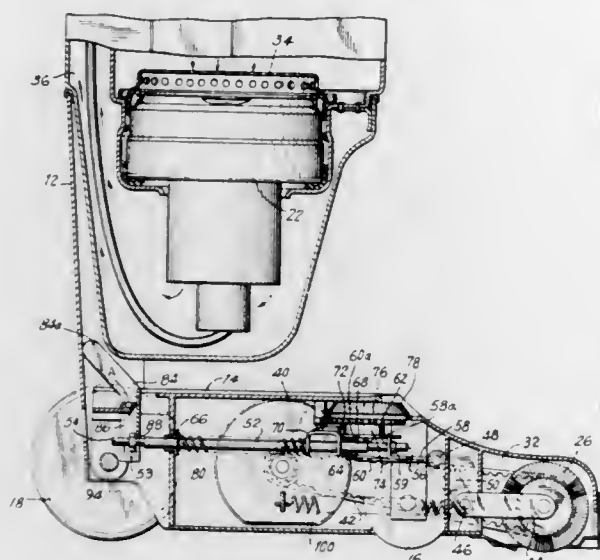
Int. Cl. A471 5/34

U.S. Cl. 15—372

8 Claims

1. A vacuum cleaner comprising:
- a. a hollow housing having an air inlet and an air discharge port,
 - b. a dust collector,
 - c. conduit means for conducting the air passing through the air inlet and depositing dust into the dust collector and thereafter passing the air out the air discharge port,

- d. an agitator for the surface to be cleaned being located in or adjacent to the air inlet,
 f. means for driving the agitator,
 f. means mounting the agitator for substantially vertical movement including:
 1. a rotatable shaft mounted in said housing being operatively connected to the agitator,
 2. a resiliently biased member operatively connected to the rotatable shaft for moving the same to yieldably



- urge the agitator toward or away from the surface to be cleaned,
 g. an operator for moving the resiliently biased member, and
 h. said resiliently biased member including an elongated rod, a member mounted on said rod having an upstanding projection, said operator being provided with a surface that in one position thereof engages the upstanding projection in order to move the rod in a direction along the longitudinal axis thereof.

3,855,667 PIVOT HINGE

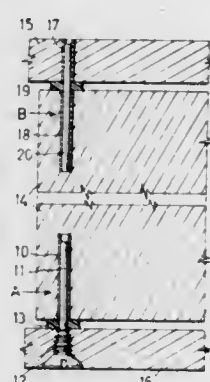
Gino Messina, 25 Margaret St., Southport., 4215 Queensland, Australia

Filed July 31, 1973, Ser. No. 384,369
 Claims priority, application Australia, Aug. 4, 1972, 9966/72

Int. Cl. E05d 5/10

U.S. Cl. 16—168

3 Claims



1. A door hingedly mounted within a door frame having top and bottom plates, an upper and lower hinge assembly; one said assembly including an elongated hollow bush lying in a hole in an edge of said door with its outer end flush with said edge, and a part having a pin and a threaded portion colinear with said pin threaded into a hole through its plate, said pin projecting into rotatable engagement in said bush; and the other said assembly including a first bush lying within a hole through its plate, a second bush lying in a hole in the edge of said door with its end flush with said edge, and a pin passing

through both said bushes and rotatable relative to at least one bush; the axis of said hinge assemblies being aligned.

3,855,668 APPARATUS FOR SEPARATING EDIBLE CRAB MEAT FROM NON-EDIBLE PORTIONS OF COOKED CRABS

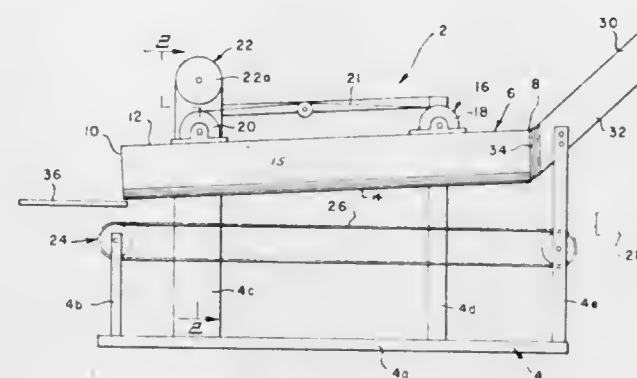
Richard T. Wenstrom, Hampton, Va., assignor to Sea Savory, Inc., Cambridge, Md.

Filed Jan. 10, 1973, Ser. No. 322,385

Int. Cl. A22c 29/00

U.S. Cl. 17—71

1 Claim



1. Apparatus for separating meat particles of a predetermined size from a whole or debacked cooked crustacean, comprising:
 a. a frame (4);
 b. a housing (6) comprising spaced apart side walls (13, 15) and spaced apart top and bottom walls (12, 14), said walls defining an elongated rectangularly shaped, open-ended chamber, said housing containing an inlet opening for receiving a crustacean body and an outlet opening for receiving a crustacean body, the bottom wall of said chamber containing a plurality of discharge openings equal to the predetermined size of the meat particles;
 c. means (16) connecting said housing with said frame for vibratory motion in a direction normal to said chamber walls with a pre-selected amplitude of vibration;
 d. means (22) vibrating said housing relative to said frame at a frequency of oscillation greater than 700 cycles but less than 1,700 cycles at an amplitude of vibration of 1/2 to 1 1/2 inches, per minute, whereby a crustacean body introduced into said chamber through said inlet opening will be vibrated with relatively violent impacting force between said chamber walls to separate meat particles from the crustacean body; and
 e. means (24) for collecting the meat particles that are discharged from said housing through said discharge openings; and means (36) for collecting the remaining portions of the crustacean body discharged from said chamber through said outlet opening.

3,855,669 ADJUSTABLE STRAP WITH QUICK RELEASE

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.

Filed Oct. 5, 1973, Ser. No. 404,010

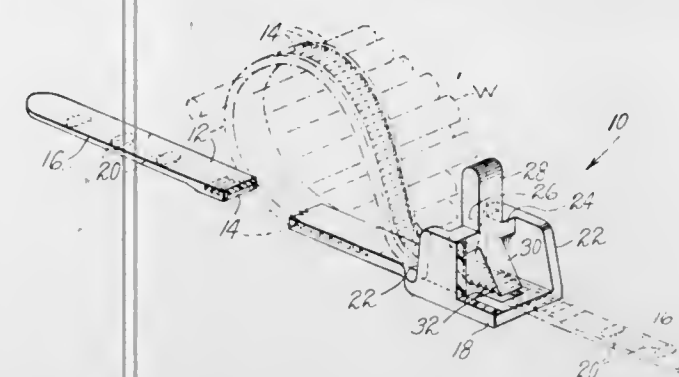
Int. Cl. B65d 63/00

U.S. Cl. 24—16 PB

2 Claims

1. A molded one-piece plastic strap clamp for binding workpieces together comprising a flexible, elongate base portion having teeth disposed at least intermediate one side of its length, two substantially rigid leg portions upstanding in spaced relation from the opposite side of one end of the base portion, and a quick-disconnect lever hingedly supported by its junction with said leg portions for movement therebetween, said junction being disposed substantially midway of the length of the lever and equally spaced from the leg portions, the junction being at least four times the thickness of the base from said base portion, an end portion of the lever being

arranged to engage in gripping relation with some of the teeth of the base portion when the latter is looped about the workpieces and received between the leg portions, said end portion



of the lever being disengageable from said teeth to release the base portion upon torque being applied to another portion of said lever.

3,855,670 BUNDLING STRAP

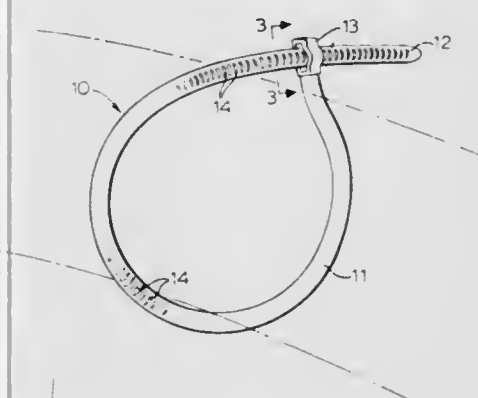
Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Canada

Filed Nov. 10, 1972, Ser. No. 305,482

Int. Cl. B65d 63/00

U.S. Cl. 24—16 PB

4 Claims



1. In a bundling strap, the combination comprising a one-piece strap made of flexible synthetic plastic material and including an elongated main body portion having a circular cross section, a free end portion, and a head portion through which the free end portion is adapted to be inserted to encircle one or more articles, said head portion having an opening therethrough adapted to receive the free end portion of the strap and at least a part of the main body portion, at least that portion of the body portion which is adapted to extend through said opening of said head portion being formed with diametrically opposed teeth, said head having opposed lateral end surface portions adjacent the opening adapted to be engaged by said teeth and thereby hold said strap in position, the sides of said opening in said head portion which extend to said end surface portions that are engaged by said teeth being tapered, said teeth having radial and inclined surfaces, said teeth having arcuate peripheral edges, said sides of said opening which are engaged by said teeth being arcuate in transverse cross section, said opening in said head portion being elongated transversely at an angularly spaced relation with respect to said opposed surface portions such that bodily rotation of the part of the body portion of the strap within the head will cause said teeth to disengage from said surface portions of said head so that the strap can be released.

3,855,671 ZIP FASTENER CONSTRUCTION

Yoshinori Fujisaki, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

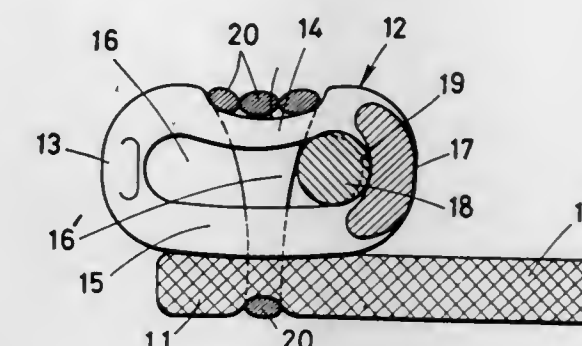
Filed July 26, 1972, Ser. No. 275,188

Claims priority, application Japan, July 31, 1971, 46-68372

Int. Cl. A44b 19/12

U.S. Cl. 24—205.1 C

6 Claims



1. In a slide fastener,
 a. a stringer;
 b. a row of coupling elements comprising, a plurality of coupling elements each having a coupling head and a pair of arms extending from said coupling head in a common direction transverse to a longitudinal direction of said row of coupling elements and defining a space therebetween, and a plurality of base portions connecting next adjacent coupling elements at ends of said arms remote from said coupling heads, one of said arms of each of said coupling elements having an inwardly bulging portion to define a narrow region more narrow than a portion adjacent said base portions of each of the spaces between each of said pair of arms;
 c. an elongated core having a transverse width greater than the narrow regions of the spaces between said pairs of arms, said core being disposed in and solely at one end of each of said spaces between each of said pair of arms adjacent said base portions and maintained engaged with said base portions by said bulging portions of said pairs of arms to maintain alignment between said coupling elements; and
 d. threads securing said coupling elements to said stringers.

3,855,672 CONCEALED ZIP FASTENERS

Ikuo Takamatsu, Uozushi, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

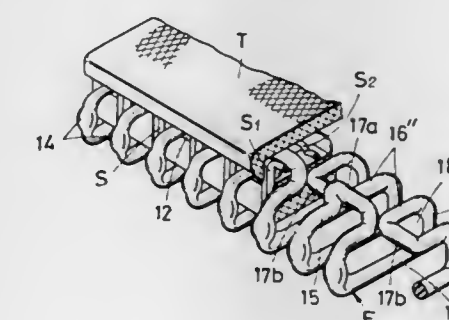
Filed Aug. 7, 1972, Ser. No. 278,473

Claims priority, application Japan, Aug. 12, 1971, 46-72406

Int. Cl. A44b 19/10, 19/32

U.S. Cl. 24—205.1 C

6 Claims



1. A concealed slide fastener comprising, a pair of carrier tapes each having an inwardly folded reinforced longitudinal edge and a series of apertures aligned along said folded longitudinal edge and defining a line of fold along which the tape is folded, a row of coupling elements each having a coupling head, upper and lower leg portions extending from said coupling head in a transverse common direction of said row of

coupling elements wherein said lower leg portion extends a greater distance than said upper leg portion, said upper leg portion being provided with a bent portion at an end remote from said coupling head and extending in a direction transverse to said row of coupling elements and away from said lower leg portion, an upstanding portion extending from an end of said lower leg portion opposite said coupling head in a direction essentially parallel thereto, an upper portion extending from an end of said upstanding portion opposite said lower leg portion in a direction toward said coupling head and essentially parallel to said lower leg portion, a lower base portion extending from an end of said upper portion opposite said upstanding portion in a lateral direction of said row of coupling elements and connecting to a lower base portion of a next adjacent coupling element, an upper base portion extending from said bent portion of said upper leg in a lateral direction of said row of coupling elements opposite the direction of said lower base portion and connecting to an upper base portion of a next adjacent coupling element, said carrier tapes being disposed with said reinforced longitudinal edge between said upper and lower leg portions and said upper base portions and said bent portions of said upper legs extending through corresponding ones of said apertures, a first line of stitches securing said upper and lower leg portions adjacent said coupling head to said folded edge and disposed substantially adjacent said apertures, and a second line of stitches securing said lower leg portion to said folded edge.

3,855,673

SLIDE-FASTENER STRINGER

Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

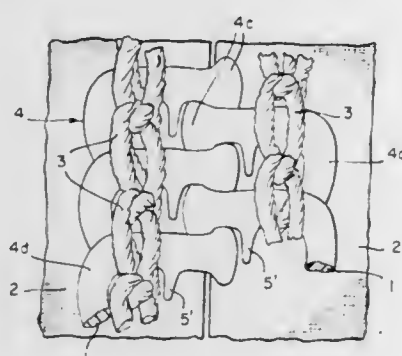
Filed Aug. 21, 1972, Ser. No. 282,553

Claims priority, application Germany, Aug. 20, 1971, 2141687

Int. Cl. A44b 19/12

U.S. Cl. 24-205.1 C

6 Claims



1. A slide-fastener half comprising:
a stringer tape;

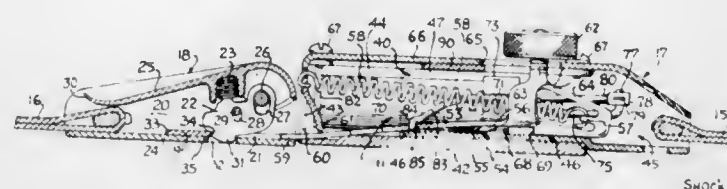
a coupling element of continuous synthetic-resin monofilament extending longitudinally on a surface of said tape, said element consisting of a multiplicity of integrally interconnected links each including a coupling head matingly engageable with a pair of similar coupling heads of a substantially symmetrical coupling element;

stitching securing said coupling element to said tape; and
locator means on said coupling element co-operating with said stitching for securing said links to said tape in substantially fixed positions, said locator means including a plurality of elongate barbs on at least some of said links set back from said coupling heads, said barbs projecting integrally from the monofilamentary body of said element, each barb being a sliver partly severed from said body whereby a shallow longitudinal depression is formed adjacent the barb and substantially complementary to the shape thereof, the barb having the same molecular orientation as said body upon being bent back into the adjacent depression but being stabilized in position to resist being thus bent back.

3,855,674
AUTOMATIC SEPARABLE FASTENER
Ralph Thiel, 1129 Wanda Ave., Seaside, Calif. 93955
Filed July 26, 1973, Ser. No. 382,917
Int. Cl. A44b 11/25

U.S. Cl. 24-230 A

10 Claims



1. The combination with the buckles of a seat belt arrangement in which a manually releasable buckle member has a spring loaded latch bolt adapted for locking engagement in an opening formed in a flat plate of the other buckle member upon insertion of such plate into the manually releasable buckle, of means for automatically unlocking the buckle members following an excessive shock pull upon such seat belt arrangement comprising:

1. a housing having a bottom with a fore end formed contiguous to the flat plate of such other buckle member for extension of the plate into the manually releasable buckle member;
2. a spring loaded shock detecting pull member arranged for sliding guided movement in said housing and projecting from the aft end thereof for connection to a seat belt;
3. a spring loaded slide bar arranged for sliding movement in said housing and having a bolt engaging and camming end arranged within the opening formed in the flat plate fore end of said housing normally urged toward the bolt for lifting the bolt out of locking engagement with the flat plate fore end of said housing;
4. slide bar cocking means between said housing and said spring loaded slide bar for cocking the latter in retracted condition with its bolt engaging end withdrawn from beneath the bolt of the manually releasable buckle member for automatically releasing the same from the flat plate other than manually; and
5. a trip mechanism between said spring loaded slide bar and said shock detecting pull member for triggering said slide bar cocking means upon the exertion of an excessive pull upon said shock detecting pull member for releasing said spring loaded slide bar and the fore end thereof for movement toward and into engagement with the bolt of the manually releasable buckle member for releasing the same.

3,855,675

1-(2-FURANYLMETHYL)-1H-PYRAZOLO(3,4-B)PYRIDINE-5-METHANONES

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons Inc., Princeton, N.J.

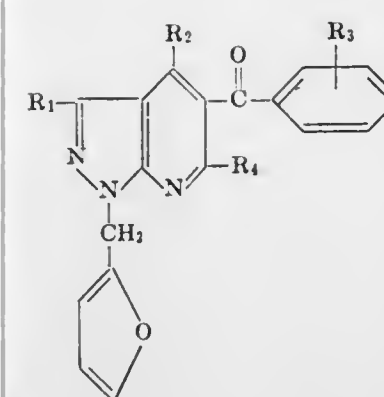
Continuation-in-part of Ser. No. 361,120, May 17, 1973, which is a continuation-in-part of Ser. No. 292,363, Sept. 26, 1972, which is a continuation-in-part of Ser. No. 146,812, May 25, 1971, abandoned. This application Apr. 22, 1974, Ser. No. 462,847

Int. Cl. C07d 49/20

U.S. Cl. 260-296 B

14 Claims

1. A compound of the formula



wherein R_1 is hydrogen or lower alkyl; R_2 is hydroxy, lower alkoxy, halo, amino or lower alkylamino; R_3 is hydrogen, halo, lower alkyl or lower alkoxy; and R_4 is hydrogen, lower alkyl or phenyl.

3,855,676

APPARATUS FOR DRAWING, SEPARATING AND WINDING FILAMENT

Takashi Kishida, and Sadao Kadokura, both of Hiroshima-ken, Japan, assignors to Teijin Limited, Tokyo, Japan

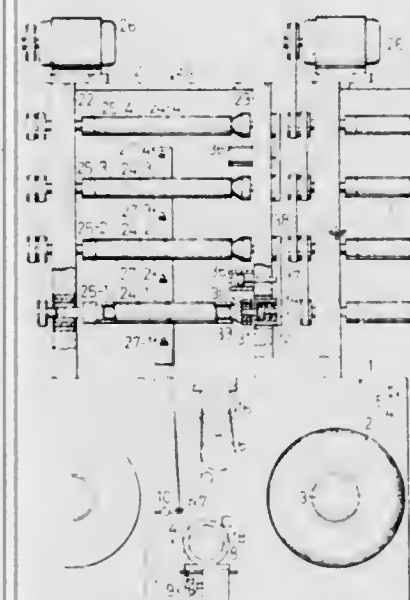
Filed Feb. 7, 1972, Ser. No. 224,048

Claims priority, application Japan, Aug. 3, 1971, 46-58466

Int. Cl. D02j 1/22

U.S. Cl. 28-71.3

8 Claims



1. An apparatus comprising: drawing means, said means drawing undrawn multifilament withdrawn without twisting from a rotatably supported package;
means for separating said multifilament drawn by said drawing means into a plurality of monofilaments; and
a winder having traversing means for concurrently traversing said monofilaments in the same direction, and a plurality of bobbins for winding up each traversed monofilament, wherein said bobbins are arranged vertically in columns and horizontally in parallel from the front to the back of said apparatus, said bobbins being supported and concurrently driven by a motor at their same one ends by respective spindles each partially engaged with said bobbin and also supported at the other ends by driven rotors each partially engaged with said other ends of said bobbin, said driven rollers being connected to pressure means for urging said bobbins to said spindles, said driven rollers being axially movable against the force of said pressure means when said bobbins are to be set or removed.

3,855,677
PROCESS FOR MANUFACTURING STUMP SOCKS AND LINERS FOR PROSTHESIS APPARATUS

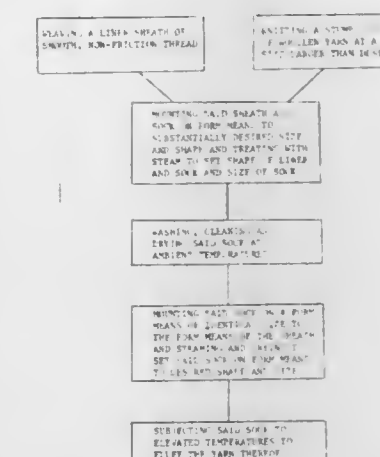
David Belzidsky, 191, rue Saint Charles-15e, Paris, France

Filed July 24, 1972, Ser. No. 274,299

Int. Cl. D04b 39/00; D06c 5/00

U.S. Cl. 28-72 R

1 Claim



1. Process for preparing a stump sock and liner sheath as a protective assembly, for use by amputees with prosthesis apparatus, comprising:
knitting a stump sock of a size larger than the final desired size;
weaving a liner sheath of substantially the size of the stump sock;
mounting said sheath and said sock on form means to establish identical shapes;
treating said sheath and sock while on said form means to preshape said sheath and sock;
cleaning, washing and drying said sock in the open air;
placing said sock on a shaped form of identical size to the form means of the sheath;
steaming and drying said sock on said form to finally shape and size the sock; and
subjecting said sock to hot air to fluff the material thereof, whereby placing the sheath within the sock forms a protective assembly for a stump within prosthesis apparatus.

3,855,678

METHOD OF MAKING WOVEN SHEET FOR RUBBER REINFORCEMENT

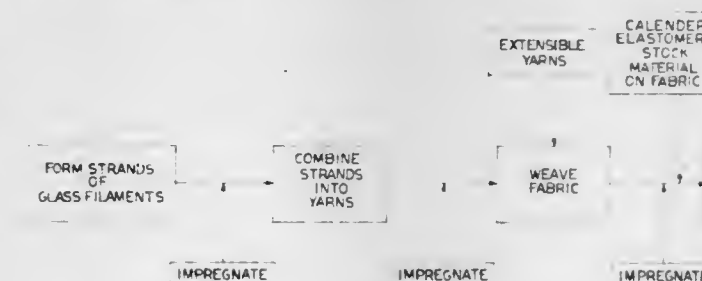
Charles F. Schroeder, Toledo, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Division of Ser. No. 777,817, Nov. 21, 1968, abandoned. This application May 12, 1971, Ser. No. 142,663

Int. Cl. D03d 15/00; D06c 27/00

U.S. Cl. 28-74 R

15 Claims



1. The method of making a reinforcement member for rubber and rubber-like goods, said method comprising:
forming strands of gathered-together filaments of glass, combining a plurality of said strands to form a first yarn, forming a woven fabric including, in one direction, a plurality of said first yarns and, in parallel relationship, second yarns of a material having an extensibility greater than said glass, said fabric defining a pattern in which both first and second yarns sinuously engage with the other components of the fabric and in which the yarns of glass fila-

ments are longer and exhibit a sinuosity which is greater than the sinuosity of said second yarns, which are accordingly shorter per unit length of fabric than said first yarns, whereby a tensile load imposed on said fabric in the said direction will be borne first by said second yarns, causing a simultaneous elongation of said second yarns and a straightening out of the originally more sinuous glass yarns until said glass yarns assume a part of said tensile load, and collecting the resulting woven sheet good.

3,855,679

ALUMINUM SOLDERING

Duane J. Schmatz, Dearborn Heights, Mich., assignor to Ford Motor Company, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 413,157

Int. Cl. B23p 3/00

U.S. Cl. 29-197

11 Claims



1. A method of effecting a corrosion resistant joint between the surface of an untreated aluminum part and the surface of a heat sensitive dissimilar metal part having a maximum tolerance temperature level, comprising:

- applying an anhydrous flux to at least said surface of the untreated aluminum part,
- applying a first solder to at least the fluxed surface of the aluminum part, said first solder consisting essentially of lead, 1-10 percent tin, a significant amount of silver up to 5 percent, and not over 0.1 percent antimony,
- heating said surface and solder to a temperature above the maximum tolerance temperature level of said dissimilar metal part for a period of time sufficient to establish a silver rich interface between the aluminum and said first solder and thereafter permitting said surface and solder to cool,
- fluxing said first solder on the aluminum part with a second flux,
- applying a corrosion resistant second solder to the re-fluxed first solder, said second solder having a melting range below said maximum tolerance temperature level, and
- melting said second solder while attaching said heat sensitive part to said heated second solder to complete said joint.

3,855,680

MILLING CUTTER

Sven Axel Olof Wirefelt, Sandviken, Sweden, assignor to Sandvik Aktiebolag, (formerly k/a Sandvikens Jernverks Aktiebolag), Sandviken, Sweden

Filed May 18, 1973, Ser. No. 361,649

Claims priority, application Sweden, May 26, 1972, 6996/72

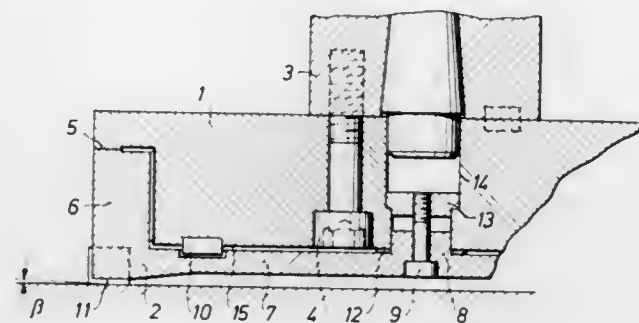
Int. Cl. B26d 1/12

U.S. Cl. 29-105 A

2 Claims

1. A face milling cutting tool for milling plane, milled surfaces on workpieces of metals and similar materials, said tool consisting essentially of a supporting body (1) adapted to be fastened to a spindle nose (3) or rotary axle of a milling machine, and a milling cutter body (2) provided with inflexible cutting inserts (11) arranged on its periphery, said milling

cutter body (2) being supportable on an annular plane support surface (5) on the outer peripheral part (6) of said supporting body (1), said support surface having approximately the same extension as that of said cutter body and taking up axial cutting forces, said milling cutter body (2) being essentially disk-



or shell-shaped and attached to the supporting body (1) in the central part of the cutting tool by holding means (9, 13) arranged for fastening and bending the milling cutter body (2), whereby to compensate for any small deviation of the axis of rotation of such spindle or axle and to tilt the cutting inserts (11).

3,855,681

DRIVE FOR SHELL-TYPE ROLLS

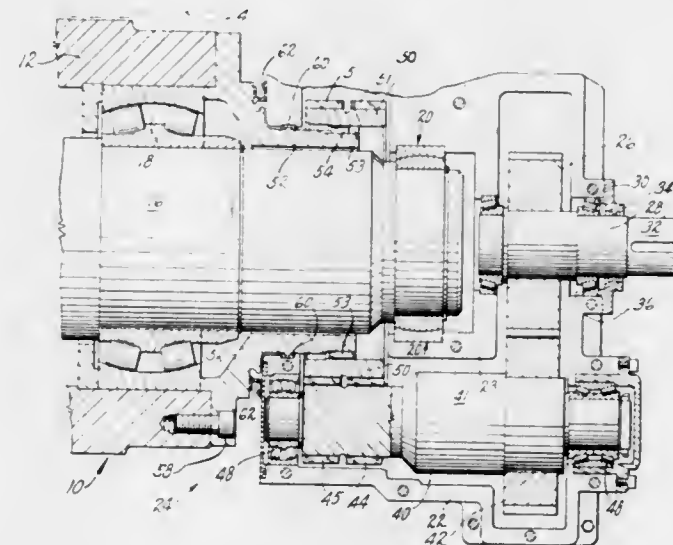
Achilles D. Andriola; Howard E. Kuehn; Warren C. Whittum, all of Orange, Conn., and Donald E. Wink, Penfield, N.Y., assignors to USM Corporation, Boston, Mass.

Filed Feb. 18, 1972, Ser. No. 227,373

Int. Cl. B60b 15/16

U.S. Cl. 29-115

8 Claims



1. A shell-type roll and means for coupling said roll to a source of rotary motion comprising: a stationary shaft; pedestal means supporting said shaft at its ends; a shell-type roll disposed over said shaft intermediate its ends; bearing means supporting said roll for rotary motion on said shaft, said means proximate either end of said roll; an annular driving flange fixedly secured to said shell roll at a driving end; drive means disposed at said end of said roll proximate said flange adapted to engage a source of rotary motion; coupling means including a countershaft journaled in said pedestal means independent of said stationary shaft and a pinion-couple disposed on said countershaft fixedly secured thereto and adapted for concurrent rotary movement therewith, said pinion-couple at one extent thereof in operative engagement with said drive means; ring gear means disposed adjacent said flange and in driving engagement therewith and also in driven engagement with the other extent of said pinion-couple, whereby said shell roll may be driven rotatably on said stationary shaft by coupling means supported independently of said stationary shaft.

3,855,682

METHOD OF SOLDERING TOGETHER AN ALUMINUM PART AND A FERROUS OR CUPROUS METAL PART

Andre Chartet, Meudon, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

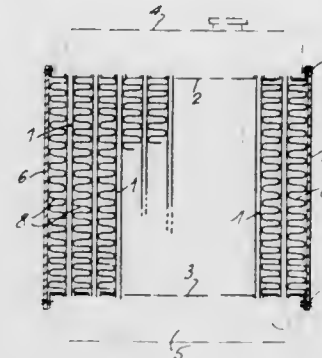
Filed Apr. 2, 1973, Ser. No. 346,758

Claims priority, application France, Apr. 6, 1972, 72.12153

Int. Cl. B21d 53/02; B23p 15/26

U.S. Cl. 29-157.3 R

11 Claims



1. A method for joining together an aluminum containing first part and a second part made of a metal selected from the group consisting of ferrous and cuprous metals comprising the steps of:

- coating the surface of the second part with a soldering alloy having a melting point at a temperature lower than 320°C,
- assembling the first part and the second part, subjecting the assembly to an organic flux containing an aqueous solution of triethanolamine, diethylenetriamine and a metal fluoborate which can be reduced by aluminum at a temperature lower than 320°C, heating the assembly and the flux at least to said temperature whereby the metal in the fluoborate is reduced out and deposited as a protective coating on the aluminum of the first part after removing the alumina layer from the aluminum,
- heating the fluxed assembly up to melting point of the soldering alloy, whereby the soldering alloy wets the aluminum containing part and is made adhering thereto, said protective coating forming an interpenetration layer.

3,855,683

METHOD OF CORRECTING ECCENTRICITY AND RUNNING OUT OF TRUE IN STAMPED STEEL WHEELS

Erich Philipp, Dabringhausen, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed May 15, 1973, Ser. No. 360,493

Claims priority, application Germany, May 17, 1972, 2224027

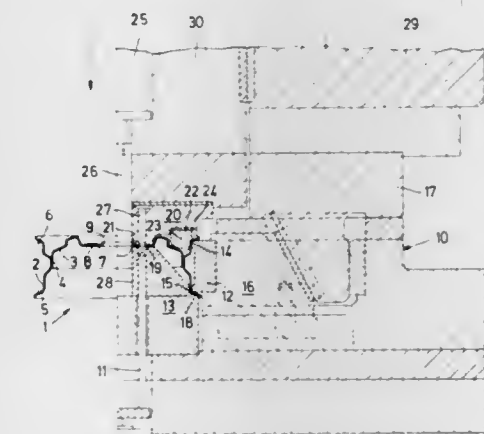
Int. Cl. B21h 1/02

U.S. Cl. 29-159.01

1 Claim

1. A method of correcting eccentricity and running out of true in a disc-type steel pressing wheel, said wheel comprising a rim and a wheel dish, said rim having first and second spaced apart tire supporting surfaces and first and second spaced apart shoulders, said wheel dish having a center bore and an outer edge, said rim being connected to said wheel adjacent said outer edge, said wheel dish having first and second annular support surfaces adjacent said center bore, said method comprising the steps of supporting one side of said wheel on a supporting calibrating tool, said supporting calibrating tool having a first calibrating face engaging said first support surface and a second calibrating face engaging said first shoulder, said supporting calibrating tool being spaced apart from the surface of said wheel between said first support surface and said first shoulder,

radially moving a plurality of segmental calibrating tools into engagement with said tire support surfaces of said rim at circumferentially spaced locations, each of said segmental calibrating tools having first and second arcuate axially spaced calibrating faces engaging said first and second tire support surfaces, said segmental calibrating tools being spaced apart from the surface of said rim between said first and second tire support surfaces when said calibrating tool is moved into engagement with said rim, inserting a center bore calibrating tool into said center bore, multiple stroke hammer pressing an axially movable calibrating tool against the other side of said wheel,



said movable calibrating tool having a first calibrating face striking said second support surface and a second calibrating face striking said second shoulder, said movable calibrating tool being spaced apart from the surface of said wheel between said second support surface and said second shoulder when said movable calibrating tool is in hammer pressing engagement with said wheel, holding said center bore calibrating tool in said center bore during said hammer pressing, removing said center bore calibrating tool from said center bore after said hammer pressing is completed, whereby said wheel rim and said wheel dish are accurately dimensioned and located with respect to each other.

3,855,684

NUCLEAR FUEL ROD BUNDLE HANDLING MEANS USEFUL IN AN IRRADIATED FUEL REPROCESSING SYSTEM

Wyvil R. Kendall, Berkley, Mich., assignor to General Electric Company, San Jose, Calif.

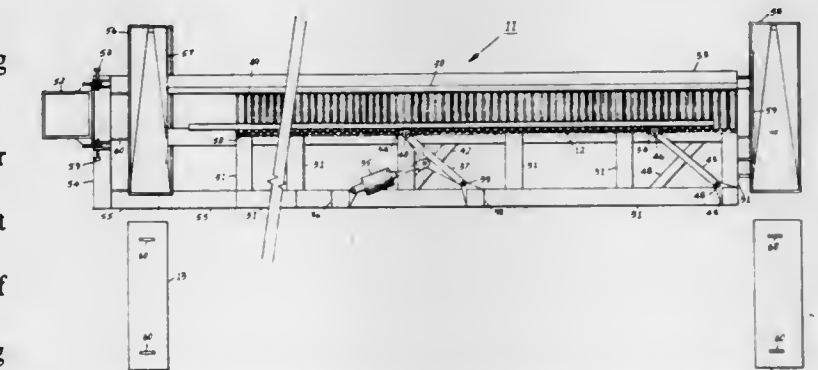
Division of Ser. Nos. 715,602, March 25, 1968, Pat. No. 3,621,742, and Ser. No. 86,092, Nov. 2, 1970, Pat. No. 3,827,579. This application Mar. 21, 1973, Ser. No. 343,297

Mar. 21, 1973, Ser. No. 343,297

Int. Cl. B23p 19/00; B24b 7/00

U.S. Cl. 29-200 D

3 Claims



1. Nuclear fuel rod bundle handling means capable of holding a nuclear fuel rod bundle in alignment with a nuclear fuel rod bundle disassembly means, said nuclear fuel rod bundle including fuel rod end securing means holding at least one

nuclear fuel rod in said nuclear fuel bundle, said nuclear fuel rod bundle handling means comprising

- a plurality of rollers in a horizontal parallel array adapted to support a fuel bundle;
- a fixed clamp member extending upwardly along a first side of said roller array;
- a movable clamp member substantially parallel to said fixed clamp member extending upwardly along a second side of said roller array and mounted for movement toward and away from said fixed clamp member, adapted to clamp a fuel bundle therebetween;
- means to move said movable clamp member toward and away from said fixed clamp member; and
- means to remove said fuel rod end securing means from at least one end of a fuel bundle positioned on said roller array.

3,855,685

LAMINATION ASSEMBLING APPARATUS

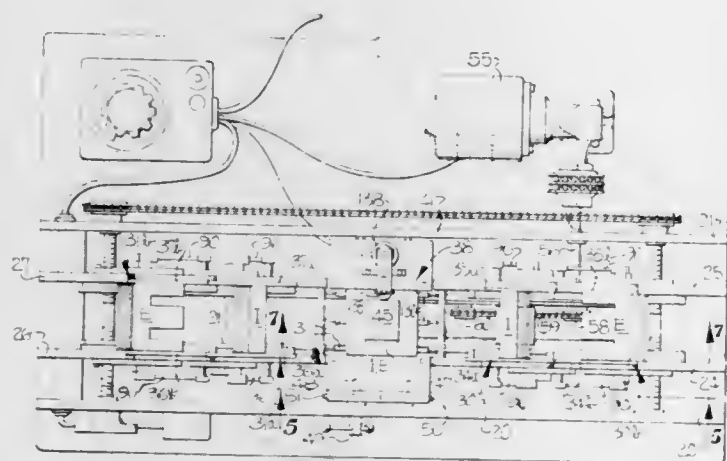
Berthold L. Nieder, Page Rd., RFD 3, Bow, N.H. 03054, and David L. Tyson, 203 Loudon Rd., Concord, N.H. 03301

Filed Nov. 19, 1973, Ser. No. 417,039

Int. Cl. H05k 13/00

U.S. Cl. 29—203 L

12 Claims



1. Apparatus for assembling laminations into a magnetic structure and comprising:

- first and second magazine means for respectively retaining stacks of a first type of lamination and of a second type of lamination;
- nest means mounted in predetermined spaced relation to said magazine means for receiving laminations being assembled into a magnetic structure and for supporting the magnetic structure so assembled;
- a plurality of lamination picking means each mounted adjacent a corresponding one of said magazine means for engaging one of the corresponding type of lamination and for moving the one type of lamination from the one magazine means toward said nest means and to an intermediate position;
- a plurality of lamination insertion means each mounted for movement between said magazine means and said nest means and each for inserting one of a corresponding type of lamination into said nest means in tandem with one of the other type of lamination; and
- drive means operatively connected with said picking means and said insertion means for driving all of said means in coordinated movement for sequentially removing all from said magazine means a pair of one first type of lamination and one second type of lamination and for inserting the pair of laminations into said nest means.

3,855,686

CARTRIDGE LINK GUIDE ASSEMBLY

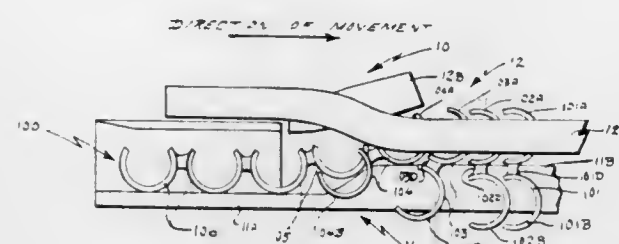
Ronald R. Snyder, Georgia, Vt., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,306

Int. Cl. B23p 19/04

U.S. Cl. 29—208 E

1 Claim



1. A cartridge link guide assembly for moving cartridge links ejected from an automatic type gun which uses cartridges previously held by the cartridge links, wherein said cartridge links are of the type having a single upper loop portion and a lower double loop portion with a center section between the lower double loops, and wherein said cartridge links were previously detachably connected in a link-to-adjacent link fashion to form an endless disintegrating type cartridge belt, comprising:

- a lower guide portion which includes a first bar member having a top surface, with said top surface configured to accept and to support said upper single loop portion of each cartridge link, and with said top surface also configured to accept, to support, and to guide said lower double loop portion of each cartridge link, and with said configured top surface abutting with said center section of said double loop portion;
- and, an upper guide portion which includes a second bar member and a third bar member that are essentially parallel to each other, and that are uniformly spaced from said first bar member to said lower guide portion, with said second and said third bar members configured and positioned to guide said upper single loop portion of each cartridge link.

3,855,687

APPARATUS FOR FEEDING FLANGES

Shigeru Moriguchi; Tetsuo Takeuchi, both of Chibaken, and Yuzi Saito, Kanagawaken, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

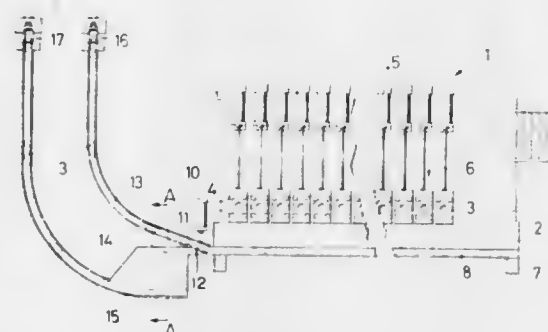
Filed May 24, 1973, Ser. No. 363,504

Claims priority, application Japan, May 29, 1972, 47-53083

Int. Cl. B23q 7/10

U.S. Cl. 29—211 C

1 Claim



1. An apparatus for feeding flanges, comprising magazines for storing various flanges, flange discharging means for each magazine, a chute system having forked chutes for rolling the discharged flange, one of the forked chutes having a slant for inverting the rolling flange, and receiving devices for receiving the rolling flange before introducing them into a flange welding machine.

3,855,688

STAPLING METHOD

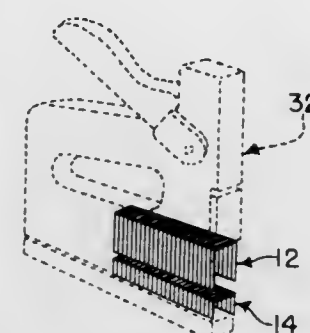
Friedrich Karl Knoch, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 178,956, Sept. 9, 1971, Pat. No. 3,788,187. This application Oct. 1, 1973, Ser. No. 400,748

Int. Cl. B23p 11/00

U.S. Cl. 29—432

1 Claim



1. A method for attaching articles to low density material including the steps of positioning, in a single driving tool, a strip of identical staple diverging anvils, each having relatively short penetrating legs, in juxtaposition with a strip of identical staples, each having relatively long flexible legs, alternately driving first an anvil from the strip of anvils into the low density material followed by the driving of a staple over the anvil so as to flare the legs of the staple outwardly without protruding from the opposite side of the material, the anvil and staple thus being driven without moving or repositioning the driving tool.

3,855,689

METHOD OF MAKING A COMB

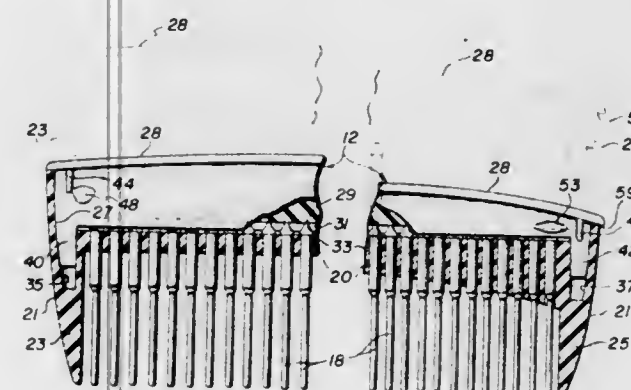
Jerome D. Schiffman, 116 Woodbine, Wilmette, Ill. 60091

Filed Jan. 2, 1974, Ser. No. 430,007

Int. Cl. B23p 19/04; A45d 24/00

U.S. Cl. 29—433

10 Claims



1. A method of making a hair comb, comprising:

- providing an elongated support frame having a recess in the back portion thereof with a mouth opening therein and with a forward wall opposite thereto and having a series of spaced apart holes extending therethrough and opening into said recess and through said forward wall;
- providing an elongated closure member adapted to close over said recess and having an elongated V-shaped groove in the front edge thereof;
- cutting a long thin member composed of metal material into a plurality of shorter similar members to provide a plurality of rodlike members being circular in cross-section;
- swaging said rodlike members to form the back end portions of said rodlike members into conically shaped head portions and to form the front end portions into gently curved blunt end portions to shape said members into teeth;
- slipping individually the thus formed teeth through said recess and into corresponding ones of said holes until said head portions engage said forward wall; and

securing said closure member in place over said mouth with said head portions being seated in said V-shaped groove and being retained between said closure member and said frame.

3,855,690

APPLICATION OF FACET-GROWTH TO SELF-ALIGNED SCHOTTKY BARRIER GATE FIELD EFFECT TRANSISTORS

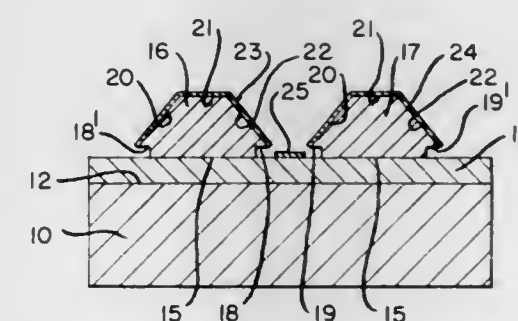
He B. Kim, Murrysville, and Michael C. Driver, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 26, 1972, Ser. No. 317,992

Int. Cl. H01L 7/36, 5/00, 29/48

U.S. Cl. 29—571

8 Claims



1. A method for making a self-aligned field-effect transistor comprising the steps of:

- forming a masking layer having at least two spaced apart windows therethrough on a planar surface of a semiconductor body having two impurity regions therein of different conductivity forming an abrupt change in impurity concentrations between impurity regions and having one impurity region adjoining said planar surface;
- epitaxially growing facets of the same conductivity type as the impurity region adjoining the planar surface from said surface through said windows and overgrowing edge portions of said masking layer at said windows to form overgrowth portions on said facets;
- removing said masking layer to cause said overgrowth portions of said facets to overhang portions of the surface adjoining the facets and shield said portions of the surface against metal deposition;
- depositing metal on the unshielded portions of the surface between the facets to form a self-aligned Schottky barrier contact to the surface; and
- depositing metal on the facets to make electrical contacts therewith.

3,855,691

METHOD OF MAKING A MAGNETIC MATERIAL PART WITH SPATIAL DISTRIBUTION OF THE PERMEABILITY

Andre Deschamps, and Georges Faye, both of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

Filed Mar. 2, 1973, Ser. No. 337,308

Claims priority, application France, Mar. 7, 1972, 72.07816; Mar. 28, 1972, 72.10779

Int. Cl. H01f 3/08

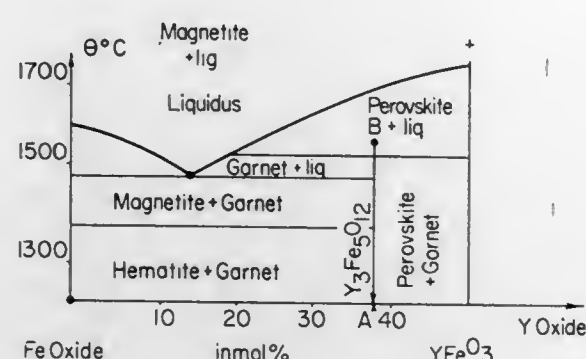
U.S. Cl. 29—608

10 Claims

1. A process for the manufacture of a solid magnetic article with a spatially uneven distribution of permeability which comprises:

- providing a sintered solid piece of polycrystalline magnetically uncompensated initial F_1 material having a first permeability value,
- heating said sintered solid piece at a temperature such that the free energy of said F_1 material is smaller than the free energy of another ferrimagnetic F_2 material having a

second permeability value different from said first permeability value, transforming at said temperature a portion of said F_1 material into said F_2 material,



discontinuing said heating before the material of said piece is completely transformed into F_2 material, and machining the resulting piece containing both F_1 and F_2 material so that at least one part of the outer surface of the machined piece consists of F_1 material.

3,855,692

METHOD OF MANUFACTURING CIRCUIT BOARD CONNECTORS

William P. Dugan, Ontario, Calif., assignor to General Dynamics Corporation (Pomona Division), Pomona, Calif.
Filed June 28, 1973, Ser. No. 374,747

Int. Cl. H05k 3/00

U.S. Cl. 29-625

37 Claims



1. A method of manufacturing electrical circuit board connectors integral with at least one circuit mounted on a positioner board and projecting therefrom comprising the steps of: bonding an aluminum sheet disposed between two sheets of a bonding agent to a positioner board having a copper clad on the unbonded side thereof, the aluminum sheet having a thickness of the desired connector height;

forming apertures through the bonded assembly at the locations of the desired projecting, integral connectors, the apertures having a size larger than the inside diameter of the desired connectors;

electro-copper plating the exposed aluminum surfaces in the apertures to a desired thickness;

electroless copper plating all surfaces of the assembly to a desired thickness;

nickel plating all exposed copper surfaces including the copper plated apertures to form nickel connectors therein;

applying a dry film photo resist layer to the top and bottom surfaces of the nickel plated assembly, the photo resist having chemical etchant resistant portions over the apertures and defining an electrical circuit on the nickel clad positioner board and chemical etchant susceptible portions over the remainder thereof;

chemically etching the assembly to remove all of the exposed nickel and copper therefrom;

removing the chemical etchant resistant portions of the photo resist to expose the apertures and the electrical circuit on the positioner board;

removing the bottom bonding agent sheet and any copper or nickel plating thereon to expose the bottom of the aluminum sheet;

dissolving the aluminum sheet to expose the nickel connectors projecting from the positioner board; and

removing the exposed copper plating from the outside of the projecting nickel connectors.

3,855,693

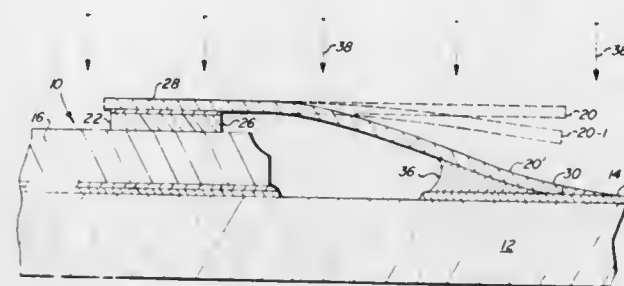
METHOD FOR ASSEMBLING MICROELECTRONIC APPARATUS

Charles Wayne Umbaugh, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.
Filed Apr. 18, 1973, Ser. No. 352,148

Int. Cl. H05k 3/32

U.S. Cl. 29-626

12 Claims



1. A method for assembling microelectronic apparatus of the type including a planiform insulator with a conductive run formed on a surface thereof, and a circuit device having one end of an elongated lead of ferromagnetic material affixed to an active face of the device, the other end of the lead extending in cantilevered fashion from the device, the device attached face up to the surface of the planiform insulator, the cantilevered end of the lead aligned over the conductive run, the method comprising the steps of:

magnetically deflecting the cantilevered portion of the lead toward the conductive run to establish mechanical contact therewith, and

bonding the deflected lead portion to the conductive run.

3,855,694

METHOD OF WINDING DEFLECTION COILS FOR PICTURE DISPLAY TUBES

Martin Clemens Van Der Heijde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 198,833, Nov. 15, 1971, abandoned.

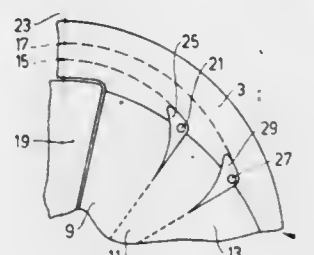
This application Aug. 20, 1973, Ser. No. 389,679

Claims priority, application Netherlands, Nov. 27, 1970, 7017341

Int. Cl. H01f 7/06

U.S. Cl. 29-605

5 Claims



1. A method of sequentially making a plurality of saddle shaped television deflection coils for a cathode ray tube comprising winding a first coil section, winding a second coil section series coupled to said first coil section about said first section, forming at least one open space having a selected position between said sections during said second recited winding step, and obtaining a desired magnetic field generated by said coils when current is passed therethrough by testing the flux distribution of a selected coil and adjusting the number of turns in each of said sections during at least one of said winding steps of coils made subsequent to said selected coil, the adjustment depending upon results of said testing step.

3,855,695

HAIR CUTTERS

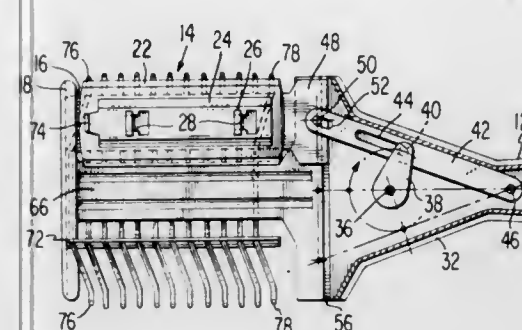
Abram Nathaniel Spanel, 344 Stockton St., Princeton, N.J. 08540

Filed Jan. 5, 1973, Ser. No. 321,343

Int. Cl. B26b 19/12

U.S. Cl. 30-30

16 Claims



1. A hair cutter comprising:

a supporting frame,

a blade carriage for a double-edged blade supported by said frame,

a protective cage supported by and extending outwardly from the frame, said cage comprising a plurality of elements forming oppositely disposed rows of bights respectively spaced outwardly from said frame, the distance between said rows of bights being greater than twice the width of said double-edged blade,

a manually movable driving element, and

a range-of-motion-enhancing means disposed intermediate of said driving element and said carriage to assist in driving said carriage toward and away from said oppositely disposed rows of bights to enable positioning of the cutting edges of said blade at selected positions between each of said oppositely disposed rows of bights, said range-of-motion-enhancing means comprising a motion imparting member pivotable about a point on said supporting frame to provide a range of motion capability to drive said blade carriage from one to the other of said oppositely disposed rows of bights in which said double-edged blade is in juxtaposition to first one and then the other of said oppositely disposed rows of bights.

3,855,696

HAIR CUTTERS

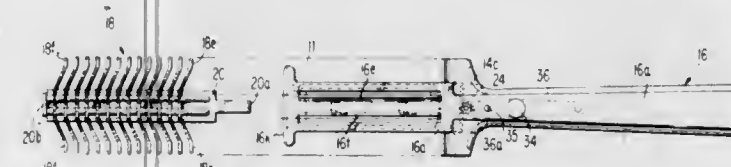
Abram Nathaniel Spanel, 344 Stockton St., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 321,343, Jan. 5, 1973, application Mar. 12, 1973, Ser. No. 340,379

Int. Cl. B26b 21/12

U.S. Cl. 30-30

51 Claims



1. In combination with a hair cutter having a cage made up of a plurality of elements, each of relatively small cross-sectional area, forming at least one row of apexes, a blade carrier for supporting a blade for lateral movement in either of two directions, respectively toward away from said apexes, a support for said blade carrier, driving means engaging said blade carrier for producing said lateral movement thereof, means for mounting said cage and said blade carrier for relative longitudinal movement of one of them, relative to the other, to expose said blade carrier for unobstructed

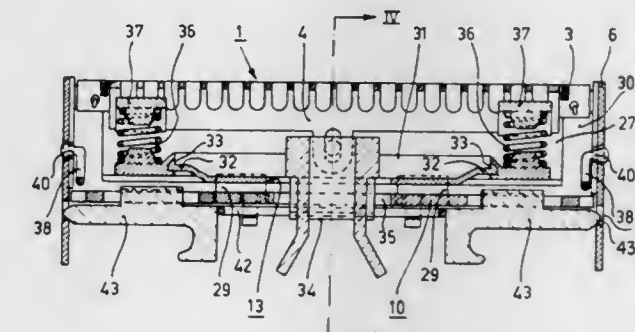
removal therefrom and placement thereon of said blade, and means for preventing said relative longitudinal movement in all but one of its lateral positions.

3,855,697

SHAVING HEAD FOR DRY-SHAVING APPARATUS
Gerald Meyer, and Leo Buzzi, both of Klagenfurt, Austria, assignors to U.S. Phillips Corporation, New York, N.Y.
Filed Mar. 1, 1973, Ser. No. 337,090
Claims priority, application Austria, Mar. 1, 1972, 1697/72
Int. Cl. B26b 19/10

U.S. Cl. 30-34.1

6 Claims



1. In a shaving head for a dry shaving apparatus, the shaving head including a shaving section having a shaving shear plate and an adjacent and cooperating shaving cutter reciprocally movable along their common longitudinal axis, a trimmer having a trimmer shear plate and an adjacent and cooperating trimmer cutter reciprocally movable along their common longitudinal axis which is parallel to said shaver section axis, drive means coupled to both of said cutters to produce common reciprocal motion, the improvement in combination therewith, wherein said trimmer shear plate and trimmer cutter are channel-shaped in cross-section transverse of said longitudinal axes and are generally concentric, each channel defining a bottom part, side walls extending outward of the bottom part, and top edges of said walls with cutting combs defined on corresponding and adjacent top edges of the trimmer's shear plate and cutter, and said shaver section is situated within said channel shape of said trimmer, with the shaver and trimmer cutters being spaced apart, the shaver shear plate being outward of the shaver cutter and the trimmer shear plate inward of the trimmer cutter, the shaving head further comprising spring means intermediate the two cutters urging them apart and resiliently against their respective shear plates.

3,855,698

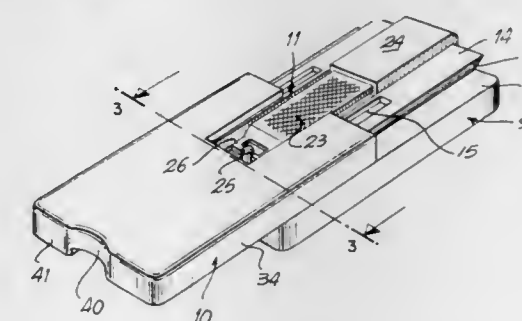
ECOLOGY NAIL-CLIP RESERVOIR DEVICE

Kenneth R. Crosby, 37-45 W. 20th St., New York, N.Y.
Filed Apr. 19, 1974, Ser. No. 462,253

Int. Cl. A45d 29/02

U.S. Cl. 30-124

9 Claims



1. A nail clip device comprising in combination: an enclosure means including a bottom member defining front and rear and opposite lateral portions and a bottom section interconnecting the portions and defining a recess in the nature of a slot extending from the front to rear portions in an upper

face of the bottom member and adjacent at least one of the side portions there being defined additional recess space communicating with the recess at a front portion, the additional recess space being defined also in the upper face of the bottom member, and there being a concave recess in the front portion in a front side wall therein defined in communication with a forward end of the slot recess, and the bottom member in the base of the slot recess forward end being shaped to stably receive a bottom face of a nail clipper means; a nail clipper means including upper and lower biased-apart clipping blades and a lever post mounted in the lower blade with pivotal joining structure defined in the upper portion of the lever post, and a lever arm defining steps therein to define proximal and distal lever portions spaced apart by a step portion, there being in juxtaposition to the step portion a projection extending downwardly from the distal lever portion making contact with an upper face of said upper blade, a terminal end of said distal lever portion being pivotally attaching to and being attached to the pivotal joining structure such that downward pressure on a terminal end of the distal lever portion is closable together of the upper and lower blades; and an upper top member shaped to fit on top of the bottom member and to enclose therebeneath said nail clipper means and said slot recess and said additional recess and defining a through space at an end mounted over the terminal end of said distal lever portion for exterior access to press downwardly the terminal end of said distal lever portion.

3,855,699

FLOWER CUTTER

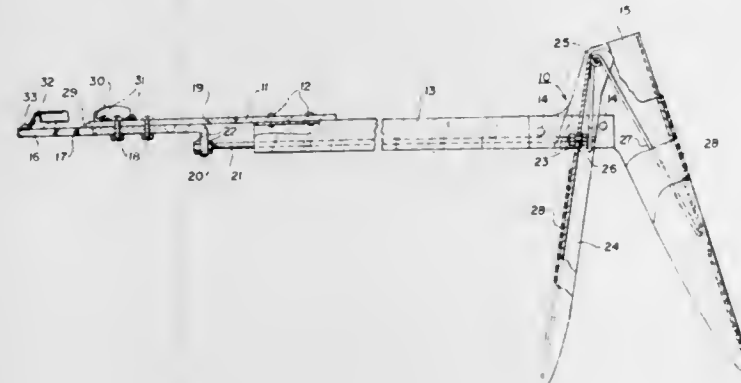
Dante J. Charlett, R.D. No. 1 Box 73, Cabot, Pa. 16023

Continuation-in-part of Ser. No. 321,701, Jan. 8, 1973, abandoned. This application Apr. 24, 1974, Ser. No. 463,609

Int. Cl. B26b 13/26

U.S. Cl. 30—135

5 Claims



1. An instrument for cutting plant stems and the like, of the type comprising a tubular pole, a pistol-grip handle attached to one end of the pole for supporting it in one hand, a lever pivoted on the handle and arranged to be pivotally squeezed toward said handle by the fingers of the hand by which the handle is held, and a rod telescopically extending through said tubular pole and connected to said lever for actuation thereby, wherein the improvement comprises a knife-edge blade fixed on the distal end of the said tubular pole, a shear member having a laterally extending slot therein for receiving a flower stem and being slidably carried by said blade, the edges of said slot being movable past the knife-edge blade in shearing relation, said shear member being connected to said rod and actuated so as to pull a stem in said slot over the knife-edge blade to effect a severing thereof when the said lever is squeezed toward the handle.

3,855,700

BLADE SCRAPER

Ronald L. Gerson, Newton, and Lawrence A. Caprio, Whitman, both of Mass., assignors to Louis M. Gerson Co., Inc., Middleboro, Mass.

Filed Apr. 19, 1974, Ser. No. 462,412

Int. Cl. B26b 1/08

U.S. Cl. 30—162

9 Claims



1. A blade scraper comprising, a hand gripping casing, a slide mounted in said casing and having means for mounting and carrying a scraping blade having a cutting edge, said casing defining a chamber with first and second opposed slide surfaces and an opening to the outside of said casing, said slide having resilient first and second spring legs biased into engagement with said surfaces respectively, pressure actuated locking means for locking said slide in a first retracted position with a scraper blade carried therein wholly within said chamber and a second operative position with said cutting edge exposed through said opening, said locking means comprising first and second cutouts defined by said casing and a pressure button means constructed and arranged to be urged into said first cutout in said retracted position and said second cutout in said operative position whereby said button can be actuated by finger pressure from outside said casing to release said locking means, said second cutout and said button means defining complementary surfaces for engagement to cause wedge locking of said slide in said second position upon application of a scraping force to said cutting edge.

3,855,701

ORTHODONTIC APPLIANCE

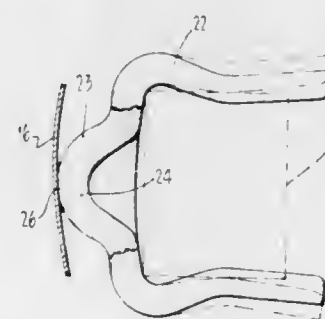
Joseph A. R. Le Clair, 4155 Moorepark Ave., San Jose, Calif. 95117

Filed Apr. 9, 1973, Ser. No. 349,219

Int. Cl. A61c 7/00

U.S. Cl. 32—14 A

11 Claims



1. An orthodontic appliance for securing a member to a tooth comprising a band fittable around the tooth, a clip secured to said band for holding said member to said tooth, a spacer between said band and said clip at the location at which

said band and clip are joined to thereby otherwise space said clip from said band, and means adhering said clip to said band at said location allowing said clip to be pivoted at said spacer at least about a first axis which is generally parallel to the surface of said band opposed to said clip toward and away from said band to adjust the orientation of said clip relative to said band as desired to accommodate said clip to said member.

3,855,702

ENDODONTIC OPERATING AND SEALING METHOD AND APPARATUS THEREFOR

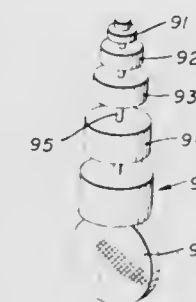
Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Filed Nov. 13, 1972, Ser. No. 305,973

Int. Cl. A61k 5/02

U.S. Cl. 32—15

2 Claims



1. A substantially compressible gutta percha endodontic sealing cone for use in root canals, comprising an elongate substantially cylindrical body with first and second ends; said body having a plurality of offset shoulders at spaced intervals along its length to form progressively larger segments from said first to said second ends; and a handle projecting from said second end and being removably disposed centrally of said body and extending from a point adjacent said first end of said body.

3,855,703

ACCESSORY RIM WITH DENTAL BITE CORRELATOR AND IMPRESSION AID

Edward C. Jarvis, 201 Meeting House Ln., Merion Station, Pa. 19066

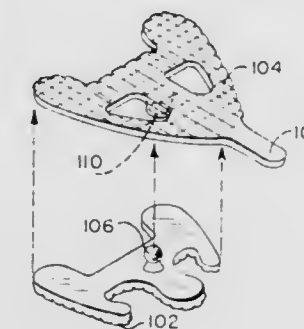
Continuation of Ser. No. 241,170, April 5, 1972, abandoned.

This application June 6, 1973, Ser. No. 368,417

Int. Cl. A61c 9/00

U.S. Cl. 32—17

2 Claims



1. An impression aid for insertion between a conventional impression tray and the opposing jaw of a patient, said impression aid comprising a first rim and second rim, said rims having an outer arcuate edge conforming to the shape of the inside of the mouth, said first rim having a ball shaped protuberance extending therefrom, said protuberance being so located so as to maintain the spacing between said rims, said second rim having a socket extending therefrom, said socket receiving said protuberance in a rotatable manner, and a handle extending from one said rims, said impression aid permitting the patient

to retain the impression tray in the mouth for as long as is required by the impression material and eliminating the need for the dentist himself to maintain the tray in position.

3,855,704

FOOT-OPERATED SPEED CONTROL FOR AIR-DRIVEN TOOL

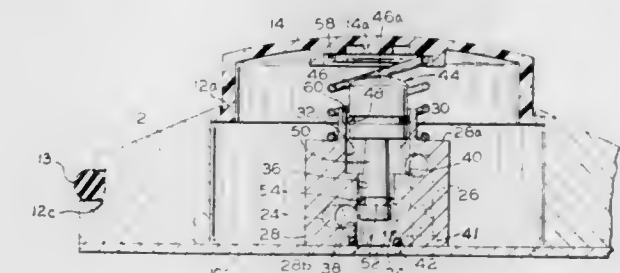
Dwight A. Booth, 3529 S.E. Crystal Springs Blvd., Portland, Ore. 97202

Filed Feb. 15, 1973, Ser. No. 332,605

Int. Cl. A61c 1/10

U.S. Cl. 32—28

15 Claims



1. A foot control for controlling the speed of an air-driven motor, said control comprising: a control block, means defining a cavity extending into said block from an upper surface opening thereof, said cavity including an upper piston chamber, a lower inlet air chamber and a narrow neck passage means interconnecting said chambers; means defining an inlet air passage extending through said block into said inlet air chamber from an inlet air port at a surface portion of said block; means defining an outlet air passage extending from a portion of said cavity above said inlet chamber through said block to an outlet air port at a surface portion of said block; and means defining a one-piece combination piston-poppet means movable within said cavity, including a piston portion movable within said piston chamber in sealed engagement with the walls of said chamber and a narrower stem portion extending downwardly from said piston portion into said neck passage and having a maximum diameter less than the diameter of said piston portion; said stem portion including sealing means operable to close said neck passage means when said piston is in an upper position within said piston chamber; said stem portion including said sealing means being movable downwardly into said inlet air chamber solely under foot pressure to open said neck passage means upon downward movement of said piston under foot pressure from said upper position and being movable upwardly solely under air pressure acting in opposition to said foot pressure to close said neck passage.

3,855,705

ENDODONTIC OPERATING SYSTEM

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Continuation of Ser. No. 165,923, July 26, 1971, Pat. No. 3,772,791. This application June 11, 1973, Ser. No. 368,513

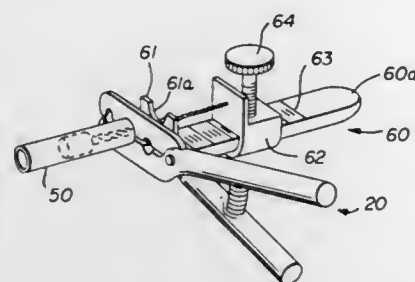
Int. Cl. A61c 3/00

U.S. Cl. 32—40 R

14 Claims

1. An endodontic measurement and operating system for root canal work comprising: A. an elongate flexible measurement instrument having a handle portion and a shank portion, with said shank portion being adapted to be inserted into said root canal; B. an elongate, hollow, deformable, cylindrical sleeve having first and second ends telescopically received on and secured to the projecting handle portion of said

instrument by crimping it thereto with said first end thereof abutting the crown of the tooth;
C. forceps means having compression grooves in the jaws thereof for deforming and securing said sleeve to said handle portion of said measurement instrument



1. whereby the distance said shank of said instrument projects from said first end of said sleeve can be determined; and
- D. means for measuring the depth of penetration of said measurement instrument.

3,855,706

RADIO NAVIGATION PLOTTER

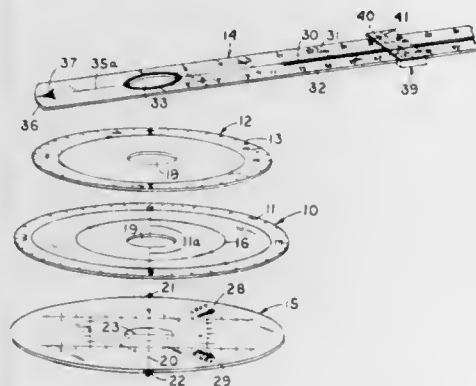
Richard J. Price, 626 N.E. 7th Ave., Boynton Beach, Fla. 33435

Continuation-in-part of Ser. No. 227,975, Feb. 22, 1972, Pat. No. 3,813,783. This application Mar. 15, 1973, Ser. No. 341,711

Int. Cl. G01c 21/20

U.S. Cl. 33-1 SD

5 Claims



1. In a radio navigation plotter for an aircraft or watercraft comprising:

a back plate and a front plate concentric with each other, said front plate having a 360° calibrated scale extending circularly about its center, and said back plate having a diametrical North-South line thereon, said back plate being rotatable with respect to said front plate about their common center to displace said North-South line angularly from alignment with the 0-180 axis of said 360° scale on the front plate according to magnetic variation at a particular geographic location;

and an elongated arm pivoted on said plates to turn about their common center, said arm extending laterally beyond one side of the plates and presenting a straight edge which extends radially outward beyond said plates, said arm having a marker aligned with said straight edge and located at the opposite side of the common center of the plates to designate on said scale on the front plate an angle 180° from the angular position of said straight edge; the improvement which comprises; a disc having a circular compass scale thereon concentric with said scale on the front plate and registering with the latter said disc being rotatable relative to said front plate about said common axis to displace said scale on the disc along said scale on the front plate in accordance with the magnetic heading of the craft; said marker on the arm being registrable with said scale on the disc in accordance with the

relative bearing so as to designate on said scale on the front plate the magnetic bearing of the craft to the radio station.

3,855,707

TACTILE DRAWING AND WRITING DEVICE

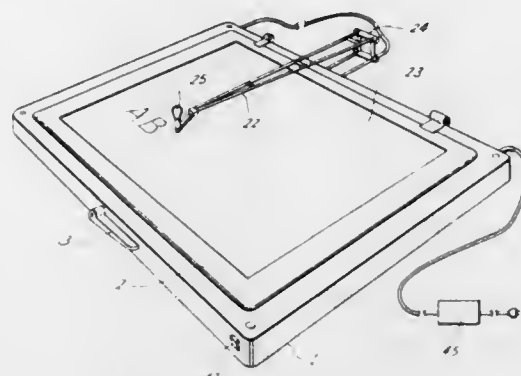
Donald R. Traylor, 308 Leisure Ln., Victoria, Tex. 77901

Filed Sept. 14, 1972, Ser. No. 289,069

Int. Cl. B431 13/00

U.S. Cl. 33-24 C

5 Claims



1. In a device for forming raised lines, a framework, a workholding means mounted on said framework, a stylus movably mounted on said framework and a vibrator for reciprocating said stylus against a worksheet mounted in said workholding means and a guide positioned opposite said stylus and on the other side of said worksheet for moving said stylus in the desired pattern over the surface of said worksheet and leveling means are mounted in said framework and bear against said workholder to level said workholding means before contacting the worksheet to be held on said framework.

3,855,708

SELF-ACTUATED DIGITAL LOCATION SENSOR

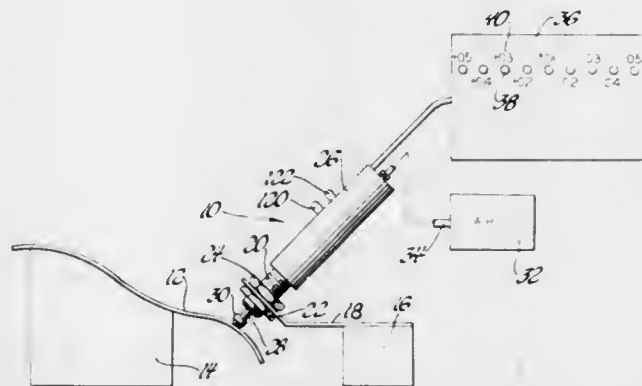
Lewis H. Tann, Troy; Robert J. Carroll, Warren, both of Mich., and Donald L. Lipke, Richardson, Tex., assignors to Candid Logic Inc., Hazel Park, Mich.

Filed Oct. 16, 1972, Ser. No. 298,176

Int. Cl. G01b 7/00

U.S. Cl. 33-169 R

6 Claims



1. A probe including: an elongated housing, a rod having one end slidably supported within the housing and the other end projecting from the housing; means for producing a force on said rod so as to cause it to move within said housing; a commutator including a plurality of segments which extend transversely to the direction of motion of the rod; a brush movable on said commutator, one of said commutator and said brush being supported for motion with said rod and the other being fixed relative to said housing; indicator means; and electrical circuitry connected to said transversely extending commutator segments, to said brush, and to said indicator means and operative to cause said indicator means to provide an output which is a function of the position of the rod relative to the housing, said circuitry means including elements con-

nected between each adjacent pair of commutator segments operative to cause said indicator means to assume a first state when the brush contacts a first segment of said adjacent pair but not the second segment thereof, and a second state when the brush contacts a second segment of the pair, either alone, or in combination with the first segment of the pair, independently of the direction of motion of the brush in reaching such position.

3,855,709

METHOD AND APPARATUS FOR MEASURING CHASSIS GEOMETRY

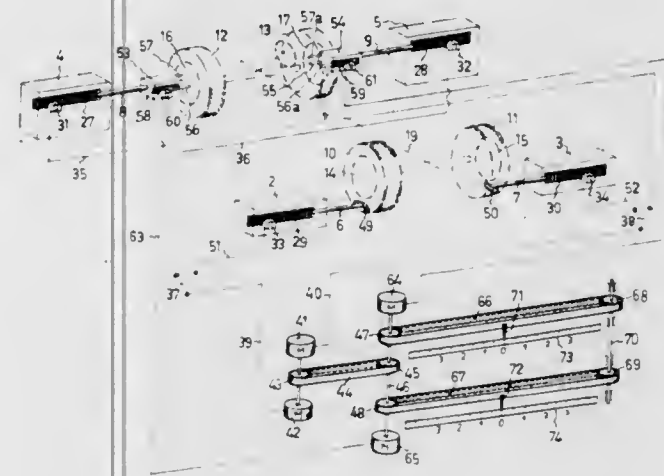
Georg Hirmann, Zurich, Switzerland, assignor to Poly-produkte, AG, Zurich, Switzerland

Filed Oct. 10, 1972, Ser. No. 296,151

Int. Cl. G01b 5/24

U.S. Cl. 33-203.15

24 Claims



1. Apparatus for measuring the angle of wheel inclination of vehicle wheels comprising: measuring means for obtaining a measurement of the angle of wheel inclination of each vehicle wheel with respect to a base axis of said apparatus, correlating means for determining a correction factor corresponding to the relative inclination with respect to said base axis of a predetermined vehicle base axis, and correcting means for correcting the measurement obtained by said measuring means in accordance with the correction factor determined by said correlating means so as to provide a measurement of wheel inclination with respect to the vehicle base axis, whereby it is unnecessary to align the vehicle in relation to a base axis of the apparatus.

3,855,710

SIGNAL CONTROL DEVICE

Jack Lunden, Sra Box 1541C, Anchorage, Alaska 99507

Filed June 15, 1973, Ser. No. 370,307

Int. Cl. G01c 15/06

U.S. Cl. 33-295

8 Claims

1. A highly portable signal control device for use in surveying sightings, comprising an elongate pole having a bottom end for resting on a survey point, visible projectile firing means on the upper end of said pole for projecting a visible signal device upwardly in axial alignment with said pole, a bracket secured to said pole intermediate of its upper and lower ends and below the eye level of a surveyor holding the pole on a survey point, a level secured on said bracket for vertically aligning said pole, and a sighting mirror secured on said bracket at such angle as to enable a surveyor holding the pole on a survey point to sight along the path of the visible

signal device when fired and to compare said path with the upper portion of said pole also visible in said mirror so as to



3,855,711

GYROCOMPASS

Shin-ichi Kawada, Yokohama, and Takeshi Hojo, Fujisawa, both of Japan, assignors to Kabushikikaisha Tokyo Keiki, Tokyo, Japan

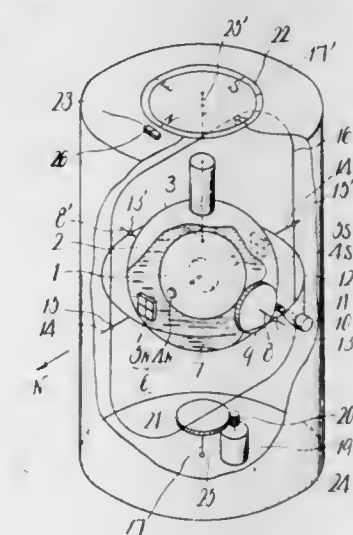
Filed July 31, 1972, Ser. No. 276,785

Claims priority, application Japan, Aug. 10, 1971, 46-60501; Aug. 10, 1971, 46-60504

Int. Cl. G01c 19/38

U.S. Cl. 33-327

10 Claims



1. A gyro compass comprising a gyro case housing therein a gyro with its spin axis being held substantially horizontal, a container surrounding the gyro case and containing a liquid therein, first support means for supporting the gyro case in the container, second support means for supporting the container with three degrees of freedom, and servo means for causing the container to follow up the gyro case about an axis in a direction of gravity, characterized in that the gyro case is adapted so that its weight is greater than the buoyancy applied thereto by the liquid; the center of buoyancy is coincident with its center of gravity; the first support means comprises a flexible suspension member; the suspension member coupling the upper inside of the container with the gyro case so that the latter acts as a pendulum in the container; and the coupling point of the suspension member with the gyro case is positioned higher than the center of gravity of the gyro case, whereby torque proportional to the inclination of the spin axis of the gyro relative to a horizontal plane and also proportional to the residual weight of the gyro case is produced about an

axis perpendicular to a plane including the spin axis of the gyro and a line of gravity therethrough to provide the gyro with a north-seeking action, wherein the second support means comprises a pair of horizontal shafts attached to the container along an axis perpendicular to a plane including the spin axis of the gyro and a line of gravity therethrough, a horizontal gimbal ring having a pair of bearings rotatably supporting the pair of horizontal shafts and a pair of normally horizontal gimbal shafts along an axis substantially perpendicular to the pair of bearings, the horizontal ring being disposed outside of the container, a follow-up ring having a pair of bearings rotatably supporting the pair of gimbal shafts and a pair of follow-up shafts along an axis substantially perpendicular to the pair of gimbal shaft bearings and normally in the vertical direction, the follow-up ring being disposed outside of the horizontal ring, and a binnacle having a pair of bearings rotatably supporting the pair of follow-up shafts.

3,855,712

METHOD OF PREPARATION OF PHARMACEUTICAL PRODUCTS

Pierre Blonde, Saint Maur Des Fosses, France, assignor to Societe Anonyme dite: Orsymonde, Paris, France
Filed Apr. 2, 1974, Ser. No. 457,244

Claims priority, application Great Britain, Apr. 3, 1973, 15914/73

Int. Cl. F26b 5/06

U.S. Cl. 34—5

17 Claims

1. A process of preparation of a dehydrated or desolvated pharmaceutical product by lyophilisation, which comprises the steps of:

- i. combining with a pharmaceutical composition to be lyophilised
 - a. a polymeric binder selected from the group consisting of polymeric compounds which are soluble in water and polymeric compounds capable of giving colloidal solutions in water; and
 - b. an organic solvent for the binder having a speed of evaporation less than 50 times that of ether;
- ii. solidifying the paste so obtained at a temperature in the range of -15° to -50°C ; and
- iii. subjecting the resultant frozen material to a process of lyophilisation under vacuum.

3,855,713

HOOD FOR DRYER

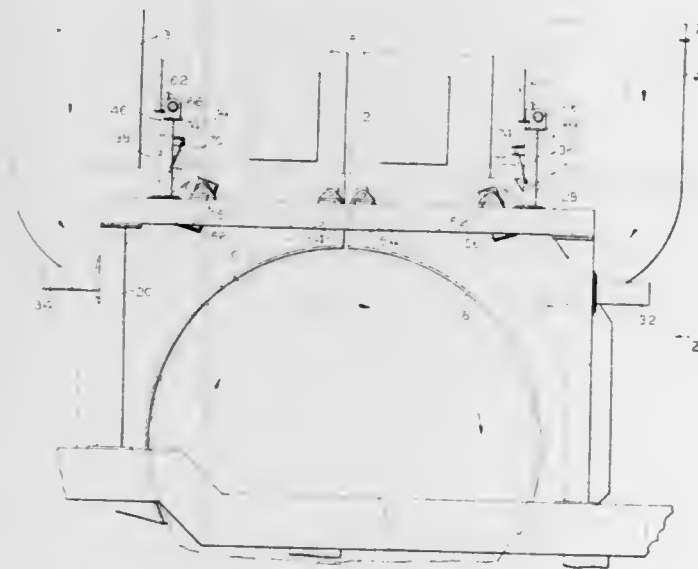
Robert C. Portouw, Portland, Oreg., assignor to Drew Engineering Co., Portland, Oreg.

Filed Mar. 2, 1971, Ser. No. 120,258

Int. Cl. F26b 11/02

U.S. Cl. 34—122

3 Claims



1. A dryer apparatus for removing moisture from material carried upon a rotating cylinder comprising:

a hood extending the length of said cylinder adjacent a portion of the periphery thereof;
frame means for supporting said hood;
means supporting said hood from said frame means for movement toward and away from said cylinder;
centering means connected to said frame means and to said hood at the longitudinal center thereof for restraining the center of said hood from movement longitudinally of said cylinder and permitting movement of said hood toward and away from said cylinder;
said centering means comprises a rod connected to each of said frame means and to said hood at the longitudinal center thereof and restraining the center of said hood from movement longitudinally of said cylinder; and
said rod means being pivotable with respect to said frame means and said hood about laterally spaced parallel axes.

3,855,714

INSTRUCTIONAL DEVICE AND METHOD FOR STUDYING THE GROSS ANATOMY OF THE HUMAN OR ANIMAL ORGAN SYSTEMS

Bartley C. Block, 233 Plains Rd., Milford, Conn. 06460
Filed Mar. 5, 1973, Ser. No. 338,084

Int. Cl. G09b 23/34

U.S. Cl. 35—17

2 Claims



1. An instructional device for studying the gross anatomy of the human or animal organ systems and organs comprising a two-dimensional manikin having anterior and posterior views of an opaque skeleton printed back to back on a transparent glossy backing and surrounded by an appropriate body outline, and a plurality of individually cut and individually applied illustrative organs of the organ systems constituted of vinyl plastic, each of said organs having selected, semi-transparent colors and transparent areas thereon, said colors indicating certain properties of said organs, the latter being adapted to adhere to the manikin upon the application of pressure thereto after each is accurately positioned on the manikin, said semi-transparent colors and transparent areas on each organ applied to said manikin permitting the visualization of the underlying bones and all attachment points thereon by the student of anatomical study of both the anterior and posterior views of the skeleton.

3,855,715

BOOT ZIPPER

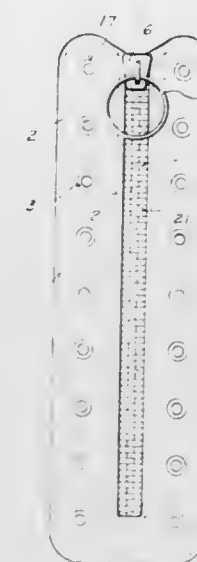
William Peter Johnson, Burnaby, British Columbia, Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest

Filed Oct. 5, 1973, Ser. No. 404,099

Int. Cl. A43b 11/00; A44b 19/30

U.S. Cl. 36—50

1 Claim



1. A replaceable zipper unit adaptable for ready installation on or removal from a boot which is formed of a split sheet of material, the adjoining split edges of which are fastened to a conventional zipper mechanism, said unit being perforated along its length with holes on each side of the zipper mechanism and fastened to a boot by means of loops of elastic lacing, in which

a split ring is fastened to the zipper slide so that the zipper slide may be latched in position by fastening the split ring through a loop of lacing adjacent the position of the zipper slide.

3,855,716

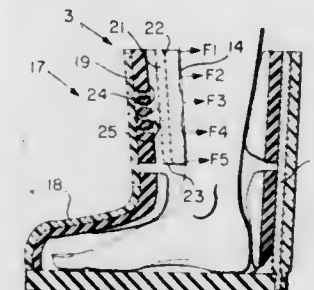
SKI BOOT LOAD DISTRIBUTOR FOR LOWER LEG
Harold D. Hutchinson, 26734 W. Latigo Shore Dr., Malibu, Calif. 90226

Filed Feb. 21, 1974, Ser. No. 444,461

Int. Cl. A43b

U.S. Cl. 36—2.5 AL

4 Claims



1. In combination:

- a. a ski boot including a foot portion and rigid cylindrical leg portion;
- b. a vertically elongated rigid member transversely curved and tapering in width in a downward direction to conform to the front of a person's shin and thereby engage the same over a substantial surface area; and
- c. bearing means between the front portion of said member intermediate its upper and lower ends, and an inside portion of said rigid cylindrical leg portion, said bearing means defining a fulcrum about which tilting of said member can take place whereby forces concentrated at said fulcrum resulting from a leaning forward of a per-

son's leg in the boot are distributed by said member over said surface area.

3,855,717

SMALL-SIZED LINEN IRONING MACHINE

Maurice Marie Achille Trouillet, Lyon, France, assignor to SEB S.A., Sologne, France

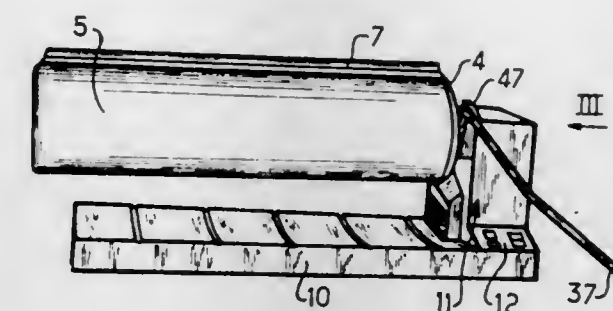
Filed Mar. 12, 1974, Ser. No. 450,429

Claims priority, application France, Mar. 20, 1973, 73,09988

Int. Cl. D06f 63/00, 65/04

U.S. Cl. 38—60

9 Claims



1. In an ironing machine comprising a casing; an ironing drum; a shoe adapted to co-operate with said drum for ironing linen disposed thereon; means contained in said casing for driving said drum in rotation; bar means mounted on said casing and extending therefrom in parallel relationship to one another; said bar means including a tubular bar onto which said drum is rotatively mounted, a tube section onto which said shoe is rotatively mounted for co-operation with said drum, and two tubes forming a base for the machine, the improvements wherein said casing includes a projecting portion forming a double sleeve namely a first sleeve receiving said tubular bar and a second sleeve containing a toothed wheel member meshing with teeth provided at the internal periphery of said drum; said toothed wheel member including a hollow and internally splined portion serving as a housing for a cylindrical member, said cylindrical member being provided with slots co-operating with said splined portion for driving said toothed wheel member in rotation; and said casing further containing speed reducer means including a gear wheel train driven by said motor for rotating said drum via said cylindrical member and said toothed wheel member, said cylindrical member and said toothed wheel member as well as said gear wheel train being disposed along an axis which is substantially parallel to the axis of revolution of said drum.

3,855,718

ADJUSTABLE MOUNTING FOR WORK-OBJECTS AND THE LIKE

Carolyn J. Parsons, and Stoner Parsons, both of 130 Echo Dr., Paris, Ky. 40361

Filed Nov. 30, 1973, Ser. No. 420,457

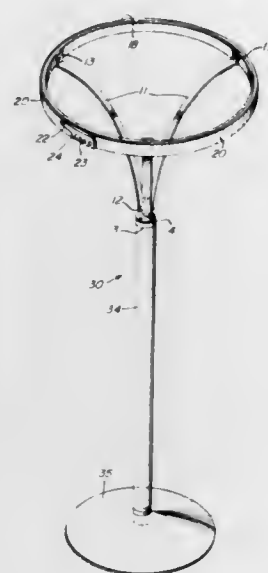
Int. Cl. D05c 1/04

U.S. Cl. 38—102.2

4 Claims

1. A freely adjustable supporting assembly comprising
 - a. a spherical element
 - b. a pair of substantially flat and contacting plates adapted to receive said spherical element therebetween;
 - c. said plates being held together and attached to a support;
 - d. one of said substantially flat plates having a round recess to receive a portion of said spherical element;
 - e. the other of said plates having a round aperture of larger diameter than that of the aforementioned round recess and a smaller diameter than that of said spherical element;
 - f. a portion of said spherical element being adapted to extend through said round aperture;
 - g. a screw-threaded shank connected to the last-mentioned portion of said spherical element;

- h. a nut screw-threadedly engaging said shank;
i. a brace secured to said screw-threaded shank by said nut;



- and
j. a work-supporting member carried by said brace.

3,855,719

METHOD AND A DEVICE IN CONNECTION WITH A REGENERATIVE DRIER FOR GAS UNDER OVERPRESSURE

Uno I. Jonsson, Spanga, Sweden, assignor to AB Carl Munters, Sollentuna, Sweden

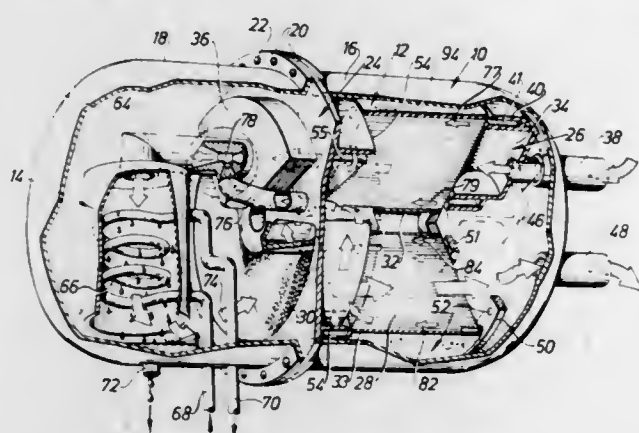
Filed Mar. 5, 1973, Ser. No. 337,892

Claims priority, application Sweden, Mar. 10, 1972, 3120/72

Int. Cl. F26b 3/00

U.S. Cl. 34—9

8 Claims



1. A method of using a regenerative drier for treating a hot gas compressed in a compressor unit, comprising, rotatably mounting a rotor in a housing, said rotor being composed of a substance with hygroscopic properties, and having therethrough a plurality of axially extending channels, dividing the space occupied by said rotor into a drying zone and a regenerating zone, each of which zones includes a different group of said channels in said rotor, and causing substantially all the hot gas coming from the compressor first to pass axially through the rotor channels in said regenerating zone to remove moisture therefrom, and then to be cooled and predried in a condenser before passing through the rotor channels in said drying zone for final drying.

3,855,720 AUTOMATIC LINE RELEASE FOR SPIN FISHING EQUIPMENT

Thor Dorph, 120 Ellis St., Apt. 101, San Francisco, Calif. 94102

Filed Dec. 26, 1972, Ser. No. 318,272

Int. Cl. A01k 87/00

U.S. Cl. 43—25

4 Claims



1. In combination with a spinning rod and reel, an automatic line release device comprising:

- a housing firmly attached to the handle of said rod on the opposite side of and forwardly of said reel;
- a trigger mounted in said housing to pivot from a first position within said housing to a second position extending outwardly of said housing and having a line receiving notch in that side of said trigger which faces the butt of said rod when in said second position so that line between said reel and the first guide on said rod may be placed in said notch;

cam means mounted in said housing for holding said trigger in said second position prior to making a cast; and means connected to and responsive to bending of said rod during casting for disabling said cam means but blocking movement of said trigger until said rod approaches a straight position to permit said trigger to move to said first position to release the line automatically at the proper moment.

3,855,721 FISHING LURE

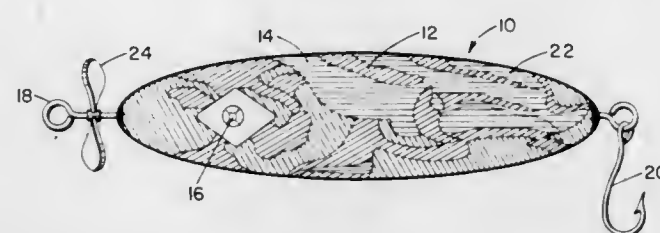
James W. Strader, P.O. Box 4029, Tallahassee, Fla. 32303

Filed Aug. 17, 1972, Ser. No. 281,301

Int. Cl. A01k 85/00

U.S. Cl. 43—42.32

3 Claims



1. An artificial fishing lure for attracting fish comprising: a body portion, hooking means attached to said body portion, said body portion having a first surface portion that reflects electromagnetic energy of a first frequency, said body portion having a second portion that reflects electromagnetic energy of a second different frequency, said first and said second body exterior portion randomly disposed adjacent each other about the outer surface of said body providing a plurality of randomly disposed swirl

patterns relative to the longitudinal and to the peripheral axes of said plug.

3,855,722 FISHING LURE CONSTRUCTION

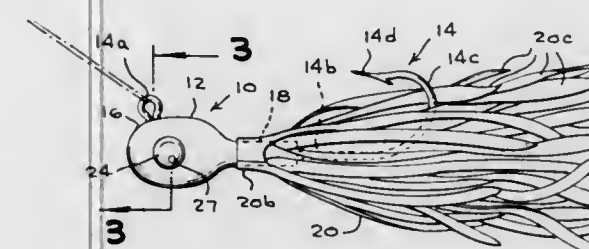
James E. Moore, Rt. 3, Tullahoma, Tenn. 37388

Filed June 6, 1973, Ser. No. 367,439

Int. Cl. A01k 85/00

U.S. Cl. 43—42.34

8 Claims



1. An artificial fishing lure adapted to be drawn through water by a fishing line, comprising a main lure body having a generally rounded leading head portion, a fish hook coupled to said lure body, said lure body being a molded metal body molded about the shank portion of the fish hook, a pair of eye assemblies mounted on the head portion for producing a moving eye appearance responsive to inertial and impact forces during movement of the lure through the water; each eye assembly comprising a hollow shell including a circular backing member, having an outwardly facing generally flat planar surface of a selected color resembling the sclera portion of an eye, a transparent generally domeshaped lens member having an uninterrupted concave inner surface and joined peripherally to and curving outwardly from the backing member to define an uninterrupted enclosed space therebetween, and a spherical ball of a color contrasting to that of said backing member and freely disposed in said enclosed space, said ball being of smaller diameter than the maximum spacing between the outermost portion of said lens member and backing member to freely roll about in said enclosed space and thereby produce a moving eye appearance responsive to said inertial and impact forces on the lure when drawn through the water.

3,855,723 FISHING APPARATUS AND QUICK CONNECTORS THEREFOR

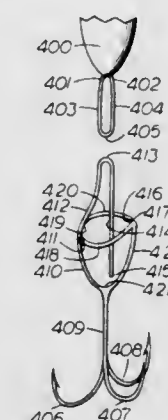
Melbourne D. Mc Gahee, Melbourne, Fla., assignor to Loop A Line, Inc., Melbourne, Fla.

Filed Dec. 26, 1973, Ser. No. 428,479

Int. Cl. A01k 91/04

U.S. Cl. 43—44.83

18 Claims



1. Fishing apparatus comprising a special connector, said special connector including an oval horizontal eye member having a pair of long sides and a pair of short sides, a pair of upstanding side members joined to said pair of short sides of said oval horizontal eye member and having their ends joined together, an extension of one of said upstanding side members

continuing beyond the opposite side of one of said oval eye side members, a bend in said extension, a central shaft connected to said bend having an end and passing back centrally through said oval eye member, and first and second fishing implements connected to said joined ends of said upstanding side members and to said shaft and disposed in said bend.

3,855,724

ANIMAL TRAP

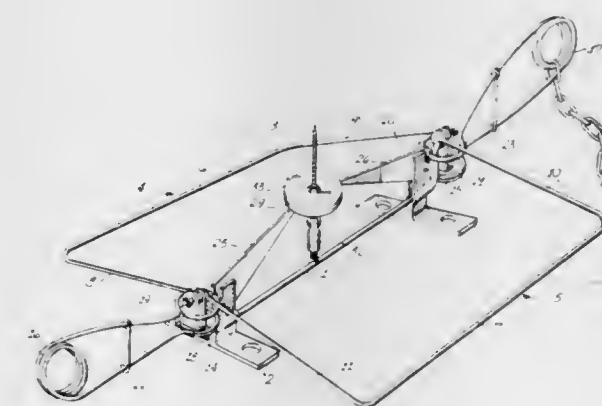
Michael Benz, 68 3rd Ave., Williams Lake, British Columbia, Canada

Filed Apr. 26, 1974, Ser. No. 464,598

Int. Cl. A01m 23/26

U.S. Cl. 43—92

6 Claims



1. An animal trap comprising:

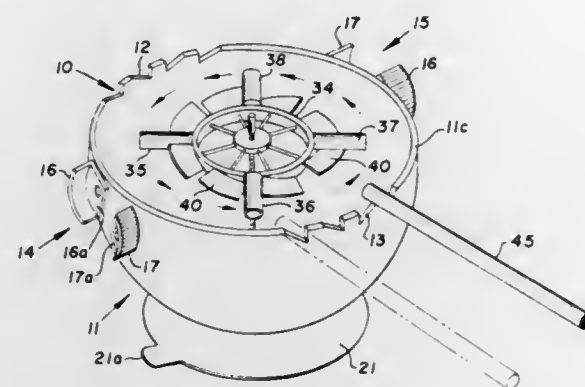
- a base;
- a pair of frames, each having an elongated side member and a pair of spaced end members, pivotally mounted on said base about a common axis such that said frames can rotate between an open position in which said side members are widely separated from each other and a closed position in which said side members are closely adjacent to each other;
- a ring member encircling each pair of adjacent end members and adapted to slide freely along each pair of said adjacent end members between said base and said side members;
- spring means adapted to urge said ring members towards said side members as said frames move to said closed position;
- trigger means adapted to maintain said frames in said open position against the action of said spring means and to be triggered to release the trap to said closed position, said trigger means comprising first and second trigger members pivotally mounted on said base and each adapted to releasably retain a said ring member adjacent said base when said trap is in said open position;
- a hollow disc member rigidly secured to said first trigger member remote from said pivotal mounting thereof and adapted to slidably contact said second trigger member; and
- bait holding means pivotally secured to said base intermediate said pairs of end members extending through said hollow disc member and including a plate member rigidly secured thereto, said plate member being adapted to engage and depress said hollow disc member and said trigger members upon movement of said bait holding means thereby releasing said ring members and causing said trap to close.

3,855,725 SPINNING TOY

James T. Tollefson, 2900 Dicken Ln., Mound, Minn. 55364
Filed Sept. 17, 1973, Ser. No. 398,013
Int. Cl. A63h 33/00

U.S. Cl. 46-1 C

7 Claims U.S. Cl. 43-65



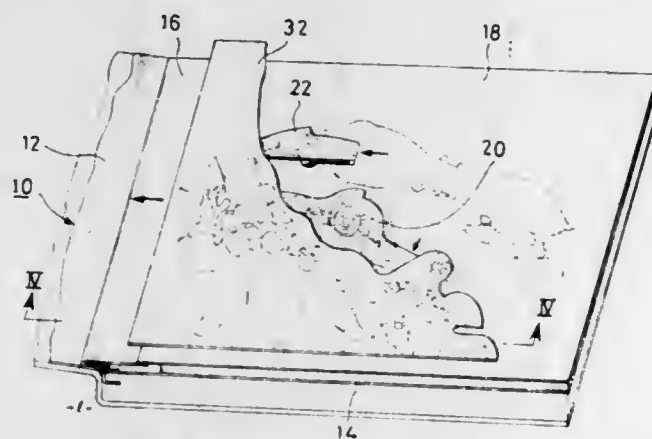
1. A spinning toy or the like, including:
 - a. a bowl shaped container having a generally circular upper edge;
 - b. means for mounting said container;
 - c. a spinner member mounted for rotation within said container below said upper edge thereof and generally planar with said edge;
 - d. at least one set of notches arranged on said upper edge of said container; and,
 - e. an actuating rod movable across said notches to impart rotative motion to said spinner.

3,855,726 STEREOGRAPHIC PICTURE BOOK

Hirokazu Yumoto, No. 1-11, 2-Chome, Sumida, Sumida-ku, Tokyo, Japan
Filed June 14, 1973, Ser. No. 369,923
Claims priority, application Japan, June 19, 1972, 47-72302
Int. Cl. A63h 33/00

U.S. Cl. 46-34

1 Claim

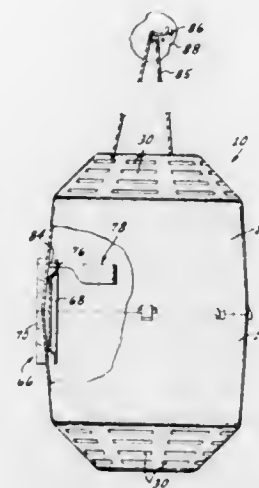


1. A stereographic picture book which comprises a folded base plate including left and right side plates, an operating plate dimensioned for connection at one end thereof to an inner edge of the left side plate and for extension over the right side plate, a stationary plate fixed to said right plate for movement relative to the operating plate, at least one display movably arranged on the second plate, a swivel connection interconnecting the operating plate with the display through an opening provided in said stationary plate for effecting movement of the display, a projectable picture plate connected by a flexible connection, at its one end, to said stationary plate and for projection, at its opposite end, to the operating plate, said flexible connection interconnecting the operating plate with the projectable plate through a second opening provided in the stationary plate for effecting protrusion of the projectable plate from the plane of the stationary plate.

3,855,727 FLY TRAP APPARATUS

Grant Canoy, 3221 Third Ave., Great Falls, Mont. 59401
Filed July 27, 1972, Ser. No. 275,471
Int. Cl. A01m 1/02

3 Claims



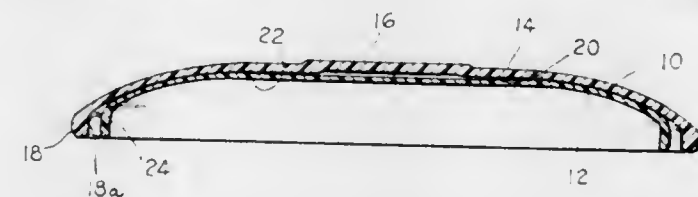
1. A trap for attracting and retaining flies comprising:
 - a first hollow member having a first end portion including a funnel shaped opening for the passage of flies into said trap and a plurality of apertures too small for the passage of flies, and a second end portion including a large opening, a guide arm, and connecting means including an attachment arm and an attachment bead;
 - a second member structurally identical to said first member, said attachment arm of said first member being engagable with the attachment bead of said second member, and the attachment arm of said second member being engagable with said attachment bead of said first member, whereby said first and second members are engagable along the second end portions of said members, said second end portions of said first and second members having means including slots for attaching a bait tray element thereto; a bait tray element having engaging means removably receivable by said slots of said first and second member, said bait tray element including a bait supporting dish and a trap supporting base, said bait supporting dish being positioned within said first and second members, and said supporting base being positioned outside when said members are engaged and said engaging means is in said slots.

3,855,728 AERODYNAMIC TOY

William B. Hynds, 3634 Fox Hall Rd., Columbia, S.C. 29204
Filed Jan. 10, 1974, Ser. No. 432,285
Int. Cl. A63h 27/00

U.S. Cl. 46-74 D

4 Claims



1. An aerodynamic toy comprising:
 - a first disk having a circular substantially flat main body portion, said main body having an upper surface and a lower surface, a rim circumscribing said main body portion extending vertically downwardly therefrom;
 - a second disk removably received within said first disk having a circular main body portion of a smaller diameter than said first disk, said main body of said second disk having an upper surface and a lower surface;
 - a rim circumscribing said main body portion of said second disk and extending downwardly therefrom;

a bottom edge of said rim of said second disk terminating on substantially the same horizontal plane as a bottom edge of said rim of said first disk when said second disk is nested within said first disk with an upper surface of said main body of said second disk flush against a lower surface of said first disk; whereby said disks can be thrown together for separating in flight.

3,855,729 ANIMATION DEVICE FOR A FIGURE TOY

Jurgis Sapkus, Manhattan Beach; J. Stephen Lewis, Pacific Palisades; Colin Vowles, Santa Monica, and William R. Yarbrough, Cerritos, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 23, 1973, Ser. No. 408,715

Int. Cl. A63h 3/24, 5/00

U.S. Cl. 46-116

6 Claims



1. In combination with a figure toy having a hollow head and a torso, said torso defining a water-impervious, compressible air chamber and having a neck opening, animating means comprising:
 - air pump means connecting said head to said neck opening in water-tight relationship with said torso;
 - first conduit means placing said air pump means in fluid communication with said torso;
 - a water reservoir mounted in said figure toy;
 - air-inflatable pressurizing means mounted in said reservoir for pressurizing water stored therein; and
 - second conduit means connecting said pressurizing means to said air pump means for supplying compressed air thereto, whereby said reservoir may be pressurized by compressing said torso.

3,855,730 FLAT STUFFED DOLL AND CLOTHING COMBINATION

Marcy L. Baer, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 3, 1973, Ser. No. 385,461

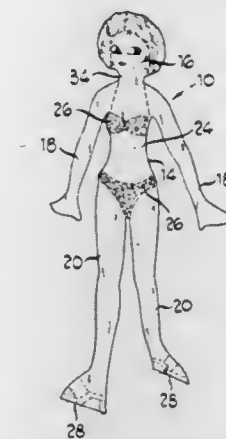
Int. Cl. A63h 3/02

U.S. Cl. 46-158

1 Claim

1. A flat stuffed doll and clothing combination comprising: a three-dimensional doll body including a generally flat torso made from soft material enclosed by a fabric cover, the torso being dimensioned so as to have a relatively substantial height and width but relatively small depth giving the appearance of a two-dimensional figure;

generally flat arms and legs connected to said torso and made from soft stuffing material enclosed by a fabric cover with the arms and legs having height and width but relatively small depth, said legs having feet formed at the bottom thereof extending laterally outwardly of the legs at a width greater than the remainder of the leg, said legs



being movable with respect to said torso in a front-to-rear direction and having sufficient rigidity so that the doll is self-supporting in a standing position on said feet when said legs are spaced in said front-to-rear direction from each other; and substantially flat clothes adapted to fit on said body and enclose said torso.

3,855,731 THROW MATS

Richard H. Yerkes, 3021 Unruh St., Philadelphia, Pa. 19149
Filed Oct. 2, 1973, Ser. No. 402,832
Int. Cl. E06b 7/00

U.S. Cl. 49-70

5 Claims



1. In a building structure including a floor, a doorway frame, and a door hinged to the frame for swinging movement between closed and open positions, mechanism to be used by a pedestrian opening the door to wipe or scrape shoes or other foot-covering comprising:

a mat formed in the shape of a segment, one edge of the mat being fixed to the floor adjacent the bottom of the door, the mat being adapted to occupy a lay-down position when door is open wherein the mat extends on the floor in front of the door and thereby available for contact by the foot-covering of a pedestrian and also adapted to occupy a retracted position when the door is closed whereby the mat is held closely adjacent the door and generally parallel the plane of the door and thereby unavailable for foot-covering contact;

first drive means on the door including a roller engaging said mat operative as a function of door motion in a direction from the closed to the open position to exert a force on the mat and pull the same from the retracted position to the lay-down position, said drive means being operative to develop said force only when the door is in motion in said direction; and

second drive means including gear means on the floor and gear means on the door meshing therewith operative as a function of door motion in a direction from open to closed position to exert a force on the mat to pull the same from the lay-down to the retracted position, the

second drive means being operative to develop said force only when the door is in motion in last said direction.

3,855,732

THRESHOLD STRIP FOR SLIDING DOORS HAVING REPLACEABLE BEARING TRACK

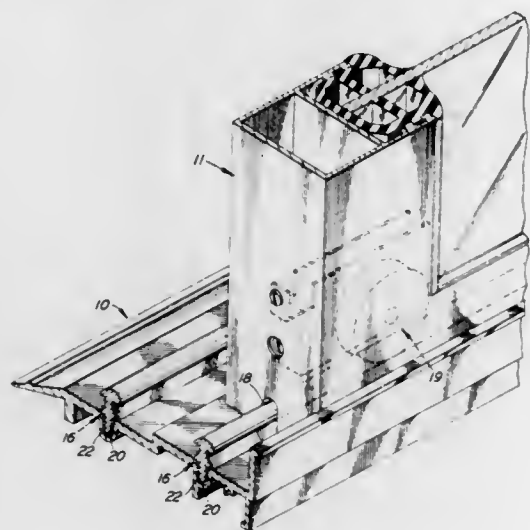
James E. Sheaf, Obetz, Ohio, assignor to Rollyson Aluminum Products, Sheridan, Ohio

Filed Oct. 15, 1973, Ser. No. 406,142

Int. Cl. E05d 13/02

U.S. Cl. 49-425

4 Claims



1. A threshold strip for supporting a sliding door comprising a longitudinally extending body with side edges having a longitudinally extending upward-opening track-receiving groove formed therein intermediate the side edges, a track removably mounted on said body, a longitudinally extending depending tongue on said track so shaped relative to the groove that it can be slipped downwardly into the groove to be retained therein by friction or be withdrawn upwardly out of the groove for removal, a longitudinally extending support portion on said track above said tongue with a longitudinally extending bearing surface at its upper edge, in which the groove is of substantially U-form in transverse cross-section and the depending tongue is of cooperating similar cross-section so that it can be slipped downwardly into the groove or be pulled upwardly therefrom, and including longitudinally extending support flanges on the track at a level between the depending tongue and the support portion and extending laterally outwardly in opposite directions to provide support surfaces which rest on the strip body at opposite sides of the groove therein.

3,855,733

SENSITIVE EDGE FOR A DOOR

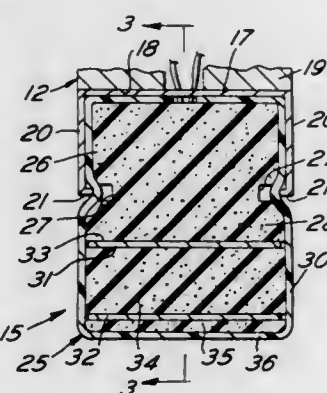
Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed June 27, 1973, Ser. No. 374,040

Int. Cl. E06b 7/23

U.S. Cl. 49-488

3 Claims



1. An electrically pressure sensitive edge structure adapted for a door, said structure comprising a channel extending along a door facing outwardly therefrom, internal projections

in said channel, and an entirely resiliently compressible pressure sensitive assembly of foam material snugly engaged longitudinally in said channel, said assembly including a base portion substantially completely occupying said channel, said base portion being sufficiently laterally compressible for edge-wise engagement into and withdrawal from said channel past said internal projections, and an active portion extending outwardly from said channel, said assembly being formed with recesses releasably receiving said projections.

3,855,734

GRINDING MACHINE WITH WORKPIECE LOCATOR ASSEMBLY

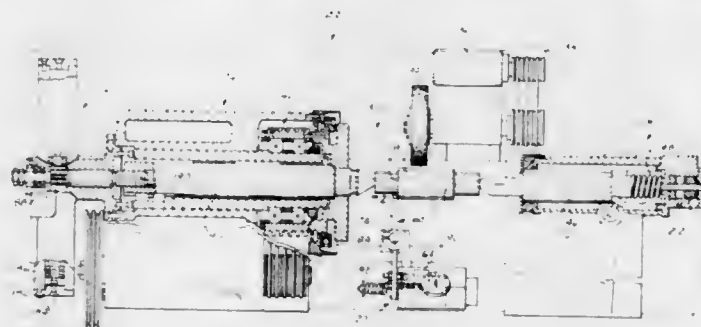
Roger H. Fournier, Millbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 28, 1973, Ser. No. 345,693

Int. Cl. B24b 49/00

U.S. Cl. 51-165 R

18 Claims



8. An apparatus as set forth in claim 7 wherein said motor means is reversible to enable said motor means to move said probe member in opposite directions relative to the work area, said connection means including first and second springs and means for connecting said springs with said motor means to enable said motor means to move said probe member in a first direction from said inactive condition to said active condition upon operation of said motor means in one of said opposite directions and for connecting said springs with said motor means to enable said motor means to move said probe member in a second direction from said inactive condition to said active condition upon operation of said motor in the direction opposite to said one direction, and control means for effecting operation of said motor means in said one direction to move said probe member in said first direction from said inactive condition to said active condition and for effecting operation of said motor means in said direction opposite to said one direction to move said probe member in said second direction from said inactive condition to said active condition.

3,855,735

DIMENSIONAL CONTROL GAUGE FOR INTERNAL GRINDERS

Hiromiti Tateisi, and Mituo Tamura, both of Iwata, Japan, assignors to Tokyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Continuation of Ser. No. 140,366, May 5, 1971, abandoned.

This application Aug. 13, 1973, Ser. No. 387,660

Claims priority, application Japan, Dec. 18, 1970, 45-114385

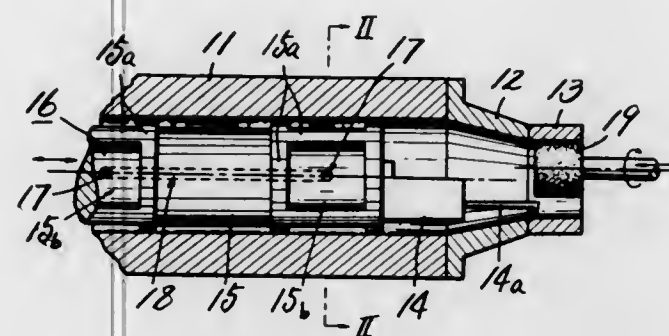
Int. Cl. B24b 49/04

U.S. Cl. 51-165 R

2 Claims

1. Apparatus for supporting a gauge for dimensional control in internal grinders comprising a rotatable hollow chuck spindle having a backing plate at the front end thereof for receiving a workpiece to be internally ground by a rotatable grinding wheel opposed to the chuck spindle and axially reciprocable into and out of the workpiece, a gauge head supporting shaft mounted within said chuck spindle, a gauge head having measuring means mounted on the front end of said supporting shaft, said measuring means including a single feeler adapted to be in contact with the inner surface of the workpiece during machining operation to measure the radius thereof, axially

spaced hydrostatic bearing means mounted within said chuck spindle and supporting said supporting shaft for axial movement coaxially within said chuck spindle whereby during a machining operation the measuring means of said gauge head will be maintained in contact with the inner surface of the workpiece being ground, said hydrostatic bearing means in-



3,855,736

GAGING METHOD AND APPARATUS

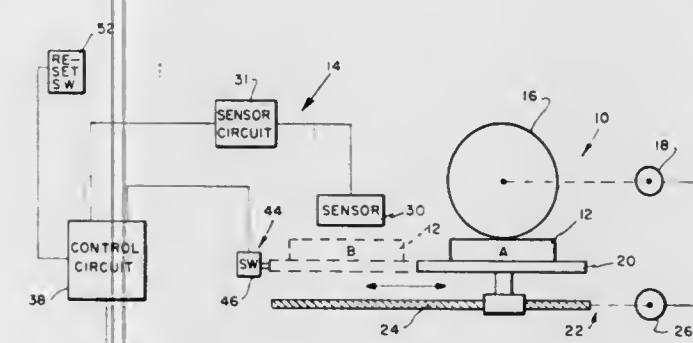
Wallace M. Porter, Jr., Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 3, 1972, Ser. No. 214,920

Int. Cl. B24b 1/00, 49/04, 49/06

U.S. Cl. 51-165.75

6 Claims



1. The method of gaging a selected dimension of an article comprising the steps of:

selecting an electrical gaging sensor which produces a continuous output signal that assumes a true gaging signal level representing the true value of said article dimension when said sensor and article are located in gaging position relative to one another and varies from said true signal level through a range of signal levels corresponding to other values of said article dimension in response to relative movement of said sensor and article from said gaging position;

effecting relative movement of said article and sensor in a manner such that the relative movement of said article with respect to said sensor occurs through said gaging position;

producing a gaging position signal in addition to and totally distinct from said sensor output signal when said article is located in gaging position; and

monitoring the output of said sensor only during occurrence of said gaging position signal.

3,855,737

AUTOMATICALLY ADJUSTABLE BLOCKING DEVICE

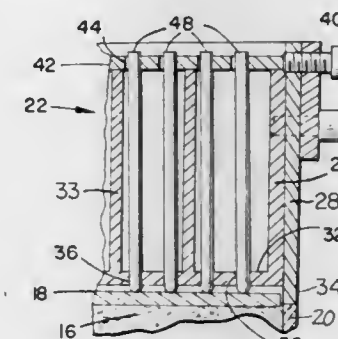
James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,210

Int. Cl. B24b 14/06; B23g 3/00

U.S. Cl. 51-216 R

13 Claims



1. Apparatus for supporting an object to be worked on, said object having at least two surfaces, each of said surfaces having a free undistorted contour, said apparatus comprising:

a. housing means, said housing means including first and second relatively movable portions, said first portion being provided with a plurality of through holes, said second portion being provided with a plurality of apertures in a pattern corresponding to said hole pattern provided in said first portion;

b. surface engagement means in the form of a plurality of automatically and simultaneously movable pins, each of said pins having a longitudinal axis, said pins being received in said holes and said apertures and movable in a direction substantially parallel to said axes; and

c. means, provided on said housing means, for moving said second part relative to said first part to substantially simultaneously lock all of said pins against axial movement.

3,855,738

CRYSTAL INDEXING FIXTURE

Robert Clifton Guggenheim Sr., Poughkeepsie, and Frank Victor Liucci, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1972, Ser. No. 305,018

Int. Cl. B24b 41/06; B25b 1/08, 5/04

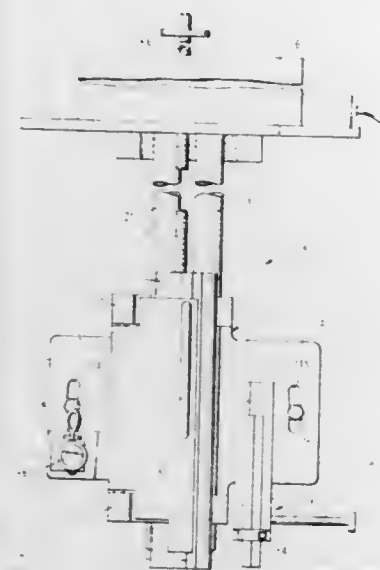
U.S. Cl. 51-217 R

15 Claims

2. A crystal boule indexing fixture, said fixture comprising: a frame including a pair of spaced apart, axially extending bores having parallel axes; a pair of rods extending through said bores, a cover hingedly connected to said frame and movable between a first position overlying a portion of said rods to press a crystal boule against said rods and a second position to increase the spacing of said cover from said rods; said frame including a body portion and projecting flanges, and means defining arcuate slots in each of said flanges to permit adjustment of said body portion in a vertical plane; a lever projecting from said cover and means biasing said lever to maintain said cover in said first position; and anti-torque means on said cover to mate with means on a crystal boule to inhibit rotation thereof, and means to engage said lever to over-ride said biasing means to lift said cover into said second position.

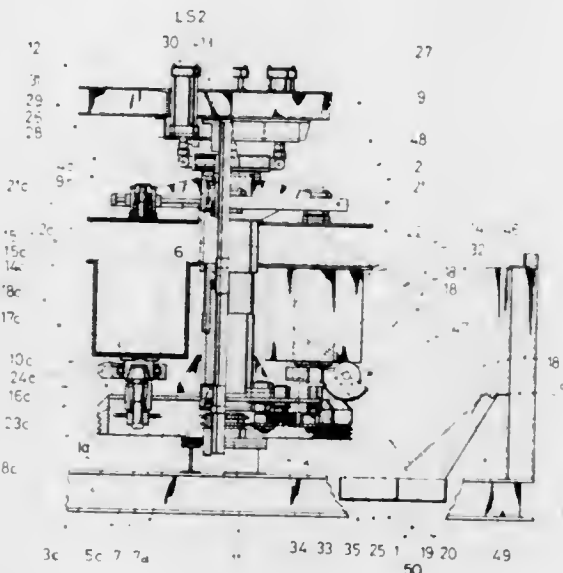
4. A crystal boule indexing fixture, said fixture comprising: a frame including a pair of spaced apart, axially extending bores having parallel axes; a pair of rods extending through said bores, a cover hingedly connected to said frame and movable between a first position overlying a portion of said rods to press a crystal boule against said rods and a second position to increase the spacing of said cover from said rods; a lever projecting from said cover and means biasing said lever to maintain said cover in said first position; and anti-torque

means on said cover to mate with means on a crystal boule to inhibit rotation thereof, and means to engage said lever to over-ride said biasing means to lift said cover into said second



rotatably journaled at one end thereof in said workpiece table and at the other end thereof in said frame for supporting said workpiece table in said frame for movement therein, means for separately adjusting the degree of eccentricity of each of said couplings for varying the radius of curvature of the curved surface to be machined, and means for causing rotational movement of said eccentrics so that a point on said workpiece and said workpiece table will describe a circular path in a plane at right angles to the axis of rotation of said eccentric couplings, the radius of said circular path being equal to the radius of curvature of the curved surface to be ground.

3,855,740
CENTRIFUGAL BARREL FINISHING APPARATUS
HAVING TILTABLE TUBS
Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co. Ltd., Nagoya City, Aichi Pref., Japan
Filed Feb. 14, 1973, Ser. No. 332,378
Claims priority, application Japan, Feb. 19, 1972, 47-17340
Int. Cl. B24b 31/04
U.S. Cl. 51-164 12 Claims

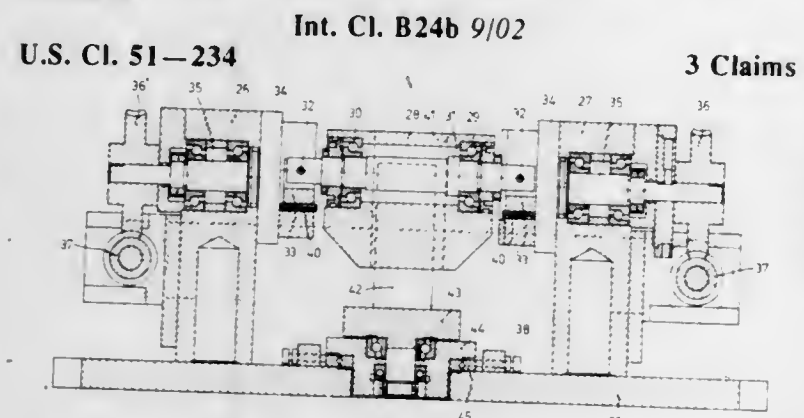


1. A centrifugal barrel finishing apparatus comprising a lower turret rotatably mounted for rotation around a central axis, a plurality of tubs rotatably mounted on said lower turret around said central axis and rotatable around axes parallel to said central axis, drive means coupled to said lower turret for rotating said lower turret, tub drive means detachable coupled to said tubs for rotating said tubs, said tubs being pivotally mounted on said lower turret for pivotal movement outwardly of said central axis to a position in which the axes of the tubs are at more than 90° to the central axis, tub-pivoting means coupled to said tubs, an upper turret mounted above said lower turret and movable toward and away from said lower turret, tub covers on said upper turret in positions corresponding to the positions of said tubs on said lower turret and engageable with said tubs to close said tubs when said upper turret is moved toward said lower turret, and upper turret drive means coupled to said upper turret for moving said upper turret toward and away from said lower turret.

3,855,741
CLOSURE FOR FIRE RESISTANT STRUCTURE
Howard W. Semon, Malvern, Pa., assignor to General Electric Company, Fairfield, Conn.
Filed Apr. 12, 1973, Ser. No. 350,537
Int. Cl. E04b 1/94
U.S. Cl. 52-19 2 Claims

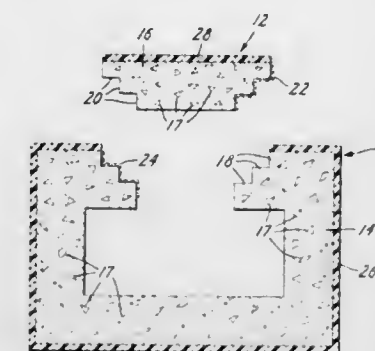
1. In a high-temperature-resistant container having an opening into its interior which opening is closable by a cover which when closed forms an interface between surfaces of the con-

3,855,739
DEVICE FOR GRINDING CURVED SURFACES
Johannes Anne Van Der Meer, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 3, 1972, Ser. No. 303,391
Claims priority, application Netherlands, Nov. 10, 1971, 7115421
Int. Cl. B24b 9/02
U.S. Cl. 51-234 3 Claims



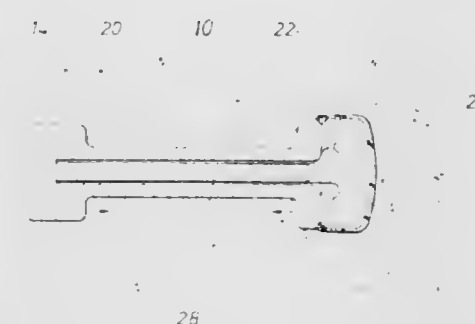
1. A device for use with a grinding machine of the type having a rotatably mounted grinding wheel and a clamping table movable relative to each other in three mutually perpendicular directions, for grinding curved surfaces, said device comprising a frame to be secured to said clamping table, a workpiece table movably mounted in said frame for supporting a workpiece to be ground, two eccentric couplings each

tainer and of the cover, the improvement comprising a facing affixed to a surface at the interface, which facing is a cloth of



fibers of a glass hard at normal ambient temperature and having a softening point below the said high temperature.

3,855,742
APPARATUS FOR PRESTRESSING A STRUCTURAL MEMBER
John D. Jeter, Midland, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 57,729, July 23, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,783
Int. Cl. E04c 2/08
U.S. Cl. 52-98 8 Claims

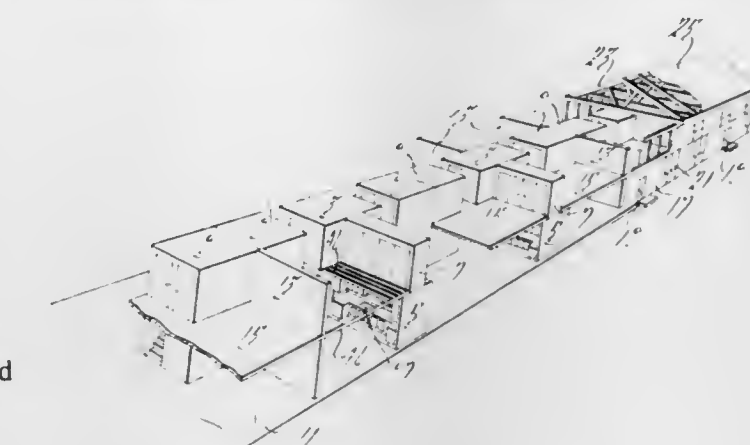


1. A reinforcing device for embedding in a body of hardenable material to place a portion of the material in compression after it has hardened, said device comprising a first member having opposing, spaced surfaces between which a portion of the hardenable material is located when the device is embedded therein, and a second member arranged to hold tensile stress in the first member to strain the member and move the two opposed surfaces thereof apart, said second member being of a shape and of a material that it will fail after the material in which it is embedded has hardened thereby releasing the first member to allow at least a portion of the stress in the first member to place the portion of the hardened material between the opposing surfaces of the first member in compression.

3,855,743
BUILDING CONSTRUCTION
Albert L. Wokas, 22245 Thorofare, Grosse Ile, Mich. 48138
Continuation of Ser. No. 80,891, Oct. 15, 1970, abandoned.
This application Sept. 11, 1972, Ser. No. 287,883
Int. Cl. E04b 1/348
U.S. Cl. 52-79 4 Claims

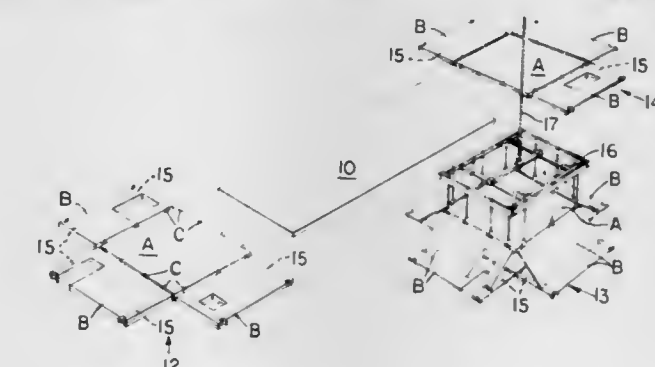
1. A two story townhouse construction comprising a foundation, a first box positioned on the foundation and containing a stairway from the first level to the second level, a second box on the foundation containing a pair of back-to-back utility rooms and having a height substantially the same as that of the first level, a third box on the foundation containing a pair of back-to-back kitchen sections and having a height substantially the same as that of the first level, a fourth box supported on the second box and containing a pair of back-to-back

bathrooms and having a height substantially the same as the second level, said second, third, and fourth boxes containing vertical transverse central walls extending the full heights of the boxes and being hollow and containing utility service means and separating one room or section from the other, said



boxes being arranged so that said hollow central walls are substantially coplanar and communicable with each other and with the wall separating adjacent apartments of the townhouse, and walls, ceilings, floors, and roof extending from and around said boxes and being separate therefrom.

3,855,744
MODULE FOR BUILDING CONSTRUCTION
Oleg V. Miram, 759 Flood Bldg., San Rafael, Calif. 94102
Division of Ser. No. 134,623, April 16, 1971, Pat. No. 3,724,157. This application Aug. 21, 1972, Ser. No. 282,400
Int. Cl. E00 1/35
U.S. Cl. 52-126 5 Claims



1. A module for use in constructing a building comprising: a. an overhead panel having a plurality of edges and means embedded therein having no portion extending beyond the boundaries thereof for distributing the weight thereof to a plurality of locations spaced from each other along the edges thereof, said means including a metallic coil at each of said locations having its axis perpendicular to the edge of said panel associated therewith one end of said coil adjacent said edge;

b. a wall panel having a plurality of edges and means embedded therein having no portion extending beyond the boundaries thereof for distributing the weight thereof to a plurality of locations spaced from each other along one of said plurality of edges thereof, said means including a metallic coil at each of said locations having its axis perpendicular to said one edge and with one end of said coil adjacent said one edge; and c. removable hinge joiner means including a lifting eye for attachment to a lifting means attached to said overhead panel at each of said plurality of locations spaced from each other along said plurality of edges of said overhead panel, said hinge joiner means along one of said plurality of edges of said overhead panel interconnecting said plurality of locations along said one edge of said wall panel to said plurality of locations along said one of said plurality of edges of said overhead panel; said hinge joiner means comprising apertured plates each adapted to be fastened to said panels at one of said locations by

means of a threaded bolt passing through said apertured plates and into engagement with the inner surface of said metallic coil at such location;

- d. said wall panel having a notch formed in the edge thereof opposite from said one of said plurality of edges thereof and an elongated structural member embedded therein and extending between said one edge and said opposite edge substantially perpendicularly thereto with one end of said elongated member terminating in said notch.

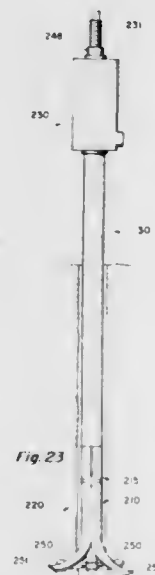
3,855,745 EARTH ANCHOR

Merle W. Patterson, and Lawrence C. Caves, Jr., both of Tulsa, Okla., assignors to Merit Systems, Inc., Tulsa, Okla. Continuation-in-part of Ser. No. 400,015, Sept. 24, 1973. This application Nov. 5, 1973, Ser. No. 412,826

Int. Cl. E02d 5/54, 5/80

U.S. Cl. 52—159

12 Claims



1. Apparatus for making an earth anchor, comprising:
 - a pair of coaxially disposed sleeves each being at least scored along a portion of their lengths to facilitate separation of said sleeves between the scored portions upon application of a spreading force thereto,
 - a rod located within said sleeves of length sufficient to extend to near the surface of the earth when said sleeves are located at a desired depth within the earth,
 - wedge means attached to an end of said rod to engage at least the inner of said sleeves at its bottom,
 - a driving tube placeable over said rod to engage at least one of said sleeves at its top, and
 - means for applying a force between said driving tube and said rod whereby said wedge means is moved into said sleeves to apply a spreading force to flare the bottoms thereof.

3,855,746 MULTI-PURPOSE TRIM FOR DOOR AND WINDOW FRAMES

Robert Leggiere, 34 Whitlaw Ln., Westchester, N.Y. Filed Jan. 25, 1971, Ser. No. 109,335

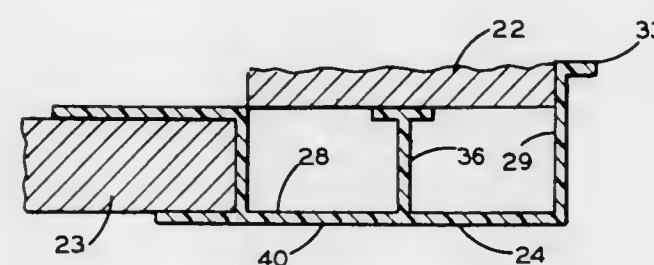
Int. Cl. E06b 1/14; E04b 1/40

U.S. Cl. 52—213

1 Claim

1. An interior and exterior casing trim for doors and window frames in the form of a linear unitary structure joining near-abutting and adjacent ends of structural components and surfacing components of a building nature lying in a mutual perpendicular plane, said device having a cross section comprising

A substantially horizontal base having an inner surface,
A substantially vertical extension integral one end of said horizontal base adjacent said inner surface, and
An L-shaped extension having an extremital end integral said inner surface in spaced relation to said vertical extension forming dual slots, one of which with said horizontal base and the other of which with both said vertical extension and said horizontal base,
said slots receptively engaging said structural component and said surfacing component at right angles to each other,



- A second vertical extension integral the free end of said horizontal base adjacent said inner surface thereof in spaced relation to said L-shaped extension for snubbing engagement of said surfacing component,
- An outwardly projecting horizontal extension for use in sealing abutment with a storm window, said latter horizontal extension secured in spaced relation to the ends of said first vertical extension, and
- A T-shaped support integral said inner surface of said base between said L-shaped extension and said vertical extension for support of both said horizontal base and said structural component.

3,855,747 DECK CONSTRUCTION

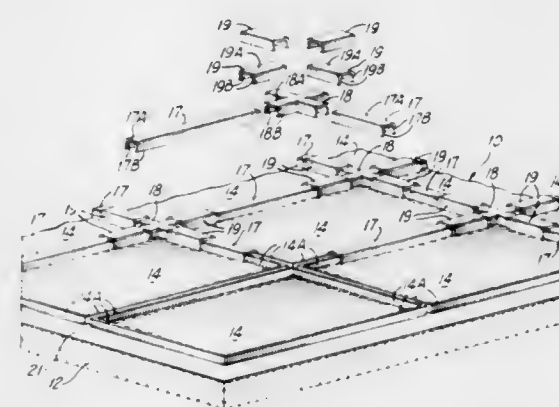
Maurice W. Langan, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Dec. 3, 1973, Ser. No. 420,780

Int. Cl. E04b 5/08

U.S. Cl. 52—404

5 Claims



1. A waterproof deck construction for use on a structural deck comprising
 - a plurality of preformed one-piece shallow pans each having upstanding peripheral flanges and in close, spaced apart relation,
 - coping joining the confronting flanges of adjacent panels,
 - filler material nested in said pans, and
 - a continuous wear surface overlying said pans, coping and filler material.

3,855,748 PLAYGROUND ASSEMBLY SET

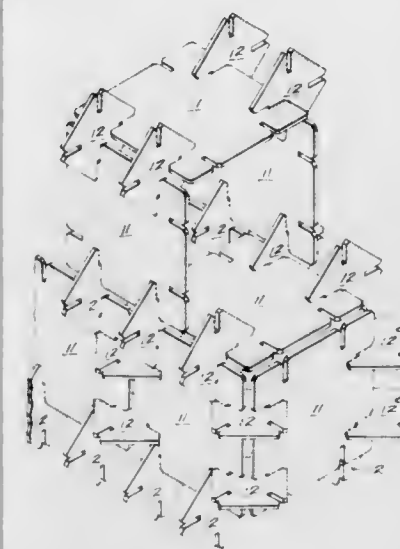
Jacob E. Thomas, 1715 Jefferson St., Port Townsend, Wash. 98368

Filed Dec. 15, 1972, Ser. No. 315,595

Int. Cl. E04c 1/10, 1/30

U.S. Cl. 52—585

6 Claims



1. A building set, the elements of which can be connected with one another to form modular structures, comprising:
 - a plurality of thin-edged, multilateral, plate-like building elements having defined therein a plurality of first slots of predetermined uniform depth, including at least two slots opening onto each edge of said building element, each of said two slots being spaced an equal distance from the nearest corner of said building element; and,
 - a plurality of thin-edged, plate-like connecting elements substantially smaller in surface area than said building elements and having defined therein a plurality of second slots of predetermined uniform depth, said connecting elements joining with said building elements in slidable interconnection between said first and second slots, wherein the distance between adjacent first slots in a given edge of said building elements is equal to twice said equal distance plus the difference between the straight-line distance separating opposing second slots in said connecting element and a distance equal to twice the depth of said first slots.

3,855,749 STOPPER INSERTING MACHINE

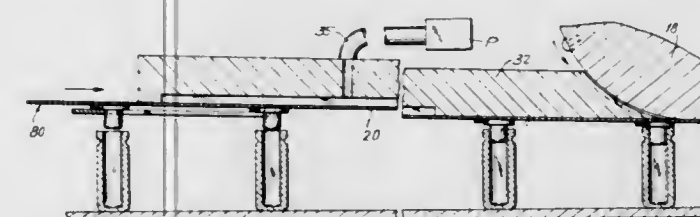
John F. McMickle, Jr., Piscataway, N.J., assignor to Cozzoli Machine Company, Plainfield, N.J.

Filed Oct. 17, 1972, Ser. No. 298,330

Int. Cl. B65b 7/28; B67b 1/04

U.S. Cl. 53—306

7 Claims



1. A machine for flying insertion of bottle stoppers into the mouths of bottles comprising means for moving bottles in a longitudinal direction in an upright position, a conveyor means, said conveyor means including means for moving bottle stoppers in a direction having a substantial component parallel to the longitudinal direction and in convergence with bottles moved by said bottle moving means, a rail structure, said rail structure including a gap through which the necks of bottle stoppers are adapted to extend when bottle stopper rims rest on the rail structure, said rail structure converging to-

wards said bottle moving means in a direction having a substantial component parallel to the longitudinal direction and said conveyor means including means for moving bottle stoppers along said rail structure in the longitudinal direction, said means for moving bottle stoppers along said rail structure including an endless belt, said endless belt having means thereon for moving bottle stoppers along said rail structure, said means on said endless belt for moving bottle stoppers along said rail structure including elements thereon for abutting bottle stoppers on the rail structure and moving the same, a vacuum port located adjacent each bottle stopper mover element and extending completely through said endless belt, a manifold block located above said endless belt and having the same inclination as said rail structure, said manifold block having a bottom surface, an elongated slot extending along said manifold block bottom surface, means for communicating said elongated slot to a subatmospheric pressure and the bottom reach of said endless belt riding along the bottom surface of said manifold block.

3,855,750

SCREW ANCHORED WALLBOARD ASSEMBLY

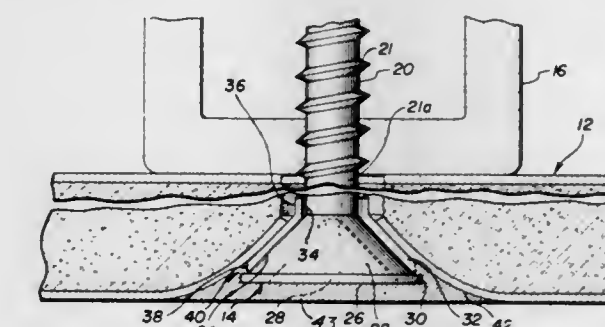
Bernard F. Reiland, Rockford, Ill., assignor to Textron, Inc., Providence, R.I.

Filed Jan. 15, 1973, Ser. No. 323,879

Int. Cl. E04b 2/58; F16b 25/00, 39/26

U.S. Cl. 52—363

3 Claims



1. In combination with a wall structure comprising a plurality of supporting studs over which sheets of wall board are secured; a screw assembly penetrating said wall board and holding the same to said studs, said screw assembly comprising a cylindrical shank having threaded means formed therealong for threading the screw assembly through a wall board panel and into engagement with one of said support studs, said cylindrical shank having a leading end inserted into the support stud and a trailing end spaced from said support stud, a conical head formed integral with said trailing end of said shank, a radially extending annular flange formed about said conical head, a washer carried on said shank and having a conical portion complementally engaged with said conical head and an aperture formed centrally therein to receive said cylindrical shank, said conical washer portion having a wall thickness, a radial extent and an axial length such that the outer conical surface of said conical portion engages the adjacent wall board surface forming an outwardly diverging depression therein and the maximum diameter edge of said washer is spaced inwardly of the peripheral edge of said flange and inwardly of the adjacent wall board surface in the depression to cooperate with said radially extending flange to form an annular recess immediately adjacent said flange on the underside thereof, with the top surface of said conical head being disposed beneath the normal outer surface of said wall board and with the peripheral edge of said flange spaced inwardly of the adjacent wall board surface in the depression to provide access opening to said recess, and a topping compound patch filling said depression and covering said screw, said topping compound being flowed through said access opening into said annular recess and hardened to provide gripping anchorage means for maintaining said patch in place.

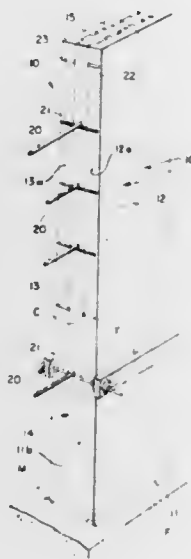
3,855,751

BUILDING BLOCK

Beacher Struthers, R.R. No. 2, Picton, Ontario, Canada
Continuation-in-part of Ser. No. 143,778, May 17, 1971,
abandoned. This application Mar. 12, 1973, Ser. No. 339,752
Int. Cl. E04c 2/04

U.S. Cl. 52-603

7 Claims



1. A structural member adapted to be stood upright, side by side, with adjacent identical members on a floor or slab for use in the construction of walls having smooth surfaces on each face and comprising:

a base portion of rectangular cross-section in plan and having a predetermined width dimension and a predetermined thickness dimension corresponding to the thickness of the said wall or the like and defining smooth, planar inner and outer sides spaced apart by said predetermined thickness dimension, and left and right hand sides spaced apart by said predetermined width dimension said width dimension being the same across the thickness of said base portion;

an inner panel portion formed integrally with said base and extending upwardly therefrom and having a thickness less than said base portion, said inner panel portion defining an inner side and left and right hand sides said inner side of said panel together with said inner side of said base forming the inner surface of said wall and said left and right hand sides forming continuous co-planar extensions of said base left and right hand sides and being spaced apart by the same said predetermined width dimension throughout the full thickness of said inner panel portion, said sides being adapted to abut closely with corresponding sides of adjacent said members when arranged as aforesaid, throughout their full height from said base to the top of said panel portion thereby to establish a smooth uninterrupted inner face for said wall when assembled as aforesaid, constituted by the inner sides of respective said inner panel portions and base portions;

an outer panel portion formed integrally with said base and extending upwardly therefrom and having a thickness less than said base, said outer panel portion defining an outer side and left and right hand sides, said outer side of said panel together with said outer side of said base forming the outer surface of said wall, and said left and right hand sides forming continuous co-planar extensions of said base left and right hand sides being spaced apart by the same said predetermined width dimension, throughout the full thickness of said outer panel portion said sides being adapted to abut closely with corresponding sides of adjacent said members when arranged as aforesaid, throughout their full height from said base to the top of said panel portion, thereby to establish a smooth uninterrupted outer face for said wall when assembled as aforesaid, constituted by the outer sides of respective said outer panel portions and base portions;

and said inner side of said inner panel portion and said outer side of said outer panel portion tapering in towards one another from the base to the top thereof,

and said inner and outer panel portions defining between them a predetermined spacing forming a deep narrow channel, closed at its lower end by said base and open at its upper end said channel being continuous along the length of said wall for reception of a suitable filler material therein;

and a stand member formed integrally with said base and located in the centre of the underside thereof, having cross-sectional dimensions in the direction both of the width and thickness of said base, which are less than the width and thickness of said base, and having a flat under-surface whereby the same can function as a stand permitting the structural member to stand erect and supporting the weight of said structural member on said floor slab, and at the same time defining a space all around said stand member between said base and a floor slab for insertion of mortar or the like between said floor slab and said base.

3,855,752

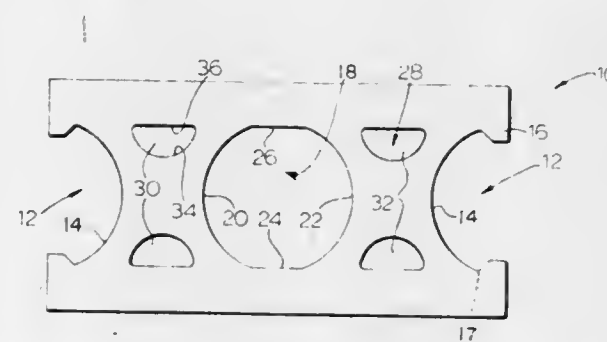
MASONRY BLOCK AND BUILDING PANELS

Norman N. Aylon, Willowdale, Ontario, Canada, assignor to
General Concrete Ltd., Hamilton, Ontario, Canada
Filed Oct. 10, 1972, Ser. No. 295,896

Int. Cl. E04c 2/04, 1/08

U.S. Cl. 52-605

3 Claims



1. A masonry block capable of cooperating with other like blocks to provide a structural panel, said block having a rectangular parallelepiped shape and including substantially parallel and smooth top and bottom faces and two end faces,

said block having an axial plane extending perpendicularly of said top and bottom faces and extending longitudinally of said block subdividing the width of said block into two areas of substantially equal dimension,

a central core extending between and substantially perpendicularly to the top and bottom faces and cross-sectionally shaped so that the portion thereof on one side of said plane is the mirror image of and has the same cross-sectional area as the portion thereof on the other side of said plane,

a recess formed in each end face and extending between said top and bottom faces, each of said recesses having the same cross-sectional dimension and having a combined cross-sectional shape and area substantially the same as those of the central core, and

four satellite cores positioned with a first two between the central core and the recess in one end face of the block and a second two between the central core and the recess in the other end face of the block,

each satellite core having substantially the same cross-sectional area and extending between and substantially perpendicularly to said top and bottom faces, the satellite cores being separated from each other, the central core and the recess within the block by material of construction of the block,

one member of each of said first and second two satellite cores being positioned on one side of said axial plane and each having substantially the same cross-sectional shape

and the other member of each of said first and second two satellite cores being positioned on the other side of said axial plane and each having the same cross-sectional shape which is the mirror image of the cross-sectional shape of said one member,

the central core having a cross-sectional shape consisting of two part-circular portions the ends of which are joined by straight line portions, the two part-circular portions of the central core having the same centre and radius of curvature, the centre of curvature of the two part-circular portions being located in said axial plane, the straight line portions of said central core being parallel to the longitudinal edges of the block,

each of the satellite cores having a cross-sectional shape which includes a semicircular portion and a diametrical portion joining the ends of the semicircular portion, the diametrical portions of said satellite cores being parallel to the longitudinal edges of the block,

the one members of said first and second two satellite cores having their diametrical portions in the same straight line and in straight line alignment with one of the straight line portions of the central core, the other members of said first and second two satellite cores having their diametrical portions in the same straight line and in straight line alignment with the other straight portion of the central core,

each recess having a cross-sectional shape including a part-circular portion of substantially the same radius of curvature and circumferential length as the part-circular portions of said central core and having its centre of curvature located at the bisection of the plane of the respective end face and said axial plane,

the semicircular portions of the satellite cores projecting inwardly of the longitudinal areas of the block and the radius of curvature thereof being such that the furthest distance between the adjacent longitudinal edge of the block perpendicularly thereto and the semicircular portion is substantially equal to the radius of curvature of the part-circular portions of the central core and the part-circular portion of the recesses,

the total cross-sectional area of said satellite cores being less than the cross-sectional area of said central core,

the ends of said diametrical portions of said first two satellite cores closer to their adjacent recess lying in a plane which extends perpendicularly to the longitudinal edges of the block,

the ends of said diametrical portions of said second two satellite cores closer to their adjacent recess lying in a plane which extends perpendicularly to the longitudinal edges of the block,

the centres of curvature of the semicircular portion of said first two satellite cores being located substantially one-quarter of the length of the block from their adjacent end face,

the centres of curvature of the semicircular portions of said second two satellite cores being located substantially one-quarter of the length of the block from their adjacent end face.

3,855,753

TILE AND TILE ROOFING

Cameron D. Terry, 2145B Almont Ave., Anaheim, Calif.
92806

Filed Apr. 13, 1973, Ser. No. 350,887

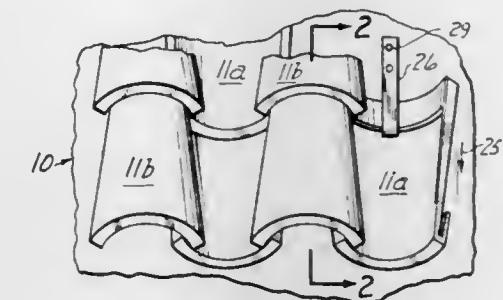
Int. Cl. E04d 3/362

U.S. Cl. 52-520

7 Claims

1. A tile comprising a body having a center line lengthwise and being curved in the plane of its cross-section perpendicular to the center line so that the surface at one side of the body is convex and the surface at the other side concave, each end of the body being curved and having a pocket, the pocket at one end being at the concave side and the pocket at the other end being at the convex side, each pocket being formed by an

engaging strip conforming with, and spaced from, the surface of the body at its end and having an opening facing toward the opposite end of the tile, said body having side edges at the



concave surface having side strips raised above the last mentioned surface, whereby a plurality of tiles can be interlocked end-to-end and also inverted to form ridges and valleys with protection against entry of rain or water beneath the ridges.

3,855,754

MITER JOINT LOCK AND COMBINATION

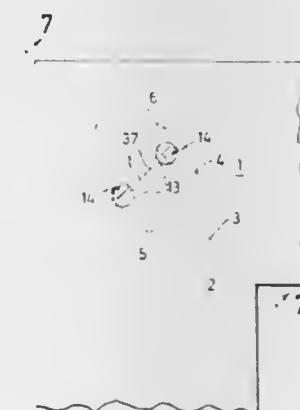
Wright A. Scoville, 20 S. Barneburg Rd., Medford, Oreg.
97501, and Chauncey J. Scoville, 7305 N.E. 39th St.,
Portland, Oreg. 97211

Filed Feb. 5, 1973, Ser. No. 329,358

Int. Cl. E04b 1/40

U.S. Cl. 52-755

7 Claims



1. A miter lock device for clamping and locking together the end of one wooden member with the end of another wooden member, which ends have flat, parallel surfaces engageable for forming a miter joint:

a. an elongated strip of rigid material formed with an opening in each end;

b. one opening in one end of said strip having a straight cam engaging edge extending at a right angle to the length of said strip at the side of said opening nearest the end of the strip nearest thereto;

c. an elongated anchoring element adapted to extend through the outer opening in the other end of said strip and to project from opposite sides of said strip into one member of said pair;

d. an elongated cam element of uniform cross-sectional contour from end to end transversely of its length adapted to rotatably extend through said one opening and projecting from opposite sides of said strip for extending into the other member of said pair for supporting said cam element in said other member for rotation relative to said strip;

e. said cam engaging edge of said one opening being straight and said cam element having a flat side adjacent and facing said straight edge and a cylindrical cam surface extending around said cam element from said flat side engageable with said cam engaging edge upon rotation of said cam element when said cam element extends through said one opening with its ends rotatably supported in said

other member for applying a force to said strip in a direction away from said anchoring element to clamp and lock such joint together when said surfaces on said members are substantially together and said other end of said strip is anchored in said one member of said pair.

3,855,755

ROTATABLE BUILDING STRUCTURE HAVING FLUID BEARINGS

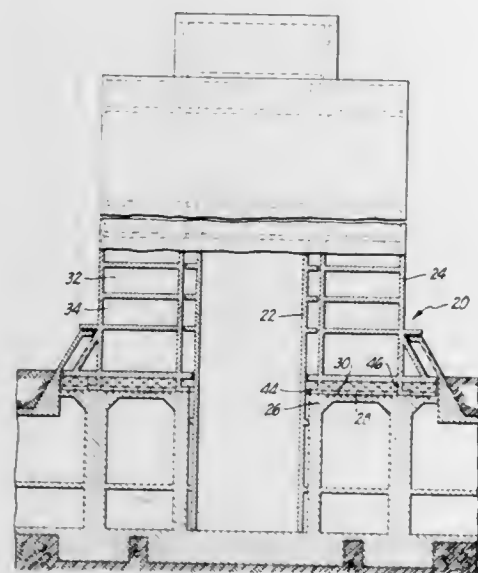
Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Aug. 30, 1973, Ser. No. 392,974

Int. Cl. E04b 1/346, 1/345

U.S. Cl. 52-65

5 Claims



1. A building structure having a rotatable portion comprising in combination:
 - a central core portion having a support base mounted in a fixed position;
 - an outer rotor portion mounted about said core and supported thereby;
 - a first horizontally disposed annular surface on said rotor portion;
 - a second horizontally disposed annular surface on said core portion, said first and said second surfaces being oppositely positioned one another;
 - a plurality of fluid bearings positioned in concentric rings connected to one of said annular surfaces and positioned between said surfaces for supporting, when operative, said rotor portion away from said core;
 - means for rotating said rotor portion relative to said core portion;
 - additional fluid bearings vertically positioned between said central core portion and said outer rotor portion to laterally support said outer rotor portion;
 - a strut structure having upwardly extending legs, connected to said rotor portion said legs joined at their lower ends to a hinge member and said hinge member attached to a bearing plate; and wherein
 - said rotating means comprises a drive wheel and a power source operatively connected thereto and connected to said core and rotor portions.

3,855,756

LOAD STABILIZATION

Roy P. Sweeney, La Mirada, and Robert W. Shull, Seal Beach, both of Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 637,522, May 10, 1967, abandoned.

This application Jan. 12, 1971, Ser. No. 105,947

Int. Cl. B65b 21/06, 53/02

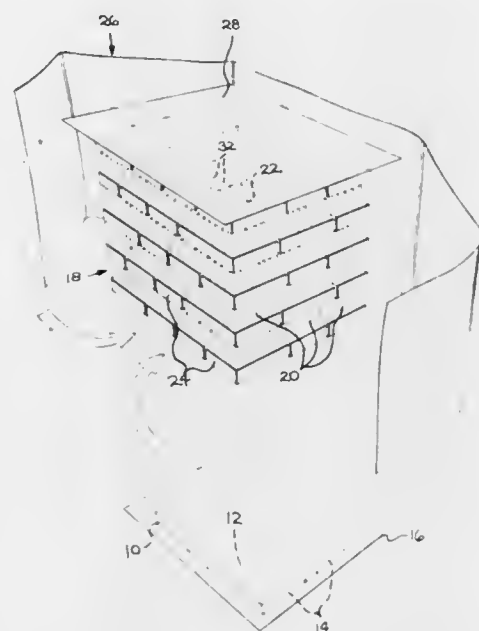
U.S. Cl. 53-26

5 Claims

1. A method of providing a stable, unitized pallet load of

multitudinous containers such as glass bottles, jars and the like, comprising the steps of:

- positioning a pallet having a load supporting surface in a container loading location;
- positioning a base sheet of heat shrinkable plastic material on said pallet, load supporting surface;
- stacking a substantial plurality of container subassemblies in a suitable array upon said base sheet leaving a peripheral portion of said base sheet exposed;
- wrapping a heat shrinkable plastic material about the sides of said stacked array;



- draping a top-sheet of a heat shrinkable plastic material upon the upper surface of said stacked array, and bringing the draped portion of said top sheet and the peripheral portion of said base sheet into contact with said side wrapping sheet;
- shrinking said material into intimate contact with the exterior surfaces of said stacked array, thereby forming a complete enclosure for the top and sides of the stacked array which exerts an inward restraining action thereupon.

3,855,757

AUTOMATIC BAGGING DEVICE

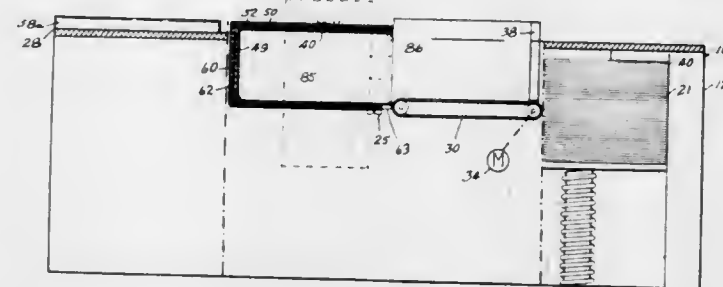
Stanley Joseloff, Eastman Shore, Lanconia, N.H. 03346

Filed Oct. 17, 1973, Ser. No. 407,080

Int. Cl. B65b 43/54, 67/04

U.S. Cl. 53-188

2 Claims



1. In an automatic bagging device for use with a bag of predetermined size and configuration, and articles of merchandise at a check-out counter, the improvement comprising: a merchandise receiving compartment disposed in said counter including a pair of side walls and an end wall, a compartment belt forming a bottom wall of said compartment, said compartment being of a size and configuration substantially the same as an opened bag; a bag receptacle juxtaposing said compartment at a longitudinal end thereof opposite said end wall; means to move said belt in a direction of said bag receptacle to empty the contents of said compartment into

said bag receptacle, bag opening means sensitive to the presence of an unopened bag disposed in said receptacle, bag supply means disposed adjacent and beneath said end wall of said compartment, said bag receptacle having a first bag and merchandise receiving position and a second bag removal position pivotally related to said first position, and latch means retaining said bag receptacle in said first position, release of said latch means allowing shift of said bag receptacle to said second position under the weight of a loaded bag.

3,855,758

FIXED LONGITUDINAL SIDE FOLDER

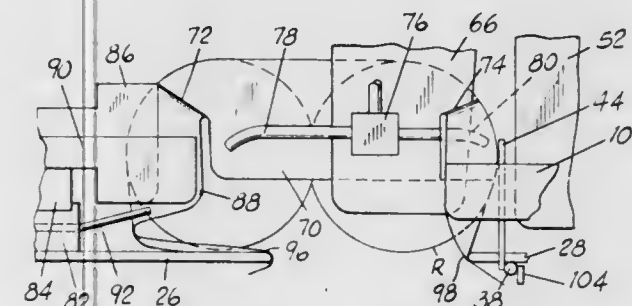
Frederick L. Walter, White Cloud, and Ronald Holt, Battle Creek, both of Mich., assignors to Battle-Creek Packaging Machinery Div. of Franklin Electric Subsidiaries, Inc., Bluffton, Ind.

Filed May 17, 1973, Ser. No. 361,279

Int. Cl. B65b 11/22

U.S. Cl. 53-226

10 Claims



1. In combination in a package wrapping machine having an article feeding conveyor, an elevator arranged to lift articles from said conveyor, a reciprocable front bottom folder to support articles raised by said elevator, an oppositely reciprocable rear bottom folder, means for delivering a wrapper sheet of film material larger than the article into a plane above the articles on the lowered position of the elevator, means to eject packages from the elevated position of said elevator with wrapper sheets therearound, and a receiving way adapted to receive packages from said elevator and seal folds in said wrapper sheet, slide fold forming mechanism comprising:
 - means immovably supporting fixed side folder plates in upright position over said elevator and in spaced relation to guidingly receive the sides of articles raised by the elevator,
 - front side folder plates located over said front bottom folder,
 - means for reciprocating said front side folder plates with their rear edges spaced apart to receive articles therebetween,
 - said reciprocating means being arranged to advance said front side folder plates to adjacent the front edges of said fixed side folder plates,
 - and nozzle means arranged to direct air jets forwardly beyond the front edges of said fixed side folder plates and rearwardly beyond the rear edges thereof.

3,855,759

METHOD AND APPARATUS FOR CLOSING AND/OR SEALING RECEPTACLES

Elmer E. Pohlenz, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 20, 1972, Ser. No. 307,963

Int. Cl. B65b 7/28

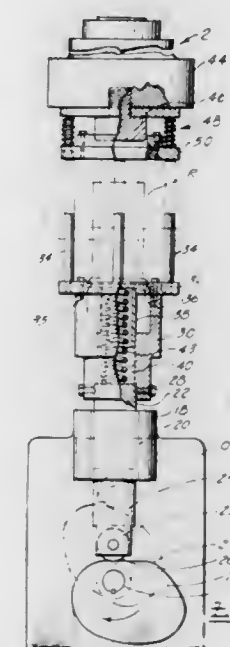
U.S. Cl. 53-342

5 Claims

1. An apparatus for closing and/or sealing receptacles comprising:
 - a support assembly adapted for mounting a receptacle having a sidewall and an open top,

a head assembly adapted to receive a closure having a depending skirt with an outwardly projecting annular bead thereon,

said support assembly and said head assembly being adapted to be positioned relative to each other so that said closure is disposed on the top of said receptacle with said skirt disposed adjacent an outwardly facing surface near the top of the sidewall of said receptacle, said head assembly including first and second dies, means to position the top of said closure against said first die,



- said second die including a draw ring having means to permit said closure to be disposed circumferentially inside said die with said projection being disposed above said draw ring,
- said draw ring being adapted to be moved upwardly with respect to the closure and container to engage the bead on the closure as restrained by said first die to constrict the bead radially inwardly towards the side wall of the receptacle as the draw ring is moved upwardly past the bead on the closure, and
- drive means for providing the relative motion between said draw ring and said closure and container.

3,855,760

PEPPER HARVESTER

Jay G. Smith, Jr., and Jerry R. Joyce, both of Forsyth, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 5, 1973, Ser. No. 348,402

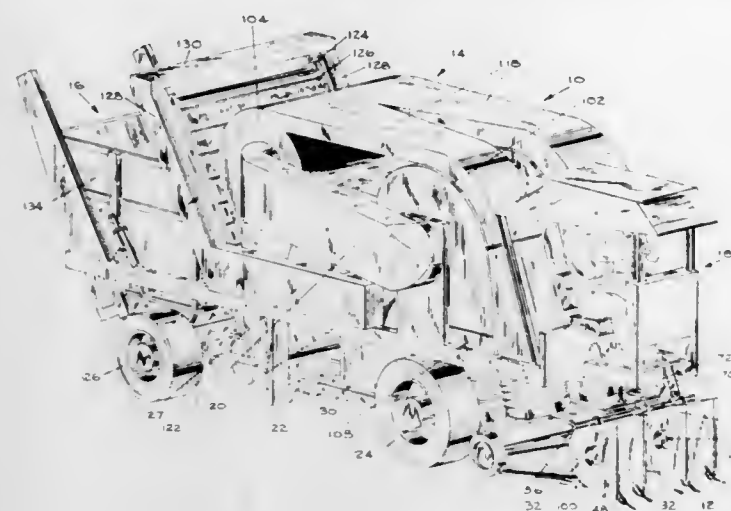
Int. Cl. A01d 45/22

U.S. Cl. 56-13.2

13 Claims

1. An apparatus for harvesting vegetable crops such as peppers, peas, beans and the like including:
 - a. a motorized vehicle which can be moved along a row of vegetable plants;
 - b. stripper means carried on the forward end of the vehicle for receiving the vegetable plants as the vehicle moves along said row, said stripper means removing an aggregate of fruit and foliage from the plants' stalks;
 - c. a separator means carried on said vehicle for receiving the aggregate from said stripper means;
 - d. blower means carried on the vehicle which communicate with said stripper means and said separator means, said blower means generating a positive and negative air current to entrain the aggregate in an airstream and pneumatically convey the aggregate from the stripper means to the separator means wherein the aggregate is separated from the airstream;

- e. means for driving the blower means;
f. first conveyor means carried on said vehicle and associated with said separator means for receiving and trans-



- porting the aggregate discharged from said separator means; and
g. collection means for receiving the aggregate from said first conveyor means.

3,855,761

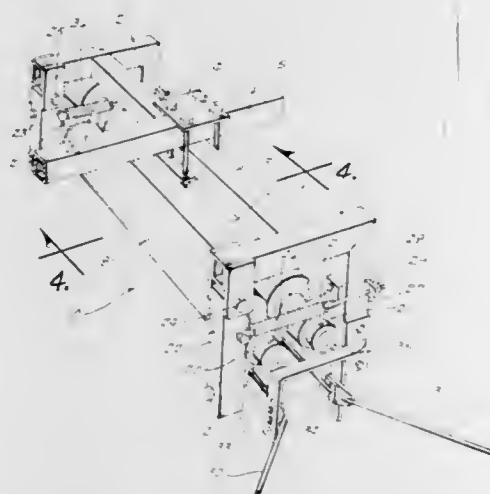
APPARATUS AND METHOD FOR REMOVING TASSELS

Robert A. Louks, and Gordon D. Louks, both of Gilman, Iowa
Continuation of Ser. No. 225,085, Feb. 10, 1972, abandoned.
This application Apr. 12, 1973, Ser. No. 350,586

Int. Cl. A01d 45/02

U.S. Cl. 56-51

5 Claims



1. A device for removing tassels from cornstalks comprising:

a framework;
a pair of horizontal rotatable cylindrical members having axes extending substantially parallel to the direction of travel of the device, said cylindrical members being in parallel contacting relationship and supported by the upper portion of said framework to dwell substantially above ground level adjacent the upper portion of said stalks, the outer surfaces of said members being of slightly resilient material;

means on said framework for rotating said cylindrical members;

stalk contacting means disposed forwardly of said rotatable cylindrical members, the stalk contacting means being adapted to bend stalks forwardly of the rotatable cylindrical members so that said stalks are in a forwardly bent position as said device moves forwardly thereover;

guide fingers carried by said framework and extending forwardly and outwardly from said cylindrical members to guide the upper portions of said stalks to engagement with said stalk contacting means;

and guard means carried by said framework and disposed below said rotatable cylindrical members, said guard means comprising spaced apart elongated members adapted to inhibit contact between plant leaves and the rotatable cylindrical members as the tassels are pulled from said stalks by said cylindrical members as they are rotated upon the forward movement of said device, said elongated members being spaced horizontally apart a distance sufficient to permit said tassels to pass freely therethrough but close enough together to restrain the engagement of leaves with said cylindrical members.

3,855,762

TOBACCO HARVESTER WITH IMPROVED SPEARING SYSTEM

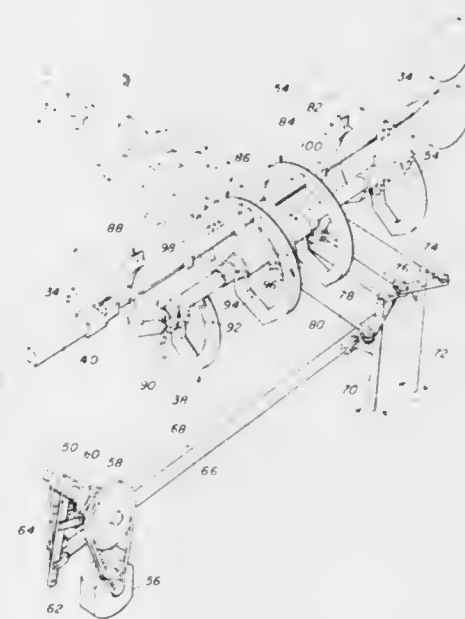
Carlisle A. Middleton, 28 Dungarrie Rd., Baltimore, Md. 21228

Continuation-in-part of Ser. No. 365,564, May 31, 1973, Pat. No. 3,798,884. This application Feb. 25, 1974, Ser. No. 445,156

Int. Cl. A01d 45/16

U.S. Cl. 56-27.5

17 Claims



1. In a tobacco harvester having a horizontally disposed spear with a pointed front, means for incrementally conveying tobacco plants for impalement of the stalks thereof on the spear, and means for gripping the spear alternately at different positions in synchronism with said incremental conveying to permit moving of impaled tobacco plant stalks therealong, the improvement comprising: the means for gripping the spear comprising: a plurality of sets of opposed arcuate jaws spaced along the length of the spear, means for mounting all said jaws about an axis parallel-spaced below the spear at a location positioning the jaws to open and close laterally of the spear.

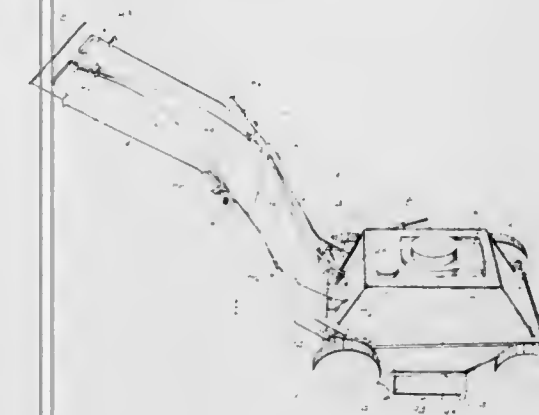
3,855,763

SELF-PROPELLED ROTARY LAWN MOWER

Lester H. Seifert, R.R. No. 2, Park Ave. Kiel, Wis. 53042;
Raymond P. Powers, 3515 N. 10th St., Sheboygan, Wis. 53081; William M. Schmidt, 35 Claireview Rd., Grosse Point Shores; Stanley E. Thorwaldsen, 286 Williams St., Grosse Point Farms, both of Mich. 48236; Frederick W. Smith, 247 Cambridge, Mt. Clemens, Mich. 48043; David C. McElroy, 22000 St. Gertrude, St. Clair Shores, Mich. 48081, and Roy P. Dunton, 37446 Charter Oaks, Mt. Clemens, Mich. 48043

Division of Ser. No. 289,539, Sept. 14, 1972, Pat. No. 3,802,170. This application Feb. 11, 1974, Ser. No. 441,634
Int. Cl. A01d 35/26; B62b 3/02
U.S. Cl. 56-320.2

3 Claims



1. A folding handle assembly for a rotary lawn mower, said mower including a housing, an engine mounted on the housing, and cutting means located within the housing and operably connected to said engine, said handle assembly including a first handle member pivotally connected to the housing at a first pivot, a second handle member pivotally connected to the housing at a second pivot located forwardly of said first pivot, a third handle member connected to the first handle member at a third pivot spaced above said first and second pivots, and releasable locking means removably interconnecting said second handle member and said third handle member with said first handle member, said locking means located between the housing and said third pivot, release of said locking means enabling the first and second handle member to be pivoted from an extended operating position to a folded position within the perimeter of the housing.

3,855,764

ASPARAGUS HARVESTING APPARATUS AND METHOD

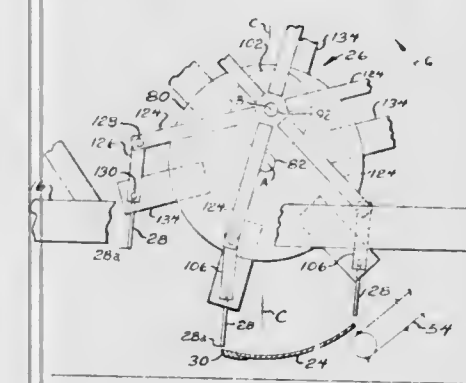
Clarence R. Helbing; Russel Peters, and Hugh E. Cooper, all of Rochelle, Ill., assignors to Towner Manufacturing Company, Santa Ana, Calif.

Filed Nov. 14, 1973, Ser. No. 415,674

Int. Cl. A01d 45/00

U.S. Cl. 56-327 A

18 Claims



1. Apparatus for harvesting field growing asparagus and the like comprising, a frame or vehicle adapted to be moved in a forward direction, a horizontally disposed abutment supported by said frame at a level at which the asparagus is to be

harvested, reel means mounted on said frame to rotate about a first horizontal axis disposed above said abutment, at least one snapping bar mounted on said reel means to swing about a second horizontal axis radially spaced from and parallel to said first horizontal axis and to be carried with rotation of said reel means about said first horizontal axis downwardly ahead of an asparagus clump approached by said frame and across said abutment to snap the asparagus therebetween, and means holding said reel-mounted snapping bar in a constant vertical disposition as it moves downwardly and across said abutment.

3,855,765

LADDERLESS, CONTINUOUSLY USABLE, RAPID FRUIT PICKER AND CONVEYOR

Claude E. Forkner, Deland, and Charles T. O'Rork, Jr., Orlando, both of Fla., assignors to F & O Research and Development Company, Deland, Fla.

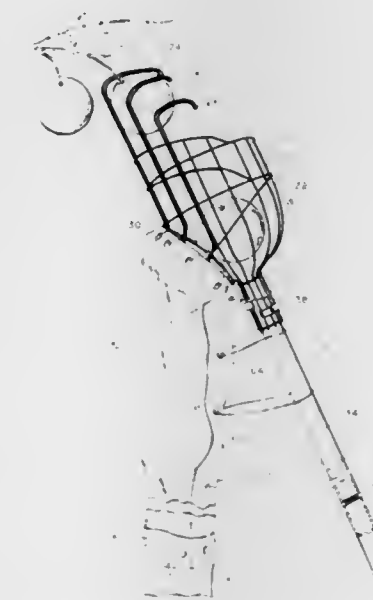
Filed Dec. 29, 1972, Ser. No. 319,619

Claims priority, application Great Britain, Jan. 7, 1972, 891/72; Feb. 11, 1972, 6614/72

Int. Cl. A01g 19/08

U.S. Cl. 56-340

10 Claims



1. A picking basket adapted to be supported by an elongate hand held pole and utilized in picking fruit from a tree on a continuous basis without the need for a ladder or for lowering said basket, said basket being essentially cylindrical in nature and comprising an open upper fruit-receiving end, a lower end defining a handle-engaging socket adapted to receive one end of the elongate hand held pole utilized in reaching fruit located high on a tree, and a central portion defined between said upper and lower ends, in which central portion is defined a fruit-in-transit containing location, said open upper end being defined by a rim, said upper end having a forward portion and a rear portion, said forward portion involving a substantially open rim portion, and said rear portion including a plurality of spaced, elongate fruit-engaging fingers said fingers extending upwardly beyond said rim and being of a hooked configuration so as to be able to at least partially surround fruit to be picked, and an outlet disposed in said central portion and below said fingers, said outlet being located adjacent but above said handle-engaging socket and being of a diameter such that fruit separated from the tree can pass there-through, and an elongate tubular fruit conveyor means adapted to be attached to said basket adjacent said outlet, said conveyor means being of stretch fabric of a diameter normally smaller than the fruit being picked, but being capable of stretching at such time as fruit from the central portion of said basket passes through said outlet and enters said conveyor means, and by such stretch action serving to slow the rate of descent of the fruit sufficiently as to prevent damage

thereto upon reaching the lower terminus of its travel, said picking basket in use normally being disposed at an angle to the ground, with said rear portion of said upper end of said basket being nearest the ground, such that fruit separated from the tree by the use of said fingers can move downwardly along said fingers, along the interior of said central portion of said basket, then roll immediately to said outlet means, and thence pass downwardly along said conveyor means.

3,855,766

CONVERTIBLE BROOM RAKE

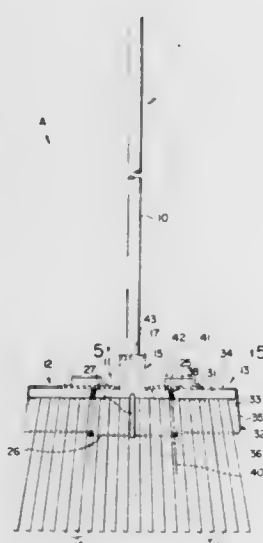
Verna Lutz, 424 Center St., Ashtabula, Ohio 44004

Filed July 23, 1973, Ser. No. 381,506

Int. Cl. A01d 7/00

U.S. Cl. 56-400.18

6 Claims



1. A lawn and garden broom rake adapted for selective use as both a lawn rake and a shrub rake comprising:

- a handle,
- three rake sections with prongs including a center section connected to and generally parallel to said handle, and two end sections pivotally connected to said center section whereby each end section is pivotable about an axis generally aligned with said handle, between an open, lawn rake position to form a relatively wide span of adjacent raking prongs, and a folded position overlying one another and overlying said center section on the rearward side thereof whereby only the center section is operable for raking, and

means operatively associated with said center section for securing said end sections in each of said positions.

3,855,767

APPARATUS FOR PRODUCING CORE YARN FOR ANTISTATIC CARPET

Robert W. Horsey, 51 Kingsford Ct., Kanata, Ontario, and Emil John Brychta, 330 John St. N., Arnprior, Ontario, both of Canada

Filed Mar. 1, 1973, Ser. No. 337,233

Int. Cl. B65h 81/08

U.S. Cl. 57-18

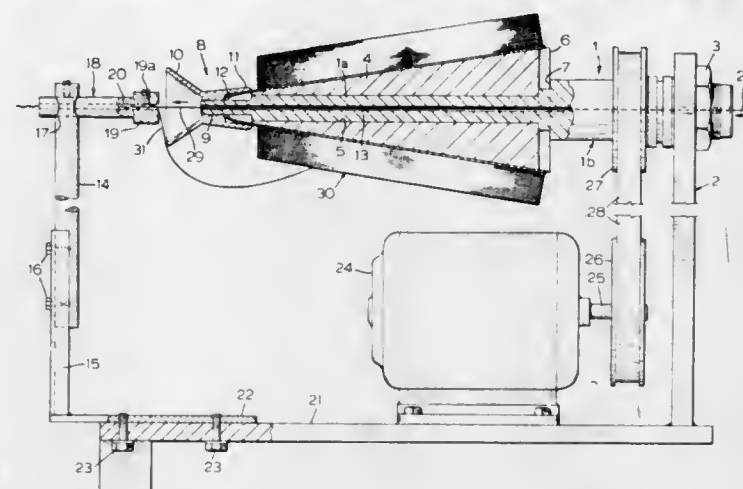
4 Claims

1. An apparatus for producing an antistatic carpet yarn which comprises:

- a. a rotatable cabler shaft including a yarn package holder, a spindle mounted on the apex of said package holder and an axial bore through said cabler shaft and spindle for passing textile yarn therethrough;
- b. a yarn guide mounted downstream of said cabler shaft and spindle and spaced therefrom;

c. a passage through said yarn guide coaxial with the axial bore of said cabler shaft and spindle for continuing the passage of said textile yarn;

d. said spindle comprising a cabler shaft engaging portion and a funnel portion downstream of the shaft engaging



portion which includes an outer edge for directing a length of conductive yarn from a yarn package mounted on said yarn package holder to a length of textile yarn passing through the passage of said yarn guide and cabling on said length of textile yarn when said cabler shaft is rotated.

3,855,768

MANUFACTURE OF CHENILLE YARN

Modesto Lopez Jubany, Calle Santa Madrona, 88, Badalona, Barcelona, Spain

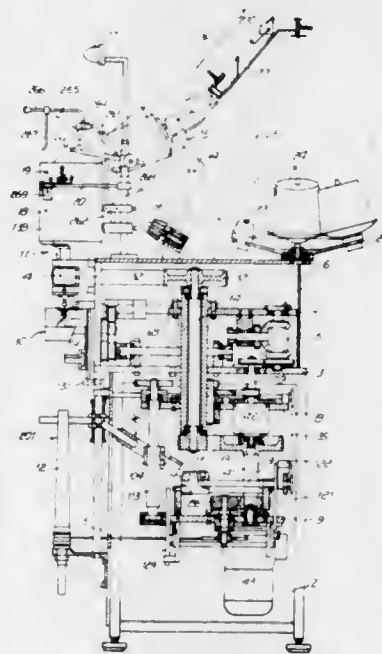
Filed June 14, 1973, Ser. No. 369,986

Claims priority, application Spain, July 4, 1972, 404853

Int. Cl. D02g 3/42

U.S. Cl. 57-24

16 Claims



1. A machine for the manufacture of chenille yarn comprising

- a. at least two core thread bobbins;
- b. means for longitudinally supplying at least two first core threads from the core thread bobbins;
- c. a supply creel for chenille effect thread, said supply creel being situated remote from said bobbins at a freely accessible location;
- d. winding-on means for conveying the chenille effect thread from the supply creel, forming a balloon of rotating chenille effect thread about the core thread bobbins and winding the rotating chenille effect thread around the longitudinally supplied first core threads;

e. feed means for supplying at least two external second core threads laterally to the wound-on chenille effect thread around the said first core threads to form at least two pairs of core threads composed of one first and one second core thread;

f. means for severing the turns of the chenille effect material between the pairs of core threads; and

g. twisting and winding-on means for twisting each pair of core threads into a chenille yarn.

3,855,769

STRAND THREADING MECHANISM FOR RING TEXTILE MACHINES

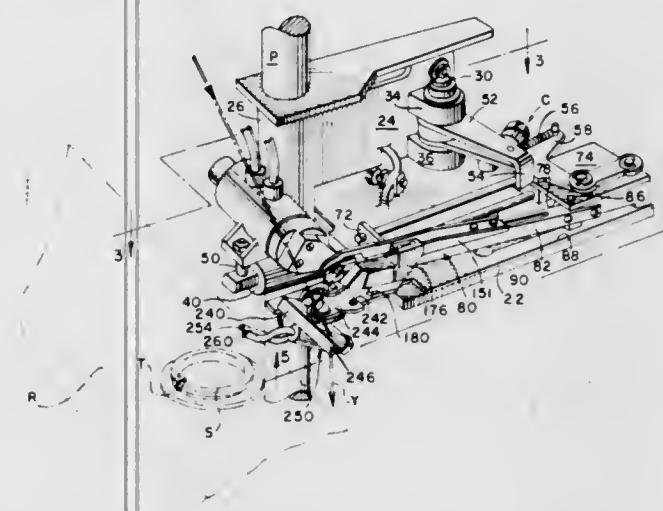
Robert Earl Morton, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 19, 1973, Ser. No. 398,591

Int. Cl. D01h 15/00

U.S. Cl. 57-34 R

17 Claims



1. In an automatic multi-station textile strand processing machine of the ring and traveler type equipped with a motor-driven traveling tender carriage capable of detecting the existence of an abnormal condition at a processing station on the machine and servicing the station to restore it to normal operation, including re-threading said strand through the ring and engaged in the traveler, said carriage having a sub-carriage arranged thereon for vertical movement in synchronism with the ring, an improved threading mechanism comprising a threader fork assembly mounted on said sub-carriage for generally reciprocating travel from an inoperative position spaced from said ring to an operative position to wrap the thread arcuately around the ring, a thread lifting sub-assembly having forward and rear ends and carried on said fork assembly for relative longitudinal displacement, said thread-lifting sub-assembly including a lifter lever rockably carried on said lifter sub-assembly proximate the forward end thereof and having a thread engaging extension projecting therefrom, means on said fork assembly for rocking said lifter lever upon relative displacement of said lifter sub-assembly, and stop means fixed on said sub-carriage for engaging said sub-assembly at a point intermediate the ends of travel of said assembly to preclude further motion of the sub-assembly while permitting further travel of said assembly.

3,855,770

MACHINES ACTING ON CONTINUOUSLY RUNNING TEXTILE YARNS

Frederick Hugh Howorth, Withnall, England, assignor to Howorth Air Conditioning Limited, Bolton, England

Filed Dec. 5, 1972, Ser. No. 312,318

Claims priority, application Great Britain, Dec. 9, 1971, 57162/71

Int. Cl. D02g 1/02; D01h 11/00

U.S. Cl. 57-34.5

1 Claim

1. A suction apparatus for a machine for processing continuously running textile yarns to enable bobbins to be doffed without stopping the machine the invention comprising a

suction tube formed with a plurality of holes therein spaced along the length of the tube, low volume high suction means connected to one end of said tube, and a sleeve of resilient material slidably mounted on the tube adjacent each hole for selectively covering and sealing the holes not in use for carrying away yarn ends during doffing and when an end breaks, each said sleeve being sufficiently pliable that when in position



to fully cover the associated hole the sleeve is deformed by the suction within the tube into positive sealing contact all around the perimeter of the hole, said suction tube being about 1 inch in internal diameter, said holes each being about one-half an inch in diameter, and said suction means operating to draw air through said tube at a pressure of about 80 inches W.G. and a velocity of about 400 cubic feet per minute.

3,855,771

DEVICE FOR BIASING YARN INTO FIXED POSITION FOR USE WITH YARN CUTTING MECHANISM OF AUTOMATIC DOFFING APPARATUS

Toshio Yoshizawa, Chiryu; Yasuo Yamada; Toshinori Taniguchi, both of Kariya; Tatsuo Kose; Kazuo Ohchi, both of Yoshibara, and Kiyokazu Hori, Sabae, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Aichi-Prefecture and Daiwa Boseki Kabushiki Kaisha, Osaka, both of Japan

Filed Dec. 5, 1973, Ser. No. 421,926

Int. Cl. D01h 9/16, 9/10

U.S. Cl. 57-53

8 Claims



1. A device for biasing a yarn into a fixed position for use with a yarn cutting mechanism of an automatic doffing appa-

ratus for doffing full packages one by one from a plurality of spinning units, arranged side-by-side, of a spinning machinery while travelling along the front of the spinning machinery, said cutting mechanism being movable into a yarn cutting position to cut the yarn prior to doffing the corresponding full package; said device comprising a divergent yarn guide disposed in the vicinity of a cutter of said cutting mechanism and formed with a yarn restraining part, the yarn being guided to traverse along the divergent surface of said yarn guide when said cutting mechanism is brought into said yarn cutting position; and means for forcibly directing the yarn traversing along the yarn guide surface toward said yarn restraining part when the yarn is to be cut, whereby the yarn is cut effectively and surely always at the fixed position and in a very short time.

3,855,772

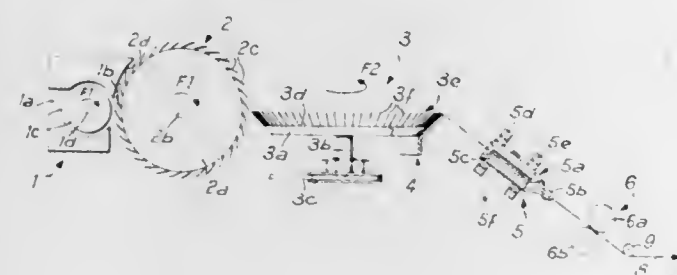
METHOD OF AND APPARATUS FOR PRODUCING YARN
Jean-Etienne Burlet, Roubaix, France, assignor to Centre Technique Industriel dit: Institut Textile De France, Boulogne sur Seine, France

Filed Aug. 29, 1973, Ser. No. 392,447

Claims priority, application France, Sept. 1, 1972, 72.31388
Int. Cl. D01h 1/12

U.S. Cl. 57—58.95

16 Claims



1. A method of spinning yarn in which a roving or sliver of substantially parallel carded fibres are worked into a yarn being formed by twisting, such a method comprising transforming the roving or sliver of fibres into a fringe of individual fibres or groups of fibres mechanically suspended by one of their ends, the free ends of the suspended fibres being progressively and successively supplied to the open end of the yarn being formed in a manner such that a major portion of each fibre is substantially parallel to the yarn being formed in the region of the open end of the said yarn, and the said end of each fibre being held until the fibre has been integrated into the yarn by the influence of the rotational effect imparted to the yarn by the twisting motion.

5. Apparatus for spinning yarn, such apparatus comprising feed means, said feed means including a rotary drum, a carding device for receiving a roving or sliver of fibres from the feed means, the carding device including a carding cylinder provided on its circumference with a plurality of carding pins, the carding cylinder being rotatable about an axis parallel to the axis of rotation of the said rotary drum, a rotatable combing disc for receiving a roving or sliver of carded parallel fibres from the carding cylinder, the combing disc being rotatable about an axis perpendicular to the axis of rotation of the carding cylinder, the combing disc being provided on a peripheral surface with a plurality of radially arranged pins adapted to co-operate with the pins of the carding cylinder and being inclined relative to the axis of rotation of the combing disc to extend beyond the periphery of the combing disc for forming a fringe of yarn fibres mechanically secured by one of their ends to the said pins doffing means for doffing the said fibres from the combing disc, and twisting means for twisting fibres doffed from the combing device onto a yarn.

3,855,773

TWO-FOR-ONE TWISTER

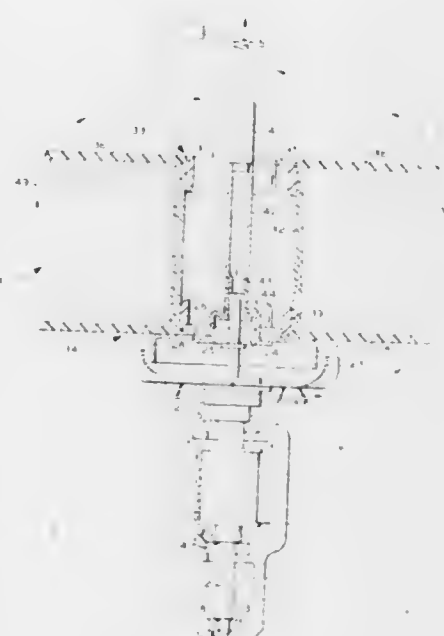
James L. Davis, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed May 7, 1973, Ser. No. 357,650

Int. Cl. D01h 7/86

U.S. Cl. 57—58.83

6 Claims



1. A coverless two-for-one yarn twister comprising a support bracket, a spindle, means mounting said spindle in said support bracket for rotation about the longitudinal axis of said spindle, a rotor means mounted on said spindle above said bracket for rotation with said spindle, said spindle being provided with a yarn passageway extending axially from the upper end thereof to a point adjacent said rotor means and then radially outwardly, said rotor means being provided with yarn guide means, bearing means mounted on said spindle above said rotor means and having an outer member which does not rotate with said spindle, bobbin support means mounted on said outer member of said bearing means and having a bobbin support surface extending outwardly in a plane perpendicular to said longitudinal axis of said spindle, a cylindrical bobbin, centering means on said bobbin support means for positioning said bobbin in a position coaxial with said spindle, a first annular bobbin cap adjacent the end of said bobbin closest to said rotor means and extending radially outwardly from said bobbin in a plane perpendicular to said longitudinal axis of said spindle, a second annular bobbin cap adjacent the other end of said bobbin and extending radially outwardly from said bobbin in a plane perpendicular to said longitudinal axis of said spindle, the diameter of said first and second bobbin caps being greater than the diameter of the yarn package formed on said bobbin, the diameter of said first bobbin cap being significantly greater than the maximum diameter of said rotor means above the path of the yarn so that the yarn emerging from the yarn passageway of said spindle and passing through said yarn guide means on said rotor means makes contact with the outer periphery of said first bobbin cap during the initial portion of the time required to bring said spindle from rest to the desired rate of rotation about said longitudinal axis, the diameter of said second bobbin cap being significantly greater than the diameter of the yarn package formed on said bobbin so that the yarn being unwound from said yarn package and entering the yarn passageway of said spindle makes contact with the outer periphery of said second bobbin cap during the initial portion of the time required to bring said spindle from rest to the desired rate of rotation about said longitudinal axis.

3,855,774

APPARATUS FOR WINDING A PLURALITY OF LINEAR MATERIALS

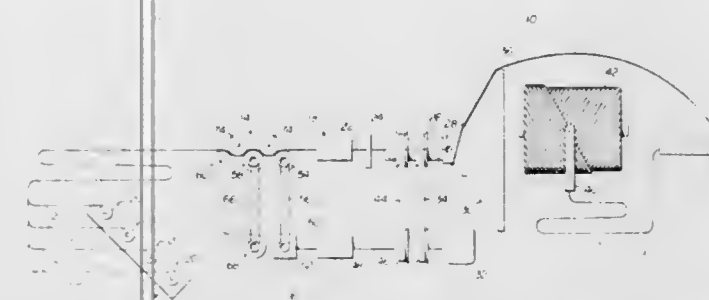
Raymond E. Hurley, Heath, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jan. 26, 1973, Ser. No. 326,704

Int. Cl. D01h 1/28

U.S. Cl. 57—81

2 Claims



1. In strand winding apparatus having a plurality of individual strand supply packages rotatably mounted on a creel for supplying the strands to be wound, said creel having a long path through which the strands are threaded to accumulate a substantial length of each strand between its package and the exit point from said creel, and electrically driven strand feeding means and twisting means, the improvement comprising: a flywheel for maintaining the speed of said strand feeding means substantially constant;

a brake connected to said flywheel;

a time delay circuit connected to said brake;

a tachometer generator means operatively connected to at least one supply package to be driven thereby, said tachometer generator means operative to generate an electrical signal whose magnitude is proportional to the rotational speed of its associated supply package;

a detector circuit responsive to a biasing signal and to the signal from said tachometer generator means for closing an electronic switch when the magnitude of at least one tachometer generator signal drops below a predetermined minimum; and

power interruption means responsive to the closing of said electronic switch for stopping said strand twisting means and for actuating said time delay circuit;

said time delay circuit for actuating said brake to stop said flywheel and said strand feeding means after said twister means has stopped.

3,855,775

PROCESS FOR PRODUCING PLY YARN FROM THREADS OF FIBERS

Etienne Valdelievre, Lille, France, assignor to Inter Textiles European, Lille, France

Filed Oct. 26, 1971, Ser. No. 192,339

Claims priority, application France, Oct. 29, 1970, 70.39080

Int. Cl. D02g 3/04, 1/20, 3/28

U.S. Cl. 57—140 BY

16 Claims

1. A process for producing a voluminous balanced and elastic ply yarn comprising a plurality of single threads of a mixture of non-keratinous natural fibres and discontinuous man-made fibres, comprising:

twisting each of said single threads in a first direction, with a twist factor α_1 of 95-110 then thermosetting each of said twisted single threads,twisting said single twisted threads together into a ply yarn having an initial twist in a second direction opposed to the first direction, with an initial twist factor α_2 of 110-125, thermosetting said initial twist of said ply yarn,untwisting the ply yarn by twisting the ply yarn in said first direction opposed to said initial twist then overtwisting the ply yarn in said first direction with a twist factor α_3 of 275-290 while heat treating the ply yarn in said over-

wisted state to a temperature which is sufficient to permanently modify the molecules of the man-made fibres but insufficient to impair the natural fibres, returning the ply yarn to said initial twist then relaxing the ply yarn and winding said ply yarn onto a support, the process further comprising imparting to the ply yarn before said heat treatment a moisture content by weight which exceeds the official moisture regain rate of the mixture of fibres.

3,855,776

SYNTHETIC THERMOPLASTIC MULTIFILAMENT YARNS

Etuzou Omura; Toshio Minami, and Tetsuhiro Kusunose, all of Noheoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

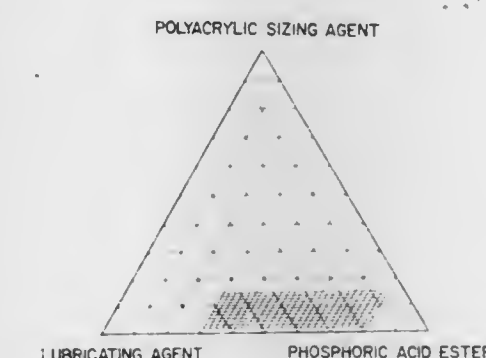
Filed June 19, 1972, Ser. No. 264,104

Claims priority, application Japan, June 22, 1971, 46-44504; Sept. 20, 1971, 46-72508; Dec. 5, 1971, 46-87585; Dec. 5, 1971, 46-87586; Dec. 5, 1971, 46-87587

Int. Cl. D02g 3/36; B32b 27/02

U.S. Cl. 57—153

9 Claims



1. A synthetic thermoplastic multifilament yarn having at most 100 twists per meter carrying about 0.5 to 3.0 percent, based on the weight of the yarn, of a treating agent comprising about 5 to 68 percent by weight of a liquid, synthetic yarn lubricating agent, about 30 to 80 percent by weight of a self-emulsifying organic phosphorus-containing surface active agent having a HLB of from about 4 to 15 and about 2 to 15 percent by weight of a polyacrylic sizing agent, the polyacrylic size being present in about 0.02 to 0.25 percent, based on the weight of the yarn.

3,855,777

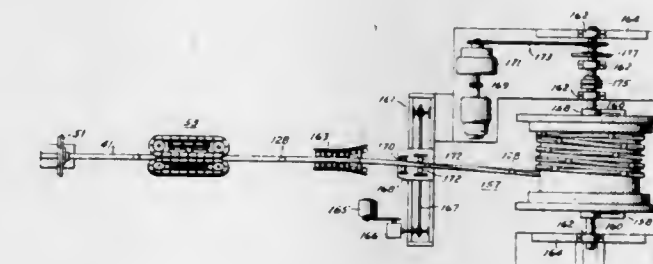
REEL OF ALTERNATELY ROTATED PARALLEL-WIRE STRAND AND METHOD OF MAKING

Jackson L. Durkee, Bethlehem; Arthur F. Beighley, Williamsport, both of Pa., and Donald E. Dunlap, deceased, late of Montoursville, Pa. (by Mary E. Dunlap, administratrix), assignors to Bethlehem Steel Corporation, Bethlehem, Pa. Continuation-in-part of Ser. No. 575,038, Aug. 25, 1966, Pat. No. 3,526,570. This application June 4, 1970, Ser. No. 43,464

Int. Cl. D07b 5/00

U.S. Cl. 57—156

23 Claims



1. A method of reeling a suspension cable strand comprising a bundle of a large number of parallel and axially extending wires, which comprises the steps of feeding said strand axially

to a drum, rotating said strand in advance of its movement to said drum to twist the outer wires in said strand into a helical path with respect to the central wires therein, said central wires extending centrally and axially with respect to said helically extending outer wires, and winding the strand on said drum, said twist being retained in the strand during reeling on said drum and being effective to eliminate the development of slack in the wires of the strand as it is wound on the drum, and to enable the wires in the said strand to revert to their said axially extending and parallel arrangement relative to each other upon unreeling from said drum.

3,855,778

PROCESS FOR FORMING AN IMPROVED FIBER TOW BY APPLYING FALSE TWIST TO THE TOW

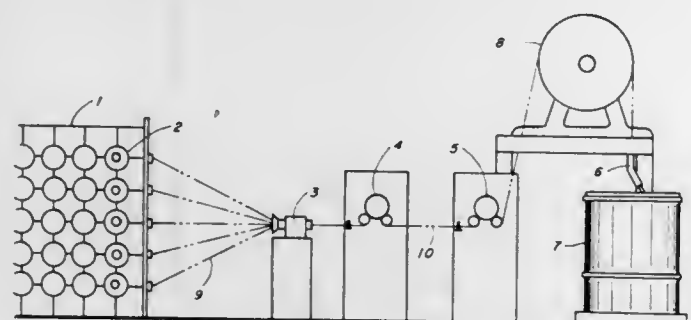
Adolph John Brandi, and James Vincent Muthig, both of Columbia, S.C., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,101

Int. Cl. D01h 5/00

U.S. Cl. 57-156

5 Claims



1. In a method of combining multiple continuous running lengths of ends of undrawn multifilament yarn into a tow, the improvement comprising combining said ends by passing said ends through means to impart false twist to said combined ends and maintaining uniform lay by said twist breaking any tight end, trapping broken loose ends by wrapping said loose ends about other continuous ends with said twist, said ends of yarn being continuous multifilament yarn.

3,855,779

PIVOTING DEVICE FOR THE WINDING WEIGHT OF AN AUTOMATIC WATCH

Urs Giger, Solothurn, and Friedrich Perrot, Lengnau, both of Switzerland, assignors to ETA A.G. Ebauches-Fabrik, Grenchen, Switzerland

Filed Jan. 28, 1974, Ser. No. 436,921

Claims priority, application Switzerland, Feb. 22, 1973, 2532/73

Int. Cl. G04b 5/02, 13/02

U.S. Cl. 58-82 A

6 Claims

1. A pivoting device for a winding weight of an automatic watch movement, comprising a winding weight support having a flat ring shaped portion with a circular opening therein, said support being intended to be fixed to the frame of said movement, a one-piece boss including a cylindrical sliding surface, a first banking surface and means for driving a winding train of said movement, and further a member, integral with said winding weight, rigidly secured to said boss and including a second banking surface, said second banking surface extending opposite said first banking surface, said ring shaped portion extending between said banking surfaces and said circular opening engaging said cylindrical sliding surface.

3,855,780
ELECTRONIC CLOCK DEVICE
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

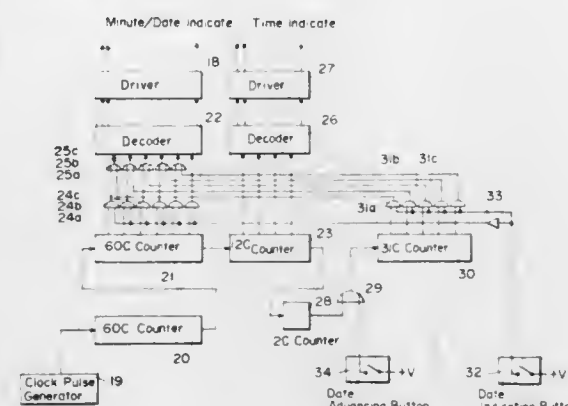
Filed Mar. 15, 1973, Ser. No. 341,585

Claims priority, application Japan, Mar. 15, 1972, 47-26382

Int. Cl. G04b 19/24

U.S. Cl. 58-4 A

6 Claims



1. A digital indication type electronic clock device comprising:
a clock pulse generating means generating clock signals of a specified, highly stable frequency;
a minute counting means responsive to said clock signals for generating minute signals by counting said clock signals from said clock pulse generating means and for generating a carry signal every 60 minutes;
an hour counting means actuated by the carry signals from said minute counting means for generating hour signals and for generating a carry signal every 24 hours;
a date counting means actuated by the carry signals from said hour counting means for generating date signals;
an hour indication means coupled to the hour counting means for performing digital indication of the counts of the hour counting means;
a minute/date indication means capable of optionally indicating on a single indication portion the output counts of the minute counting means and of the date counting means;
a manually operated switch means for selectively causing said minute/date indicating means to indicate minutes and/or date;
a first group of AND circuits and OR circuits coupled to said minute counting means coupling said AND circuits to said minute date indication means for selectively supplying said minute/date indication means with the minute signals from the minute counting means when said manual switch means is not being operated; and
a second group of AND circuits coupled to said manual switch means and coupling said minute/date indication means to the date counting means through said OR circuits for selectively supplying said minute/date indication means with the date signals from the date counting means responsive to operation of said manual switch means.

3,855,781
STEP MOTOR MECHANISM FOR ELECTRONIC TIMEPIECE

Hiroyuki Chihara, and Yoshito Ushiyama, both of Okaya, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,208

Claims priority, application Japan, Dec. 22, 1972, 47-128923

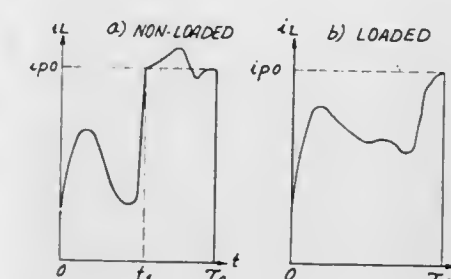
Int. Cl. G04b 19/24; G04c 3/00; H02p 1/40

U.S. Cl. 58-4 A

12 Claims

1. An electronic timepiece having a step motor and comprising a quartz crystal vibrator producing a high frequency

time standard signal; divider circuit means for producing low frequency time signals in response to said high frequency time standard signals; a gear train driven by said step motor and adapted to place the step motor in one of a loaded and unloaded conditions; load detection means for detecting the condition of the step motor and supplying a signal correspond-



ing thereto; and driving and control means intermediate the dividing circuit and the step motor for receiving the low frequency signals from the dividing circuit and applying same to the step motor for driving same, the signals applied to the step motor being controlled by application of the load detection signal to the driving and control circuit means.

3,855,782
TIME-CORRECTING DEVICE FOR ELECTRONIC TIMEPIECES

Izuhiko Nishimura, and Toshiaki Ogata, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

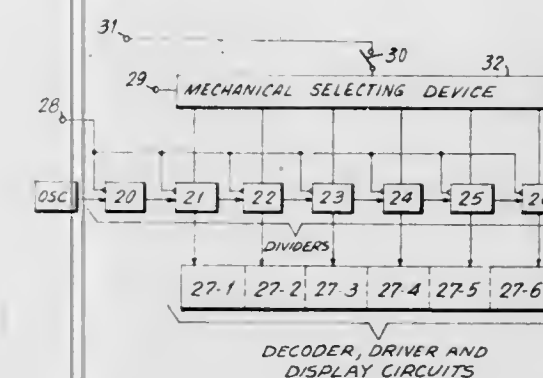
Filed Sept. 7, 1972, Ser. No. 287,202

Claims priority, application Japan, Sept. 9, 1971, 46-69297

Int. Cl. G04c 3/00; G04b 27/00

U.S. Cl. 58-23 R

6 Claims



1. An electronic timepiece comprising oscillator circuit means for producing a high-frequency time standard signal; multi-stage frequency divider circuit means for sequentially dividing said high-frequency time standard signal and producing low-frequency timekeeping signals at a selected group of said stages; display means including a plurality of display elements for the digital display of time; means for driving each of said display elements in response to one of said timekeeping signals; and time-correcting means including a manually operable selector switch means connected to at least two of the divider stages producing said timekeeping signals for selecting one of said divider stages, and a secondary switch means manually operable independent of said selector switch means for selectively applying a time-correction signal through said selector switch means to the selected divider stage for correcting the display element associated with said selected divider stage.

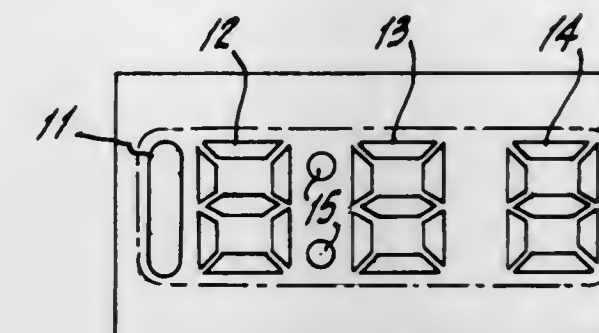
3,855,783
DIGITAL ELECTRONIC TIMEPIECE
Nunzio A. Luce, Trenton, N.J., assignor to Optel Corporation, South Brunswick Township, N.J.

Filed Apr. 20, 1972, Ser. No. 245,787

Int. Cl. G04c 3/00

U.S. Cl. 58-50 R

11 Claims



10. In a digital electronic watch comprising an electro-optical display cell having indicia thereon, a power supply for supplying energy for operation of said display cell and accompanying circuits, a frequency source capable of providing a predetermined output waveform of a given frequency coupled to said power supply, frequency divider circuit means coupled to the output of said frequency source for generating lower frequencies, as compared to said given frequency, timekeeping circuit means coupled to the output of said divider means and display driver circuit means the input of which is coupled to said timekeeping means and the output of which is coupled to said display cell, the improvement comprising means responsive to one of said lower frequencies for providing at an output thereof a frequency of one cycle per second, bidirectional switching means including a bidirectional switch and an inverter coupled across an element of said switch, said switching means responsive to said one cycle per second signal to provide at an output of said bidirectional switching means a control signal in accordance with said one cycle per second rate and means coupling the output of said switching means to selected indicia of said display cell for pulsing said selected indicia at a rate determined by said one cycle per second signal.

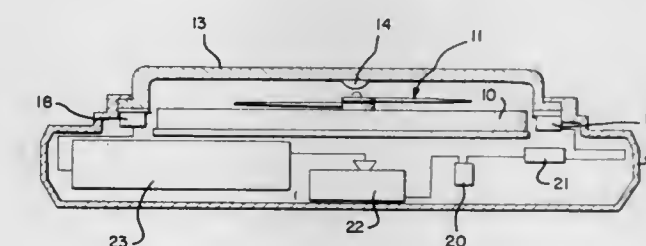
3,855,784
ILLUMINATED TIME PIECE
Donald M. Foellner, 201 Swarthmore Ave., Folsom, Pa. 19081

Filed July 30, 1973, Ser. No. 383,989

Int. Cl. G04b 19/30

U.S. Cl. 58-50 R

4 Claims



1. In a time piece including a movement, a face, a case and a crystal therefor, a bulb for illuminating said face, a battery for energizing said bulb, and an improved position responsive switch means comprising:
first and second gravity actuated switches connected in series, and
said first and second gravity actuated switches being positioned orthogonal to one another so that both switches are closed only when said time piece is substantially vertically oriented in a reading position, said position responsive switch means being located within said watch casing and connected between said battery said bulb to

selectively energize said bulb when said time piece is substantially vertically oriented in said reading position.

3,855,785

CALENDAR CORRECTING DEVICE FOR TIMEPIECE
Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

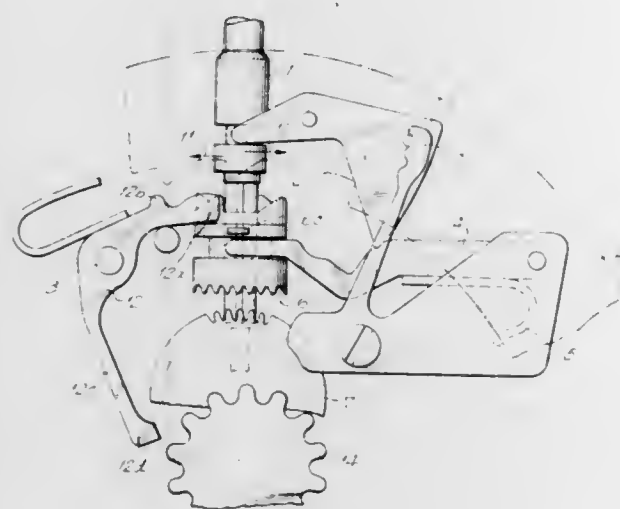
Filed Dec. 26, 1973, Ser. No. 428,142

Claims priority, application Japan, Dec. 27, 1972, 47-481626

Int. Cl. G04b 19/24

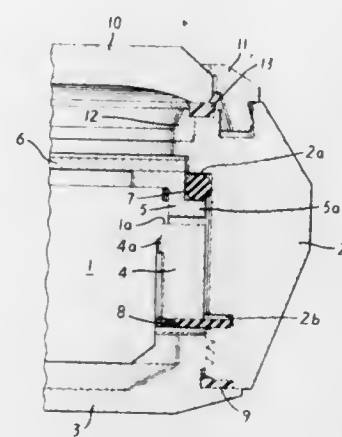
U.S. Cl. 58—58

3 Claims



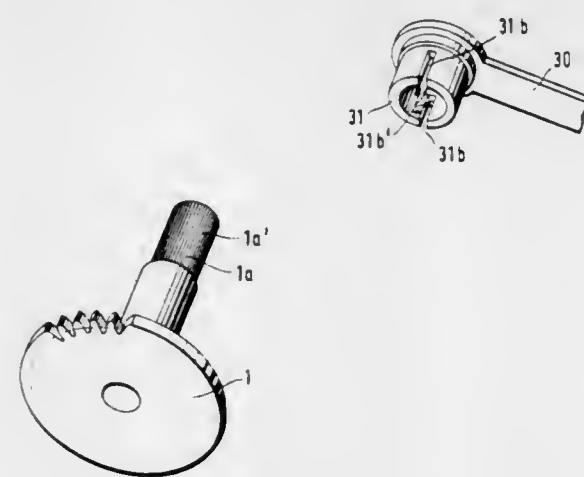
1. In a calendar watch having a rotatable winding stem selectively axially displaceable into plural predetermined positions, a rotatable date wheel and a rotatable daily star, the improvement comprising discrete first and second means for independently operatively connecting, respectively, said winding stem with said date wheel and said daily star in one of said plural predetermined positions of said winding stem for selective consecutive rotation of said date wheel in response to a rotation of said winding stem in one direction, and selective intermittent rotation of said daily star in response to a rotation of said winding stem in said other direction, said second means for operatively connecting said winding stem with said daily star including a lever means mounted for pivoting into operative intermittent engagement with said daily star for rotatively displacing said daily star in response to said rotation of said winding stem in said other direction, pivoting means arranged on said winding stem for fixed rotation therewith, said pivoting means being intermittently engageable to said lever means when said winding stem is displaced at one of said plural predetermined positions, said pivoting means being operatively intermittently engageable to said lever means for pivoting said lever means between a first position and a second position in response to a rotation of said displaced winding stem in said other direction for the rotative displacement of said daily star, said pivoting means being inoperative for pivoting said lever means between said first and second positions for thereby rotatively displacing said daily star when said displaced winding stem is rotated in said one direction, biasing means operatively connected to said lever means for normally biasing said lever means into said first position, and a stopper for supportively stopping said lever means in said first position, said biasing means having a torque which is overcome by an operative engagement of said pivoting means to said lever means for thereby pivoting said lever means from said first position to said second position, said biasing means being operable for returning said lever means from said second position to said first position at the end of an operative engagement of said pivoting means to said lever means.

3,855,786
IMPACT-PROOF WATCHCASE
Eiji Yamamoto, Matsudo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Dec. 21, 1973, Ser. No. 427,331
Claims priority, application Japan, Dec. 26, 1973, 48-410
Int. Cl. G04b 37/04
U.S. Cl. 58—88 C
11 Claims



1. An impact-proof watchcase comprising a dial, a backcover, a watchcase band therebetween having an internal peripheral downwardly facing shoulder, inner ring means within said watchcase band, watchworks disposed within said inner ring means mounted thereon, a first shock-absorbing resilient member coactive with said watchcase band shoulder resiliently absorbing vibrations of said watchworks in three dimensions, and a second shock-absorbing resilient member of considerable stiffness radially of the watchcase, bearing against a portion of the watchcase which is at least close to the backcover for resiliently supporting said inner ring means relative to said watchcase band for absorbing three dimensional vibrations of said watchworks.

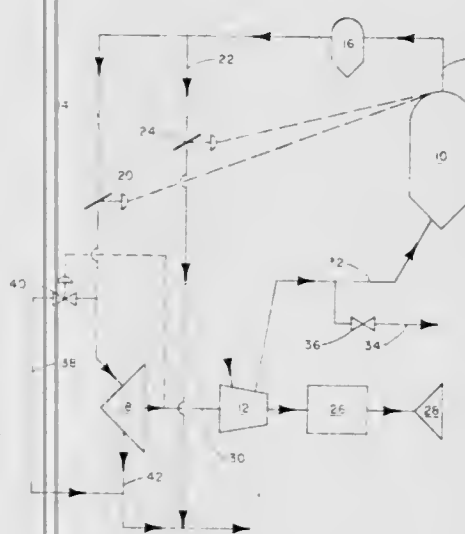
3,855,787
ATTACHMENT FOR THE HANDS OF A WATCH
Friedrich Assmus, Schramberg, Germany, assignor to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany
Filed Mar. 23, 1973, Ser. No. 344,148
Claims priority, application Germany, Apr. 1, 1972, 125361
Int. Cl. G04b 19/00
U.S. Cl. 58—126 D
4 Claims



1. In a timepiece having a driven gear mechanism; and a hand drivably mounted on said gear mechanism; said hand including wall means defining an aperture; and said gear mechanism including a plastic shaft firmly grippingly receiving the aperture of the hand; the improvement wherein:

said plastic shaft includes a plurality of radially extending and longitudinally oriented projections firmly gripping said aperture-defining wall means to effect a firm gripping engagement between said plastic shaft and said hand while affording alignment turning of said hand about said plastic shaft; said wall means including at least one slit opening into said aperture; an axially extending edge of said slit defining a projection engageable with said projections on said plastic portion.

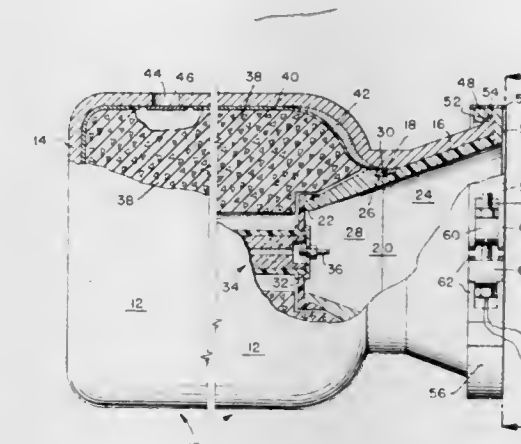
3,855,788
APPARATUS FOR AND A METHOD OF OPERATING POWER RECOVERY EQUIPMENT
Leonard P. Damratowski, Monroeville, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Continuation of Ser. No. 255,421, May 22, 1972, abandoned, which is a division of Ser. No. 110,987, Jan. 29, 1971, Pat. No. 3,777,486. This application Sept. 27, 1973, Ser. No. 401,490
Int. Cl. F02c 9/02
U.S. Cl. 60—39.03
1 Claim



1. The method of regulating the operation of a power recovery turbine utilizing as a source of energy substantially particle-free gaseous products of combustion formed in a catalyst regenerator serving a fluid catalytic cracking plant which comprises the steps of:

- directing the flow of gaseous products of combustion from the regenerator to the inlet of the turbine through a main conduit having a relatively large diameter to accommodate the volume of gaseous flow emanating from the regenerator,
- providing a path of flow through a first by-pass conduit arranged in parallel with a portion of the main conduit whereby a variable volume of gaseous flow may be directed around the turbine,
- varying passage of gaseous products in the two conduits through actuation of flow control valves disposed therein,
- providing a path of flow through a second by-pass conduit communicating with the main conduit between the valve regulating flow therein and the inlet of the turbine to also direct gas around the turbine, and
- regulating the flow of gas in the by-pass conduits, and varying the regulating of the gas flow in the by-pass conduits such that flow in said second by-pass conduit may occur more rapidly than flow in said first by-pass conduit.

3,855,789
EXPLOSIVE COUPLING ASSEMBLY
Harold M. Platzek, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 5, 1968, Ser. No. 720,438
Int. Cl. F02k 9/06
U.S. Cl. 60—225
2 Claims



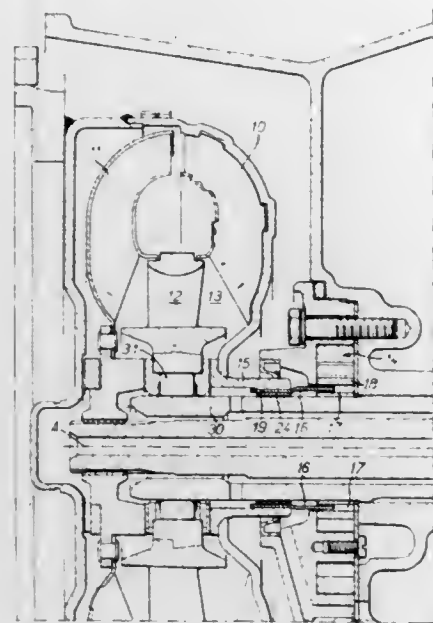
1. In a rocket launched-ram-jet sustained motor having a common combustion chamber with a ram jet nozzle of relative large throat diameter and a rocket nozzle of relatively small throat diameter, the rocket nozzle being sealingly disposed within the ram jet nozzle and adapted to be axially ejected therefrom by combustion chamber pressure at termination of rocket thrust, the motor having means for admitting ram air thereafter, the improvements in combination, comprising:

- a circular outwardly extending flange on the rear end of the ram jet nozzle having a circular outwardly and rearwardly tapered surface on its forward side,
- a plurality of equi-angularly spaced arcuate segments for preventing ejection of the rocket nozzle,
- each segment having a surface conforming to and engaging said tapered surface,
- each segment having an inwardly directed flange with a portion thereof in engagement with the rear face of the rocket nozzle for preventing its ejection, and
- a band encircling the segments having ends connected by at least one explosive bolt,
- the construction and arrangement being such that upon explosive bolt actuation the band releases from the segments and combustion chamber pressure moves the rocket nozzle axially rearwardly, forcing the segments radially outwardly and permitting ejection of the rocket nozzle.

3,855,790
DEVICE FOR DRIVING TWO PARTS IN ROTATION
Michel Rist, Boulogne/S/Seine, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France
Filed June 15, 1973, Ser. No. 370,234
Claims priority, application France, June 20, 1972, 72.22124
Int. Cl. F16h 41/04
U.S. Cl. 60—361
10 Claims

1. A device for driving two members in rotation, one with respect to the other, in which a first of said members comprises a sleeve having at least one projecting tenon extending substantially in the prolongation of the wall of said sleeve and adapted to co-operate with the second said member, and in which said device is constituted as a member separate from the sleeve and fixed rigidly on said sleeve by engagement means comprising, on the one hand at least one recess formed in said sleeve, said tenon being inserted in said recess with the application against each other of bearing surfaces adapted to

retain said tenon axially and tangentially, and on the other hand a ring concentric with said sleeve and engaged in contact



both with said sleeve and said tenon, in order to retain said tenon radially.

3,855,791

REVERSIBLE MOTOR HYDRAULIC CONTROL SYSTEM

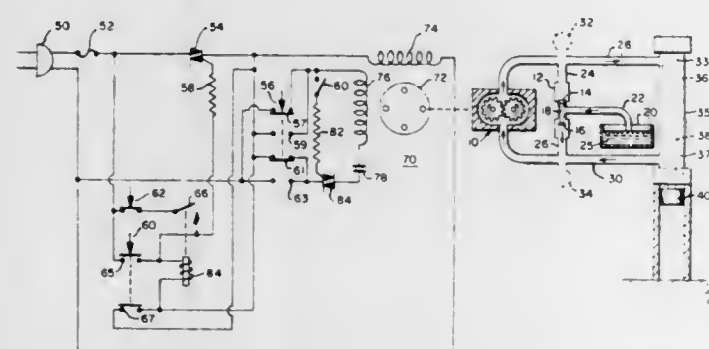
Mario Quinto, 70 Dannel Dr., Stamford, Conn. 06905

Filed Aug. 24, 1973, Ser. No. 391,234

Int. Cl. F15b 1/02, 15/18

U.S. Cl. 60—380

7 Claims



1. A reversible motor-driven hydraulic control system comprising

- a. a reversible pump,
- b. a reservoir containing a source of fluid,
- c. an actuator cylinder having a hydraulic piston movable in two directions therein coupled to said reversible pump,
- d. a compensator means coupled to said reservoir and between said pump and said actuator cylinder for equalizing fluid displacement in said actuator cylinder on the movement of said piston therein and replenishment of fluid to the system,
- e. a reversible motor coupled to said reversible pump having a stalled torque value substantially equivalent to the torque required to produce a predetermined hydraulic pressure under load conditions on the piston in said actuator cylinder, and
- f. momentary switch means actuating said motor for rotation in one direction until the hydraulic pressure reaches the stalled torque value thereby producing a starting torque in the reversed direction and reversing the direction of rotation of said motor and the reversible pump driven thereby.

3,855,792

HYDROSTATIC TRANSMISSION DRIVE SYSTEM

Edward J. Bojas, and Harold R. Ward, both of Marshall, Mich., assignors to Eaton Corporation, Cleveland, Ohio

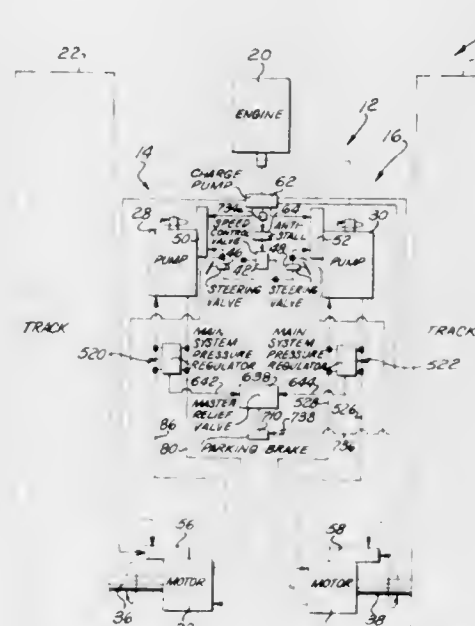
Division of Ser. No. 248,685, April 28, 1972, Pat. No.

3,795,109. This application Nov. 16, 1973, Ser. No. 416,435

Int. Cl. F16h 39/46

U.S. Cl. 60—421

19 Claims



1. An apparatus comprising a first hydrostatic transmission including a first pump unit, a first motor unit, first conduit means for conducting fluid from said pump unit to said motor unit during operation of said first hydrostatic transmission in a forward direction, second conduit means for conducting fluid from said motor unit to said pump unit during operation of said first hydrostatic transmission in the reverse direction, third conduit means for conducting fluid from said first conduit means during operation of said first hydrostatic transmission in the forward direction and for conducting fluid from said second conduit means during operation of said first hydrostatic transmission in the reverse direction, first relief valve means operable between a closed condition blocking fluid flow through said third conduit means and an open condition enabling fluid to flow through said third conduit means, a second hydrostatic transmission including a second pump unit, a second motor unit, fourth conduit means for conducting fluid from said second pump unit to said second motor unit during operation of said second hydrostatic transmission in a forward direction, fifth conduit means for conducting fluid from said second motor unit to said second pump unit during operation of said second hydrostatic transmission in the reverse direction, sixth conduit means for conducting fluid from said fourth conduit means during operation of said second hydrostatic transmission in the forward direction and for conducting fluid from said fifth conduit means during operation of said second hydrostatic transmission in the reverse direction, second relief valve means operable between a closed condition blocking fluid flow through said sixth conduit means and an open position enabling fluid to flow through said sixth conduit means and a common relief valve pilot control for controlling the opening of both said first and second relief valve means.

3,855,793

TRANSMISSION RATIO CONTROL SYSTEM

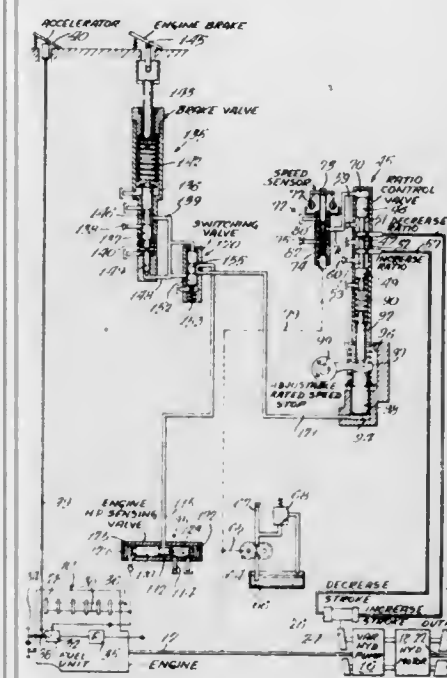
Frederic W. Pollman, Ames; David W. Reynolds, Huxley; William A. Ross, and George A. Schauer, both of Ames, all of Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 19, 1973, Ser. No. 352,660

Int. Cl. F16h 39/46

U.S. Cl. 60—431

29 Claims



1. A drive, comprising,
 - a. an engine having fuel supply means for controlling engine horsepower,
 - b. a hydrostatic transmission driven by the engine including means for varying the transmission ratio,
 - c. a ratio control valve for controlling the ratio varying means,
 - d. means for applying a bias to the ratio control valve proportional to engine speed, and
 - e. means for applying an opposing fluid bias to the ratio control valve proportional to engine horsepower.

3,855,794

SYNCHRONIZED PISTON ASSEMBLY

Kenneth H. Meyer, and William E. Heese, both of Akron, Ohio, assignors to Hydrapower Inc., Wadsworth, Ohio

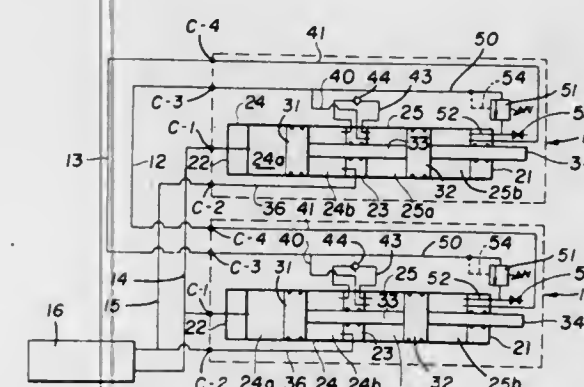
Continuation of Ser. No. 256,599, May 24, 1972, abandoned.

This application Aug. 1, 1973, Ser. No. 384,718

Int. Cl. F15b 1/122

U.S. Cl. 60—546

5 Claims



1. A synchronized piston assembly comprising at least two cylinder units each comprising: a drive cylinder having ports adapted for connection with a fluid power control source and a synchronizing cylinder having ports which are cross-connected with respect to the ports of the other synchronizing cylinder; and a piston unit in each cylinder unit having interconnected drive and synchronizing pistons axially reciprocable in the respective cylinders whereby hydraulic actuation of

said drive pistons in the respective drive cylinders actuates the respective synchronizing pistons in the respective synchronizing cylinders so that fluid displaced from one end of each synchronizing cylinder to the other end of the other synchronizing cylinder synchronizes the actuation of said drive pistons despite unequal loads on said piston units; each cylinder unit having relief valve means operative to intercommunicate the synchronizing circuit chambers on opposite sides of the synchronizing piston for fluid pressure equalization therein and for continued movement thereof and its drive piston to the end of one stroke in the event that the other piston unit previously reaches the end of one stroke, and to intercommunicate the synchronizing chambers on opposite sides of the synchronizing piston of said other piston unit to equalize fluid pressures therein each relief valve means being opened by pilot pressure buildup in its decreasing synchronizing chamber during such continued movement of its piston unit to the end of its retract stroke; said pilot pressure opening said other relief valve means for fluid pressure equalization of the synchronizing chambers on opposite sides of the synchronizing piston in said other piston unit.

3,855,795

HEAT ENGINE

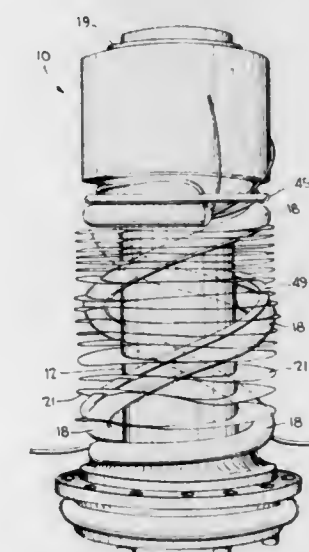
Jack E. Noble; Peter Riggle, both of Benton City; Stuart G. Emigh, and William R. Martini, both of Richland, all of Wash., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 30, 1973, Ser. No. 328,075

Int. Cl. F03g 7/06

U.S. Cl. 60—524

6 Claims



1. In a heat engine operating on a regenerative cycle and having a cylinder, the end portions of which define respectively a hot chamber and a cold chamber, the improvement comprising a temperature control heat pipe located on the outer surface of the cylinder, said heat pipe containing a working fluid and an inert gas and being conductive over its entire length to conduct heat away from the hot end of the engine when an overtemperature condition is reached and nonconductive at acceptable operating temperatures.

3,855,796

APPARATUS FOR LIFTING FLASKS AND MOLDS

Lester Charles Young, Cleveland, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 13, 1972, Ser. No. 314,892

Int. Cl. F15b 7/00

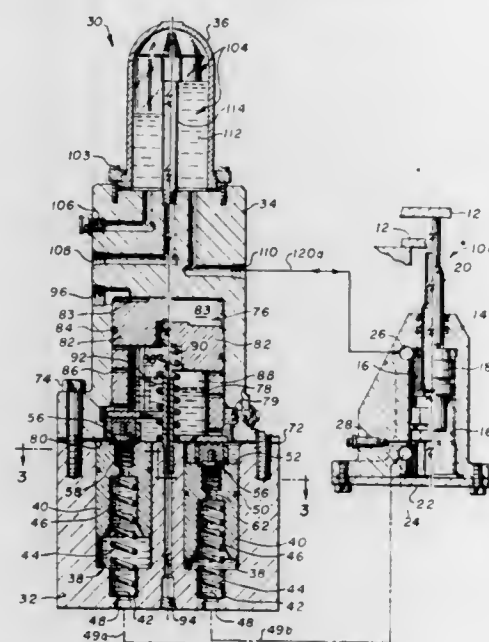
U.S. Cl. 60—547

4 Claims

1. Apparatus for lifting a mold relative to a support member, comprising in combination:

- a. plural lifting means each including a lift cylinder stationary relative to said support member and a lift piston

- movable therein for actuation between lowered and raised positions for lifting said mold when actuated to said raised position;
- b. means biasing each of said lift piston to said lowered position; and
- means for actuating said lift pistons in unison to said raised position comprising:
- a liquid reservoir,
 - plural branch cylinders each in liquid communication with a different one of said plural lift cylinders below said lift piston in its lowered position,



- piston means in each said branch cylinder having a liquid passageway extending therethrough and selectively in liquid communication with said reservoir,
- means biasing each said branch piston to a reference position remote from the lift cylinder communicating end of said branch cylinder;
- normally open poppet valve means with each said branch piston for selectively closing said passage there-through, and
- selectively actuable pressure responsive means for actuating said poppet valve means to the closed state and for moving said branch pistons only in unison toward the lift cylinder communicating end of said branch cylinder.

3,855,797

HYDRAULIC MASTER CYLINDER

Guy Papiou, Arnouville les Gonesse, France. Assignee: Societe Anonyme D.E.A., Paris, France

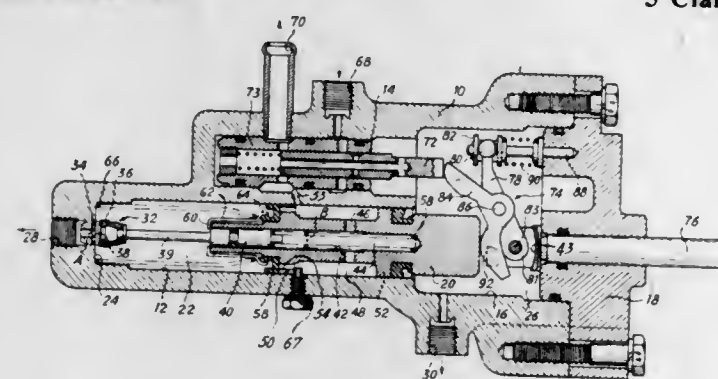
Filed Dec. 6, 1973, Ser. No. 422,216

Claims priority, application France, Dec. 18, 1972, 72.45051

Int. Cl. F15b 7/00

U.S. Cl. 60-547

5 Claims



1. In a hydraulic brake actuating device:
- a housing defining a bore therewithin;
 - a piston slidably mounted in said bore and cooperating with opposite ends of the latter to define a pair of pressure chambers;

- an outlet communicating with one of said chambers valve means shiftable from a condition venting the other chamber to a fluid reservoir to a position communicating said other chamber with a source of fluid pressure to thereby shift said piston to develop fluid pressure in said one chamber; and
- a pressure differential responsive plunger having a pair of opposed faces slidably mounted on said piston, and resilient means yieldably urging said plunger to a predetermined position with respect to the piston, one of said faces being exposed to the fluid pressure level in said one chamber, the other face of said plunger being communicated with the fluid pressure level in said reservoir; and
- cut-off valve means carried by said plunger for cooperation with said outlet to terminate communication there-through when the fluid pressure level in said one chamber drops below a predetermined level for a given movement of the piston.

3,855,798

FLUID FLOW CONTROL DEVICE

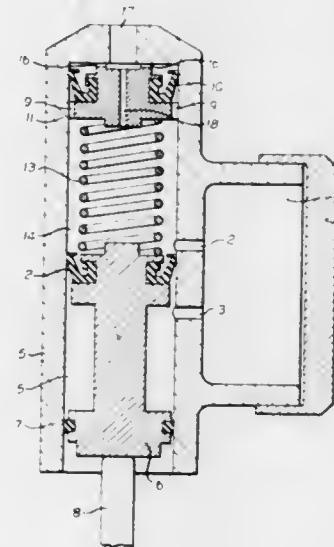
Luciano Spairani, Via B Gigli No. 24, Bologna, Italy

Filed Mar. 22, 1973, Ser. No. 343,712

Int. Cl. F15b 7/08

U.S. Cl. 60-585

6 Claims



1. A control device for the actuation of a hydraulic load, comprising:
- a cylinder provided with a supply chamber for a hydraulic fluid, said cylinder having an outlet leading to the load;
 - a valve body in said cylinder separating said outlet from said chamber, said valve body being provided with a deformable peripheral gasket engaging the cylinder wall, said valve body further having a capillary passage giving access to said outlet from said chamber;
 - a piston in said cylinder forming a movable boundary for said supply chamber, said piston being displaceable by an extraneous force toward said valve body, whereby hydraulic fluid is forced from said chamber into said outlet partly by way of said capillary passage and partly around the periphery of said valve body, said gasket yielding to fluid pressure from said chamber to give passage to said fluid; and
 - restoring means engaging said piston for returning same to an initial position remote from said valve body upon cessation of said extraneous force, thereby drawing fluid from said outlet back into said chamber by way of said capillary passage only, said gasket substantially preventing any return flow around the periphery of said valve body.

3,855,799

RIGID CORRUGATED TUBING

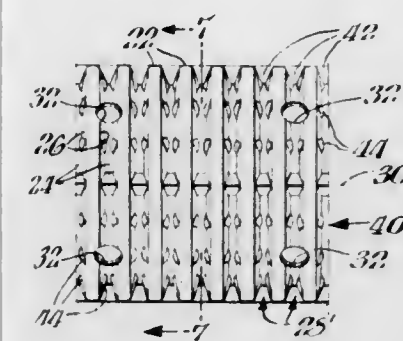
Lawrence L. Martin, Iowa City, Iowa; Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advanced Drainage Systems, Inc., Columbus, Ohio

Filed Jan. 17, 1973, Ser. No. 324,308

Int. Cl. E02b 11/00

U.S. Cl. 61-11

6 Claims



1. A longitudinally oriented rigid corrugated tube comprising alternating substantially flat peak and flat valley walls with steep interconnecting walls extending between the peak and valley walls, and stiffening rib structure connected between at least some of the valley and interconnecting walls, one form of the rib structure extending to the flat peak walls and between adjacent interconnecting walls across the valley wall therebetween for preventing flexing of the tube, and another form of the stiffening rib structure including a plurality of individual external ribs in the form of buttresses spaced from one another, each of the buttresses connected between a valley wall and one of the interconnecting walls adjacent thereto and extending up to the flat peak wall.

3,855,800

INFLATABLE BARRIERS FOR WATERCOURSES

Jean-Victor Ganzinotti, Brive, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

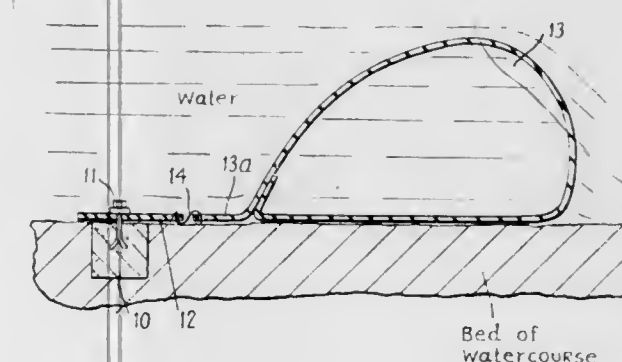
Filed Oct. 18, 1973, Ser. No. 407,502

Claims priority, application France, Oct. 18, 1972, 72.36917; Oct. 18, 1972, 72.36918; Oct. 18, 1972, 72.36919

Int. Cl. E02b 7/04

U.S. Cl. 61-29

10 Claims



1. In inflatable barrier means for retaining water in a watercourse, comprising at least one inflatable enclosure secured to an element anchored directly or indirectly in the watercourse and constructed in such a fashion as to prevent erosion, the improvement which consists in that the means for anchoring the enclosure in relation to the bed of the watercourse incorporates an anchoring strip of supple material securable to said bed and having a free extremity provided with one or more means for removably connecting said enclosure to said anchoring strip.

3,855,801

TUNNEL STRUCTURE

Jean P. Bernold, Walenstadt, Switzerland, assignor to Hans Walter Pfeiffer, a part interest

Division of Ser. No. 170,770, Aug. 11, 1971, Pat. No. 3,751,929, which is a division of Ser. No. 798,747, Feb. 12, 1969, Pat. No. 3,601,945. This application Mar. 15, 1973, Ser. No. 341,600

Int. Cl. E01g 5/00

U.S. Cl. 61-45 R

5 Claims



1. A tunnel structure or the like having a predetermined internal cross section for permanent installation in a tunnel excavation having a workface and being driven beneath the ground in a predetermined direction, said tunnel structure or the like, comprising

- a plurality of structural panel units arranged in end overlapping manner as a permanent formwork having a cross section definitive of said predetermined internal tunnel cross section;
- each of said structural panel units including
 - a series of parallel, longitudinal corrugations, the walls of which define crests lying in upper planes and troughs lying in lower planes, said corrugations being transverse to the direction of driving of said tunnel;
 - a series of bandlike pocket forming elements derived from portions of said crests between pairs of transverse cuts in said crests at predetermined intervals along said corrugations;
 - said bandlike pocket forming elements being of nonuniform width and being depressed from the plane of said crests into a pocket forming plane bridging said corrugation;
 - a series of longitudinally extending pockets having spaced upper wall portions defined by said crests and lower wall portions spaced alternately of said crests defined by said bandlike elements;
 - said pocket forming elements being narrowest at the longitudinal centerline of said pockets and widest at the opposite sides of said pockets;
 - said panel, in longitudinal elevation, thereby having rows of alternating wedge-shaped crest portions and wedge-shaped pocket forming elements separated by wedge-shaped gaps;
 - whereby said panel is readily matable with another panel of identical configuration by nesting therewith, said nested panels forming composite longitudinal pockets, the upper walls of which are defined only by said crest portions of the underlying nested panel and the lower walls of which are defined only by said pocket forming elements of said overlying panel;
- rodlike members extending through said pockets to connect overlapped, nested end portions of said structural panel units;
- said permanent formwork being inwardly spaced from walls of said excavation and defining a predetermined gap therebetween;
- a concrete lining tightly filling said gap and pockets of said panel units, said lining comprising consecutively

installed sections formed by introduction of concrete behind said formwork and vibration of said concrete in said gap to bond said lining to the walls of said excavation and said panel units;

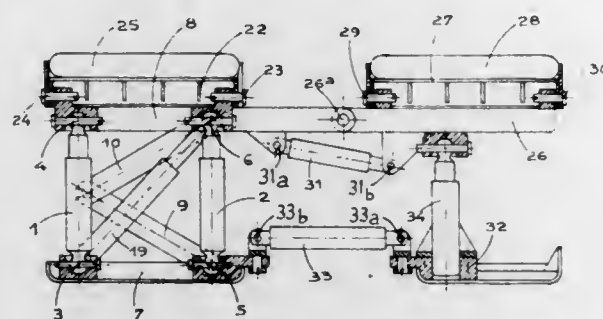
F. front formwork means disposed in each section of lining of the tunnel structure at the ends of the structural panel units which are forwardmost in said direction of driving to maintain said ends free of concrete, thereby accommodating connection by rodlike members with the rear ends of the structural panel units of the next section of said formwork and said lining to be installed.

3,855,802

WALKING SUPPORTING PIER FOR COAL MINES
Georges Alacchi, 9 ter Cours Fauriel, Saint-Etienne, France
Filed Sept. 12, 1973, Ser. No. 396,568
Int. Cl. E21d 15/44

U.S. Cl. 61-45 D

5 Claims



1. A walking supporting pier for coalmines comprising two props mounted on a common lower frame on the wall and supporting a common upper frame extended by a front shield which is pivotally connected to it and which itself supports a cowl, distinguished by the fact that said upper frame and said lower frame are connected by two sets of rods each consisting of two pivotally interconnected rods, one of which is pivotally connected to the upper frame and the other pivotally connected to the lower frame, the axes of the three pivotal connections of one set being parallel to one another and perpendicular to the longitudinal median plane of the pier, whilst the three axes of the pivotal connections of one of the sets coincide respectively with the three axes of the other set.

3,855,803

METHOD OF SUBMERGING A HOLLOW STRUCTURE
Roger Lacroix, Sceaux, France, assignor to Sea Tank Co., Paris, France

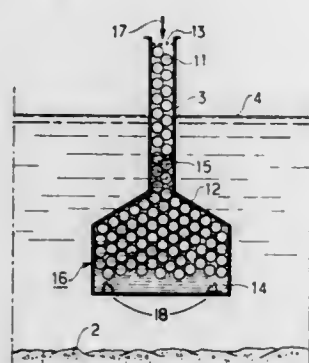
Filed Feb. 15, 1973, Ser. No. 332,845

Claims priority, application France, Feb. 15, 1972, 72.05008

Int. Cl. E02d 29/00, 23/08

U.S. Cl. 61-46.5

20 Claims



1. A method of submerging a hollow structure in water comprising the steps of

1. inserting in the structure a plurality of floats which are substantially incompressible and which have a density less

than unity, said plurality of floats being large enough in number so that said floats extend from a first inner wall of said structure to a second inner wall of said structure opposite to said first inner wall in contact with each other and with said walls, said floats being of a shape or shapes which leaves interconnecting volumes between said floats;

2. progressively filling the structure with water while keeping the interior of the hollow structure in communication with the outside atmosphere; and finally

3. removing the floats at the end of the submersion.

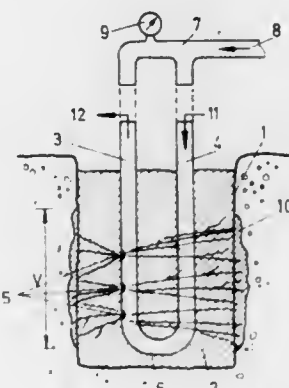
3,855,804

APPARATUS AND METHOD FOR DISTENDING THE DISTENSIBLE BODY OF AN EARTH ANCHOR

Thomas Herbst, Munich, and Klemens Finsterwalder, Socking near Starnberg, both of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany
Filed Jan. 2, 1973, Ser. No. 320,291
Int. Cl. E02d 5/62, 5/80

U.S. Cl. 61-53.6

3 Claims



1. Arrangement for distending in multiple sections of the distending body of an earth anchor in sticky soil, comprising conveying conduit means having one end embedded in the distending body below earth level and an air side end extending above the distending body for supplying cement slurry or the like to the distending body below the earth level, means above the earth level for supplying cement slurry to said conduit means, said embedded ends of said conduit means having openings for emitting the cement slurry constituting the distention material, each said section comprising two distention conduits connected at said one embedded end, and one-way valve means connecting said distention conduits.

3,855,805

GATE SELF-ADVANCING SUPPORT

Shigeo Nakajima, Kushiro, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 332,039

Int. Cl. E21d 23/00

U.S. Cl. 61-45 D

2 Claims

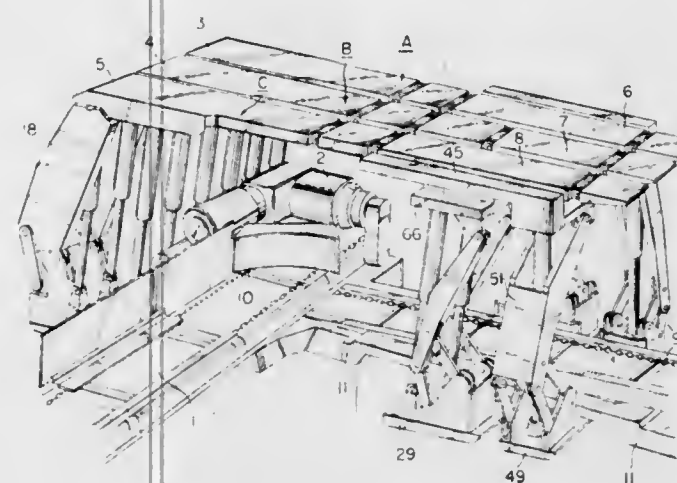
1. A moveable roof support arrangement for mining comprising:

a. a face conveyor (1) to convey to a front portion thereof, material in a longitudinal direction between the far and near conveyor sides, a charge conveyor (9) having one end positioned crosswise beneath said front portion, said one end extending over to beneath said face conveyor far side and a separator (10) for changing the direction of travel of conveyed material and discharging said material from said face conveyor (1) onto said charge conveyor (9);

b. a main skid (11) under said charge conveyor with a central elongated hollow portion to house said charge conveyor (9) so that said portion of the charge conveyor under said face conveyor (1) is completely housed within said hollow portion and does not contact said face con-

veyor and rear and front shifter brackets (12, 39) on said main skid;

c. at least one rear roof support assembly having telescoping shifter means (13) connected to said rear shifter brackets (12) a shifter skid (20) connected to said telescoping shifter means (13), links (21) on said shifter skid (20), a rear arch frame (18) with a lower end movably connected to said links (21) a roof bar (16) having an outer end supported and coupled to said rear arch frame (18) and props (19) also supporting said roof bar (16); and,



d. at least one front roof support assembly having front telescoping shifter means (30) connected to said front shifter bracket (39), a front skid (29) connected to said front shifter means (39) front links (33) on said front skid (29) front arch frames (31) with a lower end movably connected to said front links (33), a front roof bar (26) having an outer end connected to said front arch frames (31), and a center roof bar (17) pivotally connected said rear and front roof bars (16, 26) whereby said face conveyor (1) and charge conveyor (9) are held by said main skid (11) between said front and rear roof support assemblies and said roof support can be moved by said shifters.

3,855,806

APPARATUS FOR INSTALLING AND MAINTAINING SUBAQUATIC PETROL TANKS

Louis G. Le Therisien, Paris, France, assignor to Subsea Equipment Associates Limited (Seal), Hamilton, Bermuda
Filed June 28, 1972, Ser. No. 266,920

Claims priority, application France, June 28, 1971, 71.23429

Int. Cl. E21b 7/12

U.S. Cl. 61-69

15 Claims

1. An apparatus for installing and maintaining equipment submerged in a body of water in cooperation with a service unit and a work crew transfer chamber, said apparatus comprising:

1. a generally horizontal base fixed permanently to the floor of said body of water;

2. a generally cup-shaped workbell resting removably on said horizontal base in a seal-tight manner, said workbell being open on the side thereof adjacent to said horizontal base so that said horizontal base and said workbell together define an interior space which is isolated from said body of water;

3. a control chamber mounted on said workbell and having:

a. a first water-tight door connecting said control chamber to said interior space;

b. a second water-tight door adapted to connect said control chamber to the transfer chamber;

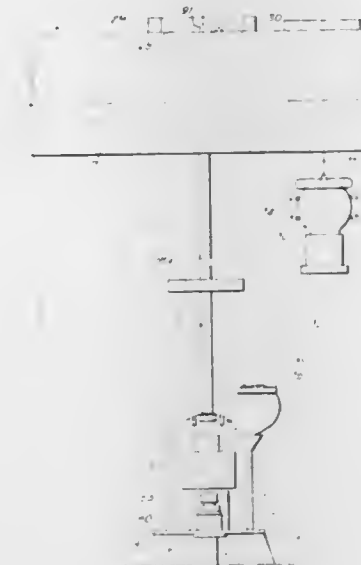
c. means for allowing water to enter into said interior space;

d. means for pumping water from said interior space;

e. means for monitoring the composition of a gaseous atmosphere contained within said interior space; and

f. a first means for introducing a first gas into said interior space,

whereby a work crew can enter said control chamber either from the transfer chamber through said second water-tight door or from said interior space through said first



watertight door, and can, while in said control chamber with said first water-tight door closed, control the atmosphere in said interior space; and

4. means for coupling the service unit to said workbell for lowering and raising said workbell to and from the position in which it rests on said horizontal base.

3,855,807

PIPE TRANSPORTING AND LAYING VEHICLE AND METHOD

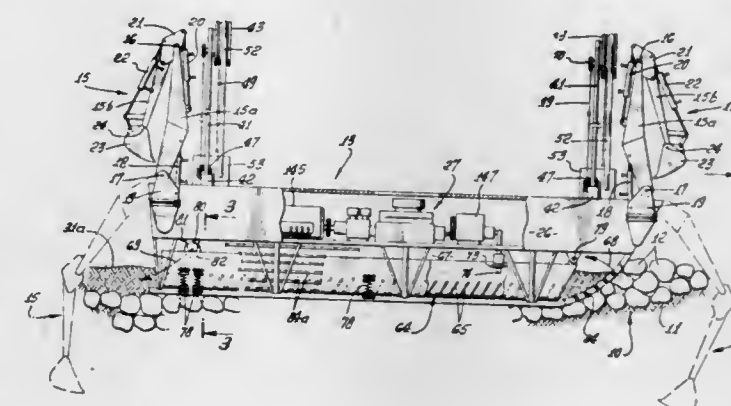
Donovan B. Grable, Long Beach, Calif., assignor to Wasteland Reclamation Corp., Long Beach; Bill C. Laney, Torrance and William W. Haefliger, San Marino, all of, Calif.

Continuation-in-part of Ser. No. 323,769, Jan. 15, 1973, Pat. No. 3,761,132. This application July 18, 1973, Ser. No. 380,268

Int. Cl. F16l 1/00; E02b 1/00; B60f 3/00

U.S. Cl. 61-72.1

14 Claims



1. In a carrier vehicle movable over terrain and water,

a. a floatable hull to float the vehicle in a body of water, and

b. articulated legs carried by the vehicle and connected therewith to engage the terrain for lifting and advancing the vehicle thereover, said legs including terminal back-hoes engageable with the terrain.

3,855,808

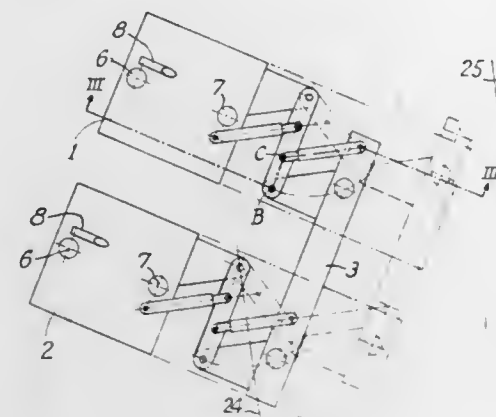
SHIFTING SYSTEM FOR WALKING SUPPORTS
Georges Alacchi, 9 ter cours Fauriel, Saint-Etienne, France (42100)

Filed Sept. 12, 1973, Ser. No. 396,548

Int. Cl. E21d 15/44

U.S. Cl. 61-45 D

4 Claims



1. A shifting system for a walking support of the type comprising two successive piers coupled to a common shift beam situated ahead of said piers, the improvement comprising means, for connecting each of said piers to said beam, said means comprising a shift rod pivotally connected on the one hand to the lower frame of said pier and on the other hand to said shift beam, and two shift jacks of which the first is pivotally connected on the one hand to said lower frame and on the other hand to said rod, whereas the second is pivotally connected on the one hand to said shift beam and on the other hand to said shift rod.

3,855,809

UNDERWATER OIL STORAGE TANK AND METHOD OF SUBMERGING SAME

Randolph E. Westling, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

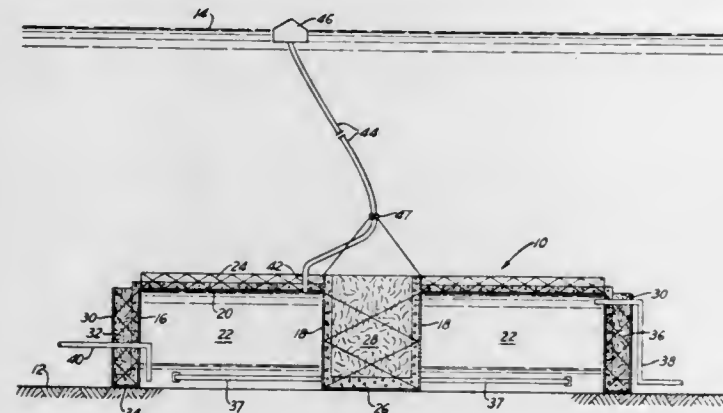
Continuation of Ser. No. 152,715, June 14, 1971, abandoned.

This application Aug. 3, 1972, Ser. No. 277,698

Int. Cl. E02b 17/00; B65d 89/10

U.S. Cl. 61-46.5

7 Claims



1. A submerged storage tank for installation on the sea bottom at offshore locations to store oil having a lower density than sea water comprising a vertical outer wall enclosing a storage compartment, a top member extending across the top of the storage compartment and connected to the outer wall to close the upper end of the storage compartment, said storage compartment being open at its lower end, a retainer wall surrounding the vertical wall and spaced therefrom to cooperate with the vertical wall in defining an upwardly opening ballast chamber between the retainer wall and the outer wall, a bottom member connected to the lower end of the vertical wall and to the retainer wall closing the lower end of the ballast chamber, said bottom member positioned and adapted to rest on the sea bottom when the tank is sunk onto the

offshore site, a sea water exchange line extending from outside of the retainer wall into the storage compartment and opening into the lower part of the storage compartment, an oil inlet line opening into the upper part of the storage compartment, and an oil delivery line extending from the top of the storage compartment upwardly to the water surface.

3,855,810

ONE FLOW CASCADE CYCLE WITH BUFFER VOLUME BYPASS

Johannes Simon, Oberaltling; Volker Eitzbach; Peter Grimm, both of Munich, and Wolfgang Ford, Grunwald, all of Germany, assignors to Linde Aktiengesellschaft, Holtriagelesk-reuth, Germany

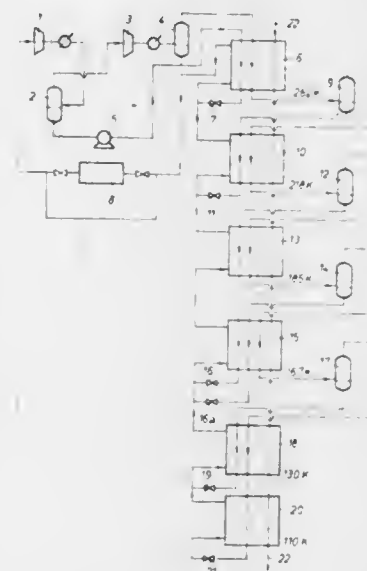
Filed Feb. 12, 1973, Ser. No. 332,022

Claims priority, application Germany, Feb. 11, 1972, 2206620

Int. Cl. F25j 3/00

U.S. Cl. 62-9

2 Claims



1. In a process for the liquefaction of natural gas by a closed "one flow cascade" refrigeration cycle operated with a refrigerant mixture, wherein the refrigerant mixture is conducted through a hermetically sealed cycle comprising a cycle compressor, a low-pressure cycle section and a high-pressure cycle section, and wherein when the cycle compressor is cut off, the pressure in the low-pressure cycle section would build up to a pressure above the maximum design pressure of said low-pressure section in the absence of a pressure relief valve, the improvement comprising introducing sufficient buffer volume in said low-pressure section when the cycle compressor is cut off, to compensate for said build-up in pressure, so said refrigerant mixture does not escape from said cycle, and so that pressure relief valves venting to the atmosphere are not required, said buffer volume being bypassed during normal operation of the cycle compressor.

3,855,811

INSULATION FOR LIQUID GAS CONTAINERS, ESPECIALLY SPHERICAL CONTAINERS

Irmhild Sauerbrunn, Altenbach/Odw., and Rudolf Bellemann, Rot, both of Germany, assignors to Rheinhold & Mahba GmbH, Anlage, Germany

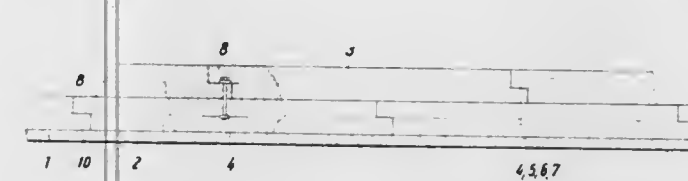
Filed Jan. 31, 1973, Ser. No. 328,397

Claims priority, application Germany, July 6, 1972, 2233332

Int. Cl. F17c 3/04

U.S. Cl. 62-45

8 Claims



1. Insulation for liquid gas containers comprising:

a plurality of molded inner foamed synthetic insulating panels each having rabbeted edges, each having a fastening element at the center thereof projecting upwardly from approximately halfway through the thickness thereof and each having a force-accepting element embedded in the center of each panel during molding thereof at approximately half the thickness of said panel; said inner insulating panels being adapted for arrangement on a gas container with each panel being staggered with respect to at least one of the next adjoining panels and interlocking therewith;

a plurality of outer insulating panels having rabbeted edges; said outer insulating panels being adapted for arrangement on said inner insulating panels with each outer panel being staggered with respect to at least one of the next adjoining outer panels and interlocking therewith and each said outer panel being staggered with respect to said inner panels; and

wherein said fastening elements of said inner panels fit into the rabbeted edges of said outer panels.

3,855,812

DOMESTIC ICE MAKER AND DEFROST TIMER

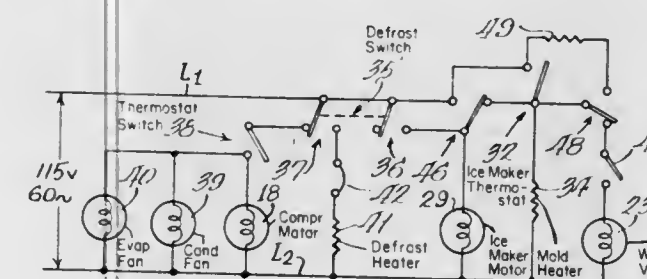
William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 21, 1973, Ser. No. 343,281

Int. Cl. F25c 1/00

U.S. Cl. 62-135

10 Claims



1. In a refrigeration apparatus having cooling means, means for defrosting the cooling means mechanism including means for making ice bodies and means operated by a drive motor for harvesting the ice bodies, and means for causing cyclical operation of the harvesting means irrespective of the making of said ice bodies, control means for controlling the operation of the defrosting means comprising: timing means operated by said mechanism only during operation of the harvesting means for initiating operation of the defrosting means upon operation of said harvesting means a preselected number of cycles; and means for maintaining operation of the defrosting means for a preselected period of time after initiation to effect defrosting of the cooling means.

3,855,813

COMPRESSOR CONTROL FOR REFRIGERATION SYSTEM

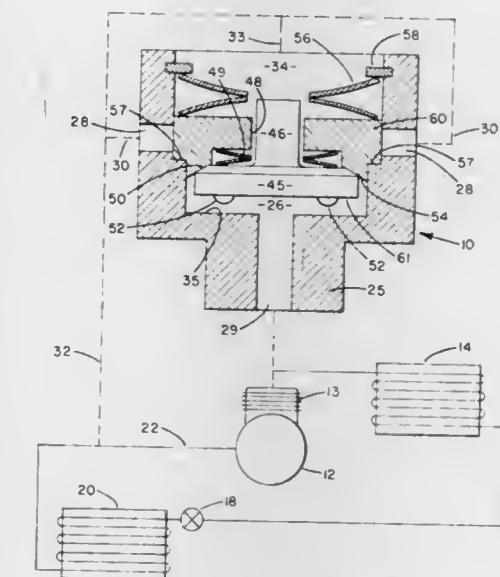
Arthur St. Laurent, 240 S. Main St., Minoa, N.Y. 13116

Filed Aug. 1, 1973, Ser. No. 384,774

Int. Cl. F25b 41/00

U.S. Cl. 62-196

2 Claims



1. In a refrigeration unit including a compressor (12) with a first heat exchange coil (14) joined to the discharge side of said compressor, expansion means (18) and a second heat exchange coil (20) joined to the suction side of said compressor, the improvement comprising:

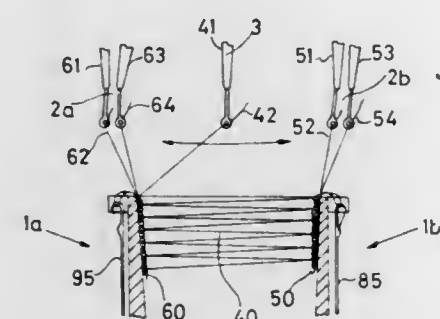
a. a combination equalizer and over-pressure control (10) having passage means adapted to communicate said compressor discharge side with said compressor suction side bypassing said other components of said unit, said passage means including a first piston-like member (60) having a first relief port therethrough, said member when in a first position preventing any flow of fluid through a second relief port (28);

b. means for closing said first relief port including a second piston-like member (45), said second piston-like member being disposed upstream of said first piston-like member, said first and second members being movable relative to one another;

c. control means including first means (49) providing a force to maintain said second member in spaced relationship relative to said first member, said second member moving into sealing abutment with said first member to close said first relief port when fluid pressure acting on said second member exceeds a predetermined value, second means (56) providing a force to maintain said first and second members in position relative to said second relief port to prevent any fluid flow therethrough, said first and second members moving jointly at a predetermined over-pressure condition to open said second relief port; and

d. said first force supplying means moving said second member relative to said first member when the compressor becomes inoperable thereby opening said first relief port, said second member including abutment means (52) to maintain said passage means in an open state when said first relief port is opened to relatively quickly equalize pressures between the discharge side and the suction side of said compressor.

- d. at least two second guides for laying thread about needles in said second needle bed,
 e. at least one third guide for laying a weft thread about needles in said first needle bed and about needles in said second needle bed said third guide being swingable substantially in the same plane as said first guides and said second guides and being located between said first guides and said second guides,
 said process comprising
 i. laying at least two threads about needles in said first needle bed by means of at least two first guides to form a first ground pattern,



- ii. laying at least two threads about needles in said second needle bed by means of at least two second guides to form a second ground pattern,
 iii. laying at least one weft thread about a needle in said first needle bed and,
 a needle in said second needle bed by means of said at least third guide to provide a weft between said first ground pattern and said second ground pattern,
 the elevations of said first needle bed and of said second needle bed relative to a predetermined point are the same at any predetermined time during the knitting cycle, the said guides laying the ground thread laying 2 or more even numbers of courses about the needles in their respective needle beds for each complete cycle of said third thread laying guide.

3,855,821

TAPE-POSITIVE YARN FEED

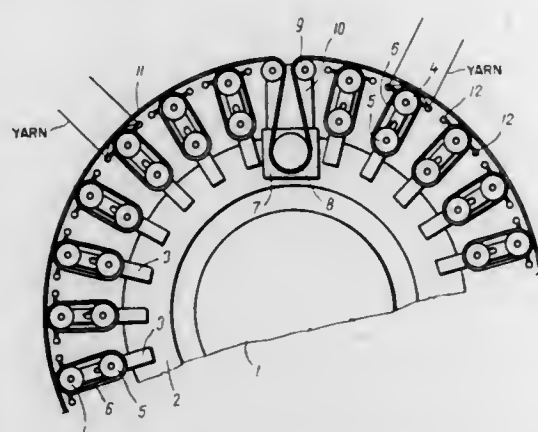
Josef Sterba, Brno, Czechoslovakia, assignor to Vyzkumny a vyvojovy ustav Zavody vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Jan. 15, 1973, Ser. No. 323,773

Int. Cl. B04b 15/48, 15/50, 20/32

U.S. Cl. 66—132

2 Claims



1. In a multifeed circular knitting machine having a cylinder, a yarn feeding device for feeding a plurality of yarns thereto, said device comprising a plurality of pairs of rotatably mounted idle feeding rollers and auxiliary rollers in angularly spaced relationship around the knitting machine, the feeding rollers being disposed generally in a circle coaxial of the cylinder of the machine, each of the auxiliary rollers being disposed radially inwardly of the feeding roller of its pair with respect

to the said cylinder, each pair of a feeding roller and its auxiliary roller being joined by its individual separate feeding belt, each pair of rollers being fitted with an entrance guiding eyelet and a delivery guiding eyelet, all the separate feeding belts being on the radially outer surfaces of the feeding rollers in driving engagement with a continuous driving and feeding belt extending around the machine and around the feeding rollers thereof and receiving a uniform driving motion from a drive mechanism, the guiding eyelets guiding the individual yarns between the places of contact of the continuous driving and feeding belt with the respective separate feeding belts on the feeding rollers and their auxiliary rollers.

3,855,822

CIRCULAR KNITTING MACHINE TAKEUP WITH A SLITTING DEVICE

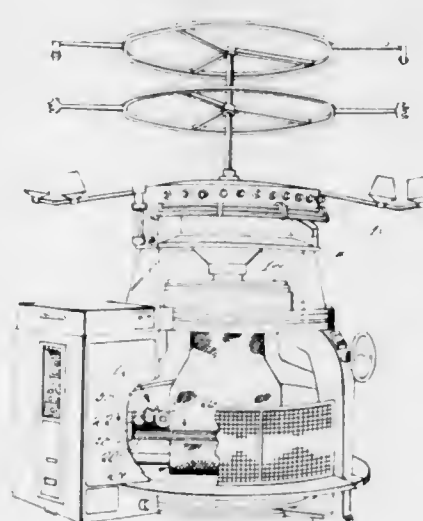
Billy M. Lee, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 24, 1972, Ser. No. 237,685

Int. Cl. D04b 35/00

U.S. Cl. 66—147

7 Claims



1. An attachment for a knitting machine of the type having a spreader structure for receiving thereover a tubular fabric progressively knitted during the operation of said machine to progressively deform the same from an open tubular condition into a flattened transversely elongated condition and cooperating take-up roll means for feeding therebetween the fabric in flattened condition passing from said spreader structure, said attachment comprising a housing, a pair of shafts journaled in said housing for rotational movement about axes disposed perpendicular to each other, a circular cutting blade fixed to one of said shafts exteriorly of said housing, a pair of gears on said shafts within said housing disposed in meshing relation with respect to one another, a pulley fixed to the other of said shafts exteriorly of said housing, driving means operatively connected with the exterior periphery of said pulley and adapted to be drivingly connected with said take-up roll means for imparting a rotational movement to said pulley in response to the fabric feeding movement of said take-up roll means, and means carried by said housing adapted to mount the same in an operative position on said machine in which (1) said cutting blade is disposed in cooperating relation with said spreader structure to progressively slit the fabric passing thereover along a longitudinally folded edge thereof and (2) said driving means is disposed in the aforesaid drivingly connected relation to said take-up roll means.

3,855,823

APPARATUS FOR CONTINUOUSLY CHAMOISING HALVES

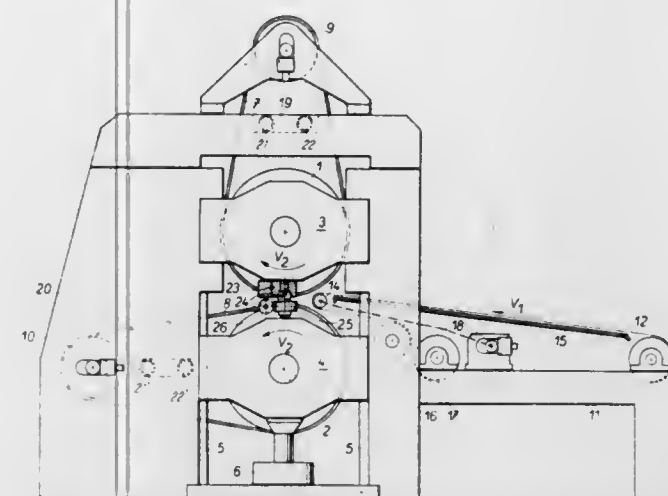
Jaroslav Prosecky, No. 2 Vodni, and Lubomir Srda, 109 Hlubcicka, both of Krnov, Czechoslovakia

Filed Sept. 12, 1973, Ser. No. 396,613

Int. Cl. C14c 13/00

U.S. Cl. 69—32

3 Claims



1. Apparatus for continuously chamoising hides, comprising two chamoising rollers one above the other driven in opposite directions and forming a nip therebetween, means for generating pressure between said rollers, an endless felt band encompassing each respective chamoising roller, a tensioning roller for tensioning each felt band, one of said bands being an upper felt band tensioned in the vertical direction, the other of said bands being a lower felt band tensioned in the horizontal direction, a feeding band conveyor having a surface speed lower than the circumferential speed of the chamoising rollers provided close to the nip of the chamoising rollers, the lower felt band being adapted to operate as a discharge conveyor for the treated hides, a moistening and washing unit provided inside the space between the upper chamoising roller and its respective tensioned felt band, and a moistening and washing unit provided inside the space between the lower chamoising roller and its respective tensioned felt band.

3,855,824

KEY RETAINING LOCK

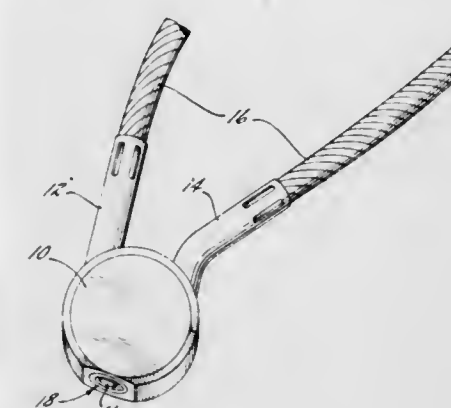
Morris Falk, Palm Springs, Calif., assignor to Fort Lock Corporation, River Grove, Ill.

Filed Dec. 10, 1973, Ser. No. 423,167

Int. Cl. E05b 11/00, 67/06, 67/22

U.S. Cl. 70—38 A

6 Claims



1. A locking device having a padlock body and first and second shackle parts interconnected by flexible cable or the like and having a key receiving locking mechanism which when rotated by a proper key inserted in the lock and rotated from a "lock" position to a lock "open" position, means associated with the key and locking mechanism prevents

removal of the key, the combination comprising, rotatable retaining means connected to said lock mechanism disposed in said padlock body, said first and second shackle parts being received in bore means on opposite sides of said retaining means in the body, fixing means disposed between the retaining means and each of the shackle parts bearing against the retaining member and the shackle parts when the lock mechanism is in the "lock" position for holding said first and second shackle parts fixed to the padlock body, and said retaining means having indentation means thereon so that rotation with the lock mechanism to the "open" position aligns said indentation means with one of said shackle fixing means providing clearance therefor and the first shackle part associated therewith may be removed from the body bore means, plunger means contained within said removable shackle bore means being normally biased outwardly for movement against said shackle fixing means when the removable shackle is removed thereby holding said shackle fixing means in engagement with said retaining member indentation means and preventing rotation of said retaining member, locking mechanism and key to the "lock" position where said key may be removed from the lock.

3,855,825

BICYCLE LOCK

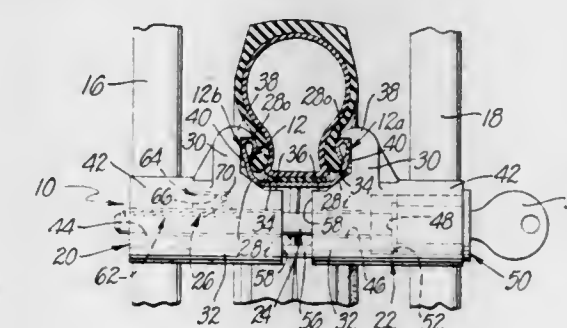
Frank W. Pickard, Inglewood, Calif., assignor to Eleanor D. J. Stanford, Los Angeles, Calif., a part interest

Filed Mar. 5, 1973, Ser. No. 338,065

Int. Cl. E05b 73/00

U.S. Cl. 70—14

3 Claims



1. A rattle-free, quick-release bicycle lock, comprising: a pair of jaws for gripping opposite sides of a rim of a spoked wheel in a direction generally parallel to an axial of said wheel, at least one of said jaws supporting a projection for engaging a fork-like frame member supporting the said axle when said jaws are affixed in place on said rim to limit rotation of said wheel, said jaws including coaxial openings; a connecting shaft turnable in said coaxial openings in said jaws, axially fixed relative to a fixed one of said jaws, and axially slidable in the opening in a movable one of said jaws; and cooperative means including one-way ratchet means on said movable jaw and connecting shaft for releasably locking said movable jaw against axial movement on said shaft away from said fixed jaw when said shaft is in a preselected rotational position relative to said movable jaw.

3,855,826

PADLOCK

Hideo Hori, Tokyo, Japan, assignor to Hori Lock Kogyo Kabushiki Kaisha, Minatoku, Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,492

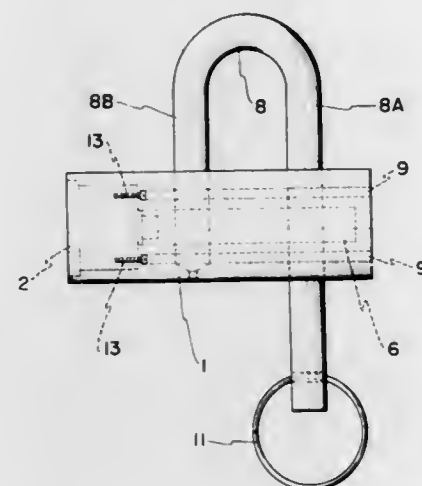
Int. Cl. E05b 67/22

U.S. Cl. 70—38 A

1 Claim

1. A padlock construction comprising a cylindrical barrel having a principal axis, a longitudinally extending bore commencing at one end of said barrel, and a counter bore communicating with said bore at an inner end thereof; said barrel

having a pair of transverse bores communicating with said counter bore; a shackle movable within said transverse bores between opened and closed positions, and selectively completely removable from said transverse bores, a locking bar rotatably positioned within said counter bore and cooperating with said shackle to selectively immobilize the same, a lock body positioned within said first mentioned bore and cooperating with said locking bar, said lock body being accessible for the engagement of a key at one end of said barrel, said barrel having at least one elongated longitudinally extending bore



therin communicating at an opposite end of said barrel and terminating at an inner counter bore of smaller diameter communicating with said first mentioned bore, said lock body having at least one threaded bore therein aligned with said inner counter bore, said elongated bore intersecting at least one of said transverse bores in said barrels; said lock body being maintained within said barrel by threaded engagement with a screw inserted into said elongated bore, whereby subsequent insertion of said shackle into said barrel prevents access to said screw and unauthorized removal of said lock body from said barrel.

3,855,827

MAGNETICALLY-OPERATED LOCKING MECHANISMS
Hermann Hallman, and Branko Perkut, both of Hamburg, Germany, assignors to MRT Magnet-Regeltechnik GmbH, Hamburg, Germany

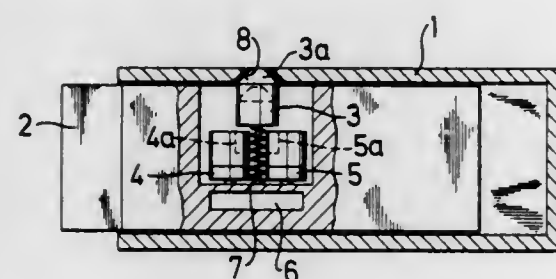
Filed Nov. 9, 1973, Ser. No. 414,328

Claims priority, application Germany, Apr. 26, 1973, 2321246; Oct. 10, 1973, 2350897

Int. Cl. E05b 47/00

U.S. Cl. 70-134

27 Claims



1. In a magnetically-operated locking mechanism which includes at least one rotatably-mounted stop member which can be moved by means of a magnetic key into a release position from a locking position into which it is biased and a control element which in the release position can enter a recess in the stop member by relative movement between the stop member and the control element in a direction parallel to the axis of rotation of the stop member, the control element being held against movement in said direction in the locking position of the stop member, so as to control movement of a locking bolt,

the improvement wherein the locking bolt is movable transversely to the direction of movement of the control element and the control element includes a cam portion which cooperates with a cam surface so that, in the locking position of the stop member, movement of the locking bolt is prevented by interaction of the cam portion and cam surface and that, in the release position, movement of the locking bolt is permitted and the control element enters the recess in the stop member upon relative sliding movement of the cam portion and cam surface.

3,855,828

COMBINATION FUEL LINE AND IGNITION LOCK FOR MOTOR VEHICLES

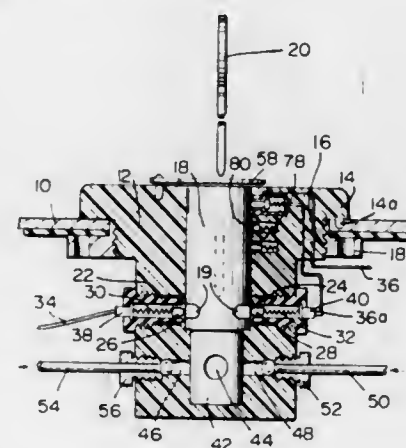
Jerome Verderber, 192-10 35th Ave., Flushing, N.Y. 11358

Filed Sept. 17, 1973, Ser. No. 397,644

Int. Cl. B60r 25/04

U.S. Cl. 70-243

4 Claims



1. An anti-theft device for an internal combustion engine of a motor vehicle comprising, in combination, lock means for simultaneously switching off an ignition circuit and shutting off a fuel supply for an engine, said lock means comprising a non-conductive lock housing, a lock cylinder rotatably displaceable in said housing, said cylinder being provided with a pair of spaced non-conductive inserts on its periphery and a lower end portion provided with a through bore, a pair of non-conductive bushings secured in said housing radially of said lock cylinder and alignable with said non-conductive inserts, contacts mounted in said bushings, springs in said bushings biasing said contacts against said cylinder, wire means for electrically connecting these elements in series with an ignition circuit of a motor vehicle; said housing having a pair of radially extending inlet and outlet passages alignable with said bore and tubing secured to said passages for connecting said inlet and outlet passages to a vehicle's fuel tank and a carburetor respectively.

3,855,829

CYLINDER LOCK

Paul Lipschutz, Croissy sur Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Neuilly S/Seine, France
Filed May 17, 1973, Ser. No. 361,109

Claims priority, application France, May 17, 1972, 72.217544

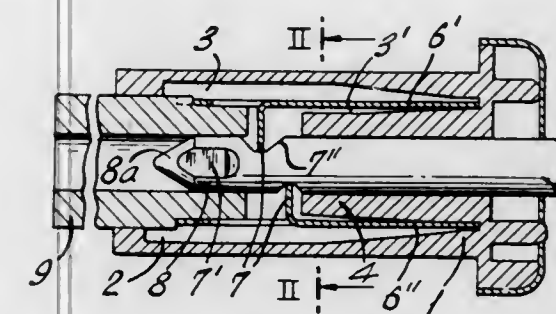
Int. Cl. E05b 29/00

U.S. Cl. 70-362

10 Claims

1. A safety cylinder lock comprising a hollow cylinder, a key-responsive inner cylindrical plug member rotatably mounted within said cylinder and rotatable by a removable key formed with notches and insertable into said plug member, and key-operated locking means carried by said plug member and releasably engageable with said cylinder, wherein the improvement consists in that said cylinder comprises an outer cylindrical casing portion and an inner substantially cylindrical core portion at least partially co-extensive in coaxial relationship with said outer casing portion to leave therebetween an intermediate annular space, the lateral peripheral surface of said inner core portion being formed with a number

of circumferentially spaced grooves whereas said locking means comprise resiliently flexible strips made fast with said rotor member and extending in generally parallel relation to the longitudinal axis of said lock and to said grooves, said strips being arranged according to an at least approximately cylindrical configuration coaxially surrounding said cylinder core portion and fitted with clearance in said annular intermediate space to be rotatable therein, said strips being circumferentially distributed in spaced relationship to be on the one hand removably engageable in their free unstrained rest posi-



tions with at least some of said grooves provided in said cylinder core portion to hold said plug member against rotation when said key is removed, and on the other hand located in their resiliently radially outward deflected positions in a same substantially cylindrical surface within said intermediate annular space in a given rotary position of said rotor member to be disengaged from said cylinder core portion and allow free rotation of said plug member, each strip being formed with a radially inward projecting catch element engageable with said key in the fully inserted position of the latter for moving said strips out of and into said grooves.

3,855,830

METHOD AND APPARATUS FOR CONTROLLING PLATE THICKNESS IN A ROLLING MILL

Hidehiro Kitanoosono; Takeaki Kubo, and Shigeru Shida, all of Hitachi, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Continuation of Ser. No. 60,223, Aug. 3, 1970, abandoned.

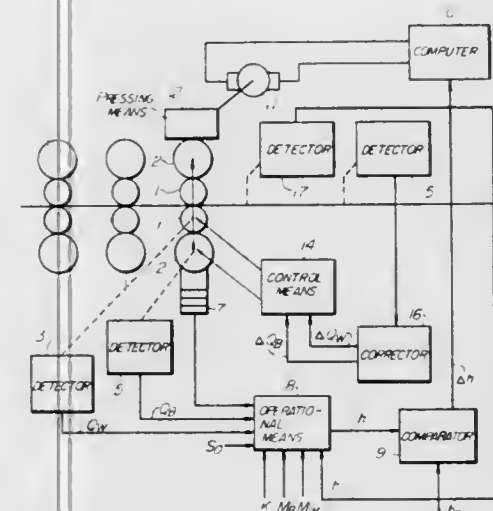
This application Nov. 27, 1972, Ser. No. 309,923

Claims priority, application Japan, Aug. 4, 1969, 44-61009

Int. Cl. B21b 37/00

U.S. Cl. 72-8

4 Claims



1. Apparatus for controlling the thickness of a rolled material in a rolling mill of a type having a pair of work rolls and at least a pair of back up rolls wherein a roll separating force is applied between the roll bearings of the work rolls and between the roll bearings of the back up rolls of a roll stand in the direction opposite to a roll depressing force, said apparatus comprising means for setting the roll clearance and for providing an output indicative thereof including roll depressing force control means; means for setting the roll separating

force for the work roll bearings and for the back up roll bearings and for providing an output indicative thereof including roll separating force control means for the work roll bearings and for the back up roll bearings; setting means for providing an output indicative of the modulus of rigidity between the roll bearings and a housing and the modulus of rigidity of the whole mill; a detector for providing an output indicative of the roll depressing force; a detector for providing an output indicative of the roll separating force at the work roll bearings and a detector for providing an output indicative of the roll separating force at the back up roll bearings; plate thickness operational means responsive to the outputs of said setting means and detectors for providing an output indicative of the thickness of the rolled material on the exit side of the roll stand; a compressor for comparing the output of said operational means with a desired value to determine the deviation therebetween and providing an output indicative thereof; and control means for receding the output of said comparator for generating a control signal to control at least one of said roll depressing force control means and said roll separating force control means for varying at least one of the depressing force and separating force at both the work roll bearings and back up roll bearings, and further comprising a detector for detecting the amount of crown of the rolled material on the exit side of the roll stand and shape control means for receiving the output of said crown detector and generating a signal to control said roll separating force control means for varying the separating force at the work and back up roll bearings so as to eliminate the crown.

3,855,831

WHEEL STRAIGHTENER

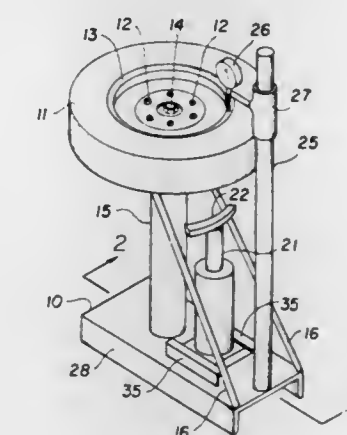
Frank Senkyrik, Seagoville, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,296

Int. Cl. B21c 51/00

U.S. Cl. 72-32

2 Claims



1. Apparatus for straightening the wheels of an automobile, consisting of a central mount, fastened to a base, upon which an automobile wheel may be fastened through holes in its hub, said central mount being rotatable with respect to said base, with a gauge supported from the base independently of the central mount and located adjacent to a section of the rim of said automobile wheel in the fastened position, said gauge measuring the variation of deflection from a plane of the automobile rim as said fastened automobile rim and wheel is rotated, together with

a hydraulic jack mounted to the base and located to bear against the automobile rim directly opposite the gauge such that the gauge will measure the deflection of the stressed wheel rim as the hydraulic jack bears upwardly against the wheel rim in restoring the wheel to a plane condition.

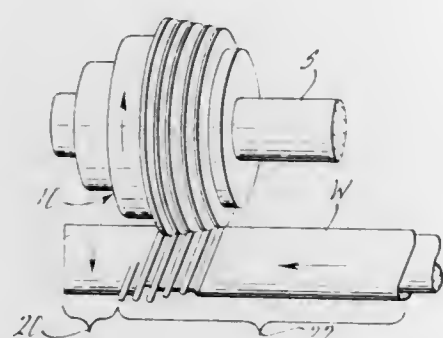
3,855,832
METHOD OF AND APPARATUS FOR MANUFACTURING
INTEGRAL FINNED TUBING
 Arthur H. Novak, 29900 Woodland Dr., Southfield, Mich.
 48075

Filed Jan. 21, 1974, Ser. No. 434,955

Int. Cl. B21h 3/00

U.S. Cl. 72-84

3 Claims

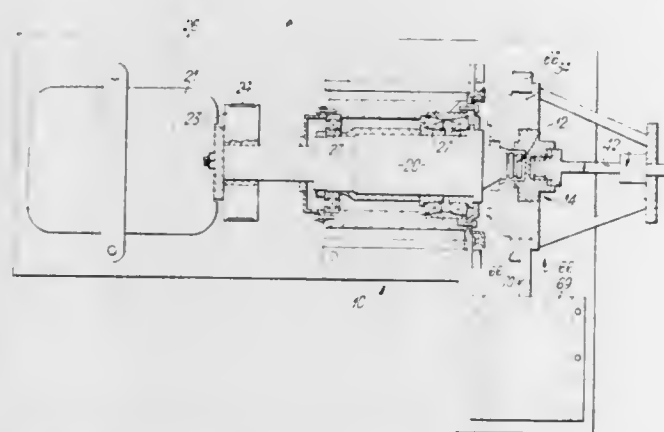


1. The method of making finned tubing which comprises providing a tube to be finned and which is rotatable about a fixed axis, providing a forming roll having a series of annular forming projections thereon of sequentially increasing diameter, the tube also being movable longitudinally of its axis relatively to the roll, driving the roll rotatably about an axis which is inclined with relation to the axis of the tube and which is spaced from the tube at a fixed distance such that when the roll is at the closest crossing point of such axes the projections are in full working engagement with the tube, characterized by moving the roll longitudinally of its axis of rotation from a start-position in which the roll is disengaged from the tube to said position of full engagement and maintaining such full engagement while driving the roll and tube in synchronous meshed engagement about their respective axes and permitting the tube to move longitudinally of its axis relatively to the rolls, whereby the projections deform a helical section of the tube, the path of longitudinal movement of the points of engagement of the projections with the tube, during feeding of the roll into such full engagement, being substantially perpendicular to the helix angle.

3,855,833
ROLLING MACHINES
 Gordon Sidney Connell, Cheltenham, England, assignor to
 Formflo Limited, Gloucestershire, England
 Continuation-in-part of Ser. No. 298,198, Oct. 17, 1972,
 abandoned. This application June 26, 1973, Ser. No. 373,702
 Claims priority, application Italy, Oct. 19, 1972, 53480/72;
 Great Britain, Oct. 20, 1972, 49248/72
 Int. Cl. B21b

U.S. Cl. 72-91

10 Claims



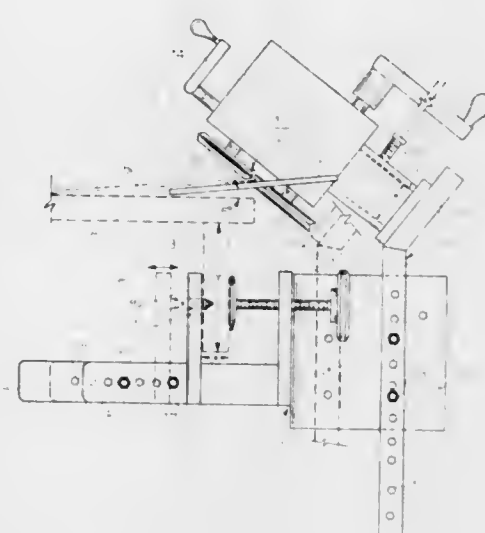
1. A roll forming machine comprising:
 a rotatable profiled forming roll, a rotatable outer profiled
 roll, said profile of said roll having a cross-sectional plane
 with a maximum diameter at plane intermediate the limits

of said profile, means for moving said inner and outer forming rolls transversely of their axes of rotation relative to one another during roll forming to form a nip between said rolls in which said workpiece is squeezed to a shape corresponding to the profiles of said inner and outer forming rolls, said outer forming roll being capable of being split into two parts which coincide with said plane of maximum diameter at said profiled rolling surface whereby said two parts of said outer forming roll can be separated after roll forming a workpiece to allow for removal of said shaped workpiece, and means for holding said two parts of said outer forming roll together during the roll forming of a workpiece.

3,855,834
MULTIPOSITION HOLDER FOR SHEET METAL EDGER
 Robert B. Evans, 21211 Currin Ave., Durham, N.C. 27707
 Filed July 5, 1973, Ser. No. 376,283
 Int. Cl. B21d 5/14

U.S. Cl. 72-179

3 Claims



1. A tool holder structure for an edging tool of the type having upper and lower edging wheels, a work piece guide plate angularly positioned with respect thereto, an operator mechanism for adjusting and operating said wheels and a spindle mounting said tool on a holder, comprising in combination:

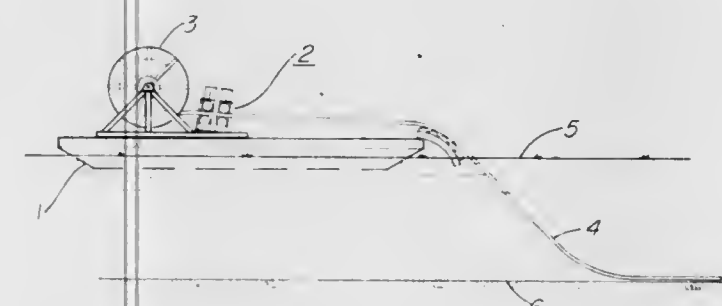
- a rear vise plate structure having a rear vise clamping plate and arm means integral therewith for adjustably securing such structure to a mating opposing vise structure;
- a front vise plate structure having a front vise screw clamp support plate, screw vise clamp means threadably mounted in said support plate, arm means integral therewith and mating with said rear vise clamping plate arm means, securing means for securing said respective arm means together in any of a plurality of table mounting positions adapted to bring said rear vise clamping plate and screw vise clamping means in predetermined laterally spaced and opposed positions for releasably clamping a worktable vertical member therebetween and having an appended vertical support plate formed integral therewith; and
- a tool mounting-yoke structure having appended arm means arranged for being secured to said front vise plate structure vertical support plate in any of a plurality of predetermined yoke structure mounting positions, securing means for securing said mounting-yoke structure arm means to said vertical support plate and having a receptacle formation integrally secured to said mounting yoke structure, said receptacle formation being mated to receive said tool spindle in a releasable, rotatable relation with screw means to releasably secure said spindle, said table mounting positions and said yoke structure mounting positions being arranged whereby said tool turning

wheels and guide plate are enabled to be positioned in a normal angular vertical position with respect to the work piece for a relatively small work piece and to be positioned substantially less vertically for a relatively large work piece whereby the work piece may be supported by the worktable, and said rear and front vise plate structures may be adjusted according to the width and height of the worktable vertical member to which said tool holder structure is clamped such that the space between said turning wheels may at all times be located near or over the worktable to which the tool holder structure is clamped.

3,855,835
APPARATUS FOR LAYING PIPELINES
 Benjamin Cornwall Tisdale, III, 10144 Idlewood Pl., New Orleans, La. 70123, and William Buford Nicholson, 4409 Cleveland Pl., Metairie, La. 70003
 Filed Dec. 10, 1973, Ser. No. 423,206
 Int. Cl. B21d 3/02

U.S. Cl. 72-183

1 Claim



1. In an apparatus supported on a floating vessel for laying pipeline on a water bottom, pipeline straightening means comprising in combination:

- a reel means mounted for rotation around a horizontal axis on said vessel for the dual function of reeling a pipeline on for storage and off for laying, and for defining a first rigid point of three sequential points between which a pipeline must be led to remove a curvature therein and place one thereon;
- a first set of rollers, adapted to vertical adjustment, and defining the second point of said three sequential points, said first set comprising a pair of peripherally opposed rollers mounted for rotation around parallel vertical axes, and a second pair similarly opposed and mounted for rotation around parallel horizontal axes, said pairs of rollers defining a pipeline passageway;
- a second set of rollers similar to the first set and spaced therefrom with its pairs of rollers reversed to define the third point of said three sequential points and a continuation of said pipeline passageway;
- a first platform mounted on said floating vessel adjacent said reel, the first set of rollers being fixed thereon and said platform being adjustably movable parallel to the horizontal axis of said reel for the horizontal adjustment of said first set relative to said reel;
- a second platform mounted for horizontal movement on said first platform, the second set of rollers being fixed on said second platform and spaced from said first set of rollers, the second platform being adjustably movable parallel to the horizontal movement of said first platform for the horizontal adjustment of said second set of rollers relative to said first set, whereby said first and second set of rollers are precisely alignable to direct a pipeline onto the reel to prevent excessive bending and coating damage, and off the reel straightened for laying.

3,855,836
DEVICE FOR CONTROLLING COOLANT PRESSURE IN
EVAPORATOR

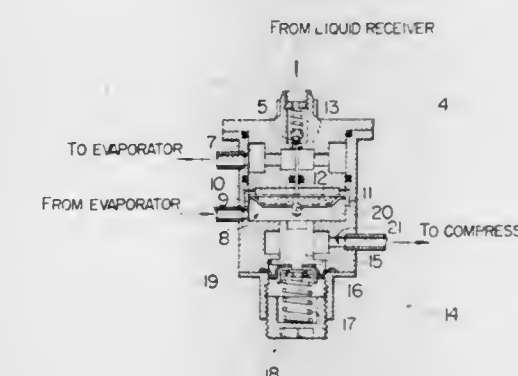
Reijiro Takahashi; Kazuo Kanemoto, both of Katsuta, and Toshikatu Ito, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1974, Ser. No. 435,971

Claims priority, application Japan, Jan. 24, 1973, 48-9542
 Int. Cl. F25b 41/04

U.S. Cl. 62-217

8 Claims



1. A pressure control valve for:
 a cooling system having,
 a compressor for compressing a coolant,
 a condenser for condensing the coolant compressed in said compressor into a liquid,
 a liquid receiver for separating the coolant from the condenser into liquid and gas,
 an expansion valve for subjecting the liquid coolant from the liquid receiver to expansion,
 an evaporator for causing heat-exchange between coolant gas from the expansion valve and air,
 a pressure control valve for maintaining the pressure in the evaporator at a level higher than a predetermined level, and
 means for returning the coolant gas from said pressure control valve to the compressor; characterized by that said evaporator includes a plurality of coolant gas passages arranged in parallel and a collector for collecting the coolant flowing through said plurality of the coolant gas passages;
 a housing mechanically connected with said collector;
 a biasing means provided in said housing, said biasing means having one side, to which is exerted the gas pressure in the collector;
 a spring for exerting a force on the other side of said biasing means;
 an adjusting screw for adjusting the pressure of the spring; and
 a valve means provided between the collector and the means for returning the coolant to the compressor and having an opening capable for varying its size.

3,855,837
MACHINE FOR CORRECTING ECCENTRICITY AND
RUNNING OUT OF TRUE IN STAMPED STEEL WHEELS
 Erich Philipp, Dabringhausen, Germany, assignor to Ford Motor Company, Dearborn, Mich.
 Filed May 15, 1973, Ser. No. 360,492

Claims priority, application Germany, May 17, 1972, 2224027

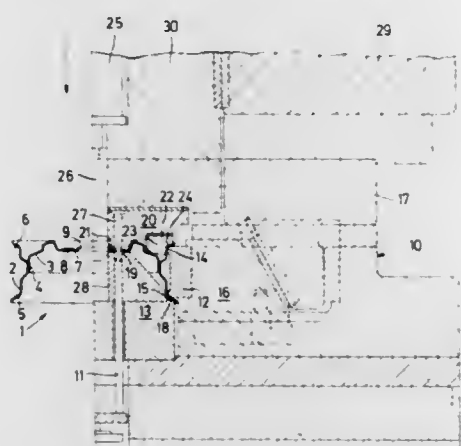
Int. Cl. B21d 22/00

U.S. Cl. 72-354

1 Claim

1. A machine for correcting eccentricity and running out of true in a disc type steel pressing wheel,
 said wheel having an annular wheel dish,
 said wheel dish having an outer edge and a center bore,
 said wheel dish having first and second annular support surfaces adjacent said center bore,

said wheel also having a wheel rim with first and second axially spaced tire support surfaces and first and second axially spaced apart rim shoulders,
 said wheel rim being affixed to said outer edge of said wheel dish,
 said machine comprising a supporting calibrating tool having radially spaced apart first and second calibrating faces,
 said first calibrating face of said supporting calibrating tool being constructed to engage said first support surface of said wheel dish,
 said second calibrating face of said supporting calibrating tool being constructed to engage said first rim shoulder, the surface portion of said wheel between said first support surface of said wheel dish and said first rim shoulder



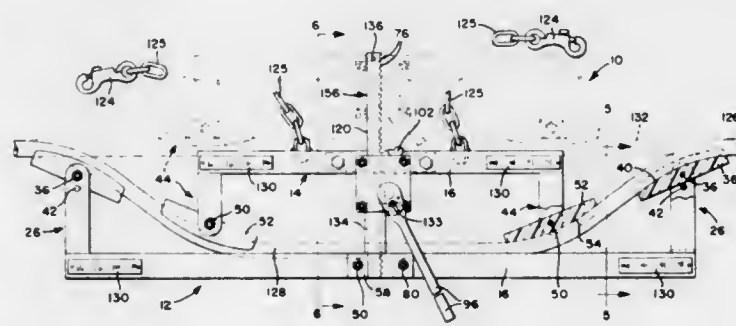
being spaced apart from said supporting calibrating tool when said supporting calibrating tool is in engagement with said first support surface and said first rim shoulder, a plurality of radially movable segmental calibrating tools,
 said segmental calibrating tools each having first and second axially spaced arcuate calibrating faces constructed to engage said first and second tire support surfaces, respectively,
 the surface portion of said wheel rim between said first and second tire support surfaces being spaced apart from said segmental calibrating tools when said segmental calibrating tools are in engagement with said first and second tire support surfaces,
 first means constructed to force said segmental calibrating tool radially inwardly into engagement with said tire support surfaces,
 said first means including an axially movable hydraulic ram, wedge means interposed between said hydraulic ram and said segmental calibrating tools and constructed to translate the axial displacement of said ram to radial displacement of said segmental calibrating tools,
 an axially movable calibrating tool having radially spaced apart first and second calibrating faces,
 said first calibrating face of said axially movable calibrating tool being constructed to engage said second support surface of said wheel dish,
 said second calibrating face of said axially movable calibrating tool being constructed to engage said second rim shoulder,
 the surface portion of said wheel between said second support surface of said wheel dish and said second rim shoulder being spaced apart from said axially movable calibrating tool when said axially movable calibrating tool is in engagement with said second support surface and said second rim shoulder,
 second means constructed to force said axially movable tool into engagement with said wheel dish and said wheel rim, said second means including an axially movable hydraulic ram disposed concentrically within said ram of said first means,
 said second means including means constructed to force

said calibrating faces of said axially movable calibrating tool into hammer-pressing engagement with said support surface means of said wheel dish and said second rim shoulder,
 said first means being constructed to hold said calibrating faces of said segmental tools in engagement with said tire support surfaces at the same time said second means forces said calibrating faces of said axially movable calibrating tool into hammer-pressing engagement with said second support surface of said wheel dish and said second rim shoulder,
 a center bore calibrating tool constructed to engage the periphery of said center bore,
 third means constructed to force said center bore calibrating tool into engagement with said center bore periphery, said third means being constructed to hold said center bore calibrating tool in engagement with said center bore periphery at the same time said second means forces said calibrating faces of said axially movable calibrating tool into engagement with said second support surface and said second rim shoulder.

3,855,838
APPARATUS FOR FORMING VARIABLE LENGTH CABLE OFFSETS
 Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communications Corporation, Clayton, Ohio
 Filed Oct. 1, 1973, Ser. No. 402,358
 Int. Cl. B21d 9/05

U.S. Cl. 72-389

10 Claims



1. Apparatus for forming in a cable an expansion loop consisting of a substantially straight section offset from and generally parallel to the main body of the cable and joined thereto by gently curved interconnecting portions comprising:
 a. a base frame including a central portion and spaced, outwardly projecting outer shoe supports,
 b. a center frame including a central portion and outwardly projecting inner shoe supports spaced from each other along said center frame,
 c. means mounting said center frame in opposed relationship to said central portion of said base frame,
 d. cable engaging shoes,
 e. means for rotatably mounting said shoes on said outer and inner shoe supports of said base and center frames with cable engaging surfaces of said shoes on said center frame disposed in opposition to cable engaging surfaces on said shoes mounted on said base frame, and
 f. means for moving said base and center frames toward each other with a cable engaged by said opposed cable engaging surfaces on said shoes to form said substantially straight offset section in said cable at that portion thereof between said inner shoe supports.

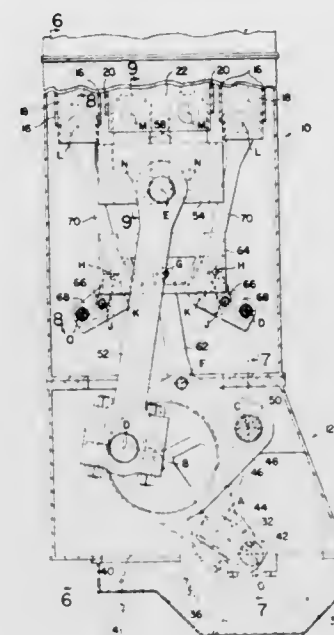
3,855,839
DRIVE LINKAGE FOR DOUBLE ACTION PRESS
 John G. Lose, Lansdowne, Pa., and John F. Roth, Salem, Ohio, assignors to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,338

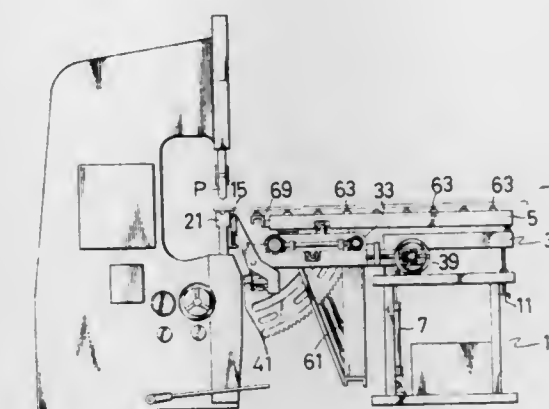
Int. Cl. B21d 24/12

U.S. Cl. 72-417

36 Claims



to said frame, said table being positioned to support a workpiece having a portion thereof located between the upper and lower dies; first operating means for imparting vertical motion to said frame; second operating means for imparting pivotal motion to said table; first control means responsive to vertical movement of the lower die, said first control means being associated with said first operating means and being operative



in conjunction therewith to move said frame vertically in unison with the lower die; and second control means responsive to pivotal movement of a workpiece supported on said table during a bending operation, said second control means being associated with said second operating means and being operative in conjunction therewith to pivotally move said table in unison with the workpiece supported thereon.

1. In a double action metal working press comprising a frame, work holding slide means supported by said frame for reciprocating movement along a linear path to hold and release a workpiece relative to said frame, plunger slide means supported by said frame for reciprocating movement along said path and through a work stroke relative to a workpiece held by said work holding slide means, said work holding slide means including driven and work holding slides and linkage means interconnecting said slides for reciprocation of said driven slide to impart intermittent reciprocating movement to said work holding slide, and drive means for reciprocating said plunger slide means and said driven slide, the improvement comprising: said drive means including crank means supported by said frame for rotation about a first axis, connecting link means pivotally interconnected with said crank means at a second axis spaced from said first axis, first slide link means having opposite ends pivotally interconnected one with said connecting link means at a third axis spaced from said second axis and the other with said plunger slide means, constraining link means pivotally interconnected with said frame at a fourth axis spaced from said first axis and pivotally interconnected with said connecting link means at a fifth axis spaced from said second axis, and second slide link means having opposite ends pivotally interconnected one with said constraining link means at a sixth axis spaced from said fourth and fifth axes and the other with said driven slide.

3,855,840
MATERIAL SUPPORT APPARATUS FOR A PRESS BRAKE SYSTEM
 Susumu Kawano, Isehara, Japan, assignor to Amada Company Limited, Kanagawa-ken, Japan
 Continuation-in-part of Ser. No. 191,319, Oct. 21, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,459
 Int. Cl. B21d 5/01

U.S. Cl. 72-418

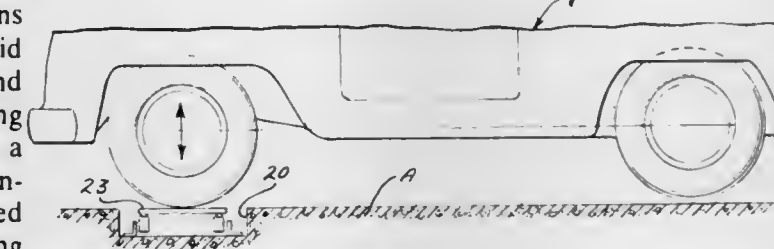
3 Claims

1. For use with a press brake or bending press of the type having an upper stationary die cooperating with a lower vertically movable die to bend a workpiece positioned therebetween, a workpiece support apparatus comprising in combination: a base fixed in relation to the press brake or bending press; a frame supported on and movable vertically in relation to said base; a table carried on and pivotally movable relative

3,855,841
METHOD OF TESTING VEHICLE SHOCK ABSORBERS AND APPARATUS THEREFOR
 Lee Hunter, 13501 Ladue Rd., Ladue, Mo. 63141
 Filed Feb. 23, 1973, Ser. No. 335,349
 Int. Cl. G01m 17/04

U.S. Cl. 73-11

7 Claims



1. Apparatus for testing shock absorbers in place in the wheel suspension systems for vehicles, consisting of a support plate the boundary of which defines an area sufficiently large for at least a first wheel of a vehicle having front and rear wheels, the vehicle being horizontally positioned with a first wheel on said support plate and other wheels spaced therefrom, a frame carrying said support plate, vehicle wheel load responsive transducer means between said frame and plate, said transducer means being positioned symmetrically around the boundary of said support plate to respond to the load of said first wheel and generate a signal proportional to the first wheel load imposed on said plate at any location of the first wheel on said plate, signal display means connected to said transducer means to display the load imposed on said support plate, and drive means to oscillate said support plate in a vertical direction along a linear path to oscillate said first wheel through its critical frequency and gyrate the vehicle about said other wheels.

3,855,842

APPARATUS FOR TESTING GOLF CLUBS

Junpei Imabori, Nishinomiya; Takeshi Kuzuoka, Kobe, and Atsuhiko Mori, Osaka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe-shi, Kyogo, Japan

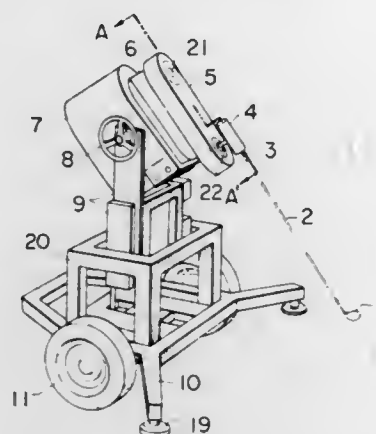
Filed May 16, 1973, Ser. No. 361,005

Claims priority, application Japan, May 24, 1972, 47-51351

Int. Cl. G01m 3/00

U.S. Cl. 73-13

2 Claims



1. An apparatus for testing dynamic characteristics of a golf club, said apparatus comprising:

- a main body;
- arm means rotatably mounted on said main body, said arm means swinging relative to said main body;
- club holder means for holding said golf club and rotatably mounted on said arm means, said club holder means rotating relative to said arm means;
- first drive means for rotating said arm means independently of said holder means;
- second drive means independent of said first drive means, for rotating said holder means independently of said arm means; and
- signal generator means for applying first and second program signals to said first and second drive means, respectively, whereby said drive means are controlled independently of each other by said program signals so that a plurality of golf club swing patterns may be simulated by the combination of independent operations of said first and second drive means.

3,855,843

SURFACE FINISH MEASURING GAUGE

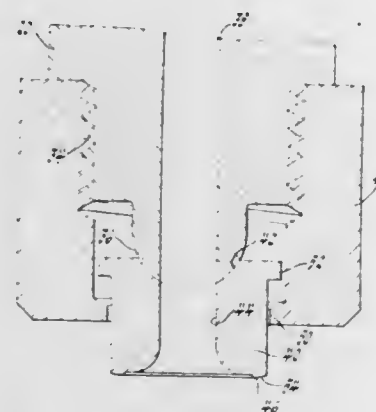
Frank D. Yagiela, Livonia, and Millard D. Crowell, Whitmore Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1973, Ser. No. 365,462

Int. Cl. G01b 5/28

U.S. Cl. 73-37

3 Claims



1. A fluid gauge for measuring surface finish comprising, a triangular base member; a pair of support members depending from two apices of said base member and being disposed in a plane intersecting the plane of the base member; fluid conducting means including passage means for conducting fluid

and being secured to the third apex of said base member and being disposed in a plane intersecting the plane of the base member, a hemi-spherical end on said passage means; measuring head means for conducting fluid from said passage means to the surface to be measured including, a spherical recess sealingly mating with said hemi-spherical end an annular surface adapted to be disposed adjacent the surface to be measured and a fluid passage aligned with said passage means communicating between said spherical recess and said annular surface; and retaining means for freely retaining said spherical surfaces in abutting sealing relation and for permitting relative movement between said spherical surfaces so that said annular opening will be disposed substantially parallel to the surface being measured.

3,855,844

LEAK DETECTION SYSTEM FOR SEALED BEAM HEADLAMP UNITS

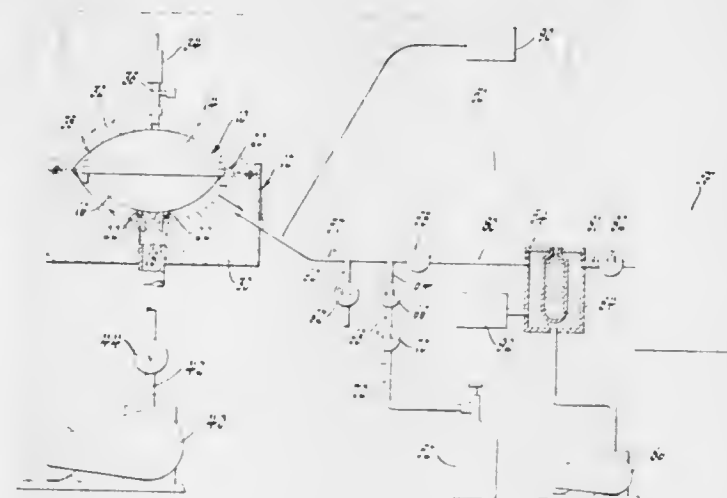
Gale M. Craig, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1973, Ser. No. 415,999

Int. Cl. G01m 3/20

U.S. Cl. 73-40.7

3 Claims



1. A leak detection system for a sealed beam headlamp unit having a gas fill including helium, said leak detection system comprising: a device operative to detect helium; a test chamber adapted to receive said unit; means for evacuating said test chamber to thereby draw said gas fill including helium through any unit leakage paths into said chamber; means for injecting a carrier gas into said test chamber after evacuating the latter, said gas admixing with any gas fill that has leaked from the unit; first checking means operably connected to said test chamber for indicating if the pressure in said chamber is above a first predetermined value indicative of a high rate of leakage; a cold trap operative to condense the carrier gas and the gas fill other than helium; means fluidly connecting said test chamber with said cold trap if the pressure in said test chamber as indicated by said first checking means is below said first predetermined value; second checking means operatively connected to said cold trap for indicating when the pressure thereat is above a second predetermined value indicative of a high rate of leakage but lower than said first predetermined value; means fluidly connecting said cold trap with said device if the pressure at said cold trap as indicated by said second checking means is below said second predetermined value whereby said first and second checks prevent excessive ingestion of helium at the device.

3,855,845

GAS SPECIFIC GRAVITY METER

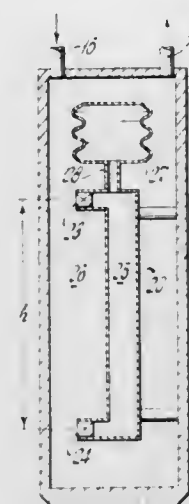
George A. J. Homolka, Ft. Worth, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,376

Int. Cl. G01h 9/26

U.S. Cl. 73-30

9 Claims



1. A meter for measuring specific gravity of gas, comprising in combination

- a first container for holding a column of gas to be measured,
- a second container for holding a column of standard gas, means subjected to the pressure of said columns near the tops thereof for equalizing most of the pressure difference thereat, comprising a bellows connected to said standard gas column and having a volume that is large compared to the volume of the column,
- first electronic means for measuring the pressure difference of said columns of gas near said tops thereof,
- second electronic means for measuring the pressure difference of said columns of gas at a location vertically displaced a predetermined distance beneath said electronic means, and
- electrical means for determining the difference between said pressure difference measurements.

3,855,846

SAMPLE APPLICATOR

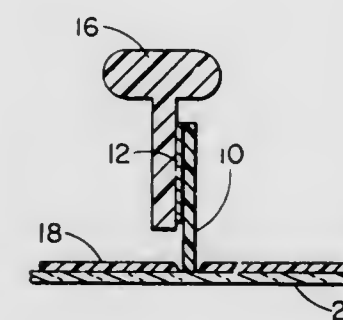
Ronald D. Forget, Owl's Head, Maine, and Calvin A. Saravis, Waban, Mass., assignors to Marine Colloids, Inc., Rockland, Maine

Filed Apr. 7, 1972, Ser. No. 241,921

Int. Cl. G01n 31/08

U.S. Cl. 73-61.1 C

5 Claims



1. An applicator for applying samples of aqueous test solution to a hydrated gel film for subjection to electrophoretic or chromatographic procedures comprising a plurality of spaced apart stiff resilient non-absorbent polymeric sheet sample holders having a thickness from 3 to 125 mils and having a hydrophilic surface each sample holder having an interrupted straight flat bottom.

3,855,847

ACOUSTIC EMISSION TRANSDUCER AND MONITORING SYSTEM

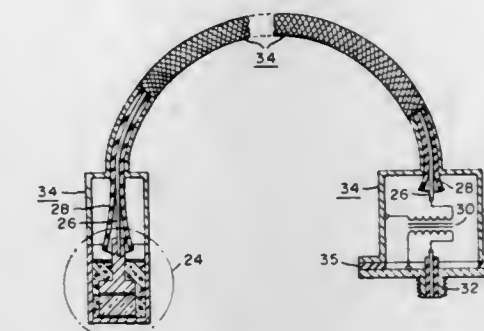
Walter C. Leschek, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1972, Ser. No. 264,663

Int. Cl. G01h 1/00

U.S. Cl. 73-71.4

32 Claims



1. An improved acoustic emission transducer system for monitoring acoustic signals generated by a metal specimen when subject to mechanical stress comprising:

- a tubular housing having a side wall;
- a thin metallic window enclosing one end of said housing to form the bottom wall thereof;
- a piezoelectric element acoustically coupled to the interior of said bottom wall of said housing;
- a positive electrode electrically coupled to said piezoelectric element;
- means for electrically insulating said electrode and said piezoelectric element from the side wall of said housing;
- means for sealing said piezoelectric element against moisture so as to prevent moisture from shorting said element, access being provided to said electrode through said sealing means;
- means for mechanically damping both piezoelectric element resonances and spurious housing resonances;
- an electrically conductive connecting cable having two leads, one grounded at one end to said housing and the other electrically coupled at one end to said positive electrode;
- an electrically conductive transmission cable circuit having two leads, one positive and one ground;
- a transformer, having primary and secondary windings, designed to match the transducer impedance coupled to said primary winding through said connecting cable to the characteristic impedance of said transmission cable coupled to said secondary winding, one end of said primary and secondary windings, respectively, is grounded at separate electrically isolated points; and
- means for insulating said primary winding ground from said secondary winding ground.

3,855,848

HARDNESS TESTING MACHINE

Marc Jean Sidler, Le Vesinet, France, assignor to S.K.F. Compagnie D'Applications Mecaniques, Clamart, France

Filed Dec. 12, 1972, Ser. No. 314,346

Claims priority, application France, Dec. 21, 1971, 71.45860

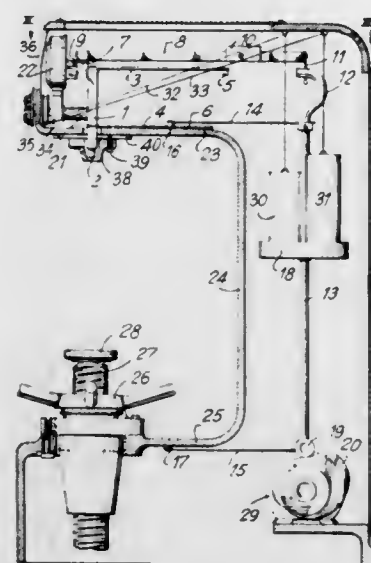
Int. Cl. G01n 3/44

U.S. Cl. 73-81

11 Claims

1. In a machine for testing the hardness of material by the Rockwell testing method, of the type including, in its frame, a single pivoted lever permanently supporting a minor pre-loading weight positioned on the same side of the lever fulcrum as means for operatively associating the lever with a penetrator having a point, and having, at its free end, means for attaching it to a major loading weight, the improvement comprising said fulcrum being formed by a pair of crossed first blades secured to said lever and forming an articulation therefor; second and third blades secured at their free ends respec-

tively to said penetrator and to said major weight, and having fixed ends secured to said frame, said second and third blades respectively guiding said penetrator and said major weight; said means for operatively associating said lever with said penetrator being constituted by a fourth blade secured to said



penetrator and engaging said lever; said blades being elastically flexible transversely but non-extensible longitudinally; said crossed first blades constituting the sole means articulating said lever, and said second and third blades constituting the sole means respectively guiding said penetrator and said major weight.

3,855,849

REENTRY VEHICLE NOSE TIP FLIGHT TESTING APPARATUS

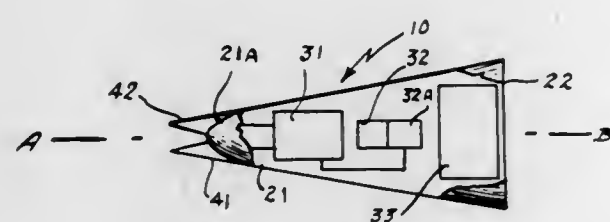
Jack M. Lordan, San Pedro, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Apr. 16, 1973, Ser. No. 351,725

Int. Cl. G01n 17/00

U.S. Cl. 73-86

2 Claims



1. An apparatus for simultaneously flight testing a plurality of reentry vehicle nose tips, comprising:
 - a. a reentry flight test vehicle having a front end;
 - b. means for fixedly mounting a plurality of reentry vehicle nose tips, which are to be flight tested, on the front end of said test vehicle; and
 - c. means, in each said nose tip, for measuring changes in the tips during reentry.

3,855,850

WIRE WRAP QUALIFICATION TEST FIXTURE

James Norskog, Los Angeles, Calif., assignor to General Telephone Company of California, Santa Monica, Calif.

Filed Dec. 10, 1973, Ser. No. 423,499

Int. Cl. G01n 3/02

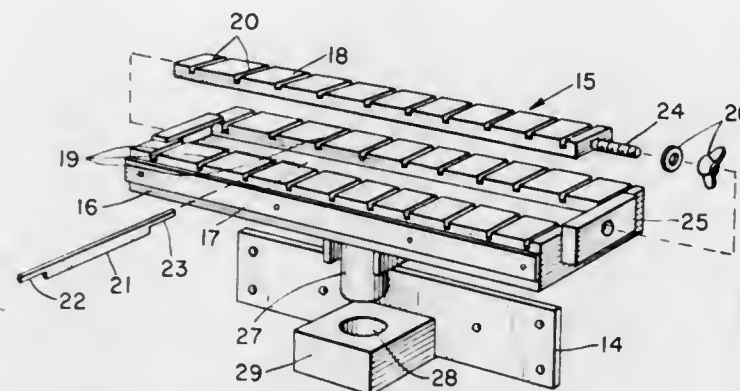
U.S. Cl. 73-88 B

4 Claims

1. A wire wrap qualification test fixture comprising, in combination:
 - a. mounting means including a flat plate having a vertical journalling bore;
 - b. a test terminal holding means including an elongated horizontal block having a shaft extending vertically down-

wardly from its central underside to be received in said bore for rotation of 180°; and

- c. keying means constituting an upper edge area of said flat plate and the juxtaposed lower side area of said block, lifting of said block above the level of said upper edge freeing the block for rotation, said block still being rotationally coupled to said mounting means in its raised



position but free to rotate 180° whereby the opposite ends of test terminals held in said holding means may be wire wrapped and tested from one side of said fixture by first wire wrapping the terminal ends on said one side and then rotating said holding means 180° to position the opposite terminal ends on said one side for wire wrapping and testing.

3,855,851

TAMPER-PROOF TIME INTERVAL RECORDING SYSTEM

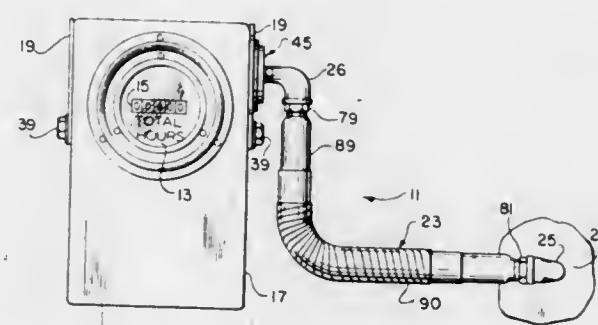
William F. Paul, Sr., 2200 Sangamon Ave., Springfield, Ill. 62702

Filed Oct. 26, 1971, Ser. No. 192,526

Int. Cl. G01m 15/00; F161 13/00

U.S. Cl. 73-115

16 Claims



1. A tamper-proof recording device comprising:
 - a parameter recording instrument;
 - a protective enclosure for said instrument, said enclosure when intact securely protecting said instrument from tampering, and adapted for being secured to apparatus with regard to which a parameter is to be recorded by said instrument;
 - means for securing said enclosure to said apparatus;
 - a conduit adapted to be connected for providing communication between said instrument and said apparatus to cause recording by said instrument of said parameter in response to operation of said apparatus; and
 - connector means for connecting said conduit between said enclosure and said apparatus so as substantially to prevent nondestructive disconnection of said conduit following said connecting thereof, said conduit comprising a length of tubular material, said material being relatively flexible but resisting any substantial twisting thereof, said connector means comprising respective threaded fittings at opposite ends of said material for being respectively threaded to connections at said enclosure and said appa-

ratus, said fittings each having the same thread direction orientation whereby when both are threaded neither of said fittings may be turned in a direction to cause unthreading by loosening thereof without causing tightening of the other fitting.

3,855,852

APPARATUS FOR CONTROLLING THE CHARACTERISTICS OF MAGNETICALLY OPERATED FRICTION TYPE POWER ABSORPTION DEVICES

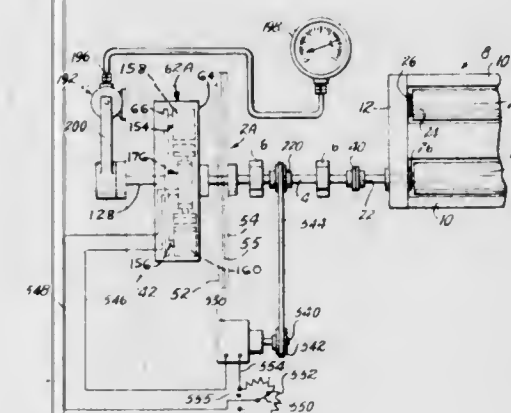
Edwin L. Cline, Pasadena, Calif., assignor to Clayton Manufacturing Company, Los Angeles, Calif.

Continuation of Ser. No. 838,997, July 3, 1969, abandoned, which is a division of Ser. No. 559,490, June 22, 1966, Pat. No. 3,453,874. This application Sept. 23, 1970, Ser. No. 74,885

Int. Cl. G011 3/16

U.S. Cl. 73-135

2 Claims



1. A friction type power absorber for use in analyzing the performance of a prime mover, comprising: a brake shaft for receiving driving torque from a member driven by a prime mover; power absorption means including rotor means connected with said brake shaft to receive driving torque from said brake shaft, stator means operatively disposed relative to said rotor means; friction brake means carried by one of either said rotor or stator means and movable into and out of frictional engagement with the other; electric actuator means operable to apply force for moving said friction brake means into said frictional engagement to thereby apply retarding force to said rotor in opposition to driving torque applied thereto by said brake shaft, the value of said retarding force varying with the force exerted by said actuator means; and control means including means to generate an electric signal to actuate an element of an electrical system for controlling said electric actuator means in accordance with the speed of rotation of said brake shaft so that the force exerted on said friction brake means by said actuator means varies as a function of said rotational speed and so that said retarding force is substantially zero at zero speed of said brake shaft and increases and decreases in value at a rate faster than said driving torque.

3,855,853

WELL BORE FORCE-MEASURING APPARATUS

Jackson R. Claycomb, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 9, 1973, Ser. No. 358,562

Int. Cl. E21b 45/00

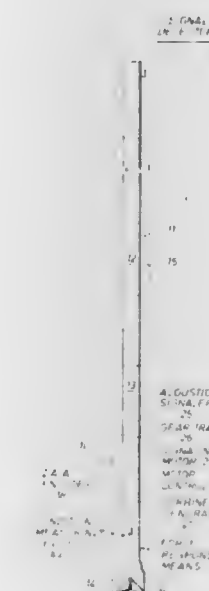
U.S. Cl. 73-151

15 Claims

1. Apparatus adapted for measuring at least one downhole load condition while drilling a borehole and comprising:
 - a drill string having a borehole-drilling device dependently coupled to the lower end thereof and defining a fluid passage for circulating drilling fluids between the surface end of said drill string and said borehole-drilling device;
 - an elongated load-responsive member having opposite end portions respectively secured to spaced portions of said drill string and cooperatively arranged for normally

maintaining said load-responsive member in tension and an unrestrained intermediate portion adapted to vary in tension in response to increases and decreases in loads imposed on said drill string tending to move said spaced portions thereof in relation to one another;

transducer means coupled to said intermediate portion of said load-responsive member and having a measurable characteristic adapted for varying in response to changes in the tensile forces in said load-responsive member oc-



curing upon relative movement between said spaced portions of said drill string; acoustic-signaling means on said drill string operatively coupled to said transducer means and cooperatively arranged for producing acoustic signals representative of variations in said measurable characteristic in drilling fluids flowing through said drill string; and acoustic signal-detecting means operatively coupled to said surface end of said drill string and cooperatively arranged for detecting said acoustic signals.

3,855,854

IMPRESSION PACKER

Stanley O. Hutchison, Bakersfield; Glenn W. Anderson, Oildale, and Gordon L. Newby, Bakersfield, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 25, 1973, Ser. No. 373,341

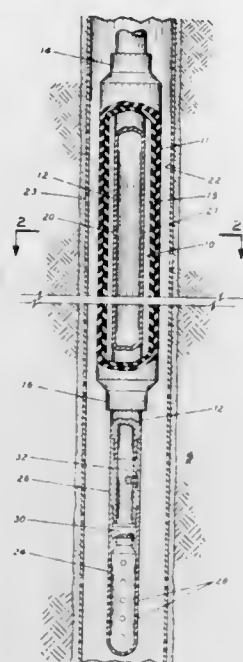
Int. Cl. E21b 47/00

U.S. Cl. 73-151

3 Claims

1. An impression packer comprising a tubing section, an elongated resilient sleeve positioned over said tubing section, means connecting the ends of said sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said sleeve, port means communicating with said annular chamber for inflating said resilient sleeve and an impression sleeve connected to said resilient sleeve for expansion and contraction therewith, said impression sleeve comprising a smooth rolled sheet containing about 60 to 80 percent by weight partially cured synthetic

nitrile rubber including cure chemicals, about 10 to 20 percent by weight natural rubber smoked sheet, about 5 to 15



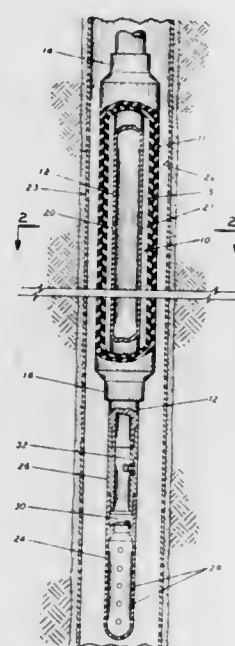
percent by weight hydrated amorphous silica, and between 2 and 6 percent by weight of rubber processing oil.

3,855,855 IMPRESSION PACKER

Stanley O. Hutchinson, Bakersfield; Glenn W. Anderson, Oildale, and Gordon L. Newby, Bakersfield, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed June 25, 1973, Ser. No. 373,342
Int. Cl. E21b 47/00

U.S. Cl. 73-151

3 Claims



1. An impression packer comprising a tubing section, an elongated resilient sleeve positioned over said tubing section, means connecting the ends of said sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said sleeve, port means communicating with said annular chamber for inflating said resilient sleeve and an impression sleeve connected to said resilient sleeve for expansion and contraction therewith, said impression sleeve comprising a smooth rolled sheet containing about 60 to 80 percent by weight synthetic nitrile rubber, about 10 to 20 percent by weight natural rubber smoked sheet, about 5 to 15 percent by weight hydrated amorphous silica, and between 2 and 6 percent by weight of rubber processing oil.

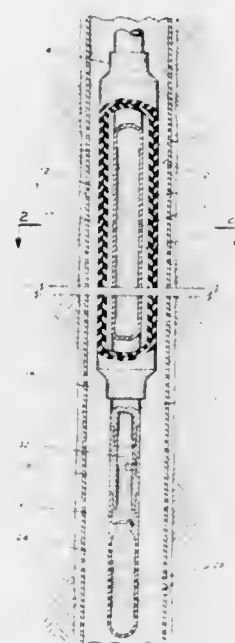
3,855,856

IMPRESSION PACKER

Stanley O. Hutchinson, Bakersfield; Glenn W. Anderson, Oildale, and Gordon L. Newby, Bakersfield, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed June 25, 1973, Ser. No. 373,343
Int. Cl. E21b 47/00

U.S. Cl. 73-151

2 Claims



3 Claims

1. An impression packer comprising a tubing section, an elongated resilient sleeve positioned over said tubing section, means connecting the ends of said sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said sleeve, port means communicating with said annular chamber for inflating said resilient sleeve and an impression sleeve connected to said resilient sleeve for expansion and contraction therewith, said impression sleeve comprising a smooth rolled sheet containing between 50 percent by weight and 70 percent by weight natural smoked sheet rubber, between 10 percent by weight and 30 percent by weight hydrated amorphous silica to impart a smooth finish on said sheet and between 3 percent by weight and 15 percent by weight of rubber processing oil.

3,855,857

FORCE-MEASURING APPARATUS FOR USE IN A WELL BORE PIPE STRING

Jackson R. Claycomb, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 358,562, May 9, 1973. This application Nov. 19, 1973, Ser. No. 417,006
Int. Cl. E21b 47/00

U.S. Cl. 73-151

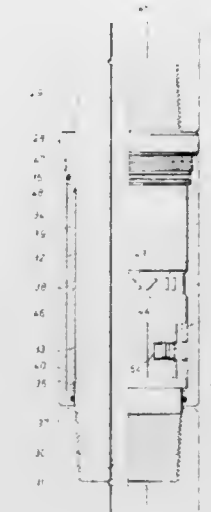
31 Claims

1. Apparatus adapted for sensing loads acting on a string of pipe in a well bore and comprising:

a load-bearing body adapted for coupling between adjacent sections of a pipe string;
an elongated load-responsive member having opposite end portions respectively secured to spaced portions of said load-bearing body and cooperatively arranged for normally maintaining said load-responsive member in tension and an unrestrained intermediate portion adapted to contract and elongate in response to increases and decreases in loads imposed on said load-bearing body tending to move said spaced body portions in relation to one another; and

transducer means coupled to said intermediate portion of said load-responsive member and having a measurable

characteristic adapted for varying in response to changes in the tensile forces in said load-responsive member occurring upon relative movement between said spaced body portions.



curing upon relative movement between said spaced body portions.

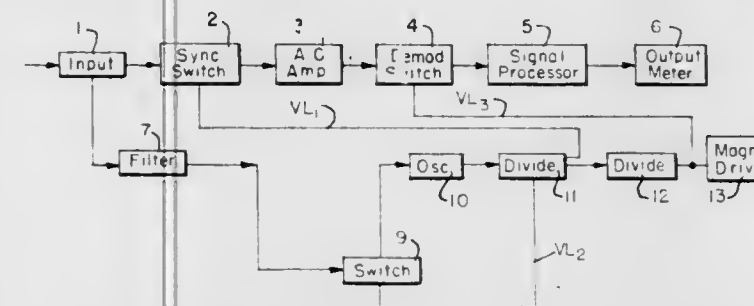
3,855,858 SELF SYNCHRONOUS NOISE REJECTION CIRCUIT FOR FLUID VELOCITY METER

Vincent J. Cushing, 9804 Hillridge Dr., Kensington, Md. 20795

Filed Aug. 1, 1973, Ser. No. 384,770
Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73-194 EM

12 Claims



1. An electromagnetic flow meter comprising an oscillator driving an electromagnet to produce electromagnetic flux periodically reversing in polarity, electrodes in which a signal is induced related to fluid flow and an amplifier to amplify said signal induced in said electrodes, the improvement comprising a self-synchronous noise rejection circuit including,

- (a) circuit means to sense coherent noise signals in the metered fluid,
- (b) second circuit means to phase lock said oscillator to said coherent noise, and
- (c) means connected to said amplifier to detect, synchronously with said oscillator, said signal,
- (d) whereby said coherent noise is substantially rejected.

3,855,859 FLOWMETER

Robert B. Adams, Tredyffrin Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed Aug. 20, 1973, Ser. No. 390,045

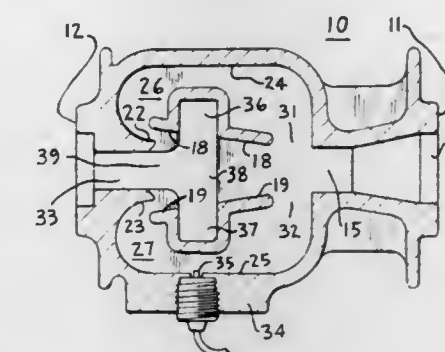
Int. Cl. G01f 1/00

U.S. Cl. 73-194 B

6 Claims

1. A fluid oscillator comprising means directing a fluid stream therethrough and imparting to the fluid of said stream an oscillation whose frequency

is directly proportional to the velocity of the fluid stream, said means including an elongated interaction chamber bounded by a pair of spaced walls and substantially normal thereto a pair of diverging side walls for fluid jet attachment, a nozzle at one end of said chamber for directing a fluid jet into said chamber, a discharge passageway at the other end of said chamber through which all the fluid from said nozzle is discharged,



control ports communicating with said chamber contiguous to said nozzle, and feedback passageways connected to said control ports from locations in said chamber upstream of said discharge passageway and downstream of said side walls, said locations being aligned with the fluid jet attached to said side walls, said side walls intermediate their ends having recessed regions with a transverse equalizing passageway therebetween.

3,855,860

FLUID FLOW ACTUATED DEVICE

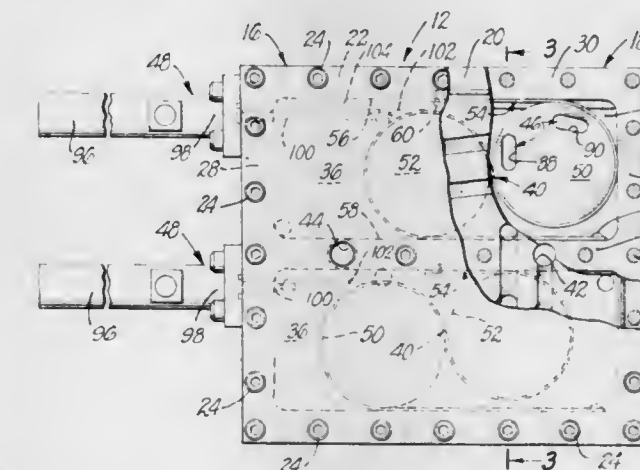
Rex V. Rhoades, 2510 San Andres Way, Claremont, Calif. 91711

Filed Feb. 1, 1973, Ser. No. 328,519

Int. Cl. G01f 3/04

U.S. Cl. 73-243

12 Claims



1. A fluid flow actuated device comprising: a pair of cylinders of rectangular cross-section each having longitudinal side walls and longitudinal guide walls normal to said side walls, a pair of rollers within each cylinder having ends disposed in fluid sealing relation with said cylinder side walls, and diameters whose sum exceeds the spacing between said guide walls, and a flexible elastic band, anchored at its ends to said guide walls, respectively, adjacent the cylinder ends and trained about said rollers in such a way that the rollers are caged by said band and movable in unison through the cylinder with pure rolling contact between the rollers and band, the roller pair in each cylinder and the corresponding elastic band constituting a pressure wall means movable through longitudinal working strokes in the cylinder,

means on said cylinders providing fluid inlet and outlet ports.
 valve means controlled by the pressure wall means for selectively communicating said ports to the ends of said cylinders in a manner such that movement of the wall means of either cylinder to the end of its working stroke effects communication of said ports with the ends, respectively, of the other cylinder, whereby said wall means are driven back and forth through their working strokes alternately when said inlet port is supplied with fluid under pressure, and
 transducer means connected to said pressure wall means for generating signals representing at least one of the variables (a) velocity of the pressure wall through each cylinder, and (b) the ends of said working strokes.

3,855,861

METHOD FOR MEASURING LIQUID LEVEL BY ELECTRICAL CONDUCTIVITY

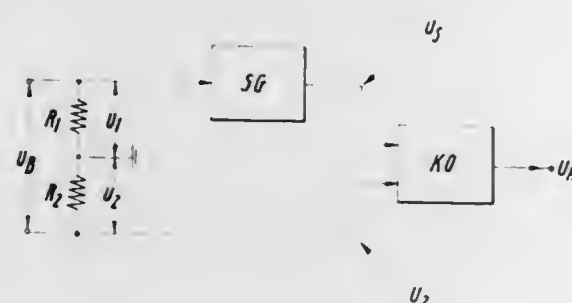
Heino Zimmermann, and Heinrich Hanemann, both of Bremen, Germany, assignors to Gustav F. Gerdt KG, Bremen, Germany

Filed Mar. 28, 1973, Ser. No. 345,815
 Claims priority, application Germany, Apr. 1, 1972, 2215950

Int. Cl. G01f 23/24

U.S. Cl. 73-304 R

3 Claims



1. A method for measuring a liquid level according to the conductivity principle employing three electrodes, having a first electrode constantly submerged in the electrically conductive liquid; a second electrode serving as a measuring electrode and submerged partially in the liquid level; a third electrode serving as the control electrode for said first and second electrodes, wherein an electrical resistance exists between the second electrode and the third control electrode which is determined by the submerged depth and the specific conductivity of the liquid, and another electric resistance exists between the constantly submerging first electrode and the third control electrode depending on the specific conductivity of the liquid, and that both resistance values result in partial voltage drops which are compared and indicated with each other by compensating the conductivity fluctuations, comprising the steps of:

- measuring separately both partial voltage drops of said first and second electrodes;
- applying the (partial) voltage drop of the first electrode to a saw-tooth generator so that the amplitude of the saw-tooth electrode to a saw-tooth voltage output is equal to the voltage drop of said first electrode with respect to the third electrode in a given time span; and
- applying the saw-tooth output voltage and the partial voltage drop of the second electrode with respect to the third electrode to a comparator, so that at the output of the comparator, a rectangular pulse signal is obtained having its ratio of pulse width to pulse period equalling the submerged depth.

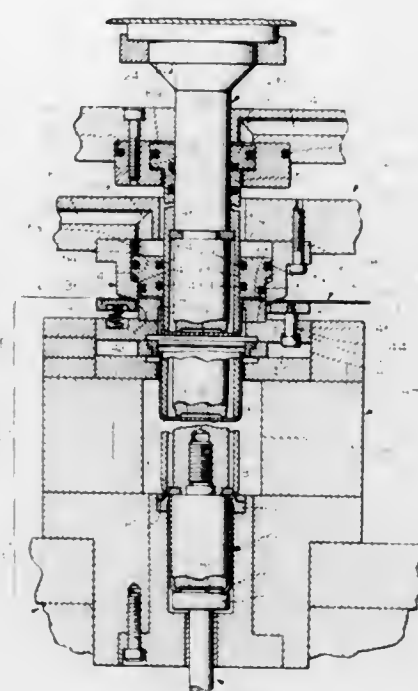
3,855,862
DRAW AND WALL IRON PROCESS FOR METAL CANS
 Jens L. Moller, Darien, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,852

Int. Cl. B21d 24/16

U.S. Cl. 72-334

3 Claims



1. In a method of forming a metal container wherein a metal blank is drawn into a shallow cup having a side wall, base at one end and an opening at the other end and wherein the base and side wall are of the same thickness, comprising:
 first wall ironing the side wall to elongate and thin the same and deepen the cup;
 then redrawing the cup to a smaller diameter by pulling the metal transaxially inwardly and then axially to cause the metal to flow circumferentially in a hoop compressive direction and axially in a tensile direction; and
 then terminating the redrawing and leaving an edge portion of the side wall about said open end as an outwardly projecting flange and then trimming said flange by cutting the same with a circular die.

3,855,863

METHOD AND APPARATUS FOR DETERMINING WET BULB GLOBE TEMPERATURE

Lorne A. Kuehn, Downsview, Ontario, and Lloyd E. McHattie, Willowdale, Ontario, both of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister National Defence

Filed Dec. 19, 1973, Ser. No. 426,025

Int. Cl. G01w 1/17; G01k 3/00

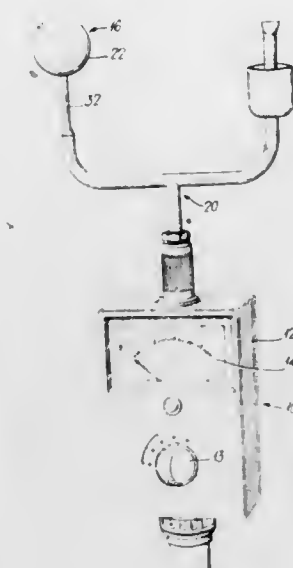
U.S. Cl. 73-339 C

20 Claims

1. A method of determining the wet bulb globe temperature of surroundings including the steps of:

- locating a wet bulb thermometer in said surroundings to provide a first signal representative of the wet bulb temperature of said surroundings;
- locating a globe thermometer having a globe of a predetermined diameter in said surroundings to provide a second signal representative of the measured globe thermometer temperature of the surroundings, said predetermined diameter being such that the measured globe thermometer temperature closely approximates the sum of two-thirds the standard 6 inch globe temperature of said surroundings plus one-third the dry bulb temperature of said surroundings;
- applying a weighting factor of 0.7 to said first signal to provide a fourth signal,

- applying a weighting factor of 0.3 to said second signal to provide said third signal,
- electronically summing said third and fourth signals to provide a weighted summation signal,



- comparing said weighted summation signal with a reference signal to provide a fifth signal corresponding to the difference therebetween, and
- providing said fifth signal to indicator means whereby an indication is obtained corresponding to the wet bulb globe temperature of said surroundings.

3,855,864

RADIATION PYROMETERS

Joseph Douglas, Derby, England, assignor to Rolls-Royce (1971) Limited, London, England

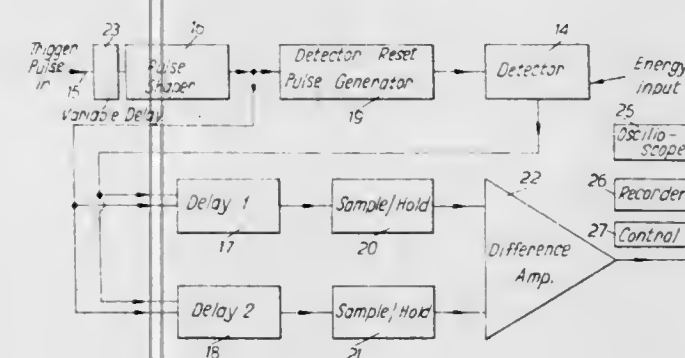
Filed July 2, 1973, Ser. No. 375,933

Claims priority, application Great Britain, July 6, 1972, 31585/72

Int. Cl. G01j 5/34; H01g 7/02, 7/04

U.S. Cl. 73-355 R

12 Claims



1. A radiation pyrometer adapted to produce an output signal which is proportional to the intensity of incident radiation comprising radiation detector means, detector charging means, and detector potential differentiating means, said detector charging means being adapted to charge said radiation detector means to a predetermined electrical potential at regular time intervals whereby a series of signals is obtained from the radiation detector means in a period of time, said radiation detector means being adapted to produce, upon receipt of said radiation, an electromotive force acting in opposition to said potential, and said differentiating means being adapted to produce a difference signal substantially proportional to the rate of change of said detector potential with respect to time, said difference signal also being the aforementioned output signal.

3,855,865

TEMPERATURE SENSING APPARATUS HAVING A GAS ADSORBING ELEMENT CONTAINED IN THE SENSING BULB

Hiroyuki Kishimoto, Yokohama, and Eiichi Morozumi, Fujisawa, both of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

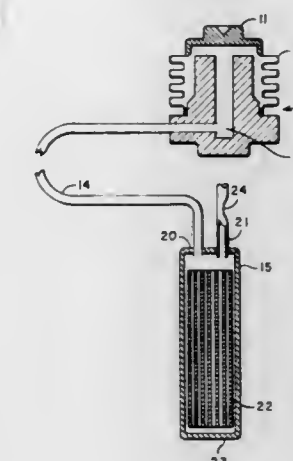
Filed Nov. 15, 1973, Ser. No. 416,303

Claims priority, application Japan, Nov. 22, 1972, 47-134642

Int. Cl. G01k 5/42

U.S. Cl. 73-368.2

2 Claims



1. A temperature sensing device, comprising
 a temperature sensing bulb,
 a gas adsorbing element formed by attaching an adsorbing material to a support member, said element being enclosed in said bulb;
 a pressure receiving output means,
 means operably connecting said bulb to said output means, and
 a gas sealed in said closed space of said bulb, and output means,
 said gas adsorbing element being formed by tightly and cylindrically coiling a sheet of aluminum foil having on at least one side a porous oxide coating by alumina treatment is retained in said sensing bulb.

3,855,866

THERMOMETER READOUT MEANS

Josef F. Klinger, and John Mark Terrill, both of Wilmette, Ill., assignors to Thermex, Inc., Chicago, Ill.

Filed July 6, 1972, Ser. No. 269,501

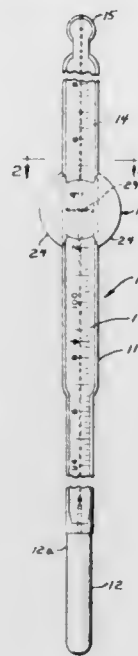
Int. Cl. G01k 1/06

U.S. Cl. 73-372

13 Claims

1. In a thermometer having a reservoir bulb defining an insertion portion to be inserted into a body orifice and a stem formed of resilient material defining a reading portion substantially rectangular in transverse cross section exposed exteriorly of the body orifice when said insert portion is inserted thereto, said bulb being sealingly fitted to one end of said stem, said stem defining a capillary bore opening to said reservoir bulb, indicator liquid in the reservoir bulb and defining a column extending into said capillary bore responsive to temperature changes to provide a variable positioning of the top of the column, and scale means on the stem reading portion, readout means providing a maintained location indication of said column top corresponding to a reading temperature notwithstanding a subsequent lowering of said column top therefrom due to subjecting the thermometer to a temperature lower than the reading temperature prior to effecting the reading of the thermometer, said readout means comprises a molded plastic flanged element partially surrounding the stem and having a reference indicator and being readily adjustably positionable on the stem reading portion to align said reference indicator accurately with said column top while said insert portion of the stem is retained in the body orifice, said

element having a mounting slot complementary to said stem reading portion providing a sliding frictional fit of said element on said stem reading portion, said element further having a convex protuberance for facilitated fingertip manipulation thereof in effecting the adjustable positioning on said stem, said protuberance defining a magnifying lens providing



a magnified image of said reference indicator, said column top, and said scale, the resiliency of the stem serving to maintain said element in the adjusted position to provide a maintained indication of the sensed temperature notwithstanding a subsequent change in the position of said column top upon removal of the insert portion from the body orifice.

3,855,867

LIQUID TRANSFER PIPETTING DEVICE

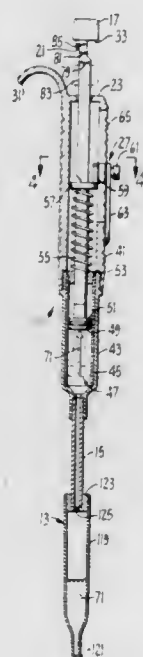
William J. Roach, Foster City, Calif., assignor to Oxford Laboratories, Inc., Foster City, Calif.

Filed Aug. 21, 1972, Ser. No. 282,321

Int. Cl. B011 3/02

U.S. Cl. 73—425.6

15 Claims



1. In a hand-held pipetter comprising an elongated barrel shaped handle, a piston chamber within said barrel, means at one end of said barrel for holding a disposable tip and for providing fluid communication between said piston chamber and an interior portion of said tip, a piston in said piston chamber, a plunger operably communicating at one end thereof with said piston and extending out of said barrel to a free end thereof through an aperture at another end of the barrel thereby to permit operation of said piston for displacing

fluid within said piston chamber by moving the free end of the plunger, and spring means normally urging said piston and plunger toward said another end of the barrel, the improvement comprising:

means providing two positive stops of the plunger relative to the barrel shaped handle for selectively limiting travel of the piston with respect to the piston chamber, whereby fluid displacement within the piston chamber is accurately determined by selection of one of said two positive stops for limiting travel of said plunger and piston, a collar on said plunger portion within said barrel handle, a slot oriented with its length extending along a length of said handle, and an adjustable stop carried by and manually movable along the slot to limit the spring return of said plunger collar to a predetermined position engaging the stop, said stop including means operable from outside the handle to fix the stop to the handle at a selected position along the length of said slot.

3,855,868

MULTIPLE PIPETTE

Osmo A. Sudvaniemi, Makitorpantie, Helsinki, Finland

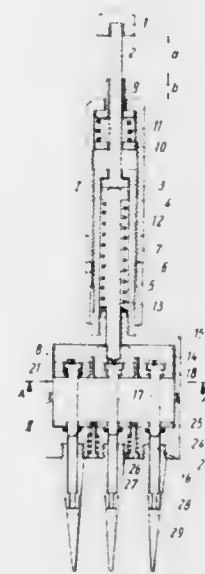
Filed Jan. 30, 1973, Ser. No. 328,054

Claims priority, application Finland, Mar. 20, 1973, 358/72; Mar. 20, 1973, 1670/72

Int. Cl. B011 3/02

U.S. Cl. 73—425.6

6 Claims



1. A multiple pipette comprising a body, a piston rod disposed within the body, a push button attached to one end of the piston rod, a plurality of containers for holding liquid, a plurality of cylinders connected to the containers, a plurality of pistons within the cylinders, a plurality of O-rings surrounding the pistons, spiral spring means surrounding the piston rod for returning it to a position in which the containers are filled after the push button has been pressed, and connecting means for connecting the pistons to the cylinders while permitting sideways movement of the pistons, the connecting means including connecting spring means that restrains axial movement of the pistons in relation to the piston rod, said connecting spring means having a force that exceeds the friction force of the O-rings.

3,855,869

DRIVEN ROTATABLE AND RECIPROCABLE SPINDLE OPERATING IN CYCLES OF SHORT DURATION

Lyudmil Vasilev Dimitrov, 40, Boul, Praga, Bulgaria

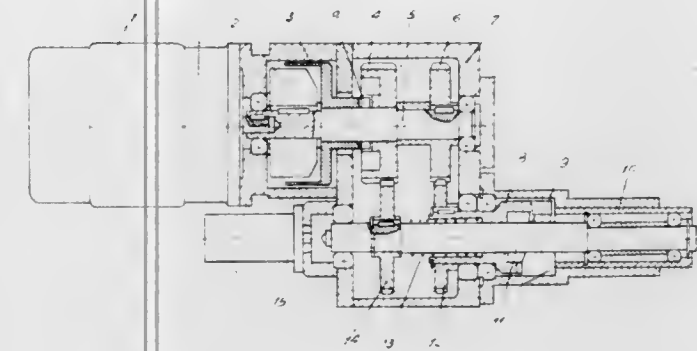
Filed Dec. 11, 1972, Ser. No. 314,256

Claims priority, application Bulgaria, Dec. 10, 1971, 19212

Int. Cl. F16h 27/00

U.S. Cl. 74—22 R

7 Claims



1. A driven spindle head adapted to be repeatedly operated in cycles of short duration, comprising a spindle, means mounting the spindle for rotation about its longitudinal axis and reciprocation along its longitudinal axis, a constantly rotating driving means, an end cam disposed coaxial of the spindle, means mounting the cam in a fixed position along its axis and for rotation about its axis, a transmission means connecting the driving means to the cam so as constantly to rotate the cam, a cam follower affixed to the spindle and cooperating with the cam to reciprocate the spindle when the cam rotates relative to the spindle, and means selectively to rotate the cam and spindle at the same speed and to rotate them at different speeds.

3,855,870

POWER TRANSMISSION BELT, REINFORCEMENT AND PROCESS

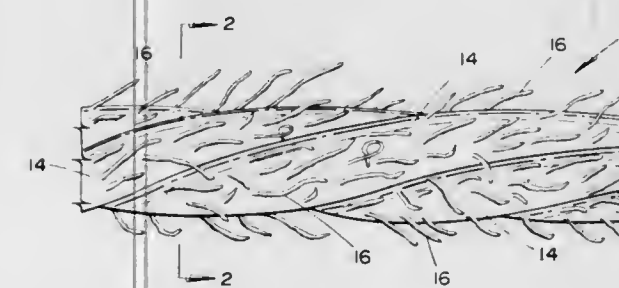
Werner D. Schnackenberg, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed July 2, 1973, Ser. No. 376,037

Int. Cl. F16g 5/00

U.S. Cl. 74—234

11 Claims



1. In a power transmission belt having a body section, the improvement comprising:
a tensile section of cord disposed in the body section, the cord including twisted multifilaments and a plurality of disassociated filaments defining end portions extending exteriorly of the cord into the body section forming a mechanical bond therewith.

3,855,871

CHAIN TENSIONING DEVICES AND DRIVE ASSEMBLIES FOR MINING

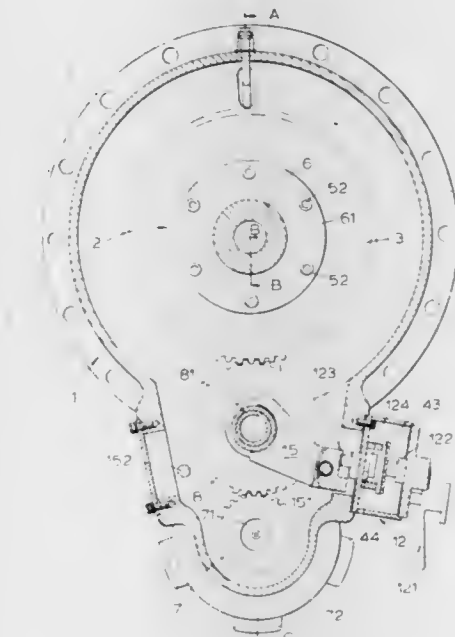
John Gibson, Newton Aycliffe, and James Nelson, Shiny Row, both of England, assignors to Underground Mining Machinery Limited, Durham, England

Division of Ser. No. 266,309, June 26, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,299

Int. Cl. F16h 7/12

U.S. Cl. 74—242.1 FP

7 Claims



1. A mineral mining installation including a conveyor, at least one chain extending therealong, and a drive assembly for circulating said chain, said drive assembly being mounted to said conveyor and comprising:

- a. a chain drum around which said chain passes;
- b. a main drive motor; and
- c. a transmission system drivably interconnecting said drive motor and said chain drum, said motor driving said chain drum through said transmission system at a predetermined normal operating speed, said transmission system comprising at least:
 - i. a transmission shaft carrying a first toothed gear;
 - ii. means for driving said chain drum at a reduced speed for chain tensioning and slackening operations, said driving means comprising:
 - A. an auxiliary motor having a drive shaft carrying a second toothed gear;
 - B. an intermediate toothed gear shiftable between a first position in which it transmits rotary motion between said first and second toothed gears and a second position in which said first and second toothed gears are out of drivable engagement;
 - C. shifting means operable to move said intermediate gear between the two said positions to selectively transmit rotary motion from said auxiliary motor through said transmission system to said chain drum; and
 - D. a housing supporting at least said auxiliary motor, said second toothed gear and said intermediate toothed gear, said housing being readily detachable from the remainder of said drive assembly.

3,855,872

ROTARY DRIVE APPARATUS

Masakazu Kakimoto, 78, Azaosshima Oozaasada, Niso-hincho, Aichi-ken, Japan

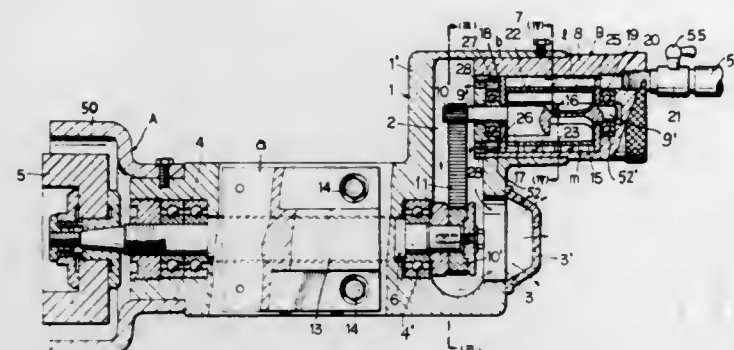
Filed Aug. 29, 1973, Ser. No. 392,927

Claims priority, application Japan, Dec. 28, 1972, 48-1929; Feb. 14, 1973, 48-18203

Int. Cl. F16h 7/10

U.S. Cl. 74-242.16

10 Claims



1. A rotary drive apparatus comprising a housing including an intermediate transmission portion, an input shaft portion connected to one end of said intermediate transmission portion and extending outwardly therefrom in a first direction, an output shaft portion connected to the opposite end of said intermediate transmission portion and extending outwardly therefrom in a second direction opposite to the first direction, an air motor exhaust port located in said housing adjacent said output shaft portion, an air motor having a rotatable drive shaft with a driven end projecting into said intermediate transmission portion of said housing and having a drive pulley affixed thereto, support means rotatably supporting said air motor in said input shaft portion with said drive shaft being eccentrically located in respect to said support means and being shiftable upon rotation of said support means, an output shaft rotatably supported in said output shaft portion and having a driven end projecting into said intermediate transmission portion of said housing and having an output pulley affixed thereto, a drive belt engaged over said input and output pulleys for driving said output shaft by said air motor, said air motor having an air discharge directed into said intermediate transmission portion of said housing for flow along said housing and exhaust at the opposite end through said exhaust port, said support means being rotatable to change the spacing between said output and input shafts in order to adjust the tension of said belt.

3,855,873

GENEVA MECHANISM

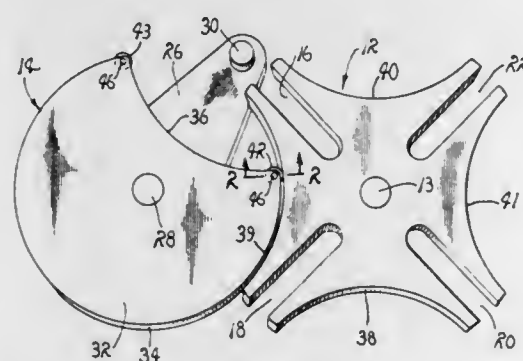
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert H. Summers, and Ralph L. Kenney, both of Pasadena, Calif.

Filed Nov. 2, 1973, Ser. No. 412,079

Int. Cl. F16h 55/04; B23q 17/02

U.S. Cl. 74-436

4 Claims



1. In a Geneva mechanism characterized by a star-wheel having a plurality of uniformly disposed, radially extended

drive slots and a segmented cam-follower surface including a plurality of uniform, incurvated segments interposed between the drive slots, and a star-wheel driver comprising a driving arm and a juxtaposed restraining cam having a segmented cam surface contiguously related with the segmented cam-follower surface and including an incurvated segment having a radius of curvature substantially equal to the radius of the incurvated segments of said cam-follower surface for sequentially engaging segments of the cam-follower surface, the improvement comprising:

friction reduction means interposed between the cam surface and the cam-follower surface adjacent to each end portion of said incurvated segment of the cam surface.

3,855,874

DOUBLE MESH TYPE W-N GEAR

Seishi Honma, Yokohama, and Yoshihisa Fujii, Tokyo, both of Japan, assignors to Kabushiki Kaisha Hasegawa Haguruma, Tokyo, Japan

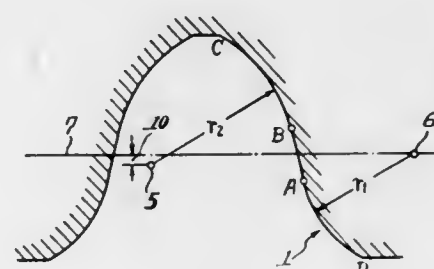
Filed July 12, 1973, Ser. No. 378,786

Claims priority, application Japan, July 26, 1972, 47-74210

Int. Cl. F16h 55/06

U.S. Cl. 74-462

7 Claims



1. A double mesh type W-N gear with a basic rack on a transverse plane or on a normal plane characterized in that modifications are introduced so that the two points of contact between the mating tooth surfaces are shifted respectively in a direction away from the pitch line so as to give a pressure angle of not less than 30° thereby to obtain an increased clearance between intermediate straight portions of the mating profiles, the gear teeth profiles each including circular addendum and dedendum arcs connected by an intermediate straight line segment at the pitch line area, the arcs being of different radii centered on the pitch line or on points adjacent thereto, the two points of contact on one gear tooth being one on the addendum and one on the dedendum arc for contact with a gear tooth on the other gear.

3,855,875

CLUTCH PEDAL OPERATED DOWN SHIFTING MECHANISM

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis Chalmers, Milwaukee, Wis.

Filed Dec. 20, 1972, Ser. No. 316,998

Int. Cl. G05g 11/00; F16d 67/02

U.S. Cl. 74-481

10 Claims

1. A vehicle clutch and shift mechanism for a vehicle transmission including, a pedal, a hydraulic clutch actuating valve adapted for operating a vehicle clutch, a hydraulic clutch actuating linkage connected between said pedal and said valve for operating said valve with said pedal, a shift control adapted for operating a multiple speed power shift transmission including, a speed range shift lever for shifting the transmission through a plurality of speed ranges, a manual control lever means connected to said speed range shift lever, a cam means connected to said hydraulic clutch actuating linkage and

3,855,877

LOCKING KNOB

Donald R. Gach, La Verne, Calif., assignor to Robert L. Gach, aka Kilo Engineering Company, La Verne, Calif.

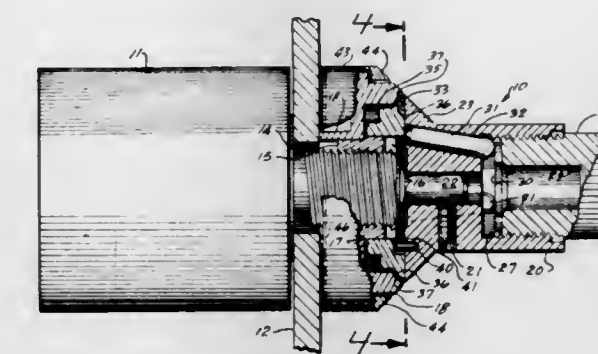
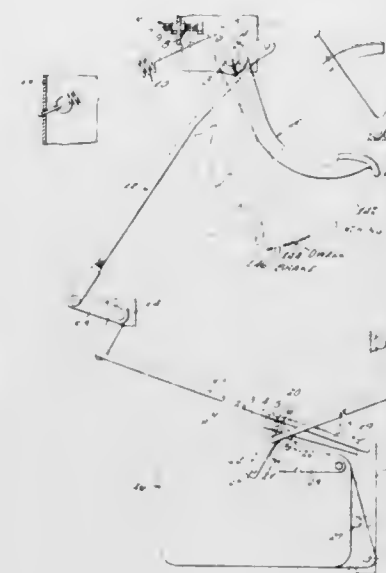
Continuation-in-part of Ser. No. 250,280, May 4, 1972,

abandoned. This application June 28, 1973, Ser. No. 374,798

Int. Cl. G05g 5/06

U.S. Cl. 74-531

9 Claims



1. A locking knob assembly for driving a rotatable shaft of a device, comprising:
a base having a portion adapted for attachment to the device to be stationary with respect to the shaft;
a knob disposed adjacent the base and adapted to be rigidly secured to the shaft to be rotatable with respect to the base;
a locking member mounted on the knob to be movable with respect to the knob toward and away from the base; and
braking means disposed between the locking member and base, and arranged to be driven by the locking member into frictional engagement with the base when the locking member is moved with respect to the knob whereby the knob and shaft can be secured at a desired rotational position.

hydraulic valve to throttle hydraulic fluid for limited slippage of the vehicle clutch.

3,855,876

TELESCOPIC SAFETY STEERING COLUMN FOR MOTOR VEHICLES

Wilhelm Albrecht, Vaihingen, and Helmut Wulf, Nellingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

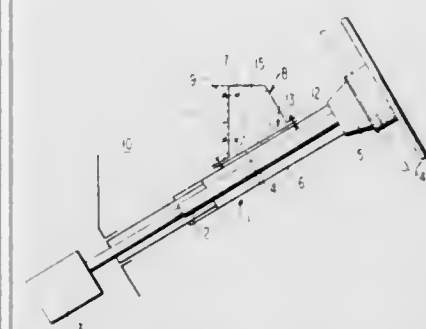
Filed May 4, 1973, Ser. No. 357,084

Claims priority, application Germany, May 4, 1972, 2221760

Int. Cl. B62d 1/18

U.S. Cl. 74-492

4 Claims



1. A telescopic safety steering column for motor vehicles which includes an outer column means, a steering wheel displaceable relative to the outer column means under energy absorption, the improvement comprising an energy absorbing connection means for connecting the outer column means with a front part of the vehicle, said energy-absorbing connection means from the outer column means to the vehicle front part being relatively soft in bending in the impact direction of a body, said energy-absorbing connection means including a structural member stressed in tension so as to render said energy-absorbing connection means form-stable in an opposite direction, and a vehicle cross bearer means provided with notch means, said notch means being covered off on the outside by said structural member, said structural member being composed of a material having a relatively high tensile strength.

3,855,878

TRANSMISSION SYSTEMS

Hubert Steiner, Longton, England, assignor to H. Steiner Limited, Staffordshire, England

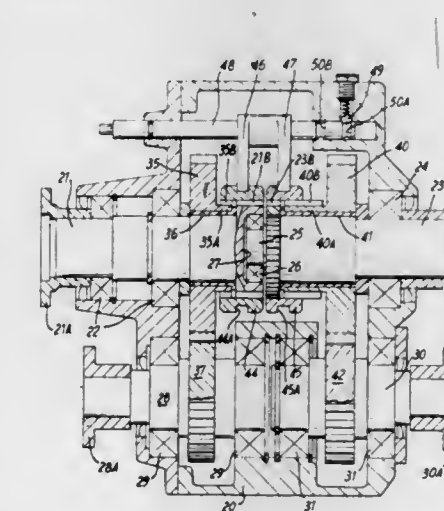
Filed Mar. 16, 1973, Ser. No. 342,225

Claims priority, application Great Britain, Mar. 24, 1972, 14022/72

Int. Cl. F16h 37/06

U.S. Cl. 74-665 Q

10 Claims



1. A gearbox comprising:
a. a housing
b. four shafts rotatably supported by said housing, said shafts including a main input shaft, a main output shaft, an auxiliary input shaft, and an auxiliary output shaft,
c. a single control means movable between two operative positions, and

d. means responsive to movement of said control means into one of its operative positions for simultaneously:

- I. connecting said main input shaft to said main output shaft,
 - II. disconnecting said main input shaft from said auxiliary output shaft, and
 - III. disconnecting said auxiliary input shaft from said main output shaft,
- and responsive to movement of said control means into the other of its operative positions for simultaneously:
- I. connecting said main input shaft to said auxiliary output shaft,
 - II. connecting said auxiliary input shaft to said main output shaft, and
 - III. disconnecting said main input shaft from said main output shaft.

9. A gearbox or transfer box having a first input shaft, a first output shaft co-axial with the first input shaft, a gear mounted on each said shaft, splines provided on each said shaft, a second output shaft, a gear mounted on said second output shaft and in constant mesh with said gear mounted on said first input shaft, a second input shaft, a gear mounted on said second input shaft and in constant mesh with said gear mounted on said first output shaft, one of each pair of intermeshing gears being rotatably mounted on its shaft, splined collars associated with the splines on said first input shaft and first output shaft and with each of said rotatably mounted gears, said collars being interconnected by control means for movement between a first position in which:

- a. said first input shaft is connected to said first output shaft,
- b. said second input shaft is not connected to said first output shaft; and a second position in which:
- c. said first input shaft is connected to said second output shaft,
- d. said first input shaft is not connected to said first output shaft.

10. A gearbox or transfer box having a first input shaft, a first output shaft co-axial with the first input shaft, a gear rotatably mounted on each said shaft, splines provided on each said shaft, a second output shaft, a gear non-rotatably mounted on said second output shaft and in constant mesh with said gear mounted on said first input shaft, a second input shaft, a gear non-rotatably mounted on said second input shaft and in constant mesh with said gear mounted on said first output shaft, a pair of splined collars slidably mounted on the splines of said first input shaft and first output shaft, said collars being interconnected by control means for movement between a first position in which the splines on said first input shaft and said first output shaft are drivingly interconnected and the gears on the respective shafts are freely rotatable thereon and a second position in which said gears are non-rotatably coupled to their respective shafts for rotation therewith and the splines of said shafts are no longer drivingly interconnected.

3,855,879

SYNCHRONOUSLY SHIFTABLE DUAL RANGE PLANETARY TRANSMISSION WITH COAXIAL INPUT SHAFTS

George M. DeLalio, 81 Gazza Blvd., Farmingdale, N.Y. 11735

Filed Dec. 22, 1972, Ser. No. 317,528

Int. Cl. F16h 47/04, 37/06

U.S. Cl. 74—867

14 Claims

I. A power transmission for use with power input means for imparting rotary drive to the transmission, comprising in combination:

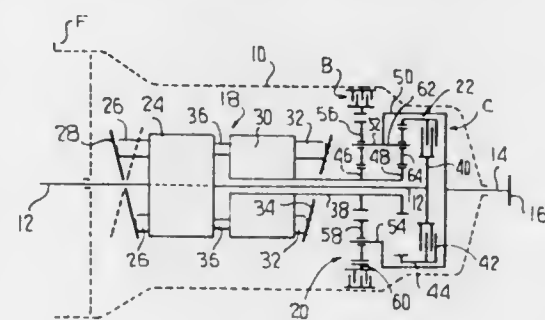
an input quill shaft and an inner shaft coaxial therewithin in which said inner shaft projects beyond said quill shaft at either end thereof;

low speed planetary gear means and high speed planetary gear means each centered about said input shafts and including sun gear input means connected to said quill shaft for continuously imparting one input path to both of

said planetary gear means; said low speed planetary gear means also including third-element gear means and planet gear means for reacting between said sun gear input means and the said third-element gear means and said high speed planetary gear means also including third-element gear means and planet gear means for reacting between said sun gear input means and the third-element gear means of said high speed planetary gear means;

an output shaft aligned with but disposed beyond said input shafts;

one of the two gear means constituted by said third-element gear means of said high speed planetary gear means and said planet gear means of said high speed planetary gear means being connected to said output shaft and to said planet gear means of said low speed planetary gear means



whereby said output shaft is capable of connection to said sun gear input means through either of said low speed and said high speed planetary gear means and a continuous drive coupling is effected between said low speed and said high speed planetary gear means;

a hydrostatic drive unit comprising a driving member mechanically connected to said power input means and a rotatable driven member connected to said input quill shaft and including means for infinitely varying the rotational speed of said driven member between first and second maximum speeds which are of opposite rotational sense with respect to each other and of maximum sense with respect to the rotational speed of said driving member;

brake means for selectively braking said third-element gear means of said low speed planetary gear means to prevent rotation thereof and establish low speed drive; and clutch means for selectively coupling said power input means to the other of said two gear means of the high speed planetary gear means through said inner input shaft to establish high speed drive;

and the gear ratios of said low speed and said high speed planetary gear means being such that as the speed of said output shaft is increasing in low speed range and said driven member of the hydrostatic unit attains said first maximum speed, said clutch means may be synchronously engaged while said brake means is disengaged under substantially no load, and as the speed of said output shaft is decreasing in high speed range and said driven member attains said first maximum speed, said clutch means may be synchronously disengaged while said brake means is engaged under substantially no load.

II. A synchronously shiftable, extended range transmission comprising, in combination:

a quill shaft and an input shaft coaxial within said quill shaft with said input shaft having an end portion projecting from said quill shaft;

a high speed planetary gear set surrounding said quill shaft adjacent that end thereof from which said inner shaft projects;

a low speed planetary gear set surrounding said quill shaft to that side of said high speed planetary gear set away from said end portion of the input shaft;

said low speed planetary gear set including a low speed planetary ring gear and low speed planet gear means meshing therewith and including a planet gear carrier, and sun gear means for rotatably driving said planet gear

carrier;
said high speed planetary gear set comprising a high speed planetary ring gear and high speed planet gear means meshing therewith, and said sun gear means meshing with said high speed planet gear means;
an output shaft coaxial with said input and quill shafts but disposed in spaced relation to said end portion of the input shaft;
said planet gear carrier enclosing said high speed planetary gear set and being connected directly to said output shaft, one of said high speed planetary ring gear and said high speed planet gear means being carried by said planet gear carrier;
clutch means for selectively coupling said end portion of the input shaft to that one of said high speed planetary ring gear and said high speed planet gear means which is not carried by said planet gear carrier;
brake means for selectively braking said low speed planetary ring gear;
a hydrostatic pump connected to said input shaft remote from said end portion thereof and adapted to be driven in fixed ratio from a prime mover and including swash plate means for selectively varying the quantity of fluid displaced by said pump; and
a hydrostatic motor fixed to said quill shaft remote from said end portion of the input shaft and connected to said pump for infinitely variable driven ratio with respect thereto.

3,855,880

HYDRAULIC PRESSURE CONTROL SYSTEM FOR AN AUTOMATIC POWER TRANSMISSION

Wataru Ishimaru, and Toshiyuki Miyauchi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

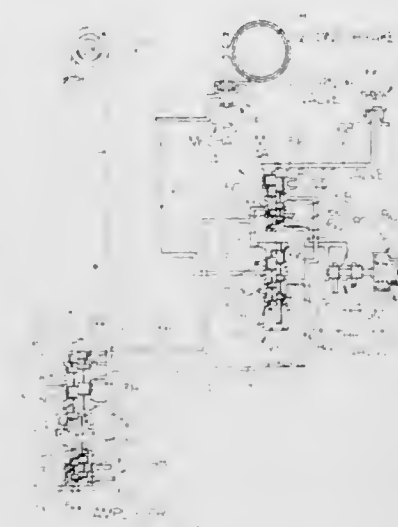
Continuation of Ser. No. 269,301, July 6, 1972, abandoned.

This application Apr. 12, 1974, Ser. No. 460,472

Claims priority, application Japan, Nov. 26, 1971, 46-95024
Int. Cl. B60k 21/00

U.S. Cl. 74—868

2 Claims



I. A control system for controlling the level of hydraulic pressure supplied to a servo mechanism of a friction element of an automotive automatic power transmission driven by an engine comprising, in combination, a source of hydraulic pressure, a first conduit means hydraulically connected to said source of hydraulic pressure, a regulator valve communicating with said source of hydraulic pressure through said first conduit means and having a valve spool for controlling the level of the hydraulic pressure, a branch conduit hydraulically connected to said first conduit means and communicating with said regulator valve therethrough, a shift valve hydraulically connected to said branch conduit and having a valve spool for controlling the supply of hydraulic pressure to be supplied to said servo mechanism, the movements of the valve

spool of said shift valve being controlled by the hydraulic pressure exerted on the valve spool of said shift valve, and a second conduit means hydraulically connected between said shift valve and said regulator valve, said second conduit means passing the hydraulic pressure to be exerted on the valve spool of said shift valve to said regulator valve which hydraulic pressure acts on the valve spool of said regulator valve, whereby the valve spool of said regulator valve is moved in a direction to reduce the level of the hydraulic pressure to be supplied to said servo mechanism simultaneously with the actuation of the valve spool of said shift valve for thereby effecting smooth engagement of said friction element, further comprising an actuating means associated with said shift valve for controlling the hydraulic pressure to be exerted on the valve spool of said shift valve for thereby controlling the movements of the valve spool of said shift valve, wherein said shift valve has a port which is hydraulically connected to said second conduit means, wherein said actuating means includes a pilot valve hydraulically connected between said branch conduit and said second conduit means and having a valve spool to control the hydraulic pressure to be admitted to the port of said shift valve, further comprising first sensing means to sense vehicle speed and a second sensing means to sense on output torque of said engine, and wherein said first sensing means includes a hydraulic governor valve adapted to produce a first pressure signal in dependence on the vehicle speed, said hydraulic governor valve communicating with said pilot valve for applying said first pressure signal on one end of the valve spool of said pilot valve, and wherein said second sensing means includes a throttle valve adapted to produce a second pressure signal in dependence on the output torque of said engine, said throttle valve communicating with said pilot valve for applying said second pressure signal on the other end of the valve spool of said pilot valve.

3,855,881

TOOL FOR INSERTING A REPAIR PLUG AND PATCH IN A WIRE CORD TIRE

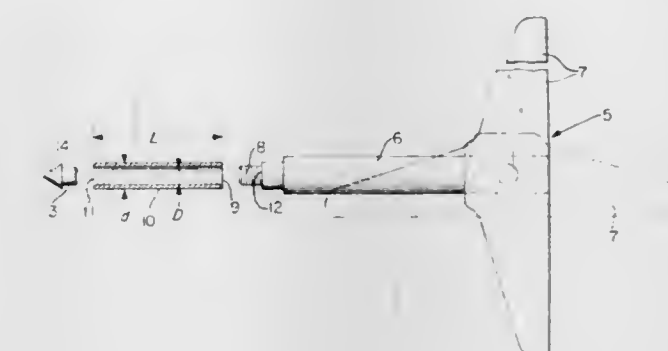
Paul S. Buckland, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 28, 1973, Ser. No. 374,707

Int. Cl. B60c 25/16

U.S. Cl. 81—15.7

2 Claims



I. A tool used in positioning a combination plug-patch required for repairing a puncture in a tire, comprising:

- a. an elongated, hollow, cylindrically shaped, rigid sleeve having an inside diameter which is uniform from end-to-end of the sleeve and sized to receive the plug of the plug-patch, the sleeve having opposing ends which are internally threaded;
- b. a pointed tip insertable in at least one of the opposing ends of the sleeve to provide a pointed sleeve end for entry into the puncture;
- c. means for gripping the tool, by hand, such that the sleeve can be pushed into the puncture in the tire and then pulled therefrom in the same axial direction as the sleeve is pushed into the puncture, said means including:

- I. an elongated body having opposing ends;
- II. a handle disposed at one end of the body in angular relation to the longitudinal axis of the body;
- III. means disposed at the other end of the body for threadably engaging the internally threaded ends of the sleeve, said means including an externally threaded end; and
- IV. an abutment carried by the body adjacent the threaded end of the body for engaging the cylindrical sleeve to limit threaded engagement between the sleeve and tool gripping means.

3,855,882

BLEED WRENCH

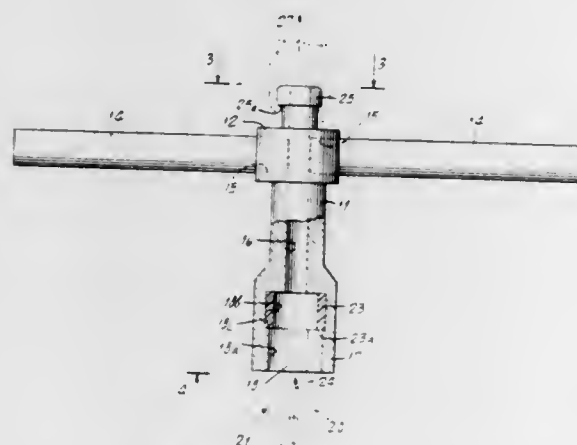
Raymond H. Wittmann, Bay Shore, N.Y., assignor to Sid Harvey Manufacturing Co., Inc., Garden City, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,671

Int. Cl. B25b 13/48

U.S. Cl. 81-121 R

4 Claims



1. For use with a bleed valve or the like having a rotatable and externally grippable valve head controlling discharge of fluid through an orifice disposed axially of the head, a wrench comprising

- a. a rigid, integral axially rectilinear shaft having
 - i. an axial bore,
 - ii. an enlarged first end forming a socket coaxial with and communicating with said bore, said socket including an outer portion shaped to receive and grip said valve head for rotation therewith, and
 - iii. a second end shaped to form a nipple adapted to be gripped by a flexible tube or the like, said bore opening axially through said nipple;
- b. a resilient annular seal fitted snugly within said socket and having an outwardly facing annular sealing surface offset inwardly from the outer extremity of said socket for bearing against a valve head inserted in said socket; and
- c. handle means, fixedly secured to the shaft and extending laterally from the shaft at right angles thereto intermediate said socket and said nipple, for effecting manual turning of said shaft about the axis thereof to turn a valve head received within said socket for opening said valve, said bore being adapted to conduct fluid discharged from said valve to a tube secured to said nipple;
- d. said socket further including an inner portion wider than said outer portion such that an inwardly facing shoulder is formed in the socket at the junction of the outer and inner portions, said inner portion terminating inwardly in an outwardly facing surface through which said bore opens, said last-mentioned surface being spaced inwardly from said shoulder;
- e. said seal having an outer diameter greater than that of said outer socket portion and an inner diameter smaller than that of said outer socket portion, said seal being inserted within said inner socket portion and there retained by said shoulder, said seal further having an axial dimension about equal to the spacing between said shoulder and said outwardly facing surface of said inner socket

portion for fitting snugly between said shoulder and said last-mentioned surface.

3,855,883

NUT RETAINING SOCKET WRENCH

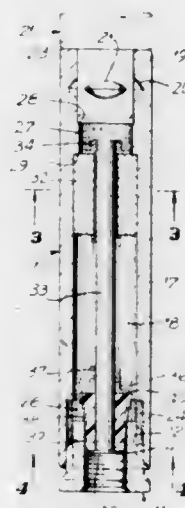
Howard C. Stumpf, 1238 Salem St., Malden, Mass. 02148, and Daniel A. Laskey, 329 Lincoln Ave., Saugus, Mass.

Filed Nov. 7, 1973, Ser. No. 413,641

Int. Cl. B25b 13/02

U.S. Cl. 81-125

6 Claims



1. A nut retaining wrench comprising a longitudinally extending body member having a nut engaging socket in its distal end, a nut bore-engaging retainer mounted in said body member coaxial with said socket and axially movable between an advanced position proximate the distal end of said socket and a retracted position rearwardly of said advanced position, and means resiliently urging said retainer member toward its advanced position, wherein said bore-engaging retainer member comprises a plug coaxial with said socket and tapering inwardly toward the distal end thereof, said plug being formed of a compressible material.

3,855,884

LOCKING UNIVERSAL JOINT

Warren L. McPeak, 3341 N. El Burrito, Tucson, Ariz. 85705

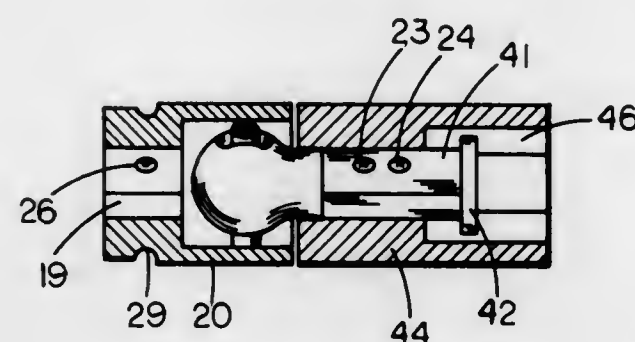
Continuation-in-part of Ser. No. 320,203, Jan. 2, 1973,

abandoned. This application Oct. 1, 1973, Ser. No. 402,264

Int. Cl. B25b 13/00

U.S. Cl. 81-177 UJ

6 Claims



1. A locking universal joint comprising:
 - a body at one end thereof;
 - a socket at the body end of the universal joint, serving as an input terminal;
 - first means at the other end of the universal joint comprising a shaft having a non-circular cross section and terminating at the end distant from the said body in a washer, the outside diameter of the washer being greater than the minimum diameter of the cross section of the shaft;

an element slideable on said shaft, bearing on the end distant from said body a shaped recess serving as an output terminal and termed a wrench socket; and second means removably locking said element in either of two positions on said first means.

3,855,885

ADJUSTABLE STOP MEANS

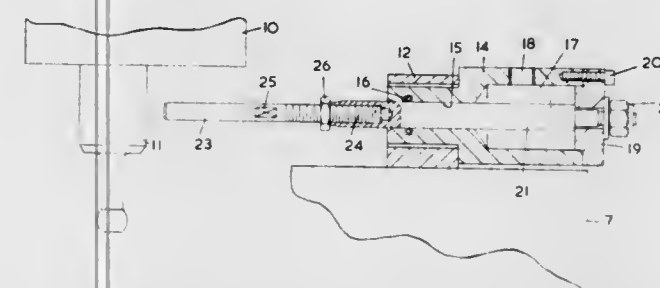
Struan Robertson Lockhart Marshall, 20 Elmdene Rd., Kenilworth, England

Filed Jan. 18, 1974, Ser. No. 434,552

Int. Cl. B23b 3/36

U.S. Cl. 82-34 B

5 Claims



1. A stop means for limiting travel of one component relatively to another comprising a member securable to one of the components, a probe arranged to be engaged by the other component to limit its travel, the member and probe being respectively connected to a part defining a hollow cavity, said connections being spaced lengthwise of said part, the cavity having an entry port for fluid which in use is at the temperature of at least one of the components, and the part being of a material having a relatively high coefficient of thermal expansion, whereby the distance between the member and the operative end of the probe, in the direction of the length of the part, varies in accordance with the temperature of the fluid.

3,855,886

CONDUIT-SLITTING METHOD

Theodore E. Andrews, Kutztown, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

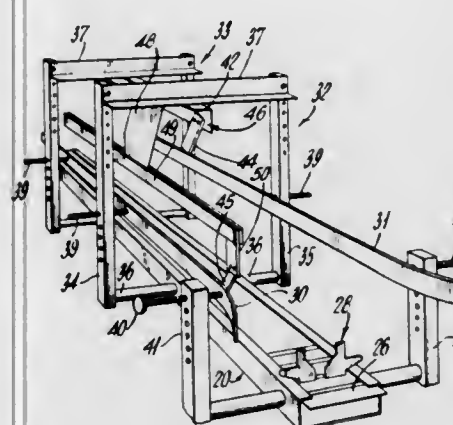
Division of Ser. No. 282,653, Aug. 22, 1972, Pat. No.

3,799,012. This application June 22, 1973, Ser. No. 372,699

Int. Cl. B26d 1/02

U.S. Cl. 83-7

6 Claims



1. The method of longitudinally dividing a flexibly sheathed tubular workpiece into hinged semicylindrical halves, which comprises first radially outwardly slicing the workpiece wall on a longitudinal alignment locally proximate to the desired hinge axis and to a radial extent short of severing the sheath, and thereafter radially slicing a diametrically opposite locale of the entire workpiece wall on a longitudinal alignment parallel to said first alignment, whereby at the local region of first slicing action the local integrity of the remaining circumferential extent of the workpiece body provides a stabilizing action to assist in accurate control of said radial extent, so that hinge

action cannot be available until a point in time after completion of the entire first-slicing action.

3,855,887

METHOD FOR CUTTING PATTERN PIECES FROM SHEET MATERIAL

David R. Pearl, West Hartford, and Samuel Clifford Robinson, Manchester, both of Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

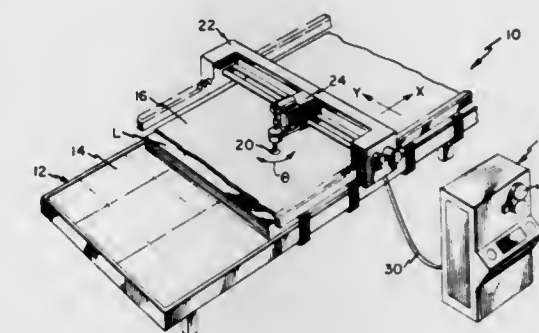
Division of Ser. No. 314,144, Dec. 11, 1972, Pat. No.

3,803,960. This application Feb. 6, 1974, Ser. No. 440,076

Int. Cl. D06h 7/00; B26d 1/10

U.S. Cl. 83-49

2 Claims



1. A method of cutting closely spaced pattern pieces in limp sheet material comprising the steps of: advancing a cutting blade in the sheet material in a given direction about a pattern piece and along a cutting path defined by the pattern piece contour; maintaining the cutting blade in a generally tangent position relative to the cutting path at each point along the path; and turning the advancing cutting blade slightly out of the tangent position and away from an adjacent, previously cut contour as the advancing blade approaches the adjacent contour.

3,855,888

CUTTING EQUIPMENT FOR A MULTI-LINE CONTINUOUS CASTING PLANT

Pierre Gay, La Tour En Jarez, France, assignor to Creusot-Loire Enterprises, Paris, France

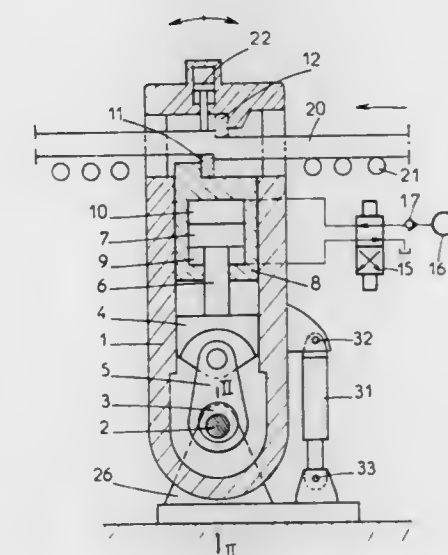
Filed Nov. 26, 1973, Ser. No. 418,949

Claims priority, application France, Dec. 8, 1972, 72.43720

Int. Cl. B23d 25/06

U.S. Cl. 83-303

7 Claims



1. Cutting equipment for a multi-line continuous casting plant comprising:

1. a plurality of shears each comprising:
 - a. a frame,
 - b. cutting blade means,
 - c. means for mounting said cutting blade means in said frame,
 - d. a shaft,

- e. means for coupling said shaft to said cutting blade means for causing said blade means to perform a cutting motion on rotation of said shaft,
 f. means for mounting said frame on said shaft for angular movement relative thereto, and
 g. means for adjusting the angular position of said frame relative to said shaft;
 2. means for coupling said shafts of said shears for co-rotation, said shafts being aligned, and
 3. drive means common to said shafts for driving said shafts.

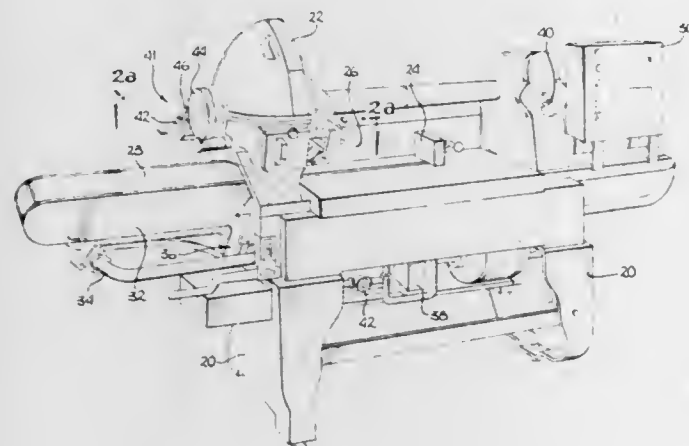
3,855,889
SLICER

Ron Wiley, Los Angeles, and Harvey R. Searing, Glendale, both of Calif., assignors to Leo's Quality Foods, Los Angeles, Calif.

Filed Dec. 4, 1972, Ser. No. 312,109
Int. Cl. B23d 25/02; B26d 4/04

U.S. Cl. 83-490

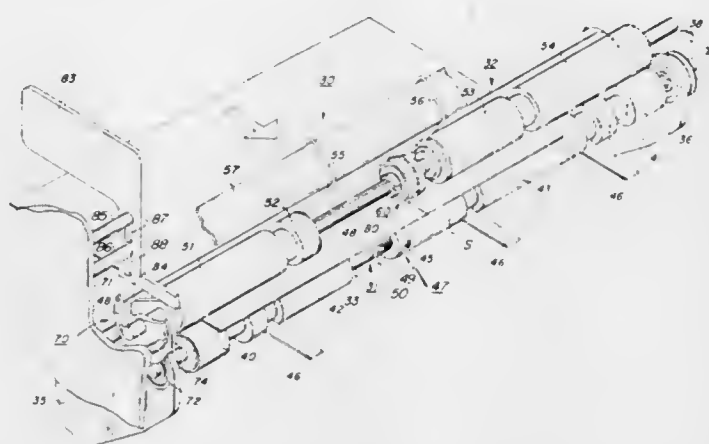
3 Claims



1. In a slicing machine, an improved knife drive comprising a first structure supported on first and second main support bearings for rotation about a first longitudinal axis defined by said bearings, said first structure having a means between said first and second bearings for driving said first structure in rotation about said first longitudinal axis by a first drive motor; a central shaft supported by first and second central shaft bearings concentric to said first longitudinal axis for rotation about said first longitudinal axis, said first central shaft bearing being supported by said first structure between said first and second main support bearings;

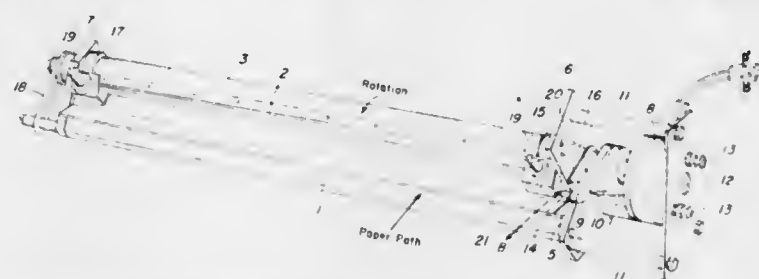
an offset shaft supported on first and second offset shaft bearings mounted on said first structure for rotation axis about a second axis substantially parallel to and radially offset from said first longitudinal axis, said offset shaft having a knife adjacent one end thereof at a longitudinal position between the longitudinal position of first and second main support bearings;
 means adjacent one end of said central shaft for driving said central shaft in rotation;
 first coupling means on said central shaft between said first and second central shaft bearings for driving a flexible drive means;
 second coupling means on said offset shaft between said first and second offset shaft bearings for being driven on rotation by a flexible drive means;
 a flexible drive means extending around said first and second coupling means;
 means for driving said central shaft in rotation by a second drive motor.

3,855,890
SLITTER/PERFORATOR APPARATUS
Thomas Lynch, Fairport; Douglas G. Berner, and Frank R. Hynes, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
 Continuation-in-part of Ser. No. 317,029, Dec. 20, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,370
 Int. Cl. B26d 3/00
 U.S. Cl. 83-331 18 Claims



1. An apparatus for perforating a sheet of material that is moving along a predetermined path of travel including:
 a support means being arranged adjacent to the path of travel;
 a first blade for operating upon said sheet mounted upon said support means, said blade being movable between an operative position in the path of travel of the sheet and an inoperative position out of the path of travel of the sheet;
 a second blade for operating upon said sheet mounted upon said support means, said second blade being movable between an operative position in the path of travel of the sheet and an inoperative position out of the path of travel of the sheet, said second blade being eccentric with respect to said first blade, with the eccentricity of said blades being such that when one of said blades is positioned in the path of travel of the sheet the other of said blades is positioned out of the path of travel of the sheet;
 means cooperating with said blades in their operative position for providing effective cutting or perforating action;
 and means for positioning said blades into and out of the path of travel of the sheet.

3,855,891
KNIFE MODULE FOR CUTTING ROLL STOCK IN AUTOMATED EQUIPMENT
James Leroy Young, Endwell, N.Y., assignor to GAF Corporation, New York, N.Y.
 Continuation-in-part of Ser. No. 161,713, July 12, 1971, abandoned. This application May 7, 1973, Ser. No. 358,094
 Int. Cl. B23d 17/00
 U.S. Cl. 83-582 6 Claims



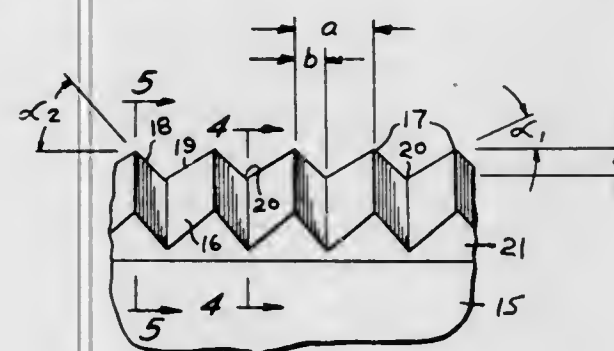
1. An improved knife assembly including,
 a stationary cutting means,
 a rotary cutting means adjacent to and operable in concert with said stationary cutting means,
 a pair of gauge means each disposed at opposite ends of said rotary cutting means to control the degree of contact

between said stationary cutting means and said rotary cutting means, one of said gauge means having a diameter equal to the diameter of the rotary cutting means, and the other of said gauge means having a diameter less than the diameter of said rotary cutting means,
 two tensioning members each positioned at opposite ends of said rotary cutting means adapted to urge said rotary cutting means to positively contact said stationary cutting means, and
 an actuating means for initiating the cutting operation by providing positive motivating force to said rotary cutting means.

3,855,892
CUTTING RULE
Carmen J. DiLello, Philadelphia, and David K. Hart, Rosemont, both of Pa., assignors to Cir-Cut Corporation, Philadelphia, Pa.
 Filed Mar. 7, 1973, Ser. No. 338,761
 Int. Cl. B26d 1/12

U.S. Cl. 83-835

21 Claims



1. In a cutting rule of the general type having an elongated flat body portion with teeth formed along at least one longitudinal edge thereof, the improvement wherein said teeth comprise a series of adjacent asymmetric teeth, each tooth having a tooth tip and first and second tooth side edges, said tooth side edges diverging from one another from the tooth tip to points of intersection with the side edges of the teeth immediately adjacent to and disposed at opposite sides of said each tooth to form tooth crotches at the said points of intersection, said first and second tooth side edges respectively intersecting a datum line at different first and second angles, and the said tips of said series of adjacent asymmetric teeth being disposed along a straight line.

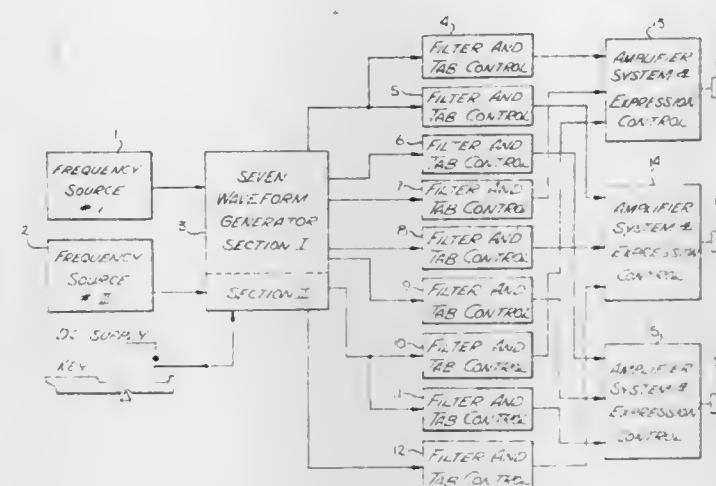
3,855,893
ELECTRONIC ORGAN EMPLOYING MULTIPLE WAVEFORM TONE GENERATORS AND CHIFF GENERATORS
Willis E. Chase, Los Angeles, Calif., assignor to Chase of California, Los Angeles, Calif.
 Filed Sept. 15, 1971, Ser. No. 180,563
 Int. Cl. G10h 1/02, 5/02

U.S. Cl. 84-1.24

6 Claims

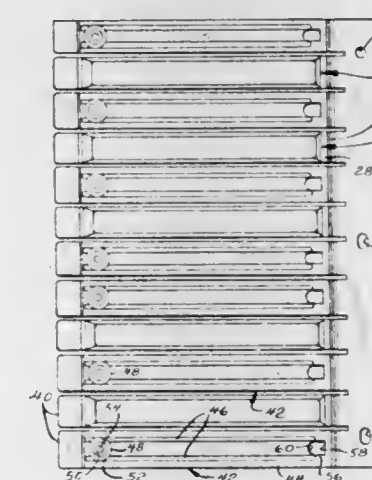
1. In an electronic musical instrument for obtaining complex waveforms comprising in combination:
 a frequency source supplying pulses continuously at a given rate;
 means for modifying the waveshapes of said pulses so that each waveshape thereof has a plurality of selected harmonics;
 key switching means connected to said waveshape modifying means for selectively rendering said waveshape modifying means operative;
 filter means responsive to the output of said waveshape modifying means for adjusting the amplitudes of said harmonics to conform to the timbre of a given musical tone;

means responsive to said key switching means for imparting a controlled change in selected harmonics of said waveshape modifying means for the purpose of giving a starting transient to said musical tone; and



signal translating means responsive to the output of said filter means to produce an audible musical tone.

3,855,894
KEY ASSEMBLY
Howard M. Thomas, and Robert F. Olszowka, both of North Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.
 Filed May 6, 1974, Ser. No. 467,207
 Int. Cl. G10c 3/12; G10h 1/00
 U.S. Cl. 84-423 13 Claims



1. A key assembly for use as in a musical instrument keyboard comprising an elongated mounting strip for attachment to supporting structure, a plurality of keys of a first type, a plurality of flexural portions respectively integrally connecting said keys of said first type to said mounting strip, a plurality of key bars corresponding to keys of a second type, a plurality of flexible portions respectively integrally connecting said key bars to said mounting strip, and a plurality of keys of said second type respectively secured to said key bars.

3,855,895
ONE-QUARTER TURN FASTENER
Ajax C. Francis, Jr., Newark, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
 Filed Dec. 27, 1972, Ser. No. 318,789
 Int. Cl. F16b 21/18

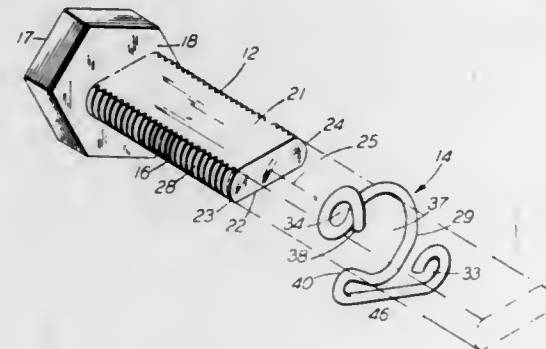
U.S. Cl. 85-1 L

2 Claims

1. A fastener comprising:
 a. an elongated member including a head at one end thereof, and a cylindric portion extending from said head, said cylindric portion having an oblong cross section with a width between two substantially parallel surfaces and a

length between two convex, grooved surfaces, the grooves in each surface being parallel to each other and in planes substantially perpendicular to the longitudinal axis of said elongated member; and

b. a retainer of a single wire having been formed into a substantially planar configuration, said wire defining an aperture loop at each of opposite ends of said retainer and a substantially U-shaped opening between said aperture loops, said U-shaped opening being defined by first and second leg portions of said wire, each being adjacent one of the aperture loops and substantially opposite the other, and a bottom portion of the wire connecting the two leg portions, the U-shaped opening having a gap



opposite said bottom portion, said gap being defined between the first leg portion and an end of the wire extending from the aperture loop adjacent the second leg portion across said second leg portion into the U-shaped opening, said configuration permitting the elongated member to be inserted through the U-shaped opening, the gap admitting the width of the oblong cross section, the length thereof extending through the gap toward the bottom portion of the wire, such that after insertion, a quarter-turn of the elongated member engages the grooved surfaces with the leg portions of the retainer to inhibit further longitudinal movement and the end of the wire stops further rotational movement of the elongated member.

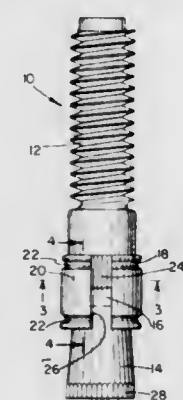
3,855,896 WEDGE ANCHOR

Bruce L. Kaufman, Trail Creek, Ind., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation of Ser. No. 192,491, Oct. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 56,479, July 20, 1970, abandoned. This application Sept. 14, 1973, Ser. No. 397,378

Int. Cl. F16b 13/06

U.S. Cl. 85-78

13 Claims



1. A wedge anchor of a type adapted to be expanded in a predrilled hole in concrete or the like, the hole being substantially the same diameter as said anchor and said anchor fitting into the hole to be expanded therein, said anchor comprising an expansion bolt having a first section formed on a first end of the bolt, said first section including means for enabling a longitudinal force which tends to urge said bolt from the hole to be applied to said bolt, a second section formed on the bolt

adjacent to the first section, said second section forming a substantially cylindrical surface coextensive with the surface of the bolt, a tapered section, a reduced diameter section between said second section and said tapered section, a one-piece split expansion collar, said split expansion collar including an integral split ring formed from a substantially rectangular, imperforate strip of metal and being positioned around said reduced diameter section, said collar having a generally annular groove defining an area of minimum thickness in cross-section proximate each axial end thereof, said groove at the axial end which rides upon the said tapered section facilitating outward swaging of the said axial end of said collar by providing a generally annular weakened area where bending occurs, said annular grooves providing a substantially symmetrical collar having axial ends which are substantially mirror images of each other whereby no particular orientation of said collar is necessary when mounting said collar on said bolt, the inner edges at each axial end of said collar including bevels which provide smooth tapers substantially about said inner edges thereby to inhibit gouging of said tapered section by said collar, said collar including at least two spaced protuberances on the outer surface thereof and extending outwardly therefrom which are adapted to engage and bear into the side wall of the hole when said bolt is moved axially of said collar to swage said collar outwardly of said bolt, said protuberances enabling a better fit between the hole and said collar and inhibiting rotation between said collar and said hole, said tapered section extending between said reduced diameter section and a second end of said expansion bolt, and a third section of said expansion bolt formed adjacent the second end of said bolt, said third section including a knurled surface fitting inside the collar as the collar swages outwardly to help hold the anchor in the hole and to help prevent rotation of said anchor in the hole.

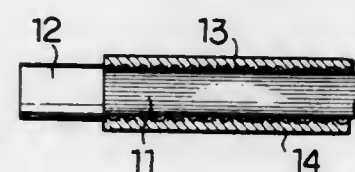
3,855,897 METHOD OF PROTECTING A BUNDLE OF FLEXIBLE OPTICAL FIBERS

Nagashige Takahashi, No. 80, Nishimachi Kokubunjishi, and Teruo Oouchi, No. 2-1-11, Kotobukicho, Fuchu-shi, both of Tokyo, Japan

Division of Ser. No. 875,836, Nov. 12, 1969, Pat. No. 3,691,001. This application June 5, 1972, Ser. No. 259,484
Int. Cl. B29d 11/00; G02b 5/16

U.S. Cl. 87-1

5 Claims



1. A method of protecting an elongated bundle of flexible optical fibers which comprises:
a. loosely enveloping said bundle with a tubular braid of intertwined filaments, the braid having an axis and the enveloped bundle being elongated in the direction of said axis;
b. axially stretching said braid until it contracts transversely to said axis and exerts radial pressure on said bundle;
c. impregnating the contracted braid with a liquid synthetic resin composition; and
d. solidifying said composition while maintaining said braid in the contracted condition.

3,855,898 PROTECTIVE PANEL FOR A VEHICLE DOOR

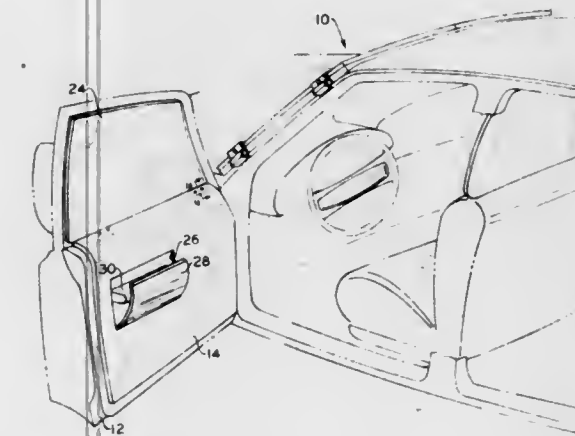
Wilson C. McDonald, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 12, 1972, Ser. No. 314,295

Int. Cl. F41h 5/00

U.S. Cl. 89-36 H

1 Claim



1. A protective panel for a vehicle comprising a tough bullet resisting transparent plastic sheet, means for removably securing said panel to a vehicle, said sheet contoured to the inside contour of the lower portion of a door and having an upper edge curved towards the window at the upper portion of the door, metal plate attaching means secured to and extending up from such curved upper edge for securing the protective panel to the door, said sheet having an opening therein in which an armrest on the door is received, the sheet having an upwardly and inwardly curved panel section extending over the inner surface of the major portion of said armrest at said opening.

3,855,899 LOADING DEVICE FOR A MULTIBARREL WEAPON

Henri Billottet; Patrice Fechner; Robert Denoux, and Jean Georget, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 27, 1972, Ser. No. 238,368

Claims priority, application France, Apr. 6, 1971, 71.12143

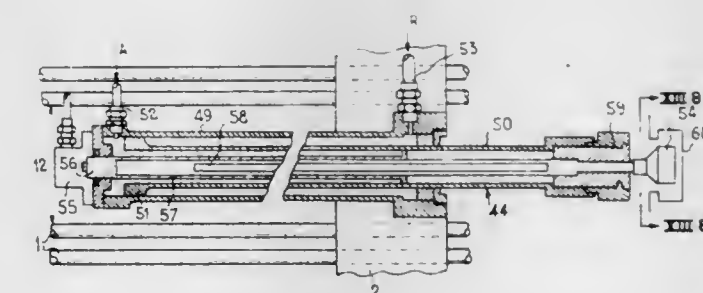
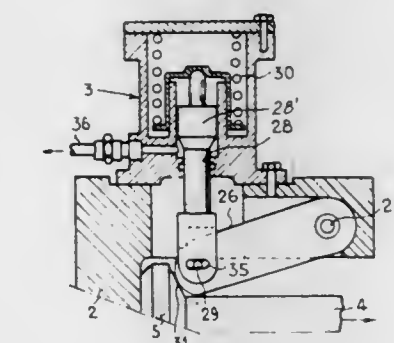
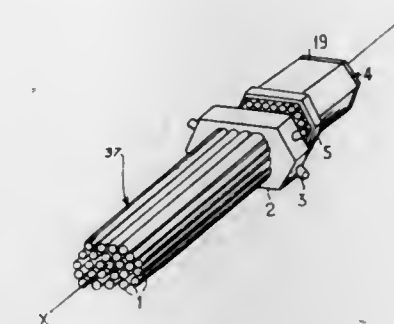
Int. Cl. F41f 17/16

U.S. Cl. 89-47

15 Claims

1. A loading device for a multibarrel weapon provided with a barrel-supporting block, comprising:
a magazine having a front face adapted to be juxtaposed with a rear surface of said block;
holding means in said magazine for a multiplicity of projectiles alignable with respective barrels of said weapon upon operative juxtaposition of said front and rear surfaces, said block and said magazine being provided with coating guide means for positively aligning said magazine with said block in a spaced-apart position of said front and rear surfaces;
drive means on said block engageable with said magazine in said spaced-apart position for drawing said magazine into operative juxtaposition with said block;
coacting latch means on said block and said magazine for locking same to each other; and
firing means for said projectiles in said magazine, said magazine and said block being provided with channels parallel to said barrels and aligned with each other upon interen-

agement of said coating guide means, said drive means comprising at least one draw bar lodged in a channel of



said block and extensible into an aligned channel of said magazine for engagement with the latter.

3,855,900 SYSTEM FOR PRIMER ACTUATION OF BOLT

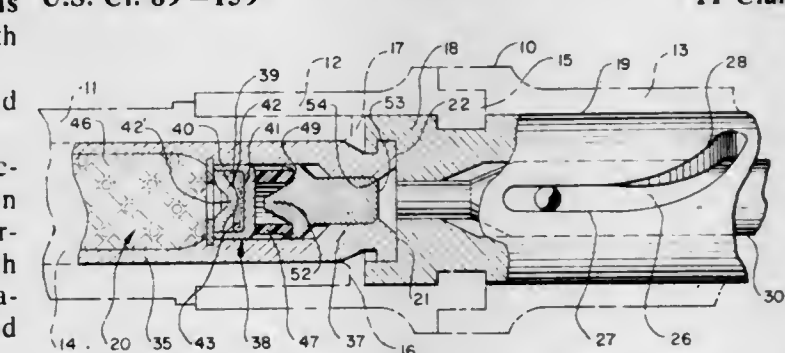
Irwin R. Barr, Lutherville, and Nicholas J. La Costa, Kingsville, both of Md., assignors to Aircraft Armaments, Inc., Cockeysville, Md.

Filed Jan. 7, 1959, Ser. No. 785,525

Int. Cl. F41d 5/04; F42b 5/02

U.S. Cl. 89-159

11 Claims



1. For use with a gun having a firing pin, a cartridge having a hollow casing adapted to contain a powder charge and having a base at the rear end, said base having an axially extending aperture, a primer mounted in the forward portion of said aperture, retaining means for limiting movement of said primer in a forward direction, a piston slideably mounted in the rearward portion of said aperture behind said primer, said piston having a surface facing said primer, a forwardly

extending projection on said surface, said piston adapted to be driven forward by said firing pin causing said projection to strike said primer and deform the same against the resistance of said retaining means, the impact of said projection upon said primer causing initiation of the latter and ignition of the charge whereby propellant gases are produced which act upon said primer and said surface, said piston being rearwardly accelerated independently of said primer by the action of the propellant gases upon said surface to thereby impart a rearward acceleration to said firing pin.

3,855,901

BROACHING MACHINE

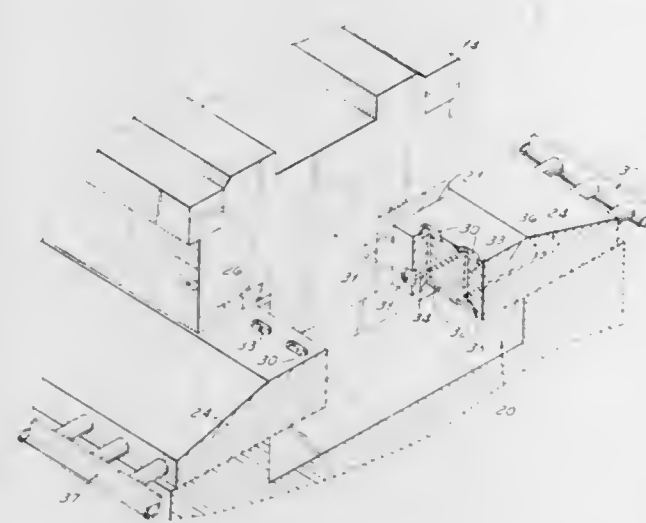
Vincent J. Girardi, Grosse Pointe, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,489

Int. Cl. B23d 37/18; F16c 29/02

U.S. Cl. 90—78

9 Claims



1. In a broaching machine, the combination comprising a base, an endless broaching chain mounted on said base, a plurality of carriers mounted at longitudinally spaced points on said chain for supporting one of a workpiece and a broaching tool, a mounting fixture positioned along a portion of the path of the carriers for supporting the other of a workpiece and broaching tool, means defining a slideway along the path of the carriers adjacent the fixture, said slideway having a plurality of planar surfaces for supporting and guiding said carriers, said carriers having complementary surfaces to said slideway planar surfaces, each of said slideway planar surfaces having longitudinally spaced cavities therein and capillary fluid passages associated therewith for supplying fluid to said cavities, the length and diameter of the capillary fluid passages and the size of the cavities being such that when a cavity is uncovered due to the absence of a carrier thereover, fluid can flow to the cavity freely and be at atmospheric pressure in the cavity, the length of each carrier being such that it covers a plurality of longitudinally spaced cavities as it is moved past the work station along said slideway, the length of the slideway being such that a plurality of cavities are uncovered at any moment of time during which a carrier is moved along said slideway, and means for supplying fluid to said cavities at least when a carrier is on said slideway such that each carrier is supported in stable, accurate frictionless relation to the slideway by fluid flow from said cavities between the complementary surfaces of said slideway and carrier.

3,855,902 CYLINDER PISTON UNIT FOR A POWER OPERATED REVOLVING CHUCK

Rudi Kirst, Hilden, Germany, assignor to Hofmann & Co. KG, Haan, Germany

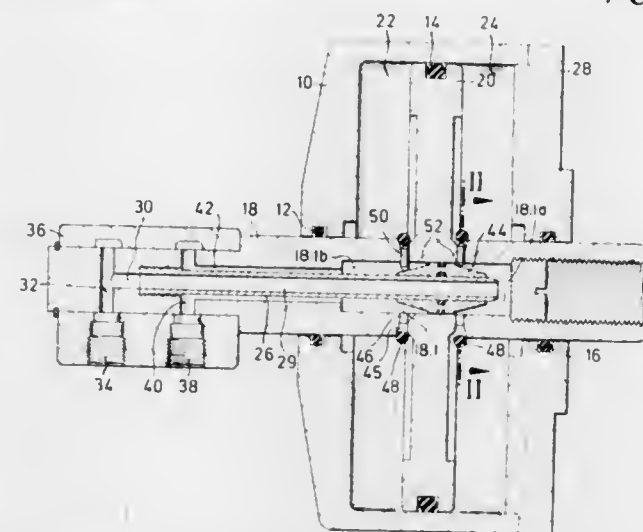
Filed Mar. 1, 1973, Ser. No. 337,126

Claims priority, application Germany, Nov. 21, 1972, 2256933

Int. Cl. F15b 11/08, 13/04

U.S. Cl. 91—420

7 Claims



3. A revolving pressurized fluid actuated operator for a chuck, comprising:

a cylinder to confine pressurized fluid, a piston in the cylinder and dividing the cylinder into a pair of fluid chambers, and the piston having a rod movable with the piston and relative to the cylinder to operate the chuck,

the piston rod being hollow,

fluid supply means including radial bores in the piston rod to direct pressurized fluid to the chambers and to vent the chambers alternately for controlling the piston movement in the cylinder and including check valves for each cylinder chamber to be opened and closed responsive to pressure reversal in the fluid supply means, said check valves comprising a pair of deformable rings respectively disposed at opposite sides of the piston and on the piston rod and in obstructing relation with said radial bores, said fluid supply means including a sleeve in the hollow piston rod and defining and separating fluid channels from each other,

an actuation member movably mounted in one of said bores to lift the check valve ring and provide venting of the respective cylinder chamber, and

an auxiliary piston being slidably mounted on said sleeve and being provided with cam faces engaging said actuating member for radially moving the actuating member in the bore.

6. A revolving pressurized fluid actuated operator for a chuck, comprising:

a cylinder to confine a pressurized fluid;

a piston in the cylinder and dividing the cylinder into a pair of fluid chambers, and the piston having a piston rod movable with the piston and relative to the cylinder to operate the chuck, the piston rod having a longitudinally extending hollow interior adjacent the piston defining a combined fluid passage and guideway, said piston rod also having a plurality of radial bores extending between said hollow interior and the exterior of the piston rod, said bores being disposed in at least two locations along the length of the piston rod adjacent each of said chambers so that certain of said bores provide communication between the hollow interior and one of the chambers, and the remaining bores provide communication between the hollow interior and the other of the chambers;

releasable valve means at the exterior of said piston rod and obstructing said radial bores, and including a plurality of plungers extending inwardly through said bores and pro-

truding into said hollow interior, said valve means being biased into bore-obstructing position and being operable in response to outward movement of said plungers to open the valve means and release pressure from the chamber;

a fluid pressure operated slider in said hollow interior of the piston rod which defines the slideway for the slider, said slider traversing the hollow interior and sealing around the interior periphery of the slideway to obstruct fluid communication longitudinally along the hollow interior of the piston rod, said slider having oblique camming surfaces bearing outwardly against said plungers to restrain inward movement of the plungers and produce radial outward movement of the plungers as the slider moves longitudinally along the piston rod for operating said valve means, said slider being moved along the interior of the piston rod by fluid pressure differentials between opposite ends of the hollow interior; and said piston rod having a pair of separate fluid passages each communicating with a respective end of the hollow interior of said piston rod to facilitate control of the fluid pressure applied to said bores and to the corresponding sides of the slider for simultaneously pressurizing one of the cylinder chambers and venting the other chamber as the fluid pressure moves the slider to operate the plungers and valve means.

first and second valve-controlled ports for each cylinder of each bank, the first ports of the first cylinder bank opening into said first manifold chamber, the second ports of the second cylinder bank opening into the second manifold chamber, first and second duct means extending between said first and second cylinder banks, said first duct means interconnecting the second valve ports of said first cylinder bank with said second manifold chamber, and said second duct means interconnecting said first valve ports of said second cylinder bank with said first manifold chamber;

3,855,904

AUXILIARY POWER STEERING SYSTEM

Erich Jablonsky, Bobingen/Rems, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

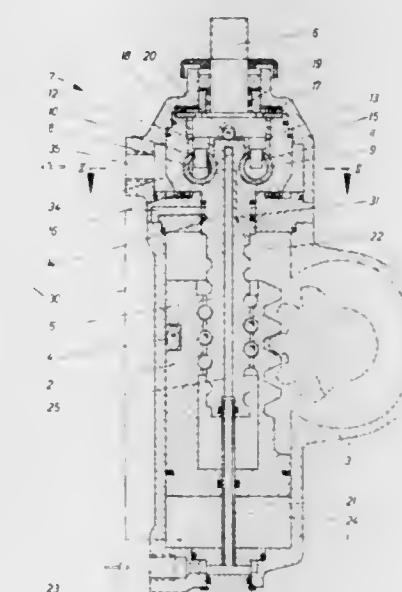
Filed June 26, 1972, Ser. No. 266,053

Claims priority, application Germany, June 24, 1971, 2131276

Int. Cl. F15b 13/16, 9/10

U.S. Cl. 91—359

12 Claims



1. In a booster power steering system utilizing a pressure storage reservoir as a pressure fluid source, the combination which comprises a double acting servo cylinder having a reciprocal piston therein and a servo cylinder pressure chamber at each end of said piston; manually operable valve means and flow passage means for connecting said storage reservoir to said chambers to selectively pressurize either of said chambers with operating pressure from said reservoir; said valve means having road reaction means for effecting simulated steering resistance; and force limiting means for overcoming said simulated steering resistance at a predetermined limit thereof responsive to operating pressure in said valve means; said valve means comprising a respective valve for each pressure chamber; said road reaction means comprising each said valve having a piston portion and a chamber and flow passage means whereby said chambers receive said operating pressure to act against the respective valve in a direction opposite to the opening direction thereof for effecting simulated steering resistance; said force limiting means comprising respective pressure operated pistons and flow passage means whereby said pistons are exposed to operating pressure controlled by each said valve; a respective prestressed spring against which each said pressure operable piston is movable in response to a predetermined pressure, and abutment means movable by an operator for opening either of said valves to pressurize a respective chamber and disposed to be actuated by either of said pressure operated pistons of said force limiting means in

3,855,903

ENGINES, PUMPS AND MOTORS

Thomas Walter Bunyan, 5, Point Close, Blackheath, London S.E. 10, England

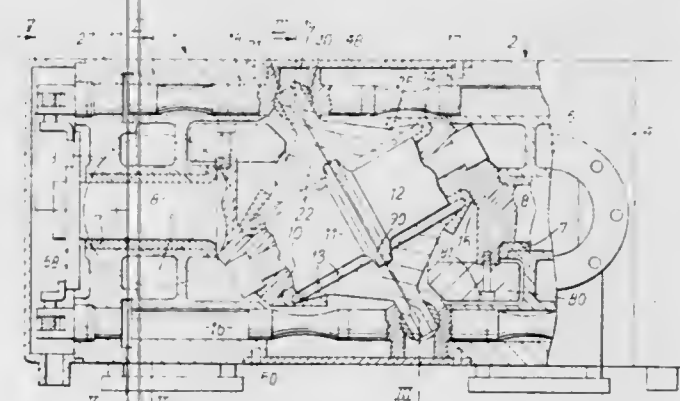
Filed Jan. 24, 1973, Ser. No. 326,525

Claims priority, application Great Britain, Jan. 25, 1972, 3454/72

Int. Cl. F01b 3/10

U.S. Cl. 91—480

11 Claims



1. In a fluid pump or motor or internal combustion engine of the kind comprising a crank shaft having an inclined working portion, first and second banks of cylinders at opposite ends of the crank shaft working portion, the cylinders in each bank being arranged around the crank shaft axis and facing the corresponding cylinders of the other bank with their axes parallel to the crank shaft axis, a set of piston rods each interconnecting a first piston in a cylinder of the first bank with a second piston in the corresponding cylinder of the second bank and a driving connection for each piston rod, the improvements which comprise:

a first fluid connection,

a first manifold chamber positionally associated with the first cylinder bank and serving both cylinder banks, said first fluid connection opening into said first manifold chamber,

a second fluid connection,

a second manifold chamber positionally associated with the second fluid connection opening into said second manifold chamber,

a direction to aid valve opening upon said predetermined pressure acting on either of said pistons.

3,855,905

HYDRAULIC POWER CONTROL DEVICE

Jean-Jacques Carre, Montreuil, France, assignor to Societe Anonyme D.B.A.

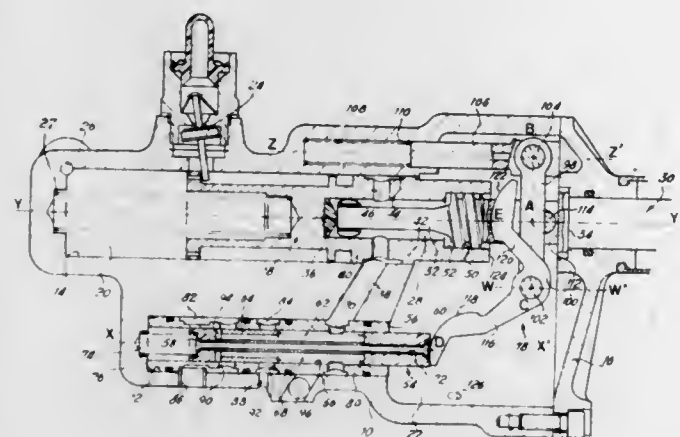
Filed May 25, 1973, Ser. No. 364,400

Claims priority, application France, June 12, 1972, 72.021053

Int. Cl. F15b 9/10

U.S. Cl. 91—384

5 Claims



1. In a hydraulic power control device:
 - a housing defining an actuating chamber therewithin;
 - a servo piston slidably mounted in said housing and responsive to the fluid pressure level in said actuating chamber;
 - a distributor valve in said housing controlling communication between said actuating chamber and a fluid pressure source;
 - an input rod linearly and slidably mounted in said housing for actuating said distributor valve, said input rod including means for engaging said servo piston for manual movement of the latter upon failure of said fluid pressure source; and
 - a follower mechanism for interconnecting said distributor valve, said push rod, and said servo piston, said follower mechanism including a sensor having a pair of arms, one of said arms cooperating with said servo piston, the other arm cooperating with said distributor valve, a lever, means pivotally mounting one end of said lever on said housing, and means pivotally mounting the other end of the lever on said sensor, said input rod including abutment means for engagement with said lever.

3,855,906

CONTACT FREE AND DIRECTLY COOLED PISTON ARRANGEMENT

Alexander Mohrenstein-Ertel, and Michael Mohrenstein-Ertel, both of Hegelstrasse 81, 8600 Bamberg, Germany

Continuation of Ser. No. 240,574, April 3, 1972, abandoned.

This application Mar. 15, 1974, Ser. No. 452,010

Claims priority, application Germany, Apr. 5, 1971, 2116624

Int. Cl. F01b 31/10; F16j 15/18

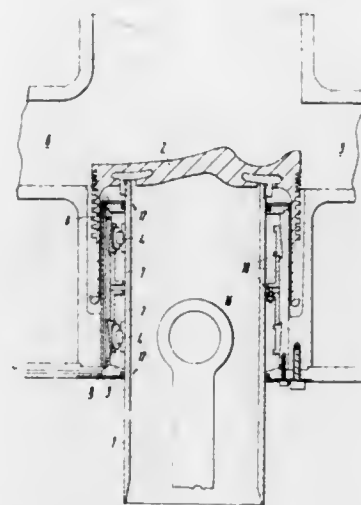
U.S. Cl. 92—153

7 Claims

1. In a device having a cylindrical chamber having a cylindrical wall and inlet and outlet ports on opposite side of the chamber, a contact-free piston arrangement comprising:
 - a supporting wall mounted within the chamber at the lower portion of the chamber to form an annular recession between said supporting wall and the cylindrical wall of the chamber;
 - annular bushing means mounted on said supporting wall capable of being biased inwardly;

a cylindrical sleeve slidably supported and guided by said bushing means for movement between a first position and a second position within the chamber;

a piston head mounted on said sleeve, said piston head dimensioned to slide within the chamber without contacting the cylindrical wall of the chamber, said piston head



having an annular cylindrical side wall essentially parallel to said sleeve and adapted to extend into the annular recession between the cylindrical wall of the chamber and said supporting wall when said sleeve is in its first position, and said piston head having annular grooves formed in said side wall to form a labyrinth seal between said piston head and the cylindrical wall of the chamber.

3,855,907

METHOD AND MACHINE FOR FORMING FLAT BOTTOM BAGS HAVING SIDE GUSSETS

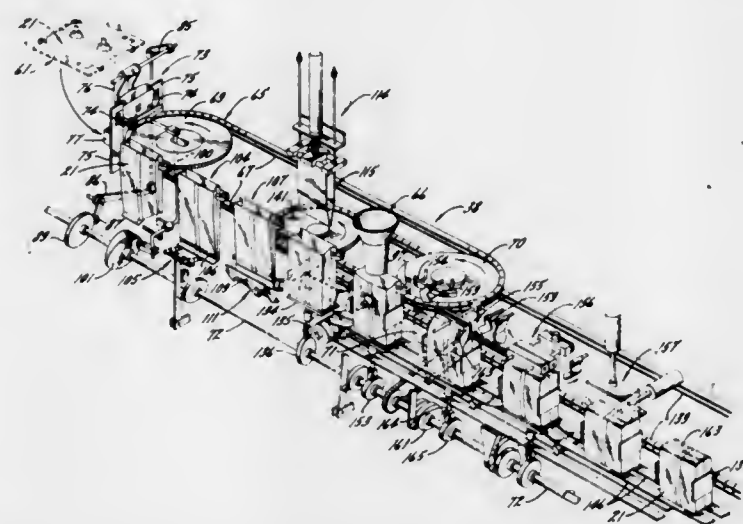
Kenneth R. Johnson, and Robert F. Lense, both of Rockford, Ill., assignors to Rexham Corporation, New York, N.Y.

Filed May 18, 1973, Ser. No. 361,537

Int. Cl. B31b 33/74

U.S. Cl. 93—35 SB

7 Claims



1. A method of forming flat bottom, side gusset bags from a strip of interconnected bags, said strip having cross-seals connecting said bags together and having side gussets along opposite margins and each defined by two inwardly tucked panels which face one another, said method comprising the steps of, advancing said strip along a predetermined path, guiding the leading bag in said strip into a pick off station, separating the two panels of each of the gussets from each other as the bag is moved into said station, severing the leading bag from said strip adjacent said station along the edge of one of said cross-seals to leave the severed bag with one end closed by one of said cross-seals and with the other end unsealed, swinging said severed bag from said pick off station onto a conveyor, keeping each of the two panels separated

from each other as said bag is swung from said pick off station onto said conveyor, clamping said bag on said conveyor, maintaining each of said two panels separated from each other as said bag is clamped to said conveyor so as to permit subsequent expansion of said gussets to open said bag as the latter remains clamped to the conveyor, advancing said conveyor to carry said bag along a continuation of said path, folding a portion of the sealed end of the bag along one side of the bag while the bag is clamped to said conveyor, and sealing said portion against the side of the bag to complete formation of the sealed end of the bag prior to opening and filling of the bag.

3,855,908

DEVICE FOR THE MANUFACTURE OF PAPER CUPS

Werner Schmidt, and Fritz Wommelsdorf, both of Hamburg, Germany, assignors to Maschinenfabrik Rissen GmbH, Hamburg-Rissen, Surrheid, Germany

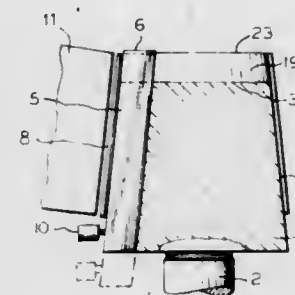
Filed June 5, 1973, Ser. No. 367,156

Claims priority, application Germany, June 6, 1972, 22274131

Int. Cl. B31b 1/28

U.S. Cl. 93—36.5 R

5 Claims



1. In a device for the manufacture of cups of paper or similar material, the cups consisting of a conic-shaped mantle and with a cup-shaped bottom portion inserted into the mantle with the side edges pointing toward the narrower end of the mantle and with the outer surface of the bottom portion being joined to the inner surface of the mantle, the improvement which comprises:
 - a. a conic-shaped pin adapted to receive a conic-shaped mantle in overlying relationship thereon, said mantle, when so received, partially extending beyond said pin at the narrower face thereof, said mantle having a seam portion extending along the length thereof;
 - b. a pressing cheek movably disposed adjacent said conic shaped pin and opposite said seam portion of said mantle;
 - c. means movably disposed to be moved adjacent the seam portion at the edge extending beyond said pin and within said mantle opposite said pressing cheek, whereby said seam portion is supported by an abutment surface, in relationship to said pressing cheek, along said pin and along said means.

3,855,909

MOUNTING ARRANGEMENT FOR AIR DIFFUSER IN A KERFED CEILING

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Redlands, Calif.

Filed Aug. 27, 1973, Ser. No. 391,793

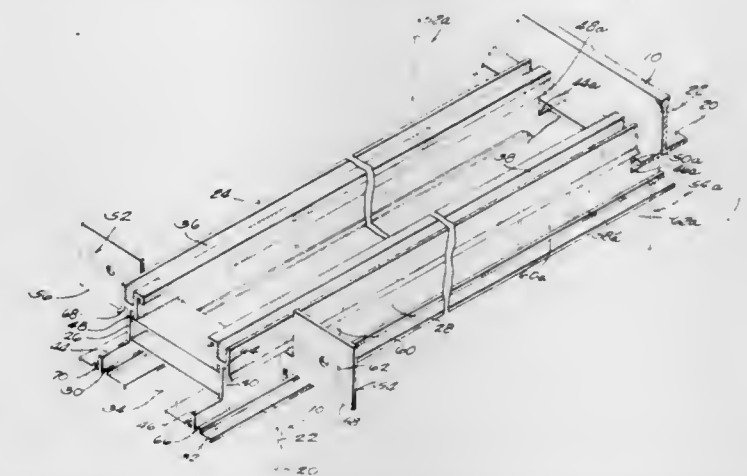
Int. Cl. F24f 13/06

U.S. Cl. 98—40 D

11 Claims

1. In a suspended ceiling including a plurality of main runner T-bars, a plurality of cross runner T-bars arranged at right angles to said main runners, each T-bar having a horizontal flange extending from opposite sides of a vertical leg, a plurality of ceiling tiles the edges of which are kerfed to provide horizontal notches, said ceiling tiles assembled in said ceiling with the flanges of said T-bars positioned in respective ones of said notches so that said ceiling has generally a monolithic

appearance, and at least one linear air diffuser positioned between an adjacent pair of said T-bars and defining a generally linear air slot, the improvement of the opposite ends of said air diffuser being coped to provide upwardly facing exposed surfaces, said air diffuser arranged with said upwardly facing surfaces positioned beneath the flanges of the T-bars between which said air diffuser is positioned and said air slot being located at the plane of said ceiling,



a holding bracket positioned adjacent each end of said air diffuser and each bracket including a downwardly facing surface, and means defining a sliding connection of said holding bracket on said air diffuser in which connection said holding bracket is slideable in a horizontal direction so that said holding brackets are slideable toward and away from a position wherein the downwardly facing surfaces of said holding brackets overlie the flanges of said T-bars between which said air diffuser is positioned to provide the support for said air diffuser in said ceiling.

3,855,910

ACOUSTICAL VENTILATOR

Bernard E. Brinton, Hitdorf, Germany, and Ludwig H. Schorn, deceased, late of Hitdorf, Germany (by Hedwig Schorn, administratrix), assignors to Robertson Bauelemente G.m.b.H., Monheim-Hitdorf (RHL), Germany

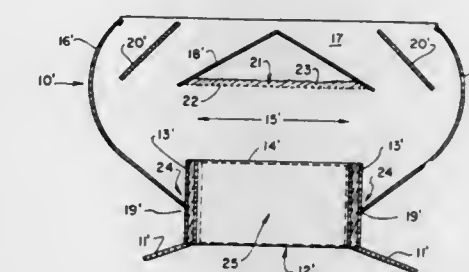
Filed Sept. 11, 1972, Ser. No. 287,881

Claims priority, application Germany, Nov. 12, 1971, 2156189

Int. Cl. F24f 7/02

U.S. Cl. 98—42

4 Claims



1. In a ridge ventilator which surmounts a generally rectangular and horizontal opening in the roof of a building, a generally vertical stack including generally vertical side stack walls and generally vertical end stack walls which are connected to each other and which form an open box-like enclosure partly above the said opening, said ventilator including side walls extended outwardly and upwardly from said stack generally parallel with the long edge of the opening and having end walls connected to the side walls and extending upwardly from the narrow edge of the opening, and having a cap member disposed above the opening between the side walls and extending substantially entirely between the end walls, the improvement comprising: an acoustic absorption assembly applied to the undersurface of the said cap member in confrontation with

said opening, said assembly including a plurality of perforate rigid, sheets confronting said opening and a layer of absorbent for acoustical energy supported between the cap member and the sheets; and each of the end and side stack walls comprising an exterior sheet, an imperforate interior sheet, and an insulating material filling the space therebetween, thereby to minimize transmission of sound energy through the end and side stack walls, the imperforate inner sheet of the end and side stack walls providing imperforate inner surfaces having reflecting properties for acoustical energy, the imperforate inner surfaces channelizing acoustical energy received from the building interior into impingement against said acoustic absorption assembly.

3,855,911

CENTRIFUGAL JUICE EXTRACTOR

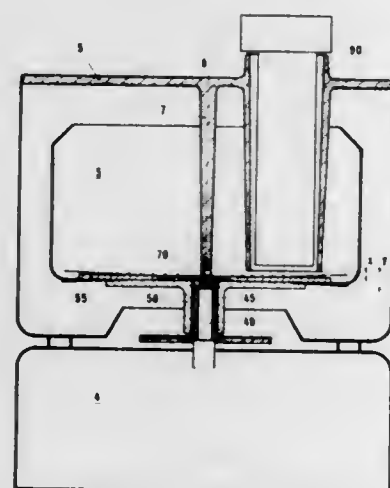
Georg Feierabend, Olten, Switzerland, assignor to Rotel AG, Aarburg, Switzerland

Filed Apr. 30, 1973, Ser. No. 355,804

Int. Cl. A23n 1/02; A47j 19/00

U.S. Cl. 99-511

3 Claims



1. A centrifugal juice extractor comprising a casing having a removable cover, a perforated basket removably and replaceably mounted within the casing so that the basket can be rotated about an axis of the basket, said basket having a light weight socket on the underside thereof, drive means for rotating the basket about such axis, said drive means including a drive shaft extending into said socket and being of a lesser size than said socket so as to fit loosely therein, a rubber elastic composition means in said socket so that said basket is mounted so that while it is being driven it can tilt relative to its axis of rotation under asymmetrically distributed loads, a grating disc at the bottom of such basket and a feed tube via which material can be fed into the casing into contact with the grating disc at a position offset from its rotation axis, a finger depending from said cover for bearing against a central zone of the bottom of the basket so as to prevent said basket and said grating disc from lifting during rotation thereof.

3,855,912

SANDWICH MAKING APPARATUS

Charles Donald Schoonmaker, Boonton Twp., Carl G. Hebel, Haworth, and Robert Francis Bardsley, Harrington Park, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 12, 1972, Ser. No. 314,293

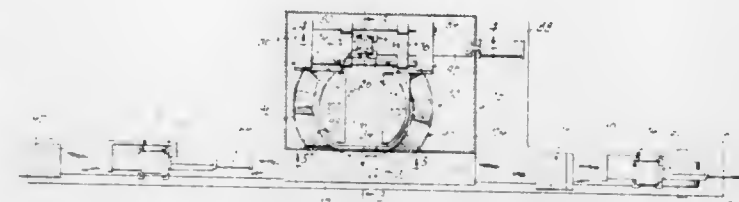
Int. Cl. A21c 9/04; B26d 4/00

U.S. Cl. 99-450.4

6 Claims

1. In a sandwich-making assembly system, apparatus for slicing a prismatic bar of thermoplastic comestible which comprises means for tempering a prismatic bar to a predetermined temperature ranging from below 0°F to 20°F and above that temperature whereat the bar may be sliced without shattering but below that temperature at which the bar will

soften or curl incident to slicing; means for transversely slicing said bar across its cross-section; means for receiving the slice thus formed and transferring it to a depositing station operative to move the slice transverse to the bar's axis; means for positioning the transferred bar slice to a station from which it may be dropped onto a bread slice; means to advance the



bread slice and superposed sealing slice to a succeeding operating station; and, means controlling the atmospheric temperature and moisture in the zone surrounding the foregoing bar slicing, transferring and depositing means so as to maintain a low relative humidity in said zone and assure that the parts thereof are substantially frost free.

3,855,913

APPARATUS FOR FORMING SHAPED POTATO PIECES FROM POTATO DOUGH

James F. Harmon; Richard D. Johnston; John H. Lach; William H. Von Der Lieth, all of Blackfoot, and Thomas L. Murphy, Idaho Falls, all of Idaho, assignors to American Potato Company, San Francisco, Calif.

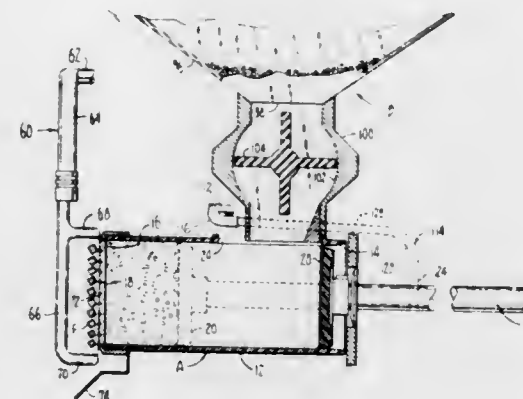
Division of Ser. No. 170,164, Aug. 9, 1971, Pat. No. 3,771,937.

This application Sept. 17, 1973, Ser. No. 398,041

Int. Cl. B01f 15/02

U.S. Cl. 99-487

3 Claims



1. Apparatus for reconstituting a dry product into a dough by addition of water thereto comprising an impervious chamber having an upwardly opening inlet and a laterally opening outlet, means disposed vertically above said inlet for metering a preselected quantity of dry product into said chamber through said inlet, means defining a water nozzle for directing water into said chamber through said inlet, means disposed at a lower vertical level than said nozzle for heating a volume of water, means for conducting water from said heating means to said nozzle along a path that slopes continuously upward from said heating means to said nozzle, and means for displacing water from said heating means to said water conducting means, said water displacing means affording reverse flow therethrough at all times when said displacing means is deactivated to permit water in said conducting means to drain by gravity into said heating means when said displacing means is deactivated.

3,855,914

APPARATUS FOR PRODUCING MINERAL WATER

Atsushi Nishino; Hiroshi Kumano, and Yukihide Iura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

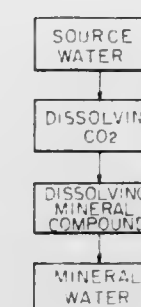
Filed Oct. 17, 1972, Ser. No. 298,446

Claims priority, application Japan, Dec. 1, 1971, 46-97049

Int. Cl. A23l 1/00

U.S. Cl. 99-275

4 Claims



1. An apparatus of producing mineral water, which comprises:

first means for supplying source water;
second means for supplying carbonic acid gas;
third means mixing said source water with said carbonic acid gas so as to carbonate the source water; and
fourth means for mixing the carbonated water with at least one kind of water-insoluble mineral compound containing a mineral component so that said source water changes to mineral water.

3,855,915

EGG BLOWING DEVICE

Harold R. Hoyt, and Marjorie L. Hoyt, both of 321 N. Treat Ave., Shawnee Mission, Kans. 85716

Filed Feb. 12, 1973, Ser. No. 331,973

Int. Cl. A47j 43/14

U.S. Cl. 99-495

9 Claims



1. An egg blowing device comprising:

a. a hollow body member,
b. a soft, elastic sealing member forming one wall of said body member and having an aperture formed there-through communicating with the interior of said body member and opening through an external surface of said sealing member, said sealing member being elastically yieldable both inwardly and outwardly relative to said body member and adapted to be pressed manually against an egg with the said aperture registered with an opening

formed in the shell of said egg, and to engage the shell of said egg around the entire periphery of said shell opening, and

c. means carried by said body member and operable to introduce air under pressure into the interior of said body member, and, through said sealing member aperture and said egg shell opening, into the interior of said egg, whereby said sealing member is held against said egg is sealing relation about the opening in the shell thereof by said air pressure, despite relative movements between said egg and said body member, and whereby the contents of said egg are forced outwardly through another opening formed in the shell thereof.

3,855,916

DRY PEELING APPARATUS

Louis P. Lazzarini, 1125 Denise Way, San Jose, Calif. 95125

Continuation-in-part of Ser. No. 826,377, May 21, 1969,

abandoned, and a continuation-in-part of Ser. No. 42,925,

June 3, 1970, abandoned, and a continuation of Ser. No.

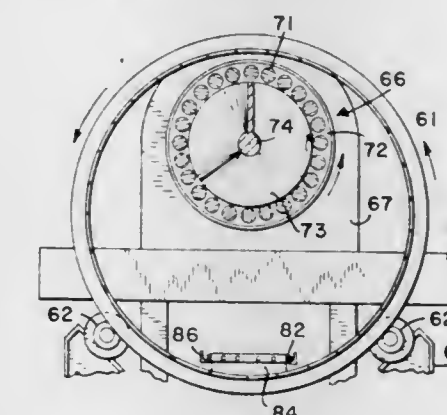
148,410, June 1, 1971, abandoned. This application Oct. 24,

1972, Ser. No. 299,760

Int. Cl. A23n 7/02

U.S. Cl. 99-623

6 Claims



1. In an apparatus for peeling fruit and vegetables having peel removing means for removing the peel and debris, said means comprising a generally horizontal cylinder driven for rotation about its longitudinal axis as defined by a series of longitudinally extending peeling rolls which individually rotate about their respective longitudinal axes and throw peel and debris to the exterior of the cylinder, the improvement which comprises a generally horizontally extending housing disposed around and coextensive with said peel removing means to receive and collect on the interior pieces of peel and debris thrown from the rolls of the peel removing means, said housing being mounted for movement around said peel removing means; means driving said housing for movement around the peel removing means to move peel and debris collected on the interior of the housing to a discharge location; and means at the discharge location for removing the peel and debris from the interior of the housing.

3,855,917

TRUSS PLATE PRESS

Richard S. Farrell, Fort Lauderdale, and Jose R. Ramos, Plantation, both of Fla., assignors to Dayton Aircraft Products, Inc., Fort Lauderdale, Fla.

Filed Oct. 15, 1973, Ser. No. 406,336

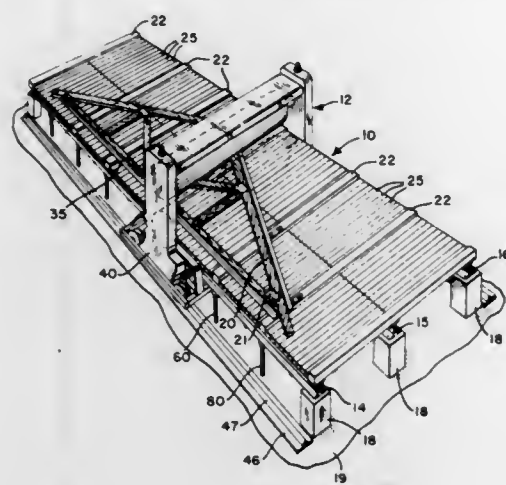
Int. Cl. B30b 13/00, 3/00

U.S. Cl. 100-35

9 Claims

9. The method of applying pairs of connector plates into opposite sides of a truss joint comprising the steps of passing a roller over one plate of said pairs forcing the same into the truss and simultaneously with the movement of said roller sequentially bringing a series of bars into pressing engagement

with the opposite plate by moving said bars with a second and opposite roller, so that the distribution of pressing forces



3,855,918

REFUSE COMPACTOR

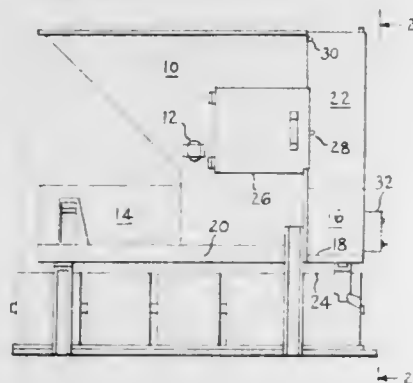
Branko Trajbar, 9 Falcon Ct., Farmingville, Long Island, N.Y. 11738

Filed Jan. 22, 1973, Ser. No. 325,876

Int. Cl. B30b 15/6

U.S. Cl. 100-49

12 Claims



1. A compactor for waste materials comprising, in combination, collecting means for collecting a predetermined quantity of said waste material; sensing means on said collecting means for sensing when a predetermined quantity of waste material is present in said collecting means; compacting means actuated by said sensing means for compacting substantially said quantity of waste material; compacting control means connected to said compacting means and operating said compacting means until said quantity of waste material has been compacted by a predetermined amount; exit gate means in contact with the compacted material, said compacted material passing through said exit gate means for removal from said compactor; gate operating means linked to said gate means for removing said gate means from contact with said compacted material and forming a free passage for said compacted material from said compactor; ejection means movable against said compacted material and toward said exit gate means for ejecting said compacted material from said compactor through said free passage; compacted waste ejection control means for controlling said gate operating means and said ejection means; first connecting means between said ejection control means and said gate operating means; and second connecting means between said ejection control means and said ejection means, said second connecting means actuating said ejection means after said first connecting means has actuated said gate operating means, said first connecting means and said second connecting means being actuated simultaneously by said ejection control means, said gate operating means and said ejection

means comprising hydraulically operated cylinders and pistons, said first connecting means and said second connecting means being fluid flow lines, the fluid flow line of said second connecting means having greater resistance to fluid flow than the fluid line of said first connecting means.

3,855,919

CONTROL SYSTEM FOR A COMPACTING MACHINE

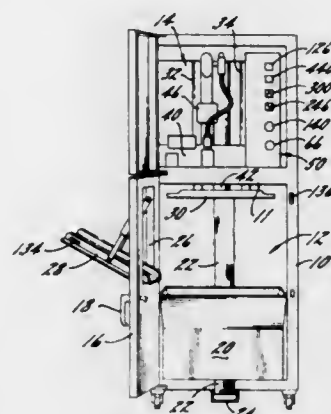
Richard W. Potter, Downers Grove, Ill., assignor to McGraw Edison Company, Elgin, Ill.

Filed Aug. 21, 1972, Ser. No. 282,413

Int. Cl. B30b 15/16

U.S. Cl. 100-52

4 Claims



2. A control system for a compacting machine having a compaction chamber for receiving material to be compacted, a pressure plate spanning the area of said chamber for compressing the contents thereof, a reversible drive source for moving said pressure plate in the forward and reverse directions within said compaction chamber, and a panel at the top of the compaction chamber for enclosing said chamber, said control system including means for sensing the fully retracted position of said pressure plate to prevent further retraction thereof by rendering said drive source inoperative whenever the pressure plate reaches said fully retracted position, and said sensing means also being responsive to the position of the compaction chamber panel to render said drive source inoperative whenever material lodged between the pressure plate and the compaction chamber panel causes said panel to flex as the pressure plate retracts thereby preventing damage to said compaction chamber panel by the retracting pressure plate.

3,855,920

ADJUSTABLE SAFETY DIE BLOCK-RADIAL LOBE DESIGN

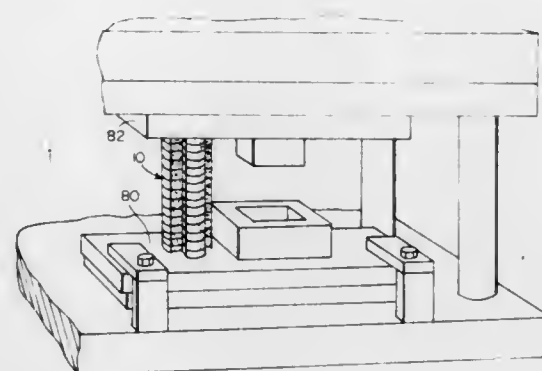
James T. Wright, Grosse Pointe Shores, Mich., assignor to Carlson-Diamond & Wright, Inc., Warren, Mich.

Filed Nov. 2, 1973, Ser. No. 412,102

Int. Cl. B30b 15/08

U.S. Cl. 100-53

28 Claims



1. In an adjustable safety die block, the improved combination comprising

a plurality of segmental layers, and means securing said segmental layers axially thereof in a parallel series forming a vertical stack, at least some of said segmental layers being rotatable about said securing means for offset relationship to next adjacent segmental layers, said next adjacent segmental layers being axially aligned and in contiguous load bearing relationship, said offset segmental layers being axially aligned and in non-load bearing relationship.

3,855,921

ADJUSTABLE U-SHAPE SAFETY DIE BLOCK

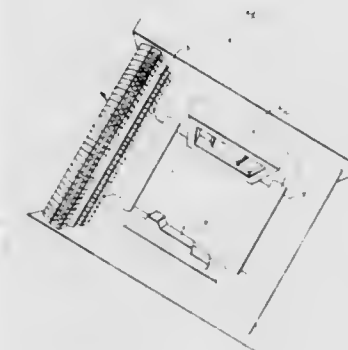
James T. Wright, Grosse Pointe Shores, Mich., assignor to Carlson-Diamond & Wright, Inc., Warren, Mich.

Filed Nov. 2, 1973, Ser. No. 412,150

Int. Cl. B30b 15/08

U.S. Cl. 100-53

27 Claims



1. In an adjustable safety die block of substantially U-shape design for use on an inclined press post, the improved combination comprising

a plurality of segmental layers of substantially U-shape design and means securing said segmental layers through a portion thereof in a parallel series forming a vertical stack,

at least some of said segmental layers being rotatable about said securing means for offset relationship to next adjacent segmental layers,

said next adjacent segmental layers being aligned one upon the other in contiguous load-bearing relationship,

said offset segmental layers being disposed upon said next adjacent segmental layers in non-load bearing relationship.

3,855,922

COMBINATION OF APPARATUS AND BUFFER STRUCTURE

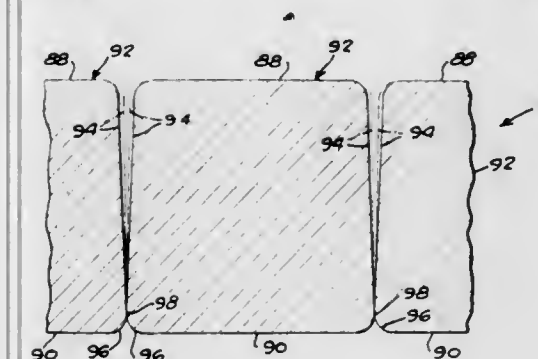
Frank Krembel, Jr., St. Clair Shores, Mich., assignor to Columbia Marking Tools, Inc., Detroit, Mich.

Filed Jan. 29, 1973, Ser. No. 327,446

Int. Cl. B44b 5/02; B21f 35/00

U.S. Cl. 101-3 R

13 Claims



1. Apparatus which comprises, two members assembled for relative movement wherein respective portions thereof approach each other,

a buffer comprising means defining a series of elements disposed between said portions, each of said elements having an edge and ends adjoining said edge and forming junctures therewith,

said ends extending transversely of the direction of said movement and the junctures between said ends and edge being spaced apart in said direction, said ends of successive elements in said series being arranged in juxtaposed pairs, said ends of each juxtaposed pair having portions proximal to said junctures which are relatively close together,

said ends of each juxtaposed pair having portions distal of said junctures which are spaced relatively further apart in said direction than are said proximal portions,

said proximal portions of said ends being generally aligned in said direction,

each of said elements having portions which extend continuously in said direction between said proximal portions thereof,

said members, responsive to said relative movement thereof, being effective to exert force on the end ones of said elements in said series,

said pairs of aligned proximal portions being interengaged when said force is so exerted,

said continuously extending portions cooperating to form a solid column in said direction when said proximal portions are so interengaged,

said elements being resiliently distortable so that, responsive to an increase of said force upon further said relative movement of said members, the spacing between said distal portions of said juxtaposed pairs of ends is diminished.

3,855,923

PRINT CONTROL SYSTEM FOR HIGH SPEED PRINTERS

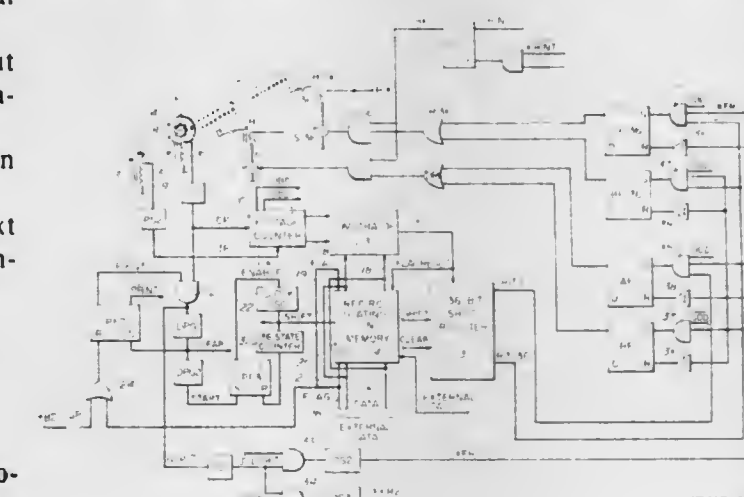
John J. Foley, 1 Algonquin Rd., West Acton, Mass. 01720

Filed June 29, 1973, Ser. No. 375,135

Int. Cl. B41j 9/12

U.S. Cl. 101-93.29

12 Claims



1. In combination with a high speed printer having a character pulse generator for producing character pulses at first intervals determined by the intervals between arrival of a series of characters in printing position, memory means for storing a sequence of character signals representing the characters in a line to be printed, means responsive to each character pulse for scanning said memory means and producing a sequence of binary signals each determining whether or not a character is to be printed in a different column following that character pulse, means for sequentially registering said sequences, timing signal generating means responsive to said character pulses for alternately producing a first or a second timing pulse following each memory scan, an image forming device for each binary signal in said sequence, and means controlled by said registering means and said timing signal generating means for energizing each of said image forming devices for a time determined by said timing pulses when said

registering means is storing a binary signal indicating that a character is to be printed by that image forming device and one of said timing signals is present.

3,855,924

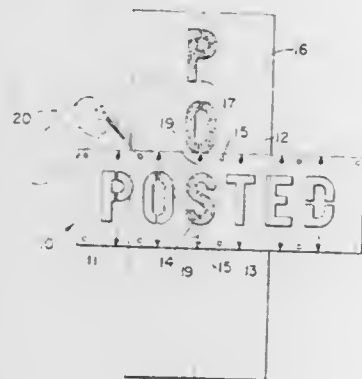
SIGN MAKING STENCIL METHOD

William E. Morse, Jr., 612A Bankers Trust Plaza Bldg., Jackson, Miss. 39201

Continuation-in-part of Ser. No. 292,752, Sept. 27, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,603 Int. Cl. B41m 1/12; G09b 11/04

U.S. Cl. 101-129

2 Claims



1. A method of making signs using a sign stencil which comprises an elongated rectangular panel having parallel longitudinal edges, said panel being provided with a longitudinally extending row of cut-outs defining a set of indicia, said row of indicia having a predetermined spacing from said longitudinal edges of the panel, and transversely aligned marker means provided at said longitudinal edges centrally of the respective indicia, whereby the stencil may be selectively used in one position to make an entire sign in one direction or may be shifted indicia-by-indicia in sequence from one end of the stencil to the other to make the same sign in a direction at right angles to the first mentioned direction, said method comprising using one edge of the sign to form a guide line on a surface at right angles to said one direction, centering said marker means of the first indicium of said row on said guide line, painting said surface through the first indicium of said row, and successively moving the stencil to center the marker means for each successive indicium of said row on said guide line, spacing each successive indicium from the immediately preceding indicium using said predetermined spacing and painting said surface through each indicium in sequence while the marker means opposite each indicium is centered on said guide line to form a complete sign corresponding to said entire sign at right angles to said one direction.

3,855,925

POCKET HAND STAMP

Takaji Funahashi, No. 1, 2-chome, Kitatakasashi-mashi, Nishiku, Nagoya-shi, Aichi-ken, Japan

Filed Apr. 27, 1973, Ser. No. 355,302

Claims priority, application Japan, June 26, 1972, 47-75323[U]

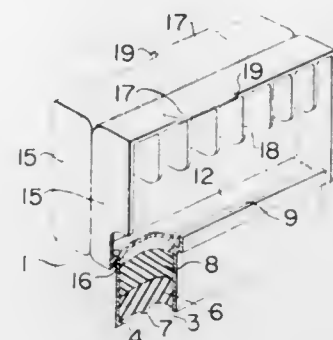
Int. Cl. B41k 1/50, 1/52, 1/56

U.S. Cl. 101-333

3 Claims

1. A pocket hand stamp comprising, in combination, a box-shaped holder having an open top and an open bottom; said top having a pair of first recesses at the outside of each end; said bottom having a flange on the inner side thereof; a cover plate detachably mounted on said top and having a pair of second recesses at the outer side of each end, said first recesses being respectively combined with said second recesses to form bearing holes; a printing plate provided between said cover plate and said flange and supported on the latter, said plate being made of an elastic sponge material having numerous fine continuous foam portions for receiving ink; a pair of box-shaped covers of the same size, having pivots on

the inner sides of both ends to engage said bearing holes respectively, and snap members on the outer sides of said covers; said snap members having inner edges which are engageable with each other; said covers having inner ribs in the inside thereof for reinforcement and non-slippage when being



held by the user, and serving to cover said plate and being interengaged, when said covers are turned to a first position under said bottom of the holder, and provide a handle for the stamp, and placed upright back to back, so that said ribs are turned outwardly when said covers are turned to a second position over said top of the holder.

3,855,926

SIGNATURE WRITER

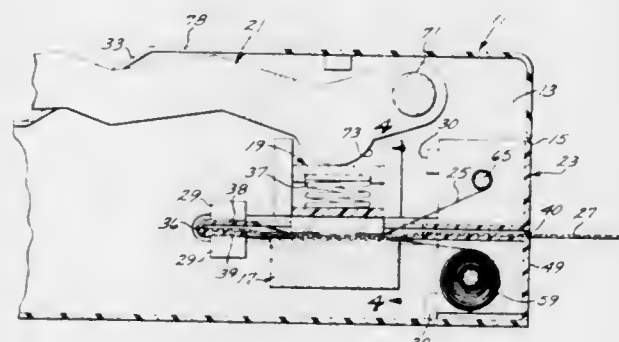
Joseph K. Dikoff, 4 Privateer, Apt. 3, Marina Del Rey, Calif. 90291

Filed Aug. 6, 1973, Ser. No. 386,191

Int. Cl. B41f 31/16

U.S. Cl. 101-336

7 Claims



1. A ribbon cartridge for receipt in a printer having a cartridge-receiving chamber including a print support surface having a print bar spaced from said support surface to form therebetween a ribbon path and having a raised indicia-bearing face shiftable toward said surface, said cartridge comprising: a cartridge frame formed with first and second coextensive webs projecting along said path and spaced apart to form therebetween a paper-receiving slot, said web being formed with confronting windows of sufficient size for passage through of said indicia-bearing face;

feed and take-up rollers mounted on one end of said frame from said respective first and second webs; and an ink ribbon having printing ink on one side thereof and feeding off said feed roller along said first web with the ink side thereof facing said first web and extending to the end of said frame opposite said one end to form a first run then turning back to extend along said second web to form a second run and then feeding onto said take-up roller whereby said cartridge may be inserted in said printer as a unit and said paper received in said slot and said printer actuated to shift said print bar towards said paper to engage said indicia-bearing surface with said second run of said ribbon and urge it through said second window to engage said paper and urge it into contact with said first run of said ribbon and then press said second run, paper and first run together and against said support

surface to print said indicia on the front and back sides of said paper.

3,855,927

INK FOUNTAIN BLADE FOR PRINTING PRESSES

Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

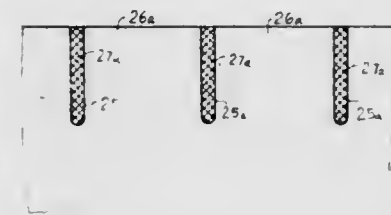
Filed June 12, 1973, Ser. No. 369,154

Claims priority, application Germany, June 13, 1972, 2228625

Int. Cl. B41f 31/04, 9/10

U.S. Cl. 101-350

5 Claims



1. As an article of manufacture, a composite ink fountain blade for cooperation with a form roller of a printing press to control the thickness of ink film in each of a plurality of zones along the length of the blade comprising, in combination, a continuous blade member formed of hard stiff metal in relatively thick section, such blade member having a set of parallel slots formed in the edge thereof and dividing the edge of the blade into adjacent sections corresponding to said zones, a thin continuous cover plate superimposed upon the blade member and having a fraction of the thickness of the blade member, the cover plate projecting slightly beyond the edge of the blade member for engagement with the fountain roller, the cover plate being bonded to the blade member and the slots being fully occupied by an elastic rubber-like material bonded to the edges of the slots and bonded to the cover plate to form a composite blade having smoothly continuous external surfaces free of recesses in which dried ink might collect while permitting movement of each section of the blade member substantially independently of the adjacent sections accompanied by movement and flexing of the thin cover plate, and means including an independently adjustable cam for engaging the underside of each of said blade sections for transmitting adjusting motions from the cam to the cover plate.

3,855,928

METHOD AND APPARATUS FOR PRINTING

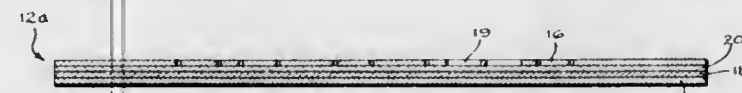
Layton C. Kinney, Chicago, and Edwin H. Tompkins, Riverside, both of Ill., assignors to American Screen Process Equipment Company, Chicago, Ill.

Filed Feb. 27, 1970, Ser. No. 15,153

Int. Cl. B41m 5/00

U.S. Cl. 101-471

9 Claims



1. A method of printing intelligence on a surface of a printing medium comprising steps of: forming a layer comprising a volatilizable colorant and an absorber of radiant energy, positioning said layer between the surface to be printed and a sheet of material having an area transparent to radiant energy and corresponding to the intelligence to be printed, and subjecting said sheet of material and the portion of said layer adjacent said transparent area to a pulse of radiant energy sufficient to cause said colorant in said area to volatilize under the influence of the radiant energy ab-

sorbed by said absorber of radiant energy and to condense on said surface to be printed.

3,855,929

LINEAR SHAPED CHARGE DEVICE

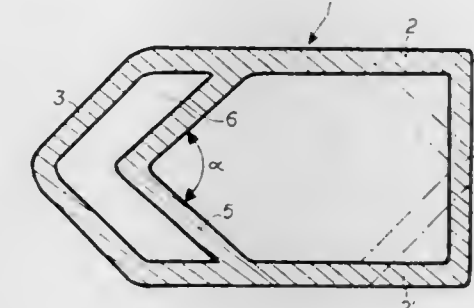
John J. Ridgeway, 403 20th St., Apt. No. 41, Gretna, La. Assignee: Explo-Ridgeway International Limited, St. Helier, Jersey, Channel Islands

Filed Feb. 7, 1972, Ser. No. 224,206

Int. Cl. F42b 3/08

U.S. Cl. 102-24 HC

7 Claims



1. An improved linear shaped charge device comprising a hollow chevron-shaped explosive chamber and integrally formed therewith an air tight, hollow stand-off chamber located adjacent to and below said chevron-shaped explosive chamber, the bottom, interior wall of said explosive chamber being an explosive liner wall, and both hollow chambers being constructed from extrudable metal as a one-piece extrusion.

3,855,930

PERSONNEL DISTRESS SIGNAL

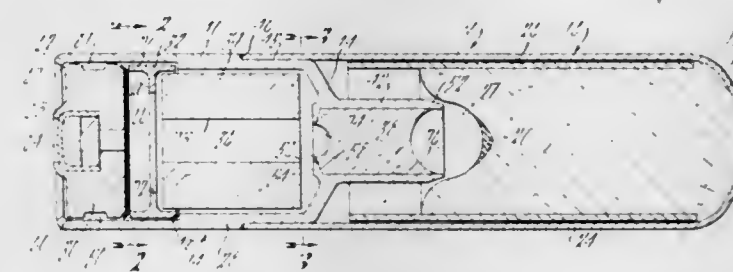
Stephen F. Mulich, San Ramon; Donald R. Duffy, Dublin, and Steven J. Salter, Walnut Creek, all of Calif., assignors to MB Associates, San Ramon, Calif.

Filed Sept. 2, 1970, Ser. No. 68,953

Int. Cl. F42b 13/40

U.S. Cl. 102-34.4

25 Claims



1. In a rocket device, an elongated generally tubular shaped housing, a cylindrically-shaped propulsion charge in one end of said housing, first means for directing the products of combustion of said charge rearwardly of said housing in a manner so as to impart rotary motion to said device as it is propelled forwardly by said charge, signal means in said housing, second means including a combustible material for igniting said signal means at a predetermined time after said propulsion charge has been ignited, and spacing means located between said first means and said charge for operatively supporting said propulsion charge, said spacing means including an annular shaped transversely extending web section and an axially extending flange located about the outer periphery of said web section and defining symmetrical portions on opposite axial ends of said web section, said symmetrical portions defining identically formed first and second recess means located on opposite axially spaced ends of said spacing means, one of said recess means cooperatively receiving and radially securing one end of said charge while the oppo-

site symmetrical portion selectively locates said charge in preselected axially spaced relationship relative to said first means.

3,855,931

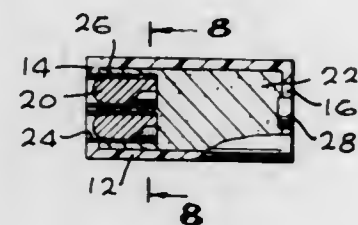
SALVO AMMUNITION FOR MULTIPLE BORE OPEN CHAMBER GUN

David Dardick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 665,139, Sept. 1, 1967, Pat. No. 3,501,998. This application Dec. 30, 1968, Ser. No. 787,754 Int. Cl. F42b 5/02, 9/06

U.S. Cl. 102-38

5 Claims



1. Salvo-type ammunition to be fired in a multiple bore open chamber gun of the character described, comprising: an ammunition round of generally triangular round shape in transverse cross-section having a central longitudinal axis and containing a rear propellant charge and a plurality of forward positionally fixed mutually axially coextensive elongate projectiles having individual longitudinal axes substantially parallel to and uniformly spaced from said central axis of said round, and said projectiles being angularly spaced in a predetermined array about said central axis.

3,855,932

EXPELLING CHARGE IGNITION SYSTEM

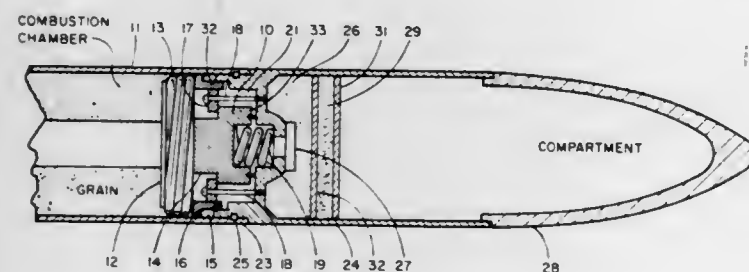
Leland L. Parker, Corona; Jerry O. Jones, Ventura, and Michael R. Osburn, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1973, Ser. No. 408,784

Int. Cl. F42b 15/10

U.S. Cl. 102-49.5

2 Claims



1. A rocket carrying a payload for ejection at a predetermined point along its trajectory comprising:

- a combustion chamber containing rocket propulsion fuel for propelling said rocket along a fixed path;
- a compartment attached to said chamber having one end nearest said combustion chamber filled with an explosive charge for supplying a rapid expanding force;
- shock reducing material positioned adjacent and in contact with said explosive charge for completely enclosing said explosive charge within an end portion of said chamber;
- communicating passageway concentric with said compartment and said combustion chamber;
- a circular plug member having a reduced diameter portion at one end to form a shoulder and a cavity at its other end, said plug member positioned between said chamber and said compartment and operable to open and close said communication passageway;
- a spring housed partially within the cavity in said circular plug and compressed in its closed position; and

heat sensitive restraining collar fixably secured to said compartment and said plug at its reduced diameter portion for holding said plug member in a position to close said passageway;

whereby the completed burning of the propulsion fuel in the combustion chamber causes hot gases to impinge upon the restraining collar allowing the passage of hot gases through the passageway to ignite the expelling charge to forcibly eject the payload from the compartment after the spring pressure overcomes the combustion chamber pressure.

3,855,933

DUAL PURPOSE GRENADE

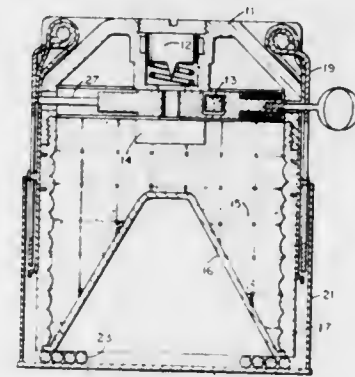
Joseph R. Messineo, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1967, Ser. No. 638,705

Int. Cl. F42b 13/50

U.S. Cl. 102-56

4 Claims



1. A dual purpose grenade which comprises:

- a base;
- a hollow cylindrical sleeve of open end construction secured in axial alignment to said base;
- a spring means mounted in said sleeve against said base;
- a canister having a lower and upper end;
- said lower end of said canister insertably mounted into said sleeve against said spring;
- said canister containing, in series, a firing pin, a detonator, a booster, and a shaped high explosive charge;
- and
- a plurality of spring actuated vanes, each of which having an upper and lower end;
- said upper end of said vanes being pivotally mounted on said upper end of said canister;
- said lower ends of said vanes being restrained in position adjacent to the body of canister by said cylindrical sleeve.

3,855,934

BLIND MATING CONNECTOR FOR MISSILE SECTIONS

Rudolph E. Nett, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 28, 1972, Ser. No. 293,178

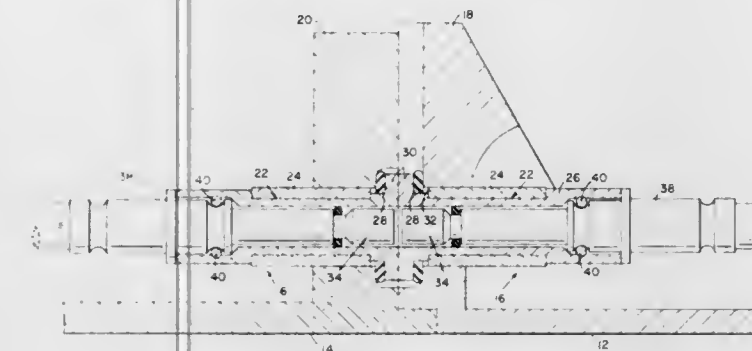
Int. Cl. F42b 3/10

U.S. Cl. 102-70 R

1 Claim

1. Apparatus for transmitting detonation waves between missile sections comprising:
- a. a flanged portion provided on the distal ends of said missile sections and each of said missile sections having a recess therein;
 - b. sleeve assembly means carried in predetermined positions on said flanged portions, whereby upon assembly of said missile sections, said sleeve assembly means in each of said missile sections will be in alignment, said sleeve assembly means consisting of a pair of connector assemblies, each of said connector assemblies including a first outer cylindrical member, a second cylindrical member

disposed within said first cylindrical member, said second cylindrical member including first and second end portions extending through the ends of said outer cylindrical member, said first end portion having a flange thereon, the flange of each said first end portion disposed in abutting relation responsive to assembly of said missile sections; and gasket means disposed between each said flange of said second cylindrical member and each said recess of said missile sections; and



c. explosive means carried in each said connector assembly for initiating said detonation waves, each said explosive means including a mild detonation fuse, an explosive communicating with said mild detonation fuse; and an end cap enclosing said explosive means, said end cap disposed in said inner cylinder adjacent said flanged end thereof, and said mild detonation fuse extending through said second end portion of said inner cylindrical member.

3,855,935

SELF ADJUSTING TRACK EXTENSION

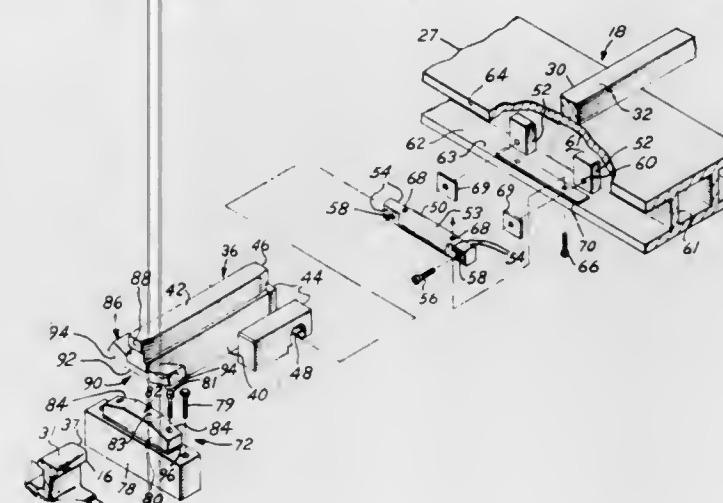
Donald H. Busam, Hometown, Ill., assignor to Interlake Inc., Chicago, Ill.

Division of Ser. No. 213,981, Dec. 30, 1971, Pat. No. 3,732,992. This application Jan. 12, 1973, Ser. No. 323,266

Int. Cl. B60s 13/02; B61j 1/10

U.S. Cl. 104-48

2 Claims



1. A self adjusting member for supporting a first vehicle during transfer of said vehicle to and from a second vehicle, comprising:

- an elongate member having an upward facing supporting surface thereon extending substantially the length of said member;
- pivotal mounting means adjacent one end of said member for pivotally mounting said member about a pivot axis for vertical movement of said elongate member thereabout;
- and
- cam means on said member spaced from said pivotal mounting means toward the other end of said member, said cam means defining a curved surface, said surface being positioned on said member such that a plane perpendicular to said surface is parallel to said pivot axis, said surface urging said member in said vertical move-

ment about said pivot axis when said surface is moved in a direction parallel to said pivot axis and into contact with an abutting element.

3,855,936

MOTORIZED ROLLER-COASTER CAR

Anton Schwarzkopf, Munsterhausen/Schwaben, Germany, assignor to Firma Anton Schwarzkopf, Munsterhausen/Schwaben, Germany

Filed Mar. 29, 1972, Ser. No. 239,016

Claims priority, application Germany, Mar. 30, 1971, 2115394

Int. Cl. A63g 7/00; B61c 9/52, 11/00

U.S. Cl. 104-63

16 Claims



1. A vehicle for a roller coaster provided with a pair of rails forming a guidetrack, comprising:

- a vehicular body;
- a front axle and a rear axle each provided with a pair of rail-engaging wheels;
- an individual bearing plate for each axle provided with two outrigger arms pivotally connected thereto forwardly and rearwardly of the respective axle and generally paralleling same;
- a pair of shock absorbers carried on opposite ends of each outrigger arm inwardly of said rail-engaging wheels for yieldably anchoring each bearing plate to said body to facilitate relative universal movement therebetween, each of said shock absorbers including a dashpot and resilient means in combination therewith; and
- a swivel mounting linking each axle with the respective bearing plate for enabling each axle to rotate freely about a vertical axis with reference to said body.

3,855,937

ELECTRIFIED TROLLEY TRACK

Kent H. Caudill, E. 3618 Tenth Ave., Spokane, Wash. 99202

Filed Mar. 14, 1974, Ser. No. 451,038

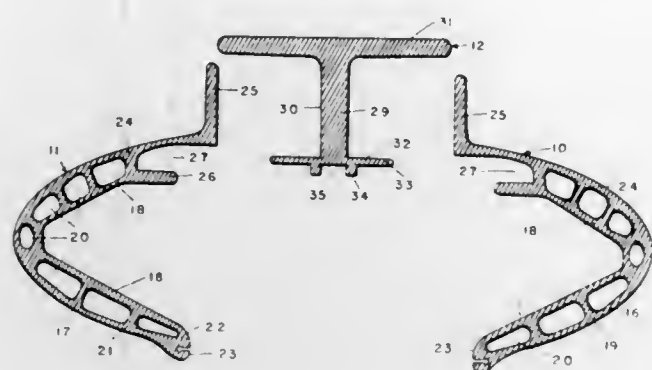
Int. Cl. B61b 3/02

U.S. Cl. 104-94

3 Claims

1. A current carrying tram track unit for wheel supported trams comprising, in combination:
- similar elongate opposed support elements having upper central flanges for joinder to a medial hanger beam and laterally extending portions defining an internal channel having a cross-section with lateral most parts defined as opposed outwardly pointing truncated triangles to accept and rollably support opposed truncated conical wheels of a tram truck;
 - a central hanger beam having a medial portion positioned between the upper medial flanges of the opposed support elements;

fastening means releasably joining the opposed support elements and central hanger beam; and



insulating means electrically isolating the support elements and central hanger beam from each other.

3,855,938

SWITCHES OR POINTS FOR TRACKS FOR VEHICLES

Cesare Peveraro, Milano, Italy, assignor to Societa' Per La Strada Guidata S.R.L., Milano, Italy

Filed Oct. 1, 1973, Ser. No. 402,390

Int. Cl. E01b 25/08

U.S. Cl. 104-130

3 Claims



1. A switch for track for a vehicle having horizontal drive wheels for cooperation with opposing surfaces of the track to guide the vehicle and guide rollers for external surfaces on the track for allowing the vehicle to be driven on only one side, the switch adjacent a straight portion opposite a deviation having

a first guide with an inwardly-facing surface and an outwardly-facing surface, said guide being fixed near the crossing zone of the switch and

a movable resilient tongue fixed by one end remote from the switch zone and arranged to be deformed to provide a deviation; and

a second, fixed, guide with an inwardly-facing surface and an outwardly-facing surface, in correspondence and on the side opposite the crossing, the second guide extending parallel to one end portion of the resilient tongue when the tongue is deviated, the tongue and second guide cooperating to provide an overlap region for facilitating travel of a vehicle onto or off the deviated track, the vehicle being guided first on one side and then on the other.

3,855,939

MAGNETICALLY SUPPORTED SUSPENDED RAILWAY

Werner Woitsch, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

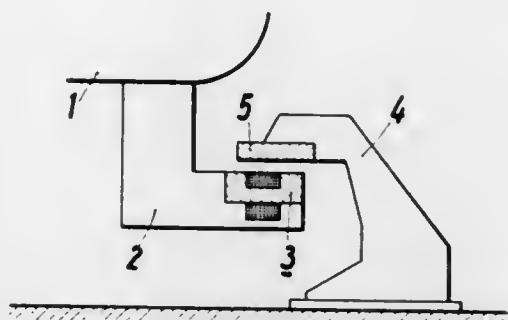
Filed Aug. 10, 1972, Ser. No. 279,733

Claims priority, application Germany, Aug. 14, 1971, 2140874

Int. Cl. B61h 13/08

U.S. Cl. 104-148 MS

4 Claims



1. An electromagnetic suspension system for vehicles, comprising:

electromagnetic means comprising two rows of electromagnets arranged side-by-side on opposite sides of said vehicle and extending in a horizontally aligned relation;

a pair of magnetically conductive rails on opposite sides of said vehicle, each of said electromagnets being opposed by one of said magnetically conductive rails, each of said magnetically conductive rails being narrower in width than the combined width of said rows of said electromagnets, said electromagnets being adapted to freely suspend said vehicle and to define a lateral guidance means for maintaining an equal spacing of said vehicle from said pair of said magnetically conductive rails, said electromagnets lie in pairs opposite one another on said both sides of said vehicle and being symmetrically arranged relative to the longitudinal axis of said vehicle, each of said electromagnets being magnetically asymmetrically arranged relative to each of said magnetically conductive rails when said vehicle is equidistant from said magnetically conductive rails; and

control means for energizing the electromagnets of one row greater than in the other row.

3,855,940

BOGIE LINEAR INDUCTOR SUSPENSION ASSEMBLY

Georges Pinto, Le Creusot, France, assignor to Creusot-Loire, Paris, France

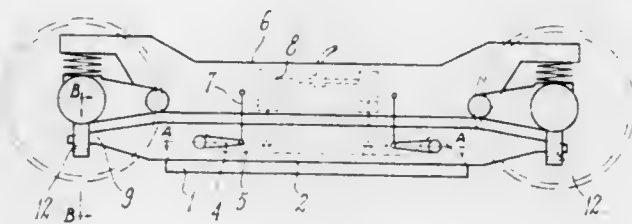
Filed Nov. 1, 1972, Ser. No. 302,679

Claims priority, application France, Nov. 12, 1971, 71.40485

Int. Cl. B61c 11/00, 15/04; B61h 7/08

U.S. Cl. 105-77

4 Claims



1. A suspension for a Foucault-current linear-inductor on a railway vehicle bogie having axle boxes and a frame comprising a Foucault-current linear inductor, means for the transmission of forces from said inductor to the bogie frame and means for displacing said inductor in a vertical plane passing through an adjacent rail between an upper inoperative position and a lower operative position, a beam supporting said inductor located in a vertical plane substantially passing through the

bogie axle boxes, arm means connected to said beam, link means connecting said arm means to the bogie frame and guide means in the axle boxes for centering and supporting said beam in the lower operative position of said inductor.

3,855,941

MONO-RAIL TROLLEY

Hans-Georg Fromme, Wetzlar, and Erich Lehberger, Dornholzhausen, both of Germany, assignors to R. Stahl Aufzuge GmbH, Neuhausen auf den Fildern, Germany

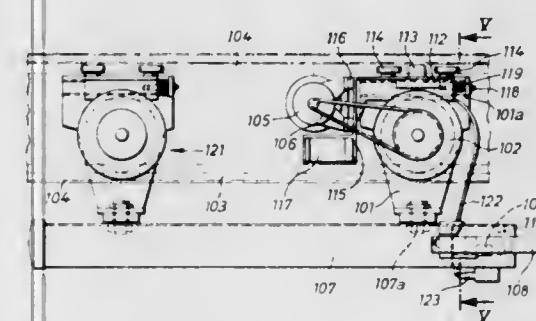
Filed July 25, 1973, Ser. No. 382,471

Claims priority, application Germany, July 25, 1972, 2236509; June 22, 1973, 2331656

Int. Cl. E04h 3/04

U.S. Cl. 105-150

8 Claims



1. A trolley for a substantially C-shaped mono-rail having current conducting bars in the upper portion of the rail, the trolley comprising

- a motor,
- a gear mechanism in driving connection with said motor,
- a carrying wheel adapted to support the trolley on the running surface of the mono-rail, said carrying wheel being driven by said gear mechanism,
- a shackle to which said motor, said gear mechanism and said carrying wheel are mounted for forming a subassembly which may be separately handled,
- a carrier plate detachably mounted on the upper portion of said shackle, and
- current conducting means for transmitting the current from the current conducting bars by way of plug-in connections to the motor and to further electric components, said current conducting means and said plug-in connections being part of said carrier plate;

the trolley being safely retained in said mono-rail when said carrier plate is mounted on said upper shackle portion and being easily removable from said mono-rail when said carrier plate is detached from said upper shackle portion and said plug-in connections are disconnected so that said shackle and said carrier plate may be handled as separate units.

3,855,942

SNUBBED RAILWAY TRUCK BOLSTER

Harry W. Mulcahy, Lansing, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sept. 28, 1973, Ser. No. 401,833

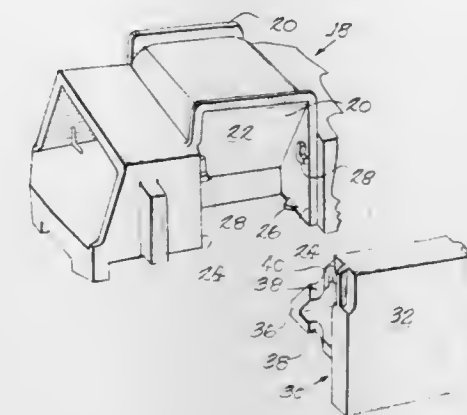
Int. Cl. B61f 5/12, 5/24, 5/50

U.S. Cl. 105-197 DB

4 Claims

1. In a railway car truck including a side frame having a window, a bolster having one end resiliently supported in said window, said bolster having a pocket adjacent said side frame, and a friction shoe receivable in said pocket for snubbing engagement with said side frame and said bolster, the improvement wherein said bolster and said friction shoe include cooperative means comprising a lug extending from said bolster into said pocket and an indentation in said friction shoe

for receiving said lug, said lug and indentation being in alignment for insertion of said friction shoe into said pocket and



3,855,943

DISPLAY RACK CONSTRUCTION

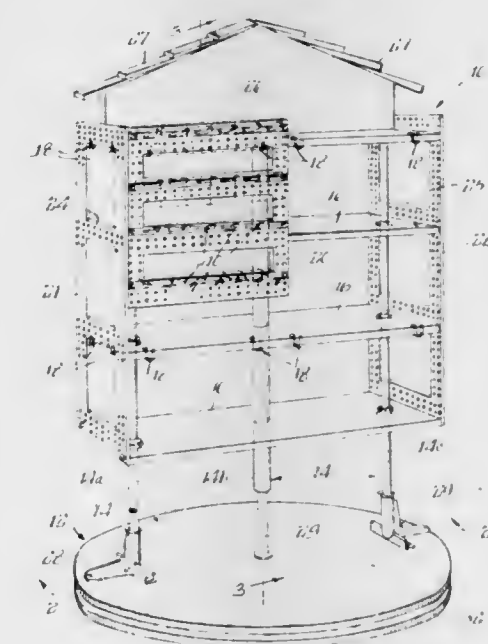
Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson, Co., Sterling, Ill.

Filed Aug. 2, 1973, Ser. No. 385,033

Int. Cl. A47b 5/00, 57/100

U.S. Cl. 108-28

6 Claims



1. A display rack construction of the type to display a plurality of different kinds of articles, said display rack construction comprising in combination: a support base to be positioned over a floor area at which the display rack is to be located for displaying a plurality of different kinds of articles, standard means extending upwardly from said support base a predetermined height, shelf means extending transversely of and connected to said standard means, said shelf means including a plurality of apertures formed near the peripheral portions thereof, said apertures having the axes thereof extending vertically and being sized to receive article support bracket means, and article support bracket means having a depending portion insertable into said apertures formed in the periphery of said shelf means, said article support bracket means further including an extended portion extending outwardly of said shelf means, said extended portion and said depending portion being integrally connected by a bight portion which is carried at the top marginal edge surface of said shelf means, said extended portion extending from near the bottom edge of said shelf means.

3,855,944

PROTECTIVE BASE PLATES FOR PALLET TIERING FRAMES

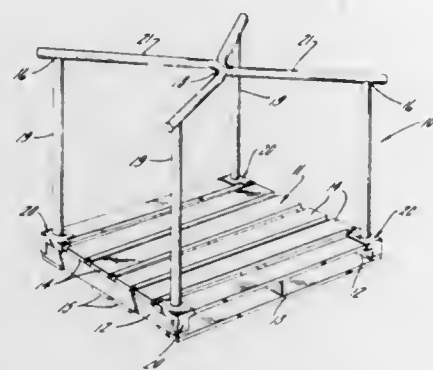
Leroy F. Skubic, La Port, and Peter P. Blozis, Beverly Shores, both of Ind., assignors to The Paltier Corporation, Michigan City, Ind.

Filed Nov. 17, 1972, Ser. No. 307,424

Int. Cl. B65d 19/44

U.S. Cl. 108—55

8 Claims



1. In a pallet tiering frame with upright posts for mounting on a pallet having parallel stringers and a plurality of spaced deck boards secured to said stringers transversely thereof, a base plate connected at the lower end of one of said frame posts for detachably securing said post to said pallet comprising, in combination,

- a flat plate secured at the lower end of said post for positioning on one of said deck boards at a location where said deck board traverses an end of one of said stringers,
- a depending flange extending downwardly from said flat plate for covering the interface line of said deck board and stringer end and at least a portion of the end face of said stringer end,
- a first substantially L-shaped flange having a vertical plate and a horizontal plate both extending inwardly from said depending flange for positioning against the side of said stringer and the immediately adjacent underside of said deck board respectively to cover the interface between said stringer side and deck board underside, and
- a second flange integrally formed on said base plate for positioning against the side of said stringer opposite said first L-shaped flange.

3,855,945

WOOD AND METAL PALLET

Roger V. Sebilleau, "Kerheol", Avessac (Loire Atlantique), and Kurt I. Eklund, 24, rue de la Guichardais, Redon (Ille et Vilaine), both of France

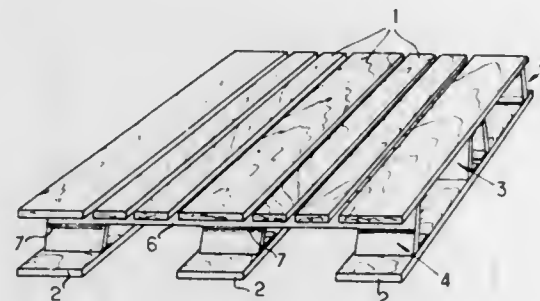
Filed May 12, 1972, Ser. No. 252,660

Claims priority, application France, May 12, 1971, 71.17079

Int. Cl. B65d 19/38

U.S. Cl. 108—57

2 Claims



1. In a partially wood and partially metal pallet adapted for support by the tines of a forklift, said pallet including spaced and substantially parallel upper and lower platforms of wood and three substantially parallel and rigid metal cross beams disposed between and fixedly interconnecting said upper and

lower platforms, two of said cross beams comprising elongated end beams disposed adjacent and extending substantially along the opposite edges of said pallet, and said other cross beam comprising a central beam disposed between said two end beams and extending substantially along the median axis of said pallet, comprising the improvement wherein said center beam comprises two spaced and substantially parallel cross bars located on opposite sides of said median axis and spaced a predetermined distance from each other, each of said cross bars being elongated and extending between and fixedly connected to the upper and lower platforms, each of said cross bars and end beams being identical and comprising an elongated metal member extending continuously throughout the length of the pallet and having substantially parallel upper and lower flanges and a single platelike web portion extending transversely between said flanges, the upper and lower flanges being fixed to the upper and lower platforms respectively, each of said cross bars and end beams having a pair of longitudinally spaced opening means extending transversely through the respective web portion thereof, the opening means in the end beams and cross bars being aligned to permit the tines of a forklift to be inserted between the upper and lower platforms of the pallet in a direction substantially perpendicular to the longitudinally extending direction of the cross beams, and each said opening means comprising a recess formed in each said elongated metal member and extending upwardly from the respective lower edge thereof and terminating at a location spaced downwardly from the upper flange of the respective metal member.

3,855,946

ADJUSTABLE LEG STRUCTURE

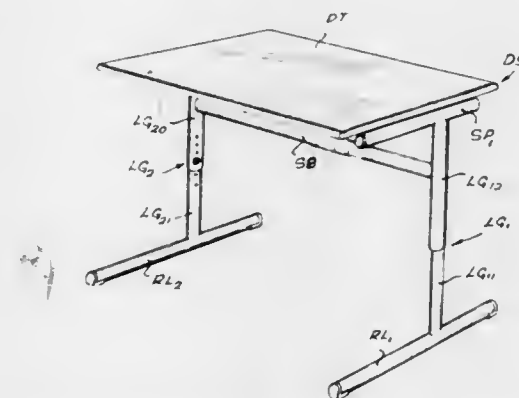
Emmett Robert Bales, North Manchester, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,865

Int. Cl. A47b 9/00; F16m 11/26

U.S. Cl. 108—144

5 Claims



1. An article of furniture, such as a desk or table, comprising a table top, at least one horizontal tubular support to which the table top is affixed, at least one adjustable leg connected to each horizontal support, each leg being composed of upper and lower hollow non-circular cylindrical tubular leg segments which are of the same shape but of different cross-sectional dimensions so that the end of the smaller dimensioned leg segment is the lower segment and is telescopically slidable within the other leg segment thereby forming an elongated substantially vertical adjustable composed leg, each leg segment having a plurality of unthreaded apertures spaced from each other by a spacing which is the same for both leg segments and vertically arranged in alignment, and clamping means for fastening each pair of telescopically arranged leg segments to each other so that they will be sturdy and substantially free of play, said clamping means comprising a relatively thick L-shaped bar of uniform thickness, said bar being oriented in its upright position and proportioned so that its horizontal branch is slightly smaller in length than the internal cross-sectional dimension of the lower leg segment within which it is disposed and its vertical branch is elongated,

held and permanently affixed substantially entirely within the lower leg segment and parallel to the apertured inner wall of the lower leg segment, the vertical elongated branch of the bar having a plurality of threaded apertures which are spaced equally with those of both leg segments and vertically arranged in alignment and adjacent the apertures of both leg segments, and a threaded bolt or bolts each having a tapered unthreaded segment between its threaded segment and its head which is inserted through overlapping apertures of both leg segments and threadably engaging a selected threaded aperture in said bar.

3,855,947

BASE CONSTRUCTION HAVING SELF-LEVELLING CAPABILITY

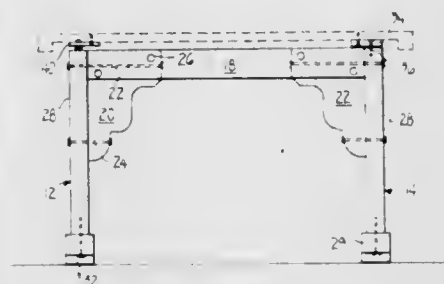
James M. Henley, 1620 Escobita, Palo Alto, Calif. 94306, and Earl C. Thordsen, 130 Fawn Ln., Portola Valley, Calif. 94025

Filed Oct. 10, 1972, Ser. No. 296,265

Int. Cl. A47b 13/00

U.S. Cl. 108—161

6 Claims



1. A base for supporting a structure on a generally horizontal floor surface comprising first and second spaced apart rigid planar legs, said legs each having an upper edge and two laterally spaced floor surface contacting portions opposite said upper edge, first and second elongate beams spanning the space between said legs, means for rigidly fixing the longitudinal ends of said beams to said legs adjacent said upper edge so that said legs are supported in parallel spaced apart relation and so that substantial medial portions of the beams intermediate said longitudinal ends are unrestricted portions, said beams being parallelly spaced apart, said beams having a thickness to width ratio such that said unrestricted portions of said beams are flexually deformable in torsion with respect to the longitudinal axes thereof, so that said floor surface contacting portions can yield to conform to uneven floor surfaces, the width dimension of said beams being substantially vertical, and means for attaching said structure to said upper edges of said first and second legs.

3,855,948

FURNITURE WITH LOG-CABIN EFFECTS

Robert Salleroli, 351 E. 84th St., New York, N.Y. 10028

Filed Dec. 10, 1973, Ser. No. 423,246

Int. Cl. A47b 13/00

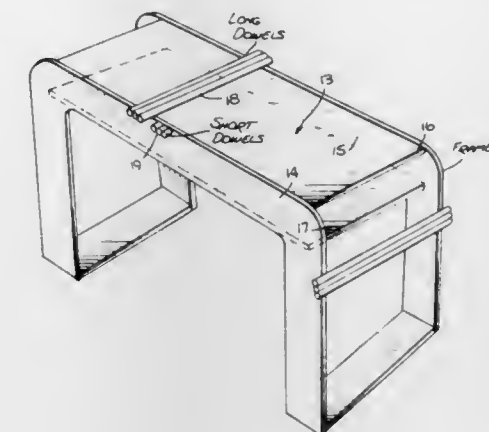
U.S. Cl. 108—161

7 Claims

1. An article of furniture having a predetermined shape and exhibiting log-cabin effects, said article comprising:

- A. a three-dimensional skeleton formed by at least one pair of spaced flat panels in parallel relation which are contoured and are joined together to create a structure whose profile conforms to the shape of the article, the spaces between the edges of the contoured panels defining the sides of the skeleton, the surfaces of the panels defining the faces of the skeleton,
- B. a phalanx of long dowels longitudinally bonded to the sides of the skeleton, the extremities of the long dowels extending beyond the edges of the skeleton to form a protective bank outlining the boundaries of panel faces, and

C. a cluster of short dowels covering said panel faces, the inner ends of said short dowels being bonded to said faces, the length of the short dowels being equal to the



3,855,949

SECURITY BOX

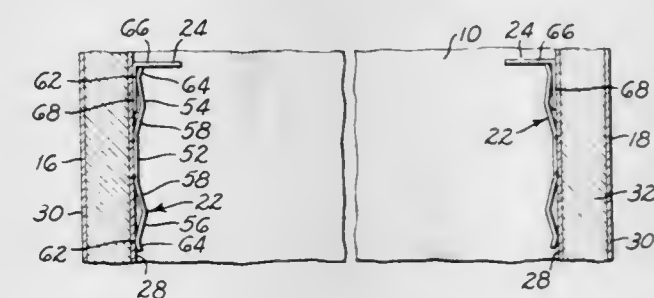
Burnham Foster, 820 S. 2nd St., Alhambra, Calif. 91801, and Morton Schneider, 747 Chimineas Ave., Tarzana, Calif. 91356

Filed Mar. 28, 1973, Ser. No. 345,746

Int. Cl. E05g 3/00

U.S. Cl. 109—23

1 Claim



1. In a security box of the type having a casing portion with an upright back panel, two opposing spaced apart horizontal, upper and lower side walls, and two opposing spaced apart vertical side walls, the four side walls extending forwardly from the back panel to form a storage chamber with a forward opening, the combination of:

- a. a pair of mounting clips fixedly attached in the storage chamber to the vertical side walls, respectively, said mounting clips each having identical upper and lower retainer legs;
- b. a pair of mounting brackets each having two arms, the first of which is removably engageable with said upper retainer leg of said mounting clip when the security box is in its normal position and which is removably engageable with said lower retainer leg when the security box is in an inverted position;
- c. portable storage means resting in said storage chamber on the second of said arms of each of said brackets;
- d. door means attached along one of said vertical side walls for opening and closing said storage chamber;
- e. each of said brackets constituting an angle member having said first arm perpendicular to said second arm, with either of said first and second arms being engageable by either of said upper and lower retainer legs of said mounting clips;
- f. said mounting clips each including a unitary spring clip having a flat central portion fixedly attached to one of

- said vertical side walls, with said upper and lower retainer legs biased toward said one vertical side wall;
- g. said retainer legs having transverse corrugations and each including an end bent away from said side wall for allowing entry of said first arm of said bracket and for supporting said second arm of said bracket; and
- h. laterally protruding shoulder means between each of said ends of said retainer legs and said central portion, and formed by one of said corrugations, for holding said first arm of said bracket against one of said vertical side walls.

3,855,950

AUTOMATIC LOADING AND ASH REMOVAL SYSTEM FOR INCINERATORS

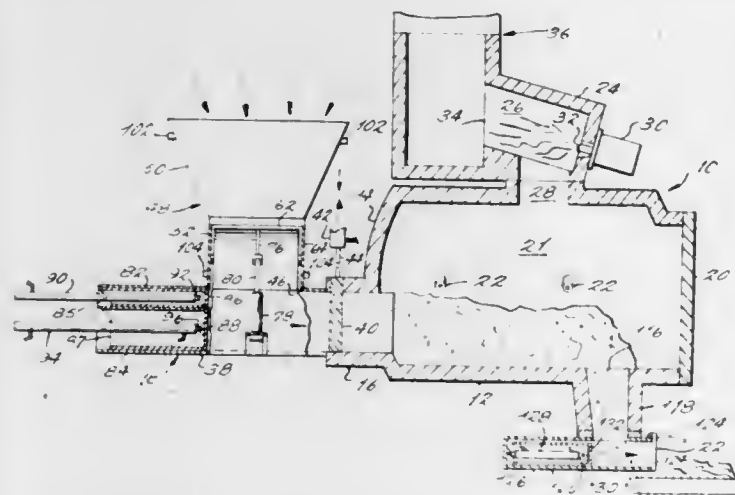
Carroll T. Hughes, Jr., and James K. Fishback, both of Richmond, Va., assignors to Consumat Systems, Inc., Richmond, Va.

Filed Oct. 10, 1973, Ser. No. 405,079

Int. Cl. F23g 5/12

U.S. Cl. 110-8 C

24 Claims



1. A controlled air incinerator comprising:
- a casing defining at least a main combustion chamber;
- loader means for automatically loading said combustion chamber with waste material without materially affecting burning conditions within said main combustion chamber, said loader means including an elongated chute having one end opening to a lower portion of the combustion chamber and having an opening in its upper portion thereof remote from its opening to the combustion chamber for receiving waste material, a fire door positioned in a portion of said chute intermediate the waste receiving opening of said chute and the opening of said chute to said combustion chamber, said fire door being moved between a closed position across said chute and an opened position out of said chute, an upper elongated pusher member and a lower elongated pusher member in said chute and having a combined pushing area substantially equal to the cross-sectional area of said chute, at least said lower pusher member having a longitudinal length at least as great as the length of the waste receiving opening in said chute;
- a hopper mounted on said loader chute over the waste receiving opening therein for feeding waste material by gravity to said chute in front of said pusher members;
- a first means to reciprocate said lower pusher member between a retracted position adjacent the waste receiving opening's rearward edge and an intermediate position where said lower pusher member is beneath the waste receiving opening in said chute when said upper pusher member is retracted while said door is open;
- and means to simultaneously reciprocate said upper and lower pusher members when said hopper is empty between a retracted position adjacent the waste receiving opening's rearward edge and an extended position at least into the opening of the chute into the combustion chamber to entirely clear said chute.

3,855,951

CYCLONE INCINERATOR

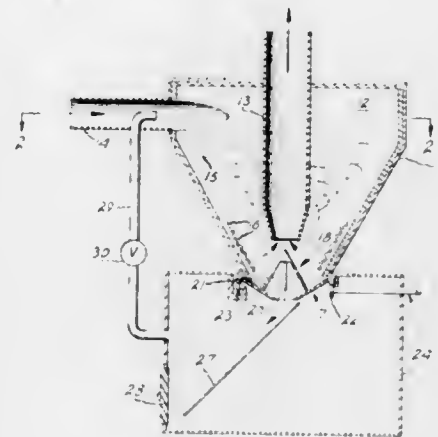
Walter B. Giles, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,211

Int. Cl. F23g 5/00

U.S. Cl. 110-8 R

11 Claims



1. A cyclone incinerator for solid waste comprising
- a vertically oriented cyclone separator having a closed upper end and an open lower end, a tangential inlet duct adjacent the upper end for admitting pneumatically propelled miscellaneous solid waste, and a centrally located exhaust duct extending vertically through said separator and out the upper end.
- inclined kiln means substantially enclosing the lower end of said cyclone separator for supporting combustible components of the solid waste for further burning and for separating non-combustible and other components to drop by gravity into a residue chamber, and
- a recirculation line connected between said residue chamber and inlet duct for recirculating unburned combustible particulates.

3,855,952

FURNACE COVER

Karl Sanderson, King City, Ontario, Canada, assignor to Lee Wilson Engineering Company of Canada Ltd., Downsview, Ontario, Canada, a part interest

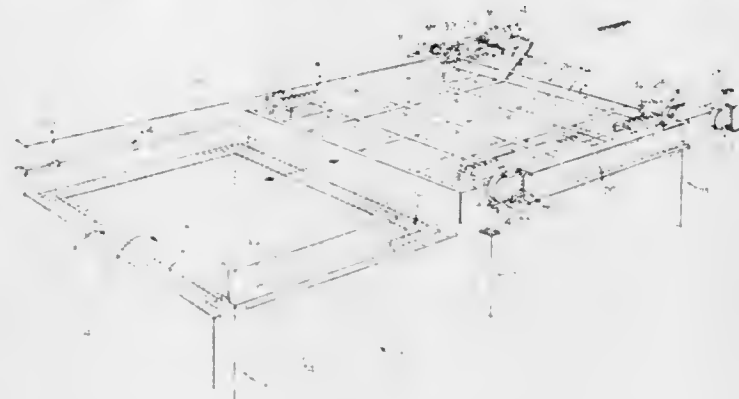
Filed Nov. 8, 1973, Ser. No. 413,784

Claims priority, application Canada, Oct. 2, 1973, 182448

Int. Cl. F23m 7/00

U.S. Cl. 110-173 A

9 Claims



1. In an industrial furnace having an upwardly opening well;
- a pair of spaced apart, parallel, substantially horizontal rails;
- a cover located between the rails and carrying journaled roller members movable along the rails;
- at least one rack fixed on the cover;
- a pinion engaging the rack; and
- fixed drive means connectable to rotate the pinion whereby the cover is movable laterally to close and open the well of the furnace.

3,855,953

CONTROLLED POPULATION PLANTER SYSTEM

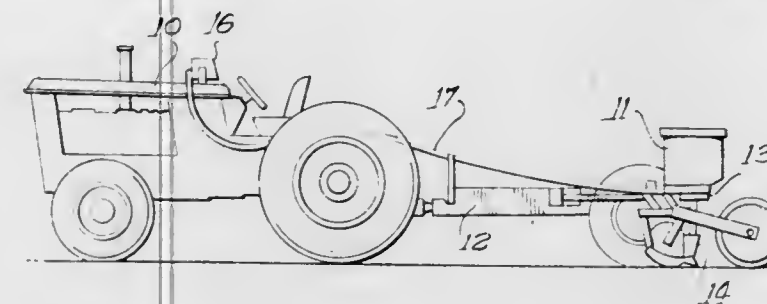
George H. Fathauer, Decatur, and Wesley J. Bachman, Mount Zion, both of Ill., assignors to Dickey-John Corporation, Auburn, Calif.

Filed June 18, 1973, Ser. No. 370,773

Int. Cl. A01c 7/18

U.S. Cl. 111-1

7 Claims



1. In a controlled population planter system, the combination including: a hopper for containing a quantity of seed, said hopper adapted to be connected to a vehicle for transport over the ground, a seed dispensing means associated with said hopper for planting the seeds as the hopper is transported over the ground, variable speed drive means, coupled to said seed dispensing means, seed detector means connected to said seed dispenser means for producing a first signal which corresponds to the number of seeds actually dispersed, distance measuring means for producing a second signal which corresponds to a predetermined distance travelled by said hopper over the ground, circuit means for receiving said first and second signals and producing a control signal in response thereto, selector means coupled to said circuit means for setting a predetermined seed population per unit area of ground over which said hopper is transported, and control means, coupled to said variable speed drive means and to said circuit means for receiving said control signal therefrom, said control means adapted to vary the speed of said variable speed drive means in response both to changes in the number of seeds actually planted and to variations in the rate of sensing said second signals from said distance measuring means, whereby a substantially desired density of seed population is maintained in accordance with the setting of said selector means.

3,855,954

JIB CRANES

Donald J. Quick, Queensland, Australia, assignor to International Harvester Company, Chicago, Ill.

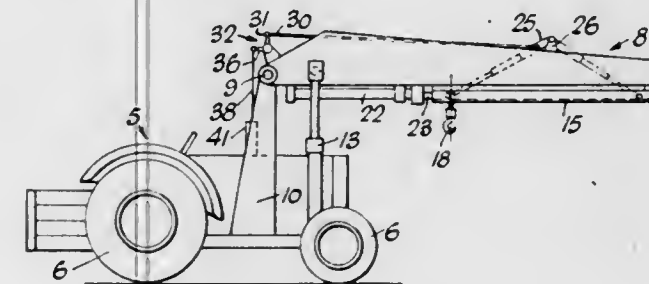
Filed Sept. 17, 1973, Ser. No. 398,917

Claims priority, application Australia, Sept. 21, 1972, 519/72

Int. Cl. B66c 23/00

U.S. Cl. 212-8 R

2 Claims



1. In a crane having a jib pivotally mounted on a frame for pivotal movement about a horizontal axis, a hook supported on the jib, means for moving the hook along the jib for positioning the hook at a preselected horizontal distance from the axis, means for pivoting the jib about the axis, and means for actuating the hook moving means, wherein the improvement comprises:

- a first link having a plurality of substantially straight telescopic segments and being pivotally connected at the opposite ends thereof respectively to the jib and to the moving means;
- a second link having a plurality of crank arms and being pivotally mounted between the arms on the jib adjacent the axis;
- a third link having a substantially straight and rigid body and being pivotally connected at one end to one of the segments of the first link and pivotally connected at the opposite end to one of the crank arms of the second link; and
- a fourth link having a substantially straight and rigid body and being pivotally connected at one end to another crank arm of the second link and pivotally connected at the opposite end to the actuating means for automatically operating the actuating means in response to pivotal movement of the jib for maintaining the hook at the preselected horizontal distance from the axis.

3,855,955

SEWING MACHINE APPARATUS

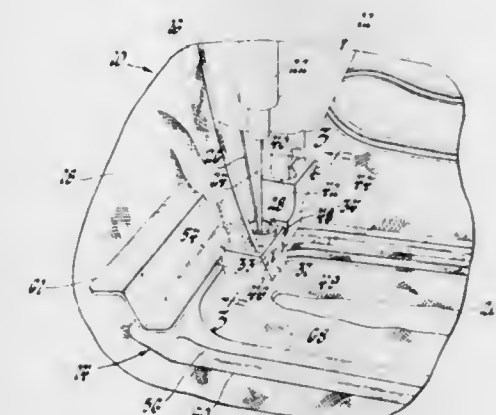
Karl H. Strang, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1974, Ser. No. 474,889

Int. Cl. D05b 35/06

U.S. Cl. 112-152

2 Claims



1. A sewing machine apparatus for sewing an elongated cloth strip onto a piece of cloth in a generally U-shaped configuration, the apparatus comprising, a sewing machine including a foot and a vertically reciprocal needle guided by the foot, a cloth guide for guiding the cloth strip below the needle, means rotatably supporting the cloth strip guide on the foot about the vertical axis of the needle and the cloth strip guide having a slide portion, a cloth clamp assembly including a pair of generally U-shaped clamp members connected to each other at the open ends thereof so as to be movable between a nonclamping position and a generally coplanar clamping position, the piece of cloth being clamped between the clamp members in the clamping position so as to leave an edge thereof exposed for sewing, and a U-shaped slide surface on the clamp assembly which is engaged by the slide portion of the cloth strip guide during relative movement between the sewing machine and the clamp assembly in the U-shaped configuration in which the cloth strip is to be stitched to the piece of cloth, this engagement controlling the rotational position of the cloth strip guide with respect to the sewing machine foot so as to thereby guide the cloth strip as it is stitched to the exposed edge of the piece of cloth within the U-shaped configuration of the clamp assembly.

3,855,956

SEWING MACHINE STITCH PATTERN GENERATION FROM STITCH DATA STORED IN STATIC MEMORY

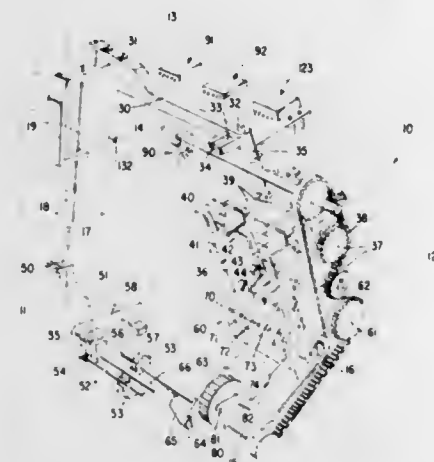
John W. Wurst, Dover, N.J., assignor to The Singer Company, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,780

Int. Cl. D05b 3/02

U.S. Cl. 112-158 E

8 Claims



1. In a sewing machine having a stitch forming instrumentality variable in position over a predetermined range of positions between successive stitches to produce a pattern of stitches, a driving device operatively connected to impart movement to said stitch forming instrumentality over said predetermined range of positions in response to stitch pattern signals, a pulse generator driven in timed relation with said sewing machine for producing an effective timing pulse between stitches, a counter responsive to said timing pulses from said pulse generator for producing output control signals in a progressive numerical code, a static memory means for storing data groups capable of being summed every combination of which is unique, means responsive to said progressive numerical code of said control signals for extracting said data groups from said static memory, means for summing each data group extracted from said static memory, and means effective to impress on said driving device a stitch pattern signal corresponding to the summation of each different data group extracted in response to said progressive numerical code of control signals.

3,855,957

SELF-PROPELLED BOAT

William J. Gross, 29105 Indian Valley Rd., Palos Verdes Peninsula, Calif. 90274

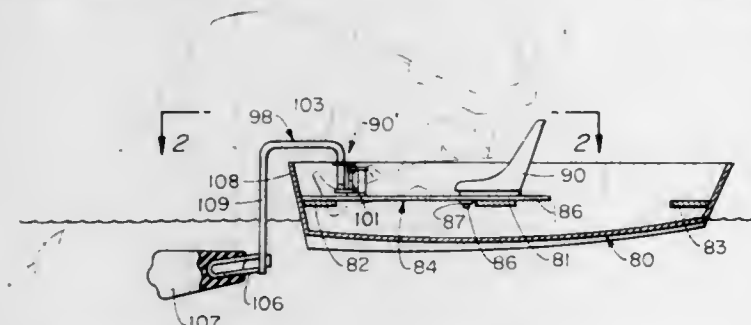
Division of Ser. No. 35,321, May 7, 1970, Pat. No. 3,695,211.

This application July 20, 1972, Ser. No. 273,380

Int. Cl. B63h 1/36

U.S. Cl. 115-28 R

6 Claims



1. A mechanism for a self-propelled boat comprising: a propelling mechanism and an occupant's seat; frame means for supporting said propelling mechanism; an upright support means attached to said frame means; said propelling mechanism comprising a propulsion shaft carrying a cross member at one end and a propulsion fin

at its other end, said propulsion fin being entirely constructed of a flexible material having memory to return to a straight configuration when at rest; pivotal mounting means for pivotally supporting said shaft on said upright support means; foot engaging areas at opposite ends of said cross member for angular movement of said propulsion shaft by the occupant seated in said seat in order to move said fin angularly through the water and propel the boat; said ends of said propulsion shaft are connected together by a substantially horizontal shaft section, said one end extending downward to connect with said upright support means and said other end extending downward and including connecting means for connecting with said fin below the water surface; said propulsion fin having a cavity; and said connecting means comprising a projection, said projection extending into said cavity, the elongated axis of said projection being substantially parallel to said horizontal shaft section.

3,855,958

SPEEDOMETER ATTACHMENT WHICH PERMITS A DIRECT READING IN KILOMETERS PER HOUR FROM A MILES PER HOUR SCALE AND CONVERSELY

David Briscoe, Willemer Strasse 13, Frankfurt/Main, Germany

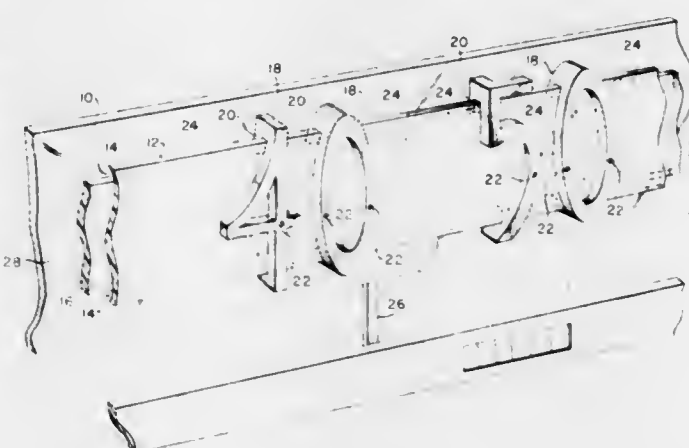
Filed Mar. 1, 1972, Ser. No. 230,560

Claims priority, application Germany, Mar. 4, 1971, 7108191[U]

Int. Cl. G01p 1/06

U.S. Cl. 116-116

10 Claims



1. A kit for permitting the direct reading in a first unit length per unit time from a basic speedometer scale including an indicator and dial reading in a second unit length per unit time at least one of said second unit length and said second unit time being different from a corresponding one of said first unit length and said first unit time, said kit comprising an elongate member attachable to a basic speedometer scale, said elongate member having portions forming at least one elongate guideway for receiving indicia members moveable longitudinally of said elongate member, indicia members including a portion engageable in said elongate guideway to adjustably secure said indicia members on said elongate member, said indicia members being adjustably moveable along said elongate guideway, means for securing said elongate member to said basic speedometer scale such that said elongate member is superposed over the dial of said basic speedometer scale, and means for fixing the position of said indicia members in said guideway whereby, when said elongate member is attached to said basic speedometer scale, said indicia members can be fixed in position to read in said first unit of length per first unit of time where said scale reads in said second units of length per said second units of time.

3,855,959

INDICATING PUSH BUTTON FOR PUSH BUTTON SWITCHES

Klaus Hinze, Berlin, Germany, assignor to Firma Rudolf Schadow KG, Berlin, Germany

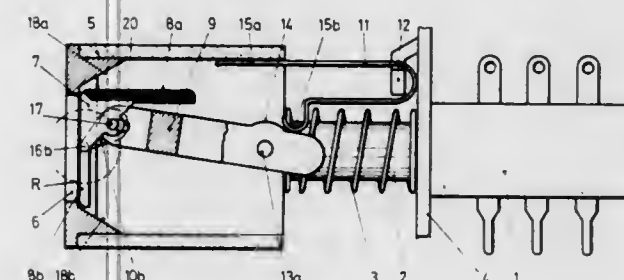
Filed July 25, 1973, Ser. No. 382,376

Claims priority, application Germany, Aug. 2, 1972, 2238091; Dec. 12, 1972, 2260733

Int. Cl. G09f 9/00

U.S. Cl. 116-124 R

10 Claims



1. An indicating push button for a push button switch, said button comprising:
a housing having a front end with a window therethrough through which indicating surfaces in the housing may be viewed;
a drive mechanism in said housing comprising lever means; two alternately visible indicating surfaces pivotally attached to said lever means and being pivotable so that the one or the other of said surfaces becomes visible through said window;
said lever means having a first pivot axis fixedly located in said housing and about which said lever means is pivotable with respect to said housing, and means in said housing to pivot said surfaces upon pivoting of said lever means;
force applying means in said housing positioned to apply force upon said lever means to pivot it about said first axis; said force applying means being held stationary relative to motion of said housing;
said lever means being movable past said force applying means and said force applying means being positioned such that said force applying means applies force to said lever means first on one side of said first axis and then on the other side of said first axis, causing said lever means to pivot in one direction and in the opposite direction as said housing is shifted past said force applying means.

3,855,960

CONTROL DEVICE HAVING IMPROVED ADJUSTMENT INDICATING MEANS AND PARTS THEREFOR OR THE LIKE

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 25, 1973, Ser. No. 382,492

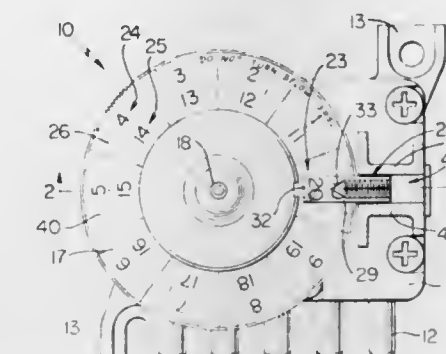
Int. Cl. G09f 9/00

U.S. Cl. 116-124 R

15 Claims

1. In a control device having an adjustable means and a rotatable member for adjusting said means as said member rotates, the improvement comprising indicating means operatively associated with said rotatable member for indicating the adjustment being made to said adjustable means as said rotatable member is rotated more than 360°, said rotatable member having opposed sides, said indicating means comprising scale means carried on one of said sides of said rotatable member and a pointer means carried by said control device and having a part disposed over said one side of said rotatable member and cooperating with said scale means, said rotatable

member having drive means on the other of said sides thereof, said pointer means having driven means disposed over said



other side of said rotatable member and operatively interconnected to said drive means to be driven thereby.

3,855,961

INDICATING PUSH BUTTON MECHANISM

Rudolf Schadow, Königsbacher Zeile, 23, Berlin 28, Germany

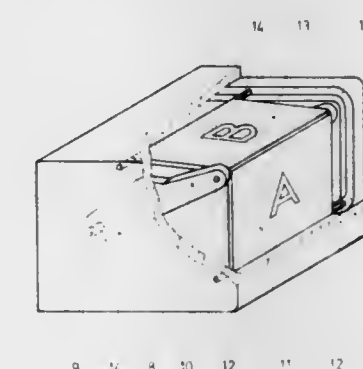
Filed Apr. 11, 1973, Ser. No. 350,031

Claims priority, application Germany, Apr. 27, 1972, 2220812

Int. Cl. G09f 9/00

U.S. Cl. 116-124 R

24 Claims



1. An indicating push button mechanism having two indicator plates for indicating two different button positions, comprising:
a hollow push button housing; said housing having a viewing window therethrough through which the interior of said housing may be viewed;
two viewable plates in said housing for being moved such that a respective one of said plates is viewable through said window at each button position;
a lever in said housing; said lever being so supported in and being so movable in said housing that a portion of said lever is movable in said housing behind said viewing window and in a first direction across said window and also in a second direction opposite said first direction;
at least one of said plates being connected to said lever portion and being movable by said lever portion across said window in said first direction to a first position at which said first plate is oriented to be viewable through said window and in said second direction to a second position at which said first plate is moved away from said window and is oriented so as not to be viewable through said window;
said second plate being connected to said first plate such that one of said lever and said first plate selectively moves said second plate to a third position at which said second plate is not viewable through said window and at which said first plate is in said first position, and moves said second plate to a fourth position at which said second plate is viewable through said window and at which said first plate is in its said second position;

lever moving means in contact with said lever; said lever moving means being shiftable with respect to said lever upon movement of said housing with respect to said moving means; said housing being movable with respect to said moving means; said moving means and said lever being so shaped and positioned with respect to each other that said lever is moved in said first direction to a first terminal position of said lever which is at said first plate position through shifting of said housing in a third direction with respect to said moving means and such that said lever is moved in said second direction to a second terminal position of said lever which is at said first plate second position through shifting of said housing with respect to said lever moving means in a fourth direction with respect to said moving means and opposite said housing motion third direction.

3,855,962

CHANNEL INDICATING FOR TELEVISION RECEIVERS

Kosaku Uchida, Neyagawa; Susumu Ide; Toshiji Kanamaru, both of Osaka, and Sadafumi Kitamura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

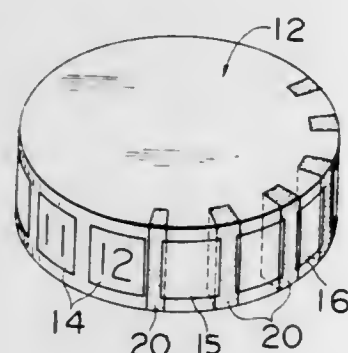
Filed Sept. 13, 1971, Ser. No. 179,851

Claims priority, application Japan, Sept. 14, 1970, 45-91427

Int. Cl. H03j 1/02

U.S. Cl. 116—124.1

6 Claims



1. A channel indicating device for television receivers, for indicating, in a display window, a numeral of a channel to be used selected among a predetermined number of UHF channel numerals extracted from the entire UHF channel numerals and from among the entire VHF channel numerals, comprising indication members each thereof representing each of said extracted UHF channel numerals and being magnetically attractable; a rotary member, said VHF channel numerals being marked on the peripheral surface of said rotary member, and said rotary member being provided with mounting portions for mounting said indicating members; and magnets provided in said rotary member for attracting said indication members.

3,855,963

CHANNEL INDICATOR

Siro Tada, Chigasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1972, Ser. No. 231,559

Claims priority, application Japan, Mar. 5, 1971, 46-14589; Mar. 8, 1971, 46-15243

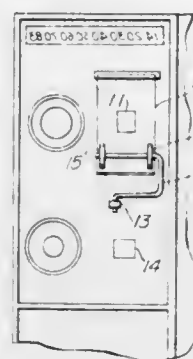
Int. Cl. H03j 1/02

U.S. Cl. 116—124.1

4 Claims

1. A channel indicator comprising a rotating drum which can be rotated in response to the rotation of a tuner shaft, a plurality of numbered tabs disposed detachably on the periphery of said drum, the numbers on said tabs corresponding to predetermined channels, a swingable door provided in a control panel on the front side of a TV receiver set and spaced opposite and closely from a peripheral wall of said drum when said swingable door is normally closed, said swingable door

being mounted at such a position that said tabs corresponding to the predetermined channels can be removed manually from the peripheral wall of said drum through said swingable door



when said swingable door is opened in an outward direction, and a window provided in said door, through which the channel numbers on said tabs on said drum can be seen.

3,855,964

CHANNEL INDICATING DEVICE FOR TELEVISION RECEIVERS

Kosaku Uchida, Neyagawa; Susumu Ide; Toshiji Kanamaru, both of Osaka, and Sadafumi Kitamura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

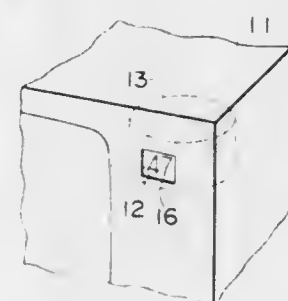
Filed Aug. 27, 1971, Ser. No. 175,620

Claims priority, application Japan, Sept. 1, 1970, 45-87379; Sept. 14, 1970, 45-91428

Int. Cl. H03j 1/04

U.S. Cl. 116—124.4

7 Claims



1. A channel indicating device, for use in a television receiver, for indicating, in a display window, a numeral of a channel selected among a predetermined number of UHF channel numerals and among the entire VHF channel numerals, comprising indication members each thereof representing one of said extracted UHF channel numerals; a rotary member, said VHF channel numerals being marked on the peripheral surface of said rotary member, and said rotary member being provided with mounting portions for mounting said indication members; and a plurality of means provided on one of two groups comprising said indication members and said mounting portions, respectively, for releasably holding said two groups together.

3,855,965

AUTOMATIC BREADING DEVICE

Jerry D. Gordon, 10765 E. 11th St., Tulsa, Okla. 74120

Filed June 21, 1973, Ser. No. 372,063

Int. Cl. B05c 5/02; A23I 1/31

U.S. Cl. 118—16

4 Claims

1. Apparatus for breading pieces of raw chicken or the like comprising a main cylinder rotatable about a horizontal central axis and having an apertured front circular wall, an apertured rear circular wall and an apertured circular partition within said main cylinder substantially parallel to and spaced between said front and rear walls, the space between said

circular partition and said rear wall defining an egg-wash chamber, the space between said circular partition and said front wall defining a flour chamber; a perforated cylinder mounted in said circular partition concentrically with said main cylinder and projecting into said egg-wash chamber; egg-wash scoop means mounted on the end of said perforated cylinder adjacent said rear wall; an elongated breading cylinder mounted in said front wall substantially concentric with said main cylinder and having a portion projecting into and through said flour chamber, the portion of said breading cylinder projecting into said flour chamber terminating adjacent said perforated cylinder, said breading cylinder having a portion projecting forwardly and externally of said main cylinder; a flour scoop mounted on the portion of said breading cylinder within said main cylinder and passing through an opening in



the wall of said breading cylinder; means for releasably locking said breading cylinder to said front wall of said main cylinder; and spiral vane means mounted in said perforated cylinder and in said breading cylinder throughout the combined lengths thereof; whereby, as said main cylinder is rotated about its horizontal central axis, pieces of raw chicken can be advanced from an opening in said rear wall through said perforated cylinder and said breading cylinder in series and discharged from the forward end of said breading cylinder and, whereby, as said main cylinder is rotated about its horizontal central axis, said egg-wash scoop means will cause egg-wash solution to pass through the perforation in said perforated cylinder onto said pieces of raw chicken and said flour scoop will cause flour to pass onto the surfaces of said pieces of raw chicken as they pass through said breading cylinder.

3,855,966

UNIVERSAL CHUCKING MECHANISM

Walter Panas, Millville, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed Nov. 30, 1973, Ser. No. 420,365

Int. Cl. B05c 11/14

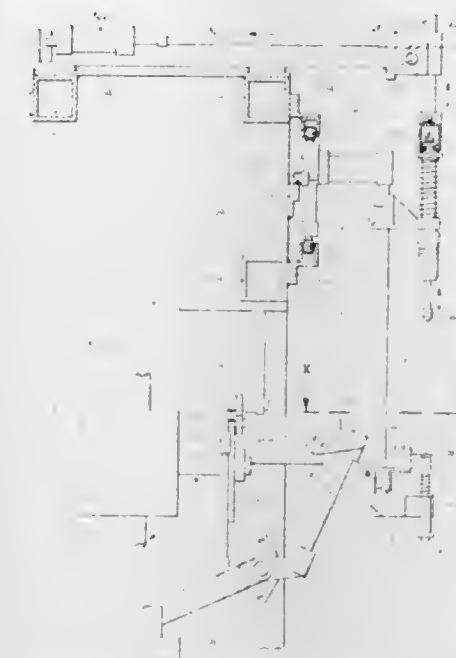
U.S. Cl. 118—66

18 Claims

10. A system for coating arbitrarily shaped containers over a predetermined portion of their surface comprising:

- a continuous horizontal conveyor;
- a plurality of chucking mechanisms located periodically along said conveyor, each of said chucking mechanisms including
 - supportive frame means attached to said conveyor and including lower securement means,
 - upper securement means attached to said supportive frame means and positioned opposite to and above said lower securement means, said upper securement means including
 - plunger means slidably mobile toward said lower securement means, containers being secured in position between said lower and upper securement means by said plunger means, and
 - masking means concentric with said plunger means and independently slidably mobile to cover a specified portion of said containers;

c. first means located at at least one point on said conveyor for controlling the position of said plunger means, and



d. second means located at at least one point of said conveyor for controlling the position of said masking means.

3,855,967

OVERVARNISH UNIT FOR CONTINUOUS-MOTION DECORATING APPARATUS

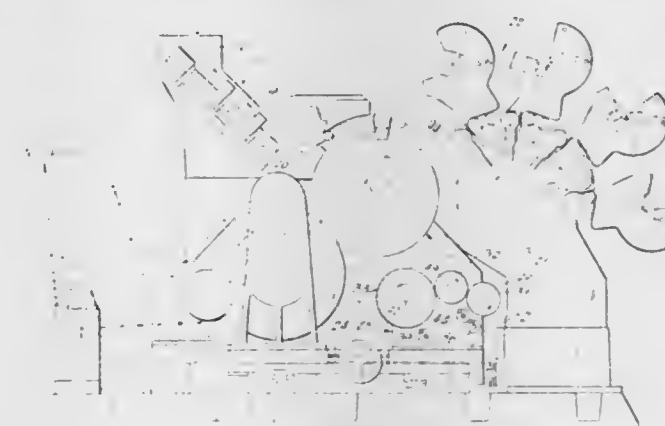
John P. Skrypek, Saddle Brook, and Edward J. Whelan, Hasbrouck Heights, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,454

Int. Cl. B05c 1/02

U.S. Cl. 118—230

9 Claims



1. Apparatus for operating on cylindrical containers, said apparatus including a main frame, a coating station on said frame, and conveyor means on said frame including spindles for carrying cylindrical containers along a feed path extending through said coating station whereby containers moved along said feed path receive a filmlike coating at an applicator nip in said coating station, said coating station having a coating mechanism including adjacent control and transfer metering elements forming a metering nip therebetween to receive a coating substance and produce a controlled thickness film of this substance on said transfer element, a transfer roll constituting said transfer element, an applicator roll for applying a coating of this substance to decorated containers, said applicator roll positioned adjacent said transfer roll and forming a transfer nip therebetween whereat the applicator roll receives the film from the transfer roll, first support means to which the control element is mounted, second support means to which the transfer roll and said first support means are mounted, and third support means to which the applicator roll is mounted, said third support means being adjustably mounted with respect to said main frame to adjust said applicator nip without operatively disturbing the transfer or metering nips, said sec-

ond support means being adjustably mounted with respect to said main frame to adjust said transfer nip without operatively disturbing the metering or applicator nips, said first support means being adjustably mounted to said second support to adjust said metering nip without operatively disturbing the transfer or applicator nips, said coating mechanism also including a sub-frame interposed between said main frame and said second and third supports, means mounting said second and third supports to said sub-frame, adjustable means removably securing said sub-frame rigidly to said main frame whereby said coating mechanism is removable and replaceable as a subassembly, said adjustable means being constructed for operation which tilts said sub-frame relative to said main frame to parallel the cylindrical axis of the applicator roll to the spindle axes.

3,855,968

APPARATUS FOR DEPOSITING A POWDERED SUBSTANCE ON THE INTERIOR SURFACE OF AN INFLATABLE TUBE

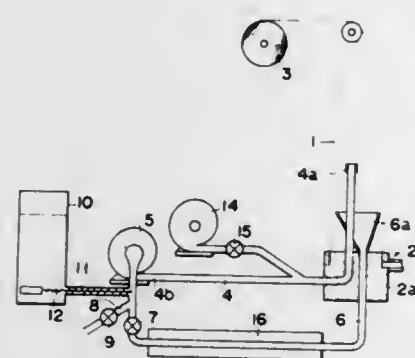
Shiro Saito, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,047

Int. Cl. B05b 7/00

U.S. Cl. 118—308

7 Claims



1. Apparatus for depositing a powdered substance on the interior surface of an inflated tube comprising
 - a. first conduit means having one end thereof opened into said tube,
 - b. second conduit means also having one end thereof opened into said tube,
 - c. a blower to which the other ends of said conduit means are connected for communication therebetween,
 - d. air feeding means, including a first valve means, for delivering air to said tube for inflating said tube when said first valve means is open,
 - e. a second valve means downstream of said air feeding means, said second valve means being closed when said first valve means is open, and adapted to be opened when said first valve means is closed, thereby to provide a continuous closed path of air circulation through said first conduit means, the inside of said tube, said second conduit means, and said blower,
 - f. means for supplying a powdered substance to one of said conduit means for delivery to the inside of said tube through said first conduit means, and
 - g. means for directing any undeposited particles of the powdered substance into the open end of said second conduit means in said tube for recirculation through said conduit means and back to said tube.

3,855,969 QUALITY CONTROL OF ELECTROSTATIC IMAGE DEVELOPER MIX

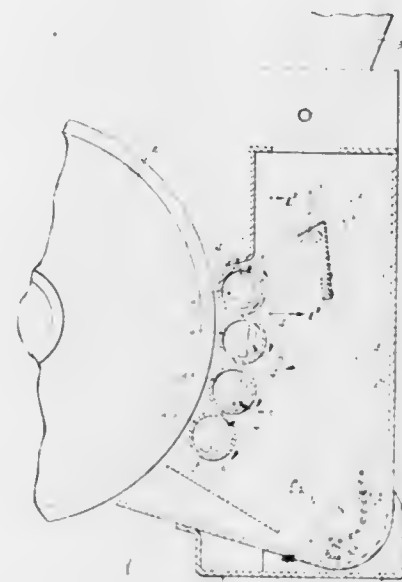
Thomas E. Andrako, Maple Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Mar. 2, 1973, Ser. No. 337,340

Int. Cl. G03g 13/00

U.S. Cl. 118—637

2 Claims



1. A magnetic brush apparatus for applying developing material to electrostatic latent images in an electrostatic printing machine of the type utilizing a moving photoreceptor surface, comprising:
 - a plurality of magnetic developing brushes each having a roller with a periphery upon which bristles of magnetic developing material are adapted to be formed, said rollers each having an axis of rotation, said axis being substantially parallel to the path of the photoreceptor surface and aligned in a vertical array;
 - said rollers having a clear space therebetween and internal magnets within the rollers oriented in opposite polarities in one roller from that in the other and establishing a merging magnetic field bridging between the roller brushes to establish a continuous migrating magnetic blanket which accepts magnetic powder material at the first roller and transports the magnetic material between the rollers and the photoreceptor surface along the front face of the rollers in brush form and bridges between rollers in reclining array;
 - means for removing a portion but less than all of any magnetically attracted material from the topmost of the rollers in the vertical array whereby the remainder of the material will cling to that roller and proceed along the roller on the side thereof opposite said front path, allowing the retained material to migrate along the back side of the said array in the same form and action as the front but in the opposite direction; and
 - a cascade delivery system for supplying fresh mixture of developer material downward and against the back side of said array.

3,855,970

AQUARIUM

Lee M. Harwood, 304 Elm St., San Carlos, Calif. 94070

Filed Apr. 2, 1973, Ser. No. 347,034

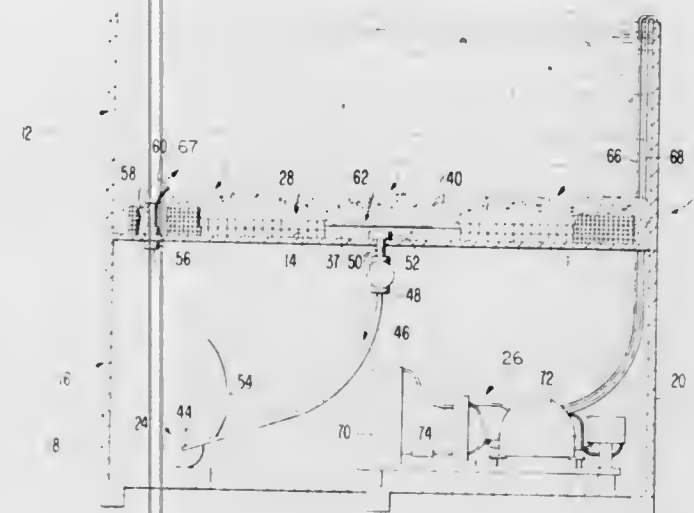
Int. Cl. A01k 63/00

U.S. Cl. 119—5

8 Claims

1. An aquarium comprising: a receptacle adapted to contain a quantity of water in which fish are to be placed, the receptacle having a bottom; means in the receptacle for forming a

water-receiving space adjacent to said bottom; a porous filter mounted on said forming means and disposed to permit water to pass into said space from a region above the filter; pump means coupled with the receptacle near the center of said bottom for drawing water out of the space; means coupled with said pump means for directing water therefrom back into the receptacle through the bottom near one end thereof and



into said region along an inclined path from a location adjacent to the upper level of said filter; a tubular heat exchanger in said space for conditioning water therein when a conditioned fluid flows through the heat exchanger, and means externally of the receptacle and coupled to the heat exchanger for conditioning a fluid and directing the same through said heat exchanger.

3,855,971

COMBINATION GRANARY AND FEEDER FOR LIVESTOCK

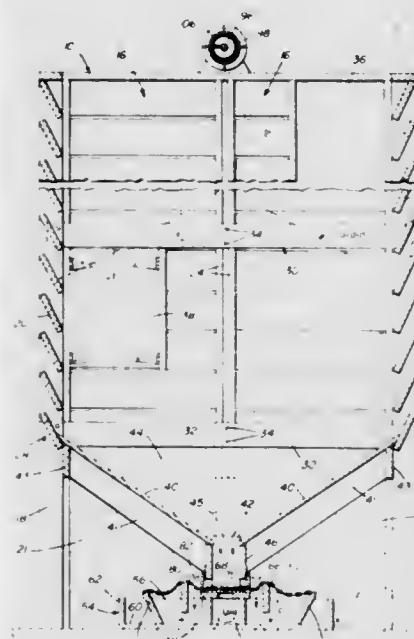
Rollie O. Hess, R.F.D. 3, Moulton, Iowa 52572

Filed Dec. 27, 1973, Ser. No. 428,788

Int. Cl. A01k 5/02

U.S. Cl. 119—52 AF

12 Claims



1. A feed handling structure comprising an upright elongated feed receiving bin, an elongated longitudinally extending feed discharge at the bottom of said bin for the downward discharge of feed from the bin, a feed moving conveyor in spaced underlying relation to said feed discharge, a livestock feeding trough also underlying said feed discharge, and means alternatively communicating said feed discharge with said feed moving conveyor or said feeding trough.

3,855,972

ROTARY COMBUSTION ENGINE WITH IMPROVED FIRING SYSTEM

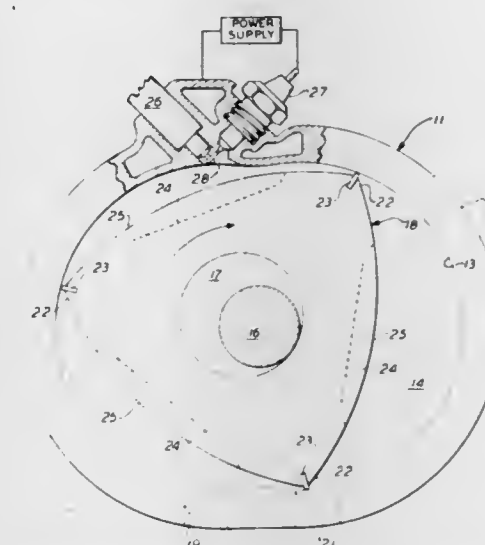
Thomas C. Roberts, Ridgewood, N.J., assignor to Curtis-Wright Corporation

Filed Sept. 28, 1973, Ser. No. 401,562

Int. Cl. F02b 53/10, 53/12

U.S. Cl. 123—8.09

8 Claims



1. A rotary internal combustion engine having a housing defining an engine cavity having intake and exhaust ports, a rotor rotatably disposed within the engine cavity and defining with the housing a plurality of working chambers of variable volume, the rotation of the rotor taking in fresh air at the intake port and compressing it in a compression zone, wherein the improvement comprises:
 - a. the housing having therein a cavity with a spark aperture communicating with the engine cavity, a fuel injector having a nozzle, means for mounting said fuel injector with the nozzle positioned in the housing cavity in proximity to the spark aperture and oriented to inject fuel into the compression zone therethrough, the nozzle bearing a U-shaped electrode with the legs of the U extending therefrom, a spark plug with an electrode projecting therefrom, means for mounting said spark plug with said electrode extending interjacent the legs of the U-shaped electrode and forming a spark gap therewith; and
 - b. an ignition system having one pole connected to the spark plug electrode and the other pole connected to the engine body so that the spark plug electrode and the U-shaped electrode are at opposite polarities, the ignition system firing a spark across the spark gap during the period of fuel injection.

3,855,973

SYNCHRONIZING MEANS FOR SEQUENTIAL FUEL INJECTION

Bruce A. Scofield, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed June 21, 1972, Ser. No. 265,046

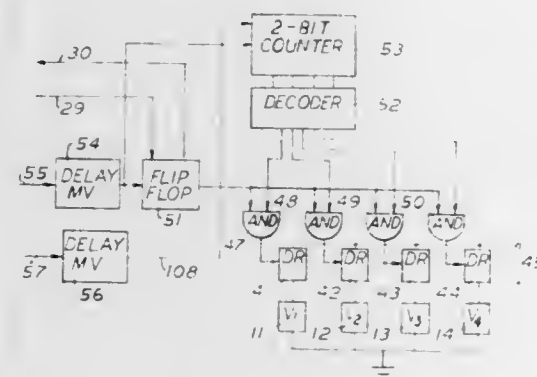
Int. Cl. F02b 3/00

U.S. Cl. 123—32 EA

5 Claims

1. A fuel injection control system for an engine including a plurality of cylinders and fuel injection valve means associated with each cylinder for injection of fuel for flow into each cylinder during the intake stroke thereof, electrically energizable actuator means for each of said fuel injector valve means, spark plug means for each cylinder, ignition pulse generating means for generating an ignition pulse in predetermined phase relation to each and every power stroke of the engine, and distributor means for applying said ignition pulses to said spark plug means in sequence, said control system comprising: a sequencing circuit for supplying sequencing signals in synchronized relation to intake strokes of the engine, timer means for supplying timing signals, means responsive to said se-

quencing and timing signals for energizing said actuator means, said sequencing circuit having a plurality of stable states respectively corresponding to said actuator means and being arranged to be indexed from one state to another in a predetermined order and to develop in each of said states a sequencing signal for control of the corresponding actuator means in response to a timing signal from said timer means, index pulse means for supplying to said sequencing circuit an index pulse in predetermined phase to each and every power stroke of the engine to index said sequencing circuit from one state to another, and reset pulse means for supplying to said sequencing circuit a reset pulse in predetermined phase relation to the power stroke of a predetermined one of the engine



cylinders to reset said sequencing circuit to a predetermined initial state, said index pulse means being arranged for coupling to said ignition pulse generating means to develop and index in response to each ignition pulse, and said reset pulse means being arranged for coupling to said distributor means to develop a reset pulse in response to each ignition pulse applied to the spark plug means for said predetermined one of the engine cylinders, said index pulse means comprising a first monostable multivibrator, said reset pulse means comprising a second monostable multivibrator, said first and second multivibrators being triggered in response to ignition pulses from said ignition pulse generating means and said distributor means.

3,855,974

APPARATUS TO CONTROL THE AIR-FUEL MIXTURE SUPPLIED TO INTERNAL COMBUSTION ENGINES

Hartmut Mayer, Aidlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 10, 1973, Ser. No. 322,568

Claims priority, application Germany, Apr. 22, 1972, 2219768

Int. Cl. F02b 3/00; F02d 1/04

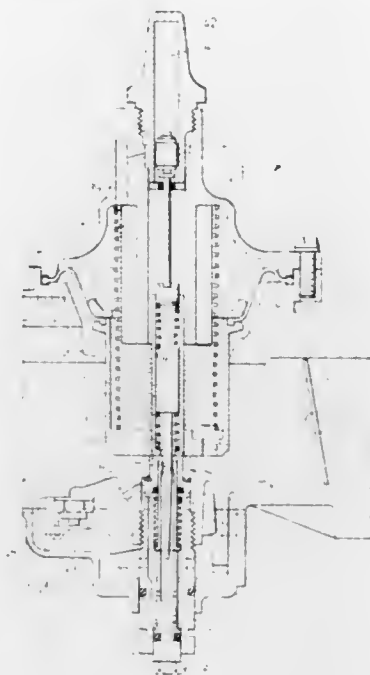
U.S. Cl. 123—32 EA

22 Claims

1. Apparatus to control the air component and fuel component of the air-fuel mixture supplied to an internal combustion engine (10) having sensing means (16) sensing the composition of the exhaust gases and providing an electrical control signal, and a carburetor (11) having control means (22, 23) supplying fuel to the mixing chamber in dependence on commanded fuel requirements of the engine for mixture of a mixing chamber (21) the fuel component and the air component and for application to the engine

wherein the carburetor comprises means forming a fuel nozzle opening (34, 73), and a needle (33, 71) movable within the fuel nozzle, the nozzle opening, upon relative selective positioning of said nozzle and needle being electrically controllable and arranged to additionally control supply of fuel to the mixing chamber, and being connected to and controlled by said electrical control signal and operatively connected to the carburetor fuel supply means to additionally regulate the relative flow of the fuel component of the mixture with respect to the air component, independently of demand of fuel-air mixture by the engine, under control of said electrical control signal provided by the sensing means to adjust the mass

ratio of the air and fuel components of the mixture being applied to the engine in dependence on the composition of the exhaust gases;



and wherein the fuel supply means includes an air pressure responsive piston (22) movably located in the path of the air stream supplied to the engine upon engine operation, the needle (33, 71) being slidably located in the piston (22) and movable under control of said control signal.

3,855,975

WARMING-UP APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kenji Masaki, and Yukihiko Etoo, both of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Jan. 24, 1973, Ser. No. 326,267

Claims priority, application Japan, Jan. 25, 1972, 47-9369; Jan. 25, 1972, 47-9370

Int. Cl. F01p 7/02

U.S. Cl. 123—41.13

6 Claims



1. In an internal combustion engine having an intake manifold, a water pump adapted to circulate and recirculate a coolant through a cooling circuit, a cooling fan and a carburetor with a throttle valve, a warming-up system comprising, in combination, a source of d.c. voltage supply, a coolant temperature responsive switch associated with the engine and electrically connected to said source of d.c. voltage supply, said coolant temperature responsive switch being closed when the temperature of the coolant in the cooling circuit is below a predetermined level, a relay switch electrically connected through said coolant temperature responsive switch to said source of d.c. voltage supply, said relay switch being closed

when said coolant temperature responsive switch is closed, an electro-magnetic clutch electrically connected to said relay switch and engaged when said relay switch is closed for stopping operations of said cooling fan and said water pump, a timer relay electrically connected to said coolant temperature responsive switch, an ignition timing change-over device comprising a retarding breaker contact assembly connected through said timer relay to an ignition coil and an advancing breaker contact assembly directly connected to said ignition coil, said timer relay being closed to actuate said retarding breaker contact assembly to retard ignition timing when said coolant temperature responsive switch is closed; and a throttle opening device responsive to the temperature of the coolant, said throttle opening device increasing the opening degree of said throttle valve when the temperature of the coolant is below said predetermined level.

3,855,976

APPARATUS FOR CONTROLLING THE QUALITY OF THE COMBUSTION AIR OF AN ENGINE

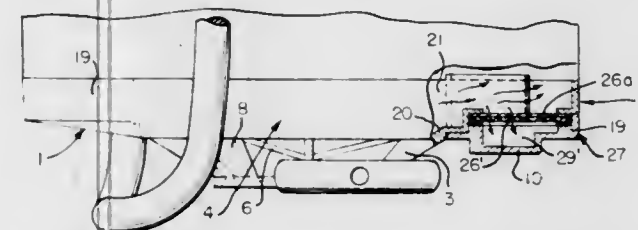
John Arthur Notaras, and Angelo Lambrinos Notaras, both of 15-21 Reynold St., both of Balmain, New South Wales, Australia

Filed Oct. 10, 1973, Ser. No. 405,117

Int. Cl. F02f 1/34

U.S. Cl. 123—41.62

6 Claims



1. A self-cleaning air filtering apparatus in combination with an internal combustion engine having a fan mounted on the engine, said apparatus including a cover overlying said fan and a portion of the cylinder of said engine, said cover provided with an air intake adjacent said fan communicating with an air flow chamber within said cover extending toward said engine cylinder, said cover having an opening therethrough upstream from and adjacent said cylinder, a planar filter medium disposed over said cover opening, cover means overlying said filter medium and provided with a passageway communicating with a combustion air intake port of said engine whereby, air directed by said fan from said air intake through said air flow chamber to said engine cylinder sweeps across said planar filter medium in the direction of orientation of the planar filter to constantly scour foreign particles therefrom and direct them past said cylinder.

3,855,977

ROTARY INTERNAL-COMBUSTION ENGINE

Frank D. Statkus, 12804 N.E. 129th St., Kirkland, Wash. 98033

Filed May 1, 1973, Ser. No. 356,095

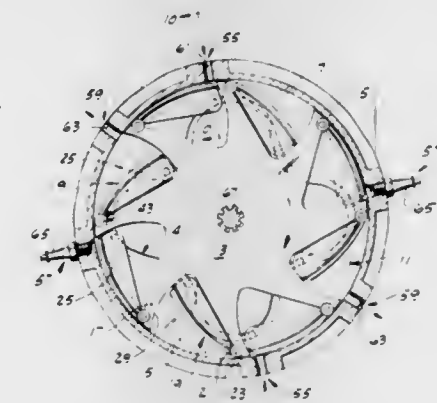
Int. Cl. F02b 57/00

U.S. Cl. 123—43 C

4 Claims

1. A rotary internal-combustion engine comprising a housing having a peripheral wall with a cylindrical internal surface and side walls defining a main chamber, a rotor rotary in one direction in said chamber, said rotor having multiple of four recesses in its periphery spaced at equal intervals therearound defining combustion chambers, portions of the rotor between said combustion chambers constituting partitions between said combustion chamber in sealing engagement at their outer periphery with said cylindrical internal surface, a plurality of pistons, one for each combustion chamber, carried by the rotor, each piston being pivotally connected at one end thereof to the rotor partition at the trailing end of the respective combustion chamber and extending toward the other end

of the respective chamber constituting its leading end, each piston being in sliding sealing engagement at its sides with said side walls and at its free end opposite its pivoted end with said other end of the respective combustion chamber, cam follower means on each piston adjacent its said free end, at least one of said side walls having cam track means receiving said cam follower means, each piston being swingable inwardly for a power stroke and a fuel intake stroke and being swingable outwardly for a compression stroke and an exhaust stroke in the course of each one-half revolution of the rotor, said housing having air and fuel intake means, fuel ignition means and exhaust means at spaced intervals around said main chamber for delivery of air and fuel to each combustion chamber, ignition of air-fuel mixture in each combustion chamber, and exhaust of products of combustion from each combustion



chamber during each one-half revolution of the rotor, said cam track means having four apogees spaced at substantially equal angular intervals around said side wall and four corresponding perigees, one between each pair of adjacent apogees, so as to effect corresponding inward and outward movement of pistons diametrically opposed to one another and to effect two power strokes of each piston for each revolution of the rotor, said ignition means being spaced relative to two of said apogees diametrically opposed to one another so as to initiate combustion of said air-fuel mixture in two diametrically opposed combustion chambers as said free end of the piston of each of said opposed combustion chambers moves past its respective ignition means thereby to substantially simultaneously effect efficient combustion of said mixture in each of said opposed combustion chambers, and to effect the balanced application of power to opposed sides of said rotor.

3,855,978

ROTARY INTERNAL COMBUSTION ENGINE

Raymond M. Becker, P.O. Box 157, Petoskey, Mich. 49770

Filed Aug. 29, 1972, Ser. No. 284,501

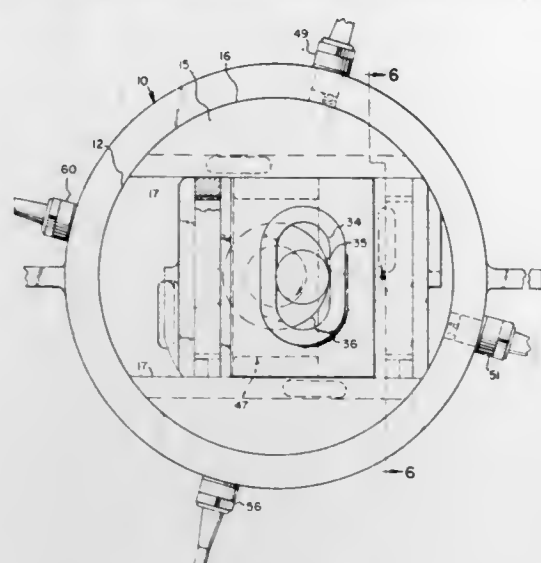
Int. Cl. F02b 57/06

U.S. Cl. 123—44 C

29 Claims

1. A rotary internal combustion engine including a housing, a cylindrical chamber having wall formed in said housing and being open at one end, an exhaust manifold sealing said chamber at said open end and forming the other wall thereof, a plurality of sectorial spacers cooperating with the side walls of said cylindrical chamber to define two perpendicular combustion chambers in the same plane, a piston slidably mounted in each of said combustion chambers, thereby dividing each chamber into two parts, both of said pistons having an offset center portion to clear the other of said pistons and being provided with a slot therein to receive a crankshaft and to rotate it, a crankshaft carried by said housing and operatively connected to each of said pistons with the rotational axis of said crankshaft being perpendicular to that of the pistons and the combustion chamber, means to introduce a fuel-air mixture into said chamber, means to ignite said fuel-air mixture

at the proper time, means to exhaust the products of combustion of said fuel-air mixture after burning, and means to cause



said pistons and said combustion chambers to rotate in the direction opposite said crankshaft.

3,855,979

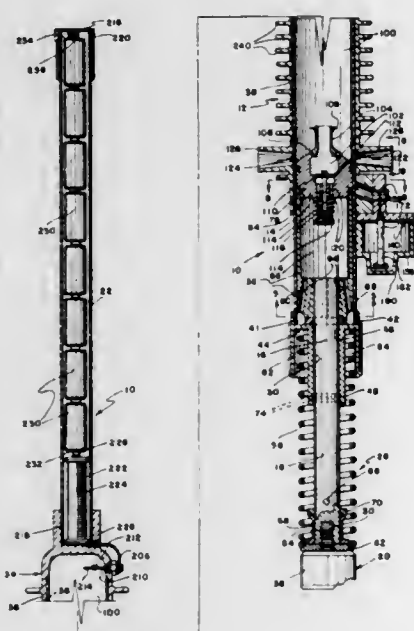
ENGINE POWERED JUMPING STICK

Herbert J. Ottaway, 3702 Elmwood Dr., Wichita, Kans. 67218
Division of Ser. No. 145,822, May 21, 1971, Pat. No.

3,715,600. This application Jan. 12, 1973, Ser. No. 322,924
Int. Cl. F011 1/02; F02b 71/00

U.S. Cl. 123-47 A

14 Claims



7. An internal combustion engine comprising an elongated hollow cylinder having first and second ends respectively closed by first and second end walls, an axially elongated piston having a hollow interior slidably and sealingly reciprocable in said cylinder between first and second positions respectively adjacent the first and second ends of the cylinder, said piston having first and second ends respectively adjacent the first and second ends of the cylinder, said second end wall having a piston rod opening therethrough, a piston rod of less diameter than the piston slidably and sealingly extending through said opening and having one end secured to the piston with its other end projecting axially from the second end of the cylinder, coiled compression spring means embracing the piston rod externally of the cylinder for yieldingly urging axial movement of the piston toward movement limiting engagement with the second end wall, a combustion chamber of a volume dependent upon the axial position of the piston defined within the cylinder between the piston and the first end

wall, a first passageway means in the piston through the first end of the latter that communicates between the hollow interior of the piston and the combustion chamber, spring loaded check valve means for preventing fluid flow through the first passageway means from the combustion chamber to the hollow interior of the piston, an annular chamber of a volume dependent upon the axial position of the piston defined within the cylinder about the piston rod and between the second end of the piston and the second end wall, said piston having a multiplicity of openings therein constituting a second passageway means in the piston that communicates between the hollow interior of the piston and the annular chamber, said cylinder including a cylindrical side wall, means including a side wall having a fuel-air mixture inlet opening therethrough that is axially spaced intermediate the first and second end walls for introducing a fuel-air mixture into the annular chamber, means including said piston for closing said inlet opening except when said piston is adjacent its first position, means including said side wall having an exhaust opening therethrough that is axially spaced intermediate the first end wall and the inlet opening for exhausting combustion products from the combustion chamber, means including the piston for closing the exhaust opening except when the piston is adjacent its second position, and means for producing an electrical ignition spark within the combustion chamber in response to a predetermined movement of the piston adjacent the first position of the latter, said last means including said piston having a radially reduced central extension that extends toward the first end wall of the cylinder and which terminates in a free end, and a radially outward extending flange on the free end of the extension that has a circular peripheral portion concentric with the side wall of the cylinder.

3,855,980

FUEL SYSTEMS FOR ENGINES

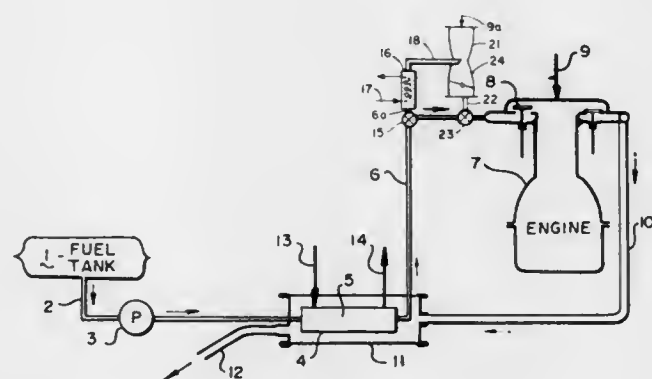
Paul B. Weisz, Yardley, Pa.; Nai Yuen Chen, Hopewell Township, and Stanley J. Lucki, Runnemede, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,563

Int. Cl. F02b 43/08

U.S. Cl. 123-3

18 Claims



1. A combination of a combustion engine with means for the introduction of fuel into the engine for burning and operation of the engine, said means comprising a fuel tank containing fuel of relatively low octane number, means for passage of the fuel through a hydrocarbon catalytic converter operated at temperatures above about 600°F. and means for passage of the effluent from the hydrocarbon catalytic converter into the engine for burning, said catalytic converter containing a crystalline aluminosilicate catalyst having a pore structure that has a shape selective preference for admitting linear hydrocarbons over hydrocarbons of other structural classes and having an alpha value of at least 5, wherein the relatively low octane number fuel is converted into relatively high octane number fuel for operation of the engine.

3,855,981

ROCKER ARM

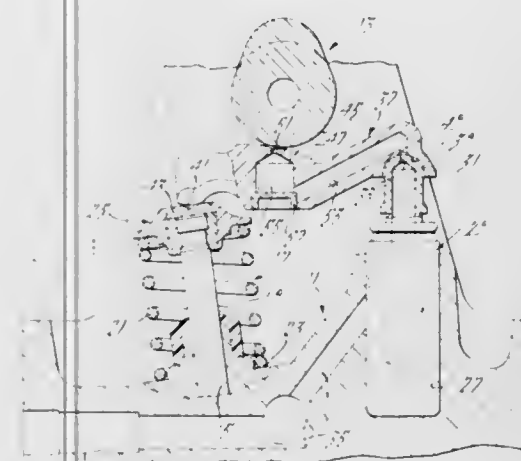
Fred G. Loon, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 15, 1973, Ser. No. 360,489

Int. Cl. F011 1/02, 1/04

U.S. Cl. 123-90.27

7 Claims



1. In an internal combustion engine having a cylinder head, a poppet valve assembly having a stem reciprocably mounted in said cylinder head, a camshaft rotatably mounted to said cylinder head, and a fulcrum member mounted to said cylinder head,

a rocker arm having a first end portion connected to said fulcrum member and a second end portion engageable with the end of said valve assembly, said camshaft slidably engaging said rocker arm at an area intermediate said end portions, a passage formed in said rocker arm, said passage having inlet means at said first end portion of said rocker arm, said passage having outlet means formed in and located at the camshaft engaging area of said rocker arm, said rocker arm receiving oil from said fulcrum member for discharge from said outlet directly against said camshaft.

3,855,982

INJECTOR

Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Steenbakkersweg, Netherlands

Filed May 1, 1973, Ser. No. 356,185

Claims priority, application Netherlands, May 5, 1972, 7206081

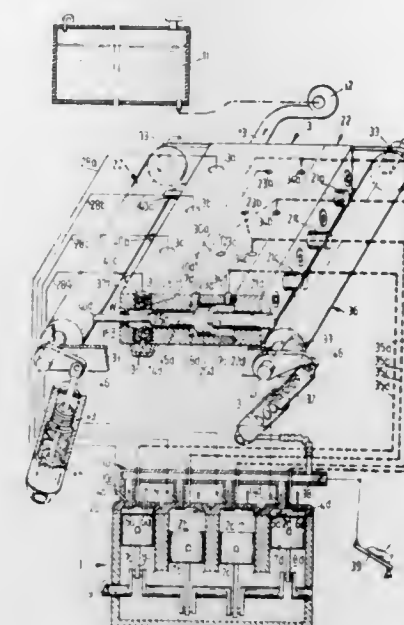
Int. Cl. F02m 47/02

U.S. Cl. 123-139 AM

15 Claims

1. Injector for delivering fuel to at least two fuel inlets of a combustion engine with at least two combustion cylinders, comprising at least two pump chambers, each of said pump chambers communicating via an inlet valve with a fuel supply and via an exhaust valve with a fuel discharge to be connected to a fuel inlet of the combustion engine and each of said pump chambers being adjoined by a displacing member being displaceable to and fro over a pump stroke between two stops,

said pump stroke being adjustable by means of control means, each displacing member being displaceable to and fro be-



tween two common stops adjustable by means of control means.

3,855,983

MAGNETIC SENSOR DEVICE FOR IGNITION SYSTEMS

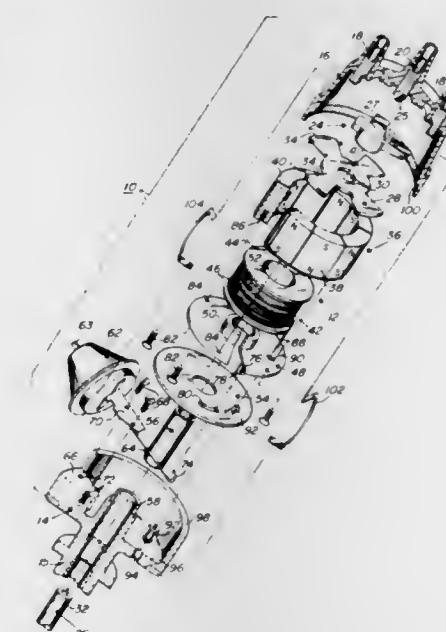
Robert J. Valek, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 26, 1973, Ser. No. 345,152

Int. Cl. F02p 7/06

U.S. Cl. 123-146.5 A

8 Claims



1. A magnetic sensor device in the ignition system for an internal combustion engine including in combination: rotatable shaft means of magnetizable material driven in synchronism with the rotation of the engine drive shaft, a first plate of magnetizable material, said plate having a plurality of radially extending arms, a permanent magnet structure having a cylindrical shape and comprising a plurality of permanent magnet sections, said magnet sections having north and south magnetic poles on opposite ends thereof, with alternate sections having opposite poles located adjacent each other, the number of said magnet sections being equal to twice the number of cylinders of the internal combustion engine and the number of said arms of said plate equaling one-half the number of said magnetic sections, a first end of said permanent magnet structure being mounted adjacent said first plate, a second plate of

magnetizable material mounted in spaced relation with respect to said first plate adjacent the opposite end of said permanent magnet structure, and sensor coil assembly means mounted concentrically with respect to said permanent magnet structure within the confines thereof, said rotatable shaft means extending through the centers of said second plate, coil assembly and permanent magnet structure, said first plate being coupled to and rotatable with said shaft means with respect to said permanent magnet structure in response to the operation of said engine for providing magnetic flux lines through said coil assembly varying between a predetermined positive amplitude and a predetermined negative amplitude, whereby an alternately poled output voltage is provided at said coil assembly for regulating the operation of said ignition system in accordance with the speed of said engine.

3,855,984

CAPACITIVE DISCHARGE IGNITION SYSTEM HAVING VARIABLE CAPACITANCE

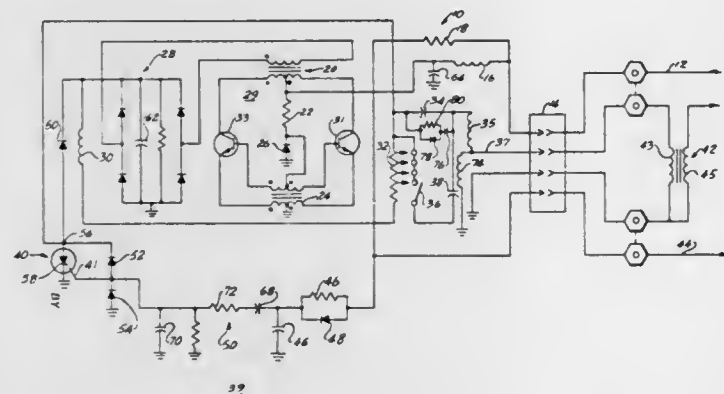
Christopher A. Jacobs, 3570-1/2 Eagle Rock Blvd., Los Angeles, Calif. 90065

Continuation-in-part of Ser. No. 866,626, Oct. 15, 1969, Pat. No. 3,716,037. This application Nov. 29, 1972, Ser. No. 310,272

Int. Cl. F02p 1/00

U.S. Cl. 123-148 E

4 Claims



1. An ignition system for internal combustion engines comprising:

- a source of electric power;
- a first capacitor for storing electric power coupled to the power source;
- a second capacitor connected in parallel circuit relationship with said first capacitor;
- normally closed switching means connected in series circuit relationship with the second capacitor;
- temperature sensing means operatively associated with said switching means for opening said switching means when engine temperature is above predetermined threshold value to disconnect said second capacitor from the ignition system;
- an ignition coil coupled to said first and second capacitors; means coupled to the ignition coil for producing an electric spark;
- an electronic switch coupled to the first and second capacitors for controlling the discharge and charge of the first and second capacitors; and
- engine controlled switching means coupled to the electronic switch for periodically operating said switch to produce discharge of the capacitors.

3,855,985

BREAKERLESS IGNITION SYSTEMS

Kiyoshi Shirai, Numazu, Japan, assignor to Korusan Denki Co., Ltd., Shizuoka-Prefecture, Japan

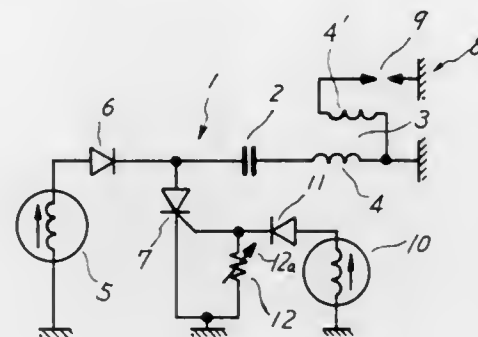
Filed Mar. 28, 1973, Ser. No. 345,547

Claims priority, application Japan, Apr. 1, 1972, 47-37850[U]

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

5 Claims



1. A breakerless ignition system for use in an internal combustion engine and having advanced and delayed ignition phases, comprising:

- a. a primary ignition circuit including a primary coil element of an ignition coil, a source to supply primary ignition current to said primary coil element of said ignition coil and a first controlled semi-conductor device to control the conduction of said primary ignition current to said primary coil element of said ignition coil;
- b. a secondary ignition circuit including a secondary coil element of said ignition coil and an ignition plug connected to said secondary coil element of said ignition coil, said plug being disposed within a cylinder of said engine;
- c. an ignition signal generator driven by said engine to produce an ignition signal in timing with the position of a piston in said cylinder; and
- d. an ignition signal converter connected between said ignition signal generator and said first controlled semi-conductor device, said ignition signal converter comprising a capacitor charged by said ignition signal generator, a Zener diode rendered conductive in response to a predetermined voltage across said capacitor, a second controlled semi-conductor device rendered conductive upon conduction by said Zener diode, said capacitor thereupon discharging through the gate and cathode of said second controlled semi-conductor and through the anode and cathode of said first controlled semi-conductor and a variable electrical resistor connected to said capacitor to control charging of said capacitor by said ignition signal generator, said variable electrical resistor having a wiper movable in accordance with movement of the accelerator of said engine

so that when said accelerator moves to provide increased acceleration of said engine, said variable electrical resistor effects increased charging of said capacitor for the advanced ignition phase of said system and so that when the accelerator of said engine moves to provide increased deceleration of said engine, said variable electrical resistor reduces the charging of said capacitor for the delayed ignition phase of said system.

3,855,986

REFLECTIVELY COATED COMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINES AND METHOD OF USING SAME

John W. Wiss, 3316 Brookdale Dr., Pittsburgh, Pa. 15241

Filed Mar. 15, 1972, Ser. No. 234,857

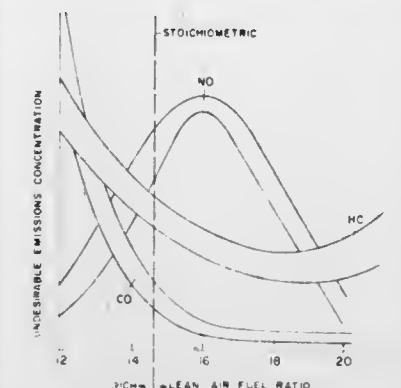
Int. Cl. F02b 23/00

U.S. Cl. 123-191 A

8 Claims

1. A process for reducing noxious exhaust emissions from a spark-ignition engine comprising the steps of

providing an infrared reflecting surface highly reflective to infrared radiation in the 1 to 5 micron range to the walls of the combustion chambers of said engine while



operating said engine at air-fuel ratios greater than 17 but less than 22.

3,855,987

ROTARY ENGINE OIL LUBRICATION SYSTEM

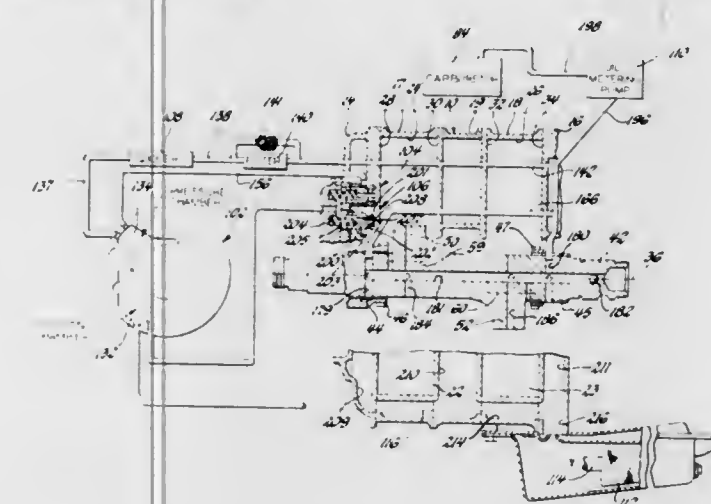
Raymond J. Green, Northville, and Erkki A. Koivunen, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1974, Ser. No. 432,848

Int. Cl. F01m 1/02; F01c 21/04

U.S. Cl. 123-196 R

5 Claims



1. A rotary engine comprising a multipart housing including a rotor housing, an end housing having one side closing one side of said rotor housing and having an oppositely facing external side, another housing part closing the other side of said rotor housing, a crankshaft rotatably supported in bearings in said multipart housing, said crankshaft having an eccentric located in said rotor housing, a hollow rotor rotatably supported by a bearing on said eccentric, an internal tooth phase gear fixed to one side of and concentric with said rotor, an annular external tooth phase gear freely received about and concentric with said crankshaft and fixed to said end housing and meshing with said internal tooth gear, and a lubrication system comprising an oil tank secured to said multipart housing in an underneath location, an internal-external gear oil pump mounted about said crankshaft and secured to said external side of said end housing and having the external gear thereof driven by said crankshaft, said pump having a suction chamber and a pressure chamber, suction passage means in said multipart housing connecting said oil tank to said suction chamber, passage means in said crankshaft for distributing oil to said bearings and said phase gears for lubrication and also to the interior of said rotor for cooling, pressure passage means connecting said pressure chamber to said crankshaft passage means, drain passage means in said multipart housing for draining oil from said bearings and phase gears and the interior of said rotor to said oil tank, cooler means in said pressure passage means external of said multipart housing for

cooling the oil prior to delivery to said bearings, said phase gears and the interior of said rotor, distribution pressure regulator valve means for regulating the oil pressure in said pressure passage means downstream of said cooler means at a predetermined value sufficient to provide adequate distribution to said bearings, said phase gears and the interior of said rotor over the engine's normal speed range, cooler pressure regulator valve means for regulating the oil pressure in said pressure passage means upstream of said cooler means at a predetermined value substantially higher than said regulated distribution pressure but lower than the pressure limit of said cooler means, and both said pressure regulator valve means having an exhaust passage directly open to said suction chamber of said pump for delivering oil overage from their regulating operations directly to said suction chamber of said pump in shunt relation to said oil tank.

3,855,988

BALL THROWING MACHINE

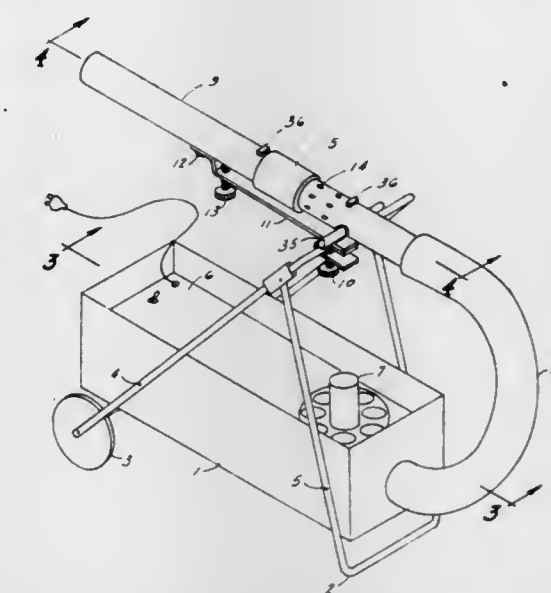
David C. Sweeton, Buffalo, N.Y., assignor to Prince Manufacturing, Inc., Princeton, N.J.

Filed Apr. 13, 1973, Ser. No. 350,696

Int. Cl. F41f 1/04

U.S. Cl. 124-11 R

8 Claims



1. A ball throwing device comprising a base embodying a stationary air box with an exterior open top portion defining a ball receiving tray, said tray having an inclined ball receiving floor with upstanding side and end walls circumscribing and extending above said floor, a support frame including a portion extending above said tray, a ball projection barrel supported on said frame, said barrel having an outer end through which the balls are projected and an inner end connected to one end of a flexible conduit with the other end of said flexible conduit being connected to said air box, a ball feed assembly including a plurality of cylindrical containers arranged in an annular side-by-side pattern each having an open top at the level of the floor of said tray for receiving a ball from said tray, wall means at the bottom of said cylindrical containers for supporting the balls in said containers except in an area adjacent the connection of said air box to said flexible conduit, a horizontal panel pivotally located below said area and being displaceable downwardly by the weight of a ball thereabove and being urged upwardly by the pressure of air in the air box to close the bottom of said cylindrical containers, said panel being releasable downwardly when a ball is in the cylindrical container to deposit each ball in succession into the air box directly adjacent the connection to said flexible conduit, means for rotating said ball feed assembly to feed balls in succession from said tray into said air box, fan means for pressurizing said air box, said conduit and said barrel to feed balls from said air box through said conduit to said barrel, and releasable detent means in said barrel for blocking the movement of the ball through said barrel until a predetermined air

pressure is built up behind said ball to release the ball for projection out of said barrel.

3,855,989

PUMP-TYPE AIR GUN WITH TUBULAR VALVE MEMBER

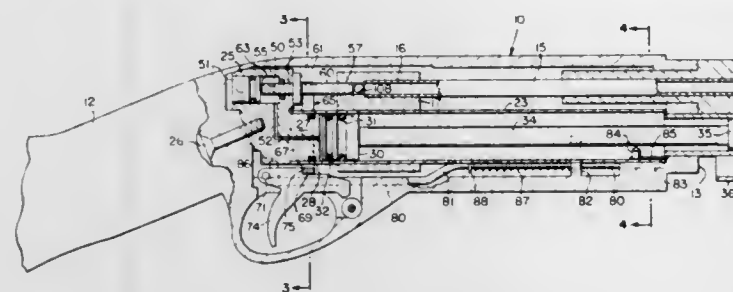
David R. Hand, Rochester, N.Y., assignor to Crossman Arms Company, Inc., Fairport, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,702

Int. Cl. F41b 11/00

U.S. Cl. 124-13 A

10 Claims



1. A pump-type air gun comprising a frame having therein an air pressure chamber, a barrel secured in said frame, manually operable pump means on said frame for filling said chamber with a supply of compressed air, a tubular valve member slidable in said chamber and having its bore aligned with the bore of said barrel, means for positioning a projectile between said valve member and said barrel in registry with said barrel, a valve seat in said chamber, means for releasably holding said valve member in a cocked position in which the bore of said valve member is closed by said seat, a releasable trigger operable to release said holding means so that the compressed air in said chamber moves said valve member off its seat and the compressed air from said chamber flows through the bore of said valve member to the rear of the projectile to propel the projectile from the barrel, and means connecting said valve member to said pump means and operative to return said valve member to its cocked position each time said pump means is operated.

3,855,990

AIR GUN VALVE APPARATUS ASSEMBLY

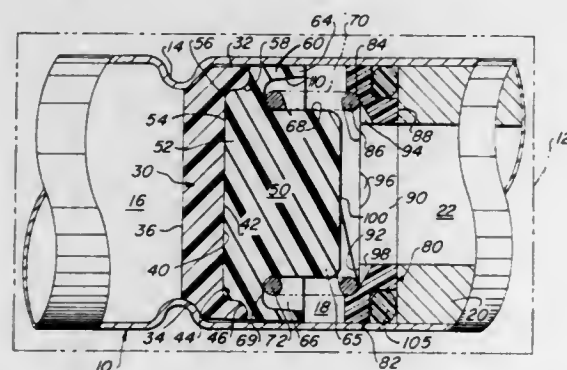
Ronald W. Joyce, Springdale, and Ross T. Dozier, Rogers, both of Ark., assignors to Victor Comptometer Corporation, Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,134

Int. Cl. F41b 11/00; F41f 1/04; F16k 15/14

U.S. Cl. 124-13 A

10 Claims



1. In an air gun or the like having a variable volume air compression chamber and a piston means operable in the air compression chamber to compress air therein by movement from a retracted maximum volume position to an extended minimum volume position, the invention comprising:

a first elongated tubular means providing said air compression chamber, a radially inwardly extending abutment means at one end of said compression chamber abuttingly receiving said piston means in the extended position and defining a central outlet passage from said compression chamber, a second elongated tubular means having a cylindrical inner peripheral surface providing an elongated cylindrical compressed air storage chamber extending axially from and adjacent said abutment means and connected to said compression chamber by said outlet passage, an axially movable cylindrical plate means mounted in said storage chamber next adjacent said abutment means and being movable axially in said storage chamber between a closed position relative to said outlet passage in abutting engagement with said abutment means and an open position relative to said outlet passage in axially spaced relationship to said abutment means, said plate means having an abutment surface facing said abutment means and being engagable therewith in the closed position, said plate means having a cylindrical outer peripheral surface of a diameter less than the inside diameter of said cylindrical inner peripheral surface of said second tubular means to provide first annular peripheral air passage means therebetween connecting said central outlet passage to said storage chamber, annular sealing means associated and movable with said plate means having a cylindrical outer peripheral surface of a diameter less than the inside diameter of said cylindrical inner peripheral surface of said second tubular means to provide second annular peripheral air passage means therebetween connecting said central outlet passage to said storage chamber and including a resiliently deflectable skirt portion having a normal outside diameter greater than the diameter of said storage chamber and normally resiliently compressibly engagable with said second tubular means to seal said air passage means when the air pressure in said storage chamber is equal to or exceeds the air pressure in said compression chamber, said skirt portion being resiliently deflectable radially inwardly of and in spaced relationship to said second tubular means when the air pressure in said compression chamber exceeds the air pressure in said storage chamber to connect said air passage means to said storage chamber, said plate means and said annular sealing means being loosely slidably supported in said storage chamber only by engagement between said cylindrical inner peripheral surface of said second tubular means and said outer peripheral surface of said plate means and said outer peripheral surface of said sealing means, and spring means in said storage chamber operatively engaged with said plate means and said sealing means to bias said plate means and said sealing means toward the closed position whenever the air pressure in said storage chamber and the force of said spring means are greater than the air pressure in said compression chamber.

3,855,991

ARCHERY BOW WITH ARROW GUIDE MEANS IN HAND GRIP

Alexander Imatt, 1595 N. Calle La Cumbre, and Derek A. Brand, 2132 Lyndhurst Ave., both of Camarillo, Calif. 93010

Filed Dec. 6, 1973, Ser. No. 422,327

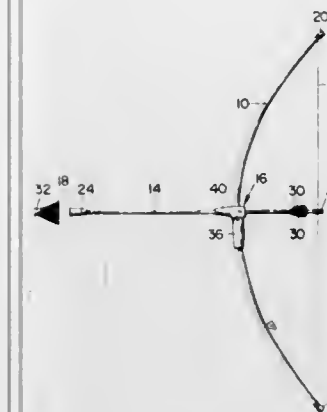
Int. Cl. F41b 5/00

U.S. Cl. 124-24 R

1 Claim

1. A missile projecting system in a bow and arrow comprising, a resilient bow, a bowstring, an arrow captured at one of its ends on the bowstring, an integral hand grip mounted on the bow and forming an arrow guide and a passage for the bow to pass therethrough, said grip having an arrow guide which is

spaced laterally from one side of the bow when the grip is mounted on the bow, and a missile releasably fixed to the free



end of the arrow, the missile being a shuttlecock having a suction cup thereon.

3,855,992

SHARPENING DEVICE FOR GRINDING WHEELS

Karl Tore Nordin, Lidkoping, Sweden, assignor to Lidkopings Mekaniska Verstaads Aktiebolag, Lidkoping, Sweden

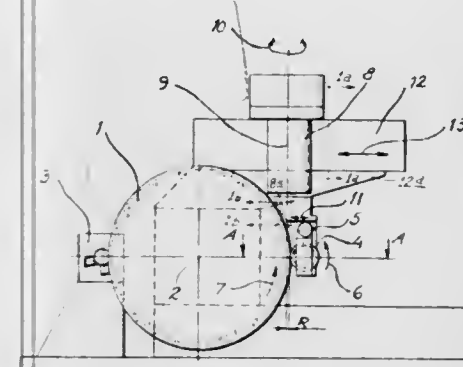
Filed May 2, 1973, Ser. No. 356,471

Claims priority, application Sweden, June 2, 1972, 7239/72

Int. Cl. B24b 53/06

U.S. Cl. 125-11 CD

5 Claims



1. A device for sharpening a grinding wheel with a profile surface consisting of two straight line segments and an intermediate arcuate segment comprising a sharpening roller rotatably mounted in a support and having two peripheral sharpening surfaces disposed at a predetermined angle relative to one another and defining an edge at the radially outer rim of said sharpening roller, means mounting said support for rotation through a predetermined angle between first and second limit positions about an axis disposed parallel to a tangent to the surface of the grinding wheel, one of said sharpening surfaces contacting one of the straight line segments of the grinding wheel when said support is located in said first limit position and the other of said sharpening surfaces contacting the other straight line segment of said grinding wheel when said support is located in said second limit position, and said rim of said sharpening roller contacting said arcuate segment of the grinding wheel when said support is rotated between said limit positions.

3,855,993

RADIATING TUBE BURNER

Karl-Heinz Burmeister, Kleve, Germany, assignor to Ipsen Industries International, Gesellschaft mit beschränkter Haftung, Kleve, Germany

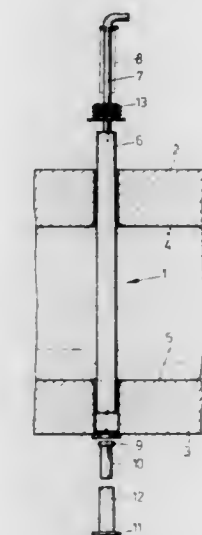
Filed Mar. 18, 1974, Ser. No. 452,283

Claims priority, application Germany, Mar. 17, 1973, 2313421

Int. Cl. F23c 3/00

U.S. Cl. 126-91 A

14 Claims



1. A radiating tube burner assembly for the continuous combustion of fuel gas with air, the burner assembly being mountable across spaced upper and lower walls of a furnace and comprising in combination:

an upright elongated tubular outer shell having an open upper end;
a combustion air feed pipe of a much smaller diameter than said shell extending through the upper end thereof along the longitudinal axis of the shell and having an open lower end positioned a distance above the lower end of the shell;
a combustion air inlet connection on the upper end of said air feed pipe;
a burner head mounted inside said outer shell a distance above the lower end of said air feed and surrounding the latter in such a way as to define an air flow passage therebetween;
a flow reversing shell extending downwardly from said burner head and enclosing the portion of the air feed pipe which reaches below the burner head so as to define an air flow channel between said pipe and the inner wall of said shell, which channel leads upwardly from the open lower end of said pipe to said air flow passage inside the burner head;
a fuel gas inlet at the lower end of said outer shell;
a fuel gas flow channel surrounding the outside of said flow reversing shell and leading upwardly inside said outer shell from the fuel gas inlet to the burner head; and
means for mixing the upwardly flowing combustion air and the surrounding likewise upwardly flowing fuel gas for combustion above the burner head in the space defined between said air feed pipe and said outer shell.

3,855,994

VENTILATED WINDOWED OVEN DOOR

Jesse L. Evans, Tipp City, and Eugene L. Hecker, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 379,725, July 16, 1973, Pat. No.

3,818,890. This application Mar. 27, 1974, Ser. No. 455,295

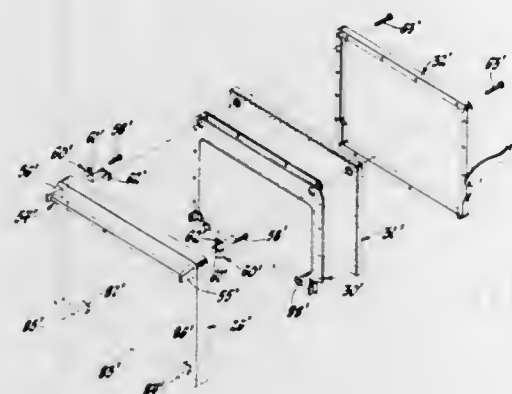
Int. Cl. F24c 15/04

U.S. Cl. 126-198

2 Claims

1. A cooking oven door in combination with a domestic range; said door including an outer cover panel having rear-

wardly directed top, side and bottom peripheral flanges, an inner double-walled box-casing located in spaced partially nested relationship with said outer cover panel top and side peripheral flanges; said double-walled box-casing including a rear pan-shaped panel and a face panel, said rear pan-shaped panel having a forwardly extending first peripheral flange and an inwardly extending second peripheral flange, said face panel positioned in parallel spaced relationship to said rear panel and substantially coextensive in planar extent therewith such that the marginal portion of said face panel abuts said rear pan-shaped panel second peripheral flange, a plurality of threaded fasteners positioned around said marginal portion securing said second peripheral flange to said face panel to form said double-walled box casing, paired upper and lower



attachment means securing said cover panel in spaced relation to said box casing, each of said upper pair of attachment means extending longitudinally through apertures in said face panel from the inner face of said cover panel to the outer face of said pan-shaped panel, threaded fastener means for connecting the ends of said upper attachment means between said cover and pan-shaped panels, said lower attachment means in the form of clip means fastened to the face panel and the adjacent side peripheral flange of said cover panel, said cover panel bottom peripheral flange free edge forwardly offset from said face panel whereby ambient air enters the space therebetween to rise by convection currents between said cover panel and said box-casing to exit through the space between said cover panel top peripheral flange and said box-casing.

3,855,995

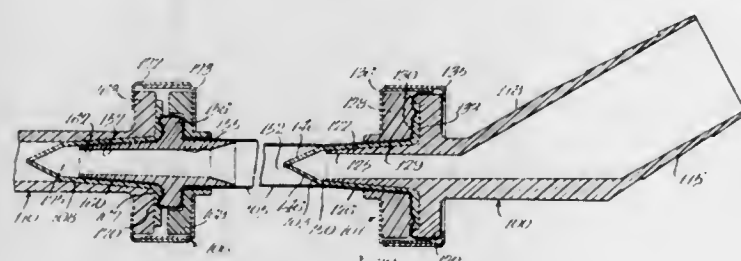
VENTRICLE ASSEMBLY FOR PULSATILE-TYPE PUMP
Donald J. Bentley, Newport Beach, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 171,924, Aug. 16, 1971, abandoned.
This application Sept. 11, 1973, Ser. No. 396,198

Int. Cl. F16k 15/00; A61b 19/00

U.S. Cl. 128-1 D

23 Claims



1. A pulsatile heart pump assembly, comprising: a chamber, means reciprocal in the chamber, a ventricle assembly at least partly in the chamber including an inlet fitting, an elongated leaflet valve wider than the inlet fitting and having a hydraulic radius substantially equal to the inlet fitting in the normally open position of the valve, a ventricle surrounding at one end said inlet fitting and adapted to be filled with blood, an outlet valve at the other end of the ventricle, and an outlet fitting communicating with said outlet valve.

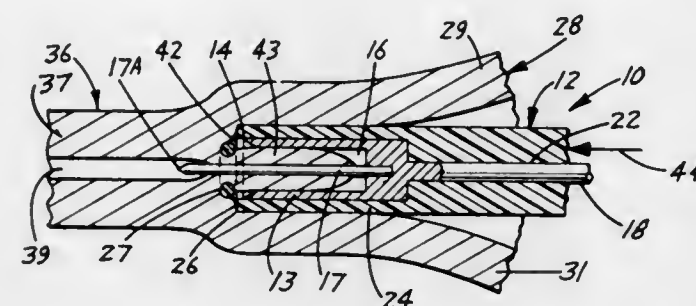
3,855,996
CONTRACEPTIVE APPARATUS AND PROCEDURE
Lee R. Bolduc, St. Louis Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 1, 1973, Ser. No. 337,071

Int. Cl. A61b 19/00

U.S. Cl. 128-1 R

15 Claims



1. An instrument for implanting an annular device in tissue around the canal of a Fallopian tube to close the canal of the Fallopian tube comprising: first means for making an annular incision in the tissue around the exit section of the canal of the Fallopian tube, said first means having a member for carrying an expanded annular device and knife means for cutting the annular incision in the tissue, and second means movable relative to the first means for moving the annular device from the member and into the annular incision in the tissue around the canal whereby said annular device contracts closing said canal.

10. A method of closing the canal of a Fallopian tube with an annular device comprising: making an annular incision around the exit portion of the canal of a Fallopian tube from the uterine cavity, placing an expanded annular device in the annular incision and allowing the expanded annular device to contract to close the canal of the Fallopian tube.

3,855,997

STERILE SPECIMEN TRAP

Philip H. Sauer, Bolingbrook, Ill., assignor to Cinco Medical Health Supply Corporation, Chicago, Ill.

Filed July 11, 1973, Ser. No. 378,349

Int. Cl. A61b 10/00; A61m 1/00

U.S. Cl. 128-2 F

8 Claims



1. A sterile specimen trap particularly adapted for use in obtaining a fluid specimen and maintaining said specimen in a sterile condition for laboratory analysis comprising:

container means open at one end to receive said fluid specimen, and closure means mounted over said open end of said container means to close and seal the interior of said container means and prevent contamination of said interior of said container means, said closure means including a first annular cover member and a second annular cover member, said second cover member being mounted on said first cover member, said second cover member and said first cover member being angularly movable relative to one another about a concentric central axis, each of said cover members having a pair of correspondingly spaced openings formed in them to communicate the interior of said container means with fluid specimen conduit means and suction conduit means, respectively, when said openings are aligned, said second cover member being held in a stationary position relative to said specimen conduit means and said suction conduit means by cover retaining means, said cover retaining means comprising an adapter cap having open end portions of said fluid specimen conduit means and said suction conduit means mounted thereon and opening therethrough, said adapter cap means being mounted on said first cover member in such a manner that said second cover member is sandwiched between said adapter cap and said first cover member and said open end portions of said fluid conduit means and said suction conduit means are aligned with said openings formed in said second cover member, a portion of said second cover member engaging said adapter cap to prevent movement of said second cover member relative to said adapter cap, said first cover member and said second cover member thereby being angularly movable relative to one another to align the openings formed in said first cover member with the openings formed in said second cover member to communicate said fluid conduit means and said suction conduit means to the interior of said container means to trap the fluid specimen therein, said first cover member and said second cover member being alternately movable in an opposite manner relative to one another, after a desired amount of the fluid specimen has been trapped in said container means, to close said openings and eliminate communication to the interior of said container means to preserve the sterility of the specimen trapped in said container means.

3,855,998

ENTERTAINMENT DEVICE

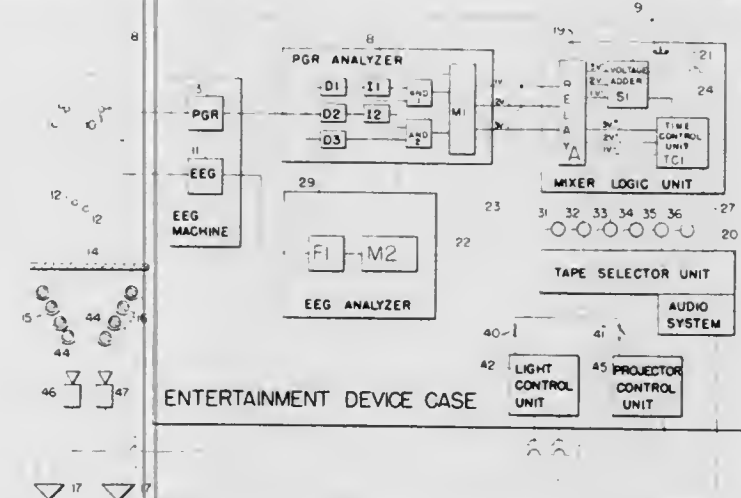
Miguel Hidalgo-Briceno, Caracas, Venezuela, assignor to Antonia Aagaard de Hidalgo and Luigi Mari Nolfi, both of Caracas, Venezuela, part interest to each

Filed Mar. 14, 1973, Ser. No. 341,284

Int. Cl. A61b 5/04

U.S. Cl. 128-2.1 B

5 Claims



1. An entertainment device comprising, in combination, means presenting stimuli to a user, said means presenting stimuli to a user having tapes with musical passages thereon, a tape selector unit, an audio system for playing tapes selected

by said tape selector unit to a user, a screen, means directing visual color stimuli of higher and lower intensity on said screen for viewing by a user, and a logic unit controlling said tape selector unit to play selected tapes for given time intervals while simultaneously controlling said means directing visual color stimuli on said screen to direct a visual color stimulus of selected intensity on said screen; and monitoring means read after each time interval by said logic unit, said monitoring means being at least an EEG machine monitoring the presence and absence of theta waves of a user and monitoring the small, medium, and large PGR of a user, said monitoring means on being read by said logic unit activating said logic unit to control said tape selector unit to select one of said tapes for said audio system to play a given musical passage thereon and to control said means directing visual color stimuli on said screen to direct a visual color stimulus of a selected intensity on said screen while said musical passage is played according to the monitored large, medium, and small PGR and the presence and absence of theta waves of the user to urge the user toward a desired state of aesthetic experience.

3,855,999

SPHYGMOMANOMETER

Mario Saenz Arroyo, Mexico City, Mexico, assignor to Articulos Medicos Mexicanos, S.A., Mexico City, Mexico

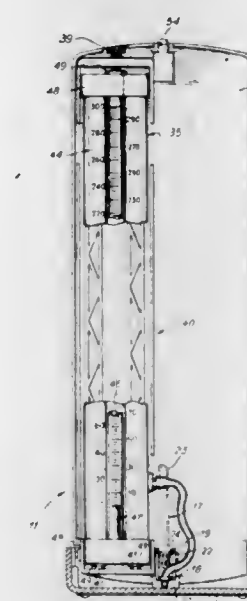
Filed Mar. 14, 1973, Ser. No. 341,177

Claims priority, application Mexico, May 30, 1972, 135791

Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 G

5 Claims



1. In the combination of a compact case and an integral, removable sphygmomanometer, wherein the case includes a base and a lid held together at respective ends by a combination of a hinge and pivotal means and closure means at the opposite end of said base and said lid; and wherein the sphygmomanometer includes a manometer with a mercury reservoir and a measuring tube held in support device having a scale alongside said measuring tube, wherein said support means has means to connect said reservoir to a bracelet which in turn has means to connect it to a manually operated pump; the improvement comprising a manometer supporting device having one disc element at its upper end and two disc elements at its lower end with centrally located recesses in said discs; said supporting device having at its upper back end movable hook means; said lid having an integral housing structure to lodge said supporting device; said structure including at its bottom upper surface two protuberances that correspondingly engage said recesses of the two lower disc elements of said supporting device; said structure having at its upper end centrally situated screw means that mates with said recess of the upper disc element of said supporting device, that becomes

fixedly attached to said structure when said screw means is driven downwards; said supporting device having detachable hose means that connects said reservoir with said bracelet which in turn has non-detachable hose means connecting the same with said pump; said detachable hose means being passed through loop guide means; said pivotal means including a reactive helical spring having oppositely projecting ends, one of which presses against said lid to hold it in its open position, while the other spring end presses against a bottom part of a spring supporting piece from whose bottom said hose guide means projects; said base having at one of its inner side walls a combination movable fastening plate coupled by pivotal means to an inner side wall portion of said base and a clamping device to hold down said non-detachable hose and a neck portion of said pump, respectively.

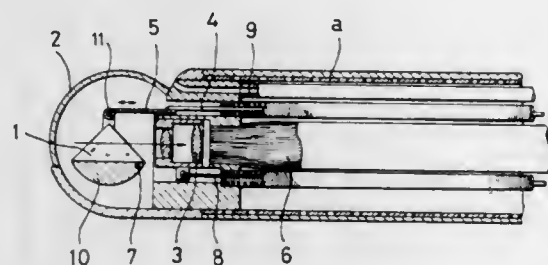
3,856,000 ENDOSCOPE

Toshio Chikama, Tokyo, Japan, assignor to Kabushiki Kaisha Machido Seisakusho, Tokyo, Japan
Filed May 16, 1973, Ser. No. 360,945

Claims priority, application Japan, June 19, 1972, 47-71361
Int. Cl. A61b 1/06

U.S. Cl. 128-6

7 Claims



1. An endoscope comprising a tube having a front end with an observation window thereat, said window having a front observation surface and one side observation surface, optical means in said tube for transmitting light and images there-through, a pivotal optical element supported in said tube between said window and said optical means for transmitting an image viewed through the window back to the optical means, means for moving the optical element between a first position for receiving an image through the front observation surface and a second position for receiving an image through the side observation surface, and a shading plate displaceably supported in the tube for movement with the optical element for blocking passage of incident light to said optical element from said side surface when the optical element is in said first position.

3,856,001

LARYNGOSCOPE BLADE

Otto C. Phillips, 143 Jefferson Dr., Pittsburgh, Pa. 15228
Filed Aug. 24, 1973, Ser. No. 391,462

Int. Cl. A61b 1/26

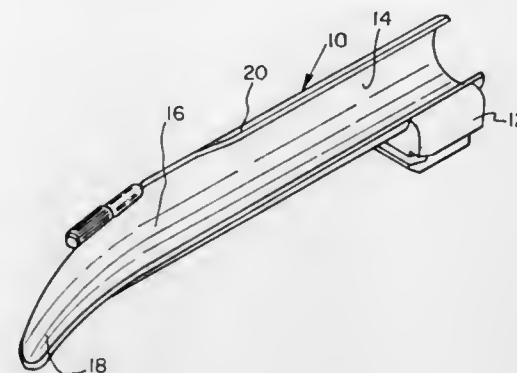
U.S. Cl. 128-11

4 Claims

1. A laryngoscope blade suitable for performing an endotracheal intubation comprising:

- an elongated, transected tube-shaped member having means on one end for attachment to a handle;
- a major part of the length of the member being substantially straight and a minor part of the length beginning at a point approximately two inches from the opposite end of the member being smoothly curved and forming a tip on the opposite end of the member;
- said opposite end being smoothly tapered inwardly toward the tip such that the blade can be inserted in a patient's pharynx and an endotracheal tube can be inserted through the tube-shaped member, and

D. to provide direct visualization of the larynx, a lamp positioned on the left-hand side of the tube-shaped member (as viewed by a patient) and focused in the direction of the smoothly curved tip.



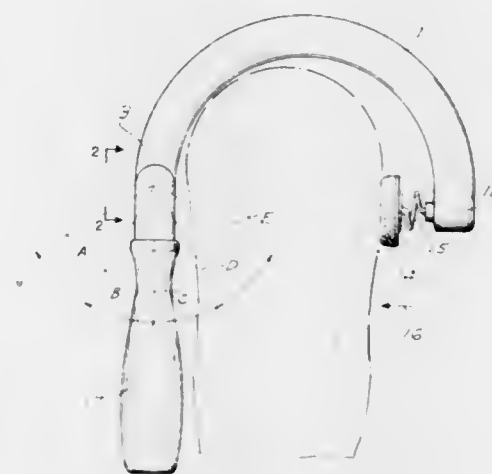
3,856,002 MASSAGE DEVICE

Josie Matsumoto, Toronto, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 28, 1973, Ser. No. 392,280
Int. Cl. A61h 7/00

U.S. Cl. 128-67

2 Claims



1. A massage device for massaging parts of the body which are difficult to reach, said massage device comprising a substantially arcuate arm having spaced free ends substantially opposite each other; a massaging head member resiliently affixed to one free end of the arm and extending in a direction toward the other free end of the arm; a handle pivotally affixed to the arm at the other free end thereof; and detent means coupling the handle to the arm in a manner whereby the arm and the handle are substantially fixedly positionable at a plurality of angles relative to each other.

3,856,003

SELF ADJUSTING PULLEY MOUNT FOR TRACTION DEVICE

Harold P. Pfluger, 340-6T Vallejo Dr., Millbrae, Calif. 94030

Filed Sept. 21, 1973, Ser. No. 399,289

Int. Cl. A61h 1/02

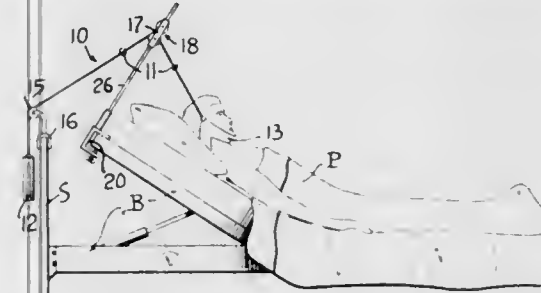
U.S. Cl. 128-75

2 Claims

1. In a traction device of the type having a sling adapted for connection to the extremity of a patient in a bed support and the like on which a pulley is affixed to a bedstead and over which a cable secured to such sling is trained and having a weight at its opposite end for creating traction beneficial to such patient:

A self adjusting feature including a base adapted to be secured to the adjustable backrest of such bed for movement therewith between its inclined and horizontal positions; between the sling and fixed pulley of such traction device and comprising in combination therewith:

- a rod fixed to and extending upwardly from said base;
- a pulley mount arranged for up and down movement on said rod and having a pair of pulleys journaled one above the other on axes perpendicular to said rod whereby a lowermost one of said pulleys engages said cable when the backrest is inclined and the uppermost



pulley engages the cable when the back rest is horizontal;

- a C clamp for said pulley mount for securing the same to said rod in a position to afford in-line traction to the extremities of the patient connected to said sling; and
- a pivotal connection between said C clamp and said pulley means facilitating swinging movement of the latter about an axis parallel to said rod to compensate for change of position of the sling end of said cable within the bed by reason of movement of the patient therein.

3,856,004

CLAVICLE BRACE

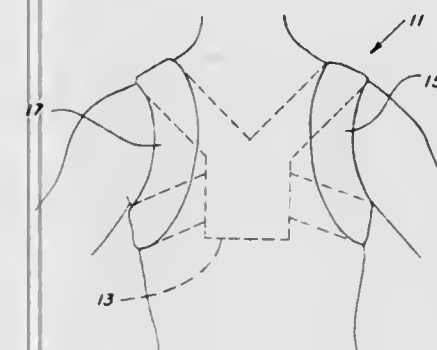
Wayne H. Cox, Pontotoc, Miss., assignor to Comfort Care Products, Pontotoc, Miss.

Filed Dec. 26, 1973, Ser. No. 427,995

Int. Cl. A61f 5/04

U.S. Cl. 128-87 R

7 Claims



1. A clavicle brace for giving support to a patient's shoulders during the healing of an injured clavicle, said clavicle brace comprising:

- body means for positioning substantially over the upper back of the patient;
- first strap means attached to the upper portion of said body means for extending over one shoulder and under the corresponding axilla of the patient, said first strap means having a distal end including fastening means thereon for allowing it to be fastened to other portions of said first strap means;
- second strap means attached to the upper portion of said body means adjacent said first strap means for extending over the other shoulder and under the corresponding axilla of the patient, said second strap means having a distal end including fastening means thereon for allowing it to be fastened to other portions of said second strap means;

d. coupling means attached to said body means below said first and second strap means for allowing the distal ends of said first and second strap means to extend there-through after passing under the respective axilla of the patient and to be subsequently doubled back on themselves for allowing said fastening means to attach said distal ends of said first and second strap means to other portions of said first and second strap means, said coupling means including a first leg, a second leg, and a third leg joined together to form an equilateral triangle; said first leg being substantially fixedly attached to said body means, said second leg depending downwardly from said first leg for allowing said distal end of said first strap means to be doubled therearound, and said third leg depending downwardly from said first leg for allowing said distal end of said second strap means to be doubled therearound.

3,856,005

LAPAROTOMY SHEET WITH EXTENDED WING SECTIONS

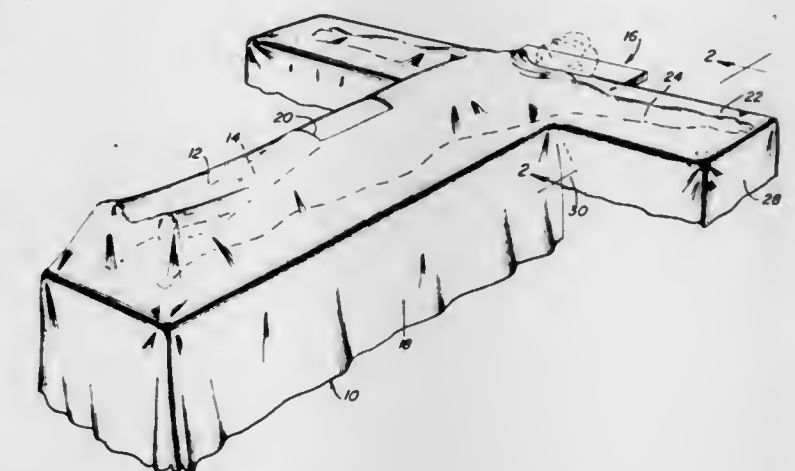
Robert J. Sislian, Brielle, N.J., assignor to Work Wear Corporation, Cleveland, Ohio

Filed May 9, 1973, Ser. No. 359,212

Int. Cl. A61f 13/00

U.S. Cl. 128-132 D

1 Claim



1. A surgical drape for positioning in overlying and protective relation to a patient and a generally rectangular surgical table provided with armboards projecting perpendicularly therefrom for receiving the arms of the patient for protecting the patient against contamination during a surgical procedure, said drape comprising a generally rectangular main body panel adapted to overlie the table and the patient from head to toe, and wing sections extending generally perpendicularly from the main body panel of the drape for overlying the arms of the patient and the armboards of the table, said main body panel and wing sections including peripheral edge portions hanging downwardly over the peripheral edge of the surgical table and armboards, said area of the drape where the wing sections join the main body panel including added material to provide a gusset area interconnecting the portions of the main body panel and wing sections hanging over the peripheral edge portions of the surgical table and armboards to define a gusset to enable the portion of the drape in this area to hang substantially vertically downwardly throughout the perpendicularly arranged edges of the table and armboards defining the included angle therebetween thereby enabling a surgeon to move into this area adjacent the body of the patient without pulling the drape from protective relation to certain areas of the body of the patient.

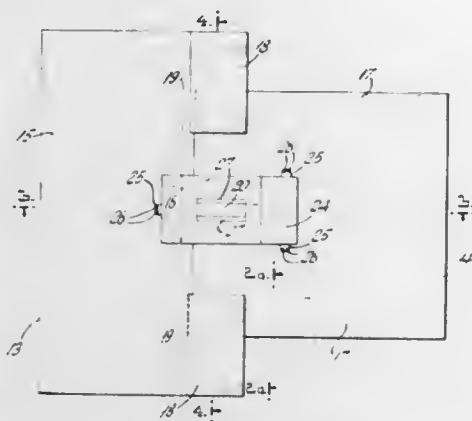
3,856,006

SURGICAL DRAPES WITH IMPROVED ARM COVERAGE
Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 2, 1973, Ser. No. 384,842

Int. Cl. A61b 19/06

U.S. Cl. 128—132 D



1. A generally T-shaped surgical drape for use on an operating table having a laterally extending board for supporting a patient's arm, said drape comprising an elongated, generally rectangular body portion having top and bottom ends and a pair of side edges, an elongated rectangular crossarm portion having top and bottom ends and side edges, said crossarm portion being disposed transversely of said body portion, the top end of said body portion being shorter than and integral with the bottom end of said crossarm portion, and an armboard flap having top and bottom ends and side edges, said armboard flap extending along the bottom end of said crossarm portion from a side thereof to a point overlying said body portion, the top end of said armboard flap being integral with the bottom end of said crossarm portion, said armboard flap being substantially free of attachment to said body portion.

3,856,007

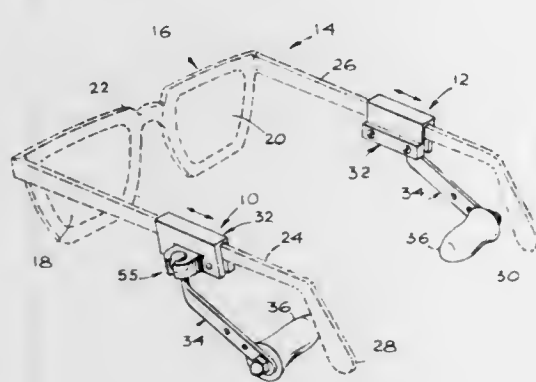
EAR PROTECTOR ASSEMBLY

Howard S. Leight, 16027 Northfield St., Pacific Palisades, Calif. 90272

Filed Apr. 2, 1973, Ser. No. 346,746

Int. Cl. A61f 11/00

U.S. Cl. 128—152



3. An ear protector for mounting on an eyeglass frame that has temple bars comprising:

a mount having a mount wall forming a slot for slideably receiving a temple bar, a fastener mounted on said mount wall and moveable towards and away from the slot to clamp the mount wall at a chosen position along a temple bar, and a pair of bearing walls mounted on said mount wall and resiliently moveable together and apart and forming a socket;

an arm having first and second ends, said first end having a ball portion which is received between said bearing walls of said mount and which holds the pair of bearing walls

biased apart to provide friction that retains the arm in any position to which it is pivoted; and an earplug mounted at said second end of said arm.

3,856,008

ELASTIC GARMENT FOR IMPOSING PRESSURE ON UNDERLYING BODY REGIONS

Susan M. Fowler, Grand Rapids; Carolyn Jobst Gottfried, Rossford; Dennis G. Mosiniak, and Ansis U. Tenteris, both of Toledo, all of Ohio, assignors to Jobst Institute, Inc., Toledo, Ohio

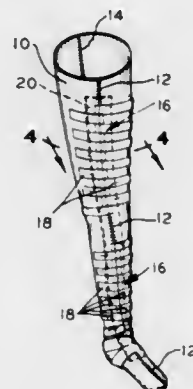
Continuation of Ser. No. 99,214, Dec. 16, 1970, abandoned.

This application May 24, 1973, Ser. No. 363,400

Int. Cl. A61f 13/00

U.S. Cl. 128—165

6 Claims



1. A leg stocking comprising a main body portion including thigh, knee, calf, ankle, instep and foot portions of generally tubular shape and of flexible material which is longitudinally and circumferentially elastic having a front seam circumferentially closed at the top, knee, instep and foot, the remaining portions of said front seam being openings; a plurality of adjustable fastening means extending laterally across said openings and spaced along the length of said main body portion, whereby regions intermediate said spaced fastening means afford longitudinal elasticity to said garment along the margins of said openings; said main body portion at the knee, instep and foot portions being formed to impose a pressure gradient on the body regions to which it is applied by gradations in the ratio of the circumference of the body region to the circumference of the garment region in registry therewith, whereby said closed tubular length imposes an inward directed radial pressure on the body region which is greater at one end thereof than at the other end, and being tailored to relieve pressure on the portion of the body encased thereby, whereby the pressure relief is accomplished by a smooth transition with said fastening means adjustable to give a gradual change in pressure gradient from the openings in said main body portion to the knee, instep and foot portions; said fastening means including lateral extensions of said material extending from both sides of the openings with said extensions on one side interdigitating with said extensions on the other side; a liner between the margins of said openings and said leg; pressure indicating indices for said extensions; and a second seam to facilitate tailoring that portion of said main body portion requiring a substantial change in contour to conform to the leg.

3,856,009

CATHETER PLACEMENT UNIT

Alon P. Winnie, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 202,256, Nov. 26, 1971, Pat. No. 3,782,381. This application May 29, 1973, Ser. No. 364,798

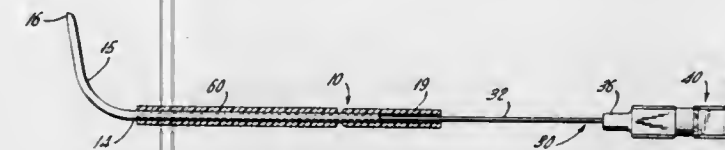
Int. Cl. A61m 25/00

U.S. Cl. 128—214.4

2 Claims

1. A catheter assembly comprising: a length of flexible tubing precurved at its distal end; an introducer needle having

a point at its distal end removably disposed within said tubing; and anti-skiving means mounted over said tubing and movable from a position overlying a portion of said tubing that is not



precurved to a position overlying said precurved distal end so that said distal end may be temporarily straightened to prevent internal skiving of said tubing when said introducer needle is fully positioned within said tubing.

3,856,010

CATHETER PLACEMENT UNIT WITH PRESSURE CLOSURE

Harvey Robert Moorehead, Salt Lake City, and George R. Reading, Sandy, both of Utah, assignors to Deseret Pharmaceutical Company, Inc., Sandy, Utah

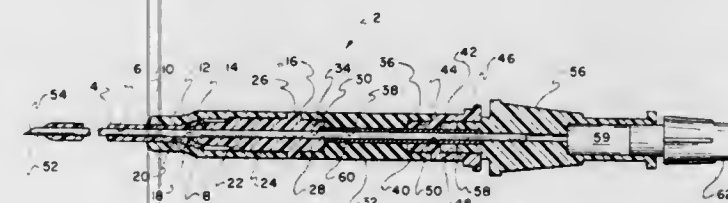
Division of Ser. No. 170,157, Aug. 9, 1971, Pat. No. 3,811,440.

This application Sept. 7, 1973, Ser. No. 395,120

Int. Cl. A61m 5/00

U.S. Cl. 128—214.4

3 Claims



1. A stylet catheter assembly comprising: a flexible catheter tube having an axial bore; elongated piercing means coaxially disposed within the bore and extending beyond the length of the catheter tube in the initial assembled condition; a hollow body affixed to the proximal end of the catheter tube through which the piercing means also coaxially passes in the initial assembled condition, the hollow of the body being in fluid communication with the bore of the catheter tube upon axial removal of the piercing means and the proximal end of the hollow body comprising an infusion female fitting; the hollow body comprising a yieldable occluding hollow section with memory forward of the female fitting which upon being manually squeezed against the piercing means fully transversely collapses upon itself and thereby occludes the hollow of the body under said squeezing force immediately upon said axial removal of the piercing means from the catheter tube and from the occluding hollow section, to prevent blood loss after venipuncture following piercing means removal before infusion attachment at the female fitting.

the hollow body comprising a yieldable occluding hollow section with memory forward of the female fitting which upon being manually squeezed against the piercing means fully transversely collapses upon itself and thereby occludes the hollow of the body under said squeezing force immediately upon said axial removal of the piercing means from the catheter tube and from the occluding hollow section, to prevent blood loss after venipuncture following piercing means removal before infusion attachment at the female fitting.

3,856,011

POST-SURGICAL DRAINAGE POUCH RETAINING ASSEMBLY

Burton L. Blanchard, 2216 Chevy Oaks Cir., Glendale, Calif. 91206

Filed Mar. 15, 1973, Ser. No. 341,388

Int. Cl. A61f 5/44

U.S. Cl. 128—283

12 Claims

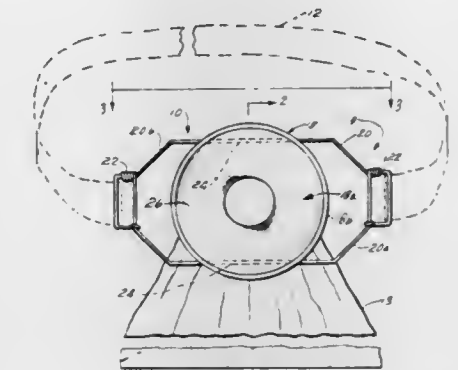
9. A post-surgical drainage pouch retaining assembly usable with a strap for holding a drainage pouch about an abdominal drainage opening of a person's body, comprising:

a retaining ring for coupling such pouch about such drainage opening and comprising a body facing side about the

axis of the retaining ring for receiving a body-to-ring sealing ring;

a connector for coupling said retaining ring with such pouch to such strap about a person's body comprising

a. first and second springs mounted in said ring and extending in opposite directions away from the axis of said retaining ring to two spring extremities,



b. each said spring having a portion located at its extremity for coupling to such strap; and
c. the extensions of each said spring being resilient for spring loading said retaining ring in an axial direction toward such person's body and against such strap.

3,856,012

STABILIZED ABSORBENT PAD

Richard C. MacDonald, Rexdale, and Noel E. Martin, Weston, Ontario, both of Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed Dec. 8, 1972, Ser. No. 313,596

Int. Cl. A61f 13/18

U.S. Cl. 128—284

3 Claims

1. A stabilized absorbent pad comprising a quantity of wood fibers defining said pad, a plurality of filaments spaced apart from each other and extending from portion to portion of said pad, water soluble adhesive interposed between each of said filaments and adjacent fibers, said adhesive and filaments defining a bond network wherein the tenacity of adhesion of said fibers to a filament decreases as a function of their proximity to said filament and wherein those fibers in one portion of said pad that are adhesively connected to a particular filament are further connected through said filament to such other portions of said pad to which said filament extends thereby stabilizing said pad against migration of said fibers within said pad.

3,856,013

HOLLOW FOAM TAMPONS FROM FLAT BLANKS

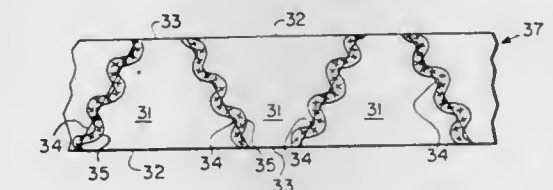
Bernard A. Dulle, Montgomery, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 172,790, Aug. 18, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 353,058

Int. Cl. A61f 13/20

U.S. Cl. 128—285

9 Claims



1. A tampon comprising: a flexible, resilient, elastic, absorbent body, said body being a cellular material having a dry modulus of compressibility of from 0.2 p.s.i. to 0.6 p.s.i., said body having an internal discontinuity forming an interior

surface, said material having been deformed subsequent to cell formation so as to provide the interior surface of said body with a circumferential compressive stress and the exterior surface of said body with a circumferential tensile stress so that the exterior surface portion is tensilely strained and the interior surface portion is compressively strained and the cell diameters parallel to and at said exterior surface are thereby made generally larger than the cell diameters parallel to and at said interior surface, thereby establishing a capillary gradient between the exterior and interior surfaces which creates a driving force from the exterior surface toward the interior surface.

3,856,014

SANITARY NAPKIN WITH POROUS RESIN POWDER DEODORANT

Akira Yamauchi, Hyogo-ken, Japan, assignor to Jex Co., Ltd., Osaka-fu, Japan

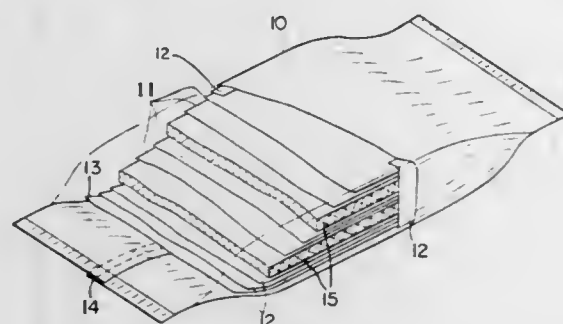
Filed Dec. 22, 1972, Ser. No. 317,795

Claims priority, application Japan, Oct. 23, 1972, 47-106072

Int. Cl. A61f 13/16

U.S. Cl. 128-290

15 Claims



1. In a sanitary napkin which comprises at least one layer of staple fibers in the form of a pad, the improvement wherein said pad contains as a deodorant a porous resin powder which is the condensation product of an aromatic amine with formaldehyde in the form of its acid salt.

3,856,015

STABILIZED CUTTING LOOP FOR RESECTOSCOPE

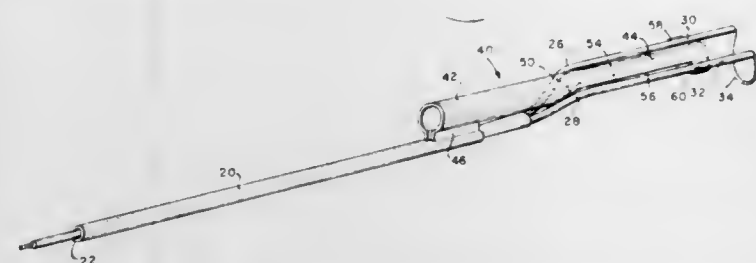
Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07205

Continuation-in-part of Ser. No. 219,687, Jan. 21, 1972, This application June 8, 1973, Ser. No. 368,185

Int. Cl. A61b 17/32

U.S. Cl. 128-303.15

2 Claims



1. As a new article of manufacture, a cutting loop assembly for a resectoscope used for performing transurethral operations, comprising an elongated conduit, an insulated electrically conductive wire extending through the conduit and protruding from the distal end thereof and formed into a wire loop comprising first sections which diverge from the conduit and extend angularly upwardly therefrom, second sections which extend from the first sections in spaced parallel relation to each other and parallel to the conduit, and a depending un-insulated loop connecting the ends of the second sections of the wires, and means for reinforcing and stabilizing the wire loop comprising an elongated rigid member formed of sheet material having a tubular part at its proximate end which is rigidly connected to the distal end part of the conduit above

the conduit and extends longitudinally thereof and outwardly therefrom, and a part distal to the tubular part which is part circular in cross section and forms an extension of the upper part of the tubular part and has lower edges which are parallel to adjacent, and in a plane even with or above the first and the second sections of the wire loop, and means rigidly connecting the part circular part of the elongated rigid member to the second sections of the wire loop at a part thereof adjacent the depending loop.

3,856,016

METHOD FOR MECHANICALLY APPLYING AN OCCLUSION CLIP TO AN ANATOMICAL TUBULAR STRUCTURE

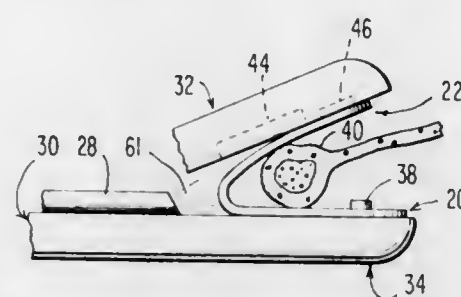
Hugh J. Davis, 2 E. Highfield Rd., Baltimore, Md. 21218

Filed Nov. 3, 1972, Ser. No. 303,314

Int. Cl. A61b 17/12, 17/10; B21d 5/16

U.S. Cl. 128-325

5 Claims



1. A method for mechanically applying an occlusion clip to an anatomical tubular structure which comprises the steps of securely mounting an occlusion clip onto a tubular instrument having clip-receiving jaws located near one end thereof and disposed in an open clip-receiving position, inserting said end of the tubular instrument having the jaws with the clip mounted thereon through an opening in an anatomical body and while viewing through an optical viewing means disposed near the other end of said tubular instrument and provided with illumination for illuminating the area of the jaws and the areas distally thereof, positioning the open jaws and the clip mounted thereon in a proper position over the anatomical tubular structure and thereafter closing the clip to produce an occlusion in said anatomical structure.

3,856,017

APPARATUS FOR LIGATING SECTIONED BLOOD VESSELS

Pierre Perisse; Jean Maurice Francois Perisse, both of 8 Rue du Stade 31, Rieumes, France (31370), and Andre Robert Chancholle, 20 Avenue Frizac, Toulouse, France (31400)

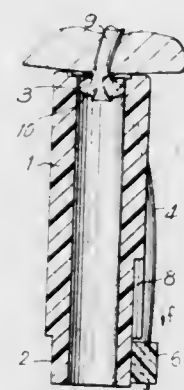
Filed Feb. 26, 1973, Ser. No. 335,758

Claims priority, application France, Feb. 24, 1972, 72.6328; Apr. 28, 1972, 72.15401

Int. Cl. A61b 17/12

U.S. Cl. 128-326

7 Claims



1. An apparatus for ligating sectioned blood vessels comprising a cylindrical body including means for removably attaching the body to a suction source, said cylindrical body

having an open end which can be placed against the end of a sectioned vessel and the tissue region therearound to form a tissue bud thereof within said body under the suction pressure from said suction source, means on said body for supporting a closure member adapted to ligate said vessel, said means supporting said closure member in surrounding relation to said bud, and actuator means operated externally of said body for applying said closure member around said bud in the course of application of suction pressure thereto to contract the tissue bud and close said end of the sectioned vessel.

3,856,018

PROCESS FOR LIGATING SECTIONED BLOOD VESSELS

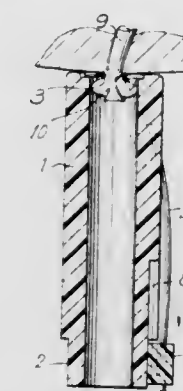
Pierre Perisse; Jean Maurice Francois Perisse, both of 8 Rue du Stade 31, Rieumes, France (31370), and Andre Robert Chancholle, 20, Avenue Frizac, Toulouse, France (31400)

Division of Ser. No. 335,758, Feb. 26, 1973. This application June 7, 1974, Ser. No. 477,269

Int. Cl. A61b 17/12

U.S. Cl. 128-326

3 Claims



1. A process for ligating sectioned blood vessels comprising applying suction force to the end of a sectioned vessel, as well as the tissue zone surrounding it to effect simultaneously the elimination of blood and the formation of a tissue bud containing the end of the vessel, and contracting the tissue bud at the base thereof, while still applying the suction to close said vessel end.

3,856,019

ACUPUNCTURE NEEDLE

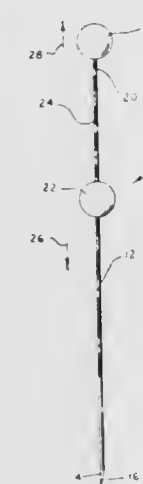
Bruce E. Waller, 533 Pali Dr., Long Beach, Calif. 90805

Filed June 4, 1973, Ser. No. 366,474

Int. Cl. A61b 17/34

U.S. Cl. 128-329 A

6 Claims



1. An acupuncture needle comprising an elongated, wire-like shaft of rigid material and of uniform cross-section, one end of said shaft having a hollow ground point, said shaft

including first and second elements thereon adjacent the end of said shaft distal said point, said elements being longitudinally spaced apart and defining therebetween a shaft portion, the distance between said elements being dimensioned such that said shaft portion and said elements may be simultaneously grasped and manipulated by the fingers of one hand.

3,856,020

TROCAR-CATHETER ASSEMBLY

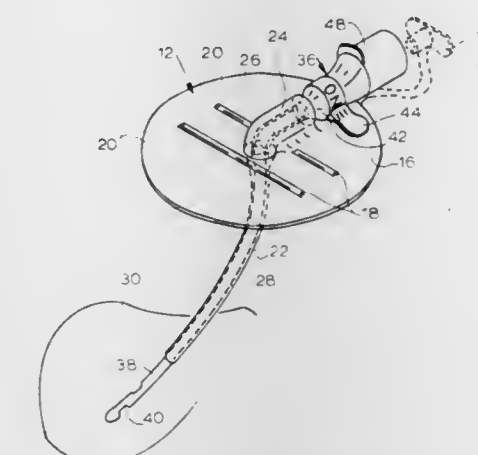
Stephen Robert Kovac, No. 3 Brookside Ln., Ladue, Mo. 63124

Filed Sept. 17, 1973, Ser. No. 397,520

Int. Cl. A61m 25/02, 5/14

U.S. Cl. 128-347

5 Claims



1. A trocar catheter for use in penetrating body cavities including: a one-piece catheter device including a flexible plate element, a catheter tube extending from one side of the flexible plate element and a curved flexible elbow section extending from the other side of the flexible plate element and having a through bore which communicates with the through bore of said catheter tube, means to permit the through bores of said catheter tube and flexible curved elbow section to be held and aligned including having a curved elbow section flexibly mounted on a portion of said plate element of said catheter device, and a rigid trocar slidably and removably received within the curved elbow section and catheter tube to align the communicating through bores thereof.

3,856,021

DEVICE FOR TREATMENT OF BLOAT OF RUMINANTS

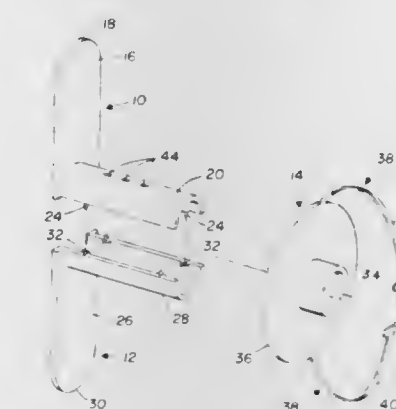
Arthur J. McIntosh, La Porte City, Iowa 50651

Filed Oct. 1, 1973, Ser. No. 402,191

Int. Cl. A61b 17/34; A61m 27/00

U.S. Cl. 128-347

12 Claims



1. A device for the treatment of bloat in ruminants including a means for providing a removable passageway through the tissues of the ruminant leading into its rumen, said device comprising a first component having a first member forming a longitudinal trough-like portion of a passageway open at its ends and a second member extending from said first member

substantially at a right angle outwardly and away from said passageway, a second component separably connected to said first component and also having a first member forming a longitudinal trough-like portion of said passageway and a second member extending substantially at a right angle from said first member outwardly and away from said passageway, the first members of said first and second components defining a means for forming a tubular passageway when said trough-like portions are assembled in connected relationship, and means for maintaining said components in fixed assembled relationship to each other and in sealing contact with said tissues, said means also providing for separation of said components when the device is disassembled.

3,856,022

SHELLING MECHANISM

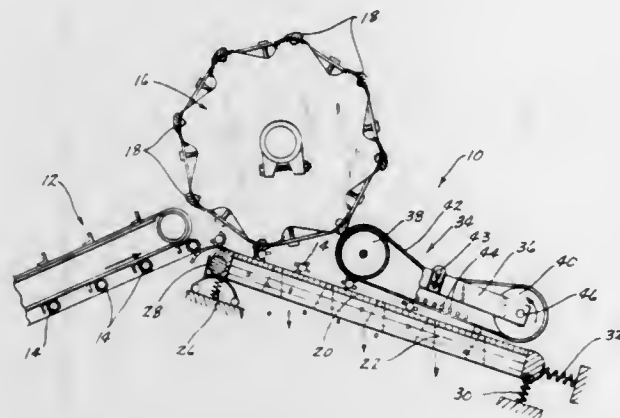
Wesley F. Buchele, Ames, Ohio, and Ali R. Mahmoud, Khartoum North, Sudan, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed July 26, 1973, Ser. No. 382,668

Int. Cl. A01F 11/06

U.S. Cl. 130—6

6 Claims



1. A corn shelling mechanism comprising, an elongated concave means having first and second ends, a powered rotatable cylinder means positioned above said concave means adjacent said first end for partially shelling the ears passing therebetween, means for conveying the ears to said cylinder means, a powered belt sheller positioned above said concave means in a spaced relationship with respect thereto, said belt sheller extending from said cylinder means towards said second end, said belt sheller urging the partially shelled ears to engagement with said concave means to complete the shelling operation, said concave means being straight and continuous beneath said cylinder means and said belt sheller.

3,856,023

DRUM FOR ROTARY DECK THRESHER

Bernard G. Habicht, Saskatoon, Saskatchewan, Canada, assignor to Western Roto Thresh Ltd., Saskatoon, Saskatchewan, Canada

Filed Aug. 14, 1972, Ser. No. 280,244

Claims priority, application Canada, June 14, 1972, 144686

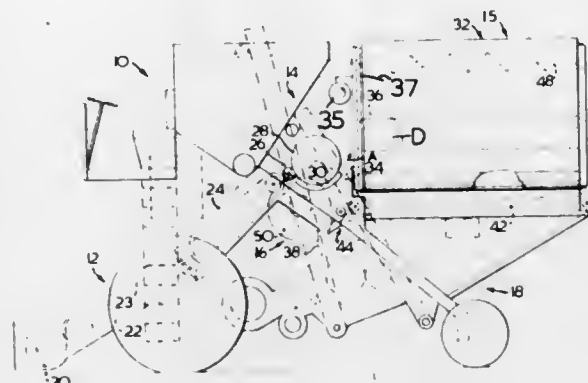
Int. Cl. A01F 12/44

U.S. Cl. 130—27 Q

8 Claims

1. A rotary deck apparatus for threshing machines for separating granular material from straw after threshing, comprising: a substantially horizontally oriented open-ended tube-like rotary deck, said deck having an entrance end and an exit end for granular material and straw; said deck being perforated to the extent of 30 - 90 percent of its surface, means for rotating said deck at a speed to produce a peripheral centrifugal force between 0.7 to 1.7 times the value of gravity; and a curved

deflector separate from said rotary deck but fixed at a location within the entrance end thereof for deflecting a stream of



mixed straw and grain downward onto the interior surface of the rotary deck at the entrance end thereof.

3,856,024

RIGID REAMER TYPE SMOKING PIPE CLEANER

John J. Lamberti, Hotel Breslin Broadway 29th, New York, N.Y. 10001

Continuation-in-part of Ser. Nos. 152,190, June 11, 1971, abandoned, and Ser. No. 215,830, Jan. 6, 1972, abandoned.

This application May 16, 1973, Ser. No. 360,755

Int. Cl. A24f 09/04

U.S. Cl. 131—243

7 Claims



1. A rigid reamer-type smoking pipe cleaner comprising two substantially rigid spring metal wires of round section twisted slightly loosely upon one another along an imaginary common linear axis, said twisted wires having a forward reaming portion with sharpened reaming and cutting end edges, respectively provided on the respective wire ends and adjacent to one another, said cleaner being usable by extending the forward reaming portion into a tar caked smoke passage of a smoking pipe bowl stem or mouthpiece and turning the cleaner to cut into pieces the caked tar and gum on the wall surfaces of the smoke passages, the twisted wires being wound over one another to provide spiral-shaped valleys or channels running coextensively with the common linear axis to accommodate the cut caked tar pieces and gum and permit their travel rearwardly from the point of reaming of the caked tar along the smoke passages, said twisted spring metal wires being adapted to laterally expand at their cutting edges when the cleaner is turned into the passages in the direction of twist of the wires upon the reamer portion thereby to cause the cutting edges to span the full internal diameter of the smoke passage up to the wall surface of the passage so that a full clearing of the passages will be effected and a handle end provided at the rear of the cleaner for turning the cleaner into the caked passage, said handle end being formed of the twisted wires spaced from one another and folded in a com-

mon plane to provide a pocket clip formation upon the cleaner.

3,856,025

TOBACCO FILTERS

Wasuke Sato; Seijiro Yamamoto, both of Tokyo; Nobuaki Kuwabara, and Shigeru Adachi, both of Yokohama, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,421

Claims priority, application Japan, Mar. 23, 1972, 47-28579

Int. Cl. A24b 15/02

U.S. Cl. 131—264

12 Claims

1. Tobacco smoke filters adapted for use with a tobacco smoke article and of a shape to be inserted in the smoke passage of such tobacco smoke article which comprises a mixture of 80 to 20 parts by weight of copolymer material and 20 to 80 parts by weight of polyolefin material, said copolymer material consisting of ethylene-vinyl acetate copolymer containing 10 to 80 mol % of ethylene, which copolymer has been saponified to an extent of at least 85 percent and said polyolefin material is selected from the group consisting of polypropylene and polyethylene, said copolymer material and said polyolefin material being in the form of fibers, split fibers, films or moldings.

3,856,026

APPLICATION OF FLOCK TO THE BODY FOR COSMETIC PURPOSES

Donald M. Gaydos, 3218 Friar Dr., Parma, Ohio 44134

Filed Jan. 16, 1974, Ser. No. 433,685

Int. Cl. A45d 29/00

U.S. Cl. 132—73

10 Claims



1. A method of applying flock to a portion of a human body, which comprises applying the flock to a substance which adheres to said portion of the body.

3,856,027

HAIR GROOMING AID

Allan E. Legere, Swampscott, Mass., assignor to Cesari and McKenna, Boston, Mass.

Filed May 29, 1973, Ser. No. 364,694

Int. Cl. A45d 24/00

U.S. Cl. 132—148

4 Claims



1. A hair grooming aid comprising

A. a generally continuous elongated housing having
1. a portion of enlarged, generally cylindrical cross section for accommodating a generally cylindrical aerosol canister therein, joined to
2. a portion of diminished cross section for accommodating an elongated comb therein with its spine parallel to the axis of said canister and in side-by-side relation thereto,
3. an aperture extending from said portion of diminished cross section to the exterior of said housing for passage of said comb therethrough,
4. parallel tracks aligned with said aperture for positioning a comb therebetween and guiding it through said aperture for use exterior to said housing and for storage interior thereto,
B. a generally cylindrical aerosol canister
1. positioned within said enlarged portion
2. having a spray nozzle thereon actuatable to release a spray from said canister.
C. an elongated comb
1. positioned within said reduced portion
2. slidable in said tracks through said aperture for use exterior to said housing.

3,856,028

MOWER CLEANING APPARATUS

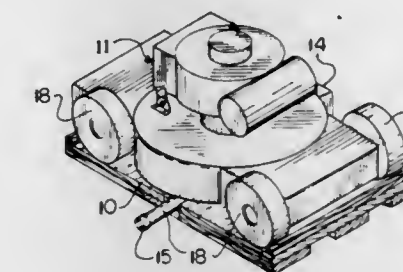
Gordon W. Kehler, P.O. Box 169, Fallbrook, Calif. 92028

Filed Mar. 12, 1973, Ser. No. 340,598

Int. Cl. B08b 3/00

U.S. Cl. 134—198

6 Claims



1. A rotary lawn mower cleaning device comprising a generally elongated body adapted to rest on a lawn; said body including a platform of sufficient size to support a rotary lawn mower thereon and including an entrance portion to said platform and an exit portion at the opposite end thereof; said platform including a surface engaging the wheels of a lawn mower on the platform to resist its rolling movement thereon; said body including at least one side wall extending along said platform of height greater than said entrance and exit portions of said platform; water discharge means supported in a central portion of said platform; said water discharge means generally including a plurality of discharge openings directed upward from said platform; and means extending through said side wall for connecting said water discharge means to a water supply.

3,856,029

DAMPING MEANS FOR PORTABLE STRUCTURES

Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Royal Oak, Mich.

Filed July 6, 1970, Ser. No. 52,619

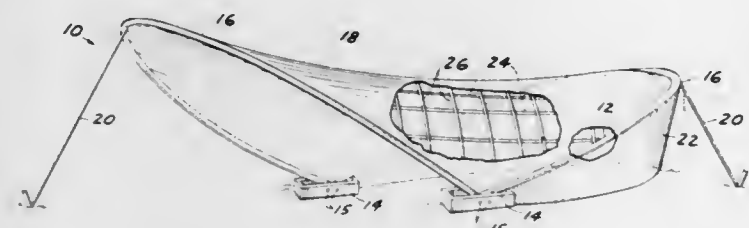
Int. Cl. E04b 1/347

U.S. Cl. 135—1 R

10 Claims

1. A portable, semi-rigid architectural structure comprising a plurality of arches with formed bight sections, said arches being inclined from a common support and tilted outward

from each other, a first plurality of longitudinal support members attached between said arches, a second plurality of transverse restraining members operatively connected to said longitudinal support members for holding said longitudinal support members in position, at least one of said first and second pluralities of members varying in length and being unevenly



spaced, a membrane operatively connected to said support members and spanning said arches, said membrane forming a tensioned warped roof for the structure, said members and membrane cooperating to effectuate a de-tuned roof system, and means for anchoring said arches to said common support for maintaining said longitudinal support members and said membrane in tension.

3,856,030

AUTOMATICALLY OPENABLE AND CLOSABLE UMBRELLA

Yoshio Sato, Nagareyama, Japan, assignor to Kabushiki Kaisha Ideal, Tokyo, Japan

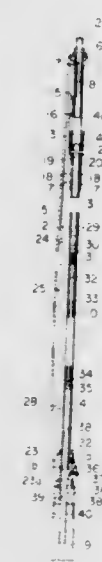
Filed Mar. 5, 1973, Ser. No. 338,261

Claims priority, application Japan, May 19, 1972, 47-049756

Int. Cl. A45b 25/16

U.S. Cl. 135-22

4 Claims



3,856,031

TELESCOPIC UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada

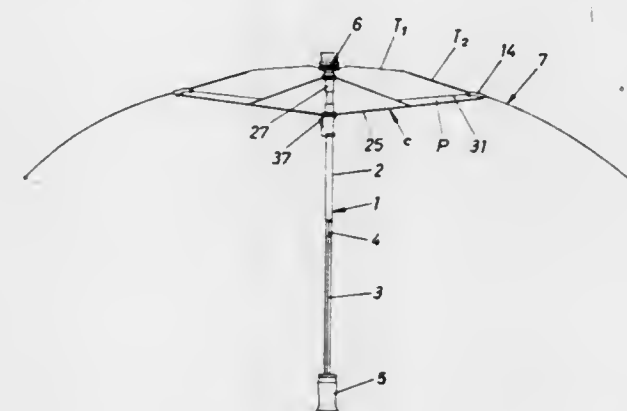
Filed Apr. 9, 1973, Ser. No. 349,006

Claims priority, application Germany, Sept. 21, 1972, 2246237; Japan, Dec. 25, 1972, 47-4560; Canada, Oct. 30, 1972, 155213

Int. Cl. A45b 19/00

U.S. Cl. 135-25 R

9 Claims



1. An automatically openable and closable umbrella comprising a shaft having a tubular outer shaft member slidably housing therein an upper inner, an intermediate inner and a lower inner tubular shaft members;

a first ring fixed to the upper portion of said upper shaft member and pivotably carrying a plurality of ribs;

a plurality of extensible rods;

a second ring mounted on said shaft below said first ring, said second ring being fixed to said outer shaft member and pivotably carrying said extensible rods pivotably supporting said ribs;

a plurality of supporting rods;

a third ring mounted on said shaft below said second ring and pivotably carrying said supporting rods pivotably supporting said extensible rods;

1. An umbrella including an umbrella frame and a cover, a telescopic stick, a crown at one end of the stick, at least a main runner slidable on the stick, a stretcher member hinged to the runner, a strut member hinged to a point on the stick between the main runner and the crown, and to a point intermediate the stretcher member, a dome rib hinged near one end thereof to the end of the stretcher member, a link member hinged to a point on the strut at one end thereof, and at the inner end of the dome rib forming a quadrilateral linkage therewith, a pair of members foldable in a direction outwardly from the stick hinged to the crown and to the inner end of the dome rib,

a plurality of spokes;

a fourth ring mounted on said shaft below said third ring and pivotably carrying at a site other than the pivotal point of each of said extensible rods, said spokes pivotably supporting said ribs;

compressible first spring means for opening the umbrella and provided between said intermediate and said lower shaft members to urge them apart;

a washer ring;

compressible second spring means for opening the umbrella, said second spring means being mounted on said shaft between said third ring and said washer ring, said washer ring being securely attached to said intermediate shaft member so as to slide on said outer shaft member, said second ring means being capable of urging said upper and intermediate shaft members apart with respect to said outer and lower shaft members;

first latch means for opening the umbrella, said latch means being capable of disengageably engaging said fourth ring; and second latch means for closing the umbrella, said second latch means being provided in the lower portion of the lower shaft member and being capable of releasing the outer shaft member from its engagement with the lower shaft member,

characterized in that:

said spokes are constituted by pairs of elastic belt members, each pair being associated with a corresponding one of said ribs, wherein the elastic belt members belong to adjacent pairs are interconnected intermediate the span thereof, whereby, as the umbrella is opened, the ribs of each pair are elastically bowed laterally intermediate the span thereof to store force for aiding collapsing the umbrella;

said fourth ring including means housing said second latch means when the umbrella is closed, to prevent accidental finger-release of the second latch means.

a cover attached to the crown and to the dome ribs, such that when the umbrella is being closed to its collapsed position, the foldable members will fold outwardly causing the umbrella cover in the area of the foldable members to spread outwardly forming a mushroom.

3,856,032

UMBRELLA RUNNER

Josef Schafer, Solingen, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada

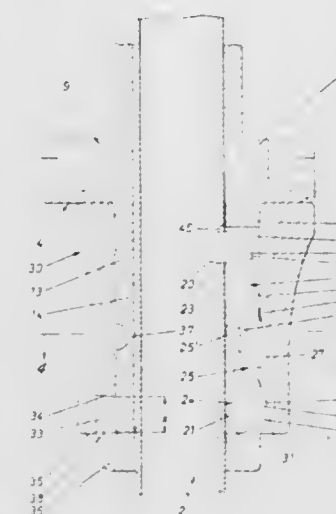
Filed May 14, 1973, Ser. No. 359,843

Claims priority, application Germany, May 31, 1972, 2226384

Int. Cl. A45b 25/06

U.S. Cl. 135-28

3 Claims



1. A runner slidable on an umbrella stick comprising an axially-extending sleeve having an inner surface in sliding contact with the stick, a recess in the sleeve, a hinge pin traversing the recess at right angles to the axis of the stick, but in a plane parallel to the axis of the stick, locking means hinged to the pin, wherein the locking means includes two separate locking pawls one on either side of the pin, each having an engaging head on a shank pivoted to the hinge pin and a cam member extending on the opposite side of the pin and adapted to be engaged by activating means; said activating means including a coaxial slide member adapted for limited sliding movement on the sleeve of the runner and having an inwardly extending projection adapted to engage alternately the locking pawls for relative movement with the respective apertures in the stick.

3,856,033

DYNAMIC GAS BLENDING

Donny R. Strain, Waterford, and Daniel B. Martin, Troy, both of Mich., assignors to Scott Environmental Technology, Inc., Plumsteadville, Pa.

Filed Feb. 22, 1973, Ser. No. 334,842

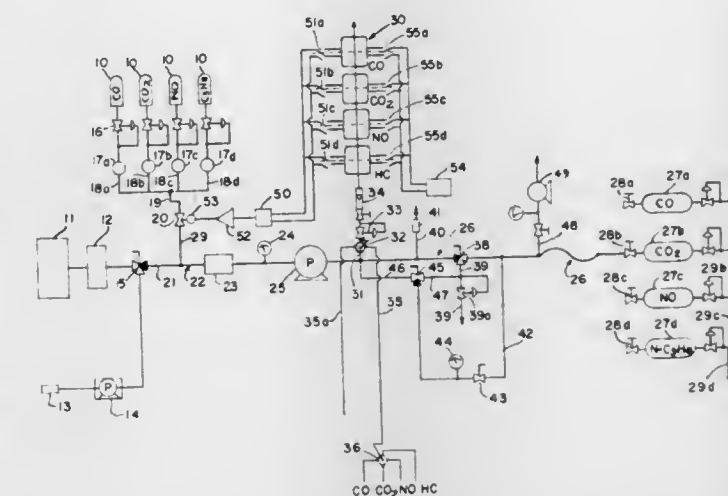
Int. Cl. G05d 11/08

U.S. Cl. 137-3

8 Claims

1. A method of charging a partly filled pressurized storage vessel with a thoroughly mixed blend of gases, the concentrations of which match the blend which is already in the vessel, wherein the charging pressure is a pressure at which the gaseous components of the blend do not freely intermix which method comprises measuring the concentration of the components of the blend in the pressurized vessel, feeding the components of the blend from separate sources to a low pressure mixing zone, mixing the components of the blend in the mixing zone at a pressure at which the components of the blend freely intermix, compressing the mixture and filling the vessel with the compressed mixture, monitoring the concentration of the components of the compressed mixture and adjusting the

feed to the low pressure mixing zone in a sense to compensate for departures of the concentrations of the mixture from the



mixture previously in the vessel to thereby match the mixture previously in the vessel.

3,856,034

FLOW CONTROL VALVE

Takane Itoh, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

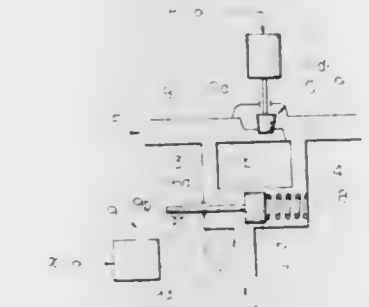
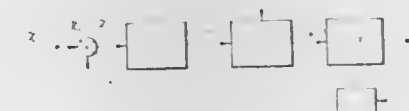
Filed June 20, 1973, Ser. No. 371,664

Claims priority, application Japan, June 21, 1972, 47-62113

Int. Cl. F15b 11/02; G05b 11/38; G05d 7/06

U.S. Cl. 137-117

4 Claims



1. In a control system for fluid operated equipment having an error signal generator for providing an error signal by comparing a command signal representing a desirable value signal with an actual value signal of a controllable variable, and having a controller for adjusting and amplifying said error signal to provide an amplified error signal; a flow control valve for controlling fluid flow therethrough in accordance with said amplified error signal, said fluid-operated equipment being operated by fluid discharged from said flow control valve at a controlled flow rate, a detecting device for detecting the actual value of said controllable variable and transmitting said actual value signal back to said comparator, said flow control valve comprising means for controlling fluid flow by adjusting a valve opening in accordance with said amplified error signal and means for controlling a pressure difference between the upstream and downstream sides of said flow control valve in accordance with said command signal, said means for control-

ling fluid flow including an inlet conduit for receiving pressurized fluid flow therein and an outlet conduit connected to said inlet conduit for discharging fluid at a controlled flow rate to said fluid-operated equipment, and said means for controlling the pressure difference between the upstream and downstream sides of said flow control valve in response to said command signal including a cylinder communicating at one end thereof with said inlet conduit and at the other end thereof with said outlet conduit, and having a drain opening provided in a wall of said cylinder, a return conduit connected to said drain opening, a spool slidably inserted in said cylinder to adjust the effective area of said drain opening, a spring disposed in said cylinder for urging said spool in one direction, and a spool actuating device operatively connected to said spool and adapted to receive said command signal to apply force on said spool in accordance with said command signal, whereby said spool controls the effective area of said drain opening at a position where a force caused by said pressure difference, a force of said spring and a force caused by said command signal are balanced.

3,856,035

LIQUID LEVEL CONTROL VALVE

Katsuji Fujiwara, 191, Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo-ken, Japan

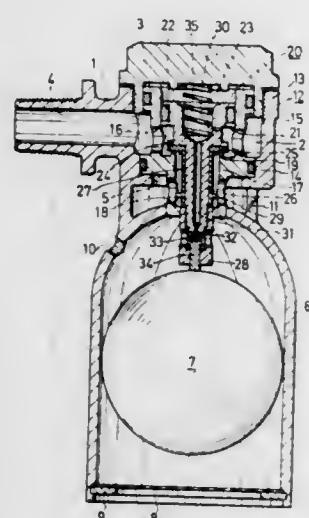
Filed Nov. 19, 1973, Ser. No. 416,788

Claims priority, application Japan, Dec. 20, 1972, 47-146484

Int. Cl. F16k 31/22

U.S. Cl. 137-413

7 Claims



1. A liquid control valve comprising, in combination, a housing, defining a valve chamber with a side wall and a bottom wall; an inflow port communicating with said valve chamber at a lower portion of said side wall; an annular seat provided at said bottom wall defining an outflow port; a float retaining member positioned beneath said outflow port; a float retained within said float retaining member in a freely movable state; a sealing member consisting of a piston disposed within said valve chamber and arranged displaceably in an air-tight sealing engagement along said wall of said valve chamber at its upper portion, thereby forming a pressure chamber; a sealing element mounted on said piston over said annular seat for cooperation therewith; a slender rod projecting from said piston into said float retaining member through said outflow port; a first orifice provided in said sealing member interconnecting said pressure chamber with said outflow port, and a second orifice positioned at the lower end of said slender rod over said float and leading therefrom to said pressure chamber through a passage; said first orifice having a smaller cross-sectional area than said second orifice.

3,856,036

SIPHON BREAK AND DIVERTER FOR AN APPLIANCE

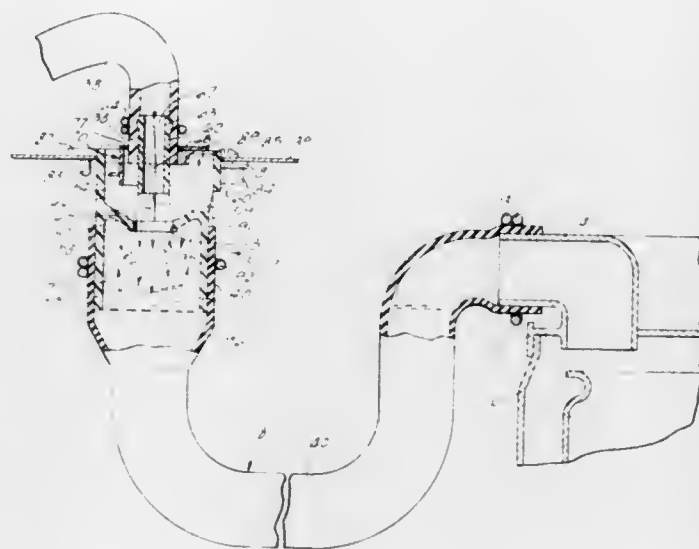
Reinhold Alvin Drews, Stevensville; Alexander B. Rosinski, Jr., Saint Joseph, and Joseph August Gauer, Buchanan, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 2, 1973, Ser. No. 412,116

Int. Cl. F16k 45/00; F16l 55/06

U.S. Cl. 137-216.1

20 Claims



1. A siphon break for use in a water inlet system for an appliance comprising a housing having a continuous wall forming a cavity, a center baffle having an aperture disposed in said cavity to form first and second cavity portions in communication with each other through said aperture, said wall having at least one opening therein adjacent to said baffle and communicating to said first cavity portion, water inlet means including a water fitting adapted for connection to a water supply conduit, said fitting having a passage therethrough, means for positioning said fitting in said first cavity portion in both a spaced relationship with said wall and with an end of said fitting being spaced from the baffle and in alignment with said aperture, said housing adjacent the second cavity portion having means adapted for connection to an outlet hose; and a cap surrounding said fitting and being received in a space between the fitting and wall, said cap having at least two rows of individually spaced baffles with the baffles of one row being arranged over the spaces between the baffles of the other row to form a labyrinth path therebetween so that water splashing in the first cavity portion is prevented from splashing out of the siphon break.

3,856,037

VALVE SEQUENCE INTERLOCK SYSTEM

Michael R. Garrett; Samuel W. Putsch, and Norman A. Nelson, all of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 22, 1973, Ser. No. 325,490

Int. Cl. E21b 7/12; F17d 17/00

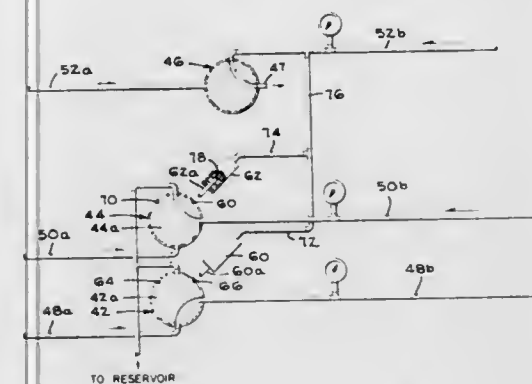
U.S. Cl. 137-236

15 Claims

1. A fluid flow control system for a well flow conduit, comprising:

1. a plurality of fluid-actuated valves installed in series relationship in a well flow conduit,
2. a fluid pressure conduit system interconnecting each of said valves and a fluid pressure source for actuation of said valves,
3. a plurality of fluid pressure control valves positioned in said fluid pressure conduit system for respective individual regulation of the admission of fluid pressure from said source to said fluid-actuated valves, and
4. an interlock system for assuring the operation of said fluid-actuated valves in a predetermined sequence, said interlock system including:

- a. restricting means actuatable to prevent operation of at least a certain one of said plurality of control valves, and
- b. control means for said restricting means, said control means comprising fluid conduit means interconnecting said restricting means and said fluid pressure conduit system so that said certain control valve restricting means is operated by valve-actuating fluid pressure in said fluid conduit means when a selected remaining one of said control valves is in a predetermined first condition to actuate its said fluid-actuated valve and said



restricting means is rendered inoperative when said selected control valve is in a predetermined second condition to de-actuate its said fluid-actuated valve, whereby placing said selected control valve in said first condition results in opening its said fluid-actuated valve and operating said restricting means to prevent operation of said certain control valve and associated fluid-actuated valve, and placing said selected control valve in said second condition results in closing its fluid-actuated valve and rendering said restricting means inoperative to facilitate operation of said certain control valve and fluid-actuated valve.

3,856,038

IRRIGATION PIPE WALKER

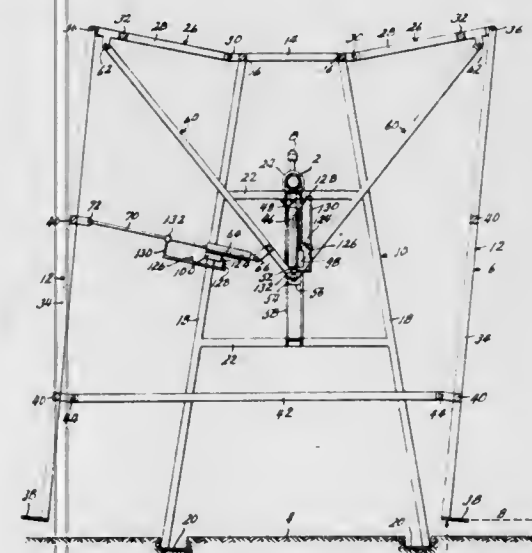
George T. Paul, 2521 Wisconsin, Joplin, Mo. 64801

Filed Nov. 5, 1973, Ser. No. 412,882

Int. Cl. A01g 25/02; B05b 3/12

U.S. Cl. 137-344

10 Claims



1. A tower for supporting an irrigation pipe extending horizontally above ground level, said pipe being adapted to be secured to said tower and said tower having two sets of ground engaging feet, the feet of one set being movable relative to the feet of the other set, both vertically so that either set may be disposed higher than the other, and also horizontally in a direction transverse to said irrigation pipe, and operating means carried by said tower and operable to move one of said sets of feet relatively to the other set in a cyclically repetitive series of strokes consisting successively of an upward stroke,

a horizontal stroke in one direction, a downward stroke, and a horizontal stroke in a direction opposite to said first horizontal stroke, whereby said tower is caused to walk in a direction transverse to the irrigation pipe, and whereby all of said feet move essentially only in a vertical direction as they engage and disengage the ground.

3,856,039

AGRICULTURAL WHEEL-LINES

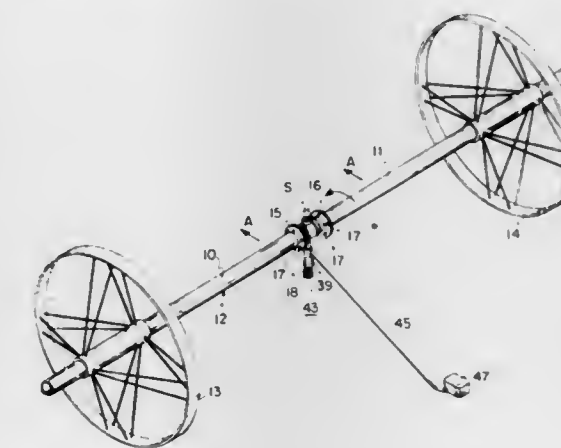
Burr Courtright, Le Grande, Ore., assignor to CH₂O, Inc., LeGrande, Ore.

Filed Nov. 7, 1973, Ser. No. 413,703

Int. Cl. B05b 15/02

U.S. Cl. 137-344

14 Claims



1. An agricultural irrigation wheel-line including, in combination, a pair of horizontally spaced wheels; wheel-line conduit means, mounting said wheels, for conducting water to a water delivery system essentially upstanding from said wheel-line conduit means; an outer sleeve member; plural, mutually spaced seal means for rotatably sealing said outer sleeve member to and about said wheel-line conduit, said wheel-line conduit including aperture means for conducting water from within said wheel-line conduit to and within said outer sleeve member, between said seal means; water delivery structure mounted to and upstanding from said outer sleeve member; and trail weight structure comprising a rearwardly declining leg articulately coupled to said outer sleeve member.

3,856,040

ANALOG POSITION CONTROLLER HAVING TWO STAGE VALVE CONTROL

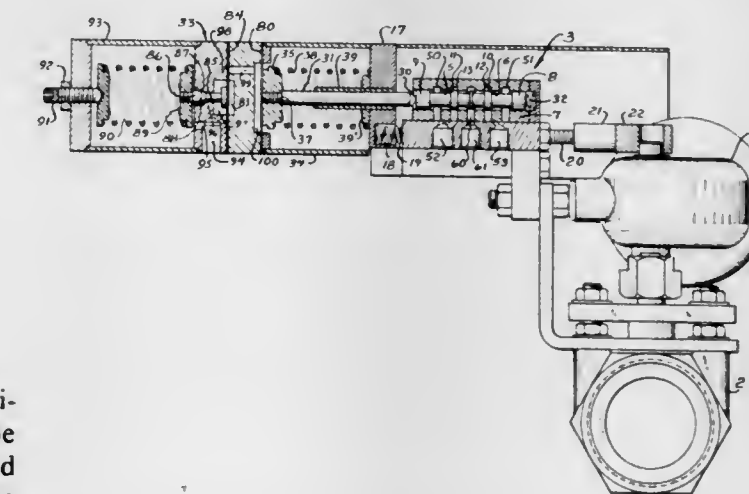
Eugene A. Roeske, 9S125 Lake Dr., Clarendon Hills, Ill. 60514

Filed Apr. 6, 1973, Ser. No. 348,642

Int. Cl. F16k 31/12; G05d 16/06

U.S. Cl. 137-488

6 Claims



1. An apparatus for controlling the operative position of a control means according to a sensed parameter comprising, controller means for transmitting a control pressure signal in response to a change from a predetermined level of an input pressure signal representative of a parameter,

said controller means being operatively coupled to a control means regulating the parameter to vary the operative position thereof proportional to the control pressure, said controller means including a first pressure responsive element adapted to sense the input pressure signal and a second pressure responsive element adapted to effect transmission of a pressure signal by the control means valve means positioned between a source of pressure and the second element and operable to direct pressure to the second element, said valve means directing a pressure signal to the second element at a reduced pressure directly proportional to the level of the input signal upon the input signal reaching a predetermined level.

3,856,041

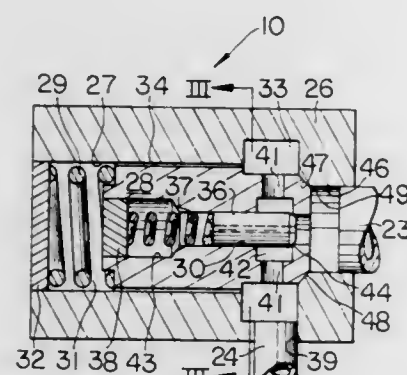
COMBINATION RELIEF AND MAKE-UP VALVE

John R. Cryder, and Edward A. Wirtz, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 28, 1973, Ser. No. 419,625

Int. Cl. F16k 17/26

U.S. Cl. 137-493.6



1. A combination relief and make-up valve assembly comprising:

- a housing having a cylindrical bore formed therein;
- a low pressure port communicating with said bore at one end thereof;
- a first valve seat defined by the juncture of said port and said bore;
- an annulus surrounding said bore and communicating therewith adjacent said valve seat;
- a high pressure port communicating with said annulus;
- a first poppet plunger reciprocally disposed in said bore and biased into engagement with said valve seat;
- a stepped bore closed at one end formed in said first poppet plunger defining a second seat adjacent the open end thereof;
- an annulus surrounding and communicating with said bore at the intersection of said step of said bore;
- a second poppet plunger disposed in said bore and engaging said second valve seat;
- passage means communicating said annulus in said plunger with said annulus in said housing;
- said second poppet plunger including a bore communicating pressurized fluid in said low pressure port to the closed end of said bore;
- spring means in said closed end of said bore biasing said second plunger into seated engagement with said second valve seat; and
- said second plunger including an area in communication with said high pressure port and disposed to create a force in response to said pressurized fluid in opposition to said spring means to thereby unseat said second plunger in response to a predetermined pressure.

3,856,042
COMBINED PRESSURE REGULATOR AND SHUTOFF VALVE

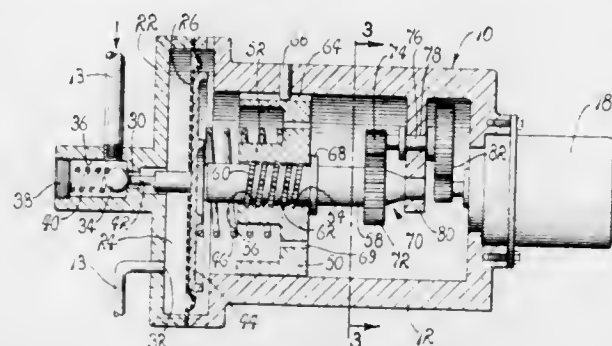
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Edgar F. Koch, Tujunga, Calif.

Filed June 21, 1973, Ser. No. 372,149

Int. Cl. F16k 17/04

U.S. Cl. 137-505.42

1 Claim



1. A valve for achieving flow control over a stream of pressurized fluid comprising:
- A. a valve housing having means defining therein a fluid inlet orifice, a fluid discharge orifice and a passage for pressurized fluids extended therebetween;
 - B. means defining within said passage a sealable port of cylindrical configuration;
 - C. a ball supported within said passage for incremental movement between a first position, wherein said ball is seated in said port in a sealing relationship therewith for interrupting a flow of pressurized fluid therethrough, and a second position, wherein said ball is disposed in spaced relation with the port for accommodating a flow of pressurized fluid therethrough;
 - D. means for continuously urging said ball in displacement toward said first position including a first helical spring seated within said passage in contiguous relation with said ball;
 - E. means for displacing said ball toward said second position including,
 - 1. an axially movable pintle having one end extended axially through said port into abutting engagement with the ball, and
 - 2. means supporting said pintle for axial motion relative to said port including an axially displaceable disk disposed in coaxial alignment with the opposite end of said pintle and rigidly affixed thereto; and
 - F. means for imparting axial motion to said pintle including,
 - 1. a flexible diaphragm secured to said disk and extended radially from the periphery thereof into sealed relation with said housing for defining within the housing an hermetically sealed, expansible plenum chamber communicating with said port and said fluid discharge orifice for moving said pintle in a first direction relative to said port in response to increased pressures within said plenum chamber, and
 - 2. means for continuously urging said pintle in displacement in a second direction opposite said first direction including a second helical spring, having one end portion engaging said disk, extended away from said plenum chamber, reactive stop means for supporting said second helical spring including an axially movable block having a tubular bore extended axially therethrough in coaxial alignment with said port, means including a mounting post concentrically related to said bore for receiving the opposite end portion of said second helical spring in a concentric relationship, means for imparting axial motion to said movable block including means for supporting said block against rotary motion, a drive shaft supported for rotary motion and extended concentrically through said bore, a ball-and-groove coupling interconnecting said drive shaft and said block, including means defining opposed heli-

cal grooves extended along the adjacent surfaces of said drive shaft and said bore, a plurality of balls seated in said opposed grooves, drive means including a reversible stepper motor, and a gear train connecting said stepper motor with said drive shaft for imparting rotary motion to the drive shaft, whereby axial motion is imparted to said block for axially displacing said second helical spring relative to said plenum chamber.

3,856,043

PRESSURE RESPONSIVE FLUID VALVE ASSEMBLY
Eugene P. Feild, Santa Rosa, and Donald C. Bergstedt, Petaluma, both of Calif., assignors to FNB Products, Inc., Santa Rosa, Calif.

Filed Oct. 30, 1972, Ser. No. 302,382

Int. Cl. F16k 31/363

U.S. Cl. 137-508

15 Claims



1. A fluid valve assembly comprising:
a housing;

- means in the housing for defining a valve capable of being opened and closed, said valve having a pair of valve members, one of which is movable, each of the valve members having a working face and the working face of at least one said valve members has a tapered configuration to define therebetween a transversely wedge-shaped annular space having a maximum separation at the outer periphery in the range of 0.0001 to 0.01 inch, when the valve members are closed;
- said housing having inlet means for permitting a flow of fluid thereto and to a location adjacent to the outer peripheries of the working faces;
- one of the valve members having a centrally located orifice extending thereto from its working face, the working faces being engageable with each other near the orifice to close the valve, the orifice being closed when the valve is closed;
- the distance between the orifice and the effective outer periphery of each of the working faces being at least 1.5 times the radius of the orifice;
- said housing having a space for receiving a device operable to bias said members toward and into engagement with each other, said wedge-shaped space being in fluid communication with said location so that fluid pressure can cause the valve members to separate from each other when the fluid is at said location to thereby open the valve, whereby the fluid can flow from said location, through said wedge-shaped space past said working faces, and into and through said orifices; and
- means coupled with the housing for permitting a flow of fluid out of said orifice.

3,856,044
PNEUMATICALLY OPERATED DIVERTING RELAY
CONSTRUCTION AND SYSTEM UTILIZING THE SAME
OR THE LIKE

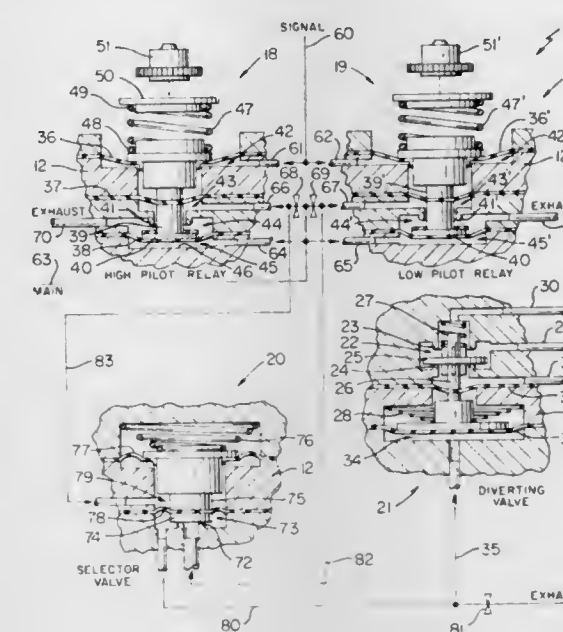
Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 10, 1973, Ser. No. 405,131

Int. Cl. G05d 23/00

U.S. Cl. 137-625.5

20 Claims



1. A pneumatically operated diverting relay construction comprising first and second pilot relay means and a diverting valve means operatively associated together, said first pilot relay means having means for causing said diverting valve means to switch from one condition thereof to another condition thereof when a pneumatic signal reaches a certain high value, said second pilot relay means having means for causing said diverting valve means to switch from said other condition thereof to said one condition thereof when said pneumatic signal decreases to a certain low value.

3,856,045
VACUUM CONTROL VALVE

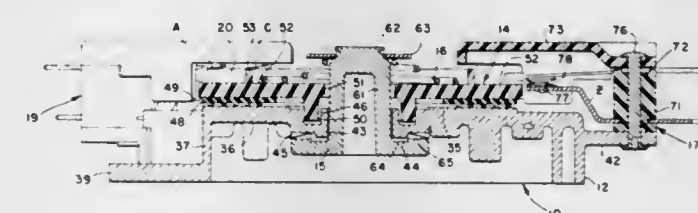
Andrew Augustine Kenny, Roselle; Richard Kendall Larson, Streamwood, and Donald Frank Janous, Chicago, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1973, Ser. No. 339,262

Int. Cl. F16k 11/14

U.S. Cl. 137-625.11

10 Claims



1. A vacuum control valve comprising:
a valve body having at least a vacuum inlet and a vacuum outlet leading therein, a generally flat surface having openings extending therein, said inlet communicating with one of said openings and said outlet communicating with the other opening;

each channelled diverter passageway further defined by contiguous circumferentially extending and radially extending bead surfaces, said circumferentially extending bead surfaces defining inner and outer edges of said passageways and said radially extending bead surfaces defining end edges of said passageways, and one of said passageway end edges further defined by first and second radially extending substantially parallel bead surfaces contiguous along their entire length and forming a double bead extending between said circumferential bead surfaces.

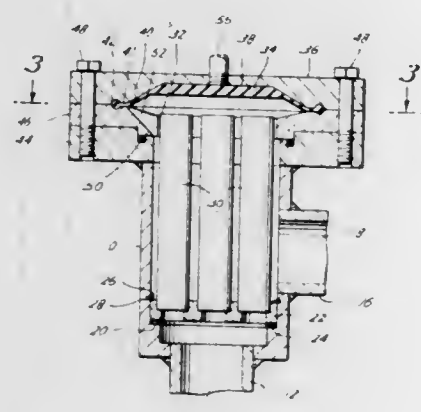
3,856,046 VALVE

Hart Brown, Houston, and Howard N. Puckett, Hockley, both of Tex., assignors to Tool Instruments Associates Inc., Houston, Tex.

Filed Oct. 17, 1972, Ser. No. 298,272
Int. Cl. F16k 31/145

U.S. Cl. 137—625.28

11 Claims



1. A valve comprising a tubular body, means defining a first port at one end of said body, means defining a second port extending through said body, a plate extending across the interior of said body and positioned between said first and second port, a plurality of tubes extending from and in communication through said plate and in parallel relationship to each other and to the axis of said tubular body with each terminating in a separate annular valve seat, said valve seats being in substantially the same plane, a diaphragm mounted to move into and from engagement with said valve seats to close and open flow through said tubes, and a cover connected to the end of said body opposite said first port, said cover clamping the outer periphery of said diaphragm to said body, the center portion of said diaphragm being of substantially greater thickness than the remainder of said diaphragm and of sufficient diameter to engage all of said valve seats.

3,856,047 PRESSURE CONTROL VALVE

Katsuki Takayama, Chiryu, Japan, assignor to Aisin Seki Kabushiki Kaisha

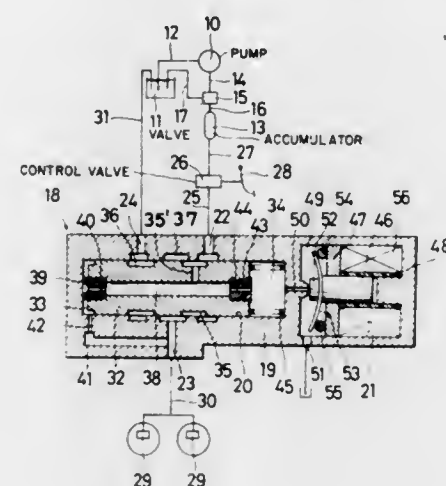
Filed Nov. 30, 1972, Ser. No. 310,768
Claims priority, application Japan, Dec. 2, 1971, 46-097424
Int. Cl. F15b 5/00; F15c 3/02; F15d 3/00; F16k 11/07, 11/32; G05d 16/00

U.S. Cl. 137—625.61

5 Claims

1. In a fluid pressure control system for a vehicle including pressure control valve means disposed between a source of fluid pressure and fluid pressure actuating means, said control valve means comprising:

a housing having a bore therein and a single inlet port, a single outlet port and a single drain port, all directly opening into said bore;
a valve spool slidably mounted within said bore of said housing for controlling fluid communication between said inlet and outlet ports and between said outlet and drain ports, said valve spool defining first and second chambers within said housing;
a first passage means within said housing for supplying said fluid pressure conveyed to said inlet port to said first chamber so as to urge said valve spool in one direction;
a first orifice provided within said first passage means;
a second passage means within said housing leading from said first chamber to said outlet port and having a second orifice therein;



a third passage means within said housing for supplying said fluid pressure conveyed to said inlet port to said second chamber so as to urge said valve spool in another direction;
a third orifice disposed within said third passage means;
a second bore in said housing having a drain port;
a flapper valve means disposed in said second bore of said housing adapted to be actuated by an output signal responsive to a vehicle operation condition; and
a nozzle in said housing leading from said second chamber being directly open into said second bore and cooperating with said flapper valve means so as to act as a variable orifice to thereby drain said fluid pressure within said second chamber to said second bore.

3,856,048

HYDROPNEUMATIC ACCUMULATOR

Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, Hauts-de-Seine, France

Continuation of Ser. No. 110,951, Jan. 29, 1971, abandoned.

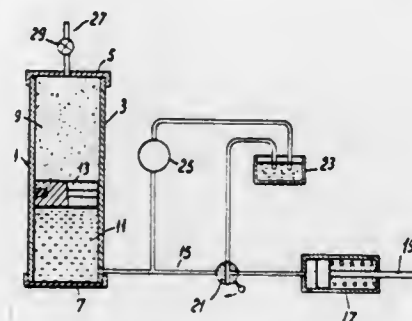
This application June 18, 1973, Ser. No. 370,808

Claims priority, application France, Jan. 29, 1970, 70.03103; Dec. 31, 1970, 70.47483; Jan. 29, 1971, 71.00010

Int. Cl. F16l 55/04

U.S. Cl. 138—31

9 Claims



1. A hydropneumatic accumulator comprising a sealed cylinder having a piston slidably located therein and defining with the cylinder a first compartment and a second compart-

ment, the second compartment enclosing a liquid and the first compartment enclosing a body of gas compressed to a maximum operating pressure of at least 200 kg/cm², said gas having a density less than that of nitrogen.

3,856,049

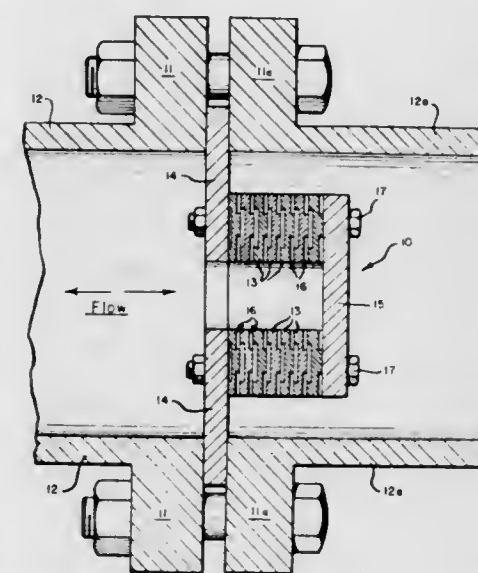
MULTIPLE STAGE RESTRICTOR

William L. Scull, Dover, N.J., assignor to Leslie Co., Parsippany, N.J.

Continuation-in-part of Ser. No. 183,099, Sept. 23, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 332,918
Int. Cl. F15d 1/02

U.S. Cl. 138—42

5 Claims



1. A multiple stage fluid restrictor adapted to be positioned in the path of flow of a fluid through a confining passage which includes an inlet and an outlet port and comprising a stack of superimposed flow-restriction plates, one plate of said stack of superimposed plates being provided with at least one plurality of spaced recesses in one surface thereof of which one of said recesses communicates with one edge of said plate and another of said recesses communicates with the other edge of said plate, and another one of said plates of said stack of superimposed plates being provided with at least one recess positioned between its edges in the surface thereof adjacent the recess-provided surface of the first-mentioned plate, each recess in the other plate extending a sufficient distance across said other plate to partially overlap and thus communicate with successive ones of said plurality of spaced recesses in the first-mentioned plate when the plates are positioned with these two surfaces in contact with one another, the resulting overlapping of the recesses of an adjacent pair of plates thus providing a communicating series of restriction orifices of relatively small cross-sectional area connecting the offset recesses of relatively large cross-sectional area extending between the two edges of said adjacent pair of plates so as to define a path of flow for fluid characterized by repeatedly alternate zones of relatively increased and relatively decreased flow velocity respectively, and baffle means connected to both ends of the stack of plates adapted to close said confining passage except for flow of fluid through the stack of plates from one edge thereof to the other.

3,856,050

FLANGE PROTECTOR

Thomas M. Rooney, 1815 Bristol Cove, Plano, Tex. 75074

Filed Dec. 18, 1972, Ser. No. 315,859

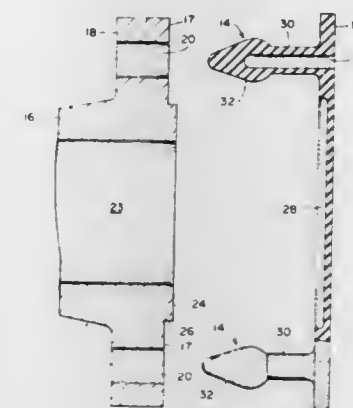
Int. Cl. B65d 59/00; F16l 57/00

U.S. Cl. 138—96 R

12 Claims

1. A flange protector for attachment to a machined surface of a flange on a pipe or valve section, the machined surface having a plurality of bolt apertures extending therethrough, comprising:

a plate of flexible material having a shape substantially the same as the shape of the machined surface; and
a plurality of connector means integrally formed on said plate and extending perpendicularly from one side of said plate for attaching said protector to the machined surface whereby said plate covers and protects said machined surface, said connector means having a first portion adja-



cent to said plate and a compressible head formed on the extremity of said first portion, said first portion being of a diameter less than the diameter of said bolt apertures, said head when uncompressed having a portion which has a diameter greater than said bolt apertures, a hollow center extends through said plate, said first portion, and into said head of said connector means whereby insertion of said head portions through said apertures is facilitated.

3,856,051

FLEXIBLE TUBE DEVICE

James A. Bain, 1650 Gloucester Rd., London 12, Ontario, Canada

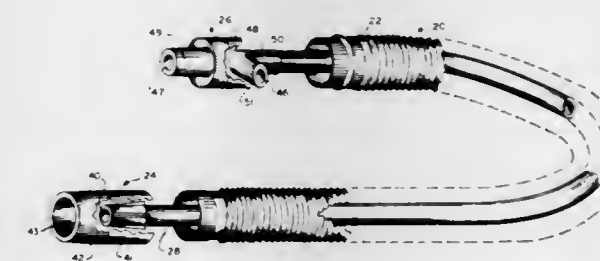
Filed Jan. 18, 1973, Ser. No. 324,690

Claims priority, application Canada, Feb. 28, 1972, 135657

Int. Cl. F16l 11/12

U.S. Cl. 138—114

7 Claims



1. A two limb flexible pipe comprising:

a. a first flexible thin wall corrugated tubular member with connection means at either end, one of said means having a first and second passage means, first said passage means communicating through the interior of the tubular member with the other connector means;
b. a second flexible essentially thick wall tubular member of smaller diameter generally disposed within the first tubular member, said second flexible member having one end communicating with the second passage means and its other end terminating in the vicinity of the other connector means to communicate therewith the interior of the first flexible tubular member.

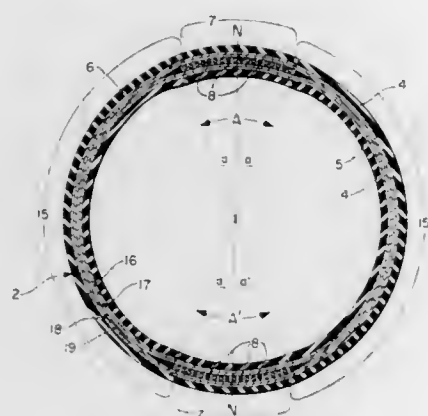
3,856,052

HOSE STRUCTURE

Robert H. Feucht, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio
Filed July 31, 1972, Ser. No. 276,629
Int. Cl. F16I 11/10

U.S. Cl. 138—119

17 Claims



1. A material transporting hose of integral construction comprising a body of flexible resilient material including at least one ply of reinforcing material extending generally circumferentially thereof to provide reinforcement against radial forces within the hose and an outer cover surrounding said reinforcing material, a pair of circumferentially spaced longitudinally reinforced portions providing primary resistance to elongation of the hose and constriction of the hose opening caused by excessive end loads, said portions surrounded by said cover so as to be disposed completely within said body on opposite sides of the cross section thereof, said portions each having at least one elongated stress-resisting reinforcing member embedded therein with said member extending generally parallel to the longitudinal axis of the hose and capable of withstanding substantial longitudinal tensile stresses applied to the end of the hose to provide the hose with longitudinal strength, and remaining portions free of said reinforcing members disposed adjacent to said longitudinally reinforced portions on each side thereof with said longitudinally reinforced portions having a total combined perimeter equal to or less than the total combined perimeter of the remaining portions of the cross-section of said body therebetween to provide a hose construction in which at least one-half of the hose remains flexible in a longitudinal direction thereby enabling the hose to be more easily reeled upon itself and less likely to develop kinks.

3,856,053

PIPELINE STRUCTURE

Eric Ingerslev, Assignor: Island International Engineers Limited, Guernsey, Channel Islands Guernsey (Channel Is.)

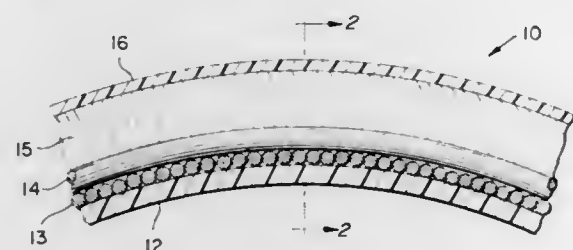
Filed Apr. 23, 1973, Ser. No. 353,537

Claims priority, application Great Britain, Dec. 1, 1972, 55708/72

Int. Cl. F16I 9/14

U.S. Cl. 138—153

3 Claims



1. In a high pressure pipeline structure having a diameter of at least about 36 inches, the combination of an internal cylindrical membrane of synthetic plastic material, a set of longitudinal steel rods extending along the outer surface of said membrane in parallel juxtaposed contacting relation with each

other, and substantially parallel to the longitudinal axis of the internal cylindrical membrane, a coiled rod wound spirally around said longitudinal rods with the coils thereof in contact with each other, a tubular layer of heat insulating material covering said coiled rods, and a tubular outer shell of synthetic plastic material covering said heat insulating layer, said longitudinal rods and said coiled rod consisting of rod having a strength of at least about 100 tons per square inch and commonly used as pre-stressed rod in concrete, said rods in said pipeline structure being not prestressed.

3,856,054

GLASS POLYMER COMPOSITES

Meyer Steinberg, Huntington Station; Peter Colombo, Patchogue, and Gerald Farber, Elmont, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 28, 1972, Ser. No. 276,211

Int. Cl. F16I 9/00; B28b 1/08

U.S. Cl. 138—174

4 Claims

1. The method of preparing a material useful for construction comprising the steps of:

- crushing glass bottles and the like;
- formulating a mixture of coarse, medium and fine aggregate having a void volume not in excess of 20 percent;
- forming said mixture and a monomer selected from the group consisting of styrene, methyl methacrylate, acrylonitrile, isobornyl methacrylate, and trimethylolpropane trimethacrylate with additive into the desired shape;
- vibrating the mixture containing monomer to eliminate trapped air; and
- causing in situ polymerization of said monomer.

3,856,055

SHUTTLE CONTROL DEVICE FOR A LOOM

Jean-Jacques Hirsch, Neuilly Sur Seine; Eugene Mayeur, and Jacky Mayeur, both of Montreuil aux-Lions, all of France, assignors to Societe en Commandite par Actions dite: Adolphe & Andre Caen, Paris, France

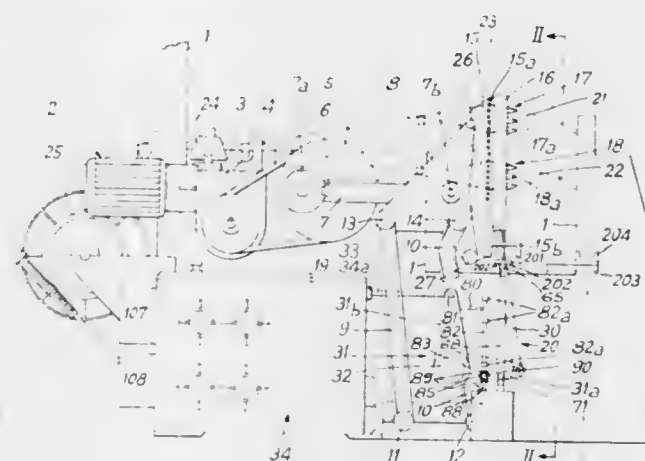
Filed Sept. 6, 1972, Ser. No. 286,700

Claims priority, application France, Sept. 6, 1971, 71.32161

Int. Cl. D03d 35/00

U.S. Cl. 139—138

20 Claims



1. A shuttle control device for a loom comprising: a beam capable of executing a substantially horizontal reciprocating movement; a batten guided for vertical movement on one face of the beam and capable of occupying at least two different positions; a plurality of horizontally disposed driving racks mounted on the batten, each driving rack being arranged to act upon a group of shuttles so as to drive the group in a horizontally reciprocating movement along the batten; a plurality of control racks, each drive rack being integral at one end with a respective one of the control racks, each control rack being meshed with a toothed wheel keyed onto a vertically disposed telescopic shaft, having an exterior sheath and an interior rod, the sheath being connected with the batten both for vertical displacement parallel to its axis and also for

horizontal translation of the batten, the sliding interior rod having splines engaged in corresponding splines of the sheath; a self-locking reciprocating driving and selection mechanism having a plurality of output shafts in a number equal to that of said telescopic shafts, a power shaft and a selection shaft controlling the connection between said power shaft and one of said output shafts; a plurality of double-cardan transmission shafts each transmission shaft connecting one end of each sliding interior rod to one of said output shafts; a drive motor connected to the power shaft; and a Jacquard means connected to the selection shaft.

3,856,056

BATTENING APPARATUS IN FLAT WEAVING MACHINE

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfeld & Co., Schaan, Liechtenstein

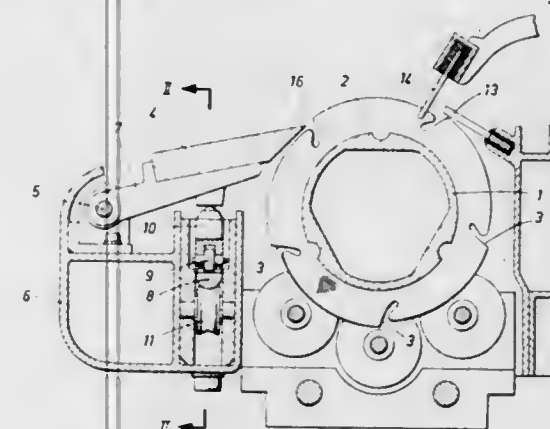
Filed Aug. 13, 1973, Ser. No. 387,721

Claims priority, application Austria, Aug. 18, 1972, 7142/72

Int. Cl. D03d 49/00

U.S. Cl. 139—291 R

3 Claims



1. In a flat weaving machine operable to insert successive filling threads between spaced apart warp threads and to beat up the filling threads so as to form a cloth having a fell, the combination of

- a support for supporting the cloth adjacent the fell,
- a horizontally extending pivot axis mounting the support for a pivotal movement between positions close to, and away from, a reed,
- a reed comprising
 - a reed shaft having an axis extending parallel to the pivot axis of the support,
 - a multiplicity of reed discs corotationally mounted on the reed shaft and having dogs adapted to extend between the warp threads and to beat successive ones of the filling threads against the fell, and
 - the reed shaft being operable to perform a succession of angular movements for beating the successive filling threads against the fell, and
- means pivotally moving the support into the position away from the reed and out of the path of the dogs during the angular movements only at the beginning of each of the angular movements of the reed shaft.

3,856,057

WINDING APPARATUS

Richard K. Mitts, Fullerton, and Hugh Jean Tyler, Santa Ana, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed July 10, 1972, Ser. No. 270,486

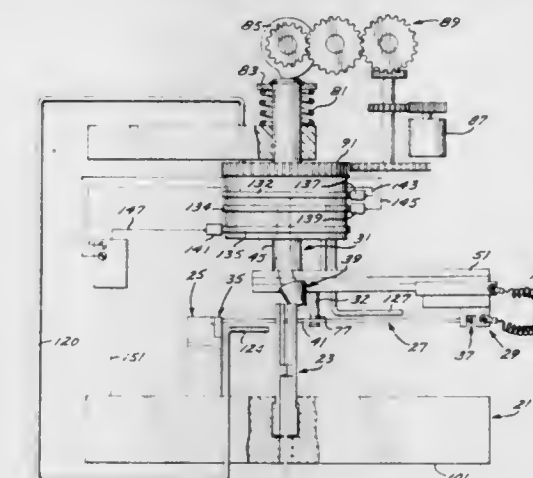
Int. Cl. B21d 11/06, 37/16; B21f 3/04

U.S. Cl. 140—102

18 Claims

1. Precision winding apparatus for coiling an elongated strip rendered malleable in a predetermined temperature range and comprising:
a frame;

an elongated mandrel supported by said frame;
first and second clamp means for clamping first and second ends of said strip;
a rotary head mounted from said frame and carrying said second clamp means for orbiting said second clamp means about said mandrel to progressively bend a selected bend area of said strip about said mandrel;
drive means for rotating said rotary head;
pitch control means coupled with said drive means and with said rotary head to shift said rotary head vertically to control the pitch of said coil;
heating means for heating said bend area;
a temperature sensor disposed adjacent said mandrel and arranged to sense the temperature at said bend area; and
temperature control means connected with said heating



means and said temperature sensor and operative in response to upper and lower temperature within said temperature range to control said heating means to maintain the area of said strip sensed by said sensor within said predetermined temperature range whereby said strip may be clamped between said clamp means, said heating means actuated to heat said bend area, said rotary head energized to orbit said second clamping means and said sensor will sense the temperature of said bend area to hold said predetermined temperature range and said pitch control means will shift said head vertically to precisely control the pitch of the resultant coil.

3,856,058

LIQUID DISPENSER HAVING IMPROVED OVERFILL PROTECTOR

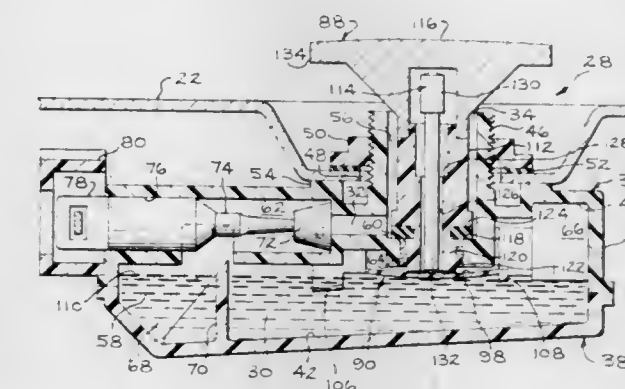
George E. Fackler, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 26, 1973, Ser. No. 410,290

Int. Cl. D06f 39/02

U.S. Cl. 141—18

8 Claims



1. A liquid dispenser comprising:
a liquid reservoir having a fill fitting providing a well opening into the reservoir;
means for selectively dispensing liquid from the reservoir;
means for closing the fill fitting including a valve and means for constraining movement of the valve in response to rising liquid level in the reservoir into sealing engagement with the fill fitting; and

means for draining the well after the valve is closed including a fitting closure having means for opening the valve in response to closing movement of the closure.

3,856,059

CONTAINER CENTERING DEVICE

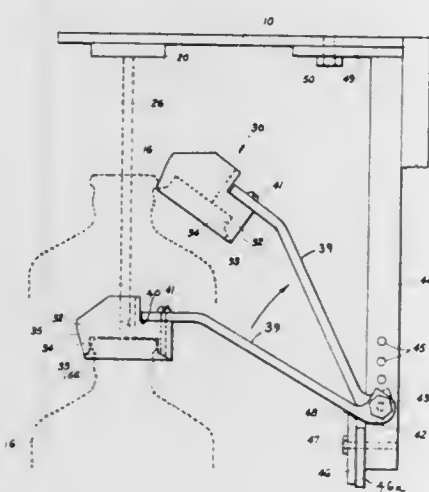
Thomas P. Hartness, 305 Bridgewater Dr.; Robert G. Hartness, 203 Wilmington Rd., both of Greenville, S.C. 29607, and Thomas S. Hartness, 1101 86th St., Marathon, Fla. 33052

Filed Mar. 7, 1973, Ser. No. 338,990

Int. Cl. B65b 43/42

U.S. Cl. 141-165

8 Claims



1. An apparatus for centering an open top container so that an elongated tube of a liquid filling device can be inserted therein when filling said container with liquid, said liquid filling device including a movable stirrup which supports said container and is capable of being shifted vertically from a loading position to a filling position wherein said elongated tube is inserted in said container, said apparatus comprising: a positioning member having a surrounding wall adjacent a bottom portion defining a recess, an inner camming surface of said surrounding wall being inclined upwardly towards the center of said positioning member, pivotal means supporting said positioning member above said container so that the top of said container engages said inclined inner surface of said positioning member for aligning said top of said container with said tube, and a cam means for engaging said positioning member for forcing said positioning member down on top of said container for insuring proper alignment of said container, whereby said positioning member aligns said container with said tube and is then retracted out of the path of said vertical movement of said container so as to not interfere with filling of said container.

3,856,060

TREE HARVESTING SYSTEM

Donald D. Savage, 2883 Cobb St., and Maurice T. Mills, 108 Margaret Ave., N.E., both of Marietta, Ga. 30060

Filed July 27, 1973, Ser. No. 383,115

Int. Cl. A01g 23/08

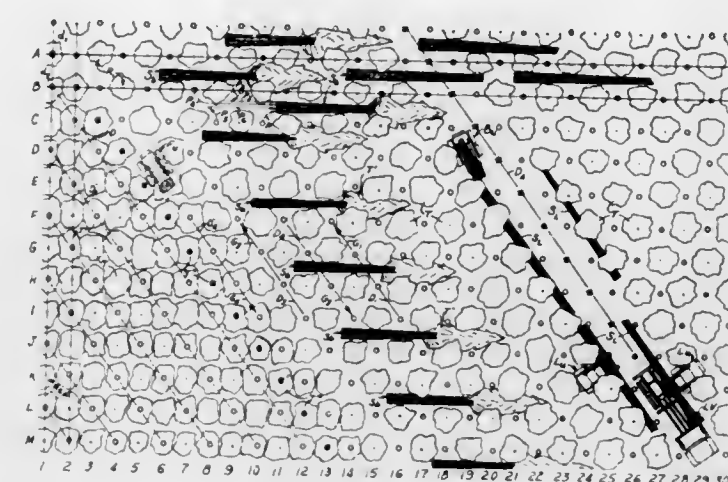
U.S. Cl. 144-34 B

13 Claims

1. A tree harvesting method for selectively thinning trees from a plantation stand in which the trees are arranged in a first series of parallel rows spaced a first prescribed distance apart and in a second series of parallel rows oriented generally normal to the first series of rows and spaced a second prescribed distance apart, said method comprising the steps of:

- felling the trees lying along diagonals extending through the plantation stand so that alternate trees with each of the first and second series of rows are removed including the sub-steps of:
 - cutting the standing tree off at its base while holding the tree in an upright position,

moving the thusly cut tree to a position so that it can be laid between adjacent rows of the first series of parallel rows while maintaining the tree in an upright position, and



laying the tree between the adjacent rows so that its longitudinal axis is generally parallel to the rows;

- delimbing and topping the felled trees to form logs; and,
- transporting the logs from the plantation stand.

3,856,061

METHOD OF CUTTING LUMBER TO RANDOM OR SPECIFIED CLEAR LENGTHS

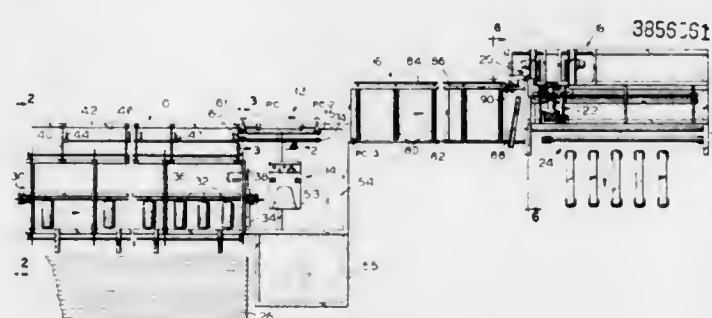
Thomas R. Miles, Portland, Oreg., assignor to Edward Hines Lumber Co., Hines, Oreg.

Division of Ser. No. 214,011, Dec. 30, 1971. This application Jan. 8, 1973, Ser. No. 321,787

Int. Cl. B27b 1/00

U.S. Cl. 144-312

13 Claims



1. The method of clear-cutting preformed lumber of specified width and thickness dimensions to specified or random lengths comprising the steps:

- cutting defects from a piece of lumber at a first defect-cutting station by sensing the defect, severing said piece on opposite sides of each said defect in response to the defect sensing to remove defect-containing sections from said piece and to thereby form a clear piece of lumber of random length extending downstream of said station,
- transferring the resulting clear random-length piece from said defect-cutting station to a cut-to-length station,
- sensing the longest one of several predetermined specified lengths in said random-length clear piece at said cut-to-length station,
- and cutting said piece to the longest specified length sensed in response to the longest-length sensing at said cut-to-length station to thereby form a finished clear piece of lumber of specified length.

3,856,062

BAG CLOSURE

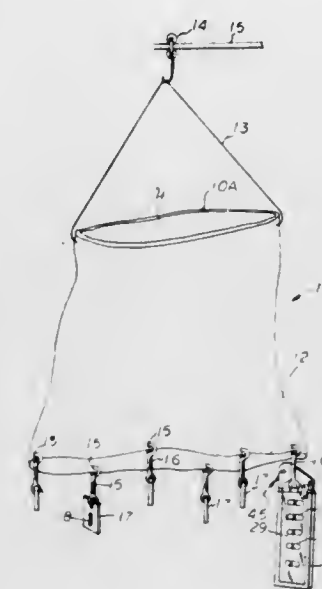
Oscar S. Ippolito, 2959 Bronxwood Ave., Bronx, N.Y. 10469

Filed June 8, 1972, Ser. No. 260,756

Int. Cl. B65d 33/16

U.S. Cl. 150-3

11 Claims



1. In combination:

- a load carrying bag having an open end portion through which the contents thereof can be readily unloaded,
- a plurality of holding means circumferentially spaced about the periphery of said bag adjacent said open end, and
- a closure means for releasably securing and gathering said holding means to close the open end of said bag for retaining the contents of said bag therein,

said closure means comprising:

- a frame means,
- a slide means, said slide means and said frame being mounted for relative movement,
- said slide means having a plurality of spaced openings formed therein, adapted to receive said holding means,
- a latching means operatively associated with each of said openings for releasably securing said holding means received within said openings,
- and an actuating means operatively connected to said frame means and slide means to effect relative movement thereof between an operative bag closing position and bag release position whereby said holding means are simultaneously released.

3,856,063

CREDIT CARD BILLFOLD AND MULTI-POCKET LINER THEREFOR

Jan Peter Dengel, West Bend, Wis., assignor to Amity Leather Products Company, West Bend, Wis.

Filed Apr. 2, 1973, Ser. No. 347,200

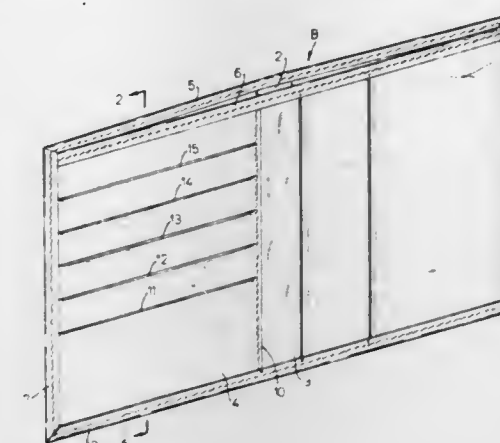
Int. Cl. A45c 1/08

U.S. Cl. 150-35

2 Claims

1. A multi-card wallet having a pair of flexible walls secured together to form an envelope-like opening therein and into which flat objects may be stored, one of said walls having a plurality of parallel and spaced apart slits cut therein, a generally rectangular and flat plastic pocket liner in said envelope-like opening and secured on three of its edges between said flexible walls, said pocket liner comprising: a back member of heat sealable plastic, a plurality of heat sealable plastic pocket members stacked against said back member, said pocket members and back member being heat sealed together to form a series of upwardly opening pockets, the top edge of said pocket members being in alignment with their respective slits in said one of said walls and cemented therealong to said wall to form a series of single edge pockets arranged in shingled

relationship for the reception of cards, said pocket liner being secured along three of its edges between said flexible walls of



said wallet, whereby said back member presents a smooth surface within said envelope-like opening.

3,856,064

OPEN-TOPPED FOLDABLE RECEPTACLE

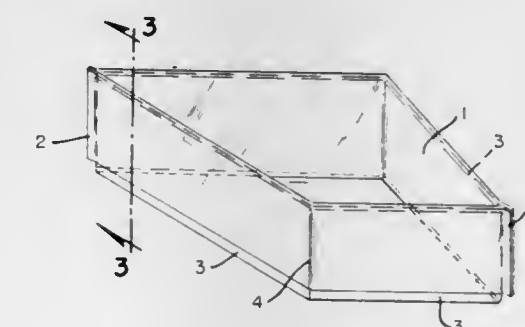
Sven Arild Swalleri, Kungsgatan 32, Stockholm, Sweden

Filed Aug. 30, 1971, Ser. No. 176,218

Int. Cl. B65d 5/36

U.S. Cl. 150-49

2 Claims



1. An open-topped collapsible receptacle having a first collapsible position and a second extended position, said receptacle comprising in said first collapsed position:

- a single piece of fluid impervious sheet material
- i. said material having at least 3 downwardly opening parallel and longitudinal folds, with the first and third folds being folded outwardly and downwardly to the same level, said folded material defining first and second longitudinal ends.
- ii. at least two upwardly opening folds lying on either side of said center downwardly opening fold
- b. at least two transverse end seals sealing the first and second longitudinal ends of said folded material, said seals extending through all downwardly opening folds,
- c. at least one longitudinal strip of stiffening material positioned within said first and third folds, said strips extending from one longitudinal end seal to the other,

3,856,065

LOCKING SCREW

James H. Gehring, 4080 N. Sagamore Rd., Fairview Park, Ohio 44126

Continuation of Ser. No. 162,086, July 13, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,636

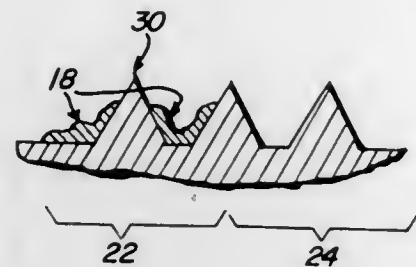
Int. Cl. F16b 39/30

U.S. Cl. 151-22

5 Claims

1. A self-locking screw comprising a threaded shank having an integral screw head with a torque receiving means, said threaded shank comprising an entering section and a locking section, said locking section comprising a plurality of back-tapered protuberances connected to said threaded shank between adjacent thread surfaces, each said protuberance forming an angled surface having a gradually inclined face

facing the direction of the screw turn, and a steep sloped face, said protuberances forming locking means running longitudinally to said threaded shank and angularly to said shank threads, each protuberance extending beyond the shank body diameter a distance less than the crest of said threads and



defining a substantially U-shaped configuration having a sharp jagged profile with each end portion of each protuberance engaging an adjacent thread surface and extending up the adjacent thread surface a greater distance from the minor diameter of the screw than the center section of the protuberance.

3,856,066

WASHER DEVICE

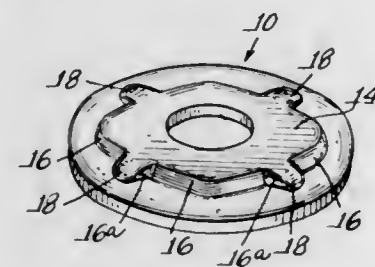
Richard L. Reynolds, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 169,228, Aug. 5, 1971, abandoned. This application May 10, 1973, Ser. No. 359,035

Int. Cl. F16b 39/24

U.S. Cl. 151-38

1 Claim



1. A dual action spring washer including an annular centrally apertured washer body, said body including a first circumferentially continuous outer marginal spring section which is substantially conical in axial cross section and having a circular outer periphery, a second, inner marginal spring section which is substantially conical in axial cross section and extends axially upwardly beyond said first section, the outer periphery of said second section defining a polygon of at least four sides and which polygonal periphery is spaced radially inwardly of the outer periphery of said first section to provide said outer marginal spring section with a varying width about its circumference, a short, rigid, strut section integrally joining said first and second sections, said strut section extending generally parallel to the washer axis, the strut section including protuberances which are U-shaped in circumferential cross section and located on each side of the polygon intermediate the corners of the polygonally shaped section, each protuberance including a top wall and a pair of side walls extending radially outwardly from the outer periphery of the inner section the outermost extremities of the side walls and top wall merging with the surface of the outer marginal spring section, the outermost extremity of the top wall and side walls providing a bearing surface for the strut section having a periphery greater than the periphery of the polygonal section, the radial distance from the axis of the apertured washer body to the outermost portion of the protuberances being less than the radial distance from the axis of the aperture to the circular periphery of the first outer marginal spring section, the outer spring section thus being provided with an uninterrupted frustoconical marginal spring-like clamping surface extending

radially outwardly of the termination point of the protuberances and corners of the polygon, the marginal periphery of the first section lying on a plane which is spaced axially downwardly from the base of the side walls and U-shaped end walls of the protuberances, the inner marginal periphery defining the aperture in the second section lying in a plane which is spaced axially upwardly from the top wall of the protuberance which allows the outer peripheral surface of the outer spring section to yield axially under load, the side walls of the protuberances being extensions of the strut section and the top wall of the protuberances being narrow extensions of the inner conical section providing circumferentially spaced clamping surfaces adapted to be engaged by a clamping surface such as the clamping surface of a rotary threaded fastener and to uniformly distribute the clamping forces in the dual action spring washer system without significantly altering the spring characteristics of either the inner spring section or the outer spring section and significantly decrease the stress concentration at the junctures of the strut with the inner and outer sections.

3,856,067

PNEUMATIC TIRE

Werner Gorter, Baden, Austria, assignor to Semperit Österreichisch-Amerikanische Gummiwerke AG, Vienna, Austria

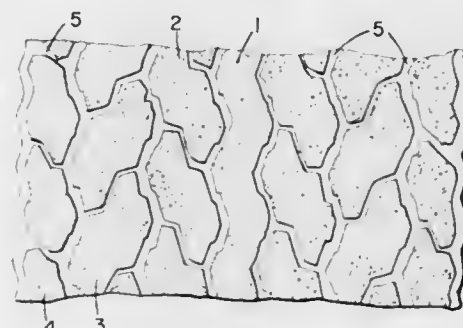
Division of Ser. No. 30,826, April 22, 1970. This application Mar. 26, 1973, Ser. No. 344,641

Claims priority, application Germany, Nov. 25, 1969, 1959194

Int. Cl. B60c 11/00

U.S. Cl. 152-209 R

3 Claims



1. A pneumatic tire includes an outer tread surface which in use contacts the surface of the ground, said tread surface is covered by a vulcanization skin and has a plurality of spaced grooves each of which extends into said tread surface to a depth in the order of centimeters, said grooves defining a plurality of areas of the outer tread surface in which said vulcanization skin is substantially continuous and unbroken, said unbroken vulcanization skin in each of said areas including a substantially regular pattern of arcuate indentations having depths ranging between 0.1 and 1 mm measured from said outer tread surface, and said pattern of said indentations corresponding to the surface pattern of a textile material.

3,856,068

TRACTION DEVICE

John W. Callaghan, and David F. Johnson, both of 215 31st St., both of Boulder, Colo. 80202

Filed Aug. 2, 1973, Ser. No. 385,091

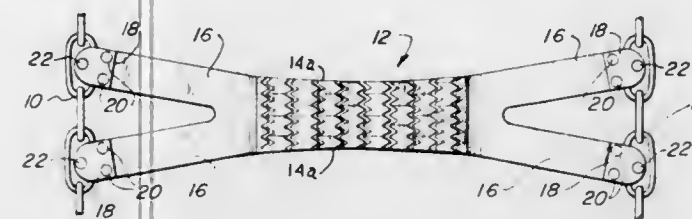
Int. Cl. B60c 27/02

U.S. Cl. 152-226

4 Claims

1. In a traction device for use upon a vehicle wheel comprising connecting means adapted to extend circumferentially along opposite sides of the vehicle wheel and a plurality of cross link members secured to and extending transversely between said connecting means; the improvement wherein each of said cross links comprises a one piece member of resilient material having a generally rectangular central section having concavely curved leading and trailing edges and integrally joined at each of two opposite ends to a pair of end

sections, said end sections diverging from each other in their extent away from said central section, means including a pair of coupling plates mounted on opposite sides of each end section and projecting beyond the end of said end sections,



means for compressively mounting said coupling plates on opposite sides of each said end section, and means coupling the projecting portions of said coupling plates to said side chains.

3,856,069

TIRE CHAIN DEVICE

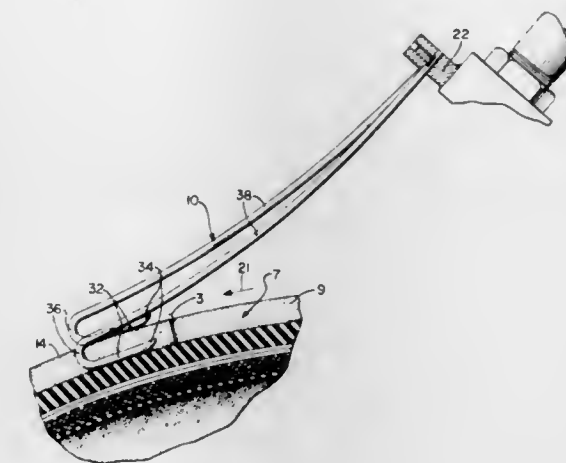
Victor S. Giannone, 952 Central Ave., Peekskill, N.Y. 10566

Filed Oct. 23, 1973, Ser. No. 408,398

Int. Cl. B60c 27/02

U.S. Cl. 152-233

5 Claims



a spring wire hook having an elongated elastically deflectable shank, a shoe portion slidable on a surface or surfaces of the tread of said tire and connected to said shank by a U-shaped bend portion, and a flash penetrator terminal portion.

3,856,071

DEVICE FOR DETACHING TIRE BEADS FROM A WHEEL RIM

Victor Duquesne, Antwerpen, Belgium, assignor to Coulter Electronics Inc., Hialeah, Fla.

Filed May 3, 1973, Ser. No. 356,930

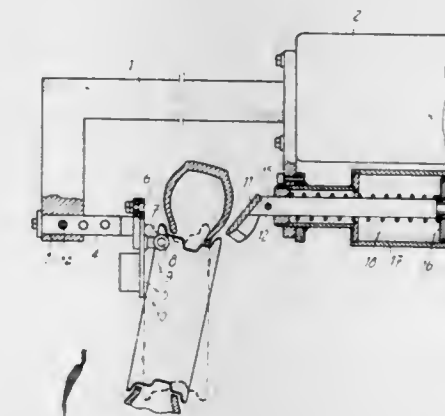
Claims priority, application Belgium, May 9, 1972, 518C5

Int. Cl. B60c 25/06

U.S. Cl. 157-1.26

4 Claims

1. A tire chain assembly for a vehicle wheel comprising: inboard and outboard straps of flexible material, each of said straps having opposite ends releasably secured together, at least one of said straps being of adjustable circumference; means on said straps forming the straps into rectilinear strap sections; said means comprising corner plates; the corner plates having entry slots, exit slots and slant corner slots; the sections of the respective straps being substantially transversely aligned and substantially parallel to one another; link chains extending between the inboard and outboard straps at spaced locations; and the straps extending through said entry and exit slots and the link chains being secured to the corner slots.



3,856,070

TRANSVERSE FLASH BREAKING IN TIRE MANUFACTURE

Christopher E. Christie, Akron; Paul E. Appleby, Cuyahoga Falls, and Frank R. Tully, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 13, 1973, Ser. No. 387,882

Int. Cl. B29h 21/00

U.S. Cl. 157-13

1 Claim

1. Apparatus for treating a new tire having mold flash extending transversely of a circumferentially endless tread groove therein comprising means for mounting said tire rotatably, at least one flash tearing instrument capable of entering said groove, means for mounting said instrument for movement into said groove, and means for effecting relative move-

1. Device for detaching the tire beads from a wheel rim, comprising a backing plate, guiding element protruding from said backing plate, a fulcrum on said backing plate spaced from said guiding element, said guiding element and fulcrum being positioned for guiding a wheel placed on a slant with respect to said backing plate, a pressure blade opposite said backing plate for engaging the tire bead, a driving means rigidly attached to said pressure blade for moving said pressure blade in a straight line towards said backing plate in order to detach the tire bead which adheres to the wheel, while swinging said wheel around said fulcrum and over said guiding element in the direction of said backing plate.

3,856,072

FLEXIBLE WALL SECTION, IN PARTICULAR FOR HEATING OR REFRIGERATING CHAMBERS

Erik Ivar Sund, Stockholm, Sweden, assignor to Igloo-Flex AB, Stockholm, Sweden

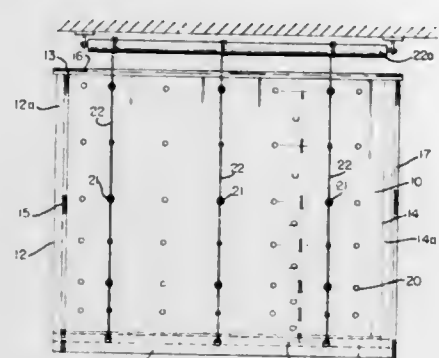
Filed Jan. 2, 1973, Ser. No. 320,351

Claims priority, application Sweden, Dec. 30, 1971, 16947/71

Int. Cl. A47h 5/032

U.S. Cl. 160-84 R

2 Claims



1. A flexible wall section for heating or refrigerating chambers having at least one layer of flexible material with good heat insulating capacity, said wall section comprising:

- a coupling means along at least three side edges for fast and releasable interconnection of the section with adjacent wall portions;
- biased pulling members for folding and removing said wall section when said side edges have been released, said pulling members maintaining said wall section in the removed position,
- folding indications perpendicular to the direction of removal so as to facilitate folding of said section during the removing operation, and
- eyelets for each pulling member provided at every second folding indication, said pulling members being attached to the edge parallel with the folding indications and passing through said eyelets,

the distance between the folding indications increasing progressively from the lower edge of the section towards the upper edge of the section after each fold so that the upper folds become larger than the lower folds.

3,856,073

OVERHEAD DOOR MOVEMENT CONTROL AND SUPPORT UNIT

J. Marlin Risser, 36 Wash. St., Elizabethtown, Pa. 17022

Filed Dec. 27, 1973, Ser. No. 429,035

Int. Cl. E05d 15/00

U.S. Cl. 160-201

9 Claims

1. An overhead door movement control and supporting means adapted to be connected to the uppermost two panels of an articulated multiple panel door for guiding the movement thereof to and from closed vertical position and overhead open horizontal position while being supported and guided by a conventional channel type track having vertical and horizontal portions connected by a curved section, said door supporting means comprising in combination guide means adapted to be fixed to the inner surface of the uppermost panel of such multiple panel door adjacent each side thereof and below the upper edge, a guide member longitudinally slidable in each guide means, an extension flexibly connected to each guide member, a guide roller rotatably connected to each extension, said guide roller being engageable within a conventional channel type track within the upper horizontal and curved portions to guide the upper edge of said uppermost panel of said door from a vertically closed position to a horizontal open position within the plane of said horizontal portions of said conventional track means, said guiding being accomplished by said extensions initially being at an

angle to said guide members to dispose said rollers initially in predetermined spaced relation from the inner surface of said uppermost door panel and advanced ahead of the upper edge of said panel as opening of said door is initiated, thereby serving to pull said upper edge abruptly from the initial vertical plane thereof toward the horizontal plane while said guide members slide in said guide means and said extensions thereon



move into substantially axial alignment therewith as said uppermost panel is guided into horizontal open position, and an elongated control member connected between each of the next to the uppermost door panels and the outer end portions of said extension of said guide members and operable to effect said sliding of said guide members relative to said guide means.

3,856,074

METHOD OF CENTRIFUGAL PRODUCTION OF CONTINUOUS METAL FILAMENTS

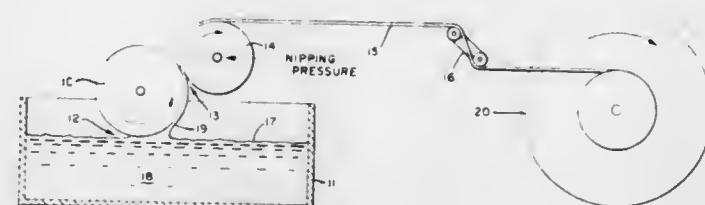
Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,814

Int. Cl. B22d 11/06

U.S. Cl. 164-87

4 Claims



1. In a method for the production of metal filaments from a molten source using a rotating quenching wheel as a quenching element, the improvement which comprises exerting sufficient nipping pressure on the formed filament at a point on the quenching wheel beyond the point of solidification of the filament and prior to the point said filament is separated from the quenching wheel by centrifugal action to retain the filament against the quenching wheel and subsequently collecting the filament.

3,856,075

APPARATUS FOR PREVENTING DISPLACEMENT OF MOLDS

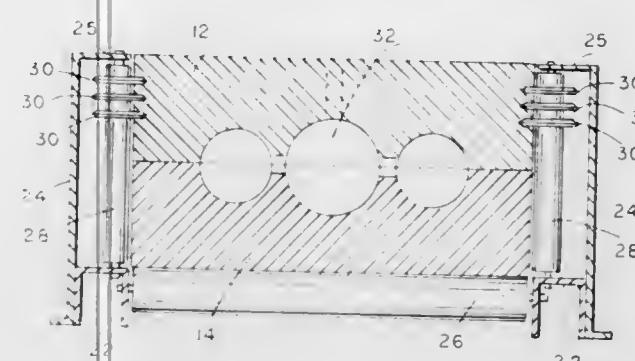
Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y. 11713

Filed Jan. 16, 1973, Ser. No. 324,240

Int. Cl. B22d 33/00

U.S. Cl. 164-323

9 Claims U.S. Cl. 165-9



1. A mold securing device for preventing relative displacement of the cope and drag halves of a sand mold during casting, comprising transport means defining a horizontal path along which a mold may progress during a casting process; guide means at least along a portion of said path, said transport and guide means together defining a space through which the mold passes as it moves along said path; and penetrating means disposed at each side of said path at a casting station and having portions which project into said space into the path of movement of the cope halves of the molds to thereby penetrate said cope halves and form elongated grooves in the latter as the molds move along said path for preventing vertical displacement of the latter during the casting process.

3,856,076

APPARATUS FOR CONTAINING THE MOLTEN REACTION PRODUCTS OF A REACTIVE CLADDING PROCESS

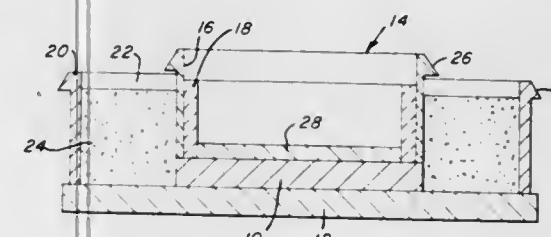
Richard C. Adams, Pitcairn Borough, Allegheny County; Robert H. Kachik, Washington Township, Westmoreland County; Arthur J. Pignocco, Franklin Township, Westmoreland County, and Waldo Rall, Fox Chapel Borough, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1973, Ser. No. 332,869

Int. Cl. B22d 19/00

U.S. Cl. 164-332

16 Claims



1. Apparatus for containing the molten reaction products of a reactive cladding process, comprising:

- a base,
- a metal substrate resting on said base,
- an outer perimeter shell of predetermined size and configuration resting on said base around said substrate, said shell being substantially larger than said substrate,
- a refractory-lined inner perimeter shell of predetermined size and configuration resting on said substrate, enclosing exactly that portion of said substrate to be clad, and spaced from said outer perimeter,
- said inner perimeter and said outer perimeter defining an annular space for containing an insulating material, and insulating material in said space.

929 O.G.-56

3,856,077

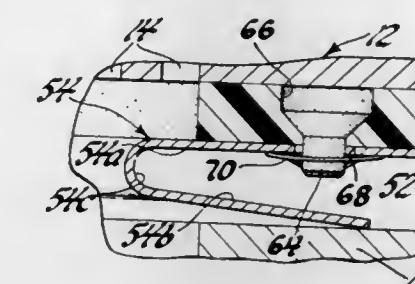
REGENERATOR SEAL

Donald C. Siegla, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,199

Int. Cl. F28d 19/00

8 Claims



1. In a rotary regenerator heat exchange apparatus having a housing and a matrix carried in said housing for rotation about an axis through two aeriform fluid flow paths including a high pressure fluid flow path and a counterflowing low pressure fluid flow path, the matrix because of these flow paths having a hot side and a cold side and a sealing means disposed between the housing and the matrix on the cold side of the matrix, said sealing means comprising a one-piece wear seal element of graphite filled high temperature plastic material, means associated with the housing and with said wear seal element to retain said wear seal element against rotation and translatable movement transverse to the axis of rotation of the matrix while permitting movement of said wear seal element parallel to the axis of rotation of the matrix, and a leaf seal positioned between the housing and said matrix to bias said wear seal element into sealing engagement with the matrix, each portion of said leaf seal being substantially U-shaped in cross section and having a first leg portion engaging the housing, a second leg portion engaging said seal wear element and an integral arcuate portion therebetween, and retainer means to retain said leaf seal in position within the housing so that the open ends of said U-shaped cross section portions of said leaf seal are acted on by the fluid flowing in the high pressure fluid path.

3,856,078

DEVICES FOR TANKS CONTAINING FLUID MEDIUM

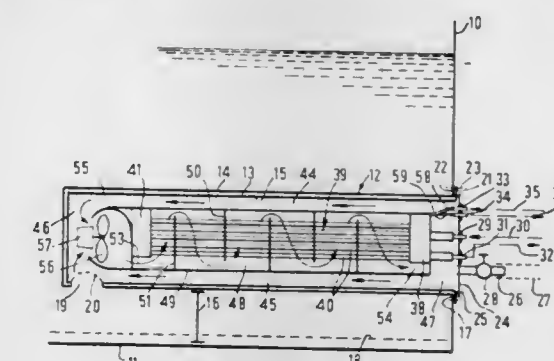
Carsten Dahl, Minde, Norway, assignor to Patents and Developments A/S, Helldal, Norway

Filed May 15, 1973, Ser. No. 360,443

Int. Cl. F28d 1/06

U.S. Cl. 165-108

5 Claims



1. A device within a tank containing fluid medium, especially so-called heavy oils, which comprise an insulated housing submerged in the fluid medium a heat exchanger having an outer jacket arranged in said housing for heating said medium, said housing comprising at its one end a first chamber in the form of an inlet and mixing chamber and at its other end a second chamber in the form of a combined circulation and outlet chamber, said one end being in open flow connection with the surrounding fluid medium and said other end being

in valve-controlled flow connection with a discharge conduit, said first and second chambers being interconnected via at least two separate flow passages within said housing, a pump disposed in the housing adjacent an end of the heat exchanger and adapted to force fluid medium along one flow passage from the first chamber via the heat exchanger into the second chamber while another flow passage permits circulation from said second chamber to said first chamber so as to keep the mixing of heated fluid medium from the heat exchanger and unheated fluid medium from the tank in step with the discharge of heated fluid medium from said discharge conduit.

3,856,079

FINNED TUBE HEAT EXCHANGE CONDUCTOR

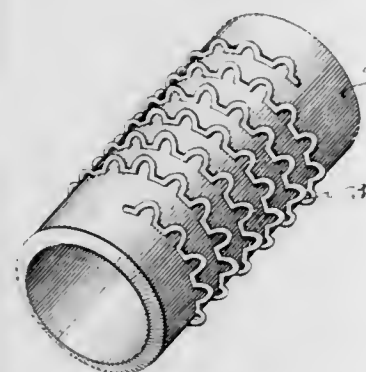
Elmo W. Geppelt, 1911 S. Delaware Pl., Tulsa, Okla. 74104
Continuation of Ser. No. 702,010, Jan. 31, 1968, abandoned.

This application Mar. 23, 1971, Ser. No. 127,338

Int. Cl. F28b 1/36

U.S. Cl. 165-184

9 Claims



1. A finned tube heat exchange conductor comprising a tube, and a heat transfer fin on the tube, the fin comprising an elongated metal member disposed helically about the tube and contacting the tube at a plurality of spaced locations along its helix, said member having portions spaced substantial distances outwardly from the tube between said spaced locations, said fin lying on the locus of the generatrix of its helix.

3,856,080

PACKER DEVICE HAVING A J-LATCH AND SEAL MEANS

Billy Ray Watson, 1000 S. Franklin, Monahans, Tex. 79756

Continuation-in-part of Ser. No. 194,326, Nov. 1, 1971,

abandoned. This application Nov. 19, 1973, Ser. No. 417,290

Int. Cl. E21b 23/00, 33/12

U.S. Cl. 166-120

11 Claims

1. A packer apparatus for use downhole in a borehole and which is adapted to be anchored in a well casing, said apparatus having a body, a hollow mandrel slidably received within said body, a housing attached to said mandrel and movable therewith, means forming a lost motion coupling connecting said housing to said body in a manner to permit said housing to be moved axially from a first to a second position relative to said body;

means forming a packer element on said body for expansion outwardly into sealing engagement with a well casing and means connected to said mandrel and to said body for causing said packer element to expand outwardly when said mandrel is moved downhole relative to said body; said mandrel, housing, and body cooperatively forming an annular chamber therebetween;

means forming a flow passageway for conducting fluid flow into the packer body at a location below said packer elements, into said annular chamber, and through said housing;

a piston reciprocally received within said annular chamber, at least part of said piston being disposed within at least part of said housing when said housing is in the first position; seal means on said piston for preventing fluid

flow through said flow passageway when said housing is in the first position and for permitting fluid flow through



said flow passageway when said housing is in the second position.

3,856,081

LOCKING DEVICES

Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 2, 1972, Ser. No. 293,869

Int. Cl. E21b 23/00

U.S. Cl. 166-123

23 Claims



1. A locking device adapted for releasable latching along a flow conductor provided with a first locating and supporting shoulder facing in a first direction and a second locking shoulder comprising a cam surface in said flow conductor spaced from said first shoulder and facing in a second opposite direction, said locking device comprising: mandrel means; locating and support means on said mandrel means for locating said locking device at and engaging said first shoulder to hold said device against longitudinal movement in said second direction; and locking means on said mandrel means longitudinally spaced from said locating and support means, said locking means including expander means and expandable means, said expandable means having a cam surface engageable with said cam surface along said flow conductor responsive to movement of said expander means for wedging said device into a longitudinal no-slip relationship and locking said device in

said relationship in said flow conductor between said first and second shoulders, said expander means having an expanding and locking surface tapering inwardly in said second direction.

3,856,082

SELECTIVE POSITIONING WELL TOOL APPARATUS

Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., Houston, Tex.

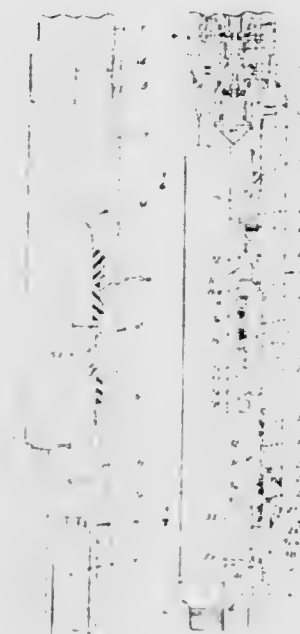
Continuation-in-part of Ser. No. 344,568, March 26, 1973,

This application June 12, 1973, Ser. No. 369,410

Int. Cl. E21b 33/16, 43/12

U.S. Cl. 166-154

21 Claims



1. Apparatus for selectively positioning well tools within a flow conductor comprising:

tubular receiver means adapted for connection in said flow conductor;

a well tool movable through said flow conductor for entrance into said receiver means;

sleeve means disposed within said receiver means for limited axial movement between closed and opened positions, axial forces acting on said sleeve means, due to pressures to which said sleeve means is subjected, being equally balanced in either said opened or closed positions;

cooperable port means in said sleeve means and receiver means registerable when said sleeve means is in said opened position to provide fluid communication between said well tool and the exterior of said receiver means;

latch means carried by said well tool engageable with said sleeve means on said entrance into said receiver means to latch said well tool therein and to shift said sleeve means to said opened position;

said cooperable port means comprising first and second axially spaced ports in said receiver means communicating with each other, through axial flow means, to provide said flow communication between said well tool and said exterior of said receiver means when said sleeve means is in said opened position, said second port communicating with the exterior of said receiver means through said sleeve means, when said sleeve means is in said opened position, seal means being disposed between said sleeve means and said receiver means for blocking said communication between said second port and said exterior of said receiver means, when said sleeve means is in said closed position.

3,856,083

WELL APPARATUS FOR RECEIVING AND OPERATING A THROUGH THE BORE RECEIVABLE SAFETY VALVE

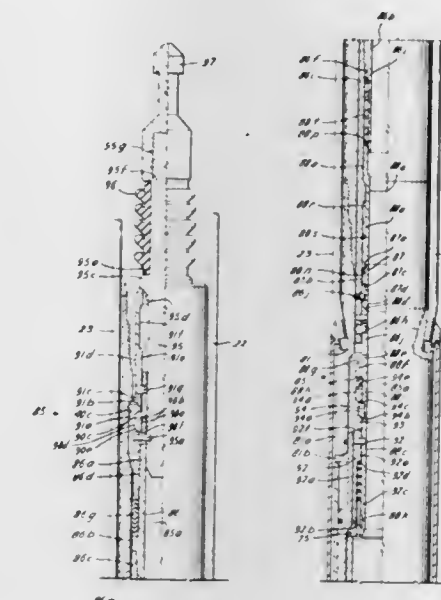
James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 131,629, April 6, 1971, Pat. No. 3,762,471. This application June 12, 1973, Ser. No. 369,261

Int. Cl. E21b 43/12

U.S. Cl. 166-224 A

10 Claims



1. An apparatus adapted for mounting in a well tubing for receiving a well flow control means movable through a bore of the well tubing to the apparatus for being received with the apparatus and operable by the apparatus between flow enabling and flow blocking positions for controlling flow of well fluids through the well tubing, including:

a. a housing having a bore therethrough and having means for connecting at its upper and lower ends with the well tubing with said bore communicating with the bore of the well tubing for providing a flow passage through said housing for the well fluids;

b. means with said housing for transmitting controlled movement to the through the bore movable flow control means received in said housing for effecting desired operation of the flow control means to control the flow of well fluids through said bore; and

c. means in said bore for positioning the flow control means in said bore for controlling flow of fluid in the tubing.

3,856,084

AN IMPROVED BLIND BOREHOLE BACK-REAMING METHOD

Roger C. Parsons, Ponca City, Okla., assignor to Continental Oil Company, Ponca, Okla.

Filed June 7, 1973, Ser. No. 368,010

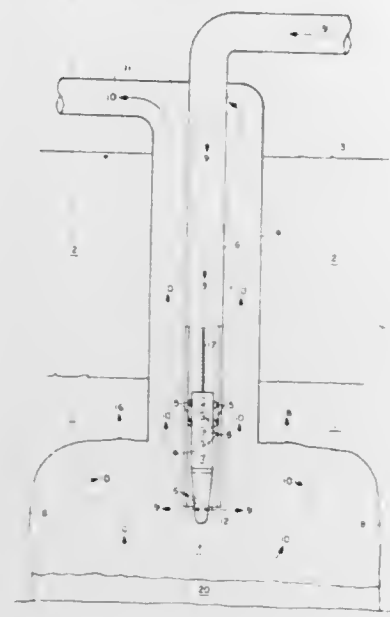
Int. Cl. E21b 43/24

U.S. Cl. 166-257

8 Claims

1. In the blind borehole backreaming method for gasifying subterranean carbonaceous deposits by injecting oxygen-containing gas into a subterranean carbonaceous deposit through an injection pipe positioned in a substantially vertical wellbore penetrating said deposits, gasifying said deposits by partially combusting said deposits at a fire front and recovering gasification products through said wellbore; the improve-

ment comprising: positioning a high temperature injection nozzle in the lower portion of said injection pipe to control the



upward advance of said fire front and to control the rate at which the lower end of said injection pipe melts.

3,856,085

IMPROVED ANNULUS PRESSURE OPERATED WELL TESTING APPARATUS AND ITS METHOD OF OPERATION

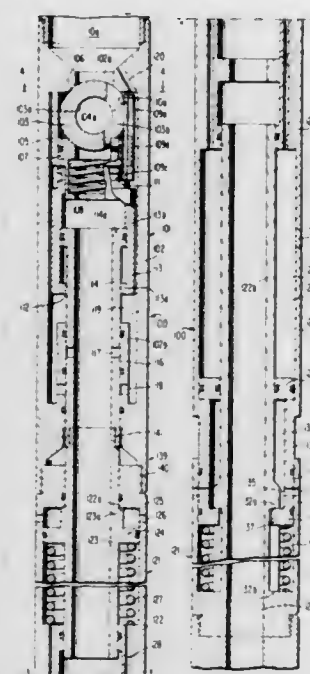
John C. Holden, and Gary Q. Wray, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 15, 1973, Ser. No. 412,881

Int. Cl. E21b 47/00

U.S. Cl. 166-264

6 Claims



1. A method for conducting formation testing utilizing a formation testing string; a formation testing valve assembly incorporated in a lower portion of said formation testing string; and a packer assembly incorporated in a lower portion of said formation testing string and operable to isolate a formation to be tested from an upper portion of a well bore within which said formation testing string is positioned, with said formation testing valve assembly being operable to control a flow of formation fluid between said formation and the interior of said formation testing string; said method being characterized by improvements in testing valve operation comprising:

providing full opening formation testing valve means in said formation testing valve assembly operable to move between closed and open conditions; said full opening formation testing valve means, in said open condition, being operable to provide a formation fluid transmitting opening extending generally centrally and longitudinally of said formation testing string; providing annulus pressure responsive, full opening formation testing valve closing means in said formation testing valve assembly and having first, annulus pressure responsive, force generating means operably responsive to the pressure of fluid in an annulus in a well bore generally adjacent said formation testing valve assembly to generate in said well bore a first biasing force, and first, annulus pressure responsive, force transmitting means operable to transmit said first annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said closed condition; providing annulus pressure responsive, full opening formation testing valve opening means in said formation testing valve assembly and having second, annulus pressure responsive, force generating means operably responsive to the pressure of fluid in said annulus of said well bore generally adjacent said formation testing valve assembly to generate in said well bore a second biasing force, and second, annulus pressure responsive, force transmitting means operable to transmit said second annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said open condition; and

operating said annulus pressure responsive, full opening formation testing valve closing means, said annulus pressure responsive, full opening formation testing valve opening means, and said full opening formation testing valve means in combination to provide said closed and open conditions in response to changes in fluid pressure in said annulus while permitting a relatively unobstructed flow of formation fluid generally centrally and longitudinally of said formation testing string through said formation testing valve assembly when said full opening formation testing valve means is in said open condition.

2. An apparatus for conducting formation testing including a formation testing string; a formation testing valve assembly incorporated in a lower portion of said formation testing string; a packer assembly incorporated in a lower portion of said formation testing string and operable to isolate a formation to be tested from an upper portion of a well bore within which said formation testing string is positioned, with said formation testing valve assembly being operable to control a flow of formation fluid between said formation and the interior of said formation testing string; said apparatus being characterized by improvements in said formation testing valve assembly comprising: full opening formation testing valve means included in said formation testing valve assembly and movable between closed and open conditions, said full opening formation testing valve means, in said open condition, being operable to provide a formation fluid transmitting opening extending generally centrally and longitudinally of said formation testing string; annulus pressure responsive, full opening formation testing valve closing means included in said formation testing valve assembly and having first, annulus pressure responsive, force generating means operably responsive to the pressure of fluid in an annulus in a well bore generally adjacent said formation testing valve assembly to generate in said well bore a first biasing force, and first, annulus pressure responsive, force transmitting

means operable to transmit said first annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said closed condition; second, annulus pressure responsive, force generating means operably responsive to the pressure of fluid in said annulus of said well bore generally adjacent said formation testing valve assembly to generate in said well bore a second biasing force, and second, annulus pressure responsive, force transmitting means operable to transmit said second annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said open condition; and

means operable to transmit said first annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said closed condition; annulus pressure responsive, full opening formation testing valve opening means included in said formation testing valve assembly and having second, annulus pressure responsive, force generating means operably responsive to the pressure of fluid in said annulus of said well bore generally adjacent said formation testing valve assembly to generate in said well bore a second biasing force, and second, annulus pressure responsive, force transmitting means operable to transmit said second annulus pressure generated biasing force to said full opening formation testing valve means and urge said full opening formation testing valve means to said open condition; and said annulus pressure responsive, full opening formation testing valve closing means, said annulus pressure responsive, full opening formation testing valve opening means, and said full opening formation testing valve means being operable to provide said closed and open conditions in response to changes in fluid pressure in said annulus while permitting a relatively unobstructed flow of formation fluid generally centrally and longitudinally of said formation testing string through said formation testing valve assembly when said full opening formation testing valve means is in said open condition.

3,856,086

MISCIBLE OIL RECOVERY PROCESS

William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

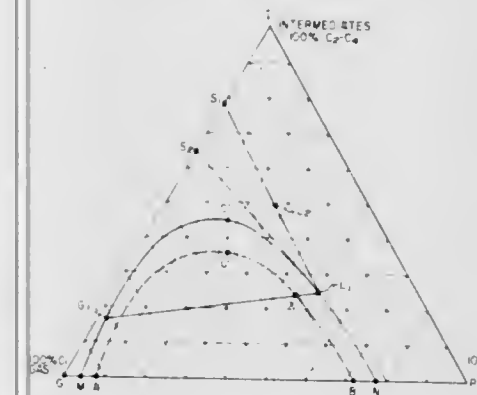
Filed Oct. 6, 1972, Ser. No. 295,771

Int. Cl. E21b 43/16

U.S. Cl. 166-274

18 Claims

TERNARY DIAGRAM FOR THE SYSTEM
GAS (G)
INTERMEDIATES (P, C, W) (I)
PENTANES PLUS (C₅+T) (P)
W = A PHASE BOUNDARY CURVE AT REDUCED PRESSURE
A = P PHASE BOUNDARY CURVE AT BUBBLE POINT PRESSURE



1. A process for recovering hydrocarbons from a hydrocarbon-bearing reservoir having a hydrocarbon liquid phase and a gas saturation, traversed by at least one injection well and one production well, comprising the steps of: a. determining the composition of a hydrocarbon solvent that is miscible on first contact with said liquid phase at the temperature and pressure of said reservoir, b. injecting into said reservoir via said injection well a slug of said hydrocarbon solvent in an amount sufficient to establish a miscible transition zone of said slug with said hydrocarbon liquid phase, c. injecting into said reservoir a drive fluid at a pressure and in an amount sufficient to maintain a drive of said slug and said reservoir hydrocarbons toward said production

well and, d. recovering said hydrocarbons via said production well.

3,856,087

METHOD FOR LOADING AND TRANSPORTING COAL

Lloyd L. Wartes, 550 E. 12th Ave., Suite 1905, Denver, Colo. 80203

Filed Oct. 24, 1972, Ser. No. 300,032

Int. Cl. A62c 1/14

U.S. Cl. 169-45

4 Claims



1. A method of transporting coal including the steps of injecting liquid carbon dioxide into the coal while loading the coal into a coal compartment to reduce the temperature of the coal to below its ignition temperature and to surround it in a fire-suppressing atmosphere, providing said coal compartment with a protective atmosphere containing sufficient carbon dioxide to prevent ignition and combustion of the coal, propelling the coal in the protective atmosphere with an engine which produces exhaust fumes, processing the exhaust fumes by compression and cooling them to liquefy and recover the carbon dioxide therefrom, storing the carbon dioxide, and utilizing the carbon dioxide recovered from the engine exhaust for said injecting step and for providing the protective atmosphere.

3,856,088

METHOD OF EXTINGUISHING OIL AND GAS WELL FIRES

Alvin J. Frisque, La Grange, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 29, 1971, Ser. No. 213,843

Int. Cl. A62c 3/04, 1/20

U.S. Cl. 169-46

6 Claims

1. A method for extinguishing oil and gas well fires which comprises injecting into said well at a point below the fire a stable liquid dispersion of a water soluble anionic vinyl addition polymer and a water soluble cationic polymer comprising: A. a polymeric latex composed of a water-in-oil emulsion which contains dispersed therein a finely-divided water soluble anionic vinyl addition polymer, said polymeric latex having uniformly distributed therethroughout; B. a water soluble cationic polymer; with the weight ratio of (A) to (B) being within the range of 1:10 to 10:1 and the total amount of (A) plus (B) present within said dispersion being within the range of from 5 to 75 percent by weight, and then inverting the liquid dispersion in the well to produce a three-dimensional water and hydrocarbon liquid insoluble gel-like structure which seals off said well; thereby extinguishing said fires.

4. The method of claim 1 wherein the inversion is accomplished by first injecting into said well prior to the injection of the stable liquid dispersion an aqueous liquid which contains 0.1 to 5 percent by weight of a water soluble surfactant or a water soluble caustic material.

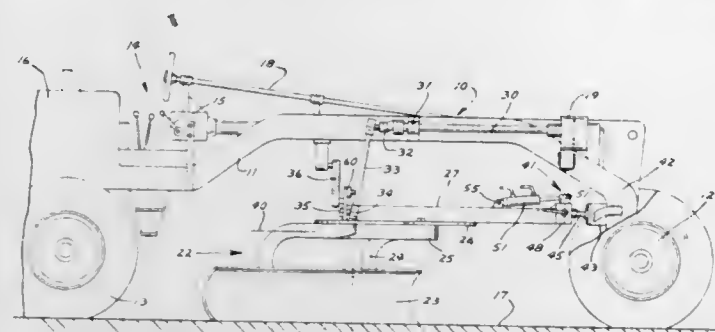
3,856,089

DRAWBAR SUPPORT FOR LEVELING CIRCLE FRAME ON ROAD GRADERS

Theodore Rivinius, 810 N. 2nd St., Bismarck, N. Dak. 58501
Continuation-in-part of Ser. No. 267,434, June 29, 1972,
abandoned. This application Sept. 20, 1973, Ser. No. 398,947
Int. Cl. E02f 3/76

U.S. Cl. 172-4.5

13 Claims



1. In grading machines having an earth working blade, a circle frame member for mounting said blade for rotation about an upright axis, a main frame, and means for connecting said circle frame to said main frame comprising a drawbar member attached at one end thereof to said circle frame, means between said circle frame and said main frame to raise and lower said circle frame and first pivot means attaching the other end of said drawbar member to said main frame, said drawbar member including two drawbar portions, means forming a second pivot connection between said drawbar portions adjacent the first pivot means, and having a pivot axis generally transverse to the direction of movement of the road grader, and means interconnecting the two pivoted drawbar portions to control the angular relationship between the two pivoted drawbar portions to level said circle frame at different depth positions of said circle frame.

3,856,090

SOD CUTTER BLADE MOUNTING

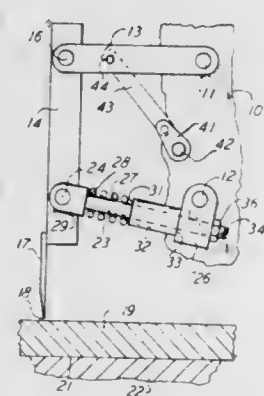
Donald G. Haffner, Greendale, and Anthony J. Saiia, South Milwaukee, both of Wis., assignors to Jacobson Manufacturing Company, Racine, Wis.

Filed Feb. 15, 1974, Ser. No. 442,877

Int. Cl. A01b 45/04

U.S. Cl. 172-20

6 Claims



1. A sod cutter blade mounting for use in a sod cutting machine, comprising a sod-cutter blade uprightly disposed, two spaced-apart pivot mounting members, a link pivotally associated between said blade and one of said mounting members for swingably mounting said blade for movement from above and into and out of the sod being traversed by the sod cutting machine, a bracket mounted on the other of said mounting members, a rod pivotally associated with said blade and slidably mounted on said bracket for controlling the swinging movement of said blade, and a compression spring on said rod and disposed intermediate said bracket and said blade for yieldingly urging said blade away from said bracket and allow said blade to have rearward movement relative to the sod cutting machine and the forward movement thereof

and to thereby momentarily remain embedded in the sod while the sod cutting machine advances forwardly.

3,856,091

ADJUSTABLE DRILL SUPPORT

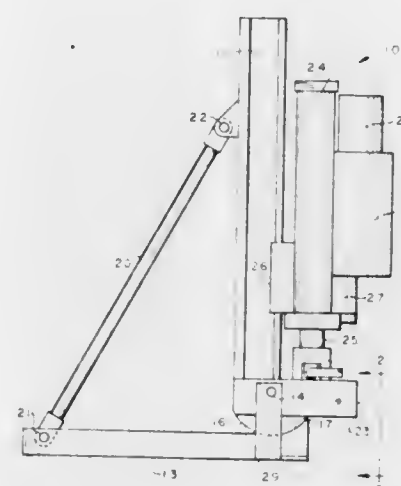
Norman Dean Dyer, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 3, 1973, Ser. No. 403,126

Int. Cl. E21c 11/00

U.S. Cl. 173-39

6 Claims



1. An earth boring machine, comprising: base means for supporting said machine, at least one support member extending out from said base means, drilling means that travel along said support member for providing drilling forces, hinge means for rotatably connecting said support member to said base means, said hinge means being a pin connection, brace means connecting said support member and said base means, a friction surface means on said base means, said friction surface means on said base means being a curved surface immediately below said support member with said curved surface on said base means being a concave surface, and a friction surface means connected to said support member proximate said friction surface means on said base means for contacting said friction surface means on said base means, said friction surface means connected to said support member being a curved surface positioned on the end of said support member with said curved surface connected to said support member being a convex surface.

3,856,092

POST DRIVER

Morley Mann, 221 Normandy Dr., Addison, Ill. 60101

Filed Apr. 10, 1973, Ser. No. 349,716

Int. Cl. B25d 1/00

U.S. Cl. 173-122

3 Claims

1. A manually operable driver for the post or the like comprising a first, inner tube having a cap at the upper end thereof and adapted to overlie a post or the like to be driven with the cap impinging against the top of said post or the like, a reaction disc fixed to said tube adjacent the lower end transversely thereof, a ram having a second tube telescoping over said first tube and adapted to slide longitudinally relative thereto, said ram having a substantial mass including a transverse weight base adjacent the upper end thereof and further having a reaction disc secured to the ram tube adjacent the lower end and extending transversely thereof, guide rods extending from one of said reaction discs through the other thereof in sliding relation relative to the other thereof, and a plurality of compression springs respectively encircling said guide rods be-

3,856,094

APPARATUS FOR UTILIZING COMPATIBLE PERFORATING FLUID IN WELL BORES

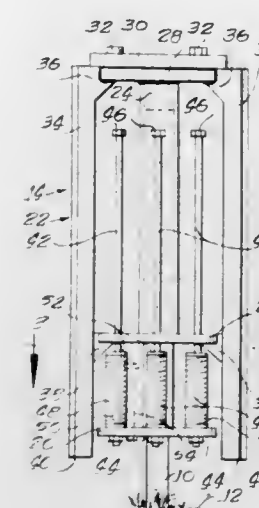
Mike Davis, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 1, 1973, Ser. No. 411,982

Int. Cl. E21b 43/116

U.S. Cl. 175-4.52

6 Claims



imposes a driving load on said first tube and said springs thereafter providing an upward restoring force of said ram.

3,856,093

SPOIL EJECTOR FOR HORIZONTAL EARTH AUGERING MACHINE

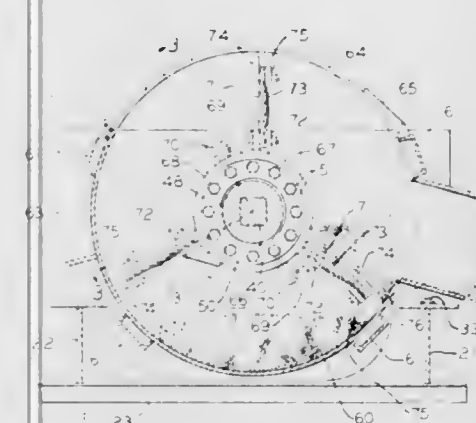
Carl J. Case, Gasport, N.Y., assignor to The Salem Tool Company, Salem, Ohio

Filed Dec. 12, 1973, Ser. No. 426,641

Int. Cl. E21c 11/14

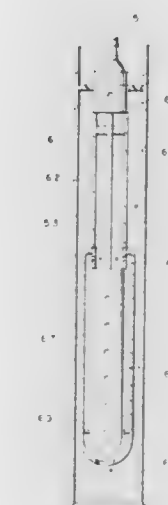
U.S. Cl. 173-152

10 Claims



1. In an augering machine for drilling horizontal holes in the earth and for simultaneously placing lengths of pipe therein, said machine including an auger and cutting head, rotary drive means for said auger and cutting head and a traveling carriage for advancing said auger and cutting head and a length of pipe positioned coaxially around said auger, simultaneously into the hole whereby spoil dislodged by said cutting head is conveyed rearwardly through said pipe by said auger, the improvement which comprises:

means defining a spoil ejector chamber adapted to receive spoil for said pipe, a plurality of rotary paddles located in said chamber and adapted to engage and propel spoil deposited in said chamber, resilient means connecting said paddles to said rotary drive means for rotation with said auger, and stationary unflexing means located in said chamber for abruptly releasing paddles, the flexing means of which are flexed, as the paddles reach a predetermined angular position in said chamber, whereby when each paddle passes said unflexing means its respective resilient means unflexes abruptly and said paddle springs forward to fling spoil in a direction laterally of said carriage.



3. An apparatus for perforating casing in an earth borehole, comprising: an elongated instrument adapted to traverse said borehole; a reservoir within said instrument; a piston within said reservoir dividing said reservoir into an upper section and a lower section, said upper section having at least one intake port for receiving borehole fluids; a perforating section connected to the lower end of said instrument having a plurality of perforating elements therein; and means for releasing at least a portion of any fluid in said lower section of said reservoir into the borehole at a point at least to the lower extremity of said perforating elements and to pump any borehole fluid displaced by said lower section fluid into said upper section of said reservoir.

3,856,095

APPARATUS FOR FORMING AND LOADING A SHOT-HOLE

James C. Adair, Bellaire, and Robert R. Luke, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 275,857, July 27, 1972, Pat. No. 3,804,182. This application Oct. 4, 1973, Ser. No. 403,371

Int. Cl. E21b 19/08, 7/18

U.S. Cl. 175-203

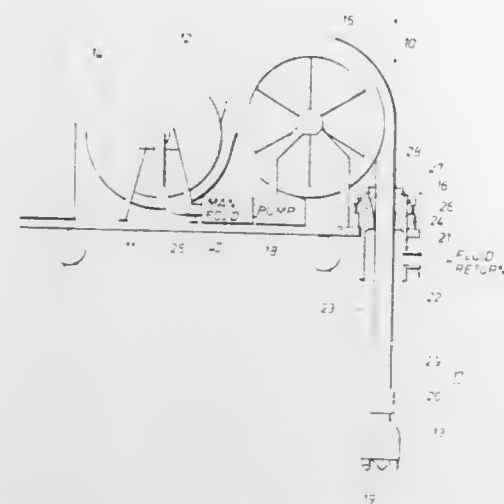
5 Claims

1. Apparatus for forming and loading a shothole comprising:

a spooled flexible conduit; a hydraulic jet nozzle rotatably attached to one end of the flexible conduit, the bottom of said nozzle having an opening of diameter sufficient to allow passage of an explosive detonating means, said opening being closed with a frangible plug which may be expelled from the opening upon application of a sufficient pressure drop across the face of the hydraulic jet nozzle; pump means for delivering pressurized fluid to the hydraulic jet nozzle; and manifold means coupling the pump means to the opposite

ends of the flexible conduit, said manifold means comprising a plurality of material storage means in fluid com-

a peripheral surface of said intermediate portion and positioned in diametrically opposed relation with said pad on said upper end portion.



3,856,096
DRILL STRING AND DRILL COLLAR THEREFOR
Edward B. Williams, Jr., P.O. Box 648 103 Mullaney Rd.,
Greenville, Tex. 75401
Filed Nov. 9, 1973, Ser. No. 414,239
Int. Cl. E21c 9/00; E21b 7/10
U.S. Cl. 175—325

12 Claims

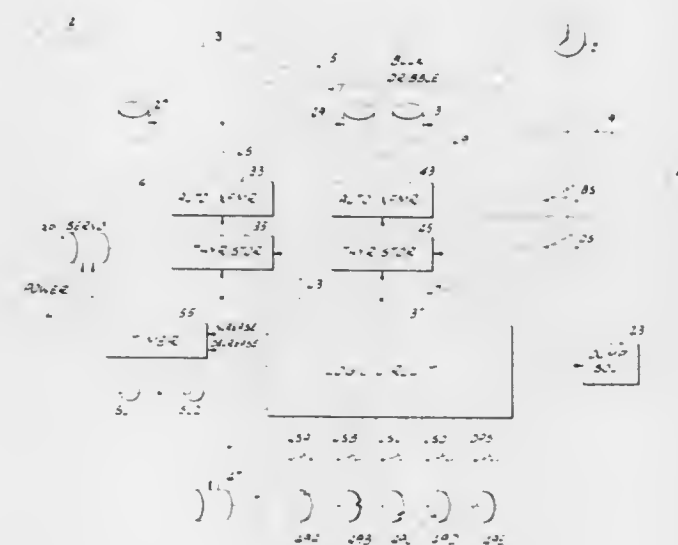


1. A drill collar comprising:
 - a. an elongated tubular drill stem having a longitudinal axis and opposite ends adapted for connection into a drilling string between a drill bit and a column of drill pipe to provide the stem for the drill bit, said drill stem having an upper end portion and a lower end portion and an intermediate portion therebetween, said intermediate portion of said drill stem having a cross section smaller than said upper end portion and said lower end portion, said intermediate portion having the center of gravity thereof positioned laterally of the longitudinal axis of said drill stem;
 - b. at least one pad secured to said upper end portion and extending around a minor portion of a peripheral surface thereof, said pad on said upper end portion having a face for wiping contact with a wall of a borehole to provide lateral support for said drill stem; and
 - c. at least one pad secured to said intermediate portion of said drill stem and extending around a minor portion of

3,856,097
AUTOMATIC SCALE CONTROL SYSTEM AND METHODS

John S. Bartlo, Ridgewood, N.J.; Richard W. Safranski;
Charles G. Hart, and David A. Wieseckel, all of P.O. Box
571, Sheboygan, Wis. 53081
Division of Ser. No. 321,531, Jan. 5, 1973, abandoned. This
application Dec. 28, 1973; Ser. No. 429,698
Int. Cl. G01g 13/02
U.S. Cl. 177—1

15 Claims



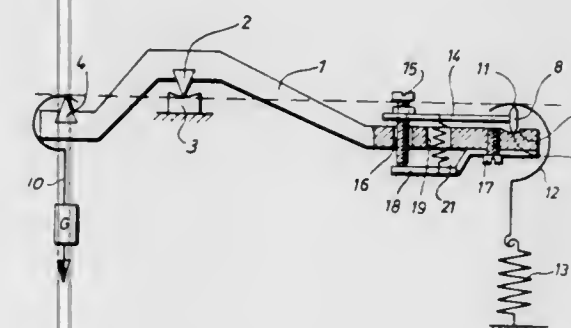
1. A method of weighing repetitive batches of a fluent product, each batch being of predetermined finish weight, comprising the steps of:

1. initiating the delivery of the fluent product to a scale via first feed means at a first delivery rate;
2. initiating delivery of the product to the scale via second feed means at a second delivery rate which is substantially lower than said first rate;
3. terminating delivery of the product to the scale at said first rate when a predetermined total first weight of product delivered to the scale is weighed by the scale;
4. terminating delivery of the product at said second rate when a predetermined total second weight of product delivered to the scale is weighed by the scale whereby a batch of said predetermined finish weight is accumulated on the scale;
5. establishing a predetermined time interval during which the predetermined total second weight of product weighed by the scale is to be reached;
6. automatically changing at least one of said first and second delivery rates if the predetermined total second weight weighed by the scale is not reached within said time interval so as to cause said predetermined second weight weighed by the scale to be reached within said time interval;
7. discharging from the scale the product batch of said predetermined finish weight; and
8. repeating steps (1) through (7).

3,856,099
SPRING BALANCE APPARATUS PROVIDED WITH COMPENSATION FOR MEASURING ERROR DUE TO TEMPERATURE CHANGES
Ernst Kuhnle, Balingen, Wurttemberg, Germany, assignor to Bizerba-Werke Wilhelm Kraut KG, Balingen/Wurtt, Germany

Filed Aug. 28, 1973, Ser. No. 392,346
Claims priority, application Germany, Aug. 29, 1972, 2242445
Int. Cl. G01g 3/18
U.S. Cl. 177—227

6 Claims

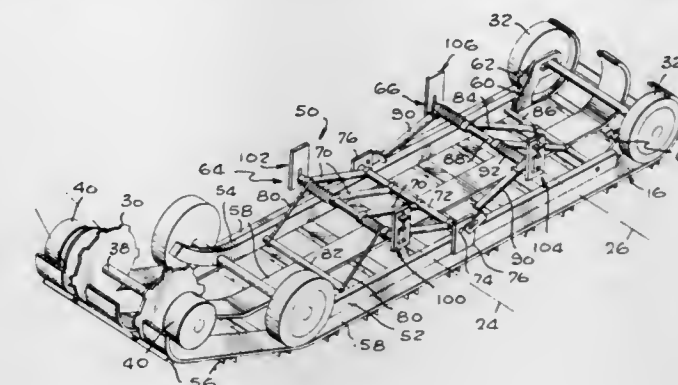


1. A spring balance apparatus comprising: an elongated weighing lever having a weighing side at one end thereof adapted to receive a mass to be weighed, and a biasing side on the other end thereof with a seat on one surface adapted to receive a biasing force; biasing means for exerting a biasing force on said seat in a direction substantially perpendicular to the longitudinal dimension of said weighing lever; a knife-edge member extending in a direction substantially perpendicular to the longitudinal dimension of said weighing lever, having a first pivot end contacting said seat and a second end associating with said biasing means for transferring the force exerted thereby to said seat; an actuating lever rigidly connected at one of its ends to said knife-edge member, extending in a direction substantially parallel to the longitudinal dimension of said weighing lever, and pivoting relative to said weighing lever about said pivot end of said knife-edge member; an elongated bimetallic element having one end fixedly mounted on the surface of said weighing lever opposite from said seat, and the other end spaced from said weighing lever, aligned with the end of said actuating lever remote from said knife-edge member, and free to move toward and away from said actuating lever; spacer means for engaging the free end of said bimetallic element and the end of said actuating lever remote from said knife-edge member, and for maintaining a predetermined spacing therebetween; biasing engagement means attached to said actuating lever intermediate said knife-edge member and said spacer means, and to said bimetallic element intermediate said fixed end and said free end for biasing together said actuating lever and said bimetallic element; and a fulcrum point on said weighing lever intermediate said weighing side and said biasing side, about which said weighing lever is free to pivot; said bimetallic element, said knife-edge member, said actuating lever and said biasing means associating in such a manner that an excursion of said bimetallic element as a result of a temperature change pivots said actuating lever about the pivot end of said knife-edge member, and thereby changes the spacing between said fulcrum and the second end of said knife-edge member through which the force exerted by the biasing means transfers, hence modifying the ratio of transmission of forces to compensate for measuring error that would otherwise occur due to temperature change.

3,856,099
SNOWMOBILE ADJUSTABLE SUSPENSION
Michael R. Bowers, Westminster, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed July 23, 1973, Ser. No. 381,805
Int. Cl. B62m 27/02

U.S. Cl. 180—5 R

4 Claims



1. A snowmobile comprising:
 - a chassis having a seat for holding a rider;
 - ski means mounted at the front portion of the chassis for supporting the front portion thereof on the ground;
 - a track drive assembly mounted at the rear portion of the chassis, including a track extending in a loop, a sprocket wheel at the front of the track loop, and a tension wheel at the rear of the track loop which holds the track under tension;
 - an engine mounted on the chassis and coupled to the sprocket wheel to rotate it and thereby drive the track to move the chassis along the ground;
 - a pair of laterally spaced rails disposed within the track loop and bearing against the track, said rails attached to the tension wheels so that the rails can keep the tension wheels from shifting forwardly;
 - a suspension assembly for mounting the chassis on the rails and for preventing the rails from shifting forwardly, said suspension assembly having suspension arm means with lower portions connected to the rails and upper portions, and spring means urging the upper portions of the arm means upwardly with respect to the rails;
 - first guide means having a primarily vertically extending guideway which extends continuously between the lowest and highest location therealong;
 - second guide means engaged with said guideway and moveable continuously therealong so that relative movement is vertical, one of the guide means attached to the chassis and the other attached to the upper end of the suspension arm means so that the upper end of the suspension arms means is confined to primarily vertical movement relative to the chassis; and
 - an adjustor coupled to the two guide means for holding the second guide means at selected positions along the vertical guideway of the first guide means, whereby to permit raising and lowering of the chassis while preventing uncontrolled forward shifting of the rails to thereby keep the track under tension.

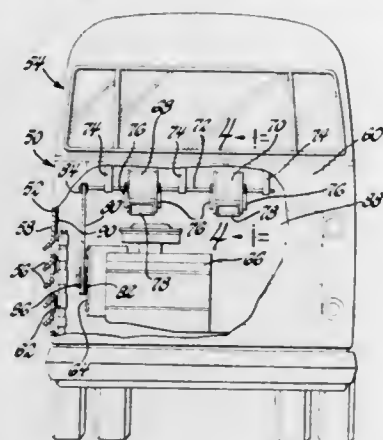
3,856,100
ENGINE COOLING AND NOISE ABATEMENT SYSTEM
Donald L. Manning, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 11, 1973, Ser. No. 405,414
Int. Cl. B60k 11/08

U.S. Cl. 180—54 A

3 Claims

1. An engine cooling and noise abatement system adapted for use in a truck or coach, said system comprising an encapsulated compartment except for a first opening formed in a first wall of said compartment, and second and third openings formed in a second wall of said compartment, a plurality of

louvers mounted in said first opening, a radiator mounted in said compartment immediately adjacent said first opening, an engine mounted in said compartment so as to have the end of its crankshaft positioned adjacent said radiator, a shaft rotatably mounted in said compartment adjacent a side of said engine, a pair of squirrel cage fans mounted on said rotatably



mounted shaft, a first pulley secured to said crankshaft, a second pulley secured to said rotatably mounted shaft, and an endless belt mounted around said first and second pulleys, said pair of squirrel cage fans having their respective outlets mounted in said second and third openings in said encapsulated compartment to thereby exhaust to the atmosphere.

3,856,101

POWER STEERING DEVICE

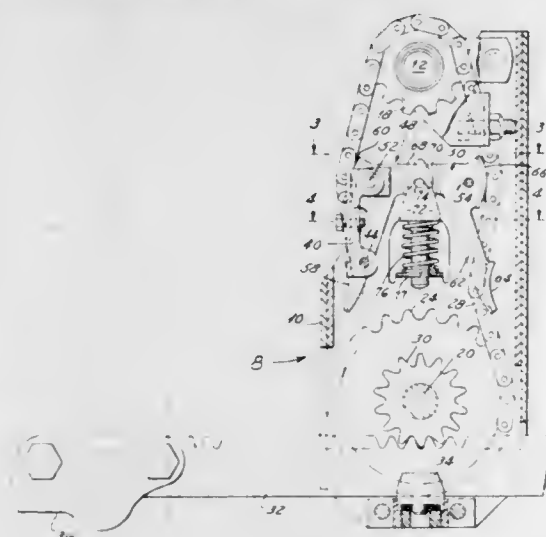
William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1973, Ser. No. 347,962

Int. Cl. B62d 5/06

U.S. Cl. 180-79.2 R

6 Claims



2. A power steering unit for a motor vehicle steering system comprising a housing and an input sprocket rotatably supported in said housing;

said input sprocket being constructed to be connected to a vehicle steering wheel;

an output sprocket rotatably supported in said housing;

a pinion rigidly secured to said output sprocket;

a rack slidably supported in said housing and in mesh engagement with said pinion;

said rack being constructed to be connected to a steering linkage mechanism;

a drive chain drivably interconnecting said input and output sprockets and having laterally spaced apart first and second spans extending between said sprockets;

a combination chain tensioner and load sensing means comprising a laterally displaceable support connected to said housing;

first and second members pivotally supported on said support and engaging said first and second spans, respectively;

each of said members engaging its respective span at two spaced locations;

spring means coupled to said first and second members and urging said members into engagement with said first and second spans;

each of said spans normally having a generally ogee configuration in response to the spring force exerted by said spring means on said first and second members;

said first and second members and said support being laterally displaceable in response to a tensile load in one of said spans that exceeds a tensile load in the other of said spans;

a power steering valve having a valve body supported on said housing and a laterally displaceable valve element situated within said body;

means coupling said valve element with said first and second members;

said coupling means being constructed to displace said valve element in response to displacement of said members when said one span of said chain is placed under a tensile load that exceeds the tensile load in said other span;

said power steering valve being constructed to provide communication between a fluid pressure source and a power steering booster cylinder in accordance with the position of said displaceable valve element.

3,856,102

ELECTRO-HYDRAULIC STEERING SYSTEM FOR VEHICLE HAVING STEERABLE FRONT AND REAR GROUND WHEELS

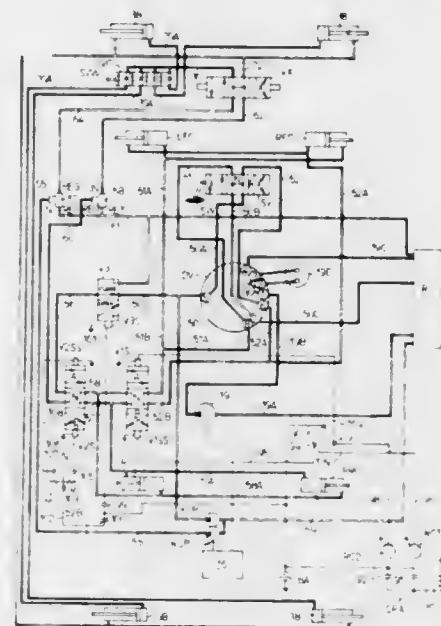
William B. Queen, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed July 11, 1973, Ser. No. 378,125

Int. Cl. B62d 5/08

U.S. Cl. 180-79.2 C

4 Claims



1. In a vehicle comprising steerable front and rear wheels; front and rear steering actuators for said front and rear wheels, respectively, and operable to move said wheels to steer said vehicle; a pump for supplying operating fluid to said steering actuators; a steering wheel; a steering valve operable in response to movement of said steering wheel to direct fluid from said pump to said front steering actuator; control means including a mode selector device having conventional, crab and tight steer positions and a mode valve; said control means when said mode selector device is in conventional steer position effecting operation of said mode valve to prevent said pump from supplying fluid to said rear steering actuator; said control means when in said mode selector device is in either

crab or tight steer position effecting operation of said mode valve to connect said steering valve to direct fluid to said rear steering actuator, said control means further comprising a centering valve and means responsive to rear wheel position to operate said centering valve to direct fluid to said rear steering actuator to effect return of said rear wheels to straight position when said mode selector device is returned to conventional steer position, regardless of the positions of said steering wheel and of said front wheels.

3,856,103

IMPACT-ABSORBING INSTRUMENT PANEL FOR VEHICLES

Hansjürgen Scholz, Echterdingen; Luigi Brambilla, Sindelfingen, and Rudolf Allgaier, Nagold, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

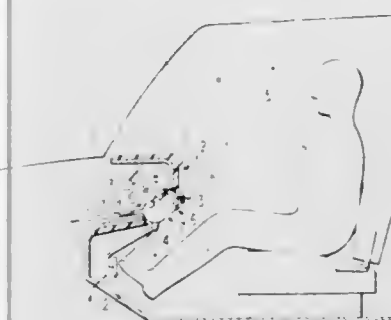
Filed Oct. 16, 1972, Ser. No. 297,848

Claims priority, application Germany, Oct. 16, 1971, 2151599

Int. Cl. B60r 21/04

U.S. Cl. 180-90

22 Claims



1. An impact-absorbing instrument panel for vehicles comprising

a base instrument panel structure in facing relationship to a vehicle interior space, said instrument panel structure being provided with shock-absorbing materials; and a deformation means for protecting knees of vehicle passengers upon impact with said instrument panel structure,

said deformation means being a hollow bearer member having a rounded profile portion in facing relationship with the knees of vehicle passengers, and

said deformation means being provided at said instrument panel structure within an area of impact of the vehicle passenger knees with said instrument panel structure, said deformation means extending approximately over the entire vehicle width.

3,856,104

SEQUENTIAL CONTROL CIRCUIT FOR A REMOTE-CONTROLLED VEHICLE

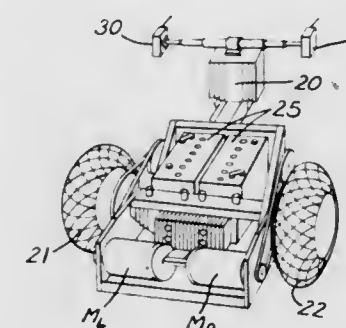
Shunjiro Ohba, 5969 N. Elston Ave., Chicago, Ill. 60646

Filed July 7, 1972, Ser. No. 269,748

Int. Cl. B60k 27/00; B64c 13/18

U.S. Cl. 180-98

8 Claims



1. In a remote-controlled motor-driven vehicle responsive to a control signal transmitted by a portable transmitter carried by a moving individual for transporting a load at a prede-

termined distance behind said individual, an improved system for controlling said vehicle comprising:

means for receiving said transmitted signal and developing therefrom a range signal representative of the distance between said transmitter and said vehicle and a bearing signal representative of the heading of said vehicle relative to said transmitter;

controlling means responsive to said range and bearing signals for first steering the vehicle in the direction toward said transmitter and then moving the vehicle to said predetermined distance behind the transmitter.

3,856,105

VEHICLE BRAKE SYSTEM HAVING FOOT PEDAL OPERATED BRAKE ACTUATOR WITH ELECTRONIC RANGE CONTROL

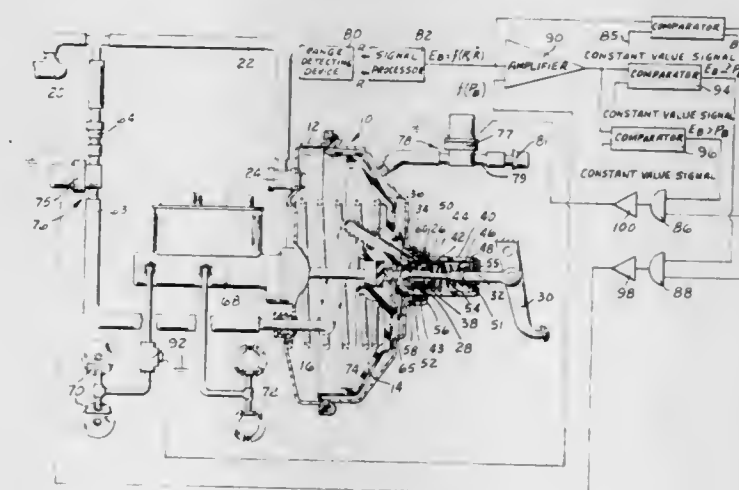
Richard L. Lewis, and George B. Hickner, both of 401 N. Bendix Dr., South Bend, Ind. 46628

Continuation-in-part of Ser. No. 293,301, Sept. 25, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,484

Int. Cl. B60k 27/00

U.S. Cl. 180-98

10 Claims



1. In an automotive vehicle brake system having a fluid pressure actuated motor including a housing with a movable wall therein dividing the housing into opposed chambers and foot pedal operated valve means having a released position in which the fluid pressures in the opposed chambers are substantially the same and an applied position in which the fluid pressure in one of the chambers is greater than that of the other chamber so that the movable wall connected to a brake actuating means creates a braking force through the brake actuating means which is applied to the vehicle brakes, the improvement which comprises:

an electrical system including fluid pressure control means having an independent valve means connecting a low pressure fluid source and a relatively higher fluid pressure source to the fluid motor and an obstacle detecting device therein which generates a signal representative of the range of an obstacle for energizing the control means to regulate the fluid pressure in the one chamber with respect to that in the other chamber upon detecting an obstacle within a predetermined range in front of the vehicle so that the vehicle brakes are automatically applied independently of the released position of the foot pedal operated valve means.

cluding a stabilizing bar and having a ground engaging end, and means at its other end for attaching same to one of the side rails of such ladder, said ground engaging end including a ground pad, a universal pin extending from the lower end of said stabilizer bar and connecting with said ground pad to permit of said ground pad conforming to slope deviations in all directions, and compression spring means installed between said ground pad and the proximate end of said stabilizer bar to render said stabilizer bar assembly substantially non-affected by normal sway movements of a ladder while in use.

3,856,113

FRAMEWORK CONSTRUCTION

Erik Arne Engvall, Vasteras, Sweden, and Thomas Ritscher, Adliswil, Switzerland, assignors to AB Carl Keijser & Co., Vasteras, Sweden

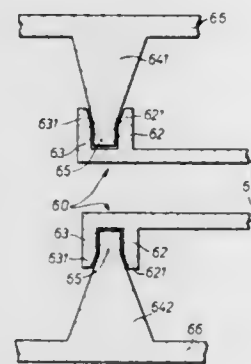
Filed Nov. 17, 1972, Ser. No. 307,503

Claims priority, application Switzerland, Nov. 23, 1971, 17018/71

Int. Cl. E06c 1/02, 7/08

U.S. Cl. 182-194

21 Claims



1. A ladder comprising two longitudinal beams made of an extrudable light metal alloy disposed in a substantially parallel alignment, said beams having a generally H-shaped cross-section in the form of a pair of legs joined by a web, wherein the web includes a central area of substantially uniform thickness, and a pair of lateral areas, each such lateral area being of gradually increasing thickness in a direction away from said central area; the central area of the web having a plurality of openings therein; a plurality of equidistant hollow struts made of an extrudable light metal alloy arranged substantially normal to and interconnecting said beams and having a generally rectangular cross-section; and opposite end portions of said struts being received in the openings in said web, each strut end portion being provided with a pair of flanges formed wedgingly to interlock with the central area and abut a portion of said lateral areas of the web of the beam adjacent said strut end portion.

3,856,114

AUTOMATIC LUBRICATION SYSTEM

Frank Zankl, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jan. 29, 1973, Ser. No. 327,418

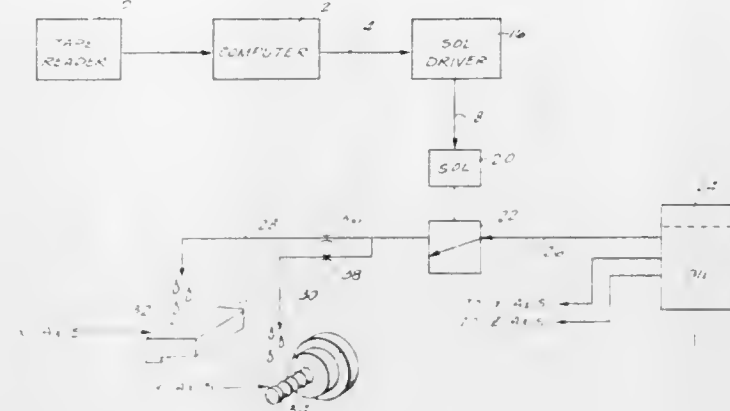
Int. Cl. F01m 1/00; F16n 17/06, 29/00

U.S. Cl. 184-6.1

6 Claims

1. A method of automatically lubricating a drive of a machine tool comprising the steps of determining the feed-rate of said drive by reading a record that is connected to control the operation of said drive, periodically adding a quantity to a counter in response to said reading which quantity bears a linear relation to the feed-rate of said drive as read from said record, and operating a valve in a conduit interconnecting a source of lubricant with said drive for a predetermined time

interval each time said counter overflows whereby the lubricant is made available to said drive at substantially the same



time that the drive is being activated in response to the data from said record.

3,856,115

MARKETING DEVICE

Frank J. Stangel, Bloomington, Minn., assignor to Fingerhut Corporation, Minnetonka, Minn.

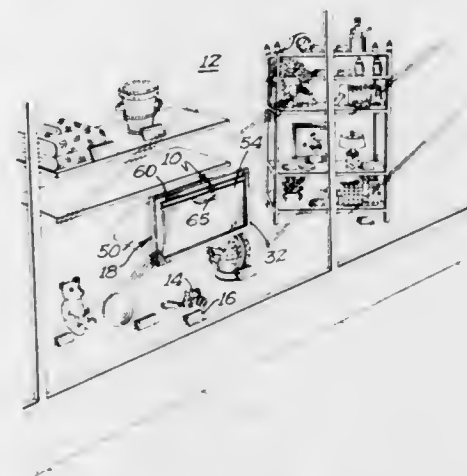
Continuation of Ser. No. 274,873, Aug. 21, 1972, abandoned.

This application Aug. 16, 1973, Ser. No. 388,932

Int. Cl. E04h 3/04

U.S. Cl. 186-1 R

23 Claims



1. A device for marketing retail products on display in a display window of a retail sales establishment to consumers viewing such products through the display window without the necessity of the presence of sales personnel, both during the normal business hours of such retail establishment and after the normal business hours of such retail establishment, comprising in combination: a frame member having an aperture therethrough and arranged for mounting the marketing device in an aperture in the display window of the retail establishment, including: a rectangular portion having an aperture therethrough and arranged to extend through the aperture in the display window; an outside lip member attached to the rectangular portion exteriorly of the display window and arranged to overlap the display window around and about the display window aperture for preventing movement of the frame member toward the inside of the display window; an inside lip member attached to the rectangular portion interiorly of the display window substantially overlying and horizontally spaced from the outside lip member for preventing movement of the frame member toward the outside of the display window; and means mounted on the inside lip member for reducing the spacing between the inside lip member and the outside lip member to thus compress portions of the display window between the inside lip member and the outside lip member for supporting the marketing device upon such display window; a mechanism for recording the sale of the retail

products to the consumer for later shipment and billing by the retail establishment and for returning a receipt of the sale to the consumer; a movable enclosure, including: a substantially flat sale-recording mechanism supporting surface; means for interconnecting the supporting surface and the frame member to allow the supporting surface to move from a closed position with the supporting surface substantially inside of the frame member to an open position with the supporting surface at least partially outside of the frame member to expose the sale-recording mechanism and the remainder of the enclosure to a purchaser positioned outside of the display window; an uncompleted order form compartment arranged within the enclosure, the compartment having an open end for providing the consumer ready access to any order forms in the compartment with the enclosure in the open position; a back wall attached to the supporting surface adjacent an edge of the supporting surface adjacent the interconnecting means and extending at substantially right angles to the supporting surface to substantially fill the aperture within the frame member in the open position of the enclosure, the dimensions of the back wall exceeding the dimensions of the aperture in the frame member and the display window for preventing the removal of the marketing device from the frame member; a completed order form compartment arranged adjacent the enclosure including an opening defined within the compartment allowing deposit of order forms completed by the purchaser, but preventing the withdrawal of completed order forms, and including a selectively removable portion to allow authorized access to the completed order forms.

3,856,116

ELEVATOR SYSTEM

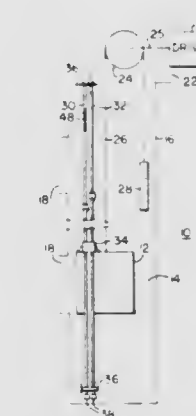
Conwell Savage, New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,155

Int. Cl. B66b 1/50

U.S. Cl. 187-28

19 Claims



1. An elevator system, comprising: a structure having a plurality of floors and a hoistway, an elevator car, means mounting said elevator car for movement in said hoistway to serve at least certain of said floors, control means for said elevator car including an elongated member having first and second substantially opposed surfaces and first and second edges, a first cam member having a first cam profile thereon, and means mounting said first cam member on said elongated member in spaced relation relative to the first opposed surface and with the first cam profile oriented to move a cooperative cam follower in a direction substantially parallel with the first opposed surface, means mounting the elongated member of said control means to extend along the hoistway of said structure in the direction of movement of said elevator car, translating means including a first switch device having a cam follower and guide means, and means mounting said translating means on said elevator car,

said guide means being disposed to guide said control means adjacent to said first switch device such that the cam follower of said first switch device is responsive to the first cam profile of said first cam member.

3,856,117

ELEVATOR SYSTEM

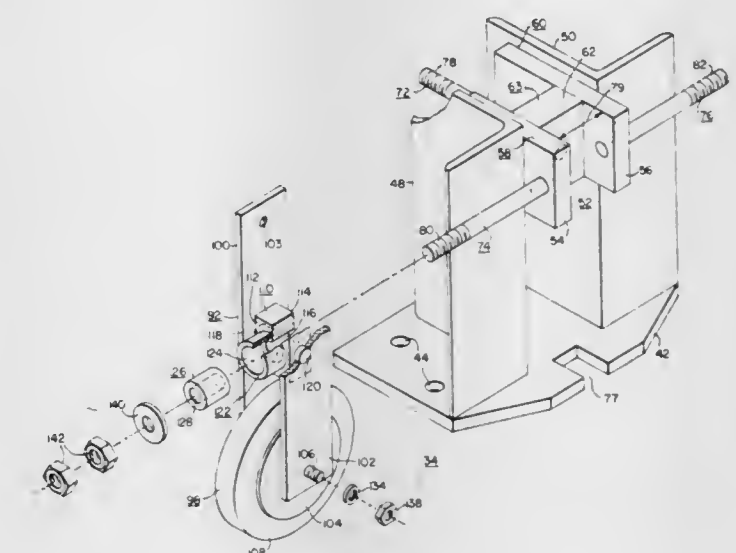
Frederick Solymos, Glen Ridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1973, Ser. No. 400,599

Int. Cl. B66b 7/04

U.S. Cl. 187-95

12 Claims



1. A roller guide element for coacting with a guide rail to guide the movement of a movable element in a hoistway, comprising:

support means mountable on the movable element adjacent the guide rail, said support means including first, second and third shaft members extending outwardly therefrom, first, second and third roller assemblies of like construction mounted on said first, second and third shaft members, respectively,

each of said roller assemblies including a sleeve member, first and second guide rollers journaled for rotation relative to a common support structure, and means pivotally mounting said common support structure on said sleeve member,

said sleeve member defining a first opening for slidably guiding the sleeve member on its associated shaft member, and a communicating second opening of larger diameter adjacent the outwardly extending end of the shaft, providing a flat surface surrounding the first opening which is substantially perpendicular to the longitudinal axis thereof,

said sleeve member being slidable on its associated shaft member to adjustably accommodate different guide rail dimensions,

and means for adjustably preloading each of said roller assemblies against the guide surface of a guide rail including threads disposed on the outwardly extending end of each shaft member, a bias member disposed about each shaft member which extends into the second opening of said sleeve member, and means threadably engaged with each shaft member which is advanced on the shaft member to contact and compress the bias member against the flat surface surrounding the first opening of said sleeve member, said means which is threadably engaged with each shaft member providing positive stops beyond which the sleeve members cannot move.

3,856,118

BRAKE SYSTEM FOR A TRAVELLING BRAKE CARRIAGE OF AN AERIAL CABLEWAY

Fritz Feuz, Bern, Switzerland, assignor to Von Roll AG Werk Bern, Bern, Switzerland

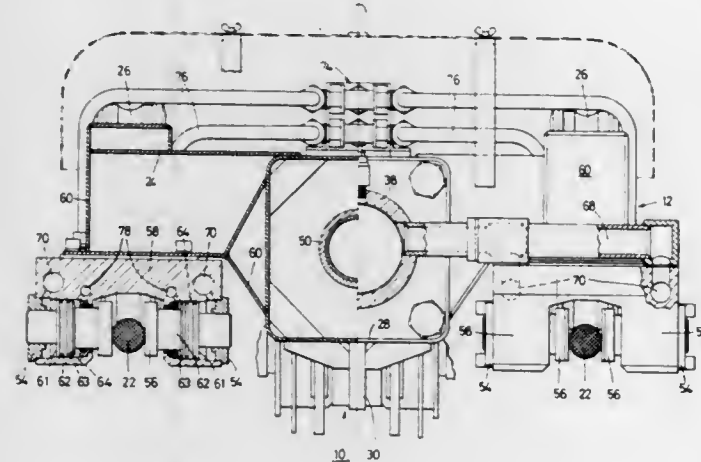
Continuation-in-part of Ser. No. 118,395, Feb. 24, 1971, Pat. No. 3,722,632. This application Feb. 20, 1973, Ser. No. 333,696

Claims priority, application Switzerland, Dec. 17, 1970, 18749/70

Int. Cl. B61h 9/02

U.S. Cl. 188-42

9 Claims



1. A brake system for a travelling brake carriage operatively connected with a travelling support carriage of an aerial cableway equipped with at least one support cable for supporting said travelling support carriage and said travelling brake carriage, the improvement comprising said travelling brake carriage embodying a brake carriage body, a housing extending in the lengthwise direction of the travelling brake carriage, said housing being provided with a braking spring accumulator, a piston and cylinder arrangement operatively associated with said braking spring accumulator, said cylinder having a compartment containing a first braking fluid medium, said braking spring accumulator continually applying a braking force upon said first fluid medium via said piston and cylinder arrangement, at least one braking block supported by said brake carriage body, said braking block being provided with cooperating pairs of braking shoes, the shoes of each pair being arranged to respective opposite sides of the associated support cable, a respective double-acting piston member having first and second opposed faces acting upon each braking shoe, unobstructed means for transmitting the pressure of the first fluid medium within the piston and cylinder arrangement against said first face of each of said double-acting piston members and thereby against the braking shoes in a direction urging the latter into a braking position towards the associated support cable, and means for continually applying a counterforce against the braking shoes in a direction opposite to the urging force exerted by the first fluid medium of the piston and cylinder arrangement, said means for applying a counterforce including means for controllably feeding a second fluid medium at a pressure greater than the pressure of the first fluid medium against said second face of each of said double-acting piston members.

3,856,119

TRANSMISSION BRAKE MECHANISM

James A. Harrington, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 382,007, July 23, 1973, abandoned. This application Oct. 15, 1973, Ser. No. 406,158

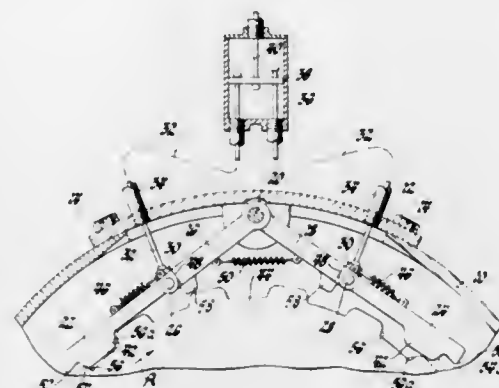
Int. Cl. F16d 63/00

U.S. Cl. 188-82.3

4 Claims

1. A transmission brake mechanism for use in a transmission having a housing and an output shaft with a toothed element drivingly connected thereto, said mechanism comprising; a

first link pivotally connected to the housing; a second link having a toothed portion intermediate the ends of said second link and fulcrum point means adjacent one end of said second link; means for pivotally connecting said second link and said first link; operating means for selectively moving said second link for engaging said tooth portion with said toothed element with said fulcrum point spaced from said toothed element and for disengaging said toothed portion from said toothed element;



ment; spring means for urging said first and second links into substantially a single plane in the engaged and disengaged position and for permitting relative pivotal movement between said links during disengagement; said fulcrum point means contacting said toothed element during disengagement for establishing said second link as a second class lever for providing assistance during disengagement of said toothed portion.

3,856,120

DISC BRAKE WITH SEMI-METALLIC AND ORGANIC FRICTION PADS

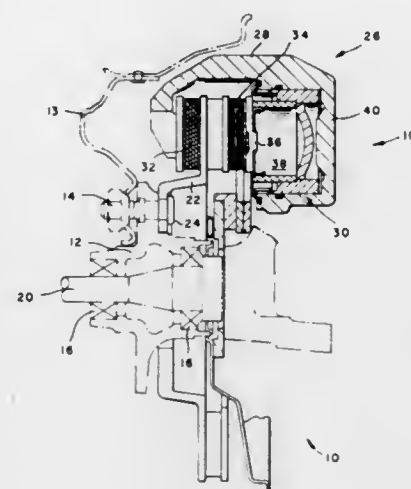
John P. Kwolek, and Patrick A. Thesier, both of Troy, N.Y., assignors to The Bendix Corporation

Filed Dec. 14, 1972, Ser. No. 315,262

Int. Cl. F16d 69/02

U.S. Cl. 188-251 A

1 Claim



1. A disc brake combination for use in a motor vehicle having a rotor means attached to a wheel and a stator means attached to a stationary portion of said vehicle adjacent the rotor means, said stator means comprising:

caliper means surrounding a first wear surface on one side and a second wear surface on another side of said rotor means, fluid receiving means responsive to a braking signal for moving said caliper means toward said first and second wear surfaces on the rotor means;

first pad means attached to said caliper means for engaging said first wear surface to create a first frictional resistance representative of said fluid signal, said first pad means consisting of a semi-metallic material having a composition of from 15-40 percent by volume of metal powder, 15 to 25 percent by volume of a metal fiber, 15-40 per-

cent by volume of a first phenolic resin, 2-10 percent by volume of a ceramic powder, 15-40 percent by volume of a graphite or carbon particles, and 15-20 percent by volume of an elastomeric modifier, said first phenolic resin being cured to form a binder for retaining said metal powder, metal fiber, ceramic powder, graphite or carbon particles and elastomeric modifiers in a fixed relationship; and

second pad means attached to said caliper means for engaging said second wear surface to create a second frictional resistance representative of said fluid signal, said second pad means consisting of an organic material having a composition of from 20-60 percent by volume of asbestos, 15-35 percent by volume of a second phenolic resin, 10-25 percent by volume of cashew nut powders, 3-15 percent by volume of elastomeric modifiers, 6-10 percent by volume of graphite or carbon, and 10-20 percent inorganic fillers, said second phenolic resin being cured to form a binder for retaining said asbestos and cashew nut powders in a fixed relationship, said first and second frictional resistances in the disc being combined to effectively produce a uniform coefficient of friction in response to said braking signal, said fluid receiving means will dissipate heat transmitted through said second pad means to maintain said uniform coefficient of friction in response to repetitive braking signals and to provide substantially equal wear with the first pad means, said first and second pad means upon heat generation during engagement with said rotor means because of said compositions will recover from a fade condition to permit a repetitive braking signal to re-establish said coefficient of friction.

3,856,121

SYNCHRONIZING DEVICE FOR MANUALLY OPERATED POWER TRANSMISSION MECHANISM

Keizaburo Usui, Eiichi Abe, and Isao Hayama, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

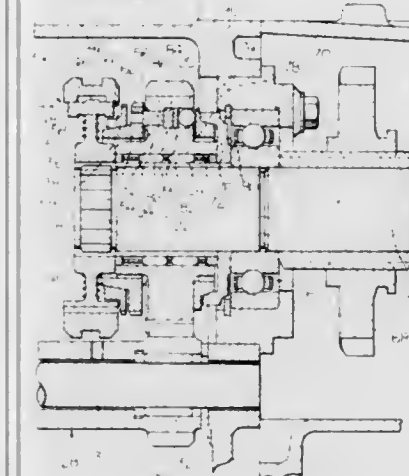
Filed June 11, 1973, Ser. No. 368,489

Claims priority, application Japan, June 13, 1972, 47-58767

Int. Cl. F16d 23/06

U.S. Cl. 192-53 F

11 Claims



1. A synchronizing device particularly for a manually operated power transmission mechanism including a transmission mainshaft and a first speed gear rotatable on the mainshaft, which device comprises a synchronizer clutch hub rotatable with said mainshaft, a synchronizer clutch sleeve rotatable with and axially slidable on said synchronizer clutch hub, said synchronizer clutch sleeve having internal gear teeth and adapted to be axially moved from the outside of the synchronizing device, at least one locking member rotatable with and axially slidable on an inner peripheral wall of said synchronizer clutch sleeve, a synchronizer clutch gear located between said synchronizer clutch hub and said first speed gear and rotatable with and axially slidable on the first speed gear,

said synchronizer clutch gear having a conical portion tapered toward said synchronizer clutch hub, a first baulk ring located between said locking member and said synchronizer clutch gear and having an inner conical surface matching said conical portion of said synchronizer clutch gear, said synchronizer clutch gear and said first baulk ring having external gear teeth which are in agreement with and located in line with said internal gear teeth of said synchronizer clutch sleeve, a synchronizer clutch ring located opposite to said synchronizer clutch gear across said first speed gear and rotatable with and axially slidable on the first speed gear, said synchronizer clutch ring having a conical portion which is tapered away from the first speed gear, a second baulk ring rotatable with the transmission mainshaft and having an inner conical surface matching said conical portion of said synchronizer clutch ring, thrust transfer means engageable at one end with said synchronizer clutch gear and at the other end with said synchronizer clutch ring across the first speed gear so that an axial pressure from the synchronizer clutch gear is transmitted to the synchronizer clutch ring when the synchronizer clutch gear is forced toward the ring speed gear, and resilient biasing means for urging said synchronizer clutch gear away from the first speed gear on the mainshaft.

3,856,122

VISCOUS COUPLING

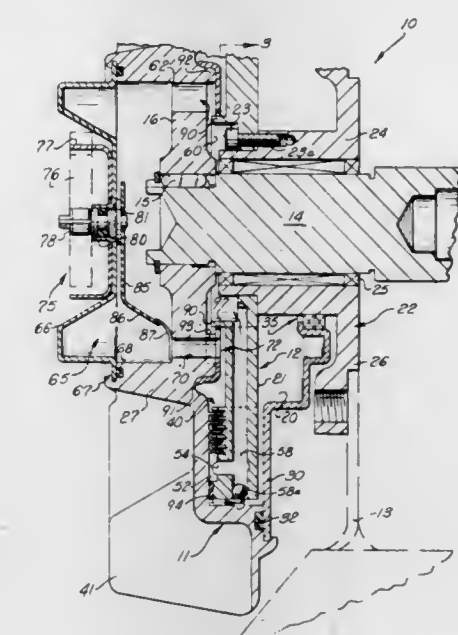
Wayne K. Leichter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 16, 1973, Ser. No. 360,629

Int. Cl. F16d 35/00

U.S. Cl. 192-58 B

12 Claims



1. A viscous coupling comprising relatively rotatable input and output coupling members,

said input coupling member defining a chamber in which at least a portion of said output coupling member is located, said input and output coupling members defining a shear space therebetween and viscous shear fluid in said shear space effecting the transmission of torque therebetween, means on said input member defining a fluid reservoir chamber,

an impact pumping element carried by said output member and against which fluid is impacted by rotation of said input member,

means defining a fluid passageway for directing fluid from adjacent said pumping element into said reservoir chamber,

passage means for directing fluid from said reservoir chamber back into said shear space,

valve means for controlling fluid flow through said passage means, and
ambient temperature-sensing means carried by said input member on an outer surface portion thereof for controlling said valve means.

3,856,123

HANDLEBAR-MOUNTED CLUTCH ACTUATING AND GEAR SHIFTING DEVICE FOR MOTORCYCLES

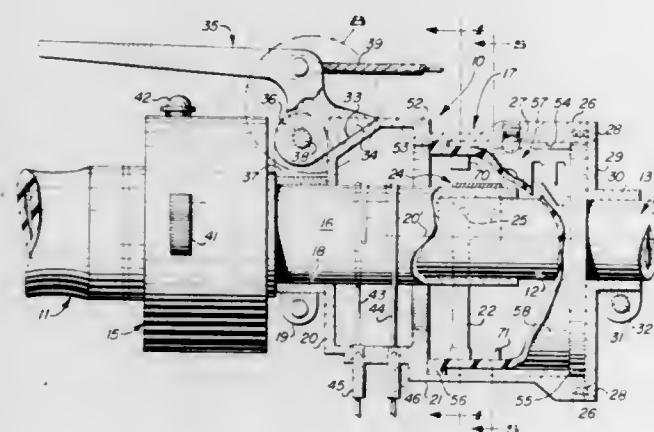
Lewis R. Kinsey, 108 S. 25th St., Phoenix, Ariz. 85034

Filed Dec. 11, 1973, Ser. No. 423,695

Int. Cl. F16h 5/36

U.S. Cl. 192-3.62

6 Claims



1. A clutch actuating, gear shifting mechanism for mounting on the handlebar of a motorcycle and like handlebar devices comprising:

- a twist hand grip for rotatably mounting around the end of a handlebar of a motorcycle,
- a first hollow cylindrical casing fixedly mounted around the handlebar juxtapositioned to said hand grip,
- said cylinder casing having a V-shaped depression formed in its outer periphery,
- a sleeve fixedly attached to and in axial alignment with said hand grip for rotation within said first cylindrical casing,
- a pair of flexible cables one end of each being fixedly attached to said sleeve for rotation therearound in opposite directions upon rotation of said sleeve,
- the other ends of said cables being attached to opposite ends of a lever arm which is fixedly attached to the rotating shaft of a gear shifting mechanism,
- a clutch lever being spring biased for placing a protrusion thereof into said depression in the outer periphery of said sleeve for detachably positioning said hand grip relative to said first cylindrical casing,
- means for attaching one end of a clutch cable to one end of said clutch lever for actuation of said clutch cable whenever said clutch lever is rotated,
- a second hollow cylindrical casing rotatively mounted within said first cylindrical casing,
- means for selectively engaging said second casing with and rotated by said sleeve upon rotation of said hand grip,
- said second casing being provided with a plurality of indicia spaced around at least a part of the periphery of said second casing indicating the position of the gear mechanism of the associated motorcycle, and
- a window opening extending through said first casing in position for exposing one of said indicia indicating the position of the gear mechanism of the motorcycle.

3,856,124 COUNTERWEIGHTED TORQUE TRANSMITTING MECHANISM

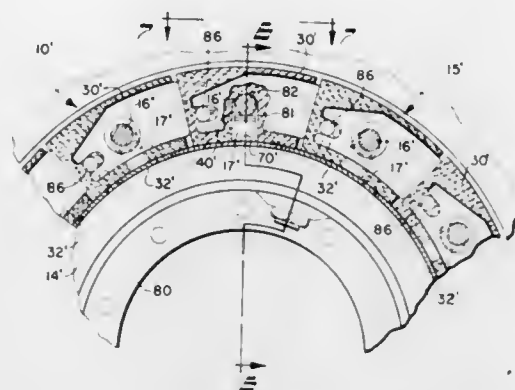
Raymond E. Mack, Rocky River; Kiritkumar R. Patel, and Edward C. Crist, both of Brooklyn, all of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 24, 1973, Ser. No. 363,686

Int. Cl. F16d 25/04

U.S. Cl. 192-88 B

10 Claims



1. A torque transmitting device for coupling relatively rotatable first and second assemblies to one another, said device including a first assembly having a relatively rotatable frame; said frame being generally cylindrical and U-shaped in cross sectional configuration, said frame including first and second circular side plates and an annular rim secured therebetween, coupling means disposed for radial movement with respect to said frame for engaging said second relatively rotatable assembly, said coupling means including a plurality of shoe assemblies circumferentially spaced in equal increments around said frame, each shoe assembly being defined as an arcuately extended segmented shoe block and a facing of friction material is secured to said shoe block, each assembly further having a central opening axially extending therethrough, actuating means engaging said coupling means to cause said radial movement thereof and a counterweight arrangement for said device, said counterweight arrangement comprising:

- mounting means affixed to said frame, said mounting means including a torque bar extending through said opening and secured at its ends to the sides of said frame;
- a first and a second counterweight pivotable about said mounting means and configured to define a forward end extending on one side of said mounting means and a rearward end extending on the opposite side of said mounting means, said forward ends exerting greater leverage about said mounting means than said rearward ends when said first assembly is rotating, said first counterweight having its forward end extending in a direction opposite said forward end of said second counterweight, each counterweight having an opening axially extending therethrough to receive said torque bar whereby each counterweight is positioned between an axial end face of said shoe assembly and the interior surface of one of said side plates; and

force transmitting means affixed to said coupling means and operatively engaged with said rearward end of said counterweight to exert said leverage on said coupling means whereby said counterweight exerts a force tending to counteract the undesirable effects of centrifugal force exerted by said coupling means.

3,856,125 PRINTING MACHINE WITH OPERATION LOCKOUT

Donald Saxton Post, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1973, Ser. No. 342,638

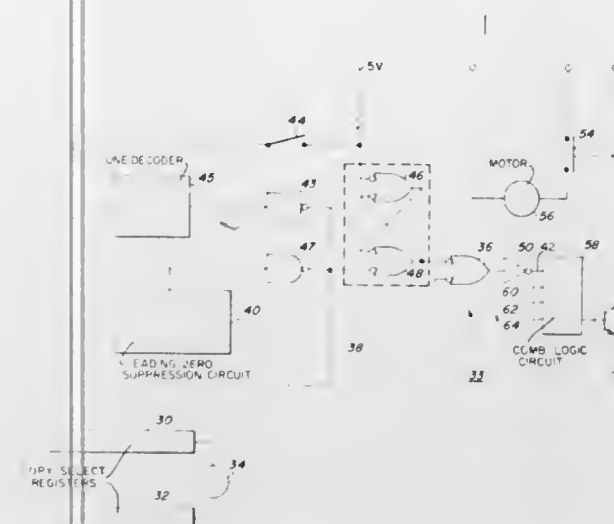
Int. Cl. G11c 19/00; H03k 21/32; B65h 7/00

U.S. Cl. 192-127

5 Claims

1. In a copying machine, the combination comprising:

a. means for registering the number of copies that it is desired be made of an original document; and



b. means for sensing any number registered by said registering means, and for preventing actuation of said machine if said registered number lies within a predetermined range.

3,856,126

COIN OPERATED APPARATUS

Wilhelm Menke, Bingen, Germany, assignor to NSM Apparatebau GmbH Kommanditgesellschaft, Bingen, Germany

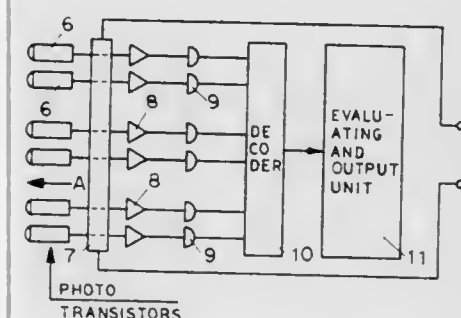
Filed Apr. 5, 1973, Ser. No. 348,222

Claims priority, application Germany, Apr. 7, 1972, 2216635

Int. Cl. G07f 9/00

U.S. Cl. 194-1 R

13 Claims



1. In a coin operated apparatus which indicates a winning wherein game feature carriers are freely movable within predetermined boundaries in the apparatus, wherein a sensing area is provided for receiving said game feature carriers, wherein sensing means are arranged for sensing said game feature carriers when they are in said sensing area, and wherein said sensing means are connected to evaluating means for controlling an output in response to sensing said game feature carriers, the improvement comprising a plurality of game feature carriers at least several of which are provided with a plurality of differently reflecting surfaces, light source means arranged to illuminate said differently reflecting surfaces when said game feature carriers are in said sensing area, light sensitive sensing means arranged to receive light reflected from a plurality of said differently reflecting surfaces of each of said several carriers, and circuit means for connecting said light sensitive sensing means to said evaluating means.

3,856,127

PHOTO-OPTICAL KEYBOARD

Uri Halfon, 3200 South Sepulveda, Los Angeles, Calif. 90034, and Meir Niv, 611 N. Curson Ave., Los Angeles, Calif. 90036

Filed Nov. 24, 1972, Ser. No. 309,186

Int. Cl. B41j 5/08

U.S. Cl. 197-98

14 Claims



1. A photo-electric keyboard apparatus comprising:

- a block member;
- means defining a first set of substantially parallel channels in one surface of said block member; each of said channels having a bottom surface;
- means defining a second set of substantially parallel channels in said one surface of said block member; each of said channels of said second set having a bottom surface; each of said channels of said second set extending at an angle to each of said channels of said first set;
- a light source disposed at one end of each of said channels of said first and second sets for radiating light through the channel;
- a light sensitive device disposed at the other end of each of said channels of said first and second sets for receiving light radiated through the channel from said light source at the said one end of the channel;
- said channels of said first set extending deeper into said one surface of said block member than said channels of said second set;
- a plurality of shutter assemblies operatively associated with said block member for selectively intercepting the light radiation in selected channels;
- each of said shutter assemblies comprising first and second shutter members spaced from one another and extending substantially parallel to one another; means connecting said first and second shutter members for conjoint movement; said first shutter member being adapted to be received by one of said channels of said first set of channels; said second shutter member being adapted to be received by one of said channels of said second set of channels; each of said first and second shutter members having an outer end; said outer end of said first shutter member extending beyond the outer end of said second shutter member; spring means biasing said first and second shutter members to an inoperative position wherein said outer end of said first shutter member is spaced from the bottom surface of said one channel of the first set of channels and said outer end of said second shutter member is spaced from the bottom surface of said one channel of the second set of channels; and finger operable means for depressing said first and second shutter members simultaneously to move the outer ends of said first and second shutter members into close proximity with said bottom walls of said one channel of said first set and said one channel of said second set, respectively, to substantially block light from radiating through said respective channels.

3,856,128

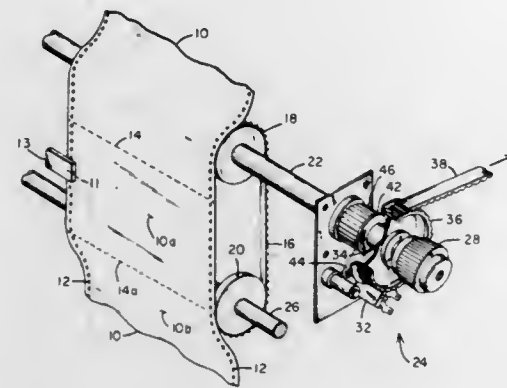
PRINTER VARIABLE FORM LENGTH CONTROLLER
James A. Taggart, Salt Lake, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,230

Int. Cl. B41j 15/04

U.S. Cl. 197-133 R

6 Claims



1. A printer variable form length controller providing line advance signals for advancing a paper web upon which characters are to be printed, comprising:

- line advance gating means for providing a line advance signal output when enabled;
- means for coupling timing signals as the first input to said line advance gating means;
- a skip counter;
- means for coupling the line advance signal output from said line advance gating means to said skip counter for counting said line advance signals;
- a skip flip-flop;
- means for coupling the output of said skip counter as a first input to said skip flip-flop;
- means for coupling a first output of said skip flip-flop as the second input to said line advance gating means;
- set switch means coupled to the second input of said skip flip-flop for enabling said line advance gating means to couple said line advance signals to said skip counter to toggle said skip counter to a predetermined skip count and then to toggle said skip flip-flop and to disable said line advance gating means.

3,856,129

APPARATUS FOR AUTOMATICALLY FEEDING CRT FACE PANELS TO A PANEL PROCESSOR

Leslie L. Baur, Glen Ellyn, and Thaddeus J. Hajduk, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 30, 1973, Ser. No. 327,916

Int. Cl. B23q 7/00

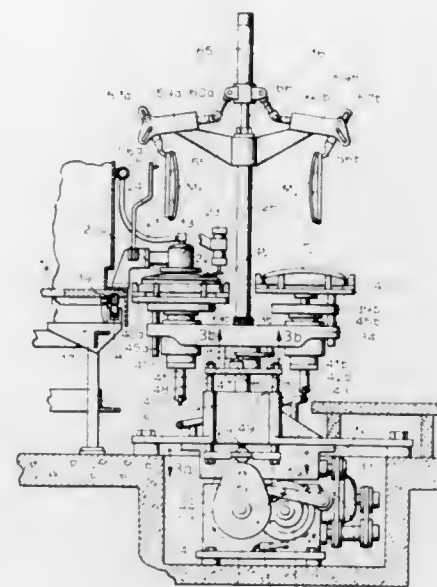
U.S. Cl. 198-19

9 Claims

1. Apparatus for automatically inserting and retrieving cathode ray tube face panels from a panel processor, said processor including a programmer, an endless conveyor carrying a plurality of panel supporting carts and a prime mover, controlled by said programmer for stepping said carts through a series of work stations, including an index station, disposed along a closed path, said apparatus comprising:

- a platen having a plurality of panel holders successively displaceable between said index station and a loading station;
- means for effecting a first reciprocation of at least that one of said panel holders instantaneously located at said index station into cooperative engagement with a first indexed one of said carts for inserting an unprocessed panel in said first cart and for thereafter effecting at said second station a second reciprocation of said one panel holder into cooperative engagement with a subsequently indexed cart for retrieving a processed panel from said subsequent cart;

and platen driving means for displacing said one panel holder and said retrieved processed panel to said loading station while simultaneously displacing another of said



panel holders carrying an unprocessed panel to said index station for insertion into said subsequently indexed cart by said reciprocation means.

3,856,130

APPARATUS FOR REMOVING PIPES FROM A CONVEYOR

Kazuo Maeda; Muneto Takizawa, both of Chibaken, and Yuzi Saito, Kanagawaken, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

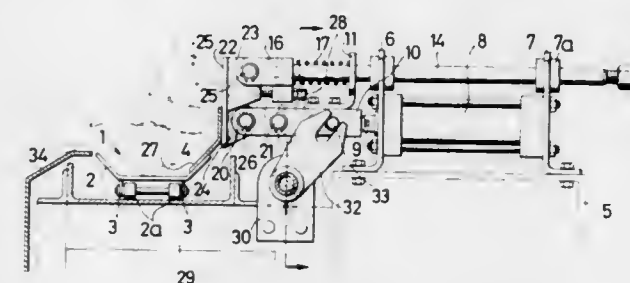
Filed May 24, 1973, Ser. No. 363,505

Claims priority, application Japan, May 29, 1972, 47-53082

Int. Cl. B65g 47/34

U.S. Cl. 198-24

3 Claims



1. Apparatus for removing a pipe from a conveyor in response to a cycle of motion of a linearly-reciprocating piston, comprising:

- connecting means secured to said piston to reciprocate linearly therewith;
- bar means mounted to be reciprocable for a predetermined distance along an axis parallel to the direction of reciprocation of said connecting means;
- spring means acting between said connecting means and said bar means and responsive to forward motion of said connecting means toward the position of a pipe to move said bar means forwardly to substantially the same extent as said connecting means, over a predetermined distance;
- stop means for arresting said forward motion of said bar means at a predetermined position before said connecting means has completed its forward stroke, said connecting means continuing its forward stroke thereafter with attendant deflection of said spring means;
- link means comprising two pivot means, one of said pivot means pivotally connecting said link means to said connecting means; and

pipe-removing plate means pivotally mounted to the other of said pivot means and also pivotally secured to said bar means, whereby said plate means moves linearly for a predetermined distance during the initial portion of the forward stroke of said piston, and moves both forwardly and angularly in a smooth predetermined scooping motion during the latter position of said forward stroke.

3,856,131

LOADING AND CONVEYING APPARATUS

Guy Flamand, Chalon Sur Saone, and Henri Lazzarini, Saint-Denis-En-Bugey, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

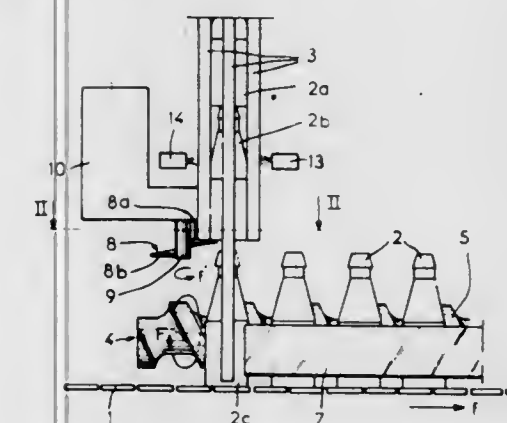
Filed Apr. 5, 1972, Ser. No. 241,188

Claims priority, application France, Apr. 7, 1971, 71.12370

Int. Cl. B65g 47/00

U.S. Cl. 198-26

8 Claims



1. Loading and conveying apparatus comprising a horizontal conveyor, means to position objects on the conveyor comprising a rotary shaft mounted above and to one side of the conveyor and having a spiral land bounding a spiral groove, the latter being large enough and deep enough to partially embrace objects, means to load objects onto the conveyor and into the groove in sequence as successive portions of the groove reach the loading means, the latter comprising vertically arranged guide means above the conveyor and means for supporting objects in said guide means for releasing the same one by one to drop from the guide means onto the conveyor and into the section of the groove below the guide means, means to detect the presence of the groove section below the guide means, and means responsive to said detection means to effect actuation of said supporting means to release an object to drop from the guide means and to thereafter engage the succeeding object for supporting the same.

3,856,132

APPARATUS FOR CONVEYING SHEET MATERIALS

Masayuki Sakurai, Tokyo; Syozo Takahashi, and Hideo Kikuno, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed July 7, 1972, Ser. No. 269,578

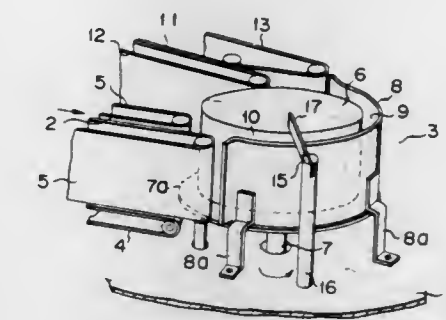
Claims priority, application Japan, July 8, 1971, 46-59816

Int. Cl. B65g 47/30

U.S. Cl. 198-30

4 Claims

1. Apparatus for conveying sheet materials comprising a vertical rotary drum, a guide frame disposed about one half of the periphery of said rotary drum to define a gap therebetween extending in parallel with the periphery of said rotary drum, a rotary table extending outwardly from the lower end of said rotary drum to close the bottom of said gap, a supply conveyor driven in the same direction as the direction of rotation of said rotary table for conveying said sheet materials in the upright condition, said supply conveyor having a discharge end disposed close to the entrance end of said guide frame, and a takeoff conveyor driven in the same direction as the direction of rotation of said rotary table for conveying said sheet materials discharged from said gap in the upright condi-



tion, said takeoff conveyor having an inlet end disposed close to the discharge end of said gap and comprising an outside belt having an inner surface disposed in substantially the same plane as the inner surface of said guide frame at the exit end thereof and an inside belt driven in the same direction at a higher speed as said outside belt, said outside and inside belts cooperating to take off, one after one, said sheet materials discharged from said gap, said gap reversing the direction of movement of said sheet materials while they are conveyed therethrough and having a radial width sufficient to permit overlapping of a plurality of sheet materials for the sake of temporarily buffering them while they are conveyed therethrough in the upright condition.

3,856,133

ENDLESS BELT CONVEYOR

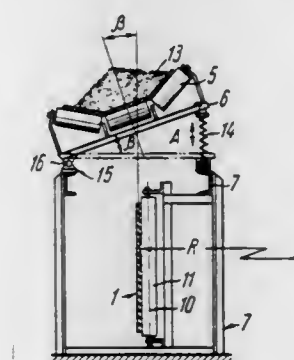
Vladimir Konstantinovich Dyachkov, ulitsa Chkalova, 41/2, kv. 1, Moscow, U.S.S.R.

Filed Dec. 26, 1972, Ser. No. 318,276

Int. Cl. B65g 15/28

U.S. Cl. 198-182

3 Claims



1. An endless belt conveyor having a path which has rectilinear and curvilinear sections disposed in a horizontal plane, said conveyor comprising: a frame; bearers uniformly distributed the length of said frame and mounted on said frame; idlers mounted in said bearers; an endless belt having load carrying and return strands which are supported by said idlers; the idlers which support said return strand of said endless belt in said curvilinear sections of the conveyor path being positioned with their axes extending vertically so as to permit a decrease in the radius of turn of said return strand of said endless belt in said curvilinear section of the conveyor path; the idlers which support said return strand of said endless belt in the transition portion of the conveyor path between said rectilinear and curvilinear sections thereof being positioned so as to have their axes inclined to the horizontal, the inclination angle of the idlers progressively increasing from zero to 90°, whereby said endless belt is gradually turned from a horizontal into a vertical position; and said bearers with said idlers mounted therein to support said load carrying strand of said belt within said curvilinear sections thereof being disposed so as to be inclined away from the center of the curvilinear section of the conveyor path.

3,856,134

CONVEYOR CHAIN

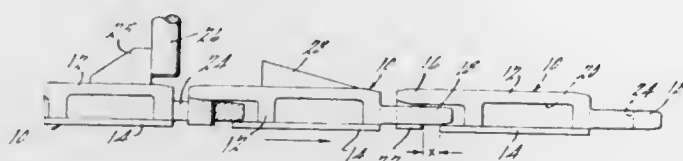
Robert Krammer, Farmington, Mich., assignor to Jorgen S. Bildsoe, St. Paul, Minn.; Robert Krammer, Farmington and Myron B. Brookfield, Birmingham, both of, Mich., part interest to each

Filed Dec. 13, 1971, Ser. No. 207,471

Int. Cl. B65g 17/06

U.S. Cl. 198—189

9 Claims



1. A conveyor chain comprising a plurality of identical links articulated together, each of said links comprising a longitudinally extending body portion having adjacent one end first means defining an opening and adjacent the opposite end second means defining a first projection, the axis of said first projection being disposed generally parallel to the axis of said opening, said first projection on each link being pivotally receivable within said opening in the immediately adjacent link, and locking means for preventing removal of each said first projection from the opening in which it is disposed except when the longitudinal axes of the respective immediately adjacent links are positioned at approximately right angles with respect to one another in a plane perpendicular to the axis of said opening, said locking means comprising means on each said link defining a second projection adjacent said first projection, said second projection being spaced from said first projection a distance less than the distance between said opening and the free end of said first means so that said second projection will engage said first means on said immediately adjacent link and prevent such removal except when said immediately adjacent links are in said position.

3,856,135

CONVEYOR COVER ASSEMBLY

Masaya Hayakawa, Tokyo; Iki Harada, Yokohama, and Fumiyoshi Yamagami, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

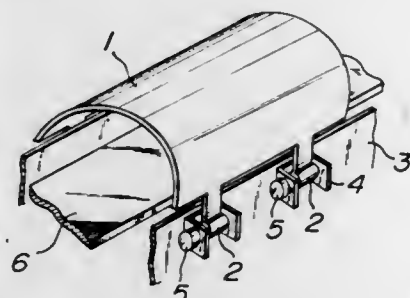
Filed Sept. 7, 1973, Ser. No. 396,275

Claims priority, application Japan, Sept. 11, 1972, 47-105080[U]; Sept. 11, 1972, 48-57321

Int. Cl. B65g 21/08

U.S. Cl. 198—204

3 Claims



1. A conveyor cover assembly comprising a plurality of cover plate members, each having a pair of substantially rectangular parallel edge portions and a raised covering surface extending between the two edge portions, each edge portion having at last one leg extending downwardly in a direction substantially opposite to the direction in which the covering surface is raised, said leg having a hinge hole extending there-through in parallel to said edge portion; a plurality of brackets, one for each said leg, said bracket having parallel end walls defining a leg-receiving space therebetween, each said end wall having a shaft hole; and hinge shafts which are detachably

mounted in the brackets so as to pivotally connect said legs to the brackets by extending through said shaft holes of the bracket and said hinge hole of the leg disposed in said leg-receiving space of the bracket, each consisting of a rod having a fixed head secured to one end thereof and a resiliently deformable enlarged portion secured to the opposite end thereof, said fixed head having a dimension at right angles to the longitudinal direction of the rod, which dimension is large enough to inhibit passage of the fixed head through said shaft hole of said bracket end wall, said enlarged portion normally assuming a dimension at right angles to the longitudinal direction of the rod, which dimension is large enough to inhibit passage thereof through said shaft hole of the bracket end wall and said hinge hole of said leg, but said enlarged portion being deformable to a smaller dimension for allowing passage thereof through said shaft hole of the bracket end wall and the hinge hole of said leg.

3,856,136

DISPOSABLE PALETTE

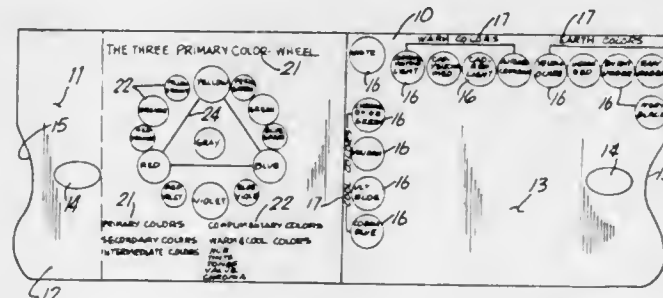
Sandi Governale, 13 Tenafly Ct., Tenafly, N.J. 07670

Filed Feb. 6, 1973, Ser. No. 330,091

Int. Cl. B44d 3/02; G09b 11/10

U.S. Cl. 206—1.7

1 Claim



1. A book of disposable palette sheets, each shaped in the form of a painter's palette having a through thumb hole, and a concave recess positioned along the adjacent edge near the thumb hold for ease in grasping the palette, with each sheet of the book fastened so as to be readily individually detached, and with each sheet marked into individual sections which are each labeled with the name of a color of the pigment that is to be placed in that section, and with each group of markings of similar colors linked together and identified as to their similarity, with

the labeled sections for placement of the cool colors such as cobalt blue, ultramarine blue, viridian and chrome oxide green located adjacent to each other and labeled cool colors, with

the labeled sections for the placement of the warm colors such as cadmium yellow light, cadmium yellow medium, cadmium red light and alizarine crimson placed together and labeled warm colors, and the sections for locating earth colors, such as yellow okra, indian red, burnt umber, raw umber and ivory black placed together and labeled as earth colors, together with

a cover sheet which is permanently attached to the binder of the book, with the inside face of the cover sheet marked with information to indicate the mixing of the primary colors and to indicate the secondary colors which are formed by mixing each pair of primary colors, with individual sections, each labeled with the name of a color, located on the circumference of the circle, with the sections marked with the name of the secondary colors formed, by combining each pair of the primary colors shown, located on the circle between that pair of sections labeled with the names of those particular primary colors.

3,856,137

DISPLAY TRAY WITH MERCHANDISE-MOUNTED CARD PACKAGES

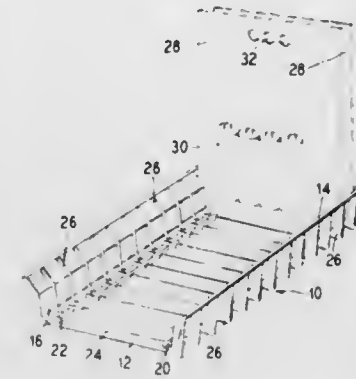
Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 120,698, March 3, 1971, abandoned, which is a continuation of Ser. No. 765,852, Oct. 8, 1968, abandoned. This application Dec. 29, 1972, Ser. No. 319,531

Int. Cl. B65d 1/36

U.S. Cl. 206—73

2 Claims



1. In combination a plurality of cards having merchandise-mounted thereon, and a tray for supporting and displaying said cards in an erect position, said tray being fabricated from a thin, thermoplastic resin material and having a generally rectangular bottom, a pair of upstanding side walls, an open end and an upstanding end wall at the other end, said walls being integral with said bottom; a plurality of ribs formed in said side walls and extending externally thereof so as to buttress said side walls, said ribs providing slots in each side wall with the slots in one side wall being opposite and registering with the slots in the other side wall so that the cards having merchandise mounted thereon are inserted into opposite slotted ribs and held therein in an erect position; the height of said side walls being less than the height of the inserted cards so that said cards can be displayed in said tray; a plurality of longitudinal ribs in the bottom of said tray close to each of said side walls to resist longitudinal bending of said tray; a plurality of transverse ribs in said bottom to resist transverse bending of said tray so that said transverse ribs and said longitudinal ribs cooperate to resist twisting of said tray; and wherein said longitudinal ribs and transverse ribs are disposed in a concave-convex arrangement wherein the ribs in one direction are concave and the ribs in the other direction are convex.

3,856,138

COMPARTMENTALIZED CONTAINER

Hideyuki Maekawa, Osaka, and Masaichi Nakanishi, Amagasaki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed May 31, 1973, Ser. No. 365,696

Int. Cl. B65d 25/02; B01f 13/00; A61j 1/00

U.S. Cl. 206—221

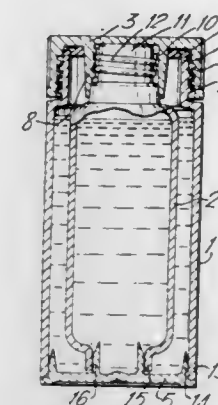
6 Claims

1. A compartmentalized container for storing, mixing and dispensing liquids which must be segregated prior to use, which comprises in combination;

an outer and an inner cylindrical side wall components each having an open bottom end disposed concentrically with respect to the other such that both of said open bottom ends are substantially in a plane, said outer side wall component having a mouth at its top with a fastening screw and said inner side wall component having a closed top end with a fastening screw extending therearound, the threading-in direction of which screw being in reverse to that of the first-mentioned screw,

a bottom plug stopping said open bottom ends in common, a closure cap means having a fastening means engageable with the fastening screw of said mouth of the outer side wall component and another fastening means engageable

with the fastening screw of said closed top end of the inner side wall component, and



an annular sealing member being placed between the closure cap means and the mouth of the outer cylindrical side wall component.

3,856,139

CARRIER MEANS FOR AUTOMATICALLY DRIVEN FASTENERS

Hugh Black, c/o Woodloc Incorporated, Liner Cove Rd. Box 556, Waynesville, N.C. 28786

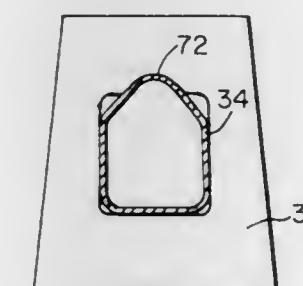
Continuation-in-part of Ser. No. 869,837, Oct. 27, 1969, Pat. No. 3,693,863. This application Sept. 8, 1972, Ser. No.

287,542

Int. Cl. B65d 79/00

U.S. Cl. 206—340

4 Claims



1. The combination of an apertured fastener for securely joining material sections together and a flexible carrier tube for holding a plurality of said apertured fasteners used in fitting the fasteners onto automated drive tools

said fastener comprising a body section having a leading end and a trailing end,

a peripheral wall depending from each side of said body section to form a channel-like unit, said body section having a centrally located aperture therein,

said aperture being generally rectangular in shape having three substantially straight sides,

the fourth side of said aperture including a centrally located arcuate extension of the main aperture, and

said carrier tube conforming to said generally rectangular shaped aperture with said extended portion so as to be contiguous with all sides of said aperture including the extended portion,

the extended portion facilitating mounting said fasteners on the carrier and preventing the fasteners from jamming on said carrier while being driven from said automated drive tool.

3,856,140

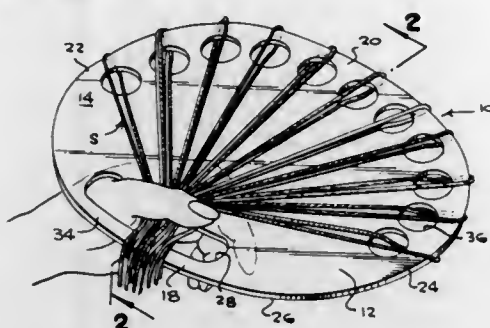
YARN PALETTE

Jane W. Fitts, 4245 Brookdale St., Jackson, Miss. 39206

Filed Apr. 2, 1973, Ser. No. 346,937

Int. Cl. B65b 85/67; B65h 75/06

U.S. Cl. 206-388



1 Claim

of the coil with an axially outwardly directed overhanging projection of protective material around the outer circumferential edge at each end of the coil; protective material in the eye of the coil; a steel sheet annular member adjacent each end of the coil within said overhanging projection of protective material; and annular flexible cushioning at at least the radially outermost edge of said annular member immediately adjacent said overhanging projection of protective material.

3,856,142

INHALANT PACKAGE

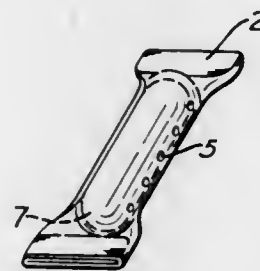
William V. Vessalo, Irwin, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 24, 1973, Ser. No. 326,166

Int. Cl. A61m 15/00; B65d 85/42

U.S. Cl. 206-437

3 Claims



1. An inhalant package comprising a frangible ampoule containing an inhalant, a wrapper having inner and outer surfaces and inner and outer ends and a central absorbent area spaced inwardly from the edges of the wrapper, the wrapper being wrapped around the ampoule in engagement therewith and projecting from the opposite ends of the ampoule, and a pressure sensitive adhesive on the inner surface of the wrapper at the opposite ends thereof and along its opposite sides, the adhesive surrounding said absorbent area, the adhesive at the inner end of the wrapper sticking to the ampoule and the adhesive at the outer end of the wrapper sticking that end to the outer surface of the wrapper, the projecting portion of the wrapper at each end of the ampoule being flattened on itself to form flat layers of the wrapper stuck together by the adhesive, and the portion of the wrapper surrounding the ampoule being porous.

3,856,143

SHAPE-RETAINING CLOSURE OF A TUBULAR PACKAGE FOR TAMPONS

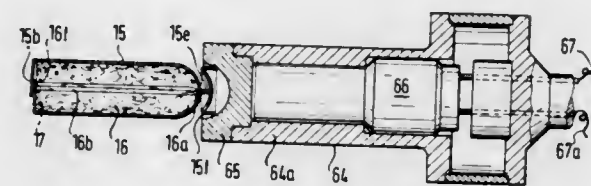
Stefan Simon, Moedling, Niederosterreich; Justus Wolff, Wuppertal-Elberfeld, and Wolfgang Johst, Gevelsberg, all of Germany, assignors to Dr. Carl Hahn KG, Dusseldorf, Kaiserswerther, Germany

Division of Ser. No. 86,778, Dec. 22, 1970. This application June 30, 1972, Ser. No. 267,822

Int. Cl. A61f 13/20; B65d 33/16, 85/54

U.S. Cl. 206-438

3 Claims



1. A wrapped tampion comprising a tampon with a substantially rounded head end and a string containing rear end and a sleeve of substantially tear resistant material therearound wherein the end of said sleeve corresponding to the rear end of said tampon is folded over the rear end of said tampon and wherein the end of said sleeve corresponding to the head end of said tampon extends beyond the head of said tampon and has a twist closure therein forward of the head of said tampon and terminates in a forwardly directed rosette having a periphery

3,856,141

COIL PACKAGE AND METHOD OF FORMING A PACKAGE

Geoffrey Ronald Reed, Ham, England, assignor to The British Iron and Steel Research Association, London, England

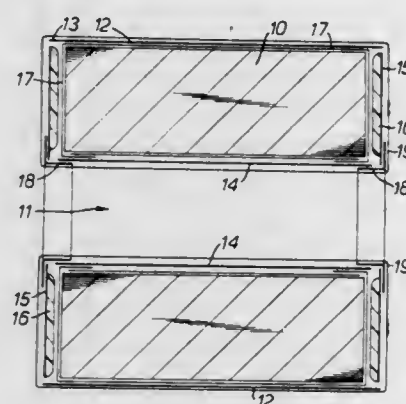
Filed Mar. 29, 1973, Ser. No. 346,040

Claims priority, application Great Britain, May 16, 1972, 22948/72

Int. Cl. B65d 85/02, 85/54

U.S. Cl. 206-407

13 Claims



8. A packaged coil of metal strip material including: steel sheet protective material wrapped around the circumference

which is inwardly folded upon the forwardly directed face of said rosette, said rosette with said inwardly folded periphery reflexed toward the head of the wrapped tampon and substantially conforming to the shape of the head of said tampon.

3,856,144

BLISTER PACKAGING ASSEMBLY

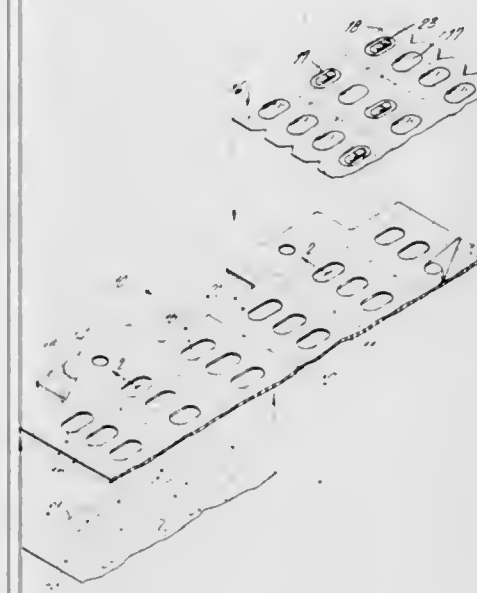
Franklin Kelly, 17 Stafford Cir., Dennisport, Mass. 02639

Filed Jan. 15, 1973, Ser. No. 323,346

Int. Cl. B65d 83/04, 85/56

U.S. Cl. 206-462

4 Claims



1. A blister packaging assembly comprising a semi-rigid sheet foldable along a center line, a layer of pressure sensitive adhesive on the inner face of the semi-rigid sheet, a release sheet overlying the adhesive, a plurality of windows symmetrically disposed in spaced relationship on each side of the center line in the combined semi-rigid and release sheets, a blister sheet comprising a planar portion and a plurality of blisters extending outwardly of said planar portion said blisters being receivable within the windows on one side of the center line and a fluid impervious foil carried by the outer face of the semi-rigid sheet on the portion of the semi-rigid sheet opposite the blister sheet receiving portion.

3,856,145

RECORD STORAGE RACK

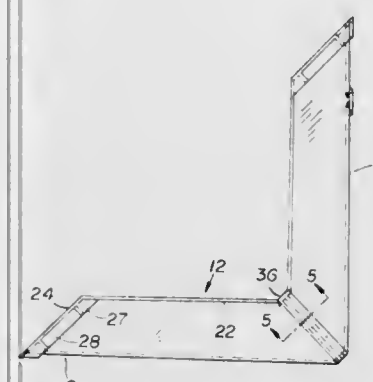
Allan E. Bartholomew, North Canton, Ohio, assignor to Myers Industries, Inc., Akron, Ohio

Filed Jan. 22, 1974, Ser. No. 435,479

Int. Cl. A47g 29/00

U.S. Cl. 211-40

5 Claims



1. A record storage rack comprising a pair of elongate members having upstanding side walls, the side walls of each member having corresponding ends beveled off at about a 45° angle, and complementary shaped rib and recess securing means formed on the beveled ends of said side walls for interlocking-slidable engagement therebetween whereby the mem-

3,856,146

HANGING MERCHANDISE DISPLAY AND CONTAINING APPARATUS

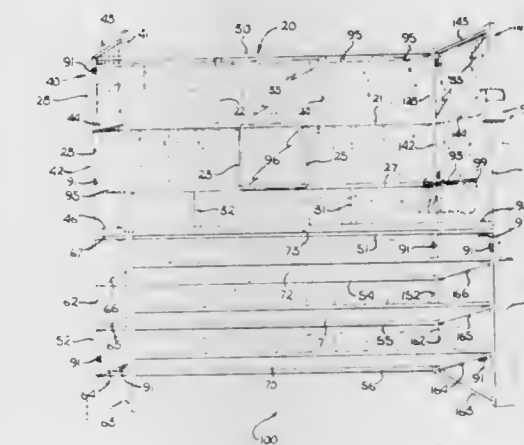
Irving Levine, 23555 Park Belmonte, Calabasas Park, Calif. 91302

Filed June 25, 1973, Ser. No. 373,398

Int. Cl. A47f 5/00

U.S. Cl. 211-134

1 Claim



1. A merchandise display apparatus for displaying and storing hanging bead strands, elongated hardware members, bagged merchandise and accessories comprising:

- a back frame, including an upper and lower portion wherein said upper portion has horizontal and vertical members which divide said upper portion into areas which may receive portions of completed hanging merchandise assemblies, means for coupling portions of said elongated hardware members to said upper portion, and means for suspending a multiple quantity of hanging bead strands from said upper portion, and wherein said lower portion has horizontal members which may receive and support shelving;
- a pair of end frames, each comprised of an upper and lower pair, coupled to opposite ends of said back frame thereby forming a substantially U-shaped structure, wherein said upper portion has horizontal members which divide said end frame into an area which may receive portions of completed hanging merchandise assemblies, means for coupling portions of said elongated hardware members to said end frame and means for suspending accessories from said end frame within the opening of the U-shaped structure and wherein said lower portion has inclined members for supporting shelving;
- a plurality of shelves disposed in said lower portion and supported by said inclined members in said end frames and said horizontal members in said back frame, wherein at least one of said shelves is sloped downward towards said back frame whereby bagged hanging merchandise will remain secured on said sloped shelf; and
- a side rack having five enclosed sides and one open side being coupled to said lower portion of said end frame, said side rack adapted to receive and contain said elongated hardware members.

3,856,147

STRUCTURAL COMPONENTS FOR THE COMPOSITION OF DISASSEMBLABLE PIECES OF FURNITURE

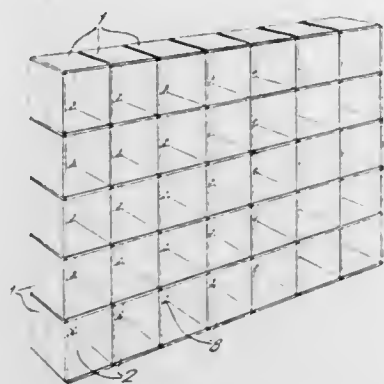
Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli s.a.s., Bologna, Italy

Division of Ser. No. 164,592, July 21, 1971, Pat. No. 3,722,704. This application Feb. 2, 1973, Ser. No. 329,131

Int. Cl. A47f 5/00

U.S. Cl. 211-148

10 Claims



1. A structural unit comprising at least three substantially identical panels having parallel edges, a connecting member secured along each of said parallel edges, each connecting member having a pair of outwardly converging faces at substantially a right angle to one another and at angles of 45° to a median plane through the panel, one face of each of said members being formed with a longitudinally extending groove and the other face of each member being formed with a longitudinally extending rib substantially perpendicular to the respective other face and complementarily receivable in a said groove of another connecting member, said panels forming at least two right angles between them and being interconnected at angular junctions by said ribs and grooves, at least one angle reinforcement secured to the adjacent inner surfaces of said panels at each of said junctions having holes opening in a direction parallel to the ribs and grooves at the respective junction at least along one side of said panels, and a plate spanning said side and having pins extending in said direction and receivable in said holes whereby said plate is perpendicular to said panels.

3,856,148

CONVERTIBLE GONDOLA DISPLAY FOR STORES

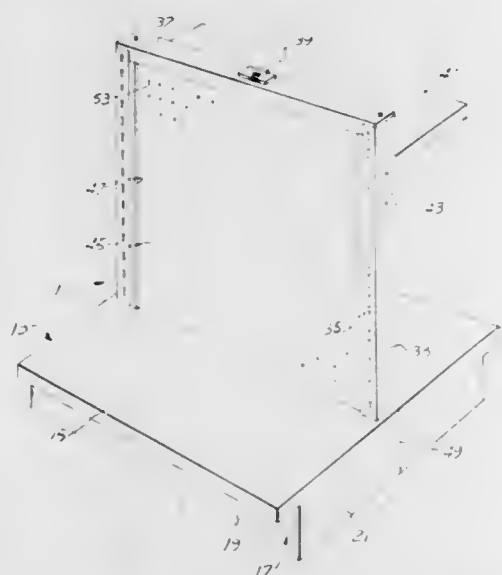
Robert F. Olinick, Warren, Mich., assignor to The Jentzen-Miller Company, Madison Heights, Mich.

Filed Apr. 30, 1973, Ser. No. 355,810

Int. Cl. A47f 5/00

U.S. Cl. 211-148

2 Claims



1. A convertible gondola island display for stores comprising a unit molded base of structural foam plastic material and

of rectangular shape in plan having a monoplanar flat top platform, and a honeycomb downwardly opening skeleton body depending therefrom, including parallel spaced monoplanar side and end support walls and a series of interconnected right angularly related partitions therebetween, said walls and partitions being of uniform height with their lower edges in a single plane;

said partitions and end walls defining therebetween a pair of open-ended spaced upright tubular passages of rectangular cross section at opposite ends and throughout the height of said platform and body;

upright tubular supports of similar cross section nested and disposed within said passages and frictionally retained therein, and extending above said platform;

a cap extending between and overlying said supports and secured thereto;

said top platform having therein a pair of spaced outwardly opening slots at their ends merging with said passages; and a pair of upright parallel back panels nested within and between said tubular supports and cap and at their lower ends nested and retained within said slots respectively, inwardly directed panel retainers projecting from said tubular supports retainingly engaging said panels along their height.

3,856,149

MOBILE LOAD HANDLING MACHINES

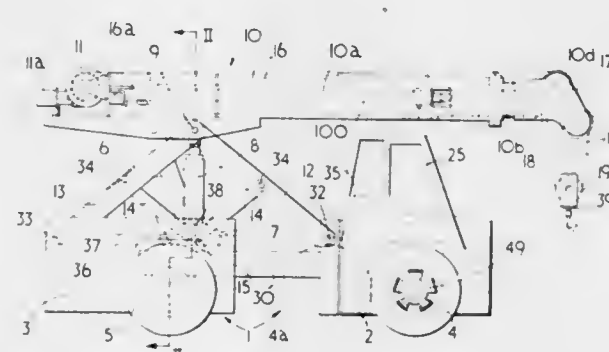
Donald George Shaw, Albrighton, England, assignor to Shaw, Trew & Smith Limited, Shifnal, England

Filed June 6, 1973, Ser. No. 367,373

Int. Cl. B62d 5/06

U.S. Cl. 212-38

7 Claims



1. A mobile load handling machine, comprising: a chassis having front and rear wheeled portions movable relative to one another along the fore and aft axis of the machine; upstanding mutually inclined linkage pivotally interconnecting said chassis portions; a jib supported by said linkage from the chassis portions; a mounting member movable in a fore and aft direction on one of the chassis portions; tie linkage pivotally connected between said mounting member and the jib; and ram means pivotally connected between the mounting member and the jib whereby, on extension and retraction of the ram means, said ram means operates in conjunction with the tie linkage to effect raising and lowering luffing movement of the jib and also operates in conjunction with the mutually inclined linkage to effect relative retraction of the chassis portions to reduce the wheel base of the machine on raising of the jib and vice versa.

3,856,150

MOBILE LOAD HANDLING MEANS, PARTICULARLY TOWER CRANES

Donald Edward Wellman, Komoka, Ontario, Canada, assignor to General Crane Industries Limited, Ontario, Canada

Filed Nov. 2, 1972, Ser. No. 303,042

Claims priority, application Great Britain, Nov. 4, 1971, 51290/71

Int. Cl. B66c 23/68

U.S. Cl. 212-46 A

9 Claims



1. Mobile load handling or lifting means comprising mobile platform means including a vehicle such as a truck, trailer or semi-trailer, a tower, pivot means mounting the base of the tower on the platform means to allow tilting movement of the tower between a vertical operating position and a substantially horizontal travelling position, and means interconnecting the platform means and the tower for moving the tower between these positions, said vehicle having a substantially flat chassis bed portion and side members connected to and extending upwardly from the sides of the vehicle flat bed portion along a major part of the length of the flat bed portion, said side members being spaced apart to accommodate the tower therebetween when the latter is in its folded travelling position and wherein the tower is supported by said flat bed portion, the side members including bracing means for reinforcing the flat bed portion against bending along its length in the vertical plane due to the weight of the tower thereon in the folded travelling position, the pivot means for the tower being carried by the side members at an elevation above the flat bed portion at least equivalent to a major part of the width of the base of the tower, the tower pivot means being disposed above the longitudinal axis of the tower when the tower is in its travelling position.

3,856,151

TELESCOPIC BOOM AND JIB ASSEMBLY WITH MEANS TO MAINTAIN A PREDETERMINED ANGULAR POSITION THEREBETWEEN

Gerald P. Lamer, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 29, 1973, Ser. No. 420,168

Int. Cl. B66c 23/06

U.S. Cl. 212-55

4 Claims



1. A crane including an extensible boom having a plurality of longitudinal hollow boom sections telescoped for extension and retraction with said boom including at least a base section

and a tip section having a free end, power means for extending and retracting said boom section relative to each other, a jib assembly having one end pivotally connected adjacent said free end of said tip section, a cable assembly supporting said jib assembly in a predetermined angular position with respect to said boom, said cable assembly having one end connected to said jib assembly at a location spaced a substantial distance from the pivotal connection, said cable assembly having an opposite end connected inside said tip section adjacent the telescoping end, and a plurality of freely rotatable pulleys on said boom sections with said cable assembly entrained over said pulleys, said pulleys being arranged to maintain said predetermined angle between said boom and said jib assembly while said boom sections are being extended and retracted by said power means.

3,856,152

OUTRIGGER HYDRAULIC SYSTEM

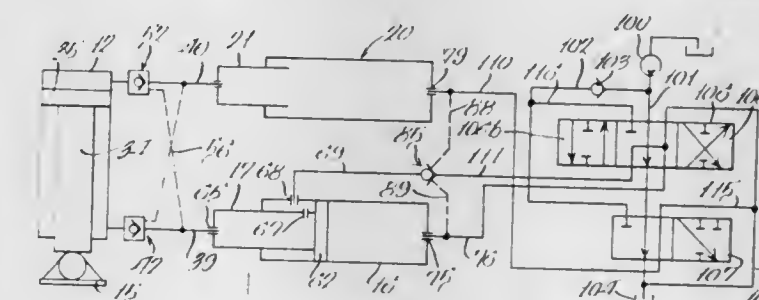
John T. Parrett, St. Joseph, and David S. Frazer, Benton Harbor, both of Mich., assignors to Koehring Company, Benton Harbor, Mich.

Filed Dec. 3, 1973, Ser. No. 421,337

Int. Cl. B66c 23/62

U.S. Cl. 212-145

24 Claims



1. A hydraulic system for an outrigger support having an extensible beam and a vertical jack cylinder at an end of the beam comprising: a hydraulic extension cylinder connectable to parts of the beam whereby extension of the rod of the extension cylinder extends said beam; a fluid circuit including a beam extension line connected to one end of the extension cylinder and a beam return line connected to the other end of the extension cylinder and a first control valve for selectively connecting said lines to either pressure fluid or to tank; said jack cylinder having a pair of fluid lines for supplying pressure fluid to said jack cylinder for either raising or lowering the jack carried by said cylinder; fluid feed means connected to one of said jack cylinder fluid lines; a second control valve in the fluid circuit for directing pressure fluid to said fluid feed means to cause lowering of the jack; a fluid line connecting the other of the jack cylinder fluid lines to the beam return line; and hydraulic means including a pilot-operated check valve for holding said beam retracted or in an intermediate extended position with said check valve being piloted open by a pilot connection to said beam extension line.

3,856,153

COUPLER YOKE WITH DRAFT GEAR REMOVAL MEANS

Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 22, 1974, Ser. No. 453,624

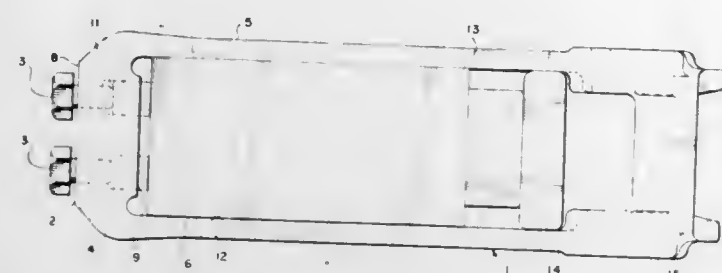
Int. Cl. B61g 9/20

U.S. Cl. 213-67 A

5 Claims

1. A yoke, for use in draft rigging of railway cars, comprising a pair of vertically spaced longitudinally extending straps connectable forwardly by tie bars or a yoke head and connectable to a coupler, and connected rearwardly by a vertically directed rear wall having inner and outer surfaces, there being at least one longitudinal aperture in the wall extending from the inner surface to the outer surface, the aperture having a larger cross-section at the inner surface than at the outer surface, a plug member slidably disposed in the larger cross-

section of the aperture and means disposed in the smaller 45° to reduce the frictional force tending to hold said toggle cross-section for sliding the plug member outwardly, said in engagement therewith when said toggle comes into contact



means and plug member being capable of compressing a draft gear disposed between the longitudinal straps.

3,856,154

RAILWAY CAR COUPLER

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland Ross Corporation, Cleveland, Ohio

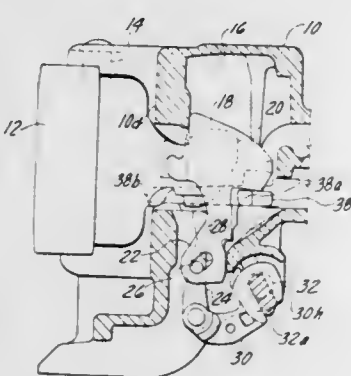
Filed Apr. 26, 1974, Ser. No. 464,355

Int. Cl. B61g 3/08

U.S. Cl. 213-110

10 Claims

with said upper surface during dropping of said lock toward its locked position.



1. In a car coupler of the pivoted knuckle type, mechanism therein operable for unlocking and opening the knuckle thereof, said mechanism including a rotor shaft member pivoted to the coupler and adapted upon rotation thereof to actuate said mechanism, and automatic means for effecting rotation of said shaft member, said means comprising a cam element keyed to said shaft member for rotation therewith, a lever member pivoted to said coupler, said lever member having means engageable with said element for effecting rotation thereof, said last-named means comprising a roller for rolling engagement with said element, and force exerting means acting against said lever to effect pivotal movement thereof.

3,856,155

RAILWAY COUPLING

Russell George Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 29, 1973, Ser. No. 420,005

Int. Cl. B61g 3/06

U.S. Cl. 213-142

1 Claim

1. In a railway coupler comprising a head, a knuckle and knuckle thrower supported by said head for movement between thrown and locked positions, said knuckle thrower being movable with said knuckle toward their locked positions, a lock movable within said head between thrown, lockset and locked position, said lock being movable toward its locked position due to gravity, and a locklift assembly including a toggle for moving said lock toward its lockset position and movable with said lock toward its locked position; the improvement wherein said head includes an anti-creep ledge having an inclined upper surface sloped at an angle of about

1. A car coupler having a tightened contour compared to a standard 10A coupler contour, said coupler comprising a coupler head having a standard 10A contour and a knuckle pivoted to said head, said knuckle comprising a nose portion having a front face and a pulling face, a heel portion, and a tail portion, said knuckle having a standard 10A contour so modified that the pulling face of said nose portion is located approximately five sixty-fourths inch closer to the buffing face of said head as measured along the longitudinal center line of the coupler and said heel portion and adjacent front face are relieved and contoured along a smooth compound convex curve formed by several radii, said modified contour providing a contour slack of approximately five-eighths inch between two coupled couplers having heads with the standard 10A coupler contour and knuckles of said modified contour, as measured in a direction longitudinally of said couplers, while affording substantially the same amount of horizontal and vertical angling between the said coupled couplers as is present between two coupled couplers in which the heads and knuckles are of standard 10A contour.



3,856,156

RAILWAY CAR COUPLER

William J. Metzger, East Cleveland, Ohio, assignor to Midland Ross Corporation, Cleveland, Ohio

Filed Aug. 6, 1973, Ser. No. 385,747

Int. Cl. B61g 1/06

U.S. Cl. 213-151

10 Claims

3,856,157

MAGNET HOLDER FOR MATERIAL HANDLING APPARATUS

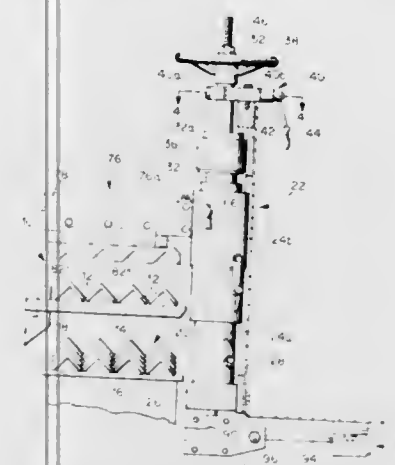
William J. Hill, Holden, Mass., assignor to Mergan Construction Company, Worcester, Mass.

Filed Feb. 5, 1973, Ser. No. 329,633

Int. Cl. B66c 1/06

U.S. Cl. 214-1 BT

9 Claims



1. For use with an apparatus for handling elongated magnetic elements wherein the elements are initially arranged in a horizontal tier on spaced support members which are then extended horizontally to carry the tier of elements to a delivery position overlying a receiving means, and wherein the support members are thereafter retracted from beneath the elements to thereby deposit the elements on the receiving means, the improvement comprising: magnet holding means adjacent to the delivery position, first operating means for vertically moving said magnet holding means between a raised inoperative position spaced vertically above a tier of elements on the spaced support members at the delivery position, and a lowered operative position at which energization of said magnet holding means will produce a magnetic force causing the elongated elements to be held upwardly against said magnet holding means, whereupon following retraction of the support members from beneath the elements held upwardly against said magnet holding means, the magnetic holding means may then be de-energized to release the elements for deposit onto the underlying receiving means, and second operating means for rotating said magnet holding means in a horizontal plane between said raised inoperative position and a third position at which said magnet holding means is located to one side of said delivery position.

3,856,158

MEANS FOR PALLETIZING OPEN FLAPPED CARTONS AND THE LIKE IN A PALLET LOADING MACHINE

Richard W. Currie, Saratoga, Calif. Assignor: Currie Machinery Company, Santa Clara, Calif.

Filed Nov. 26, 1973, Ser. No. 418,945

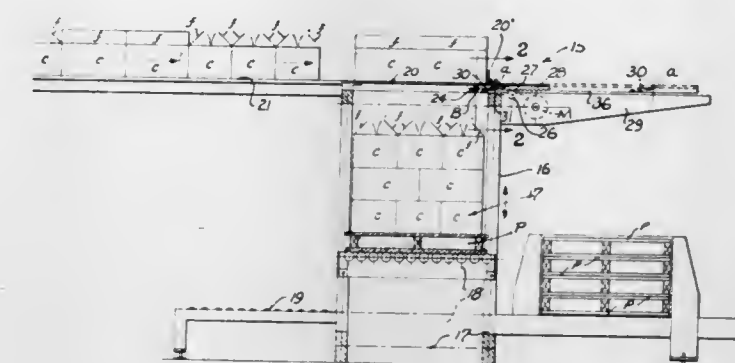
Int. Cl. B65g 57/24

U.S. Cl. 214-6 DK

5 Claims

1. In a palletizer of the type having an elevator for raising and lowering a pallet between the lower and upper end of an elevator shaft in accordance with a coded cycle control in which a light beam emanating at one side of the elevator shaft traverses the latter adjacent its upper end and impinges upon a photo cell electrically connected to the circuit of the coded cycle control to effect stoppage of the elevator upon obstruction of such light beam by a layer of cartons and the like as the elevator arrives in proximity to a horizontally reciprocative plate at the upper end of the elevator shaft and upon withdrawal of such plate from beneath a layer of cartons thereon are deposited onto the layer of cartons on the elevator; the combination therewith of means for facilitating palletizing of open flapped cartons on such palletizer comprising a member extending across the elevator shaft adjacent and parallel to the light beam therein and having one edge parallel to the light

beam hingedly connected to the underside of the stripper plate and its opposite end normally disposed at an acute angle



relative thereto pendently into the elevator shaft for engaging and depressing the open flap of a carton approaching the light beam.

3,856,159

SHIPSIDE CARGO CONVEYANCE DEVICE

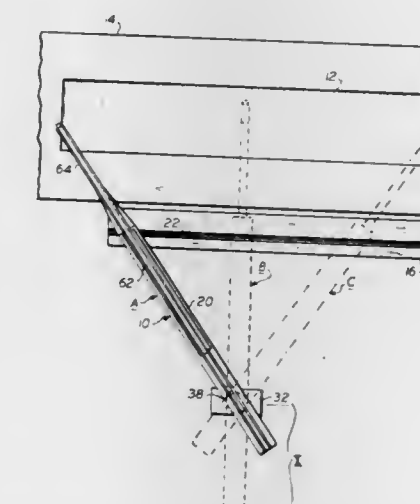
Paul Soros, 1102 Oenoke Ridge, New Canaan, Conn.
Continuation of Ser. No. 84,662, Oct. 28, 1970, abandoned.

This application Oct. 16, 1972, Ser. No. 297,650

Int. Cl. B65g 63/04

U.S. Cl. 214-14

4 Claims



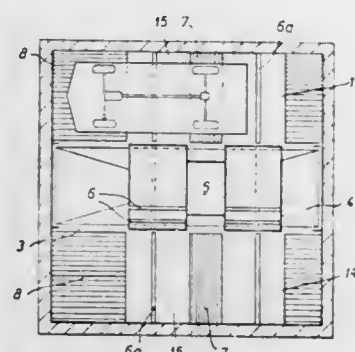
1. A device for loading a ship moored in a predetermined longitudinal orientation, said ship having longitudinally aligned cargo receiving means, an elongated structure for supporting conveyor means, said structure having a first ship-side end and a second end remote from said shipside, means mounted proximate said first end enabling cargo transference between said device and said ship cargo receiving means, means including guide means supporting said elongated structure proximate said first end for movement thereof along a generally straight line path alongside and substantially parallel to the longitudinal axis of a ship moored in said predetermined orientation, said support means further including a pivot whereby said first end is movable pivotally and laterally in the direction of the axis of said ship, a support for said second end, said support for said second end including means for permitting the pivotal movement of said elongated structure about said support for said second end between two extreme positions, said pivot for said second end being spaced from said guide means by a distance less than the length of said elongated member when said elongated member is in one of said extreme positions, and means enabling longitudinal movement of said elongated structure relative to said support for said second end, whereby as said first end is moved along said straight line path, said second end of said elongated structure moves both pivotally and longitudinally toward and away from said straight line path.

3,856,160

ELEVATOR GARAGE

Anton Roth, Mühlstrasse 19, Hanau/Main, Germany
 Division of Ser. No. 766,389, Oct. 10, 1968. This application
 May 10, 1971, Ser. No. 141,759
 Claims priority, application Germany, Oct. 13, 1967, 16
 84 904; Oct. 22, 1968, 17 59 941
 Int. Cl. E04h 6/06
 U.S. Cl. 214—16.1 DC

5 Claims



1. A structure for parking a vehicle on superposed floors has an elevator, vehicle storage means on each floor and a shaft space receiving said elevator and extending through said floors, said vehicle including a first rotatable ground engaging means near one longitudinal end and a second rotatable ground engaging means near the other end,

comprising in combination:

a pair of transfer means removably disposed on said elevator and operable to move transversely of the vehicle length, each of said transfer means being operable to receive a ground engaging means, respectively, at least two vehicle storage means disposed adjacent said elevator on each floor including a receiving portion, said transfer means being movable with a vehicle thereon to a place near said storage means, displacing means mounted on said transfer means for lengthwise displacement of the vehicle into said storage means from said transfer means in said place, said displacement means being operative to engage a ground engaging means of said vehicle whereby there occurs a shifting of said ground engaging means lengthwise of said vehicle onto a receiving portion therefor while the other ground engaging means is moved to an area disposed forwardly of said transfer means, said receiving portion being disposed between said pair of transfer means.

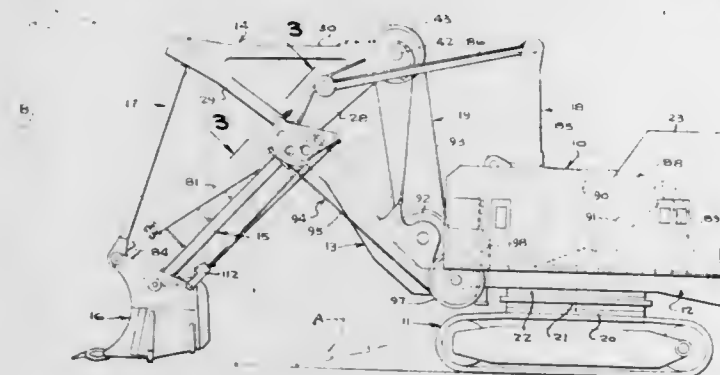
3,856,161

POWER SHOVEL

George B. Baron, Marion, Ohio, assignor to Marion Power Shovel Company, Inc., Marion, Ohio
 Filed Nov. 2, 1973, Ser. No. 412,257
 Int. Cl. E02f 3/00

U.S. Cl. 214—138

34 Claims



1. A power shovel comprising a body, a stiffleg pivotally connected at the lower end thereof to said body, a hoist frame

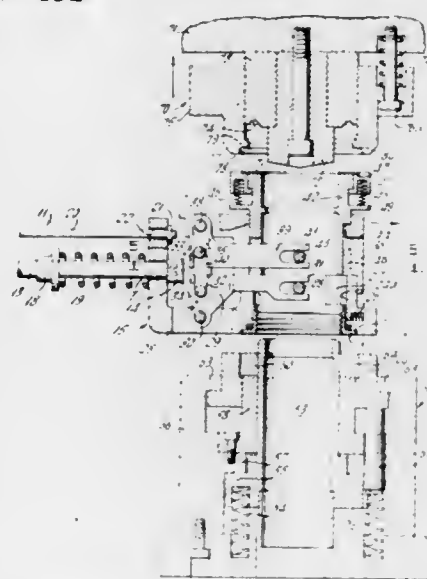
pivotally mounted on said stiffleg, a dipper handle pivotally mounted on said hoist frame, a dipper pivotally connected to said dipper handle, a hoist link pivotally interconnected to said hoist frame and said dipper, said stiffleg and the components supported thereon having sufficient weight to provide a self-crowding action of said dipper when said stiffleg is permitted to pivot downwardly, means for pivoting said stiffleg upwardly to retract said dipper and means for hoisting said dipper.

3,856,162

CLOSURE FEEDING METHOD

John Jesevich, Cicero, and Vyto Simkus, Chicago, both of Ill., assignors to American Flange & Manufacturing Co. Inc., New York, N.Y.
 Division of Ser. No. 131,258, April 5, 1971, Pat. No. 3,800,401. This application Oct. 25, 1973, Ser. No. 409,392
 Int. Cl. B65g 1/06
 U.S. Cl. 214—152

4 Claims



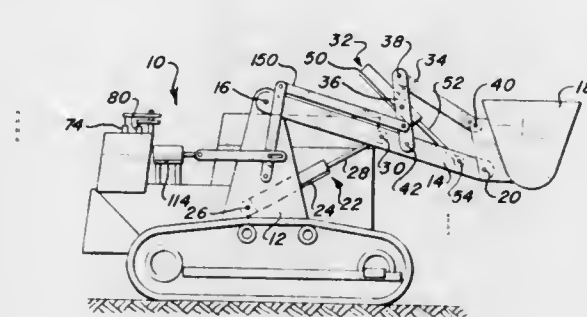
1. The method of simultaneously feeding a closure flange and a tag ring element into an insertion die for securing the same to a container wall, comprising the steps of supporting a closure flange and a tag ring element in vertically spaced juxtaposition, advancing said closure flange and said tag ring element horizontally into said insertion die, displacing said closure flange and tag ring element vertically away from each other, releasing said closure flange and said tag ring element in said insertion die and supporting said closure flange and said tag ring element in said insertion die for permanent securing about a container wall opening.

3,856,163

METHOD OF USING A HYDRAULIC LEVELING CIRCUIT ON AN IMPLEMENT

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.
 Division of Ser. No. 272,365, July 17, 1972, Pat. No. 3,811,587. This application Dec. 14, 1973, Ser. No. 424,920
 Int. Cl. B65g 7/00
 U.S. Cl. 214—152

3 Claims



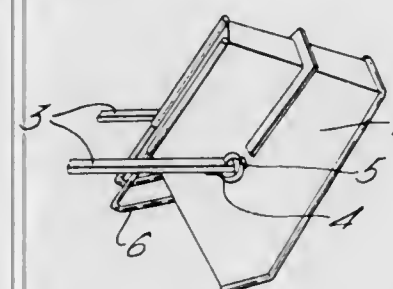
1. A method for controlling a boom pivoted on a vehicle by a boom ram and a material handling unit pivoted on the boom

3,856,164

TIPPABLE CONTAINERS

Bjarne Torvund, 5870 O., Ardal, Norway
 Filed Apr. 24, 1973, Ser. No. 354,049
 Claims priority, application Norway, Apr. 28, 1972, 1518/72
 Int. Cl. B65g 65/04
 U.S. Cl. 214—315

1 Claim



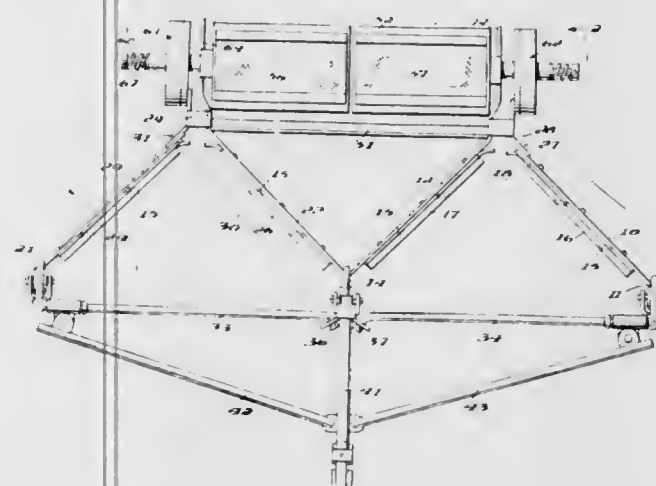
1. The improvement in pivotal containers which are adapted to be lifted by the forks of a fork lift truck comprising mountings mounted for rotational movement relative to the container on both sides of said container in the form of a curved spiral shaped member, said member at its smallest radius portion being adapted to engage and lock onto the tips of said forks such that as its larger radius portion comes into engagement against the underside of the fork, the fork is locked to said member by the resilient clamping action between the smallest and the larger radius portions, whereby the container can be pivoted relative to said forks and thereby dumped.

3,856,165

BALL RETRIEVER

August W. Gustafson, and Edna L. Gustafson, both of 350 Pasadena Pl., Corpus Christi, Tex. 78411
 Division of Ser. No. 288,263, Sept. 12, 1972., This application
 Feb. 7, 1974, Ser. No. 440,555
 Int. Cl. B60p 1/00
 U.S. Cl. 214—356

3 Claims



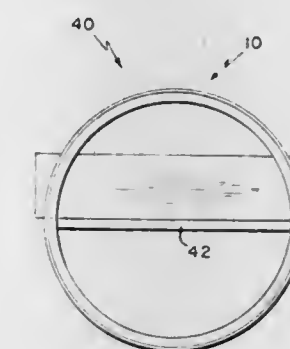
1. In apparatus for retrieving balls from the ground, a frame including plates which diverge from each other in proceeding forwardly, wheels supporting the forward ends of the plates, a rear wheel supporting the rear end of said frame, a disc member carried by said frame adjacent said rear wheel, said

3,856,166

HAND TRUCK

Louis J. Gibson, 1014 Anna Rd., Huntingdon Valley, Pa. 19006
 Filed Jan. 26, 1973, Ser. No. 326,972
 Int. Cl. B62b 1/09
 U.S. Cl. 214—370

10 Claims



1. A hand truck comprising an outer wheel means having a hoop-like configuration of substantial diameter and including a pair of spaced apart hoop members, an inner rim means of a hoop-like configuration mounted concentrically within said wheel means including a hoop-like rim mounted on each of said hoop members and having a circular rim portion within the interior of said wheel means, bearing means between said wheel means and said inner rim means providing for relative rotating movement therebetween whereby the truck may be moved by hand as a hoop along a surface with the wheel means rotating about the rim means, means between said spaced apart hoop members for supporting articles to be transported by said hand truck, and frame means extending between said rim members for holding the same together in spaced apart relation and to provide substantial clearance around said circumference thereof for receiving an article to be transported by relative radial-like movement through the cleared spaced-apart circumferential portions of said rim members, said frame means being located to provide a circumferential clearance of at least 180° for receiving articles between said spaced apart rim members.

3,856,167

SPARE WHEEL HOLDING DEVICE

Setsuo Yasue, Gifu-ken, and Tomio Yamamoto, Aichi-ken, both of Japan, assignors to Sanki Kiki Kabushiki Kaisha, Nageipa, Japan
 Filed Jan. 2, 1973, Ser. No. 320,534
 Claims priority, application Japan, Dec. 30, 1971, 47-2262
 Int. Cl. B62d 43/04
 U.S. Cl. 214—451

8 Claims

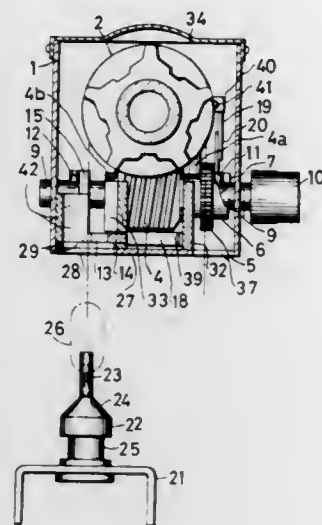
1. Apparatus for holding a spare wheel on a motor vehicle, comprising:
 a casing adapted to be secured to the underside of the chassis of a motor vehicle;
 a winch mechanism supported by said casing and including a bidirectionally rotating means;

an elongate flexible member passed at least partly around said rotating means and having one end adapted to be raised upon rotation of said rotating means in one direction, while being lowered upon rotation of said rotating means in the opposite direction;

a wheel support member connected to said one end of said flexible member and adapted to support a spare wheel;

a lock means supported by said casing;

a shoulder means formed on said wheel support member; and,



an actuating means operationally associated with said rotating means for actuating said lock means to cause said lock means to engage said shoulder means to hold said wheel support member in a raised position upon rotation of said rotating means in one direction, while said lock means is caused by said actuating means to disengage from said shoulder means to permit lowering of said wheel support member upon rotation of said rotating means in an opposite direction.

3,856,168

BOAT TRAILER CONSTRUCTION

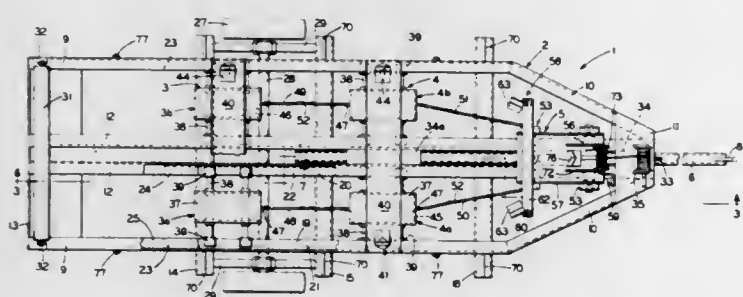
Robert J. Mauck, Pinconning, Mich., assignor to John J. Buta, Deerand, Mich.

Filed May 3, 1973, Ser. No. 356,927

Int. Cl. B60p 3/10

U.S. Cl. 214—505

9 Claims



1. A boat trailer construction including frame means; a pair of spaced wheel mounted on the frame means for movement of the trailer along the ground; a drawbar pivotally mounted on the frame means and extending longitudinally forwardly from the frame means; hitch means mounted on the drawbar

for attaching the drawbar to a towing vehicle; the frame means including a pair of spaced, parallel, longitudinally extending outer channel members, and a pair of spaced, parallel, longitudinally extending inner channel members, said inner channel members being parallel with said outer channel members; ramp means formed on the outer and inner channel members; said ramp means being formed in the rear end portions of said channel members and aligning transversely with respect to each other; first carriage means mounted on the inner pair of channel members including boat receiving cradle means, means for securing a boat onto the cradle means, and a plurality of first rollers mounted on the first carriage means for movement of said carriage means along the inner channel members; at least second carriage means movably mounted on the inner and outer pairs of channel members; said second carriage means including a pair of subcarriages, each of said subcarriage having a pair of axles extending transversely between one of the inner channel members and the adjacent outer channel member; a plurality of second rollers being rotatably journaled on the ends of said axles engageable with the inner and outer channel members for moving said second carriage means along the channel members; a support channel being mounted on and extending upwardly from the subcarriage axles; a platform extending transversely across and spaced above the frame means and mounted on the support channels; boat supporting pad means extending upwardly from the ends of the platform; chain means extending between the first and second carriage means; and winch means mounted on the frame means operatively connected to the first carriage means for longitudinally moving all of the carriage means forwardly along the frame means by successively tensioning the chain means between said carriage means whereby the carriage means successively engage a boat floating in the water and lift the boat upwardly upon movement of the carriage means upwardly along the ramp formations.

3,856,169

APPARATUS FOR COLLECTION OF SEDIMENT IN BOTTLED FLUIDS

John Stuart Wilson, 180 Kingston Rd., Heatherton, Australia (3202), and Ronald George Cutts, 3 Hazel Ave., Highett, Victoria, Australia (3190)

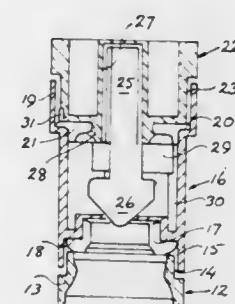
Filed July 5, 1973, Ser. No. 376,332

Claims priority, application Australia, July 7, 1972, 9609/72

U.S. Cl. 215—6

Int. Cl. B65d 1/04

8 Claims



1. A capping assembly adapted to be inverted over the top of a bottle containing fluid from which sediment can be collected, said capping assembly comprising a body member having port means for egress of the collected sediment, means for securing said body member to the neck of said bottle, a conical probe member mounted for controlled longitudinal movement within said body member and spaced therefrom to

form therewith a well for collecting such sediment, cap means operatively connected to said probe member for controlling the longitudinal movement of the probe member between first and second positions, first seal means for sealing said well when said probe member is in said first controlled position and opening said well to said port means when said probe member is in said second controlled position, and second seal means disposed adjacent the inner end of said probe member for sealing said bottle when said probe member is in said second controlled position thereby permitting withdrawal of such sediment from said well through said port means.

3,856,170

SNAP-TOP BOTTLE CAP WITH SAFETY PRY-OFF

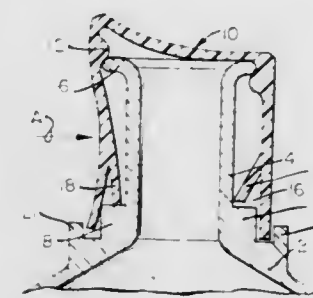
Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512

Filed June 14, 1973, Ser. No. 370,016

Int. Cl. B65d 55/02, 85/56; A61j 1/00

U.S. Cl. 215—224

5 Claims



1. Safety means for containers comprising in combination
 - a. a container having a cylindrical pouring spout with a thin annular outwardly-extending flange at the top of the spout,
 - b. and a plastic snap-cap snugly fitting the top of said spout, said cap having an internal annular flange elastically engaging the underside of said outwardly-extending flange to retain said cap on the spout,
 - c. said cap having a downwardly-extending semi-rigid cylindrical wall surrounding said cylindrical pouring spout and of sufficiently greater diameter than the outer diameter of said spout to provide a substantial cylindrical gap between said wall and said spout,
 - d. a small lug in said gap extending at the base of said cylindrical spout toward said cylindrical wall of the cap and fixed to said container,
 - e. a semi-rigid bar of the same plastic material as the cap and unitary therewith extending diagonally downward from a point above said lug toward said lug but not as far as the lug, even when the cap is rotated so that the lug and bar have the same orientation, said bar being sufficiently stiff so that when the cap is rotated to have the same orientation as the lug and the side of the cap containing the bar is pressed toward the spout, the end of the bar will engage the lug and pry at least a portion of the snap cap off the annular flange so that the cap can then be readily removed from the spout.

3,856,171

CAP FOR CONTAINER

Anthony T. Rossi, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Filed May 18, 1973, Ser. No. 361,632

Int. Cl. B65d 41/32

U.S. Cl. 215—256

1. Apparatus comprising:

a container including:

a bottom wall portion,

a circumferentially extending sidewall portion terminating at an open upper end defining an upper container edge, and

6 Claims

3,856,172

VACUUMIZED PLASTIC CAP FOR HEAT INSULATING CONTAINERS

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 20, 1973, Ser. No. 389,748

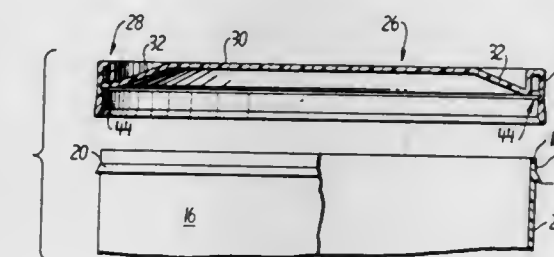
Int. Cl. B65d 39/08; A47j 41/02

U.S. Cl. 215—364

7 Claims

1. A vacuum plastic cap comprising encapsulating boundary wall of a normally solid plastic material completely enclosing

- a circumferentially extending, interlock projection on said sidewall portion adjacent said open upper end of said container, said interlock projection facing outwardly of said sidewall portion and dividing said sidewall portion into:
- an upper, lip section terminating in said upper container edge, and
- a lower section extending to said bottom wall portion of said container;
- a cap for closing said container, said cap including:
- a cover section comprising:
- a central flat portion, and
- a sloping edge portion sloping downwardly and radially outwardly from said central flat portion, and
- a generally inverted U-shaped seating section for receiving said upper lip section of said sidewall portion of said container, said seating section comprising:
- a generally upright wall portion integral at its lower end with said sloping edge portion of said cover section and rigidified thereby at its juncture with said sloping edge portion, said generally upright wall portion being of a length sufficient to project into said con-



tainer on the inner side of said sidewall portion by substantially the depth of said lip section, and

an outer, circumferentially extending, depending skirt portion for embracing the outer side of said container sidewall portion, said skirt portion including:

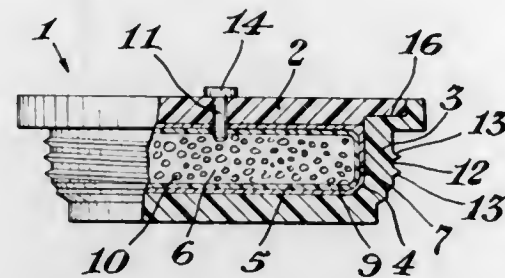
a main body,

a tear strip contiguous with and depending from said main body for a substantial circumferential extent of said main body, which extent terminates at a section of said main body thicker than, integral with and forming a circumferential continuation of said tear strip, and

an inwardly facing circumferentially extending groove, defining the juncture of said main body and the tear strip depending therefrom, for interlocking with said interlock projection of said container;

said rigidified juncture of said generally upright wall portion of said seating section and said sloping edge portion of said cover section being disposed adjacent said circumferentially extending interlock groove to enhance maintenance of a positive seal at the location of said interlock projection of said container and said groove of said cap.

an evacuated space, a layer of metal on at least one entire surface of said boundary wall, an overcoating of a barrier



plastic adherent to the entire metal layer and a gas absorbing material residing in the evacuated space enclosed by the boundary wall to absorb gases present in said evacuated space.

3,856,173

TRASH RECEPTACLE

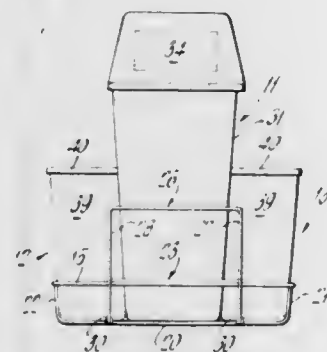
Loryn B. Deane, and Edward V. Deane, both of 18 Overlook Rd., Ardsley, N.Y. 10502

Filed Oct. 17, 1972, Ser. No. 298,338

Int. Cl. B65d 21/02

U.S. Cl. 220-1 T

1 Claim



1. A trash receptacle comprising a rack having a substantially rectangular, horizontally disposed frame including two long sides and two short side portions, one of said long sides having a portion disposed centrally thereof spaced outwardly therefrom and in the plane of said frame, legs carried by said frame to support the frame in spaced relationship to a supporting surface, a first trash receptacle of rectangular configuration positioned centrally in said rack and engaging the other long side and said central portion of said one side to retain said container centrally of said rack and a pair of outer containers engaging the end portions of said rack and positioned in adjoining relationship to the walls of said central container, said first trash receptacle being tapered downwardly and inwardly and said outer receptacles having walls adjoining the first said receptacle which are parallel to the walls of said first receptacle and said rack includes a structure secured to and extending upwardly therefrom and in spaced relationship to said first container.

3,856,174

LARGE-VOLUME CONTAINER

Otto Ernst Hartmann, Wackersberg/Bad Tolz, Germany, assignor to Cota-Spedition International Container-Transporte GmbH & Co., Berlin, Germany

Filed Mar. 5, 1973, Ser. No. 337,860

Claims priority, application Germany, Nov. 10, 1972, 2255147

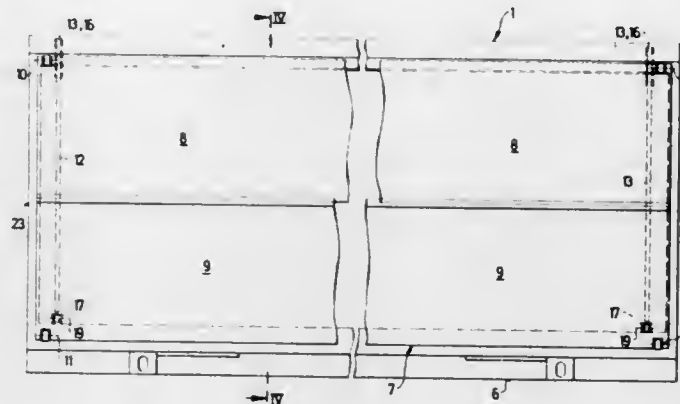
Int. Cl. B65d 7/12

U.S. Cl. 220-1.5

20 Claims

1. A rectangular-shaped large-volume container comprising:

a horizontally disposed floor, a front wall, a rear wall, and first and second side walls, said rear wall being constructed as a lockable and openable rear door and an upper rear wall frame member extending between said first and second side walls, said upper rear wall frame member being removable from position for accommodating loading of said container from the rear when said rear door is open,



said first side wall being formed by respective upper and lower flap members, said flap members being pivotal about respective upper and lower horizontally extending flap axes such that said flap members together form a substantially solid first side wall when said flap members are in respective first positions and such that said first side wall is substantially open for accommodating loading of said container from the side of said first side wall when said flap members are in respective second positions.

3,856,175

MOLDED RUBBER PRODUCTS AND RELATED COMPOSITIONS

William R. Dunlop, Buffalo Grove, Ill., assignor to The Richardson Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 5,891, Jan. 26, 1970,

abandoned. This application June 27, 1972, Ser. No. 266,806

Int. Cl. B65d 1/26, 85/00; C08d 9/08

U.S. Cl. 220-22

10 Claims

1. A vulcanizable composition comprising about 6-20 weight percent of a styrene-butadiene copolymer rubber containing 5-30 weight percent styrene, about 50-80 weight percent of a finely divided inert filler having a particle size below about 80 microns selected from the group consisting of coal, talc and hard rubber dust and from about 2 to about 8 weight percent of a resin of a styrene butadiene copolymer containing about 70-90 weight percent styrene and having a softening temperature of about 150°-250°F to provide in the composition when cured a tensile strength of at least about 670 psi at room temperature and an impact resistance of at least about 3 inches (with a 2 lb. ball) at 0°F. and based on the rubber about 30-70 weight percent of a processing oil having viscosity of about 40-180 SUS at 210°F, about 40-100 weight percent of an activator selected from alkaline earth hydroxides or carbonates and about 4-12 weight percent sulfur.

3,856,176

COVER WITH REPLACEABLE COVERING MATERIAL

Fay G. Carter, San Jose, Calif.

Continuation of Ser. No. 207,483, Dec. 13, 1971, abandoned.

This application Oct. 10, 1973, Ser. No. 405,154

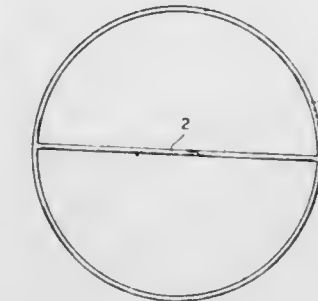
Int. Cl. B65d 51/02; A47j 36/06

U.S. Cl. 220-24 R

2 Claims

1. A cover for pots and pans consisting of: a frame consisting of an outer circular frame having a circu-

lar cross-section and a cross member extending along the diameter of said outer circular frame and attached at both ends to said outer circular frame, said cross member being formed into a handle at one location along the length of said cross member, said handle being perpendicular to said outer circular frame; and



a replaceable, disposable deformable, non-flammable covering material replaceably wrapped about said frame to form the covering of said cover, said covering material maintaining its own shape after being wrapped about said frame so as to maintain itself onto said frame; and said handle extending above said covering material.

3,856,177

FIRE EXTINGUISHER CABINET

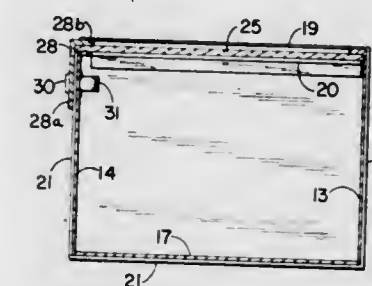
William L. Fudge, Minneapolis, Minn., assignor to Larsen's Manufacturing Company, Minneapolis, Minn.

Filed Sept. 6, 1973, Ser. No. 394,738

Int. Cl. B65d 25/54, 43/12

U.S. Cl. 220-82 R

4 Claims



1. In an improved fire extinguisher cabinet comprising:

- a. an elongated open front rectangular box having spaced side walls and spaced top and bottom walls;
- b. spaced guideway means, extending along an edge of each of said top and bottom walls adjacent the open front;
- c. an elongated, breakable, transparent panel member for closing the open front slidably insertable into and removable from said guideways transversely of the longitudinal dimension of said panel members and box;
- d. an angular edge portion rigidly attached to one of said side walls adjacent said open front so as to overlie an adjacent edge of said panel, said one side wall limiting movement of said panel member along said guideways in one direction;
- e. a removable closure member extending substantially between said top and bottom walls for limiting movement of said panel along said spaced guideways in an opposite direction when in a closure forming position;
- f. said closure member having an L-shaped cross section with one leg thereof disposed in juxtaposition to said

other side wall and the other leg thereof disposed to overlie an adjacent edge of said panel member in the closure forming position;

- g. the other of said side walls having an opening formed therethrough adjacent said open front and generally midway between said top and bottom walls;
- h. lock means mounted on said one leg generally midway between opposite ends thereof for insertion into the opening in said other side wall and having a lockable engagement with said other side walls; and
- i. said other leg portion having opposite end portions which are each received within an adjacent guideway when said closure member is in the closure forming position.

3,856,178

INSULATED SHIPPING CONTAINER

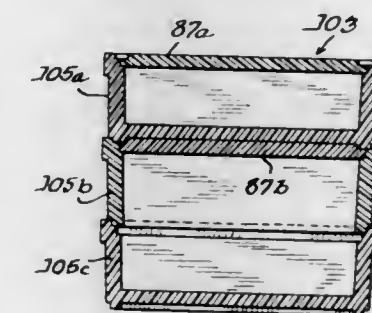
Arthur J. Norgaard, Deerfield, Ill., assignor to General Box Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 133,499, April 13, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,597

Int. Cl. B65d 21/02

U.S. Cl. 220-23.83

3 Claims



1. An insulated shipping container of modular construction comprising:

an outer shell for forming a protective exterior envelope; a plurality of nestable units arranged in a stack configuration and disposed within said outer shell, said nestable units having an enclosure wall extending around side portions thereof and an open top, said nestable units having a nesting flange adjacent the open top thereof for receiving another of said nestable units and a closure flange, disposed below and inwardly of said nesting flange, for receiving a cap to form a closure on the open top of said nestable units, said nestable units including a receptacle having a floored bottom, said nestable units including a spacer unit having an open floor, said spacer unit combining with an associated nestable unit to form a double unit compartment; and at least one cap positioned on the closure flange of a nestable unit in sealing engagement therewith.

3,856,179

CONTAINER END WITH PROTECTIVE BEAD

James D. Fox, Darlington; Earl P. Norman, Jr., and Jerry F. Sansbury, both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Continuation-in-part of Ser. No. 162,379, July 14, 1971, Pat. No. 3,754,678. This application May 3, 1973, Ser. No. 356,871

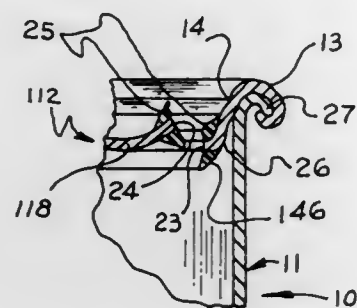
Int. Cl. B65d 17/20

U.S. Cl. 220-54

4 Claims

1. A container end comprising an end panel; a removable portion in said end panel; said removable portion defined by

a score line; pull means attached to said removable portion for removal thereof by tearing along said score line; and protective means over said score line on each side thereof for protecting the sharp edges of the removed portion and the remaining residual lip of said end panel, whereby a force applied



3,856,181 INFLATOR

Richard L. Merrell, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1973, Ser. No. 373,284

Int. Cl. F17c 7/00

U.S. Cl. 222-5

4 Claims

to said pull means effects a tearing action along said score line and through said protective means such that a protective shield extends over the edge of said removable portion and said residual lip.

3,856,180 INFLATOR

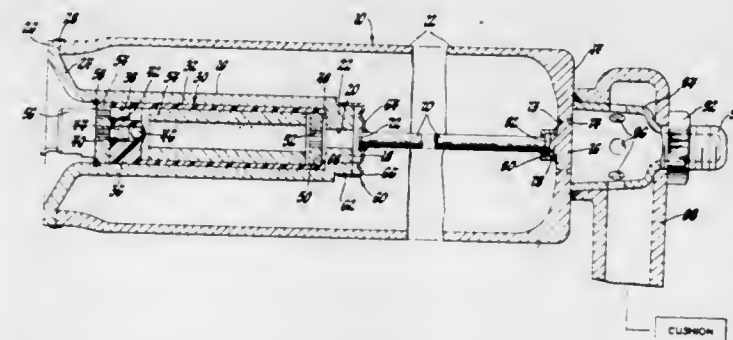
Richard L. Merrell, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1973, Ser. No. 373,283

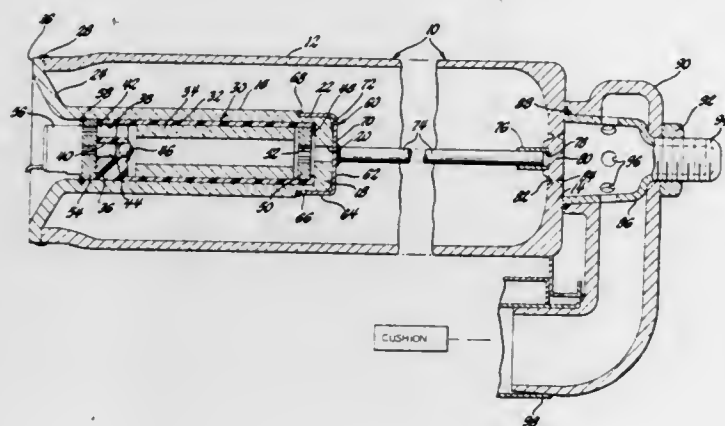
Int. Cl. F17c 7/00

U.S. Cl. 222-5

1 Claim



1. An inflator comprising, in combination, a pressure vessel containing pressure fluid and having an outlet for communicating the inflator with an occupant restraint cushion, first closure means closing the outlet, a combustion chamber containing a charge of propellant for generating gas and having an outlet for communicating the combustion chamber with the pressure vessel, second closure means closing the chamber outlet, the first and second closure means being rupturable in directions opposite of each other under the pressure of the fluid within the pressure vessel, rigid elongate means, means mounting the rigid means to each closure means whereby each closure means under the pressure of the fluid within the vessel exerts a force on the other closure means in a direction opposite its rupturable direction, and means for adjusting one of the mounting means to correspond the spacing of the first and second closure means to the length of the rigid elongate means.



1. An inflator comprising, in combination, a generally cylindrical pressure vessel containing pressure fluid and having an outlet for communicating the inflator with an occupant restraint cushion, rupturable means closing the outlet, generally cylindrical combustion chamber coaxially within the pressure vessel and containing a charge of propellant for generating gas, the chamber including a generally radially extending end wall at one end thereof having an outer surface provided with a central flat portion and a surrounding tapered portion, the end wall including a normally open outlet through the flat portion communicating the combustion chamber with the

3,856,182 APPARATUS FOR REGULATING MOLTEN METAL SUPPLY

Aristide Berthet, and Jacques Blum, both of Metz, France, assignors to Institut De Recherches De La Siderurgie Francaise (IRSID), Saint Germain-en-Laye, France

Continuation-in-part of Ser. No. 230,746, March 1, 1972, Pat. No. 3,773,218. This application Nov. 7, 1973, Ser. No. 413,662

Int. Cl. B22d 37/00

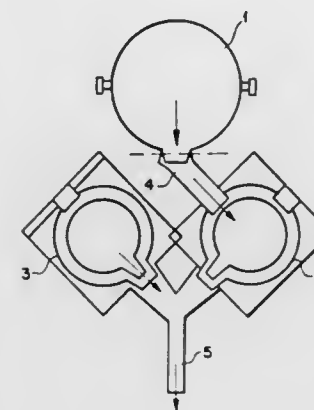
U.S. Cl. 222-56

7 Claims

1. An apparatus for supplying a substantially constant flow of molten metal from metal supplying means to a metallurgical equipment comprising:

pressure vessel, a diaphragm cap of thin frangible material telescoped over the end of the combustion chamber and including an axial wall surrounding and secured to the chamber and a radial wall seating on the flat portion of the outer surface of the end wall of the chamber around the outlet to close the outlet, the seating of the radial wall of the cap on the flat portion of the outer surface of the end wall supporting the radial wall against rupture by the pressure fluid within the pressure vessel, and rigid means mounted on the radial wall of the cap and projecting to adjacent the rupturable means for impacting and rupturing the rupturable means upon generation of gas within the combustion chamber and rupture of the radial wall of the cap.

at least two intermediate tipping vessels, means for alternatively filling said vessels from said metal supplying means and emptying the vessels into said metallurgical equipment to obtain a continuous flow of molten metal; means for determining the actual flow rate of metal running out from the vessel being emptied; means for providing a reference quantity corresponding to a desired constant supplying flow rate of molten metal;



comparison means for developing a differential signal by comparing said actual flow rate and said desired constant flow rate to give a differential signal corresponding to the difference of said flow rates; and regulating control means responsive to said differential signal for controlling the speed of tipping of each of said tipping vessels so as to maintain said differential signal at a substantially zero value.

3,856,183 TILTING MOLTEN METAL DISPENSER WITH CONSTANT LIQUID HEAD CONTROL

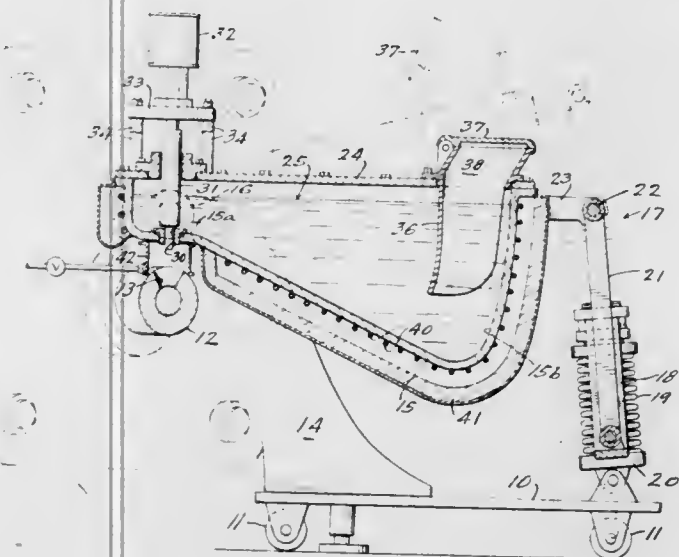
Alfred F. Bauer, Toledo, Ohio, assignor to NL Industries, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,242

Int. Cl. B22d 37/00

U.S. Cl. 222-70

4 Claims



1. A device for metering charges of metal from a reservoir to a point of use comprising a metal supply pot, pivot means adjacent one end of said pot defining a pivot point.

a discharge valve having a valve seat in the lower wall of said supply pot close to said pivot point, said lower wall extending downwardly and away from said discharge valve, means to support said supply pot for tilting movement around said pivot point to maintain a substantially constant head of molten metal over said discharge valve seat, and means to open said discharge valve for a predetermined time period whereby substantially equal charges of metal flow through said discharge seat at each valve opening.

3,856,184 EASY-OPENING CONTAINER CLOSURE HAVING A SLIDING TAB

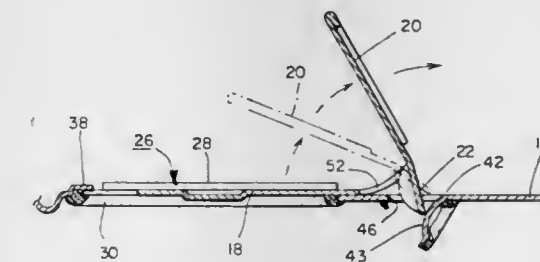
John J. Luviano, Rydal, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Aug. 30, 1972, Ser. No. 285,000

Int. Cl. B65d 47/10

U.S. Cl. 222-80

15 Claims



1. A closure of the easy opening type comprising: a closure panel having a dispensing aperture therein and an at least partially pre-formed vent hole spaced therefrom; an easy opening tab including a sliding portion closing said dispensing aperture, a flip-over portion having a hinged connection with said sliding portion, and a vent hole puncturing portion extending from said flip-over portion, said flip-over portion being double-backed over said sliding portion when said tab is in the closed position with said vent hole puncturing portion extending away from said closure panel, said vent hole puncturing portion contacting said partially pre-formed vent hole when said flip-over portion is pivoted about said hinged connection to a position extending outwardly away from said sliding portion, said flip-over portion forming a lever having a fulcrum at said hinged connection, the overall length of the lever arm of said flip-over portion being longer than the distance from the point of contact between said partially pre-formed vent hole and said hinged connection so as to provide a substantial mechanical advantage in puncturing said end panel at said partially pre-formed vent hole.

3,856,185 SINGLE DOSE, REPLACEABLE SUPPLY AIR PRESSURE OPERATED DISPENSER

Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,854

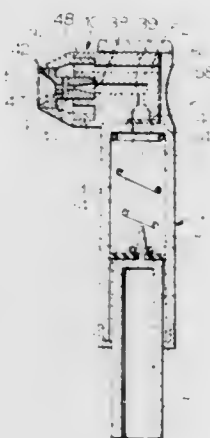
Int. Cl. B67d 5/54

U.S. Cl. 222-193

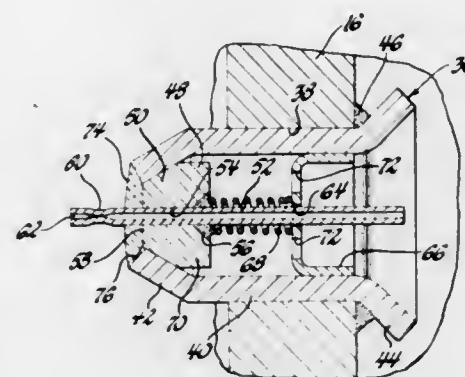
10 Claims

1. A single dose replaceable product supply dispensing device comprising: a piston-cylinder means having a movable member and a fixed member having a compressed air flow path there-

through with an aperture at the end remote from said movable member;
a single dose replaceable product dispensing member having a product dispensing aperture and adapted to be operatively connected to said fixed member and having a compressed air flow path therethrough, said flow path being operatively positioned relative to said compressed air flow path of said piston-cylinder means when said product dispensing member is connected to said fixed member for communication therebetween, said dispensing member further having a product supply chamber, and aspirating means in said compressed air flow path communicating with said product supply chamber for dispensing said product via said product dispensing aperture; and



and opening at its outer end to a hollow extension projecting outwardly of the valve member and of the outer end of the housing, means closing the outer end portion of the extension, the valve member being displaceable against the resilient biasing means to permit pressure fluid to flow between the valve member and the housing into the pressure vessel to fill



the vessel, and means permanently sealing the valve member to the housing after the pressure vessel has been filled, removal of the closed outer end portion of the extension permitting pressure fluid to bleed out of the pressure vessel through the bore of the valve member and any unremoved portion of the extension.

a diaphragm member normally blocking the compressed air flow path and adapted to open only when said movable member approaches thereto, during its compression stroke;
whereby as said movable member moves toward said fixed member in a compression stroke, air is compressed in the fixed member, said diaphragm member remaining closed until said movable member substantially reaches the end of its compression stroke whereupon said diaphragm member opens, allowing compressed air to travel along said compressed air flow path into said product dispensing member and through said aspirating means, product being dispensed thereby.

3,856,186 PRESSURE VESSEL FILL AND BLEED VALVE ASSEMBLY

Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

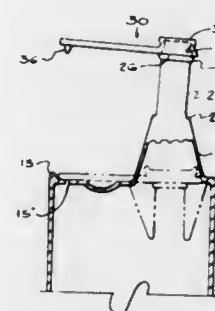
Filed June 25, 1973, Ser. No. 373,285
Int. Cl. B65d 47/10

U.S. Cl. 222-402.16

4 Claims

1. In combination with a pressure vessel having an apertured wall, a fill and bleed valve assembly, comprising, an annular hollow housing adapted to extend through the aperture in the wall of the pressure vessel and to be secured thereto, said housing including an outer end portion provided with a tapered inner surface, a valve member slidably received within the housing and including an outer tapered surface complementary to the tapered inner surface of the housing, resilient means biasing the valve member outwardly of the housing to seat the tapered outer surface thereof on the tapered inner surface of the housing, said valve member including a bore therethrough opening at its inner end to the housing

2. A container comprising:
a. a container body;
b. a top secured to said body;
c. a pouring spout secured to said top, said spout being nestable within said body and removable to an extended, pouring position;
d. a pull tab secured to said spout adjacent an upper end thereof, said tab further being secured to said top; and
e. a weakened area in said top adjacent said point of securement of said pull tab, whereby pulling on said tab causes rupture of said weakened area and produces a vent opening in said top and further pulling on said tab withdraws said spout from said nested position.



3,856,187 CONTAINER WITH COLLAPSIBLE POURING SPOUT AND SELF OPENING VENT HOLE

Walter K. Chlystun, 327 St. James Dr., Spartanburg, S.C. 29301

Filed Dec. 3, 1973, Ser. No. 421,431
U.S. Cl. 222-529

Int. Cl. B67d 5/12

9 Claims

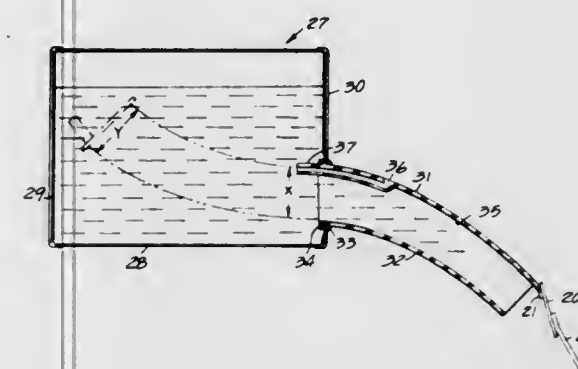
3,856,188 DISPENSER FOR LIQUIDS AND SOLIDS WITH SELF-CONTAINED SPOUT

Terrell B. Newby, 1204 Golden Oak Way, San Jose, Calif. 95120

Filed Feb. 21, 1973, Ser. No. 334,240
Int. Cl. B65d 17/24

U.S. Cl. 222-535

14 Claims



1. A fluid tight dispenser for materials which has a pop-open feature with a self-contained spout comprising:
a container having a hollow body portion closed at its opposite ends respectively by a plate-like top wall and a bottom wall;
a break-away portion formed in said top wall;
pull means attached to said break-away portion on its outer surface operable when manually manipulated to force a partial separation between said break-away portion and said top wall thereby forming an aperture in said top wall when the break-away portion is removed; and
tubular hollow rigid spout means located within said hollow body portion, said spout means having a smooth outer wall and also having one end thereof attached to the inside surface of said break-away portion so said spout means can be extracted through the aperture formed as said break-away portion is separated from said top wall, said spout means sized to said aperture so its smooth outer wall continuously engages and expands the periphery of the aperture in a sealing relationship along a substantial portion of the length of said spout means as said spout means is extracted whereby an exterior service spout is formed as said spout is extracted through which materials within the dispenser can be poured therefrom without leakage between the spout means and the aperture.

3,856,189 REMOVABLE SLIDE GUIDE FOR A SLIDE CLOSURE

Ernst Meier, Adliswil/Zurich, Switzerland, assignor to Interstop AG, Zug, Switzerland
Filed Dec. 8, 1972, Ser. No. 313,262

Claims priority, application Germany, Dec. 10, 1971, 2161368

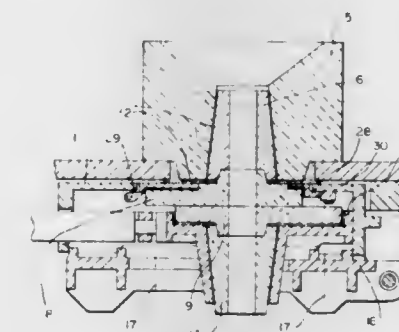
Int. Cl. B67d 3/00

U.S. Cl. 222-537

9 Claims

1. In a slide closure for the pouring spout of metal melt containing vessels, such as steel pouring ladles, such slide closure including a slide housing on said vessel adjacent said spout thereof, a refractory orifice plate fixedly positioned

against said vessel, a refractory slide plate having a refractory outflow sleeve attached thereto, a supporting element mounting said slide plate within said slide housing for sliding movement against said orifice plate, and a slide guide removably attached to said slide housing for guiding the sliding movement of said supporting element, the improvement comprising:
first attachment means for rigidly attaching said slide guide to said slide housing in the operational position thereof;



second attachment means for supporting said slide guide on said slide housing but to allow movement of said slide guide away from said slide plate when said first attachment means are released to remove said slide guide from said operational position, to thus allow removal of worn refractory elements; and
said first and second attachment means being positioned to prevent hinderance of the operation of said first attachment means by said second attachment means during the fixing of said slide guide in said operational position.

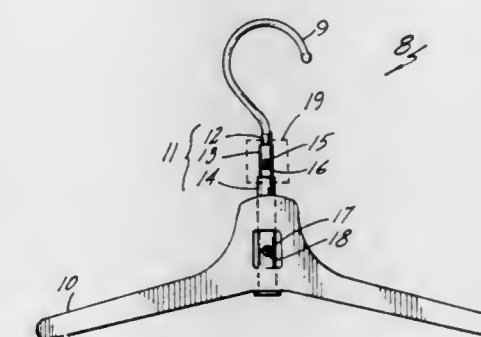
3,856,190 TELESCOPING COAT HANGER

Frank T. Mole, and Carmel E. Mole, both of 3400 Melvin Pl., Seaford, N.Y. 11783

Filed Dec. 26, 1973, Ser. No. 427,519
Int. Cl. A47j 51/10

U.S. Cl. 223-94

13 Claims



1. A telescoping device comprising in combination: first and second elements, the first being a female element and the second being a male element telescopically insertable into the female first element; the first element including in its inner wall surface a step indentation toward the outer wall thereof

stepping downwardly in a direction moving away from the point of insertion of the second element, and the second element having mounted thereon extending laterally from a side of the second element a spring-biased key means spring-biased laterally outwardly from the second element's side such that upon insertion of the second element within the first element the spring-biased key means outer end is ridable against the inner wall surface of the first element and is lockably snapable outwardly behind the step indentation securable of the second element telescopically within the first element, the first element further including a radially inwardly extending flange element and the second element further including a radially extending outwardly directed flange element with the inwardly extending flange element being aligned with and for engagement with the outwardly extending flange element such that when the spring-biased key means is not engaged lockably the male second element in the telescopically opening thereof is not separable from within the mouth of the female first element, the improvement being that at least one of said first element's inner wall surface lateral to the step indentation and of said spring-biased key means on a lateral side portion of an outwardly directed end face surface of a lock key projection includes a wedge-inclined surface such that upon lateral or rotary twisting of one of the first and second elements one relative to the other the key projection becomes pressed radially inwardly to thereby become unlockably released from a locked state behind the downwardly stepped step indentation thus permitting the male second element to be telescopically extended within the female first element, at least the female first element being cylindrical in shape.

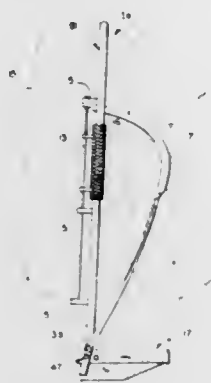
3,856,191 PACK FRAME

Harold J. Pohl, Washington, Mo., assignor to Kellwood Company, St. Louis, Mo.

Filed Apr. 28, 1972, Ser. No. 248,532
Int. Cl. A45f 3/10

U.S. Cl. 224-25 A

4 Claims



1. A pack frame comprising a pair of generally parallel, spaced-apart side frame members and cross members extending between the side members, a pair of shoulder straps for the pack frame and a hip belt comprising pad means engageable on the wearer's hips, a strap secured to the outside of the pad means adapted to encircle the wearer, means at the ends of the strap for fastening the hip belt in place on the wearer, and means for connecting a respective side member adjacent its lower end to the hip belt at each side of the belt as it is worn for transferring a portion of the weight of the load carried by the frame to the wearer's hips, said connecting means comprising at least one hole in the strap at each side of the hip belt, a hole in each side member adjacent its lower end, and a headed pin at each side of the hip belt extending through the respective hole in the strap and the hole in the respective side

member for connecting each side member adjacent its lower end to the hip belt, said strap being free in part of the pad means to permit the pin to be inserted through the hole in the strap from the side thereof toward the pad means and through the hole in the adjacent side member, with the head of the pin bearing against the outside of the pad means, said pad means including a relatively thin, stiff protector member between the head of each pin and the pad means, a body of resilient, flexible foam material of such length as to extend around the wearer's back from one side to the other, and a cover enclosing the foam material, said protector member being bonded to the outside of the foam and being enclosed within the cover, and said strap being stitched to the outside of the cover, so that the pad means including said protector member, when worn by the wearer, is interposed as a cushion between said headed fastener member and the wearer and said protector member prevents gouging of the wearer by said headed fastener member.

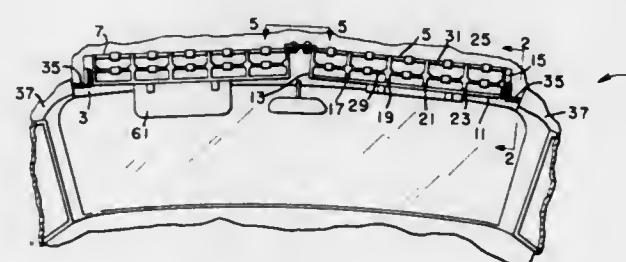
3,856,192 STEREO TAPE CARTRIDGE RACK

Charles R. Nelson, RD No. 1, Box 128, Duanesburg, N.Y. 12056

Filed June 18, 1973, Ser. No. 371,182
Int. Cl. B60r 9/00

U.S. Cl. 224-42.1 C

5 Claims



1. A stereo tape cartridge rack for mounting above a vehicle's windshield header, said stereo tape cartridge rack comprising sub-assemblies having bottom walls, inner and outer lateral side walls, intermediate walls, rear walls, middle ribs, middle divider strips and top divider strips defining compartments for storing stereo tape cartridges, said bottom walls being horizontally disposed, said lateral side walls being vertically upstanding from said bottom walls, said intermediate walls being vertically upstanding from said bottom walls and being between said lateral side walls, said middle ribs extending outwardly from said lateral side and intermediate walls and in transverse relationship thereto, said middle divider strips joining said middle ribs and said top divider strips joining the top portions of said lateral side walls and intermediate walls, said middle ribs being canted relative to said bottom walls, wherein said middle divider strips are coplanar with said middle ribs and wherein said top divider strips are parallel with said middle divider strips such that half said stereo tape cartridges emplaced in the storage compartments are correspondingly canted relative to the remaining emplaced stereo tape cartridges to present a wider open mouth end to facilitate grasping and removal of the stereo tape cartridges, and return and replacement of same in the storage compartments, the upper portions of said bottom walls, the inside portions of said lateral side walls, both sides of said intermediate walls, the inside portions of said rear walls, said middle ribs and the midportions of said middle divider strips and top divider strips includes means with compressible portions to guide the insertion of a stereo tape cartridge into its respective compartment by engaging the lateral sides, top, bottom and rear of the stereo tape cartridge with the thusly compressed portions of said means functioning to releasably retain the emplaced stereo tape cartridge and to prevent its rattling, said rack including mounting brackets, wherein said outer lateral side walls adjustably carry said mounting brackets and wherein

said mounting brackets are adapted to be suitably fixed to and carried by the vehicle's inside upper front window mouldings.

3,856,193

AUTOMOBILE WIND DEFLECTOR ASSEMBLY

John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation-in-part of Ser. No. 106,803, Jan. 15, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,572
Int. Cl. B60n 9/04

U.S. Cl. 224-42.1 D

7 Claims



1. A vehicle wind deflector including a blade of substantially uniform cross sectional shape and a pair of supporting brackets, each of said brackets having a socket portion and a base portion adapted to be fastened to a portion of the vehicle body, said socket portion conformably encircling one end of said blade, means on said brackets for securing the ends of said blade in said socket and a fixed elongated wall connecting said base portion and said socket portion which closes the space between said blade and the vehicle body at the opposite ends of said blade, said wind deflector comprises the rear portion of a luggage rack having a pair of opposite side rails with their rear ends supported on said wind deflector so as to be spaced above a roof portion of the automobile, said blade being oriented to deflect ambient air onto the rear window of the vehicle.

3,856,194

CAR TOP CARRIER ROOF OR DECK LID

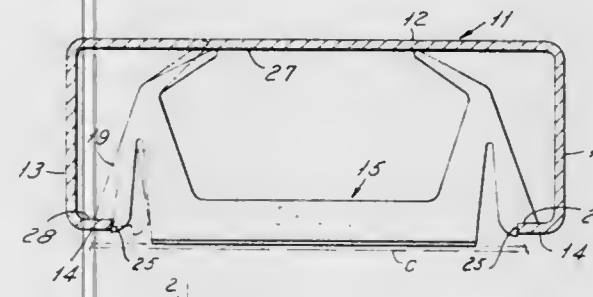
Frederick A. Helm, 9818 Grinnell Ave., Detroit, Mich. 48213

Filed Dec. 26, 1973, Ser. No. 428,190

Int. Cl. B60n 9/04

U.S. Cl. 224-42.1 D

31 Claims



1. In a car top carrier deck, the combination comprising a plurality of longitudinally extending strips adapted to extend along a car top, each said strip being channel shaped and comprising a base wall, spaced side walls and longitudinally extending portions extending inwardly toward one another, a plurality of plastic members positioned at spaced points within each said strip, each said plastic member comprising a relatively rigid central body having an exposed surface, relatively rigid side walls extending transversely from said central body, relatively rigid secondary walls extending from said side walls at a point spaced from the exposed surface and toward said exposed surface, each said relatively rigid secondary wall being connected to said side wall by an integral flexible portion,

each said secondary side wall having a free edge with a shoulder thereon receiving the inwardly extending portions of said strip, the distance between the free edges of said inwardly extending portions of said strip being less than the distance between said shoulders when said secondary walls are in the unflexed position, said plastic members having integral flexible portions extending from said side walls in a direction opposite from the central body portion engaging the inside of the strip and biasing the strip upwardly, and urging the inwardly extending portions of the said strip against said shoulders of said secondary walls, the distance between said inwardly extending portions of said strip and the inner surface of the base wall of said strip being less than the distance between the shoulders and the free edges of said flexible portions when the plastic member is in the unflexed condition, and a layer of pressure sensitive material on said exposed surface, said exposed surface when said plastic members are in position within said strip extending outwardly beyond the adjacent edges of said inwardly extending portions of said strip such that when the pressure sensitive surface is applied to a car top, the plastic members are adhered thereto holding said strip in position.

3,856,195

MOTOR VEHICLE ODOMETER SYSTEM

Tadao Kakizaki, Yoshiro Ichimaru, both of Yokohama, and Ryozi Arai, Sagami, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

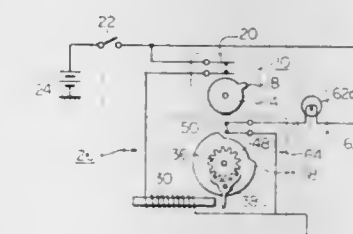
Filed Nov. 21, 1973, Ser. No. 417,784

Claims priority, application Japan, Dec. 7, 1972, 47-140847

Int. Cl. G01c 22/00; G06f 15/18

U.S. Cl. 235-97

7 Claims



1. A motor vehicle odometer system including a total odometer and an auxiliary odometer for producing a positive alarm signal to call the vehicle driver's attention to the vehicle having been driven a selected distance at which the vehicle is due for regularly scheduled inspection and maintenance services, said total odometer comprising first electrical means to produce signals at intervals corresponding to unit distances driven; said auxiliary odometer comprising a plurality of figure wheels, a cam wheel adjustably attachable to the last figure wheel of said plurality of figure wheels, advancing means to advance said plurality of figure wheels in response to said signals, second electrical means to generate said positive alarm signal, said selected distance being preset on said auxiliary odometer which is thereafter reset, said cam wheel being attached at presetting on said last figure wheel such that when said last figure wheel is turned by said advancing means to the position representing the most significant digit of said selected distance said cam wheel turning therewith closes the circuit of said second electrical means to generate said alarm signal.

3,856,196

CAPSTAN DETACHER

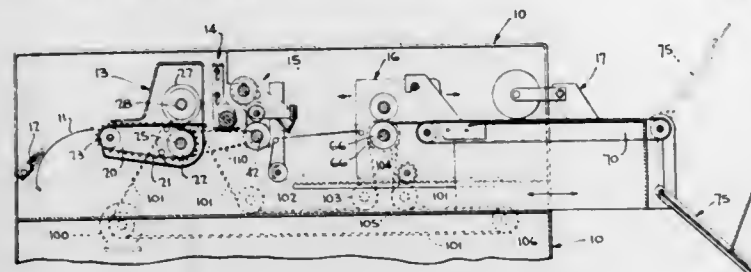
Justin A. Bayne, East Rochester, N.H., and James J. Knize, Lewiston, N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Jan. 26, 1973, Ser. No. 327,230

Int. Cl. B26f 3/00

U.S. Cl. 225-100

4 Claims



1. A machine for detaching sheets from continuous cross-perforated webs, comprising a constant tension constant speed infeed mechanism which comprises pinfeed tractor device for the web, a pair of high speed pull rolls for seizing the successive new ends of the web and bursting sheets therefrom, means for driving said pull rolls continually at a speed greater than that of the infeed mechanism, and a free-running snubber roll bearing upon the web beyond the tractor device, whereby the resistance of the web to the pulling force of the pull rolls is solely effected by the retarding effect of the constantly applied tension of the normal feed of the infeed mechanism, said snubber roll bearing the brunt of the restraining force on the web.

3,856,197

GUIDE ROLLERS

Ewart H. Doe, Houghton, Near Stockbridge, and William J. Linforth, Chandlers Ford, Near Eastleigh, both of England, assignors to Twyford Moors (Aircraft & Engineering) Limited, Eastleigh, England

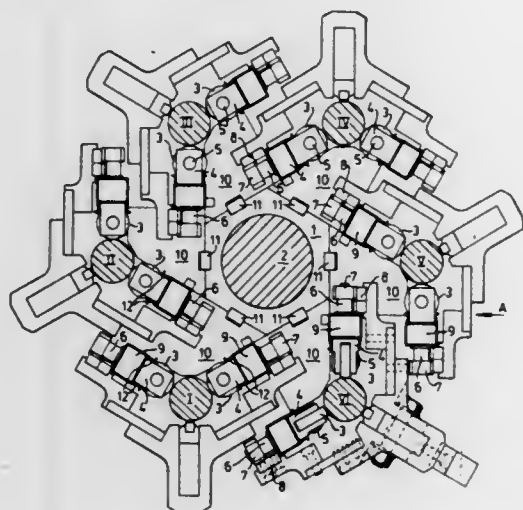
Filed Dec. 11, 1973, Ser. No. 423,866

Claims priority, application Great Britain, Dec. 28, 1972, 59896/72

Int. Cl. B65h 17/22

U.S. Cl. 226-181

8 Claims



1. In a bar feeder, having a guideway and drive means, to feed bar stock material longitudinally through said guideway to a rotatable collet of a machine tool, at least one idler roller rotatable about an axis of rotation, for bearing against said bar stock material and cooperating with said drive means, mounting means for the idler roller and control means connected to said mounting means for orientating said idler roller with said axis perpendicular to the longitudinal extent of the guideway during operation of said drive means to feed said bar longitudinally through said guideway, and for orientating said idler

roller with said axis parallel to the longitudinal extent of the guideway during machining of the bar by the machine tool.

3,856,198

INTEROFFICE ENVELOPE

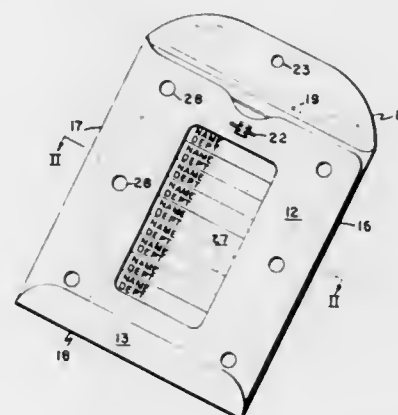
Robert S. Daley, Worcester, Mass., assignor to Daley Inc., Worcester, Mass.

Continuation of Ser. No. 264,227, June 16, 1972, abandoned, which is a continuation of Ser. No. 34,494, May 4, 1970, abandoned. This application Aug. 27, 1973, Ser. No. 391,885

Int. Cl. B65d 27/04, 27/08

U.S. Cl. 229-71

2 Claims



1. A dual pocket interoffice envelope composed of a unitary sheet, scored and folded to define a rectangular back panel, an intermediate panel hinged to one side back panel and folded over and against said back panel, a front panel hinged to the opposite side of said back panel and folded over and against said intermediate panel and substantially completely covering the same, the front panel and the intermediate panel acting as front and back walls of a pad pocket, said front panel having a window therein, a pad residing in the pad pocket each sheet of which is printed with indicia in registry with the window for a series of successive addresses, a bottom flap hinged to the bottom of said back panel and folded over and against said front panel, securing means on said back panel and having means thereon to cooperate with the securing means on said front panel to close not only a relatively large main pocket formed between the back panel and the intermediate panel, but also the relatively small pad pocket formed between the intermediate panel and the front panel, and spaced lines of adhesive applied between the intermediate panel and the front panel to define the limits of the second pocket to size substantially the same as the pad to maintain the indicia in registry with the window despite handling of the envelope.

3,856,199

ARRANGEMENT FOR SEALING A TUBE FOR KEEPING DOCUMENTS OR SIMILAR CONTAINER

Kaj G. Gartz, Tullinge, Sweden, assignor to K. G. Hansson AB, Tullinge, Sweden

Filed Aug. 1, 1972, Ser. No. 276,947

Int. Cl. B65d 3/04, 3/10

U.S. Cl. 229-93

7 Claims

1. An arrangement for sealing a capped container, particularly a tube for documents, comprising a cap fully seated on the container, a wall portion of said cap and a wall portion of said container being in overlapping relationship, an abutment on one of said container and said cap for limiting the overlap of said wall portions, openings of a given size in each of said wall portions in partial alignment with one another, said container opening having a resilient edge portion partially overlying said cap opening and said cap opening having an edge portion partially overlying said container opening thereby forming a passageway between openings of a size smaller than the size of each opening, a rigid locking member having spaced first and second heads interconnected by a shank, said

3,856,201

TEMPERATURE REGULATING CONTROL VALVE

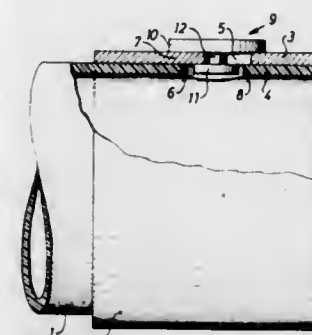
David C. Genever-Watling, Forest Park, and Howard B. Kast, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,271

Int. Cl. G05d 23/00

U.S. Cl. 236-93

7 Claims



first head overlying said cap opening, whereby said abutment prevents relative sliding movement of said wall portions in one direction, and contact between said shank and said cap opening edge portion and between said second head and said resilient edge portion prevents relative sliding movement of said wall portions in an opposite direction.

3,856,200

DAMPING DEVICE FOR RAPIDLY SPINNING ROTARY BODY

Helmut Lieb, Unterhaching, Germany, assignor to Maschinenfabrik Augsburg-Nürnberg AG, Munich, Germany

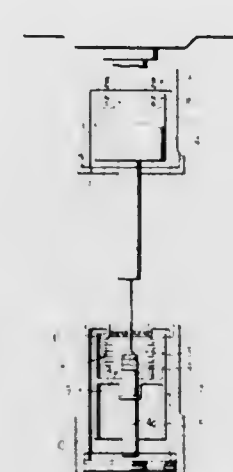
Filed May 11, 1972, Ser. No. 252,192

Claims priority, application Germany, May 13, 1971, 2123654

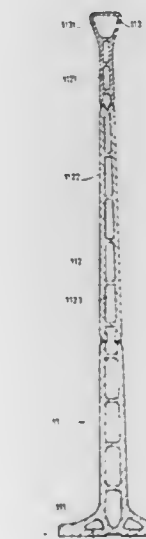
Int. Cl. B01d 21/26

U.S. Cl. 233-1 C

10 Claims



1. A device for damping a rapidly spinning rotary body supported in a damped thrust bearing means, which includes a housing nearly completely filled with a damping oil arranged between the rotary body and the thrust bearing means and positively coupled with the rotary body, and a damping means immersed in said housing, said damping means being movably connected with the housing and being movable against a restoring force relative to the housing, and the housing being connected, by way of a flexible support means, with a bearing pin which is carried in the thrust bearing means and axially supports the damping means, characterized by a system of magnets arranged in both the housing and the damping means including magnet means forming two magnetized poles of the same sign which are disposed mutually opposite one another.



1. An assembly of track elements adapted to provide guide and traction means for a linear motor vehicle of the type

1. A high temperature fluid control valve consisting of a housing defining an inlet, an outlet, and a first piston chamber; a thermal regulating piston positioned within said chamber, said piston cooperating with said housing to define a variable flow orifice between said inlet and said outlet; a temperature responsive servo for controlling the pressure on a first face of said piston, said servo forming a portion of a mechanically unloaded control bleed loop around said variable flow orifice, and feedback means connected between said piston and said servo.

3,856,202

TRACK ELEMENT FOR LINEAR MOTOR VEHICLES AND A TRACK USING SUCH AN ELEMENT

Francois Colas, 10 Avenue de Petit Chambord, Bourg-la-Reine, and Claude Gregorian, 4 Allee Racine, Sevran, both of France

Filed Dec. 1, 1972, Ser. No. 311,109

Claims priority, application France, Dec. 1, 1971, 71.43129

Int. Cl. E01b 11/00, 25/00

U.S. Cl. 238-122

8 Claims

carrying an inductor for cooperation with armature means associated with the track, each said element comprising a vertically extending limb, cavities defined by said limb at the ends thereof, a tubular bead-shaped portion of transverse rigidity extending along the top of said limb, cavities defined by said tubular portion at the ends thereof, at least some of the cavities in said limb and in said tubular portion comprising passages extending along the length thereof, means for joining the elements end-to-end to form the track, said joining means comprising fish-plate means which comprise a sealing joint of resilient material extending between the adjacent ends of said elements, at least one fish-plate being received within two adjacent cavities in a lower section of said elements and at least one additional fish-plate being received within the adjacent cavities of tubular portions of said elements, the upper section of said limb forming said armature, and wherein the exterior walls of said upper section diverge outwardly from the top of said limb at an angle between 2° and 5° relative to each other.

3,856,203

DRINKING FOUNTAIN ATTACHMENT

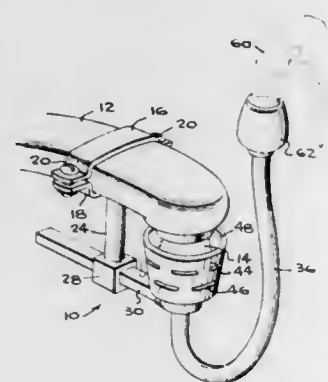
Charles F. Clark, P.O. Box 86, Roanoke, Va. 24002

Filed Oct. 31, 1973, Ser. No. 411,203

Int. Cl. E03b 9/20

U.S. Cl. 239-27

6 Claims



1. A drinking fountain attachment connectable to a conventional water discharge pipe of the type extending horizontally and having a downward facing water discharge opening, said attachment comprising clamp bracket means dimensioned to clampingly fit over the horizontal portion of a water discharge pipe at a location upstream from said downward facing discharge opening, support rod means extending from said clamp bracket means, an upwardly flaring conical flow directing cup supported on one end of said support rod means, said flow directing cup being open on its upper end and including a conical side wall including a plurality of openings for permitting the egress of excess water and pressure in said cup and an outflow opening in its lowermost portion, conduit means comprising a plastic tube member having an embedded wire enabling an easy manipulation of said conduit to a desired position in which the conduit will remain until subsequently repositioned and having one end connected to said outflow opening and an opposite end spaced transversely from said flow directing cup facing upwardly so that water flow directed by said flow directing cup into the end of said conduit is projected upwardly out of said other end in a fountain-like manner and pivotal connector means including a pivot pin supported for rotation about its axis in an opening in said bracket means pivotally connecting said support rod means to said bracket means for swinging movement of said support rod means in a horizontal plane so that said support rod can be positioned in a first position in which said flow directing cup is spaced beneath said discharge opening of said pipe in alignment with said discharge opening to receive water from said discharge opening and an inoperative position transversely spaced away from beneath said discharge opening so as not to interfere with normal operation of said water discharge pipe wherein said support rod means is connected to said pivot pin

by means of a rod clamp housing portion on the lower end of said pivot pin defining an aperture in which said support rod is slidably positionable and holding means engageable with said support rod for maintaining said support rod in an adjusted position.

3,856,204

GAS EMITTING DEVICE

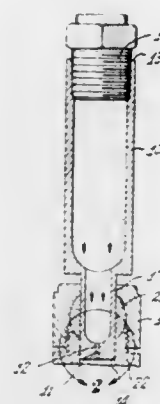
Ramesh Chand, Santa Susana, Calif., assignor to Ecology Board, Inc., Los Angeles, Calif.

Filed Mar. 12, 1973, Ser. No. 340,300

Int. Cl. A24f 25/00; A61l 9/04

U.S. Cl. 239-34

29 Claims



1. A device for emitting a gaseous substance at a predetermined rate, comprising:
a sealed vessel for holding said substance under pressure, said vessel being impermeable to said substance and having an exit for emission of said substance; and
a quantity of permeable polymeric silicone material positioned in said exit, said material having a permeability which decreases with increasing temperature and constant pressure in said vessel, whereby said substance permeates through said material and is emitted from said vessel at the predetermined rate, and said device has a characteristically low overall sensitivity to temperature variations.

3,856,205

PLANT WATERING DEVICE

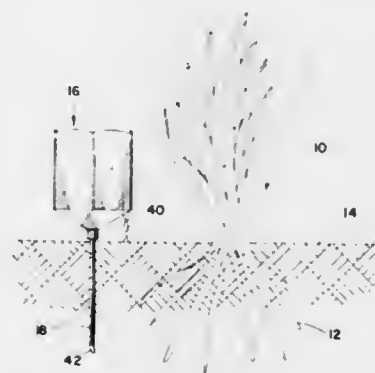
Hermann Rohling, 4160 Pearl Rd., Cleveland, Ohio 44109

Filed July 18, 1972, Ser. No. 272,847

Int. Cl. A01g 25/00; B05b 1/30

U.S. Cl. 239-63

10 Claims



1. A plant watering device comprising,
a container having an upwardly opening fill passage for receiving water,
said passage extending through the otherwise imperforate top of said container and including structural means for preventing air flow into the container through said passage subsequent to filling said container with water, said container including sidewalls extending from said wall to a bottom,

said container being supported such that it is above the lowest extent of the roots of the plant it is to water;
a standpipe projecting from below through the bottom of the container and extending upward within said container, said standpipe being hollow and defining a fluid passage from one end to the other;
a tube for placing in fluid communication with a point in the soil near the lowest extent of the roots and extending into the container and terminating above the upper level of the standpipe;
a discharge passage having its inlet near the bottom of the container,
said discharge passage extending upward and then downward to connect in fluid communication with the lower part of said standpipe.

3,856,206

THERMOSENSITIVE FLOW CONTROL DEVICE

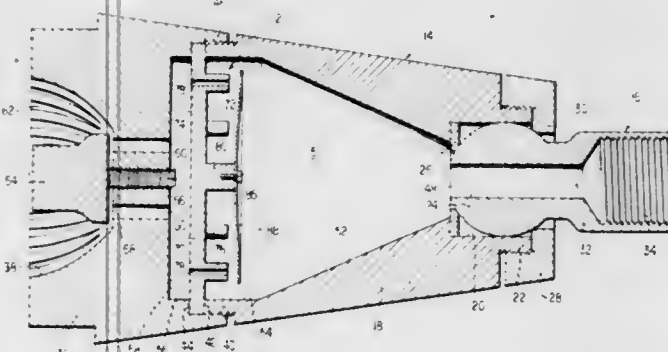
Edward H. Bell, and John R. Bell, both of Monogahela, Pa., assignors to American Standard Inc., New York, N.Y.

Filed July 26, 1973, Ser. No. 382,734

Int. Cl. A62c 37/00, 37/34

U.S. Cl. 239-75

15 Claims



1. A flow control device which retards flow of a liquid stream when the stream temperature exceeds a predetermined first temperature and which restores full flow when the stream temperature drops to or below a predetermined second and lower temperature, said device comprising:

a flow head connected to said liquid stream;
flow port means in said head through which said liquid stream flows;
a temperature responsive disc connected to said flow port means and positioned a preselected distance therefrom when said stream temperature is less than said predetermined first temperature, to permit full stream flow through said flow port means;
said disc having at least a portion thereof free for flexural movement toward and away from said flow port means with such flexural movement occurring in response to temperature variations in said liquid stream;
said disc arranged and constructed to be flexed toward said flow port means when said stream temperature exceeds said predetermined first temperature, to partially close said flow port means to provide a controlled reduced stream flow through said flow port means;
said disc portion arranged and constructed to be flexed away from said flow port means and returned to its predetermined spacing at said preselected distance from said flow port means when said stream temperature drops to or below said predetermined second and lower temperature, whereupon full stream flow through said port means is restored.

3,856,207

SPRAY DEFLECTOR AND ARRANGEMENT FOR ROTATABLE SPRINKLERS

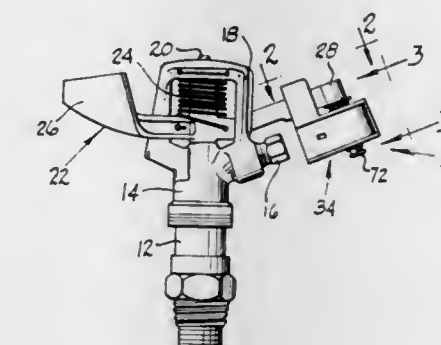
Charles E. Rees, Jr., Fresno, Calif., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Oct. 12, 1973, Ser. No. 405,953

Int. Cl. B05b 3/02, 3/14

U.S. Cl. 239-230

20 Claims



1. In a rotatable sprinkler including a sprinkler jet and an oscillatable arm projecting beyond and at one side of said jet, a water deflector arrangement, comprising:

a. a cylindrical pin connected with and extending from said oscillatable arm, said pin being movable into the path of water issuing from said jet;
b. a water deflector having a front end, a back end, opposite top and bottom surfaces extending between said front and back ends and opposite side surfaces extending between said ends, said deflector including a passageway extending therethrough from said top surface to said bottom surface;
c. said cylindrical pin extending through the passageway of said deflector such that
i. said deflector is pivotally movable about said pin,
ii. the front end of said deflector faces substantially away from said sprinkler jet, and
iii. at least one of the side surfaces of said deflector is adapted to deflect water issuing from said jet when said pin moves into the path;
d. said passageway including a longitudinal segment through which a longitudinal portion of said pin passes, said passageway segment having a predetermined cross-sectional configuration such that those surfaces of said pin portion which face the front and back ends of said deflector during pivotal movement of said deflector are at all times out of contact with said deflector.

3,856,208

SUPPORT AND COUPLING FOR WATER SPRINKLERS

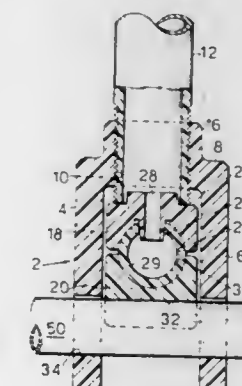
Natan Naftaly, 27 Ousha St., Kiryat Mozkin, Israel

Filed Aug. 3, 1973, Ser. No. 385,256

Int. Cl. B05b 3/06

U.S. Cl. 239-251

8 Claims



1. A support and coupling device for water sprinklers and the like, including a housing for receiving a water distribution line and a water sprinkler pipe, and a connector for connecting the water distribution line to the water sprinkler pipe,

characterised in that the housing further includes a stabilizing tube having a straight portion rotatably adjustable within the housing, and a bent end the tip of which is adapted to engage the ground for steadily supporting the housing on sloping or uneven ground.

3,856,209

PRESSURE SPRAY CAN HOLDING AND OPERATING APPARATUS

John D. Hickson, 5986 - 17A Ave., Beach Grove, Delta, B.C., Canada

Filed Jan. 7, 1974, Ser. No. 431,354

Int. Cl. B05b 15/06

U.S. Cl. 239-532

13 Claims



1. Apparatus for holding and operating pressure spray cans holding liquid under pressure and having at one end an outlet controlled by a normally-closed valve, said valve being movable to open the can outlet to permit liquid to spray there-through, comprising an elongated handle, a carrier swingably mounted on the handle near an end thereof for movement between a position substantially parallel to the handle and a position substantially normal thereto, securing means for holding the carrier in any adjusted position relative to the handle, gripping means on the carrier for holding a spray can thereon, an operating pin, holding means retaining the pin in a position adjacent the valve of the can on the carrier, said pin being movable relative to the holding means, cable means connected to said operating pin and extending therefrom to near an opposite end of the handle, said cable means permitting swinging movement of the carrier, and a trigger mounted on the handle near said opposite end and connected to said cable means and operable to cause through said cable means movement of said pin into engagement with said valve, thereby causing liquid to spray through the can outlet.

3,856,210

FLAIL TYPE MATERIAL SPREADER

James H. Hodgson, Vinton, Iowa, assignor to Chromalloy American Corporation, St. Louis, Mo.

Filed Jan. 28, 1974, Ser. No. 436,967

Int. Cl. A01c 3/06, 15/14

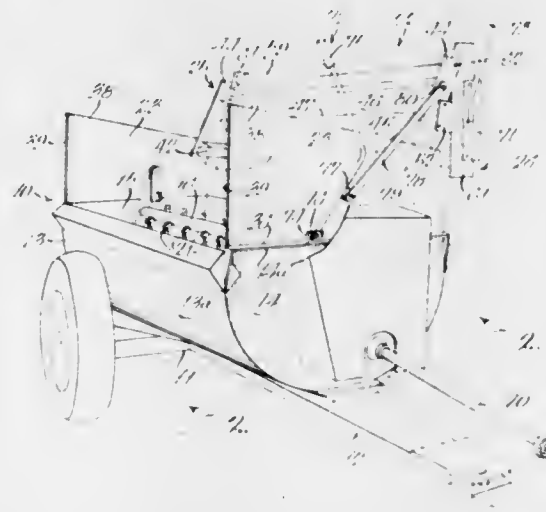
U.S. Cl. 239-658

11 Claims

1. In a material spreader of the type which has a container generally in the form of the bottom half of a cylinder with parallel end walls, a shaft journaled on the axis of said cylinder, flexible flails on said shaft, and means for driving said shaft so the flails discharge material over a first side of said

container, a spreader upper structure comprising, in combination:

an upper side panel surmounting the second side of said container, said upper side panel having a plurality of angularly related planar portions all of which lie outside but closely adjacent to a cylindrical projection of said half a cylinder, the two uppermost of said portions defining a side and top of a recess which is open toward the first side of the container and forming a rigidifying beam; upper end panels surmounting the end walls, said upper end panels having nearly horizontal top edges; means connecting said upper end panels to said upper side panel; opposed pivot bosses on the end panels which extend into said recess; a cover which includes a pivot tube journaled on said pivot bosses, a sheet metal body which has a first marginal portion secured to said pivot tube, a plurality of angularly related planar body portions all of which lie outside of but closely adjacent to said cylindrical projection, a free marginal body portion having angularly related parts defining a pocket which is close to the apex of the container and which is open toward the first side of the container.



and parallel upright flanges at the ends of said cover which project beyond the open side of said pocket; interengaging means on the cover end flanges and on the upper end panels to support the cover in closed position; a cover extension pivotally mounted on the projections of the cover end flanges outside the pocket, said cover extension including a tube which is below said pivotal mounting and partly within said pocket in spaced relationship to the cover parts that define the pocket, a sheet metal body which has a first marginal portion secured to the upper part of said tube, a plurality of angularly related planar body portions including a marginal portion forming an upstanding flange, and parallel upright end plates including means resting on the top edges of the end panels when the cover extension is closed, and lever means at an end of the spreader for moving said cover extension and said cover between their closed and open positions, said cover extension being rotatable by said lever means on its pivotal mounting to an open position resting on the upper webs of the support brackets, and the cover being rotatable on the pivot bosses by said lever means, when the cover extension is open, to an open position inclined outwardly from the vertical.

3,856,211

MATERIAL SPREADER UTILIZING PLUG-IN MATERIAL CONTAINER

Marvin E. Williams, Marysville, Ohio, assignor to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Feb. 16, 1972, Ser. No. 226,822

Int. Cl. A01c 17/00

U.S. Cl. 239-685

52 Claims



1. A material spreading combination, comprising a wheeled spreader unit and a separate material container-hopper means, said spreader unit comprising: means for receiving and maintaining said container-hopper means in a predetermined disposition on said spreader unit and for simultaneously enabling discharge of material from a lower portion of said container-hopper means; a rotary material spreading device having a powered drive connection providing rotation during spreader unit operation; and material flow directing means adjacent said container-hopper means lower portion for receiving and passing material from said container-hopper means during spreader operation to said rotary material spreading device, whereby said container-hopper means is a separate, material container when dissociated from said spreader unit and is a hopper when received on said spreader unit, during said spreader operation.

3,856,212

FEEDING ASSIST MEANS FOR A WOOD CHIPPER

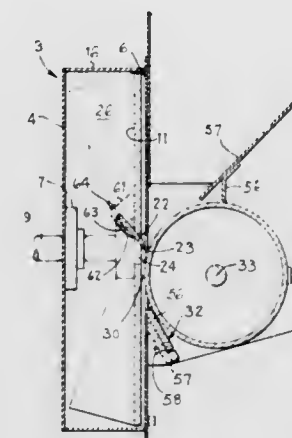
Albert Swatko, Kingston, Pa., assignor to Royer Foundry and Machine Co., Kingston, Pa.

Filed Aug. 2, 1973, Ser. No. 385,185

Int. Cl. B02c 23/02

U.S. Cl. 241-56

6 Claims



1. In a wood chipping device having a rotatable disk, cutting knives on a face thereof and openings through said disk at

locations adjacent the cutting edges of said disk, air blast creating means on the side of the disk opposite said knives for drawing a current of air through said openings and expelling said air and said chips through discharge means, the improvement comprising feeding assist and anvil means comprising: a freely rotatable roller positioned closely adjacent a surface of said disk spaced therefrom sufficiently to clear said knives and form an anvil means for said knives and a mounting device for supporting same rotatably about an axis substantially perpendicular to the direction of travel of said knives at the moment of cutting; means substantially tangent to said roller and forming an acute angle to the face of said disk for guiding workpieces against said disk for chipping thereof.

3,856,213

METHOD OF PRODUCING KAOLIN CLAY FROM ORE HAVING SILICA SAND CONTENT

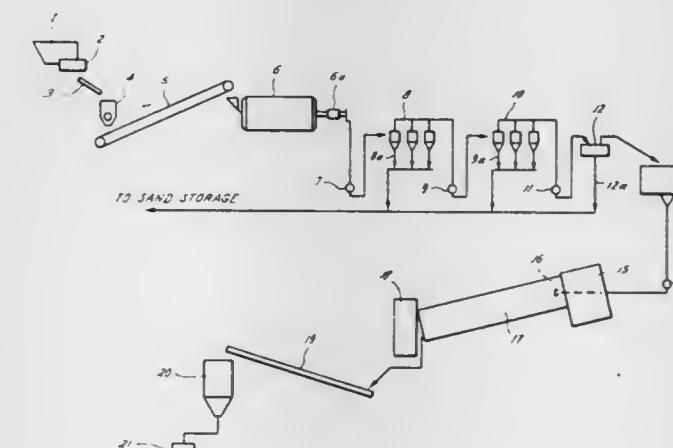
Lucius B. Dulaney, Houston, Tex., and Erwin F. Theobald, Sutter Creek, Calif., assignors to Kaolin Corporation, Sutter Creek, Calif.

Filed Apr. 12, 1973, Ser. No. 350,399

Int. Cl. B02c 21/00

U.S. Cl. 241-4

3 Claims



1. A method of recovering kaolin clay from raw ore having a silica sand content in quantities that inhibit air separation of the silica sand from the kaolin clay comprising the steps of: a. preparing a slurry of the ore; b. moving the ore slurry to reduce the particle size of the kaolin clay to substantially the normal particle size present in the raw ore; c. separating the silica sand from the kaolin clay slurry; and d. drying the kaolin clay slurry wherein the drying atmosphere temperature is not greater than approximately 1,100°F. and the exposure time of the kaolin clay slurry in such heated atmosphere is not longer than approximately 30 seconds.

3,856,214

MATERIAL PULVERIZING SYSTEM

Robert Paul Kaltenbach, Worcester, and Wayne C. Rogers, West Boylston, both of Mass., assignors to Riley Stoker Corporation, Worcester, Mass.

Filed Jan. 4, 1974, Ser. No. 430,906

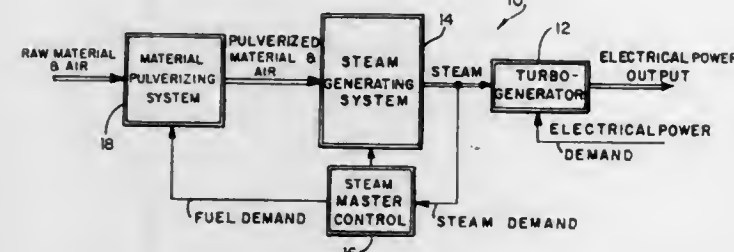
Int. Cl. B02c 25/00

U.S. Cl. 241-34

33 Claims

1. A material pulverizing system comprising a power operated pulverizing mill for providing a pulverized material output in response to a variable mill output demand signal, means for feeding pulverizable material to said mill at a variably controlled feeding rate and means for automatically controlling the feeding rate of said feeding means, said automatically controlling means comprising

first means for generating a first electrical signal indicative of the power consumed by said mill,
second means for generating a second electrical signal indicative of the sonic intensity of said mill,
third means for generating a third electrical signal indicative of said mill output demand signal and



fourth means for generating an output control signal for controlling the feeding rate of said feeding means in response to said first, second and third electrical signals.

3,856,215

ENCrustation-PREVENTING DEVICE FOR FLUID ENERGY TYPE MILLS

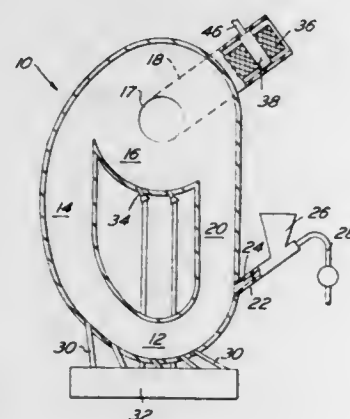
Edward Van Vliet, Doylestown, Pa., assignor to Fluid Energy Processing & Equipment Company, Hatfield, Pa.

Filed Oct. 23, 1973, Ser. No. 408,451

Int. Cl. B02c 19/06

U.S. Cl. 241-39

10 Claims



1. In a centrifugal type grinding mill wherein granular material is centrifugally passed through the mill in a vortex action by gaseous fluid whereby the particles pulverize each other and are then centrifugally separated into smaller and larger particles, and wherein the smaller particles are centrifugally exhausted through an outlet duct, the improvement comprising an anti-encrustation assembly which comprises a screen in said outlet duct, said screen having a cross-sectional contour conforming to the interior cross-sectional contour of the duct but being radially inwardly spaced from the interior wall surface of said duct, and fluid delivery means to deliver gaseous fluid between said screen and said interior wall surface of said duct in a manner to propel said gaseous fluid radially inward through said screen.

3,856,216

SYSTEM AND APPARATUS FOR CLEANING BAR GRID

Roger W. Teague, and Richard Paul Snyder, both of Largo, Fla., assignors to General Signal Corporation, New York, N.Y.

Division of Ser. No. 275,914, July 28, 1972. This application July 11, 1973, Ser. No. 378,139

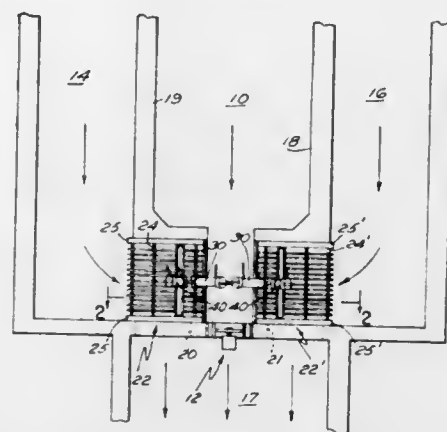
Int. Cl. B02c 18/40

U.S. Cl. 241-46 R

4 Claims

1. In a system including a flume in which waste material flows, a grid for separating and retaining large solid particles of waste matter from said waste material and a disintegrator for reducing the size of said solid particles, the improvement

comprising a plurality of vertical walls providing at least two individual inlet channels and a common discharge channel, one inlet channel terminating in a wall containing a disintegrator, the other inlet channel directing the flow through the grid,



said disintegrator and said grid discharging into said common discharge channel, said grid having an automatic rake mechanism for periodically removing said solid particles from said grid and directing said particles to said disintegrator.

3,856,217

COMBINATION SHREDDER AND AIR-CLASSIFICATION EQUIPMENT

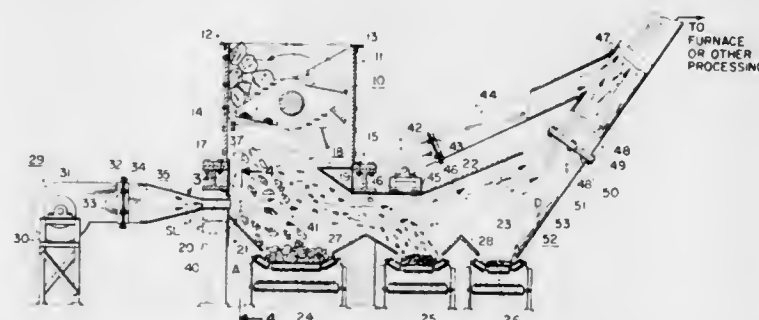
John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed June 4, 1973, Ser. No. 366,987

Int. Cl. B02c 13/06; B07h 4/02

U.S. Cl. 241-79.1

3 Claims



1. In combination, revolving blade means for shredding materials including metals in pieces; means disposed immediately and essentially vertically beneath said shredding means for directly receiving and air-classifying said pieces, including metals, into a plurality of groups progressively spaced from said air-classifying means, which groups are of essentially differing characteristic weights, the progressively lighter of said groups being progressively farthest removed from said air-classifying means, said air-classifying means including means for producing a vertically thin, horizontally elongate stream of classifying air, and means proximate said air-classifying means for separately receiving said groups, wherein said separately receiving means comprises plural, parallel, endless belt-type conveyors having respective, corresponding, opposite side edge margins, and wherein said combination includes upwardly convex divider means overlapping corresponding side edge margins of said conveyors.

3,856,218

WASTE REDUCTION APPARATUS

Grady R. Harmon, Lafayette; John D. Norman, and Guy M. Tadlock, both of Auburn, all of Ala., assignors to R. Bogan Renfro and Harmon Engineering, both of Atlanta, Ga., part interest to each

Filed Nov. 21, 1972, Ser. No. 308,546

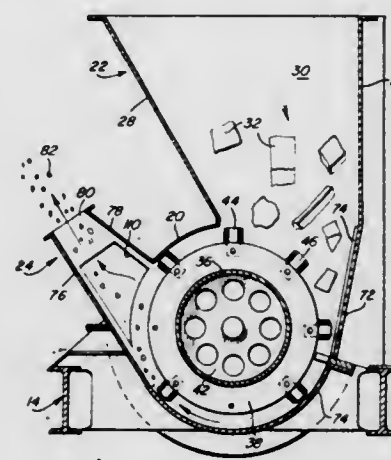
Int. Cl. B02c 13/04, 13/288

U.S. Cl. 241-186 R

8 Claims

1. A solid waste reduction apparatus comprising, in combination:

- a housing support means constructed to include a horizontally oriented, substantially cylindrical shaped portion defining a material reduction area, said housing including horizontally spaced, upwardly projecting wall means defining a vertically oriented material entrance passageway, said passageway detailed in location whereby material can flow by gravity through said passageway into said material reduction area, and wherein said housing includes a material discharge passageway projecting substantially radially from said cylindrical shaped portion;
- a cutting assembly rotatably supported in said material reduction area, said cutting assembly including a plurality of axially spaced circular discs, with each disc having a plurality of cutting elements pivotally supported and circumferentially spaced adjacent the edge of said disc,



said disc detailed in shape and location to provide a rotary supporting surface beneath and adjacent the bottom of said material entrance passageway for supporting material to be automatically fed by gravity during a cutting operation, said cutting elements detailed in size and location to be capable of pivotal movement to an inoperable cutting position completely within the circumference of said disc and movement to an operable cutting position projecting radially from said disc; and

- anvil means supported on said housing for cooperation with said cutting elements for effecting a reduction of material introduced through said entrance passageway, said anvil means including a plurality of anvil elements, one anvil element axially spaced and aligned with each of said discs and detailed in length to extend to a position adjacent the circumferential edge of said disc.

3,856,219
BONE MILL

LeRoy M. Stayton, and Theodore L. Herling, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1972, Ser. No. 293,735

Int. Cl. B02c 1/00; B26d 1/10

U.S. Cl. 241-263

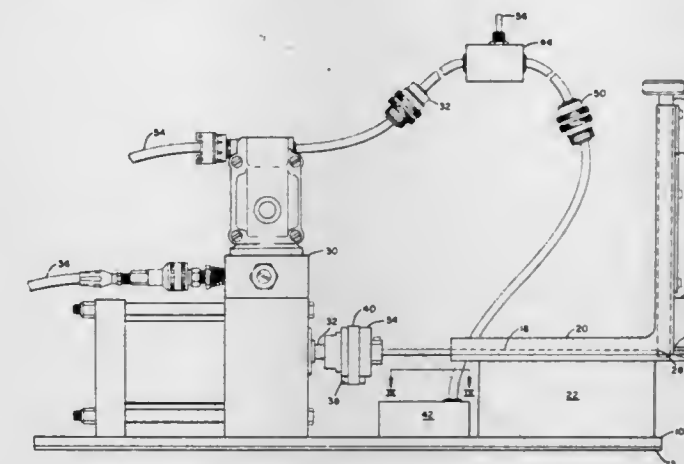
2 Claims

1. A bone mill for converting cadaver bone into controlled size fragments comprising:

- a bone supply channel;
- a weighted feed rod located within said channel for pressing against a cadaver bone;
- said rod fitting closely within said channel;
- a shear channel perpendicularly intersecting said bone supply channel to form an aperture of constant cross section extending through the opposite walls of said bone supply channel;
- a serrated shear bar having a set of teeth of stair-step configuration slidably movable within said shear channel and through said aperture;

means for reciprocating said bar to move completely across said bone supply channel for causing the interaction of said teeth and the bottom edge of said supply channel

against a bone to shear the bone into controlled size fragments;
said reciprocating means comprising
an air cylinder including a two-way piston shaft;
a pair of magnetic reed switches;
a linear alignment coupler connecting said piston shaft and said bar;
a magnet attached to said coupler for alternately actuating said reed switches;



said reed switches being parallel to and adjacent the movement of said magnet;

a valve on either side of said piston shaft for introducing compressed air into said cylinder; and

a solenoid associated with each said valve for opening and closing said valves in response to an electrical signal from said reed switches.

3,856,220

BLADES FOR FOOD PREPARING MACHINE

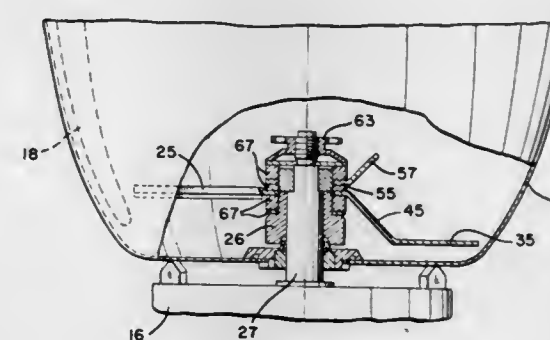
Barrett Bradford Waters, Sheridan, Wyo., assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Mar. 26, 1973, Ser. No. 345,207

Int. Cl. B02c 18/12

U.S. Cl. 241-282.1

6 Claims



1. In an apparatus for comminuting and mixing materials, including a container having a bottom wall surrounded by a side wall, a drive shaft rotatably passing through the bottom wall, and a motor drivably connected to the rotatable shaft for rotation thereof, this improvement comprising:

- an upper knife blade and a lower knife blade mounted on the shaft adjacent the bottom wall of the container, said upper knife blade having a beveled leading edge surface portion facing generally the bottom wall, and said lower knife blade having a beveled leading edge surface portion facing away from the bottom wall to effect optimum mixing and comminuting of material within the container, and
- a third knife blade mounted on the shaft above said upper blade and having a portion projecting upwardly at an inclined angle relative to said upper knife blade, said upwardly projecting portion having a radial extent approximately one-fourth that of said lower knife blade and including a beveled leading edge surface portion.

3,856,221

PUSH-PULL STATOR WINDING APPARATUS AND METHOD

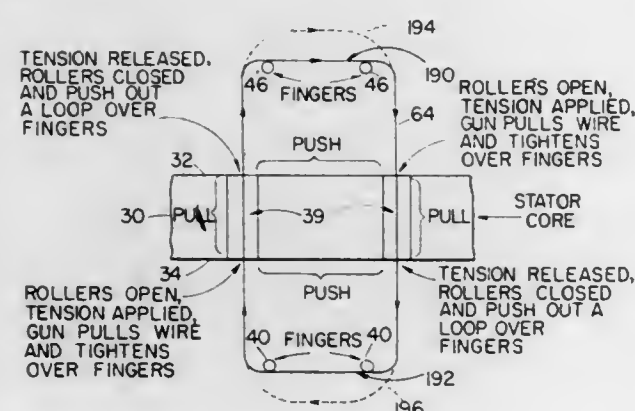
Robert E. Arick, Fort Wayne, Ind., and Ralph A. Vogel, Three Rivers, Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Sept. 4, 1973, Ser. No. 394,323

Int. Cl. H02k 15/085

U.S. Cl. 242-1.1 R

24 Claims



1. In apparatus for winding dynamoelectric machine stator core members which have opposite sides and radially inwardly extending polar projections with inner ends defining a bore having an axis and defining winding slots therebetween, said apparatus comprising means for holding a stator core member to be wound, a winding gun mounted for axial movement through said bore and for rotary movement about said axis, said gun including means for dispensing wire radially with respect to said axis, means coupled to said gun for reciprocally moving the same axially through said bore between predetermined extreme positions spaced respectively from said opposite sides of said stator core member, and means coupled to said gun for rotating the same in one direction between first and second predetermined angularly spaced positions respectively aligned with two of said slots when said gun is on one side of said stator core member and in the opposite direction between said angularly spaced positions when said gun is on the other side of said stator core member whereby wire dispensed by said dispensing means forms a coil with side portions respectively in said two slots and with end turn portions respectively on said opposite sides of said stator core member and connecting said side portions; the improvement comprising means for feeding wire from a source to said dispensing means including selectively actuatable means for withdrawing wire from said source and for pushing the same through said dispensing means at a linear rate faster than the rate of movement of said gun, and means for actuating said withdrawing and pushing means during formation of said end turns and deactivating the same during dispensing of wire into said slots, whereby said gun and dispensing means pulls wire from said source during dispensing thereof into said slots and said wire is pushed at a faster rate during formation of said end turns initially to form enlarged end turn loops which thereafter are pulled behind previously formed end turns.

3,856,222

METHOD OF AUTOMATICALLY CHANGING WINDING TUBES AND WINDING APPARATUS FOR IMPLEMENTING THE AFORESAID METHOD AND IMPROVED SPOOL DOFFING MECHANISM

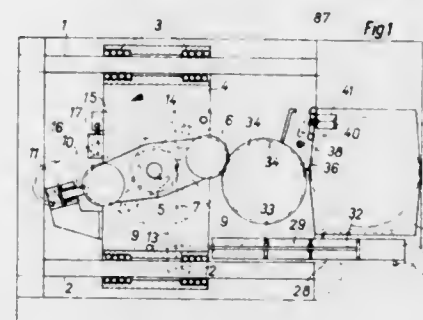
Olivier Wust, Seuzach, Switzerland, assignor to Rieter Machine Work Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 76,181, Sept. 28, 1970, abandoned. This application Apr. 13, 1973, Ser. No. 350,793 Claims priority, application Switzerland, Oct. 3, 1969, 15021/69; Jan. 22, 1973, 854/73; Feb. 2, 1973, 1547/73

Int. Cl. B65h 54/06

U.S. Cl. 242-18 A

66 Claims



1. A method of automatically changing two tubes, each of which have been positioned upon a respective mandrel arranged on a movable member and rotatable such that said tubes alternately contact a friction drive drum for taking up an endless thread delivered at high speed in a winding device, comprising the steps of rolling the full package wound upon one of the tubes during such time as the desired package size is reached along the friction drive drum in the sense of an extension of the thread path on said friction drive drum and until the other tube which is empty contacts the friction drive drum, prior to such contact of the other empty tube with the friction drive drum axially displacing the mandrel carrying the empty tube in the direction of its free end to bring a thread catching and severing zone within a thread traversing range, accelerating such empty tube due to its contact with the friction drive drum, lifting the full package off the friction drive drum while the thread is still being wound thereon due to the inertia of the full package, unthreading the thread from a thread traversing guide, deflecting the thread passing from the friction drive drum to the full package which has been lifted out of contact with the friction drive drum such that the deflected thread passes through said rotating catching and severing zone of the mandrel supporting the empty tube, thereafter catching and severing the connecting thread between the full package and the empty tube by means of the rotating catching and severing zone, and placing a number of reserve wraps onto the empty tube by axially moving such tube into a normal winding position while rolling such empty tube along the friction drive drum.

3,856,223

WINDING MACHINE

John K. P. Mackie, Belfast, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland

Filed Feb. 29, 1972, Ser. No. 230,235

Claims priority, application Great Britain, Mar. 10, 1971, 6475/71

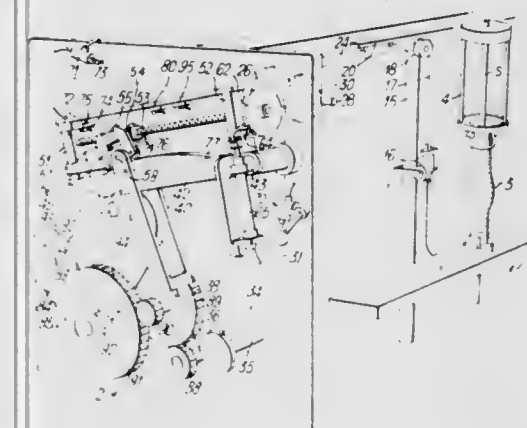
Int. Cl. B65h 54/36

U.S. Cl. 242-26.3

7 Claims

1. In a multihead winding machine for the winding of material delivered from a controlled speed source of supply, having a plurality of winding heads, each said winding head comprising a rotary guide, a non-rotary package support and means for driving said rotary guide around said support; traverse mechanism common to a plurality of winding heads to produce a relative axial traversing motion between each said

rotary guide and said respective package support, said traverse mechanism including a lever arm mounted to rock about a fulcrum, means for progressively reducing the stroke of said traversing motion at either of two predetermined rates of reduction, and control means manually operable while said driving means is in operation to change the rate of reduction produced by said stroke reducing means from one of said predetermined rates to the other, whereby the higher of said predetermined rates may be applied during the period of winding when completed packages are being doffed and fresh



packages started, said control means comprising a pressure-actuated cylinder connected to actuate said stroke-reducing means and to be actuated through a pneumatic circuit having two branches, a source of fluid pressure, a change-over device whereby said branches may be alternatively connected between said cylinder and said source, one of said branches including first valve means operated by rocking movement of said lever arm, and the other of said branches including second valve means, and means for operating said second valve means more rapidly than said first valve means.

3,856,224

SEWING APPARATUS

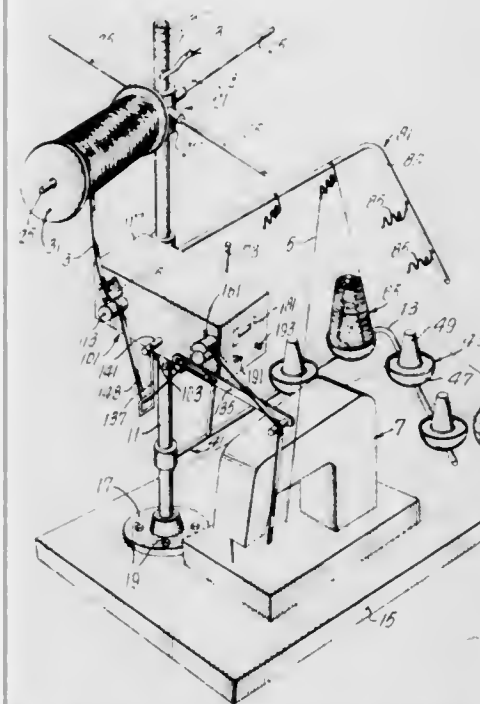
Hendrik Van der Aa, and Johan Van der Aa, both of Perrefonds, Quebec, Canada, assignors to Movatex Products Ltd., Ste-Anne-de-Bellevue, Quebec, Canada

Filed July 31, 1972, Ser. No. 276,860

Int. Cl. B65h 75/02

U.S. Cl. 242-55

18 Claims



1. Apparatus suitable for use in sewing tapes to fabric with thread in a sewing machine, the apparatus comprising a substantially vertically extending support member, mounting means on the member for mounting at least one rotatable

collar, a plurality of arms extending radially from said collar for carrying tape reels, means for indexing said collar, means on the member for supporting a plurality of thread bobbins, and means on the member for supporting thread tensioning and guide means.

3,856,225

ABSORBENT YARN BOBBIN

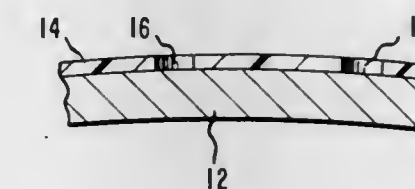
Rhodes Ebeling Wray, Staunton, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1971, Ser. No. 190,108

Int. Cl. B65h 75/10

U.S. Cl. 242-118.32

6 Claims



1. A textile yarn support comprising: an imperforate core of absorbent material having an outer surface; and a plastic material having perforations there-through adhered to said outer surface, said plastic material constituting a winding surface for the yarn.

3,856,226

METHOD AND APPARATUS FOR CORELESS SPOOL PRODUCTION

Daniel J. Dowd, Jr., Clifton Forge, Va., assignor to Westvaco Corporation, New York, N.Y.

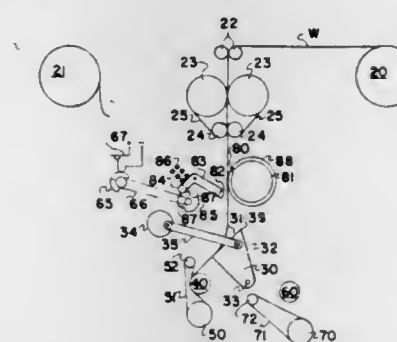
Division of Ser. No. 216,629, Jan. 19, 1972, Pat. No.

3,802,639. This application Dec. 10, 1973, Ser. No. 424,343

Int. Cl. B65h 17/02

U.S. Cl. 242-56 R

13 Claims



1. An apparatus for winding coreless spools of thin web material from a substantially continuous supply thereof, said apparatus comprising:

supply means for dispensing an indefinite length of thin web material having substantially uniform width along a material flow path having a substantially fixed portion thereof; cyclically positionable deflector means for directing said web along one of at least two distribution flow paths; cutting means disposed between said supply means and said deflector means for severing said web across the width thereof at substantially uniform length intervals; substantially cylindrical, axially rotatable mandrel means proximately disposed at the terminal end of each distribution flow path for receiving said uniform lengths of web directed thereto by said deflector means, each of said web lengths being wound about said mandrel with a plurality of wraps to form a spool; and, fluid ejection means for removing said spool from the proximity of said mandrel comprising pressurized fluid supply means and a plurality of fluid discharge apertures disposed about the wrapping surface of said mandrel, said apertures being in communication with said fluid supply means and disposed at an angle to the mandrel axis whereby the discharge of pressurized fluid from said

apertures expands said spool from substantial surface contact therewith and propels said spool over one axial end of said mandrel.

3,856,227

DEVICE FOR THE CONTINUOUS FEEDING OF A MACHINE WITH A STRIP UNWOUND FROM SUCCESSIVE REELS

Jean-Claude Gouy, Chaville, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

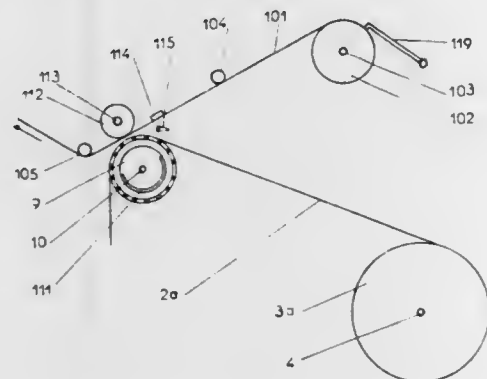
Filed Apr. 27, 1972, Ser. No. 247,945

Claims priority, application France, Apr. 30, 1971, 71.15616

Int. Cl. B65h 19/04, 19/16

U.S. Cl. 242—58.3

8 Claims



1. A device for feeding a machine with a feed strip unwound from a feed reel, comprising a drum member having a free end portion and adapted to receive at least two refill reels on each of which is wound a refill strip, means for moving successively each of said refill reels and bringing said reels successively at the end portion of said drum member and at the place of the preceding reel, respectively, means for receiving the free end of each of said refill strips and maintaining said ends at standby close to said feed strip, means for accelerating one of said refill strips and making it move in synchronism with said feed strip, means for moving said ends in synchronism with said movement of said refill reels towards said accelerating means and transferring said ends successively onto said accelerating means, means for joining said feed strip to the leading end of each said refill strips successively, and means for cutting the leading end of said one refill strip.

3,856,228
TAPE REEL

Hiroo Hosono; Seiko Minamide, both of Osaka; Juichi Hukushima; Yoku Kudou, both of Neyagawa, and Shunichiro Kimura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 131,351, April 5, 1971, Pat. No.

3,797,777. This application Jan. 2, 1974, Ser. No. 430,183

Claims priority, application Japan, Apr. 8, 1970, 45-30294; Apr. 8, 1970, 45-30295; Apr. 8, 1970, 45-34189; Apr. 8, 1970, 45-34191; Aug. 24, 1970, 45-84518; Aug. 24, 1970, 45-84519; Aug. 24, 1970, 45-84521; Aug. 24, 1970, 45-84523; Sept. 18, 1970, 45-93362; Oct. 19, 1970, 45-104352; Nov. 30, 1970, 45-120034; Nov. 30, 1970, 45-120036; Nov. 30, 1970, 45-120054; Dec. 2, 1970, 45-120723; Dec. 2, 1970, 45-120724

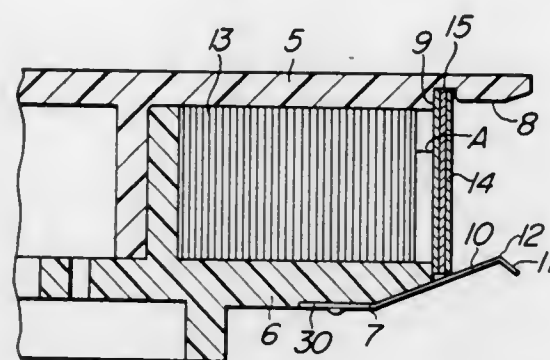
Int. Cl. B65h 75/28; G11b 23/10

U.S. Cl. 242—71.8

13 Claims

1. In a tape reel for taking up a ribbon-like recording medium and a leader strip which is greater in width than the recording medium and connected to one end thereof, which said tape reel comprises a hub and two relatively inflexible flanges secured to said hub in axial, spaced-apart relation, the spacing of said flanges being at least equal to the width of said recording medium but less than the width of said leader strip,

and which said flanges are provided with outer peripheral portions around which said leader strip may be wound, the improvement wherein at least one of said flanges is provided with a plurality of spaced, radially outwardly extending fingers yieldably engageable with an edge of said leader strip, said



fingers having axially inwardly extending offset portions adjacent their respective outer ends and being characterized by sufficient resiliency to permit such offset portions to retract axially outwardly when an edge of said leader strip is moved therepast when being wound on or unwound from said outer peripheral portions.

3,856,229

WEB WINDING SPOOL

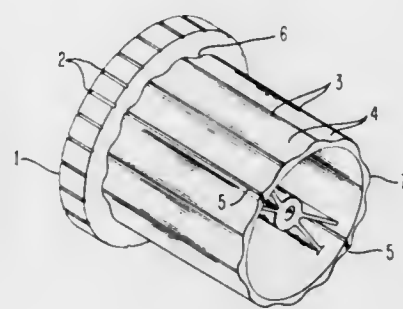
James Warren Byram, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,238

Int. Cl. B65h 75/18

U.S. Cl. 242—71.8

5 Claims



1. Web winding spool apparatus, comprising: an axially tapered, generally cylindrical spool body; means on said spool body for holding an end of a web material to be wound in contact with said spool body; a flange means at the larger end of said tapered spool body for abutting an edge of said web material to maintain a straight edged formation of a roll of said web material during winding.

3,856,230

WIRE DISPENSING CART

Edward J. Zimmer, 5383 Claridge Ln., West Bloomfield, Mich. 48033

Filed Dec. 13, 1973, Ser. No. 424,292

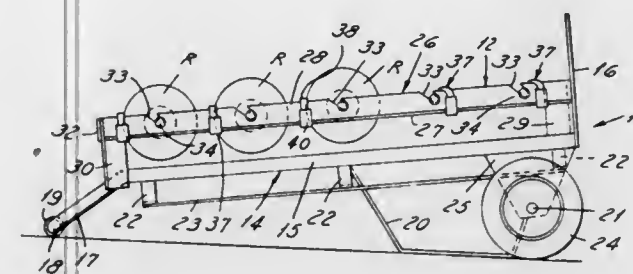
Int. Cl. B65h 75/40

U.S. Cl. 242—86.5 R

12 Claims

1. A cart for dispensing wire or the like products, comprising the combination of a wheeled dolly unit usable as such for transporting loads, and a rigid superstructure unit fixedly mounted on said dolly unit to convert the latter for the dispensing of such products, said superstructure unit comprising a pair of elongated laterally spaced side frame members having a plurality of transversely spaced and aligned pairs of openings to removably receive spindles of end-flanged product reels, and a plurality of like elongated strap devices extending between said laterally spaced side frame members, each of said strap devices being provided at opposite ends

thereof with means for releasably anchoring the strap device to said frame members, with said strap devices in frictional



restraining engagement with either a reel and flange or with a spindle for a reel.

3,856,231

BOBBIN HOLDER

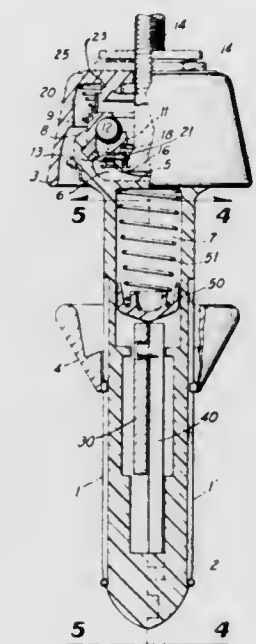
Richard K. Whitehead, Sr., 2034 Deborah Dr., N.E.; Richard K. Whitehead, Jr., 2044 Breckenridge Dr., N.E., both of Atlanta, Ga. 30345, and Alvin C. Whitehead, 1890 Silverstone Dr., Decatur, Ga. 30033

Filed Nov. 8, 1973, Ser. No. 414,130

Int. Cl. B65h 49/02; D03j 5/08

U.S. Cl. 242—130.2

12 Claims



1. A bobbin holder for rotatably fastening yarn bobbins to a bobbin reel and comprising:

- a rotatable assembly including a shell insertable into a recess in a bobbin to be held, bobbin catch means supported by said shell, and catch actuating means for extending and retracting at least a portion of said catch means to and from the exterior of said shell to catch and release a bobbin positioned about said shell; and
- a stationary assembly including a brake shoe, first spring means biasing said brake shoe against said rotatable assembly, frictional engagement means disposed adjacent said rotatable assembly, and second spring means biasing said frictional engagement means into contact with said rotatable assembly in response to the weight of a bobbin held on said rotatable assembly exceeding a preselected magnitude and biasing said frictional engagement means out of engagement with said rotatable assembly in response to the weight of a bobbin held on said rotatable assembly failing to exceed said preselected magnitude.

3,856,232

BUTCHERS TWINE DISPENSER

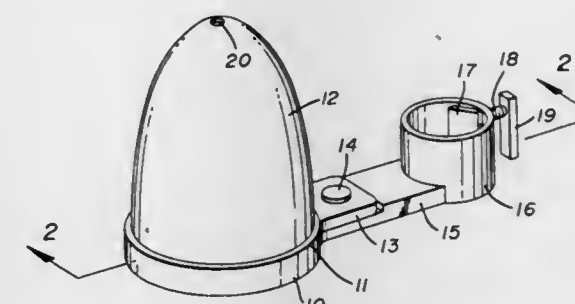
Ronald M. Rinaldi, 116 S. Cleveland St., Niles, Ohio 44446

Filed Aug. 3, 1973, Ser. No. 385,567

Int. Cl. B65h 49/36

U.S. Cl. 242—146

2 Claims



1. A butcher's twine dispenser comprising a base, a cover member frictionally engaged thereon and apertured for guiding twine therethrough, an extension on said base and a clamping device having an arm thereon, said extension movably secured to said arm said clamping device consisting of a circular body member, a V-shaped clamping member disposed therein longitudinally, a threaded shaft loosely engaged on said V-shaped clamping member and engaged in a threaded opening in said circular body member.

3,856,233

THREAD TENSIONING DEVICE

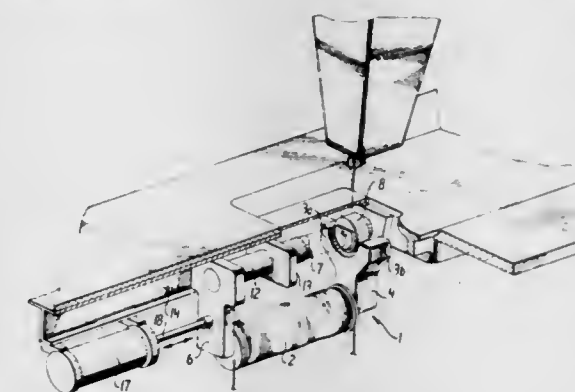
Charles C. Thomas, Starkville, Miss., assignor to Mississippi State University Development Foundation, Inc., State College, Miss.

Filed Feb. 12, 1973, Ser. No. 332,034

Int. Cl. B65h 59/04, 59/22

U.S. Cl. 242—156

16 Claims



1. A thread tensioning system for a sewing machine comprising means for tensioning the bobbin thread including:

- a ferromagnetic bobbin, onto which said thread is wound;
 - a ferromagnetic bobbin case for housing said bobbin, said bobbin case being rigidly and removably mounted to a support member;
 - an electromagnetic to provide a source of magnetic flux;
 - radial flux guiding means rigidly connected to an end of said electromagnet for guiding magnetic flux radially between said bobbin and said bobbin case and said electromagnet;
 - axial flux guiding means rigidly connected to the other end of said electromagnet for guiding magnetic flux axially between said electromagnet and said bobbin and said bobbin case, wherein said radial flux guiding means, said axial flux guiding means, said bobbin, said bobbin case and said electromagnet form a closed magnetic circuit;
- means for supplying electrical current to said electromagnet to create said magnetic flux therein proportionately to the

magnitude of said electrical current, thereby causing tension on the thread to be created by the combination of the magnetic drag resisting rotation of said bobbin in said magnetic flux and the frictional engagement between said bobbin and said bobbin case caused by said bobbin being urged against an interior wall of said bobbin case by said magnetic flux; and means for varying said electrical current to vary said magnetic flux and thereby vary said thread tension.

3,856,234

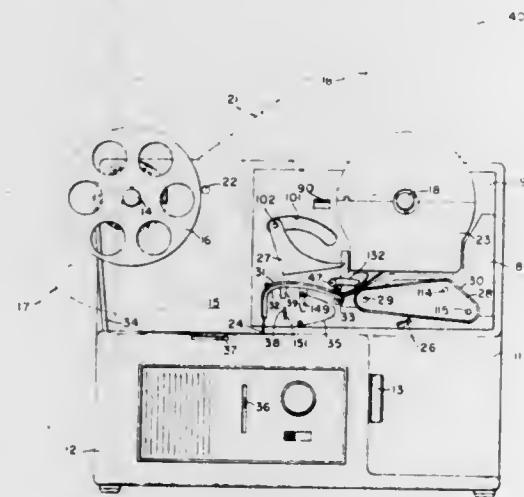
CINEMATOGRAPHIC PROJECTORS OR THE LIKE AND CARTRIDGES FOR USE THEREWITH

John J. Bundschuh, and Robert J. Roman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 24,657, April 1, 1970, Pat. No. 3,750,976, which is a division of Ser. No. 685,616, Nov. 24, 1967, Pat. No. 3,552,683. This application Apr. 25, 1973, Ser. No. 354,607 Int. Cl. G03b 1/04, 23/04

U.S. Cl. 242-189

6 Claims



1. A cinematographic projector comprising:

- a roll support member adapted to rotatably support a received film supply roll;
- movable means for selectively locating said roll support member at either of two fixed positions;
- a film gate;
- means for advancing film through said film gate as said film is unwound from a supply roll which is rotatably supported by said roll support member;
- rewind means operable to rewind said film onto a supply roll supported by said roll support member after said film has been advanced through said gate;
- rewind actuating means for initiating the operation of said rewind means in response to the occurrence of a predetermined tension in said film between said gate and said supply roll during such advancement of said film; and
- means for automatically disabling said rewind actuation means whenever said roll support member is located at a predetermined one of said two fixed positions.

3,856,235

MAGNETIC TAPE CONTROL ARM

Robert S. Wallace, 2881 S. Robertson Blvd., Los Angeles, Calif. 90034

Filed Mar. 12, 1973, Ser. No. 340,120

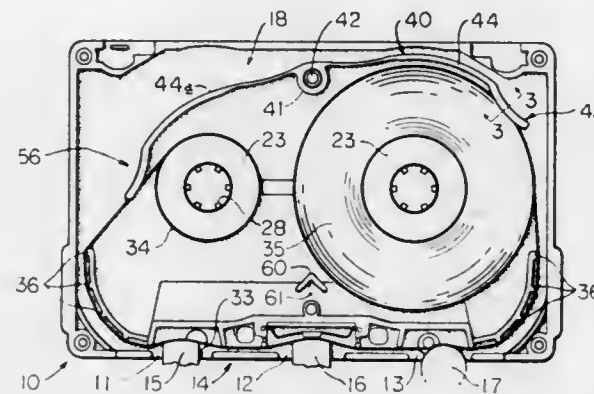
Int. Cl. G11b 23/10

U.S. Cl. 242-199

9 Claims

1. For use in a magnetic tape cassette assembly having cover and receptacle elements defining a case with apertures along an edge thereof for exposing tape to contact with playback unit head means, and tape reel means mounted to rotate within the case, the improvement comprising

- an elongated cantilevered arm having a first portion to be supported in the case and having a second portion spaced from said first portion to engage and bias the tape,
- said second portion defining a tape receiving channel, and said second portion having elongated ribbing projecting in the channel to slidably engage and seat a non-track portion of the tape, said second portion also having trans-



versely spaced and opposed surfaces which taper toward the interior of the channel to seat opposite edges of the tape at a tape position of proximal medial engagement with said ribbing, crosswise of the tape width, the overall width of said ribbing being substantially less than the spacing between said surfaces, said ribbing confined to the medial portion of said space between said surfaces, said ribbing and surfaces being integral.

3,856,236

COMPOSITE AIRCRAFT

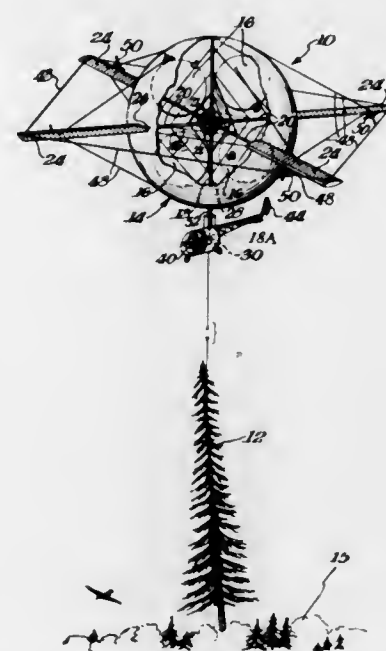
Donald B. Doolittle, Hockessin, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed May 7, 1973, Ser. No. 357,636

Int. Cl. B64c 37/02

U.S. Cl. 244-2

15 Claims



1. A composite aircraft comprising a large balloon chamber containing a lighter-than-air gas which provides a large static lifting force having a magnitude substantially greater than the weight of said aircraft, said aircraft having a substantially vertical axis, a set of substantially horizontally disposed wings extending radially relative to said vertical axis, a structural assembly connected to said aircraft at said vertical axis for supporting said wings in a substantially horizontal radial array relative to said aircraft, rotatable coupling means connecting said wings to said structural assembly and permitting adjust-

ment of the effective angle of attack of said wings, thrust means mounted upon said wings whereby said wings and chamber are rotated about said axis, and control means connected to said wings for varying their effective angle of attack to either provide a dynamic lifting force for augmenting said static lifting force whereby said combined static and dynamic lifting forces are sufficient to lift large weights or to provide a strong negative dynamic lift for overcoming said static lift and moving said aircraft towards the ground.

3,856,237

GUIDANCE SYSTEM

John T. Torian, Jackson Heights, and Richard W. Safford, Huntington, both of N.Y., assignors to Fairchild Hiller Corporation, Hagerstown, Md.

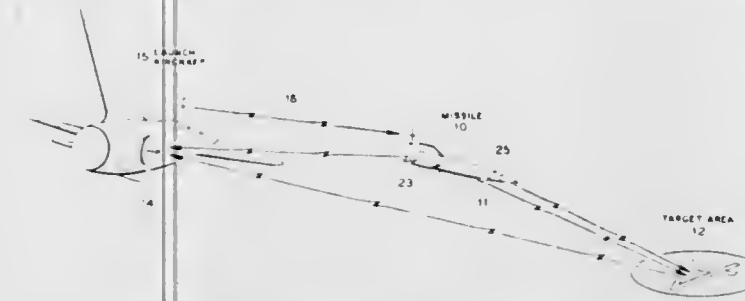
Continuation of Ser. No. 402,377, Oct. 6, 1964, abandoned.

This application Aug. 3, 1967, Ser. No. 661,164

Int. Cl. F41g 7/00; G01s 9/02

U.S. Cl. 244-3.11

8 Claims



1. Apparatus for producing a map of a target area at a first station as observed from a second station, comprising transmitter means at one of said stations for transmitting radiant energy toward a target area, receiver means at the other of said stations for receiving radiant energy directly from said transmitter means and the radiant energy reflected from said target area, said transmitter and receiver means each including an antenna having a radiation pattern, means for scanning one of said radiation patterns over said target area, display means including a screen located at said first station and responsive to said receiver for displaying a map of the area scanned by said one pattern, said display means including means for moving a visual indication across said screen at a preselected rate, means responsive to the time interval between the direct and reflected radiant energy arriving at the receiving means for varying the intensity of said visual indication thereby indicating the range of said target area relative to said second station, and means for synchronizing the movement of said one radiation pattern and the movement of said visual indication whereby the location of said visual indication on said screen is representative of the bearing of said second station with respect to said target area.

3,856,238

AIRCRAFT TRANSPORTER

Frank S. Malvestuto, Jr., 4295 E. Mexico Ave., Denver, Colo. 80222

Filed Apr. 14, 1972, Ser. No. 244,068

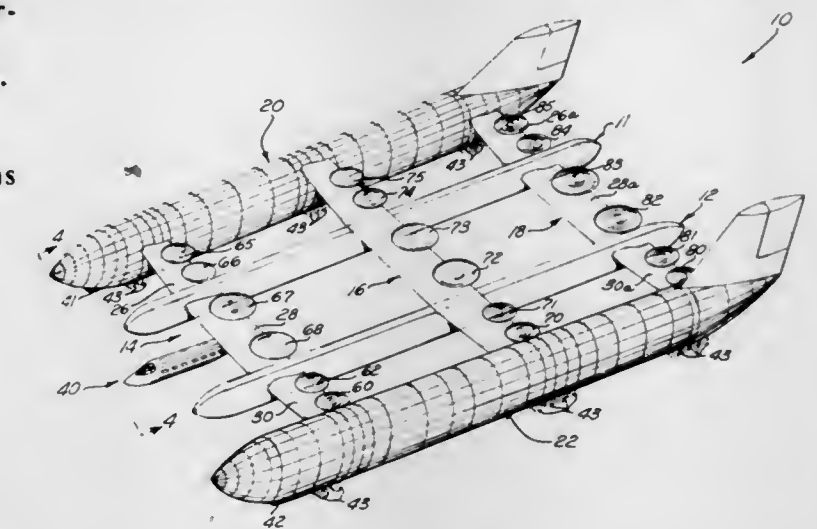
Int. Cl. B64b 1/20, 1/34

U.S. Cl. 244-5

26 Claims

1. An aircraft comprising a wing structure, said wing structure comprising at least one wing having a leading edge and a trailing edge, said one wing having upper and lower surfaces defining an airfoil portion for producing a lifting force when said wing is moved forwardly through the air, at least a portion of the trailing edge of said airfoil portion being configured to define an arcuate recess having a forward portion and a pair of rearwardly extending side portions, a power-driven rotor connected with said one wing and mounted for rotation about a forwardly canted axis which extends at an acute angle to a horizontal plane and is disposed in a vertical plane extending parallel to the direction of forward movement of said one wing, said rotor having generally radial blades with tip portions which are movable along an annular path which slopes

upwardly and rearwardly from said trailing edge of said one wing and is at least partially disposed within said arcuate recess, said annular path having a leading portion which is disposed closely adjacent to said forward portion of said recess, said leading portion of said annular path being disposed above said lower surface of said airfoil portion and below said upper surface of said airfoil portion, said annular path having a pair of spaced apart side portions which are disposed closely adjacent to said rearwardly extending side portions of said recess, each of said side portions of said annular path being disposed above said lower surface of said airfoil portion and below said upper surface of said airfoil portion, said annular path having an arcuate trailing portion which is disposed



diametrically opposite and above said leading portion of said annular path, said annular path having a first diametral axis extending forwardly and downwardly at an acute angle to a horizontal plane and intersecting said leading and trailing portions of said annular path, said first diametral axis being disposed in a vertical plane extending parallel to the path of movement of the aircraft, said annular path having a second diametral axis which extends perpendicular to said first diametral axis and parallel to the horizontal plane, said blades having surface means for producing upward and forward thrust and for inducing a low pressure air flow across said upper surface and a high pressure air flow under said lower surface to thereby urge said aircraft upwardly and forwardly upon rotation of said blades, and means for rotating said blades.

3,856,239

APPARATUS FOR THRUST REVERSAL

Heinrich Leibach, Grafrath-Wildenroth, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany

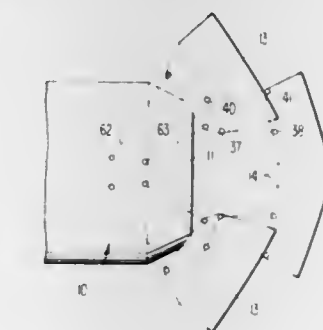
Filed Aug. 27, 1973, Ser. No. 391,842

Claims priority, application Germany, Aug. 25, 1972, 2241817

Int. Cl. B64c 15/06

U.S. Cl. 244-12 D

38 Claims



1. Thrust reversing apparatus for a vehicle having a turbojet engine equipped with a thrust nozzle; said apparatus comprising: first thrust reversing flap means,

second thrust reversing flap means, first flap adjusting means for moving said first flap means between inoperative positions out of deflecting engagement with the flow of gases through said thrust nozzle and operative positions with flow deflecting surfaces of said first flap means in deflecting engagement with at least a portion of said flow of gases, and second flap adjusting means for moving said second flap means between inoperative positions out of deflecting engagement with said flow of gases and operative positions with flow deflecting surfaces of said second flap means in deflecting engagement with at least a portion of said flow of gases,

said first and second adjusting means including means for moving said first and second flap means to respective first positions with only said first flap means furnishing flow deflecting surfaces for said flow of gases and to respective second positions with both said first and second flap means furnishing flow deflecting surfaces for said flow of gases, said first and second flap means being spaced from one another in the direction of gas flow through said thrust nozzle when in said respective second positions,

wherein each of said first and second flap means includes a pair of flap members, the flap members of each pair being disposed at opposite sides of a centerline of said thrust nozzle, wherein said first adjusting means includes a main pivot lever for each flap member of said first flap means, each of said main pivot levers being pivotable at one end about a respective pivot axes which is fixed in position with respect to jet pipe means arranged upstream of said thrust nozzle, the respective other ends of each of said main pivot levers being pivotally connected to respective flap members of said first flap means, wherein a pull-push rod is provided between each flap member of said first flap means and a respective guide path extending eccentrically with respect to the fixed pivot axis of the associated main pivot lever, each of said pull-push rods having one end pivotally attached at the respective flap member by way of a pivotal connection spaced from the pivotal connection between said associated main pivot lever and respective flap member and the other opposite end slidably guided in the respective guide path such that pivotal movement of said main levers along a circular arc about the respective fixed pivot axes effects a flatly curved path of movement of said flap members of said first flap means between operative and inoperative positions thereof.

3,856,240

PARACHUTE SUSPENSION LINES

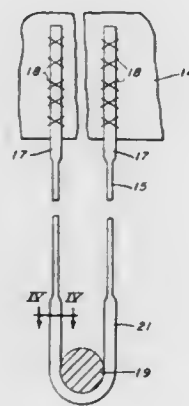
John Conrad Forbis, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 19, 1972, Ser. No. 316,446

Int. Cl. B64d 17/24

U.S. Cl. 244-142

9 Claims



1. A suspension line for use in parachute apparatus to interconnect a payload with a canopy, the combination comprising:

braided filament rope having a preselected line strength, additional filament material braided into the rope along preselected lengths at the points of attachment to the canopy and to the payload for increasing the load transfer strength at such points, the length of rope receiving said additional filament material being small in relation to the overall length of the rope so that the efficiency for load transfer at the point of attachment at least equals the basic strength of the rope, and means for attaching the rope having said additional filament material to the canopy.

3,856,241

KNOCKDOWN KITE

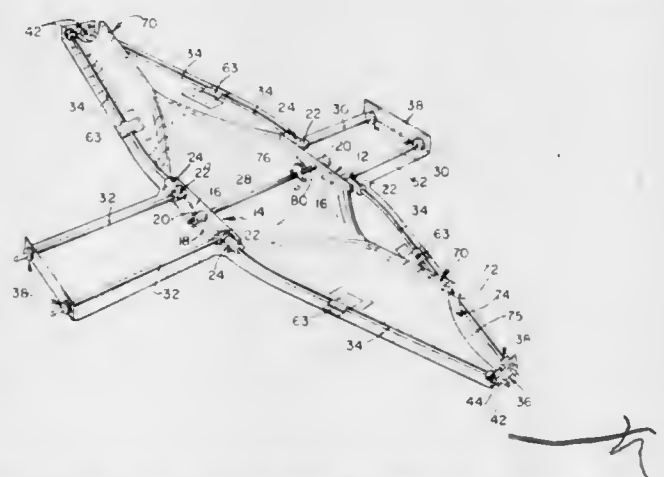
Sam Kupperman, and Dennis I. Kupperman, both of Skokie, Ill., assignors to R. B. Toy Development Co., Skokie, Ill.

Filed June 14, 1973, Ser. No. 369,890

Int. Cl. B64c 31/06

U.S. Cl. 244-154

10 Claims



1. A knockdown kite comprising a framework which forms a wing framework, a forward and rearward framework extending forwardly and rearwardly respectively of said wing framework, said framework comprising a front connector and a rear connector, said front connector having spaced forwardly facing sockets and laterally facing sockets, said rear connector having spaced rearwardly facing sockets and laterally facing sockets, a rod connecting said front and rear connectors in spaced relation, a pair of spaced rods secured in said forward facing sockets and forming the forward framework and a pair of spaced rods secured in said rearward facing sockets and forming the rearward framework and laterally extending rods secured in said laterally facing sockets and forming the oppositely extending wings of said wing framework, said rods and connectors being detachably secured and when secured forming the framework of said kite, a covering secured to the free ends of said rods, said covering being of a flexible material and having a width between the laterally extending rods so that the wing coverings billow upwardly and form pockets in the underside of said wing coverings while the kite is in flight.

3,856,242

MOUNTING APPARATUS FOR A SURGE VOLTAGE ARRESTER

Bernard D. Cook, Pittsfield, Mass., assignor to General Electric Company

Filed Mar. 29, 1973, Ser. No. 346,130

Int. Cl. F16f 15/00

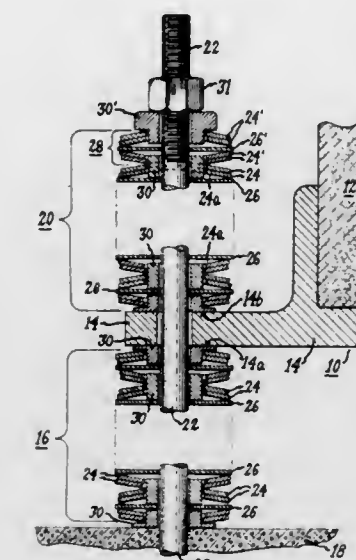
U.S. Cl. 248-20

2 Claims

1. In combination with a surge voltage arrester having a generally elongated ceramic housing and an attached supporting foot, a shock and energy absorbing apparatus comprising: a resilient member for flexibly connecting the supporting foot and a mounting body, the resilient member having the capability of changing dimensions and absorbing energy under influence of shock energy; and

b. means including a bendable metal plate for providing a limiting connection between the supporting foot and the

mounting body when shock energy less than a predetermined magnitude is applied to said combination and for



eliminating the limiting connection when shock energy greater than the predetermined magnitude is applied to said combination.

3,856,243

HOLDER

Lewis L. Ruter, 7111 3rd St., North, Minneapolis, Minn. 55411

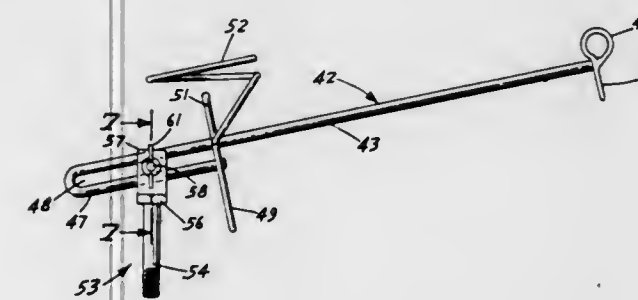
Division of Ser. No. 15,368, March 2, 1970, Pat. No.

3,640,494. This application Feb. 8, 1972, Ser. No. 224,508

Int. Cl. A01k 97/10

U.S. Cl. 248-42

16 Claims



1. A holder for attaching an object to a boat having at least one oarlock with a generally upright hole comprising: an elongated arm having an end portion with an elongated slot, a mount at said end portion of the arm positionable at an angle with the arm, said mount having a cylindrical member adapted to fit into the hole of the oarlock and a head larger than the hole of the oarlock on one end of the cylindrical member providing a stop to locate the cylindrical member in the hole in the oarlock, and projection means secured to and extended from the head, and connector means having a portion located in the slot coupling the arm to the projection means, said connector means having cooperating members adjustable relative to each other to hold the arm at a selected angle relative to the mount and at a selected longitudinal position on said mount, said cooperating member being releasable whereby the arm can be angularly and linearly movable relative to the projection means, and a stop member secured to the arm and projected generally in the direction of the mount, said stop member being adjustable with the arm relative to the mount whereby the stop member can be located in engagement with an outside portion of a boat adjacent the oarlock to limit pivotal movement of the arm relative to the boat.

3,856,244

CLAMPING APPARATUS

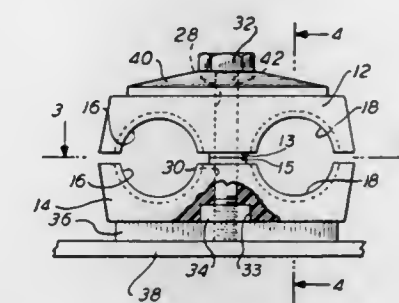
Arnold Menshen, Beuler-Weg 52, Neuenrade Westf., Germany

Filed July 26, 1972, Ser. No. 275,338

Int. Cl. 248 68 CB; F16l 3/02

U.S. Cl. 248-54 R

3 Claims



1. Clamping apparatus for clamping a plurality of longitudinally extending members in a predetermined spaced apart relationship, comprising:

a pair of clamping members, each of said clamping members provided with at least two groups of inwardly directed parallel, arcuate, ridge-like members, and a centrally positioned spacer means, and upon the assembly of said clamping members in a predetermined opposed relationship, said groups of ridge-like members formed in each clamping member being placed opposite the groups of ridge-like members formed in the other clamping member with said spacer means engaging each other whereby said groups of ridge-like members cooperatively provide two partially closed, longitudinally extending interrupted apertures having parallel longitudinal axes, said apertures for receiving said longitudinally extending members and said ridge-like members for engaging said longitudinally extending members; said clamping members, including said ridge-like members, being of a predetermined resilient material for dampening vibrations and shocks and for absorbing noise; each of said clamping members having an aperture formed centrally thereof, in a direction perpendicular to the said longitudinal axes of said longitudinally extending apertures, and upon said assembly of said clamping members, said apertures being aligned and receiving a threaded fastener;

at least one of said clamping members having a counterbore formed centrally thereof coincident with said aperture formed centrally thereof, said counter-bore being formed in said one clamping member generally opposite said two groups of ridge-like members formed therein;

a metal welding plate having a boss formed centrally on one surface thereof and having a threaded aperture formed centrally thereof and through said boss, said welding plate permitting the welding of said clamping apparatus to a metal support surface;

said metal welding plate for engaging said clamping member having said counter-bore formed centrally thereof and having its boss received within said counter-bore and having its threaded aperture aligned with said aperture formed centrally of said clamping member;

a threaded fastener having a bolt head formed on one end thereof and the other end thereof having threads formed thereon;

a clamping plate having an aperture formed centrally thereof for receiving said threaded fastener, said clamping plate being of a material more rigid than said predetermined resilient material of said clamping members, said clamping plate engaging the other of said clamping members and having its aperture aligned with said aperture formed centrally of said other clamping member; upon said clamping members being assembled as said and said longitudinally extending members being received within said apertures formed by said ridge-like members, and upon said welding plate and cover plate being in

engagement with said clamping members as said, said threaded fastener being received within said centrally formed apertures with said bolt head engaging said cover plate and said threads being placed in threaded engagement with said threads formed in said welding plate whereby said resilient clamping members are compressed together by said clamping plate and said welding plate to cause said ridge-like members to resiliently engage said longitudinally extending members and clamp said longitudinally extending members in said predetermined spaced apart relationship.

3,856,245

PIPE MOUNTING CLAMP

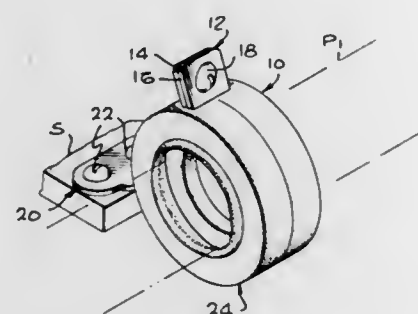
Robert M. Byerly, Burbank, Calif., assignor to Viking Industries, Inc., Chatsworth, Calif.

Filed Mar. 14, 1973, Ser. No. 341,276

Int. Cl. F16l 3/12

U.S. Cl. 248—54 R

3 Claims



1. A pipe mounting clamp comprising:

- a band for encircling a pipe, said band having a pair of tab portions fastenable to each other to tighten the band on the pipe; and
- a cushion of resilient material covering the radially inner surface of the band to contact and encircle the pipe, said cushion having a pair of radially-inwardly extending end ridges at the axially opposite ends of the cushion and having a middle ridge located between said end ridges, each of said end ridges having a height which is at least 50 percent greater than the height of said middle ridge, whereby the middle ridge does not contact a pipe until the end ridges have been severely deformed.

3,856,246

CONDUIT SPACER MODULAR CONSTRUCTION

George M. Sinko, Royal Oak, Mich., assignor to Underground Products, Inc., Livonia, Mich.

Filed May 19, 1972, Ser. No. 255,225

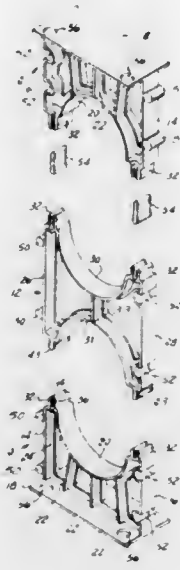
Int. Cl. F16l 3/22

U.S. Cl. 248—68 CB

8 Claims

- 1. A conduit spacer assembly comprising a pair of end frame members each of generally rectangular configuration having a straight side and a side which is recessed inwardly for accepting part of the periphery of a conduit disposed with its axis in a substantially perpendicular relationship to the plane of said frame member, an intermediary substantially similar frame member having two opposite sides recessed inwardly and normally disposed in an adjacent position to the recessed side of each of said frame members such as to surround the remaining of the periphery of the conduit, and locking means on each extremity of said recessed sides comprising an elongated prong member on one of said frame members having a longitudinal axis and engageably projecting within a bifurcated lug member integrally projecting from another of said frame members, said bifurcated lug member formed by a pair of identical flexibly spreadable sidewall members for accepting said prong member, and at least one one-way wedging and locking step formed on a surface of said prong member for interlockingly engaging a corresponding wedging and locking

recess on an interior surface of one of said sidewall members of said bifurcated lug member for preventing separation of said frame members in a direction substantially perpendicular to the axis of said conduit and substantially parallel to the plane of said frame members while permitting sliding separation of said frame members in a direction substantially parallel to the axis of said conduit and substantially perpendicular to the plane of said frame members, at least one of said prong members being a separate prong member provided on at least a surface thereof with at least one one-way wedging and lock-



3,856,247

FASTENING MEANS

Neville Keighley, Clitheroe, England, assignor to D. T. & N. Keighley (Whalley) Limited, Lancashire, Great Britain

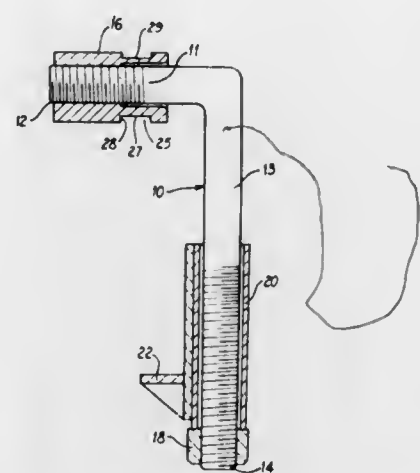
Filed May 2, 1973, Ser. No. 356,520

Claims priority, application Great Britain, May 3, 1972, 20507/72

Int. Cl. B61d 45/00; B65j 1/22; B60p 3/32

U.S. Cl. 248—154

7 Claims



- 1. A fastener for removably fastening a shipping container to the top side of a vehicle platform, comprising: a body mem-

ber of L-shape and having a short horizontal leg, a long vertical leg and also having screw threads at the ends of the legs; a spigot defining a peripheral recess rotatable on the thread of the short leg, so that the location of the recess can be adjusted lengthwise of the short leg; a sleeve member movable along the long leg and having an abutment bracket extending therefrom in the same direction as that of the short leg, said bracket defining a surface to engage the underside of the vehicle platform; and nut means engaging the screw thread of the long leg and acting on the lower end of the sleeve member, to move the sleeve member along the long leg and hence adjust the location of the bracket lengthwise of the long leg.

3,856,248

APPLIANCE LEVELING DEVICE

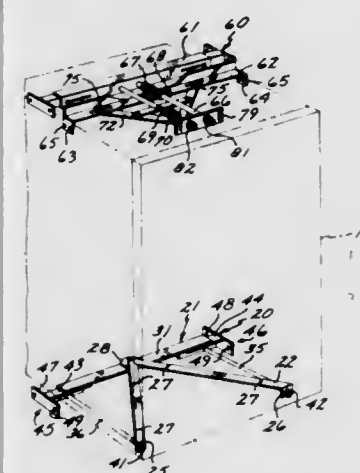
Donald J. Labelle, 3148 Tevis Ave., Long Beach, Calif. 90808

Filed June 25, 1973, Ser. No. 373,197

Int. Cl. F16m 1/124

U.S. Cl. 248—188.2

8 Claims



- 1. Apparatus for aligning the angular orientation of an appliance relative adjacent supporting structure, comprising: first support means attached to said structure for pivotally supporting the bottom surface of said appliance; and second support means attached to said structure in substantially parallel alignment with the top surface thereof and connected to said appliance for providing adjustment in translation of the relative position of the top surface thereof along two orthogonal axes.

3,856,249

SELF-SECURING HOLDING DEVICE

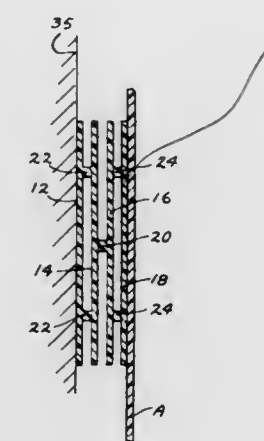
Bruce J. Frye, 13601 69th Ave. North, R.R. No. 2, Osseo, Minn. 55369

Filed Mar. 15, 1973, Ser. No. 341,720

Int. Cl. F16m 13/00

U.S. Cl. 248—205 A

3 Claims



- 1. A self-securing article holding device having in combination a body portion comprising a plurality of layers,

welds securing together adjacent of said layers, said welds being spaced inwardly of the edge portions of said layers, one of the outward facing surfaces of the layers at each end of said body portion comprising a self-securing surface, a pair of said welds securing together the facing surfaces of an adjacent pair of said layers, a weld securing together the outer facing surface of one layer of said pair of layers and the facing surface of a layer adjacent thereto, and said pair of welds and said weld being out of registry with respect to each other.

3,856,250

INTERENGAGED COMPONENT ELECTRICAL EQUIPMENT MOUNT

Marion R. Farmer, Memphis, Tenn., assignor to Aluma-Form, Inc., Memphis, Tenn.

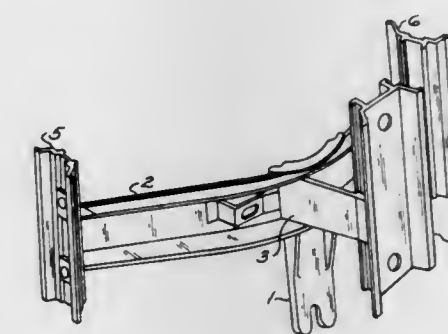
Continuation of Ser. No. 96,481, Dec. 9, 1970, abandoned.

This application Oct. 24, 1972, Ser. No. 300,163

Int. Cl. F16m 13/02

U.S. Cl. 248—221

15 Claims



- 1. An improved electrical equipment mount for attachment to a utility pole and formed from components that interengage to provide enhanced structural support comprising an elongated bearing plate adapted for bearing against said pole, means holding said bearing plate securely to the pole, a horizontally disposed channel member arranged for engagement at approximately its midpoint to said bearing plate, means provided upon said bearing plate for stabilizing said channel member in a horizontal position, brace means connecting at one end to said channel member and fixed against vertical movement by means of said member, a vertically disposed bracket connecting to and interlocking with the opposite end of said brace means, a pair of additional brackets, one of each bracket connecting to and interlocking with the laterally disposed end of said channel member, each additional bracket being formed having a vertically disposed plate, means associated with said plate to accommodate attachment of electrical devices to said bracket, a pair of flanges integrally connecting to and extending from the surface of said plate to embrace the contiguous end of the channel member to stabilize the mounting of said bracket, connecting means engaging both said plate and said proximate channel member to secure the same together, each connecting means comprising at least one angle means, each of said angle means formed having a pair of integrally attaching legs, said channel member formed having grooves provided upon its upper or lower surfaces, one leg of each angle means interlocking within a channel member groove to stabilize the bracket against movement, said angle means arranged through an aperture provided through said plate, said plate having a longitudinally disposed groove formed in its side opposite to the side of the plate that engages the channel member end, the other leg of said angle means interjoining within said plate groove to further stabilize the bracket, and fastener means securing said angle means to the respective plate and channel member to hold the same together.

3,856,251

SELF-COMPENSATING EXTENSIBLE BEAM

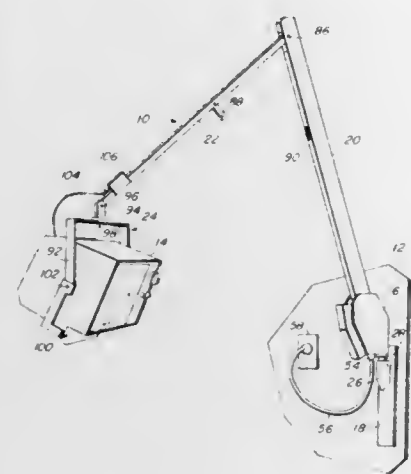
Julius Miller, Brockton, Mass., assignor to Nouveau Products Corporation, Brockton, Mass.

Filed Oct. 24, 1972, Ser. No. 299,710

Int. Cl. A47f 5/00; F21s 1/02

U.S. Cl. 248—280

8 Claims



1. A self-compensating, extensible beam, comprising
 - a. a base,
 - b. a fully rigid single tubular primary arm pivotally mounted at one end to said base about a first horizontal axis,
 - c. first spring means engaging said primary arm at said one end and urging it into a normally raised position,
 - d. said first spring means including a rigid rocker arm fixed perpendicularly to the one end of said primary arm and intersecting said first axis, a pair of parallel guideways mounted fixed to said base and oriented along lines extended to opposite sides of said first axis, a coil spring mounted in each of said guideways, a connecting rod connected to each end of said rocker arm, each of said connecting rods extending through said guideways in co-axial engagement with one of said coil springs,
 - e. a fully rigid single secondary arm levered near one end directly to the other end of said primary arm about a second horizontal axis parallel to said first axis,
 - f. load-supporting means mounted to the free other end of said secondary arm, and,
 - g. second spring means extending longitudinally within said primary arm and connected to said one end of said secondary arm and to said base at a point spaced from said first axis of said primary arm for normally urging upwardly said other end of said secondary arm, said point being offset from a line between said first and second axes, whereby the force on said second spring means will increase upon at least one of said arms being pivoted downwardly,
 - h. said second spring means including a coil spring, a connecting rod engaging the lower end of said spring and said one end of said secondary arm, and a shipping rod engaging the upper end of said spring and said base at said point whereby said spring is compressed between said rods.

3,856,252

TELESCOPIC SUPPORT FOR SEATS, TABLES AND THE LIKE

Rene Marc Jean Regis, Fontaines Saint Martin, France, assignor to Les Applications Industrielles du Tube, Villeurbanne (Rhône), France

Filed Nov. 23, 1973, Ser. No. 418,771

Claims priority, application France, Nov. 29, 1972, 72.43276

Int. Cl. A45d 19/04; F16m 13/00

U.S. Cl. 248—402

4 Claims

1. Telescopic support for members such as seats, tables and the like, of the type comprising a fixed outer tube, for attaching support legs, an inner tube sliding axially inside the outer

tube attaching the member for which this support is intended, a rack integral with one of the tubes along one of its generatrices, a toothed wheel mounted to rotate freely on a shaft supported transversely by the other tube, in order to mesh with the aforesaid rack and a toothed shoe capable of engaging in the teeth of the aforesaid toothed wheel in order to prevent it from rotating and with which are associated operating means making it possible to disengage it from these teeth, characterized in that the rack is integral with the outer tube and the shaft of the toothed wheel is supported by a lower sliding extension of the inner tube, spring means normally keeping the inner tube and its extension in the extended position,



whereas means for operating the toothed shoe are constituted by a rod to which the toothed shoe is attached at the lower end, which passes axially through the inner tube and its extension and whose upper end, provided with an enlarged head, is slidably connected by means of a stirrup member to a control lever pivoted at a pivot integral with the inner tube upward movement of the control lever causing the displacement in the same direction of the aforesaid rod, when the member supported by this support is not under load, but having no action on this rod when, owing to the loading of this member, the inner tube has slid downwards on its lower extension and on the rod.

3,856,253

ADJUSTABLE STAND

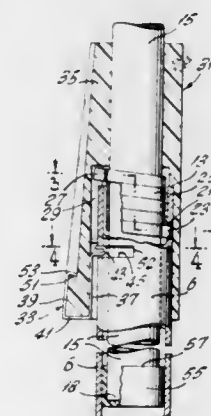
Frederick L. Seebinger, Smoke Rise, N.J., assignor to American Trading and Production Corporation, Baltimore, Md.

Filed May 1, 1973, Ser. No. 356,225

Int. Cl. F16b 7/14

U.S. Cl. 248—411

10 Claims



1. An adjustable stand comprising a base, a first rigid tube having an end connected to said base and an opposed free end upstanding therefrom, a second rigid tube of lesser diameter than said first rigid tube and slidably connected therewith, said second rigid tube being telescopable within said first rigid tube, resilient means between said first and second rigid tubes for releasably biasing said second rigid tube in a normally

fixed position relative to said first rigid tube, and clutch means for releasing said resilient means for vertically adjusting said second rigid tube relative to said first rigid tube, said clutch means being discrete from said resilient means for normally maintaining said first and second rigid tubes in assembled relation and comprising an assembly clip including a pair of leg members connected one to the other by a base member, one of said legs terminating in a U-shaped body extending initially outwardly from the plane of said leg and returning inwardly toward the plane of said leg, said first rigid tube being provided with a lateral slot for receiving said U-shaped body, said U-shaped body being rotatable through said lateral slot for releasing tension of said resilient means on said second rigid tube whereby said second rigid tube may be vertically adjusted relative to said first rigid tube.

3,856,254

FORM FOR WALL PANELS WITH IMBEDDED HEATING TUBES

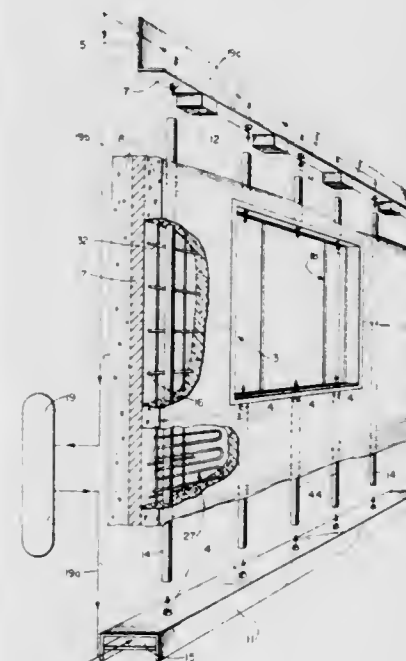
Arthur P. Fattor, 5380 S. Holly St., Englewood, Colo. 80110

Filed Nov. 17, 1972, Ser. No. 307,371

Int. Cl. E04g 15/02

U.S. Cl. 249—39

4 Claims



1. Apparatus for the production of precast composite concrete wall units comprised of upper and lower mold elements, side walls and members arranged to form an enclosure in the nature of a mold cavity; said upper and lower mold elements include plates; a plurality of conically shaped, tubular members positioned on said upper and lower plates and extending vertically into said mold cavity; a plurality of tubular means mounted in said mold cavity and each mounted on and fitted to an upper and lower conically shaped, tubular member for passage of steam or heated fluid therethrough; means inclusive of a source of steam or hot fluid for passing steam or heated fluid through said plurality of tubular means; a steel matrix parallel with said side walls centrally located in said mold cavity and coextensive therewith and affixed to said tubular means; and means including entry ports at the bottom of both end members for introducing fluid concrete under pressure into said mold cavity to exclude air pockets from said cavity.

3,856,255

APPARATUS FOR THE FABRICATION OF INJECTION-MOLDED OR DIE-CAST ARTICLES

Wilfried Holzmann, Torkenweiler, Germany, assignor to Firma Hasco Normalien Hasenclever & Co., Ludenscheid, Germany

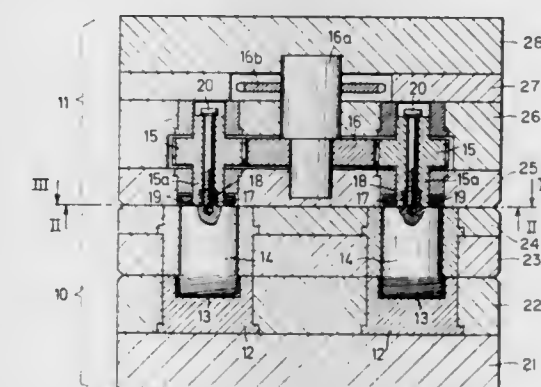
Filed Aug. 31, 1972, Ser. No. 285,308

Claims priority, application Germany, Sept. 9, 1971, 21450420

Int. Cl. B29f 1/14

U.S. Cl. 249—59

5 Claims



1. An apparatus for the fabrication of ejection-molded or die-cast articles equipped with a thread, such as screw-closing caps, comprising:
 - a molding unit including
 - a body,
 - a plurality of forming sets in said body defining openings for forming articles to be molded therein, and respective cores rotatable in said body and having threaded portions at one end of each core receivable in said opening and engageable by the article to be molded therein; and
 - a driving unit including
 - a housing,
 - a plurality of driving pinions in said housing alignable with said cores upon juxtaposition of said units, common drive means in said housing for rotating said pinions, and
 - coupling means for operatively and releasably connecting together said drive pinions and the corresponding cores, said driving unit constituting an independent drive set adapted to be a dismounted from said molding unit and usable independently thereof, said drive pinion and the respective threaded cores being formed with complementarily shaped structural parts, one of said parts including a receiving member and the other of said parts forming a stay flange axially projecting from the other of said structural parts and engaging snugly in said receiving member.

3,856,256

INJECTION MOLD FOR MAKING HOLLOW BODIES HAVING A MOLD LOCKING CORE

Louis Emile Celesti, Sonnaz (Chambery), France, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 14, 1973, Ser. No. 341,045

Claims priority, application France, Mar. 22, 1972, 72.10742

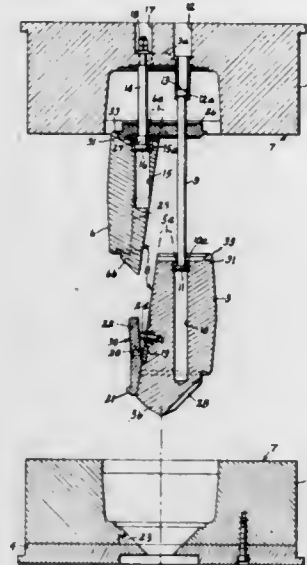
Int. Cl. B29c 1/14; B29f 1/14

U.S. Cl. 249—66

5 Claims

1. Apparatus for injection molding of open-ended hollow bodies comprising a mold having a parting plane perpendicular to the axis of symmetry of the mold and passing through the largest section of the mold between the two ends thereof so as to divide the mold into an upper part and a lower part, a core disposed within the mold and separated along a plane slanted with respect to the axis of symmetry thereof and dividing said core into a first part having a large base portion and a second part having a small base portion, and means adapted

to be actuated by the mating of the core parts for locking the core part having the large base portion to the lower mold part, said locking means including a latch pivoted on said first core part, a groove in said second core part having a slanted bottom



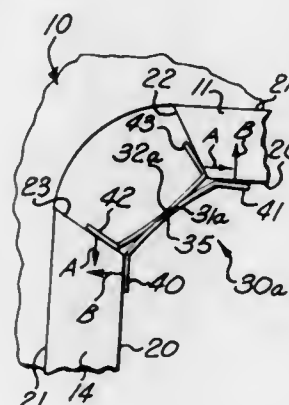
3,856,258
X-SHAPED HOT TOP CORNER WEDGE
George Dowidchuk, Novelty, and James R. Stockham, Lakewood, both of Ohio, assignors to Oglebay Norton Company, Cleveland, Ohio

Filed June 28, 1973, Ser. No. 374,365

Int. Cl. B22d 7/10

U.S. Cl. 249—197

7 Claims



portion, and a tail on said latch constructed and arranged for engagement with the bottom portion of said groove for moving said latch to its engaged position when the mold is closed thereby locking said first core part to said lower mold part.

3,856,257

MOLDED PICTURE FRAME

Janet M. Wetstone, 1041 Crane Rd., N.E., Atlanta, Ga. 30324

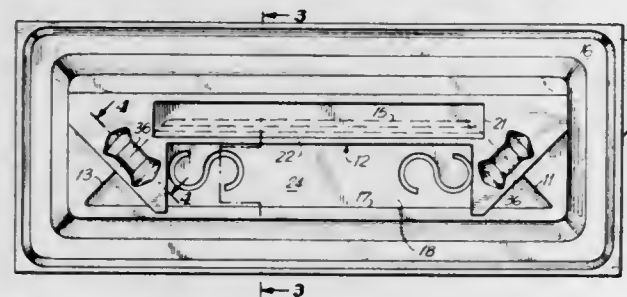
Continuation-in-part of Ser. No. 142,701, May 12, 1971,

abandoned. This application Aug. 6, 1973, Ser. No. 386,026

Int. Cl. B41b 11/54

U.S. Cl. 249—160

4 Claims



1. A combined two-part mold for forming a segment strip for a picture frame and providing for the simultaneous formation, by molding, of the strip and keying means for attaching a segment to an adjacent segment, the combined mold comprising (a) a female mold having a first depression comprising an article space-defining surface for defining a strip, key depressions extending outwardly from the space-defining depression but continuous therewith, and an annular perimetric edge portion surrounding the depressions; and (b) a hermaphroditic mold comprising an annular perimetric edge portion adapted to engage in abutting relationship with at least a portion of the annular perimetric edge portion of the female mold; a front convex surface extending outwardly from the perimetric annular edge portions and a rear surface having a second and a third depressions comprising article space-defining surfaces for defining two keying means, first portions of the front convex surface fitting within the key depressions in the female mold and second portions extending across and into the first depression in the female mold; the combined mold, thereby, simultaneously permitting, when the annular perimetric edge portions are in abutting relationship and the

1. Apparatus for use in a hot top including a plurality of preformed elongated refractory panels for location within a casing, at least one of said panels having a front surface facing the interior of the casing and a rear surface for engaging a wall thereof and side edge surfaces interconnecting the front and rear surfaces, said panel being wedge shaped, and means for wedging the panels into tight abutting engagement with the wall of said casing, said means comprising at least one corner wedge made of a sheet metal material and having a tapered configuration, said corner wedge comprising a pair of spring members secured together to be resiliently deflectable away from each other, one of said pair of spring members having portions which engage, respectively, adjacent side edge surfaces of said panels and the other of said pair of spring members having portions which engage, respectively, the front surfaces of adjacent ones of said panels.

3,856,259

THERMALLY RESPONSIVE VALVE ASSEMBLY

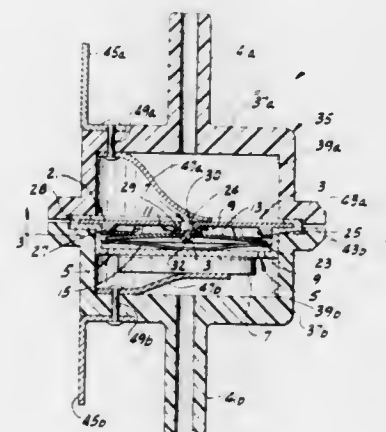
John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,768

Int. Cl. F03g 7/06; F16k 31/56

U.S. Cl. 251—11

11 Claims



1. A thermally responsive electrically actuated valve assembly comprising a generally flat cylindrical capsule having an inlet port in one face and an outlet port in the other face thereof with communication between said ports, one of said ports having a valve seat, valve means movable into and out

of engagement with said valve seat thereby selectively to block communication between said ports, said valve means comprising a generally circular dish-shaped snap-acting thermostatic disk responsive to a variation in temperature to abruptly change its curvature between a first position in which said disk is bowed toward said seat and the valve means are closed against said seat thereby to block communication between the ports and a second position in which the disk is bowed away from the seat and the valve means are spaced therefrom thereby to open communication between the ports, spring means biasing said disk and said valve means toward said seat when the disk is in said first position thereby to apply sufficient force thereto to maintain said valve means closed against said seat, an electric heater secured to one face of the capsule in heat exchange relationship with said disk whereby when electrically energized it will heat said disk to a temperature at which said disk will reverse curvature from one position to the other, and abutment means spaced from the disk when it is in its first position and against which the disk reacts to effect movement thereof into its second position.

3,856,260

THREE-WAY SOLENOID VALVES

Jean-Louis Giordano, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

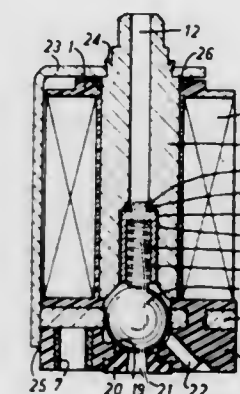
Filed Mar. 23, 1973, Ser. No. 344,208

Claims priority, application France, Mar. 31, 1972, 72.11672

Int. Cl. F16k 11/10, 31/06

U.S. Cl. 251—129

5 Claims



1. A ball-type three-way solenoid valve, comprising:

- a. an electromagnet comprising
 - a magnetic yoke,
 - a magnetic core having a longitudinal axial passage therein, and,
 - a coil yoke having a solenoid coil wound thereon;
- b. a valve member slidably disposed in said magnetic core's passage;
- c. a valve seat for said valve member, disposed in said magnetic core's passage;
- d. a gasket disposed in engagement with said valve seat;
- e. a copper-coated ball movably responsive to the pulling effect of said electromagnet;
- f. a seat member for said ball;
- g. a compression spring interposed between said valve member and said ball;
- h. said coil yoke and said seat member being portions of a unitary synthetic material molded member having a longitudinal axial passage therein, said magnetic core inserted into said molded member's passage proximate said coil yoke portion and said ball inserted into said molded member's passage proximate said seat member portion, a shoulder disposed in said molded member's passage to abut said core and an abutment disposed in said molded member's passage to support said ball when said electromagnet is de-energized;

- i. a pair of seals disposed in said molded member's passage, said first seal disposed at one end of said passage in said seat member portion, and said second seal disposed at the opposite end of said passage between said core and said coil yoke portion; and
- j. said magnetic yoke comprising a folded pressed sheet, steel shield partially enclosing said molded member proximate said coil.

3,856,261

PRESSURE RELIEF MEANS FOR VALVE BODY CHAMBER

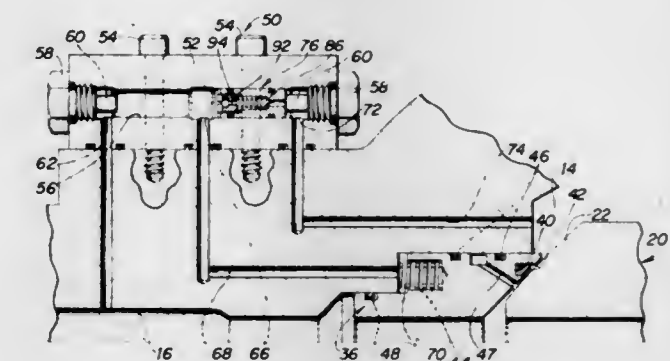
Jerry W. Jourdan, Alvin, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 2, 1973, Ser. No. 385,208

Int. Cl. F16k 25/00

U.S. Cl. 251—172

2 Claims



1. A ball structure comprising a valve body and upstream and downstream flowlines, a valve member mounted within the valve body, means to move the valve member between open and closed positions to control the flow of fluid, a fluid pressure actuated sealing member on opposed sides of the valve member providing upstream and downstream sealing members, a separate pilot valve for each sealing member mounted outside the valve body, each pilot valve including a body having a central bore and three ports communicating with the bore and spaced longitudinally of the pilot valve body to provide intermediate and end ports, a first fluid conduit between the intermediate port and associated sealing member to provide fluid rearwardly of the sealing member to urge the sealing member toward the valve member, a second fluid conduit between one end port and the associated flowline, a third fluid conduit between the other end port and the valve body, a shuttle member responsive to fluid pressure from said end ports slidable back and forth within the central bore between positions selectively communicating the intermediate port with one of the end ports and blocking flow to the other end port thereby to provide fluid rearwardly of the sealing member, the shuttle member having a check valve therein which is actuated at a predetermined high fluid pressure in the valve body when the shuttle valve is in a position blocking flow to the second fluid conduit, said shuttle member upon a fluid pressure being reached in the valve body greater than the fluid pressure in the flowline being moved to the position blocking flow to the second fluid conduit, said check valve within the shuttle member being opened at said predetermined high temperature in the valve body to permit a flow of fluid from the valve body to the flowline through the second fluid conduit thereby to reduce any excessive fluid pressure within the valve body.

3,856,262 VALVE

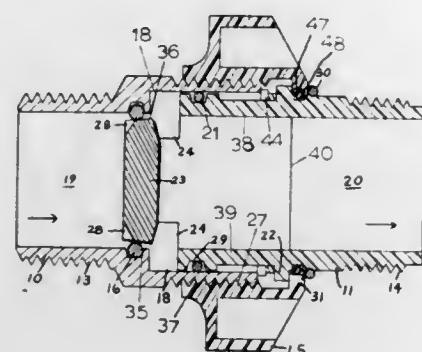
Chalmer C. Jordan, Perry Hwy., Saegertown, Pa. 16433

Filed Nov. 17, 1972, Ser. No. 307,657

Int. Cl. F16k 51/00

U.S. Cl. 251-340

9 Claims



1. A valve comprising a body, a sleeve telescopically received in said body, said sleeve having a partition supported on one end, an external flange on said sleeve, a nut threadably received on said body and receiving said sleeve, a flange on said nut engaging said flange on said sleeve for moving said sleeve toward and away from said body, a sealing means in said body adapted to engage said partition on said sleeve whereby a flow passage through said valve is stopped when said sleeve is in a first position, said sleeve being movable to a second position whereby said partition is out of engagement with said sealing means whereby a flow passage is established through said valve, said sleeve having an oval shaped portion received in a complementary shaped portion in said body whereby said body and said sleeve are held against relative rotation.

3,856,263 VALVES

Richard Terence Macguire-Cooper, 3 Burcot Park, Clifton Hampden, near Abingdon, England

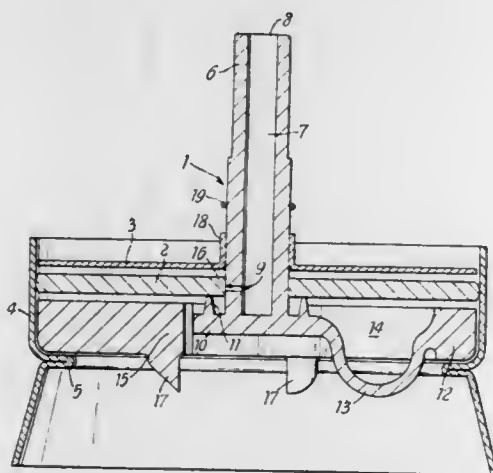
Filed Jan. 7, 1972, Ser. No. 216,215

Claims priority, application Great Britain, Jan. 8, 1971, 1110/71; Mar. 2, 1971, 5767/71; Dec. 14, 1971, 57895/71

Int. Cl. F16k 31/58

U.S. Cl. 251-347

4 Claims



1. A valve assembly comprising a resilient gasket and a plastics moulded member having a valve surface normally contained by said gasket to provide a releasable closed condition of said assembly, said moulded member comprising: a valving region defining said valve surfaces; a flexible spokes integral with and extending from said valving region; and

supporting means to which said spokes extend so that said valving region is displaceable relative to said supporting means for displacing said valve surface from said gasket, said supporting means comprising a member having portions defining slots, wherein said spokes extend into said slots, and wherein said slot defining portions support said gasket at zones nearer said valving region than the outer ends of said spokes, said spokes and said slots extending non-radially of said valving region.

3,856,264

PORTABLE WHEEL STAND

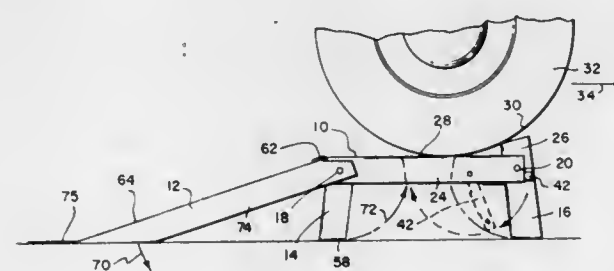
Francis L. Thumma, 3714 W. Rose Ln., Phoenix, Ariz. 85019

Filed Aug. 4, 1972, Ser. No. 278,103

Int. Cl. E02c 3/00

U.S. Cl. 254-88

8 Claims



1. In a portable wheel stand, the combination of: an elongated platform member having opposite ends and disposed to be supported in a substantially horizontal position above the surface of the ground; first and second leg members having normally upper portions pivotally connected to said platform member; said leg members movable from a position substantially parallel to said platform member and into a downwardly directed position; said leg members having normally lower ends disposed to engage the ground and to support said platform member in said horizontal position; and an elongated normally inclined ramp member having a normally inclined upper wheel engaging surface; said ramp member having a first end pivotally connected to one of said opposite ends of said platform members; said ramp member having a second end disposed to rest on the ground so as to maintain said ramp member in an inclined position and extending from the ground to substantially the level of said platform member; said ramp member pivotally movable relative to said platform member so as to permit said ramp member and said leg members to be disposed in substantially contiguous parallel relation to said platform member for collapsing said portable wheel stand into compact position; first and second latch members pivotally connected to said platform member; said first and second latch members disposed and adapted respectively to brace and hold said first and second leg members in downwardly directed relation to said platform member and to prevent pivotal movement of said leg members into a nonsupporting position, relative to an elevated position of said platform member.

3,856,265

TENSIONING DEVICE

Howard F. Foster, 1050 N.W. 55th St., Fort Lauderdale, Fla. 33505

Filed July 30, 1973, Ser. No. 383,587

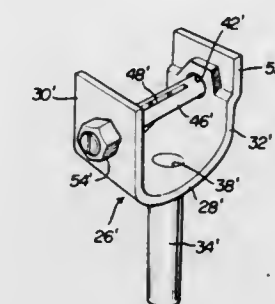
Int. Cl. A63b 61/04; B65d 63/00

U.S. Cl. 254-161

3 Claims

1. In a tensioning device for a flexible element having a bolt with an aperture therein to receive the end of a flexible element to be wound around a bolt and a polygonal portion with adjoining flat surfaces adjacent one end thereof, a stem, and a frame having a base and substantially parallel legs projecting from the base, the legs having openings which are aligned with each other across the space between the legs so that the bolt is rotatable and axially adjustable in a lateral direction in the openings, the bolt having a nut for the end thereof opposite the polygonal portion, the improvement wherein the entire

width of one of said legs at the side of the opening therein is offset laterally outward and substantially parallel to said one leg on the opposite side of said opening and presents only three polygonally disposed, adjoining flat edges which face toward the axis of said opening and are each elongated substantially perpendicular to the axis of said opening and are



each spaced from said axis by substantially a radius of said polygonal portion of the bolt to a flat surface thereon to hold three sides of the polygonal portion of said bolt against rotation when said bolt is axially shifted toward the other of said legs, said one leg having no other edges for engaging said polygonal portion of said bolt.

3,856,266

BALANCING APPARATUS WITH SERVO RELIEF VALVE

Lorne J. Kendrick, 5131 Surfwood, Milford, Mich.

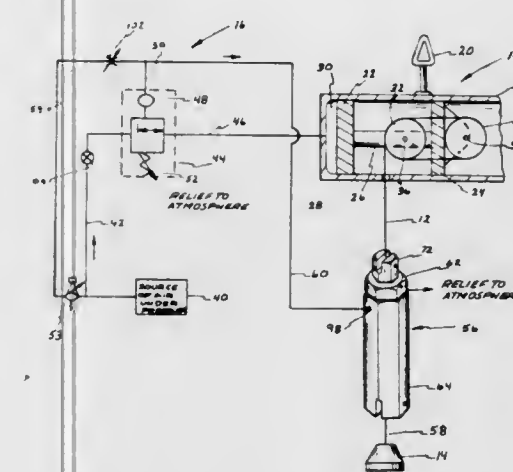
Continuation of Ser. No. 13,272, Feb. 24, 1970, This

application Oct. 12, 1971, Ser. No. 188,534

Int. Cl. B66d 1/44

U.S. Cl. 254-168

3 Claims



including a seal member fixed to said valve closure member, said valve closure member and said seal member adapted for relative movement toward and away from said annular recess, whereby said seal member is moved into and out of said annular recess upon separation of said valve closure member and said housing member to thereby open and close said port for the passage of air from said regulator means through said valve means to atmosphere and a spring carried by said housing member and urging said housing member and said valve closure member toward a position closing said annular recess.

3,856,267

VIBRATION ISOLATOR

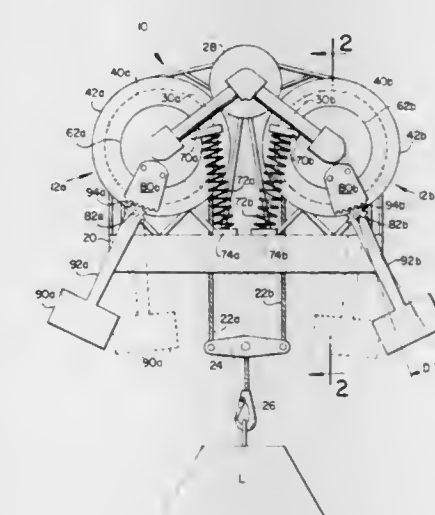
William G. Flannelly, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Jan. 12, 1973, Ser. No. 323,038

Int. Cl. B66d 1/26

U.S. Cl. 254-183

15 Claims



1. A vibration isolator for reducing the transmission of vibrations from a winch cable through a winch drum to a supporting structure, the drum being driven rotatably relative to the supporting structure, comprising: a torque-reaction housing rotatably mounted on the supporting structure, the drum being rotatably driven relative to the supporting structure through the housing whereby the driving torque applied to the drum is reacted through the housing to the supporting structure, resilient means connected between the torque-reaction housing and the supporting structure for resiliently restraining rotational movements of the torque-reaction housing relative to the supporting structure; an inertial mass mounted for movement on the supporting structure; and connecting means between the mass and the torque-reaction housing for displacing the mass relative to the supporting structure in accordance with rotational movements of the housing relative to the supporting structure.

3,856,268

HIGHWAY SAFETY DEVICE

John C. Fitch, Falls Village, Conn., assignor to Fibco, Incorporated, Boston, Mass.

Filed Sept. 17, 1973, Ser. No. 397,618

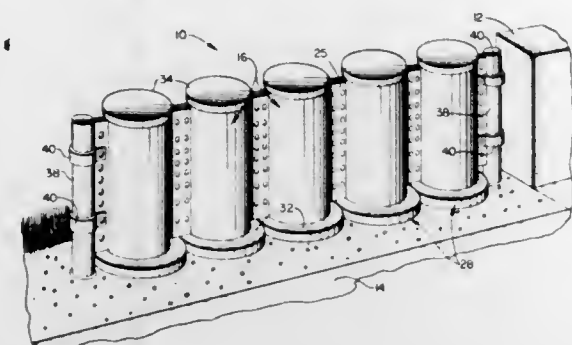
Int. Cl. E01f 15/00

U.S. Cl. 256-13.1

4 Claims

1. A highway safety device for decelerating or redirecting a vehicle approaching a hazard comprising a vertically elongated deformable hollow metal cell, a lightweight crushable core filling the lower portion of said cell and providing a ground-engaging base for said cell which permits essentially free displacement of said cell upon impact by a vehicle, and a metal crush panel extending diametrically across said cell

along the full length of the portion of said cell above said core means fixedly connecting said panel to said cell, the space



above said core being adapted to contain a dispersible mass such as sand.

3,856,269

MIXING APPARATUS

Bernard Henry Fothergill, Barton-on-Humber; Henry Earle, Cumberland, and William John Kelly, Brigg, all of England, assignors to Albright & Wilson Limited, Warley, Worc., England

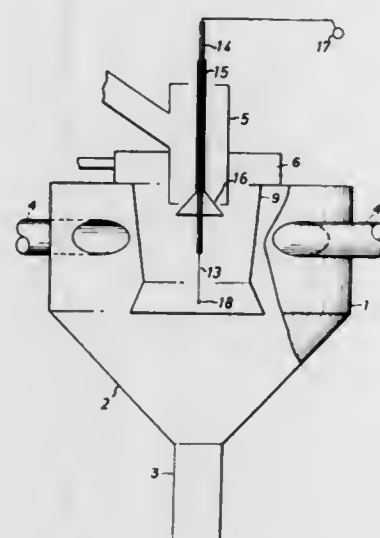
Filed Oct. 24, 1972, Ser. No. 300,009

Claims priority, application Great Britain, Oct. 25, 1971, 49547/71

Int. Cl. B01f 5/00, 15/02

U.S. Cl. 259-4

8 Claims



1. An apparatus for mixing together liquids and particulate solids, comprising a funnel shaped base having a substantially vertical axis,

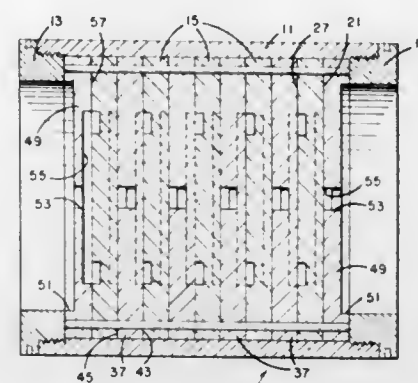
fluid injection means for introducing a stream of liquid tangentially into the mixer to establish a continuous vortex in at least the lower part of the funnel shaped base, solid inlet means for introducing a stream of solid particles into the mixer, and substantially down the axis thereof, deflection means comprising a corona discharge electrode located substantially at the axis of the funnel, below the level of the solid inlet means and adapted to deflect the solid particles substantially radially outward into the vortex, when the apparatus is in use, to form a mixture of the solid with the liquid, and

an outlet for the mixture at the base of the funnel.

3,856,270
STATIC FLUID MIXING APPARATUS
Herman W. Hemker, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Oct. 9, 1973, Ser. No. 404,276
Int. Cl. B01f 15/02

U.S. Cl. 259-4

10 Claims



1. Apparatus for mixing fluids including a series of plates retained in snug face-to-face contacting, fluid-tight relationship each of the alternate plates of such series of plates having a pair of spaced channels in each of the opposite faces thereof and openings extending therethrough connecting the channels in one of said faces with the channels in the other of said faces, the channels in said one face of the respective alternate plates each serving to divide individual streams of fluid into a plurality of separate fluid flows, each of the channels in said other face of the respective alternate plates arranged to receive individual streams of fluid from a pair of channels in an adjacent of said alternate plates and direct the same to the opening in such intermediate plate where they are combined into a single stream of fluid, the channel in said other face of the respective intermediate plates serving to divide a single stream of fluid into individual streams and arranged to direct such individual streams to respective channels of a pair of channels in an adjacent of said alternate plates.

3,856,271
MIXING DEVICE FOR GLUING WOOD SHAVINGS
Wilhelm Lodige, Elsener Str. 9c; Fritz Lodige, Leuschner Str. 12, and Josef Lucke, Im Lohfeld 13, all of 479 Paderborn, Germany

Filed Dec. 26, 1972, Ser. No. 318,648

Claims priority, application Germany, Dec. 23, 1972, 2164380

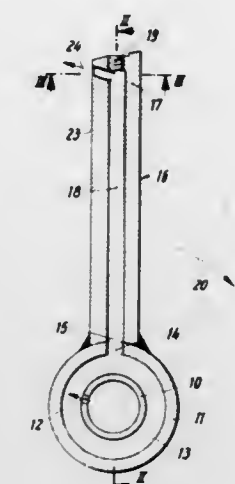
Int. Cl. B01f 7/02, 15/02

U.S. Cl. 259-25

12 Claims

1. A device for mixing wood shavings, fibers and similar mixtures of wood and waste bagasse, especially cellulose containing materials and for simultaneously adding glue thereto, which includes: a hollow rotatable shaft, feeding conduit means arranged within said rotatable shaft in radially spaced relationship thereto so as to define with said rotatable shaft an annular chamber, said feeding conduit means being adapted to be connected to a supply of liquid glue and being provided with passage means therethrough for conveying liquid glue from said feeding conduit means into said annular chamber, and a longitudinal mixing tool connected to and extending outwardly of said rotatable shaft for rotation in a mixing chamber, said mixing tool having an outer free end and being provided with a longitudinal passage communicating with said annular chamber and with outlet passage means

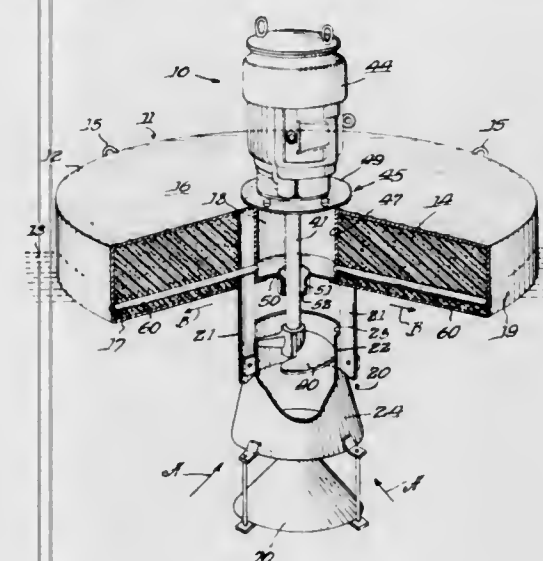
including an outer mouth communicating with said longitudinal passage substantially transverse thereto and leading to the outside of said mixing tool, said outlet passage means being provided near the outer free end of said mixing tool which end



3,856,272
FLOATING MIXER
Richard B. Ravitts, Rockford, Ill., assignor to Richards of Rockford, Inc., Rockford, Ill.
Filed June 8, 1972, Ser. No. 260,851
Int. Cl. B01f 5/12

U.S. Cl. 259-95

12 Claims



1. In a floating liquid mixer adapted to be mounted in a parent body of liquid, the combination comprising:

a float adapted to be supported buoyantly in the parent body of liquid,

said float having a vertically extending passage therethrough,

mixing means positioned below said float adapted to be submerged in the parent body of liquid for agitating the liquid,

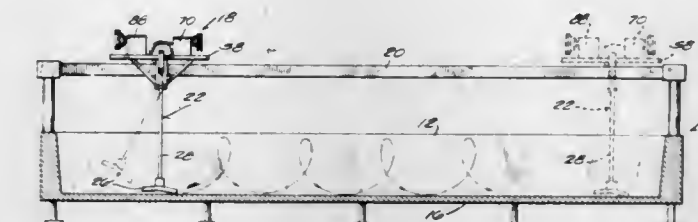
drive shaft means connected to said mixing means, motor means mounted on said float for powering said drive shaft,

a shield member at the lower end of said passage containing an opening through which said drive shaft means extends, said opening providing a clearance between said drive shaft means and said shield member whereby liquid agitated by the mixing is introduced into said passage, and conduit means between said passage and a location remote from said mixing means for controlling the level of liquid in said passage.

3,856,273
WING TYPE AGITATOR
Billy Leon Born, Rockford, Ill., assignor to Stoelting Brothers Company, Kiel, Wis.
Filed June 25, 1973, Ser. No. 372,963
Int. Cl. B01f 13/00

U.S. Cl. 259-99

15 Claims



1. Apparatus of the type described comprising, in combination,

a vat having a bottom wall, spaced vertical side walls and an open top,

a carriage, means supporting said carriage for horizontal movement relative to said vat generally parallel to said side walls,

a stirring blade assembly extending through said open top into said vat, said stirring blade assembly including a blade member,

means connecting said blade assembly to said carriage for horizontal movement therewith and for oscillating movement in a vertical plane relative to said carriage and said vat,

said means connecting said blade assembly to said carriage including

a rotatable crank arm connected to and rotatably driven by said drive means for said blade assembly,

an elongated support arm connected to said blade member,

means pivotally connecting said support arm to said crank arm,

and guide means connected to said support arm said carriage and movable with said carriage, said guide means supported for pivotal movement about a horizontal axis while permitting sliding movement of said support arm relative thereto so that as said support arm is raised and lowered by said crank arm said support arm can also pivot in a vertical plane generally about the pivot axis of said guide means and oscillate in a horizontal direction,

and drive means for moving said carriage horizontally relative to said vat and for oscillating said blade assembly vertically so that said carriage and said blade assembly can be moved horizontally through a process medium in said vat with said blade assembly also moving vertically.

3,856,274
STORAGE TANK
James S. Stevenson, 4230 St. Andrews Rd., Oakland, Calif. 94605

Filed Dec. 15, 1972, Ser. No. 315,295

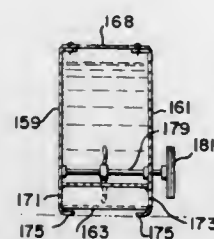
Int. Cl. B01f 7/02

U.S. Cl. 259-109

5 Claims

1. A lightweight storage tank applicable for use on a mobile vehicle, comprising a pair of opposing side walls, each comprising a unitary substantially rectangular piece of sheet material, and a one piece bottom and end walls of sheet material disposed between said side walls with said end walls, at their upper edges, terminating in substantially the plane of the upper edges of said side walls, and with said bottom above the lower edges of said side walls, whereby those portions of said

sheet material side walls below said bottom constitute legs for said tank, said legs being arced to provide resilient support for



said tank and avoid fatiguing of said sheet material and possible resulting cracking of said legs.

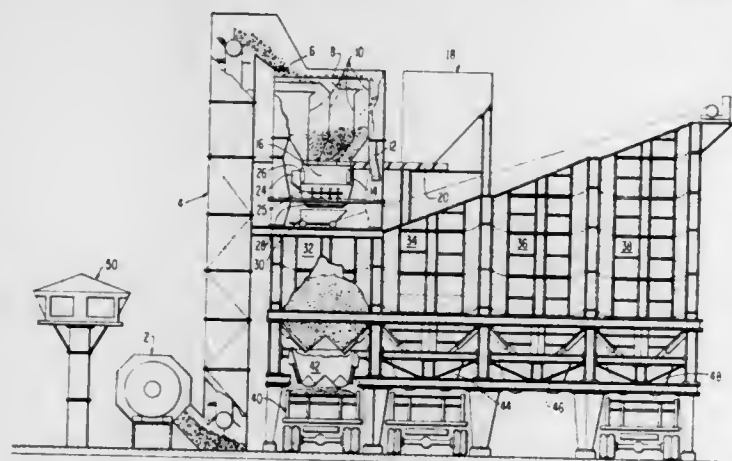
3,856,275

APPARATUS FOR MAKING AND STORING HOT ASPHALT PAVING MATERIAL

Michael Dydzyk, 11B Queentree Ct., Baltimore, Md. 21207
Filed Nov. 13, 1972, Ser. No. 305,756
Int. Cl. B28c 7/16

U.S. Cl. 259—161

10 Claims



1. Apparatus for making and dispensing a hot mix asphalt paving material, comprising plant means for making batches of hot mix asphalt paving material, said plant means having pugmill means of a given maximum capacity for mixing batches of the constituents of an asphalt paving material and discharging the hot mixed batches thereof through a plant outlet passage; a first storage bin located directly below the plant means and having an inlet opening for receiving mixed batches discharged through the plant outlet passage, said storage bin being elevated and having an elevated discharge opening at its lower end for releasing paving material into transport vehicles located therebeneath.

3,856,276

COMPOST PROCESSING MACHINE

Robert T. Pannell, R.D. No. 1, Avondale, Pa. 19118
Filed Sept. 8, 1972, Ser. No. 287,473
Int. Cl. B01f

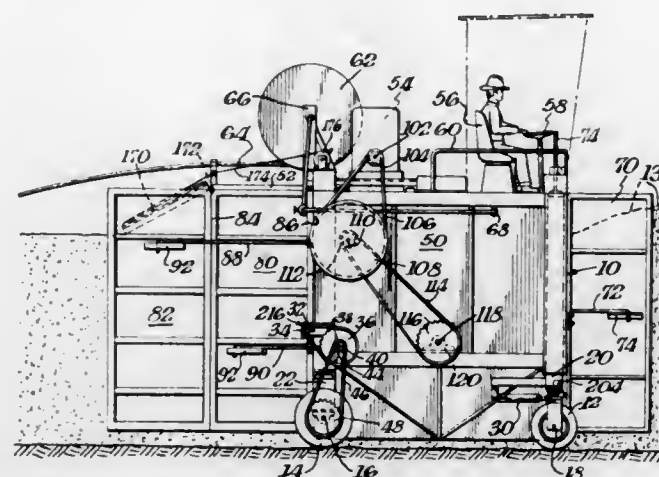
U.S. Cl. 259—183

10 Claims

1. In a compost processing machine for separating, mixing, and stacking fermenting compost, said machine having front and back ends and side walls and being mounted on wheels to facilitate the traversal of a stack of said compost during processing, the improvement comprising:

a rotatable pick-up means mounted between said side walls adjacent the front end of said machine, drive means for rotating said pick-up means thereby to lift and move said compost rearwardly as said machine moves forward, rotatable means having an axis of rotation and at least one planar surface disposed at an angle to said axis of rotation

to receive and divert compost from said pick-up means rearwardly and toward the side walls, and



means for rotating said rotatable means at a greater peripheral velocity than that of said pick-up means, thereby to divert, mix and stack said compost at the back end of said machine.

3,856,277

SCREEN ASSEMBLY FOR PROCESSING PLASTIC

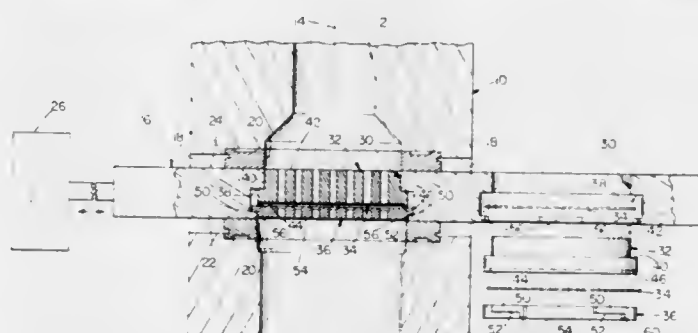
Marco Tiramani, Gloucester, Mass., assignor to Gloucester Engineering Co. Inc., Gloucester, Mass.

Filed Sept. 28, 1973, Ser. No. 401,901

Int. Cl. B29b 1/12

U.S. Cl. 259—185

5 Claims



1. In apparatus for processing plastic and having a body defining a duct for plastic flow along an axis, a screen changer comprising

a carrier mounted in said apparatus for sliding movement across said duct and transverse to said axis, said carrier having two screen apertures and parallel upstream and downstream surfaces surrounding and extending between said apertures; and

a screen assembly in each said aperture, each screen assembly comprising a breaker plate, a backup plate, and screening sandwiched between said plates;

each said breaker plate and said carrier having mating shoulders to locate said breaker plates with their downstream surface in the plane of, and forming extensions of, said downstream surface of said carrier, and to prevent said breaker plates from being forced downstream and out of said carrier by the pressure of plastic flow;

each said backup plate having circumferentially spaced lugs, and said carrier at each said aperture having circumferentially spaced retainer extensions extending into said aperture, said lugs and extensions being arranged to positively locate said backup plates along said axis, said lugs having upstream surfaces spaced axially from the upstream surfaces of their respective plates proper by a distance equal to the axial dimension of said retainer extensions, so that when installed in said apertures said upstream surfaces of said backup plates will be positively located along said axis in the plane of, and forming extensions of, said upstream carrier surface.

3,856,278

TWIN-SCREW EXTRUDER WITH ADJUSTABLE THROTTLING MEANS

Gerhard Eisenmann, Senden, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

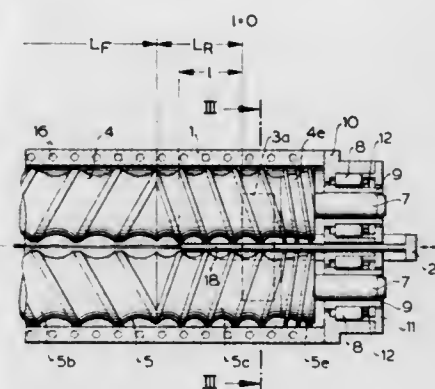
Filed Oct. 2, 1973, Ser. No. 402,711

Claims priority, application Germany, Oct. 7, 1972, 2249328

Int. Cl. B29f 3/02; B01f 7/08

U.S. Cl. 259—192

10 Claims



1. A twin-screw extruder for processing pulverized and pasty material, said extruder comprising: an elongate housing having at one end a feed opening and at the other end a discharge opening; a pair of coaxial parallel screws rotatably mounted in the housing for conveying material to be processed in the direction from the feed opening toward the discharge opening, said screws being separated by a lengthwise gap and each of said screws including screw flights pitched for conveying the material in said downstream direction and screw flights pitched to convey the material in opposition to the downstream direction; and adjustable throttling means for controlling the downstream conveyance of material through the housing, said throttling means including an elongate slidable member interposed in the gap between said oppositely pitched screw flights, said slidable member being lengthwise displaceable relative to said oppositely pitched screw flights.

3,856,279

HUMIDIFIER ASSEMBLY

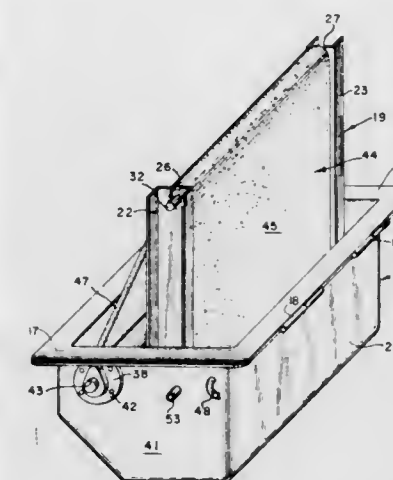
Richard J. Yeagle, Hartland, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.

Filed Sept. 21, 1972, Ser. No. 290,808

Int. Cl. B01f 3/04

U.S. Cl. 261—80

8 Claims



1. A humidifier assembly comprising an open top receptacle adapted to contain a body of water, means for maintaining said water at a predetermined level, a relatively rigid support mounted in said receptacle with its lower end secured to said receptacle and its upper end projecting freely well above the

open top of said receptacle, upper and lower idler rollers rotatably mounted on said support on substantially horizontal axes, the lower of said rollers being disposed below water level in the receptacle and the upper roller being disposed an appreciable distance above the open top of said receptacle, a drive roller rotatably mounted on said receptacle above said water level and below the open top of said receptacle upon a fixed substantially horizontal axis that is above the level of said lower roller and laterally spaced therefrom, an external motor unit mounted on a wall of said receptacle operatively connected through said wall to said drive roller, and an endless evaporator pad element mounted around and by said rollers, rotation of said drive roller causing movement of said element to pass a lower element section of substantial length through the water in said receptacle and dispose two water bearing sections thereof above the receptacle in the path of air to be humidified.

3,856,280

MODULAR LIQUID COOLING SPRAY UNITS

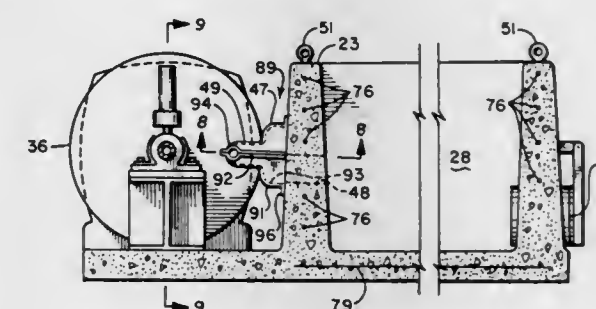
Leonard J. Boler, and Mandel L. Desnick, both of Minneapolis, Minn., assignors to Cherne Industrial Inc., Edina, Minn.

Filed Oct. 10, 1972, Ser. No. 296,778

Int. Cl. B01f 3/04

U.S. Cl. 261—90

28 Claims



1. A modular liquid cooling spray unit for controlled projection of liquid drops in desired trajectories, particle sizes, velocities, and volume rates providing cooling of the liquid, said modular unit comprising a longitudinally and upwardly extending trough wall portion having a base portion adapted for supporting the trough wall portion at one edge of a reservoir of heated liquid to be cooled, with the trough wall portion having a rear surface adapted to provide at least part of a reservoir boundary wall for maintaining a desired liquid level in such reservoir, a spray member support portion on one of said trough wall and base portions, a plurality of rotary spray members mounted on said spray member support portion for rotation on a horizontal axis spaced in front of and parallel to the trough wall portion, with at least a portion of each spray member spaced vertically below the desired level of heated liquid in such reservoir, and conduit means in said trough wall portion for feeding liquid from said reservoir through said trough wall portion to at least one surface of each spray member at a limited area which is below said desired liquid level and from which the rotation of the spray members carries liquid and projects liquid drops in a plurality of trajectories substantially all of which have horizontal components extending generally crosswise of said trough wall portion.

3,856,281

DEVICE FOR COOLING HOT ROLLED METALLIC STRIPS

Nino Bertolotti, Tirrenia; Bruno Sabatini, and Giuseppe Mocci, both of Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A.

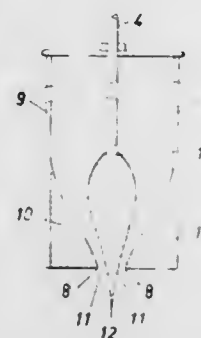
Filed July 10, 1972, Ser. No. 270,292

Claims priority, application Italy, July 17, 1971, 51720/71; June 22, 1972, 51091/72

Int. Cl. C21d 1/62

U.S. Cl. 266-3 R

18 Claims



1. A device for cooling hot rolled metallic strip by means of water directed against a strip moving rapidly between the last finishing stand of a strip mill and a coiler, comprising a cooling water distributing box having inner side walls that converge downwardly and terminate downwardly in a slit that extends generally transverse to the path of movement of the strip, said side walls having upper concave portions and lower convex portions adjacent said slit.

3,856,282

DEVICE FOR APPLYING FLAME-SCARFING POWDER

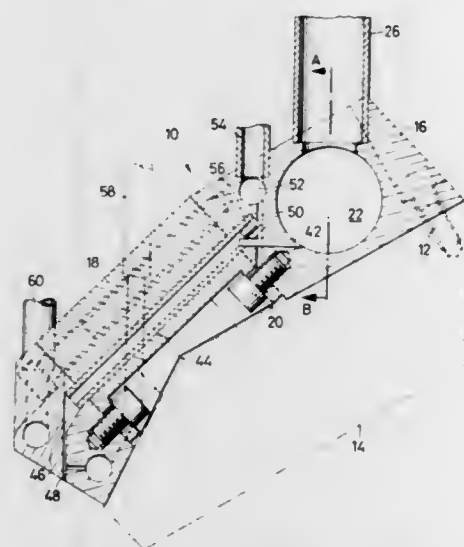
Alfred Lucht, Bickenbach, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Oct. 17, 1973, Ser. No. 407,273

Claims priority, application Germany, Oct. 21, 1972, 2251788

Int. Cl. B23k 7/08

U.S. Cl. 266-23 H



1. In a device for applying flame-scarfing powder to the surfaces of work pieces to be flame-scarfed with a conduit for supplying the powder from a storage container into a chamber in the device and with an outlet conduit connected with the chamber through which the powder may be supplied with the aid of a conveying medium to the work piece surface, the improvement being said powder supply conduit having at least two branches, one of said branches terminating in about the center of said chamber, the other of said branches being connected to the frontal side of said chamber, said outlet conduit being in the form of a plurality of side by side outlet channels, and each of said channels communicating with said chamber.

3,856,283

PIPE CUTTING AND BEVELING TOOL

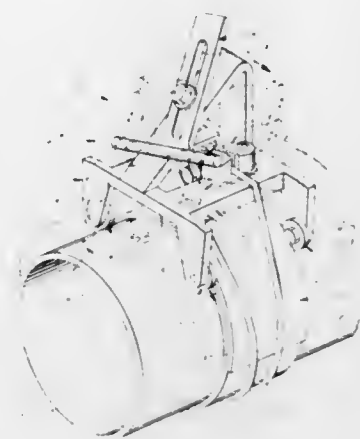
James R. Johnson, 7808 Allengrove St., Downey, Calif. 90240

Filed Dec. 27, 1972, Ser. No. 318,874

Int. Cl. B23k 7/04, 7/10

U.S. Cl. 266-23 NN

8 Claims



1. Apparatus for cutting and beveling a pipe comprising: a strip of flexible material having a smooth hard surface for wrapping about the surface of a pipe for more than one turn with the sides of the successive wrappings aligned; a mount for supporting a cutting torch, said mount adapted to be positioned on the surface of the pipe with at least one of the side surfaces thereof contacting the sides of said wrappings; and flexible means for holding said mount against the surface of the pipe by interconnecting the ends of the mount while lying against the surface of the strip; whereby said mount can be advanced about the surface of the pipe while being guided by the sides of said wrappings and while said flexible means slips about the surface of said strip.

3,856,284

CONTAINER FOR HOT LIQUID METALS

Otto Hoyer, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke Alpine Montan Aktiengesellschaft, Vienna

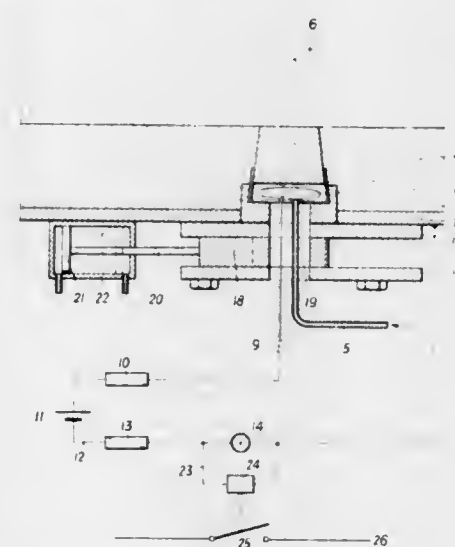
Filed Aug. 20, 1973, Ser. No. 389,532

Claims priority, application Austria, Aug. 21, 1972, 7183/72

Int. Cl. C21c 7/00

U.S. Cl. 266-34 PP

2 Claims



1. A container for hot liquid metals comprising a refractory lining and a bottom in which a porous, gas-permeable, refractory stone is inserted to which a conduit is joined through which a gas is blown into the liquid metal, the gas conduit at least in the area below the porous stone being made of an easily separable material, and further comprising a slide with

3,856,286

TORSION BAR PLATE

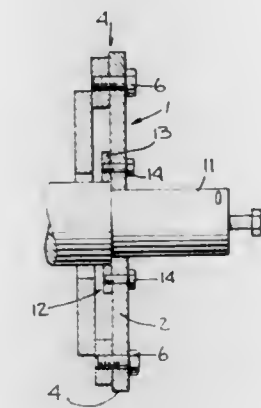
William Mitchell, Baldwin, N.Y., assignor to Motion Mini Car Corp., Baldwin, N.Y.

Filed June 12, 1973, Ser. No. 369,311

Int. Cl. F16f 1/16

U.S. Cl. 267-57

2 Claims



1. A torsion bar assembly comprising a torsion bar, a torsion bar plate, means for supporting said torsion bar on said torsion bar plate means for supporting the torsion bar plate on a frame, said torsion bar plate comprising a substantially flat plate having an opening therein to support the torsion bar, said torsion bar plate also comprising end edges and side edges, bolt openings being provided in the corners formed by the edges, said bolt opening being adapted to accommodate means for mounting the plate at same frame, a spacer assembly is provided around the opening, said opening is located substantially centrally on said plate, said spacer assembly being a ring removably bolted to the plate around the opening.

3,856,285

SHOCK ABSORBING APPARATUS

Akio Yamada, 20-21 Suehiro 1-chome, Ichinomiya, Japan

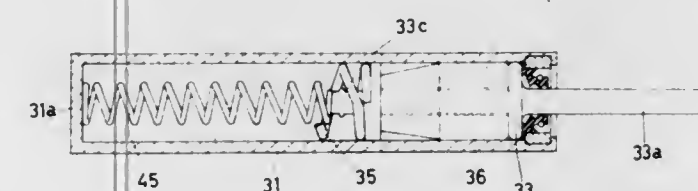
Continuation-in-part of Ser. No. 271,914, July 14, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,638

Claims priority, application Japan, July 16, 1971, 46-52990; May 15, 1972, 47-47873

Int. Cl. B60g 13/02, 15/04

U.S. Cl. 267-9 C

11 Claims



1. A vehicular collision impact absorbing apparatus comprising: a hollow elongate casing open at one end and closed at the other end, said open end having a closure means; an elongate elastically deformable component positioned in said casing and having an axial hole therethrough, said deformable component comprising a cylindrical portion toward one end and a tapered portion toward the other end, said cylindrical portion having an outer peripheral surface in contact with the inner surface of said casing, said deformable component having an overall length satisfying the formula $S/S' < \mu$, where S represents the cross-sectional area of said cylindrical portion, S' represents the outer peripheral surface area of said deformable component and μ represents the coefficient of friction between the inner surface of said casing and said outer surface of said deformable component, said tapered portion having a length equal to one-third to two-thirds of said overall length of said deformable component, and a minimum outer diameter equal to the outer diameter of said cylindrical portion less one-third to two-thirds of the difference between the outer diameter of said cylindrical portion and the diameter of said axial hole; a piston positioned in said casing and having one side contacting said one end of said deformable component; a first piston rod connected at one end to said one side of said piston and extending through said axial hole of said deformable component, said first piston rod having a diameter slightly smaller than that of said axial hole; a second piston rod connected at one end to the other side of said piston and extending in a direction opposite to said first piston rod, said second piston rod slidably extending through said open end of said casing, and the other end of said second piston rod serving as a means for fastening the apparatus to a vehicle; a guide member provided slidably inside said casing and having one side contacting said other end of said deformable component, said guide member being centrally provided with an opening which is coaxial with said axial hole of said deformable component and through which said first piston rod slidably extends; and elastic support means positioned in said casing and interposed between said closed end of said casing and the other side of said guide member to press against said guide member for restoring said deformable component to a beginning position.

3,856,287

PISTON ROD SEAL FOR ADJUSTABLE PNEUMATIC SPRING

Herbert Freitag, Koblenz-Metternich, Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Germany

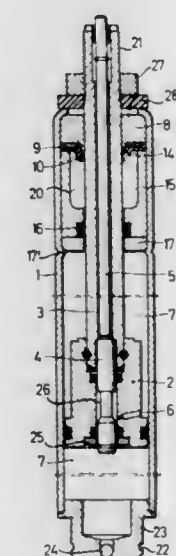
Filed June 20, 1973, Ser. No. 371,768

Claims priority, application Germany, June 24, 1972, 2231050

Int. Cl. F16f 5/00

U.S. Cl. 267-64 R

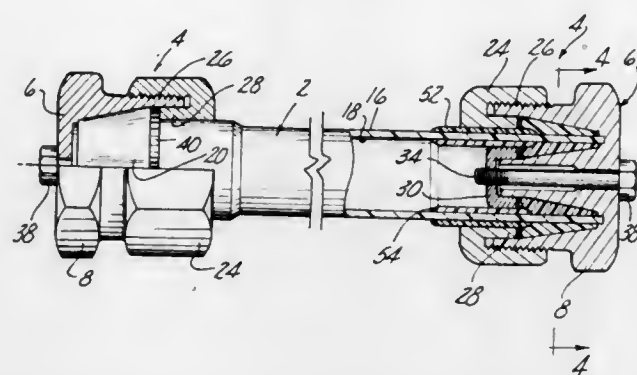
9 Claims



1. A pneumatic spring comprising: a. a cylinder having an axis and bounding a cavity therein; b. a piston axially slidable in said cavity and separating two compartments of said cavity;

- c. valve means operatively interposed between said compartments;
- d. valve operating means accessible outside said cavity for moving said valve means toward and away from an open position in which said valve means connects said compartments; e. a piston rod fixedly fastened to said piston and axially extending therefrom outward of said cavity, said cylinder including an end wall transverse to said axis and formed with an aperture for passage of said piston rod;
- f. fluid filling said cavity; and
- g. sealing means interposed between said end wall and said piston rod for preventing escape of fluid through said aperture, said sealing means including:
1. a rigid tubular member substantially coaxially enveloping said piston rod with sufficient clearance to permit free axial movement of said piston rod through said tubular member,
 2. a sealing member of resilient material formed with an opening therethrough, said tubular member having a first axial portion enveloping said rigid tubular member and a second axial portion extending axially beyond said tubular member in a direction inward of said cavity,
 3. said second portion having a radially outer, axially extending face radially spaced from said cylinder and exposed to said fluid,
 4. the radially innermost part of said second portion constituting a lip portion, said lip portion being the only part of said sealing member frictionally engaging said piston rod.

high modulus anchor having at least one axially tapered side surface radially aligned with the tube's terminal side surface; and elastic force-transmitting material interposed between



each terminal side surface and each tapered side surface; said elastic material constituting the sole force-transmitting connection between the tube and anchor.

3,856,290

APPARATUS FOR COMPRESSING ARTICLE HOLDING RACKS

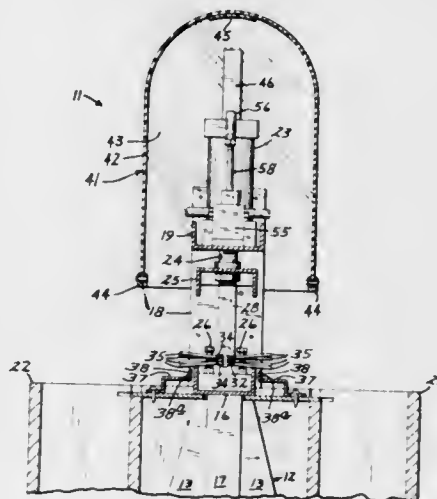
Dennis H. Jensen, New Brighton, and Thomas E. McKinley, Minneapolis, both of Minn., assignors to M J Manufacturing Consultants, Inc., Minneapolis, Minn.

Filed Mar. 15, 1973, Ser. No. 341,474

Int. Cl. B25b 1/18; C23b 5/70

U.S. Cl. 269—14

22 Claims



1. Apparatus for compressing article holding racks having a plurality of resilient finger pairs arranged in opposed, longitudinal rows, the fingers of each pair being mutually compressible to receive and retain an article, said apparatus comprising:

- a frame comprising an overhead support member;
- a first clamping member carried by the frame in a stationary position and constructed to engageably receive one finger of each finger pair;
- a second clamping member carried by the frame for movement relative to the first clamping member in clamping relation therewith, the second clamping member constructed to depressibly engage the other finger of each finger pair;
- the first and second clamping members comprising elongated channel members disposed horizontally below said overhead support member with their channels in opposed relation;
- power means comprising at least one actuator mounted on the overhead support member for moving the second channel member between clamping and non-clamping positions, the second channel member being operatively connected to the actuator for vertical movement thereby;
- shield means carried by the frame means for vertical

3,856,288

MULTISTAGE SPRING ASSEMBLY

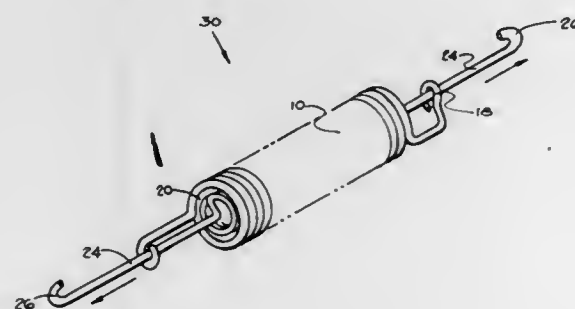
Bernard V. Alvarez, Rt. 1, Box 32, Inman, S.C. 29349

Filed Dec. 13, 1973, Ser. No. 424,472

Int. Cl. F16f 1/12

U.S. Cl. 267—73

15 Claims



1. A spring assembly comprising a pair of extension type coil springs in operative association, a first of said springs having stop means integral therewith and a second of said springs having means integral therewith guiding said second spring into contact with said stop means, said second spring being individually extended upon receipt of an axial force thereon to contact with said stop means and thereafter simultaneously extended with said first spring.

3,856,289

FORCE TRANSMITTING SYSTEM

Wallace Lee Roy Steele, Lathrup Village, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 155,697, June 23, 1971, This application Mar. 29, 1973, Ser. No. 346,197

Int. Cl. F16f 1/16

U.S. Cl. 267—154

18 Claims

1. In a torsional force-transmitting system: a low modulus torsion tube having at least one terminal side surface defined by spaced parallel planes A and B normal to the tube axis; a

movement between a first position protectively surrounding the clamping members and a second position permitting accessibility thereto;

g. and means for controlling movement of the power means, the controlling means including switching means engageable by the shield means in said second position to initiate movement of the second clamping member to said clamping position.

3,856,291

PRESSING MEANS FOR USE IN GLUEING CONSTRUCTION PANELS TO A BASE

Tor Noldus Nilsen, Ostrevel 25, 3150 Tolvsrod, Norway

Filed Sept. 7, 1973, Ser. No. 395,056

Claims priority, application Norway, Sept. 20, 1973, 3375/73

Int. Cl. B25b 11/00

U.S. Cl. 269—22

1 Claim



1. Pressing means for use when glueing construction panels and the like to a preferably vertical base, particularly to vertical posts in a building construction, characterized by an elongate channel profile (1) with an inflatable rubber tube (2) arranged in the profile cavity (2) and extending substantially along the entire length of the profile, and in that at the end of the profile (1) feet or blocks (7) are arranged for securing of the profile between two points, for example, floor and ceiling in a building construction, each foot (7) being secured to a rod (9) which is movably mounted in the longitudinal direction of the profile, a knee band approximately at the center of the profile (1), between the ends of the two rods (9), the two free ends (12) of said knee bend being secured to the free ends of the rods (9), a threaded sleeve through which a spindle (14) is passed at the branching point of said knee bend, said spindle being at one end mounted freely rotatable to the profile and, at its other end, having a control wheel (15).

3,856,292

RETENTION OR VISE COMBINATION

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 825,369, May 16, 1969, Pat. No. 3,653,708. This application Nov. 10, 1971, Ser. No. 197,222

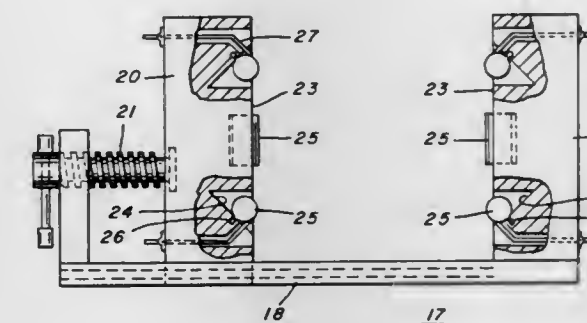
Int. Cl. B23q 3/00

U.S. Cl. 269—135

3 Claims

1. A vise comprising:

- a base;
- a pair of jaw members having confronting generally flat, parallel faces, one of said jaw members being movably



means such that the roller contacts the inclined surface of the recess, the rolling axis of the roller being parallel to the inclined surface, to permit movement of the roller in the directions of convergence and divergence said friction roller being retained such that in a rest position it projects partially beyond the recess in which it is mounted, and in a workpiece engaging position, each roller engages and restrains movement of the workpiece in the direction of convergence of the inclined surface, each roller, recess and resilient means being arranged such that each roller may recede into its recess upon application of sufficient force by the adjustment means, whereby the face of the jaws may be brought into engagement with the workpiece.

3,856,293

AUTOMATED FOLD PAN

Harold E. Boyer, Anna, Ohio, assignor to Bell and Howell Company, Sidney, Ohio

Filed Dec. 14, 1972, Ser. No. 314,923

Int. Cl. B65h 45/14

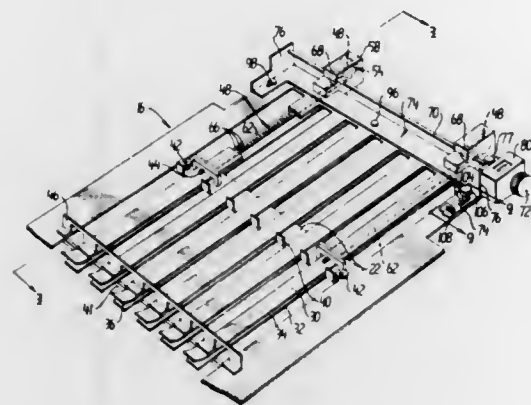
U.S. Cl. 270—68 A

20 Claims

1. A fold-pan assembly for attachment to a sheet folding machine comprising:

- a pair of parallel spaced plates defining a space therebetween with a sheet-entrance mouth at one end thereof;
- a fold-controlling paper stop disposed in said space movable toward and away from said sheet-entrance mouth;
- a crown extension spring attached to said paper stop, said crown extension spring normally having a stored coiled portion and a non-coiled extended portion having an end attached to said paper stop; and

a paper-stop adjusting means rigidly engaging said extended portion for moving said extended portion to thereby



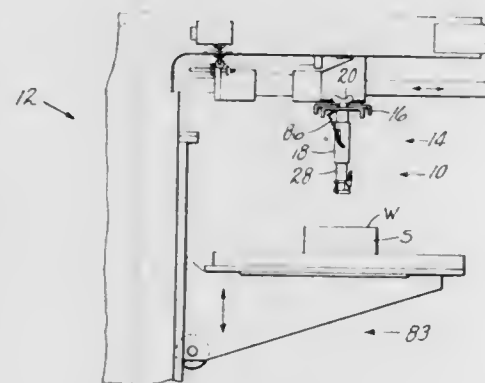
3,856,294

MECHANISM FOR SEPARATING FLEXIBLE PLIES FROM A STACK

Carlton G. Lutts, and James R. Stewart, both of Salem, Mass., assignors to USM Corporation, Flemington, N.J.
Filed June 6, 1972, Ser. No. 260,306
Int. Cl. B65h 3/00

U.S. Cl. 271-10

4 Claims



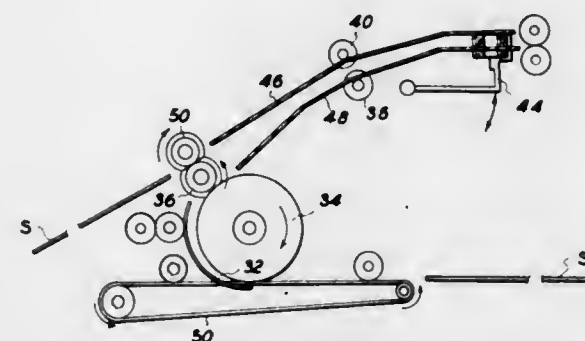
1. In a machine for transferring single plies of flexible sheet material from the exterior of a stack and having at least one pick-up device, a ply separating mechanism comprising a reciprocable piston for carrying the pick-up device toward and from the stack, a tubular body slidably mounting the piston and providing a first chamber therebetween the piston and the body having a pin and helical slot connection, the slot extending heightwise of the stack with inclination to cause the device to impart torsion to a locality of a top ply for facilitating its initial separation from the stack, a second chamber disposed between the piston and the pick-up device, and control means for changing fluid pressure in the first chamber to effect cooperation between said pin and slot and thereby shift the pick-up rotatively and away from the stack when the top ply has been seized, said control means being adapted to change fluid pressure in the second chamber on arrival of the pick-up device with the top ply at a delivery position to effect work release by the device.

3,856,295 INVERTER-REVERSER FOR A REPRODUCTION MACHINE

John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 28, 1973, Ser. No. 429,252
Int. Cl. B65h 29/60

U.S. Cl. 271-65

7 Claims



1. A reproduction system for producing single sided and double sided copy comprising:
a reproduction machine including a first sheet handling means and a second sheet handling means for feeding sheets serially through said reproduction machine to produce copy thereon;
transport means associated with said reproduction machine for transporting sheets having copy thereon through a first path to a location external of said reproduction machine;
deflector means associated with said transport to deflect copies from said transport along a second path to said second sheet handling means;
resilient stop means adapted for movement into said second path for contacting the leading edge of a sheet passing therethrough to stop the sheet and reverse the direction of movement thereof; and
feed means adapted for contact with the edge of the sheet opposite the edge contacted by said stop means for feeding the sheet into said first path for delivery of the sheet to a location external of said reproduction machine.

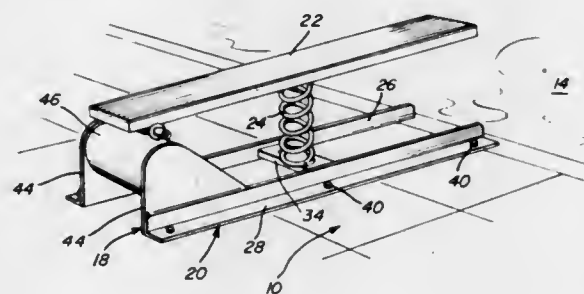
3,856,296

DIVING BOARD CONSTRUCTION

Henry V. Fischer, R.F.D. No. 1, Tipton, Mo. 65081
Filed Jan. 7, 1974, Ser. No. 431,483
Int. Cl. A63b 5/10

U.S. Cl. 272-66

5 Claims



1. A diving board construction including an elongated base defined by a pair of elongated horizontal spaced apart opposite side members, transverse brace means extending between

and rigidly secured to mid-portions of said side members, one pair of ends of said side members including upstanding mounting plates secured thereto and extending longitudinally therealong, a large diameter horizontally disposed tubular combined brace and support member extending between and rigidly secured to said plates, a pivot shaft supported from, spaced slightly above and extending along said tubular member, and a diving board extending along and overlying said base in spaced relation thereto, with one end of said board overlying said pivot shaft, means supporting said one end of said board from said pivot shaft, upstanding compression spring means interposed between said transverse brace means and an under surface portion of a mid-portion of said board disposed above said brace means, and a pair of upstanding eye bolts secured downwardly through opposite end portions of said tubular member and having horizontally aligned upper end eye portions through which the opposite ends of said pivot shaft extend.

means enabling decoupling of each actuating shaft from the respective load shaft to permit relative angular displacement of said actuating shafts independently of the respective load shafts allowing rotation of only a single actuating shaft and its associated load shaft when a user acts on one of said crank arms, the meshing gears being dimensioned for maintaining a generally uniform torque therebetween in at least one direction over said arcs; and means connected to said first means for varying said torque means removably attachable to the crank arms so that both arms may be rotated in unison when a user applies a force thereto through an arc during an exercise program.

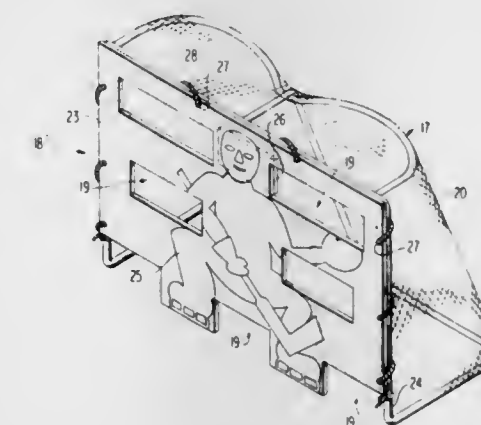
3,856,298

HOCKEY PRACTICE APPARATUS

Paul R. Frantti, 123 Wyandott St., Laurium, Mich. 49913
Filed Jan. 14, 1972, Ser. No. 217,801
Int. Cl. A63b 69/00

U.S. Cl. 273-1 B

2 Claims



3,856,297

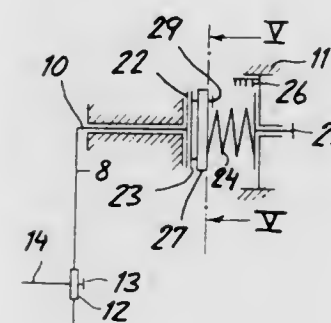
FRICTIONAL TYPE EXERCISING DEVICE

Josef Schnell, 8889 Peutenhausen, Germany
Filed Mar. 19, 1973, Ser. No. 342,734
Claims priority, application Germany, Mar. 20, 1972, 2213440

Int. Cl. A63b 21/00, 23/00, 23/04

U.S. Cl. 272-79 D

13 Claims



1. An exercise apparatus comprising:
a support including a pair of horizontally spaced upright frames;
respective horizontal actuating shafts rotatable on each of said frames;
a respective crank arm attached to each of said shafts and lying in a vertical plane formed by rotation of said respective crank arm along an inner side of each frame between a user and one of the upright frames, said arms being displaceable through arcs of approximately 180° by a person positioned between said frames to rotate said shafts;
respective horizontal load shafts journaled on said frames;
respective force receiving members affixed to each of said load shafts externally of said frames and rotatable in respective vertical planes;
a large-diameter gear on each of said load shafts;
a small-diameter gear on each of said actuating shafts in mesh with the respective large-diameter gear;
means for applying a variable force to said force-receiving members; and

1. Game apparatus for practicing skills or for demonstrating competence in the game of hockey comprising:
a. a game playing surface in the form of an ice hockey rink,
b. a plurality of markers located in the center portion of the playing surface, said markers having equal spacing between successive markers and being aligned on a line which is parallel to the sidelines of the playing surface,
c. a box-shaped receptacle positioned adjacent one sideline of the playing surface, said receptacle being provided with cleats for maintaining contact with the surface of the ice and having an opening located in its lower portion at the level of and facing onto the playing surface for entry by a hockey puck into the receptacle, and
d. a hockey goal positioned at at least one end of the playing surface and having attached to its front portion a barricade member which blocks entry into the goal, said barricade member having the figure of a goalie located on the center portion of the barricade member facing onto the rink, and a plurality of openings located in the barricade member and positioned around the periphery of the figure of the goalie, said openings being of a size sufficient to allow a hockey puck to pass through said barricade member.

3,856,299

FINGER GAME

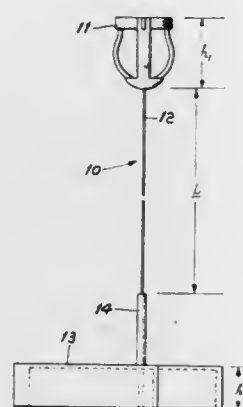
Massud K. Ghovanloo, 241 Shoreward Dr., Great Neck, N.Y.
Filed May 15, 1972, Ser. No. 253,019
Int. Cl. A63f 9/00

U.S. Cl. 273-1 M

6 Claims

1. A finger game adapted to be used when suspended from fingers of a user's hand, the game comprising at least two

assemblies, each of which comprises a finger thimble of resilient material which defines a bottom end, and an open top end for accommodating a finger of a user inserted in the open end, a three-dimensional element having a center of gravity and having a junction part above said center of gravity when the element is in upright orientation, and a filament having its length substantially greater than its diameter, said filament having a first end fixed to the bottom of said thimble, and a



second end fixed to the junction part of said element, the element of one of said assemblies having, when upright, on at least one exposed side, a mating surface of predetermined shape and the element of each other assembly having, when upright, on at least one exposed side, mating surface having a shape that generally complements the shape of a mating surface of another element, any two of said elements when in mating position having more than line contact.

3,856,300

BALL TOSsing DEVICE

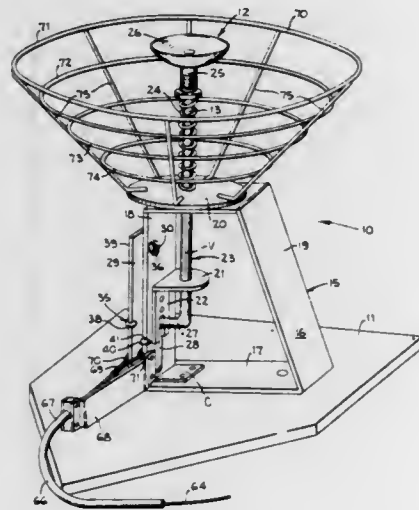
David Payne, 488 Coakley Dr., San Jose, Calif. 95117

Filed Nov. 26, 1973, Ser. No. 418,829

Int. Cl. A63b 69/40

U.S. Cl. 273-25

5 Claims



1. In a ball tossing device of the type having a spring loaded ball supporting tee and releasable latching means therefor, the combination of:

- a. a base simulating homeplate;
- b. a ball supporting tee mounted on said base including a U-shaped strap material frame having a bight portion

secured to the base, one leg portion extending upwardly therefrom adjacent approximate center of the base, the other leg portion of such frame extending diagonally upward as a brace; and a disc mounted on the upper ends of said legs in parallel relation to said base and concentric to center thereof;

c. a bracket secured to said one leg portion and having a flange extending laterally therefrom substantially parallel to and midway between the bight portion of said frame and said disc, said disc and flange each having concentrically aligned bores formed therethrough in vertical alignment above the center of the base;

d. a plunger bar arranged in the aligned bores of said disc and flange for up and down guided movement relative thereto;

e. a ball supporting cup threadably mounted on the upper end of said plunger bar;

f. a compression spring circumscribing said plunger bar between said ball supporting cup and said disc for urging said plunger bar upwardly relative to the latter;

g. a foot extending laterally from said plunger bar;

h. a slot formed vertically in said one leg portion of said frame for receiving the foot of said plunger bar there-through and for limiting up and down movement of said bar relative to said frame.

i. a spring loaded latch lever mounted on said one leg portion for engaging the foot of said plunger bar and for maintaining the latter in its lowermost condition against the action of said compression spring.

j. remote control means separate from said base and ball supporting tee, including a flexible cable having one end secured to said ball supporting tee and its opposite end spaced therefrom for remotely controlling said latch lever to release the latter from latching engagement with the foot of said plunger bar and for facilitating removal said base and ball supporting tee from home plate position after a ball on said ball supporting cup has been tossed upwardly therefrom.

3,856,301

PORTABLE BALL STOP

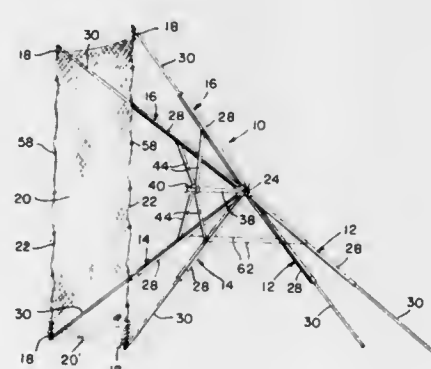
William A. Davidson, 2208 S. Inverness Way, Coupeville, Wash. 98230

Filed June 4, 1973, Ser. No. 366,625

Int. Cl. A63b 67/00

U.S. Cl. 273-55 B

6 Claims



1. A portable ball stop, comprising:
an umbellate net supporting frame comprising a rear hub

3,856,303

BASKETBALL GAME

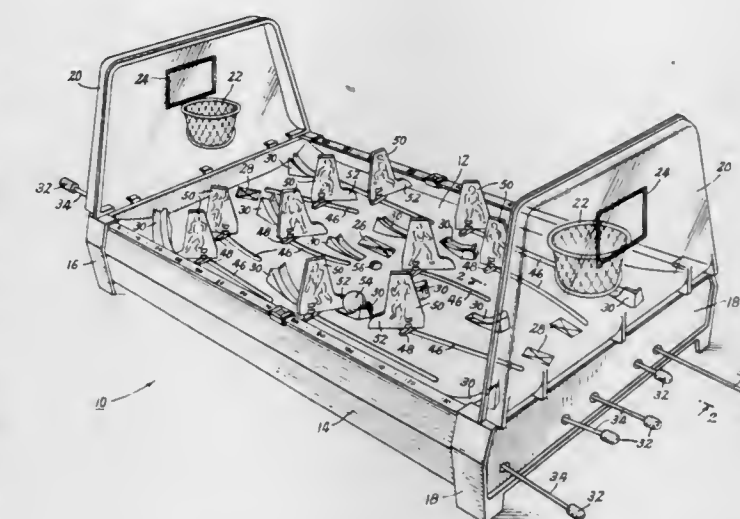
Calvin L. Payne, Jr., Hastings-on-Hudson; Vincent J. Gambello, New York, both of N.Y., and John A. Molnar, Fairfield, Conn., assignors to Tudor Games, Incorporated, Brooklyn, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,307

Int. Cl. A63f 7/10, 7/14

U.S. Cl. 273-85 B

4 Claims



member, four support arms extending forwardly from said rear hub member in an umbellate relationship and terminating in free end portions, pivot pin means pivotally connecting the support arms to said hub member, a support stem for a brace assembly rigidly attached to said rear hub member and extending axially forwardly therefrom, and a collapsible brace assembly for the support arms comprising a ring member surrounding said stem and being slidable axially therealong, and four radial brace members, each of which is pivotally connected at one of its ends to the sliding ring member and is pivotally connected at its opposite end to the rear part of one of the support arms at a location on such rear part spaced from the hub member a distance slightly greater than the length of such brace arm;

a pair of laterally spaced apart line members in tension interconnected between the free end portions of said support arms;

a net supported by and between said line members, said net having a vertical dimension that is substantially larger than the length of said line members;

means securing the upper portion of said net to said stop; slide connector means along the sides of said net slidably attaching said net onto said line members below said upper portion so that a ball striking said net at an upwardly directed angle will move the net vertically, to absorb the momentum of the ball, as well as rearwardly into the space between said support arms; and

a rear prop connected to the umbellate frame, for holding it in a position placing the net generally vertical.

3,856,302

FOOTBALL GOAL POSTS

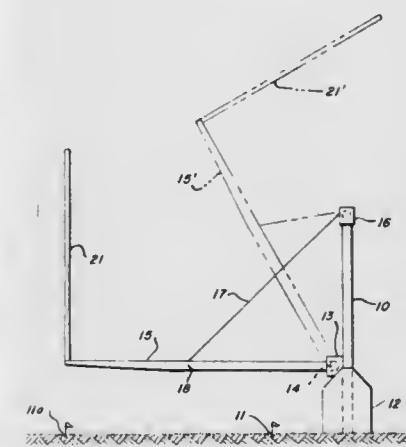
George E. Karkoska, Berwyn, Ill., assignor to G.E.K. Enterprises, Inc., Chicago, Ill.

Filed Aug. 8, 1973, Ser. No. 378,796

Int. Cl. A63b 67/00

U.S. Cl. 273-55 R

7 Claims



1. A football goal post for use as a field goal and extra point scoring target comprising:

a horizontal bar with two vertically directed bars attached to said horizontal bar and forming a U-shaped target means;

goal post support means adapted for anchoring to the ground;

an elongated boom pivotably connected to said goal post support means at one end and connected to the horizontal bar of said U-shaped target means at its opposite end and having a first position wherein said U-shaped target means is in its scoring target position; and

means for pivoting said boom about its pivotable connection to said goal post support means to a second position at an angle above the horizontal.

3,856,304

BOXING GAME

Takao Matsumoto, and Masaru Aoki, both of Tokyo, Japan, assignors to Tony Kogyo Company, Ltd., Tokyo, Japan

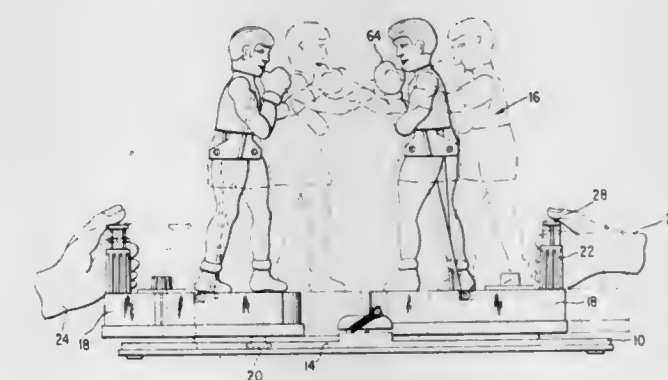
Filed Apr. 30, 1973, Ser. No. 355,728

Claims priority, application Japan, May 10, 1972, 47-54809

Int. Cl. A63f 9/14; A63h 13/06

U.S. Cl. 273-85 F

7 Claims



1. A boxing game comprising:
a base;

two housings, means mounting said housings for movement on said base, said housings being provided with handles having actuator members;

boxing figurines mounted on said housings in opposed relationship, each of said figurines having arms, means causing said arms to extend outwardly, a torso and means causing said torso to rock when contacted; means operatively connecting said actuator members of said housings to said means causing said arms to extend outwardly of said figurines; means counting and recording the number of times said torso of each of said figurines is rocked as a result of being contacted by at least one of the arms of the opposing figurine; and means causing each of said figurines to rock backwardly out of position after said torso is contacted and rocked a predetermined plurality of times.

3,856,305

TETHERED BALL APPARATUS ADAPTED FOR PLAY UNDER WEIGHTLESS CONDITIONS

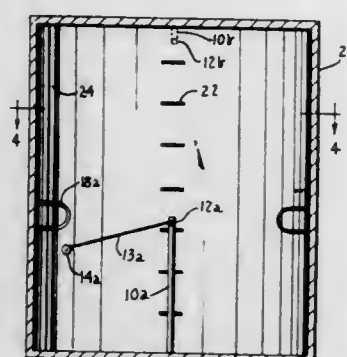
Curtis E. Vetter, 1710 Gunwale, Houston, Tex. 77058

Filed Oct. 10, 1972, Ser. No. 295,808

Int. Cl. A63b 71/02

U.S. Cl. 273-95 A

7 Claims



1. Game apparatus comprising:

- a. a space station,
- b. a gravity free chamber provided within said station,
- c. a tethered ball,
- d. a centrally disposed support means within the chamber,
- e. swivel means disposed on the support means,
- f. said ball tethered to said swivel means constraining the ball to follow an orbit as directed by the impact of a game player,
- g. racket means to impact the tethered ball,
- h. goal means positioned at a distance spaced from said support means, the distance being slightly shorter than the length of the tether such that a player can direct the ball into a goal, and
- i. positioning means peripherally spaced about said support means by which players may pull themselves upwardly and downwardly in elevation and peripherally toward a better ball striking position.

3,856,306

TARGET, INDICATOR AND TETHERED PROJECTILE

Victor Petrusek, 18511 Gottschalk, Homewood, Ill. 60430

Filed July 9, 1973, Ser. No. 377,406

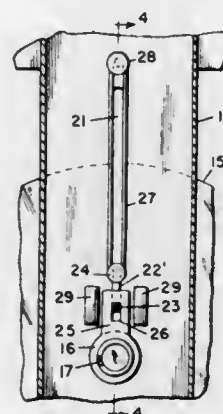
Int. Cl. A63b 72/01

U.S. Cl. 273-98

2 Claims

1. In a target game apparatus, the combination of a vertically elongated housing adapted to be mounted on a vertical

supporting surface, a target provided on the lower portion of said housing and including a depressible button, resilient means in said housing biasing said button to its undepressed position, a bell provided in the upper portion of the housing in spaced relation from said button, said housing having guide means extending vertically from said button toward said bell, said guide means constituted by a slot formed in said housing, a striker movable along said guide means with a portion thereof projecting into said slot and slidable therein, coacting keeper means provided on said projecting portion of said



striker and on said button for releasably retaining the striker at a point on said guide means adjacent said button when the button is undepressed, resilient means for propelling said striker along said guide means to impact said bell when said keeper means are released by depressing of the button, an aerial projectile cooperable with said target button, an elongated elastic element tethering said projectile to said bell, said releasable keeper means comprising an apertured tab provided on said button in said housing, and a bevelled detent provided on said projecting portion of said striker, said detent being receivable in the aperture of said tab.

3,856,307

ELECTRICALLY-OPERABLE GAME APPARATUS

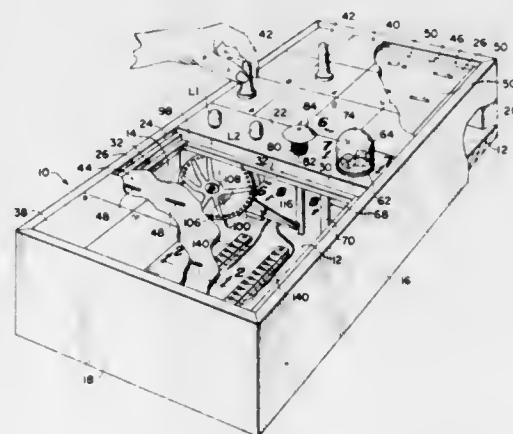
Hugh J. Tinman, Rt. 2, Box 79, Lockport, Ill. 60441

Filed Mar. 11, 1974, Ser. No. 449,968

Int. Cl. A63f 3/00

U.S. Cl. 273-134 A

12 Claims



1. A game apparatus comprising a playing board having designated locations thereon, a playing piece embodying a

magnet and adapted for selective positioning on said locations, a normally open, magnetically-responsive, circuit-making and breaking switch disposed beneath each of said locations and effective when the playing piece is positioned on the super-jacent location to become closed, an electrically-energizable signal device connected to all of said switches, an indexable distributor mechanism having a series of contacts, one for each switch, said contacts being electrically connected to said signal device, said distributor mechanism further including a movable wiper arm adapted to traverse said contacts successively upon indexing of the distributor mechanism, a pair of electric leads adapted for connection to a source of electric current, one of said leads being connected to all of said switches, the other lead being connected to said wiper arm, and manually-operable means for indexing said distributor mechanism.

3,856,309

CHESS PIECE WITH REMOVABLE INSTRUCTIONAL BASE

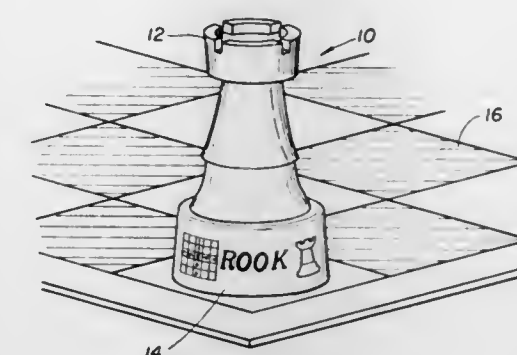
Saul Helfgott, Lindenhurst, N.Y., assignor to Field Manufacturing Co., Inc., Lindenhurst, N.J.

Filed Apr. 8, 1974, Ser. No. 458,719

Int. Cl. A63f 3/02

U.S. Cl. 273-137 R

6 Claims



3,856,308

THREE DIMENSIONAL GAME APPARATUS

Jeffrey D. Breslow, Highland Park, and Kathy A. Dunn, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1973, Ser. No. 328,874

Int. Cl. A63f 3/00

U.S. Cl. 273-135 R

10 Claims



1. A game apparatus comprising, in combination: an upright column resembling an elevator shaft having a plurality of playing positions for receiving playing pieces; a plurality of playing pieces positionable at said playing positions; complimentary indicia means at said playing positions and on said playing pieces, whereby each playing piece is correlated to at least one of said playing positions; a set of instruction cards for determining the play of said playing pieces at said playing positions; and plunger means vertically reciprocally movable within said column, said plunger means having simulated elevator means thereon and wherein said column has a portion adjacent the path of said simulated elevator means through which a player can visually observe the elevator means from the outside of said column.

3,856,310

ELECTRICAL CIRCUIT HAVING AN ODDS SELECTOR FOR A GAME OF CHANCE

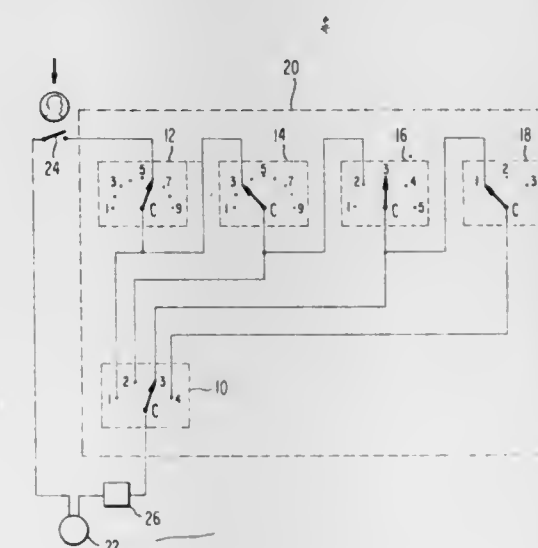
Ken E. Sniderman, 1930 Riverside Dr., Trenton, N.J. 08618

Filed Jan. 8, 1974, Ser. No. 431,755

Int. Cl. A63b 71/06

U.S. Cl. 273-138 A

1 Claim



1. A chance game device comprising an electric circuit including a power source and win indicator, the input of said electric circuit connected to the common terminal of a rotatable multiple pole odds switch, said poles being sequentially numbered; a plurality of rotatable multiple pole secondary

switches in sequential order starting from a first, said poles of said secondary switches being numbered; the common terminal of each of said secondary switches taken in sequence each being connected to a respective one of said sequentially numbered poles of said odds switch; and all of said secondary switches taken in reverse sequence save said first having at least one but fewer than all of its numbered poles removably connected to the common terminal of the preceding secondary switch, with said first secondary switch having at least one but less than all of its numbered terminals removably connected to the output of said electric circuit, said power source and win indicator being connected in series between said output and input of said circuit.

3,856,311

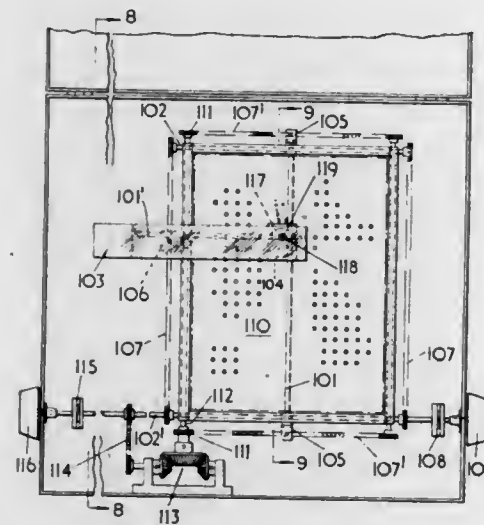
MACHINE FOR PUSHING PEGS OUT OF A GAME BOARD
Henry Francis Triggs, St. Albans, England, assignor to Remalo Engineering Company Limited, St. Albans, England

Filed Nov. 9, 1971, Ser. No. 197,082

Int. Cl. A63f 3/00

U.S. Cl. 273-139

2 Claims



1. A machine for playing a game comprising a rectilinear board fixed in a vertical position, said board having front and rear sides and provided with a plurality of holes extending from the front side to the rear side in which holes pegs or spills can be inserted, a map positioned on the front side of the board for concealing the holes, a vertical rod located behind the rear side of the board, said vertical rod having upper and lower ends, a traveller fixed to each of said ends of the vertical rod, upper and lower horizontal rods on which said travellers are mounted for sliding movement, a pusher member, a pusher member bush for the pusher member, said bush being slidably mounted on said vertical rod, a cursor of transparent material solidly joined to the pusher member bush, a third horizontal rod solidly fixed to the pusher member bush and extending perpendicularly with respect to said first vertical rod, a vertically movable traveller in which said third horizontal rod slides, means operably related to said vertically movable traveller for moving said traveller vertically to shift said third horizontal rod vertically and carry therewith the pusher member bush and cursor with the pusher member bush sliding on the vertical rod, further means operably related to the travellers at the ends of the vertical rod for moving said travellers horizontally along the upper and lower horizontal rods whereby the pusher member bush and cursor move horizontally by means of the vertical rod, said cursor having a portion located in spaced relationship to the front side of the board,

and means for engaging the pusher member with the rear side of the board so that the pusher member may be inserted into anyone of said holes to eject the peg or spill therefrom through the front side of the board.

3,856,312 MANUALLY ACTUATED BALL MIXING AND DISPENSING DEVICE

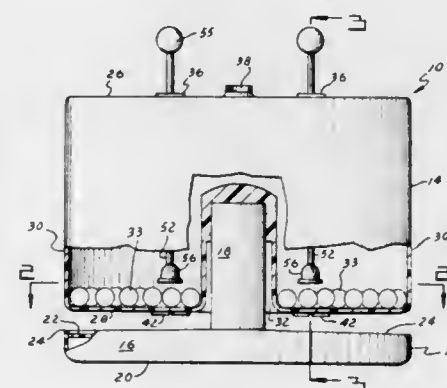
Stanley F. Dabrowski, 315 Arcadia Blvd., Springfield, Mass. 01118

Filed May 17, 1974, Ser. No. 470,955

Int. Cl. A63f 7/10

U.S. Cl. 273-144 A

7 Claims



1. A device for mixing and dispensing indicia marked balls comprising a base member, a vertical post disposed in the middle of said base member, a covered ball retaining cup rotatably supported above said base member in spaced relation thereto on said vertical post, said cup having a ball feeding aperture in the cover thereof and at least one ball dispensing aperture in the bottom thereof, deformable ball retaining means covering each said ball dispensing aperture, and a manually actuated plunger means in said cup aligned with each said ball dispensing aperture and normally biased above said aperture a distance greater than the diameter of said balls for urging a ball from said cup past said deformable ball retaining means onto said base member.

3,856,313

GOLF PUTTING APPARATUS WITH BALL RETURN
David P. Tierney, 1024 Forestwood Dr., Ferguson, Mo. 63135

Filed May 4, 1973, Ser. No. 357,166

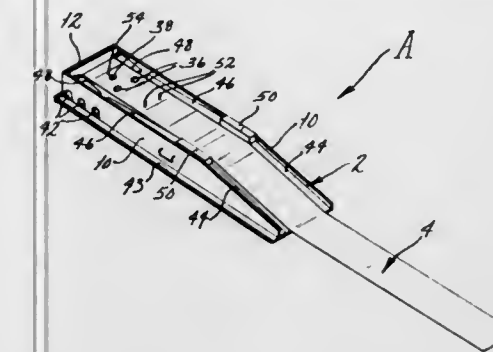
Int. Cl. A63b 67/02

U.S. Cl. 273-176 FB

10 Claims

1. A device for playing a game which simulates golf, said device comprising: a frame adapted to rest on a floor and having spaced apart sidewalls along its sides and also having a closed end and an open end, one of the sidewalls having at least one discharge opening therein which is sized to accommodate a golf ball; supporting means mounted on the frame between the sidewalls and defining a surface elevated above the floor level, the elevated surface being partly horizontal and partly inclined with the horizontal portion being at the closed end of the frame and the inclined portion being at the open end of the frame, the horizontal portion being spaced from the closed end of the frame a distance great enough to accommodate a golf ball so as to create a transverse slot at the closed end of the frame, the lower end of the inclined portion

being substantially at floor level, the supporting means having holes opening out of the horizontal portion of the elevated surface with the holes being sized to receive a golf ball; return means defining a return surface which is located beneath the holes in the supporting surface and below the transverse slot and is inclined upwardly from the discharge opening in said one sidewall to the other sidewall for receiving golf balls which enter the holes and slot and for directing them toward the discharge opening; gutters mounted on the frame above the



return surface and along the sides of the horizontal elevated surface of the supporting means, the gutters being inclined downwardly toward and opening onto the return surface of the return means so that golf balls which enter the gutters will be directed toward the discharge opening in said one sidewall; and a flexible mat supported in part on the horizontal and inclined portions of the supporting surface and extending out of the open end of the frame where the remainder of the mat is supported on the floor.

3,856,314

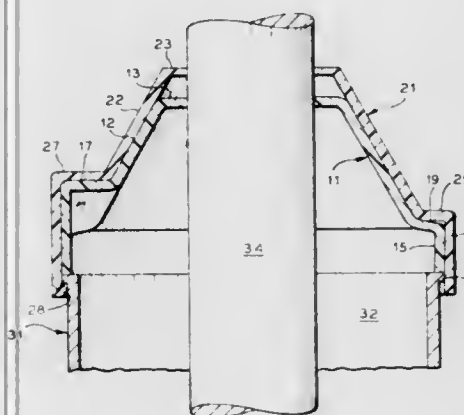
TWO-PIECE SHIELD
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,031

Int. Cl. F16j 15/32

U.S. Cl. 277-1

11 Claims



1. A shield suitable for covering the opening between a movable shaft and a surrounding housing, said shield comprising

a first resilient tapered shield member having a first opening at the narrow end thereof through which said shaft can pass, first annular means around its open large end adapted to contact the top surface of said housing, and a first slot extending from said first opening through said first annular means to said open large end to permit said first shield member to be engaged around said shaft without access to either end of said shaft; and
a second resilient tapered shield member having a second opening at the narrow end thereof through which said shaft can pass, second annular means around its open large end adapted to contact the outside surface of said housing, and a second slot extending from said second opening through said second annular means to said open large end of said second shield member to permit said

second shield member to be engaged around said shaft without access to either end of said shaft, said second shield member being adapted to engage said first shield member along the outside surface of said first shield member and the inside surface of said second shield member with the slot in said first shield member being covered by the solid surface of said second shield member and the solid surface of said first shield member underlying the slot in said second shield member.

3,856,315

BELL AND SPIGOT PVC PIPE JOINT

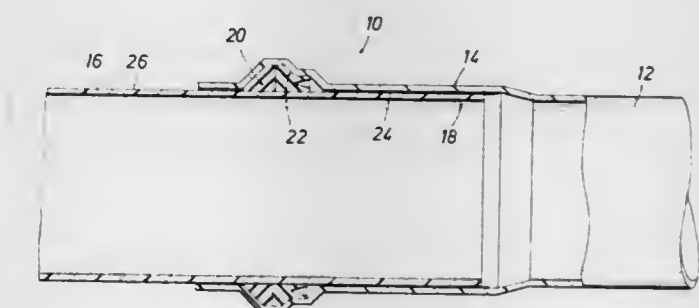
Patrick H. Stansbury, N. 800 Fancher Way, Terminal Box 2706, Spokane, Wash. 99220

Filed Jan. 2, 1973, Ser. No. 320,282

Int. Cl. F16j 15/10

U.S. Cl. 277-188

20 Claims



1. A pipe joint comprising:

a spigot at one end of a first section of PVC pipe;
a bell at one end of a second section of PVC pipe, said bell having a sufficiently large diameter to accommodate said spigot therein and having an annular recess formed therein;
an annular gasket seated in said annular recess and sealingly compressed between said bell and said spigot;
said gasket comprising a first portion formed of a first resilient material having a first hardness bonded to a second portion formed of a second resilient material having a second hardness less than said first hardness;
the cross-section of said first portion comprising a first linear segment, a second linear segment having one end intersecting one end of said first linear segment, a third linear segment longer than said second linear segment and having one end intersecting the other end of said first linear segment, and a fourth linear segment intersecting the other ends of said second and third linear segments;
the cross-section of said second portion comprising said first linear segment, a fifth linear segment having one end intersecting said one end of said first linear segment, a concave curved segment having one end intersecting the other end of said fifth linear segment, a sixth linear segment having one end intersecting the other end of said first linear segment, and a V-shaped segment intersecting the other ends of said sixth and seventh linear segments.

3,856,316

FUEL TANK FILLER NECK BREAKAWAY ASSEMBLY
Melvin C. Badberg, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 4, 1972, Ser. No. 312,064

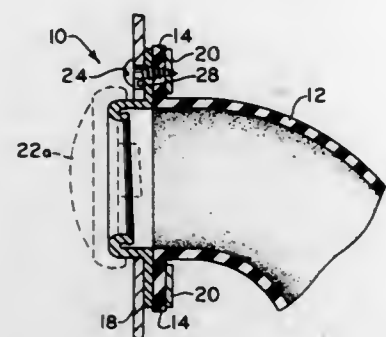
Int. Cl. B65d 39/00

U.S. Cl. 280-5 A

7 Claims

1. A breakaway fuel tank filler neck assembly adapted for attachment to the panel material of a vehicle body comprising:
a. a flanged elastomeric filler neck hose having inner and outer flange surfaces; and

b. means providing a capped end closure and including compression bearing surfaces mounted and cooperating with said flange surfaces to effect a sealing engagement therewith and providing attachment of the hose flange to



the vehicle panel material such that the hose flange is in compression and to maintain the compression and sealing engagement should the filler neck assembly be disengaged from the vehicle panel material in a crash situation.

3,856,317

SAFETY SKI BINDING

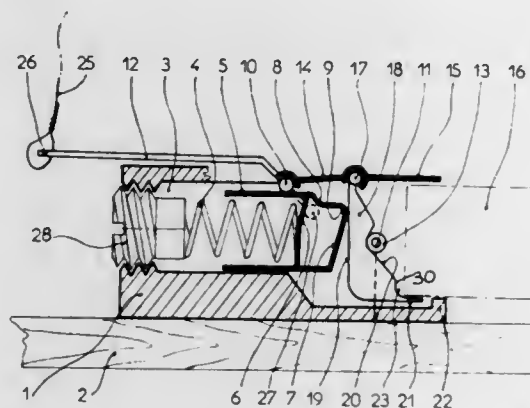
Bernard Sentou, Cluses, France, assignor to Etablissements CARPANO & PONS, Place du Cretet, Cluses, France
Filed May 16, 1973, Ser. No. 360,782

Claims priority, application France, May 19, 1972, 72.18018

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

7 Claims



1. Ski safety heel binding, comprising a frame including means defining a plane face adapted to be fitted on the upper surface of a ski with a principal axis of said frame disposed along the longitudinal axis of the ski, guide means fixed relative to said frame, a boot sole holding member pivotally mounted on said frame about a first axis parallel to said plane face and perpendicular to said principal axis, a lever pivotally mounted on said member about a second axis parallel to and spaced apart from said first axis, said lever having opposed first and second faces, a piece movably mounted on said frame, means defining a first profiled surface on said piece, elastic means for urging said piece against said first face of said lever to apply said second face of said lever against said guide means said second surface of said lever having means defining a cam-like profile for cooperating with said guide means to hold said member down in a first boot-sole engaging position under the action of said elastic means while allowing movement of said member to a second boot-sole releasing position when said member is subjected to a raising force exceeding a given value; and release means for enabling voluntary movement of said member to its second position, said release means including a second lever pivotally mounted on said frame about a third axis parallel to said second axis, said second lever including a part which engages with play with said movable piece, said second lever including means for enabling it to be manually moved from a first position to a

second position, said part cooperating with said means defining a first profiled surface of said piece for moving said piece against the action of said elastic means from a first position acting against said first surface of said first lever to a second position removed from said first surface of said first lever when said second lever is moved from its first to its second position, profiled stop means on said frame, and means for defining a second profiled surface on said piece for engaging with said profiled stop means on said frame for releasably holding said piece in said second position under the action of said elastic means.

3,856,318

ARTICULATED MULTIPLE SECTION SNOWMOBILE SKI

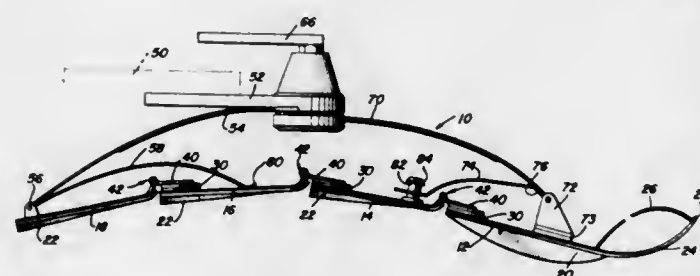
Perry T. Hollenbeck, 706 Michigan Ave., Manistique, Mich. 49854

Filed Oct. 11, 1973, Ser. No. 405,579

Int. Cl. B62b 19/04

U.S. Cl. 280—28

10 Claims



1. An elongated ski assembly including front and rear ends and defined by at least three elongated and end aligned ski sections having adjacent ends pivotally joined together for relative angular displacement about horizontal transverse and upstanding axes, a support member, spring means supporting said sections from said support member for vertical shifting relative thereto and including steering means connected to at least the forwardmost section for swinging the latter about an upstanding axis disposed rearward of said forward section relative to said support, said spring means, including said steering means, also supporting at least the forward end of the ski section immediately behind said forwardmost section for lateral swinging with the rear end of said forwardmost section during actuation of said steering means to swing said forwardmost section about said upstanding axis and thus allow relative angular displacement of said sections with the latter maintained in adjacent end aligned train fashion position relative to each other.

3,856,319

LIFTING AND LOWERING DEVICE FOR TRAILERS

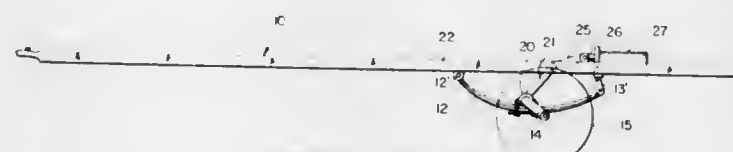
Clyde Hardy, 119 W. 1st St., Cordell, Okla. 73632

Filed Sept. 26, 1973, Ser. No. 401,022

Int. Cl. B62d 33/08

U.S. Cl. 280—43.18

3 Claims



1. A trailer having a front and rear end with side rails forming a bed adapted for travel over the road and having a front hitch and at least two wheels disposed toward the rear of the bed to support the load carrying bed comprising a pair of elongated leaf spring means connected between the wheels and bed, one each of said spring means being disposed to extend longitudinally along each of the opposite sides of the trailer respectively and being pivotally connected to the trailer at the front end and connected to the trailer by means of an articulating link at its rear end, a main axle rotatably carried

in bearings fixed to said spring means, crank arms at the ends of the main axle, stub shafts at the ends of said crank arms upon which said wheels are mounted, a lever fixed to one end of said axle to rotate the axle in said bearings, said lever being of a length to extend from said axle to the underside of one of said side rails whereby said crank arms are rotated with the axle supported on the bearings on said springs to turn on the stub shafts in the wheels to raise and lower the axle and the associated spring means and bed relative to the road, reciprocally driven power means connected to said lever with a link pivotally connected thereto, and power drive means mounted on the bed over the articulating link that connects the spring to the bed and said construction being operative to lower the bed relative to the ground when said driven power means is extended and to lift said bed for travel when said power means is retracted, to relieve the power means of undue load stresses when the trailer travels over the road.

3,856,320

WHEELED DISPLAY STAND

Horace Blanchard, Hasbrouck Heights, N.J., assignor to Nabisco, Inc., New York, N.Y.

Filed May 21, 1973, Ser. No. 362,177

Int. Cl. B62b 3/00

U.S. Cl. 280—47.35

9 Claims



1. A wheeled display stand comprising in combination a product supporting base having front and rear edges, a product retaining back extending upwardly from the rear edge of said base, a front panel extending downwardly from the front edge of said base, a rear extension member extending rearwardly from each side of said base substantially past the most rearward portion of said back, a pair of wheels adjacent the bottom of said front panel beneath said base, a pair of casters mounted to said extension members and positioned adjacent the outer end thereof, and a reinforcing member inclined from the vertical toward said back and extending from adjacent the outer end of each of said extension members upwardly to said back, a handle member extending between said reinforcing members, said product retaining back comprising a lower product retaining section rigidly secured to said base, an upper product retaining section including an upper back section telescopically mounted to said lower section to vary the height of said back, locking means for holding said upper back section in a selection position, means on said upper back section for supporting a shelf, and a shelf mounted to said upper back section by means of said shelf supporting means.

3,856,321

WHEELED BOARD TOY ASSEMBLY

Frank Solymosi, 255 Violet St., Massapequa Park, N.Y. 11762

Filed Oct. 20, 1972, Ser. No. 299,432

Int. Cl. A63c 17/00

U.S. Cl. 280—87.04

20 Claims



1. A skiing instruction device comprising:

- a pair of elongated platforms each having an upper surface adapted to receive a different foot of the user when the foot is disposed along the length of the platform;
- a pair of wheel assemblies each having at least one wheel mounted spaced apart with respect to one another along the lower surface of each of the pair of platforms, the axis of rotation of each wheel extending substantially in a transverse direction with respect to the length of the platform, the wheel assemblies enabling the platforms to travel along a rolling surface in the direction of the length of the platforms when the user is standing thereon;
- means flexibly coupled to the leading portion of each of the platforms for maintaining the leading portions at a predetermined distance with respect to one another to enable the platforms to travel together in a side-by-side relationship when the user is standing thereon and for enabling the platforms to be rotated about an axis substantially parallel to the longitudinal axis of the platforms whereby the user utilizes the platforms to simulate the techniques of snow skiing; and
- means flexibly coupled to the trailing portion of each of the platforms for maintaining the trailing portions at a predetermined distance with respect to one another to enable the platforms to travel together in a side-by-side relationship.

3,856,322

MOBILE PACKAGING AND STACKING DEVICES

Ute W. Bestehorn, 3330 Morrison Ave., Cincinnati, Ohio 45220

Division of Ser. No. 37,786, May 15, 1970, Pat. No. 3,712,463.

This application May 31, 1972, Ser. No. 258,329

Int. Cl. B62d 53/06

U.S. Cl. 280—79.1

6 Claims

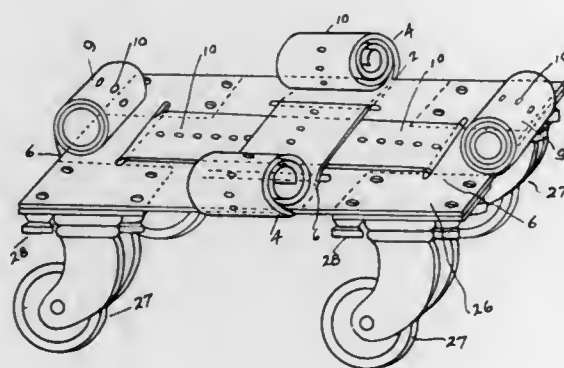
1. A mobile packaging, stacking, and display device for materials adapted to be stacked comprising:

- a base plate for supporting said materials on said base plate having spaced elongated side slots parallel and adjacent sides of said base plate and other spaced elongated end slots adjacent to ends of said base plate,
- a continuous side band of flexible self-spiraling material extending down around a side and upwardly through one of said side slots and across the top of said base plate to span a space between the side slots and extending down through the other of said side slots and up and around the other of said sides of said base plate, and equal lengths of

said side band retained on each of the sides of said base plate,
another continuous end band of self-spiraling material extending down around an end of said base plate and upwardly through one of the said elongated end slots and across the top of said base plate to span a space between the said end slots and extending down through the other of said end slots and up around the other side of said base plate, and equal lengths of said end band retained on each side of said base plate,

said base plate having a hole centrally located and peripheral holes centrally located adjacent the sides of said base plate for securing said bands to said base plate,
a multiple of spaced holes throughout the length of said bands and selected holes in said bands adapted to be indexed with said hole in said base plate, a removable fastener securing said bands at right angles to each other on said base plate through said selected holes and said hole in said base plate,

said bands adapted to be removably wrapped around said stack of materials to secure said stack in a bundle,



removable fasteners to secure said bands in tightly wrapped condition around said stack to provide a rigid bundle of materials,

a multiple of casters removably secured to said base plate, said casters having a multiple of button headed studs extending upwardly from head plates of said casters, said button head studs having shanks smaller in diameter than said button heads thereby providing a space intermediate a bottom of said buttons and said head plate,
a multiple of U-slots adjacent to corners of said base plate, said U-slots having first legs perpendicular to bottom slots forming said U-slots and terminating in orifices sufficiently enlarged to receive said button heads and said slots being narrower than said orifice for said button heads to slidably retain said shanks of said button head studs,

other leg slots of said U-slots disposed at acute angles to said bottom slots and directed toward said first leg slots thereby forming continuous U-slots, and;
a depression at the end of each said angularly displaced other leg slot adapted to removably retain said button head and secure said caster from movement in relation to said base plate.

3,856,323

MOTOR VEHICLE CHASSIS SUBASSEMBLY

Klaus H. Arning, Birmingham, and Robert J. Rumpf, Grosse Pointe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

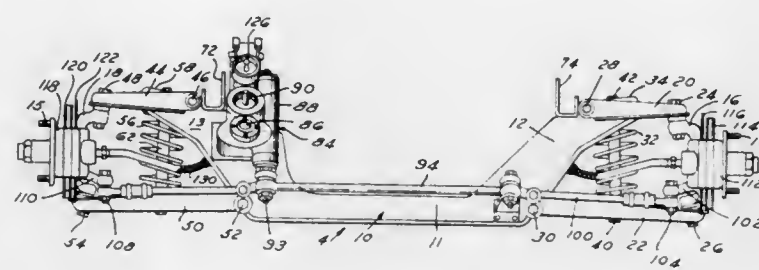
Division of Ser. No. 52,235, July 6, 1970. This application
Sept. 1, 1972, Ser. No. 285,690
Int. Cl. B60t 13/00

U.S. Cl. 280-96.2 R

5 Claims

1. A motor vehicle chassis subassembly comprising a frame component and front wheel support means,
suspension means interconnecting said wheel support means and said frame component,

said suspension means being constructed to resiliently support said wheel support means for jounce and rebound movement relative to said frame component,
hydraulic brake actuating means secured to said frame component,
wheel brake means secured to said wheel support means,
hydraulic conduit means interconnecting said brake actuating means and said wheel brake means,



mounting means secured to said frame component and constructed to connect said subassembly including said frame component, said wheel support means, said suspension means, said hydraulic brake actuating means and said wheel brake means as a unit to the chassis of a motor vehicle.

3,856,324

CONNECTING MEANS BETWEEN AN IMPACT ABSORBING SIDE FRAME MEMBER OF A MOTOR VEHICLE FRAME STRUCTURE AND A TRANSVERSE MEMBER

Shigeru Saitoh, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

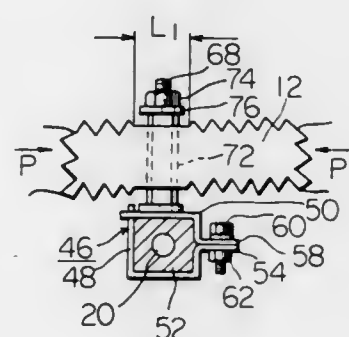
Filed May 22, 1973, Ser. No. 362,842

Claims priority, application Japan, May 23, 1972, 47-60182

Int. Cl. B60r 19/00

U.S. Cl. 280-106 R

6 Claims



1. A frame structure for use in a motor vehicle having an occupant compartment including a pair of longitudinal side frame members extending in a longitudinal direction of said vehicle, and a transverse member located substantially transversely to said longitudinal direction of said vehicle, comprising a mounting unit for connecting said transverse member to each of said side frame members which unit supports said transverse member and which unit has at least one rod, said mounting unit being mounted on the corresponding side frame member through said rod, wherein said rod of said mounting unit comprises a single rod, each of said side frame members is formed in opposite surfaces thereof with a hole for receiving said single rod, and wherein each of said side frame members is provided with a tube for inserting said rod thereinto, said tube being received in said holes and being securely fixed to said side frame member.

3,856,325

MULTIPLE AXLE VEHICLE SUSPENSION SYSTEM

Elwood H. Willetts, 102 S. Penataquit Ave., Bay Shore, N.Y.

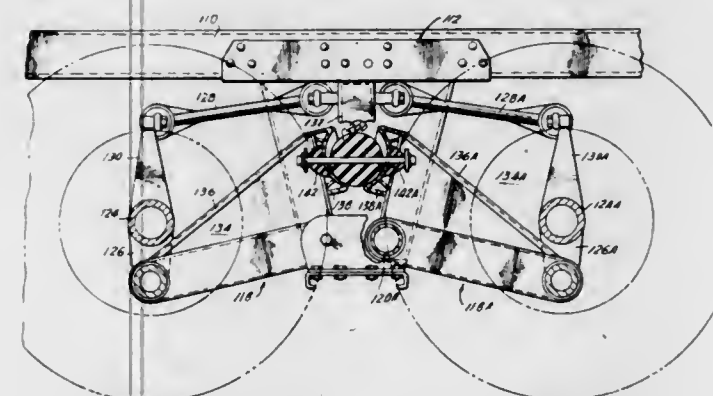
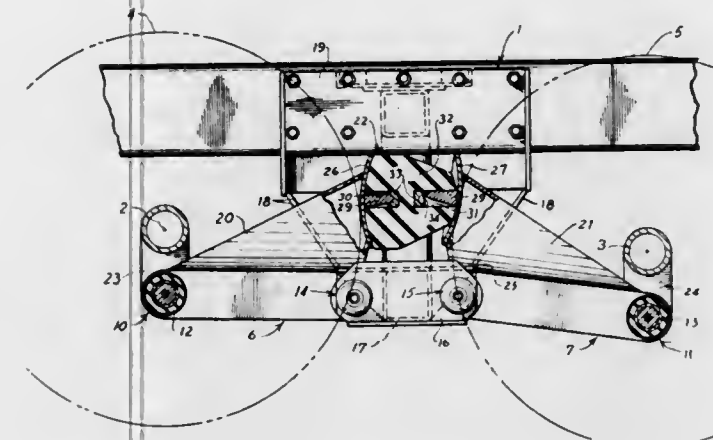
11706

Division of Ser. No. 293,648, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 196,982, Nov. 9, 1971., This application Aug. 23, 1973, Ser. No. 390,931

Int. Cl. B60c 5/06

U.S. Cl. 280-124 R

9 Claims



1. A structure for use with axle suspension system, comprising, in combination: a bracket member formed with bearing surfaces defining substantially axially aligned holes there-through, said bearing surfaces extending substantially longitudinally with respect to the axis of said holes, a tubular assembly having portions thereof extending through said aligned holes, tapered plug members disposed within end portions of said tubular assembly and each being formed with an opening extending therethrough, and threaded means extending through said openings for moving said plug members toward one another, thereby firmly holding said tubular assembly end portions against said bearing surfaces, said tubular assembly comprises at least one split tube member, a sleeve member disposed in contact with and disposed between said split tube member and an elastomeric member, said elastomeric member encircling portions of said sleeve, and a ring member disposed in contact with and encircling portions of said elastomeric member.

3,856,326

OCCUPANT RESTRAINT SYSTEM

Brook A. Lindbert, Utica; Wesley L. McCollum, Brighton, and Edward H. Mertz, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,458

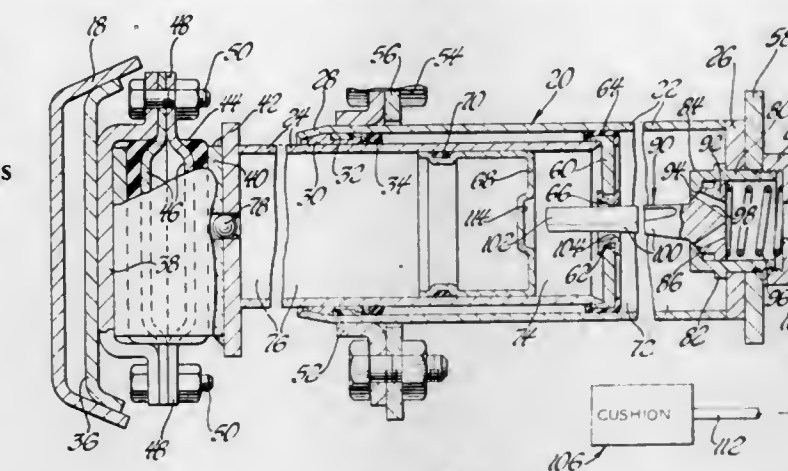
Int. Cl. B60r 21/08

U.S. Cl. 280-150 AB

4 Claims

1. In an automotive vehicle, the combination comprising, an inflatable occupant restraint mounted within an occupant compartment of the vehicle, a bumper impact bar, energy absorbing means supporting the impact bar on the vehicle and including a piston movable within a chamber containing a gas liquefied under pressure and ambient temperature, means controlling the displacement of the liquefied gas from one side

of the piston to the other side of the piston upon impact of the impact bar with an obstacle to absorb the energy of the resultant impact forces, and means responsive to the displacement



of a predetermined volume of liquefied gas to the other side of the piston for communicating the chamber and the restraint to release the liquefied gas for expansion and flow to the restraint for inflation thereof.

3,856,327

SAFETY SEAT BELT FOR MOTOR VEHICLE

Syuichi Otani, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

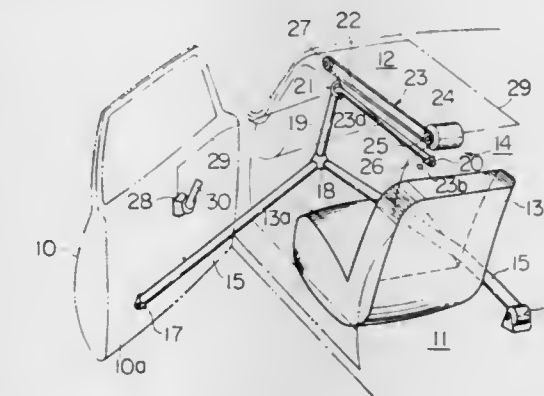
Filed Mar. 3, 1972, Ser. No. 231,586

Claims priority, application Japan, Mar. 11, 1971, 46-15942

Int. Cl. B60r 21/02

U.S. Cl. 280-150 SB

3 Claims



1. A safety seat belt for a motor vehicle having a door provided with the inner panel and with a door handle, a floor panel, a seat with a seat portion and on up-right backrest portion mounted on the floor panel and a ceiling structure, and adapted to restrain a passenger from injury in the event the motor vehicle undergoes an excessive deceleration comprising, in combination, a lap belt having one end connected to said floor panel by means of an inertia-responsive retracting means and the other end connected to the inner panel of said door, said lap belt extending over and across the seat portion of said seat, a shoulder belt having one end connected to an intermediate portion of said lap belt and the other end secured to an outboard portion of said ceiling structure approximately over said upright backrest portion, an electric actuation mounted on said ceiling structure adjacent said other end of the shoulder belt, a driving member connected to said electric actuator, a driven member mounted on said outboard portion forwardly of said driving member, an endless means provided between said driving and driven members and having straight portions movable back and forth substantially parallel to the plane of said ceiling structure, a guide ring fixedly connected to said endless means and slidably receiving therein said shoulder belt, and an electric switch mounted on said door at the door handle thereof and opened and closed by said door handle, said electric switch being electrically connected to said electric actuator, whereby, when said electric switch is closed, said electric actuator is actuated to move said endless

means to cause said guide ring to raise said shoulder belt away from the seat portion.

3,856,328

SAFETY HARNESS SHOCK ABSORBER

Toshihiro Koizumi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

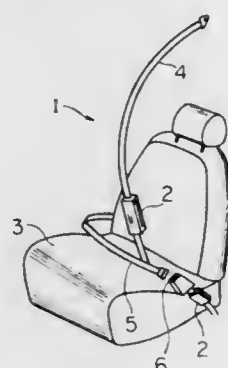
Filed Sept. 7, 1973, Ser. No. 394,987

Claims priority, application Japan, Sept. 9, 1972, 47-105315

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

4 Claims



1. In a vehicle having a safety harness having at least one of a shoulder strap and a seat belt extending over a portion of a seat for restraining a vehicle occupant in the event of an excessive deceleration condition of the vehicle, a shock absorber for absorbing kinetic energy from the occupant caused by the excessive deceleration which comprises:

movable and fixed pulleys about which said at least one of a shoulder strap and a seat belt extends in a block and tackle configuration; and

a casing for supporting said movable and fixed pulleys and comprising means to yieldably resist movement of said movable pulley toward said fixed pulley, said means comprising side members of said casing defining slots through which said movable pulley may be forcibly moved.

3,856,329

SENSING ARM FOR CONTROL UNIT BETWEEN ARTICULATED VEHICLES

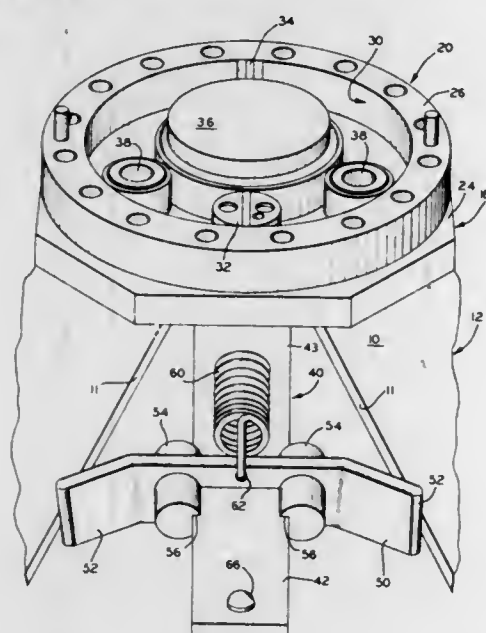
Miguel A. Ordorica, Temperance, Mich., assignor to The Mather Company, Toledo, Ohio

Filed Oct. 24, 1973, Ser. No. 409,058

Int. Cl. B62d 53/08

U.S. Cl. 280—432

11 Claims



1. In an articulated connection between two vehicles having a king pin mounted on one vehicle that fits into a "V" shaped notch in the fifth wheel mounted on the other vehicle, and having a control unit attached to said king pin for damping

relative angular movement between two said vehicles, the improvement in a sensing means attached to said king pin and fitting in said notch said sensing means comprising:

A. a radially extending arm fixedly attached to said king pin,

B. a cross member slidable along said arm, the ends of which cross member are engageable with the edges of said "V" shaped notch, and

C. spring means acting on said cross member for urging said cross member towards said king pin.

3,856,330

RETRACTABLE KING PIN

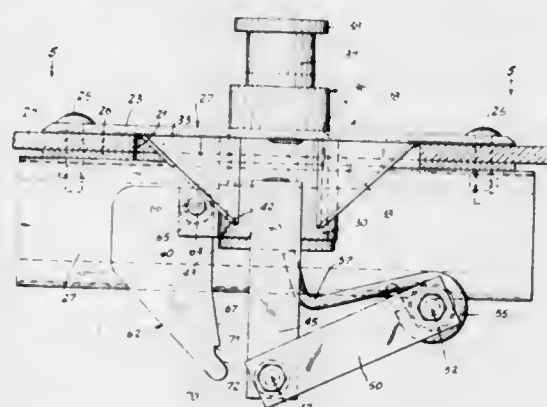
Bobby G. Baxter, and Theodore B. Splitt, both of Warrenton, Mo., assignors to The Binkley Company, Warrenton, Mo.

Continuation-in-part of Ser. No. 322,640, Jan. 11, 1973, This application Aug. 24, 1973, Ser. No. 391,041

Int. Cl. B62d 53/08

U.S. Cl. 280—433

12 Claims



1. A king pin assembly for mounting to a bed of a towing vehicle comprising a pin, means for mounting the pin for movement normal to the bed between an operative position with a portion of the pin extending above the bed and a retracted position with the pin depressed, spring means for biasing the pin in its operative position, quick release locking means for releasably locking the pin in its retracted position, and means for operating the quick release locking means from the upper side of the vehicle bed for releasing the pin from its retracted position to its operative position.

3,856,331

HITCH

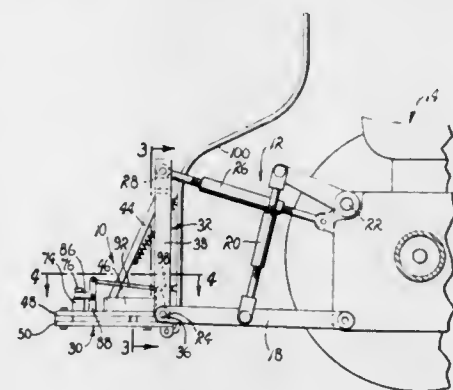
Nick Bogdanovich, 5051 12th Ave., Hanford, Calif. 93230

Filed Oct. 31, 1973, Ser. No. 411,257

Int. Cl. B60d 1/04

U.S. Cl. 280—479 R

1 Claim



1. An improved hitch for coupling a towable vehicle with a towing vehicle comprising:

A. a hitch-pin receiver including a pair of horizontally oriented plates disposed in mutually spaced parallelism, each of said plates being provided with a pair of converging surfaces defining a horizontally extended throat for receiving a hitch pin;

B. a latching pawl comprising a substantially disk-shaped plate interposed between said horizontally oriented plates including a pair of surfaces defining therefor a peripheral fluke, means supporting said latching pawl for oscillatory motion including a bearing pin extended through said pair of horizontally oriented plates in abaxial alignment with said throat, tension means connected with said pawl for continuously urging said pawl in displacement toward a first position wherein the fluke is in juxtaposition with said throat and one surface of said pair of surfaces defining said fluke is disposed substantially transversely of said throat in a position to be engaged by a hitch pin as the hitch pin is inserted into said throat for displacing said pawl to a second position wherein the fluke is disposed transversely of said throat for capturing said hitch pin;

C. a pawl retainer for securing said pawl against angular displacement, including a spring-biased locking pin supported for extension through at least one of said horizontally oriented plates and said pawl;

D. release means for extracting said locking pin from said pawl comprising a bellcrank having one arm thereof connected with said spring-biased locking pin and the opposite arm thereof connected with a manually operable linkage; and

E. means for connecting said hitch with a three-point hitch assembly of a tractor.

3,856,332

REATTACHABLE CHECKS

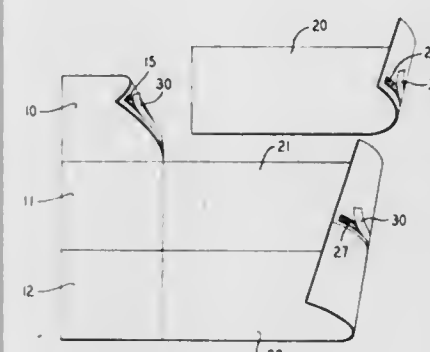
Herbert Elmer Snedeker, P.O. Box 4397, Patrick Air Force Base, Indian Harbour Beach, Fla. 32925

Filed Feb. 20, 1973, Ser. No. 333,638

Int. Cl. B42d 15/00

U.S. Cl. 283—57

1 Claim



1. A checkbook page comprising a plurality of stubs, a plurality of checks individually detachable from said stubs and from each other in conventional manner, individual adhesive surfaces disposed on each said stub along the edge to which the check associated therewith is attached, an adhesive surface disposed on at least one of each adjacent two of said checks along substantially the entire edge attaching said adjacent two checks together, said adhesive surfaces disposed for reattaching detached ones of said checks to each other and to said stubs in an overlapping relationship in substantially their original locations, and removable protective material normally covering said adhesive surfaces.

3,856,333

DRIP IRRIGATOR DEVICE

Edwin Dexter Cox, Pine, Colo., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Dec. 7, 1972, Ser. No. 313,064

Int. Cl. F16l 55/00; E02b 13/00

U.S. Cl. 285—14

2 Claims

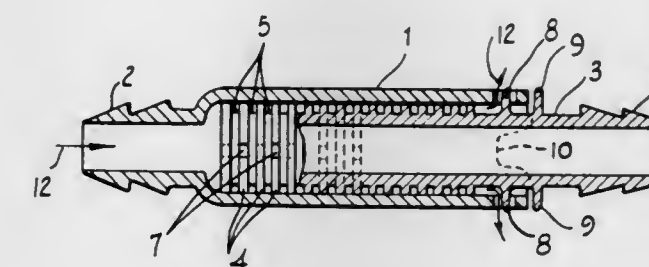
1. An irrigation dripper unit to connect adjacent pipeline sections comprising:

an outer tubular member; an inner tubular member fitting within said outer tubular member;

one pair of opposite end portions of said inner and outer tubular members projecting beyond the other pair of opposite end portions of said outer and inner tubular members respectively, for connection to adjacent pipe-line sections;

a series of radial flanges axially spaced apart and attached to and projecting from the outer surface of said inner tubular member, each of said flanges extending circumferentially entirely around said inner tubular member and extending to substantially fill the annular space between said inner and outer tubular members, each of said flanges having therein a notch permitting fluid communication between opposite sides of the flange;

the notches in adjacent flanges being spaced apart circumferentially whereby there is defined a labyrinthine path for irrigation fluid passing from one end of said series of



flanges axially along said inner tubular member to the other end of said inner tubular member, said labyrinthine path being radially bounded by the inner surface of said outer tubular member and the outer surface of said inner tubular member;

a groove between each pair of adjacent radial flanges, wherein each groove has therein a barrier which completely blocks said groove and the notches in the adjacent pair of radial flanges being adjacent to, but spaced on opposite sides of said barrier, each of said grooves extending circumferentially around said inner tubular member from one side of said barrier to the other side of said barrier, thereby defining a fluid path which essentially encircles said inner tubular member;

one end of said labyrinthine path communicating with an adjacent pipe section and defining an inlet; an outlet in said unit adjacent to and communicating with the opposite end of said labyrinthine path; and connecting means formed in said unit for releasably connecting said tubular members together.

3,856,334

APPARATUS FOR ATTACHING A HOT AND COLD WATER PLUMBING FIXTURE TO BUILDING WATER PIPES

Hermann Paul Lange, Singlistrasse 15, 8049 Zurich, Switzerland

Filed Nov. 24, 1971, Ser. No. 201,848

Claims priority, application Austria, Dec. 2, 1970, 10849/70

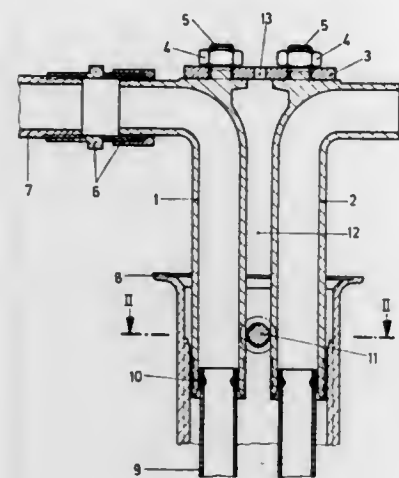
Int. Cl. F16l 39/04

U.S. Cl. 285—137 R

2 Claims

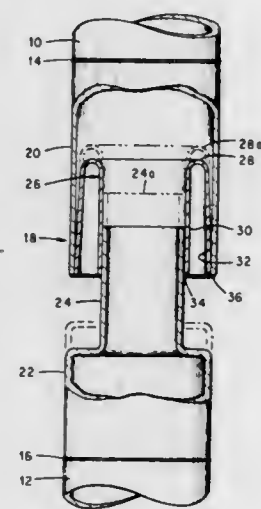
1. Apparatus for attaching a hot and cold water plumbing fixture having a housing enclosing a pair of spaced water supply lines disposed substantially parallel to each other to hot and cold water pipes installed in a building, said apparatus comprising a wall fitting including a pair of connecting pipes which are arranged parallel to each other adjacent one end and adapted to be connected respectively to the building water pipes at their opposite ends, said opposite ends of said pipes extending at a substantial angle one to the other, the parallel portions of said connecting pipes being of such size and spacing as to receive and telescope with the spaced parallel fixture water supply lines, means holding said connecting

pipes together with the parallel end portions spaced a fixed distance apart and permitting rotation of said connecting pipes about an axis through said parallel end portions in order to change the disposition of said opposite ends, said means for holding and permitting rotation includes a plate coextensive with a portion of the length of said connecting pipes at said opposite ends, said plate providing a pair of spaced apertures, each of said connecting pipes at said opposite end having a



surface complementary to for receipt in juxtaposition on said plate, a stud projecting from each surface for receipt through each said apertures, means received by each said stud for fastening said connecting pipes to said plate, sealing means for making water-tight the joint between said connecting pipes and fixture supply lines when they are telescoped together, and means for mechanically locking said fixture housing and said wall fitting together when said connecting pipes and supply lines are in telescoped engagement.

3,856,335
ROLLING DIAPHRAGM SLIP JOINT
Alexander Blake, 550 Escondido Cir., Livermore, Calif. 94550
Filed Nov. 16, 1973, Ser. No. 416,554
Int. Cl. F16I 13/02
U.S. Cl. 285-286
1 Claim

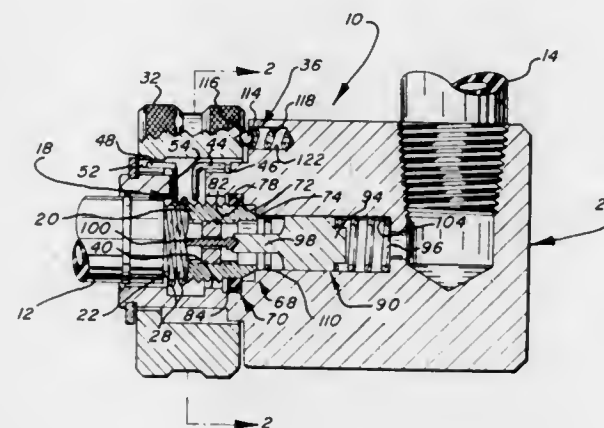


1. A shock-absorbing fluid-tight slip joint for attenuating the transmission of axial compressive shock loads from one bore hole casing member to another, said slip joint having:

- a first collar member continuously welded at one end to one of said casing members and coaxial therewith;
- a second collar member continuously welded at one end to the other of said casing members and coaxial therewith, said second collar member having an extension of reduced size extending into said first collar member, concentrically therewith and defining an annular clearance therebetween;
- a generally annular diaphragm extending between said collar members and coaxial therewith, said diaphragm

having a generally semi-toroidal convolution with inner and outer concentric sleeves integral therewith and extending therefrom, the inner sleeve at its end distal to said convolution being continuously welded to a mid-region of said extension of said second collar member, and the outer sleeve at its end distal to said convolution being continuously welded to the other end of said second collar member, said diaphragm being disposed generally within said annular clearance and substantially free of contact with said collar members except where welded thereto, whereby to accommodate minor misalignment of said casing members, said diaphragm being stiff and made of relatively thick but ductile material, plastically deformable by the rolling of said convolution upon the application of severe axial compressive shock to one of said casing members, whereby to absorb energy from said shock and mitigate its transmission along said casing, yet permit the pulling of said casing members from said bore hole without permanent elongation of said joint.

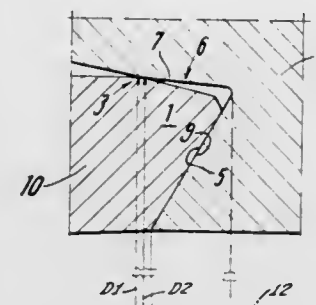
3,856,336
COUPLING ASSEMBLY
Thomas D. Karcher, Rocky River, and Walter W. Antoniwi, Lakewood, both of Ohio, assignors to The Hansen Manufacturing Company, Cleveland, Ohio
Filed Feb. 7, 1973, Ser. No. 330,395
Int. Cl. F16I 37/22
U.S. Cl. 285-316
8 Claims



1. A quick-connect coupling assembly for use in connecting first and second conduits in fluid communication, said coupling assembly comprising a plug member adapted to be connected with the first conduit, said plug member including outer surface means defining an external helix having a plurality of turns extending in a continuous path around said plug member, socket means adapted to be connected with the second conduit, said socket means including means defining a chamber for receiving said plug member, coil spring means connected with said socket means for applying a radially inwardly directed force to said plug member along a plurality of turns of said helix to resiliently grip said plug member and hold said plug member in said chamber, said coil spring means including a resiliently deflectable coil spring having a plurality of turns of the same pitch as said external helix and a free internal diameter which is less than the root diameter of said helix, and means for resiliently flexing each of the plurality of turns of said coil spring to a simultaneously increase the internal diameter of each of said plurality of turns of said coil spring to a diameter which is greater than the crest diameter of said helix to facilitate rapid connection and disconnection of said coupling assembly.

3,856,337
PIPE COUPLING
Karl Horst Ehm, Mulheim; Paul Schatton, Dusseldorf, and Joachim Kruse, Meerbusch, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed July 6, 1972, Ser. No. 269,336
Claims priority, application Germany, July 9, 1971, 2134274

Int. Cl. F16I 25/00
U.S. Cl. 285-334
3 Claims

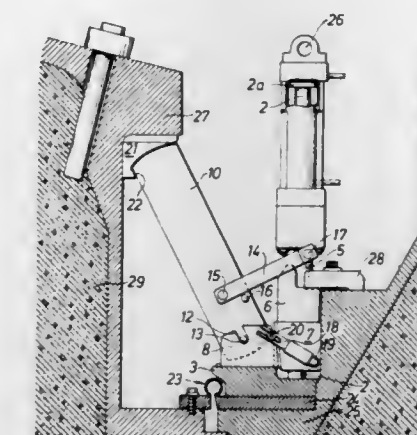


1. In a pipe coupling structure as between first and second pipes with tapered external and internal threading, respectively, of the first and second pipe to be threadedly interconnected upon threading the first pipe into the said second pipe in a particular axial direction, each pipe having an axis, the improvement comprising, an unthreaded end portion of the first pipe with the external threading, having an annular, radially outwardly directed first convexity, having a first crest, the first crest having particular diameter relative to the axis of the first pipe, and in a plane transverse thereto, the outer diameter of the unthreaded portion of the first pipe gradually decreasing from the first crest in the axial direction of insertion of the first pipe; the second pipe having internally an unthreaded portion, beyond the internal thread and in axial direction into the pipe; the unthreaded portion of the second pipe having an annular, radially inwardly directed second convexity having a second crest of a diameter, relative to the axis of the second pipe slightly smaller than said particular diameter of the first crest, the inner diameter of the unthreaded portion of the second pipe gradually decreasing towards the second crest in the axial direction of insertion of the second pipe, the first and second convexities sealingly engage upon threaded insertion of the first pipe in the second pipe.

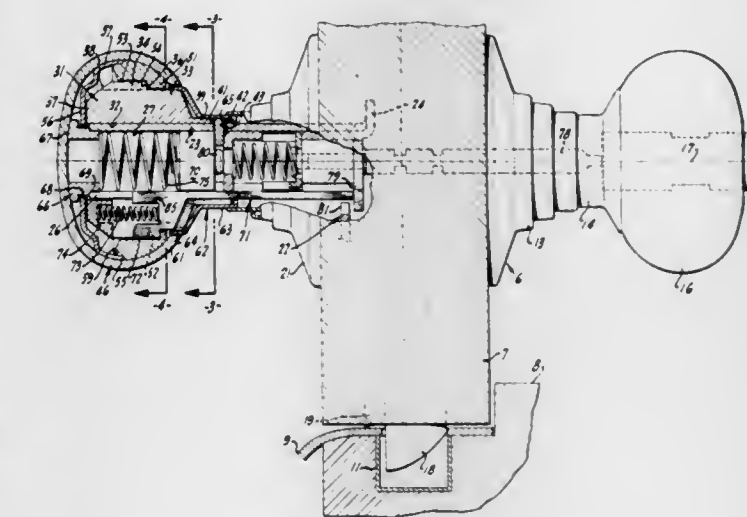
3,856,338
LOCKING DEVICE FOR THE LID OF A PRESSURE VESSEL
Erik Borje Johnsson, Trosa, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Apr. 18, 1973, Ser. No. 352,224
Claims priority, application Sweden, May 26, 1972, 6988/72
Int. Cl. B65d 45/00
U.S. Cl. 292-256
10 Claims

1. Locking device for the lid of a pressure vessel, comprising a plurality of support legs (10) arranged along the circumference of the lid (25), a shoulder (25a) on the lid for the lower end of the support legs and a shoulder (27) on the pressure vessel (28) for the upper end of the support legs, characterized in that the lower end of the support leg is pivotally fitted on a support plate (8), that the support plate (8) is movable perpendicularly to the circumference of the lid, that a hydraulically or pneumatically driven slide (4) is arranged to be movable substantially vertically close to the support leg (10), that the slide (4) is connected by means of a link arm to the support leg (10) in order to pivot this to engage or disengage with the shoulder (27) on the pressure vessel, that by means of a spring load link arm (18) the slide is connected to the support plate (8) to move the support plate perpendicularly outwards towards the circumference of the lid to tighten up the support leg and to permit a wedge (7) to be applied against

the support plate, and that the wedge (7) is arranged to be moved by the slide (4) into engagement with the support plate



3,856,339
RELEASABLE KNOB FOR A LOCK
John A. Tornoe, Redwood City, and Curtis A. Dyer, Belvedere, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.
Filed Apr. 9, 1973, Ser. No. 349,241
Int. Cl. E05c 1/00
U.S. Cl. 292-336.3
11 Claims



1. A releasable knob for a lock having a body and having a spindle with an axially extending slot rotatable relative to said body about an axis comprising a first knob member, means for mounting said first knob member for rotation about said axis, means for connecting said first knob member and said spindle for conjoint rotation about said axis, a second knob member, means for mounting said second knob member around said first knob member for rotation relative thereto about said axis, means forming an axially extending first groove in one of said knob members, means forming an axially extending second groove in the other of said knob members adapted in one relatively rotated position of said knob members to be in axial alignment with said first groove, a locking bar, means for mounting said locking bar in said spindle slot for movement in an axial direction between one position disengaged from one of said grooves and a second position in engagement with both of said grooves.

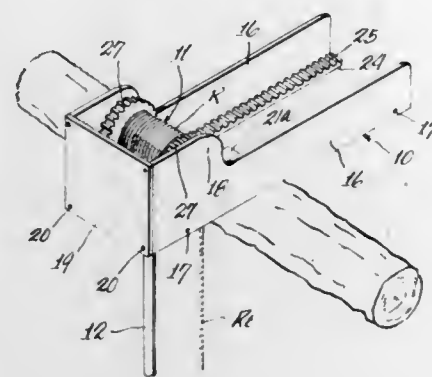
3,856,340 ROPE DROPS

Robert W. Faulkner, 8296 Park Ave., Garrettsville, Ohio 44231

Filed Nov. 21, 1973, Ser. No. 418,072
Int. Cl. A47f 13/06

U.S. Cl. 294-19 R

7 Claims



1. A rope drop, comprising:
a spool, having rope wound thereon,
a cradle, having elongated track means, said cradle releasably supporting said spool at one end of said track means, support means operated by a person at ground level for elevating said cradle and the spool supported thereby to a position above an object over which the rope is to be dropped, with said one end of said track means disposed on one side of said object and the opposite end of said track means disposed on the opposite side of said object, a free end of said rope extending from the part wound on said spool and extending downwardly on said one side of said object,
whereby a pull on said rope free end propels said spool along said track means to cause it to drop off the latter and fall toward the ground, said spool unwinding rope as it falls.

3,856,341 HAY HOOK AND TWINE CUTTER

Florian F. Florek, 126 Marker St., Edinboro, Pa. 16412

Filed Feb. 26, 1973, Ser. No. 336,019
Int. Cl. B65g 7/12

U.S. Cl. 294-24

1 Claim



1. A hay hook and twine cutter combination comprising a handle,
a first plate and a second plate,
and a cutter,
said first plate and said second plate each having a flat hook part, a flat cutter receiving part, and a curved handle engaging part between said hook part and said cutter receiving part,

said handle engaging parts of said plates curving outwardly from each other and providing a space for a handle therebetween,
said cutter receiving parts receiving an edge of said cutter therebetween and fastening means holding said cutter to said cutter receiving parts,
said cutter having two sharpened edges extending from said cutter receiving parts and diverging toward each other, an end of said handle being received between said handle engaging parts of said plates and said hook curving toward said handle,
and means holding said hook parts of said plates together, the outside of said hook part being defined by a curved outer surface defining an arc of approximately 90° of a circle,
said arc terminating adjacent said handle at one end and at the point of said hook at the other end,
a second arc defining the other side of said hook,
said second arc starting at said handle and terminating at said point and defining the opposite side of said hook.

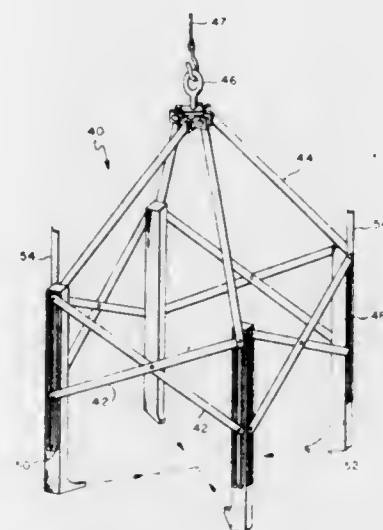
3,856,342 PANTOGRAPHIC CARGO HOIST

James M. Kelly, 15 Bailey Ave., Beverly, Mass. 01915

Filed May 14, 1973, Ser. No. 360,141
Int. Cl. B66c 1/16

U.S. Cl. 294-67 R

21 Claims



1. A hoisting apparatus which comprises in combination:
a clamping mechanism having a plurality of uniformly dimensioned planar walls, each of said planar walls including at least two sides of a pantograph, the entire clamping mechanism including a plurality of interconnected pantographs, at least two of said pantographs having a common corner, the pantographs each comprised of members pivotally connected such that the movement of any one of the members of any pantograph will effect a corresponding movement in all of the members of all of the other pantographs of the clamping mechanism defining the sides, and
means to retract all of the planar walls of the structure to a release position, whereby the cross-sectional area defined by the planar walls is uniformly increased and to elongate the planar walls to a clamping position, whereby the cross-sectional area is uniformly diminished, and the walls may engage a load to be moved.

3,856,343 BOTTLE GRIPPER FOR PACKING AND UNPACKING MACHINES

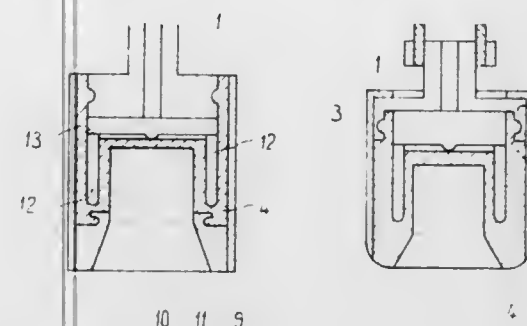
Friedhelm Muller, Dortmund-Wickede, Germany, assignor to Holstein & Kappert Maschinenfabrik "Phonix" GmbH, Dortmund, Germany

Filed Dec. 6, 1972, Ser. No. 312,732

Int. Cl. B66c 1/46

U.S. Cl. 294-99 R

5 Claims



1. A bottle gripper for use in packing and unpacking machines, comprising a vertically extending double collar including a vertically extending annular inner elastic wall and a vertically extending annular outer elastic wall spaced radially outwardly from and laterally enclosing said inner wall, said inner wall and outer wall being integrally connected together at their lower ends, a separate horizontally arranged connecting piece disposed horizontally and extending across the upper end of said outer wall and disposed in surface contact with said outer wall, said double collar includes a horizontally arranged section integrally formed with and extending across the upper end of said inner wall for forming a seal for forming a sealed closure for the upper end of the space laterally enclosed by said inner wall, the combination of said inner wall and said horizontally arranged section thereof along with said outer wall and connecting piece forming a closed space within said double collar which can be charged with a pressure medium and said connecting piece arranged to provide a passageway for supplying the pressure medium into the closed space, wherein the improvement comprises that said horizontally arranged section integrally formed with said inner wall is spaced below and separate from said connecting piece, said outer wall has a circumferentially extending annular bead located adjacent to and spaced below its upper end, said connecting piece has an annular groove formed therein spaced intermediate its upper and lower horizontal surfaces and extending in the circumferential direction thereof and disposed in juxtaposition to said annular bead on said outer wall so that said annular bead seats within said annular groove, and an elastic sleeve tightly laterally encloses the radially outer surface of said outer wall and provides an inelastic support for the engagement of said annular bead in said annular groove, the radially inner surface of said inelastic sleeve located below the upper horizontal surface of said connecting piece being of a uniform diameter over its length and the radially outer diameter of said outer sleeve being of a uniform diameter for its length below said connecting member, the upper end of said outer wall being held against flexural displacement by the cooperating relationship of said outer wall with said connecting piece and inelastic sleeve so that the pressure medium introduced into the closed space formed within said double collar does not deform said inner and outer walls relative to a supporting or holding member whereby leakage through said double collar could develop due to failure at the locations of flexural displacement, a guide connected to and extending downwardly from the interconnected lower ends of said inner and outer walls, the inner surface of said guide having a frusto-conical configuration converging inwardly from the lower end thereof in the upward direction, said guide having a first outwardly facing surface extending from its lower end and disposed in contact with the inner surface of said inelastic sleeve and a second outwardly facing surface extending upwardly above and spaced radially in-

wardly from said first outwardly facing surface, a groove formed in said second outwardly facing surface, and a bead formed on the integrally connected portions of said lower end of said inner and outer walls and facing radially inwardly and being seated within the groove in said second outwardly facing surface of said guide.

3,856,344 ORTHOTROPIC TRAILER

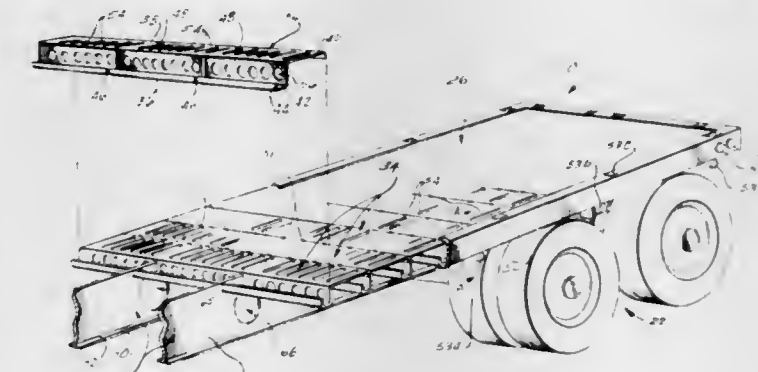
Frederick W. Loeber, Downey, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Continuation-in-part of Ser. No. 221,608, Jan. 28, 1972, abandoned. This application Mar. 16, 1973, Ser. No. 341,874

Int. Cl. B62d 33/02

U.S. Cl. 296-28 M

15 Claims



1. In a highway trailer, a load-support bed including a pair of spaced apart and generally parallel, rigid, elongated open-section metal beams each having at least a vertical web and a bottom flange, and a series of rigid, elongated open-section load-support members each being made of metal and shaped to provide a top flange, a bottom flange below the top flange, and a web integral with and extending between the top flange and the bottom flange, the series of load-support members being mounted on the beams in a side-by-side relation with the bottom of each top flange being in substantially continuous contact with the top of each load-support member and being rigidly bonded to each beam, the web and the bottom flange of each load-support member also being rigidly bonded to each beam, the top flanges of the load-support members being rigidly bonded together to form a continuous rigid panel extending lengthwise relative to the beams for providing a load-supporting deck and also serving as a compression flange for the vertical webs of the beams and a tension flange for the webs of the load-support members to form a stiff, unitary load-support bed of orthotropic design.

3,856,345 FOLDING CHAIR

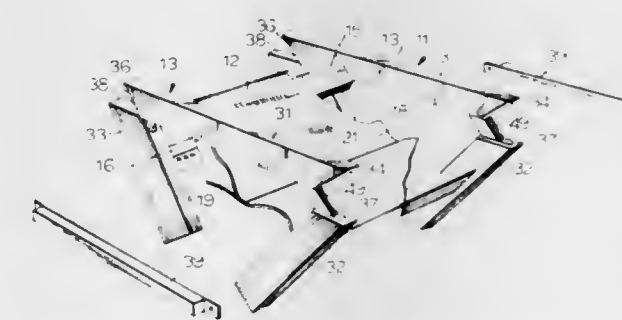
Charles Randolph Beckley, 2708 Woodley Pl., N. W., Washington, D.C. 20008

Filed July 23, 1973, Ser. No. 381,759

Int. Cl. A47c 4/32

U.S. Cl. 297-16

16 Claims



1. A seat which is foldable to assume either an erect sittable condition or a collapsed condition wherein the seat includes

at least two folding frame members, each of which comprises: an arm having first and second ends and extending generally in a horizontal direction when the seat is in the erect condition;

- a first leg for supporting the first end of said arm when the seat is in the erect condition;
- means for pivoting one end of the first leg adjacent to the first end of the arm to extend the first leg from the arm at an angle thereto when the seat is in the erect condition and to fold the first leg to extend along the arm in close proximity thereto when the seat is in the collapsed condition, said first end of said arm and the adjacent end of said leg forming means for supporting the seat in self-supporting, collapsed, storable condition with the arm and leg extending vertically;
- a second leg for supporting the second end of said arm member when the seat is in the erect condition; and
- a link member pivoted adjacent to the second end of the arm and secured to the second leg, wherein said link member extends from said arm and past said first leg when the seat is in the collapsed condition to fold said second leg to extend along said first leg in close proximity thereto and wherein the link member extends generally along said arm to project said second leg at an angle from said arm when the seat is in the erect condition.

3,856,346

RECLINING CHAIR

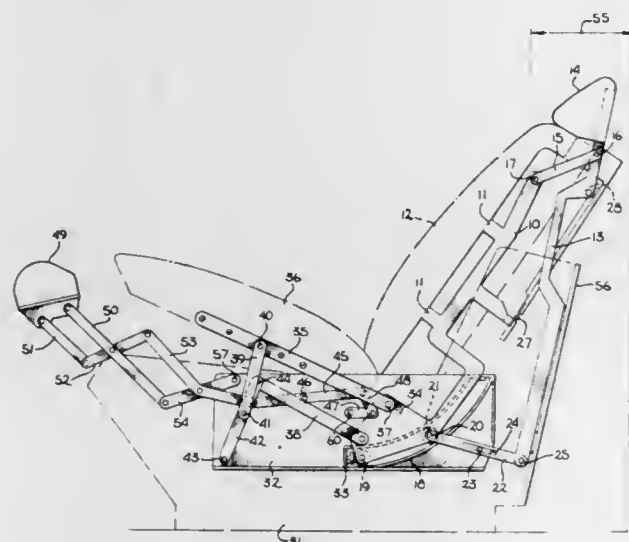
Marvin J. Herman, Los Angeles, Calif., assignor to Herman, Kulo & Modell, Los Angeles, Calif.

Filed Dec. 11, 1972, Ser. No. 313,787

Int. Cl. A47c 1/037

U.S. Cl. 297—61

4 Claims



1. A reclining chair comprising:
 - a base which includes a pair of spaced-apart parallel guide slots each having a generally curved shape;
 - a backrest frame having an upper portion for receiving a cushion and a lower portion which includes a pair of spaced-apart parallel shoes;
 - connector means for movably coupling said shoes to said guide slots such that the movement of said shoes is restricted by said guide slots;
 - a pair of seat links for receiving a seat, each pivotally coupled at one end to one of said shoes;
 - seat support link means, pivotally coupled to said seat links for providing support to said seat links;
 - a headrest;
 - a first and a second connector links for pivotally coupling said headrest to said backrest frame, said second connector link being pivotally coupled to at least one of said shoes and to said base so that downward movement of said shoes is translated into upward movement of said backrest;

whereby as said chair is reclined said connector means advance within said guide slots and said backrest is raised.

3,856,347

CONVERTIBLE AND REVERSIBLE SEAT STRUCTURE

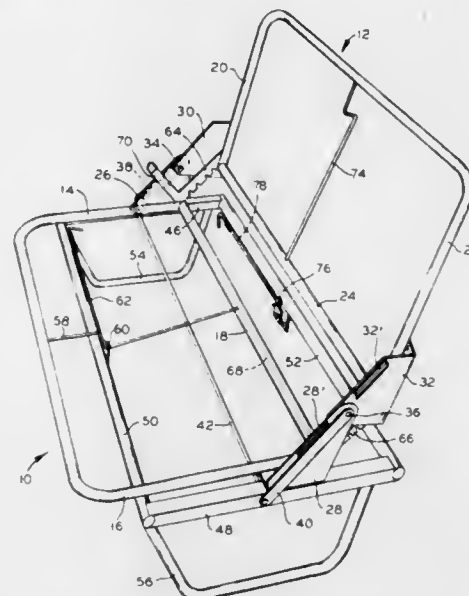
Richard A. Bell; Earl C. Wallace, and Ted W. Winters, all of Andrew, Ind., assignors to General Engineering Manufacturing Corp., Andrews, Ind.

Filed Sept. 13, 1972, Ser. No. 288,741

Int. Cl. B60n 1/02

U.S. Cl. 297—92

10 Claims



1. A convertible and reversible seat structure comprising:
 - a load supporting base;
 - two load supporting frames;
 - bracket means attached to opposite sides of said load supporting frames;
 - means pivotally interconnecting said frames and said base including a single pair of connecting arms attached at one end to said bracket means on opposite sides of said load supporting base;
 - a rod attached to the other ends of said connecting arms and pivotally attached to respective opposite sides of said base;
 - latching means for positively and selectively engaging one of said frames with said base;
 - means for selectively maintaining one of said frames in a position relative to the other of said frames; and
 - means preventing said frames from moving beyond a predetermined position.

3,856,348

CYCLE SADDLE WITH PLASTIC BASE

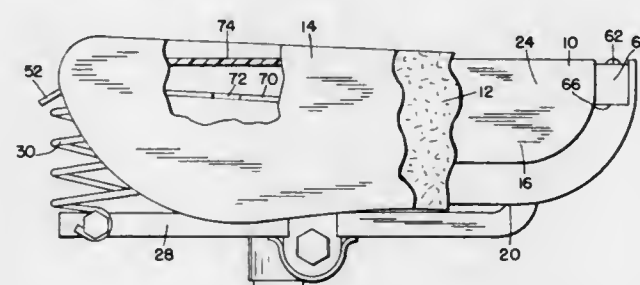
Martin J. Bird, Norwalk, Ohio, assignor to Persons-Majestic Mfg. Company, Worcester, Mass.

Filed June 28, 1973, Ser. No. 374,667

Int. Cl. B62j 1/00

U.S. Cl. 297—195

9 Claims



1. A cycle saddle comprising a one piece molded plastic base including a pommel and integral seat portion, the seat portion having diverging side edges, side flanges on the base extending downwardly from the pommel area and the seating area,

a truss secured at its forward end to the forward end portion of the pommel and extending to the rear edge area of the seat portion, springs interposed between the truss and the rear edge of the plastic base, said base being generally self-sustaining but deflective downwardly under conditions of load in the seating area, and a substantially rigid elongated metal member fastened at one end to the pommel and at the rear edge portion of the seat portion, said metal member being spaced from the molded plastic base in the seating area.

3,856,349

PORTABLE VERTEBRAL COLUMN SUPPORT

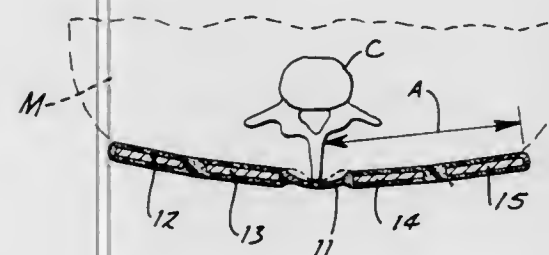
Richard U. Light, Delton, Mich., assignor to Flat-Back Corporation, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 63,253, Aug. 12, 1970, Pat. No. 3,709,557, which is a continuation-in-part of Ser. No. 852,693, Aug. 25, 1969, abandoned. This application Nov. 13, 1972, Ser. No. 305,664. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. A47c 7/42

U.S. Cl. 297—230

17 Claims



1. A portable vertebral support device for use as a medical appliance in supporting the vertebral column of a user and designed for use between the user's back and an external supporting surface such as a seat back, said support device consisting of a substantially flat and elongated pad having a width approximately no greater than the width of the user's back so that the support device directly engages the back muscles of the user, and said support device being relatively rigid throughout the complete longitudinal length thereof but being provided with lateral flexibility to conform to the user's back, and to permit folding, said pad comprising:
 - elongated relatively rigid stiffening members positioned substantially parallel with respect to each other and spaced apart to define a central portion therebetween of width sufficient, but no greater than that necessary, to span the palpable portion of the vertebral column of the user, said central portion having a width which is a small fraction of the overall width of said pad; and
 - retaining means affixed to said stiffening members for holding same in a predetermined position with respect to each other and extending at least substantially the full length and width of said stiffening members;

said device being positionable so that the longitudinal axis thereof extends parallel to the vertebral column of the user with said central portion substantially spanning at least the palpable portion of the vertebral column of the user and said stiffening members being positioned on opposite sides of the vertebral column and disposed for contact with at least those of the user's back muscles which are closely adjacent his vertebral column.

3,856,350

CHAIRS

Dennis Duke, West Kensington; Michael James Swain, and Alan Cracknell, both of St. Albans, all of England, assignors to 1, 2, Hertfordshire 5 EN

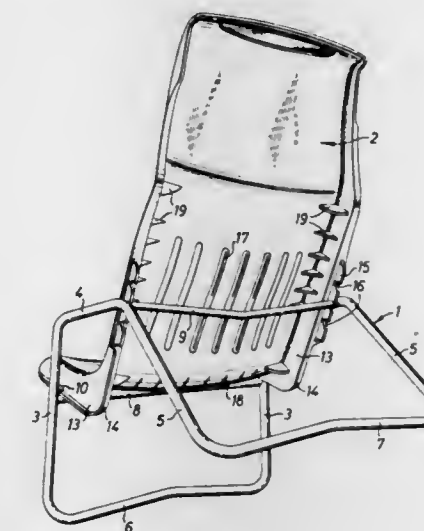
Filed Mar. 19, 1973, Ser. No. 342,484

Claims priority, application Great Britain, Mar. 21, 1972, 13276/72

Int. Cl. A47c 1/00

U.S. Cl. 297—355

2 Claims



1. A chair comprised of a base and body;
 - said body including a seat and a back disposed at an angle with respect to said seat;
 - said seat having opposite sides and having a respective lip projecting outwardly from and extending a distance along each said seat side;
 - said back carrying a plural position chair base engagement means;
 - said base including a support for the chair; said base also including respective portions extending upwardly past said seat lips, and on those said base portions are respective guide elements for said lips, which said guide elements engage said lips in supporting relationship while said lips are slidable along their length on said guide elements;
 - said base also carrying plural position chair back engagement means that are positioned and adapted to engage the said chair base engagement means on said back at any of a plurality of positions along said back and which engage said chair base engagement means on said back at one of said positions;
 - said guide elements comprising a respective pair of guiding posts for each said lip, with each said post extending over its said lip and one of said posts of each pair being above its respective said lip and the other said post of that said pair being below its respective said lip; said posts of each said pair being spaced apart a distance which enables the respective said lip to slide along its length between its said posts and to be guided in movement against substantial up and down shifting;
 - said seat and said back being rigid and being rigidly connected to each other;
 - said chair back engagement means on said base comprising a cross rail means and said chair base engagement means on said back comprises at least one rack with a plurality of cross rail means receiving notches thereon extending along the height of said back; said cross rail means being selectively engaged in one said notch and being movable to be engaged in each other said notch;
 - the said lip supporting posts below both said lips being joined and form a cross rail across said base.

3,856,351

VEHICLE OCCUPANT RESTRAINT BELT SYSTEM WITH COMFORT CLIP

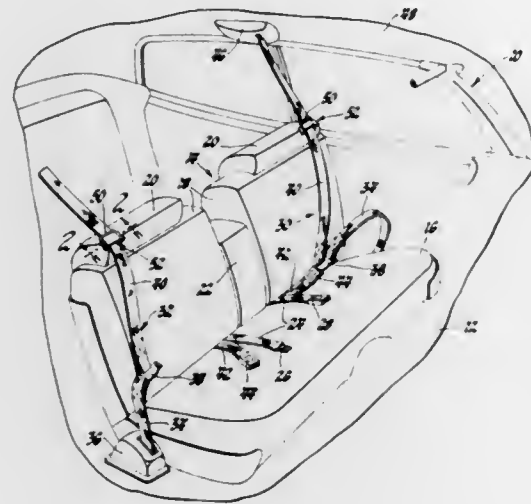
Louis P. Garvey, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1973, Ser. No. 421,213

Int. Cl. A62b 35/00

U.S. Cl. 297-388

2 Claims



1. In an automotive vehicle including an occupant seat having cushion and back portions, a restraint belt system for a seated occupant comprising:

lap and shoulder belts with first ends secured to a common first buckle component, a second buckle component for selectively attaching the first buckle component so as to secure the belts in an occupant restraining position, the lap belt extending generally laterally with respect to the vehicle across the occupant's lap while in the restraining position, and the shoulder belt extending diagonally across the occupant's chest while in the restraining position;

an automatic locking type belt retractor receiving the other end of the lap belt so as to normally tension the lap belt across the lap of the belted occupant and to store the lap belt upon detachment of the buckle components;

an inertia locking type belt retractor receiving the other end of the shoulder belt so as to normally tension the shoulder belt across the chest of the belted occupant and to store the shoulder belt upon detachment of the buckle components;

a stop through which the shoulder belt passes, the stop being located toward the shoulder belt retractor with respect to the shoulder of the belted occupant over which the shoulder belt passes while extending diagonally across the occupant's chest in the restraining position, and the stop allowing the shoulder belt to be freely pulled in either direction therethrough so that the shoulder belt is not impeded thereby during movement to the restraining position and does not, in and of itself, prevent the shoulder belt retractor from tensioning the shoulder belt across the occupant's chest; and

a plastic comfort clip positioned on the shoulder belt between the first buckle component and the stop, the comfort clip being of a one-piece construction and including a generally planar base of a rectilinear configuration that extends between the opposite edges of the shoulder belt in a generally parallel relationship with respect to the plane of this belt, the ends of the base adjacent each edge of the shoulder belt having generally rectilinear configurations extending generally parallel to the edges of the shoulder belt, and

a pair of clamping portions integrally connected to the rectilinear ends of the base adjacent each edge of the shoulder belt and extending about the respective edges of the shoulder belt back toward each other so that the shoulder belt is positioned between the clamping por-

tions and the base of the clip, the clamping portions defining a slot through which the shoulder belt may be inserted intermediate the ends thereof so as to be positioned between the clamping portions and the base, the base and the clamping portions of the clip cooperating to clamp the shoulder belt therebetween with a force that is not so large as to prevent the clip from being readily slid along the shoulder belt by a manual effort to provide adjustment thereof, the clamping force being sufficiently large to prevent the shoulder belt retractor from pulling the shoulder belt through the clip, and the clip engaging the stop to prevent movement therethrough so that appropriate manual adjustment of the clip along the shoulder belt will prevent the shoulder belt retractor from tensioning the shoulder belt across the occupant's chest.

3,856,352

STACKABLE CHAIR KNEELER

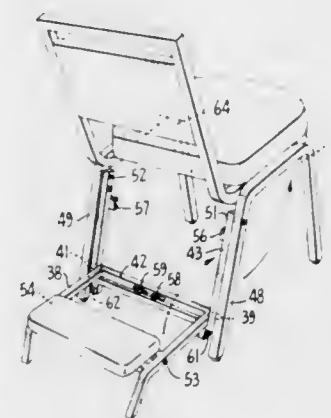
Arno M. Jacobi, Sr., Belmont, Calif., assignor to Walter Jacobi & Sons, Inc., Belmont, Calif.

Filed June 18, 1973, Ser. No. 371,161

Int. Cl. A47c 7/50, 9/14

U.S. Cl. 297-425

23 Claims



19. A stackable chair kneeler, comprising a chair having a seat and substantially inverted U-shaped side elements providing downwardly diverging legs, said chair being stackable with other chairs of similar configuration and with its legs nesting with the legs of the chairs above and below, a subframe pivotally mounted to the legs of said chair adjacent to said seat and formed for selective swinging movement between an operative position in substantially coplanar alignment between the rear legs of said chair and a storage position closely underlying said seat, a kneeler frame pivotally on said subframe for selective swinging movement between a retracted position in generally coplanar alignment with said subframe and a lowered position for kneeling, and holding means formed for releasably retaining said subframe in said operative and storage positions.

3,856,353

CUSHION CONNECTION

Andrew I. Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, both of N.Y., assignors to Knoll International Inc., New York, N.Y.

Filed Oct. 11, 1972, Ser. No. 299,619

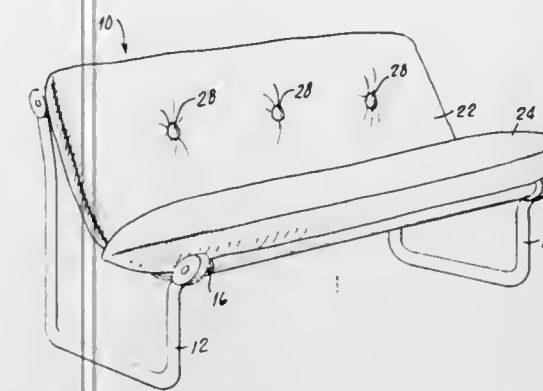
Int. Cl. A47c 7/14

U.S. Cl. 297-452

11 Claims

1. An item of furniture comprising a substrate having an aperture therein, and a cushion having a tufting assembly

which creates a tufting effect in the cushion and which includes a button secured thereto which is buttoned through the



aperture in the substrate to provide the sole means for securing the cushion to the substrate.

3,856,354

SUGAR CANE WAGON AND THE LIKE

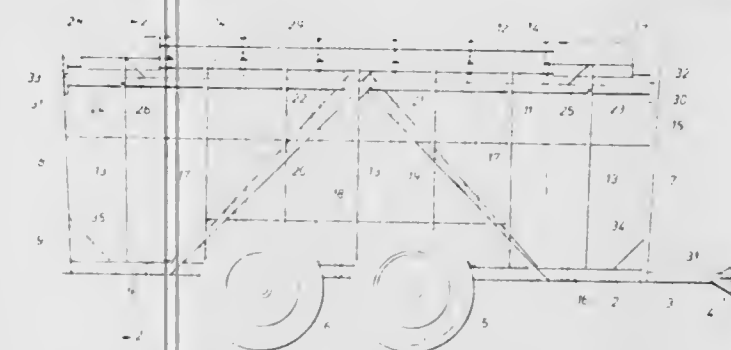
Darryl B. Davis, 624 W. St. Peter St., New Iberia, La. 70560

Filed Mar. 13, 1972, Ser. No. 234,268

Int. Cl. B65g 67/50

U.S. Cl. 298-10

12 Claims



1. A wagon-like vehicle capable of traversing soft terrain while carrying at least 10 tons of cut sugar cane or the like and adapted for movement by a prime mover, comprising

a rectangular frame assembly composed of a pair of steel side beams rigidly interconnected together in a parallel spaced-apart manner by a plurality of spaced-apart steel cross beams and having a lateral pivot axis spaced rearwardly of the forward end of said frame assembly a distance substantially equal to 11/20ths of the length of said frame assembly,

a forward end wall assembly mounted on the forward end of said frame assembly,

a rearward end wall assembly mounted on the rearward end of said frame assembly,

a first open lattice-like side wall assembly mounted between said end wall assemblies along one side of said frame assembly and outwardly tilted therefrom,

a second open lattice-like side wall assembly mounted between said end wall assemblies along the opposite side of said frame assembly and outwardly tilted therefrom,

said second side wall assembly having a height greater than the height of said first side wall assembly,

a forward axle assembly fixedly mounted laterally across said frame assembly at a location spaced rearwardly from the forward end of said frame assembly a distance substantially equal to 8/20ths of the length of said frame assembly,

a rear axle assembly fixedly mounted laterally across said frame assembly at a location spaced from said forward axle assembly a distance substantially equal to one-fourth of the length of said frame assembly,

a pair of hanger mount members mounted on the upper edge of said first side wall assembly adjacent said end wall assemblies and raised to a height greater than that of said second side wall assembly,

a cable hanger member adapted to rest on said hanger mount members,

a plurality of flexible carrying lines interconnected between said cable hanger member and the upper edge of said second sidewall assembly and draped against the inside surfaces of said sidewall assemblies and across said frame assembly at spaced-apart locations therealong,

a drawbar extending forwardly of the forward end of said frame assembly and having a vertical recess in its forward end,

a first angle member vertically located on the end of said drawbar at one side of said recess and having one side provided with a plurality of bolt holes and arranged to form a forward extension of said side of said recess,

a second angle member vertically located on the end of said drawbar at the other side of said recess and having one side provided with the same plurality of bolt holes and arranged to form a forward extension of said other side of said recess,

a link member having a cylindrical bushing-like portion at one end which is insertable in said recess and between angle members and further having spaced apart parallel extensions having a plurality of bolt holes matching selected ones of said bolt holes in said angle members,

a plurality of spacing sleeves located between said link member extensions and connecting said bolt holes therein,

a plurality of bolts adapted to be inserted through said bolt holes in said linking means and said angle members and through said spacing sleeves for securing said link member to said drawbar,

coupling means having provision at one end for interconnection with said prime mover, and connector means for interconnecting said coupling means and said bushing-like portion of said link member.

3,856,355

RECOVERY OF SUB-SURFACE METALS

Donovan B. Grable, Long Beach, Calif., assignor to Wasteland Reclamation Corp., Long Beach; Bill C. Laney, Torrance and William W. Haefliger, San Marino, all of, Calif., part interest to each

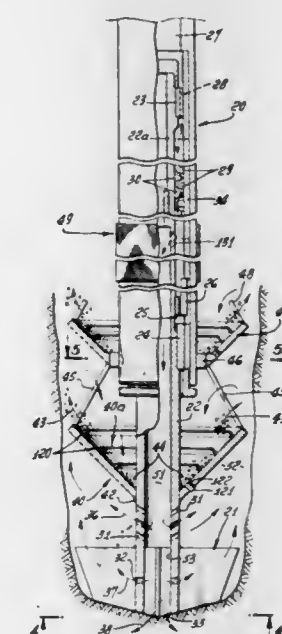
Continuation-in-part of Ser. No. 338,151, March 5, 1973, Pat. No. 3,790,213. This application July 18, 1973, Ser. No.

380,362

Int. Cl. E21c 45/00

U.S. Cl. 299-8

24 Claims



1. In the method of recovering segregatable particles in an underground formation, the steps that include

- a. progressively rotatably cutting into the underground formation both up and down and laterally to produce an underground swath, and to loosen said particles, said lateral cutting being carried out during up and down cutting,
- b. delivering liquid in a pressurized stream to said swath to displace the loosened particles in the delivered water, and
- c. locally collecting the displaced particles in a collection zone in said swath, during said cutting, for subsequent retrieval at the surface.

3,856,356

METHOD OF MINING MINERAL

Archelaus Dawson Allen, Preston, and Fred Small, Lathom, both of England, assignors to Gullick Dobson Limited, Lancashire, England

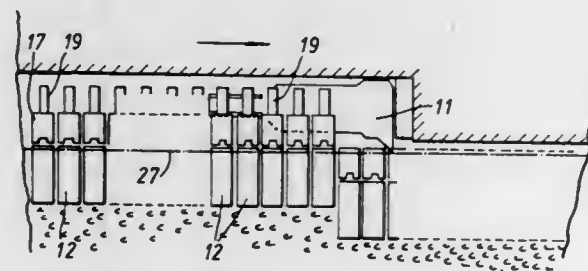
Filed Mar. 21, 1973, Ser. No. 343,223

Claims priority, application Great Britain, Mar. 24, 1972, 13973/72

Int. Cl. E21c 27/24

U.S. Cl. 299-11

1 Claim



1. A method of mining mineral from a mineral face which comprises the following steps:

- positioning a line of self-advancing mine roof supports along and spaced from said mineral face, each of said roof supports having an extensible and retractable roof supporting extension bar, a section of a path defining means and a double-acting pressure-fluid ram means for advancing the support and for advancing said section of the path defining means, the sections of path defining means of the line of supports collectively defining with said mineral face a path parallel to the mineral face,
- driving a self-propelled mining machine, which incorporates its own driving motor and is propelled by traction with a surface of the mine working, along said path so that said mining machine removes a web of mineral from the mineral face,
- operating said pressure-fluid ram means to advance the mine roof supports in turn behind the mining machine and towards the mineral face by an amount which is a fraction (e.g. half) of the thickness of the web of mineral removed from the face by the mining machine,
- advancing said roof supporting extension bars of the supports towards the mineral face to provide roof support in the vicinity thereof,
- driving the mining machine on a return journey along said path,
- operating the pressure-fluid ram means of each support to advance the path defining means thereof towards the mineral face by the same amount as said advance of the supports,
- operating the pressure-fluid ram means of each support so as to advance the supports further so that the total advance thereof is equal to the total thickness of the web of mineral removed from the mineral face by the mining machine, and
- operating the pressure-fluid ram means of each support to advance the path defining means thereof further by the same amount of said further advance of the supports.

3,856,357
COMBINATION ROTOR-BOX CUTTER MINING
MACHINE AND METHOD OF MINING

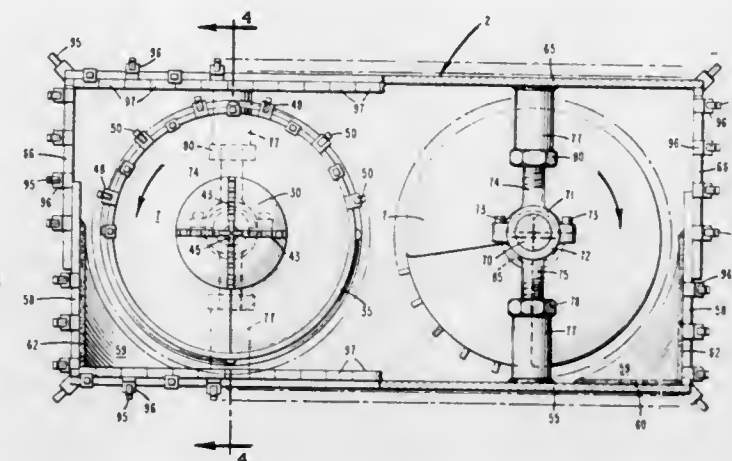
George C. Wharton, P.O. Box 450, Wise, Va. 24293

Filed Aug. 22, 1973, Ser. No. 390,409

Int. Cl. E21c 27/10

U.S. Cl. 299-12

12 Claims



1. In a coal mining machine the combination comprising a rotor means having a burster element on the forward end thereof, a tubular element with forwardly extending cutting means surrounding and in axial alignment with said burster element, means to rotate said rotor means and said tubular element including a drive shaft means therefor, a rectangular cutter box means having forwardly extending cutters at the forward end thereof, said cutter box means being of a dimension exceeding the cross-sectional area of said tubular element, and means in interconnection with said drive shaft to impart oscillatory motion to said cutter box means.

3,856,358

WEAR-RESISTANT INSERTS FOR IN SURFACES OF THE
LINKS OF CUTTER CHAINS AND THE LIKE TO RETARD
WEAR THEREOF

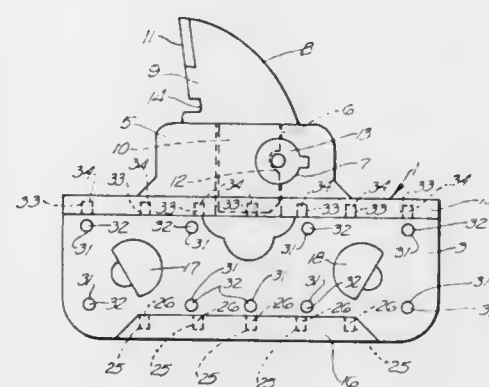
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Filed Apr. 27, 1973, Ser. No. 355,262

Int. Cl. E21c 27/28

U.S. Cl. 299-82

19 Claims



1. In the combination of a chain for a mining machine or the like and a supporting means for said chain with which said chain has sliding contact, wherein said chain is made up of a plurality of links and wherein at least some of said chain links and said supporting means have surfaces subject to sliding-type wear therebetween, means for protecting at least selected ones of said surfaces, said means comprising discrete hard wear-resistant insert elements of circular cross section embedded axially in preformed holes in said surfaces to be protected.

3,856,359

ANTI-CORING DEVICE FOR USE WITH BIT MOUNTING
MEANS ON MINING, EARTH WORKING AND DIGGING
MACHINES

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Division of Ser. No. 181,771, Sept. 20, 1971, Pat. No.

3,778,112, which is a continuation-in-part of Ser. No. 842,791,

June 30, 1969, Pat. No. 3,622,206, which is a

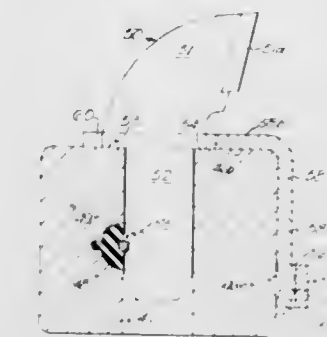
continuation-in-part of Ser. No. 753,398, Aug. 19, 1968,

abandoned. This application Sept. 21, 1973, Ser. No. 399,468

Int. Cl. E21c 35/18

U.S. Cl. 299-92

16 Claims



1. An anti-coring device for use with bit and mounting means assemblies mounted on the driven elements of mining machines, digging machines and earthworking machines wherein each of said mounting means has at least one forward surface facing the cutting direction and subject to coring, said mounting means having a perforation therein adapted to receive the shank of a bit, said shank receiving perforation forming an opening in said at least one surface, said shank receiving perforation at said opening being countersunk, said countersink forming a gauge-determining abutment surface adapted to cooperate with a matching gauge-determining abutment surface on said bit, said anti-coring device comprising a disposable element adapted to cover a part at least of said at least one surface of said mounting means, means for detachably maintaining said anti-coring device at said at least one surface of said mounting means, said anti-coring device having a perforation therethrough so positioned therein as to be coaxial with said shank receiving perforation when said anti-coring device is in position on said mounting means, said perforation in said anti-coring device being so sized as to expose said gauge-determining abutment surface on said mounting means.

3,856,360

ALUMINUM BASE ALLOY DIE CASTING WHEEL

Richard S. Lindberg, Homewood, and G. Leslie Armstrong, Crete, both of Ill., assignors to U.S. Reduction Co., East Chicago, Ind.

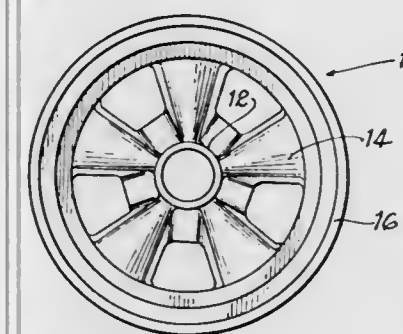
Division of Ser. No. 85,372, Oct. 30, 1970, Pat. No. 3,726,672.

This application Mar. 1, 1973, Ser. No. 337,002

Int. Cl. B60b 1/08; C22c 21/02

U.S. Cl. 301-65

2 Claims



1. A die-cast aluminum automobile wheel having a flange, spiders and a rim, said wheel consisting essentially of aluminum, and by weight percentage of the total composition,

magnesium 0.25 to 0.6%, copper 0.25 to 0.6%, iron 0.5 to 1.5%, silicon 11 to 13.5%, chromium 0.25 to 0.4%, a maximum of 3% zinc, a maximum of 0.5% manganese and a maximum of 0.2% of each of titanium, nickel, tin and lead.

3,856,361

VEHICLE BRAKING SYSTEM

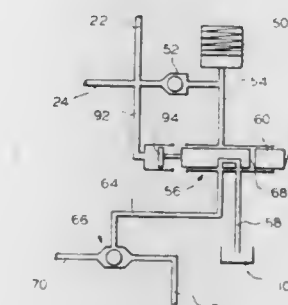
Allan R. Swanson, St. Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 5, 1973, Ser. No. 321,422

Int. Cl. B60t 11/32

U.S. Cl. 303-6 R

8 Claims



1. A vehicle braking system comprising: first braking means responsive to fluid pressure for applying a first braking force; second braking means responsive to fluid pressure for applying a second braking force; primary fluid supply means for supplying primary fluid pressure to said first and second braking means to actuate said first and second braking means; auxiliary fluid supply means for supplying auxiliary fluid pressure to said first and second braking means upon a release of fluid pressure in said primary fluid supply means, said auxiliary fluid supply means including flow control means for isolating one of said braking means from the supply of said auxiliary fluid pressure independently of the supply of said auxiliary fluid pressure to the other braking means in response to the release of fluid pressure by said one of said braking means, first valve means responsive to fluid pressure from both of said primary and said auxiliary fluid supply means for supplying said first braking means fluid pressure from one of said primary and said auxiliary fluid supply means, and second valve means responsive to fluid pressure from both of said primary and said auxiliary fluid supply means for supplying said second braking means fluid pressure from one of said primary and said auxiliary fluid supply means, said auxiliary fluid supply means including a first fluid passage interconnecting said flow control means and said first valve means and a second fluid passage interconnecting said flow control means and said second valve means, said flow control means being responsive to a predetermined drop in fluid pressure in either one of said passages for discontinuing the supply of auxiliary fluid pressure thereto.

3,856,362

ELECTRONICALLY CONTROLLED SOLENOID
REGULATED SERVOMOTOR

Donald W. Howard, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed May 31, 1973, Ser. No. 365,798

Int. Cl. B60t 13/74

U.S. Cl. 303-7

6 Claims

1. In a tow vehicle-trailer braking system, electrical means for generating an operational signal from an actuation signal for the wheel brakes of the tow vehicle to regulate the operation of a servomotor in the trailer which provides an output force to actuate the wheel brakes of the tow vehicle, said electrical means comprising:

first transducer means for converting said actuation signal for the wheel brakes of the tow vehicle into a corresponding first electrical signal;

3,856,367

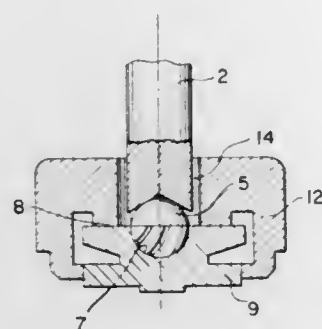
SPIRAL-GROOVED BEARING AND METHOD OF MANUFACTURE

Horst Wohnhaas; Kurt Haas, both of Friedrichshafen, and Manfred Granzow, Meckenbeuren, all of Germany, assignors to Dornier Systems GmbH, Friedrichshafen, Germany
Filed Feb. 16, 1973, Ser. No. 333,312

Claims priority, application Germany, Mar. 1, 1972, 2209712

Int. Cl. F16c 17/16, 17/04; B21d 53/10
U.S. Cl. 308—9

24 Claims



1. A hydrodynamically-acting sliding bearing, comprising, a shaft having a roller bearing ball affixed to the end thereof, and a supporting member of a hardenable alloy adapted to operatively cooperate with said end of said shaft and having an imprint of a spherical segment formed in an initially plane surface by punching a roller bearing ball into said plane surface prior to the hardening of said hardenable alloy, said roller bearing ball affixed to the end of said shaft having dimensions of the same order of magnitude but slightly smaller than the dimensions of said imprint of said spherical segment to form a gap between said roller bearing ball and said imprint of said spherical segment.

3,856,368

FLUID SEAL FOR BEARING ASSEMBLY

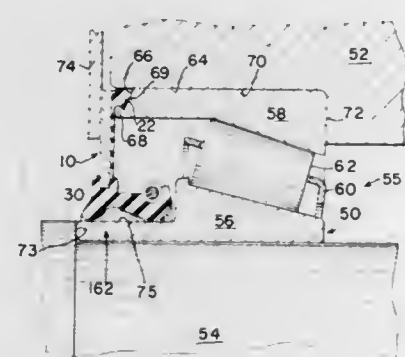
Kare Andersen, 832 Carol Ave., Elgin, Ill. 60120
Continuation of Ser. No. 147,990, May 28, 1971, abandoned.

This application May 25, 1973, Ser. No. 363,829

Int. Cl. F16c 33/78

U.S. Cl. 308—187.2

5 Claims



1. A unitized bearing and seal assembly comprising in combination, radially inner and outer races, a plurality of rotatable bearings disposed between said inner and outer races and being positioned therein by means of a cage, one of said inner and outer races having an axially extending collar with a radially directed sealing surface thereon, a groove in the other of said races, said groove having an axially extending portion and a radially undercut portion, a seal unit forming a part of said bearing and seal assembly, said seal unit including a relatively rigid, radially extending stiffener portion closing off a major portion of the area lying between said inner and outer races, a sealing lip extending substantially axially outwardly from and bonded to one end of said relatively rigid stiffener, said lip having a seal band portion thereof formed by the convergence of a pair of frusto-conical surfaces, and an annu-

lar spring overlying said seal band whereby said seal band is urged into engagement with said sealing surface on said one of said races, and a secondary sealing bead formed on the other end of said stiffener portion, said secondary sealing bead having a bead portion of a shape generally conforming to the shape of said groove and other of said races, whereby an axially directed force on said stiffener will force said secondary sealing head radially outwardly from said groove and into snug sealing engagement with a member fixed with relation to said second race, said bead portion of said secondary sealing bead being adapted when received in said race groove to position and support said seal assembly in relation to said bearing assembly.

3,856,369

METHOD FOR STOWING-AWAY CASSETTES IN A SUITABLE-HOLDER

Michel Commiant, Molenbeek-Saint-Jean, Belgium, assignor to Compagnie Generale des Isolants (Cogebi), Brussels, Belgium

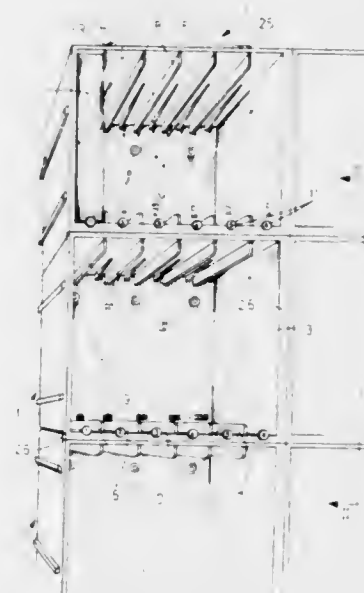
Filed Mar. 16, 1973, Ser. No. 342,261

Claims priority, application Belgium, Mar. 21, 1972, 780968; Aug. 18, 1972, 787724

Int. Cl. B65d 39/00; A47b 73/00; F16b 12/00

U.S. Cl. 312—107

6 Claims



1. A holder for cassettes, said cassettes being parallelepiped-shaped, said holder comprising a parallelepiped-shaped box whose front side is open and which comprises an inner back face opposite said open front side, inner side faces and inner top and bottom faces, the bottom face being divided into parallel compartments adapted to receive cassettes, said compartment extending at right angles to the open front side, whereby the width and the length of the compartments correspond substantially to the width and length of a cassette, whereby a plurality of cassettes may be stored in adjacent upright positions on one of the sides thereof in said compartments, said box further comprising resilient members provided on said inner back face inside each of said compartments, a rigid stop for each of said compartments opposite each of said resilient members and rigid guide members provided on said inner top face inside each of said compartments, each of said resilient members operating at right angles to said inner back face toward each of said rigid stops whereby when a cassette is disposed in a compartment, said cassette is clamped between the resilient member and the corresponding rigid stop, the rigid guide members being arranged so as to guide a cassette into each of said compartments and retain said cassettes against the inner bottom face thereof.

3,856,370

STAND FOR STORING, INDEXING AND DISPLAYING STOCK

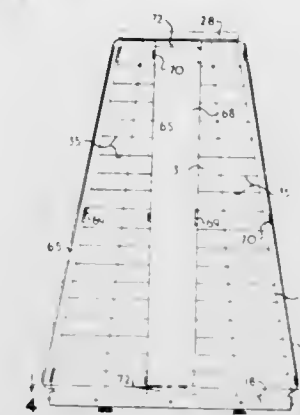
Alfred A. Burrell, 10323 106th St., Edmonton, Alberta, Canada

Filed Oct. 19, 1973, Ser. No. 407,830

Int. Cl. A47f 3/14

U.S. Cl. 312—118

10 Claims



1. For storing, indexing and displaying stock, a stand of upright frusto-conical form comprising a horizontal circular base; a circular top of smaller diameter spaced thereabove; base surfacing members of alternate rectangular and truncated sector shape secured to the upper side of said circular base each with narrowly spaced upstanding side flanges; and vertical metal partitions arranged between said base and top; said partitions extending outward to the circumference of the stand with their lower edges being supported on said base and their outer edges lying at an inclined angle tapering to said smaller diameter circular top and serving to define a plurality of sections being joined together at their inner vertical edges in right angle relation to define a sector-shaped section and wherein the partitions are arranged parallel in pairs with each pair providing opposite sides of a substantially rectangular section with each partition of a parallel pair in association with the confronting partition of the next adjoining parallel pair providing the opposite sides of one of said sector-shaped sections, and wherein the lower edge of each vertical partition fits between a pair of the narrowly spaced side flanges of an adjacent rectangular and truncated sector shape base surfacing member and is secured thereto.

3,856,371

KNOCK-DOWN DESK CONSTRUCTION

James M. Forsyth, Pocompton, Pa., assignor to General Metalcraft, Inc., Jenkintown, Pa.

Filed Oct. 17, 1973, Ser. No. 407,211

Int. Cl. A47b 13/06, 17/06

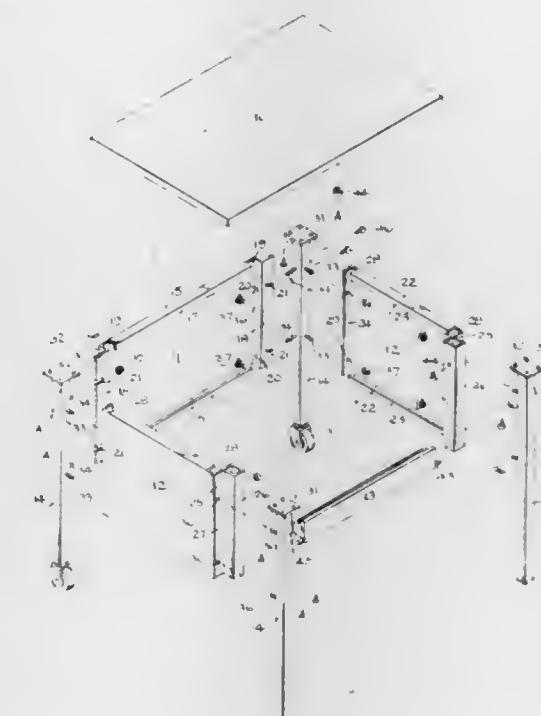
U.S. Cl. 312—195

10 Claims

1. A knock-down construction of a supporting understructure for the top of a table or the like comprising in combination,

- a pair of vertically extending side panels disposed in laterally spaced, parallel relation, each side panel having at its rear end a vertically extending intumed flange and at its front end a vertically extending flange bent upon itself to provide a frontally projecting box-like section inwardly offset from the panel to provide a right angular space or seat extending along the full vertical length of the panel for accommodating therein a vertically extending front leg for the table,
- a vertically disposed back panel extending transversely between the rear ends of said side panels, said back panel being provided at each of its opposite ends with a vertically extending right-angular flange having a terminal branch of which extends freely beyond the end of and is disposed in inwardly spaced parallel relation to said back panel to provide at each said end of said panel a right angular vertically extending space or seat in oppositely

facing relation to the space or seat provided at the front end of the adjoining side panel for accommodating therein a vertically extending rear leg for the table, c. a plurality of vertically extending post members or legs of square cross section respectively nested in the vertically extending right-angular spaces or seats provided in the opposite ends of said back panel and the front ends of said side panels, and



3,856,372

LABORATORY WORKING SINK STATION

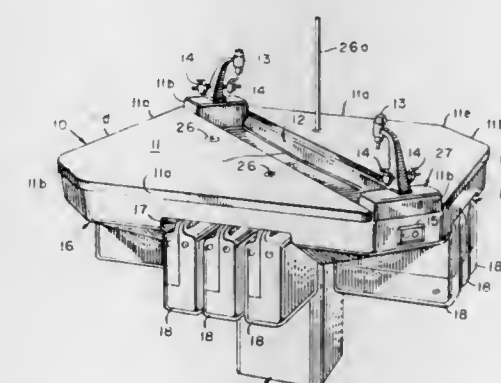
Arthur W. Carlson, Muskegon, and Leif Blodde, Holland, both of Mich., assignors to E. H. Sheldon and Company, Muskegon, Mich.

Continuation-in-part of Ser. No. 135,608, April 20, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,611

Int. Cl. B01l 9/02

U.S. Cl. 312—209

10 Claims



1. A laboratory table structure comprising: a fixed hollow pedestal for routing plumbing and electrical supply lines and having upright side walls; an access panel in one of said side walls of said pedestal; means for securing said pedestal to a floor; an upwardly concave plastic hull providing an enlarged central aperture at its bottom to receive said pedestal and having upwardly-extending peripheral side walls; a plurality of said side walls of said hull defining recesses for supporting storage means; a table top having a polygonal plan shape with four relatively long sides extending along the edges of a square

and four relatively short sides extending between adjacent ones of said long sides, said table top providing a trough opening elongated diagonally of said square; a trough beneath said trough opening accessible from the top of said table; link means for securing said table top to said hull; and vertically adjustable flange means on the exterior of said pedestal for supporting and securing said hull to said pedestal at one of a plurality of vertically spaced locations on said pedestal to adjust the height of said hull, top, trough and storage means as a unit, the remaining portion of said pedestal extending within said hull.

3,856,373 FILE DRAWERS LOCK

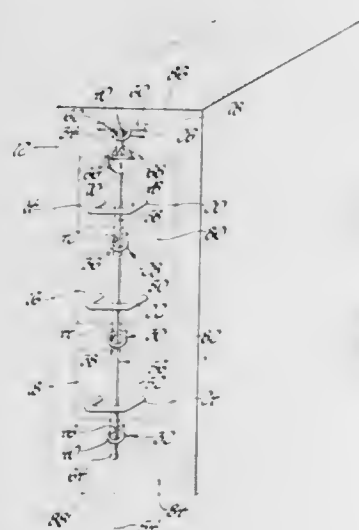
Paul J. Tucich, 4645 Woodworth, Dearborn, Mich. 48126

Filed Feb. 20, 1973, Ser. No. 334,010

Int. Cl. E05b 65/46

U.S. Cl. 312-216

6 Claims



1. In a cabinet containing tiers of file drawers operable to move in a horizontal direction with respect to the cabinet, the improvements comprising:

- a rod having a thickness and depending in a vertical direction across the face of the cabinet and the face of the drawers therein;
- a member surrounding said vertical rod near the top thereof and being fixed to the cabinet and limiting the horizontal translation of said rod with respect to said cabinet;
- a cross bar member having a thickness of an order of magnitude corresponding to the thickness of said vertical rod and being rigidly attached to the top of said rod and resting on top of said limiting member;
- an aperture having a maximum horizontal width less than the thickness of said vertical rod and passing through said rod below said limiting member and being operable to receive a shackle of a lock;
- a lock having a shackle passing through said aperture and said shackle having a thickness less than said maximum horizontal width of said aperture, and said shackle, when passed through said aperture, being operable to abut against the bottom surface of said limiting member thereby limiting the vertical translation of said rod with respect to said cabinet;
- another member limiting horizontal translation of said rod with respect to said cabinet and being fixed to said cabinet and being spaced at a distance from said first mentioned limiting member;
- said another limiting member having a portion surrounding said vertical rod member having a thickness of the same order of magnitude as the thickness of said shackle and a part of said portion being juxtaposed between said vertical rod member and the face of said cabinet;
- whereby said rod, lock and limiting members cooperate to limit the translation of the drawers with respect to said cabinet.

3,856,374 KNOCK-DOWN ELECTRIC FOOD SMOKER

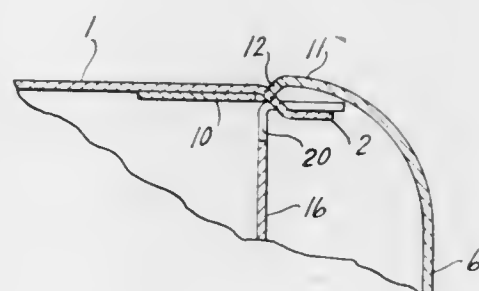
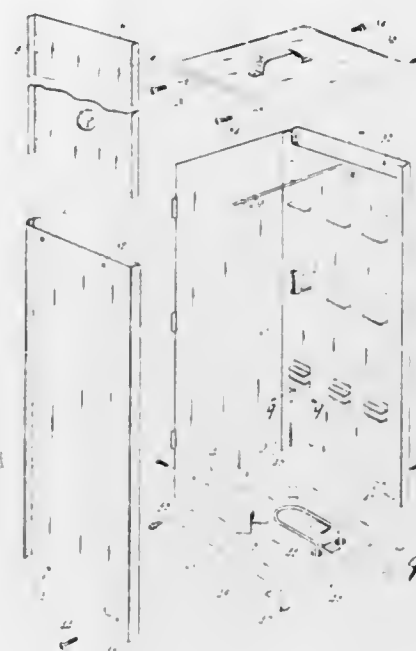
Jack P. Christen, Onalaska, Wis., assignor to Outers Laboratories, Inc., Onalaska, Wis.

Filed Mar. 18, 1974, Ser. No. 452,566

Int. Cl. A47b 47/00

U.S. Cl. 312-263

1 Claim



1. Sheet metal panels construction for a knock-down electric food smoker cabinet comprising, two vertical side panels each having a flange extending at right angles and located along the rear edge of each panel, slots located in said flanges, an interior baffle plate located in parallelism along the inside of each of said side panels, said baffle plates having slots which are alignable with said slots in said side panels, a vertical rear panel having tabs extending outwardly from each of its sides and which tabs are inserted in said aligned slots of said baffles and side panels to thereby rigidly hold said baffle plates, said side panels and said rear panel together in assembled relationship.

3,856,375 MULTIPLE PLUG DEVICE

Heinz Muench, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 13, 1972, Ser. No. 271,403

Claims priority, application Germany, July 19, 1971, 2136022

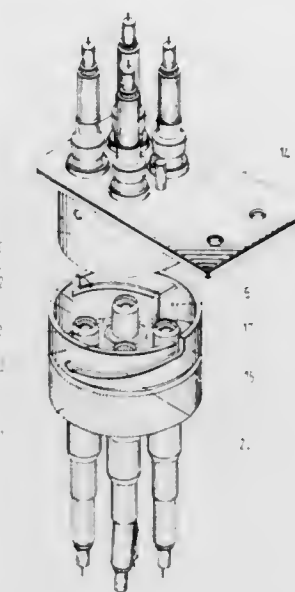
Int. Cl. H01r 13/54, 13/64

U.S. Cl. 339-31 R

6 Claims

1. A multiple connector comprising a first plug part and a second plug part each comprising a respective plurality of contact elements which cooperably engage the other plurality of contact elements when said plug parts are mated, each of said pluralities of contact elements fixed in a pattern defining the corners of a polygon which permits at least two different engagement associations of the pluralities of contact elements, first and second protective collars included in the respective plug parts surrounding the contact elements thereof and di-

mentioned for telescopic movement of said second protective collar into said first protective collar upon mating of the plug parts, first and second cooperable guide means for the respective plug parts for aligning and guiding said parts, said first guide means rigidly connected with said first plug part, second guide means included in said second collar, said first protective collar being rotatably mounted on said first plug part



about an axis of said first plug part extending in the direction of plugging, and means for selectively securing said second protective collar to said second plug part at a number of circumferentially distributed positions, the number of positions determined as at least an integer fraction of the number of possible associations of said pluralities of said contact elements.

3,856,376 ELECTRICAL CONNECTOR

John M. Poliak, East Meadow; Milton J. Weitzman, Bayside, and Juan M. Lopez, New York, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

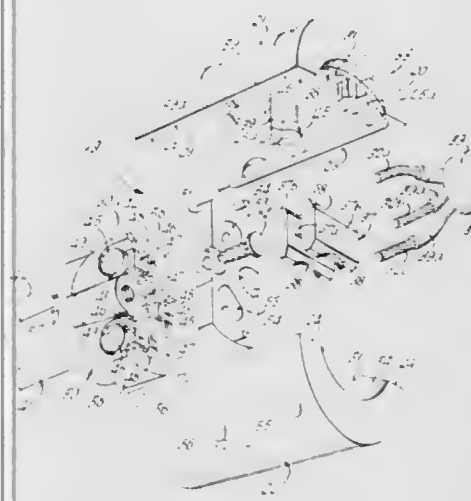
Continuation of Ser. No. 30,143, April 20, 1970, abandoned.

This application Apr. 27, 1972, Ser. No. 248,030

Int. Cl. H01r 13/58

U.S. Cl. 339-107

23 Claims



1. In an electrical connector for attachment to the end of an electrical cable, the improvement which comprises:

- a. a split body formed of an insulating material;
- b. said body being split along its longitudinal axis into two complementary parts and having an opening at a rear end thereof to receive an electrical cable;
- c. said two parts of the body having opposing surfaces adapted to be brought into engagement with each other;
- d. fastening means located along opposite sides of said body for securing the two parts of the body together; and
- e. strain-relief means carried by and located within said

- body adjacent the opening in the rear end thereof for engagement with the cable received therein;
- f. said relief means exerting a predetermined clamping force on the cable when the two parts of the body are brought into engagement; wherein:
- g. the strain-relief means includes cable-clamping members carried by the two parts of the split body;
- h. said cable-clamping members having opposing spaced surfaces for receiving and clamping a cable therebetween;
- i. at least one of said clamping members is capable of being placed in different positions in one part of the body with the spacing between the clamping surfaces of said members being different in each of said different positions; and wherein:
- j. said one cable clamping member has an H-shape having legs with clamping surfaces at the ends thereof;
- k. said H-shaped member including a bar connecting said legs with said bar being offset relative to the ends of the legs.

3,856,377 OPTICAL SCANNER WITH SINGLE OPTICAL HEAD

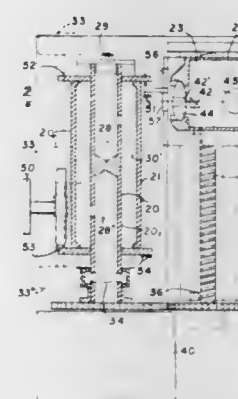
Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y. 14620

Filed June 4, 1973, Ser. No. 366,775

Int. Cl. G02b 17/00

U.S. Cl. 350-6

11 Claims



1. The method of optically scanning records bearing characters arranged in distinct parallel lines, which comprises providing an optical head and a rotor containing a cylindrical surface coaxial with its axis of rotation, effecting turning motion of said rotor on its axis, wrapping a record sheet on said cylindrical surface, with the character lines extending approximately in the direction of the rotor periphery, by first attaching the leading record side thereto, pressing the record onto said cylindrical surface as the rotor turns, without further attaching it, and attaching the trailing record side thereto as wrapping nears completion, lighting the record through said optical head, effecting feed motion between said head and rotor axially of the rotor in time with the turning motion of said rotor, for scanning the character lines of the record, gathering light reflected from a small lighted area of the record and directing it to means adapted to produce variations in electric current in accordance with the light variations received, reversing said turning and feed motions after scanning to return to starting position at increased speed, and releasing first the former trailing side of the record from the cylindrical surface after reversal and later releasing the opposite side as the record becomes unwrapped.

3,856,378

METHOD AND MEANS FOR MODULATING LIGHT PROPAGATING IN AN OPTICAL WAVEGUIDE BY BULK ACOUSTIC WAVES

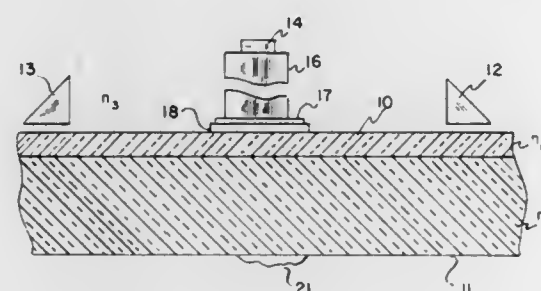
Gerald B. Brandt, and Milton Gottlieb, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1973, Ser. No. 336,864

Int. Cl. G02b 5/14; G02f 1/24

U.S. Cl. 350-96 WG

11 Claims



1. A method for modulating light propagated through an optical waveguide comprising:
passing ultrasonic acoustic bulk waves through said waveguide substantially perpendicular to the plane of the waveguide and to the direction of light propagation for interaction with said propagated light.

3,856,379

OPTICAL MIXING DEVICE EMPLOYING NONCRITICAL PHASE MATCHING IN WAVEGUIDES

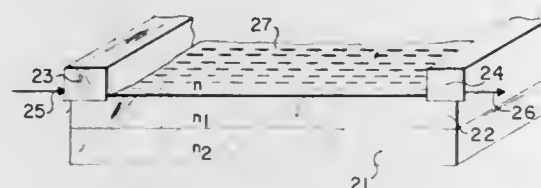
William K. Burns, and Ronald A. Andrews, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1973, Ser. No. 389,750

Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

10 Claims



1. A substantially symmetric optical waveguide which for noncritical phase matching comprises:
an optically transparent dielectric material substrate of substantially uniform thickness;
a high index dielectric film supported by said substrate, and an index of refraction tunable liquid supported upon and overlying said dielectric film;
said dielectric film having an index of refraction greater than said substrate and said liquid an input optical coupler on one end of said waveguide for coupling radiation into said waveguide, an output optical coupler on the opposite end of said waveguide for coupling radiation out of said waveguide, whereby radiation coupled into and out of said symmetrical waveguide is phase matched by tuning said liquid.

3,856,380

PRISM TO SEPARATE A SECOND HARMONIC FROM ITS FUNDAMENTAL FREQUENCY

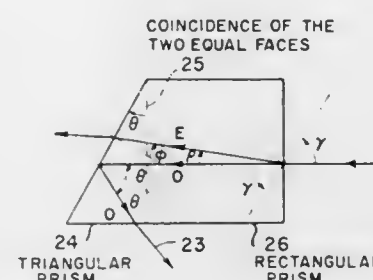
Kamala S. Krishnan, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1973, Ser. No. 360,500

Int. Cl. G02b 1/24

U.S. Cl. 350-157

5 Claims



1. A single-section prism for separating light impinging thereon into its fundamental and second harmonic frequencies, said prism being formed from a birefringent material and providing total internal reflection of one frequency and total transmission of the other frequency at its Brewster's angle by properly orienting the crystal and properly selecting said crystal's geometry a light beam incident on one face of said crystal being separated into its ordinary and extraordinary rays as it travels through said crystal, said extraordinary ray being incident on the back face of said crystal at its Brewster angle so that it is totally transmitted while said ordinary ray is almost totally reflected.

3,856,381

VOLTAGE-CONTROLLED DISPERSION OF LIGHT BY LIQUID CRYSTALS

Clarence L. Hedman, Jr., Campbell; Karl-Dieter S. Myrenne, Los Altos Hills, and Perry H. Vartanian, Jr., Woodside, all of Calif., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 242,709, April 10, 1972, Pat. No. 3,758,195. This application Aug. 22, 1973, Ser. No. 390,461

Int. Cl. G02f 1/16

U.S. Cl. 350-160 LC

7 Claims



1. In apparatus for separating polychromatic light into its spectral components, said apparatus comprising a source of polychromatic light, a beam-defining member cooperating with said source, a dispersion member aligned with the beam, and a viewing station for the dispersed light, said viewing station having portions non-aligned with said beams and said dispersion member being located between said beam-defining member and said viewing station, the improvement wherein said dispersion member comprises:
a cell having walls transparent to said light,
a mesomorphic material in said cell, said mesomorphic material having light-dispersion characteristics when subjected to a field of particular magnitude, said dispersion comprising formation of a plurality of spectra, displaced angularly from said beam and onto non-aligned portions of said viewing station,

means to generate a field of variable magnitude greater than said particular magnitude, and
means to subject said mesomorphic material to said variable field, said spectra being displaced in an amount dependent upon the magnitude of said field.

3,856,382

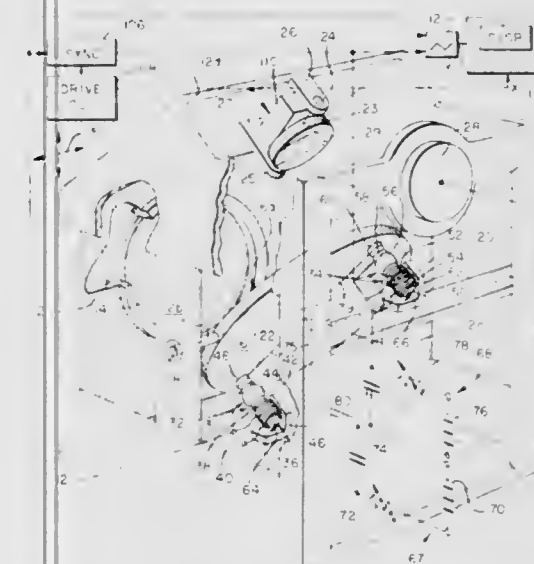
BALLISTIC LINEAR BIDIRECTIONAL SCANNER SYSTEM, assignor to Midland Capital Corporation, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,727

Int. Cl. G02f 1/34

U.S. Cl. 350-285

7 Claims



1. A linear scanning system operative to bidirectionally scan radiation incident on said system over a field of view and comprising:

means for redirecting radiation received from said field of view;
means for supporting said redirecting means for ballistic rotation about an axis through a rotational angle and providing a low frictional restraint to rotation of said redirecting means, whereby the ballistic rotation rate of said redirecting means is generally maintained through said rotation angle;
a rotation cycle being defined as two complete traversals through said rotation angle in opposed directions by said redirecting means;
an electromagnetic transducer including plunger means disposed at at least one angular limit of said rotation angle to contact said redirecting means at said at least one limit and operative to reverse the rotation of said redirecting means by applying a torque impulse to said redirecting means during contact therewith over a time interval which is a small fraction of the rotation cycle of said redirecting means, thereby to provide ballistic scanning by said redirecting means over substantially all of said rotation cycle;
first and second electrical contacts mounted on a reverse surface of said redirecting means and positioned along a line orthogonal to said axis;
said plunger means comprising:
first and second electrical coils having the respective axes thereof generally directed toward said first and second electrical contacts;
first and second plungers slidably mounted within said first and second electrical coils respectively;
said plungers being responsive to the application of electrical excitation to said coils to cause said plungers to be impelled toward said first and second contacts;
third and fourth contacts respectively secured to said first and second plungers on ends which respectively confront said first and second contacts, whereby said third and fourth contacts are operative to alternately contact

said first and second contacts during oscillation of said redirecting means;

said electromagnetic transducer including:

first means for applying electrical excitation to said first coil in response to electrical contact between said first and third contacts thereby to cause rotation of said redirecting means away from said first coil toward said second coil; and

second means for applying electrical excitation to said second coil in response to electrical contact between said second and fourth contacts thereby to cause rotation of said redirecting means away from said second coil toward said first coil.

3,856,383

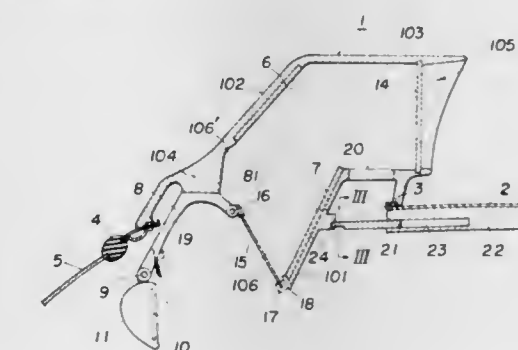
REAR VISION MIRROR APPARATUS FOR AUTOMOBILE Makoto Yamashita, Sagami-hara; Kenkichi Ikura, Yokohama, and Masagoro Kushida, Isehara, all of Japan, assignors to Ichika Industries Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,624

Claims priority, application Japan, Oct. 1, 1971, 46-90036 Int. Cl. G02b 5/08

U.S. Cl. 350-302

4 Claims



1. A rear vision mirror apparatus of the periscope type to provide a rear field of vision via the roof top of an automobile, comprising: a cylindrical housing fixed to the roof top and having an open rear end sealed tightly by a transparent cover and also having a front lower portion opening into the driver's chamber at a position close to the front window pane of the automobile; an objective mirror and a reflecting mirror operatively arranged in said housing; and an eye-piece mirror pivotally secured below said open front lower portion, the lowermost end part of the housing located in the immediate foreground of said transparent cover being provided with a rearward open portion communicating with the driver's chamber, and of sufficient size for a person to manually clean said transparent cover, said open front lower portion and said rearward open portion cooperatively forming a passageway for heated air from a defroster, the heated air passing into the housing through said lower front portion thereby preventing frost from forming on said transparent cover, and returning to the interior of said automobile through said rearward open portion; a movable cover member mounted within said rearward open portion and adapted for blocking said passageway and terminating the flow of heated air when the rear field of vision may be clearly viewed through said transparent cover, the portion of the device applied to the inner surface of the roof of the automobile forming a space for the accommodation of said cover member, said cover member being slidably insertable within said space so that, by sliding this cover member, the rearward open portion may be blocked and unblocked; a light attrition filter and a stay for pivotally securing said eyepiece mirror to the housing, said stay having a branched arm to provide a support for the light-attrition filter, one end of said filter being pin-hinged to said support, whereby said filter may assume a selected position between a position transverse to the optical path leading from the reflecting mirror to the eye-piece mirror and a position out of line of said optical path.

3,856,384

OPTICAL MIRROR

Iosif Ivanovich Kryzhanovsky, Krasnaya ulitsa, 20, kv. 6, Leningrad, U.S.S.R.

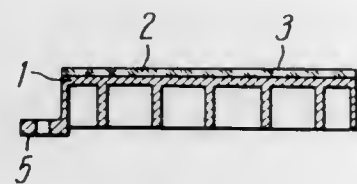
Continuation of Ser. No. 71,612, Sept. 11, 1970, abandoned.

This application Mar. 16, 1973, Ser. No. 342,319

Int. Cl. G02b 5/08

U.S. Cl. 350-310

2 Claims



1. A light-weight optical mirror, suitable for high-speed scanning systems, comprising the combination of a thin glass layer not exceeding 6 millimeters in thickness, with a carrier base made of a refractory metal with a low specific weight between 1.86 and 4.507 grams per cm³, constituting a rigid frame onto which said glass layer is baked and with which it is fused, with the exclusion of a frame and the like member; said refractory metal having a softening temperature exceeding that of said glass layer by more than 100°C, and a thermal expansion coefficient so close to that of said glass layer that deforming stresses do not appear therebetween within the region of operating temperatures; and a reflecting coating applied to a polished external surface of said glass layer, combining high mechanical strength and rigidity, as inherent in said refractory metal, with excellent thermal resistance and impact strength, as imparted by said reflecting coating to the resulting combination of said metal base and said glass layer.

3,856,385

WIDE-ANGLE LENS ASSEMBLY OF RETROFOCUS TYPE

Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

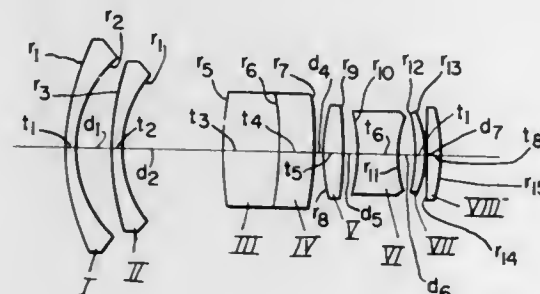
Filed Apr. 25, 1973, Ser. No. 354,198

Claims priority, application Japan, May 1, 1972, 47-43506

Int. Cl. G02b 9/00, 1/00

U.S. Cl. 350-214

1 Claim



1. In a wide-angle retrofocus type of objective having eight lenses I-VIII wherein lenses III and IV are cemented together and have a common surface whose radius of curvature is r_6 , said objective having for a focal length F of 100 mm, the following data:

Lens	F = 100 mm		Glass <i>n</i>	Constants <i>v</i>
I	<i>r</i> ₁ =	+160.34	1.51633	64.1
	<i>r</i> ₂ =	+78.42		
	<i>r</i> ₃ =	+187.33		
II	<i>r</i> ₄ =	+81.33	1.58913	61.1
	<i>r</i> ₅ =	+242.83		
	<i>r</i> ₆ =	-242.83		
III	<i>r</i> ₇ =	-222.49	1.51633	64.1
	<i>r</i> ₈ =	+103.19		
	<i>r</i> ₉ =	-261.91		
IV	<i>r</i> ₁₀ =	-122.46	1.81554	44.5
	<i>r</i> ₁₁ =	+90.19		
	<i>r</i> ₁₂ =	-109.64		
V	<i>r</i> ₁₃ =	-68.62	1.69350	50.8
	<i>r</i> ₁₄ =	-648.62		
	<i>r</i> ₁₅ =	-118.08		
VI	<i>r</i> ₁₆ =	-132.3	1.71300	54.0
	<i>r</i> ₁₇ =	+113.9		
	<i>r</i> ₁₈ =	12.95 <i>F</i>		
VII	<i>r</i> ₁₉ =	-132.3	<i>F</i> /0.756	
	<i>r</i> ₂₀ =	+113.9		
	<i>r</i> ₂₁ =	12.95 <i>F</i>		
VIII	<i>r</i> ₂₂ =	-132.3	<i>F</i> /0.088	
	<i>r</i> ₂₃ =	+113.9		
	<i>r</i> ₂₄ =	12.95 <i>F</i>		

where r_1, \dots, r_{15} are the radii in millimeters of the successive lens surfaces from front to rear, indicated as being positive where the center of curvature is at the rear of the objective and negative where the center of curvature is at the front of the objective, with the radius r_6 being common to the cemented surfaces of lenses III and IV, the thicknesses t_1-t_{16} of the lenses I-VIII, respectively, also being in millimeters, with the distances d_1-d_7 between the successive lenses also being in millimeters, the glass constants n being the d -line refractive index of the successive lenses and v being the Abbe numbers of the successive lenses, while F_B is the back focus, and F_1 and F_2 are respectively the composite focal lengths of the first two and first four lenses.

3,856,386

EXTRA-WIDE-ANGLE RETROFOCUS TYPE OF OBJECTIVE

Yoshisato Fujioka, Tokyo, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo-to, Japan

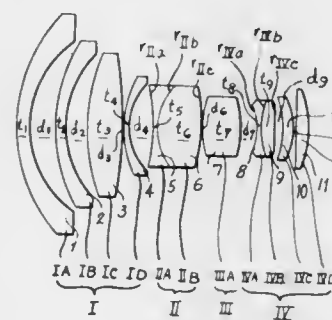
Filed May 8, 1973, Ser. No. 358,266

Claims priority, application Japan, May 9, 1972, 47-45044

Int. Cl. G02b 9/64

U.S. Cl. 350-214

9 Claims



— Spherical aberration in lateral direction
--- Coma aberration at -39°
--- Coma aberration at -47.25°

1. An extra-wide-angle retrofocus objective having four lens element sections the first of which is situated at the front of the objective nearest to the object to be photographed and has a divergent effect, said first lens element section consisting of four elements arranged with air gaps respectively situated therebetween and the first, second and fourth of said elements

of said first section, considered in the direction from the front toward the rear, being negative meniscus lenses respectively having convex surfaces directed forwardly toward the object, while the third of said four elements is a positive lens element, the second of said four lens element sections being situated behind the first, having an extremely weak refractive power in its entirety and including at least two but not more than three lens elements the first of which is nearest to the object and has a concave surface which is directed forward toward the object, the third of said lens element sections being situated behind the second and forming a positive lens system including at least one but not more than two lens elements, and the fourth of said lens element sections being situated behind the third and including from the front toward the rear a negative biconcave lens element, a positive lens having a convex surface of large curvature directed toward the object, a positive meniscus lens having a convex surface directed rearwardly toward the image plane, and a positive rear lens, the first and second lens elements of said fourth lens element section being cemented to each other at a forwardly directed convex surface of the second lens element of said fourth lens element section, and the remaining elements of said fourth lens element section being separated by air gaps.

3,856,387

SOUND EDITOR FOR SOUND MOTION PICTURE PROJECTOR

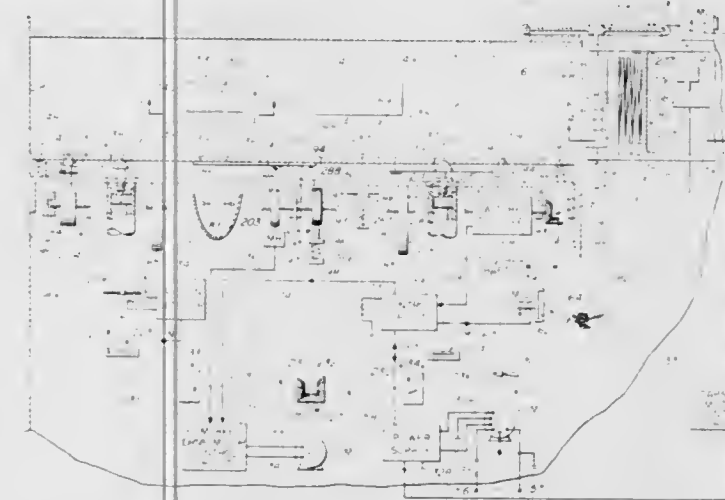
William R. Wray, Brookline, and Joseph A. Stella, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 28, 1973, Ser. No. 374,700

Int. Cl. G03b 31/00

U.S. Cl. 352-5

11 Claims



1. Sound editing and reviewing apparatus for a sound motion picture producing system comprising a housing adapted to receive a cassette containing a strip of motion picture film bearing a sound track, a viewing screen mounted on said housing, a loudspeaker, a microphone, a control button, means mounting said first control button for movement between first and second positions, a second control button, means mounting said second control button for movement between first and second positions, control means in said housing engageable with the film in a cassette received by said housing for sequentially transporting the film through a sequence of movements comprising an advance movement and a return movement, a servomechanism engaged with the film during said advance movement for moving a portion of the film past a sound station at a uniform speed determined by the average speed of said advance, a sound transducer, means for engaging said transducer with the sound track on the film when said servomechanism is engaged with the film, means actuated by said control means for projecting images on the film onto said viewing screen during said advance movement, first interrupting means actuated by said first control button in its second position and effective during said advance movement for interrupting said advance movement and starting said return movement, second interrupting means actuated by said first control button when returned from its second position to its first position for interrupting said return movement and resuming said advance movement, means actuated by said second control button in its second position during said advance movement for connecting said microphone to said transducer, and means actuated by said second control button in its first position for connecting said transducer to said loudspeaker.

3,856,388

OUTDOOR DRIVE-IN THEATER

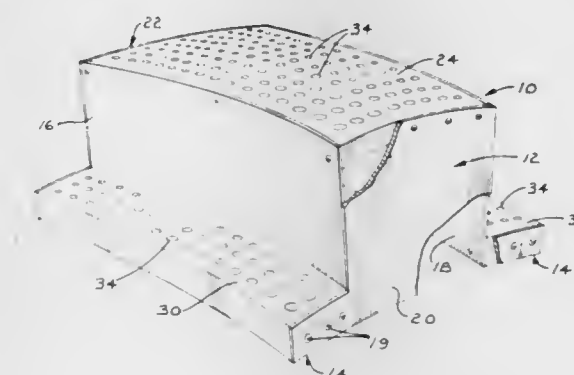
Reat R. Younger, Springfield, Mo., assignor to United States T.R.A.D. Corporation, Springfield, Mo.

Filed July 19, 1973, Ser. No. 380,708

Int. Cl. G03b 21/32

U.S. Cl. 352-40

2 Claims



1. An apparatus for projecting a plurality of images from a projected image onto at least two spaced groups of discrete viewing surfaces, said apparatus comprising a projector means for projecting an image, a first group of lens means, said first group being positioned to receive said projected image and to convert said projected image into discrete images for focusing on one group of said viewing surfaces, a second group of lens means, said second group being positioned to receive said projected image and to convert said projected image into discrete images for focusing on the other group of said viewing surfaces, and a cluster board having at least two surfaces spaced from one another and from said projector means, one of said board surfaces operable to support said first group of lens means, the other of said board surfaces operable to support said second group of lens means, the distance separating said board surfaces corresponding to the differences between said focal lengths of said lens groups.

3,856,389

HORIZONTAL FILM EDITING TABLE

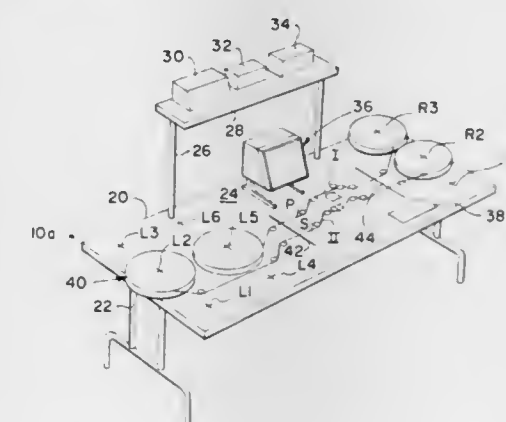
Rodney D. Gardner, 2807 St. Paul St., Baltimore, Md. 21218

Filed Apr. 30, 1974, Ser. No. 465,473

Int. Cl. G03b 21/00

U.S. Cl. 352-129

12 Claims



1. A film editing machine comprising: a film transport, including: a plurality of spindle assemblies, means rotatably mounting said film transport, a film transport, including: a plurality of spindle assemblies, means rotatably mounting said film transport, a film transport, including: a plurality of spindle assemblies, means rotatably mounting said film transport.

supporting said plurality of spindle assemblies vertically oriented in series-parallel-spaced relation, each spindle assembly including an upper spindle and a lower spindle co-axially aligned therewith, means for selectively retarding rotation of each of said upper spindles, means for releasibly connecting each upper spindle with the respective lower spindle co-axially aligned therewith, means for coupling in rotation all said lower spindles, a synchronous speed motor, means for releasibly connecting the synchronous speed motor with a first said lower spindle, a variable speed motor, means for releasibly connecting the variable speed motor with a second said lower spindle; means for manually grasping each of said upper spindles, and a film sprocket proximately below each said grasping means.

3,856,390

PULL-STRIP MECHANISM FOR MULTIPURPOSE FILM CASSETTES

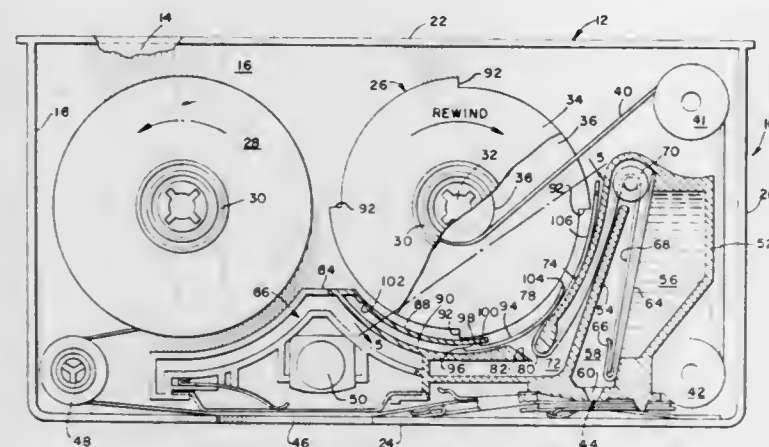
Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1973, Ser. No. 428,376

Int. Cl. G03c 11/00

U.S. Cl. 352-130

17 Claims



1. In a multipurpose film cassette of the type containing for exposure and processing a strip of photographic film connected at opposite ends to supply and take-up spools, processing means also contained in the cassette and including a supply of processing fluid initially sealed by a releasable tear-tab closure to be removed after film strip exposure for deposition of the processing fluid on the film strip during rewind movement thereof from the take-up spool to the supply spool, the film strip having an aperture near the end thereof connected to the supply spool to receive and latchingly engage the free end of a resilient pull strip joined at its other end to the tear-tab closure, the improvement comprising:

movable keeper means for holding the free end portion of the pull-strip out of contact with the film strip during passage thereof from the supply spool to the take-up spool during exposure; and

means for moving said keeper means away from the free end portion of the pull-strip to an inoperative position after exposure, thereby to allow the free end portion of the pull-strip to spring resiliently into contact with the film strip to engage the aperture therein and be pulled with the film strip on rewind to remove the tear-tab closure from the supply of processing fluid.

3,856,391

SLIDE TRAY AND SLIDE POSITIONING MECHANISM

Roy E. Hickey, Honeoye Falls, and William R. Sanderson, Rochester, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,470

Int. Cl. G03b 21/14

U.S. Cl. 353-88

24 Claims

1. Apparatus for projecting slides comprising:

a slide projector;

a slide tray, including a plurality of indexing pins depending therefrom, removably mounted on said projector and adapted to contain a plurality of slides for projection by said projector;

said projector including:

a gate;

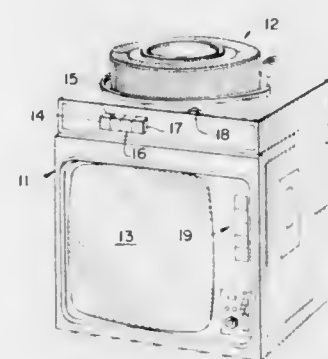
said gate including a shutter member rotatably mounted near one end thereof along an axis in a plane substantially normal to the optical path of said projector;

said shutter having a first position blocking the optical path of said projector and a second position for which the optical path of the said projector is not blocked;

indexing means adapted to rotate said slide tray relative to said gate for successively bringing slides in said slide tray, one at a time, into substantially vertical register with said projector gate; and

first means operating in time relation with said indexing means for successively feeding said slides substantially vertically from said tray into said gate under the influence of gravity, for projection, and from said gate substantially vertically back into said tray;

second means in time relation with said indexing means for causing said shutter to be in its first position in response to the absence of a slide in said gate and for causing said



shutter to be in its second position in response to the presence of a slide in said gate to enable projection of the image on said slide;

said second means including:

means biasing said shutter in said second position;

means in time relation with said indexing means for rotating said shutter around said rotational axis to said first position in opposition to said biasing means and for enabling counter-rotation of said shutter around said rotational axis to said second position under the urging of said biasing means; and

means for sensing the absence of a slide in said gate for latching said means for rotating said shutter in a position wherein said shutter is at said first position and for enabling the return of said shutter to said second position when a slide is in said gate;

said indexing means including:

a driven indexing bar having a slide tray indexing element at one end thereof;

pivoted means coupled to said indexing bar for guiding said indexing element to a position between two adjacent pins depending from said slide tray and then rotating said indexing bar around the pivot of said pivoted means to rotate said slide tray; and

means for disabling said driven indexing bar to prevent indexing of said slide tray by said indexing means.

3,856,392

AUTOMATIC LENS FOCUSING METHOD AND APPARATUS

William J. Harrison, San Rafael, Calif., assignor to Photoidetics, Inc., San Francisco, Calif.

Division of Ser. No. 117,815, Feb. 22, 1971, Pat. No. 3,732,001, which is a continuation of Ser. No. 691,405, Dec. 18, 1967, abandoned. This application Nov. 30, 1972, Ser. No. 310,750

Int. Cl. G03b 3/00, 21/14

U.S. Cl. 353-101

5 Claims



1. A slide projector with automatic lens focusing comprising:

first lens means for projecting a first image of a slide transparency;

a screen spaced from said first lens means for receiving the projected first image;

second lens means spaced from said screen and positioned to form a second image of a portion of the first image projected on said screen;

an image motion detector spaced from said second lens means in a position to receive the second image formed by said second lens means, said motion detector designed to generate a signal in response to motion of the image formed thereon;

masking means mounted adjacent said first lens means in the aperture area of said first lens means in a position to interrupt a portion of the light passing through said lens means onto said screen;

means for moving said masking means in the aperture area of said first lens means to cause motion of the out-of-focus portions of the first formed image on the screen and thereby the second image on the motion detector, whereby a signal is generated at the motion detector in response to motion of out-of-focus portions of the first formed image;

and control means controlling the relative distance between said first lens means and said slide transparency and activated by said generated signal to provide optimum focusing of the first formed image on the screen.

3,856,393

OPENING DEVICE FOR AN ELECTRONIC SHUTTER

Masuo Ogihara, and Masanori Watanabe, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,237

Claims priority, application Japan, May 26, 1972, 47-52309

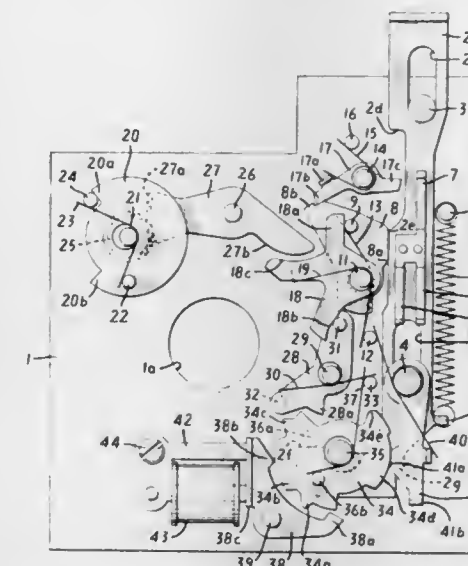
Int. Cl. G03b 9/62

U.S. Cl. 354-258

4 Claims

1. In a camera having an electric shutter movable from a closed state to an open state and back to said closed state to effect an exposure: opening means for opening said shutter to initiate an exposure comprising an opening member having one position corresponding to that wherein said shutter is closed and turnable in one direction from said one position to effect opening of said shutter, means for releasably locking said opening member in said one position, first biasing means biasing said opening member in said one direction with a first biasing force sufficient to effect turning of said opening member in said one direction when said opening member is unlocked to thereby effect opening of said shutter, and retarding

means engageable with said opening member, means for spacing said retarding means from said opening member with a predetermined distance when the opening member is in said one position so that said opening member is started without relation with said retarding means when said opening member



3,856,394

FILM HOLDING ARRANGEMENT FOR PHOTOSSETTING MACHINE

Hans Linde, Berlin, Germany, assignor to Firma H. Berthold AG, Berlin, Germany

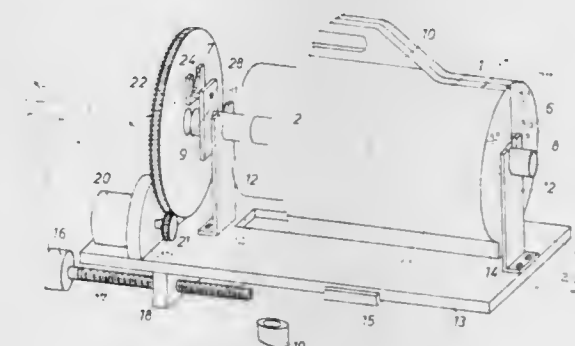
Filed Sept. 10, 1973, Ser. No. 396,050

Claims priority, application Germany, Oct. 5, 1972, 2249197

Int. Cl. B41b 21/32

U.S. Cl. 354-275

10 Claims



1. A film holding arrangement for a photosetting machine or the like, said arrangement comprising:

a support;

a shell on said support and formed with a window;

a film-carrying drum received in and surrounded by said shell while being rotatable relative thereto;

at least one blocking element attached to said drum over an end of a piece of film adapted to receive light through said window;

spring means between said drum and said shell for urging said shell and drum into a relative position in which said element prevents light entering said shell through said window from falling on said film;

mounting means on said support including a seat for releasably supporting said shell; and

means on said support and on said drum for relatively angularly displacing said shell and said drum to shift element out of said position when said shell is supported on said seat.

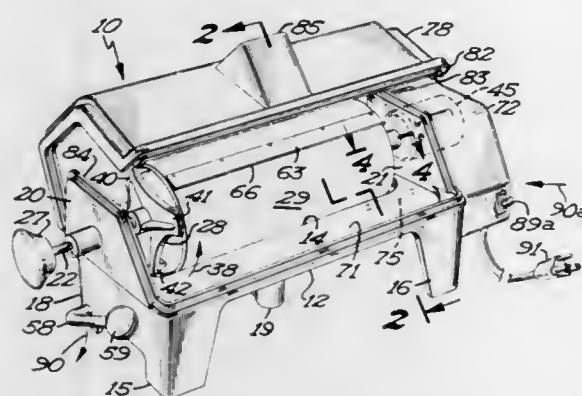
3,856,395

COLOR PHOTO PROCESSING APPARATUS

Alfred E. Comstock, Frontenac, Minn. 55026
 Filed Feb. 15, 1973, Ser. No. 332,670
 Int. Cl. G03d 13/00

U.S. Cl. 354-299

4 Claims



1. A photographic processing apparatus for chemically processing photographic material with processing liquid comprising:

- a processing receptacle adapted to contain a predetermined amount of processing liquid therein and including a trough in said receptacle to contain the processing liquid; a cover member on said receptacle and movable relative thereto between open and closed positions, said cover member when in the closed position engaging said processing receptacle in light-sealing relationship therewith and defining a processing chamber above said trough;
- a cylinder adapted to retain photographic material;
- a rotatable cylinder engaging mechanism in the chamber releasably engaging said cylinder so that a part of the periphery of the cylinder will extend into liquid in the said trough, the mechanism including drive means for rotating said cylinder;
- a funnelled aperture through said cover member with cooperating baffles therealong to guide the liquid through the aperture and to exclude light from entering the chamber through the aperture; and
- said receptacle further including a distribution ledge for processing liquid, the ledge being inclined downwardly toward said trough and lying in the chamber along and adjacent the trough and directly beneath said funnelled aperture so that said aperture discharges liquid onto said ledge for distribution into and along said trough.

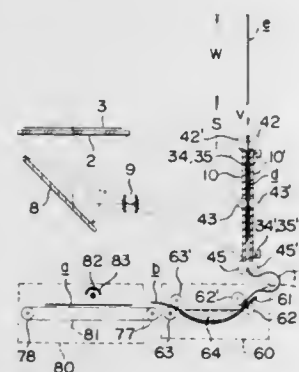
3,856,396

ELECTRONIC PHOTOCOPYING MACHINE

Teizo Kushima; Susumu Tanaka, and Masaya Ogawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Continuation of Ser. No. 543,226, April 18, 1966, Pat. No. 3,690,759. This application July 11, 1972, Ser. No. 270,831
 Int. Cl. G03g 15/22

U.S. Cl. 355-10

4 Claims



1. An electronic photocopying machine comprising a magazine containing a plurality of papers stacked therein each of

which papers is coated with a photoconductive insulator on one side; a first feeding mechanism for feeding said papers sequentially from said magazine at predetermined intervals; means for providing electrostatic charges to the photoconductive insulator on the thusly fed paper so as to impart a photosensitive property thereto; a second feeding mechanism for introducing the thusly photosensitized paper to a predetermined exposure position; an exposure frame including driven rollers and a transparent plate at said exposure position, said second feeding mechanism including a pivotal assembly which comprises a plurality of driving rollers, a motor to drive said driving rollers, and a hooked lever means having a lever member with a notch adapted for engaging a fixed pin to secure the pivotal assembly in a predetermined position with respect to said exposure frame, in which position a predetermined space is provided between the assembly and transparent plate for passage of photosensitive paper and said driving rollers oppose the driven rollers for feeding the paper through said space; a lamp means for illuminating an object to be copied; an optical system for projecting an image of the object onto the paper at the exposure position, said first and second feeding mechanisms including feeding means which are inoperative for a predetermined period for effecting exposure and operative subsequently to transfer the thusly exposed paper; a developing means to develop the image on the photosensitive paper; a drying means to fix the image thereon; a third feeding mechanism for feeding the exposed photosensitive paper through the developing means and drying means at a relatively lower feeding velocity than those of the other feeding mechanisms, said third feeding mechanism including opposed driving and driven rollers disposed at the entrance to the developing means and relatively positioned with respect to the second feeding mechanism to receive the exposed paper therefrom so that by virtue of the lower feeding velocity of the third feeding means the paper is formed with a temporary loop at the entrance to the developing means; said velocity of the rollers of the third feeding mechanism being sufficiently fast so that a succeeding photosensitive paper does not overlap the photosensitive paper entering the developing means; and an endless belt means wound on at least two of said driving rollers and advancing in contact with the driven rollers for advancing the paper therewith.

3,856,397

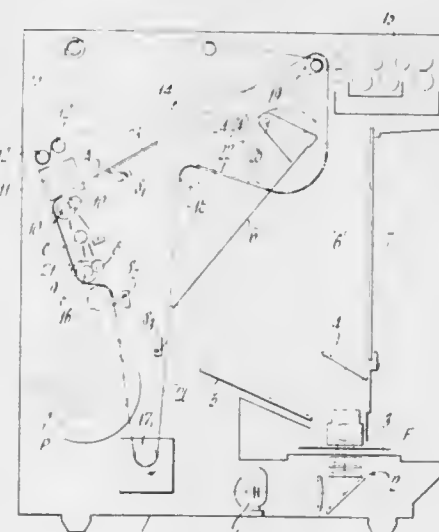
VIEWING AND ELECTROSTATIC COPYING MACHINE

Hidenori Suzuki, Kawasaki; Katsumi Maeda; Keiji Nakatani, both of Tokyo, and Kenjiro Ishii, Yokohama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Filed July 12, 1973, Ser. No. 378,746
 Claims priority, application Japan, July 19, 1972, 47-85538[U]

U.S. Cl. 355-45

Int. Cl. G03b 13/28

6 Claims



1. A viewing and electrostatic copying machine comprising a viewing section, an electrostatic copying section including

an electrostatic charging means, an electrostatic image developing means and means for advancing copy paper from said charging means along an image focal plane to said developing means, means including a mirror moveable between a retracted and an advanced position for alternatively projecting an image of an original to said viewing section or to said copying section focal plane, means for delivering copy paper to said copying section, a drive and timing sprocket chain traversing a predetermined run, selectively actuated drive means for cycling said sprocket chain, transfer means motivated by said sprocket chain for successively advancing and retracting said mirror at spaced intervals during a cycle of said sprocket chain and including a pair of longitudinally spaced first sprocket chain sections carried by and transversely offset from said endless sprocket chain, a sprocket wheel located in the path of and successively engageable and rotatable by said sprocket chain sections at spaced intervals and means for swinging said mirror between said advanced and retracted positions with the rotation of said sprocket wheel, means on said sprocket chain for motivating said copy paper delivery means, an actuating element carried by said sprocket chain and means including a first switch actuated by said actuating element at a predetermined position for exposing copy paper supported at said focal plane to an image of said original for a predetermined time in response to the actuation of said switch while said mirror is in said advanced condition.

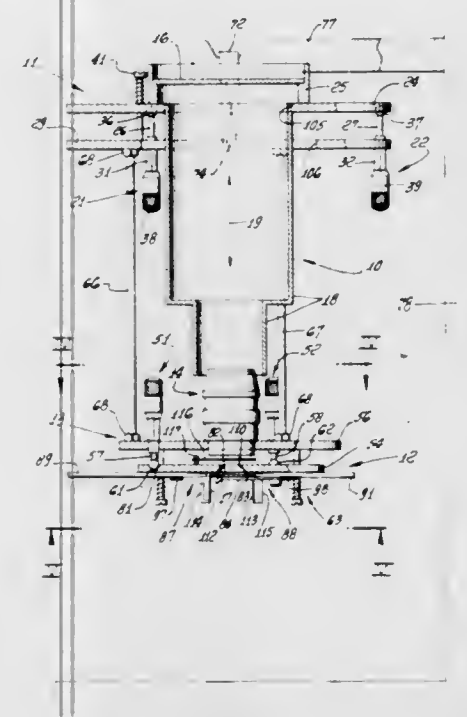
3,856,398

APPARATUS AND METHOD FOR WIDE AREA, DARK FIELD, HIGH RESOLUTION AUTORADIOGRAPHY

Dermot B. Taylor, 3914 Sierks Way, Malibu, Calif. 90265
 Filed Nov. 13, 1972, Ser. No. 305,993
 Int. Cl. G03b 27/68

U.S. Cl. 355-63

7 Claims



1. A wide field high resolution microscopy camera apparatus comprising:

- a camera frame having a lower object end and, vertically aligned thereabove, an upper image end;
- an image stage defining an image plane and including a holder for a photographic film;
- an object stage defining an object plane and including a holder for a substantially planar object to be photographed;
- a lens system carried by said camera frame defining an optical axis;
- means mounting the image stage to the image end of said camera frame including a set of three micrometer means located at the vertices of an imaginary equilateral triangle within the image plane with each micrometer means

individually providing for adjustable displacement of the image stage relative to the image end along a line parallel to said optical axis and passing through the associated vertex;

means for mounting the object stage to the object end of said camera frame including a second set of three micrometer means located at the vertices of an imaginary equilateral triangle in the object plane with such imaginary triangle being rotated 60° relative to the first named imaginary triangle and with each micrometer means providing individual adjustable displacement of the object stage relative to the object end along a line parallel to said optical axis and passing through the associated vertex, whereby each object stage micrometer means may be adjusted cooperatively with the diametrically opposed image stage micrometer means to adjustably rotate, respectively, the object stage plane and the image stage plane about parallel and spaced apart axes.

3,856,399

AUTOMATICALLY ADJUSTABLE FOCUSING SYSTEM

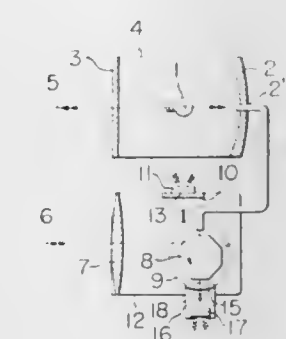
Kazuya Hosoe, and Seiichi Matsumoto, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 14, 1973, Ser. No. 341,056

Claims priority, application Japan, Mar. 22, 1972, 47-28772

Int. Cl. G01c 3/08

U.S. Cl. 356-1

14 Claims



1. A focusing system having an adjustable objective, said focusing system comprising: a radiating source for radiating a radiant ray amplitude-modulated at a constant frequency on an object; a first photoelectric conversion means which receives a radiant ray reflected from said object of the ray radiated from said radiating source towards the object; a second photoelectric conversion means which receives a radiant ray directly obtainable from said radiating source; a light receiving means arranged in a constant spaced relation of base line with said radiating source, said light receiving means having [an intermittently radiating] means which receives a radiant ray reflected from said object of the ray radiated from said radiating source towards the object to intermittently project flux of radiant rays on said first photoelectric conversion means and to intermittently project flux of radiant rays directly obtainable from said radiating source on said second photoelectric conversion means; optical means arranged frontwardly of said light receiving means and adapted to direct the reflected ray from the object into said light receiving means; and a range detecting means for receiving the same radiant rays radiated from said radiating source into said first and second photoelectric conversion means and for detecting the range of object by comparing a time difference of signals obtainable at said first and second photoelectric conversion means.

3,856,400

APPARATUS FOR NO-CONTACT MEASUREMENT HAVING A MULTI-COLORED GRATING

Horst Hartmann, Wetzlar, and Hans-Werner Stankewitz, Steindorf, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

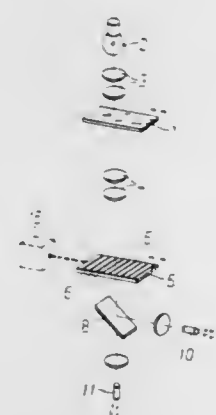
Filed Feb. 22, 1973, Ser. No. 334,601

Claims priority, application Germany, Mar. 6, 1972, 2210681

U.S. Cl. 356—28

Int. Cl. G01p 3/36

10 Claims



1. In an apparatus for the no-contact measurement of the velocity, the path, or the distance of an object without special optical markers with respect to a reference position having the object imaged by an objective onto a grating along an imaging beam path and measuring the light flux leaving the grating after cooperation with the grating by means of photoelectric elements generating output signals which exhibit a frequency component proportional to the velocity of movement, the improvement comprising:

a grating (5, 25) located in the imaging beam path in proximity to the imaging plane of the objective (4) defining a correlator and position frequency filter, said grating comprising a support (26) having areal, photoelectrically distinguishable, colored structures (6, 6', 27), said structures disposed alternately in side-by-side line-wise relationship in correspondence with their colors, and said support followed, via chromatic splitter means (8) by a plurality of photoelectric receivers (10, 11) generating output signals which are phase-shifted with respect to one another by given amounts based on the physical configuration of the grating.

3,856,401

APPARATUS FOR NO-CONTACT MEASUREMENT USING AN OSCILLATING GRATING

Knut Heitmann, and Eckart Schneider, both of Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Feb. 20, 1973, Ser. No. 333,514

Claims priority, application Germany, Mar. 1, 1972, 2209667

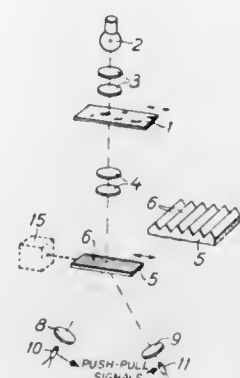
U.S. Cl. 356—28

Int. Cl. G01p 3/36

8 Claims

1. In an apparatus for the no-contact measurement of the velocity or the path of objects without special optical markers with respect to a reference position in one or two coordinate directions, having imaging means with an aperture giving an image of the object onto a grating, said grating exhibiting a plurality of divisional markers geometrically dividing the object-image into at least two object-image components localized in defined aperture image planes, each image of the aperture being associated with at least one photoelectric receiver means, said receiver means generating output signals having a frequency component proportional to the motion velocity, said grating effective as a correlator and spatial frequency filter disposed in the proximity of the objective-imaging plane and associated, per coordinate, with at least two of said photoelectric receiver means, the output signals of

these receiver means being in push-pull relationship to one another, the improvement comprising:



electrical drive means (15) providing oscillatory or continuous relative movement between said object image and said grating (5', 6, 25).

3,856,402

CLEAR AIR TURBULENCE DETECTOR

George M. Low, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Werner K. Dahm, 7605 Martha Dr. S.E., Huntsville, Ala. 35803; Donald J. Delgrego, 3 Edgar Rd., Billerica, Mass. 01821; Irving Goldstein, 77 Pond Ave., Brookline, Mass. 02146; Robert M. Huffaker, Rt. 4, Box 1842, Huntsville, Ala. 35803; Albert V. Jelalian, 3 Reeves Rd., Bedford, Mass. 01730; Wayne H. Keene, 6 Homestead Dr., Medfield, Mass. 02052; Perry A. Miles, 3 Dewey Rd., Lexington, Mass. 02173, and Charles M. Sonnenschein, 19 Nimitz Cir., Natick, Mass. 01760

Filed Apr. 11, 1973, Ser. No. 350,249

Int. Cl. G01c 3/08

U.S. Cl. 356—5

12 Claims



1. A clear air turbulence detector comprising: laser light generating means for providing as an output a narrow beam of light energy of a predetermined frequency; pulse generating means for providing a train of electrical pulses at a preselected rate and of a preselected width; modulation means responsive to said laser light generating means and said pulse generating means for providing pulses of said beam of light energy corresponding in time to the pulse output of said pulse generating means; optical transmission means responsive to the output of said modulation means for transmitting pulses of narrow beam light in a selected direction and for receiving reflected returns of said pulses of said light; detection means responsive to an output of said optical transmission means of reflected returns of light for providing as an output, discrete electrical signals of a frequency proportional to the velocity of aerosols from which the light returns are reflected; filter means responsive to the output of said detection means for providing a plurality of outputs, each output

being selectively responsive to signal frequencies within a selected discrete band of frequencies within a selected overall range of frequencies of the detector; gating means coupled to said filter means for passing a selected sequence of outputs of said filter means as a set of outputs for each of a plurality of selected ranges from the clear air turbulence detector of aerosols providing reflected returns of light; and indicating means responsive to said filter means for indicating the velocities of aerosols providing returns and the distance of said aerosols from said detector.

3,856,403

VELOCITY BIASED LASER VELOCIMETER

Robert W. Maughmer, Thousand Oaks, and John R. Yamamoto, Sherman Oaks, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 116,918, Feb. 19, 1971, abandoned.

This application Mar. 9, 1973, Ser. No. 339,685

Int. Cl. G01p 3/36

U.S. Cl. 356—28

10 Claims



1. An apparatus for measuring the relative three-dimensional vectorial velocity in a coordinate system between a moving object mounted thereto and an adjacent surface, said apparatus comprising:

illuminating means developing a plurality of coherent beams of light for illuminating separate portions of said surface with light energy;

means for receiving light energy reflected from said surface at three different angles of reflection, said last-mentioned receiving means having three functionally separate signal processing channels;

three optical gratings disposed between said surface and said receiving means with each functionally separate grating modulating the reflected light energy processed by a corresponding one of said separate channels, a first one of said optical gratings effectively located at a different point in the coordinate system from said second and third ones of said optical gratings, said second and third gratings having a different orientation with respect to one another in the coordinate system, each said optical grating having alternate transparent and opaque lines extending in a direction normal to a corresponding velocity component V_a , V_b , and V_c to be measured in predetermined directions a , b , and c , said opaque lines interrupting the reflected light energy points so that said receiving means detects the resulting motion of each of the interrupted energy points and converts the energy points into pulses for a signal representative of the relative velocity components V_a , V_b , and V_c between the moving object and the adjacent surface, each said optical grating adapted for continuous motion parallel to the direction of the velocity component at an effective velocity V_d relative to said receiving means;

V_d being selectively adjusted when said object has zero relative velocity with respect to said surface so that $V_d \geq 0$, $V_b \geq 0$, and $V_c \geq 0$; and

means coupled to said receiving means for deriving signals representative of the three-dimensional vectorial velocity

between said moving object and said surface in a predetermined coordinate system.

3,856,404

METHOD AND APPARATUS FOR MEASURING VAPOR PRESSURE

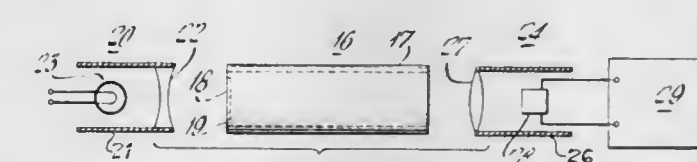
Abe Hershtler, New York, N.Y., assignor to Phys-Chemical Research Corp., New York, N.Y.

Filed June 6, 1973, Ser. No. 367,612

Int. Cl. G01n 21/22

U.S. Cl. 356—36

23 Claims



12. A vapor pressure sensor comprising a transparent body member having microcapillary pores formed in a surface thereof, said pores having diameters between 100 and 400 Angstrom units and depths at least equal to said diameters.

3,856,405

METHOD FOR COLOR TEMPERATURE CALIBRATION OF TUNGSTEN

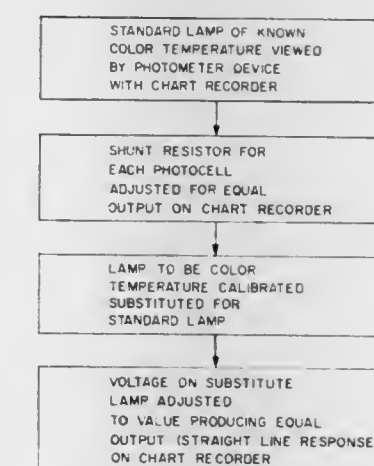
Martin Lazarus, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,581

Int. Cl. G01j 3/34, 3/50, 5/52

U.S. Cl. 356—46

6 Claims



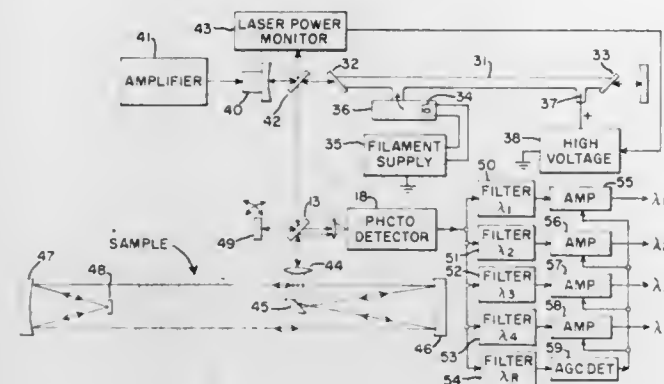
1. A method for color temperature calibrating an unknown filamentary lamp, comprising the steps of:

- energizing a standard filamentary lamp at a predetermined voltage to cause said lamp to emit radiation of known color temperature;
- directing said radiation emitted by said standard lamp successively onto a series of radiation-sensitive sensors, with the sensors connected in series with an output comparing means, and each sensor shunted by a variable resistor, each sensor being adapted to respond to a different pass band of the radiation spectrum of said lamp to produce a corresponding indication on said means;
- adjusting each of said resistors while the associated sensor is exposed to said standard lamp to produce equal outputs from said means; and then
- replacing said standard lamp with said unknown lamp, energizing said unknown lamp from a variable voltage source, directing the radiation emitted from said unknown lamp successively onto said series of sensors, and adjusting the voltage of said source to a value which produces equal outputs from said means.

3,856,406

HETERODYNE LASER ABSORPTION SPECTROMETER
Milton L. Noble, Pennellville, and Lawrence R. Snowman,
Liverpool, both of N.Y., assignors to General Electric Com-
pany, Syracuse, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,389
Int. Cl. G01b 9/02; G01n 21/34; G01j 3/42
U.S. Cl. 356-106 S 3 Claims



1. A laser absorption spectrometer comprising:
 - a. a laser for producing an output beam having:
 1. a gaseous medium capable of simultaneous optical amplification at a plurality of optical frequencies, each line being subject to Doppler broadening,
 2. an optically resonant cavity, optically coupled to said gaseous medium and supporting multimode operation within said broadened line, and
 3. means for frequency modulating the optical output of said laser in a linear sawtooth manner to displace the frequency of each laser line by an amount inversely proportional to its wavelength by changing the resonant frequency of said optical cavity to produce mode pulling,
 - b. means to separate the output beam of said laser into a first and a second beam pursuing separate paths and to recombine said first and second beams with a fixed mutual time delay sufficient to produce electrically resolvable frequency differences for individual lines,
 - c. an optical detector upon which said mutually delayed beams impinge having a bandwidth sufficiently great to reproduce heterodyne waves equal to said frequency differences,
 - d. a plurality of bandpass filters coupled to the output of said detector tuned to separate the heterodyne waves produced, and
 - e. means coupled to the output of each bandpass filter for sensing the intensity of each of said heterodynes.

3,856,407

AUTOMATIC FOCUSING DEVICE

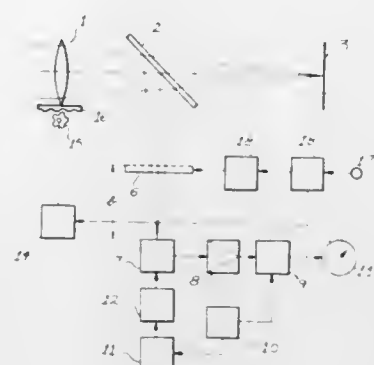
Hideomi Takeda, and Harumi Kawasaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 2, 1973, Ser. No. 412,457
Claims priority, application Japan, Nov. 14, 1972, 47-113992

Int. Cl. G01j 1/00; G03b 3/00
U.S. Cl. 356-123 6 Claims

1. Automatic focusing apparatus comprising:
 - first means, including a lens, defining an optical path such that at least a portion of light passing through the lens impinges upon a plane, the lens and the plane being movable relative to each other in either of two opposite directions along the optical path,
 - second means, including a photoelectric element responsive to the light impinging upon the plane, for producing an electrical focusing control signal that varies in accordance with the degree of contrast in the light impinging upon the plane, the degree of contrast being maximum for an in-focus spacing between the lens and the plane,

an optical transmission function filter for increasing the difference between the degree of contrast obtained at an in-focus spacing and the degree of contrast obtained at an out-of-focus spacing, the filter comprising a two-dimensional diffraction grating disposed in the optical path and spaced from both the lens and the plane, and



third means responsive to the electrical focusing control signal for adjusting the spacing between the lens and the plane to a relative position that maximizes the degree of contrast.

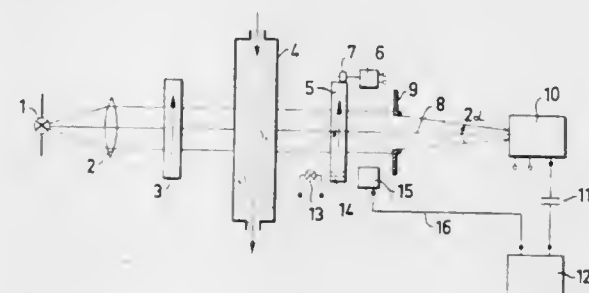
3,856,408

APPARATUS FOR MEASURING THE OPTICALLY BIREFRINGENT PROPERTIES OF A LIQUID SAMPLE

Jan Erik Hill, Solna; Erik Lennart Eriksson, Vallentuna, and Mats Lennartsson, Stockholm, all of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Filed May 25, 1973, Ser. No. 363,816
Claims priority, application Sweden, June 5, 1972, 7353/72
Int. Cl. G01n 21/40

U.S. Cl. 356-114 3 Claims



1. An apparatus for measuring the optically birefringent properties of a liquid sample, comprising a source of parallel light, a first fixed polarizer for plane polarizing the light, a sample holder disposed to be transilluminated by said plane polarized light, analyzing means comprising a second polarizer rotating at a constant speed and disposed to receive said plane polarized light, a first photoelectric detector for receiving the light transmitted by said rotatable polarizer, means for generating a periodic electric reference signal with a steep edge in synchronism with the rotation of the rotatable polarizer, phase comparing means receiving said reference signal and an output signal from the photoelectric detector, and means for forming the phase difference between said signals supplied to the comparing means along a common time axis.

3,856,409

LASER ALIGNMENT DEVICE

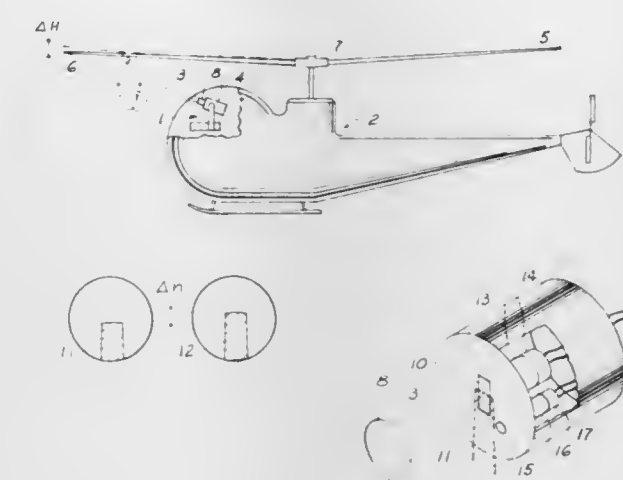
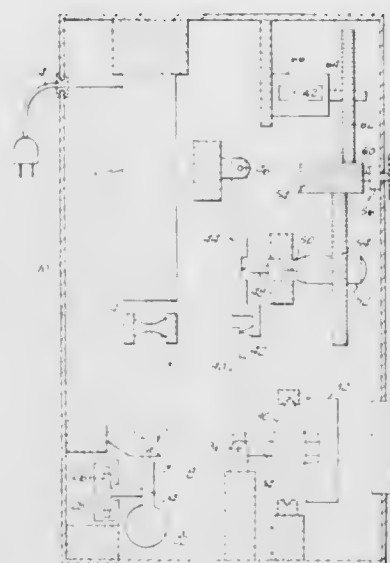
Ivan Cindrich, Southfield; Carl C. Aleksoff, and Alex Klooster, Jr., both of Ann Arbor, all of Mich., assignors to KCA Laser Systems, Ann Arbor, Mich.

Filed May 9, 1973, Ser. No. 358,765
Int. Cl. G01b 11/26

1. A device for adjusting the angle of inclination of a light beam, comprising: a housing; a plano-concave lens pivotably

supported with respect to the housing for motion about a first pivot point located at the center of curvature of its concave section; a first lever arm fixed with respect to said lens, a second lever arm pivotably supported with respect to the housing for motion about a second axis and having its free end in contact with the free end of said first arm; means for adjusting the position of said second arm so as to cause adjustment

obtaining from each second electrical signals and the identification signal a comparative indication of the out-of-



of the position of said lens about said center of curvature; an optical element supported with respect to said housing adapted to receive the beam and pass it to the plano-concave lens; and means for maintaining said optical element at a constant inclination relative to the horizontal plane for a limited movement of the housing relative to the horizontal plane.

track distance of each other blade with respect to said particular blade.

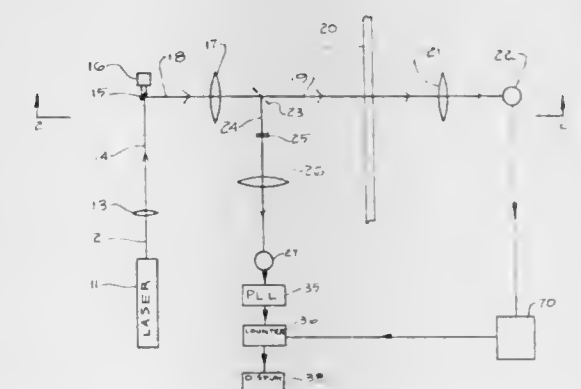
3,856,411

OPTICAL NONCONTACTING DIAMETER GAUGE

Carl A. Zanon, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation-in-part of Ser. No. 368,441, June 8, 1973, abandoned. This application Aug. 14, 1973, Ser. No. 388,267

Int. Cl. G01b 11/00 5 Claims

**METHOD AND APPARATUS FOR TESTING BLADED ROTORS**

Gilbert Swift, Bryan; William M. Moore, College Station, and Lionel J. Milberger, Bryan, all of Tex., assignors to Martin Tracker Corporation, College Station, Tex.

Filed Nov. 27, 1972, Ser. No. 309,892

Int. Cl. G01b 11/02

U.S. Cl. 356-167 17 Claims

1. A method for measuring the distances by which the unmodified tips of a several bladed rotor are out-of-track, comprising:

forming an optical image of the area through which each successive blade tip travels as it passes a selected azimuth; deriving therefrom in synchronism with the rotor a succession of first electrical signals, the maximum amplitude of said first electrical signals being proportional to the brightness of the sky, said succession containing said first electrical signals, the comparative amplitudes of which are representative of the comparative axial position of each successive blade tip;

comparing selected portions of said first electrical signals to produce therefrom a succession of second electrical signals the amplitudes of which are proportional to the axial position of each successive blade tip, said amplitudes of said second electrical signals being independent of the brightness of the sky;

generating an identification signal in synchronism with the rotor whereby the portion of said second electrical signal produced by the passage of a particular blade can be identified, and

1. An electrooptical device for measuring the cross-sectional width of an opaque test object which comprises (1) a source of radiant energy which provides a narrow beam; (2) means for scanning this beam in a direction perpendicular to its direction of propagation; (3) means for collecting and splitting said scanned beam into first and second portions and (4A) to direct said first portion of said beam onto a first photodetector through a precision scale with alternate transparent and opaque bands at least about half the width of the diameter of said scanned beam, to produce a sinusoidal signal whose spatial frequency corresponds to the spacings on said precision scale, and thence onto (5) means for breaking up said signal to produce a much higher frequency locked in phase to the output of said first photodetector, and (4B) to direct said second portion of said beam past said opaque test object onto a second photodetector which detects the modula-

tion of said scanned beam by said test object; and (6) means connected to the signals derived from both portions of said beam for measuring the number of pulses while the energy is interrupted by the test object to produce a signal corresponding to the cross-sectional width of said test object.

3,856,412

OPTICAL NONCONTACTING GAUGE

Carl A. Zaroni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

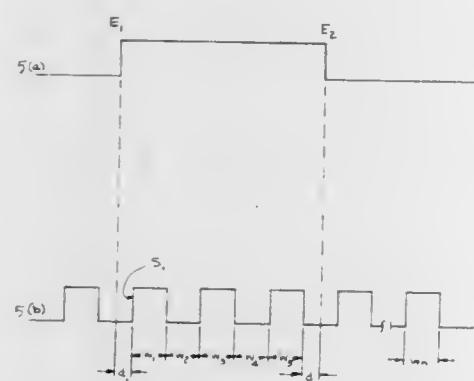
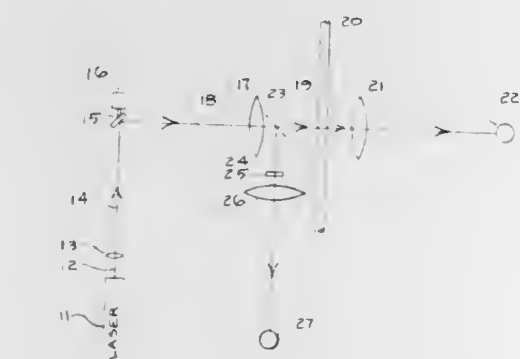
Continuation-in-part of Ser. No. 368,441, June 8, 1973, and a continuation-in-part of Ser. No. 388,267, Aug. 14, 1973.

This application Sept. 6, 1973, Ser. No. 394,562

Int. Cl. G01b 11/00

U.S. Cl. 356-167

7 Claims



1. An electrooptical device for measuring the cross-sectional width of an opaque object which comprises (1) a source of radiant energy which provides a narrow beam; (2) rotating means for scanning said beam; (3) means for collecting and splitting said scanned beam into first and second portions, and for passing (4A) said first portion of said beam through a precision scale, with alternate transparent and opaque bands of equal width, at least half the width of the diameter of said scanned beam, onto a first photodetector to produce a sinusoidal signal with spatial frequency corresponding to the spacings on the precision scale; (4B) said second portion of said beam past an opaque object onto a second photodetector for photoelectrically detecting the modulation of the scanned light beam by said test object; (5) means for squaring off said sinusoidal signal derived from said first portion of said scanned beam; (6) means for generating a fine vernier; and (7) means connected to the signals from said squaring off means, said vernier, and said second photodetector for measuring the number of full pulses and vernier pulses during the interruption of said second portion of said beam by said test object, to produce a signal corresponding to the cross-sectional width of said test object.

3,856,413

PHOTOGRAPHIC COLOR DENSITOMETER

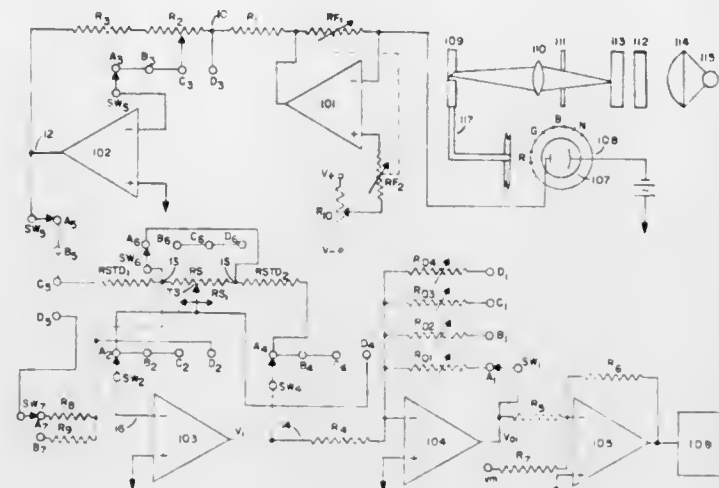
Paul P. Bey, and Michael P. Bey, both of 4909 Abbott Dr., Temple Hills, Md. 20031

Filed Jan. 18, 1973, Ser. No. 324,664

Int. Cl. G01j 3/50

U.S. Cl. 356-175

21 Claims



1. A photometric device for determining the difference in optical density between a standard optical absorber and an unknown optical absorber comprising:

- a light source for generating light of a particular intensity incident on an optical absorber;
- optical coupling means for directing said generated light through said optical absorber;
- selectable primary color filter means disposed in the optical path of light transmitted through said optical absorber;
- detector means for collecting light transmitted through said optical absorber and said selectable primary color filter means, said detector means providing a detector current proportional to the intensity of the selected spectral component of said transmitted light;
- voltage generating means coupled to said detector means for producing a voltage proportional to said detector current;
- a first operational amplifier means and associated variable feedback resistive means coupled to said voltage generating means, producing a voltage proportional to said detector current and wherein the gain of said first operational amplifier is adjustable by said variable feedback resistive means;

- a second operational amplifier means and associated feedback potentiometer means coupled to said first operational amplifier means for providing an adjustable resistive ratio and corresponding amplifier gain in inverse proportion to the intensity of each of the said individual spectral components of said transmitted light incident on said detector means corresponding to selectable color reference voltages generated by said second operational amplifier means for each of said individual spectral components of said incident light on said detector means;
- density calibration means coupled to said potentiometer means for displaying said difference in optical density;
- memory standard means coupled to said second operational amplifier means comprising a third operational amplifier means with selectable variable feedback resistive means and associated gain establishing said selectable color reference voltages wherein each selectable voltage corresponds to the intensity of light transmitted through said standard optical absorber and one of said selected primary color filters;
- voltage comparing means coupled to said third operational amplifier means and to a fixed voltage means;
- null detecting means coupled to said voltage comparing means providing an indication when said fixed voltage is equal to the voltage generated by said third operational amplifier.

3,856,414

APPARATUS FOR INSPECTING STRIP MATERIAL

Robert F. Menary, Northbrook, Ill., assignor to Paulmar, Incorporated, Northbrook, Ill.

Filed Jan. 18, 1973, Ser. No. 324,674

Int. Cl. G01n 21/32

U.S. Cl. 356-200

19 Claims



19. A machine for inspecting movie film or similar strip material and for detecting defects of a predetermined character in the material including variations in thickness exceeding a predetermined length due to improper splicing or the presence of adhesive tape or the like and damage in the form of edge tears, holes and the like, which machine comprises means for supporting the strip material for advance along a predetermined path, a plurality of inspection stations spaced along said path, means for advancing said strip material through said inspection stations, a single light source, a plurality of fiber optic light conduits each of which conduits has one end disposed so as to receive light from said single light source and the opposite end disposed adjacent an inspection station so as to direct a light beam in predetermined angular relation onto the exposed surface of said traveling strip material, light sensor means positioned relative to the beam emitting end of each said conduit and said exposed material surface so as to produce an output signal when there is a change in the light received from the associated conduit which change results from the presence of one of said defects in the traveling material, and means actuated by said output signal for interrupting the strip material advancing means when one of said defects is detected by said sensing means.

3,856,415

LIGHT SHIFTING SYSTEM FOR USE IN AN OPTICAL INSTRUMENT, SUCH AS A SPECTROPHOTOMETER

Manuel C. Sanz, and Georges Revillet, both of Geneva, Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Mar. 28, 1973, Ser. No. 345,804

Claims priority, application Switzerland, Apr. 28, 1972, 6419/72

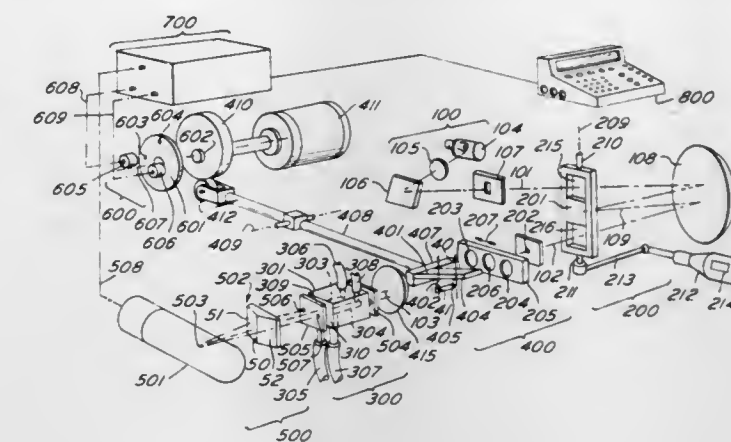
Int. Cl. G01j 3/08; G02f 1/34

U.S. Cl. 356-205

10 Claims

1. A device, adapted to be used in optical instruments for shifting a light beam from an incident path alternately to each of two offset parallel emergent paths which are parallel to the incident path, comprising two transparent members, each having parallel front and back surfaces, the distance from the front to the back surface being the same in each member, one of the members being mounted in cross-wise relationship adjacent the other with the front faces of the two members lying in the separate planes of a dihedral angle, the vertex of which is a straight line which lies in the plane bisecting the angle, a reciprocable support, the transparent members being mounted on the support so that the optical axis of the incident light beam lies in the plane bisecting the dihedral angle with the vertex in the path of the incident light beam and perpendicular to the optical axis of the incident beam, and means for

reciprocating the support, with the transparent members mounted thereon, in a direction generally parallel to the ver-



tex to alternately interpose the front face of one member and then that of the other into the path of the incident beam.

3,856,416

LIGHT METER WITH NUCLEAR LIGHT SOURCE

Ewald Schmidt, Braunsfels, and Willi Wiessner, Wetzlar, both of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

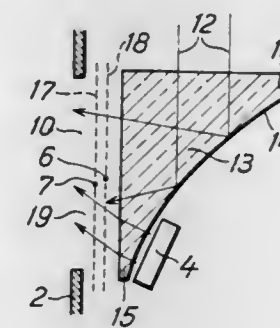
Filed Sept. 12, 1972, Ser. No. 288,375

Claims priority, application Germany, Sept. 27, 1971, 2148106

Int. Cl. G01j 1/42

U.S. Cl. 356-219

14 Claims



1. A light meter having coordinated indicating elements including a scale and means for pointing, a front plate disposed in front of said means for pointing, an aperture in the front plate for viewing said means for pointing, means for illuminating said indicating elements with external light and with a self-powered light source, said self-powered light source being disposed behind said means for pointing, said scale having a first section for measuring weak light and a second section for measuring higher light intensity, means for illuminating said first section with self-powered light source, and means for illuminating said second section with said external light.

3,856,417

PHOTOGRAPHIC COLOR DENSITOMETER

Paul P. Bey, and Michael P. Bey, both of 4909 Abbott Dr., Temple Hills, Md. 20031

Filed Nov. 30, 1971, Ser. No. 203,282

Int. Cl. G01j 1/10

U.S. Cl. 356-229

10 Claims

1. A photometric device for determining a difference in optical density between a standard optical absorber and an unknown optical absorber comprising:

- a light source for generating light of a particular intensity;
- optical compensating filters placed in the optical path of said light source to modify the spectral distribution of said light source;

optical absorbers comprising alternately a standard reference and unknown absorber placed in the optical path of said light source;

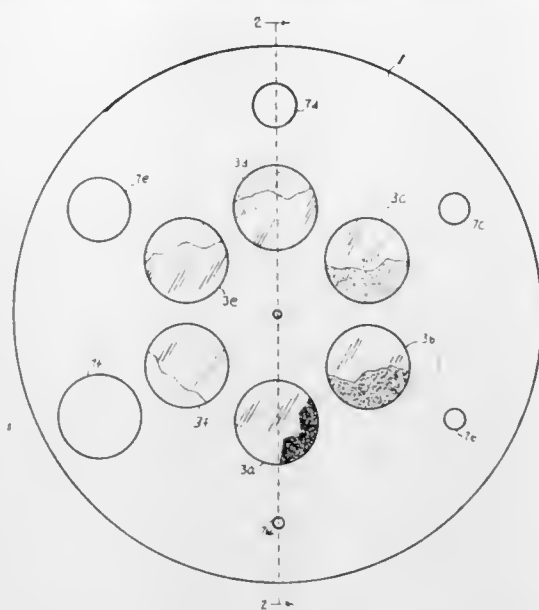
Means for supporting a plurality of spectral selecting filters for passing selected spectral components of light passing through said compensating filters and said optical absorbers;

detector means in proximity to said spectral selecting filters for providing detector currents proportional to the intensity of said spectral components incident on said detector means;

voltage generating means comprising a first operational amplifier means for producing a voltage proportional to said detector currents;

second operational amplifier means coupled to said first operational amplifier means in series with a variable resistive feedback means generating signal voltages proportional to said detector currents and resistance of said variable resistive feedback means;

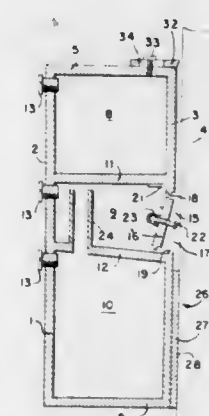
sively varying in proportion with the light transmitted through its correlated filter means, the light aperture with the smallest



area being correlated with the filter means transmitting the least light.

3,856,419
NON-OVERLAPPING COATING DEVICE
Ira A. Levine, 6716 Eastern Ave. N.W., Washington, D.C. 20012

Filed Sept. 11, 1972, Ser. No. 287,641
Int. Cl. B05c 5/02
U.S. Cl. 401-5
8 Claims

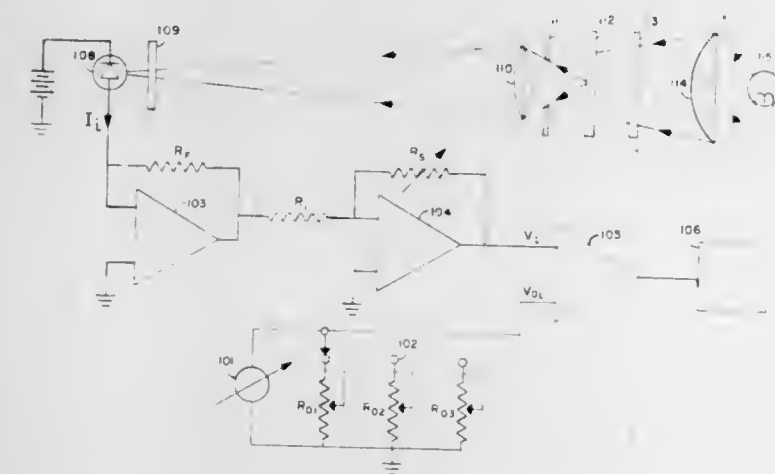


1. A liquid coating device comprising a body having a front wall and additional wall means forming a feeder reservoir, an opening means in the front wall communicating with the reservoir, a closure for the opening means normally closing the same, operating means to variably open said closure to permit flow of coating material onto the work surface to be coated, a doctor blade located on one side of said opening means and extending lengthwise across the width of the body, and a planar guiding and support means on and projecting from said body on a direction normal to said front wall and located entirely on the other side of said opening means, the dimension of said guide support means measured along the width of said body being less than the length of the doctor blade extending across the body.

3,856,420
EXTENDED-LIFE PEN
Fay W. Oltmann, Anamosa, Iowa, assignor to Souvenir/Incorporated, Cedar Rapids, Iowa

Filed Jan. 23, 1974, Ser. No. 435,881
Int. Cl. B43k 7/12, 27/04
U.S. Cl. 401-109
5 Claims

1. An extended-life pen, including first and second elongated pen units disposed side by side with a segment of each of said pen units projecting beyond an end of the other of said



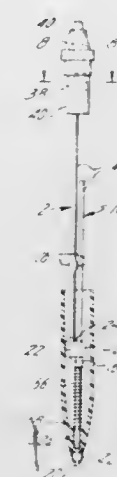
density calibration means coupled to said variable resistive means for displaying the difference in optical density between a known and unknown optical absorber;
memory standard means for generating selectable standard reference voltages wherein each selectable voltage corresponds to an individual spectral component of light having passed through said standard optical absorber;
voltage comparing means comprising a difference amplifier coupled to said second operational amplifier means and to said memory standard means producing a null voltage when said memory reference voltage is equal to said representative signal voltage corresponding to a particular resistance of said resistive feedback means;
indicating means coupled to said voltage comparing means for providing an indication when said representative signal voltage and said reference memory voltage are equal.

3,856,418
LIGHT METERING AND CONTROLLING DEVICE
Ira A. Levine, 6716 Eastern Ave. N.W., Washington, D.C. 20012

Filed June 25, 1973, Ser. No. 373,255
Int. Cl. G01j 1/40
U.S. Cl. 356-233
5 Claims

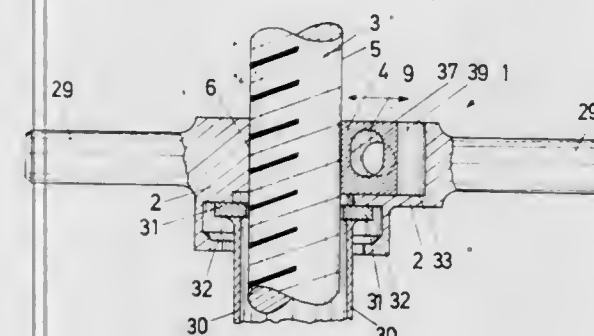
1. A light metering and controlling device comprising a support, a series of light filter means mounted in said support, said filter means progressively and decreasingly varying in light transmission therethrough, a series of light apertures in said support, each light aperture being correlated with a respective filter means, the area of each light aperture progres-

pen units, each of said pen units having a writing tip, barrel means containing said pen units and having guiding passage means at one end thereof for exposing the writing tip of said first pen unit and having means at the opposite end thereof for applying writing thrust to the projecting end portion of said second pen unit, and means linking said pen units together for



transmitting said writing thrust from said second pen unit to said first pen unit, said first and second pen units being interchangeable for disposing the writing tip of the second pen unit in said guiding passage and for utilizing the first pen unit to transmit writing thrust from said barrel means to said second pen unit.

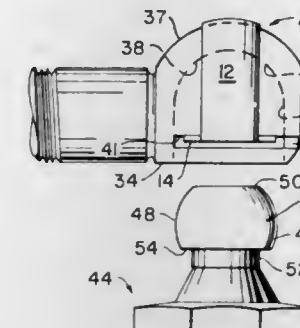
3,856,421
SUPPORT POLE
Walter Nogler, Innsbruck, Austria, assignor to Gebrüder Kollensperger, Innsbruck, Austria
Filed May 2, 1973, Ser. No. 356,447
Claims priority, application Austria, May 2, 1972, 3783/72
Int. Cl. E04g 25/06
U.S. Cl. 403-118
8 Claims



1. A supporting device, preferably for scaffolds, formworks and such used in construction, said device comprising:
an external tube;
a screw spindle adjustably movable within said tube;
a built-up split nut that fixes the position of said screw spindle telescopically movably within said external tube, said split nut being revolvably positioned at an end of said external tube through which the screw spindle is moved, said split nut comprising first and second parts movable with respect to each other in a linear and radial direction to an open and a locked position, said first part comprising a housing positioned on said end of said tube, and said second part comprising a sliding body movable in said housing in a radial direction toward and away from said screw spindle, said sliding body having a hole extending at least partially therethrough; and
an eccentric positioned in said hole to be rotatable in said housing around an axis normal to the sliding direction of said sliding body.

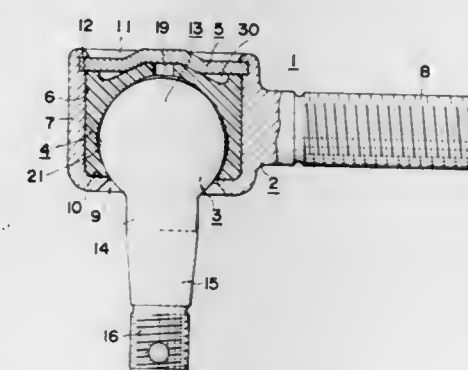
3,856,422
RETENTION CLIP FOR BALL AND SOCKET JOINT
William A. Trefry, 29540 Cunningham Dr., Warren, Mich. 48092

Filed May 29, 1973, Ser. No. 364,618
Int. Cl. B25j 3/38; F16b 7/00
U.S. Cl. 403-122
12 Claims



1. A retention clip for holding a ball and socket joint in assembly, said retention clip comprising an elongated resilient metal strip of substantial width relative to its thickness, said strip having a longitudinally curved central portion, said strip terminating in end portions extending from the ends of said central portion laterally inwardly toward one another, the inner edges of said end portions being disposed in spaced relation to one another, said end portions in the unstressed condition of said strip being inclined with respect to a plane through their outer edges in a direction toward said central portion from their outer edges to their inner edges, said end portions being resistant to forces tending to flex them away from said central portion, said central portion being flexible and capable of opening out in response to the application of spreading forces on the inner edges of said end portions.

3,856,423
BALL JOINT
Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1973, Ser. No. 349,692
Claims priority, application Japan, Feb. 6, 1973, 48-15275
Int. Cl. B25g 3/38; F16f 7/00; F16c 11/06
U.S. Cl. 403-140
4 Claims



1. A ball joint comprising a socket having a cylindrical inner surface and openings provided at both ends thereof, a ball stud having a spherical head, a bearing member for the spherical head which is mounted in said socket and which includes upper and lower concave bearing surfaces which are respectively disposed above and below the equatorial plane of the spherical head and which are connected in a region of their mutual largest diameter, said spherical head being supported by a pair of upper and lower bearing regions and an annular volume for receiving a lubricant supply existing between the region of the equatorial plane of said spherical head and the bearing surfaces, and further comprising a cover associated with said bearing member and inserted into said socket, characterized in that: said upper and lower bearing regions are respectively disposed substantially in the middle of said bear-

ing surfaces, an air gap exists between the spherical head and the apex of the upper bearing surface, the bearing member includes in its upper side an annular recess disposed to generally correspond to the upper bearing region and a domed area at the top of said bearing member radially within said recess, the lower exterior surface of said bearing member being substantially cylindrical, and the upper exterior surface of said bearing member being biased outwardly from the cylindrical shape of said lower surface so that the uppermost portion of the upper exterior surface has a tendency to have a greater radius than the radius of said lower surface, and said cover abutting the upper side of the bearing member thereby axially pre-loading the ball stud, and defining an annular cavity between said upper side of the bearing member and said cover.

3,856,424

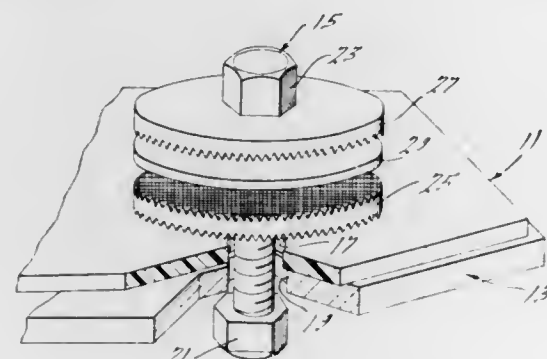
MEANS FOR FASTENING A STRUCTURAL MEMBER SUBJECT TO CREEP

Robert H. Beck, Jr., Dearborn, and Kenneth C. Rusch, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1971, Ser. No. 204,534
Int. Cl. F16b 5/00

U.S. Cl. 403—227

15 Claims



8. Fastening means for joining a plastic structural member subject to creep to a bolt-type fastener comprising first, second and third rigid members, said plastic member being sandwiched between said first and second rigid members, a resilient member being sandwiched between said second and third rigid members, said resilient member having greater resiliency, less rigidity and less creep than said plastic member, aligned openings formed in said rigid plastic and resilient members receiving said bolt-type fastener, said fastener when installed loading said rigid plastic and resilient members in compression whereby the resilient member loads the fastener in tension, at least one of the surfaces of said rigid members engaging said plastic material being knurled.

3,856,425

ADJUSTABLE SIDE FOR SLIP FORM

Charles P. Miller, Allen R. Miller, both of McHenry, and David J. Miller, Ringwood, all of Ill., assignors to Miller Formless Co., Inc., McHenry, Ill.

Continuation-in-part of Ser. No. 103,423, Jan. 4, 1971, which is a continuation-in-part of Ser. No. 774,014, Nov. 7, 1968, Pat. No. 3,606,827. This application Nov. 20, 1972, Ser. No. 308,174

Int. Cl. E01c 19/00

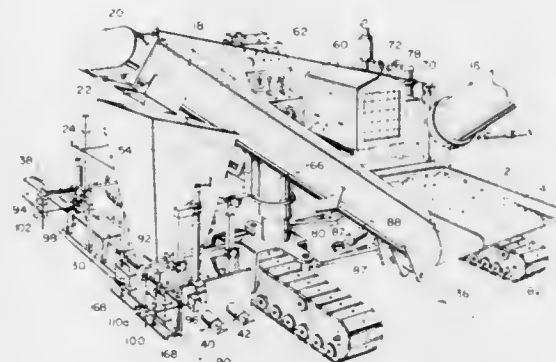
U.S. Cl. 404—84

14 Claims

1. A slip form for transport by a machine over a grade to lay a continuous layer of formable material therealong comprising:

an elongated form member adapted to be supported from said machine with its longitudinal axis extending along the path of travel;

said form member having laterally spaced sidewalls depending from an enclosing top wall;
said sidewalls having bottom edge portions defining the lateral limits of said continuous layer;
a skirt member associated with and contiguous to the outside bottom edge portion of one of said sidewalls;
vertically adjustable support means extending from said machine and carrying said skirt member for vertical movement independent of said one side wall of said form member;



power means provided by said machine for actuating said support means; and
sensor means carried by said machine and operatively controlling said power means to raise and lower said skirt member;
said sensor means being slideably engageable with said grade along and contiguous to said skirt member;
said sensor means being responsive to the depressions in said grade and operative to provide a control signal to actuate said power means and move said skirt member along the contours of said depressions.

3,856,426

RAMMING OR TAMPING MACHINE OR THE LIKE

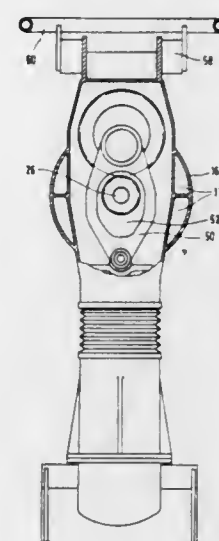
Hans-Georg Waschulewski, Mettmann, and Hans Baumann, Düsseldorf-Gerresheim, both of Germany, assignors to Losenhausen Maschinenbau AG, Düsseldorf-Grafenberg, Germany

Filed July 23, 1973, Ser. No. 381,325
Claims priority, application Germany, July 25, 1972, 2236371

U.S. Cl. 404—133

Int. Cl. E01c 19/34

6 Claims



1. In a hand manipulated tamping apparatus comprising an upper casing, a tamping tool device below said casing, a crank device in the casing, a spring oscillating set connecting the drive and the device, a flange-mounted diesel engine secured

to the casing and having a drive shaft, and a gear drive connecting the engine drive shaft and the crank drive, the improvement comprising:

said drives including an intermediate shaft coaxial with the engine drive shaft, a pinion mounted on the intermediate shaft, a crankshaft mounted above the intermediate shaft and parallel thereto, a gear mounted on the crankshaft and engaging said pinion, and a connecting rod having an upper and lower end and an opening therebetween, the upper end being connected to the crankshaft, the lower end being connected to said oscillating set, said intermediate shaft extending through said opening with the connecting rod thereby encircling said intermediate shaft.

3,856,427

ADJUSTABLE BORING TOOL

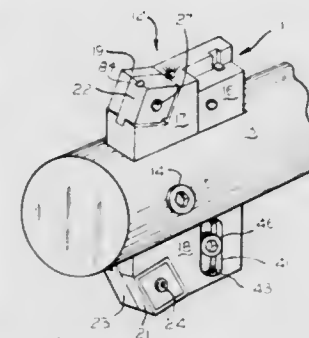
Norman H. Lovendahl, 2728 N. Clinton St., River Grove, Ill. 60171

Filed Nov. 1, 1972, Ser. No. 302,890

Int. Cl. B23b 29/034

U.S. Cl. 408—182

15 Claims



1. An adjustable boring tool comprising a boring block, said boring block having oppositely disposed, spaced-apart cutting tools thereon, motion determining means for simultaneously advancing both of said cutting tools out from or toward the center of the boring block to adjust the diameter of the bore, and unitary means engaging said motion determining means for equalizing the distance between the center of said block and the cutting edge of each of said cutting tools by moving said motion determining means in either direction along its longitudinal axis relative to the center of the boring tool.

3,856,428

TOOL SUPPORT

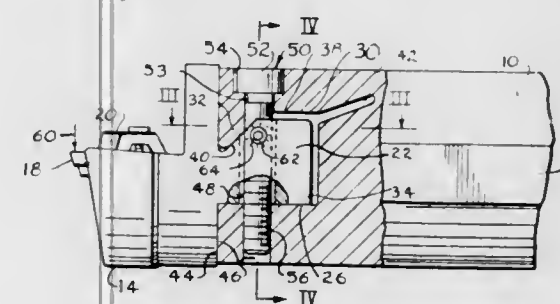
William C. Eversole, Mount Zion, Ill., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 257,051, May 25, 1972, Pat. No. 3,801,213, which is a continuation of Ser. No. 89,186, Nov. 13, 1970, abandoned. This application Nov. 27, 1973, Ser. No. 419,337

Int. Cl. B23b 29/02

U.S. Cl. 408—240

5 Claims



1. In a head to support a cutting insert and adapted for adjustable mounting on a grooved support; a body of machinable metal and having a longitudinal axis, said body having an

intermediate portion and an axially extending end portion on each side thereof, pocket means for receiving a cutting insert formed in one end portion of said body, a diametral tongue formed on said other end portion of said body and adapted for insertion into the groove of a grooved support, the side of said intermediate portion of said body from which said tongue protrudes being disposed in a flat plane perpendicular to the axis of said body, one side of said tongue being parallel to the axis of said body, the other side of said tongue comprising an inclined portion adjacent said body which diverges from the axis of said body in a direction away from said body, and a slot through said tongue on an axis perpendicular to said one side of the tongue and elongated in a direction perpendicular to the axis of said body, said slot adapted for receiving a clamp bolt for clamping the head to the grooved support.

3,856,429

PUMP UNIT FOR THE TRANSPORTATION OF LIQUIDS

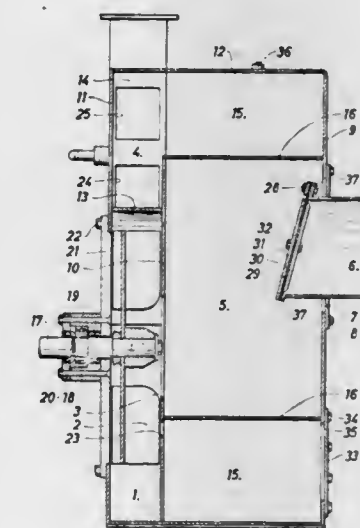
Carl Bruno Pettersson, Smedjegatan 80, Vara, Sweden

Filed Mar. 26, 1973, Ser. No. 344,997

Int. Cl. F04d 5/00

U.S. Cl. 415—53

3 Claims



1. Centrifugal pump unit for pumping of liquids, comprising a pump housing, an impeller located in said housing, an outlet conduit in communication with said pump housing, said outlet conduit extending in an upwardly direction and having a side wall with a first opening at a comparatively high location relative to the pump housing, a chamber for receiving liquid in communication with said first opening, said chamber being in communication with said pump housing via additional openings in a wall of said pump housing, a second opening in said side wall of said outlet conduit at a higher level than said first opening, said second opening establishing communication between said outlet conduit and the upper portion of said chamber, and a valve plate pivotally mounted in said outlet conduit between said first and second openings, said valve plate normally extending transverse to said outlet conduit to close same when the pressure in said outlet conduit is comparatively low, and pivotable to a position substantially parallel to said side wall to open said outlet conduit when said pressure approaches the working pressure of the pump.

3,856,430

DIFFUSER WITH BOUNDARY LAYER REMOVAL

Stephen Langham, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 27, 1973, Ser. No. 383,329

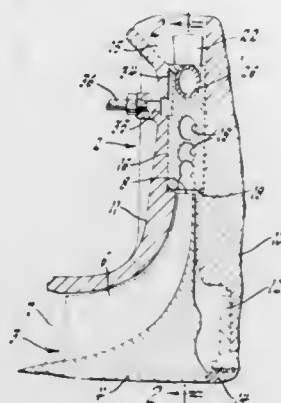
Int. Cl. F04d 29/44

U.S. Cl. 415—207

4 Claims

1. A diffuser for a centrifugal compressor comprising, in combination, a generally annular diffuser body defining diverging diffusing passages extending generally radially and tangentially from the radially inner surface of the body to the

radially exterior surface of the body, the radially outer end of each passage being enlarged to provide a socket; a diffuser outlet tube mounted in each socket; the diffuser body defining a boundary layer exit slot between the radially inner end of



each outlet tube and the bottom of the corresponding socket; means defining a manifold extending circumferentially of the diffuser; and means within the body defining passages connecting the exit slots to the manifold.

3,856,431

SIDE EXPANSION SCROLL-TYPE BLOWERS

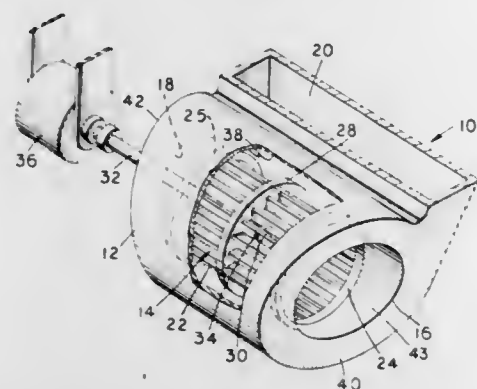
Carl L. Tucker, Baskingridge, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 24, 1973, Ser. No. 409,108

Int. Cl. F01d 25/24; F04d 24/40, 29/44

U.S. Cl. 415-219

4 Claims



1. A blower unit comprising a fan wheel from which air is discharged peripherally, and a housing for said wheel including sloping side surfaces between which the wheel is wholly located, the side surfaces including openings through which air enters the housing, said housing also including ducting between the openings in the side wall and fan wheel through which the inlet air may flow to the wheel in directions generally parallel to the axis of said wheel and including a surface between the side surfaces extending in the form of a spiral about the wheel to an opening from which air moved by the wheel may be expelled, said side surfaces extending in directions diverging toward the exit opening.

3,856,432

SELF-GOVERNING TURBINE SPEED LIMITER

Carl J. Campagnuolo, Potomac, and Paul A. Curto, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,314

Int. Cl. F01d 7/02

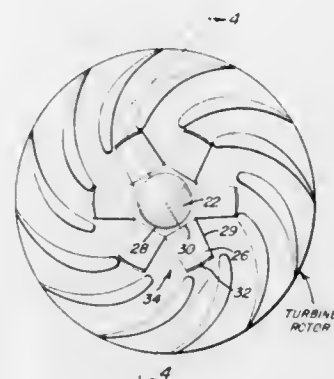
U.S. Cl. 416-45

8 Claims

1. In a turbine rotor having a support plate mounting turbine blades around the periphery, a speed limiting device comprising:

a hub centrally mounted on the support plate; movable means movably connected to the hub, the movable means having a first position whereat they overlay the

hub to remain in non-interfering relationship with air flow through passageways between blades, the movable means responding to centrifugal force acting thereon when a predetermined rotational speed of the rotor is exceeded, said response resulting in movement of the movable means for the blockage of at least one of the passageways;



whereby an increase of turbine rotor speed is averted; and wherein the hub is a conical member having the twofold function of serving as a retainer for the movable means as well as spilling flow of a high inlet ram velocity over the blades when the movable means move to the blockage position.

3,856,433

LIQUID COOLED TURBINE BUCKET WITH DOVETAILED ATTACHMENT

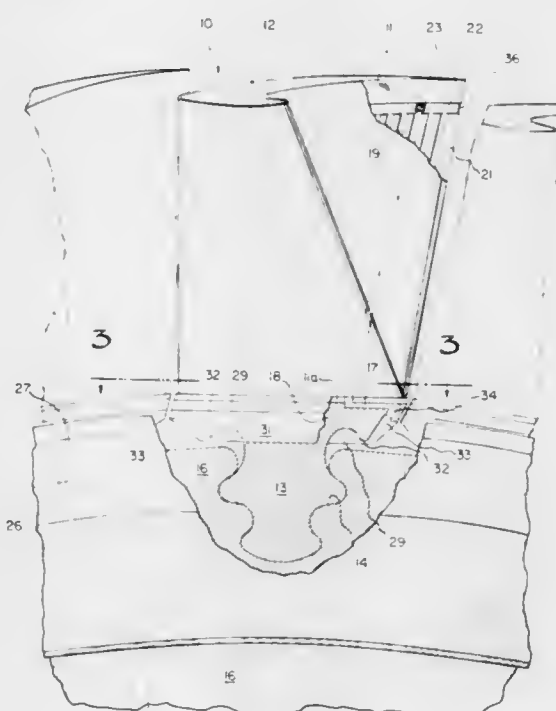
Clayton M. Grondahl, Elnora, and John H. Eskesen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1973, Ser. No. 384,990

Int. Cl. F01d 5/08, 5/18

U.S. Cl. 416-97

9 Claims



6. In a gas turbine wherein a turbine disk is mounted on a shaft rotatably supported in a casing, said turbine disk extending substantially perpendicular to the axis of said shaft and having turbine buckets mounted on the outer rim thereof, means located radially inward of said bucket adjacent said turbine disk for supplying liquid coolant to said buckets to enter open-circuit distribution paths comprising cooling channels and a manifold system in each of said buckets, the improvement comprising:

a. each of said buckets having integrally formed airfoil-shaped core, platform and root portions, said root portion

having a dovetailed configuration fitting into a matching slot in said outer rim,

b. the platform portion of each bucket having a pair of longitudinally-extending recesses formed in the underside thereof, one of said recesses extending along each side of, in the same direction as and adjacent said dovetailed configuration, a pair of longitudinally-extending gutters formed in the underside of said platform portion, one of said gutters extending parallel to and adjacent each of said recesses,

c. a pair of longitudinally extending projections formed along the underside of said platform portion, each of said projections separating one recess and one gutter, each of said projections having a crest, said crest being arcuate in cross-section and presenting a convex cylindrical surface, the elements of the cylindrical surfaces of both crests being parallel to the elements of the cylindrical convex ridges of said dovetailed configuration and

d. in each of said buckets a plurality of first cooling grooves recessed into the upper surface of the platform portion, said cooling grooves being connected to a plurality of second cooling grooves recessed into the pressure and suction faces of the airfoil-shaped core, said second cooling grooves in turn being connected to a manifold system adapted to discharge coolant from said bucket,

e. skin material disposed over the upper surface of the platform portion and over the pressure and suction faces of each of said buckets thereby covering said first and second cooling grooves and said manifold system except for the exit therefrom,

f. a plurality of holes passing through said platform portion placing said first cooling grooves in flow communication with said pair of gutters and

g. said means for supplying liquid coolant being in flow communication with each of said longitudinally extending recesses,

whereby once any given recess has become full of coolant, as additional coolant enters said recess the excess coolant flows over the adjacent crest along the length thereof and passes through said holes, said first and second cooling grooves and said manifold for exit from said bucket.

3,856,434

CENTRIFUGAL FAN WHEEL

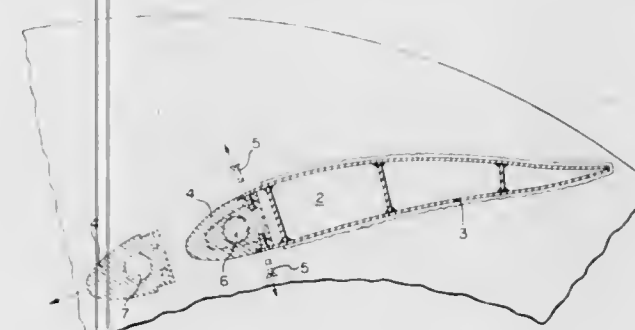
Joseph H. Hoffmann, Norwood, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1973, Ser. No. 407,725

Int. Cl. F04d 17/16, 29/30

U.S. Cl. 416-184

2 Claims



1. A centrifugal fan wheel and blade assembly comprising, a center-plate, a side-plate axially spaced from said center-plate, a plurality of airfoil-type blades to be located between said center-plate and said side-plate, each of said airfoil blades having at least two segments including a nose-piece segment defining the leading edge of said airfoil in the assembled relation, said nose-piece segment being provided with an aperture extending longitudinally through the major axis of said nose-piece from the side-plate to the center-plate and a tail-piece segment defining the trailing edge of said airfoil in the assembled relation, means to permanently secure said tail-piece segment between said center-plate and said side-plate, and

means to removably secure said nose-piece segment between said center-plate and said side-plate in the assembled relationship, wherein said removable securing means includes a bolt extending through said aperture and said center- and side-plates.

3,856,435

COFFEE MAKER

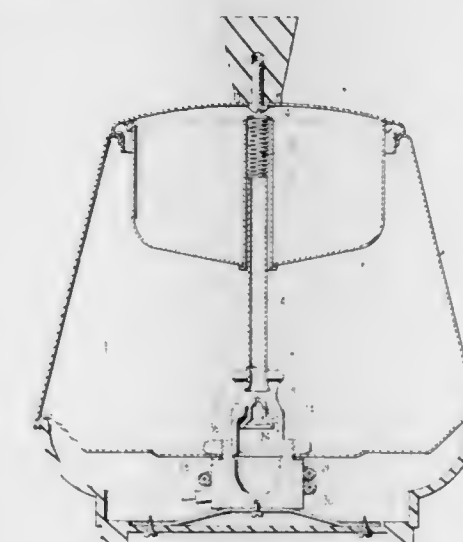
Neiland H. Ballard, Ocean Springs, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.

Filed Nov. 20, 1973, Ser. No. 417,672

Int. Cl. F04b 19/24; F04f 1/18, 9/00

U.S. Cl. 417-158

6 Claims



1. In a beverage infusion appliance having means for holding coffee or other material to be infused, and means including a pump for introducing liquid into the material to be infused, the improvement wherein said pump has a unitary housing provided with an upper portion, a midportion and a lower portion

said upper portion having a longitudinal bore, said midportion having a transverse bore, said lower portion having a longitudinal bore intersecting said transverse bore, said lower longitudinal bore is enlarged at its lower end and reduced at its upper end where it intersects said transverse bore, and

a fountain tube affixed to the housing and extending longitudinally through the longitudinal bore in the upper portion of the housing, said fountain tube having an inlet portion positioned in the transverse bore, and

jet means supported in the longitudinal bore of the lower portion of the housing for directing a fluid jet into the inlet portion of the fountain tube to aspirate liquid communicating with the transverse bore upwardly into and through the fountain tube and then into said holding means.

3,856,436

POWER TRANSMISSION

Kurt R. Lonnemo, Troy, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Dec. 18, 1972, Ser. No. 315,945

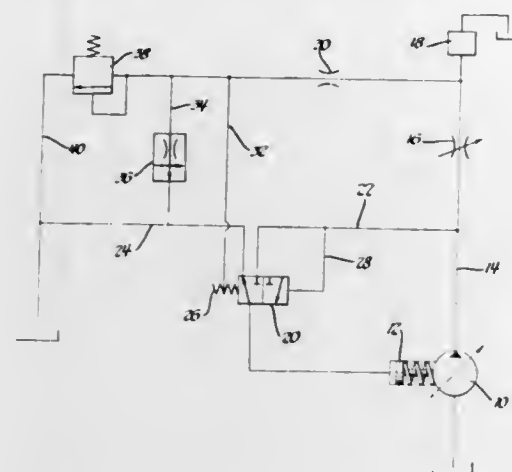
Int. Cl. F04b 1/00

U.S. Cl. 417-212

4 Claims

1. A pilot operated load compensated variable displacement pump for maintaining a predetermined pressure drop across an adjustable orifice comprising a servomotor for adjusting the pump displacement, a pilot valve for controlling the servomotor, a connection from the pump output ahead of the adjustable orifice for urging the pilot valve toward a position of lesser pump displacement, a second connection from the pump output beyond the adjustable orifice for urging the pilot valve toward a position of greater displacement, a restrictor in the second connection and a bleed restriction comprising a pressure responsive flow regulator from the restrictor to main-

tain a small and fixed continuous flow therethrough independent of system pressure and sufficient to create a pressure drop through the restrictor several times as great as the pres-



sure drop through the adjustable orifice under steady state conditions, whereby a large pressure differential for operating the pilot valve is available without imposing a large pressure drop in the main flow through the adjustable orifice.

3,856,437 PUMPS

Denis John Allman, and Robert Vincent Seager, both of Chichester, England, assignors to E. Allman & Company Limited, Chichester, Sussex, England

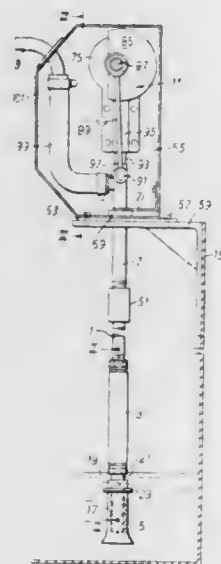
Filed Dec. 7, 1972, Ser. No. 312,897

Claims priority, application Great Britain, Dec. 9, 1971, 57310/71

Int. Cl. F04f 7/00

U.S. Cl. 417-241

12 Claims



1. A portable pump comprising a body formed with an elongated passage which extends between a liquid inlet and a liquid outlet; a support for mounting adjacent to a vessel containing the liquid to be pumped which the body is reciprocally mounted; means mounted on the support for effecting a bodily reciprocation of the body relative to the support so that when the liquid inlet of said body is beneath the liquid in said vessel, said inlet will reciprocate within said liquid, a valve seat which is disposed in the passage between the inlet and the outlet and spaced from said inlet by a tubular inlet passage of substantially uniform diameter,

a valve member which is movable into and out of engagement with the seat, and means for retaining the valve member adjacent to the valve seat when the member is disengaged from the seat, said retaining means comprising a spring, whereby, in use, the body is arranged with the liquid inlet immersed in a liquid and the reciprocating means are operated to reciprocate the body relative to the support so that the passage is alternately moved relative to the liquid in a first sense, which corresponds to a flow of liquid from the inlet towards the outlet and causes disengagement of the valve seat and the valve member against the action of the spring, and in the opposite sense, during which the spring assists in effecting a rapid re-engagement of the valve seat and the valve member and a return flow of liquid is prevented or substantially prevented.

3,856,438 FUEL INJECTION PUMP

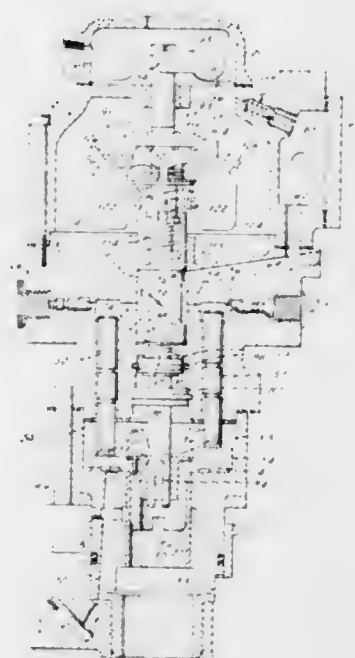
Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1972, Ser. No. 318,297

Int. Cl. F04b 49/00

U.S. Cl. 417-270

7 Claims



1. A fuel injection pump for an air throttled internal combustion engine comprising in combination: a housing; fuel supply means communication with the housing; means forming a plurality of fuel receiving bores within the housing and including fluid discharge communication means between said bores and said engine and further including a plurality of spill passage means for communicating the bores with the fuel supply means; a plurality of plungers received within the bores in a one-to-one relationship therewith; a metering valve means arranged to close the spill passage means in a selected sequence; drive means adapted to be driven by the engine and including means for driving said metering valve to thereby sequentially close said spill passage means in the selected sequence and means for reciprocating said plungers within said bores; and means responsive to the engine, operable to control the quantity of fuel pumped to the engine by said plungers; said engine responsive means including speed responsive means within said housing operatively coupled to said metering valve and arranged to controllably vary the phase relationship between spill passage means closure events and engine operation whereby the spill passage

means closure event may be advanced with increasing engine speed over selected ranges of engine operation; said means for reciprocating the plungers including rotary drive means arranged to engage said plungers, operative upon rotation to reciprocate said plungers within said bores; said rotary drive means including a contoured cam actuating surface for engagement with said plungers, the contour of said cam actuating surface being selected to provide plunger displacement velocities which do not decrease for drive means rotational positions corresponding to substantially all possible rotational positions of spill port closure by said metering valve means, whereby the cam actuating surface cooperates with the advance of the metering valve means and the concomitant advance of the spill passage means closure events to provide a fuel delivery characteristic which closely matches the air flow characteristic of the engine over substantially the entire speed range of the engine.

3,856,439

SOUND PROOFED AND AIR COOLED SHELL FOR PORTABLE AIR COMPRESSOR

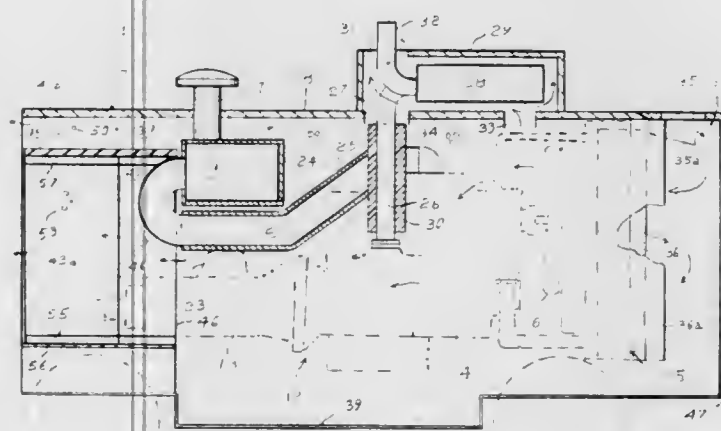
Rudolf E. Moehrbach, Franklin, Pa., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 27, 1973, Ser. No. 374,267

Int. Cl. F04b 39/06

U.S. Cl. 417-312

2 Claims



1. A sound proofed and air cooled portable compressor apparatus comprising a box-like shell having a roof, side walls, a front wall and a rear wall, a combustion engine driven air compressor unit confined within the shell provided with cooling radiator means at its forward end and with an engine driven fan located between the engine and the radiator means for drawing cooling ambient air through the radiator means and blowing it over the unit and through the shell, an air inlet chamber defined at the forward end of the shell between the front wall and the radiator means, air intake openings adjacent the front wall formed in the roof and side walls and opening directly onto the chamber for allowing ambient air to be drawn by the suction of the fan into the chamber and through the radiator means, multiple vent openings formed in the rear wall communicating directly into the rear of the shell for allowing exit of air blown by the fan through the shell, the vent openings comprising a plurality of channels extending forwardly partway into the shell, and there being a plurality of acoustic sound attenuating panels arranged in the rear area of the shell parallel to each other and to the longitudinal axis of the shell and defining the channels, the direction of movement of the ambient air drawn into the chamber being linearly from the chamber at the front end of the shell to the vent openings at the rear end of the shell.

3,856,440

ROTOR PAIR FOR POSITIVE FLUID DISPLACEMENT

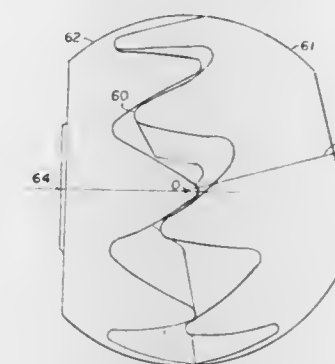
Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y. 14620

Filed Mar. 19, 1974, Ser. No. 452,508

Int. Cl. F01c 1/08; F03c 3/00; F04c 17/04

U.S. Cl. 418-195

12 Claims



1. A pair of rotors adapted to run on intersecting axes, having intermeshing teeth to provide fluid displacement and having tooth numbers differing by one tooth, said rotors having tooth-top portions of convex profiles in planes perpendicular to the tooth direction, one rotor of said pair having its entire tooth surfaces formed conjugate to the tooth-top portion of the other rotor, the tooth addendum at mid-face of said other rotor being algebraically smaller than the curvature radius of its said profile at its mid-point, so that the curvature center is displaced from the pitch surface towards the tooth bottom.

3,856,441

APPARATUS FOR PELLETIZING POWDERED SOLID SUBSTANCE IN A FLUIDIZED BED

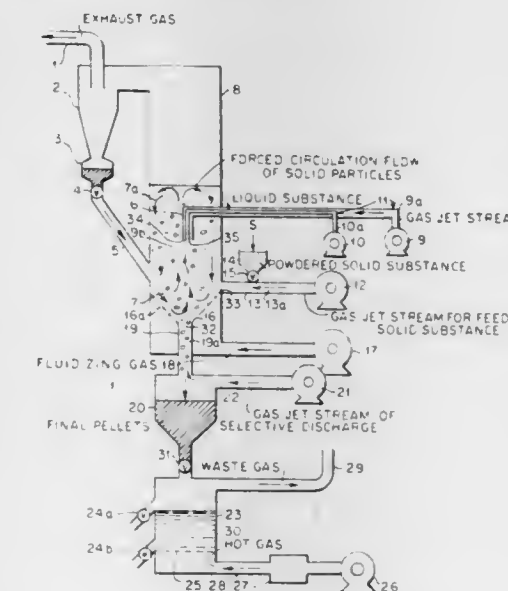
Yuichi Suzukawa, Hisashi Kono, and Atushi Kuribayashi, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Continuation of Ser. No. 85,611, Oct. 30, 1970, abandoned, which is a continuation of Ser. No. 839,749, April 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 554,082, May 31, 1966, abandoned. This application Nov. 3, 1972, Ser. No. 303,304

Int. Cl. B22d 23/08

U.S. Cl. 425-7

9 Claims



1. Apparatus for pelletizing a powdery solid substance by causing agglomeration to produce pellets of a predetermined minimum size, the combination of, a fluidizing vessel enclosing a fluidizing zone comprising side walls surrounding the periphery of said zone and a bottom wall structure defining the bottom of said zone, said vessel having a bottom pellet-discharge opening and said bottom wall structure extending

downwardly toward said opening from said side walls at an acute angle to the horizontal, said bottom wall structure having gas-discharge openings for fluidizing gas, means to supply fluidizing gas through said gas discharge openings, means providing a vertical passageway extending upwardly to and concentric with said pellet-discharge opening, means directing a stream of fluidizing gas upwardly through said passageway at a controlled rate, means for delivering the powdery solid substance at a controlled rate into said vessel, means to deliver an agglomerating liquid to a zone within said vessel remote from said side walls and bottom wall structure, said stream of fluidizing gas being effective to produce an upward flow of gas from said pellet discharge opening and said first-mentioned fluidizing gas cooperating therewith to produce and maintain a fluidizing gas pattern throughout said fluidizing zone with the flow being upwardly from said pellet-discharge opening and thence horizontally to the upper portion of said side wall structure and thence downwardly past said side wall structure and thence along said bottom wall structure generally toward said pellet-discharge opening to complete the path, whereby the powdery solid substance and said liquid are entrained into said fluidizing gas and the liquid wets and agglomerates the powdery solid substance to form pellets the size of which is increased by surface wetting and contact with additional fragments of the solid substance, said stream of fluidizing gas flowing upwardly through said passageway at a controlled rate such that pellets which are smaller than said minimum size are carried upwardly into said fluidized zone and pellets of said minimum size are discharged through said passageway by the action of gravity.

3,856,442

DISPERSION OF MATERIALS IN THERMOPLASTICS
Brendan Gallagher, Welwyn, and Anthony Graham Marshall
Last, Welwyn Garden City, both of England, assignors to
Imperial Chemical Industries, Limited, London, England
Division of Ser. No. 189,135, Oct. 14, 1971, Pat. No.
3,787,542. This application Sept. 4, 1973, Ser. No. 394,397
Claims priority, application Great Britain, Oct. 19, 1970,
49447/70

Int. Cl. B29d 27/00

U.S. Cl. 425-4 C

12 Claims



1. Apparatus suitable for the production of extruded foamed synthetic thermoplastic polymeric materials comprising a screw extruder provided with two inlet ports, downstream of the melting zone, through which a liquid and a gaseous blowing agent respectively may be injected, the inlet port for the gaseous blowing agent being connected to a constant pressure supply of gaseous blowing agent via a flow restricting device while the inlet port for the liquid blowing agent is connected to a metering device for delivering a given quantity of liquid blowing agent per unit time.

3,856,443

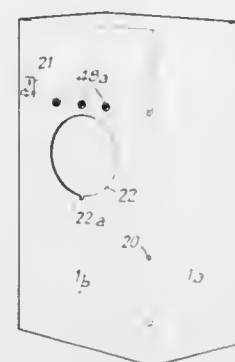
APPARATUS FOR PRODUCING CANDYFLOSS
Attilio A. Salvi, Asnieres, France, assignor to General Properties Anstalt, Vaduz County, Liechtenstein
Filed Aug. 6, 1973, Ser. No. 385,711
Int. Cl. A23g 3/20

U.S. Cl. 425-9

8 Claims

1. In apparatus for producing the sugary confectionery called "candyfloss" and consisting of filaments of sugar attached to and wound around a small stick such apparatus

comprising a framed housing; a circular trough mounted interiorly of this framed housing with its axis vertical; a rotary hollow drum located coaxially in said trough with its axis vertical; means mounting said drum for rotation about said vertical axis; heating means operative to maintain the interior of said drum at an elevated temperature; a feed opening in the upper wall of said drum; outlet orifice means for the sugar filaments and formed in the lateral peripheral wall of said drum; sugar container means disposed in said housing; a dispensing tube communicating said sugar container means with said feed opening of the rotary drum; a sugar dispenser interposed between said sugar container means and the dispensing tube; a control unit operatively associated with said sugar dispenser; a drive motor disposed coaxially of the rotary drum



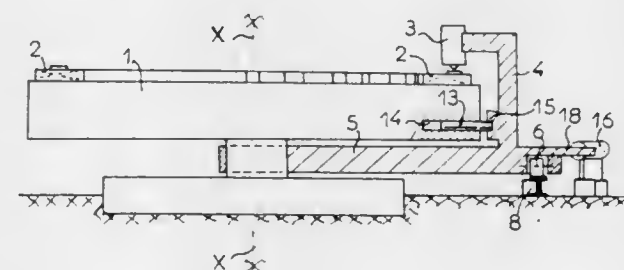
and beneath the trough; an output shaft of said drive motor passing through said trough and attached to the rotary drum; further control units effective to control said drive motor and heating means said further control units including timer means; and pre-payment control means connected to the control unit of the sugar dispenser and to said further control units; the improvement comprising means for adjusting the volume of sugar dispensed by said sugar dispenser; means mounting said trough for rotation about its axis; drive means capable of imparting to said trough an angular speed lower than that of said rotary drum; a reservoir for containing sticks onto which in use of the apparatus candyfloss will be wound; means for dispensing sticks individually from said reservoir; and a control unit for said dispensing means operatively associated with said pre-payment control means.

3,856,444

SHORT-CYCLE MOLDING DEVICE
Jean Louis Saltel, Quai du Mas d'Hours, 30100 Ales, France
Filed Oct. 5, 1972, Ser. No. 295,268
Int. Cl. B29c 5/00

U.S. Cl. 425-60

10 Claims



1. Apparatus for rapid cyclic molding of a quick setting fluid material such as polyurethane, said apparatus comprising a carousel mounted for rotation about a vertical axis, means for continuously rotating said carousel about said vertical axis, said carousel including a circular table and a series of molds on said table at the periphery thereof, covers for said molds, radial arms pivotably supported on said carousel and carrying said covers, means for pivoting said arms to move said covers and open said molds during a material pouring operation and close said molds during setting of the material, and a pair of abutments corresponding to each mold and fixed at the pe-

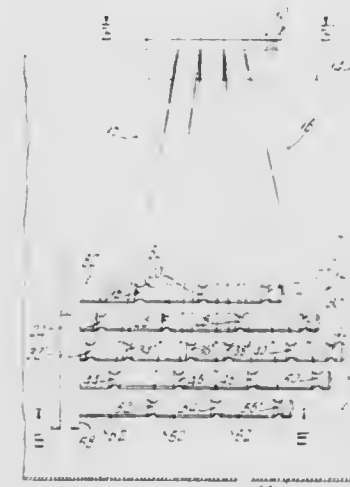
riphery of said table; a movable assembly mounted for pivotable movement around said vertical axis below said table and including at least one pouring head extending at a level above said molds for introducing said material into the molds entrainment means for driving said movable assembly by said carousel over a limited path of annular travel, and means for reciprocally moving the pouring head above a corresponding mold during the pouring operation, said entrainment means comprising a radial finger supported from said movable assembly for radial movement between extended and retracted positions, said finger in the extended position engaging one of said abutments to drive said movable assembly and in the retracted position being free from said abutments to permit the movable assembly to return to an initial position.

3,856,445

SPINNERET WITH YARN SEPARATOR
David W. Norwood, Baltimore, Md., assignor to Concorde Fibers, Inc., Columbia, Md.
Continuation of Ser. No. 216,172, Jan. 7, 1972, abandoned.
This application July 31, 1973, Ser. No. 378,363
Int. Cl. D01d 7/00

U.S. Cl. 425-71

6 Claims



1. A spinning apparatus for extruding polymeric yarn which includes a spinneret having a plurality of grouped spinning orifices arranged in rows there being several grouped spinning orifices in each row, the polymer being extruded into filaments through said spinning orifices issuing from the spinneret, and a yarn separator cooperating with said spinneret for separating the filaments extruded from the respective groups of orifices into respective yarn ends, said yarn separator comprising a plurality of substantially parallel separator bars, each separator bar having a plurality of spaced guide means for guiding the yarn ends, the guide means on each separator bar in addition to being spaced from each other being also staggered with respect to the guide means on the other separator bars such that each guide means receives yarn from only one of the grouped spinning orifices, whereby the yarn ends of each of the grouped spinning orifices are guided to and away from the yarn separator in a spaced relationship.

3,856,446

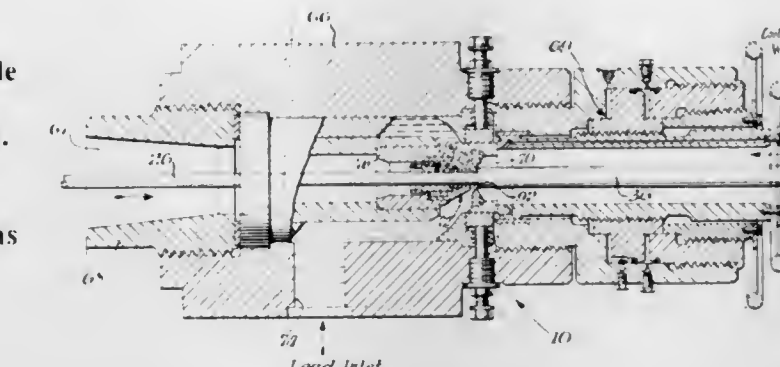
LEAD EXTRUSION DEVICE WITH MEANS FOR REMOVING A DIE MEMBER WITHOUT INACTIVATING THE MATERIAL FEED MEANS
John J. Schultz, Wilmington, Del., assignor to Electric Hose & Rubber Company, Wilmington, Del.
Continuation of Ser. No. 136,720, April 23, 1971, abandoned.
This application Mar. 20, 1973, Ser. No. 343,132
Int. Cl. B29f 3/10

U.S. Cl. 425-113

10 Claims

1. An extrusion device for extruding a jacket around an elongated tube comprising a die block body, a longitudinal passageway extending completely through said die block

body, a female die in said passageway, a male die assembly in said passageway disposed adjacent said female die and slightly spaced therefrom, said male die assembly including a die insert facing said female die, an extrusion die tip removably engaged to said die insert and projecting therefrom disposed adjacent said female die, feed means for feeding jacket making material around said die insert and between said extrusion die tip and said female die whereby a tube may pass through said die block body and have a jacket extruded thereon, the downstream edge of said die insert being disposed sufficiently close to said female die to act as a male die when said die tip is removed therefrom, the opening in said female die being at least substantially the same size as the opening in said die insert left when said die tip is removed therefrom, said device having a longitudinal passage exposed at the upstream end of



said device remote from said female die and of a size sufficient for said extrusion die tip to be movable therein, removal means for completely removing said extrusion die tip through said passage by manipulation externally of said device without inactivating said means for feeding said jacket making material and without interrupting the flow of material around said die insert, said removal means including a temporary tool locking member connected to said extrusion die tip for joint movement and for temporarily having a manipulating tool locked thereto, said tool locking member being wholly within said passage and terminating remote from the open upstream end of said device, said tool locking member having tool reception means at its rear edge remote from said open end of said device whereby said extrusion die tip may be manipulated externally of said device by insertion of a manipulating tool into said passage for engagement with said tool locking member to disengage said extrusion die tip from said die insert and to withdraw said extrusion die tip from said passage, and said tool locking member having means to hold it in place against axial movement within said passage when the manipulating tool is disengaged therefrom.

10. An extrusion device for extruding a jacket around an elongated tube comprising a die block body, a longitudinal passageway extending completely through said die block body, a female die in said passageway, a male die assembly in said passageway disposed adjacent said female die and slightly spaced therefrom, said male die assembly including a die insert facing said female die, an extrusion die tip removably engaged to said die insert and projecting therefrom disposed adjacent said female die, feed means for feeding jacket making material around said die insert and between said extrusion die tip and said female die whereby a tube may pass through said die block body and have a jacket extruded thereon, said die block body having a longitudinal passage exposed at the upstream end of said device remote from said female die and of a size sufficient for said extrusion die tip to be movable therein, removal means for removing said extrusion die through said die block body passage by manipulating externally of said device without inactivating said means for feeding said jacket making material and without interrupting the flow of material around said die insert, and said removal means including temporary tool locking member connected to said extrusion die tip for joint movement and for temporarily having a manipulating tool locked thereto, said tool locking member being wholly within said passage and terminating remote from the open upstream end of said device, said tool locking

member having tool reception means at its rear edge remote from said open end of said device whereby said extrusion die tip may be manipulated externally of said device by insertion of a manipulating tool into said passage for engagement with said tool locking member to disengage said extrusion die tip from said passage, said tool locking member having means to hold it in place against axial movement within said passage when the manipulating tool is disengaged therefrom, said means for preventing axial movement of said tool locking member including a locking sleeve mounted in said die insert and having camming means, and follower means on one of said locking tool member and extrusion die for riding against said camming means.

3,856,447

EXTRUSION HEAD FOR THE MANUFACTURE OF HOSES FORMED OF PLASTIC MASSES AND CONTAINING REINFORCEMENT INSERTS

Walter Hugo Schiesser, Zurich, Switzerland, assignor to Schiesser AG, Zurich, Switzerland

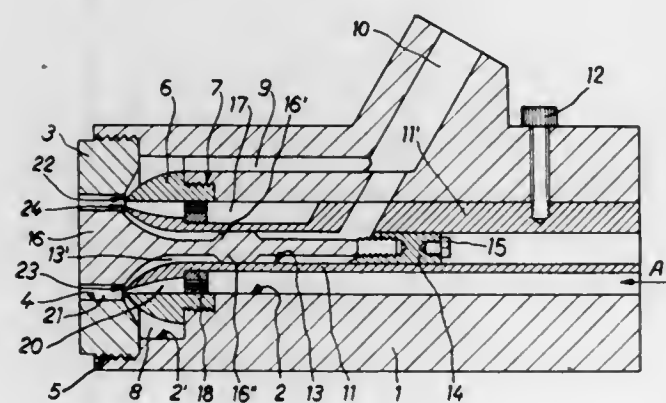
Division of Ser. No. 151,418, June 9, 1971. This application, June 26, 1973, Ser. No. 373,651

Claims priority, application Switzerland, June 16, 1970, 9100/70

Int. Cl. B29f 3/10

U.S. Cl. 425-114

9 Claims



1. An extrusion head arrangement for manufacturing hoses formed of rubber or other plastic masses and containing pre-formed, solid reinforcement inserts, comprising an extrusion head housing, means providing an inlet for plasticized hose forming material at said housing, said housing being provided with means defining a pair of compartments in communication with said inlet, an extrusion opening arranged at the outlet side of said housing, an outlet provided for each of said compartments, each said outlet possessing a substantially ring-shaped outlet opening, said outlet openings being located concentrically with respect to one another in front of the inlet to said extrusion opening, discharge means opening into said openings of the compartments, and guide means within said housing for reinforcement material introduced into the housing in order to guide such pre-formed, solid reinforcement material in a predetermined spatial arrangement out of an annular gap defining said discharge means into said extrusion opening, said extrusion head arrangement being adapted to simultaneously and separately inject plasticized material from each of said outlet openings against both the inside and outside of said pre-formed, solid reinforcement material to thereby form said hoses.

3,856,448 MULTI-CORE CIRCULAR DIE FOR PREPARING MULTI-LAYER TUBULAR FILM

Akira Iijima; Yujiro Yokoyama, both of Yokohama; Yosuke Yamada, Tokyo, and Makoto Kimura, Yokohama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinanyo-shi and The Japan Steel Works, Limited, Tokyo, both of Japan

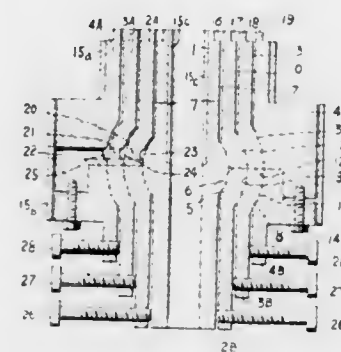
Filed Dec. 29, 1972, Ser. No. 319,283

Claims priority, application Japan, Dec. 29, 1971, 47-3069

Int. Cl. B29f 3/00

U.S. Cl. 425-133.1

11 Claims



1. Apparatus for preparing a multi-layer tubular film made of a thermoplastic resin comprising a multi-core circular die which in turn comprises:

- a plurality of cores having concentric tube portions and central spherical portions which are rotatably fitted with each other at said central spherical portions;
- a housing surrounding said cores and having a spherical inner surface which rotatably secures said cores together; and
- a plurality of tubular passages for conducting the flow of said resin which are disposed within spaces formed between said tube portions of said cores and between said tube portions of one of said cores and said housing.

3,856,449 MEANS FOR HIGH SPEED TRIMMING OF SOAP EXTRUSIONS

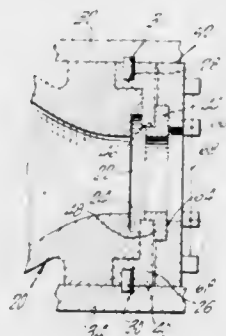
Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 308,954

Int. Cl. B28b 11/16; B29c 17/10

U.S. Cl. 425-308

7 Claims



1. A wire trimmer assembly for a soap plodder including a housing for levigating and homogenizing a mass of soap, said housing terminating in an outlet for roughly extruding said mass of soap, said assembly comprising a nozzle plate holder detachably secured to said housing outwardly of said outlet, a nozzle plate overlying said nozzle plate holder and downstream of said outlet for closely shaping said mass, a wire cutting head outwardly and downstream of said nozzle plate, said nozzle plate holder having a bore therethrough said nozzle plate having a barrel portion seating in said bore and a flange portion of larger diameter than said bore between said nozzle plate holder and said wire cutting head, said nozzle plate having a rectangular die opening therein, and means for

securing said wire cutting head to said nozzle plate holding said nozzle plate therebetween.

2. A wire trimmer assembly for a soap plodder including a housing for levigating and homogenizing a mass of soap, said housing terminating in an outlet for roughly extruding said mass of soap, said assembly comprising a nozzle plate downstream of said outlet for closely shaping said mass of soap, a nozzle plate holder, a wire cutting head downstream of said nozzle plate, fastening means for detachably securing said wire cutting head to said nozzle plate holder, said nozzle plate holder having a bore therethrough, said nozzle plate having a barrel portion seating in said bore, said nozzle plate having a rectangular die opening therein, and bayonet means for detachably securing said nozzle plate holder to said housing with said nozzle plate being inwardly of said wire cutting head.

3,856,450

MOLD CONSTRUCTION

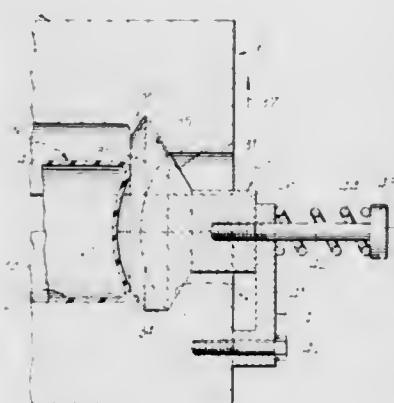
George C. Britten, Massapequa, N.Y., assignor to Manbritt Industries, Inc., Amityville, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,193

Int. Cl. B29d 23/03

U.S. Cl. 425-398

8 Claims



1. A mold construction having a pair of separable complementary hollow mold parts combining to define a cavity for formation therein of a molded article, and wherein said mold parts having draft of unobstructed withdrawal away from each other and a molded article, comprising: a plug carried by one of said mold parts for movement into and out of said cavity for forming an external recess in a molded article when said plug is in its inwardly projecting position in said cavity, resilient means fixed to said one of said mold parts urging said plug toward its outwardly projecting position out of said cavity so as not to obstruct said mold part withdrawal, and cooperating means on said plug and the other of said mold parts to shift said plug to its inwardly projecting position in said cavity against said resilient means upon mold part movement toward each other for forming said recess in a molded article.

3,856,451

DEVICE FOR PRODUCING MOLDINGS FROM FOAMABLE PLASTICS, MORE PARTICULARLY, POLYURETHANE

Karl Holzinger, Herford-Schwaren-moor, Germany, assignor to Herbert Kannegiesser Kommanditgesellschaft of Hollwiesen, Vlotho, Germany

Filed May 24, 1973, Ser. No. 363,698

Claims priority, application Germany, May 26, 1972, 7219751

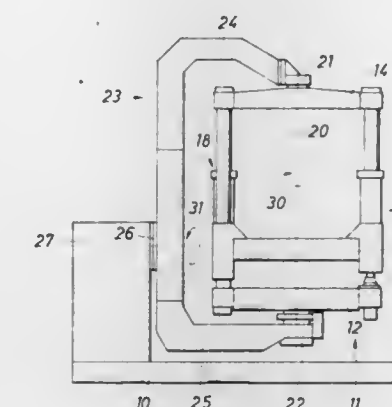
Int. Cl. B29c 5/04

U.S. Cl. 425-429

2 Claims

1. In a device for producing moldings from foamable plastics, more particularly, polyurethane, wherein a two-part mold is arranged in a mold support pivotable about at least a first axis disposed in the direction of closing of the mold and about a second axis arranged at right angles to the first axis in the center of concentration of the mold support and wherein the

two ends of the first axis pass through the arms of a U-shaped bow which is disposed about the mold support and mounted on the frame on its rear stem side along the line of the second axis, the improvements comprising the mold support (11) has a table-shaped clamping plate (12), a pressure yoke (13), a traverse bar (14), and two guide and displacement devices



(17,18) for the pressure yoke (13); said guide and displacement devices (17,18) being arranged opposite each other in an off-set position approximately along the line of a diagonal (19) of the clamping plate (12) and the guide rods (28,29) of the guide and displacement devices (17,18) interconnecting the clamping plate (12) and the traverse bar (14).

3,856,452

APPARATUS FOR CENTRIFUGALLY CASTING HOLLOW SPHERES

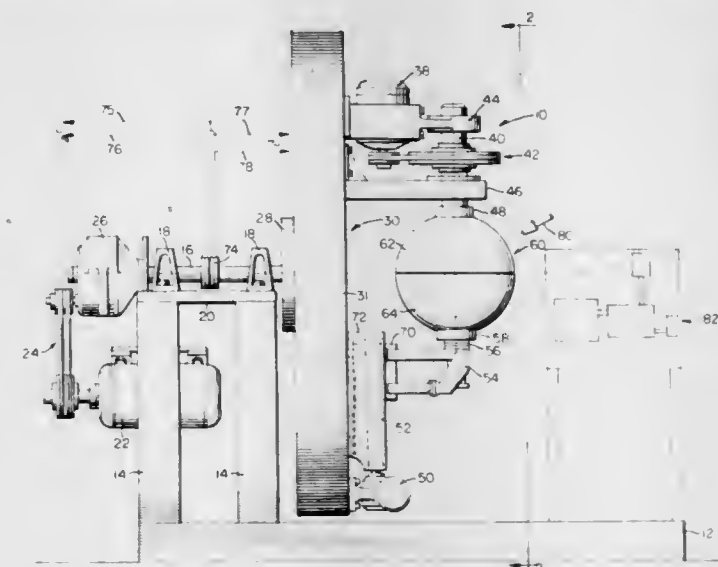
Juan Jose Amado, Jr., Aptdo. 4241, Panama 5, Panama

Filed Nov. 5, 1973, Ser. No. 412,614

Int. Cl. B29c 5/04

U.S. Cl. 425-429

8 Claims



1. An apparatus for centrifugally casting hollow spheres from molten material comprising

- a. frame means for supporting shaft bearing means,
- b. a first drive shaft rotatably held in said shaft bearing means,
- c. first electric motor means for rotating said first drive shaft,
- d. rotating platform means coupled to said first drive shaft for rotation by said first electric motor mean,
- e. second electric motor means mounted on said rotating platform means,
- f. slip ring means to supply electric power to said second electric motor means,
- g. a second drive shaft driven by said second electric motor means,
- h. said second drive shaft being at right angles to said first drive shaft and in a common plane therewith,

- h. first clamping means rotatable by said second drive shaft,
 i. second clamping means rotatable on shaft means in line with said second drive shaft,
 j. means to advance and retract at least one of said clamping means,
 k. and mold means clamped by said first and second clamping means,
 l. said mold means capable of being positioned with its center of rotation at the intersection of the axes of said first and second drive shafts.

3,856,453

FACING RING AND POURING CHUTE FOR VERTICALLY CAST CONCRETE PIPE

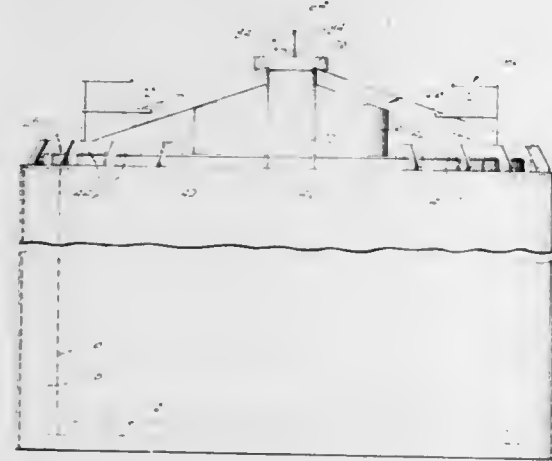
Frank M. Wells, Aztec, N. Mex., and Gordon J. Black, Nuevo, Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Filed Aug. 2, 1973, Ser. No. 385,189

Int. Cl. B28b 21/04

U.S. Cl. 425-447

6 Claims



1. Apparatus for casting concrete pipe in a vertically disposed pipe mold having a cylindrical outer mold case, and an inner cylinder disposed concentrically inside the outer mold case to form an annular mold cavity into which concrete is to be poured, the apparatus comprising a flat facing ring encircling the cylinder and mounted above the annular mold cavity, the facing ring including gate means capable of being opened and closed to control passage of the concrete through the facing ring into the mold cavity, and a downwardly extending pouring chute mounted in a fixed position above the facing ring in communication with the gate means of the facing ring so that concrete poured onto the pouring chute will be distributed by the pouring chute through the gate means to the annular mold cavity, the facing ring providing a flat undersurface which will form a flat annular end section of the cast pipe when concrete is filled to the bottom of the facing ring.

3,856,454

ROTARY TYPE INJECTION MOLDING MACHINE

Katashi Aoki, 6037, Oaza Minamijo, Sakaki-machi, Hani-shina-gun, Nagano-ken, Japan

Division of Ser. No. 171,914, Aug. 16, 1971, Pat. No.

3,806,296. This application June 5, 1973, Ser. No. 367,261

Claims priority, application Japan, Aug. 29, 1970, 45-75442; Aug. 29, 1970, 45-75443

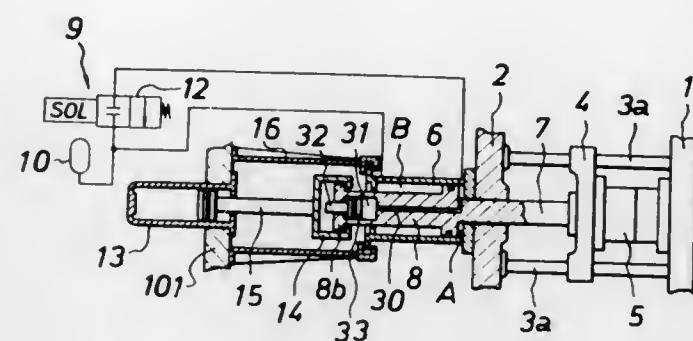
Int. Cl. B29f 1/06

U.S. Cl. 425-451

1 Claim

1. A rotary type injection molding machine having a mold pressurizing device, wherein a fluid circulating path having an accumulator for storing one part of the pressurized fluid and valve means for blocking the fluid path is provided for a pressurizing cylinder including a piston integrally connected to a mold operating rod, a pressure reducing cylinder communicating with a chamber located at the mold operating rod side

of the pressurizing cylinder is provided inside of said piston at one end thereof, and said pressure reducing cylinder includes



a pressure reducing piston operable by a mold opening-and-closing device of the injection molding machine.

3,856,455

METHOD AND APPARATUS FOR MIXING AND TURBULATING PARTICULATE FUEL WITH AIR FOR SUBSEQUENT COMBUSTION

Clifford G. Otway, 3023 Larchway, Port Coquitlam, and

Barry D. Biden, 1350 W. 70th, Vancouver, both of Canada

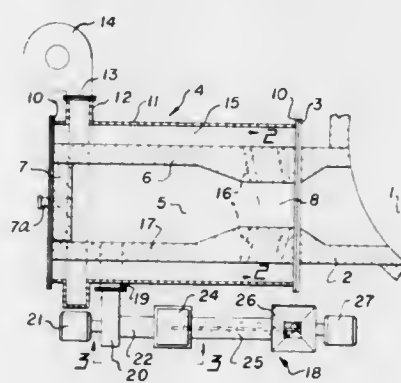
Filed Jan. 29, 1973, Ser. No. 327,821

Claims priority, application Canada, Feb. 1, 1972, 133611

Int. Cl. F23d 11/44; F23l 15/00

U.S. Cl. 431-11

14 Claims



1. Apparatus for generating and igniting a fuel mixture stream comprised of an intimate mixture of air and particulate fuel, comprising
 an elongated chamber having an inlet at one end and a restricted outlet at the other end,
 a duct connected axially to the inlet of the chamber for entraining particulate fuel in a stream of primary air in a proportion and at a temperature insufficient to permit significant combustion of the fuel in the chamber, and for injecting the resultant mixture into the chamber, said chamber being constructed to exclude any other air therefrom,
 means in said duct for generating turbulence in the chamber to create a thorough mixing of the fuel and primary air therein as the mixture moves therethrough towards the outlet,
 means for maintaining ignition of the suspension in the region of the outlet,
 and means for directing a stream of secondary air into confluence with the turbulent suspension in the region of said outlet to provide, together with the primary air sufficient air to support complete combustion of the fuel suspended in the air, said directing means being such as to cause the secondary air to assist in moving said mixture through the chamber.

3,856,456

DEAD BULB SENSING MECHANISM

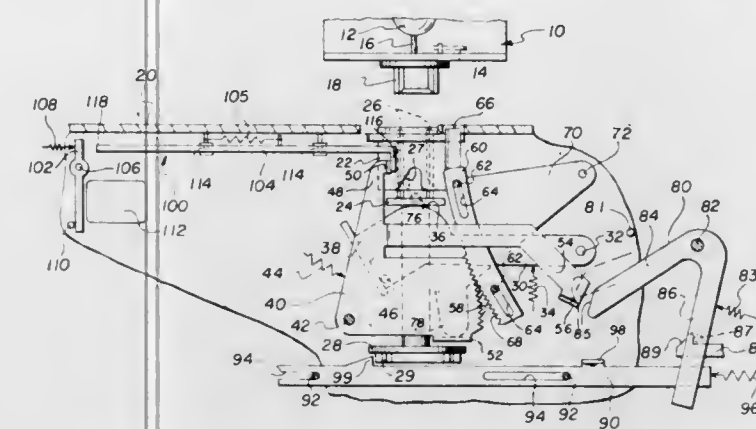
David Easton Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1973, Ser. No. 402,954

Int. Cl. F21k 5/02

U.S. Cl. 431-92

9 Claims



1. For use with a flash unit having a plurality of flashlamps fireable by striking; a striker associated with each flashlamp and releasable from a pre-energized condition to effect such striking; and means defining an access opening providing access to such a pre-energized striker; photographic apparatus comprising:

means for receiving such a flash unit with one of the flashlamps located in a predetermined firing position relative to said photographic apparatus;
 means for rotating said receiving means to position another of the flashlamps at the predetermined firing position;
 means, including a sensing member movable through an access opening in the flash unit, for sensing the presence or absence of a pre-energized striker associated with the flashlamp located at the predetermined firing position;
 means responsive to movement of said sensing member for indicating the presence or absence of a pre-energized striker;
 first withdrawing means for withdrawing said sensing member from the access opening in response to rotation of said receiving means; and
 second withdrawing means, responsive to operation of said rotating means, for withdrawing said sensing member from the access opening prior to its withdrawal by said first withdrawing means.

3,856,457

BURNER OF THE OXY-FUEL TYPE

Keith A. Miller, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 29, 1972, Ser. No. 319,493

Int. Cl. F23d 15/02

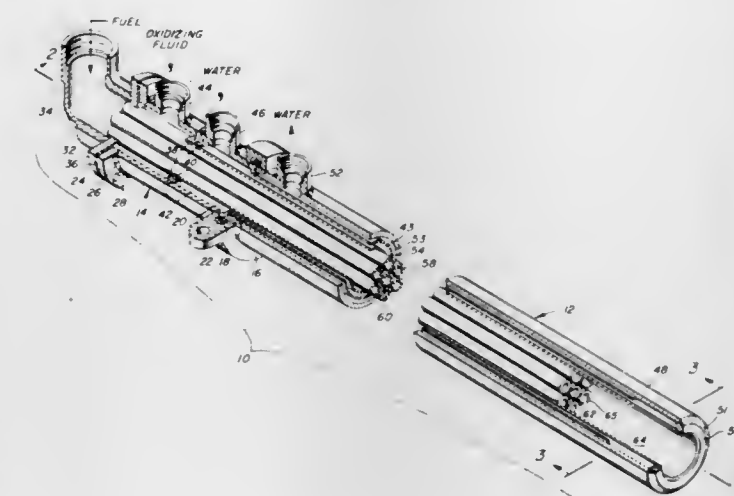
U.S. Cl. 431-353

12 Claims

1. A burner of the oxy-fuel type comprising in combination: an elongated generally cylindrical housing having an outer wall and an inner wall with internal fluid cooling passages, said housing defining on one end thereof an opening for producing a flame;

means for introducing to and removing fluid from said internal fluid cooling passages;
 a plurality of elongated tubes disposed within said housing, defining a bundle compacted by the inner wall of said housing with the axis of each tube generally parallel to the axis of the other tubes, each of said tubes being spaced apart from the other tubes in said bundle and so constructed and arranged to define a first longitudinal fluid passage having a total cross-sectional area comprising the sum of the individual cross-sectional areas defined by the outside surfaces of adjacent tubes and the outside surfaces of said tubes and the adjacent housing surface said passage being coextensive with the tube bundle, a second longitudinal fluid passage having a cross-sectional area

defined by the sum of the cross-sectional areas defined by the bore of each tube in said bundle, said bundle being spaced inwardly from the opening in the housing for producing a flame thereby defining a generally cylindrical combustion chamber;
 means for introducing a first fluid through the passage defined by the bores of said tubes to said combustion chamber;



means for introducing a second fluid into the passage defined by the outside surfaces of the tubes in the tube bundle for mixing with the first fluid in the combustion chamber to provide a flame directed outwardly of said housing, said first and second fluids being either a fuel or an oxidizing fluid.

3,856,458

METHOD AND APPARATUS FOR HEAT SOFTENING PLASTIC ARTICLES

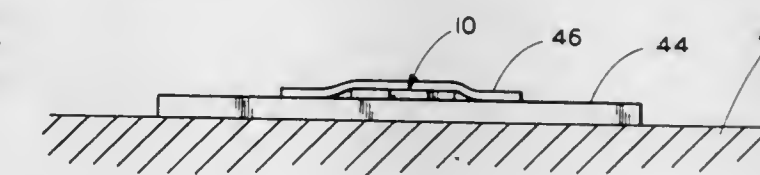
Harry Greenwald, Chicago, Ill., assignor to Craftics, Inc., Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,634

Int. Cl. F27b 9/28

U.S. Cl. 432-5

5 Claims



1. A method of applying heat along a predetermined path on a surface of a plastic article, comprising the steps of directing heat through an intervening limited thermal barrier along said predetermined path and in direct contact with said surface of said plastic article, converting said limited thermal barrier with a further thermal barrier, and maintaining the direction of said heat for a predetermined period of time to obtain localized softening of said article immediately below the surface of said limited thermal barrier.

3,856,459

HEATERS

Dennis Frederick Bourton, Canterbury, England, assignor to Canterbury Precision Engineering Limited, Canterbury, Kent, England

Filed July 19, 1973, Ser. No. 380,843

Claims priority, application Great Britain, July 27, 1972, 35125/72

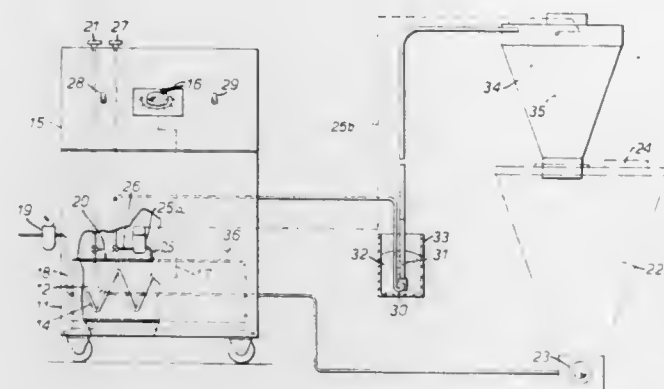
Int. Cl. F27b 15/00

U.S. Cl. 432-58

4 Claims

1. A device for heating and conveying bulk material which comprises: a gas heater including a pressure vessel having inlet means and outlet means, said inlet means being arranged to be connected to a source of pressurized gas, and electrical heat-

ing means located within said pressure vessel for heating said gas therein; and a bulk material conveyor system including an inlet hopper having a lower end and adapted to receive and dispense bulk material and a pneumatic conveyor pipe adapted to convey bulk material from a source to said hopper;



said outlet means including means for delivering heated pressurized gas to said pneumatic tube for preheating and conveying said bulk material to said hopper and means for delivering heated gas to the lower end of said hopper for heating bulk material therein.

3,856,460

DEVELOPING SYSTEM FOR FILM BY ADIABATIC HEAT FLOW

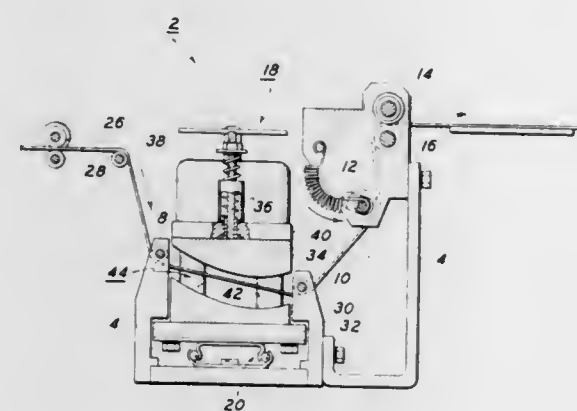
Frank R. Hynes, Rochester; Joseph N. May, Webster, and David H. Thompson, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,719

Int. Cl. F27b 9/28

U.S. Cl. 432-59

6 Claims



1. Developing apparatus for processing a web of dry film having a heat developable emulsion on one side of a support material, including:

- a frame to support and guide a web of film in tension along a film path,
- a developing station movably mounted on said frame and operatively connected to a drive means for reciprocating movement along a first axis between a standby position and an operative position relative to said film path,
- said developing station including a pair of heatable platens having substantially mating facing surfaces defining a cavity therebetween and actuator means to effect reciprocating movement of one of said platens relative to the other of said platens along a second axis to respectively close and open said cavity,
- said platens being disposed one on each side of said film when said developing station is in its operative position relative to said film path, said platens being out of contact with said film when said cavity is open, and one of said platens being in contact with the side of said film opposite said emulsion when said cavity is closed, and

control means interconnecting said drive means and said actuator means to interdependently control:

1. said drive means to move said developing station to and from its operative position relative to said film path, and
2. said actuator means to open and close said cavity.

3,856,461

REPRODUCTION MACHINE FUSER

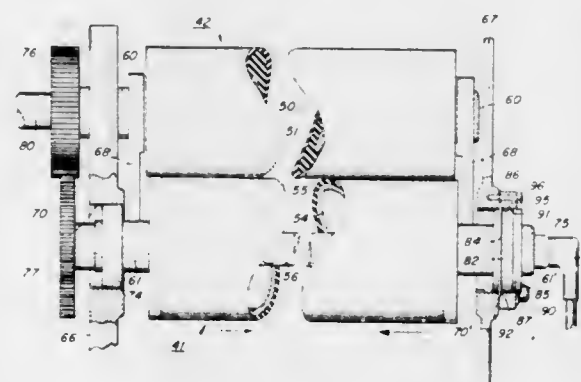
William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1973, Ser. No. 407,682

Int. Cl. G03g 5/00; H05b 3/10

U.S. Cl. 432-60

5 Claims



1. In a reproduction machine for producing copies of documents, the machine including a fuser for fixing the copy images developed, the fuser having cooperating pressure and heated fusing rolls forming therebetween a nip through which the copies to be fused pass, the improvement comprising:

- bearing means supporting said fuser roll for rotation, said bearing means being movable in an axial direction to permit said fuser roll to be shifted axially relative to said pressure roll whereby to offset spot wear on the surface of said fuser roll; and
- locking means for releasably locking said bearing means and said fuser roll in selected position.

3,856,462

REPRODUCTION MACHINE FUSER

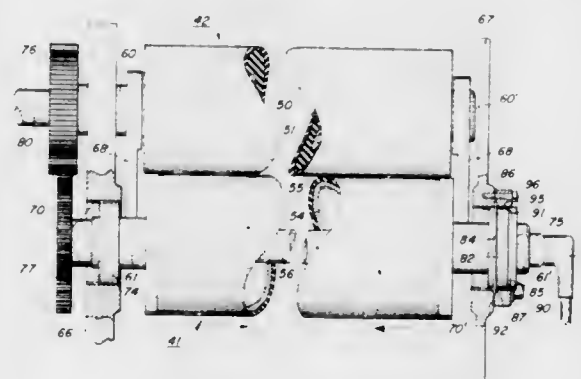
Karl J. Mueller, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1973, Ser. No. 407,683

Int. Cl. G03g 5/00; H05b 3/10

U.S. Cl. 432-60

4 Claims



1. In a reproduction machine for producing copies of documents, said machine having a fuser for fixing the copy images developed, said fuser having cooperating pressure and heated fusing rolls forming therebetween a nip through which copies to be fused pass, the improvement comprising means supporting said fusing roll for a shift in an axial direction relative to said pressure roll from one relatively permanent operating position to a second relatively permanent operating position whereby to permit the surface of said fusing roll to be displaced to a new position rela-

tive to said pressure roll to offset uneven wear on the surface of said fusing roll.

3,856,463

INCLINED FURNACE FOR CALCINATION AND SINTERING OF MATERIAL PARTICULARLY SPLINT LIMESTONE

Karl Beckenbach, Meererbusch 1, Eschenweg 2, Dusseldorf, Germany

Filed Sept. 28, 1973, Ser. No. 401,698

Claims priority, application Germany, Sept. 29, 1972, 2247785

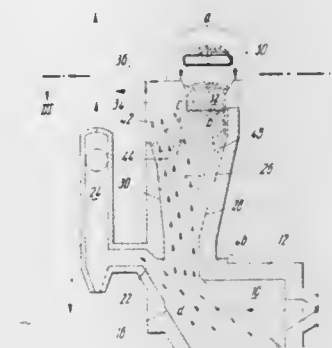
Int. Cl. F27b 1/00

U.S. Cl. 432-96

4 Claims

1. A furnace for calcining and sintering material, particularly split-limestone material, comprising a firing chamber defined by a slopping hearth having upper and lower ends, a dome-like roof, lateral walls and a wall opposite said hearth; at least one burner located in said chamber wall opposite said hearth; means defining orifice means adjacent said upper end of said hearth; a recuperator connected to said firing chamber through said orifice means; vertical inlet and outlet shafts for material to be treated located at said ends of said hearth and laterally staggered relative to each other, each said shaft being defined by a pair of opposed long walls and a pair of opposed short walls, at least said long walls of said inlet shaft diverging upwardly above said orifice means, and said long and short walls of said inlet shaft defining an inlet shaft top opening

having opposed lateral portions; a pre-silo arranged to discharge material into one of said lateral portions of said inlet shaft opening; a gas collection chamber arranged in the other of said lateral portions of said inlet shaft opening, said other



lateral portion of said inlet shaft opening being on that side of the inlet shaft nearest said recuperator, and said inlet shaft forming a slopping surface at a level below said pre-silo for material issuing from said pre-silo; and a chimney communicating with said gas collection chamber.

3,856,464

METHOD OF MODIFYING KERATINOUS TEXTILES AND FIBRES AND PRODUCTS OBTAINED

Bryan Dobinson, Duxford, and Kenneth Winterbottom, Whittlesford, both of England, assignors to Ciba-Geigy AG, Basle, Switzerland

Continuation of Ser. No. 205,398, Dec. 6, 1971, abandoned.

This application Aug. 31, 1973, Ser. No. 393,693

Claims priority, application Great Britain, Dec. 10, 1970, 58787

Int. Cl. D06m 3/00

U.S. Cl. 8-127.5

17 Claims

1. A process for modifying keratinous material which comprises

1. treating the material with a polyurethane or polythiourethane containing at least two mercaptan (-SH) groups per molecule, and
2. curing the polyurethane or polythiourethane on the material.

3,856,465

LEAK DETECTION COATING FOR AIRCRAFT FLEXIBLE FUEL CELLS

David J. Lipscomb, Smyrna, Ga., assignor to Lockheed Aircraft Corporation, Los Angeles, Calif.

Filed May 17, 1973, Ser. No. 361,239

Int. Cl. G01n 21/16

U.S. Cl. 23-230 L

7 Claims

1. A leak detection coating for flexible fuel cells in aircraft comprising a batch of homogeneous mixture stored in an air-tight container until ready for use, said mixture consisting essentially of equal parts of a solvent and rubber cement and approximately 1 to 1.2 ounces per gallon of coating desired of an oil soluble dye selected from the AZO and Anthraquinone types.

3,856,466

FLUID IMPURITY ANALYZER

Harry M. Crawford, Port Murray, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

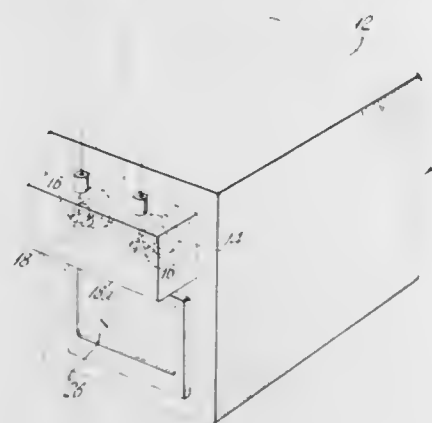
Continuation of Ser. No. 103,766, Jan. 4, 1971, abandoned.

This application May 3, 1972, Ser. No. 250,086

Int. Cl. G01n 29/02, 33/18

U.S. Cl. 23-230 R

11 Claims



1. A method for determining the organic impurity content in a fluid comprising the steps of:

- a. mixing a sample of said fluid with an organic solvent, whereby a two-phase liquid mixture is formed including an impurity-containing organic phase;
- b. extracting a sample of the organic phase containing the organic impurity;
- c. disposing an amount of the extracted sample on at least a first crystal having a predetermined resonant frequency and operably connected with first oscillator circuit means;

d. providing second oscillator circuit means having a predetermined resonant frequency; and

e. determining the amount of organic impurity in said organic solvent as a function of the difference in frequency between said first and second oscillator circuit means.

3,856,467

CUMULATIVE THERMAL DETECTOR

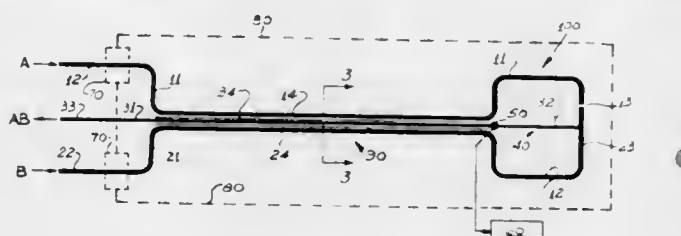
Patrick Picker, Sherbrooke, Quebec, Canada. Assignor: Université de Sherbrooke

Filed June 5, 1972, Ser. No. 259,630

Int. Cl. G01k 17/02; G01n 33/00

U.S. Cl. 23-230 R

7 Claims



1. A thermal detector for studying thermal properties of mixing reactants comprising first and second reactant duct means for circulating a first and a second reactant, each reactant duct means having an inlet end, an outlet end and a heat exchange region therebetween; a mixture duct means for circulating the product of said reactants having an inlet end, an outlet end, and a heat exchange region therebetween, said mixture duct means also defining a reactants mixing region located between its inlet end and its heat exchange region; and the outlet ends of said reactant duct means merging into the inlet end of said mixture duct means; the three heat exchange regions of said reactant duct means and mixture duct means being closely coupled and defining a counter-current heat exchanger wherein said reactants circulate in the first direction through said reactants duct means while said product circulates in the opposite direction through said mixture duct means; thermal insulation means for insulating said reactant and mixture duct means from the environment, temperature sensing means for detecting the temperature of said product, and thermostating means for controlling the temperature of said reactants at the inlet ends of said first and second reactant duct means.

3,856,468

METHOD FOR DETERMINING FLUID SATURATIONS IN PETROLEUM RESERVOIRS

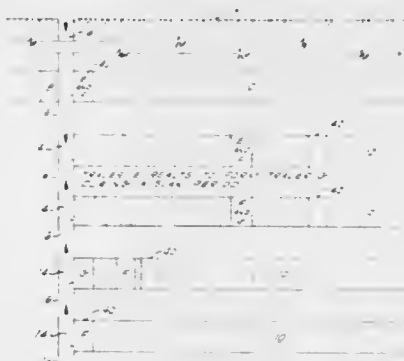
Theodore E. Keller, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 7, 1972, Ser. No. 312,814

Int. Cl. E21b 43/16; G01n 33/24

U.S. Cl. 23-230 EP

12 Claims



1. A method for measuring the relative saturation of immiscible fluids present in a subterranean formation penetrated by

a well in communication therewith and wherein at least one of said fluids is mobile, which comprises:

injecting a carrier fluid into said formation, said carrier fluid being miscible with one of said mobile fluids and immiscible with at least one of the other fluids and containing low concentrations of (1) a precursor that partitions between the carrier fluid and the immiscible fluid and that reacts in the formation to form a first tracer material that partitions between the carrier fluid and the immiscible fluid differently than the precursor and (2) a second substantially non-reactive tracer material that partitions between the carrier fluid and the immiscible fluid to about the same degree as said precursor;

displacing said carrier fluid into said formation; shutting in said well for a time period sufficient to permit the precursor to react to form detectable quantities of said first tracer material; producing said well to recover fluids from said formation; analyzing said recovered fluids to determine the concentrations of said first and second tracer materials in said fluids as a function of the volume of said fluids produced from said formation; and

applying chromatographic principles to determine the relative saturation of the immiscible fluids present in said formation.

3,856,469

INTERFERANT REMOVAL FROM AMPHETAMINE IMMUNOASSAY

Richard S. Schneider, Sunnyvale, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Corporation, Palo Alto, Calif.

Filed Jan. 2, 1973, Ser. No. 320,374

Int. Cl. G01n 23/00, 31/02, 33/16

U.S. Cl. 23-230 B

10 Claims

1. In an assay method for determining aralkyl amines, wherein 1-aralkyl β -hydroxyamines interfere, the improvement which comprises: treating the sample to be assayed at a pH greater than about 8 with an amount of aqueous periodate solution sufficient to remove the hydroxyamine interferant wherein said pH is maintained by the presence of an ammonium hydroxide.

3,856,470

ROTOR APPARATUS

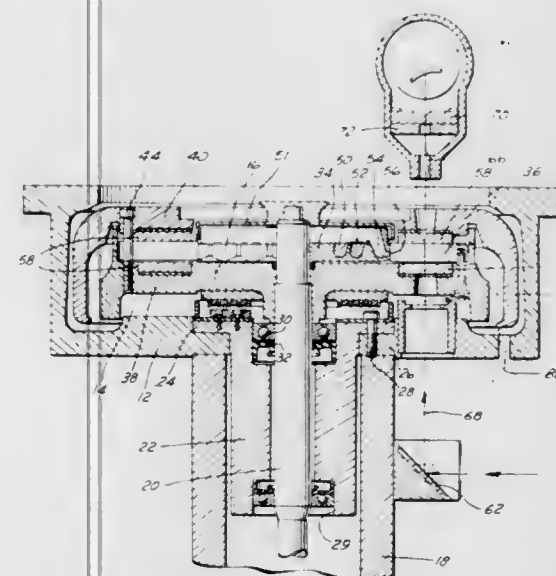
Herbert M. Cullis, Silver Spring; Willard E. Fordham, Laurel, and Charles I. Soodak, Silver Spring, all of Md., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 10, 1973, Ser. No. 322,323

Int. Cl. F25b 21/02; B04b 15/02; G01n 1/10, 21/00

U.S. Cl. 23-253 R

3 Claims



1. In a photometric solution analyzer comprising a power-driven rotor assembly which defines a multiplicity of sample

analysis chambers for accepting liquid samples to be analyzed, said rotor assembly having transparent walls adjacent said sample analysis chambers for permitting the passage of light therethrough and a multiplicity of chambers adapted to retain liquid samples and reactants when said rotor assembly is at rest, and to release said liquid samples and reactants to said sample analysis chambers when said rotor is rotated; and stationary photometric means for detecting changes in the analysis chambers by passing a beam of light through the transparent walls of said rotor assembly, the improvement comprising:

electric powered temperature adjusting means mounted on, and rotatable with, said photometric assembly; electric output producing temperature sensing means mounted on, and rotatable with, said photometric rotor assembly; and means coupled to said temperature adjusting means and said temperature sensing means for controlling the temperature of said photometric rotor assembly at a selected value.

3,856,471

AMINO ACID ANALYSIS

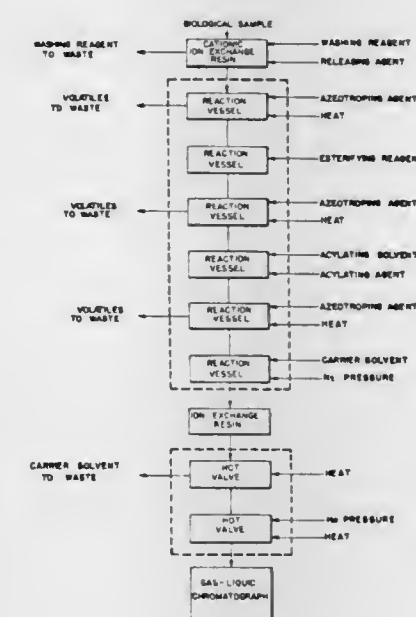
Milton Winitz, Palo Alto, and Jack Graff, Santa Clara, both of Calif., assignors to The United States National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 5, 1968, Ser. No. 750,235

Int. Cl. B01d 15/08; G01n 31/08, 33/16

U.S. Cl. 23-253 R

2 Claims



1. Apparatus for qualitatively and quantitatively determining the amino acid contents of a sample, which apparatus comprises:

a reaction vessel for holding a group of amino acids from a sample, means for supplying to said vessel in serial order (a) an azeotroping agent, (b) an esterifying reagent, and (c) azeotroping agent to convert said amino acids to the N-acyl amino acid alkyl ester derivatives thereof, means for heating said reaction vessel to remove solvents and water, means for supplying to said vessel a carrier solvent for said entire N-acyl amino acid alkyl ester mixture, heating chamber means to which said mixture is transferred from said reaction vessel, means for connecting said chamber means to waste while said carrier solvent is vaporized, means for thereafter connecting said chamber means to the inlet of a gas chromatographic device and to a source of

carrier gas for transferring said amino acid derivatives thereto in the gaseous state, and a control device connected to each of said above-mentioned means for automatically effecting sequential timed operation of each of said above-mentioned means.

3,856,472

APPARATUS FOR THE GETTERING OF SEMICONDUCTORS

Samuel Schweitzer, Birr, and Georg Ziffermayer, Wittingen, both of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

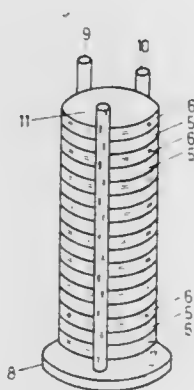
Filed Dec. 19, 1972, Ser. No. 316,520

Claims priority, application Switzerland, Dec. 20, 1971, 18431/71

Int. Cl. H01k 9/00; H01j 7/18

U.S. Cl. 23—252

3 Claims



1. A semi-conductor gettering assembly comprising a stack of semi-conductor discs separated from each other by discs of the same size interposed respectively therebetween made from a getter material and which lie in contact with the faces of said semi-conductor discs, said getter material being selected from the group consisting of quartz glass, silicon nitride and boron nitride, and a structure made of the same material as said getter discs supporting said stacked discs comprising a base plate and at least three upstanding rods thereon distributed about a vertical axis which surround and engage the periphery of the discs.

3,856,473

APPARATUS FOR MEASURING NO_x CONCENTRATIONS

Glenn W. Dillon, Newton Centre, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 26, 1974, Ser. No. 445,877

Int. Cl. G01n 21/26; H01j 39/12

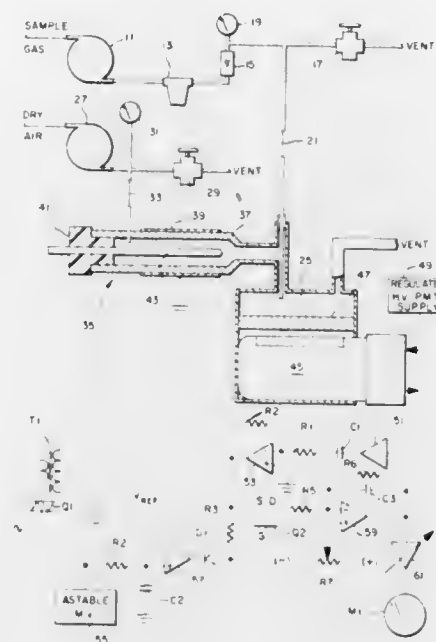
U.S. Cl. 23—254 E

12 Claims

1. Apparatus for analyzing a gaseous sample flow to measure the concentration of a constituent of the flow which reacts in a chemiluminescent manner with ozone, said apparatus comprising:

a sample chamber;
photodetector means for detecting light in said chamber and generating a signal which is responsive thereto;
means for providing a continuous flow of the gaseous sample into the chamber;
means for providing a continuous flow of a reaction gas including oxygen;
means, including an electrically energizable ozonator, for coupling the flow of reaction gas to said chamber for reaction with the sample gas flow, said ozonator being operative, when energized, to convert at least a portion of the oxygen in said reaction gas flow to ozone;
means for periodically energizing said ozonator; and
means for measuring the component of the photodetector

signal which varies periodically with the same frequency as the periodic energization of said ozonator, the measurement so obtained being indicative of the concentration of the reactive constituent in the gaseous sample.



3,856,474

BITUMEN EXTRACTION APPARATUS INCLUDING ENDLESS PERFORATE CONVEYOR AND PLURAL SOLVENT-SPRAY MEANS

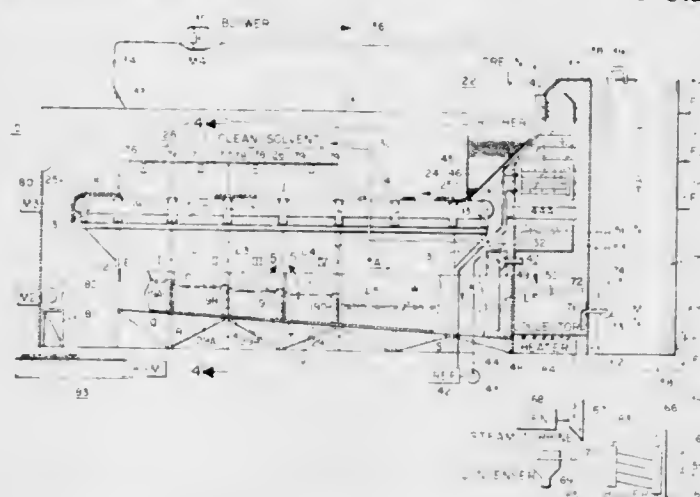
Tobe A. Pittman, 1517 Ninth St., Centerville, Utah 84014, and Jack L. Woods, 1409 Walker Bank Building, Ogden, Utah 84111

Filed Feb. 4, 1974, Ser. No. 439,442

Int. Cl. B01d 11/02; C10c 3/08

U.S. Cl. 23—267 R

3 Claims



1. Apparatus to effect the extraction of bitumen from bitumen-containing crushed ore, including, in combination: a series of fixed, mutually horizontally spaced, solvent spray means for spraying crushed ore with bitumen solvent; movably revolvable endless conveyor means proximately disposed underneath said solvent-spray means, having a feed end and a discharge end, and including an endless perforate conveyor belt for transporting a layer of crushed ore operatively past said solvent-spray means, for producing, as a downfall therefrom, a bitumen-solvent solution; a series of fixed, mutually horizontally spaced, depending walls forming respective zones including said spray means, respectively, said walls depending toward but being proximately spaced with respect to said endless conveyor belt, whereby to permit a layer of ore, carried by said endless conveyor belt, to pass in proximately underneath said walls; means for containing said solution disposed underneath said conveyor belt; said endless conveyor belt including upper and lower, oppositely traveling courses,

said containing means being disposed beneath both courses and including transverse means defining contiguous, solution-collection chambers constructed for a maximum fluid level which is progressively lower as one progresses from said discharge end of said endless conveyor means to said feed end thereof; means disposed essentially above said containing means for receiving and condensing solvent vapors from said solution, to form a condensate; means coupled to said receiving means for routing such condensed solvent back to at least one of said solvent-spray means; enclosure means surrounding said spraying means and said endless conveyor means for preventing escape of solvent vapors, beneath said enclosure means including a spent-ore exit opening disposed beneath said discharge end of said endless conveyor belt, blower means constructed and positioned proximate said opening to force solvent vapors away from said opening and within said enclosure means; and said enclosure means including a blower provided exhaust vent means disposed above said discharge end of said endless conveyor belt for exhausting solvent fumes back to said receiving and condensing means.

3,856,475

AN APPARATUS FOR TRANSFERRING A GAS BETWEEN TWO LIQUIDS

Guenter H. Marx, Engadiner Str. 4, Munich, Germany

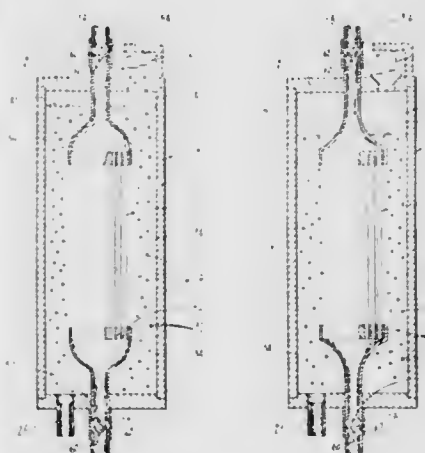
Filed Dec. 10, 1970, Ser. No. 96,865

Claims priority, application Germany, Dec. 17, 1969, 1963319

Int. Cl. A61m 1/03

U.S. Cl. 23—258.5

22 Claims



1. A heart-lung combination comprising: a housing containing a liquid which has a high solubility for oxygen and into which an oxygen containing gas is introduced, a plurality of relatively long, small diameter tubes constructed of a resilient, flexible, gas pervious material for the transfer of oxygen to blood flowing in the tubes, the tubes being disposed in the housing and in fluid communication through blood inlet and blood outlet means with the exterior of the housing for connection to a circulatory system, first valve means communicating the housing interior with the exterior, and check valve means disposed in the blood inlet and blood outlet means to control the flow of blood, means to provide pressurization of the liquid in the housing and means for selectively alternately opening and closing the first valve means whereby the tubes are alternately compressed and expanded and thereby alternately draw blood in a flow direction from the housing exterior into the tubes and force blood in the same direction of flow from the tubes to the housing exterior.

3,856,476

HIGH VELOCITY WET ELECTROSTATIC PRECIPITATION FOR REMOVING GASEOUS AND PARTICULATE CONTAMINANTS

Alexander P. De Seversky, New York, N.Y., assignor to Seversky Electronatom Corporation, New York, N.Y.

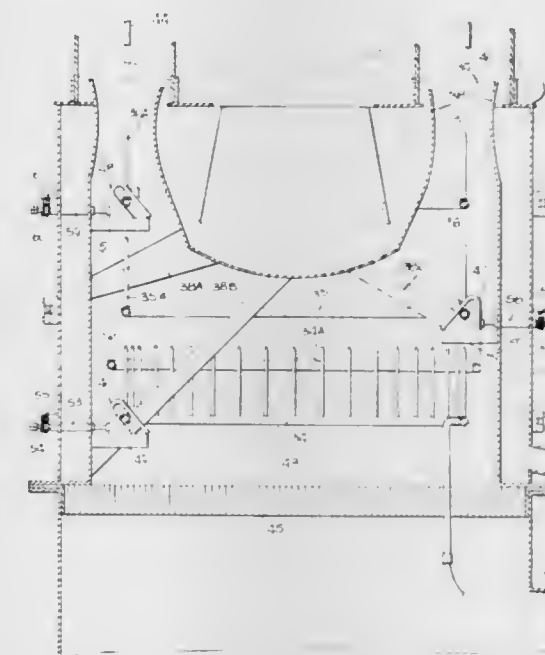
Continuation-in-part of Ser. No. 723,810, April 24, 1968.

This application Jan. 31, 1972, Ser. No. 222,227

Int. Cl. B03c 3/01, 3/16, 3/78

U.S. Cl. 23—284

17 Claims



1. An electrostatic wet precipitator adapted to purify a gaseous stream containing gaseous as well as particulate contaminants before the stream is discharged into the atmosphere, said precipitator comprising:

- a. concentrically-arranged collector tubes defining at least one vertically-disposed annular gas passage having an inlet at the lower end of the tubes and an outlet at the upper end thereof, said outlet leading to the atmosphere;
- b. means to produce downwardly-flowing films of liquid on the complementary surfaces of adjacent tubes which line said passage thereby to form liquid collectors;
- c. a discharge-electrode structure disposed within said passage in spaced relation to said liquid collectors;
- d. inlet means including a reaction chamber disposed below said collector tubes followed by a Venturi opening to feed said contaminated gaseous stream at a relatively high velocity into the inlet of each passage to produce an expanding gas which flows upwardly through said passage in counter-current relationship to said liquid films to force said films against said surfaces to maintain the uniformity thereof;
- e. means to apply a high voltage between said discharge electrode structure and said liquid collectors to ionize the particulate contaminants in the gaseous stream flowing through said passage to cause migration of said particulate contaminants toward said liquid collectors and thereby purify the stream;
- f. means in said reaction chamber to disperse reagents therein to react with said gaseous contaminant to produce reaction products in particulate form which are ionized and precipitated in said passage along with said particulate contaminants in said stream;
- g. adjustable means to optimize the amount of reagents dispersed in said chamber relative to the existing concentration of the gaseous contaminant to an extent whereby substantially all of said gaseous contaminant is caused to react with said reagents and the stream discharged into the atmosphere through said outlet is substantially free both of said reagents or said gaseous contaminant, and
- h. means separate from said reaction chamber to drain said liquid collectors and thereby recover said reaction products.

3,856,477

**PROCESS FOR REFINING ZIRCONIUM
TETRACHLORIDE CONTAINING HAFNIUM
TETRACHLORIDE**

Hiroshi Ishizuka, 19-2 Ebara-6-chome, Tokyo, Japan

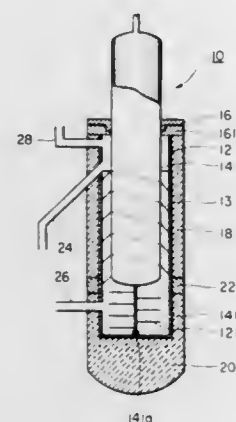
Filed Dec. 27, 1971, Ser. No. 212,170

Claims priority, application Japan, Dec. 28, 1970, 45-119693; Nov. 20, 1971, 46-92751; Dec. 6, 1971, 46-97835

Int. Cl. B01d 3/30, 7/00

U.S. Cl. 23-294

4 Claims



1. A process for refining zirconium tetrachloride containing hafnium tetrachloride by collecting refined zirconium tetrachloride at the lower end of a thermal distillation column, while exhausting hafnium enriched zirconium tetrachloride from the upper end of the column, which process comprises the steps of maintaining one of two substantially vertical facing surfaces forming the distillation column at a uniform temperature higher than the sublimation temperature of zirconium tetrachloride while maintaining the other surface at a uniform temperature lower than the sublimation temperature; feeding vapor of crude zirconium tetrachloride to the distillation column in the space between the facing surfaces to condense zirconium tetrachloride at the lower temperature surface; scraping off the condensate from the lower temperature surface to cause at least a part of the condensate thus removed to contact the higher temperature surface for evaporation; causing a downward flow of the condensate while causing an upward flow of the vapor generated by said evaporation of said once deposited and scraped off condensate; repeating said condensation of the vapor due to contact with the lower temperature surface, scraping off the condensate and partial evaporation of the scraped condensate due to contact with the higher temperature surface; and causing sublimation of at least a part of the condensate collected at the lower end of the distillation column for further repeating said condensation and evaporation.

3,856,478

FE-MO-C-[CR] SINTERED ALLOYS FOR VALVE SEATS
Tokushige Iwata; Kiyooki Sakamoto; Teruo Nawata; Hiroyasu Endo; Masaru Nakano, all of Kyoto, and Hajime Murayama, Niigata, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,340

Claims priority, application Japan, Dec. 22, 1971, 46-104303

Int. Cl. C22c 39/14, 39/50, 33/02

U.S. Cl. 29-182

6 Claims

1. A ferrous sintered alloy valve seat having improved impact wear characteristics and having coated or having uniformly deposited on the engaging surfaces thereof stable, durable and self-lubricating protective oxide film securely bonded thereto, said surfaces and valve seat containing suitable voids therein adapted to retain said protective oxide film; said alloy consisting essentially of 0.4-2.0 weight percent carbon, 2-10 weight percent molybdenum in the form of

ferromolybdenum particles dispersed in the microscopic metallurgical structure, balance iron;
said alloy having a hardness value (HVN) of between about 111 and about 282;
said valve seat present a durable hot impact wear-resistant surface in contact with the valve associated therewith without promoting substantial wearing of said valve under heated conditions.

3,856,479

**CONTINUOUSLY CAST PLATE WITH TEXTURED
SURFACE**

Clement Roger Howle, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

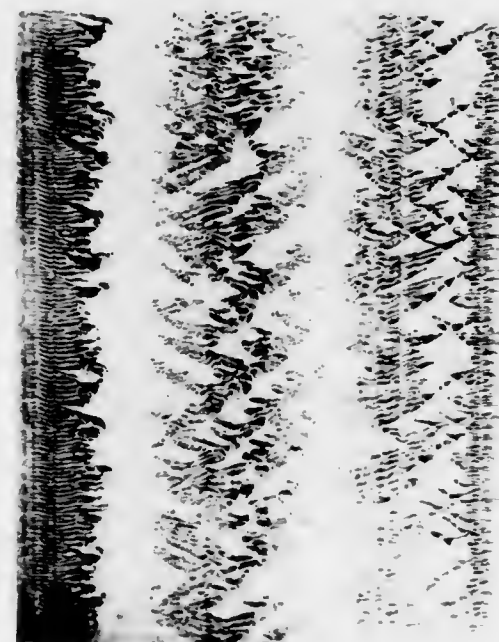
Division of Ser. No. 23,205, March 27, 1970, Pat. No.

3,697,393. This application Apr. 3, 1972, Ser. No. 240,873

Int. Cl. B22c 7/00

U.S. Cl. 29-183

3 Claims



1. Improved continuously cast decorative plate not over 1 inch in thickness composed of an aluminum alloy consisting essentially of 3 to 13 percent silicon, balance essentially aluminum, characterized by a substantially uniform internal structure throughout except for a surface region including a textured surface having multiplicities of outer and inner faces and by different constituent distribution patterns in an aluminum matrix associated with said faces such as to provide a repeating occurrence of each respective pattern associated with the respective inner and outer faces such that the pattern in the region of the outer faces is fine and closely spaced whereas that in the region of the inner faces is coarse and widely spaced so as to produce, in response to integral color anodic coating treatments, different color-shade development such that said outer faces produce a darker color-shade effect and the inner faces produce a different and lighter effect, which effects occur repeatedly throughout said textured surface.

3,856,480

DIAMOND JOINED TO METAL

Donald R. Johnson, and James R. Sawers, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1973, Ser. No. 333,144

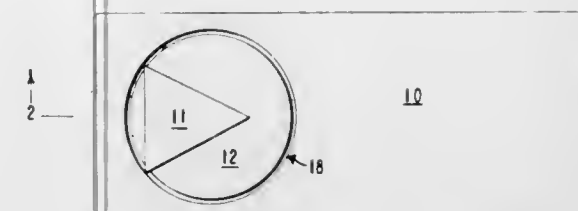
Int. Cl. B32b 15/04

U.S. Cl. 29-195

5 Claims

1. An article of manufacture comprising: a metal shank; an alloy selected from the group consisting of gold-tantalum alloys containing from about 1 to about 25 percent by weight of tantalum, and gold-niobium alloys containing from about 1

to about 10 percent by weight of niobium; an inert powdered material dispersed in at least a portion of said alloy; and a



diamond, adhered to said metal shank by said alloy at all opposed surfaces of said metal shank and said diamond.

3,856,481

METHOD OF MAKING PLASTIC COAL BRIQUETTES

Grigory Mikhailovich Grechanichenko, Pushkinsky vyezd, 7, kv. 16; Evgeny Savelievich Gusinsky, ulitsa Lopanskaya, 34; Anatoly Semenovich Petrukhno, ploschad Rozy Ljuxemberg, 5, kv. 26; and Evgeny Vladimirovich Dobrovolsky, Pushkinsky vyezd, 7, kv. 8, all of Kharkov, U.S.S.R.

Filed Nov. 21, 1973, Ser. No. 418,036

Int. Cl. C10I 5/00, 5/10

U.S. Cl. 44-10 H

2 Claims

1. A method of making plastic coal briquettes from gas coals and poorly caking coals, comprising the steps of: heating the coals to a softening temperature thereof; maintaining the heated coals under approximately isothermal conditions; pressure forming a plastic coal strip having a thickness which is not less than the required thickness of a plastic coal briquette to be made from the heated coals; pressure forming individual plastic coal briquettes from the pressure formed coal strip.

3,856,482

DEGASSING OF BRINE

Robert La Fortune, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 172,239, Aug. 16, 1971, abandoned.

This application Dec. 18, 1972, Ser. No. 316,407

Int. Cl. B01d 19/00, 39/04

U.S. Cl. 55-36

1 Claim

1. The method of clarifying brine clouded by very finely divided and substantially uniformly dispersed incipient gas bubbles, which method comprises:

- passing the clouded brine into a fibrous filter element disposed within a filter zone, said element having a fiber density sufficient to provide a pressure drop for said brine across said filter element of not substantially below about 20 p.s.i.g., and containing in the element natural fibers, synthetic fibers, or both maintained in said filter zone at least in part by resin binding, wherein said fibers are selected from the group consisting of natural wool, cellulose, and rayon, and said fibers are bound together by a synthetic, water-insoluble resin;
- withdrawing flowing, clarified and gas-depleted brine from the downstream region of said filter zone, said clarified brine being at a pressure of not substantially less than about 20 p.s.i.g. below the pressure of said clouded brine entering said filter element; and
- permitting passage of gas from said filter zone and away from the resulting clarified brine flowing away from said filter zone.

3,856,483

METHOD AND DEVICE FOR DEGASSING LIQUIDS

Hans Rumpf, Hansjakobstr. 12, 75 Karlsruhe; Kurt P. Leschonski, Claus Thal-Zellerfeld, and Helmar Schubert, Karlsruhe-Durlach, all of Germany, assignors to Hans Rumpf, Karlsruhe, Germany, by said Leschonski and said Schubert

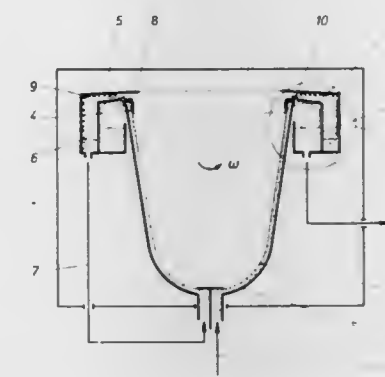
Filed Sept. 21, 1972, Ser. No. 291,031

Claims priority, application Germany, Sept. 21, 1971, 2147124

Int. Cl. B01d 19/00

U.S. Cl. 55-38

11 Claims



1. Method of degassing a liquid flowing in a film along the inner peripheral surface of a rotating centrifuge rotor, which comprises dividing the liquid, before it leaves the rotor, into a fraction having a low gas-bubble content and a fraction having a high gas-bubble content, separately removing the fraction having a high gas-bubble content, and separately removing the liquid fraction having the low gas-bubble content from the rotor in a manner to minimize the addition of further gas-bubbles thereto.

3,856,484

PROCESS FOR RECOVERING ETHYLENE OXIDE

Giacchino Cocuzza, Catania, and Benedetto Calcagno, Milan, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

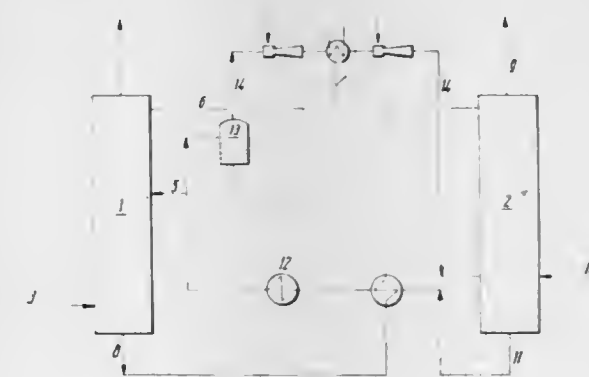
Filed Nov. 15, 1973, Ser. No. 416,136

Claims priority, application Italy, Nov. 30, 1972, 32275/72

Int. Cl. B01d 53/14

U.S. Cl. 55-48

7 Claims



1. A process for recovering ethylene oxide from a gaseous mixture containing it in quantities up to 3 percent by weight, using an aqueous solvent to absorb the gaseous mixture in an absorption region, stripping the enriched solvent with steam in a stripping region and recycling the lean solvent from the stripping region to the absorption region, characterized in that the lean recycled solvent is supplied in two flows, a main flow and a secondary flow, to two separate places in the absorption region, the main flow being supplied at a temperature equal to, or less than, 40° C and the secondary flow being substantially free from ethylene oxide and supplied at a temperature at least 15° C lower than the temperature of the main flow, the weight ratio between the main flow and secondary flow being kept at values of from about 2:1 to 5:1.

3,856,485

APPARATUS AND METHODS FOR TREATING EXHAUST GASES OF COMBUSTION

Henry J. Mansell, Davison, Mich., assignor to Meps, Inc., Flint, Mich.

Continuation-in-part of Ser. No. 684,751, Nov. 11, 1967, abandoned. This application Nov. 24, 1969, Ser. No. 879,457

Int. Cl. B01d 53/14, 53/04; F02b 13/10

U.S. Cl. 55-73

26 Claims



1. A method of reducing undesirable emissions caused by the combustion of hydrocarbon fuel, said method comprising introducing a mixture of fuel and air to a combustion chamber in a lean ratio such as to provide an excess of air sufficient to minimize the formation of carbon monoxide and to assure combustion of said fuel at a temperature in excess of about 1,450°F.; combusting said fuel in said chamber; exhausting the gases of combustion from said chamber; and quenching said gases to a temperature below about 1,450°F. substantially instantaneously upon their exhaust from said combustion chamber to inhibit the formation of oxides of nitrogen.

3,856,486

PNEUMATIC PRESSURE CONTROL SYSTEM

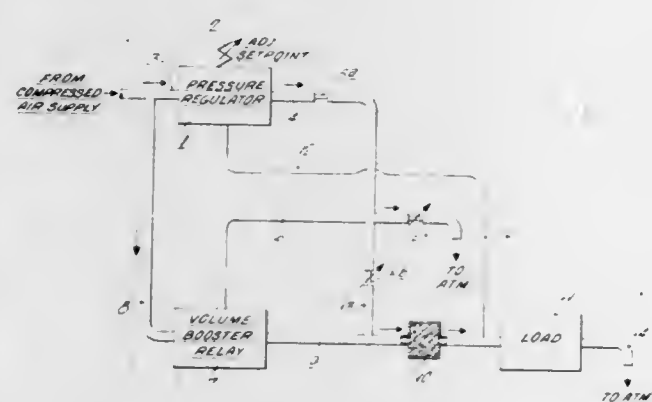
Robert C. C. Chang, Sao Paulo, Brazil, assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Jan. 24, 1974, Ser. No. 436,262

Int. Cl. G05d 16/00

U.S. Cl. 55-210

7 Claims



1. A pneumatic pressure control system for automatically controlling the pressure supplied to a load from an air supply, comprising a pressure regulator having a setpoint and arranged and connected to receive air from said air supply; a volume booster relay connected and receiving air from said air supply and supplying output air to a load, means connected to said regulator and relay for utilizing the output of said regulator to control the output pressure of said relay, and means connected adjacent said load to said regulator for feeding back a pressure signal from upstream said load to said regulator, for comparison with said setpoint to produce a signal.

3,856,487

GAS SCRUBBER

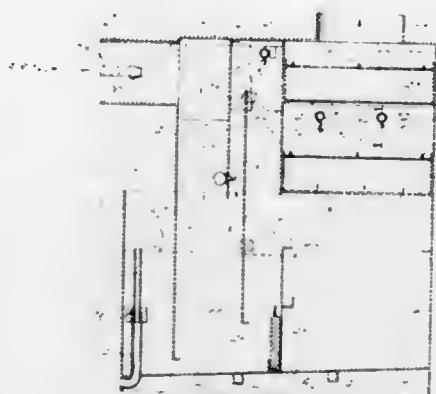
Manuel Perez, River Vale, N.J., assignor to Aerosols Control Corporation, Englewood, N.J.

Filed Aug. 11, 1972, Ser. No. 279,848

Int. Cl. B01d 47/06

U.S. Cl. 55-223

8 Claims



1. Gas scrubbing apparatus comprising a housing having a gas inlet and a gas outlet; baffle means in said housing forming a passageway there-through connecting the gas inlet and the gas outlet, said baffle means comprising fixed baffle means connected to said housing and at least one movable baffle spaced from said fixed baffle which defines with said fixed baffle means an adjustable throat portion of reduced cross-sectional area in said passageway; means for adjusting said movable baffle;

spray means disposed in said throat portion in a plane substantially perpendicular to the direction of gas flow for producing a liquid spray across said throat portion trans-versing the direction of gas flow;

a liquid-filled sump portion in said housing; and sump filter screen means dividing said sump portion into at least a first sump section disposed beneath said gas inlet and said throat portion and a second sump section coupled to said spray means for supplying spray liquid thereto,

whereby gas passing through said throat portion from the gas inlet to the gas outlet is increased in velocity and turbulence and scrubbed by the liquid spray and said sump filter screen means is operable to prevent particulates and other contaminants falling into said first sump section from entering said second sump section, to thereby prevent clogging of said spray means.

3,856,488

ELECTRIC VACUUM CLEANER

Satoru Kato; Kouki Fukuda, and Kuninobu Nannichi, all of Ojima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

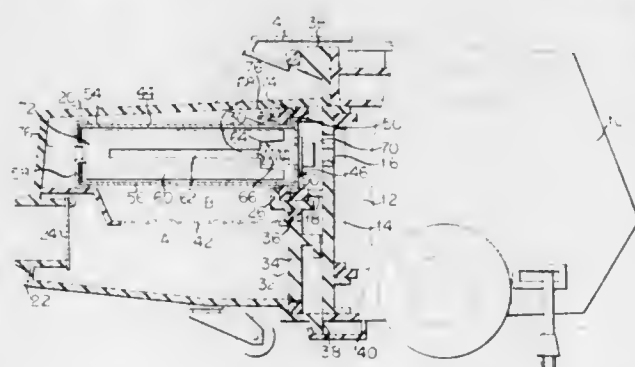
Filed Sept. 4, 1973, Ser. No. 394,113

Claims priority, application Japan, Sept. 5, 1972, 47-102958; Sept. 5, 1972, 47-102960

Int. Cl. B01d 46/04

U.S. Cl. 55-300

4 Claims



1. An electric cleaner device comprising, in combination, a housing including an exhaust port and an electrically operated

blower disposed therein, a dust collector casing detachably engaged by said housing, said dust collector casing including a dust suction port and an opening for dumping dust, a tubular filter unit having end faces secured to an opening in a partition of said dust collector casing so as to be inserted into and pulled out from the latter through the interface at which said dust collector casing engages said housing, said filter unit having a vent opening formed only on that end face thereof adjacent to said interface of said dust collector casing and said housing, an annular packing element secured to the outer periphery of said end face of said filter unit, and a pushing element on said housing capable of engaging said packing element in the assembled position, said filter unit being sealed in said dust collector casing by having said packing element abutting against said dust collector casing while said pushing element pushes against the packing element to maintain the hermetic seal between said packing element and said dust collector casing.

3,856,489

HOLDER FOR ANNULAR FILTER

Edward J. Vokral, Hinsdale, Ill., assignor to Evo Corporation, Hinsdale, Ill.

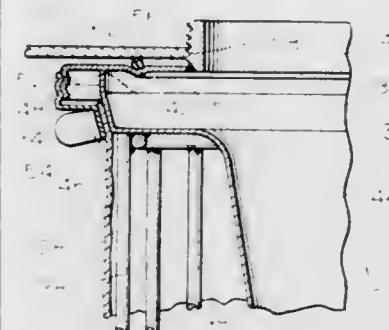
Filed June 22, 1973, Ser. No. 372,523

Int. Cl. B01d 46/02

U.S. Cl. 55-379

11 Claims

8. A filter holder unit comprising: an annular filter;



body means for supporting the annular filter, said body means having a first conical section for receiving the annular filter;

a sealing annulus having a second conical section for sealing the annular filter to the first conical section of said body means;

means for drawing the second conical section of said sealing annulus toward the first conical section of said body means in such manner as to clamp the annular filter between the first conical section of said body means and the second conical section of said sealing annulus and form a continuous seal around the annular filter; and wherein

the first conical section of said body means has a sealing lip for engaging said drawing means and forming a seal therewith.

3,856,490

BAFFLE FILTERS FOR CARBURETORS

Leo Heintzelman, 4990 Burlingame S.W., Wyoming, Mich. 49509

Filed Aug. 27, 1973, Ser. No. 392,042

Int. Cl. B01d 50/00

U.S. Cl. 55-420

6 Claims

1. In an air regulator for a carburetor, including, in combination, a band of a given height, forming an enclosure a plurality of holes extending through said band so that air may freely pass therethrough, means forming an air trap for air passing through at least some of said holes in said band to restrict the flow of air into the enclosure formed by said band, said air trap means including a plurality of baffle plates movably mounted within said band for movement between a closed position,

blocking air movement through said air trap, and an open position, permitting air movement through said air trap, and means for biasing said baffle plates in a closed position so that



the baffle plates are opened by an increase in vacuum pressure in the carburetor and closed when the vacuum pressure within the carburetor drops.

3,856,491

AIR FILTER AND AIR FILTERING SYSTEM

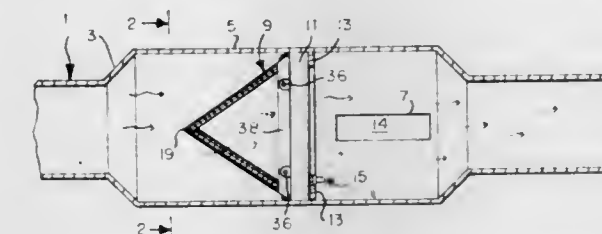
Charles Dietrich, 1794 Los Gatos-Almaden Rd., San Jose, Calif. 95124

Filed June 7, 1973, Ser. No. 367,795

Int. Cl. B01d 46/16

U.S. Cl. 55-478

8 Claims



1. An improved and foldable air filter, comprising:

1. an inflatable tube which when inflated defines a polygon having at least four sides;

2. an orifice communicating with the interior of said tube for inflating and deflating said tube; and

3. a plurality of triangular shaped filter elements in a number equal to the number of sides of said polygon, each triangular shaped filter element having the base thereof of the same length as a side of said polygon and said base including means for attaching said base to said side, the adjacent legs of adjacent of said triangular shaped filter elements being bendably attached to one another, by attachment material sufficiently flexible so that the filter can be folded said triangular shaped filter elements being of such a size that the apexes of said triangular shaped filter elements coincide.

3,856,492

HYDRATE FORMING IN WATER DESALINATION

Donald L. Klass, Barrington, Ill., assignor to The Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 880,734, Nov. 28, 1969, abandoned. This application May 5, 1972, Ser. No. 250,791

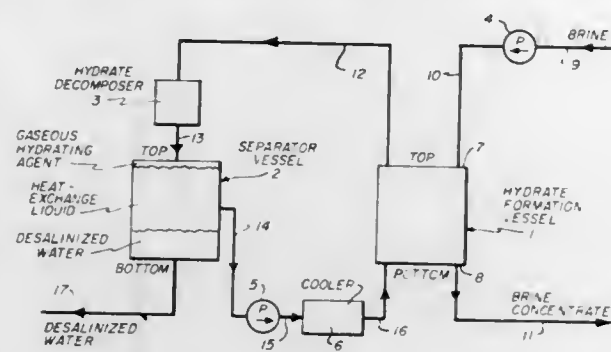
Int. Cl. B01d 9/04

U.S. Cl. 62-58

14 Claims

1. A process for water desalinization comprising the steps of: commingling in a hydrate formation zone at a temperature above ice formation, brine and a heat-exchange liquid which is substantially immiscible with brine and water, has a specific gravity different from the specific gravities of brine, water and the range therebetween and has a dissolved gaseous hydrating agent therein, said hydrating agent being capable of forming a solid hydrate having a specific gravity on the same side of the specific gravity of both water and brine as the specific gravity of said heat-exchange liquid and being substantially insoluble in said heat-exchange liquid; adjusting temperature, pressure

or a combination thereof to form a solid hydrate and a portion of the heat of hydration being absorbed by said heat-exchange liquid; withdrawing concentrated brine from said hydrate



formation zone separate from said heat-exchange liquid and solid hydrate; withdrawing said heat-exchange liquid and said solid hydrate from said hydrate formation zone to a hydrate decomposition zone; decomposing said solid hydrate, aided by said heat of hydration being transferred directly from said heat-exchange liquid, in said decomposition zone directly into water and gaseous hydrating agent; separating said heat-exchange liquid containing gaseous hydrating agent dissolved therein and desalinized water; and all of the process being conducted at temperatures above ice formation.

3,856,493

ENERGY RECOVERY SYSTEM FOR OIL INJECTED SCREW COMPRESSORS

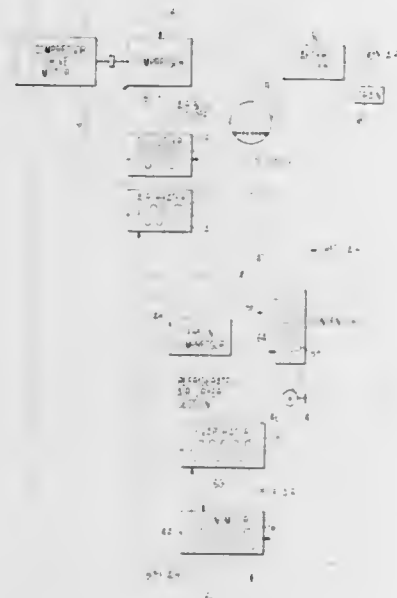
Clifford T. Bulkley, Glastonbury, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed May 8, 1973, Ser. No. 358,445

Int. Cl. F25d 9/00

U.S. Cl. 62-401

3 Claims



1. In an air compressor system for delivering compressed air at relatively high temperature and moisture free to a load downstream of said compressor, and wherein said air compressor has a working chamber subjected to a lubricating and sealing oil with a large amount of the heat of compression of the air being absorbed by the oil in comparison with that retained by the air and wherein said system includes an oil separator which receives the compressor discharge and separates the oil from the compressed air for recirculation of the oil via an oil return line to the compressor working chamber, and wherein a first heat exchanger is fluid coupled to the oil sump and receives the oil free compressor discharge air and cools the compressed air to effect condensation and includes a trap for removal of the moisture within the compressor discharge air prior to delivery of the moisture free compressed air to an end use device, the improvement comprising:

a second heat exchanger thermally coupling said oil within said return line between said oil separator and the air compressor working chamber to the oil free, moisture

free compressed discharge air downstream of the first heat exchanger for returning the heat lost to the compressed discharge air at the first heat exchanger to the moisture free compressed air from the separated oil, thereby increasing the overall thermal efficiency of the system.

3,856,494

LIGHT-CONDUCTING GLASS STRUCTURES MADE BY VAPORIZATION

Ichiro Kitano, Kobe, and Yoshiro Ikeda, Nishinomiya, both of Japan, assignors to Nippon Selfoc Kabushiki Kaisha, also known as Nippon Selfoc Co. Ltd., Tokyo-to, Japan

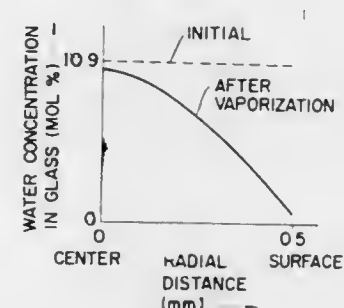
Continuation-in-part of Ser. No. 865,201, Oct. 9, 1969, abandoned. This application June 5, 1972, Ser. No. 259,780

Claims priority, application Japan, Oct. 19, 1968, 43-76229; Dec. 12, 1968, 43-91375

Int. Cl. C03c 15/00; C03b

U.S. Cl. 65-2

7 Claims



1. A method of producing a light-conducting glass structure having a center axis in the principal direction of light conduction and having a refractive index gradient which decreases continuously from the center axis toward the outer surface of said structure in any cross-section thereof perpendicular to the axis, which comprises: preparing a fiber glass body consisting essentially of a substantially homogeneous mixture of glass and water said water being dissolved in said body in a uniform concentration throughout and said body thereby having a uniform refractive index throughout and heating said glass body for a period of time sufficient to cause vaporization of said water from the surface of said glass body and to reduce the concentration of said water near the surface substantially more than the concentration of said water in the deeper regions of said glass body, whereby the concentration of said water in said glass body decreases continuously toward said surface from the center axis of the body, thereby due to the varying concentration of water the refractive index gradient continuously decreases in the body from said axis toward the surface.

3,856,495

METHOD OF PRODUCING LIGHTWEIGHT EXPANDED SLAG

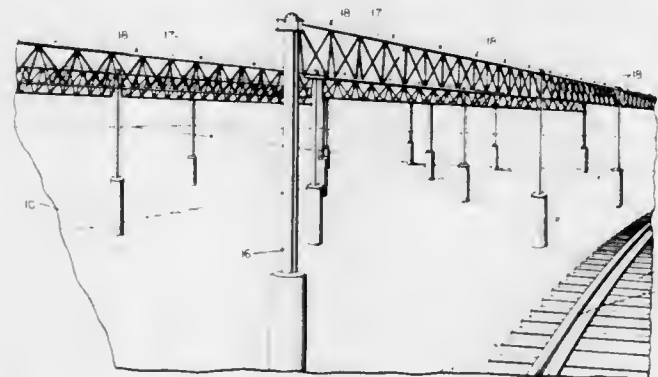
Sidney Brian Foxton, Cockeysville, Md., assignor to The Arundel Corporation, Baltimore, Md.

Filed Sept. 26, 1973, Ser. No. 400,921

Int. Cl. C03b 19/00; C21b 3/06

U.S. Cl. 65-19

3 Claims



1. The method of forming a lightweight expanded slag in an open pit, comprising:
a. thoroughly wetting the pit bottom by an overhead umbrella spray system with water,

- pouring the slag in a molten state rapidly into the pit so that by gravity flow the slag upon contacting the water is expanded,
- wetting the slag while pouring with the umbrella spray,
- scrubbing out during and after the pouring cycle the emissions from the expanding slag by means of said umbrella water sprays, and
- building multiple layers of slag superposed one upon another thoroughly soaking and cooling each under layer prior to pouring a superposed layer.

3,856,496

GLASS MELTING FURNACE AND PROCESS

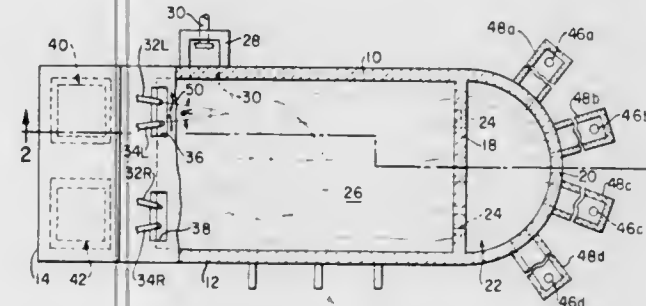
John D. Nesbitt, Chicago; Dennis H. Larson, Bridgeview, and Mark E. Fejer, Chicago, all of Ill., assignors to Leone International Sales Corporation, Bridgeton, N.J.

Filed Jan. 26, 1973, Ser. No. 326,593

Int. Cl. C03b 5/00, 5/24

U.S. Cl. 65-29

20 Claims



1. The method of preparing and operating a glass melting furnace, said furnace including burners for admitting at least one pair of fuel jets into a melting zone of the furnace for mixture with air which is fed into the melting zone through air ports, comprising incrementally adjusting the directions in which said fuel jets are emitted with respect to the air flowing through said ports, measuring the amounts of excess air and carbon monoxide in the flue gases from the furnace after each incremental adjustment of said fuel jets, monitoring the quality of the glass pulled from the furnace, and continuing to adjust incrementally the directions of said fuel jets until said excess air has been minimized with the level of carbon monoxide being maintained below a preselected level while maintaining acceptable glass quality to thereby increase the mixing of fuel from the burners with air flowing through said air ports.

3,856,497

METHOD OF MAKING CRYSTALLIZED GLASS

Merritt J. Hummel, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 239,335, March 29, 1972, abandoned. This application Mar. 22, 1973, Ser. No. 343,981

Int. Cl. C03b 29/00

U.S. Cl. 65-33

5 Claims

1. A method of making a crystallized glass article substantially free of microcracking, comprising:

- preparing a glass batch consisting essentially of (1) a silica, (2) an alumina, (3) lithium family glass batch ingredient consisting of a lithium salt, and (4) a zinc salt in an amount sufficient to provide a crystallized glass article from said glass batch having a ZnO content, percent by weight on an oxide weight basis of 1 to 3.8, which crystallized glass article obtained upon cooling a melt of said glass batch, forming and heat treating said article is characterized by the presence of microcracks in the surface thereof;
- adding to said glass batch an alkali metal salt wherein the alkali metal is a member of the group consisting of potassium, rubidium and cesium, said alkali metal salt being present in an amount sufficient to provide a glass article upon cooling a melt of said glass batch having a content

- of an oxide of the alkali metal of said salt, percent by weight on an oxide weight basis, of 0.15 to 2.50;
- melting the glass batch containing the ingredients set forth in (a) and (b) to form a glass melt;
- cooling said glass melt and subsequently therewith;
- forming a glass article having the following composition on an oxide weight basis:

Component	Percent by Weight On An Oxide Basis
SiO ₂	64-74
Al ₂ O ₃	15-23
Li ₂ O	3.3-4.8
ZnO	1-3.8
TiO ₂	1.2-2.4
ZrO ₂	0-2
F	0.15-0.40
R ₂ O, where R is Potassium rubidium or cesium	0.15-2.50

and

- heat treating said glass article at temperatures and for times sufficient to form crystals throughout the glass article and form a crystallized glass article having the surfaces thereof substantially free of microcracks.

3,856,498

GLASSWARE COATING APPARATUS AND PROCESS THEREFOR

Edward R. Campagna; Donald F. Hardy, both of Horseheads; Thomas W. Palmer, III; Barney R. Daugherty, both of Elmira Heights, and John R. Letawa, Horseheads, all of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 7, 1972, Ser. No. 232,455

Int. Cl. C03c 17/32

U.S. Cl. 65-60

4 Claims

1. A process for coating a glass container comprising: preheating the container to a temperature of from about 400° F to about 600° F; dipping the preheated container into a fluidized bed comprising a thermoplastic polymer having a particle size of from about 75 to about 20 mesh and a melt index of from about 1 to about 3 for from about 2 to 10 seconds; heating said dipped container at a temperature of from about 400° F to about 550° for from about 2 to about 8 minutes to form a contiguous thermoplastic surface on said glass container; and, cooling said coating and applying thereto a compound selected from the group consisting of wax, carnauba wax, silicone, and silicone-wax combinations.

3,856,499

SHAPING HEAT-SOFTENED GLASS SHEETS BY ROLL FORMING

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,920

Int. Cl. C03b 23/02

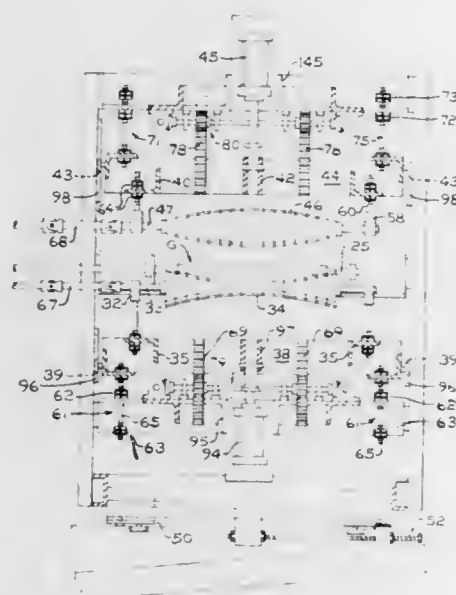
U.S. Cl. 65-104

5 Claims

1. A method of shaping deformable sheets by a roll forming method comprising moving a flat sheet while said sheet is at its deformation temperature between a pair of opposed sets of rotatable shaping rolls having complementary shaping surfaces and disposed one set above the other set when the sets are separated sufficiently to provide clearance for the entry of said flat sheet between said sets, and when said flat sheet is moving between said sets, providing relative movement between said sets toward one another until one of said sets of shaping rolls rotatably engages a portion of one surface of said sheet intermediate its opposite edges and the other of said sets of shaping

rolls rotatably engage a portion of the other surface of said sheet along its opposite edge portions, whereby said relatively moving sets apply a bending force tending to shape said sheet into conformity with said complementary shaping surfaces,

discontinuing said relative movement of said sets toward one another to discontinue the application of said bending force when said sets reach a position where they are separated by a predetermined distance slightly more than the thickness of said glass sheet,



continuing to move said sheet between said sets, disengaging said sheet from the set disposed above the other set to support said sheet on said other set in rolling engagement therewith, providing relative movement between said sets to separate said sets, and removing said shaped sheet from between said sets before it cools below an elevated temperature sufficient to impart at least a partial temper by subsequent rapid cooling.

3,856,500

POTASSIUM POLYPHOSPHATE FERTILIZERS CONTAINING MICRONUTRIENTS

Donald E. Cox, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 811,569, March 28, 1969, abandoned. This application Dec. 29, 1972, Ser. No. 319,137

Int. Cl. C05b 7/00

U.S. Cl. 71-34

11 Claims

1. A liquid fertilizer composition having suspended or dispersed in its liquid phase as a micronutrient source finely-divided heavy metal potassium polyphosphate solid particles, at least one dimension of said particles being in the range of from about 1 millimicron to about 10,000 millimicrons, the heavy metal content of said composition being from 0.1 to 30 percent by weight and the heavy metal content of said polyphosphate being from 5 to 40 percent by weight.

3,856,501

AGENT FOR CONTROLLING THE GROWTH OF PLANTS
Bernd Zeeh, Ludwigshafen; Johann Jung, Limburgerhof, and Costin Rentzea, Heidelberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Mar. 22, 1973, Ser. No. 343,627

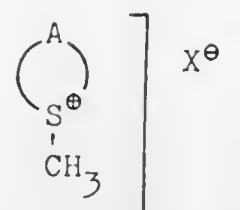
Claims priority, application Germany, Apr. 13, 1972, 2217697

Int. Cl. A01n 9/14

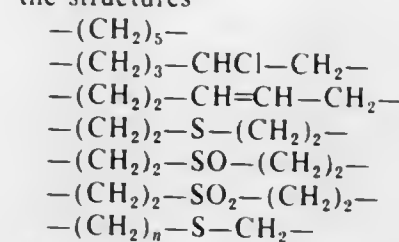
U.S. Cl. 71-76

10 Claims

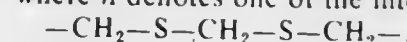
1. A process for stunting plant growth wherein the plants are treated with a plant growth stunting amount of a salt of the formula



where X⁻ denotes the anion of a non-phytotoxic acid and A denotes a chain which may be substituted by chlorine and has the structures



where n denotes one of the integers 2 and 3, or,



3,856,502

METHOD FOR STIMULATION OF PLANT GROWTH
Robert L. Noveroske, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1973, Ser. No. 386,928

Int. Cl. A01n 9/22

U.S. Cl. 71-77

5 Claims

1. A method for stimulating plant growth of plants in the presence or absence of fungal organisms which attack the foliar parts of plants which comprises applying to plants or plant parts a fungicidally effective and growth stimulating amount of a composition containing 2,3,5-trichloro-6-(methylsulfonyl)-4-cyanopyridine, as the active fungicide and growth stimulant, in intimate admixture with an inert carrier therefor.

3,856,503

HERBICIDAL METHOD AND COMPOSITIONS

Tony Cebalo, Indianapolis, Ind., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

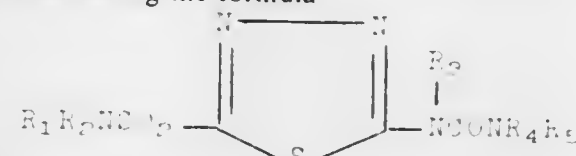
Continuation-in-part of Ser. No. 77,719, Oct. 2, 1970, Pat. No. 3,726,892, which is a continuation-in-part of Ser. No. 867,385, Oct. 17, 1969, abandoned. This application Jan. 22, 1973, Ser. No. 325,485

Int. Cl. A01n 9/12

U.S. Cl. 71-90

10 Claims

1. A method for the control of unwanted plants which comprises contacting such plants with a phytotoxic amount of a compound having the formula



wherein

R₁ is hydrogen or a substituted or unsubstituted lower alkyl radical, the substituents being selected from the class consisting of halo, hydroxy, cyano and lower alkoxy;

R₂ is hydrogen, a lower alkoxy radical, or a substituted or unsubstituted lower alkyl radical, the substituents being selected from the class consisting of halo, hydroxy, cyano and lower alkoxy, provided that R₁ and R₂ cannot both be hydrogen;

R₃ is hydrogen or a lower alkyl radical;

R₄ is hydrogen, a lower alkyl radical or a lower cycloalkyl radical; and

R₅ is hydrogen, a lower cycloalkyl radical, a lower alkoxy radical, or a substituted or unsubstituted lower alkyl radical, the substituents being selected from the class consisting of halo, hydroxy, cyano, or lower alkoxy, provided that R₄ and R₅ cannot both be hydrogen or a lower cycloalkyl radical;

and tautomers thereof wherein R₃ is hydrogen.

3,856,504

USE OF CERTAIN

N-(2,6-DIHALOBENZYLIDENE)-BENZYLAMINES AND CERTAIN N-(2,6-DIHALOBENZYLIDENE)PHENYLETHYLAMINES TO INCREASE CROP YIELD

Thomas K. Dickson, Greenville, Miss., assignor to Hercules Incorporated, Wilmington, Del.

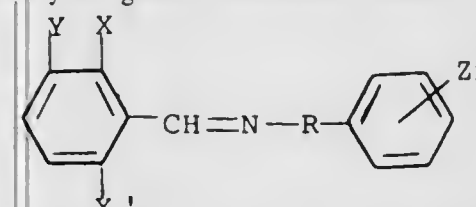
Filed June 8, 1971, Ser. No. 151,151

Int. Cl. A01n 9/20

U.S. Cl. 71-121

3 Claims

1. A process for increasing the yield of a crop, which comprises applying to the growing plants of said crop an effective quantity of material selected from the group of compounds represented by the generic structural formula:



in which R is selected from the group consisting of CH₂, CH(CH₃), C(CH₃)₂, and CH₂-CH₂, Z is selected from the group consisting of 0, 1 and 2, X, X' and X'' are selected from the group consisting of F, Cl, Br and I, and Y is selected from the group consisting of H and NO₂.

3,856,505

PROCESS FOR OBTAINING NICKEL CONCENTRATES FROM NICKEL OXIDE ORES

Tadaharu Ogawa, 10 of 2 Motohuto 4-chome, Urawa; Hiroshi Yasui, 22 of 26 Wada 2-chome, Tokyo, and Shigeo Kaji, 8 of 3 Ryoke 4-chome, Urawa, all of Japan

Continuation-in-part of Ser. No. 23,078, March 26, 1970, abandoned. This application June 15, 1972, Ser. No. 263,247
Claims priority, application Japan, Mar. 28, 1969, 44-23077

Int. Cl. C22g 1/08, 1/14

U.S. Cl. 75-3

14 Claims

1. A process for obtaining nickel concentrate from nickel oxide ore which comprises calcining a nickel oxide ore at a temperature which is at the minimum at least above 750°C., the temperature being sufficient to transform the mineral structure of the ore into that of forsterite or enstatite, pulverizing the calcined ore, mixing a carbonaceous reducing agent and a chloridizing agent with the pulverized ore, pelletizing the mixture, drying and then subjecting the pellets rapidly to a segregation reaction.

3,856,506

METHOD OF ROASTING FINE GRANULAR SULPHIDE MATERIAL IN FLUIDIZED BED FURNACES

Per Anders Herman Henningsson Fahlstrom, Boliden, and Karl Goran Gorling, Lidings, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 126,314, March 19, 1971, abandoned, which is a continuation of Ser. No. 739,222, June 24, 1968, abandoned. This application Oct. 26, 1973, Ser. No. 409,932

Int. Cl. C21b 1/20; C22b 1/10

U.S. Cl. 75-3

7 Claims

1. In a process for roasting finely divided sulphide-containing flotation concentrates and other sulphide-containing products of similar extremely fine particle size in a furnace of the fluidized bed type wherein fluidizing gases are introduced in the lower portion of the bed and passed upwardly therethrough in effecting the roasting operation and finally depart the furnace via the furnace shaft together with the main part of the roasted product obtained during roasting, the improvement in the method of supplying the concentrates to said furnace which comprises

adjusting the water content of the concentrates not to exceed 30 per cent of their solid volume,

compacting said treated concentrates by passing them between substantially smooth surfaced rolls at a roll pressure less than 5 ton per cm roll length to obtain aggregates of suitable mechanical strength and size, and directly charging the aggregates into the fluidized bed, the aggregates after being compacted having obtained such mechanical strength and size that when charged will penetrate into the bed to a sufficient depth to have time when decrepitating to be uniformly distributed over the area of said bed and become substantially roasted before particle entrainment by the roaster gases leaving the furnace.

3,856,507

RECOVERY OF GOLD FROM SOLUTION IN AQUA REGIA

James E. Brug, and Eric X. Heidelberg, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 12, 1973, Ser. No. 340,166

Int. Cl. C22b 11/04

U.S. Cl. 75-.5 A

10 Claims

1. In the process for recovering gold from solution in aqua regia, the improvement comprising the steps of:

adding base to said aqua regia in an amount sufficient to raise the pH of the resulting reaction mixture to in the range to about 2 to about 4 without precipitating gold from solution while maintaining the temperature of said reaction mixture below about 50°C. and;

adding reducing agent to said reaction mixture in an amount sufficient to precipitate metallic gold from said reaction mixture; and

recovering said metallic gold from said reaction mixture.

3,856,508

METHOD FOR PRODUCING ALUMINUM CHLORIDE, ALUMINUM METAL, AND IRON DIRECTLY FROM ORES

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 103,765, Jan. 4, 1971, Pat. No. 3,793,003, and a continuation-in-part of Ser. No. 308,059, Nov. 20, 1972. This application May 3, 1973, Ser. No. 356,905

Int. Cl. C21b 15/00; C22b 21/00

U.S. Cl. 75-29

11 Claims

1. A process under substantially atmospheric pressure for producing an aluminum halide from an original material in the form of pulverent solids containing aluminum and iron in compounds with oxygen comprising:

a. contacting said pulverent solids in a lower temperature reaction zone at a temperature of 500°C to 1050°C in the presence of a solid reductant with a gaseous halogenating agent containing a substantial amount of an aluminum halide; whereby an iron halide goes off in a gas stream; and a solid residue is formed substantially depleted of iron but containing at least most of the aluminum, much of which is in the same compounds present in said original material;

b. passing at least most of said iron halide in said gas stream to a higher temperature reaction zone which is charged with said solid residue substantially depleted of iron where, at a temperature between 1050°C and 2000°C in the presence of said solid reductant, said iron halide reacts with at least a part of said aluminum in said compounds contained in said residue from said first reaction zone, to form metallic iron and a gas stream containing an aluminum halide;

c. passing at least a part of said gas stream from said higher temperature reaction zone containing an aluminum halide as a halogenating agent to said lower temperature reaction zone of (a) where it is contacted with said original pulverent solids in the presence of said solid reductant

to produce said gaseous iron halide and said residue depleted of iron; and
d. removing said metallic iron from said higher temperature reaction zone.

3,856,509

PROCESS FOR THE REDUCTION OF IRON ORES OR THE LIKE IN THE PRODUCTION OF PIG IRON IN THE BLAST FURNACE

Gerhard Heynert, Mulheim, and Karl-Heinz Peters, Duisburg-Hamborn, both of Germany, assignors to August Thyssen-Hütte Aktiengesellschaft, Duisburg-Hamborn, Germany

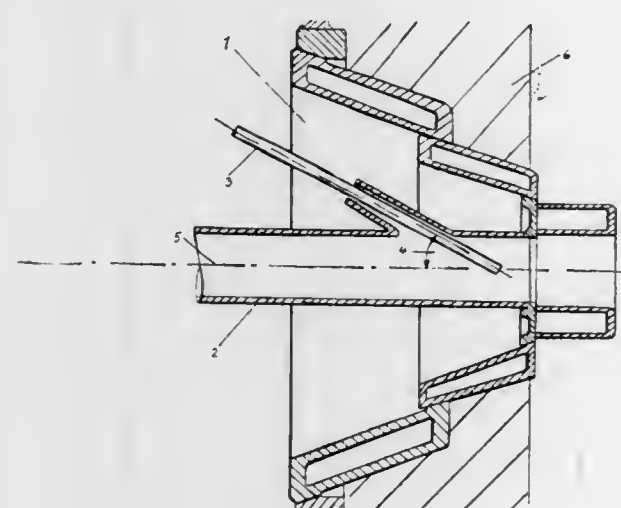
Filed Apr. 27, 1972, Ser. No. 248,137

Claims priority, application Germany, Apr. 30, 1971, 2121241

Int. Cl. C21b 5/00

U.S. Cl. 75—42

14 Claims



1. In a process for the reduction of an iron ore, sinter or other such starting material in a blast furnace in which at least a portion of the reducing agent comprises an oil, the improvement comprising introducing said oil into the blast furnace in the form of a water-in-oil emulsion having a water content between 3 and 15 percent by volume, said emulsion being introduced in the tuyeres of the blast furnace, the amount of oil charged into the blast furnace being at least 90 kg of oil per metric ton of pig iron in the blast furnace.

3,856,510

PIG IRON REFINING PROCESS

Paul Emile Nilles, Embourg, Belgium, assignor to Eisenwerke-Gesellschaft Maximilianshütte m.b.H., Sulzbach-Rosenberg, Germany

Filed Apr. 3, 1973, Ser. No. 347,521

Claims priority, application Belgium, Apr. 4, 1972, 782186

Int. Cl. C21c 5/34

U.S. Cl. 75—60

7 Claims

1. A pig iron refining process in a tipping converter of which the side wall is provided with at least one tuyere consisting of two coaxial conduits, the central conduit being for the blowing in of a highly oxidizing gas and the peripheral conduit being for the introduction of a protective fluid through the converter wall into the melt in said converter, which comprises:

1. loading the converter with liquid iron and with scrap iron,
2. putting the converter in an essentially vertical position,
3. blowing in a highly oxidizing gas through the central conduit of the side tuyere(s) simultaneously with the blowing in of a protective fluid through the peripheral conduit of said side tuyere(s) said tuyere discharging said oxygen and said protective fluid below the upper level of the metal bath,

4. continuing the blowing until a carbon content which is approximately the desired one has been achieved, and
5. thereafter placing the converter in an essentially horizontal position so that the outlet of the side tuyere(s) is located above the metal bath level, and thereafter completing the refining by blowing in a highly oxidizing gas which penetrates the slag and the metal through the slag through the central conduit of the side tuyere(s) simultaneously with the introduction of a protective fluid into said melt through the peripheral conduit of said side tuyere(s).

3,856,511

PURIFICATION OF CRUDE ALUMINUM

Warren E. Becker; James D. Johnston, both of Baton Rouge, La., and Clarence L. Hildreth, Brookhaven, Miss., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 234,401, March 13, 1972, which is a continuation-in-part of Ser. No. 878,951, Nov. 21, 1969, abandoned. This application Feb. 20, 1974, Ser. No. 444,104

Int. Cl. C22b 21/04

U.S. Cl. 75—68 B

10 Claims

1. A process for refining an impure aluminum-containing source material, comprising:

- a. heating the impure aluminum-containing source material with sodium fluoride in a first reaction zone to a temperature high enough to initiate reaction but below 1,000°C and effecting the reaction at a reduced pressure of less than about 100 millimeters of mercury, thereby avoiding the formation of aluminum mono fluoride and producing cryolite, residue, and metallic sodium, and causing said metallic sodium to be vaporized out of said reaction zone and separately condensed from said cryolite; and
- b. reacting the cryolite produced in step (a) with metallic sodium in a second reaction zone at elevated temperature and at a pressure at least as high as normal atmospheric to keep the sodium from boiling out, thereby producing purified metallic aluminum and sodium fluoride.

3,856,512

PROCESSING TITANIFEROUS IRON ORES FOR THE RECOVERY OF ALUMINUM, CHROMIUM, IRON, TITANIUM AND VANADIUM

Joseph Palmer, Les Saules, Quebec, and Guy Handfield, Loretteville, Quebec, both of Canada, assignors to Centre de Recherche Industrielle du Quebec, Canada

Filed Apr. 27, 1973, Ser. No. 355,303

Int. Cl. C22b 3/00

U.S. Cl. 75—101 R

12 Claims

1. A process for treating titaniferous iron ore or concentrate having a total iron content of at least 40% and a titanium dioxide content of less than 25% which comprises

- a. roasting the finely divided titaniferous iron ore or concentrate in an oxidizing atmosphere and in the presence of a roasting agent made up of a mixture of (1) a sodium oxide forming compound and (2) an alkaline earth metal oxide compound selected from calcium oxide, magnesium oxide, a calcium oxide forming compound, a magnesium oxide forming compound and mixtures thereof, the amount of sodium oxide or sodium oxide forming compound being at least the stoichiometric amount expressed as sodium oxide and calculated in accordance with the formula:

$$\text{Na}_2\text{O}(\text{moles}) = 2 \times \text{Cr}_2\text{O}_3(\text{moles}) + 3 \times \text{V}_2\text{O}_5(\text{moles}) + \text{Al}_2\text{O}_3(\text{moles})$$

and the amount of the second oxide forming compound of the roasting agent being at least the stoichiometric amount expressed as calcium oxide or magnesium oxide calculated in accordance with the formula:

$$\text{CaO or MgO}(\text{moles})$$

$$= 2 \times \text{SiO}_2(\text{moles}) + \text{TiO}_2(\text{moles}) - (\text{CaO} + \text{MgO})$$

(moles in the ore or concentrate)

- b. leaching the roast with an aqueous solution of 5 to 75 gr/l of sodium carbonate and 2 to 10 gr/l of sodium hydroxide;
- c. and separating the solid containing the residue from the chromate, aluminate and vanadate containing solution.

3,856,513

NOVEL AMORPHOUS METALS AND AMORPHOUS METAL ARTICLES

Ho-Sou Chen, Warren, and Donald E. Polk, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,146

Int. Cl. C22c 1/00, 19/00, 31/00, 37/00, 39/00

U.S. Cl. 75—122

8 Claims

1. A metal alloy of the formula $\text{M}_a\text{Y}_b\text{Z}_c$ which is at least 50 percent amorphous and wherein M is a metal selected from the group consisting essentially of iron, nickel, chromium, cobalt, or vanadium or a mixture thereof, Y is a metalloid selected from the group consisting of phosphorus, carbon and boron or a mixture thereof, and Z is an element selected from the group consisting of aluminum, silicon, tin, antimony, germanium, indium, and beryllium and mixtures thereof, "a", "b" and "c" are atomic percentages ranging from about 60 to 90, 10 to 30 and 0.1 to 15 respectively with the proviso that a plus b plus c equals 100.

3,856,514

COLD WORKABLE AND AGE-HARDENABLE STEEL

Chiaki Asada, Nagoya, and Toshiyuki Watanabe, Nishio, both of Japan, assignors to Daido Seiko Kabushiki Kaisha, Minami-ku Nagoya Aichi Prefecture, Japan

Filed Oct. 8, 1971, Ser. No. 187,825

Claims priority, application Japan, Oct. 19, 1970, 45-91150; Sept. 8, 1971, 46-68868

Int. Cl. C22c 57/14

U.S. Cl. 75—124

1 Claim



1. A cold workable and age-hardenable steel, characterized in that it consists essentially of the weight percentages of carbon and manganese within the area enclosed by the line connecting points P, Q and R to the point S as shown in the accompanying FIG. 1; an effective amount up to 0.6 weight % of silicon, and, as age-hardenability improving alloying metals, more than 2.5 weight % of nickel, more than 0.6 weight % of aluminum, more than 0.5 weight % of copper and more than 0.5 weight % of titanium, the total amount of nickel, aluminum, copper and titanium being in the range of from 4.6 to 6.5 weight %, said point P indicating zero weight % of carbon and 1.8 weight % of manganese, said point Q indicating 0.08 weight % of carbon and 0.5 weight % of manganese, said point R indicating 0.08 weight % of carbon and zero weight % of manganese and said point S indicating zero weight % of car-

bon and zero weight % of manganese, and further consisting of, as alloying metals for improving the fineness of the crystalline particles of said steel, at least one element selected from the group consisting of an effective amount up to 0.3 weight % of the total amount of niobium and tantalum, an effective amount up to 0.5 weight % of vanadium and an effective amount up to 0.5 weight % of zirconium.

3,856,515

FERRITIC STAINLESS STEEL

Helmut Brandis; Rudolf Oppenheim, both of Krefeld, Gustav Lennartz; Sontheuse and Heinrich Kiesheyer, Krefeld, all of Germany, assignors to Deutsche Edelstahlwerke GmbH, Krefeld, Germany

Filed Oct. 26, 1972, Ser. No. 301,067

Claims priority, application Germany, Oct. 26, 1971, 2153186; Oct. 28, 1971, 2153766

Int. Cl. C22c 39/20, 39/50, 39/54

U.S. Cl. 75—126 C

1 Claim

1. A ferritic high-chromium stainless steel operating while stressed at temperatures ranging between -100°C and 100°C and higher while in contact with fluids containing chlorides and consisting by weight of:

18 to 35%	chromium
.5 to 6%	molybdenum
0.001 to 0.01%	boron
0 to 5%	nickel
0 to 2%	copper
0 to 3%	silicon
0 to 1%	manganese
0 to 0.015%	carbon
0 to 0.015%	nitrogen

Remainder iron and impurities occasioned by smelting conditions.

3,856,516

LOW CREEP HIGH STRENGTH FERROUS ALLOY

Ray H. English, McCandless Township, Allegheny County, Pa., assignor to Blair-Knox Company, Pittsburgh, Pa.

Filed Feb. 12, 1970, Ser. No. 11,001

Int. Cl. C22c 39/20

U.S. Cl. 75—128 W

3 Claims

1. A low creep, high strength alloy resistant to corrosion and thermal shock at elevated temperatures and having unusual stress rupture characteristics at elevated temperatures consisting essentially of about 0.3% to 0.9% carbon, about 20% to 30% chromium, about 15% to 35% nickel, about 0.8% to 4% manganese, about 0.9% to 3.5% silicon, about 0.3% to 5% tungsten, about 0.030% to about 0.15% sulfur and the balance iron with residual impurities in ordinary amounts.

3,856,517

IRRADIATION SWELLING RESISTANT ALLOY FOR USE IN FAST NEUTRON REACTORS

John F. Bates; James J. Holmes, both of Richland; Michael M. Paxton, Pasco, and Jerry L. Straalsund, Richland, all of Wash., assignors to The United States of America as represented by the U.S. Atomic Energy Commission, Washington, D.C.

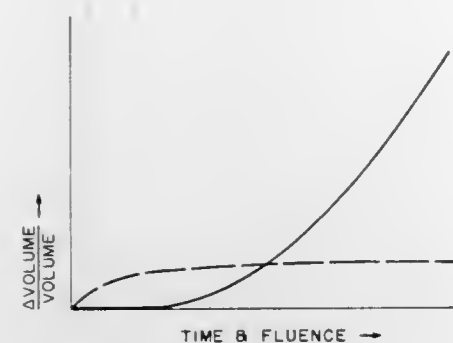
Filed Nov. 26, 1973, Ser. No. 419,017

Int. Cl. C22c 39/14

U.S. Cl. 75—128 A

2 Claims

1. A stainless steel alloy resistant to void formation under irradiation by fast neutrons consisting essentially of the following:



Element	Weight Percent
Chromium	16.0 to 18.0
Nickel	11.0 to 14.0
Molybdenum	2.0 to 4.0
Silicon	1.1 to 2.0
Manganese	1.00 to 2.00
Carbon	0.04 to 0.08
Nitrogen	0.04 to 0.06
Phosphorus	0.00 to 0.03
Sulfur	0.00 to 0.03
Cobalt	0.00 to 0.05
Copper	0.00 to 0.01
Boron	0.00 to 0.001
Iron	Balance

3,856,518

METHOD OF ELECTROPHOTOGRAPHICALLY MANUFACTURING A TELEVISION SCREEN USING HYGROSCOPIC MATERIAL

Francis Bernardus Strik, and Nicolaas Augustinus Joseph Van Soerland, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,942

Claims priority, application Netherlands, Mar. 4, 1972, 7202907

Int. Cl. G03g 13/22; C03c 3/28

U.S. Cl. 96—1 R

1 Claim

1. A method of electrophotographically manufacturing a display screen of a color television display tube comprising a shadow mask and a face panel, said method comprising the steps of:

- providing said face panel comprising a fireable conductive layer disposed thereon and a fireable photoconductive layer disposed on said conductive layer;
- providing first phosphor particles comprising an outer layer of a hygroscopic material which is electrically conductive in a moist condition;
- providing a first pattern of phosphor regions at said face panel by uniformly electrostatically charging said photoconductive layer and selectively discharging said photoconductive layer by exposing said photoconductive layer through a shadow mask, thereby forming a latent charge image which comprises charges in the regions corresponding to the said first pattern and then depositing on the said charge image and from an insulating developing liquid, first phosphor particles charged with opposite polarity to said latent charge image;
- rendering said hygroscopic material of said first phosphor particles in a moist condition;
- then repeating step (c) above with second phosphor particles to provide second phosphor regions at said face panel;
- rendering said hygroscopic material on said face panel in a dry condition;
- following step (f) providing a light-absorbing layer between said phosphor regions by uniformly electrostatically charging said photoconductive layer with said phosphor regions, selectively discharging regions of said photoconductive layer and said deposited phosphor regions

by uniformly exposing said photoconductive layer with the said phosphor regions, and depositing between the charged phosphor regions and from an insulating developing liquid, light-absorbing particles charged with the same polarity as said photoconductive layer; and

h. firing the face panel to remove said conductive layer and said photoconductive layer.

3,856,519

TRANSFER OF TOWER USING A VOLATILE INSULATING LIQUID

Satoru Honjo, Tokyo, and Masamichi Sato, Asaka, both of Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1971, Ser. No. 111,126

Claims priority, application Japan, June 4, 1970, 45-48234

Int. Cl. G03q 13/10, 13/16

U.S. Cl. 96—1.4

6 Claims

1. An imaging method comprising the steps of forming an electrostatic charge pattern on an electrostatic imaging surface, developing the electrostatic latent image with a liquid developer comprising a high boiling point insulating liquid having electroscopic marking particles dispersed therein, contacting said imaging surface with said liquid developer thereon with a transfer sheet having substantially uniformly available at the contacting surface a volatile insulating liquid having a lower boiling point and a greater evaporation rate than said high boiling point liquid, and having an evaporation rate greater than about two times that of n-butyl acetate, transferring said particles from said imaging surface to said transfer sheet while said transfer sheet and said imaging surface are in contact, and drying said transfer sheet.

3,856,520

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENTS COMPRISING A SULFUR-SUBSTITUTED TETRAHYDROPYRIMIDINE DEVELOPMENT INHIBITOR PRECURSOR AND PROCESS FOR THEIR USE

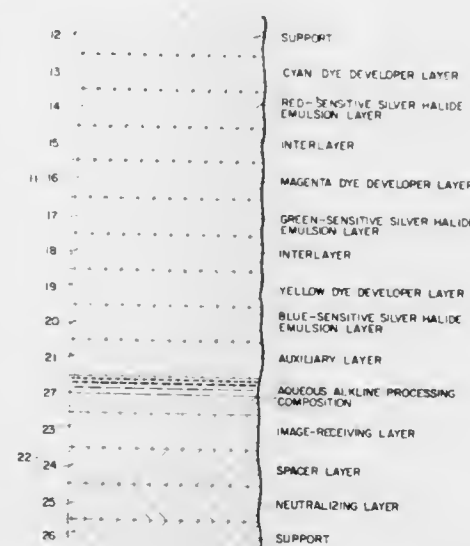
Stanley M. Bloom, Waban, and Milton Green, Newton Centre, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 210,650, Dec. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 60,272, Aug. 3, 1970, abandoned. This application Apr. 9, 1973, Ser. No. 349,063

Int. Cl. G03c 7/00, 5/54, 5/30, 1/48, 1/40, 1/06

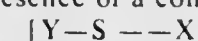
U.S. Cl. 96—3

19 Claims



1. In a process for forming diffusion transfer images in color which comprises the steps of developing an exposed photosensitive element comprising a plurality of layers including a silver halide layer, at least one of said layers containing a dye image-providing material, by contacting said element with an aqueous alkaline solution, forming thereby an imagewise distribution of mobile dye image-providing material as a func-

tion of the point-to-point degree of exposure of said element, transferring by imbibition at least a portion of said imagewise distribution of mobile dye image-providing material to a superposed image-receiving element which comprises a dyeable polymeric layer, to provide to said dyeable polymeric layer a dye image; the improvement which comprises carrying out said process in the presence of a compound of the formula:



wherein Y is a tetrahydropyrimidine group and X is selected from the group consisting of hydrogen and a group hydrolyzable in said alkaline solution, said X being bonded to said compound through the sulfur or a ring nitrogen.

3,856,521

DIFFUSION TRANSFER COLOR FILM AND PROCESS

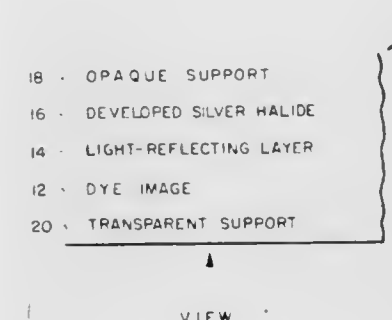
Ruth C. Bilofsky, Arlington, and Howard G. Rogers, Weston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 247,022

Int. Cl. G03c 7/00, 5/54, 1/40, 1/48, 1/84

U.S. Cl. 96—3

32 Claims



1. A photographic product for forming a diffusion transfer image in dye within a permanent laminate including at least one developed silver halide layer, said photographic product comprising, in combination, an image-receiving layer; at least one silver halide emulsion, each said silver halide emulsion having associated therewith an image dye-providing substance selected from the group consisting of image dyes and image dye intermediates; means providing a light-reflecting layer containing a metal pigment between said image-receiving layer and said silver halide emulsion(s) to mask said silver halide emulsion(s) after development thereof and to provide a white background for viewing a dye image in said image-receiving layer; a transparent support through which image-receiving layer may be viewed; means providing a processing composition for developing said silver halide emulsion(s) after photo-exposure and for forming a transfer image in at least one dye in said image-receiving layer; said product including a silver halide solvent and a second silver halide complexing agent, said second silver halide complexing agent being capable of forming a relatively insoluble complex with silver halide; said product further including a compound which will form a colored product with ions of said metal at an acidic pH and said processing composition containing a metal complexing agent in a concentration effective to at least substantially prevent the formation of said colored product, said metal complexing agent being N-(carboxymethyl)-N'-2-hydroxyethyl-N,N'-ethylene glycine.

3,856,522

SPACER LAYER FOR DYE DIFFUSION TRANSFER FILM

Louis J. George, Somerville, and Ronald A. Sahatjian, Bedford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,402

Int. Cl. G03c 7/00, 5/54, 1/40

U.S. Cl. 96—3

18 Claims

1. In a photographic product comprising a photosensitive element including at least one light-sensitive silver halide layer

having a dye image-providing material associated therewith and an image receiving element including a dyeable stratum adapted for receiving a dye image pattern and a neutralizing system integrated with said photosensitive system or said image receiving element for lowering the pH of an aqueous alkaline processing composition; said neutralizing system including a neutralizing layer and a spacer layer arranged on a support and wherein said spacer layer is disposed with respect to said neutralizing layer so that said processing fluid must first diffuse through the spacer layer before contacting the neutralizing layer;

the improvement wherein said spacer layer comprises as a continuous phase a coalesced aqueous film-forming synthetic polymer dispersion which is substantially impervious to said processing fluid and a discontinuous phase comprising polyvinyl alcohol.

3,856,523

PROCESS FOR PREPARING LITHOGRAPHIC PLATES

Henri Ulrich, Northford; Fred A. Stuber, North Haven, and Allen J. Broggi, Branford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 315,303, Dec. 15, 1972, Pat. No.

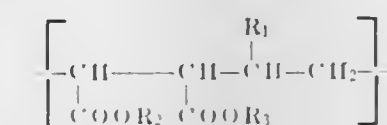
3,792,025. This application Nov. 12, 1973, Ser. No. 414,731

Int. Cl. G03c 1/70, 5/16

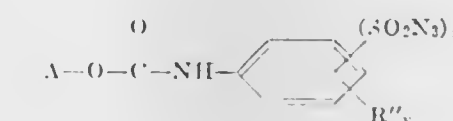
U.S. Cl. 96—33

4 Claims

1. A process for the preparation of a hydrophobic printing master which is receptive of oleophilic inks which comprises a. applying to a substrate a layer of a hydrophobic radiation-sensitive polymer characterized by a recurring unit of the formula:



wherein R₁ is selected from the class consisting of phenyl and lower-alkoxy and wherein one of R₂ and R₃ represents hydrogen and the other of R₂ and R₃ represents a group having the formula:



wherein A is straight chain alkylene having from 12 to 20 carbon atoms, inclusive, R'' is selected from the class consisting of lower-alkyl and halogen, x is an integer from 1 to 2, y is an integer from 0 to 2, provided that x + y is not greater than 3, and the SO₂N₃ group is in any of positions 3, 4 and 5 in the phenyl nucleus to which it is attached, and at least one of the said positions 3, 4 and 5 is unsubstituted;

- exposing the coated substrate to appropriate radiation, transmitted via a negative of the image to be reproduced, to activate said radiation-sensitive polymer; and
- developing the image produced by irradiation by dissolving away the unexposed radiation-sensitive polymer.

3,856,524

PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR PROVIDING TANNED IMAGE RECORDS

Vernon Leon Bissonette, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 189,289, Oct. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 189,331, Oct. 14, 1971, Pat. No. 3,748,138. This application Dec. 4, 1972, Ser. No. 312,157

Int. Cl. G03c 5/00, 5/24, 1/58, 5/22, 5/34, 5/26, 1/06, 1/48, 1/30; G03f 7/02

U.S. Cl. 96—35

26 Claims

1. A process of imagewise tanning a photographic element comprising at least one layer containing an unhardened hydrophilic colloid and at least one layer containing an imagewise distribution of a catalytic metal, said process comprising effecting contact of said imagewise distribution of metal with a liquid composition containing a cobalt (III) ion complex at a pH of at least 11, whereby said unhardened hydrophilic colloid is imagewise tanned.

3,856,525

METHOD FOR MANUFACTURING CATHODE RAY TUBE SCREEN

Takuji Inoue, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

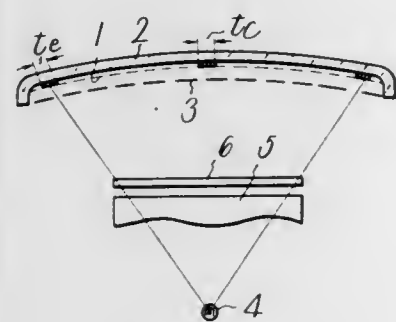
Filed Sept. 15, 1972, Ser. No. 289,445

Claims priority, application Japan, Sept. 21, 1971, 46-73565

Int. Cl. G03c 5/00

U.S. Cl. 96—36.1

11 Claims



1. A method for producing the phosphor screen of a cathode ray tube comprising the steps of coating the surface of a face plate with a light sensitive layer containing phosphor material, exposing said layer to light passing through apertures of a mask from a light source which, in the course of said exposing of said layer to the light therefrom, is disposed at least at two positions relative to said face plate, which two positions lie on, and are spaced from each other along a line parallel to a line perpendicular to said face plate at the center of the latter so that the areas of said layer exposed to light from said source through apertures of said mask adjacent the periphery of the latter will be larger relative to the respective apertures than are the areas of said layer exposed to light from said source through apertures of said mask adjacent said center of the latter, and developing said light sensitive layer so that said phosphor material will remain only on selected areas of said surface corresponding to said areas of said layer exposed to light through said apertures.

3,856,526

PROTECTIVE LAYER FOR PHOTOTHERMOGRAPHIC ELEMENTS

Fredrick L. Hamb, Rochester; Gary L. Hiller, Hilton, and Albert W. Wise, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

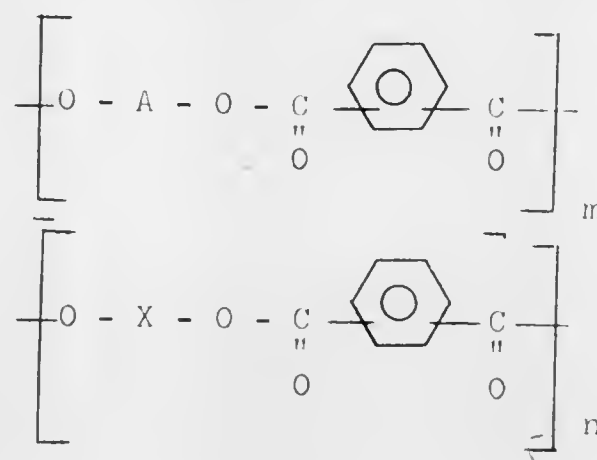
Filed Aug. 6, 1973, Ser. No. 385,934

Int. Cl. G03c 5/24

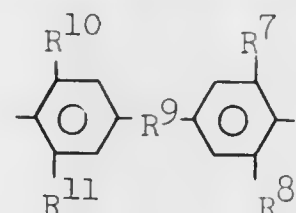
U.S. Cl. 96—48 HD

8 Claims

1. In a photothermographic element having a protective layer, the improvement comprising as said protective layer a carboxylic polyester having a glass transition temperature of at least 190°C. represented by the formula:



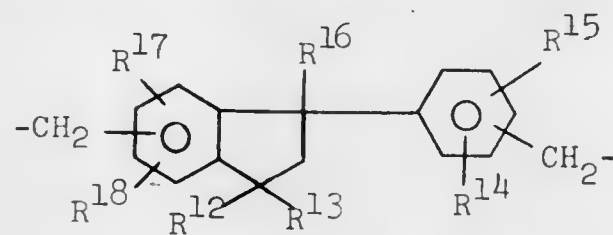
wherein A is a radical selected from the group consisting of a. a radical represented by the formula:



wherein

- R⁷, R⁸, R¹⁰ and R¹¹ are the same or different and each are hydrogen, halogen or alkyl containing 1 to 4 carbon atoms;
- R⁹ is a bivalent polycyclic radical selected from the group consisting of 2-norbornylidene, hexahydro-4,7-methanoindane-5-ylidene, decahydro-1,4:5,8-dimethanonaphth-2-ylmethylene, octahydro-4,7-methanoisobenzofuran-6-ylidene, bicyclo [3.2.1] oct-2-ylidene, and tricyclo [2.2.1.0^{2,6}] heptan-3-ylidene; each of said bivalent polycyclic radicals having bonded to at least one of the polycyclic rings at least one radical selected from the group consisting of hydrogen, halogen, phenyl and alkyl containing 1 to 4 carbon atoms;

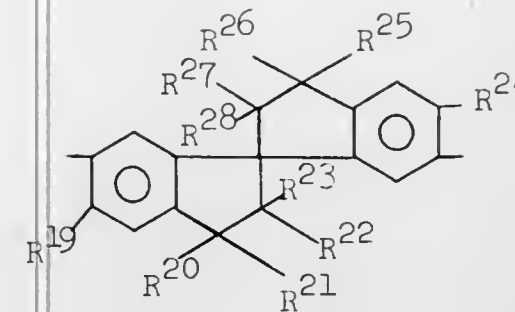
b. a radical represented by the formula:



wherein

- R¹² and R¹⁶ are the same or different and each are hydrogen or alkyl containing 1 to 6 carbon atoms;
- R¹³ is alkyl containing 1 to 6 carbon atoms;
- R¹⁴, R¹⁵, R¹⁷ and R¹⁸ are the same or different and each are hydrogen, aryl containing 6 to 12 carbon atoms, halogen, nitro, cyano, amino or alkoxy containing 1 to 4 carbon atoms;

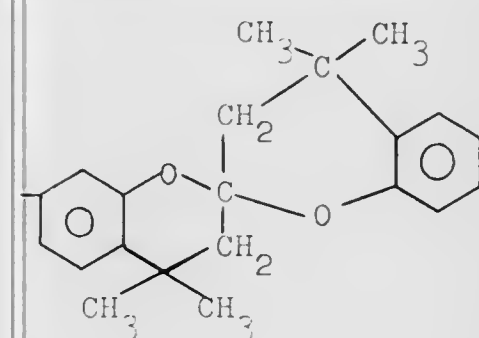
c. a radical represented by the formula:



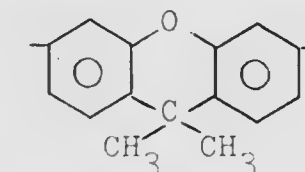
wherein

- R¹⁹ and R²⁴ are the same or different and are each hydrogen or alkyl containing 1 to 12 carbon atoms;
- R²⁰, R²¹, R²², R²³, R²⁵, R²⁶, R²⁷ and R²⁸ are the same or different and are each alkyl having 1 to 6 carbon atoms; with the proviso that R²⁰ and R²⁶ are the same and R²¹ and R²⁵ are the same and that the sum of the carbon atoms in R²⁰ and R²¹ equals the sum of the carbon atoms in R²⁶ and R²⁵ and equals the sum of the carbon atoms in R²², R²³, R²⁷ and R²⁸ plus 2;

d. a radical represented by the formula:

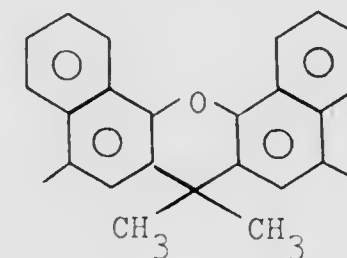


e. a radical represented by the formula:

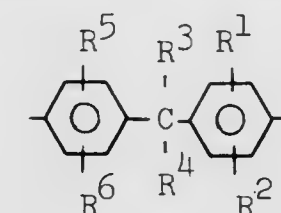


and

f. a radical represented by the formula:



and wherein X is a radical selected from the group consisting of designated radicals (a) through (f) and g. a radical represented by the formula:



wherein

- R¹ and R⁵ are the same or different and each are hydrogen, aryl containing 6 to 20 carbon atoms, halogen, nitro, amino, cyano or alkoxy containing 1 to 5 carbon atoms;
- R² and R⁶ are the same or different and each are hydrogen, aryl containing 6 to 20 carbon atoms, halogen,

nitro, cyano or alkoxy containing 1 to 5 carbon atoms; iii. R³ and R⁴ are the same or different and each are hydrogen, alkyl containing 1 to 6 carbon atoms, cycloalkyl containing 4 to 6 carbon atoms, or aryl containing 6 to 20 carbon atoms, or R³ and R⁴ taken together with the carbon atom to which they are bonded can be a monocyclic, bicyclic or heterocyclic moiety containing 4 to 7 atoms in the ring;

m represents 1 to 100 mole percent and n represents 100-m mole percent.

3,856,527

PROTECTIVE LAYER FOR PHOTOTHERMOGRAPHIC ELEMENTS

Fredrick L. Hamb, Rochester; Gary L. Hiller, Hilton, and Albert W. Wise, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

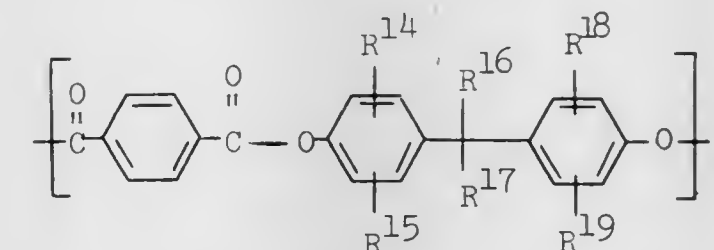
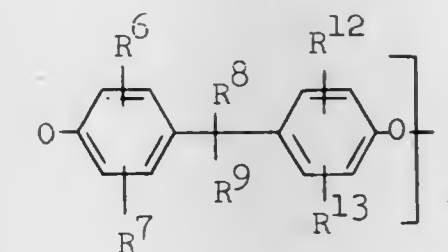
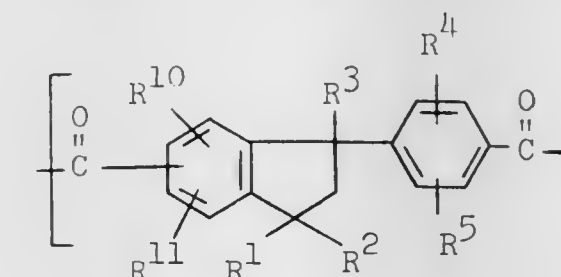
Filed Aug. 6, 1973, Ser. No. 385,935

Int. Cl. G03c 5/24

U.S. Cl. 96—48 HD

12 Claims

1. In a photothermographic element having a protective layer, the improvement comprising as said protective layer a carboxylic polyester having a glass transition temperature of at least 190°C. having repeating units represented by the formula:



wherein m represents 15 to about 100 mole percent and n represents 0 to about 85 mole percent;

R¹ and R³ are each hydrogen atoms or alkyl groups containing 1 to 6 carbon atoms; R² is alkyl containing 1 to 6 carbon atoms;

R⁴, R⁵, R⁶, R⁷, R¹⁰, R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁸ and R¹⁹ are each hydrogen atoms; aryl containing 6 to 12 carbon atoms; halogen atoms; nitro; cyano; and alkoxy containing 1 to 4 carbon atoms;

R⁸, R⁹, R¹⁶ and R¹⁷ are each hydrogen atoms; alkyl containing 1 to 6 carbon atoms; cycloalkyl; and aromatic radicals containing 6 to 20 carbon atoms, or

R⁸ and R⁹, taken together with the carbon atom to which they are bonded can be a bridged ring moiety, a fused ring moiety, a monocyclic moiety, or a heterocyclic moiety containing 4 to 7 carbon atoms in the ring, and R¹⁶ and R¹⁷, taken together with the carbon atom to which they are bonded can be a bridged ring moiety, a fused ring moiety, a monocyclic moiety or a heterocyclic moiety containing 4 to 7 carbon atoms in the ring.

3,856,528

COLOR TONED PHOTOPOLYMERIZATION IMAGING PROCESS

Steven Levinos, Chatham, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 10, 1972, Ser. No. 279,580

Int. Cl. G03c 5/34; G03f 7/08

U.S. Cl. 96—49

4 Claims

1. In an imaging process which comprises exposing to light through a continuous tone image carrying material a supported layer of photopolymerizable composition comprising an ethylenically unsaturated polymerizable compound, a light-sensitive aromatic diazosulfonate, and a photoreducible dye a time sufficient to effect polymerization in the light-exposed areas of said composition, and separating unpolymerized composition from said layer to thereby form a polymeric image defining such imagewise light exposure, the improvement comprising:

- including an azo coupler compound in said photopolymerizable composition layer; and
- subsequent to said image-forming step, contacting the resulting polymeric image with a toning composition including a first compound comprising a ferricyanide ion reducible in the presence of said azo coupler compound, and a second compound comprising an ion selected from ferric and uranyl ions capable of forming a distinct color body with the reduced form of said first compound ion.

3,856,529

METHOD AND MATERIALS FOR MAKING HALF TONE PRINTS

Gunther Schädlich, Wiesbaden-Biebrich; Renate Haenisch, Wiesbaden, and Roland Moraw, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation of Ser. No. 732,024, May 27, 1968, abandoned.

This application Sept. 8, 1971, Ser. No. 178,828

Int. Cl. G03c 1/14

U.S. Cl. 96—81

4 Claims

1. A light-sensitive material suitable for the production of a printing plate capable of reproducing continuous tones comprising a base, a light-sensitive layer the light-sensitive substance of which is selected from the group consisting of naphthoquinone diazide, iminoquinone diazide, diazido stilbene disulfonic acid, and photopolymerizable compounds on said base, and a contrast layer which presents sufficiently uniformly distributed areas, produced by a material selected from the group consisting of white and yellow opaque pigments, of 0.05 to 10 microns in diameter, the light-transmission capacity of which areas contrasts with that of their immediate environment.

3,856,530

PHOTOGRAPHIC POLYESTER FILM MATERIAL COMPRISING ANTISTATIC LAYER

August Jean Van Paesschen, Antwerpen; Joseph Antoine Herbots, Edegem, and Daniel Maurice Timmerman, Mortsels, all of Belgium, assignors to Agfa-Gevaert, Mortsels, Belgium

Division of Ser. No. 84,926, Oct. 28, 1970, Pat. No. 3,786,002.

This application July 30, 1973, Ser. No. 383,549

Claims priority, application Great Britain, Oct. 29, 1969, 53026/69

Int. Cl. G03c 1/82

U.S. Cl. 96—87 A

8 Claims

1. Photographic film material comprising a polyester film support, at least one light-sensitive silver halide emulsion layer on one side of the polyester support, and on the other side a layer of an antistatic coating composition for a polyester film support, comprising an homogeneous mixture of (A) a chlorine-containing polymer consisting of at least 70% by weight of at least one monomer taken from vinyl chloride and vinylidene chloride, (B) a polymeric material having electroconductive properties, and (C) about 10 to 20% by weight of a

waxy material, the ratio of chlorine-containing polymer to electroconductive polymeric material in said homogeneous mixture varying between 2:1 and 1:2 parts by weight, said composition having a surface resistance at 30% RH of less than 1.10^{10} ohm/10 sq.cm. and at 60% RH less than 1.10^9 ohm/10 sq.cm.

3,856,531

PHOTOGRAPHIC COMPOSITIONS AND PROCESSES

Patrick J. Grisdale, and Bruce E. Babb, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 168,392, Aug. 2, 1971, Pat. No. 3,767,409.

This application June 4, 1973, Ser. No. 366,884

Int. Cl. G03c 1/52, 1/58, 1/72

U.S. Cl. 96—91 N

6 Claims

1. An image-forming composition comprising in admixture a radiation-sensitive organoazide which is one of either an aryl azide or a heterocyclyl azide and a triorganophosphine precursor which, on treatment with base, liberates a triorganophosphine that can form a radiation-sensitive complex with the azide.

3,856,532

PHOTOGRAPHIC SILVER HALIDE EMULSION CONTAINING A SUPERSENSITISING COMBINATION

Elvin Frederick William Thurston, and John Gabriel Valentine Scott, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

Filed Apr. 18, 1973, Ser. No. 352,484

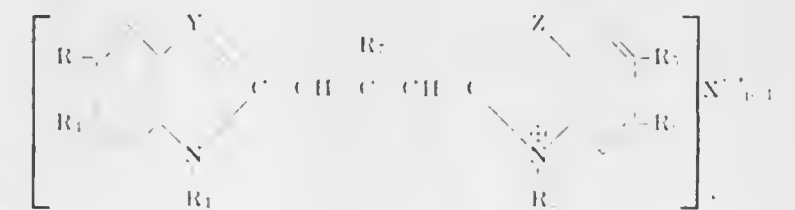
Claims priority, application Great Britain, Apr. 26, 1972, 19408/72

Int. Cl. G03c 1/14

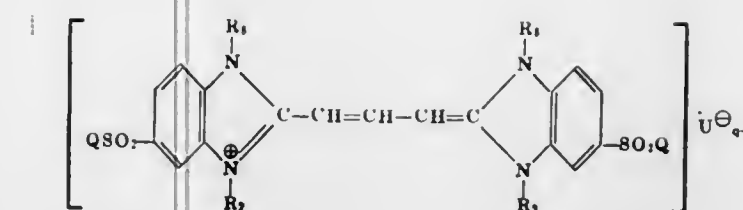
U.S. Cl. 96—124

7 Claims

1. A photographic silver halide material which contains a super-sensitising combination which consists essentially of a sensitising dye of the formula



wherein R_1 and R_2 are each alkyl groups, or a group A-Q where A is a straight or branched alkylene chain containing 1-6 carbon atoms and Q is an amide, carboxylic acid or sulphonc acid group, R_3 , R_4 , R_5 and R_6 are the same or different and each represents a hydrogen or halogen atom, or an alkyl, aryl, hydroxy or alkoxy group, R_7 is a lower alkyl group, Y and Z are each sulphur or selenium atoms or one is an oxygen atom and the other is a sulphur or selenium atom, X is an anion and p is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonc acid in either or both R_1 and R_2 or by the presence of a carboxylic acid in both R_1 and R_2 and is 2 in the case of a non-betaine-like molecular structure, together with a symmetrical trimethincyanine dye of the formula



wherein R_x is an alkyl group and R_y is an alkyl, aryl, sulphonyl, hydroxyalkyl, carboxyalkyl, aralkyl or carboxybenzyl group, or an acylsulphamoylalkyl group of the formula $-(\text{CH}_2)_n \text{SO}_2 \text{NHCOR}_{10}$ where n is an integer from 1 to 6 and R_{10} is an alkyl group, or an alkyl or aralkyl sulphonylalkyl group of the formula $-(\text{CH}_2)_n \text{SO}_2 \text{NHR}_{11}$ where n is an integer from 1 to 6 and R_{11} is an alkyl or aralkyl group, Q is a phenyl or phenyl substituted with at least one halogen, alkyl or alkoxy substituent, U is an anion and q is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonc acid or carboxylic acid group in R_y and is 2 in the case of a non-betaine-like molecular structure.

3,856,533

SURFACE POLISHES BASED ON ORGANOPOLYSILOXANES AND WAX

Karl Schnurrbusch, Leverkusen-Steinbuechel, and Peter Preiss, Wuppertal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 28, 1973, Ser. No. 429,310

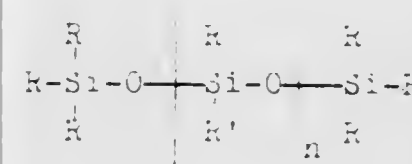
Claims priority, application Germany, Jan. 4, 1973, 2300245

Int. Cl. C08h 9/06; C09g 1/08

U.S. Cl. 106—10

5 Claims

1. A polish for glass, stone, plastic, metal, paint and the like, especially for lacquered metal surfaces, comprising, as its base, an organopolysiloxane-wax polishing composition, which polish is improved by an additional content of 2 to 40 per cent by weight, calculated on said composition, of an organosiloxane of the general formula



wherein

n is zero or an integer from 1 to 12,
 R' is R or $-\text{QSiR}_3$, and
each R is a hydrocarbon radical having up to 18 carbon atoms, individually selected from the group consisting of alkyl, alkenyl and monocyclic aryl, but chosen with the proviso that in said additional organosiloxane of the above formula the numerical ratio of the sum of all carbon atoms to the sum of all silicon atoms is from 4 : 1 to 20 : 1.

3,856,534

ANTI-FOG COMPOSITION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Harry D. Morrison, and Dorrie L. Carmin, Jr., both of Seabrook, Tex.

Continuation-in-part of Ser. No. 69,488, Sept. 3, 1970, abandoned. This application Sept. 8, 1971, Ser. No. 178,771

Int. Cl. C09k 3/00, 3/18

U.S. Cl. 106—13

38 Claims

1. An anti-fog composition for application to viewing surfaces consisting essentially of from about 6.8 to 23.8 parts by volume of a surface active agent; from 11.7 to 62.3 parts by volume of water; and from 0.5 to 15 parts by volume of an oil

time extender selected from the group consisting of a substantially water-insoluble organopolysiloxane having the formula $(\text{R}_2\text{SiO})_n$ wherein R is an aliphatic or aromatic hydrocarbon group having from about 1 to 8 carbon atoms and wherein n ranges from 2 to 20 and an organophosphate ester having the formula R_3PO_3 wherein R is an aliphatic or aromatic hydrocarbon group having from about 1 to 8 carbon atoms.

3,856,535

EMULSIFIABLE HALOALKYL PHOSPHATE BLEND FOR AQUEOUS TEXTILE FLAME-RETARDANT TREATMENTS

Christopher A. Ferguson, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Filed Dec. 6, 1973, Ser. No. 422,521

Int. Cl. C09d 5/18

U.S. Cl. 106—15 FP

9 Claims

1. A textile flame-retarding treating agent blend useful in making stable aqueous emulsions consisting essentially of:

- a flame retarding agent having the general formula $(\text{XH}_2\text{C}-\text{CHXCH}_2\text{O})_3-\text{PO}$ and $[\text{XH}_2\text{C}-\text{CH}(\text{X})\text{O}]_3-\text{PO}$ wherein X is chlorine or bromine, and
- 5-20 percent by weight of said flame retarding agent of an emulsifier having an HLB of 14.5-18.7 which comprises ethoxylated or propoxylated fatty acid esters of glycerol having a high average molecular weight of 6,500-14,000 and up to 150 percent by weight of said high molecular weight fatty acid ester of a low molecular weight fatty acid ester of glycerol, sorbitol, or sorbitan and ethoxylated or propoxylated fatty acid esters of glycerol, sorbitol, or sorbitan having a molecular weight in the range of 1,000-6,500 and wherein said fatty acid moiety in said esters have 10-22 carbon atoms.

3,856,536

LOW-PRESSURE INKING SYSTEM AND INK THEREFOR

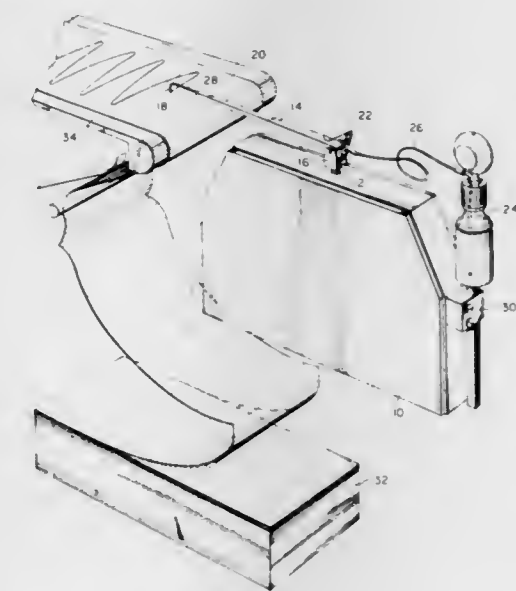
Abe Siegelman, Morton Grove; Robert N. Quoss, Clarendon Hills, and Raymond M. Pawlak, Addison, all of Ill., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 263,699, June 16, 1972, which is a continuation of Ser. No. 50,652, June 29, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,682

Int. Cl. C09d 11/00

U.S. Cl. 106—22

4 Claims



1. A low-viscosity ink designed for use in a low-pressure writing system comprising a major proportion of water containing 20 to 35 percent by weight ethylene glycol monomethyl ether, a water-soluble coloring agent and a water-soluble resin selected from polyvinylpyrrolidone and polyethylene oxide, the amount of polyvinylpyrrolidone being 0.1 to 5 percent by weight and the amount of polyethylene oxide being 0.01 to 0.3 percent by weight.

3,856,537

BORON-SILICON COMPOSITION AND METHOD OF MAKING SAME

Raymond A. Busch, Richland, Wash., assignor to Battelle Development Corporation, Columbus, Ohio
 Filed Mar. 7, 1973, Ser. No. 338,902
 Int. Cl. C04b 35/58

U.S. Cl. 106—55

2 Claims

1. A metastable boron-silicon composition containing up to about 20 atom percent silicon and the balance boron, having a hardness of at least about 3,500 DPH.

3,856,538

REFRACTORY LINING FOR HOT METALLURGICAL LADLES, SOAKING PITS AND FURNACES

Crawford B. Murton, 1906 Brushcliff Road, Pittsburgh, Pa. 15221

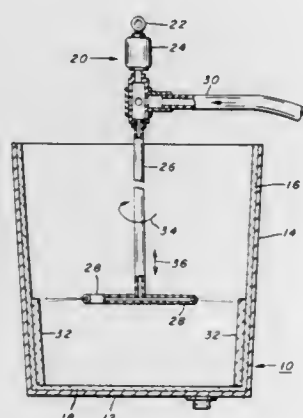
Division of Ser. No. 77,059, Oct. 1, 1970, Pat. No. 3,737,489.

This application Jan. 4, 1973, Ser. No. 320,893

Int. Cl. C04b 35/14

U.S. Cl. 106—68

9 Claims



1. A refractory composition suitable for application use at temperatures ranging from about 400° F. to about 2,800° F. and being capable of being applied to hot vessels by projection, the composition consisting essentially of, by weight, from about ¼% to about 4% of organic material selected from a group consisting of pitch, tar, rosins, polyvinylchloride, polyethyltetrachloride, and mixtures thereof, from about 40% to about 70% of bonding clay, and from about 28% to about 58% of quartzite.

3,856,539

SOLIDIFIED SILICA FOAM PRODUCT AND PROCESS

William A. Mallow; Richard A. Owen, and Ethelbert J. Baker, Jr., all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 102,504, Dec. 28, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,279

Claims priority, application Great Britain, Dec. 4, 1970, 57615/70

Int. Cl. C04b 35/16

U.S. Cl. 106—75

19 Claims

1. In a method for making a foamed alkali metal silicate product including the step of frothing into a foam by gas entrainment a composition comprising an aqueous solution of alkali metal silicate selected from the group consisting of sodium silicate and potassium silicate, together with a surface tension depressant, a silicon dioxide polymer forming agent being introduced into the composition in an amount sufficient to make the foam rigid and resistant to degradation by water, shaping the frothed product, and hardening the shaped product in a polymerization zone, the improvement comprising permitting the frothed product to harden free of damaging contraction or expansion, under conditions of high humidity, approaching 100% relative humidity.

3,856,540

CEMENT ADDITIVE

Tsutomu Mizunuma, and Takeo Yoshida, both of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 327,556

Claims priority, application Japan, Jan. 28, 1972, 47-10312

Int. Cl. C04b 7/02

U.S. Cl. 106—89

2 Claims

1. A cement additive comprising calcium sulfate from 20 to 90% by weight and calcium fluoroaluminate having the chemical formula $3\text{CaO} \cdot 3\text{Al}_2\text{O}_3 \cdot \text{CaF}_2$ from 80 to 10% by weight.

3,856,541

HYDRAULIC CEMENT AND METHOD OF CEMENTING IN ENVIRONMENTS HAVING ELEVATED TEMPERATURES

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 138,339, April 28, 1971,

abandoned, which is a continuation-in-part of Ser. No.

106,560, Jan. 14, 1971, abandoned. This application Sept. 8,

1972, Ser. No. 287,458

Int. Cl. C04b 7/02

U.S. Cl. 106—90

6 Claims

1. In the method of emplacing an aqueous hydraulic cement slurry into an environment having an elevated temperature of at least about 200° F which temperature would normally cause a premature setting of the hydraulic cement, the improvement which comprises:

admixing with said hydraulic cement slurry a water soluble alkali or alkaline earth metal salt of a boron containing hydroxycarboxylic acid in an amount ranging from about 0.1 to about 10 parts by weight per 100 parts by weight of dry cement to retard the setting rate of said hydraulic cement slurry at said elevated temperature.

3,856,542

PROCESS FOR THE PRODUCTION OF IMPROVED CEMENT

Alois Aignesberger, and Hans-Gunter Rosenbauer, both of Trostberg, Upper Bavaria, Germany, assignors to Suddeutsche Kalkstickstoff-Werk Aktiengesellschaft, West Germany

Filed Aug. 13, 1973, Ser. No. 387,668

Claims priority, application Germany, Nov. 8, 1972, 2254668

Int. Cl. C04b 7/54

U.S. Cl. 106—102

4 Claims

1. Process for the production of improved cement comprising,

addition of aqueous solution of a melamine formaldehyde condensation product to ground dry cement in an amount of 0.1 to 2 weight per cent of condensation product with respect to the dry cement by spraying the solution into the fine grinding compartment of a cement grinding mill of a cement production plant, and wherein the concentration of the solution of the condensation product as a function of temperature and dwell time of the material in the fine grinding compartment is controlled so that the retention time required for complete evaporation of the water is not substantially exceeded by total grinding time.

3,856,543

CONTROLLING-SETTING OF PLASTERS

Maurice Allen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1973, Ser. No. 409,451

Claims priority, application Great Britain, Oct. 31, 1972, 50155/72

Int. Cl. C04b 11/00

U.S. Cl. 106—110

9 Claims

1. Method of controlling the setting time of calcium sulphate hemihydrate and a preselected quantity of water, which comprises the steps of intimately mixing with part of the water at least one calcium compound adapted to react with sulphuric acid to form calcium sulphate, intimately mixing sulphuric acid with the calcium compound and water mixture, partially reacting the sulphuric acid and calcium compound, and then during said reaction intimately mixing solid calcium sulphate hemihydrate with the reacting mixture, the total amount of water in the final mixture being equal to the said preselected quantity of water.

3,856,544

FIBER-REINFORCED CALCIUM SILICATE HYDRATE INSULATION

Stanley G. Benner, Littleton, Colo., and Kenneth F. Greene, Somerville, N.J., assignors to Johns-Manville Corporation, Arapahoe County, Colo.

Filed Aug. 6, 1973, Ser. No. 386,132

Int. Cl. C04b 15/06

U.S. Cl. 106—120

9 Claims

1. In a process for reacting lime and a siliceous material under hydrothermal conditions in aqueous solution to produce an aqueous slurry of calcium silicate hydrate crystals, with subsequent molding of the crystals to a desired shape and drying of the shape-molded product to form a shaped object of light weight calcium silicate hydrate suitable for use as thermal insulation, the improvement which comprises incorporating into said aqueous slurry of calcium silicate hydrate crystals 1 to 10% by weight based on solids of poly(ethylene terephthalate) fibers, said fibers having a length of from ¼ to 1 inch and a denier of from 0.5 to 5.

3,856,545

PIGMENTARY COMPOSITION

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation of Ser. No. 164,416, July 20, 1971, abandoned.

This application Nov. 15, 1972, Ser. No. 306,926

Int. Cl. C08h 17/02

U.S. Cl. 106—288 B

11 Claims

1. A white appearing pigmentary composition comprising calcined agglomerates consisting of from about 90 to 99 parts by weight of anhydrous silicates selected from the group consisting of silica, the silicates of beryllium, magnesium and calcium, aluminosilicates, the aluminosilicates of lithium, beryllium, magnesium, barium, sodium, potassium and calcium; and mixtures thereof; 1 to 10 parts by weight of an inorganic binder selected from the group consisting of glassy sodium polyphosphates having from about 4 to 100 phosphorus atoms per molecule, expanding lattice montmorillonites, soluble silicates of sodium, potassium and lithium, and mixtures thereof, said anhydrous silicates consisting of particles having an average size ranging from about 2 to 40 microns and said agglomerates ranging in size from about 20 microns to 1 centimeter.

3,856,546

NON-TOXIC COMPOSITIONS FOR USE IN PRIMER COATING FORMULATIONS

Gerald L. Weiss, Freehold, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,139

Int. Cl. C09c 1/36; C08h 17/04

U.S. Cl. 106—300

7 Claims

1. A component for use in a primer formulation adapted to be applied to cedar or redwood substrates to prevent staining said component intimately associated with a non-toxic tin composition comprising from 4.9 to 7.0 percent hydrous stannous oxide, calculated as SnO, containing absorbed, unreacted stannous salt yielding stannous ions in said primer formulation for reacting with the staining agents of said cedar or redwood substrates to form insoluble compounds with said agents.

3,856,547

PROCESSING AIDS FOR POLY(VINYL CHLORIDE) RESINS

Erwin Aron, Clifton, N.J., assignor to Technical Processing, Inc., Paterson, N.J.

Filed Oct. 16, 1973, Ser. No. 407,033

Int. Cl. C08f 45/44; C08k 1/44

U.S. Cl. 106—316

5 Claims

1. A composition comprising an admixture consisting essentially of:

- from about 50 to about 70 weight percent of at least one monoalkyl phenoxy polyethylene glycol having from about 8 to about 12 carbons in the alkyl group thereof and from about 3 to about 7 ethyleneoxy units;
- from about 15 to about 25 weight percent of at least one amine or ammonium salt of an organic acid having a vapor pressure of not greater than 1 mm Hg at 20°C. selected from the group consisting of monoamine salts of monohydric organic acids or molecular weight of at least 146 and polyethylene polyamide salts of such acids where said polyethylene polyamide has at least 4 ethyleneamine units, there being one acid residue for each amine nitrogen of said polyalkylene polyamine; and
- from about 5 to about 25 weight percent of at least one amide having a vapor pressure of not greater than about 1 mm Hg at 20°C. selected from the group consisting of N-lower alkyl and N-hydroxy lower alkyl substituted higher amides of from about 10 to about 80 carbons and amides of monohydric organic acids of molecular weight of at least 146 and polyethylene polyamines having at least 4 ethyleneamine units, there being one acid residue for each amine nitrogen.

3,856,548

STRIPPABLE OVERCOATING FOR IMPROVED XEROGRAPHIC PLATES

Thomas W. Taylor, Marion; Anthony J. Ciuffini, and Paul L. Gerace, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 5, 1973, Ser. No. 321,165

Int. Cl. C03g 13/22

U.S. Cl. 117—6

11 Claims

1. A method of making a photoreceptor member which comprises:

- vacuum depositing a layer of photoconductive material onto a supporting substrate;
- forming a strippable organic overcoating over said photoconductive layer following vacuum deposition; and
- stripping off said overcoating whereby dust, dirt and other foreign material is trapped within the strippable coating and removed from the surface of said photoconductive layer.

3,856,549

METHOD FOR STABILIZING POLYBENZIMIDAZOLES
Richard J. Dauksys, 49 Nuthatch Knob, Bellbrook, Ohio 06033

Filed June 4, 1973, Ser. No. 366,912

Int. Cl. B44d 1/06, 5/06

U.S. Cl. 117—33.3

6 Claims

1. A process for stabilizing a shaped article of a polybenzimidazole against degradation by ultraviolet light which comprises immersing the article for a period ranging from 5 minutes to 5 hours in a solution comprising osmium tetroxide and a solvent therefor selected from the group consisting of ethyl ether, pyridine and dioxane, the amount of osmium tetroxide in solution ranging from about 0.05 to 1.0 gram per liter of solution and the solution being at a temperature ranging from about 20 to 100°C.

3,856,550

FLUORESCENT VISUAL AUGMENTATION COMPOSITION

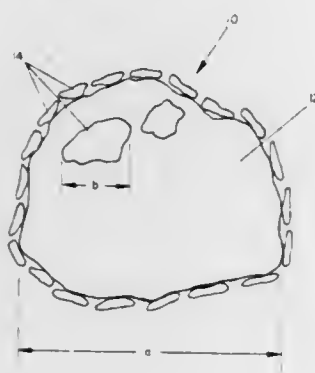
Everett M. Bens, and Lloyd J. Holt, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 56,941, July 21, 1970, abandoned. This application Sept. 12, 1973, Ser. No. 396,650

Int. Cl. C09k 1/02

U.S. Cl. 117—33.5 R

2 Claims



1. A method for preparing composite articles which, when released in the air in a large group, will form a highly visible cloud which descends slowly, said method comprising the steps of:

- placing, in a container, a plurality of inert dry carrier particles selected from the group consisting of talc, expanded mica, magnesia, silica gel, diatomaceous earth, bakelite, expanded vermiculite, calcium silicate, alumina and silica, said particles having diameters such that the particles will pass through a screen of from 30 to 300 mesh;
- adding a plurality of dry daylight fluorescent pigment particles having diameters in the range of from 0.5 to 2.5 microns to said container which contains said carrier particles, said daylight fluorescent pigment particles being added in the weight percentage range of from 12.5 weight percent pigment per 87.5 weight percent carrier particles to 50 weight percent pigment per 50 weight percent carrier particles; and said daylight fluorescent pigment particles being prepared by a method selected from that of coloring a resin in the fused state with a rhodamine dye and that of dyeing a powdered resin or resin precipitate in a dyebath with a rhodamine dye and then reducing the colored or dyed resin to particles having diameters in the range of from 0.5 to 2.5 microns; and
- mixing said carrier particles and said daylight fluorescent pigment particles together until a plurality of composite articles each made up of an inner carrier particle and a plurality of outer pigment particles coating the carrier particle and held thereto by means of electrostatic attraction, friction forces, van der Waals forces, gravitational forces or a combination thereof are formed and all

of the material in said container appears visually to have taken on the color of said daylight fluorescent pigment particles.

3,856,551

PRESSURE SENSITIVE COPYING PAPER

Frank Llewellyn Jenkins, Chesham, England, assignor to Wiggins Teape Research & Development Limited, London, England

Continuation-in-part of Ser. No. 886,741, Dec. 19, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 215,079 Claims priority, application Great Britain, Dec. 24, 1968, 61358/68

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2

5 Claims

1. In a web or sheet of paper having on a surface thereof a coating capable of developing a colour former from the colourless to a coloured form, in which the coating includes fine particles of inorganic acidic, oil-absorptive, mineral material and an organic, acidic polymer, the improvement comprising the mineral particles being silica having a surface area greater than 100 m²/g and being individually coated with an organic, acidic polymer containing phenolic hydroxyl groups, which polymer is reactive with the colour-former to develop it to the coloured form and is coated on the particles in an amount sufficient to develop the colour-former to the coloured form.

3,856,552

COLOR PROJECTION TRANSPARENCIES

Frank L. Deyak, Stillwater, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 2, 1973, Ser. No. 347,194

Int. Cl. B41c 1/06; B41m 5/18

U.S. Cl. 117—36.2

5 Claims

1. Sheet material, which rapidly develops a longlasting color when first briefly subjected to vapors of salicylic acid, having an active color-forming stratum comprising a mixture of (A) a protonatable chromogenous dye-forming color progenitor and (B) a substantially colorless oxidizable Nhydrocarbyl-substituted dihydroheterocyclic amine precursor of a styryl or cyanine dye.

5. A copy-sheet assembly useful in making a color projection transparency copy of a graphic original by the thermographic copying process and consisting of a color-forming film member and an acid source sheet releasably tabbed together along one common margin in face-to-face relationship and an acid-impervious separator sheet removably positioned therebetween, and wherein said color-forming member includes a transparent carrier film coated with a mixture in a polymeric binder of a protonatable chromogenous dye-forming color progenitor and an oxidizable N-hydrocarbyl-substituted dihydroheterocyclic amine precursor of a styryl or cyanine dye.

3,856,553

LIGHT-RESISTANT-COLOR DEVELOPING SHEET FOR PRESSURE-SENSITIVE COPYING PAPER

Takao Hayashi, Hiroharu Matsukawa, and Masataka Kiritani, all of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 151,046, June 8, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,574

Claims priority, application Japan, June 8, 1970, 45-49339

Int. Cl. B41c 1/06

U.S. Cl. 117—36.2

10 Claims

1. A color developing sheet for pressure-sensitive copying paper comprising a support and a developer layer coated thereon, said developer layer comprising an alkaline substance selected from the group consisting of an alkali metal hydroxide and an alkali metal carbonate, in addition to a clay and a phenol compound in which the hydrogen atom bonded to the aromatic ring is substituted with at least one hydroxyl group,

3,856,555

METHOD FOR DRYING AN ELECTROPHOTOGRAPHIC SUPPORT ELEMENT

Arthur R. Mandeville, South Hadley, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Division of Ser. No. 140,889, May 6, 1971, Pat. No. 3,724,096.

This application Jan. 8, 1973, Ser. No. 321,817

Int. Cl. F26b 13/00; G03g 13/20, 15/20

U.S. Cl. 117—37 LE

5 Claims

said alkaline substance being present in an amount of from 0.2 to 30 parts by weight per 100 parts by weight of said clay and said phenol compound being present in an amount of from 1 to 10 parts by weight per 100 parts by weight of clay.

2. A color developing sheet according to claim 1, wherein said phenol compound is a member selected from the group consisting of p-t-butyl phenol, p-t-amyl phenol, p-cresol, p-



nonylphenol, p(p-bromophenyl) phenol, biphenyl phenol, 2,4-xyleneol, 2,4-diphenyl phenol, 2-chloro-4-phenyl phenol, 2,3,5-trimethyl phenol, tetramethyl phenol, 4-phenyl pyrocatechol, o,o'-biphenol, 4,4'-bi-o-cresol, α, α'-diphenyl-4,4'-bi-o-cresol, biphenyl tetrol, 2,4'-methylene diphenol, methylene diresorcinol, 2,2-methylene di-p-cresol, methylene bis-(benzylphenol), methylene bis-(phenyl phenol), methylene bis-(halo-phenol), and 4,4'-thiodiphenol.

3,856,554

PRESSURE-SENSITIVE CARBONLESS TRANSFER SHEET AND METHOD FOR PROVIDING A CHEMICALLY FORMED IMAGE ON AN UNTREATED SUBSTRATE

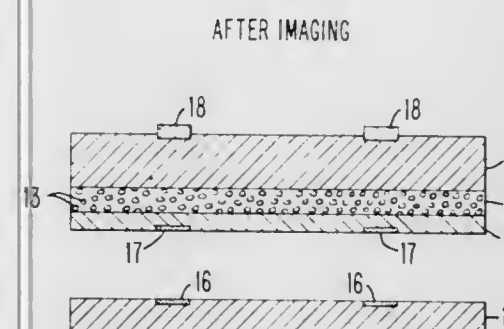
Richard B. Jablonski, Lambertville, N.J., and James F. Martone, Lexington, Ky., assignors to International Business Machine Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,710

Int. Cl. B41m 5/00

U.S. Cl. 117—36.8

11 Claims



1. A pressure-sensitive carbonless transfer sheet having a surface supporting a multitude of microscopic pressure-rupturable capsules containing a reactant solution comprising a precursor taken from the class of dithiooxamide and its N,N'-di-substituted derivatives, and a solvent and also supporting a co-reactant for the reactant solution, which co-reactant comprises nickel (II) chloride, sodium ricinoleate and stearic acid,

the reactant solution and co-reactant being adapted, upon application of a localized pressure to the sheet and consequently rupture of the capsules while said surface is in intimate contact with another surface devoid of reactant and co-reactant, to cause a substantial portion of the co-reactant and reactant solution to physically transfer to said other surface to cause chemical reactions to occur between the precursor and co-reactant for rapidly providing a dry, chemically formed image on such other surface.

1. A method for drying an electrophotographic support element containing on its front surface a latent electrostatic image which has been toned and rendered visible by immersion of said support element in a developing solution comprising a mixture of charged toner particles in a carrier liquid, comprising

placing said support element carrying the developed image on a downwardly inclined foraminous member so that its back surface contacts said foraminous member and its front surface is directed away from said foraminous member, and circulating relatively cool air over said front surface and said back surface so as to evaporate said carrier liquid and to leave said toner particles attached to said support element.

3,856,556

PROCESS FOR THE MANUFACTURE OF CHEMICAL RESISTANT POLYARYLATE FILMS AND COATINGS

Zbigniew K. Brzozowski, Stanislaw Porejko, Janusz Kaczorowski, and Jędrzej Kielkiewicz, all of Warszawa, Poland, assignors to Politechnika Warszawska, Warszawa, Poland

Filed Mar. 8, 1973, Ser. No. 339,053

Claims priority, application Poland, Mar. 15, 1972, 154073; Apr. 27, 1972, 155001

Int. Cl. B44d 1/46

U.S. Cl. 117—62

4 Claims

1. A process for the manufacture of a chemical resistant, self-extinguishing polyarylate film or coating formed from a polyarylate based on a chlorobisphenol or ester thereof in which the carbon atom between two aryl rings with substituents or without substituents is connected by a double bond to a CCl₂ group comprising subjecting said film or coating to a temperature of 135°–320°C for 1 to 10 hours.

2. A process according to claim 1 wherein the polyarylate is the condensation product of said chlorobisphenol or a mixture of said chlorobisphenol with a bis(hydroxyaryl)alkane and at least one dicarboxylic acid chloride or ester.

3,856,557

PROCESS FOR FORMING A MANGANESE BISMUTHIDE FILM

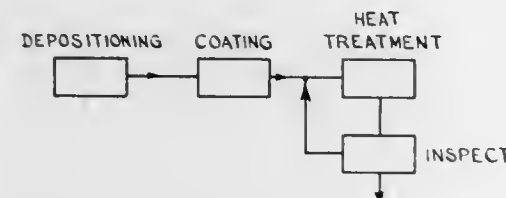
Willis Robert Cuttall, Pagnell, and Norman Nathan Truman, Enfield, both of England, assignors to International Computers Limited, London, England

Filed Oct. 2, 1972, Ser. No. 294,069

Claims priority, application Great Britain, Oct. 1, 1971, 45773/71

Int. Cl. C23c 13/02

U.S. Cl. 117-71 R



1. A process for the formation of a film of intermetallic manganese bismuthide on a substrate comprising the steps of: depositing under vacuum at a first pressure level manganese and bismuth on to the same region of the substrate; depositing under a vacuum at a second pressure higher than the first level an air impervious layer which is chemically inert to the manganese and bismuth to encapsulate the manganese and the bismuth; transferring the substrate to a heating zone, and converting the manganese and bismuth into an intermetallic manganese bismuthide by heating the manganese and bismuth under ambient pressure conditions for at least 2 hours at a temperature of approximately 200°C.

3,856,558

TREATMENT OF CELLULOSE

Edward Robbart, 321 Fairmount Ave., Milton, Mass. 02186

Continuation-in-part of Ser. No. 308,057, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 39,538, May 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 522,366, Jan. 24, 1966, abandoned. This application Aug. 8, 1973, Ser. No. 386,622

Int. Cl. C23c 11/00

U.S. Cl. 117-106 R

20 Claims

1. The process for rendering a cellulosic material water repellent which comprises contacting a cellulosic material having a water content between about 2 and 7 weight percent with vapors of a lower alkyl silicon halide which reacts with water to form a siloxane, maintaining the cellulosic material and lower alkyl silicon halide in contact between about 0.1 and 8 seconds, the concentration of lower alkyl silicon halide and the temperature at which the contact is conducted being maintained so that the cellulosic material contacted with the lower alkyl silicon halide is rendered water repellent and has a pH greater than 2.5.

3,856,559

METHOD OF MANUFACTURING COMPOSITE FILMS OF HEAT RESISTING POLYMERS

Keisuke Nakagome, Osaka, Japan, assignor to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 28, 1972, Ser. No. 293,181

Claims priority, application Japan, Sept. 30, 1971, 46-76996

Int. Cl. B44d 1/44

U.S. Cl. 117-119.6

8 Claims

1. A method of manufacturing a heat adhesive composite film of a heat resisting polymer having thereon a heat softenable adhesive layer comprising

applying a solution of a cresol-soluble, heterocyclic ring-containing polymer to at least one surface of a heat resisting support film formed from a solution of a heterocyclic ring-containing polymer which is insoluble in a cresol but soluble in an aprotic polar solvent,

drying said coated layer to a residual solvent content of 20% by weight or less based on the weight of the solid content in said coated layer.

3,856,560

ARYLENE SULFIDE POLYMER COATING COMPOSITIONS

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 177,130, Sept. 1, 1971, Pat. No.

3,776,880. This application Aug. 15, 1973, Ser. No. 388,598

Int. Cl. B32b 15/08, 27/06

U.S. Cl. 117-132 B

7 Claims

1. A coated structure comprising a substrate having bonded thereto a coating composition comprising a poly(arylene sulfide) resin and a finite amount up to 50 weight percent, based on resin, of at least one nitrogenous organic compound selected from melamine, hexamethylenetetramine, benzothiazole, 1H-benzotriazole, casein, and an ammonium salt of casein, and mixtures thereof.

3,856,561

RUBBER ARTICLES HAVING IMPROVED SLIP COATING

Pascal E. Esemplare, Mountainside, N.J., and Dennis Beeferman, Brooklyn, N.Y., assignors to Sutures, Inc., Coventry, Conn.

Filed Jan. 25, 1972, Ser. No. 220,692

Int. Cl. B32b 25/08

U.S. Cl. 117-139

3 Claims

1. An article including a rubber surface provided with a slip coating, said slip coating consisting essentially of a copolymer selected from the group consisting of vinyl chloride-alkyl acrylate copolymer and vinylidene chloride-alkyl acrylate copolymer, said copolymer comprising from 20 to 80 mole percent vinyl chloride or vinylidene chloride units and, correspondingly, 80 to 20 mole percent alkyl acrylate units.

3,856,562

METHODS FOR TREATING FIBERBOARD WITH AMINOPLAST COPOLYMER BLENDS

James T. White, Cottondale, and Donald L. Gumprecht, Tuscaloosa, both of Ala., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Division of Ser. No. 282,939, Aug. 23, 1972, abandoned, which is a continuation of Ser. No. 107,583, Jan. 18, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,449

Int. Cl. D21h 1/40

U.S. Cl. 117-140 A

6 Claims

1. A method for increasing the sag resistance of fiberboard panels by treating the surface of said fiberboard panels with a liquid thermosetting resin blend of liquid thermosetting copolymers consisting essentially of (1) from about 25% to about 55% by weight, based upon the total weight of (1) and (2), of a melamine-formaldehyde copolymer, said copolymer having a mole ratio of melamine to formaldehyde of about 1.0:2.5 (2) from about 75% to about 45% by weight, based upon the total weight of (1) and (2), of a urea-formaldehyde copolymer, said copolymer having a mole ratio of urea to formaldehyde of about 1.0:1.9 and (3) from about 0.05% to about 0.5% by weight, based upon the combined weight of (1) and (2), of an ammonium hydroxide-sodium hydroxide stabilizer, said stabilizer having a ratio of concentrated liquid ammonium hydroxide to a 50% by weight aqueous solution of sodium hydroxide of about 2.0:1.0 and thermosetting said blend.

3,856,563

OPACITY OF CLAY FILMS

William E. Zentz, Jr., Iselin, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Division of Ser. No. 270,498, July 10, 1972, Pat. No.

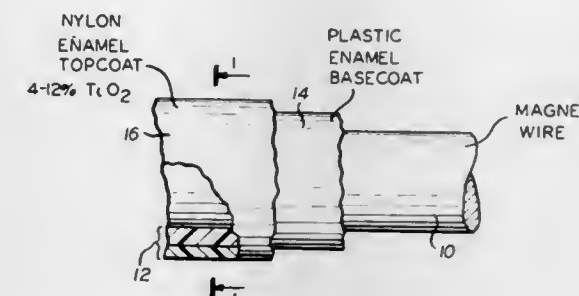
3,816,153. This application Mar. 18, 1974, Ser. No. 451,954

Int. Cl. D21h 1/10

U.S. Cl. 117-152

5 Claims

1. In the preparation of clay-coated paper wherein a coating composition comprising water, kaolin clay, adhesive binder and clay deflocculating agent is prepared and the composition is coated on paper and dried, the improvement which comprises incorporating a small amount of a hydrolyzable bismuth (+3) salt with the clay before an aqueous slip of said clay is deflocculated, the amount of said salt being sufficient to increase the opacity of a sheet coated with said coating composition.



3,856,564

PAPER COATED WITH CLAY AND ASBESTOS

William Brian Kirkham, Montreal, Quebec, Canada, assignor to Domtar Limited, Montreal, Canada

Continuation-in-part of Ser. No. 222,399, Jan. 31, 1972,

abandoned. This application Aug. 7, 1973, Ser. No. 386,391

Int. Cl. D21h 1/28

U.S. Cl. 117-155 UA

3 Claims

1. A coated paper comprising a substrate of paper and a coating consisting essentially of clay and asbestos and a binder, said asbestos being present in the amount of 0.1 to 10 percent based on the weight of the clay said binder being present in the amount of 10 percent - 20 percent based on the weight of said clay, and said coating being uniformly distributed over at least one surface of the substrate.

3,856,565

METHOD OF ELECTROLESSLY PLATING A METAL TO A BODY WHICH INCLUDES LEAD

Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 3, 1973, Ser. No. 355,671

Int. Cl. C23c 3/00

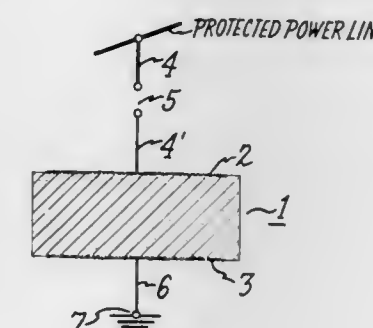
U.S. Cl. 117-212

4 Claims

1. In a method of depositing a metal electrolessly from a plating bath, on a surface of a body a portion of which surface contains a lead compound, the step of activating said surface with a solution separate from the plating bath, that includes, in addition to the activating substance, a substance that reacts with lead ions to form an insoluble lead compound such that the lead is converted to a condition in which it cannot poison said activating substance.

1. A method of forming an electrode on a porous ceramic substrate comprising the steps of:

applying to the surface of a porous, granular substrate a layer of a finely divided titanium oxide;
heating the substrate with the applied layer in a reducing atmosphere to a temperature of between 1,200° to 1,300°C until the titanium oxide is reduced more than it is in its stoichiometric state and becomes relatively conductive, and
cooling the substrate to room temperature.



3,856,566

METHOD OF MAKING INSULATED MAGNET WIRE

Hollis S. Saunders, Ballwin, Mo., assignor to General Cable Corporation, New York, N.Y.

Continuation of Ser. No. 256,440, May 24, 1972, abandoned.

This application Feb. 28, 1973, Ser. No. 336,781

Int. Cl. H01b 7/02

U.S. Cl. 117-218

10 Claims

1. The method of making insulated magnet wire having a slick, smooth surface with a low coefficient of friction suitable for winding the wire on high speed winding machines, which method comprises providing an electrical conducting wire, preparing a nylon enamel containing titanium dioxide dispersed in the enamel, the titanium dioxide being about 20 to 40 percent of the weight of the solids in the enamel and imparting a slick, smooth surface to the enamel, applying insulation around the wire to the thickness necessary for the in-

3,856,568

METHOD FOR FORMING AN INSULATING FILM ON AN ORIENTED SILICON STEEL SHEET

Osamu Tanaka, Takaaki Yamamoto, and Toshihiko Takata, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sept. 27, 1972, Ser. No. 292,715

Claims priority, application Japan, Sept. 27, 1971, 46-75233

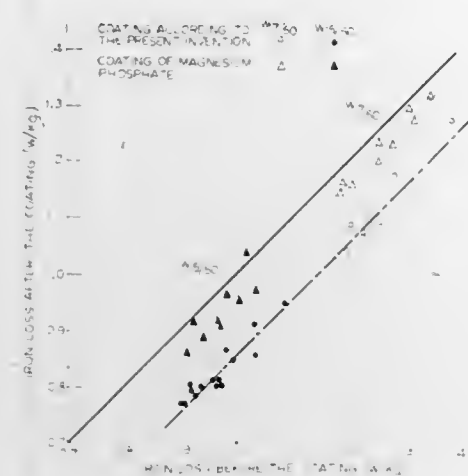
Int. Cl. C22c 39/46; H01f 27/24

U.S. Cl. 117-70 B

5 Claims

1. A method for forming an insulating film on an oriented silicon steel sheet, comprising the steps of applying to the oriented silicon steel sheet a coating solution composed of 4 to 16 wt. percent of colloidal silica, 3 to 24 wt. percent of aluminum phosphate, calculated as aluminum biphosphate,

and 0.2 to 4.5 wt. percent of at least one compound selected from the group consisting of chromic anhydride and chromate



anhydride and chromate and baking the thus applied coating solution at a temperature above 350°C.

3,856,569

PROCESS FOR THE PURIFICATION AND CONCENTRATION OF SOLUTIONS DERIVED FROM MARINE ALGAE

Clifford H. G. Strong, Guelph, Ontario, Canada, assignor to Uniroyal, Ltd., Montreal, Canada

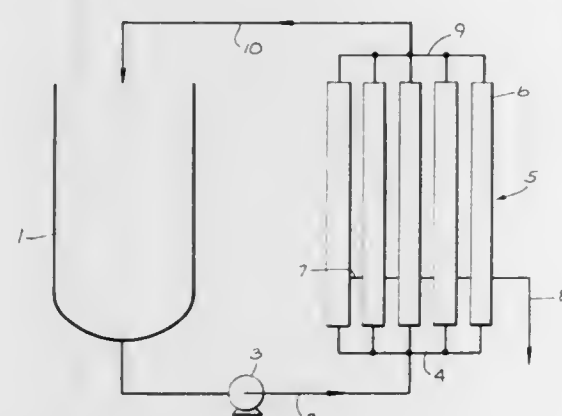
Filed Sept. 7, 1972, Ser. No. 287,178

Claims priority, application Canada, Aug. 16, 1972, 149534

Int. Cl. B01d 13/00; C07c 47/18

U.S. Cl. 127-34

20 Claims



1. The method of purifying and concentrating an aqueous polysaccharide solution derived from marine algae which comprises subjecting said solution to ultrafiltration using a semi-permeable ultrafiltration membrane having an apparent pore diameter of from 20 Angstrom units to 400 Angstrom units and thereby causing water and low molecular weight species to pass through said membrane and the polysaccharide to be retained by said membrane.

3,856,570

METHOD AND APPARATUS FOR CLEANING THE INTERIOR OF INDUSTRIAL VESSELS BY USING ROTATING NOZZLE HEADS

David C. McDermott, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 11, 1972, Ser. No. 296,714

Int. Cl. B08b 9/08

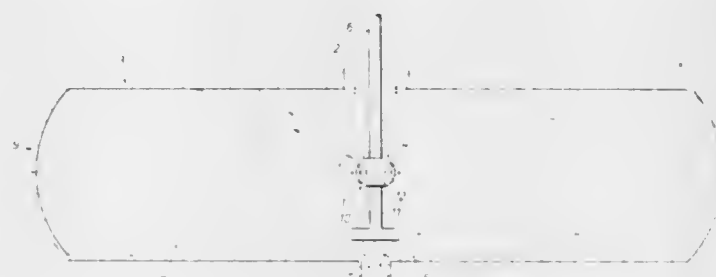
U.S. Cl. 134-24

7 Claims

1. A method for cleaning the interior of a tank car comprising:

inserting within the tank car interior a nozzle assembly including a pair of rotatable nozzle heads for producing high velocity liquid jets of cleaning fluid and a tee-shaped gas nozzle, the liquid nozzle heads and the gas nozzle

being mounted on concentric supply pipes which supply liquid to the rotatable nozzles and gas to the gas nozzle, the liquid nozzle heads generally coinciding with the tank axis, and the gas nozzle being parallel to the tank car axis just above the floor of the tank car; rotating the liquid nozzle heads at least about 10 rpm for producing liquid jets about an axis generally coinciding with the tank axis so as to obliquely sweep a circumferential area approximately 3 feet long of the tank car wall with each nozzle so that each part of the tank wall receives a sweeping action of fresh cleaning fluid several



times each minute continuously removing the liquid from a bottom outlet of the tank car; and establishing a gas flow pattern from the tee-shaped gas nozzle which extends the length of the tank car so that gas is deflected by each head of the tank car and returned via the upper portion of the tank car to exit via a manway, the gas nozzle comprising a cylindrical head having opposing nozzles with exit diameters not more than about 4 inches and the length of each half of the head being a minimum of about two diameters of the head in order to effectively direct the gas jets issuing from the nozzles.

3,856,571

CONTACT LENS HOLDER AND STORAGE CONTAINER USEFUL IN A METHOD FOR CLEANING CONTACT LENSES

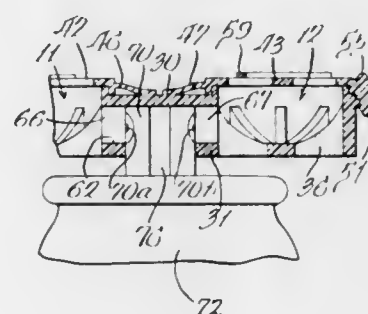
Guy J. Sherman, 504 Burning Tree Ln., Naperville, Ill. 60540

Filed Jan. 22, 1973, Ser. No. 325,254

Int. Cl. A45c 11/04; B08b 3/02

U.S. Cl. 134-34

10 Claims



1. A method of treating a pair of lenses including the steps of: holding the lenses in juxtaposed spaced relationship at the outer ends of oppositely directed passages; providing a container of pressurized lens treating solution provided with nozzle means having oppositely directed spray outlets; disposing said nozzle between the inner ends of said passages; and manipulating the nozzle means to concurrently spray treating solution through said passages for concurrently treating both lenses with said treating solution.

3,856,572

APPARATUS FOR CLEANING UTENSILS OR THE LIKE

Eduard Hildebrand, Aadorf, Switzerland, assignor to Ed. Hildebrand Ing. AG, Aadorf, Switzerland

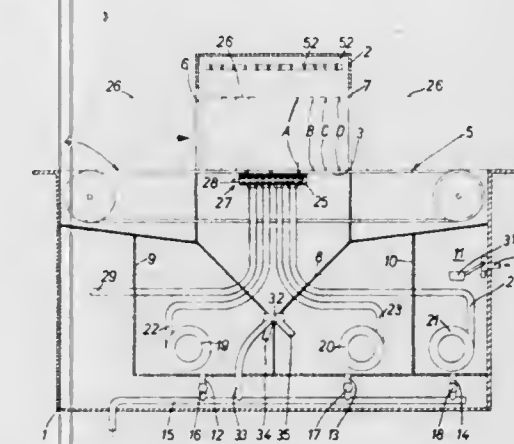
Filed Jan. 26, 1973, Ser. No. 327,162

Claims priority, application Switzerland, Jan. 27, 1972, 1202/72

Int. Cl. B08b 3/02

U.S. Cl. 134-96

4 Claims



1. An apparatus for cleaning articles, such as utensils or the like, especially laboratory utensils, said apparatus comprising: at least one rack for receiving articles to be cleaned, a nozzle system for delivering different treatment liquids for the treatment of the articles, separate conduits for the feed of the different treatment liquids, said separate conduits having respective outlets, means for successively connecting said nozzle system with said separate conduits, wherein said nozzle system comprises a conduit system arranged at the rack and spray nozzles supplied by said conduit system, means defining a cleaning compartment, a conveyor mechanism for stepwise moving the rack through the cleaning compartment, and an inlet for said conduit system arranged at the rack such that during the conveying movement of the rack said inlet is successively connected in flow communication with respective outlets of the separate conduits, wherein the outlets of the separate conduits, viewed in the direction of movement of the conveyor mechanism, are arranged in a row behind one another at a first stationary coupling portion, and the inlet for the conduit system is arranged at a second coupling portion fixedly mounted at an associated movable rack such that said second coupling portion is capable of being brought into operable engagement with the first coupling portion and is displaceable relative thereto in order to successively flow communicate the inlet with one of the outlets at the first coupling portion.

3,856,573

METHOD OF PRODUCING A STRUCTURAL MEMBER FORMED OF ELECTRODES, COVER LAYERS AND A SUPPORT FRAME FOR FUEL ELEMENTS WITH A LIQUID ELECTROLYTE, AND STRUCTURAL MEMBER PRODUCED BY THE METHOD

Dieter Groppel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 50,051, June 29, 1970, abandoned.

This application Aug. 16, 1972, Ser. No. 281,163

Claims priority, application Germany, July 1, 1969, 1933305

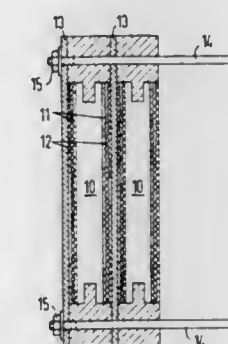
Int. Cl. H01m 27/00, 37/00, 27/02

U.S. Cl. 136-86 R

9 Claims

1. Method of producing a compact, storable structure member, formed of catalyst-layer electrodes, cover layers and framework for fuel elements which comprises welding a first metal screen member to one side of a framework portion of

reduced thickness projecting from a framework formed of plastic material and forming a first shoulder having a greater length at the outer edge of the framework than the thickness of said first metal screen member, placing at least one screen of plastic material adjacent the first metal screen member, welding a second metal screen member to the other side of the framework portion, which forms a second shoulder located on the opposite side of said framework portion from said first shoulder thereof and having a greater length at the outer edge of the framework than the thickness of said second metal



3,856,574

ELECTRODE AND METHOD OF MANUFACTURE

Yasuo Amagi, and Zenya Skiiki, both of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1972, Ser. No. 223,026

Claims priority, application Japan, Feb. 3, 1971, 46-3776

Int. Cl. H01m 13/00

U.S. Cl. 136-120 FC

3 Claims

1. A porous carbon electrode having an average pore diameter of 0.5 to 20 μ , a porosity of 5 to 50%, a bulk density of 0.2 to 0.9 g/cc, a surface-to-weight ratio of 600 to 2,000 m^2/g and a compressive strength of 20 to 400 kg/cm^2 , said electrode comprising hollow carbon micro-spheres dispersed in a carbonized matrix wherein said hollow carbon micro-spheres have grain diameters of 5 to 100 μ and wall thicknesses of 0.5 to 25 μ .

3,856,575

ELECTRIC CELL WITH WIDE AND NARROW POSITIVE AND NEGATIVE PLATES AND PLATE STRAP ATTACHMENT

Herbert Denis Hughes, Evesham, England, assignor to Alkaline Batteries Limited, Redditch, Worcestershire, England

Filed Apr. 2, 1973, Ser. No. 346,804

Claims priority, application Great Britain, Apr. 6, 1972, 15971/72

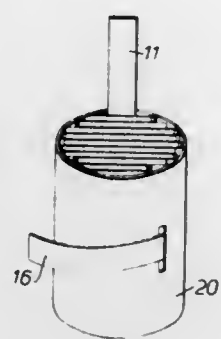
Int. Cl. H01m 37/00

U.S. Cl. 136-134

5 Claims

1. An electric cell of alkaline type having substantially planar rectangular positive and negative plates of pocket type interleaved in a cylindrical casing and lying in planes parallel to the axis of the casing, the outer plates being narrower than the middle ones, in which the plates of each polarity are provided with a plate strap of foil strip, one said plate strap passing circumferentially around and being welded to corresponding longitudinal edges of plates of one polarity, and said other

plate strap passing similarly around and being welded to corresponding longitudinal edges of the plates of the other polarity,



to connect the plates of each polarity together and to an external terminal.

3,856,576

PROCESS OF TREATING ELECTROLYTIC MANGANESE DIOXIDE

Martin Angel Prieto, Diamond Bar, Calif., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

Filed June 25, 1973, Ser. No. 373,431

Int. Cl. C01g 45/02

U.S. Cl. 136-139

10 Claims

1. A method of treating electrodeposited manganese dioxide comprising:

- providing an admixture comprising manganese dioxide in an aqueous treatment solution of sulfuric acid and manganous ion, said manganous ion being present in an amount of at least 1 gram per liter of solution, said sulfuric acid being present in an amount sufficient to provide a ratio of manganous ion to sulfuric acid of from 1:10 to 2:1 and said manganese dioxide being present in an amount of from about 150-1,500 gram per liter of solution;
- maintaining said admixture at a treatment temperature of from about 70°C. to about the boiling point of the admixture for a time of from 2 to 10 hours;
- agitating said admixture during at least a portion of the time it is maintained at said treatment temperature; and
- recovering the treated manganese dioxide.

3,856,577

ELECTROCHEMICAL CELL SUPPORT AND CONTACT STRUCTURE

Toshihiko Oki, Suwa; Hirohisa Kurita, Shimosuwa, and Motoyuki Fujimori, Suwa, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

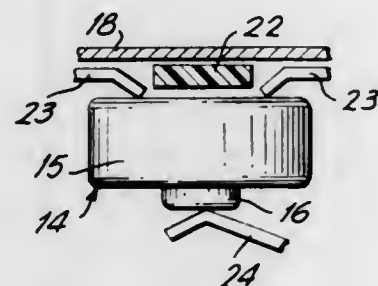
Filed July 21, 1972, Ser. No. 274,115

Claims priority, application Japan, July 22, 1971, 46-54859

Int. Cl. H01m 1/04

U.S. Cl. 136-171

2 Claims



1. In a cell-powered device wherein a cell must be held in a single specific electric orientation for proper operation of said device, and one of said cell terminals is a casing having a longitudinal axis and the other of said cell terminals projects from said casing in a direction along said axis and is substantially smaller in diameter than said one terminal and short circuiting between said terminals must be avoided, the im-

provement comprising support means for said cell, first and second contact means mounted in juxtaposition to said support means, said support means and contact means being constructed and arranged to allow serial electrical engagement between said terminals of said cell and said contact means only when said cell is mounted in said support means in a pre-selected orientation, said support means including an insulator means so positioned as to engage said other terminal and prevent electrical connection between said first contact means and said other terminal in the event that said cell is inserted into said support means in other than the pre-selected direction.

3,856,578

BIPOLAR TRANSISTORS AND METHOD OF MANUFACTURE

Richard Steven Payne, Piscataway, N.J., and Robert John Scavuzzo, Bethlehem, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

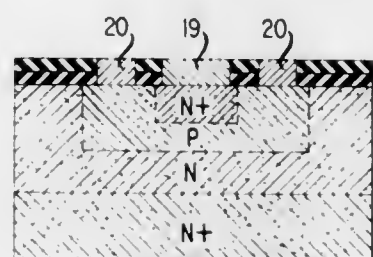
Continuation-in-part of Ser. No. 234,021, March 13, 1972,

Pat. No. 3,756,861. This application July 16, 1973, Ser. No. 379,408

Int. Cl. H01f 7/54

U.S. Cl. 148-1.5

6 Claims



1. A method of fabricating a transistor comprising the steps of:

- exposing a semiconductor zone of one conductivity type to a first ion beam of impurities of opposite conductivity type so as to form a first region of impurities of opposite conductivity type therein;
- exposing said zone to a second ion beam of impurities of said opposite conductivity type so as to form a second region of impurities of opposite conductivity type therein over the area of the first region with a peak density which is less than the peak density of the first region and which extends deeper into said zone than the peak density of the first region, said first and second regions of impurities overlapping to form a composite region of impurities comprising the base region which is dominated by the impurities of the first region from the surface of the body to a depth less than x_1 and which is dominated by the impurities of the second region at a depth greater than x_1 and further wherein there exists at least one point of inflection in the impurity profile of the composite region; and, following the formation of said base region, forming an emitter region of impurities of said one conductivity type within the semiconductor zone within the area defined by said base region by exposing said zone to a third ion beam of impurities of said one conductivity type and subsequently heating said zone to diffuse the impurities further into the bulk of the zone and form the emitter-base junction at a depth which is greater than or equal to x_1 .

3,856,579

SPUTTERED MAGNETIC MATERIALS COMPRISING RARE-EARTH METALS AND METHOD OF PREPARATION

Richard P. Allen, Richland, and Ronald D. Nelson, Grandview, both of Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 4, 1972, Ser. No. 311,879

Int. Cl. H01f 1/02

U.S. Cl. 148-103

24 Claims

1. A sputtered-deposit of a magnetic material consisting essentially of a rare-earth metal (R) selected from the class consisting of yttrium and elements of atomic number of 57 to 71, inclusive, and mixtures thereof, and a transition metal (M) selected from the class consisting of cobalt, iron and nickel, and mixtures thereof, said deposit having a thickness greater than 0.001 inch and having been formed at a deposition rate in excess of 0.5 mil per hour, said material having a grain size less than 10 microns.

3,856,580

AIR-STABLE MAGNETIC MATERIALS AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 22, 1973, Ser. No. 372,691

Int. Cl. H01f 1/02

U.S. Cl. 148-105

3 Claims

1. A process for coating a metal having a melting point above 500°C on cobalt-rare earth alloy particles without significantly deteriorating their permanent magnet properties producing magnetically air-stable particles which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobalt-rare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-metallic gaseous products of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least about 10^{-7} atmosphere and produces the metal in an amount ranging from 1 percent to 5 percent by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,856,581

ANNEALING AIR-STABLE MAGNETIC MATERIALS HAVING SUPERIOR MAGNETIC CHARACTERISTICS AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 22, 1973, Ser. No. 372,688

Int. Cl. H01f 1/02

U.S. Cl. 148-105

3 Claims

1. A process for increasing the intrinsic coercive force of magnetically air-stable cobalt-rare earth alloy particles coated with a metal having a melting point above 500°C which comprises annealing the coated particles in an inert atmosphere or in a substantial vacuum or in air at a temperature ranging from about 50° to 200°C for a period of time ranging from 30 minutes to 100 hours, said annealing increasing the intrinsic coercive force of said coated cobalt-rare earth alloy particles

by at least 10 percent, said magnetically air-stable particles having been produced by providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobalt-rare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-metallic gaseous product of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least about 10^{-7} atmosphere and produces the metal in an amount ranging from 1 percent to 5 percent by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,856,582

FABRICATION OF MATRIX BONDED TRANSITION METAL-RARE EARTH ALLOY MAGNETS

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 22, 1973, Ser. No. 372,690

Int. Cl. H01f 1/02

U.S. Cl. 148-105

4 Claims

1. A process for depositing a substantially interconnecting adherent coating of a metal having a melting point above 500°C on the exposed surfaces of pressed particles of cobalt-rare earth alloy without significantly deteriorating their permanent magnet properties producing a magnetically air-stable compact which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which is a solid or liquid at room temperature and which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, admixing said organometallic compound and said particles of alloy to form a substantially intimate mixture, said organometallic compound being used in an amount which on decomposition produces the metal in an amount ranging from 1 percent to 5 percent by weight of said cobalt-rare earth alloy particles, pressing said mixture to form a green body, heating said green body in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum at a temperature below 500°C and substantially completely decomposing said organometallic compound and producing said gaseous product of decomposition and metal vapor, said metal vapor depositing a substantially interconnecting continuous coating of metal having a melting point above 500°C on the exposed surfaces of said pressed particles substantially uniformly throughout said body and having no significant deteriorating effect on the magnetic properties of said alloy particles, said deposited metal supporting said particles and providing the resulting compact with an effective barrier to the atmosphere, said non-metallic gaseous product of decomposition diffusing away from said body leaving the resulting compact porous in an amount ranging from about 5 to 40 percent by volume of said compact.

3,856,583

METHOD OF INCREASING HARDNESS OF ALUMINUM-SILICON COMPOSITE

Robert N. Sanders, Baton Rouge, La., and Alex R. Valdo, Elgin, Ill., assignors to Ethyl Corporation, Richmond, Va. Division of Ser. No. 219,523, Jan. 20, 1972, abandoned. This application July 9, 1973, Ser. No. 377,724

Int. Cl. C22i 1/04; C22e 21/04

U.S. Cl. 148—159

2 Claims

1. A method of increasing the hardness of an aluminum-silicon composite, said composite consisting essentially of an aluminum, silicon, magnesium alloy and a non-metal filler not subject to being reduced by aluminum selected from the group consisting of zircon, alumina, zirconia and aluminum silicates, said silicon being present in said alloy in an amount of 19–21 percent by weight said magnesium being present in said alloy in an amount of about 2 to 10 percent by weight sufficient to reduce the surfaces of the non-metallic filler to a metal-like coating when the metallic phase of the composite is in a liquid state, said non-metal filler constituting from about 5 to about 80 percent of the weight of the composite, consisting essentially of subjecting said composite to a threestage heat treatment as follows:

- conducting a solution heat treatment at 800°–1,000°F for about 4 to 24 hours followed by a quench;
- conducting a precipitation heat treatment at 200°–300°F for about 12 to 36 hours; and,
- conducting a second precipitation heat treatment at 300°–400°F for about 4 to 12 hours.

3,856,584

REDUCING THE SUSCEPTIBILITY OF ALLOYS, PARTICULARLY ALUMINUM ALLOYS, TO STRESS CORROSION CRACKING

Baruch M. Cina, Ramat Gan, Israel, assignor to Israel Aircraft Industries Ltd., Lod Airport, Israel

Filed Mar. 13, 1973, Ser. No. 340,757

Claims priority, application Israel, Apr. 12, 1972, 39200

Int. Cl. C22i 1/04

U.S. Cl. 148—159

2 Claims

1. A method of substantially reducing the susceptibility to stress-corrosion cracking of the 7,000 series aluminum alloys containing zinc, magnesium, and copper, while still retaining their original mechanical strength, which alloys have been subjected to a solution heat treatment at a high temperature and then to an aging treatment at a lower temperature thereby hardening the alloy but likewise producing therein a susceptibility to stress-corrosion cracking, comprising the steps of:

- subjecting the alloy to a retrogression heat treatment for a few seconds to a few minutes at a temperature of from 200°C to 260°C, which temperature is above the age-hardening temperature of the alloy but below the solution heat treatment temperature; and
- subsequently subjecting the alloy to a re-aging heat treatment at a temperature from 115°C to 125°C for a substantially longer period of time than in step (a) up to several days.

3,856,585

METHOD AND APPARATUS FOR THERMALLY DECOMPOSING A HALOGENATED HYDROCARBON TO PROVIDE A GASEOUS CARRIER MEDIUM FOR VAPOR EPITAXIAL GROWTH

Ronald L. Moon, Palo Alto, Calif.; William W. Stein, Fort Wayne, Ind., and Donald Warnock, Aromas, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Aug. 4, 1972, Ser. No. 277,965

Int. Cl. H01l 7/36; C01b 7/08

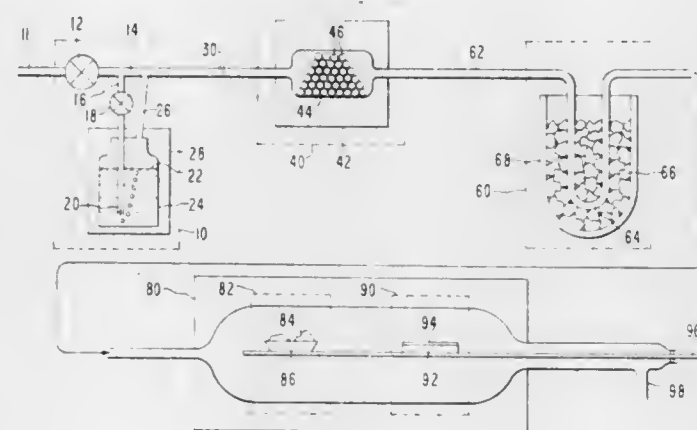
U.S. Cl. 148—175

9 Claims

1. A method of forming a hydrogen halide gas during vapor phase epitaxial growth of a compound crystal having at least one higher valence constituent and at least one lower valence constituent on the growing surface of a substrate, by incorpo-

rating a source material of the constituents in a carrier gas flow containing the hydrogen halide, the method comprising the steps:

- storing an inert, non-toxic halogenated hydrocarbon;
- providing a gas flow containing the halogenated hydrocarbon;
- completely decomposing the halogenated hydrocarbon into carbon and a hydrogen halide;
- removing the carbon from the gas flow;
- exposing the source material to the gas flow containing the hydrogen halide at a first temperature sufficient to cause



a chemical reaction between the hydrogen halide and the source material which produces a gaseous halide of the at least one lower valence constituent and a gaseous species of the at least one higher valence constituent; and exposing the substrate to the gas flow containing the source material in gaseous form at a second temperature lower than the first temperature causing the halide of the at least one lower valence constituent and the gaseous species of the at least one higher valence constituent to decompose permitting the constituents to epitaxially deposit on the growing surface of the substrate.

3,856,586

METHOD FOR PRODUCING HOMOGENEOUSLY DOPED ZONES IN SEMICONDUCTOR DEVICES

Edgar Borchert, and Karl-Heinz Sommer, both of Beleck, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

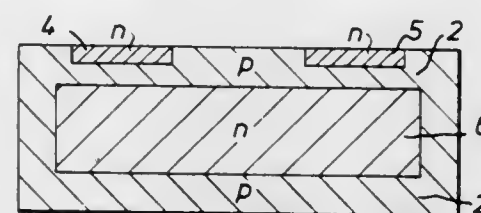
Filed Sept. 10, 1973, Ser. No. 395,455

Claims priority, application Germany, Sept. 14, 1972, 2244992

Int. Cl. H01l 7/44

U.S. Cl. 148—186

19 Claims



1. A method for producing a semiconductor device in a semiconductor wafer which is initially substantially undoped, comprising the steps of: forming in outer areas of the semiconductor wafer the semiconductor zones necessary for creating the device while leaving an interior zone of the semiconductor wafer substantially undoped; and subsequently doping the semiconductor wafer with a doping material which is only slightly soluble in the material of the semiconductor wafer and has a high diffusion speed, for substantially homogeneously doping the interior zone.

3,856,587

METHOD OF FABRICATING SEMICONDUCTOR MEMORY DEVICE GATE

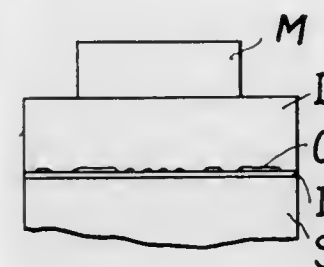
Shumpei Yamazaki, c/o Yamazaki Kogyo K.K. 9-7, 1-chome Shinkawa, Shizuoka; Ichiro Kagawa, c/o Tokyo Denki Kagaku Kogyo K.K. 15-7, 2-chome Higashi Ohwada, Tachikawa, and Yuriko Sugimura, c/o Yamazaki Kogyo K.K. 9-7, 1-chome Shinkawa, Shizuoka, all of Japan

Filed Mar. 20, 1972, Ser. No. 236,153

Int. Cl. H01l 7/36

U.S. Cl. 148—187

18 Claims



1. The method of fabricating the gate of a semiconductor memory device, which comprises depositing a thin insulating coating in at least a mono-layer on a surface of a semiconductor substrate, forming a semiconductor cluster or a thin film made of silicon or germanium on the thin insulating coating, and forming a silicon nitride coating on the top of the cluster or thin film, thereby forming memory capability controlling the existence, polarity and amount of charge to be trapped into the insulating coating.

3,856,588

STABILIZING INSULATION FOR DIFFUSED GROUP III-DEVICES

Masafumi Hashimoto, and Yasuo Shimura, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

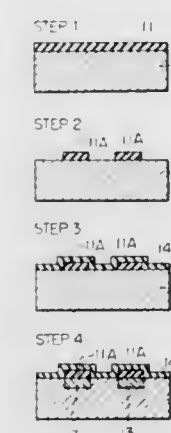
Filed Oct. 10, 1973, Ser. No. 405,096

Claims priority, application Japan, Oct. 11, 1972, 47-102123; Oct. 11, 1972, 47-102124; Oct. 11, 1972, 47-102125

Int. Cl. H01l 7/34

U.S. Cl. 148—188

7 Claims



1. A method of forming diffused junctions in a III-V compound semiconductor wafer, comprising the steps of: forming a first oxide layer containing an impurity element to be diffused on selected areas of a surface of said wafer leaving remaining areas of said surface exposed; forming a second oxide layer containing a Group III metal over said first oxide layer and exposed said remaining areas of said surface of said wafer, said metal being a constituent of said wafer; and heating said wafer to diffuse said impurity element into said wafer.

3,856,589

FLUORINE-CONTAINING ORGANIC CARBONATE

Albert L. Rocklin, Walnut Creek, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 81,634

Int. Cl. C06b 15/00; C07c 69/00

U.S. Cl. 149—109.4

3 Claims

1. Di[2,3-bis(difluoramino)propyl] carbonate of refractive index, n_D^{25} , of up to 1.3990 and impact sensitivity of from about 20 to 22 kg-cm.

3,856,590

PROPELLANTS AND METHOD OF PRODUCING THE SAME

John F. Kincaid, Jefferson Township; Louis P. Hammett, Pittsburgh, both of Pa., and Benjamin P. Dailey, Cumberland, Md., assignors to The United States of America as represented by the Director, Office of Scientific Research and Development, Washington, D.C.

Filed Apr. 18, 1945, Ser. No. 589,090

Int. Cl. C06d 5/06

U.S. Cl. 149—19.8

1 Claim

1. A new article of manufacture, a propellant comprising about 21.0 percent nitrocellulose, about 13.0 percent nitroglycerine, about 55.4 percent potassium perchlorate of an average particle diameter of $7.5 \pm 0.5 \mu$, about 9.0 percent carbon black, about 1.0 percent centralite No. 1, 0.3 percent magnesium oxide and 0.3 percent magnesium stearate, the nitrocellulose and nitroglycerine being colloided and intimately mixed with the other ingredients to form a matrix in which the particles of potassium perchlorate and carbon black are distributed.

3,856,591

METHOD FOR MAKING BEAM LEAD DEVICE

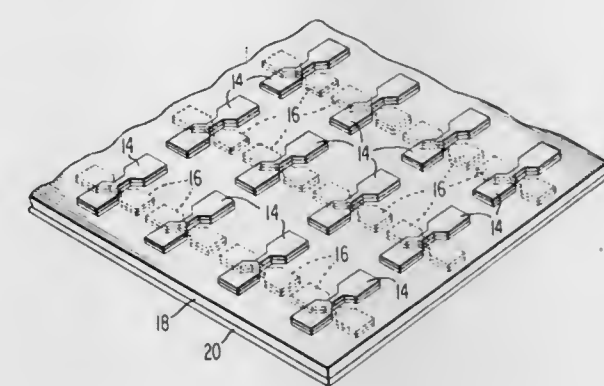
Louis Sebastian Napoli, Hamilton Square, and John Joseph Hughes, Spotswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 314,089, Dec. 11, 1972, abandoned. This application June 25, 1973, Ser. No. 373,600

Int. Cl. H01l 7/50

U.S. Cl. 156—3

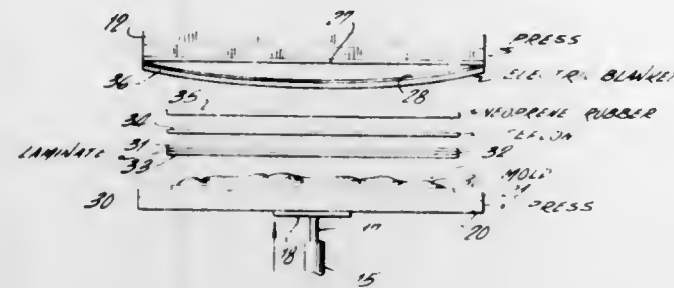
6 Claims



1. The method of making a semiconductor device comprising the steps of:

- providing an appropriately doped piece of semiconductor material having a first side and a second side;
- depositing a first set of elongated metal contacts upon said first side of said semiconductor material;
- depositing a second set of elongated metal contacts upon said second side of said semiconductor material, said second set of elongated metal contacts crossing said first set of elongated metal contacts; and
- etching said semiconductor material thereby removing all of said semiconductor material other than that which is disposed between said first set and said second set of elongated metal contacts.

3,856,592

METHOD OF MAKING AN EMBOSSED TRIDIMENSIONAL PHOTOGRAPH BY A DRY PROCESSLewis A. Giorgi, 286 Main St., Yonkers, N.Y. 10701
Filed Nov. 30, 1972, Ser. No. 310,699Int. Cl. B44f 7/00; B28G 11/08; B32b 3/00; B44c 1/24
U.S. Cl. 156-59 5 Claims

1. A dry method of producing an embossed photograph of life-like appearance which comprises introducing a pre-heated laminate having as its top layer a dry photograph of a subject on a canvas layer with a plastic lowermost layer into a pre-heated hydraulic press on supported contoured hardenable molding material conforming to the subject of the photograph and shaping the laminate to conform to the contoured molding material by actuation of the press, and thereafter removing the contoured laminate and finishing the same into the desired embossed photograph.

3,856,593

EXPANDED POROUS SUBSTRATE FOR FIBROUS GRAPHITE STRUCTURE

Ronald L. Pegg, Costa Mesa, Calif., assignor to Havg Industries, Inc., Wilmington, Del.

Filed May 23, 1972, Ser. No. 256,070
Int. Cl. B29c 25/00

U.S. Cl. 156-60

11 Claims

1. A process for making a porous substrate unit comprising:
1. providing a substrate unit comprising plies of B-stage graphitizable resin impregnated cloth having a carbon assay of at least 80 percent;
2. heating said substrate unit in the absence of external pressure to convert said resin to C-stage, said substrate unit expanding during heating thereby producing a porous substrate unit; and
3. at least pyrolyzing said porous substrate unit.

3,856,594

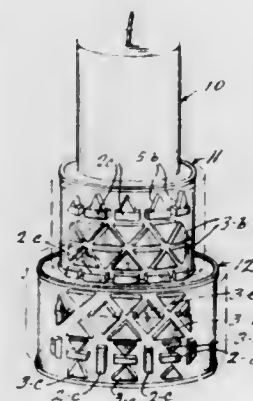
METHOD FOR MAKING A DECORATED OBJECT

John R. Grube, Waterville, Ohio, assignor to General Mills Fun Group, Inc., Toledo, Ohio

Filed Nov. 1, 1973, Ser. No. 412,002
Int. Cl. B44i 5/00

U.S. Cl. 156-63

6 Claims



1. A method for making a decorated object, said method comprising the steps of:

A. cutting from large slabs of splittable grain lumber a plurality of pieces of predetermined standard thickness and unit width,

1. some of said pieces being rectangular and having a length which is a multiple of said unit width,

2. the grain of all of said pieces extending in the direction of such standard thickness;

B. placing said rectangular pieces one after another between parallel guides that are spaced a distance equal to such unit width and that have a cross guide for a splitting device and a stop spaced from said cross guide a distance equal to such unit width;

C. splitting a predetermined number of said pieces with the grain thereof to form unit-squares,

D. splitting selected ones of said unit-squares to form shapes consisting of squares, rectangles, right triangles, isosceles triangles and diamonds all having dimensions along their sides equal to a unit distance or a fraction of a unit distance as desired for a pattern for decoration and,

E. adhering selected ones of said shapes in patterned relationships to the surfaces of the object being decorated.

3,856,595

MEASUREMENT OF DIMENSION OF ELONGATED MATERIAL DURING ITS CONTINUOUS VULCANIZATION

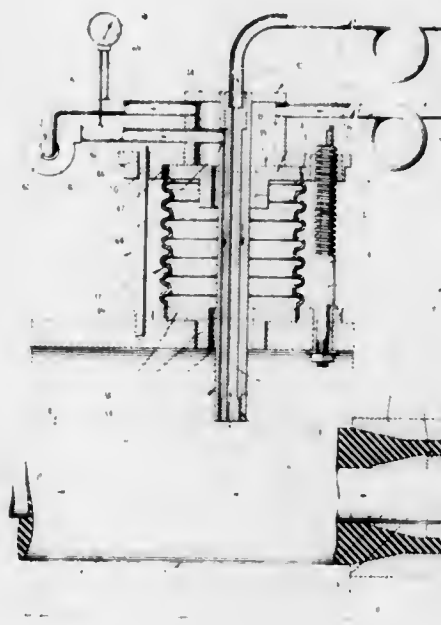
Max Skobel, Iselin, N.J., assignor to John Royle & Sons, Paterson, N.J.

Filed Apr. 16, 1973, Ser. No. 351,592

Int. Cl. G01b 13/08

U.S. Cl. 156-64

18 Claims



1. The method of detecting radial deviations in position of the surface of an elongated vulcanizable material of generally uniform transverse section travelling in a predetermined path through a continuous vulcanizing chamber wherein it is exposed to a fluid vulcanizing atmosphere at elevated pressure and temperature, the vulcanizable material being a sleeve-like extruded sheath on a cable having a central, axially directed core, comprising directing a jet of fluid at a pressure above said elevated pressure through one end of a probe against a zone of the surface of the material as it travels within the chamber, axially guiding the core of the cable along a fixed path at a location close to the location of the jet, and detecting, by indicating means connected to the opposite end of the probe, deviations in the fluid from the jet which is reflected from said zone of the surface of the travelling material.

3,856,596

BACKED TUFTED CARPET AND METHOD OF MANUFACTURING THE SAME

Stanley Shorrock, "The Braids," Billinge End Rd., Blackburn, England

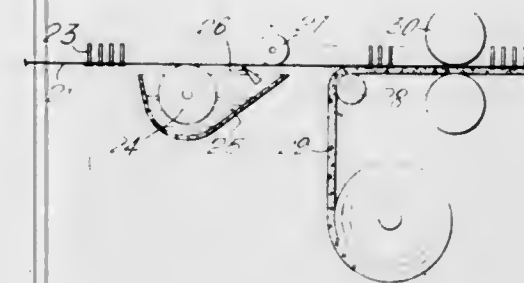
Filed Dec. 21, 1971, Ser. No. 210,507

Claims priority, application Great Britain, Dec. 31, 1970, 62094/70

Int. Cl. D05c 15/00

U.S. Cl. 156-72

8 Claims



1. A method of manufacturing a tufted carpet comprising the steps of traversing a backing fabric which has a front and a back past a row of tufting needles, causing said needles to insert straight tufts of pile yarn through said backing fabric with each tuft having a relatively long, pile end projecting forwardly from the front of the backing fabric and an opposed relatively short fixing end projecting from the back of the fabric, applying an adhesive to said short ends of said tufts at the back of the fabric to secure them in said fabric, separately producing a layer of resilient foamed rubber, sticking said layer to said back of said backing fabric and said short ends of said tufts by means of an adhesive, and splaying said short ends apart and situating them in flattened condition against the back of the fabric, said splaying and flattening of said short ends being carried out at a time no later than the sticking of said layer to said back of said backing fabric.

3,856,597

METHOD AND APPARATUS FOR PRODUCING PILE FABRIC

Clemens Adrianus Maria Campman, Leeuweriklaan 23, Bussum, Netherlands

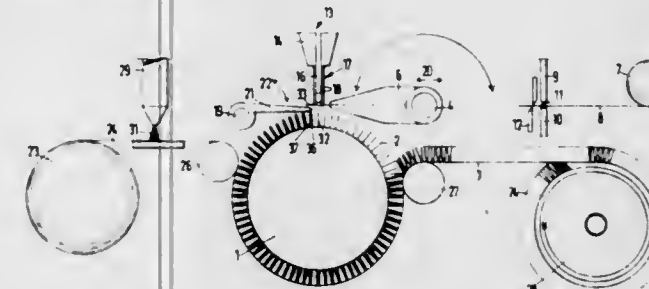
Filed Apr. 24, 1973, Ser. No. 353,968

Claims priority, application Netherlands, Apr. 27, 1972, 7205734

Int. Cl. B32b 3/16, 5/08

U.S. Cl. 156-72

6 Claims



1. A method for producing three dimensional and variable color effects in a laminate of the type composed of a backing layer, a facing layer of upstanding fibers, and a water insoluble, substantially continuous binder inter-layer, securing the facing layer to the backing layer, consisting of:

- shrinking selected areas of the facing layer in a predetermined design pattern by applying a chemical shrinkage agent to said selected areas;
- drying the laminate; and
- washing the laminate.

3,856,599

SEALED EDGE CUTTING METHOD

Don M. Bylund, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 834,641, June 19, 1969, abandoned.

This application Aug. 23, 1973, Ser. No. 390,986

Int. Cl. D03d 47/50; B32b 31/08

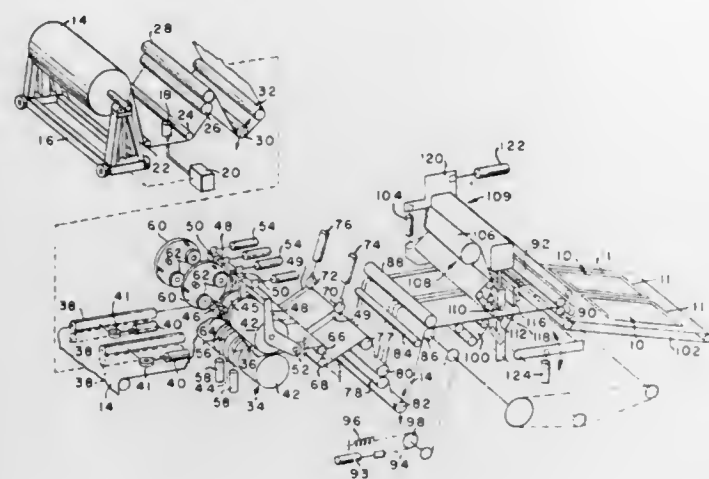
U.S. Cl. 156-88

7 Claims

1. Apparatus for use in producing a pile fabric wherein the pile has a predetermined height comprising
a roller rotated intermittently and having a plurality of peripherally located, spaced radially extending slats;
yarn supply means;
cutting means associated with said yarn supply means to cut off pieces of yarn, the length of each piece being equal to twice the pile height;
pivotal means capable of grasping the individual cut yarns and transporting said yarns by pivotal movement to said slats;

1. A method to produce a sealed edge product comprising the steps of: providing a supply of textile material, putting a pre-selected length of material under tension in a predetermined fixed position, placing a thermoplastic strip of material across the width of said textile material, applying heat and pressure to said thermoplastic strip of material to seal said thermoplastic strip to said textile material, moving a cutting means into registry with said thermoplastic seal while holding said textile material in said pre-determined fixed position, actuating said cutting means to sever said textile material through said thermoplastic seal, moving the severed textile material to a point of collection while putting another length

of textile material in said pre-determined position under tension and successively repeating the steps to provide successive



textile material segments with the edges sealed across the width thereof.

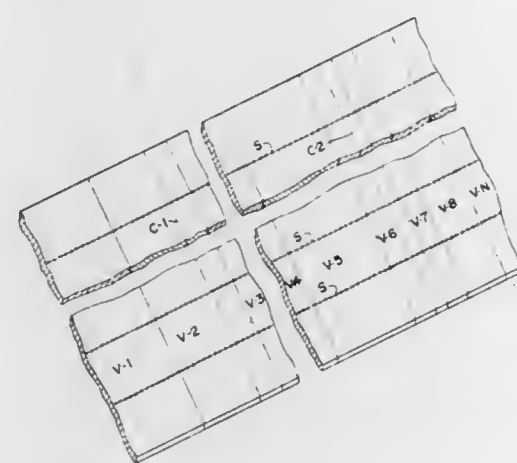
3,856,600

VENEER ARTICLE AND PROCESS OF MANUFACTURING PLYWOOD

Fred W. Fields, Portland, Oreg., assignor to The Coe Manufacturing Company, Plainville, Ohio
Continuation-in-part of Ser. No. 118,850, Feb. 25, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 312,919
Int. Cl. B32g 7/08

U.S. Cl. 156-93

4 Claims

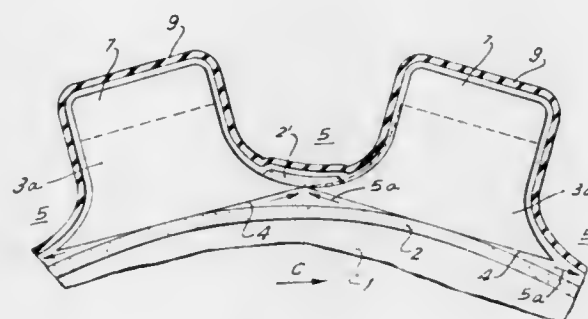


1. In the manufacture of rectangular plywood panels having length, width and thickness dimensions the steps of producing a plurality of green veneer sheets slightly longer than one of the dimensions other than the thickness dimension of a plywood panel to be produced and of random width less than the other dimension of the panel and with the grain of the wood running lengthwise of the green veneer sheets, arranging a plurality of the green veneer sheets in side-by-side relation, machine sewing the side-by-side green veneer sheets transversely of the grain of the wood and of the length of the green veneer sheets intermediate their ends with thread to produce a plurality of continuous rows of thread stitches connecting the side-by-side green veneer sheets to produce an assemblage of side-by-side green veneer sheets larger in length and width than the length and width of the panel to be produced, drying the assemblage of stitched together side-by-side green veneer sheets to reduce the moisture content of the veneer and produce an assemblage of connected side-by-side dried veneer sheets, applying adhesive material to the assemblage of connected side-by-side dried veneer sheets, and subsequently assembling the assemblage of connected side-by-side dried veneer sheets having adhesive thereon with other dried veneer sheets into a plywood panel.

3,856,601
METHOD OF RETREADING VEHICLE TIRES
Wilhelm Schelkmann, Crengeldanzstr. 85, Witten, Germany
Division of Ser. No. 58,107, June 24, 1970, Pat. No. 3,745,084.
This application Apr. 3, 1973, Ser. No. 347,614
Claims priority, application Germany, Nov. 10, 1969, 1956391

Int. Cl. B29h 5/04, 5/16, 17/36
U.S. Cl. 156-96

7 Claims



1. In a method of retreading vehicle tires, the first step of forming an assembly consisting essentially of a tire carcass having a circumferential face, tread means of elastomeric material superimposed upon said circumferential face and provided with relatively deep spaced profiles, and a bonding material between said carcass and said tread means; the second step of confining said assembly in a fluid-tight flexible envelope which overlies said profiles in close abutment with the edges of said profile; the third step of establishing a pressure drop in direction from the exterior to the interior of said envelope so that the same is displaced into the recesses between respective ones of said spaced profiles down to the lowest base regions of the latter so as to exert at such base regions a substantially uniform pressure upon said tread means; the fourth step of venting gaseous fluid entrapped in the respective base region between said profile and said envelope to the exterior of the latter; and the fifth step of vulcanizing said assembly for permanently bonding said tread means to said carcass while said envelope exerts said pressure upon said tread means.

3,856,602
METHOD OF PRODUCING NON-WOVEN TEXTILE FIBER PRODUCTS HAVING A RELIEF-LIKE STRUCTURE

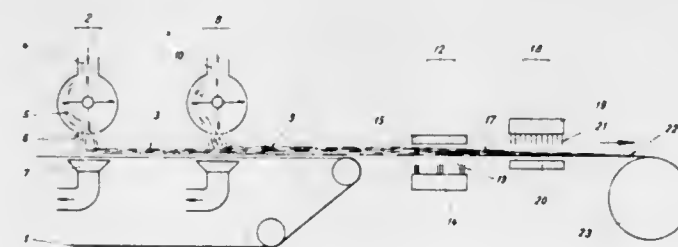
Johannes Jakobus Vincent Colijn, and Gunter Horst Tesch, both of Fribourg, Switzerland, assignors to Breveteam S.A., Fribourg, Switzerland

Filed Jan. 12, 1972, Ser. No. 217,363

Claims priority, application Switzerland, Jan. 12, 1971, 390/71

Int. Cl. B32b 3/00
U.S. Cl. 156-148

4 Claims



1. A method of producing non-woven, textile fiber fabrics with boucle-type knobs or ridges on the fabric surface from at least two kinds of fibers of unequal retractability, comprising the steps of:
superposing in a multi-layer batt at least two distinct layers of fibers, the fibers of one outside layer exhibiting a considerably higher longitudinal retraction than the other

fibers of the batt, when all are subjected to the same retraction-inducing treatment;
pattern-needling the multi-layer batt from the side of the highly retractable fiber layer with punching needles which are aligned to produce a repetitive line pattern so that, in the line-regions of needling, length portions of the fibers of the highly retractable fiber layer are punched transversely through the remainder of the batt and protrude from the other side thereof as bristles or loops;
folding the protruding bristles or loops against the batt side from which they protrude;
needling the entire surface of the batt from the side of the protruding fibers so as to needle-punch the protruding portions of the highly retractable fibers back into the composite batt to form hooks having a shape similar to clinched staples; and
subjecting the composite batt to a retraction treatment, whereby the longitudinal retraction of the retractable fibers not only causes the clinched, twice-needed, staple-shaped fibers to shorten and close upon themselves into tighter hooks, thereby compacting the less retractable fibers in the line regions of pattern needling, but also causes an overall area shrinkage of the needled batt, resulting in a lateral compression and an elevation of the less retractable fibers in the batt areas between the line regions of pattern needling so as to give the fabric the desired boucle-type, three-dimensional surface.

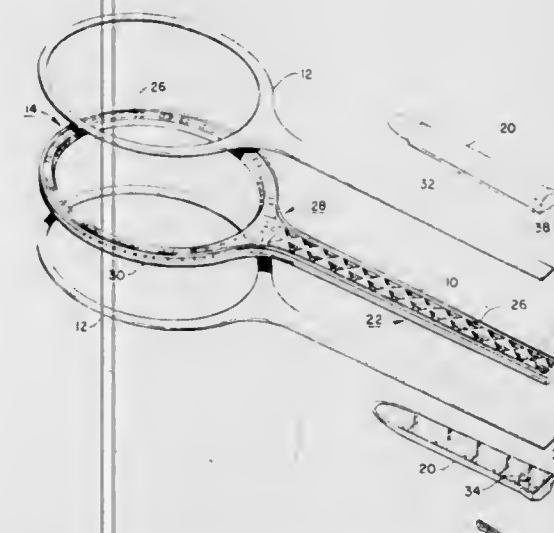
3,856,603

METHOD OF MANUFACTURING GAME RACKETS
William E. Schaefer, and Richard E. Bender, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Division of Ser. No. 241,176, April 5, 1972, Pat. No. 3,840,230. This application May 14, 1973, Ser. No. 359,815
Int. Cl. B29g 1/00, 7/00

U.S. Cl. 156-245

7 Claims



1. A method of manufacturing a game racket which comprises the steps of:

molding a racket shell having a head frame and a handle extension connected to the frame by a throat portion, said shell being substantially planar with two substantially parallel faces, from a material comprising a synthetic resin having flexural modulus of from about 3×10^5 to about 17×10^5 psi and a notched Izod impact measurement of from about 2 to 15 ft-lb/in., said shell being formed with a plurality of spaced pockets extending inwardly from the faces;

forming substantially planar facing members having the general shape of said shell from a material comprising high-strength fibers in a synthetic resin matrix, said fibers having a Young's modulus of from about 20×10^6 to about 80×10^6 psi and a density of from about 0.05 to about 0.07 lb/in.³;

laminating a facing member to each of said shell faces to cover said inwardly extending pockets; and
securing pallet members to the handle extension of said shell to form an easily gripped handle.

3,856,604

MACHINE FOR SELECTIVELY CUTTING AND GLUING ADDRESS LABELS

Erkki Lukkarinen, Helsinki, Finland, assignor to Kontorikoneteollisuus Oy, Helsinki, Finland

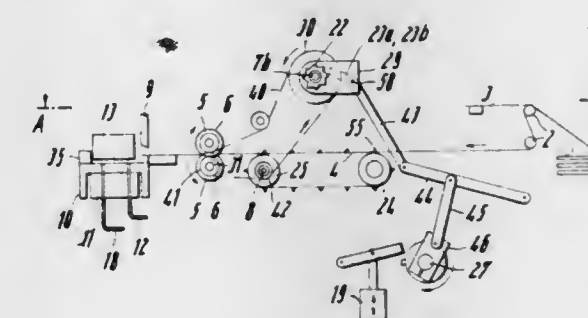
Filed Sept. 15, 1972, Ser. No. 289,429

Claims priority, application Finland, Sept. 24, 1971, 2680/71

Int. Cl. B65h 35/04

U.S. Cl. 156-361

1 Claim



1. Machine for gluing address labels from address list bands and having feeding elements for moving said address list bands, said bands having transport holes on the lengthwise edges and having addresses printed across the band; said band having two or more lengthwise rows of addresses separated from each other across the band by spaces, and crosswise lines of two or more addresses, said crosswise lines of addresses being separated from each other along the band by spaces, means for cutting off the lengthwise edges after said address list band has moved a selected distance, means for cutting off address line strips after said lengthwise edgings have been cutoff, a track for receiving said line strips and means for detaching separate labels from said address line strips, means for applying glue to the bottom of the detached address label and means for pressing the glued label onto a surface, said feeding elements being mounted on feeding chains which are in turn mounted on a pair of endless tracks in vertical planes along the address list band, said endless tracks being positioned one at each side of said address list band; means for adjusting the length of the cut labels, the length adjusting means comprising a ratchet wheel, a plurality of ratchets of different lengths and means for placing a selected one of said ratchets in contact with said ratchet wheel; means for connecting the endless track for movement with said ratchet wheel, said ratchet wheel and endless track being moveable a selected amount by the one said ratchet to control the length of the label to be cut.

3,856,605

APPARATUS FOR BONDING PILE YARNS ONTO RIGID THERMOPLASTICS

Charles W. Carpenter, Wilmington, Del., assignor to Hercules Incorporation, Wilmington, Del.

Division of Ser. No. 888,708, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 780,038, Nov. 29, 1968, Pat. No. 3,640,786, which is a continuation-in-part of Ser. No. 731,221, May 22, 1968, abandoned. This application July 26, 1972, Ser. No. 275,386 The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.

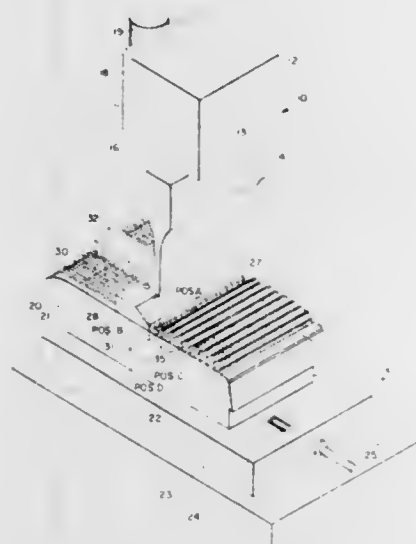
Int. Cl. B32b 31/16

U.S. Cl. 156-436

5 Claims

1. Apparatus for covering the surface of a substantially rigid thermoplastic article with tufted thermoplastic yarn which comprises:

support means for supporting and advancing said thermoplastic article,
 loop forming means for guiding a plurality of oriented thermoplastic yarns in sheet-like array onto a surface of said thermoplastic article along a bonding line extending transversely of the path of movement of said thermoplastic article and for forming loops therein between the bonding line and the preceding bond between the respective yarns and the thermoplastic article,
 a sonic device having a working surface adapted to engage said yarns and thermoplastic article along said bonding line,



means for moving said sonic device into and out of pressure engagement with said yarns and thermoplastic article along the bonding line,
 actuating means for energizing said sonic device to sonically fusion bond said yarns to the thermoplastic article during said pressure engagement without adversely affecting the orientation of the yarns between the bonding lines, and means operative, when the bonding operation is completed for causing said support means to advance a predetermined amount and to cause operation of said loop-forming means whereby loops are formed and properly positioned for subsequent bonding to the thermoplastic article.

3,856,606

COUPLING SOLID SUBSTRATES USING Silyl PEROXIDE COMPOUNDS

You Ling Fan, E. Brunswick, and Richard Greggshaw, Califon, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 737,319, June 17, 1968, abandoned, and Ser. No. 831,747, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 737,315, June 17, 1968, abandoned, and Ser. No. 737,316, June 17, 1968, abandoned, and Ser. No. 737,317, June 17, 1968, abandoned, and Ser. No. 737,318, June 17, 1968, abandoned, and Ser. No. 737,321, June 17, 1968, abandoned. This application May 5, 1970, Ser. No. 34,897

Int. Cl. C09j 5/00; B32b 27/04

U.S. Cl. 156—329

1 Claim

1. The method of interbonding solid surfaces which comprises providing a silicon peroxide comprising a peroxide radical bonded to silicon thereof through a peroxy oxygen, at the interface of said surfaces and decomposing such peroxide radical.

3,856,607

APPARATUS FOR AUTOMATICALLY REGISTERING AND COMBINING TWO SHEET MEMBERS

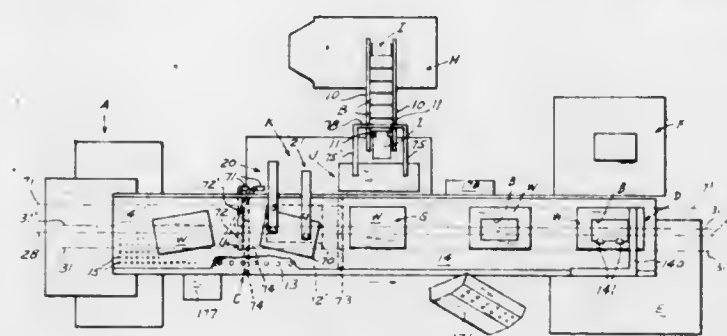
Maurice J. Faltot, Morris Plains, and Helmut Voltmer, Park Ridge, both of N.J., assignors to NJM, Inc., Hoboken, N.J.

Filed Aug. 14, 1972, Ser. No. 280,673

Int. Cl. B32b 31/00; G05g 15/00

U.S. Cl. 156—351

19 Claims



1. Apparatus for automatically registering and combining two sheet members, comprising means for carrying a plurality of first sheets having adhesive thereon in spaced apart relation along a given path, means for successively repositioning said first sheets on said carrying means so that a given line extending lengthwise of said path on the sheet shifted is brought into registered alignment with a reference line located to one side of and in spaced parallel relation to the longitudinal centerline of said carrying means, said repositioning means comprising a plurality of sensing means movable transversely of said carrying means and each capable of developing a signal when sensing said given lengthwise line on a first sheet, means for moving said sensing means independently until each has found such given lengthwise line, said sensing means each having associated therewith means for gripping a first sheet at different locations thereof when such given lengthwise line has been found, and means for moving in coactive relation the gripping means associated with the sensing means to shift the gripped sheet until said given lengthwise line thereof is brought into alignment with said reference line, and means for searching in a direction longitudinally of said path for a given line disposed transversely of said path on such repositioned sheet and for depositing on such sheet when found a second sheet so as to bring both of such sheets into adhesive face-to-face relation.

3,856,608

APPARATUS FOR MAKING HEAT-INSULATING PANEL OR SHEET

John Ian Menzies, and Maureen Menzies, both of Brisbane, Queensland, Australia, assignors to Heatshield Research and Development Pty. Ltd., Queensland, Australia

Division of Ser. No. 834,241, June 16, 1969, Pat. No.

3,720,558. This application Dec. 21, 1972, Ser. No. 317,250

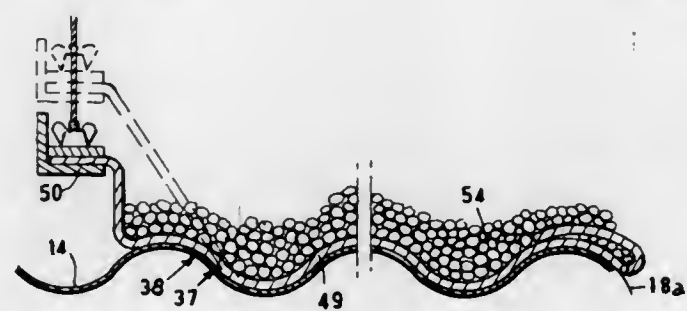
Claims priority, application Australia, June 17, 1968,

39284/68; July 16, 1968, 40707/68; Aug. 6, 1968, 41754/68

Int. Cl. B31f 1/24; B32b 31/20

U.S. Cl. 156—468

6 Claims



1. Apparatus for heat insulating a panel or sheet comprising:
 a. a main frame,

b. means for conveying said panel along said main frame,
 c. means for simultaneously applying to the upper surface of said moving panel layers of a metal foil and a film of thermoplastic material, with the film being interposed between said panel and said foil so as to maintain said foil continuously out of contact with said panel,
 d. a flexible sheet over the entire exposed surface of said foil on said moving panel, said flexible sheet being longitudinally non-movable and assuming the surface configuration of said moving panel and layers,
 e. means in the form of a continuous mass of deformable weight on the surface of said flexible sheet for pressure contacting said sheet against said foil thereby firmly pressing the entire surface of said foil and film layers against said panel, and
 f. heating means adjacent said flexible sheet for heating said laminated panel to cause said thermoplastic film to adhere both to said foil and to said surface of said panel thereby firmly bonding said foil to said panel.

3,856,609

HANGING DECORATION

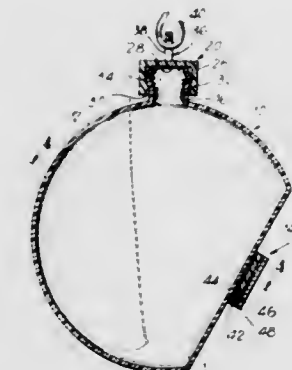
Fred L. Maas, Stamford, Conn., assignor to Paper Novelty Manufacturing Co., Stamford, Conn.

Filed Jan. 14, 1974, Ser. No. 433,343

Int. Cl. A47q 33/08

U.S. Cl. 161—16

8 Claims



1. Ornament for display by suspension from above and by securement with a surface comprising, in combination, a three-dimensional ornament having at least a front portion, a top portion and a rear portion wherein said rear portion comprises a substantially flat surface angularly disposed relative said top portion, means connected with said top portion for enabling suspension of said ornament from above and means mounted with said flat surface for enabling mounting of said ornament on a surface for display thereon.

3,856,610

AUTOMOBILE FLOOR MAT CONSTRUCTION

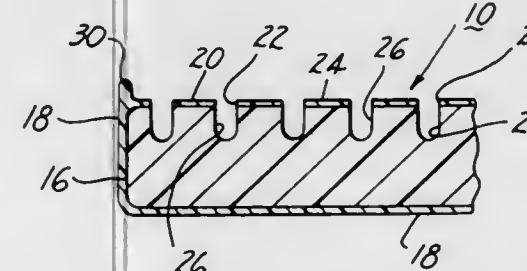
Charles H. Bruneel, Mt. Clemens, Mich., assignor to Emerance C. Bruneel, Anchorville and Hubert Champine, Mt. Clemens, both of Mich., a part interest to each

Filed Aug. 14, 1972, Ser. No. 280,450

Int. Cl. B32b 1/04, 3/10

U.S. Cl. 161—43

5 Claims



1. A floor mat construction for absorbing liquids and holding foreign particles, said mat comprising:

a body portion of a predetermined shape for facilitating the positioning of said mat upon a portion of a floor of an automobile, said body portion having a bottom surface and a top surface, said body portion being a liquid absorbing material and of a strength sufficient to maintain said predetermined shape when the body portion is wet;
 a liquid impervious skin completely enclosing said body portion and adhering to the exposed surfaces of said body portion, the portion of said skin in contact with said body portion top surface being perforated to permit liquid and foreign particles thereon to pass therethrough, respectively, for absorption and storage by said body portion, said skin enclosed body portion being of a strength sufficient to support the weight of the feet of a passenger in said automobile; and
 an upright ridge disposed along the peripheral edge of said top surface and extending above said top surface to form a barrier to restrain the movement beyond said edge of any liquids and foreign particles disposed on said top surface.

3,856,611

DECORATIVE PANEL WITH FINISHED EDGES

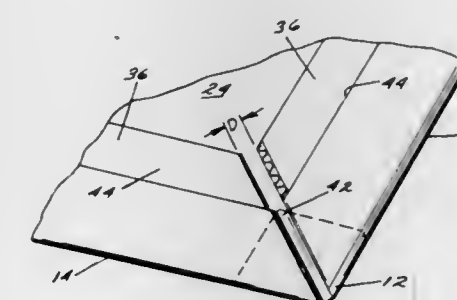
Jerry M. Markley, Wyoming, Mich., assignor to Sackner Products, Inc., Grand Rapids, Mich.

Filed Jan. 12, 1973, Ser. No. 323,141

Int. Cl. B32b 1/04

U.S. Cl. 161—43

13 Claims



13. A decorative panel comprising in combination a backing support and a flexible covering layer; said backing including front and back surfaces; said covering including at least one extending corner and being secured to said backing support on said front surface along the periphery thereof; said backing support including fold guidelines interior of said periphery separating said backing support into foldable margins and a central support area; said backing support further including at least one truncated corner with an edge; said extending corner being folded over said corner edge and secured to the back of said backing; said foldable margins being folded against said back of said backing and secured thereto in overlapping engagement with said extending corner whereby said cover is wrapped around the periphery of said panel forming finished, covered edges thereon and said extending corner is doubly retained and prevented from loosening; the outside dimensions of said covering being less than the outside dimensions of said backing support and greater than the outline formed by said fold guidelines; said panel further including a padding layer interposed between said backing support and cover; said padding layer having outside dimensions equivalent to the outline formed by said fold guidelines.

3,856,612

NON-WOVEN STRUCTURES

Paul H. McGinnis, Jr., Kings Mountain, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,293

Int. Cl. B32b 3/04

U.S. Cl. 161—108

8 Claims



1. A bonded non-woven fabric having parallel sides and being of substantially uniform thickness and density across its width comprising a randomly-laid continuous thermoplastic polymer filament web folded and pressed such that the randomly-laid edges are substantially coincident with the center of the web.

5. A bonded non-woven fabric comprising a random array of continuous thermoplastic filamentary material composed of at least one organic synthetic polymer, said bonded non-woven fabric forming a single planar structure composed of at least two layers of said material calendered together such as to resist delamination, said layers being integrally connected at the outermost edges therefore, the calendered material comprising said portions folded over upon itself and extending across at least half of said folded fabric such that the edges are substantially coincident with the center of the folded fabric.

3,856,614

FOAMED MATERIALS OF SYNTHETIC RESIN AND LAMINATIONS COMPRISING THE SAME

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Jiro Saito, Tokyo; Koichi Takano, Tokyo, and Kiyoshi Yoshikawa, Tokyo, all of Japan, assignors to Lion Fat and Oil Co., Ltd., Tokyo, Japan

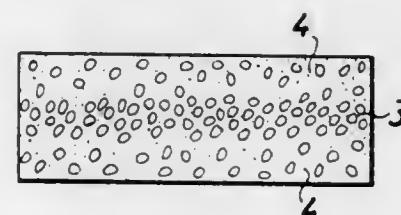
Filed Sept. 22, 1971, Ser. No. 182,733

Claims priority, application Japan, Sept. 30, 1970, 45-97449; Sept. 30, 1970, 45-97450

Int. Cl. B32b 3/26, 5/18

U.S. Cl. 161—159

8 Claims



1. A foamed thermoplastic lamination comprising at least two foamed layers bonded to one another in laminated relationship, each layer being a foamed thermoplastic resin material selected from the group of homopolymers, copolymers thereof, and mixtures thereof, and further containing a filler selected from the group consisting of calcium sulfate, gypsum and mixtures thereof in admixture with said thermoplastic resin material, said foamed layers being foamed to extents different from one another.

3,856,613

COMPRESSIBLE ENERGY ABSORBING ARTICLE

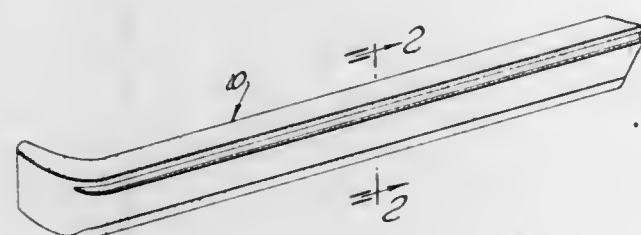
Peter A. Weller, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Aug. 28, 1972, Ser. No. 284,318

Int. Cl. B32b 5/08, 7/08; B60r 19/04

U.S. Cl. 161—116

23 Claims



1. An energy absorbing article comprising: core means made of compressible energy absorbing material and having a top and bottom interconnected by a front and back with one of said top and bottom being thinner in thickness than the other as viewed in cross section, and energy transfer means for transferring energy between said top and bottom, and vice versa, in response to a frontal impact, said energy transfer means including at least one member embedded within said energy absorbing material and fulcrum means for establishing a position about which said member may rotate in response to said impact.

3,856,615

RESILIENT ENERGY ABSORBING ASSEMBLY

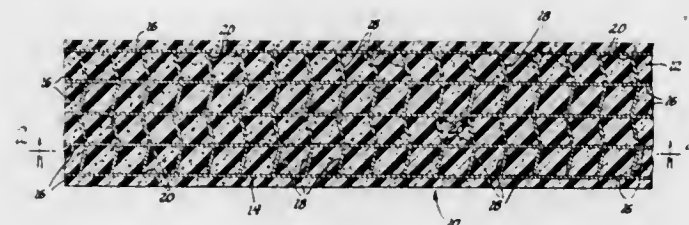
James Howard Dreher, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Aug. 28, 1972, Ser. No. 284,317

Int. Cl. B32b 3/00, 5/02; B60r 19/08

U.S. Cl. 161—168

29 Claims



1. An energy absorbing assembly comprising: yieldable means and force transmitting network means disposed at least partially within said yieldable means; said network means including a plurality of spaced elongated means, link members for connecting adjacent elongated means, and joint means for facilitating relative angular movement between said link members and said elongated means, said elongated means and said link members having a depth as viewed in plan to define a plurality of collapsible compartments which collapse in response to a force applied in a direction to urge said elongated means toward one another as said joint means facilitates angular movement between said link members and said elongated means, thereby to compress said yieldable means within said collapsible compartments for absorbing energy.

3,856,616

PHENOLIC RESIN-CONTAINING CELLULOSIC OVERLAYS FOR WOODY SUBSTRATES

James E. Scott, Jr., Homewood, Ill., and Ernest Ray Woodward, Seattle, Wash., assignors to Pacific Resins & Chemicals, Inc., Seattle, Wash.

Filed Nov. 9, 1972, Ser. No. 305,000

Int. Cl. D21d 3/00; D21h 3/50

U.S. Cl. 162—165

34 Claims

1. In a process for producing a resin-containing, cellulosic overlay useful for overlaying woody substrates comprising admixing an aqueous slurry of cellulosic fibers and an alkaline, water-solubilized, phenol-formaldehyde resole resin, precipitating said resin onto said fibers by acidification of said slurry, and forming a dry sheet from the acidified slurry, the improvement wherein:

- said phenol-formaldehyde resole resin is produced by condensation of phenol and formaldehyde under acidic conditions to form a novolac resin having a formaldehyde:phenol mole ratio of from 0.6 to 0.95; and methylation of said novolac resin with sufficient additional formaldehyde to produce a resole resin having a formaldehyde:phenol mole ratio of from 1.4 to 2.0; and
- said acidification is effected by adding to said slurry an acid selected from sulfuric, hydrochloric, phosphoric, acetic, citric and p-toluenesulfonic acids.

3,856,617

SUCTION CYLINDER PAPER FORMING MACHINE WITH ADJUSTABLE DOCTOR KNIFE SUPPORT STRUCTURE FOR CONTROLLING PAPER THICKNESS

Kazuetsu Fukuzaki, No. 910 Kawanoe-cho, Kawanoe-shi, Japan

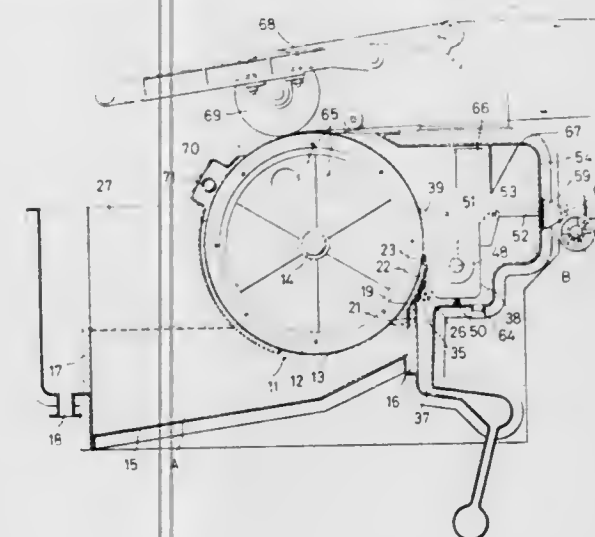
Filed June 25, 1973, Ser. No. 373,293

Claims priority, application Japan, July 7, 1972, 47-68326

Int. Cl. D21f 1/04

U.S. Cl. 162—276

7 Claims



1. A wet paper producing apparatus comprising a tank having two chambers partitioned by a wall: a rotary suction drum mounted in one chamber; a doctor knife supporting box operatively positioned and having a doctor knife at the upper edge of a curved front face of the supporting box confronting the periphery of the suction drum above said partition wall; means coupled to said supporting box for rotating said supporting box about a first pivot for the adjustment of a distance between the doctor knife and the periphery of the suction drum; means coupled to said supporting box for adjusting the angle of said doctor knife with respect to the suction drum and for rotating said supporting box around a second pivot toward and away from the suction drum for the adjustment of the distance between the front face of the supporting box and the periphery of the suction drum; a lip board mounted on the partition wall so as to abut the periphery of the suction drum below said doctor knife; a lip board adjustment means con-

nected to said lip board and adapted to move said lip board up and down for the adjustment of the distance between the doctor knife and the lip board; and a means for supplying slurry to the surface of said suction drum between said lip board and said doctor knife.

3,856,618

MULTI-PLY PAPER FORMING MACHINE WITH UPWARD AND DOWNWARD FORMING RUNS

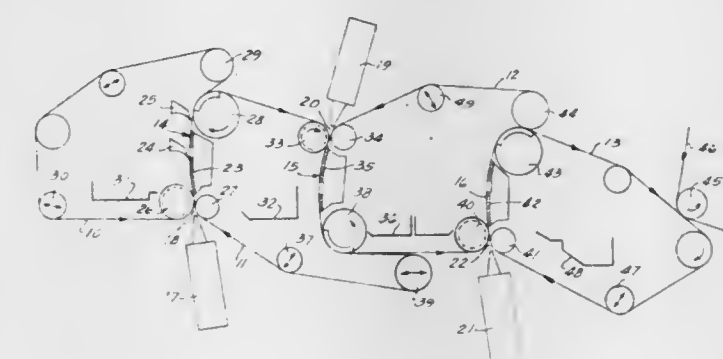
William J. Roell, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed June 4, 1973, Ser. No. 365,993

Int. Cl. D21f 1/00

U.S. Cl. 162—299

5 Claims



1. A multi-ply board making machine comprising in combination:

- first and second looped forming wires;
- first and second wire guide means training the wires into a first vertically upwardly extending forming throat leading to a first vertically upwardly extending dewatering run with the wires applying a pressure against a web through said run;
- a first headbox positioned to direct a pressure jet of first stock into the first throat;
- first and second water receiving means within said first and second loops respectively receiving water expressed from the web in said first run;
- a third looped forming wire;
- a third wire guide means within the third wire positioned to guide the wire into a vertically downwardly extending second forming throat leading to a vertically downwardly extending second dewatering run with the second wire and the second and third wire applying pressure to the web through said second run;
- a second headbox directing a second stock into said second throat onto the web carried on the second wire from the first run thereby forming a second layer on the web;
- and a water receiving means within the third wire receiving water from said second layer with the first and second layers being bonded to each other by the flow of water during the second run;
- each of said forming runs including a series of successive spaced bars extending in a cross-machine direction sequentially engaging the second wire in the first forming run and the third wire in the second forming run, said bars lying in a broad arc of very large radius so that the first and second wires in the first forming run and the second and third wires in the second forming run travel through a plurality of chordal sectors and the web is gently dewatered in both directions in the first run and the second layer is gently dewatered in both directions in the second run so as to cause a bonding between the second layer and first layer.

3,856,619

PAPERMAKING MACHINE HEADBOX WITH SLICE CHAMBER CONTAINING FLEXIBLE TRAILING ELEMENTS HAVING EXTENDED EDGES

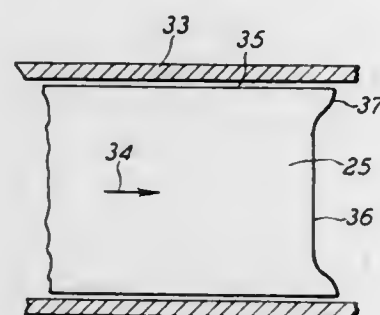
George R. Davidson, and David R. Gustafson, both of Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 7, 1973, Ser. No. 338,679

Int. Cl. D21f 1/02

U.S. Cl. 162-343

9 Claims



1. In a headbox for delivering stock to a forming surface, the headbox having a slice chamber and a slice opening, the improvement comprising:

a trailing element means positioned in the slice chamber extending in a downstream direction;

means supporting the upstream end of said trailing element means;

said element means being unattached at its downstream edge and being self-positionable responsive to pressures of stock flowing past the element means toward the slice opening, said element means extending in a direction transversely of the slice chamber and substantially to the pond side of the slice chamber,

said element means having a downstream edge and having a longer portion extending further toward the slice opening at the pond side than the portion inwardly therefrom.

3,856,620

METHODS OF AND APPARATUS FOR DETECTING A FAILED FUEL ASSEMBLY

Ken Tomabechi, Tokyo, Japan, assignor to Doryokuro Kaku-nenryo Kaikatsu Jigyodan, Tokyo, Japan

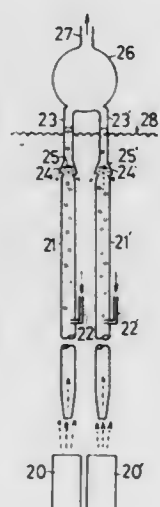
Filed May 15, 1972, Ser. No. 253,114

Claims priority, application Japan, May 20, 1971, 46-34335

Int. Cl. G21c 17/00

U.S. Cl. 176-19

3 Claims



1. An apparatus for detecting a failed fuel assembly in a nuclear reactor, which comprises a plurality of tubes to separately sample coolant flowing out of a plurality of fuel assemblies and to extract fission products by means of a carrier gas from said sampled coolant; a plurality of gas blowing means each having a valve means through which said carrier gas can

be blown into said sampled coolant, each of said valve means being independent of the others of said valve means such that said valve means can be opened at the same time or one at a time; means for releasing most of said sampled coolant outside of said tubes, comprised of a plurality of conduits each having an outwardly spread open end and a baffle plate, each of said conduits being placed over each of said tubes so that said outwardly spread open end covers said open upper end of each of said tubes at a suitable distance, said baffle plate being placed over said open upper end of each of said tubes within the inner portion of said outwardly spread open end; a gas collecting chamber associated with said conduits to collect gas blown into said coolant samples; means for detecting radioactivity of said collected gas; and means for circulating said collecting gas to said gas blowing means after determining its radioactivity.

3,856,621

BLOCKING ARRANGEMENT FOR MECHANISM FOR HANDLING FUEL ASSEMBLIES IN NUCLEAR REACTORS

Antti Suvanto, and Ake Fries, both of Vasteras, Sweden, assignors to Aktiebolaget Asea-Atom, Vasteras, Sweden

Continuation of Ser. No. 30,096, April 20, 1970, abandoned.

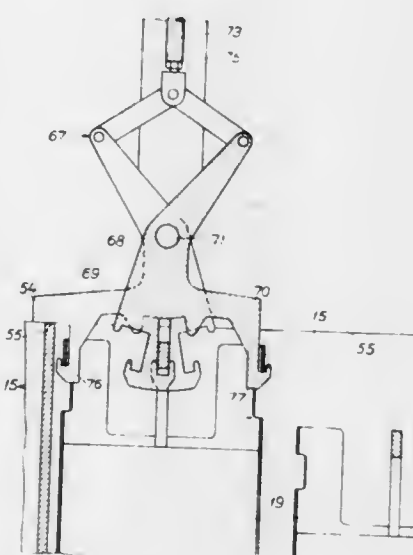
This application July 17, 1972, Ser. No. 272,139

Claims priority, application Sweden, Apr. 21, 1969, 5575/69

Int. Cl. B66c 1/66; G21c 19/10

U.S. Cl. 176-30

4 Claims



1. In a nuclear reactor, a core comprising a plurality of vertically arranged elongated fuel assembly containers, a container grid transverse to said containers, the grid having upwardly facing top surfaces, each container position being surrounded along part only of its circumference by adjacent grid portions having such top surfaces, fuel assemblies individually mounted in said containers within said grid, each fuel assembly having a lifting handle lying mainly in a vertical plane, a gripping device for moving fuel assemblies to and from said containers, the gripping device having a handle hook means and a simultaneously operating container gripping hook means, said container and handle hook means always having the same mutual orientation during engagement of said handle hook means with the handle, said container having attachment apertures for said container gripping hook means, said gripping device having a stop, the upwardly facing top surfaces of said adjacent grid portions constituting a blocking surface engageable with said stop at undesired angular orientations of said handle in relation to grid parts lying in vertical planes.

3,856,622

HIGH TEMPERATURE NUCLEAR REACTOR FUEL

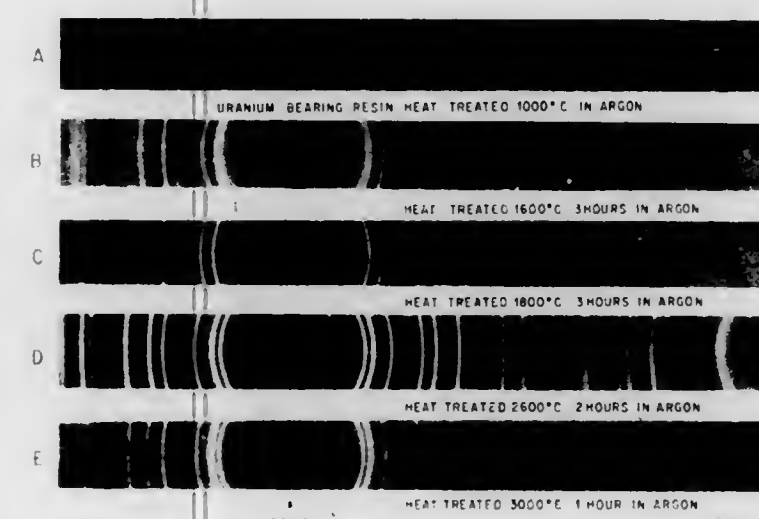
Charles B. Pollock, Oak Ridge; James L. Scott, Knoxville, and James M. Leitnaker, Kingston, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 18, 1972, Ser. No. 246,096

Int. Cl. G21c 3/04

U.S. Cl. 176-68

3 Claims



1. A nuclear fuel kernel comprising a matrix phase of carbon or graphite and a dispersed phase of a crystalline uranium compound consisting essentially of uranium, carbon, an ameba-inhibiting concentration of from 2 to 10 weight percent sulfur, and up to 0.5 weight percent oxygen, said fuel kernel further characterized in that it shows inhibition of uranium migration across a temperature gradient at a temperature in excess of 1200°C. and has an X-ray diffraction pattern which is distinguishable from UO_2 , UC , or US .

3,856,623

FUEL ASSEMBLY FOR NUCLEAR REACTOR

Yasuo Kamo, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

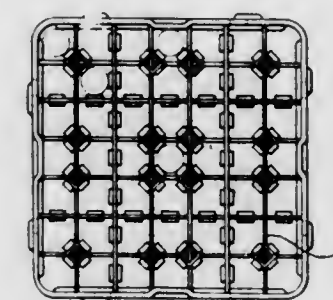
Filed Aug. 2, 1972, Ser. No. 277,232

Claims priority, application Japan, Aug. 6, 1971, 46-59049

Int. Cl. G21c 3/30

U.S. Cl. 176-78

9 Claims



1. A fuel assembly for a nuclear reactor, said assembly comprising a plurality of fuel rods, an upper tie plate and a lower tie plate provided, respectively, at upper and lower ends of the fuel rods for holding the fuel rods, an upper mounting frame and a lower mounting frame provided adjacent to the respective tie plates to surround the fuel rods, a plurality of segment spacers arranged between said upper and lower mounting frames to surround the fuel rods and hold the fuel rods at an appropriate separation, and connecting parts on facing end portions of said upper and lower mounting frames and each of said plurality of segment spacers to connect the mounting frames to said segment spacers and to connect adjacent segment spacers together, and wherein said connecting parts include a combination of guide plates and pivots in engaging relationship to a combination of guide grooves and openings.

3,856,624

PROTEIN MOLECULAR PROSTHESIS MEDIATED BY CARBAMYL PHOSPHATE AND CARBAMYL PHOSPHATE DERIVATIONS

Alfred P. Kraus; Lorraine M. Kraus, and John L. Wood, all of Memphis, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Sept. 18, 1972, Ser. No. 289,942

Int. Cl. A61k 27/00

U.S. Cl. 195-1.8

10 Claims

1. A method for the inhibition of the sickling of erythrocytes in the blood of humans containing hemoglobin S comprising incubating said blood in vitro with an amount of carbamyl phosphate and for a time sufficient to inhibit the sickling of said erythrocytes.

3,856,625

PROCESS FOR THE PRODUCTION OF POLYSACCHARIDE

Frazer Keith Elliott Imrie, Wallington, England, assignor to Tate & Lyle Limited, London, England

Filed May 29, 1973, Ser. No. 364,254

Int. Cl. C12b 1/00

U.S. Cl. 195-31 P

10 Claims

1. A process for the production of a polysaccharide consisting of a partially acetylated variable block copolymer of 1-4 linked *D*-mannuronic acid and *L*-guluronic acid residues, which process comprises the steps of:

- inoculating an aqueous final culture medium with a bacterium of the species *Azotobacter vinelandii*, said medium having a pH in the range of from about 7.0 to about 8.2 and containing as essential ingredients at least one carbon source selected from the group consisting of monosaccharides and disaccharides, at least one phosphate source in an amount such that the concentration of phosphate in the medium is in the range of from about 0.1 to about 0.8 millimolar, and sources of molybdenum, iron, magnesium, potassium, sodium, calcium and sulfate;
- cultivating said bacterium in said medium under aerobic conditions, while maintaining the pH of the medium within the range of from about 7.0 to about 8.2, until a substantial formation of polysaccharide has occurred; and
- recovering a polysaccharide-containing culture broth.

3,856,626

FERMENTATION PROCESS FOR THE SIMULTANEOUS PRODUCTION OF PROTEIN AND BIO POLYMERS

Allen Clamen, Westfield, N.J., and Bruce L. Dasinger, Niantic, Conn., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 9, 1972, Ser. No. 261,191

Int. Cl. C12d 1/00

U.S. Cl. 195-49

9 Claims

1. A process for simultaneously producing bio-polymer and bacteria cells in a single fermentation zone comprising continuously cultivating a microorganism selected from the group consisting of *Achromobacter* sp. ATCC 21575, ATCC No. 21576, ATCC No. 21578, *Alcaligenes faecalis* ATCC No. 21577 on an oxygenated hydrocarbon feed in a media comprising an aqueous growth medium containing oxygen and other essential cell nutrients at temperatures ranging from about 20° to about 65°C.

3,856,627

CULTURE MEDIUM FOR BACTERIA

Taro Nagasawa; Kozo Hamada; Hiroya Yuguchi, and Kenji Mizuguchi, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd.

Filed May 7, 1973, Ser. No. 357,922

Claims priority, application Japan, Dec. 11, 1972, 47-124123

Int. Cl. C12k 1/10

U.S. Cl. 195—100

2 Claims

1. The culture medium FLP-1 as a substitute for a brain heart infusion culture medium, prepared by dissolving dried fish protein hydrolysate containing more than 80% hydrolyzed fish protein, sodium chloride, dextrose and dipotassium phosphate in water and adjusting said prepared culture medium at a pH of about 7.0.

3,856,628

METHOD AND APPARATUS FOR THE IDENTIFICATION OF MICROORGANISMS

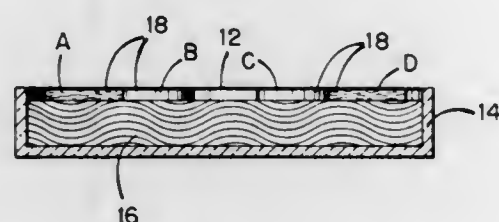
Anthony J. Sbarra, Milton, Mass., assignor to Richard P. Crowley, Wellesley Hills, Mass., a part interest

Filed May 17, 1972, Ser. No. 254,193

Int. Cl. C12k 1/04

U.S. Cl. 195—103.5 R

12 Claims



1. Means useful to identify a microorganism through a change in absorbent by the reaction or nonreaction of the microorganism with a carbohydrate comprising:

- an essentially flat sheet of absorbent material adapted to be placed onto the top surface of a culture medium containing a microorganism where identity is to be determined;
- the absorbent material free of restriction on at least one surface thereof and having a plurality of distinct and separate test zones thereon in a sufficient number such that the microorganism can be identified;
- each test zone containing absorbed thereon in combination a carbohydrate and a pH color indicator of phenol red, which indicator changes color about the periphery of the test zone on the fermentation of a carbohydrate by the microorganism; and
- the indicator employed in each test zone being the said phenol red and the carbohydrate in each test zone a different carbohydrate, whereby the absorbent sheet may be placed on top of a culture medium containing a microorganism in a culture plate, and the change in color and lack of color change about the periphery of the test zones used to identify the presence or absence of a particular microorganism.

3,856,629

FRACTIONATOR AND METHOD OF FRACTIONATING

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 9, 1972, Ser. No. 261,368

Int. Cl. B01d 3/14

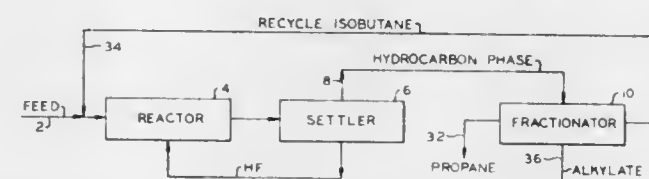
U.S. Cl. 202—158

2 Claims

1. Fractionation apparatus adapted to separate fluid mixture into at least three products, comprising:

- a vessel adapted to be mounted in a vertical position;
- a first partition extending from the top of said vessel downwardly to a first location between the top and the bottom of the vessel, a second partition extending from the top of said vessel downwardly to a second location which is

lower than said first location and which is between the top and bottom of said vessel, said partitions being spaced from one another and extending across said vessel to divide the vessel into first and second separate upper regions which are separated by the first and second partitions above the first location and by the second partition between the first and second locations, said vessel being provided with an inlet opening in the top thereof between the partitions so that the space between the partitions



serves as an inlet conduit to permit introduction of a feed mixture to be separated into said vessel in heat exchange relationship with fluids in the first and second upper regions above said first location, said vessel being provided with a product outlet below said second location and separate product outlets in each of said first and second upper regions; and

fractionation trays positioned in said vessel in said first and second regions and between said product outlet and said second location.

3,856,630

EVAPORATOR FABRICATED FROM PRE-FORMED SHEETS

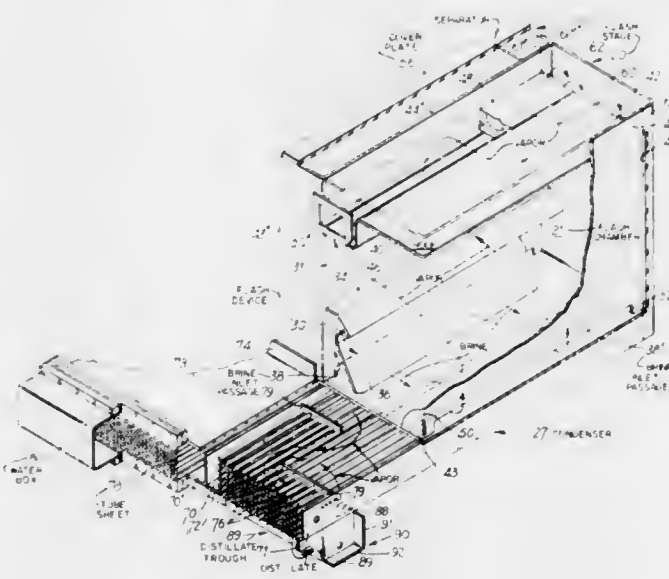
Frederick W. Gilbert, Shreveport, La., assignor to Riley-Beard Inc., Chicago, Ill.

Filed Jan. 10, 1973, Ser. No. 322,322

Int. Cl. B01d 1/28, 3/02

U.S. Cl. 202—173

9 Claims



1. In a multi-stage flash evaporator that includes a longitudinal succession of hollow rectangular prisms forming successive continuous flash chambers, the combination comprising a pre-formed L-shaped elongated continuous sheet of material extending longitudinally throughout a plurality of said stages and having a first small-radius substantially right angle bend throughout its longitudinal extent to connect first and second angularly disposed planar arm portions,

said bent continuous sheet being arranged with its first planar arm portion disposed horizontally to form floors for adjacent ones of successive flash chambers and having its second planar arm portion extending vertically and longitudinally to form side walls for adjacent ones of successive flash chambers,

a plurality of first pre-formed substantially L-shaped members each formed of a unitary sheet of material having a small-radius substantially right angle bend across its width

dimension to provide an angled edge portion between two angularly disposed planar leg portions,

said first L-shaped members being successively arranged so as said radius bend is substantially vertical and the bottom edge of the first leg portion of each first member is aligned along and welded to the outermost longitudinal edge of the first planar arm portion of said elongated sheet and with the bottom edge of its second leg portion extending transversely across and also welded to said first planar arm portion and said second leg portion terminating at its outermost edge in a welded joint with the interior face of said vertically disposed second arm portion, the vertical edge of the first leg portion of each of said first L-shaped members being welded along its outermost edge to the angled edge portion of the immediately adjacent L-shaped member, whereby the second leg portions of said L-shaped members form transverse vertical back and front walls, respectively, of adjacent flash chambers, liquid input means in the lower part of each of said front walls for permitting liquid flow from flash chamber to flash chamber,

declined plate flashing means associated with the downstream side of each input means for flashing into vapor at least a portion of the liquid entering each flash chamber, a roof disposed across each flash chamber,

separator means in the roof and top portion of each flash chamber for separating vapor and entrained mist produced in the respective flash chamber.

3,856,631

PROCESS AND APPARATUS FOR SEPARATING WATER FROM NON-VOLATILE SOLUTES

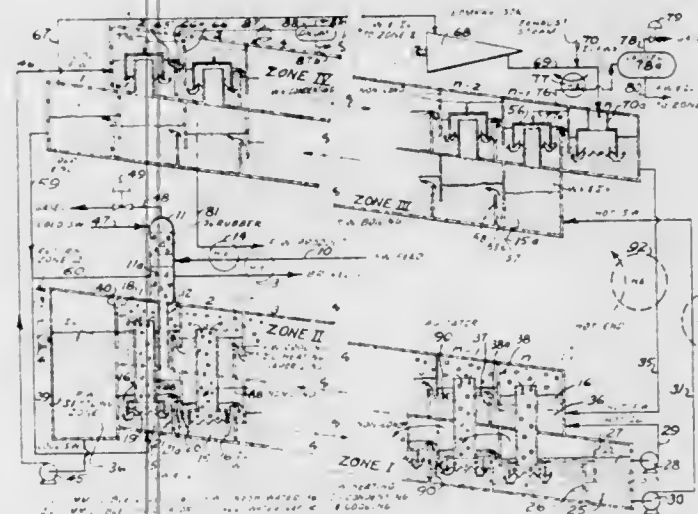
Calvin S. Smith, Jr., El Cerrito, Calif., assignor to Harrison W. Sigworth, Orinda and Thomas N. Finical, Jr., San Carlos, both of Calif., a part interest to each

Continuation-in-part of Ser. No. 19,592, March 16, 1970, Pat. No. 3,640,850. This application Feb. 7, 1972, Ser. No. 224,018

Int. Cl. B01d 3/02, 3/00, 3/10

U.S. Cl. 203—11

24 Claims



1. Apparatus for the direct contact transfer of latent heat of condensation of the vapor of an immiscible liquid A to a dilute solution S comprising a liquid B, such solution containing a non-volatile solute, and for evaporation of liquid B from the solution S, said liquids A and B being immiscible and liquid A having a narrow boiling range lower than the boiling point of liquid B and having a density different than the density of solution S, said apparatus comprising:

- a first (solution S heating) zone (zone I) divided into a plurality of stages and including an input stage an output stage and a plurality of intermediate stages,
- means providing for flow of solution S between but preventing flow of vapor between successive stages of zone I except for minor flow of bleed gases,
- a second (liquid A vaporizing) zone (zone II) divided into a plurality of stages corresponding to and paired with the stages of zone I and including an input stage, an output

stage and a plurality of intermediate stages, said zone I and zone II stages being arranged for countercurrent flow of liquids in the two zones,

- means providing for flow of liquid between but preventing flow of vapor between successive stages of zone II except for minor flow of bleed gases,
- vapor transfer means between each pair of corresponding stages of zone II and zone I whereby vapor of liquid A generated in the respective stage of zone II is caused to pass in finely divided form into a body of solution S in the respective stage of zone I and to form a liquid condensate (liquid A) therein thus heating solution S,
- a third (solution S flashing) zone (zone III),
- a fourth (liquid B vapor condensing) zone (zone IV),
- means for separating heated solution S from condensate (liquid A) derived from the output stage of zone I,
- means for transferring the resulting separated condensate of liquid A to the input stage of zone II for re-evaporation therein,
- means for transferring resulting separated heated solution S to and through zone III to be flashed therein to produce vapor of liquid B and means for recycling a portion of the unevaporated solution S from the output stage of zone III to the input stage of zone I and withdrawing the remainder of unevaporated solution S from the system,
- means for transferring vapor of solution S formed by flashing in zone III to liquid B flowing in zone IV and condensing such vapor therein, and
- means for circulating resulting condensate of vapor of solution S in admixture with liquid B through zone IV to the input stage of zone II in admixture with liquid A from elements (h) through zone II and back to zone IV to condense vapor of solution S in zone IV and to evaporate liquid A in zone II.

3,856,632

METHOD AND APPARATUS FOR PRODUCING A DISTILLATE

Klaus-Dieter Peter, Varrel, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

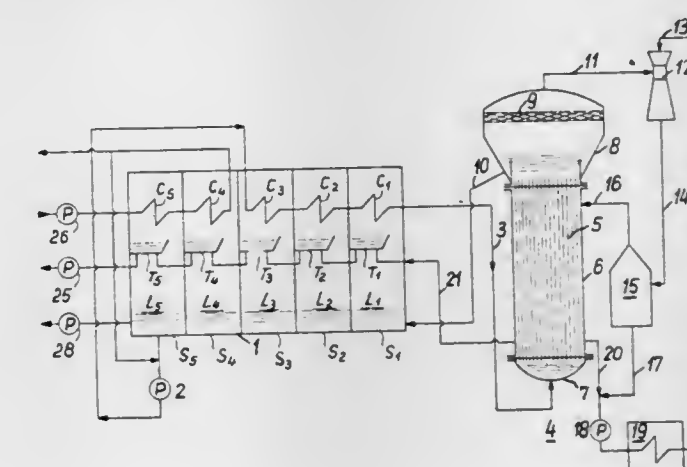
Filed July 17, 1973, Ser. No. 379,978

Claims priority, application Germany, July 26, 1972, 2236519

Int. Cl. B01d 3/06

U.S. Cl. 203—11

10 Claims



1. In a method for producing a distillate from raw water by the use of a multi-stage flash evaporator each stage of which includes an evaporation zone, a condensation zone and a distillate collection zone, the method including preheating raw water by passing it through the condensation zones of a plurality of the flash evaporator stages, partially evaporating the untreated water in the evaporation zones of the flash evaporator stages, condensing the evaporated water in the condensation zones of the flash evaporator stages, collecting the condensed water at the distillate collection zones of the flash evaporator stages, removing inert gases from the evaporation

zones, and adding additional heat energy to the evaporation system, the improvement comprising:

- conveying the preheated raw water from the last of the condensation zones through which it passes to a vertical tube evaporator;
- passing such water through the vertical tube evaporator; evaporating a portion of the water passing through the vertical tube evaporator by bringing it into heat-exchange communication with a heating medium;
- removing the resulting vapor from the vertical tube evaporator;
- compressing the removed vapor to a higher saturation temperature by means of a heat pump comprising a hot water ejector which receives said removed vapor and an ejector motive water pump connected to said hot water ejector for supplying hot water to said hot water ejector and returning the vapor to the vertical tube evaporator as the heating medium, the transfer of heat from such heating medium to the water passing through the vertical tube evaporator causing the vapor constituting the heating medium to condense;
- conveying a first portion of the condensed heating medium, as a distillate, from the vertical tube evaporator to the flash evaporator distillate collection zones to transfer part of the heat contained in the condensed medium, by stepwise evaporation, to the raw water passing through the condensation zones;
- conveying a second portion of the condensed heating medium to the ejector motive water pump;
- conveying the portion of the water which passed through the vertical tube evaporator without evaporation through the evaporation zones of the flash evaporator stages in succession for causing such water to partially evaporate in a stepwise manner in the stages, to transfer heat to the raw water passing through the flash evaporator zones, and to condense as a result of such heat transfer; and
- collecting the distillate from the respective distillate collection zones of the flash evaporation zone and from the vertical tube evaporator, and having the distillate production in the flash evaporator higher than the distillate production in the vertical tube evaporator.

3,856,633

CONCENTRATION MEASUREMENTS UTILIZING COULOMETRIC GENERATION OF REAGENTS

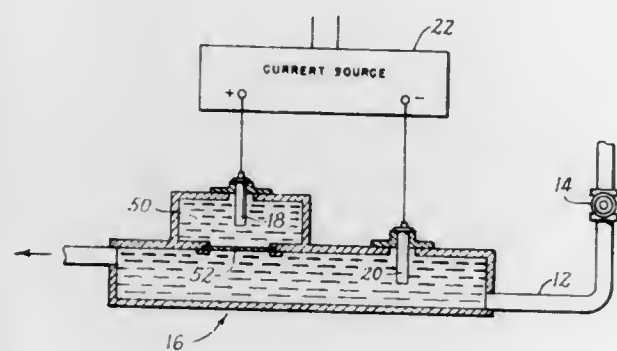
Kenneth S. Fletcher, III, Norfolk, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Jan. 7, 1971, Ser. No. 104,661

Int. Cl. G01n 27/46

U.S. Cl. 204—1 T

1 Claim



1. A method of analyzing the concentration of the ions of a flowing fluid sample the ions of which react chemically with silver ions, and wherein the fluid sample includes an oxidizing medium, said method comprising the steps of:

- flowing current through a pair of electrodes, one of which is a silver electrode in a silver solution, to generate coulometrically a reagent containing silver ions for reacting chemically with ions of the fluid sample;

transferring said silver ions into said fluid sample to form a solution effecting said chemical reaction, to reduce the concentration of said silver ions by an amount proportional to the concentration of ions in the fluid sample; isolating said silver electrode from said flowing fluid sample by interposing therebetween a silver-sulfide membrane which allows only silver ions to pass therethrough, whereby to prevent said oxidizing medium from reaching said silver electrode and generating additional silver ions; flowing said solution by one side of a silver-sulfide membrane system sensitive to silver ions; flowing a known concentration of silver ions by the other side of said silver-sulfide membrane system; and sensing the signal developed by said silver-sulfide membrane system to effect a measurement of the ionic concentration of the fluid sample.

3,856,634

METHOD FOR MEASURING DISSOLVED OXYGEN IN AQUEOUS SOLUTION USING TUNGSTEN BRONZES AS A POTENTIOMETRIC INDICATING ELECTRODE

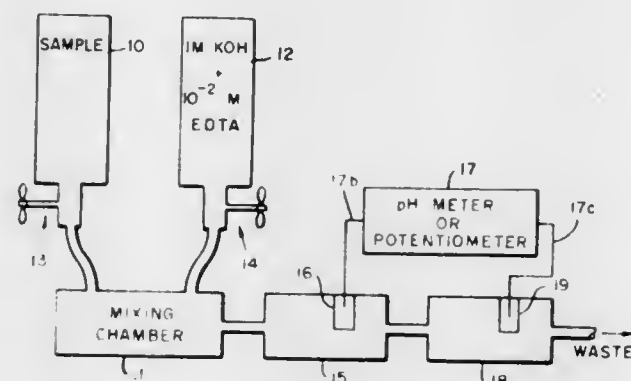
Paul B. Hahn; Dennis C. Johnson; Howard R. Shanks, all of Ames, Iowa, and Margaret A. Wechter, Hammond, Ind., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 19, 1973, Ser. No. 342,682

Int. Cl. G01n 27/46

U.S. Cl. 204—1 T

7 Claims



1. A method of determining the dissolved oxygen concentration in a sample solution comprising: adding a complexing agent to said sample to complex metal ions therein; contacting the sample in a basic solution with an indicator electrode having as an active element a non-stoichiometric bronze crystal responsive to dissolved oxygen in said sample; and measuring the potential of said indicator electrode, said potential being representative of the dissolved oxygen concentration in said sample.

3,856,635

FORMATION OF THE ROTOR TRACK OF A ROTARY ENGINE

Henry Brown, Huntington Woods, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Dec. 28, 1972, Ser. No. 316,207

Int. Cl. C23b 7/02, 7/00

U.S. Cl. 204—9

9 Claims

1. A method for forming a housing comprised of aluminum for the rotor track of a rotary internal combustion engine, which comprises the steps of:

- 1. electrodepositing a first layer on to a mandrel of the shape of the track of the rotor, said first layer being separable from the mandrel during subsequent steps;
- 2. electrodepositing a wear resistant layer on to said first layer;
- 3. forming on to the wear resistant layer a metallic layer useful for improving adhesion of the aluminum casting to the previously formed wear resistant layer;

- 4. electrodepositing zinc on to the mandrel, electrodepositing copper on to the zinc deposit, electrodepositing a plate comprised of iron of a thickness of about 1 to about 10 mils containing about 2 to about 8 weight percent fine silicon carbide particles, and electrodepositing a zinc deposit of a thickness of about 0.1 mil to about 2 mils;
- 5. then casting a housing comprised of aluminum; and
- 6. separating the housing from the mandrel.

3,856,636

OXYGEN SENSOR

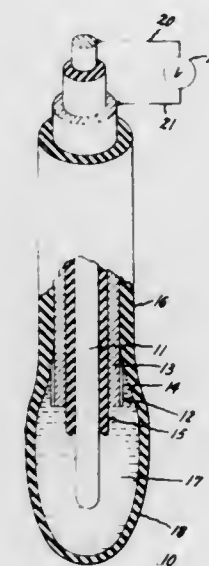
Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,772

Int. Cl. G01n 27/46

U.S. Cl. 204—195 P

3 Claims



1. A chemically biased oxygen sensor comprising of a first electrode of platinum, an electrical lead connected to the first electrode, a second electrode spaced from the first electrode, a second electrode comprising silver with at least a partial layer of silver halide thereon, an electrical lead connected to the second electrode, an aqueous pH 5 buffered electrolyte solution containing a halide salt and 0.5 to 5.0 weight percent of an oxidizable fuel selected from the class consisting of alcohols, ethylene glycol, glycerol, and polymers containing COH groups contacting at least a portion of both electrodes, and a high impedance voltmeter connected to the opposite ends of the electrical leads.

3,856,637

METHODS OF ELECTROPLATING ZINC AND CYANIDE FREE OR LOW CYANIDE ZINC PLATING BATHS THEREFOR

Richard B. Kessler, Jericho, and Fred I. Nobel, Roslyn, both of N.Y., assignors to Lea-Ronaf, Inc., Freeport, N.Y.

Filed July 9, 1973, Ser. No. 377,817

Int. Cl. C23b 5/10, 5/46, 5/62

U.S. Cl. 204—29

5 Claims

1. An alkaline zinc electroplating solution containing water and less than about 15 gms./l of free cyanide, a soluble zinc compound for supplying zinc to be electrolytically deposited on an object, a brightening compound capable of producing a bright or semi-bright zinc deposit but which will produce a dull, smeary, or smutty zinc deposit because of impurities in the water and to which has been added at least about 0.001 oz./gal. of an alkaline soluble metal silicate to substantially eliminate dull, smeary or smutting deposits.

3,856,638

BRIGHT GOLD ELECTROPLATING BATH AND METHOD OF ELECTROPLATING BRIGHT GOLD

Maurice Bick, South Orange, and Jean A. Lochet, Metuchen, both of N.J., assignors to Auric Corporation, Newark, N.J.

Continuation-in-part of Ser. No. 176,263, Aug. 20, 1971.

abandoned. This application Apr. 26, 1973, Ser. No. 354,682

Int. Cl. C23b 5/28, 5/42, 5/46

U.S. Cl. 204—43 G

10 Claims

1. A bright gold electroplating bath, comprising: an aqueous solution of an alkali metal gold cyanide, said gold being present in concentrations of from about 2 g/l to saturation; between 4 mg/l and 40 grams/l calculated as the metal, of an alloying agent selected from one or more members of the group consisting of cobalt and nickel, said agent being added to said bath as a complex with at least aminoguanidine and a chelating phosphonic acid; the concentration of said aminoguanidine being from about 2 g/l to 50 g/l, and said phosphonic acid being present in sufficient quantity to complex said alloying agent; as additional conducting and buffering agents, one or more bath soluble phosphates; the pH of said bath being between 3 and 6, and the concentration of said conducting and buffering agents being appropriate in the presence of the remaining bath components to adjust the bath specific gravity to a desired level of from about 6° up to 20° Baume, said level being above that which would be achieved in the absence of said agents.

3,856,639

HIGH-LEVEL LIGHT TOWER WITH LIGHT LOWERING DEVICE AND CONTROL SYSTEM THEREFOR

Ivan D. Rohn, Washburn; Richard A. Kleine, and Charles A. Wright, both of Peoria, Ill., assignors to Rohm Manufacturing Co., Peoria, Ill.

Filed Dec. 15, 1969, Ser. No. 884,838

Int. Cl. F21v 21/38

U.S. Cl. 240—64

34 Claims



1. In combination with an illuminating instrument tower; a head structure having a plurality of lateral supporting arms; means securing said arms to the tower; said arms comprising respective assemblies of angular bars secured rigidly together and sloping downwardly and outwardly relative to the axis of the tower, a carriage having lights or instruments mounted thereon; and means for suspending the carriage from the arms to provide at least three points of suspension for maintaining the

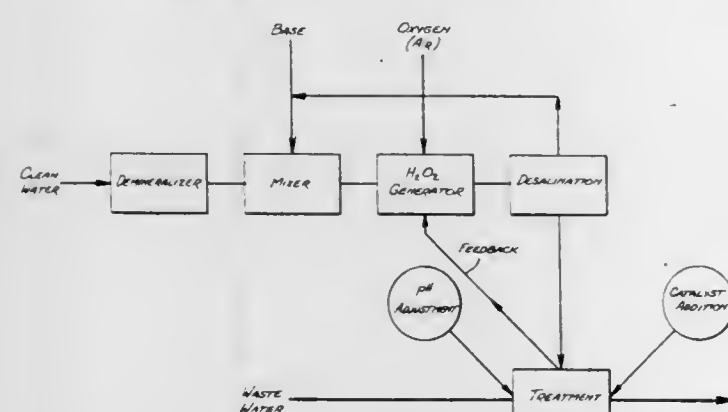
carriage in a stabilized condition and to permit the carriage to be moved up to an operating position and down for servicing of the instruments at ground level.

3,856,640

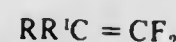
PRODUCTION OF HYDROGEN PEROXIDE

Kurt Halfar, Meinier-Geneva; Michael L. Hitchman, and Wolfgang Mehl, both of Geneva, all of Switzerland, assignors to H. Dudley Wright, Geneva, Switzerland
Continuation-in-part of Ser. No. 149,194, June 2, 1971, abandoned. This application May 30, 1972, Ser. No. 257,955
Int. Cl. C01b 15/02; B01k 1/00, 3/04
U.S. Cl. 204—84

4 Claims



1. An improved process for producing aqueous hydrogen peroxide including the step of passing an electric current through an aqueous electrolyte between an anode and a cathode wherein one surface of said cathode is in contact with said electrolyte and another surface of said cathode is in contact with an oxygen containing gas, wherein the improvement comprises employing as said cathode a flexible, gas-permeable membrane having a thickness of from about 0.1 to about 2 millimeters and a density of from about 0.4 to about 0.8 grams per cubic centimeter, said membrane consisting essentially of from about 95 to about 10 weight percent of finely divided, porous, high surface area carbon dispersed through from about 5 to about 90 weight percent of sintered, finely-divided particles of a hydrophobic polymer of a monomer of the formula:



wherein R is hydrogen, halogen or trifluoromethyl and R' is hydrogen or halogen, said carbon having a particle size of from about 10 to about 500 millimicrons and said polymer having a particle size of not greater than about 0.5 microns before sintering.

3,856,641

METHOD OF OBTAINING VANADIC OR TUNGSTIC OR MOLYBDIC HYDROXIDE

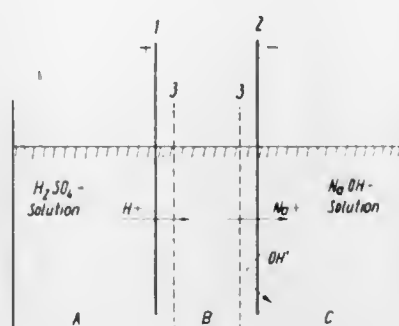
Hans Rothmann, and Werner Keil, both of Nurnberg, Germany, assignors to Gesellschaft Fur Elektrometallurgie m.b.H., Dusseldorf, Germany
Filed Sept. 18, 1972, Ser. No. 289,967
Claims priority, application Germany, June 9, 1972, 2228065
Int. Cl. C01b 13/14

U.S. Cl. 204—96

8 Claims

1. A method of producing vanadic, tungstic or molybdic hydroxide from aqueous alkali salt solutions containing vanadium, tungsten or molybdenum ions with the simultaneous recovery of alkali hydroxide by applying electric current between an anode and a cathode; comprising abstracting alkali metal ions by the electric current from the said solution until the isoelectric point is reached in the center chamber of a three-chambered electrolytic cell in which the center chamber is separated from the anode and cathode chambers by cation exchanger diaphragms, the anolyte containing a mineral acid, the center chamber containing a heavy metal-alkali salt

solution, and the catholyte containing an alkali metal hydroxide whereby vanadic, tungstic or molybdic hydroxide is precipitated, and recovering the said vanadic, tungstic or molybdic hydroxide, and recovering alkali hydroxide from the said cathode chamber.



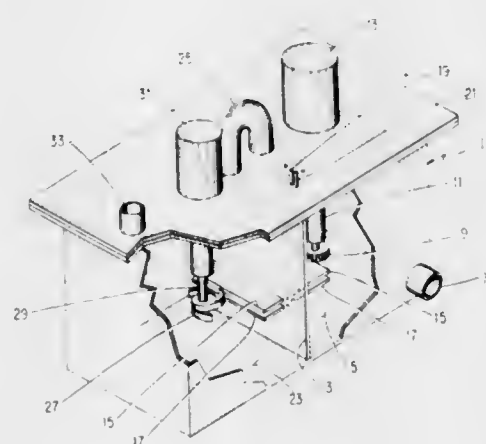
precipitated, and recovering the said vanadic, tungstic or molybdic hydroxide, and recovering alkali hydroxide from the said cathode chamber.

3,856,642

METHOD FOR ELECTROSANITIZING WASTE WATER

Donald F. Lieb, Mentor, and Neil W. Stillman, Madison, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Filed June 21, 1973, Ser. No. 372,085
Int. Cl. C02b 1/82; C02c 5/12
U.S. Cl. 204—149

4 Claims



1. A process for the treatment of waste water, which process comprises:

- providing a batch of an alkali metal chloride-containing waste water to a first container;
- agitating and macerating said waste water whereby any solids contained therein are comminuted;
- while agitating and macerating, subjecting said waste water to electrolysis whereby chlorine is produced;
- halting said agitation, maceration, and electrolysis;
- subsequently, by means of a second batch of alkali metal chloride-containing waste water, transferring the thus-treated waste water to a second container wherein it is further agitated and subjected to chlorine-producing electrolysis; and
- removing the thus-purified water from said second container by means of the introduction of a further batch to the first container.

3,856,643

PHOTOCURABLE COMPOSITIONS CONTAINING POLYVALENT METAL SALTS OF UNSATURATED MONO OR DICARBOXYLIC ACIDS

Hideo Nakamoto; Juichi Kobayashi, and Takashi Kobayashi, all of Nagoya, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Filed Sept. 18, 1973, Ser. No. 398,337
Claims priority, application Japan, Sept. 19, 1972, 47-93210

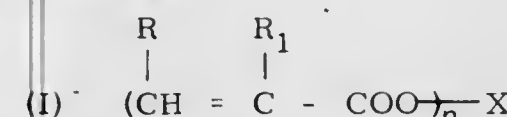
Int. Cl. B01j 1/10, 1/12

U.S. Cl. 204—159.15

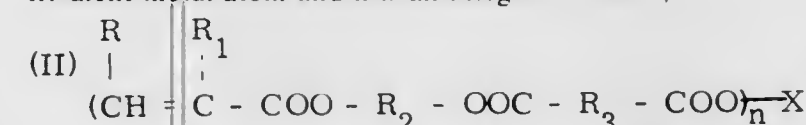
7 Claims

1. A resinous composition curable by photo-irradiation which comprises:

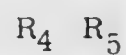
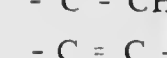
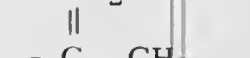
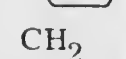
A. At least one divalent or trivalent metal salt of unsaturated mono- or di-carboxylic acids selected from the group consisting of



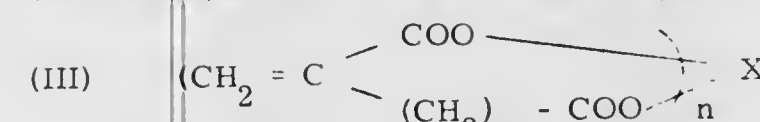
wherein R and R₁ are hydrogen or methyl; X is a divalent or trivalent metal atom and n is an integer of 2 or 3,



wherein R and R₁ are defined as above, R₂ is an alkylene group having 2 to 10 carbon atoms, polyethylene glycol residual group or polypropylene glycol residual group, and R₃ is



wherein R₄ and R₅ represent hydrogen or alkyl having 1 to 4 carbon atoms, and X and n are as defined above; and



wherein m is an integer of 2 or 3 and X and n are as defined above.

B. At least one unsaturated compound having 0.5 to 12 polymerizable unsaturated bonds per unit molecular weight of 1000, being selected from the group consisting of

- A divinyl reaction product of a polyepoxy having an epoxy equivalent of 100 to 2000, and an unsaturated monocarboxylic acid, in a ratio of one epoxy group per one carboxylic acid group.
- A tetra or hexa vinyl ester condensate reaction product of said divinyl product (1) above, and a diisocyanate in a ratio of 2:1 to 3:2.
- An unsaturated resin reaction product of dicarboxylic acid and glycidyl acrylate or methacrylate in a molar ratio of 1:2.
- Reaction product of (3) above with a diisocyanate in a ratio of 2:1 to 3:2.
- Di-, tri-, or tetra-vinyl condensation reaction product of a polyol and an unsaturated carboxylic acid and halide thereof in an equivalent ratio, and

C. At least one photosensitizer wherein the quantity of (A) and (B) is from 2 to 60% by weight, and from 98 to 40% by weight, respectively based on the total weight of (A) and (B), and wherein the photosensitizer is used in an

amount of 0.1 to 15% by weight, based on the weight of the resinous composition.

3,856,644

HIGHLY REACTIVE UNSATURATED POLYESTER RESIN COMPOSITIONS WHICH CONTAIN ACRYLAMIDE-METHYLOL-ETHERS AND CAN BE CURED BY UV-LIGHT

Hans-Joachim Traenckner, Krefeld-Fischeln; Hans Rudolph, Krefeld-Bockum; Hans Jurgen Rosenkranz, Krefeld; Karl Fuhr, Krefeld, and Manfred Patheiger, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 12, 1973, Ser. No. 405,878
Claims priority, application Germany, Oct. 20, 1972, 2251469

Int. Cl. B01j 1/10; C08d 1/00

U.S. Cl. 204—159.15

15 Claims

1. A resin composition that can be cured by ultra-violet light, which composition contains (a) 10-90 percent by weight of an unsaturated polyester based on one or more α,β-unsaturated dicarboxylic acids and at least one polyol wherein said polyol contains an allyl ether of a polyfunctional alcohol, said polyfunctional alcohol being at least trifunctional, (b) 90-10 percent by weight of one or more ethers selected from the alkyl, cycloalkyl, aralkyl and alkenyl ethers of N-methylolacrylamide and of N-methylolmethacrylamide, and (c) 10-0.3 percent by weight referred to the sum of component a) and component b) of a photoinitiator.

3,856,645

RADIATION CURING OF SOLID STYRENE-ALLYL ALCOHOL COPOLYMER BASED POLYENE-POLYTHIOL COMPOSITIONS

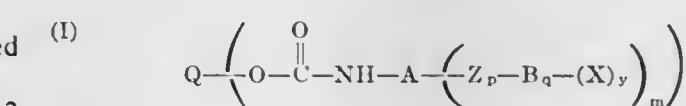
Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 250,729, May 5, 1972, Pat. No. 3,834,421.
This application Dec. 18, 1973, Ser. No. 425,746
Int. Cl. B01j 1/10; C08d 9/10; C08f 29/20

U.S. Cl. 204—159.19

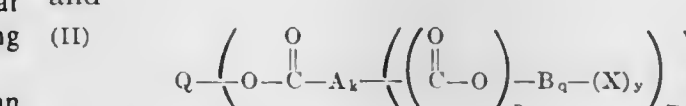
9 Claims

1. A process of forming a solid cross-linked polythioether which comprises admixing

1. a solid polyene containing at least 2 reactive unsaturated carbon to carbon bonds per molecule selected from the group consisting of polyene compounds having the general formula:

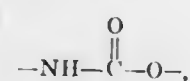


and

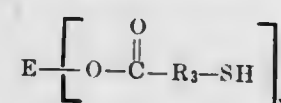


wherein Q is a styrene-allyl alcohol copolymeric moiety remaining after n hydroxyl groups of a styrene-allyl alcohol copolymer have reacted to form (i) n urethane linkages in Formula I and (ii) n ester linkages in Formula II; A and B are polyvalent organic radical members free of reactive carbon to carbon unsaturation and are independently selected from the group consisting of aryl, substituted aryl, aralkyl, substituted aralkyl, cycloalkyl, substituted cycloalkyl, alkyl and substituted alkyl containing 1 to 36 carbon atoms and mixtures thereof, said group members can be internally connected to one another by a chemically compatible linkage selected from the group consisting of —O—, —S—, carboxylate, carbonate, carbonyl, urethane and substituted urethane, urea and substituted urea, amide and substituted amide, amine and substituted amine and hydrocarbon; Z is a divalent chem-

ically compatible linkage selected from the group consisting of



—O—, and —S—: X is a member selected from the group consisting of: (a) $-(\text{CH}_2)_d-\text{CR}'=\text{CHR}$, (b) $-\text{O}(\text{CH}_2)_d-\text{CR}'=\text{CHR}$, (c) $-\text{S}-(\text{CH}_2)_d-\text{CR}'=\text{CHR}$, (d) $-(\text{CH}_2)_d-\text{C}(\text{CR})_2$, (e) $-\text{O}-(\text{CH}_2)_d-\text{C}(\text{CR})_2$, (f) $-\text{S}-(\text{CH}_2)_d-\text{C}(\text{CR})_2$, and mixtures thereof; where R and R' are each independently selected from the group consisting of hydrogen and methyl radicals; d, k, p and q are each integers from 0 to 1; y is an integer from 1 to 10; m and n are each integers of at least 1; with the proviso that when n is 1, y or m is at least 2; and (2) a solid polythiol containing at least 2 thiol groups per molecule of the general formula:



wherein x is an integer of at least 2; E is a styrene-allyl alcohol copolymeric moiety remaining after removal of x hydroxyl groups from a styrene-allyl alcohol copolymer to form x ester linkages; and R₃ is a polyvalent organic radical member free of reactive carbon to carbon unsaturation and is selected from the group consisting of aryl, substituted aryl, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkyl and substituted alkyl groups containing 1 to 16 carbon atoms and mixtures thereof, the total combined functionality of (1) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (2) the thiol groups per molecule in the polythiol being greater than 4, and thereafter exposing the mixture to actinic radiation or ionizing radiation.

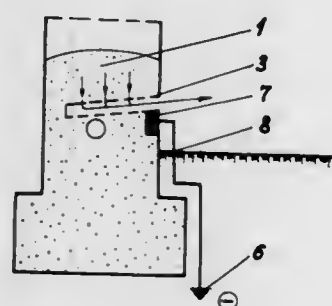
3,856,646

METHODS AND ELECTRODES FOR THE DRYING OF DAMP BUILDINGS

Dinu Stefan Morarau, Str. Sibiel 1, Bucharest, Romania
Continuation-in-part of Ser. No. 744,162, July 11, 1968,
abandoned. This application Oct. 20, 1972, Ser. No. 299,326
Claims priority, application Romania, Sept. 19, 1967, 54724
Int. Cl. B01d 13/02

U.S. Cl. 204—180 R

23 Claims



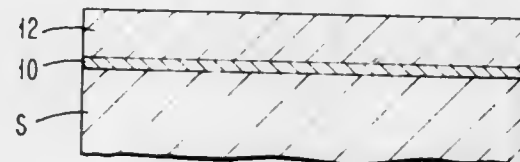
1. An active electro-dehumidification method for a damp structure, said method comprising embedding positive and negative electrodes in alternation in a wall of the structure in a damp region thereof which is to be dehumidified, forming the negative electrodes as hollow water-permeable members which can receive water externally thereof and convey the water for discharge outside said wall, and applying positive and negative charges to respective electrodes by connecting the electrodes to respective poles of a voltage source.

3,856,647
MULTI-LAYER CONTROL OR STRESS IN THIN FILMS
Arthur Gilbert Blachman, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1973, Ser. No. 360,693
Int. Cl. C23c 15/00

U.S. Cl. 204—192

6 Claims



1. In a method for achieving a minimum resistivity, minimum stressed conducting thin film comprising the steps of sputter depositing a thin layer of a refractory metal on a substrate at a first voltage bias on said substrate, said voltage being selected to produce a multi-layer of minimum stress, and then sputter depositing a thicker layer of another refractory metal over said first layer at a second voltage bias on said substrate different from said first voltage bias and corresponding to that bias voltage which produces a multi-layer of minimum resistivity.

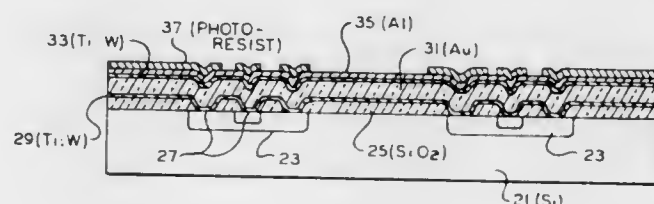
3,856,648
METHOD OF FORMING CONTACT AND INTERCONNECT GEOMETRIES FOR SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS

Clyde Rhea Fuller, Plano, and Prabhakar Bhimrao Ghate, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1973, Ser. No. 426,408
Int. Cl. C23c 15/00

U.S. Cl. 204—192

15 Claims



1. A method of forming interconnections on a semiconductor slice, comprising:

- depositing a layer of Ti:W on said slice;
- depositing over said layer a conductor metal having a high conductivity;
- depositing over said conductor metal a second layer of Ti:W;
- depositing over said layer of Ti:W a layer of aluminum;
- photolithographically patterning and wet chemically etching said aluminum to leave an aluminum pattern representing the desired interconnection pattern on the slice;
- removing the exposed portions of said second layer of Ti:W;
- sputter etching the exposed portions of said conductor layer; and
- removing the exposed portions of said first layer of Ti:W.

3,856,649
SOLID STATE ELECTRODE
Marvin Alden Genshaw, Elkhart, and Melvin Dee Smith, Mishawaka, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 16, 1973, Ser. No. 341,999
Int. Cl. G01n 27/30

U.S. Cl. 204—195 F

9 Claims

1. A solid state electrode for use in determination of ion concentration in an aqueous solution comprising, an electrically conductive inner element,
a salt having as a cation a cation form of at least a portion of said inner electrode material and also having an anion, said salt being disposed on a surface portion of said inner electrode,
a solid hydrophilic layer in intimate contact with said salt, said solid hydrophilic layer including polyvinyl alcohol and a water soluble salt of said anion, and
a solid hydrophobic layer in intimate contact with said solid hydrophilic layer shielding said solid hydrophilic layer from direct contact with the ion-containing aqueous solution when said electrode is immersed therein.
7. An electrode as described in claim 1 wherein an ion selective material is included in said hydrophobic layer.

3,856,650
CATHODE FOR AN ALUMINIUM FUSION ELECTROLYSIS CELL AND METHOD OF MAKING THE SAME

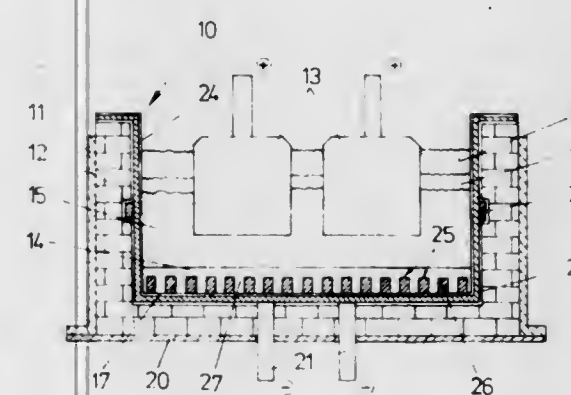
Tibor Kugler, Thayngen, and Hans Wolfhart Rieger, Berlingen, Switzerland, assignors to Swiss Aluminium, Ltd., Chippis, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,450
Claims priority, application Switzerland, Mar. 21, 1972, 4295/72

Int. Cl. B01k 3/04

U.S. Cl. 204—243 R

13 Claims



1. A pot suitable for use as the cathode of an aluminum fusion electrolysis cell, comprising a heat insulating outer shell and, on the interior thereof, an inner chamber having walls of electrically conductive material, and an inner protective thin lining comprising compacted interfused particles strongly adhering to the inner surface of said chamber walls and adapted to be in contact with the melt, said lining being composed of a ceramic material which is electrically conductive and insoluble in a melt of fused cryolite and in molten aluminum.

3,856,651
APPARATUS FOR PRODUCING UNIFORM ANOLYTE HEADS IN THE INDIVIDUAL CELLS OF A BIPOLAR ELECTROLYZER

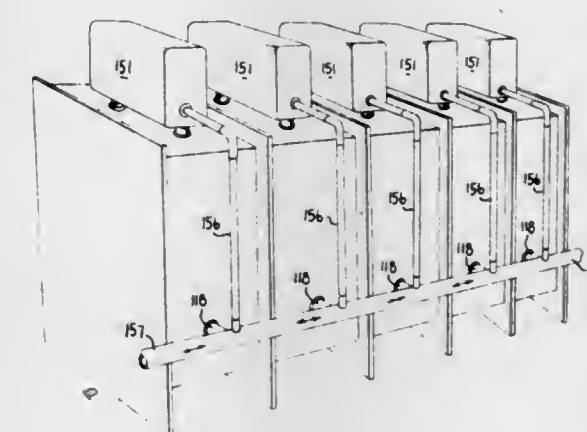
Carl W. Raetzsch, and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 171,231, Aug. 12, 1971, Pat. No. 3,755,108, which is a continuation-in-part of Ser. No. 55,693, July 17, 1970. This application May 16, 1973, Ser. No. 361,014

Int. Cl. B01k 3/10

U.S. Cl. 204—255

2 Claims



1. A bipolar electrolyzer comprising:
a plurality of individual electrolytic cells in series, each of said cells having an anolyte compartment and brine feed means, and said electrolyzer having an equalizer means independent of said brine feed means and comprising individual metal pipe means extending from openings in the anolyte compartments of the individual electrolytic cells to a common equalizer pipe means external the individual cells whereby to provide hydraulic communication between said anolyte compartments to maintain a substantially uniform head of anolyte in each of said cells.

3,856,652
ELECTROCHEMICAL CELLS
Martin Fleischmann, Eastleigh; Christopher John Hall King, Newcastle-upon-Tyne; John Wilfred Oldfield, Sutton Coldfield; Raymond Ernest Plimley, Newcastle-upon-Tyne, and Charles Lionel Kasturiratne Tennakoon, Kalagedihena, all of England, assignors to National Research Development Corporation, London, England

Filed Dec. 26, 1972, Ser. No. 318,463
Claims priority, application Great Britain, Dec. 30, 1971, 60763/71

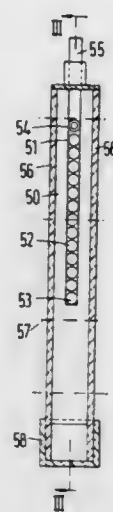
Int. Cl. B01k 3/04; C01b 7/06

U.S. Cl. 204—268

17 Claims

1. A multi-bipolar electrode cell adapted for operation with flowing electrolyte, comprising a plurality of bipolar electrode units, or groups of bipolar electrode units, said bipolar electrode units or groups of bipolar electrode units being arranged, in operation, to be electrically in series in spaced relationship from one end of the electrode system to the other, series connections being provided, in operation of the cell, between the adjacent electrode units or groups of electrode

units by flowing electrolyte substantially uniformly bridging the gaps between them, comparatively thin films of electrolyte



being in contact with the remainder of the surfaces of individual electrode units.

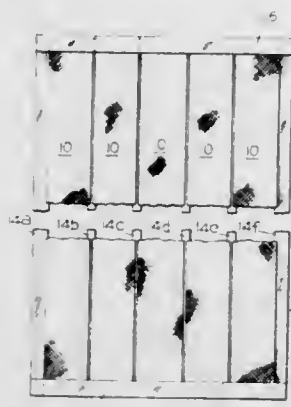
3,856,653

PLATINUM CLAD TANTALUM ANODE ASSEMBLY
Orris A. Rogers, Woodbury; Eldridge K. Camp, and John P. Borgmann, both of Litchfield, all of Conn., assignors to American Chemical & Refining Company, Incorporated, Waterbury, Conn.

Filed Nov. 21, 1972, Ser. No. 308,478
Int. Cl. C23b 5/72, 5/58

U.S. Cl. 204-286

9 Claims



1. A platinum-clad tantalum anode assembly comprising:
a relatively flexible tantalum mesh having platinum cladding on only one surface thereof and a tantalum surface;
a relatively rigid framework disposed adjacent the tantalum surface of said tantalum mesh and extending about the margins of said mesh, said framework including a plurality of elongated frame members and transverse frame members extending perpendicularly thereto at the ends thereof, said said frame members being fabricated of tantalum and said tantalum surface of said mesh being bonded to said elongated frame members to provide electrical connection therebetween resistant to corrosive action by a bath in which the assembly may be disposed, said frame members extending generally parallel to the plane of said mesh, and
a relatively rigid current distribution subassembly comprising at least one elongated bus member extending in generally parallel relationship to said elongated frame members and to the plane of said mesh, said distribution subassembly further comprising at least one transverse bus member extending generally perpendicular to said elongated bus member and disposed intermediate the ends of said elongated frame members and extending therebetween, said transverse bus member being bonded on one surface thereof to said elongated bus member and on the

other surface thereof to the surface of said elongated frame members spaced from said mesh to provide electrical connection therebetween resistant to corrosive action by a bath in which the assembly may be disposed, said bus members of said subassembly being free from electrical contact with said framework and said mesh except through the conductive paths provided by said bonds between the transverse bus member and the elongated frame members intermediate the length of said elongated frame members for distribution of electrical current to said framework and to said tantalum mesh from points spaced intermediate the length of said conductive framework.

3,856,654

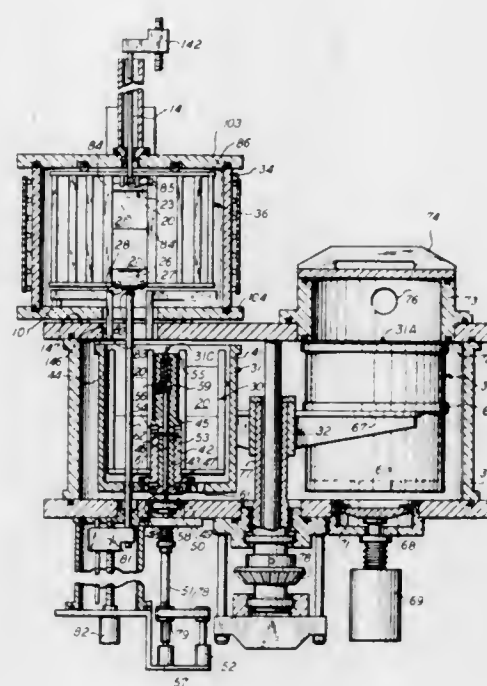
APPARATUS FOR FEEDING AND COATING MASSES OF WORKPIECES IN A CONTROLLED ATMOSPHERE
Carroll H. George, North Andover, Mass., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 26, 1971, Ser. No. 175,247

Int. Cl. C23c 15/00

U.S. Cl. 204-298

14 Claims



1. In an apparatus for sputtering a metallic film onto substrates:
a sputtering chamber having a centrally disposed cathode for sputtering a film of the material of the cathode on the substrates;
a carousel for holding a circular array of substrates about said cathode;
means for indexing the carousel to move the substrates in a circular path about the cathode;
said chamber having a slot formed therein in tangential relation to the circular path of movement of the substrates;
a magazine carrier for holding a radial array of substrates;
means for intermittently rotating said magazine carrier to move each substrate into alignment with said slot;
means for moving an aligned substrate through said slot into said carousel following each intermittent rotation of said magazine carrier and then for removing a film coated substrate from the carousel and returning the substrate to the magazine carrier; and
means including a housing surrounding said magazine carrier for maintaining a vacuum about the substrates during movement to and from the sputtering chamber.

3,856,655

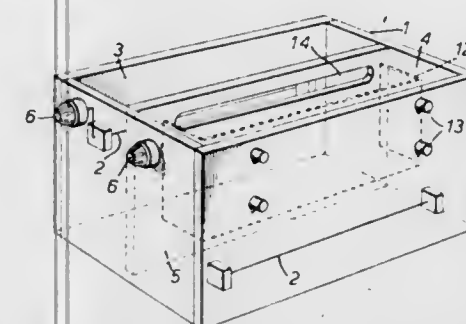
VERTICAL GEL ELECTROPHORESIS APPARATUS
Peter Clive Buckley Roberts, Buenos Aires, Argentina, assignor to Bovril Limited, Enfield, Middlesex, England

Filed Jan. 15, 1973, Ser. No. 323,426

Int. Cl. B01d 13/02

U.S. Cl. 204-299

3 Claims



1. Vertical gel electrophoresis apparatus comprising a rectangular buffer tank divided into a first compartment and a second compartment by a vertical partition extending upwardly from the base of the tank and wholly across the tank in a plane parallel to two opposite side walls thereof, the first compartment containing a lower buffer tank in which is vertically disposed a gel cell, the lower surface of the gel cell being directly contactable over its whole area with a buffer solution containable within the lower buffer tank, and an upper buffer tank defined by four walls, one of the four walls being a portion of the partition, and at least part of the bottom of which upper buffer tank is defined by the upper surface of the gel cell, means for allowing a buffer solution in the second compartment to overflow into the upper buffer tank and, disposed in each compartment, an electrode for establishing a potential across the gel cell.

3,856,656

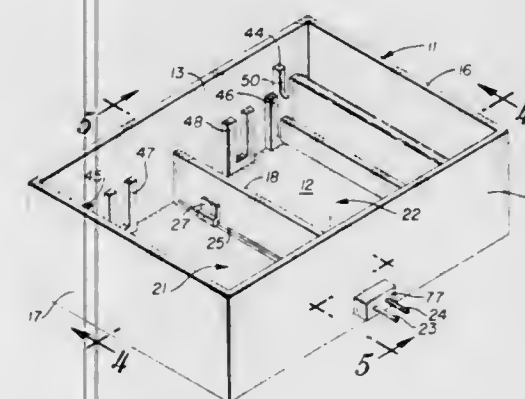
ELECTROPHORETIC APPARATUS
Miles L. Brink, 1050 Halland St., Lakewood, Colo. 80215

Filed June 18, 1973, Ser. No. 370,910

Int. Cl. B01k 5/00

U.S. Cl. 204-299

9 Claims



1. Apparatus useful in connection with electrophoresis studies comprising an upwardly opening cell structure having liquid-tight end and side walls, a liquid-tight intermediate wall for said cell structure dividing a lower portion of the cell structure into separate receptacles adapted to receive an electrolyte-buffer solution, separate electrodes in each of said receptacles in position for contact with said buffer solution, support partitions that are of operative height greater than the height for said intermediate wall for disposition in each of said receptacles, a carrier structure having a specimen receiving surface on a lower or inverted face of said carrier disposed for support by and extension between the support partitions in the separate receptacles, said specimen receiving surface accordingly being disposed across and above said intermediate wall, said carrier structure further having edge elements extending downwardly at all sides of said specimen receiving surface for

the protection of said specimen receiving surface and said support partitions providing slots for the accommodation of said downwardly extending edge elements, wick elements of a type to be wetted by the buffer solution on each of said support partitions and in wetted contact with the buffer solution and the specimen receiving surface of said carrier whereby electrical current may be delivered to the specimen receiving surface, and a power source for selective connection to said electrodes to provide said electric current.

3,856,657

OXIDIZED PETROLEUM PITCH
Marc Michael Seinfeld, 5 Morningside Dr., Succasunna, N.J. 07876, and George Alexander Shedyak, 2 Pender Pl., Fords, N.J. 08863

Filed Feb. 11, 1974, Ser. No. 441,093

Int. Cl. C10c 3/04

U.S. Cl. 208-6

7 Claims

1. A binder pitch obtained from a feedstock of aromatic petroleum hydrocarbon bottoms derived from the thermal processing of petroleum hydrocarbons, by the batchwise oxidation-polymerization of said aromatic petroleum feedstock in the presence of a residue of previously oxidized aromatic petroleum feedstock, at a temperature in the range of 680°-750°F., while passing a source of oxygen through said feedstock at the rate of about 0.01 to 0.2 cu.ft./min. oxygen/bbl., at substantially atmospheric pressure.

3,856,658

SLURRIED SOLIDS HANDLING FOR COAL HYDROGENATION

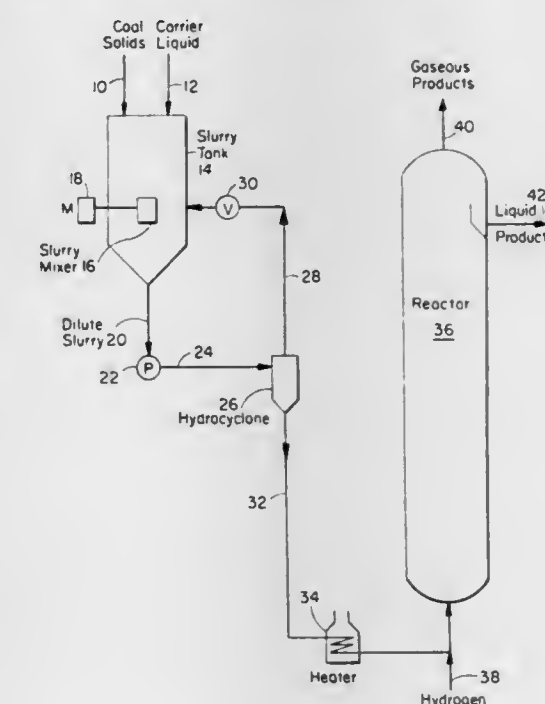
Ronald H. Wolk, Trenton, and Michael C. Chervenak, Pennington, both of N.J., assignors to Hydrocarbon Research Inc., New York, N.Y.

Continuation-in-part of Ser. No. 191,035, Oct. 20, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,281

Int. Cl. C10g 1/06

U.S. Cl. 208-10

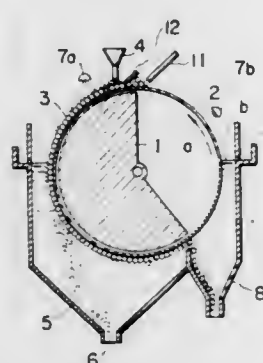
10 Claims



1. A method for introducing particulate coal in liquid phase slurry form into a high pressure reaction zone which comprises:

- mixing said particulate coal with a hydrocarbon liquid to produce a dilute slurry;
- pressurizing said dilute slurry to a pressure above the reaction zone pressure;
- passing said pressurized slurry through liquid-solid centrifugal type separator means without substantial loss of pressure to produce a clarified liquid portion and a concentrated slurry portion;

periphery and having an axis which is fixed substantially horizontally, said cylindrical body consisting of a plurality of sets of multiple discal permanent magnets each having a cut away recess and discal yokes each having a similar configuration to said magnets, said plurality of sets of permanent magnets and said yokes being coaxially mounted side by side with their cut away recesses coinciding and being assembled into an integral body with the sets of permanent magnets sandwiched between said yokes so that adjacent yokes have opposite polarity to each other, rotary drum disposed coaxially with and rotatable about and in close proximity to said stationary cylindrical body, said rotary drum including axially spaced nonmagnetic material portions separated by circumferential strips of mate-



rial of high magnetic permeability, said strips being in alignment respectively with said yokes and forming low reluctance paths for the magnetic field across the gap between the drum and said cylindrical body and defining a first group of induced poles, and a single continuous layer of induced poles provided on the immediate outer periphery of said drum overlying said first group of induced poles and forming a second group of induced poles spanning the complete length and the periphery of the drum opposite at least the non-cut away portion of said cylindrical body; whereby, said magnetic particles are effectively separated from the nonmagnetic particles contained within raw material particles directed onto the rotary drum periphery during rotation thereof.

3,856,667

MICROBIAL DEGRADATION OF PETROLEUM

Edward N. Azarowicz, Vienna, Va., assignor to Biotechnika International, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 43,226, June 3, 1970, Pat. No. 3,769,164. This application Dec. 11, 1972, Ser. No. 313,629. The portion of the term of this patent subsequent to Oct. 30, 1970, has been disclaimed.

Int. Cl. C02b 9/02

U.S. Cl. 210-11

10 Claims

1. A process for the microbial degradation of aqueous polluting petroleum and oily wastes which comprises treating the petroleum or oily waste with at least one microorganism selected from the group consisting of *Candida lipolytica* 2005 ATCC 20255, *Candida lipolytica* 2002 ATCC 20362, *Candida lipolytica* 2003 ATCC 20363, and *Candida lipolytica* 2004 ATCC 20364, and mutants thereof in an aqueous system for a sufficient time until the treated petroleum oily waste has been substantially degraded.

3,856,668

METHOD FOR TREATMENT OF COAL WASHERY WATERS

Roland H. Shubert, 11530 Hickory Cluster, Reston, Va. 22090

Filed May 30, 1973, Ser. No. 365,202

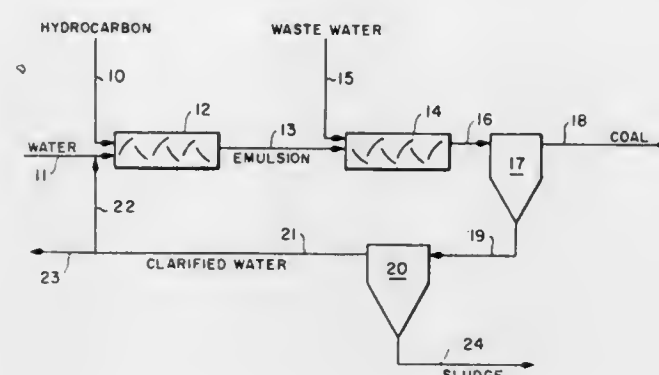
Int. Cl. B01d 11/00

U.S. Cl. 210-21

12 Claims

1. A method for treating a water slurry containing in suspension very finely divided coal particles and particulate inorganic materials associated with coal which comprises:

mixing with said water slurry a heavy, liquid hydrocarbon in aqueous emulsion, wherein the amount of hydrocarbon added to the waste stream is in the range of 2 to 10% by weight based upon the weight of coal particles contained in the waste stream, said hydrocarbon being chosen from the group consisting of heavy fuel oils, waste lube oils and coal tar, said mixing being accomplished by subjecting the slurry and emulsified hydrocarbon to agitation sufficiently intense to disperse the hydrocarbon on the surface



of the coal particles and to cause collisions between coal particles resulting in the formation of coal agglomerates; passing the slurry, now containing coal agglomerates and finely divided inorganic matter in suspension, to a first separation zone wherein coal agglomerates are removed; passing the water fraction containing suspended inorganic matter to a second separation zone, and recovering from the second separation zone a clarified water fraction.

3,856,669

ELUTION CENTRIFUGE-APPARATUS AND METHOD

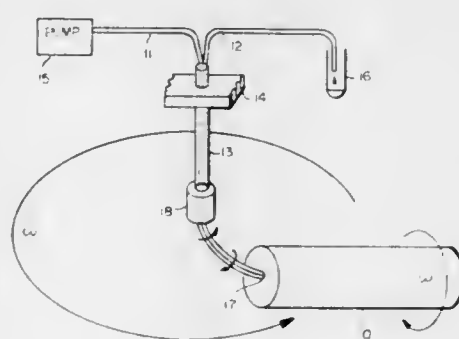
Yoichiro Ito, and Robert L. Bowman, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed July 2, 1973, Ser. No. 375,882

Int. Cl. B01d 15/08

U.S. Cl. 210-31 C

9 Claims



1. An elution centrifuge comprising: a separation column the axis of which is generally perpendicular to a main axis of revolution; a feed tube for introducing fluids to said separation column and means for passing fluid to said feed tube; a return tube for discharging fluids from said separation column and means for receiving fluid therefrom; centrifugation means for revolving said separation column about the main axis of revolution and for simultaneously rotating said separation column about its axis at the same angular velocity to prevent twisting of said feed and return tubes; and a stationary guide means, located outside said centrifugation means coaxial with the main axis of revolution, for guiding said feed and return tubes.

3,856,670

REMOVAL OF BORON FROM WATER

Willard D. Peterson, Pasadena, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 74,877, Sept. 23, 1970, abandoned.

This application Jan. 31, 1972, Ser. No. 222,385

Int. Cl. B01d 15/04

U.S. Cl. 210-32

14 Claims

1. A process for the removal of boron values from aqueous solutions having borate ions contained therein comprising contacting the aqueous solution containing borate ions with a water insoluble solid organic ion exchange resin, which resin is produced by the co-condensation of an aromatic ortho-hydroxy carboxylic acid, a phenolic compound and an aldehyde to selectively absorb the boron value onto the resin in the presence of at least one cationic species selected from the group consisting of alkali, alkaline earth, nitrogen organic bases and ammonium cations.

3,856,671

CLOSED-LOOP OZONE GENERATING AND CONTACTING SYSTEM

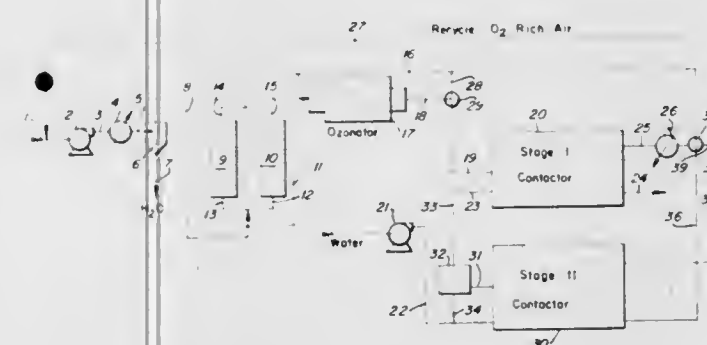
Hanju Lee, Columbia, and Harvey Milton Rosen, Laurel, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 204,503, Dec. 3, 1971, Pat. No. 3,748,262. This application Nov. 21, 1972, Ser. No. 308,612. The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl. C02b 1/38

U.S. Cl. 210-63

23 Claims



1. A closed-loop water treatment process using an oxidizing gas comprising:

- flowing at least one portion of an oxygen enriched gas to an ozonator wherein from about 1 to 7 percent ozone is formed; said oxygen enriched gas being the product of a pressure-swing fractionator;
- flowing the oxygen enriched gas containing ozone to a first gas-liquid contactor;
- flowing a partially purified water to be treated with said oxygen enriched gas containing ozone to said first gas-liquid contactor from an additional gas-liquid contactor;
- thoroughly contacting said partially purified water and said oxygen enriched gas containing ozone in said first gas-liquid contactor producing a treated water which is substantially purified and a gas at least partially depleted of ozone and oxygen;
- flowing impure water from an inlet to said additional gas-liquid contactor;
- flowing said gas at least partially depleted of ozone and oxygen to said additional gas-liquid contactor for thorough contacting with said impure water, partially purifying said impure water, and said gas at least partially depleted of ozone and oxygen is further depleted in at least one component;
- flowing said gas further depleted in at least one component from said additional gas-liquid contactor as a recycle gas and comixing said recycle gas with a portion of air;
- flowing the comixture of air and recycle gas through a pressure-swing fractionator wherein nitrogen is selec-

tively removed, thereby yielding an oxygen enriched gas; and

i. repeating step (a), thereby producing a closed-loop water treatment system.

3,856,672

CONTINUOUS WET OXIDATION SYSTEM FOR THE HOME

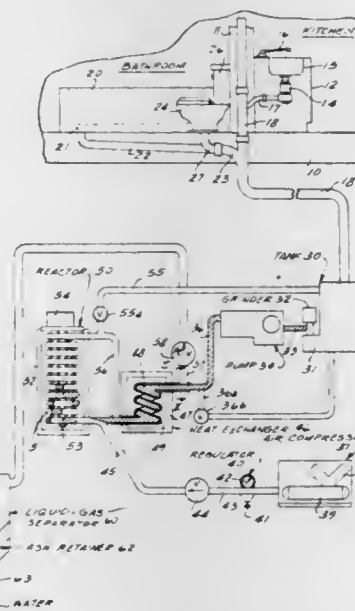
George Boswinkle, and Robert Bradford Wheaton, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 4, 1972, Ser. No. 312,194

Int. Cl. C02c 5/06

U.S. Cl. 210-63

11 Claims



1. The method of handling waste, organic trash and garbage in a home, which includes the steps of:

- flushing garbage disposers, toilets and other household appliances for receiving and gathering organic refuse, garbage and trash through a common hydraulic system formed by suitable plumbing means, thereby to collect the waste generated in the home as flushed material containing solid and liquid contents;
- at one point in the system collecting the flushed material into a common receiving tank;
- macerating and mixing the solid and liquid contents of the tank to form an influent which can be circulated through the system;
- at a second point in the system metering a supply of pressurized air to support oxidation of the influent;
- at a third point in the system pressurizing the influent by pumping to drive the influent in the form of a stream;
- at a fourth point in the system confining the stream together with the air supplied thereto to flow through a heat transfer coil of substantial length and numerous loops in a reacting zone while adding radiant thermal energy to the stream through the coil throughout the entire effective flow path length of the coil within the reacting zone such that a temperature in the order of 550°- 560° F. is maintained throughout travel of the stream through the coil in the reacting zone and thereby oxidizing the solids during the residence of the stream in the reacting zone and forming a completely oxidized effluent within the reacting zone;
- and separating effluent leaving the reacting zone into harmless gas, sterile residual ash and clarified water.

3,856,673

PURIFICATION OF SPENT SULFURIC ACID

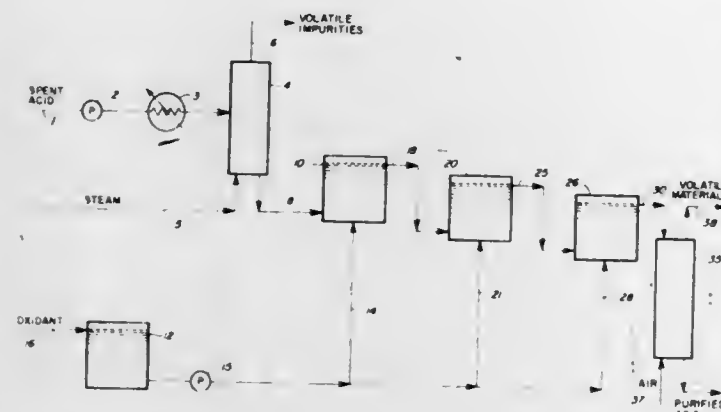
George B. De La Mater, Media, and Barton Milligan, Ardmore, both of Pa., assignors to Air Products and Chemical, Inc., Wayne, Pa.

Filed Apr. 2, 1973, Ser. No. 347,219

Int. Cl. C02b 1/36

U.S. Cl. 210-63

6 Claims



1. In a system for the nitration of aromatic compounds, a process for purifying a spent acid stream from said system and containing organic impurities which comprises the steps of stripping said spent acid stream in a denitrifier to remove a substantial portion of the volatile organic impurities therefrom, contacting the resulting stripped spent acid stream containing at least 50 ppm of nonvolatile organic impurities selected from the group consisting of nitroresols and other nitrophenolic compounds and from 60% to about 85% by weight of sulfuric acid from said denitrifier with an oxidizing agent selected from the group consisting of ozone, hydrogen peroxide, chlorates, peroxydisulfates and mixtures thereof by adding at least one stoichiometric equivalent in increments of about one-third or less of said oxidizing agent per equivalent of nonvolatile organic impurities during a period of about one minute to about 60 minutes at a temperature of about 130° to 230°C and recovering a purified acid stream containing less than 50 weight of said nonvolatile organic impurities than said stripped spent acid stream.

3,856,674

FILTERING PROCESS AND APPARATUS

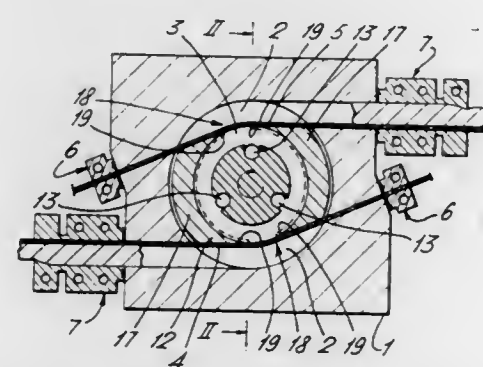
Peter Gabor Kalman, 51 Compayne Gardens, London, England

Filed Mar. 23, 1973, Ser. No. 344,414

Int. Cl. B01d 35/13

U.S. Cl. 210-71

119 Claims



1. A process for filtering a substance flowing through a passage comprising the steps of introducing said passage so that a part of the filter extends across the passage, forcing the substance through the filter part in the passage to filter the substance, providing a flowable sealing substance in said inlet and outlet ports, maintaining temperature conditions at said inlet and outlet ports resulting in the formation therein of

sealing plugs of said flowable sealing substance of adequate rigidity to prevent substantial leakage at said ports of the substance being filtered, supporting at least said part of the filter which extends across the passage by means of a movable backing support adapted to receive substance filtering through the filter, equalizing the force applied to the backing support as the result of a hydrostatic pressure differential across the filter urging the filter against the backing support by applying to the backing support a counteracting force thereby at least to reduce the net force tending to restrict the ease of movement of the backing support, effecting movement of said filter through said ports to introduce another part thereof into said passage under conditions providing for maintenance of the said sealing plugs, effecting movement of said backing support with said filter movement so that the backing support serves as a moving bearing for the filter, and extracting said filtered material received in the backing support.

3,856,675

COAL LIQUEFACTION

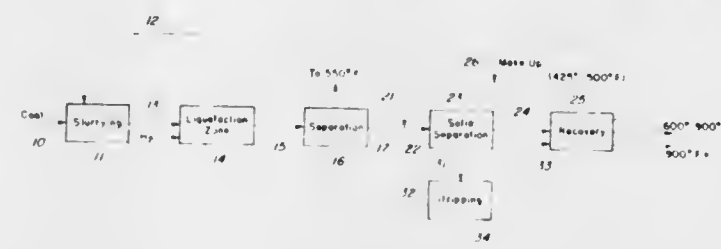
Morgan C. Sze, Upper Montclair, and George J. Snell, Fords, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 7, 1972, Ser. No. 304,319

Int. Cl. C10g 1/00

U.S. Cl. 210-73

31 Claims



1. A process for separating insoluble material from a coal liquefaction product produced from a coal feed and comprised of insoluble material and carbonaceous matter dissolved in a coal liquefaction solvent, comprising:

introducing said liquefaction product and a liquid promoter into a gravity settling zone to separate insoluble material by gravity settling, said liquid promoter having a 5 volume percent distillation temperature of at least about 250° F. and a 95 volume percent distillation temperature of at least about 350° F. and no greater than about 750° F., said liquid having a characterization factor (K) of at least 9.75;

said liquid having a characterization factor greater than said coal liquefaction solvent;

said promoter liquid being added in an amount sufficient to promote and enhance gravity settling of insoluble material to produce an overflow essentially free of insoluble material; and

recovering from the settling zone a liquid overflow essentially free of insoluble material and a liquid underflow containing the insoluble material.

3,856,676

WATER PURIFICATION AND VENDING APPARATUS

Henry L. Grimme, Jr., Parkville, Mo., and Ray Osborn, Overland Park, Kans., assignors to Raypak, Inc., Westlake Village, Calif.

Filed Apr. 3, 1972, Ser. No. 240,535

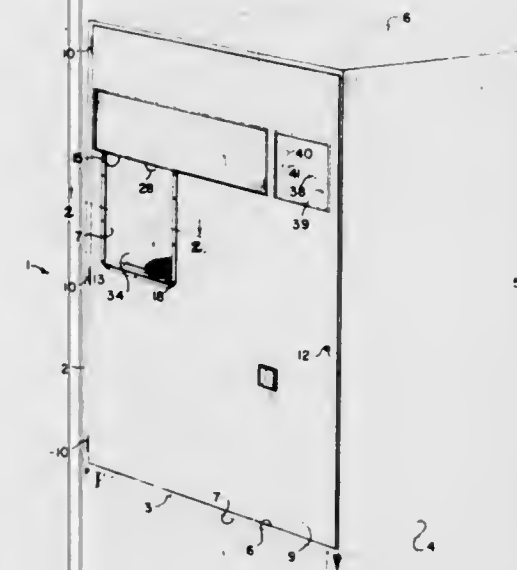
Int. Cl. B01d 31/00

U.S. Cl. 210-96

7 Claims

1. A vending apparatus for dispensing water comprising:
a. a housing having at least one dispensing station accessible from the exterior thereof;
b. a closed treated water tank in the housing;
c. a water treating means including a semipermeable membrane filtration structure operating under pressure to pass filtered water and reject impurities including solids and

dissolved minerals, said treating means having a filtered water outlet in flow communication with the treated water tank for delivery of filtered water thereto;
d. means connecting said membrane filtration structure to a disposal for transmittal of rejected water thereto;
e. a flow line having an inlet connected to a source of raw water;
f. a pump having an inlet connected to said flow line and an outlet connected to the water treating means to deliver raw water to the upstream side of said membrane filtration structure for treatment therein;
g. a dispensing means for dispensing water at said dispensing station;
h. means connecting the treated water tank to said dispensing means to transmit treated water from said tank to said dispensing means for dispensing;



i. a coin operated means supported by said housing operative to control said dispensing means and effect delivery of a predetermined quantity of treated water in response to deposition of a coin of proper value;

j. a carbon filter between the treated water tank and said dispensing means and arranged whereby all water dispensed passes therethrough;

k. means for detecting the purity of the treated water from the water treating means and operative for deactivating from dispensing means when impurities in the treated water exceed a predetermined level;

l. a prefilter in said flow line upstream from said pump and operative to remove particles of solids from the raw water; and

m. means responsive to differential pressure around said prefilter and operative to deactivate the dispensing means and pump if flow through the prefilter is retarded to a predetermined minimum.

3,856,677

PROPORTIONAL CHEMICAL INJECTION SYSTEM

Beldon A. Peters, Houston; Louis P. Smith, Webster, and Aubrey O. Landrum, Houston, all of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Dec. 18, 1972, Ser. No. 316,338

Int. Cl. B01d 17/04

U.S. Cl. 210-96

17 Claims

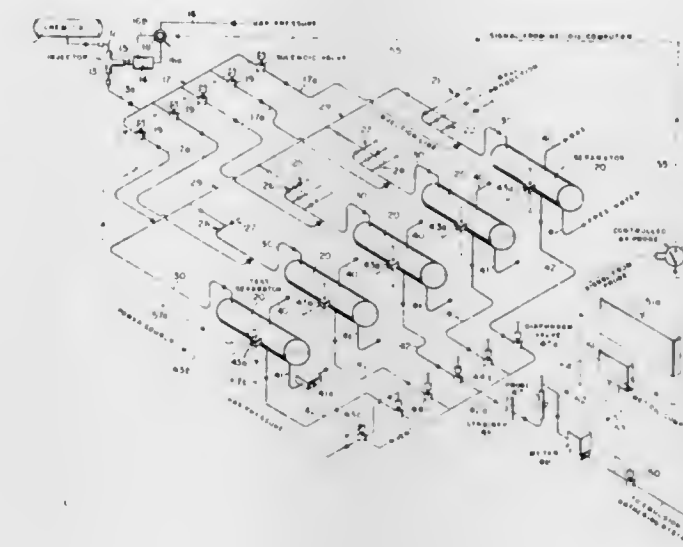
1. A system for treating an emulsified mixture of oil and water which comprises:

at least one separator means adapted to be connected to and contain a supply of said mixture;

said separator means being provided with separate means to discharge separately gas, free water, and an emulsion of oil and water;

means connected to said separator means for injecting a selected amount of demulsifying agent into said mixture in said separator means;

means connected to said emulsion discharge means for generating and transmitting first or second signals which are, respectively, proportional to the amount of water in the emulsion or the gross amount of said emulsion discharged from said vessel when the percentage of water in said emulsion discharged from said vessel exceeds a predetermined percent;



an electrical circuit connected electrically to said generating and transmitting means and injection means; and switch means in said electrical circuit operable when the percentage of water in said emulsion exceeds said predetermined percent to close said electrical circuit means and thereby conduct said first or second signals to said injection means for injecting said selected amount of demulsifying agent.

3,856,678

SELF-RECONDITIONING FILTER APPARATUS FOR CONTINUOUS REMOVAL OF SOLIDS FROM A STREAM OF LIQUID

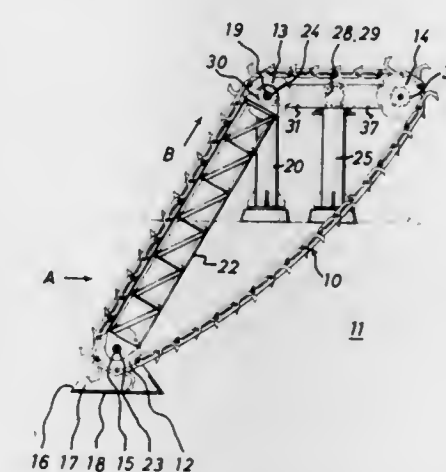
Tadashi Hagihara, 4-1, 5-chome, Minami Nagasaki, Toshima-ku, Tokyo, Japan

Filed Jan. 17, 1974, Ser. No. 434,113

Int. Cl. B01d 33/04

U.S. Cl. 210-160

5 Claims



1. A self-reconditioning filter apparatus for continuous removal of solids from a liquid flowing through a channel of given width and depth, comprising in combination:

a shaft rotatably supported across said channel adjacent the bottom thereof;

a first pair of toothed wheels fixedly mounted on said shaft adjacent both ends thereof respectively;

at least one other shaft rotatably supported across said channel above the level of the liquid flowing there-through, said one other shaft being located on the downstream side of the first mentioned shaft;

a second pair of toothed wheels fixedly mounted on said one other shaft adjacent both ends thereof respectively;
drive means for imparting rotation at least to said second pair of toothed wheels;
a filter medium in the form of an endless belt adapted to operate at least over said first and second pairs of toothed wheels in engagement therewith, said filter medium including:
a number of filter units of generally flat, elongated shape arranged longitudinally of said filter medium in a discontinuous manner with lateral spacings therebetween and each having a shank portion and a hook portion in offset arrangement, said shank portion having first and second bores formed through both ends thereof respectively; and
a plurality of linking rods arranged transversely of said filter medium to interconnect said filter units into the form of an endless belt, each of said linking rods being loosely received alternately in said first and second bores of the adjacent filter units whereby the hook portion of each of said filter units is normally partly buried between the shank portions of the transversely adjacent filter units; and
a frame extending linearly between said first and second pairs of toothed wheels to support said filter medium against the force of the liquid flowing therethrough.

3,856,679

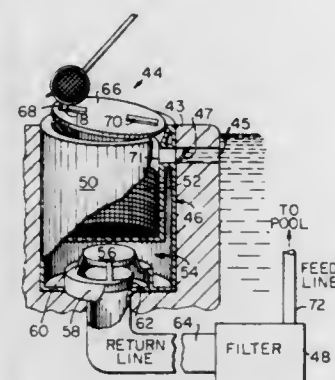
POOL SKIMMER NET

Richard L. Jackson, 70 Andrew Ford Way, Abington, Mass. 02351

Filed Nov. 12, 1973, Ser. No. 414,947
Int. Cl. E04h 3/20

U.S. Cl. 210-169

6 Claims



1. A tool and net combination for cleaning a swimming pool skimmer, the skimmer including an open ended body in which there is mounted a strainer, a cover formed with an opening is removably seated on the skimmer body about the open end thereof, said combination tool and net comprising:

- a head in the form of a substantially annular member;
- a handle mounted to said head at a rearward portion thereof, a longitudinal axis of said handle extending through a center of said head;
- a first hook projecting from a forward portion of said head, said first hook being a substantially L-shaped member having a leg and a foot, said leg of said first hook extending outwardly from said head in a plane that is in substantially parallel relationship with a plane in which said handle lies, said foot of said first hook extending downwardly from said leg of said first hook in a plane that is in substantially perpendicular relationship with the plane in which said handle lies;
- a second hook projecting from a forward portion of said head, said second hook being a substantially L-shaped member having a leg and a foot, said leg of said second hook extending outwardly from said head in a plane that is in substantially parallel relationship with the plane in which said handle lies, said foot of said second hook extending downwardly from said leg of said second hook

in a plane that is in substantially perpendicular relationship with the plane in which said handle lies;
e. a net mounted to said head, said net having an open end and a closed end, said open end coinciding with and secured to said head;
f. said first hook disposed at one side of the longitudinal axis of said handle and said second hook disposed at the other side of the longitudinal axis of said handle, a longitudinal axis of said foot of said first hook and a longitudinal axis of said foot of said second hook diverging toward the center of said head, the width of said first hook being substantially wider than the width of said second hook, said first hook operative to engage the opening formed in the cover for removing and replacing the cover, said second hook operative to engage the strainer for removing and replacing the strainer, said net operative to be received in the strainer for removing debris therefrom.

3,856,680

AUTOMATIC SCREEN CHANGER FOR EXTRUDING PROCESSES

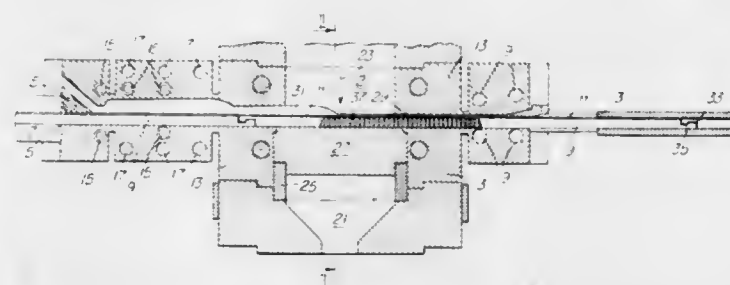
Jeffrey T. Elmore, Webster, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,502

Int. Cl. B01d 35/18

U.S. Cl. 210-184

5 Claims



1. In apparatus for extruding heat softened material wherein a filter screen enclosure having inlet and outlet parts is placed transverse the bore of an extruder housing the flow of heat softened material and periodic change of a filter screen in said filter screen enclosure of said extruder is required without interrupting the flow of heat softened material, the improvement which comprises:

- a backing plate with spaced apart transverse support bars across the extruder bore in the filter screen enclosure of the extruder,
- an elongated perforated rectangular breaker plate in matching engagement with a strip of filter screen in said inlet and outlet parts of said filter screen enclosure which will move with said screen across said backing plate and said extruder bore,
- said breaker-plate-screen filter combination passing through said inlet and outlet parts in said filter enclosure provided with adjacent temperature adjusting means and said outlet port sized larger than said inlet port to permit the accumulation of a plug of solidified thermoplastic on the upstream side of the screen which is used under the influence of pressure to transversely move said breaker-plate-screen assembly when solidified thermoplastic material is softened in the inlet and outlet ports of said screen enclosure.

3,856,681

CHROMATOGRAPHY APPARATUS AND METHOD

Charles N. Huber, P.O. Box 172, Sequim, Wash. 98382

Filed Aug. 17, 1972, Ser. No. 281,511

Int. Cl. B01d 15/08

U.S. Cl. 210-198 C

29 Claims

1. In a chromatography column in which flow of a fluid to be separated occurs primarily along a predetermined axis, said column having a height dimension, a packing for said column comprising:

a plurality of layers of chromatographic media arranged contiguous to each other, said layers having a thickness dimension and a height dimension, said thickness dimension of said layers extending substantially perpendicularly to said predetermined axis, said height dimension of said



layers extending substantially parallel to said predetermined axis, said layers being substantially continuous and homogeneous to form a uniformly dense layer in both the thickness and height dimensions of said layers, said height dimension of said layers being substantially equal to the height dimension of said column.

3,856,682

TWO SHELL GRAVITY OIL-WATER SEPARATOR

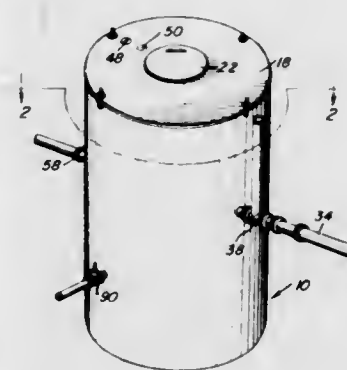
Robert L. Summers, Roanoke, Va., assignor to William D. Mason, Jr., Roanoke, Va., a part interest

Filed Mar. 28, 1973, Ser. No. 345,696

Int. Cl. B01d 21/24

U.S. Cl. 210-294

7 Claims

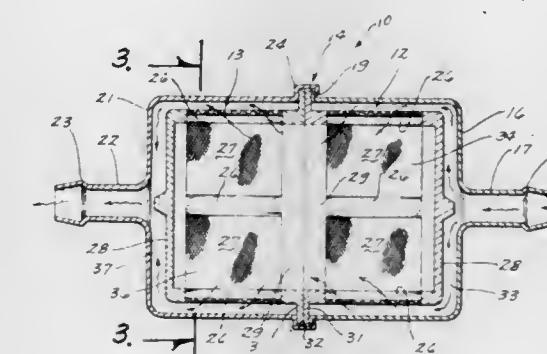


1. A gravity separator comprising a tank assembly defining first and second individual tank components, said first component including an upper inlet opening thereinto at a working level spaced below the upper end thereof and including means for the ingress of oil and water into said first component at said level in a generally horizontal direction, said second component including an upper outlet opening opening outwardly therefrom at a level spaced below the upper end thereof and generally horizontally aligned with the inlet, said second component including means defining an upstanding lift passage is closed communication with the outlet opening at its upper end and opening downwardly into a lower interior portion of said second component at its lower end, means defining a transfer passage having inlet and outlet ends communicated with a lower portion of the interior of the first component and an upper portion of the interior of the second component, respectively, a flow control valve operatively associated with said inlet and a flow control valve operatively associated with said transfer passage, and a gravity discharge outlet passage having its inlet end opening into the interior of said first component at a level spaced appreciably below the first mentioned level and at least somewhat above the lower end of said transfer passage, and flow control valve means operatively associated with said gravity discharge outlet passage.

3,856,683
DUAL FLOW FLUID FILTER
Erwin W. Parr, 3001 McKinley, Des Moines, Iowa 50321
Filed Dec. 15, 1972, Ser. No. 315,495
Int. Cl. B01d 29/14

U.S. Cl. 210-336

2 Claims



1. A dual filter comprising:
a cylindrical casing having a first portion with an inlet therein and a second portion with an outlet therein, said inlet and outlet being coaxially aligned;
first cylindrical filter means disposed in said first portion of the casing, said first filter means having a first perforate peripheral surface spaced from the interior of the casing, a first imperforate annular flange extended radially outwardly from one end of the first filter means and abutting a peripheral edge of said first portion of the casing;
second cylindrical filter means disposed in said second portion of the casing, said second filter means having a second perforate peripheral surface spaced from the interior of the casing, a second imperforate annular flange extending radially outwardly from one end of the second filter means and abutting the first annular flange of the first filter means and abutting a peripheral edge of said second portion of the casing;
clamping means on said casing for clamping the abutting first and second annular flanges between the peripheral edges of said first and second portions of the casing and thereby forming a seal thereat; and
supporting means for supporting said perforate surfaces of the first and second filter means, said supporting means comprising a plurality of parallel ribs extending from the first and second annular flanges, along the first and second perforate surfaces, to the other respective ends of said first and second filter means, said other ends of said first and second filter means being imperforate, and each other end having a tapering projection thereon which is coaxially aligned with the coaxially aligned inlet and outlet to thereby disperse the flow of fluid evenly through the filter.

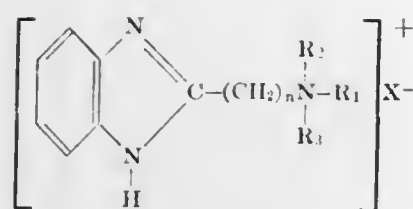
3,856,684
COMPOSITION CONTAINING BENZIMIDAZOLE
DERIVATIVES FOR SOFTENING RINSE
Ronald Edward Atkinson, Tynemouth, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 230,032, Feb. 28, 1972, abandoned. This application May 18, 1973, Ser. No. 361,740
Claims priority, application Great Britain, Mar. 12, 1971, 6699/71

U.S. Cl. 252-8.8

Int. Cl. D06m 13/46

7 Claims

1. A textile softening rinse composition consisting essentially of a quaternary ammonium benzimidazole derivative having the formula:



wherein either (i) R_1 is an alkyl group of from 14 to 22 carbon atoms or an alkylphenyl or alkylbenzyl group of from eight to 16 carbon atoms in the alkyl chain, and R_2 is alkyl of from one to six carbon atoms or a group $(\text{C}_2\text{H}_4\text{O})_m\text{H}$ where m is from one to 20; or (ii) each of R_1 and R_2 is an alkyl of from 10 to 22 carbon atoms or an alkylphenyl or alkylbenzyl group as defined above;

R_3 is an alkyl of from one to six carbon atoms or a group $(\text{C}_2\text{H}_4\text{O})_m$ where m is from 1 to 20;

n is from 1 to 4; and

X is an anion

and a pH buffering agent selected from the group consisting of water-soluble phosphates, carbonates, borates, citrates, tartrates and the corresponding acids thereof, the pH of a solution of the composition having 0.1 percent by weight of the benzimidazole derivative being below the pKa value of the benzimidazole derivative such that the benzimidazole derivative is in its cationic form.

3,856,685

LUBRICANT COMPOSITIONS

Kenjiro Mori, Takarazuka; Shigeharu Ikebe, Toyonaka; Masaaki Hirooka, Ibaragi, and Takashi Kato, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 4, 1972, Ser. No. 311,526

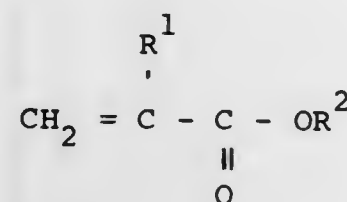
Claims priority, application Japan, Dec. 2, 1971, 46-97641

Int. Cl. C10m 1/28

U.S. Cl. 252-56 R

4 Claims

1. A lubricant composition comprising 100 parts by weight of an oil having a lubricant viscosity and 0.1 to 50 parts by weight of at least one copolymer of isobutylene, propylene or both thereof with at least one acrylic ester compound represented by the formula



wherein R^1 is a hydrogen or halogen atom, or a C_{1-20} hydrocarbon or -halohydrocarbon radical, and R^2 is a C_{1-20} hydrocarbon or -halohydrocarbon radical, in which the intrinsic viscosity of the copolymer is 0.02 to 3 dl/g as measured in benzene at 30°C, and wherein the copolymer consists essentially of alternating copolymers in which the member selected from the group consisting of isobutylene and propylene units is linked solely to the acrylic ester units and the acrylic ester units are linked only to the member selected from the group consisting of isobutylene and propylene units.

3,856,686
LUBRICANT CONTAINING THE INORGANIC
POLYMERIC GRAPHITE FLUORIDE IN AN IMPROVED
DISPERSED STATE THEREOF AND METHOD FOR THE
MANUFACTURE OF THE SAME

Ken Sato, Yokohama, and Kikuo Nakamoto, Kyoto, both of Japan, assignors to Nippon Carbon Company Limited, Tokyo and Tamotsu Hori, Kyoto, both of Japan

Filed Dec. 13, 1971, Ser. No. 207,652

Claims priority, application Japan, Dec. 21, 1970, 45-114910

Int. Cl. C10m 3/02

U.S. Cl. 252-30

2 Claims

1. A method of manufacturing a dispersion of graphite fluoride in water, comprising the steps of:

1. dipping said graphite fluoride in an inert organic solvent selected from the group consisting of: alcohol and siloxane, thereby removing impurities on the surface thereof to activate said graphite fluoride;
2. then adding said graphite fluoride to water in an amount of 0.0001 - 60 percent by weight of graphite fluoride per unit of water;
3. then adding a colloidal silica powder having a purity of more than 98 percent, a particle size less than 60 millimicrons, with more than 90 percent of said particles being of size less than 20 millimicrons, and having a surface area of 100-400 m²/g, in an amount 1/20 to 50 times by weight of said graphite fluoride to, the graphite fluoride and water; and
4. mixing and agitating said water, graphite fluoride and colloidal silica powder for a period of at least ten minutes under a reduced pressure of 1-720 mm Hg.

3,856,687
ACID NEUTRALIZING ACCELERATING
COMPOSITIONS

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

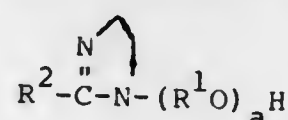
Continuation of Ser. No. 142,838, May 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 45,567, June 11, 1970, Pat. No. 3,711,406. This application Nov. 5, 1973, Ser. No. 413,144

Int. Cl. C10m 1/40, 1/32

U.S. Cl. 252-33.4

3 Claims

1. A lubricating oil composition comprising: a major amount of a hydrocarbon oil of lubricating viscosity; from about 0.01 to 5 weight percent of at least one oil-soluble acid neutralization accelerating compound of the formula



wherein R^1 is an ethylene or propylene radical, a is an integer in the range of 1 to about 12, and R^2 is an aliphatic hydrocarbon radical of molecular weight in the range from about 100 to about 2,000; and sufficient alkaline earth metal carbonate dispersed in said hydrocarbon oil with a sulfonate or phenate dispersant to provide an alkalinity value of 0.5 to 100 ml KOH/g.

3,856,688
ETHER-CONTAINING DIBASIC FATTY ACID METAL
SOAP THICKENED GREASES

Harold E. Kenney, Jenkintown, and Edward T. Donahue, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

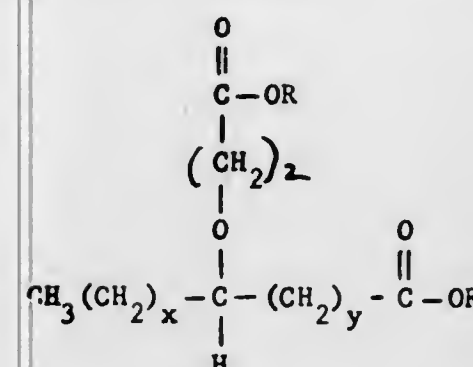
Division of Ser. No. 275,009, July 25, 1972. This application Aug. 24, 1973, Ser. No. 391,182

Int. Cl. C10m 5/16, 5/14, 7/24

U.S. Cl. 252-39

9 Claims

1. A multipurpose grease comprising a major amount of a lubricating oil selected from the group consisting of paraffin oil and aliphatic diester oil and a minor thickening amount of a dibasic fatty soap of the formula



wherein the sum of x and y is a number from 10 to 19 and R is a metallic ion capable of forming a fatty soap.

3,856,689
OIL-SOLUBLE POLYMERS OF N-3-AMINOALKYL
ACRYLAMIDES, AND LUBRICANTS CONTAINING
THEM

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

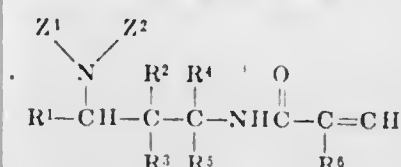
Continuation-in-part of Ser. Nos. 832,412, June 11, 1969, Pat. No. 3,666,810, and Ser. No. 203,853, Dec. 1, 1971. This application Mar. 24, 1972, Ser. No. 237,871

Int. Cl. C10m 1/32

U.S. Cl. 252-51.5 A

6 Claims

1. A lubricating composition comprising a major amount of a lubricating oil and a minor amount, effective to impart dispersancy thereto or modify the viscosity thereof, of an oil-soluble interpolymer comprising (A) at least about 50 percent by weight of units derived by free radical polymerization from an alkyl acrylate or methacrylate in which the alkyl group contains at least about 8 carbon atoms, said interpolymer also containing (B) units derived by free radical polymerization from a monomer of the formula



wherein each of R^1 , R^2 and R^3 is hydrogen or a hydrocarbon radical containing no more than about 30 carbon atoms; each of R^4 and R^5 is a hydrocarbon radical containing no more than about 30 carbon atoms; R^6 is a hydrogen or a lower alkyl radical; Z^1 is hydrogen or a hydrocarbon radical containing no more than about 30 carbon atoms and Z^2 is hydrogen, an alkyl or cycloalkyl radical, or



is piperidino or pyrrolidino.

3,856,690
LUBRICANT COMPOSITIONS CONTAINING
DERIVATIVES OF ANTHRANILIC ACID

Milton Braid, Westmond, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

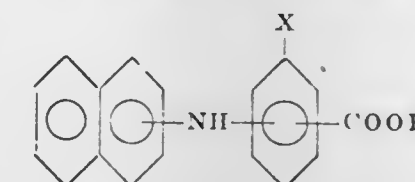
Continuation-in-part of Ser. No. 126,891, March 22, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,185

Int. Cl. C10m 1/32

U.S. Cl. 252-51.5 A

10 Claims

1. A lubricant composition comprising a major amount of a lubricant and an amount sufficient to impart antioxidant properties thereto of an ester of anthranilic acid having the formula:



wherein R is an alkyl having from 1 to about 20 carbon atoms and X is a member of the group consisting of hydrogen, halogen, alkoxy, alkyl, nitro and cyano, wherein said alkoxy and alkyl contain from 1 to about 20 carbon atoms.

3,856,691
LUBRICATING OIL COMPOSITION
Haakon Haugen, Oslo, Norway, and David G. Weetman, Hopewell Junction, N.Y., assignors to Texaco, Inc., New York, N.Y.

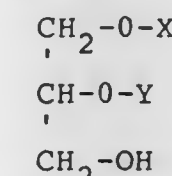
Filed Dec. 15, 1972, Ser. No. 315,382

Int. Cl. C10m 1/22

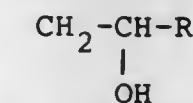
U.S. Cl. 252-52 R

8 Claims

1. A lubricating composition comprising a lubricating oil as a major component and containing from about 0.05 to 1.0 weight percent of an additive represented by the formula:



in which X and Y alternatively represent hydrogen and a hydroxy-substituted radical having the formula:



in which R is an aliphatic hydrocarbon radical having from about 6 to 23 carbon atoms, one of X and Y being said hydroxy-substituted radical.

3,856,692
LIQUID ELECTROSTATOGRAPHIC DEVELOPER
COMPOSITIONS

Joseph Mammino, and Alan B. Amidon, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 873,105, Oct. 31, 1969, Pat. No. 3,692,520. This application Aug. 28, 1972, Ser. No. 284,319

Int. Cl. G03g 9/04

U.S. Cl. 252-62.1

1 Claim

1. An electrostatographic developer composition comprising a liquid dispersion having a conductivity in the range of from about 10^{-4} to about 10^{-15} (ohm-centimeters)⁻¹ comprising

a carrier liquid having dispersed therein from about 15 to about 35 percent of finely divided toner material based

on the weight of the developer composition and from about 0.1 to about 1 percent of glyceryl tri-(12-hydroxy stearate) based on the weight of the developer composition.

3,856,693

METHOD FOR PRODUCING LEAD ZIRCONATE TITANATE POLYCRYSTALLINE CERAMICS

You Song Kim, Emmaus, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1972, Ser. No. 316,254

Int. Cl. C04b 35/46, 35/48

U.S. Cl. 252-62.9

7 Claims

1. A process for producing a piezoelectric lead zirconate titanate polycrystalline body comprising sintering a structurally integrated body of comminuted material, said material having been produced by: forming a mixture of oxides or compounds which upon heating yield the oxides by combining constituents equivalent to 65 to 70 weight percent PbO, 19.5 to 21.1 weight percent ZrO₂, 9 to 13.8 weight percent TiO₂ and 0.4 to 1.5 weight percent Nb₂O₅; calcining the mixture; and comminuting the calcined material; characterized in that: calcining is carried out at a temperature of from 900° to 1100° C for from 2 to 20 hours; comminuting is carried out to achieve a granule size of up to 44 microns; sintering is carried out in a substantially pure oxygen atmosphere at a temperature of from 1240° to 1300° C for from 1 to 8 hours; and further characterized in that amounts of SiO₂ and Al₂O₃ in the sintered product are limited to 0.07 weight percent and 0.15 weight percent, respectively.

3,856,694

PROCESS FOR STRIPPING NICKEL FROM ARTICLES AND COMPOSITION UTILIZED THEREIN

Donald H. Becking, Birmingham, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed June 18, 1973, Ser. No. 370,889

Int. Cl. C23g 1/04, 1/08

U.S. Cl. 252-101

8 Claims

1. A composition for stripping accumulated nickel deposits from plating apparatus and the like, which comprises nitric acid and sources of chloride, copper and tellurium or selenium ions, said chloride ion being present in concentrations of about 0.01 to 0.5 M and said tellurium or selenium ions being present in small but effective amounts sufficient to accelerate the stripping rate without noticeable deleterious effects upon the plating apparatus.

5. An aqueous solution for stripping accumulated nickel deposits from plating apparatus, which contains therein about 2 to 10 grams per liter of tellurium or selenium dioxide, 600 to 850 grams per liter of nitric acid, 2 to 20 grams per liter of copper sulfate, and 3.5 to 35.5 grams per liter of a source of chloride ions.

7. In a method of stripping nickel deposits from articles by immersing them in a concentrated nitric acid solution containing a chloride catalyst, the improvement which comprises adding to said solution a small but effective amount of a selenite or tellurite compound capable of providing selenium or tellurium ions in the solution.

3,856,695

SOLVENT BASED DETERGENT

Richard Geiss, Lushhof, 8875 Offingens, 1 Donau, and Rolf Quarch, St. Johannsstrasse 37, 7912 Weissenhorn, both of Germany

Continuation-in-part of Ser. No. 60,924, Aug. 4, 1970, Pat. No. 3,737,386. This application Apr. 12, 1973, Ser. No. 350,393

Claims priority, application Germany, Aug. 6, 1969, 1940018 The portion of the term of this patent subsequent to June 5, 1990, has been disclaimed.

Int. Cl. C09d 9/04

U.S. Cl. 252-162

14 Claims

1. A solvent-based detergent composition that is miscible with water consisting essentially of

- A. 10-80% by weight liquid aliphatic chlorinated hydrocarbons;
- B. 10-40% by weight liquid lower aliphatic ketones and/or liquid lower aliphatic esters;
- C. 5-50% by weight water-soluble alkanols having two to five carbon atoms and
- D. 1-10% by weight of a detergent anionic or nonionic surface active agents.

3,856,696

COMPOSITIONS CONTAINING DITHIONITES

Derek James Stanbank, Leeds; Roland Albert Leigh, Harrogate, and Geoffrey Moorhouse Gibson, Leeds, all of England, assignors to The British Oxygen Company Limited, London, England

Filed Oct. 26, 1972, Ser. No. 301,028

Claims priority, application Great Britain, Oct. 26, 1971, 49707/71; Apr. 12, 1972, 16893/72

Int. Cl. C09k 3/00

U.S. Cl. 252-188

18 Claims

1. A substantially anhydrous and homogeneous composition consisting essentially of a dithionite selected from sodium, potassium and calcium dithionites and from 0.1 to 10% by weight of said composition of an unsaturated carboxylic acid or an anhydride thereof.

3,856,697

LUMINESCENT ALKALI METAL GALLATE

Judicus Marinus Pieter Jan Versteegen, and Emiel Petrus Juliana De Meester, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,764

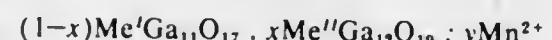
Claims priority, application Netherlands, Nov. 3, 1972, 7214859

Int. Cl. C09k 1/04, 1/08

U.S. Cl. 252-301.4 R

5 Claims

1. A luminescent alkali gallate activated by bivalent manganese which has a hexagonal crystal structure corresponding to the structure of β -alumina and which is defined by the formula:



in which Me' represents at least one of the alkali metals Na, K, Rb and Cs and Me'' represents at least one of the alkaline earth metals Sr, Ba and Ca, in which formula from zero up to 75 mol % of Ga is replaced by Al and $0 \leq x \leq 0.8$ and $0.0001 \leq y \leq 0.20$.

3,856,698

PREPARATION OF RARE-EARTH OXYSULFIDE LUMINESCENT MATERIAL

Dilip K. Nath, Mayfield, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed June 16, 1972, Ser. No. 263,418

Int. Cl. C09k 1/14

U.S. Cl. 252-301.4 S

7 Claims

1. A method for preparation of a crystalline rare-earth oxysulfide luminescent material having the general formula $\text{Ln}_{12-2x}\text{Ln}'_x\text{O}_2\text{S}$ wherein Ln is one or more of Y, Gd, La and

Lu, and Ln' is one or more of Dy, Er, Eu, Ho, Nd, Pr, Sm, Tb and Tm which comprises:

- a. heating a rare-earth oxide mixture with H₂S gas at a temperature from about 700°C to 1000°C in a liquid fluxing medium containing an alkali metal sulfide selected from Na₂S, K₂S and Li₂S including mixtures thereof and a sufficient amount of an alkali metal sulfite compound to decompose and generate SO₂ during said heating until the oxysulfide material is formed, and
- b. recrystallizing the oxysulfide material in the same liquid fluxing medium by heating to a temperature of at least about 1050°C in an inert atmosphere.

3,856,699

PROCESS FOR PRODUCING CAPSULES HAVING WALLS OF A WAXY MATERIAL

Shizuo Miyano, and Asaji Kondo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 61,563, Aug. 6, 1970, abandoned.

This application Oct. 24, 1972, Ser. No. 300,072

Claims priority, application Japan, Aug. 8, 1969, 44-62739

Int. Cl. B01j 13/02; B44d 1/02

U.S. Cl. 252-316

12 Claims



1. A process for producing controlled particle size capsules consisting essentially of walls of a single waxy material surrounding a single core material, said process comprising dropwise dispersing a waxy material containing a core material particle in a first agitated aqueous medium maintained at a temperature higher than the melting point of the waxy material, and allowing the waxy material containing said core material particle to fall by gravity from said first agitated aqueous medium into a second non-agitated aqueous medium maintained at a temperature lower than the melting point of the waxy material thereby forming said capsules, the size of the capsules being regulated by the amount of agitation in said first aqueous medium.

3,856,700

PERCURSOR COMPOSITIONS FROM ANIMAL HIDE GLUES FOR DRY-STRUCTURED FOAMS

Madeline G. Lambou, and James J. Spadaro, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 4, 1972, Ser. No. 311,611

Int. Cl. B01f 17/30

U.S. Cl. 252-354

7 Claims

1. A foam precursor composition consisting of a homogeneous aqueous emulsion of at least about 4% of an animal hide glue hydrolyzed to a jelly strength of 135-411 gms and about 2% of a surfactant.

3,856,701

ANTIFOAM COMPOSITION

Kermit W. Householder, Tonawanda, N.Y., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 144,263, May 17, 1971, Pat. No.

3,763,021. This application Apr. 9, 1973, Ser. No. 349,605

Int. Cl. B01d 19/04

U.S. Cl. 252-358

4 Claims

1. An antifoam composition which consists essentially of 1. 1 to 20 percent by weight of a silicone-glycol copolymer having the general formula $(\text{CH}_3)_3\text{SiO}[(\text{CH}_3)_2\text{SiO}]_x[(\text{CH}_3)\text{GSiO}]_y\text{Si}(\text{CH}_3)_3$ wherein

x has an average value from 50 to 100,

y has an average value from 5 to 10, and

G is a radical of the structure $-\text{D}(\text{OR})_2\text{A}$ wherein

D is an alkylene radical containing from 1 to 30 carbon atoms,

R is composed of ethylene radicals and radicals selected from the group consisting of propylene and butylene radicals, the amount of ethylene radicals relative to the other alkylene radicals being such that the ratio of carbon atoms to oxygen atoms in the total OR blocks ranges from 2.3:1 to 2.8:1,

z has an average value from 25 to 100, and

A is a capping group selected from the group consisting of hydroxy, acyl, ether and carbonate ester capping groups,

2. 65 to 98 percent by weight of polypropylene glycol having an average molecular weight in the range of 1000 to 2000, and

3. 1 to 15 percent by weight of a hydrophobic silica.

3,856,702

ALUMINUM BORATE CATALYST COMPOSITIONS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 269,544, July 7, 1972,

abandoned. This application Nov. 16, 1972, Ser. No. 306,984

Int. Cl. B01j 11/82

U.S. Cl. 252-432

20 Claims

1. A catalyst composition consisting essentially of a minor proportion of a catalytically active component dispersed and supported on a shaped, porous cohesive aggregate consisting essentially of crystalline aluminum borate, said catalytically active component comprising at least one member selected from the group consisting of the metals of Groups IB, IIB, VB, VIB, VIIB and VIII, and catalytically active compounds thereof, said catalyst having been prepared by the steps of:

1. intimately admixing finely divided alumina in a dry or hydrous state with sufficient boria or boria precursor to provide in the finished catalyst a B₂O₃/Al₂O₃ weight ratio between about 8/92 and 25/75;

2. forming the resulting mixture into an aggregate of desired shape for catalytic contracting;

3. calcining the shaped aggregate for a time and at temperatures sufficient to form a cohesive crystalline aluminum borate aggregate having a surface area between about 1 and 150 m²/g and a porosity of at least about 0.1 ml/g;

4. impregnating the calcined aggregate from step (3) with one or more soluble compounds of said catalytically active component; and

5. calcining the impregnated aggregate to convert said one or more soluble compounds to a catalytically active form.

3,856,703

INTERESTERIFICATION CATALYSTS CONSISTING OF AN ALKALI METAL DISPERSED IN A NEUTRALIZED AND SATURATED FAT

Johannes Jacobus Muller, Rotterdam, and Theodorus Joannes Kock, Heenvliet, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,659

Claims priority, application Great Britain, June 2, 1972, 25841/72

Int. Cl. B01j 11/00

U.S. Cl. 252—430

7 Claims

1. Interesterification catalyst essentially consisting of particles of an alkali metal, at least 90 percent of which have a particle size of 0.3 to 1 mm, dispersed in a substantially completely saturated and substantially neutralized solid fat of a melting point of 25°–45°C and having no more than 0.05 percent by weight of water, the proportion of alkali metal in fat being from 5–60 percent by weight.

3,856,704

PROCESS FOR PREPARING DESACETOXYCEPHALOSPORANIC ACIDS FROM CEPHALOSPORANIC ACIDS AND PALLADIUM OXIDE HYDRATE SUPPORTED ON ALPHA-CELLULOSE USEFUL IN THE PROCESS

Dale W. Blackburn, Moorestown, N.J.; Robert F. Devenney, Newtown Square, Pa., and John J. Mlynarski, Oaklyn, N.J., assignors to Smithkline Corporation, Philadelphia, Pa. Division of Ser. No. 117,691, Feb. 22, 1971, Pat. No. 3,773,761. This application Aug. 7, 1973, Ser. No. 386,461

Int. Cl. B01j

U.S. Cl. 252—430

1 Claim

1. Palladium oxide hydrate supported on alphacellulose having a particle size of about 20 to 60 microns in average length and about 16 to 20 microns in average thickness.

3,856,705

ALUMINUM BORATE CATALYST COMPOSITIONS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 269,544, July 7, 1972, abandoned. This application Nov. 16, 1972, Ser. No. 307,105

Int. Cl. B01j 11/82

U.S. Cl. 252—432

15 Claims

1. A shaped, porous, cohesive aggregate consisting essentially of crystalline aluminum borate having a surface area between about 1 and 150 m²/g and a porosity of at least about 0.1 ml/gram, and wherein the weight-ratio of B₂O₃/Al₂O₃ is between about 8/92 and 25/75, said aggregate having been formed by calcining a preshaped composite of alumina and boria, or boria precursor, at temperatures between about 1,250° and 2,600°F for a sufficient time to produce said crystalline aluminum borate, said preshaped composite comprising between about 8% and 40% by dry weight of B₂O₃ equivalent.

3,856,706

HIGH SURFACE AREA SILICEOUS SUPPORT

Henry F. Harrison, Chattanooga, Tenn., and Moses P. Davis, Jr., White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 8, 1972, Ser. No. 261,061

Int. Cl. B01j 11/32, 11/40, 11/58

U.S. Cl. 252—450

12 Claims

1. Process for the production of a high specific surface area catalyst support which comprises subjecting a fired ceramic comprising cordierite and of desired geometrical shape and structure to the leaching action of an aqueous acid; for a time sufficient to remove at least a portion of the magnesium and aluminum combined in the cordierite of said fired ceramic followed by heating to a temperature no higher than about

1,000° C.; said acid being characterized by having a dissociation constant in water of at least 1×10^{-5} and forming soluble magnesium and aluminum salts.

3,856,707

METHOD FOR PREPARING A MONOLITHIC CATALYST CONTAINING A SOL AND THE CATALYST OBTAINED THEREFROM

Tadanari Kato; Tadashi Ikemi; Tutomu Oishi, all of Yokohama, Japan; Mitsuyoshi Sano, Yokosuka; Hengo Hayashida, Yokosuka, and Chinami Matsumoto, Yokosuka, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Nov. 7, 1972, Ser. No. 304,300

Claims priority, application Japan, Nov. 8, 1971, 46-88299

Int. Cl. B01j 11/08

U.S. Cl. 252—455 R

18 Claims

1. A method of preparing a catalyst for use in exhaust gas after-treatment systems of hydrocarbon burning apparatuses comprising the steps of providing a monolithic carrier with a plurality of through passageways from one end to the other; preparing a mixed solution containing a catalytic compound of the platinum group and a sol of an alumina containing additive; immersing said monolithic carrier into said mixed solution; removing said monolithic carrier from said mixed solution; gelling said sol by using an alkali or an acid; drying said monolithic carrier in air to obtain a carrier coated with said catalytic compound and said alumina-containing additive; and subjecting the coated carrier to hydrogen gas at an elevated temperature for reducing said catalytic compound to metal, whereby said catalyst comprising said carrier, said alumina-containing additive and said metal dispersed in said alumina-containing additive is obtained.

3,856,708

ALUMINA CATALYST SUPPORT

Val G. Carithers, Little Rock, Ark., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 10, 1972, Ser. No. 242,748

Int. Cl. B01j 11/06

U.S. Cl. 252—463

10 Claims

1. An alumina catalyst support consisting essentially of activated alumina having an LOI of about 1 to 5 percent, a surface area on the order of 200 m²/gm, and a total pore volume of at least about 0.7 ml/gm, wherein a major portion of the pore volume associated with pores larger than 700 angstrom units is contributed by pores which are larger than 3,000 angstrom units, and in which said pores larger than 700 angstrom units contribute a pore volume of at least about 0.3 ml/gm.

3,856,709

COATING A SUBSTRATE WITH SOFT PARTICLES

Paolo Della Porta; Angelo Cantaluppi; Bruno Ferrario, and Paolo Montalenti, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed May 3, 1972, Ser. No. 249,772

Int. Cl. B01j 11/06, 11/08; B05b 7/14

U.S. Cl. 252—463

16 Claims

1. A method of producing a substrate having a particulate coating of high surface area to mass ratio, said method comprising in sequence the steps of:

- I. disposing between a substrate and an intermediate body a mixture comprising:
 - A. hard particles which are harder than the substrate and are harder than the intermediate body, and
 - B. soft particles which are softer than the hard particles and are softer than the substrate;
- II. compressing the substrate and intermediate body with particles therebetween whereby the intermediate body pushes the hard particles into the substrate; and

3,856,712

POLY(ALKOXYARYLOXYPHOSPHAZENE) ELASTOMERS

Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

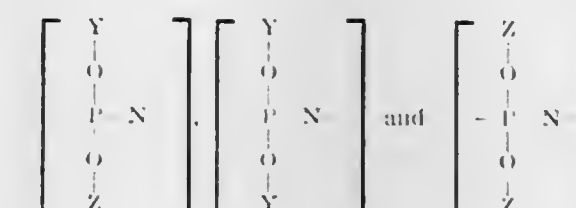
Filed June 11, 1973, Ser. No. 368,844

Int. Cl. C08g 33/16, 33/02

U.S. Cl. 260—2 P

10 Claims

1. Polyphosphazene copolymers consisting of reacting units which are distributed in a nonregular fashion and are represented by the formulas:



wherein each Y represents an alkyl group which contains from one to 15 carbon atoms and each Z represents an aryl group representing a formula selected from the group consisting of $-C_6H_4X$ and $-C_6H_3X_2$ in which each X is selected from the group consisting of H, alkyl with 1 to 4 carbon atoms, Cl and Br and all of the X's need not be the same, and the ratio of Y:Z is between 4:1 and 2:3 and the number of such units in the copolymer is between 10 and 50,000.

3,856,713

ELASTOMERIC POLY(ARYLOXYPHOSPHAZENE) COPOLYMERS

Selwyn H. Rose, Beachwood, and Kennard A. Reynard, Mentor, both of Ohio. Assignor: Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

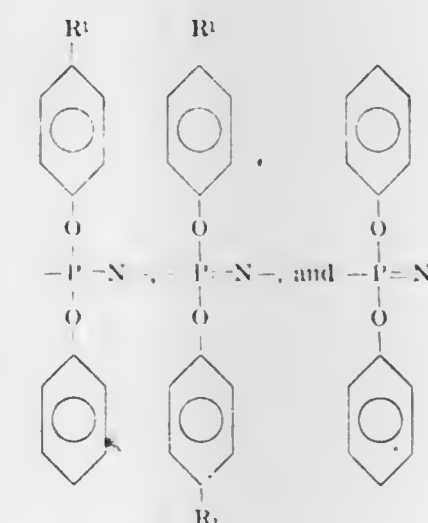
Filed June 11, 1973, Ser. No. 368,845

Int. Cl. C08g 33/16, 33/02

U.S. Cl. 260—2 P

8 Claims

1. Poly(aryloxyphosphazene) copolymers having a degree of polymerization between about 10 and about 50,000 consisting of repeating units distributed in a nonregular fashion and represented by the formulas:



in which R₁ represents an alkyl radical selected from the group consisting of primary alkyls with 2 to 12 carbon atoms, secondary alkyls with 4 to 12 carbons and α,α -dimethyl tertiary alkyl radicals with from 4 to 14 carbon atoms, and the ratio of C₆H₅O to R₁C₆H₄O is between 3:1 and 1:3.

III. removing the intermediate body from the particles leaving the hard particles embedded in the substrate and the soft particles adhering to the substrate.

3,856,710

NICKEL/COPPER CHROMITE CATALYSTS FOR HYDROGENATING EDIBLE OILS

Karl J. Moulton, Brimfield, and Robert E. Beal, Elmwood, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 4, 1974, Ser. No. 438,960

Int. Cl. B01j 11/22

U.S. Cl. 252—470

3 Claims

1. A catalyst composition for the selective partial hydrogenation of vegetable oils consisting essentially of a mixture of a nickel catalyst consisting essentially of nickel metal and hardened vegetable oil, and a copper chromite catalyst in proportions such that the weight ratio of nickel metal to copper chromite catalyst is from about 0.125:1000 to 0.50:1000, 1000.

3,856,711

LIQUID DETERGENT COMPOSITIONS

Marvin L. Mausner, Teaneck, and Arnold H. Dater, Fair Lawn, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 91,153, Nov. 19, 1970, Pat. No. 3,709,838, which is a continuation-in-part of Ser. No. 777,143, Nov. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 510,358, Nov. 29, 1965, abandoned. This application Nov. 29, 1972, Ser. No. 310,293 The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. C11d 3/075, 1/83, 3/26

U.S. Cl. 252—545

19 Claims

1. In a method of making a polyfunctional essentially 100% active stable liquid detergent composition consisting essentially of the following ingredients in the following percentages by weight:

- | | |
|---|----------|
| A. An ethanolamine salt of a member selected from the group consisting of alkyl benzene- and alkyl toluene-sulfonic acids in which the alkyl radical contains from 8 to 18 carbon atoms. | 30 to 90 |
| B. A non-ionic normally liquid, water soluble surfactant comprising a polyoxyethylene-polyoxypropylene glycol condensation product | 5 to 35 |
| C. Fatty acid amides selected from the group consisting of mono-ethanolamide, diethanolamide and isopropanolamide in which the fatty acid acyl radical contains from 10 to 16 carbon atoms. | 5 to 35 |

the steps which comprise forming a substantially homogeneous solution of the B ingredient with an ethanolamine, then gradually adding thereto, under conditions of agitation, a member selected from the group consisting of alkyl benzene and alkyl toluene-sulfonic acids in which the alkyl radical contains from 8 to 18 carbon atoms, said sulfonic acid being added in an amount essentially to be neutralized by said ethanolamine thereby to form the ethanolamine salt of said sulfonic acid, the temperature of the above mixture being maintained so as not to exceed about 100°C., and then adding under conditions of agitation, said C ingredient until a clear, homogeneous liquid is obtained.

3,856,714

POLYVIOLOGENS

Phyllis T. Moore, Morgantown, W. Va., and Myron S. Simon, West Newton, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

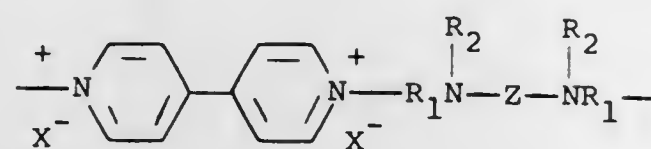
Filed Sept. 7, 1973, Ser. No. 395,255

Int. Cl. C08g 20/20, 33/02

U.S. Cl. 260—2 R

30 Claims

1. A polymer having in its structure repeating units of the formula:



wherein R_1 is propylene or a straight-chain alkylene group having from six to 12 carbon atoms in the chain; R_2 is —H or a hydrocarbon group having from one to six carbon atoms; Z is a bivalent radical resulting from the removal of both active halide atoms from an aromatic dihalide wherein said halide atoms are activated by virtue of being attached to the aromatic nucleus through a carbonyl group or by being directly attached to the carbon atom of a —C=N— group in the aromatic nucleus; or from an aliphatic dicarboxylic acid dihalide having a straight 4 to 8 carbon alkylene chain between terminal dicarboxylic acid halide groups; and X is an anion.

3,856,715

GUANIDINE GROUP CONTAINING ANION EXCHANGE RESINS FROM AMINO GROUP CONTAINING RESINS AND CYANAMIDES

Herbert Corte, Opladen; Harold Heller; Michael Lange, both of Koeln, and Otto Netz, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 29, 1972, Ser. No. 319,417

Claims priority, application Germany, Jan. 5, 1972, 2200457

Int. Cl. C05c 11/00; C05f 11/00

U.S. Cl. 260—2.1 R

18 Claims

1. Process for the production of a strongly basic anion exchanger having guanidine groups which process comprises reacting a salt of a polymer containing at least one of the group consisting of primary and secondary amino groups, with a cyanamide reactant selected from the group consisting of cyanamide and alkylated cyanamide, in the presence of water, at a weakly acid pH value and at an elevated temperature.

3,856,716

HIGH DENSITY POLYURETHANE FOAMS

Victor Frederick Jenkins, St. Albans, England, and Daniel Anthony Doherty, Dublin, Ireland, assignors to Laporte Industries Limited, London, England

Continuation-in-part of Ser. No. 232,621, March 7, 1972, abandoned. This application Aug. 1, 1973, Ser. No. 384,568

Claims priority, application Great Britain, Mar. 10, 1971, 6513/71

Int. Cl. C08g 22/48

U.S. Cl. 260—2.5 BD

4 Claims

1. A method of making a flexible high density polyurethane foam which comprises:

- taking a liquid polyfunctional copolymer, of MW between 700 and 4,000, of an ϵ -caprolactone and an epoxide selected from the group consisting of ethylene oxide, propylene oxide and epichlorohydrin;
- reacting said copolymer with a diisocyanate compound thereby to obtain a stable, liquid isocyanate-terminated prepolymer
- dissolving a diol of molecular weight below 140 copolymers of MW between 700 and 4,000 of an ϵ -caprolactone and an epoxide selected from the group consisting of ethylene oxide, propylene oxide and epichlorohydrin to

form a liquid reactant mixture which is also stable and readily miscible, with said liquid prepolymer

- dissolving a blowing agent in at least one of said prepolymer and said reactant mixture; and
- mixing together said reactant mixture and said prepolymer to cause them to react and the blowing agent to generate a blowing gas thereby to form a flexible foam of density greater than 0.3 gm/cc.

3,856,717

RIGID POLYETHYLENE FOAM

Leslie Peter Theard; Frank Clyde Peterson, both of San Diego; John Lynn Russell, Jr., La Jolla, all of Calif., and Robert L. Reiersen, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation of Ser. No. 204,353, Dec. 12, 1971, abandoned.

This application June 25, 1973, Ser. No. 373,586

Int. Cl. C08f 47/10; C08j 1/26

U.S. Cl. 260—2.5 HA

4 Claims

1. A process for preparing a rigid foam of polyethylene which consists essentially of the sequential steps of:

- charging a pressure resistant vessel with particulate linear polyethylene having a density in the range of from 0.940 to 0.980 gram per cubic centimeter and having an average molecular weight greater than 100,000 (as determined by viscosity) and (b) a hydrocarbon containing 3–5 carbon atoms and having a boiling point below 30°C. at atmospheric pressure, the weight ratio of charged hydrocarbon to polyethylene being in the range of 1:1 to 5:1;
- sealing the vessel from Step (1);
- heating the sealed vessel from Step (2) to at least the critical temperature of the hydrocarbon contained in the sealed vessel and maintaining the sealed vessel at such temperature for 1 to 90 minutes;
- cooling the contents of the sealed vessel to a temperature sufficiently below the melting point of the linear polyethylene charged in Step (1) so that the linear polyethylene solidifies in the sealed vessel;
- opening the sealed vessel to vent the hydrocarbon therefrom; and
- recovering a foamed polyethylene resin having a bulk density of less than 0.5 gram per cubic centimeter and a substantially uniform cell structure wherein at least 90% of the pore volumes or cells will each have a pore volume equal to the average pore volume multiplied by a factor in the range of 0.5 to 1.5.

3,856,718

MOLDED FLEXIBLE POLYURETHANE FOAMS

Bernard Taub, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

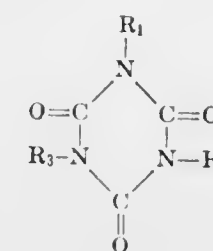
Filed Sept. 18, 1972, Ser. No. 290,185

Int. Cl. C08g 22/14, 22/26, 22/44

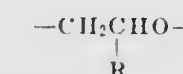
U.S. Cl. 260—2.5 AQ

17 Claims

1. A polyurethane foam having a density in excess of 1.75 lb/ft³, a tensile strength of at least 12 psi, an elongation of at least 130%, a tear strength of at least 1.5 lb/in., a sag factor of above about 2.5, and compression set at 50%, after humid aging, of not greater than 30, prepared by the process comprising effecting reaction between an organic polyisocyanate selected from the group consisting of an undistilled toluene diamine phosgenation product, a polyaryl-polyalkylene polyisocyanate and a benzene triisocyanate, and a polyether polyol having a number average molecular weight between about 3,000 and 7,500 in the presence of a catalyst, a blowing agent comprising water and, as curing agent an isocyanurate polyol corresponding to the formula:



wherein R_1 is a hydrogen-terminated oxyalkylene chain of from 2 to 10 oxyalkylene units, and each of R_2 and R_3 , which may be the same or different, is a hydrogen-terminated oxyalkylene chain of from 1 to 10 oxyalkylene units, wherein each oxyalkylene unit has the formula



wherein R at each occurrence independently is hydrogen, methyl or ethyl, in an amount of from about 1 to 8 percent, by weight, based on the weight of the polyether polyol.

3,856,719

PROCESS FOR PRODUCING FOAMED THERMOPLASTIC RESIN ARTICLES

Akira Miyamoto; Hiroyuki Akiyama; Toshiaki Noguchi, and Isao Ohtsuka, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company, Inc. and Japan Styrene Paper, Inc., both of Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,277

Int. Cl. C08f 47/10, 29/12

U.S. Cl. 260—2.5 HA

11 Claims

1. A process for producing a formed article of thermoplastic resin by extruding into a low pressure zone, a molten thermoplastic resin composition, with or without a nucleating agent, said composition containing at least one organic foaming agent of a saturated hydrocarbon, a halide thereof or an ether, which is normally gaseous or liquid and having a boiling point of from —45°C to 70°C, which comprises using, as said thermoplastic resin composition, a composition consisting essentially of

- 100 parts by weight of a low density polyethylene or a copolymer thereof with a vinyl monomer, said copolymer containing at least 80 mole % of ethylene as a monomer unit, and
- from 10 to 60 parts by weight of (A) a polystyrene containing resin containing at least 50% by weight polystyrene and (B) a high density polyethylene, the amount of (B) being from 6 to 40 % by weight based on the total of (A) and (B).

3,856,720

CYCLIC NITRILE ADDUCT-EPOXIDE COMPOSITIONS

Jerry A. Dieter, Huntington Woods, Mich.; Donald H. Russell, and Richard W. Sauer, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

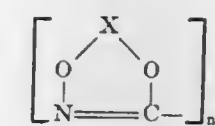
Filed Mar. 8, 1973, Ser. No. 339,239

Int. Cl. C08g 22/04, 33/02

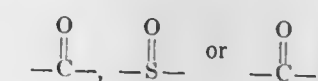
U.S. Cl. 260—2.5 A

14 Claims

1. A method of preparing urethane or thiourethane compounds by catalytically condensing a vicinal epoxide compound with a cyclic nitrile adduct having the structure:



wherein R is an organic radical having from 2 to about 200,000 carbon atoms, and is free of reactive hydrogen atoms as determined by the Zerewitinoff test X is:



and n ranges from 2 to about 100,000 in the presence of a catalyst selected from the group consisting of

- a tertiary amine,
- a first metal or mixture of metals selected from Groups III through V of the Periodic Table and a second metal or mixture selected from the metals of Groups I and II and the iron series of Group VIII of the Periodic Table,
- a compound of aluminum, tin, titanium, zinc, bismuth or iron which is soluble in the reaction mixture provided that the metal is in a valence state other than zero, further provided that when the metal is aluminum, tin, titanium or bismuth there is an absence of metal from Groups I, II or the iron series of Group VIII of the Periodic Table, and when the metal is zinc or iron the reaction is conducted in the absence of metals in groups III to V of the Periodic Table, and
- mixtures of (a) with (b) or (c).

3,856,721

SYNTACTIC FOAMS AND THEIR PREPARATION

Larry Edwin Fritschel, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 16, 1973, Ser. No. 406,793

Int. Cl. C08d 13/08, 5/02, 11/04

U.S. Cl. 260—2.5 B

9 Claims



1. The process of producing a syntactic foam which comprises curing in two stages a monomer-extended resinous polymeric composition in which are dispersed substantially 30 to 100 parts of microspheres per 100 parts of the polymer, the microspheres measuring substantially 20 microns to 1 inch in diameter, the size and amount of the microspheres being selected to produce a commercial foam, the polymeric material being at least largely a polymer selected from the class consisting of (a) homopolymers of butadiene and (b) copolymers of styrene and methyl and ethyl derivatives of styrene, in which at least 40% by weight is butadiene and at least 80% of the repeating butadiene units being of the 1,2-configuration, 100 parts of said polymeric material being compounded with 0.2 to 5 parts of a low-temperature-curing peroxide curing

agent, 0.1 to 5 parts of a high-temperature-curing peroxide curing agent, a mixture of 3-5 parts of cobalt naphthenate to 1 part of iron naphthenate with 5 to 20 parts of cobalt naphthenate per 100 parts of the low-temperature-curing peroxide, and 10 to 30 parts of acetylacetone as a curing accelerator per 100 parts of the low-temperature-curing peroxide; in the first stage, curing at a temperature of 50° to 150° F. until the polymer sets, without substantial heat-degradation of the polymeric material, and thereafter, in the second stage, completing the cure at a temperature of 175° to 375° F. at which the higher-temperature-curing peroxide is effective.

3,856,722

NOVEL ALKALI METAL SALTS OF HIGHER ALIPHATIC FATTY ACID ETHANOLAMIDE SULFOSUCCINATE AS FOAMING AGENTS FOR LATICES AND COMPOSITIONS CONTAINING THE SAME

Emil Alfred Vitalis, Stamford, and Donald John Tracey, Jr., Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. Nos. 361,115, May 17, 1973, abandoned, and Ser. No. 436,825, Jan. 25, 1974, abandoned.

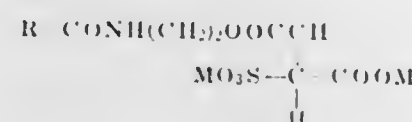
This application Feb. 12, 1974, Ser. No. 441,771

Int. Cl. C08d 13/10; C08f 47/10; C08j 1/16

U.S. Cl. 260—2.5 L

6 Claims

1. A foaming composition adapted for use as a coating for carpets which comprises a latex rubber and at least one foaming agent having the formula:



where R is a C₁₂-C₂₂ fatty acid moiety and M is a cation selected from the group consisting of ammonium, sodium, potassium and lithium.

3,856,723

ELASTOMERS REINFORCED WITH SILICEOUS FILLERS

George Vrisakis, 4 Quai de la Plage 69, Collonges-Au-Mont D'Or, and Jean Machurat, 8 rue Descartes 69, Neuville-Sur-Saone, both of France

Filed Apr. 28, 1972, Ser. No. 248,547

Claims priority, application France, May 6, 1971, 71.17263

Int. Cl. C08c 9/14, 11/10, 11/14

U.S. Cl. 260—4

2 Claims

1. An improved elastomeric composition which when vulcanized has improved properties, said composition consisting of a solid elastomer selected from the group consisting of natural rubber, copolymers of butadiene styrene, polybutadiene, butyl rubber, cis-polyisoprene, polychloroprene, ternary polymers of ethylene-propylene-diene monomers, and combinations thereof; a siliceous filler selected from the group consisting of clays, kaolins, precipitated silicates, thermal silicas, precipitated silicoaluminates, precipitated calcium silicates and combinations thereof; said siliceous filler being present in an amount such that the percentage by weight of said siliceous filler with respect to the elastomer is in the range of between 5 and 250%; and as an additive, polyvinyl alcohol, said polyvinyl alcohol comprising between about 0.5 and 20% by weight of the elastomer and from about 0.5 to 10% by weight of the siliceous filler, and said polyvinyl alcohol remaining in a free state to maintain all of its solubility in water.

3,856,724

REINFORCED THERMOPLASTIC COMPOSITIONS

James J. O'Connor, Poughkeepsie, and John T. Nolan, Jr., Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 111,087, Jan. 29, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,208

Int. Cl. C08f 45/04, 45/18

U.S. Cl. 260—17.4 CL

10 Claims

1. A reinforced thermoplastic composition comprising from about 5 to about 45 percent by weight of alpha-cellulose, from about 0.05 to about 35 percent by weight of an ionic hydrocarbon copolymer with the balance being a polyolefin selected from the group consisting of low density polyethylene, polypropylene and polybutene, the said ionic hydrocarbon copolymer comprising a copolymer of an alphaolefin having the formula:



wherein R is selected from the group consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms and an alpha-beta-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, said copolymer having from 10 to 90 percent of the carboxylic acid groups ionized by neutralization with metal ions uniformly distributed throughout the copolymer, said copolymer being a direct copolymer of the alpha-olefin and the unsaturated carboxylic acid in which the carboxylic acid groups are randomly distributed over all molecules and in which (1) the alpha-olefin content of the copolymer is at least 50 mole percent based on the alpha-olefin-acid copolymer, (2) the unsaturated carboxylic acid content of the copolymer is from 0.2 to 25 mole percent, based on the alpha-olefin-acid copolymer, and (3) any other monomer component optionally copolymerized in said copolymer is monoethylenically unsaturated, and said metal ions being selected from the group consisting of mon, di and trivalent ions of metals in Groups I, II, III, IV-A and VIII of the Periodic Table of Elements and having an ionized valence of from 1 to 3 inclusive when the unsaturated acid is a monocarboxylic acid and an ionized valence of 1 when the unsaturated acid is dicarboxylic acid and said metal ions being selected from the group consisting of uncomplexed and complexed metal ions, said ionic copolymers having solid state properties characteristics of crosslinked polymers and metal-fabricability properties characteristic of uncrosslinked, thermoplastic polymers.

3,856,725

WATER-SOLUBLE RESINS AND METHODS FOR THEIR PREPARATION

Giorgio Montesissa, and Francesco Piepoli, both of Piacenza, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Nov. 24, 1972, Ser. No. 309,060

Claims priority, application Italy, Nov. 29, 1971, 31773/71; Feb. 8, 1972, 20333/72

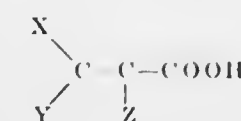
Int. Cl. C08g 45/06

U.S. Cl. 260—18 EP

18 Claims

1. An acidic resin comprising the reaction product of the following components:

- I. an epoxy resin having a mean molecular weight between 100 and 20,000 and containing at least one oxirane ring per molecule;
- II. at least one polyunsaturated monocarboxylic fatty acid having from 8 to 20 carbon atoms and more than one olefinic double bond; and
- III. an α,β -unsaturated monocarboxylic acid of the formula:



wherein X, Y and Z are independently selected from the group consisting of hydrogen, alkyl of from 1 to 6 carbon atoms and phenyl groups wherein the molar ratio of said components (I), (II) and (III) is between 1:1.0.5 and 1:4:8.

3,856,726

THERMOPLASTIC COMPOUND OF POLYBUTENE-1

Gerhard Menzel, Eckhard Seidel, and Gunther Jaenichen, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Sept. 14, 1972, Ser. No. 289,164

Claims priority, application Germany, Sept. 15, 1971, 2146068

Int. Cl. C08f 19/14, 21/14

U.S. Cl. 260—23 H

11 Claims

1. A thermoplastic polybutene-1 composition consisting essentially of an admixture of solid polybutene-1 and an amount of up to 1% by weight of a water-insoluble magnesium compound having a solubility in water of less than about 1×10^{-3} at room temperature and an amount of up to 1% by weight of a phenolic antioxidant for polyolefins effective to improve the high-tension insulating properties of the polybutene-1, substantially free from other organic compounds.

3,856,727

LIGHT STABILIZED SYNTHETIC RESIN

COMPOSITIONS CONTAINING CERTAIN BENZOTRIAZOYLPHENOXY TIN COMPOUNDS

Toshio Seki, Osaka; Kozaburo Suzuki, Kobe, and Takashi Matsuzaki, Osaka, all of Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan

Division of Ser. No. 574,924, Aug. 25, 1966, Pat. No. 3,600,397. This application Dec. 8, 1969, Ser. No. 883,282

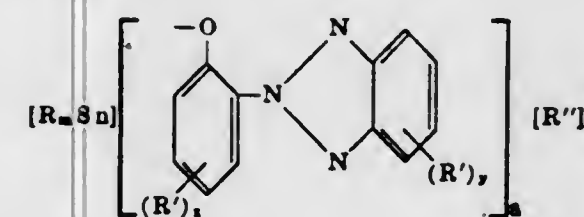
Claims priority, application Japan, Aug. 25, 1965, 40-51406

Int. Cl. C08f 45/62

U.S. Cl. 260—23 X

2 Claims

1. A light-stabilized synthetic resin which contains an inhibiting amount of a compound of the formula



wherein

- a. each R₁ is independently selected from the group consisting of an alkyl of 1-18 carbon atoms, cyclohexyl, phenyl, and benzyl,
- b. each R₂ is independently selected from the group consisting of an alkyl of 1-12 carbon atoms, methoxy, hydrogen, and halogen,
- c. each R₃ is bonded to a tin atom and is selected from the group consisting of the residue of aliphatic monocarboxylic acids of 1-18 carbon atoms, alkyl mercaptides, alkyl esters of mercaptoacetic acid, benzyl maleates and hydroxyl groups,
- d. each of a and m is an integer 1-3, b is 0 or an integer 1-2, x and y are 0 or integers 1-3, and a + b + m = 4, and
- e. all unsubstituted valences of the atoms in said formula are bonded to hydrogen atoms.

3,856,728

ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS HAVING IMPROVED RESISTANCE TO DISCOLORATION

Charles Abramoff, New York, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

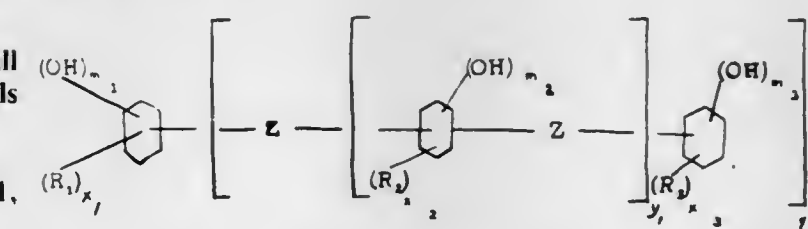
Filed Apr. 26, 1971, Ser. No. 137,609

Int. Cl. C08f 45/58

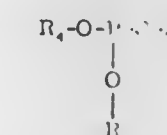
U.S. Cl. 260—23.7 N

10 Claims

1. An acrylonitrile-butadiene-styrene polymer having its resistance to deterioration when heated at 350°F and above enhanced by an amount within the range from about 0.1 to about 10 percent by weight of the polymer of a stabilizer combination comprising a polyhydric polycyclic phenol having the formula:



wherein R₁ and R₂ and R₃ are inert substituents selected from the group consisting of hydrogen, halogen, and organic radicals containing from one to about 30 carbon atoms selected from the groups consisting of alkyl, aryl, alkenyl, alkaryl, aralkyl, cycloalkenyl, cycloalkyl, alkoxy, aryloxy, acyl, carboxyl, and thiohydrocarbon groups, Z is selected from the group consisting of oxygen, sulfur, alkylene, alkenylene, alicyclene, arylene, and mixed alkylene-arylene and alkylene-alicyclene groups, m₁ and m₂ are integers from 1 to a maximum of 5, and m₃ is an integer from 1 to a maximum of 4, x₁ and x₂ are integers from 0 to 4, and x₃ is an integer from 0 to 3, y₁ is an integer from 0 to about 6, and y₂ is an integer from 1 to about 5; an organic phosphite having the formula:



wherein R₄, R₅ and R₆ are selected from the group consisting of alkyl, aryl, cycloalkyl, aryl alkyl, alkyl aryl, alkyl cycloalkyl and cycloalkyl alkyl groups having from one to about 30 carbon atoms, and an epoxy compound, the organic phosphite and epoxy compound each being in an amount within the range from about 2.5 to about 50 parts by weight, and the phenol being in an amount within the range from about 0.5 to about 50 parts by weight, the amount of each being selected within such ranges to enhance the stabilizing effectiveness of the others.

3,856,729

BUTADIENE RUBBER COMPOSITION

Joji Shimozato, Tokyo; Masashi Umeno, Kawasaki, and Shiro Yabuta, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1972, Ser. No. 243,828

Claims priority, application Japan, Apr. 15, 1971, 46-23442

Int. Cl. C08c 11/72; C08d 9/14

U.S. Cl. 260—23.7 M

10 Claims

1. In the rubber compositions for making vulcanized butadiene rubbers comprising polybutadiene, a vulcanizing agent consisting essentially of sulfur, and a vulcanizing activator, the improvement in which the amount of the vulcanizing agent, sulfur, is 0.1 to 0.6 gram per 100 grams of the rubber component, and the vulcanizing activator is at least one metal compound selected from the group consisting of zinc oxide, zinc compound selected from the group consisting of zinc carbonate, lithopone, fatty acid salts of zinc, dithioacid salts of zinc and thiazole salts of zinc, lead monoxide and cadmium oxide,

the amount of which corresponds to 1.23 to 6.2 milligram atoms of the metal per 100 grams of the rubber component.

3,856,730 POLYMER

David John Walker, Epsom, England, and Paul Branlard, Grenoble, France, assignors to BP Chemicals International Limited, London, England, by said Walker and Distugil S. A., Clichy, France, by said Branlard

Continuation of Ser. No. 250,980, May 8, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,982

Claims priority, application Great Britain, May 14, 1971, 14930/71

Int. Cl. C08d 9/12

U.S. Cl. 260—27 R

8 Claims

1. A process for the production of a polychloroprene latex which comprises polymerising chloroprene under alkaline conditions in aqueous emulsion in the presence of a water soluble salt of an unbranched mercapto organic carboxylic acid.

3,856,731

WAXY COMPOSITION FOR PREVENTING RUBBERY SUBSTANCE FORM OZONE DETERIORATION AT MEDIUM AND/OR LOW TEMPERATURE

Toshihiko Shinomura, No. 438 Miyauchi, Kawasaki-shi, Kanagawa-ken, Japan

Filed Mar. 7, 1973, Ser. No. 338,799

Int. Cl. C08f 45/52; C08c 11/70

U.S. Cl. 260—28.5 B

3 Claims

1. A method of preventing a rubbery substance selected from the group consisting of natural rubber, styrene-butadiene rubber, butadiene rubber and Alfin rubber from ozone deterioration at temperatures between -10°C and 40°C, consisting essentially of the steps of mixing a waxy composition with said rubbery substance in raw state, said waxy composition containing at least 50 per cent by weight of normalchain saturated hydrocarbons having from 26 to 29 carbon atoms, the remainder of said wax being essentially free of aromatic components, aliphatic unsaturates and components removable by deoiling which selectively removes lower molecular weight fractions, subsequently vulcanizing said mixture, and leaving said vulcanized mixture as it is for letting said waxy composition bloom on the surface of said vulcanized mixture.

3,856,732

MODIFIED ASPHALT HYDRAULIC SEALER

Clarence R. Bresson, and Forrest D. Spaulding, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1973, Ser. No. 325,387

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 AS

5 Claims

1. A sealant composition consisting essentially of an air-blown cut-back asphalt having incorporated therein from 1 to 10 weight percent of asphalt of a hydrogenated random butadienestyrene copolymer having a butadiene content ranging from 30 to 44 weight percent with the remainder being styrene, and an approximate molecular weight in the range of 25,000 to 125,000, said copolymer having been hydrogenated to not more than 5 percent olefinic unsaturation.

3,856,733

POLYMERISATION PROCESS FOR GRAFTING VINYL CHLORIDE ON ETHYLENE-VINYL ACETATE COPOLYMER

Alan Charles Sturt, Guildford, and Richard Harvey Williams, Horsham, both of England, assignors to Vinyl Products Limited, Carshalton, Surrey, England

Continuation-in-part of Ser. No. 113,072, Feb. 5, 1971, abandoned. This application Aug. 10, 1972, Ser. No. 279,354

Claims priority, application Great Britain, Feb. 5, 1970, 5575/70

Int. Cl. C08f 45/24, 15/40

U.S. Cl. 260—29.6 RB

5 Claims

1. A copolymer latex capable of form coherent films which comprises a latex of an ethylene/vinyl acetate copolymer with a polymerised ethylene content of 5 to 45% by dry weight having vinyl chloride units graft polymerised therein wherein the copolymer contains 10-35% by weight of graft polymerised vinyl chloride units, said copolymer latex being capable of forming coherent films at 30°C or below.

3,856,734

AQUEOUS EMULSION OF INTERPOLYMER OF VINYL ACETATE N-METHYLOL ACRYLAMIDE AND ACRYLIC ACID

John G. Iacoviello, Somerville, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 139,828, May 3, 1971, Pat. No. 3,770,680.

This application June 28, 1973, Ser. No. 374,402

Int. Cl. C08f 45/72

U.S. Cl. 260—29.6 TA

5 Claims

1. An aqueous emulsion of a thermosettable interpolymer of additively combined units of vinyl acetate, N-methylol acrylamide, and acrylic acid, said interpolymer containing about 5 to 20 weight percent of polymerized N-methylol acrylamide, about 1 to 3 weight percent of polymerized acrylic acid, and a balance consisting essentially of polymerized vinyl acetate, said emulsion containing an effective amount of an acidic curing catalyst selected from the group consisting of chromium nitrate, aluminum chloride, phosphoric acid, chromic acid, oxalic acid, nitric acid and citric acid, about 40 to 60 weight percent of water, and said emulsion being substantially devoid of solid particles having a size larger than 150 mesh (U.S. Sieve Series).

3,856,735

INCORPORATION OF HIGH MOLECULAR WEIGHT FLUOROCARBON POLYMER IN ARYLENE SULFIDE POLYMER

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1972, Ser. No. 299,065

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

7 Claims

1. A process for forming poly(arylene sulfide) coating dispersions consisting essentially of the following steps: subjecting fluorocarbon polymer, in particulate form having a molecular weight sufficient to give a melt viscosity flow of 0 at 380°C using a 5,000 g. weight, to intensive milling by ball milling or rod milling with a liquid selected from water, ethylene glycol or propylene glycol; and thereafter adding thereto said poly(arylene sulfide) in particulate form and a pigment or filler in particulate form and subjecting the resulting mixture to additional intensive milling by ball milling or rod milling, the ratio of said fluorocarbon polymer to said pigment or filler being within the range of 0.1 to 3 parts by weight of fluorocarbon polymer per 1 part by weight of said pigment or filler, the ratio of said poly(arylene sulfide) to said fluorocarbon polymer being within the range of 2:1 to 40:1, and wherein the total solids content is within the range of 15 to 40 weight percent based on the total weight of said dispersion.

3,856,736

INCORPORATION OF HIGH MOLECULAR WEIGHT FLUOROCARBON POLYMER IN ARYLENE SULFIDE POLYMER

Dale O. Tieszen, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

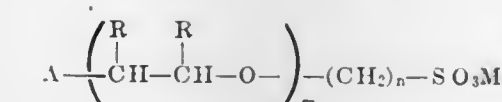
Filed Oct. 19, 1972, Ser. No. 299,145

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

10 Claims

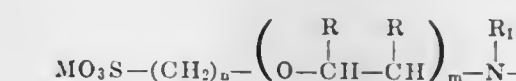
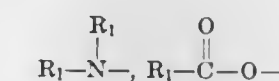
1. A process for forming poly(arylene sulfide) coating dispersions consisting essentially of the following steps: subjecting fluorocarbon polymer, in particulate form having a molecular weight sufficient to give a melt viscosity flow of 0 to 380°C using a 5000 g. weight, to intensive dry milling by ball milling or rod milling with a pigment in particulate form; and thereafter subjecting the resulting mixture to intensive milling by ball milling or rod milling with said poly(arylene sulfide) polymer in particulate form in a liquid selected from water, ethylene glycol, or propylene glycol, said fluorocarbon polymer being present in an amount within the range of 0.02 to 1 part by weight per 1 part by weight of said pigment, the ratio of said poly(arylene sulfide) to fluorocarbon polymer being within the range of 3:1 to 30:1 and, wherein the total solids content is within the range of 15 to 40 weight percent based on the total weight of said dispersion.



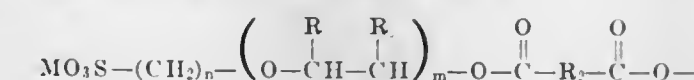
wherein

R represents hydrogen or a methyl radical,

A represents the radicals



and



in which R₁ represents C₁—C₃₀—alkyl, R₂ C₃—C₃₀—alkylene radical, M an alkali metal or alkaline earth metal or an ammonium or alkylammonium radical, m represents an integer of from 1 to 150 and n represents an integer of from one to 6.

3,856,737

SURGICAL CEMENTS OF IMPROVED COMPRESSIVE STRENGTH CONTAINING STANNOUS FLOURIDE AND POLYACRYLIC ACID

John Foster, and Ernest Henry, both of London, England, assignors to The Amalgamated Dental Company, Limited, London, England

Filed Jan. 16, 1973, Ser. No. 324,225

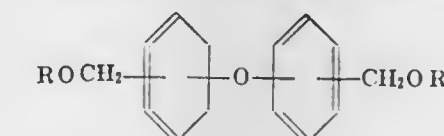
Claims priority, application Great Britain, Jan. 14, 1972, 1899/72

Int. Cl. C08f 29/34; A61k 5/00, 5/02

U.S. Cl. 260—29.6 M

6 Claims

1. A surgical cement consisting essentially of (a) zinc oxide together with from 5 to 10 percent by weight, based on the weight of said zinc oxide, of stannous fluoride, and (b) an aqueous solution of polyacrylic acid having a viscosity determined molecular weight of from 15,000 to 150,000; said cement comprising from 0.5 to 4 parts by weight of component (a) per part by weight of component (b).



wherein R is selected from the group consisting of methyl, ethyl, propyl and butyl radicals.

3,856,738

ACRYLONITRILE POLYMERS WITH REDUCED SURFACE RESISTANCE

Ferdinand Bodesheim; Eduard Radlmann; Heinz Schaffner, and Gunter Nischk, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 1, 1972, Ser. No. 311,372

Claims priority, application Germany, Dec. 2, 1971, 2159834

Int. Cl. C08f 45/44

U.S. Cl. 260—30.8 R

7 Claims

1. An antistatic acrylonitrile polymer composition which has incorporated therein an acrylonitrile polymer having at least 60 percent by weight of acrylonitrile and as an antistatic agent 1 to 20 percent by weight, based on the total weight of the polymer composition of a sulphonate groups containing polyalkylenoxide compound of the formula

3,856,740

POLYSULFIDE RUBBER SEALANT COMPOSITION

Naoya Takahashi; Yoshiaki Aida, both of Yokohama, and Isao Shimizu, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,376

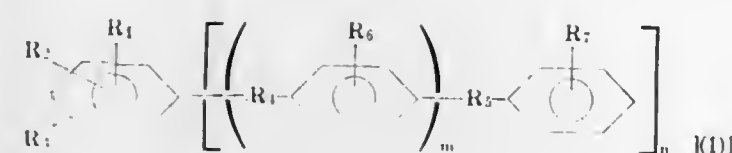
Claims priority, application Japan, Mar. 7, 1972, 47-23464

Int. Cl. C08c 11/22

U.S. Cl. 260—33.6 AQ

5 Claims

1. A polysulfide rubber composition vulcanizable by a vulcanizing agent to produce a sealant which comprises a liquid polysulfide rubber and a plasticizing amount of a plasticizer comprising a compound or mixture of compounds represented by the following structural formula:



wherein R_6 and R_7 are H or CH_3 , n is 1 or 2, m is 0 or 1 and $m + n$ is 2, R_1 , R_2 and R_3 are H or alkyl having from 1 to 3 carbon atoms and the total number of carbon atoms in said R_1 , R_2 and R_3 is in the range of from 1 to 4, and R_4 and R_5 are alkylene or polymethylene having from 1 to 3 carbon atoms.

3,856,741

ADHESIVE FOR CONCRETE AND METHOD OF PREPARATION

John A. Lovell, Monroe Falls, and Philip G. Harris, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 8, 1971, Ser. No. 105,128

Int. Cl. C08g 51/04

U.S. Cl. 260—37 N

3 Claims

1. A composition of matter characterized by being capable of meeting the requirements of ASTM method D-1191 and having a modulus at 0°F. of 87 to 425 and comprising the reaction product of a reactive hydrogen containing material of about 1,000 to 6,000 molecular weight selected from the class consisting of polyester polyols of glycols and dicarboxylic acids, polyether polyols and hydrocarbon polyols, an organic polyisocyanate having a functionality of about 2 to 3 and at least 24 parts and sufficient, but no more than 100 parts of white pigment for each 100 parts of reactive hydrogen containing material, said white pigment being selected from the class of calcium carbonate and a mixture of calcium carbonate, titanium dioxide and zinc oxide.

3,856,742

PROCESS FOR IMPROVING THE ANTI-FRICTION PROPERTIES OF POLYMERIC SUBSTANCES

Lutz Hoppe, and Rudolf Behn, both of Walsrode, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Continuation of Ser. No. 258,468, May 31, 1972, abandoned, which is a continuation of Ser. No. 69,503, Sept. 3, 1970, abandoned. This application May 14, 1973, Ser. No. 359,644

Claims priority, application Germany, Sept. 3, 1969, 1944619

Int. Cl. C08g 51/04

U.S. Cl. 260—37 N

2 Claims

1. In the process of preparing a polyamide polymer containing silica in which said polyamide is the condensation product of a mixture of monomers consisting essentially of diamine and a dicarboxylic acid; the improvement comprising the steps of

- adding a water dispersion of silica powder having an average particle diameter of 5 millimicrons to 100 microns to said diamine and forming a salt of the diamine and silica whereby hazing is reduced;
- polycondensing said diamine and dicarboxylic acid to a polyamide containing silica condensed therein; in which the amount of silica powder is 0.01% to 10% by weight of said mixture of monomers.

3,856,743
ANTI-FOULING POLYESTER RESIN
Guy Balsacq, "Hucheloup" Kersoulard en Crach, 56400 Auray, France

Filed June 5, 1973, Ser. No. 367,182

Claims priority, application France, June 19, 1972, 72-21956

Int. Cl. C08g 51/24, 51/56, 51/62

U.S. Cl. 260—40 R

6 Claims

1. A composition for use in coating and forming articles to be protected from infestation by aquatic flora and fauna consisting essentially of at least one polymerizable polyester resin derived from phthalic acid, said phthalic acid being selected from the group consisting of isophthalic acid, orthophthalic acid, tetrahydrophthalic acid, terephthalic acid and mixtures thereof; at least one member of the group consisting of cupric, mercuric and stannic salts in a finely divided physical state in an amount of from 15% to 25% by weight, based on the resin content and a gelling amount of colloidal silica.

3,856,744

ULTRAVIOLET POLYMERIZABLE PRINTING INK COMPRISING VEHICLE PREPARED FROM BETA-HYDROXY ESTERS AND POLYITACONATES

Sol B. Radlove, Chicago; Abraham Ravve, Lincolnwood, and Kenneth H. Brown, Chicago, all of Ill., assignors to Continental Can Company, New York, N.Y.

Division of Ser. No. 242,793, April 10, 1972, Pat. No. 3,804,735. This application Jan. 28, 1974, Ser. No. 437,087

Int. Cl. C08g 51/04; C08k 1/02

U.S. Cl. 260—40 R

14 Claims

- An ultraviolet polymerizable printing ink comprised of a coloring compound in a vehicle comprised of
 - about 30 to 55 percent by weight of a beta-hydroxy ester prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having three to six carbon atoms,
 - 2 to 10 percent by weight of a polyitaconate prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and itaconic acid,
 - about 40 to about 70 percent by weight of a polyacrylate prepared from a polyhydric alcohol having 2 to 6 hydroxyl groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having 3 to 6 carbon atoms and
 - about 0.1 to about 5.0 percent by weight of a photosensitizer.

3,856,745

PROCESS FOR THE PRODUCTION OF CARBONACEOUS GRAFT POLYMERS

Tadashi Yamaguchi; Takayuki Ono, both of Miyagi-ken; Hiroshi Hoshi, Chiba-ken; Michio Hirakawa, Chiba-ken, and Isao Watanabe, Chiba-ken, all of Japan, assignors to Lion Yushi Kabushiki Kaisha (Lion Fat & Oil Co., Ltd.), Sumida-ku Tokyo-to, Japan

Filed Sept. 17, 1973, Ser. No. 397,925

Claims priority, application Japan, Sept. 16, 1972, 47-93042

Int. Cl. C08f 45/08

U.S. Cl. 260—42.14

8 Claims

1. A process for the production of a carbonaceous graft polymer having a high rate of grafting, comprising separately dispersing a finely divided carbonaceous material and at least one vinyl monomer in an aqueous medium and initiating graft polymerization of said monomer with said material while dispersed in said medium with an initiator consisting essentially of sulfur dioxide and recovering the resultant carbonaceous graft polymer

3,856,746
THERMOPLASTIC COMPOSITION FOR MOLDING
Rinnosuke Suzuki, Tokyo; Hiroshi Hoshi, Narashino; Jiro Saito, Tokyo; Keiichi Murakami, Sendai, and Hisashi Yamada, Ichikawa, all of Japan, assignors to Lion Fat & Oil Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 185,436, Sept. 30, 1971, abandoned, which is a continuation of Ser. No. 842,391, July 16, 1969, abandoned. This application June 4, 1973, Ser. No. 366,417

Claims priority, application Japan, July 22, 1968, 43-51218; Sept. 9, 1968, 43-64276; Feb. 15, 1969, 44-11393

Int. Cl. C08f 45/04, C08g 51/04

U.S. Cl. 260—42.24

5 Claims

1. A thermoplastic moldable resin composition consisting essentially of a mixture of (1) 20 to 90 percent by weight, based on the total weight of the composition, of a finely divided filler material selected from the group consisting of calcium sulfite hemihydrate having a particle size of less than about 60μ and anhydrous calcium sulfite having a particle size of less than about 60μ, as the sole filler material in said composition and (2) the balance of the composition is resin ingredient consisting of (a) from 0 to 5 percent by weight, based on the total weight of the composition, of an ethylene-propylene rubber or a styrene-butadiene rubber and the balance of the resin ingredient (2) being (b) a resin selected from the group consisting of polyolefin, polyvinyl-chloride, polystyrene, vinyl chloride-vinyl acetate copolymer, ethylene-propylene copolymer, acrylonitrile-butadiene-styrene copolymer, polyamide, polyester and mixtures of polyethylene and ethylene-vinyl acetate copolymer

3,856,747

PROGRAMMED DEGRADATION OF POLYOLEFINS

D. J. Dibiasi, South Plainfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,671

Int. Cl. C08d 11/04

U.S. Cl. 260—45.7 P

13 Claims

1. A method of inhibiting the degradation of polyolefin resins, said resins having incorporated therein from about 50 parts/million to about 3,000 parts/million, based on the weight of the polyolefin, of a pro-degradant selected from the group consisting of manganese dioxide and cobalt naphthenate and having incorporated directly into the polyolefin resins from about 50 parts/million to about 500 parts/million based on the weight of the polyolefin, of a vaporizable stabilizer selected from the group consisting of tetrakis [methylene-(3,5-di-tert-butyl-4-hydroxyhydrocinnamate)] methane and 1,1,3-tris-(2'-methyl-4'-hydroxy-5'-tert-butyl phenyl) butane by maintaining said resins in a closed atmosphere and/or having therein as a separate entity a minor stabilizing amount of a vaporizable stabilizer selected from the group consisting of 2,6-di-tert-butyl-p-cresol, tris-nonylphenyl phosphite, zinc dibutylthiocarbamate and dilaurylthiodipropionate.

3,856,748

COMPOSITIONS STABILIZED WITH HYDROXYPHENYL ACYLAMIDES

Martin Dexter, Briarcliff Manor, and Martin Knell, Ossining, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

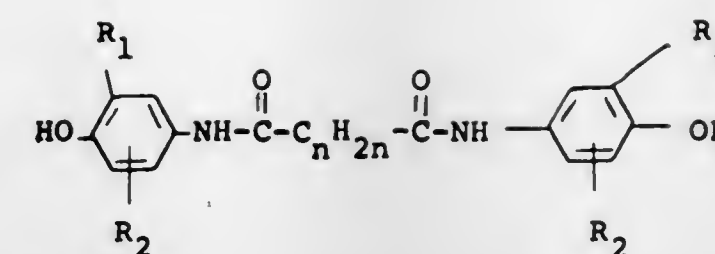
Division of Ser. No. 125,828, March 18, 1971, Pat. No. 3,754,031, which is a continuation-in-part of Ser. No. 795,697, Jan. 31, 1969, abandoned. This application Mar. 19, 1973, Ser. No. 342,335

Int. Cl. C08g 51/60, 51/58; C08d 9/08

U.S. Cl. 260—45.9 NC

5 Claims

1. A composition of matter comprising polypropylene, natural rubber or butadiene-styrene elastomer normally subject to oxidative deterioration containing from 0.005 to 5% by weight of a hydroxyphenyl acylamide having the formula



wherein

R_1 and R_2 are independently alkyl groups containing up to 6 carbon atoms, and n is a number from 2 to 10.

3,856,749

STABILIZATION OF POLYMERS CONTAINING POLY(ALKYLENE OXIDE) UNITS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 17, 1973, Ser. No. 351,818

Int. Cl. C08g 51/60

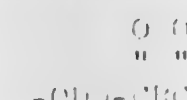
U.S. Cl. 260—45.9 NC

10 Claims

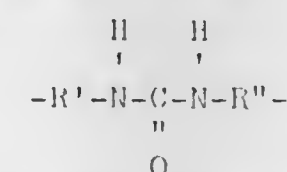
1. A copolyetherester composition stabilized against oxidative degradation which consists essentially of a mixture of (a) a copolyetherester containing a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, said long chain ester units being represented by the formula



and said short chain units being represented by the formula



where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight of about 400-600 and a carbon to oxygen ratio of about 2.0-4.3; R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid or ester-forming equivalent thereof having a molecular weight less than about 300 and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; provided said short chain ester units amount to about 15-95 percent by weight of said copolyester, (b) 0.01 to 7 percent by weight of the composition of an additive having the general formula:



wherein R' and R'' are independently selected from the group consisting of C_1 - C_{40} aliphatic or substituted aliphatic radicals and C_6 - C_{20} aromatic or substituted aromatic radicals, and (c) 0.2 to about 5 percent by weight of an antioxidant.

3,856,750

POLYOLEFINS STABILIZED WITH NICKEL OR COBALT COMPLEXES OF HALOGENATED MONO OR DITHIO BETA DIKETONES

Jack P. Guillory, Bartlesville, Okla., and Ronald D. Mathis, Taylors, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1973, Ser. No. 411,455

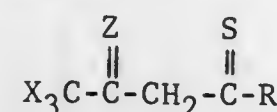
Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 N

5 Claims

1. A polyolefin composition having admixed therewith in an amount to impart thermal and ultraviolet light stability to the

composition a nickel or cobalt complex of a mono or dithio-beta diketone of the formula:



wherein

Z = oxygen or sulfur,

X = fluorine, chlorine, bromine or iodine, and

R is a hydrocarbyl radical selected from alkyl, aryl and cycloalkyl radicals and combinations thereof containing from 1 to 18 carbon atoms.

3,856,751

DIACID-XANTHYLIUM ION POLYESTER AND PHOTOGRAPHIC ELEMENT COMPRISED THEREOF
John C. Wilson, Irondequoit, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

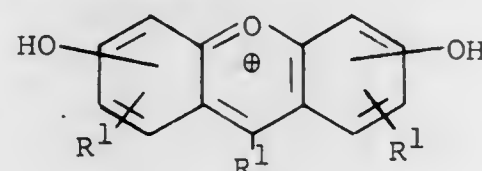
Filed June 14, 1972, Ser. No. 262,911

Int. Cl. C08g 17/08

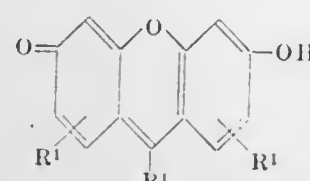
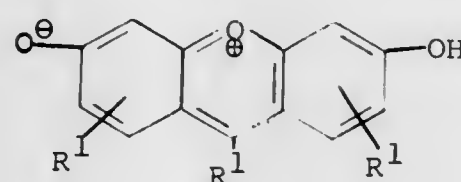
U.S. Cl. 260-47 C

12 Claims

1. A linear polyester having an inherent viscosity in the range of from 0.2 to 1.5 and having as a repeating unit thereof the ester of (1) an organic diacid or ester forming derivative thereof and (2) a xanthylum ion having a formula selected from the group consisting of:



and



in which R¹ is in each occurrence independently chosen from the group consisting of hydrogen, alkyl, aromatic, halogen, alkoxy and cyano substituents; where the inherent viscosity is measured at 25°C using a solution containing 0.10 grams of said polyester per 100 ml. of solution in which the solvent is a mixture of phenol and chlorobenzene in equal parts by weight.

3,856,752

SOLUBLE POLYIMIDES DERIVED FROM PHENYLINDANE DIAMINES AND DIANHYDRIDES
John Bateman, Bardonia, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

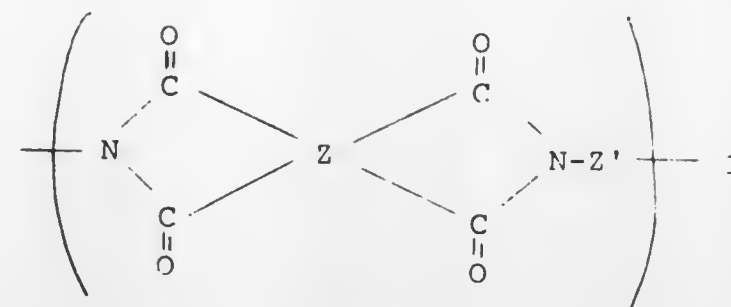
Filed Oct. 1, 1973, Ser. No. 402,646

Int. Cl. C08g 20/32

U.S. Cl. 260-65

14 Claims

1. A soluble polyimide consisting essentially of the recurring unit having the formula

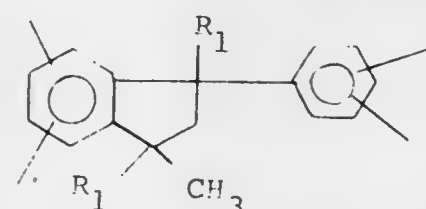


wherein the four carbonyl groups are attached directly to separate carbon atoms, the carbonyl groups being ortho or peri to each other so that five or six membered imide rings are formed respectively;

wherein Z is a tetravalent radical containing at least one aromatic ring; and

wherein Z' is a divalent organic radical selected from aromatic, aliphatic, alkyl aromatic, cycloaliphatic, and heterocyclic radicals, combinations of these, and radicals with heteroatom-containing bridging groups where the heteroatom in the bridge is oxygen, sulfur, nitrogen, silicon or phosphorus, provided that

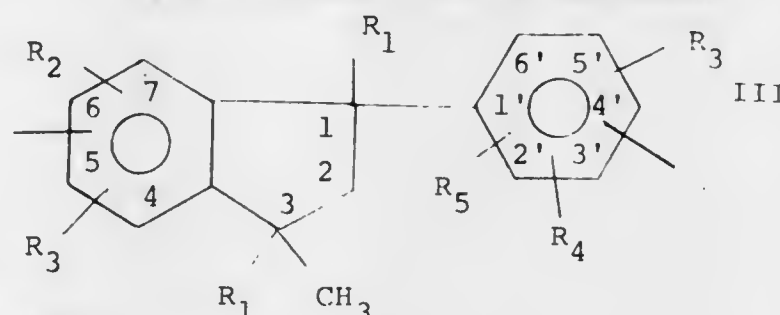
1. out of the total number of polyimide recurring units
A. 0 to 100 percent of such units have Z equal to a phenylindane radical of the structural formula



II

wherein R₁ is hydrogen or an alkyl group of from 1 to 5 carbon atoms, and

B. 0 to 100 percent of such units have Z' equal to a phenylindane radical of the structural formula



III

wherein

R₁ is hydrogen or alkyl group of from 1 to 5 carbon atoms, and

R₂, R₃, R₄ and R₅ are independently hydrogen, halogen or (lower)alkyl having 1 to 4 carbon atoms,

2. out of the total number of Z and Z' radical units, at least 10 percent are phenylindane radical units, and

3. the polyamide acid, from which the soluble polyimide is produced, has an inherent viscosity of at least 0.1, measured at 25°C at a concentration of 0.5 percent by weight of the polymer in N,N-dimethylacetamide, N-methylpyrrolidone, or dimethylformamide.

3,856,753

COPOLYESTER POLYMER OF ENHANCED DYEABILITY
Charles Leroy Henry, Asheville, and Gerald Willard McNeely, Arden, both of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed July 17, 1972, Ser. No. 272,243

Int. Cl. C08g 17/08

U.S. Cl. 260-75 N

10 Claims

1. Copolyester polymer consisting essentially of segments selected from the group consisting of alkylene terephthalate and alkylene isophthalate and containing units derived from about 0.5 to about 10 mole percent sulfonamide comonomer dye sensitizing reactant having the formula:

3,856,755

OLIGOMERS AND/OR POLYMERS CONTAINING CARBOXYLIC AND HYDROXYLIC GROUPS, AND PROCESS FOR MAKING THEM

Wilhelm Vogt, Hurth-Efferen; Edgar Fischer, Frankfurt am Main-Schwanheim, and Eberhard Auer, Erfstadt-Liblar, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 20, 1972, Ser. No. 316,659

Claims priority, application Germany, Dec. 28, 1971, 2164888

Int. Cl. C08I 27/02, 27/14

U.S. Cl. 260-78.5 T

4 Claims

1. Polymer complex formers and sequestering agents for polyvalent metal ions which are the hydrolysates of halogenated copolymers, the said hydrolysates containing substantially between 51 and 77 weight % of free or lactonized carboxylic groups, substantially between 1 and 29.5 weight % of free or lactonized hydroxylic groups, and having a specific viscosity substantially between 0.1 and 2.0, determined on a 1 weight % solution in dimethyl formamide at 25°C; the halogenated copolymers having substantially between 5 and 60 weight % of halogen therein, a relative viscosity substantially between 0.1 and 5, determined on a 4 weight % aqueous solution at 25°C and a principal chain based on structural units, in any desirable sequential arrangement, of the following general formulae I and II or I and III

3,856,754
LINEAR HOMOPOLYESTERS AND COPOLYESTERS BASED ON METHYLENE-BIS(HYDROXYALKYLDIMETHYL HYDANTOINS)

Jurgen Habermeyer, Pfeffingen, Switzerland; Lothar Buxbaum, Lindenfels, Germany, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,060

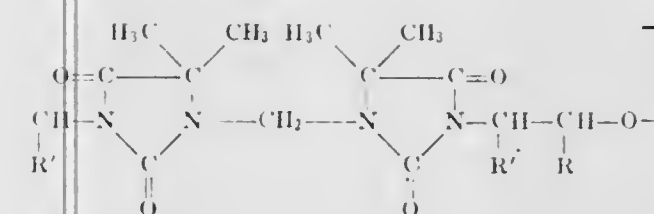
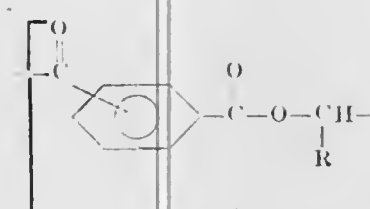
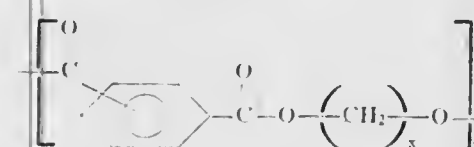
Claims priority, application Switzerland, Aug. 25, 1972, 12654/72

Int. Cl. C08g 17/08

U.S. Cl. 260-75 N

3 Claims

1. A linear, thermoplastic homopolyester or copolyester having a relative viscosity of 0.5 - 3.0 dl/g, measured at 30°C on a 1% strength solution consisting of equal parts of phenol and tetrachloroethane, said polyester consisting essentially of the structural element of the formula



in which X, Y and Z stand for a hydrogen and/or halogen atom with the proviso that at least one of the X, Y and Z substituents stand for a halogen atom. R stands for a carboxyhalide radical, a carboxylic group, ester group, nitrile group or anhydride group, and the mole fraction m stands for a number greater than zero and smaller than 1.

3,856,756

SILYL SUBSTITUTED UREA DERIVATIVES AND A PROCESS FOR THEIR PREPARATION

Kuno Wagner, Leverkusen; Gunter Oertel, Cologne, both of Germany; Hans Dietrich Goltz, deceased, late of Cologne, Germany (by Ingrid Irene Klarch Goltz, heiress), and Bernd Quiring, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 3, 1972, Ser. No. 303,671

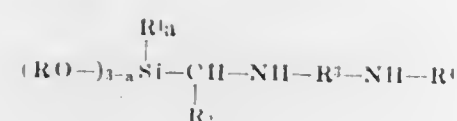
Claims priority, application Germany, Nov. 6, 1971, 2155259

Int. Cl. C08g 22/08

U.S. Cl. 260-77.5 AQ

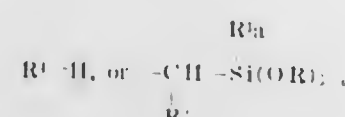
5 Claims

1. A process for the preparation of polyaddition products which contain alkoxy silane groups, comprising reacting in the presence of 10 to 80% by weight based on the sum of the reactants of a secondary or tertiary alcohol at a temperature between -20°C and +150°C an alkoxy silane group of the general formula



in which

R represents a C₁-C₁₈ alkyl radical or a C₄-C₁₄ cycloalkyl radical, a phenyl or a benzyl radical,
 R¹ represents a C₁-C₁₈ alkyl, C₄-C₁₈ cycloalkyl or C₆-C₁₀ aryl radical,
 R² represents a hydrogen atom or a methyl or phenyl radical,
 R³ represents a C₂-C₁₆ divalent aliphatic hydrocarbon radical and the radical obtained by removing the amino groups from 1-amino-3,3,5-trimethyl-5-aminomethyl-cyclohexane



and a = 0, 1 or 2, with organic polyisocyanates.

3,856,757

LIGHT-SENSITIVE HIGH POLYMER COMPOUND AND PROCESS FOR THE PREPARATION THEREOF

Masato Satomura, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 30, 1973, Ser. No. 393,088

Claims priority, application Japan, Aug. 31, 1972, 47-86688

Int. Cl. C08g 22/12

U.S. Cl. 260—77.5 CR

10 Claims

1. A process for preparing a light-sensitive high molecular weight polymer compound, which comprises reacting an α,β-unsaturated carboxylic acid with an aliphatic or aromatic diepoxide to form the corresponding diol compound and reacting a diisocyanate compound with said diol compound.

3,856,758

POLYMERS OF CYANO-SUBSTITUTED NORBORNENE DERIVATIVES AND METHOD FOR PREPARING THE SAME

Takashi Ueshima, Yokohama; Shoichi Kobayashi, and Masami Matsuoka, both of Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

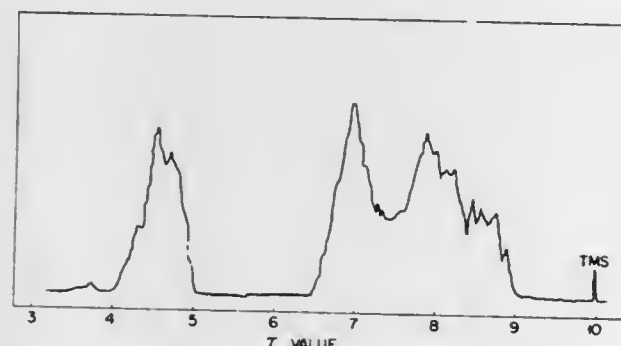
Filed Mar. 27, 1973, Ser. No. 345,437

Claims priority, application Japan, Mar. 31, 1972, 47-31755; Nov. 1, 1972, 47-108902

Int. Cl. C08f 1/28, 5/00

U.S. Cl. 260—78.4 N

31 Claims



1. Polymers prepared with a reduced viscosity of 0.1 to 20 by ring-opening polymerization of cyano-substituted norbornene derivatives expressed by the following general formula



where:

W, X, Y and Z = radicals selected from the group consisting of hydrogen, nitrile group, substituents containing nitrile group, alkyl radical having 1 to 20 carbon atoms, alkenyl radical having 6 to 20 carbon atoms, aryl radical having 1 to 20 carbon atoms and aralkyl radical having 1 to 20 carbon atoms, at least one of said W, X, Y and Z radicals being selected from the group consisting of nitrile group and the substituents containing nitrile group.

3,856,759

VEHICLES FOR PRINTING INK

Hitoshi Koishi; Michio Takao; Yasuhiro Oda, all of Tokyo; Hideo Iguchi, Saitama-ken, and Shigeru Kohase, Chiba-ken, all of Japan, assignors to Tokyo Printing Ink Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1972, Ser. No. 297,263

Claims priority, application Japan, Oct. 19, 1971, 46-82115

Int. Cl. C08f 27/08

U.S. Cl. 260—78.4 D

4 Claims

1. A vehicle for a printing ink which comprises a resinous ingredient prepared by allowing a petroleum resin having a softening point between 80° to 180°C to undergo an addition reaction with an unsaturated dibasic acid or anhydride thereof and then allowing the addition product to react with a polyalkylene polyamine in which two or three amino groups are bonded to different carbons of more than two alkyl groups of methylene, ethylene, propylene, or butylene, two of the amine groups being located at both terminals of the molecule, the amount of said polyalkylene polyamine being from 0.1 to 3 mols per mol of unsaturated dibasic acid.

3,856,760

METHOD OF COPOLYMERIZING UNHINDERED CONJUGATED DIENES WITH MALEIC ANHYDRIDES

C. Michael Fontana, Rt. 2, Washington, W. Va. 26181, and Byron Sparks, 860 Sinclair Dr., Baton Rouge, La. 70815
 Continuation of Ser. No. 79,275, Oct. 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 36,497, May 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 724,590, April 26, 1968, abandoned. This application Oct. 24, 1972, Ser. No. 299,985

Int. Cl. C08f 15/02

U.S. Cl. 260—78.5 BB

1 Claim

1. In a method of copolymerizing butadiene with maleic anhydride, the improvement comprising the step of reacting the maleic anhydride and butadiene in the presence of an organic solvent selected from the group consisting of acetone and tetrahydrofuran and also in the presence of a catalyst-accelerator combination of substantially equal molar amounts of solid ammonium persulfate and solid sodium bisulfite in an amount of combined weight from 4-7 per cent based on the combined weight of monomers, the amount of solvent being present in a weight ratio to combine monomers in a range of 2:1 to 5:1.

3,856,761

SULFUR VULCANIZATION SYSTEM CONTAINING A TWO-COMPONENT ACCELERATOR SYSTEM

Frank S. Maxey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 215,411, Jan. 4, 1972, abandoned. This application Apr. 18, 1972, Ser. No. 245,262

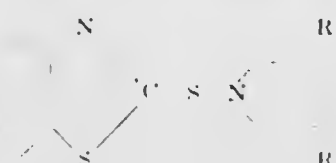
Int. Cl. C08c 11/62; C08d 9/00; C08f 27/06

U.S. Cl. 260—79.5 B

3 Claims

1. A sulfur vulcanizable diene rubber containing 0.10 to 3.25 parts of free sulfur per 100 parts by weight of rubber and 0.10 to 3.25 parts by weight per 100 parts by weight of rubber of an accelerator system for the sulfur vulcanization of rubber comprising

A. 2-(morpholinodithio)-benzothiazole, and
 B. at least one amino thiazole monosulfide compound having the following structural formula:



wherein R and R¹ are the same and are selected from the group consisting of hydrogen and alkyl radicals having one to four carbon atoms wherein the weight ratio of (A) to (B) is 1/1 to 7/3 and the combined amount of sulfur plus the accelerator system is from 2.25 to 5.50 parts by weight per 100 parts.

3,856,762

SULFONAMIDE ADDITIVES FOR SULFUR VULCANIZABLE POLYMERS

Roger J. Hopper, Akron, and John P. Lawrence, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

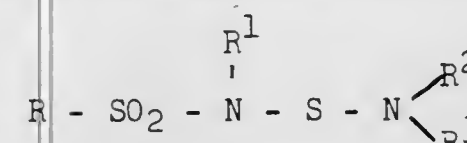
Filed June 26, 1972, Ser. No. 266,009

Int. Cl. C08f 27/06; C08c 11/60; C08d 9/00

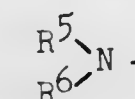
U.S. Cl. 260—79.5 B

8 Claims

1. A sulfur vulcanizable diene polymer having incorporated therein at least one compound having the following structural formula



wherein R and R¹ are selected from the group consisting of alkyl radicals having one to 20 carbon atoms, cycloalkyl radicals having five to 20 carbon atoms, aralkyl radicals having seven to 20 carbon atoms, aryl radicals having six to 20 carbon atoms and wherein R can also be the radical



and wherein R and R¹ can be joined through a —CH₂— group to constitute with the —SO₂—N— group a heterocyclic ring radical, wherein R⁵ and R⁶ are selected from the group consisting of alkyl radicals having one to 20 carbon atoms, cycloalkyl radicals having five to 20 carbon atoms, aralkyl radicals having seven to 25 carbon atoms, and aryl radicals having six to 20 carbon atoms and wherein R⁵ and R⁶ can be joined through a member of the group consisting of —CH₂—, —O—, and —S— to constitute with the attached nitrogen atom a heterocyclic ring, and wherein R² and R³ are selected from the group consisting of hydrogen, cyanoalkyl radicals having three to 21 carbon atoms and radicals, other than aryl, described for R⁵ and R⁶ and can join to form the heterocyclic ring described for R⁵ and R⁶.

3,856,763

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT, HIGH UNSATURATION ISOBUTYLENE-CONJUGATED DIENE COPOLYMERS

Warren A. Thaler, Matawan; Donald J. Buckley, Sr., Plainfield, both of N.J., and Joseph P. Kennedy, Akron, Ohio, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 151,038, June 8, 1971, Pat. No. 3,808,177. This application Apr. 6, 1973, Ser. No. 348,678

Int. Cl. C08d 1/04; C08f 1/72

U.S. Cl. 260—80.7

13 Claims

1. A process for preparing substantially gel-free copolymers consisting essentially of an isoocten having about four to about 10 carbon atoms and conjugated dienes having about five to about 14 carbon atoms wherein said dienes are selected from the group consisting of (1) at least one acyclic diene wherein said acyclic diene is isoprene, piperylene, 2,3-dimethylbutadiene, or mixtures thereof, (2) cyclopentadiene and (3) cyclopentadiene and at least one second diene wherein the second diene is isoprene, piperylene, 2,3-dimethyl butadiene, or mixtures thereof comprising at least 8 to about 40 mole percent unsaturation; said polymer having a number average molecular weight of at least 120,000, which comprises carrying out a solution polymerization at a temperature below -100°C. in a feed consisting of about 5 to about 40 volume percent of a cosolvent and about 95 to about 60 volume percent monomers using as the catalyst a catalytic amount of a hydrocarbyl-aluminum dihalide, said dihalide being a dibromide or a dichloride; wherein said polymerization is carried out to a conversion level of about 2 to about 20 percent.

3,856,764

POLYMERIZATION PROCESS

Morford C. Throckmorton, and William W. Saltman, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 202,024, Nov. 24, 1971, abandoned. This application July 18, 1973, Ser. No. 380,176

Int. Cl. C08d 1/14

U.S. Cl. 260—82.1

8 Claims

1. In a process for the polymerization of butadiene and butadiene in mixture with other diolefins to form polymers containing a high proportion of the butadiene units in the cis-1,4 configuration comprising contacting at least one monomer from the group of butadiene and butadiene in mixture with other diolefins under polymerization conditions with a catalyst consisting essentially of (1) organoaluminum compounds, (2) nickel compounds selected from the class consisting of nickel salts of carboxylic acids, organic complex compounds of nickel, nickel tetracarbonyl, and mixtures thereof, wherein the improvement comprises using (3) hydrogen fluoride complexes (HFC) prepared by complexing hydrogen fluoride with a member of the class consisting of ketones, esters, ethers, alcohols, and nitriles and mixtures thereof in which the mol ratio of the organoaluminum compound/nickel compound ranges from about 0.3/1 to about 300/1, the mol ratio of the HFC/nickel compound ranges from about 2/1 to about 300/1 and the mol ratio of the HFC/organaluminum compound ranges from about 0.2/1 to about 15/1.

3,856,765

FUNCTIONALLY SUBSTITUTED TERPOLYMERS OF ALPHA-OLEFINS

John Wilfred Collette, 1235 Faun Road Graylyn Crest; Roland Shih-Yuan Ro, 1208 Lakewood Dr., and Fred Max Sonnenberg, 1423 Carson Rd., Green Acres, all of Wilmington, Del. 19803

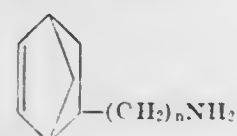
Division of Ser. No. 829,758, June 2, 1969, Pat. No. 3,796,687. This application Apr. 27, 1973, Ser. No. 355,010

Int. Cl. C08f 15/40

U.S. Cl. 260—80.73

1 Claim

1. An addition copolymer of (1) ethylene, (2) an α -olefin having 3–18 carbon atoms, and (3) and unsaturated functional monomer having the formula



where n is an integer within the range 0–20.

3,856,766

PROCESS FOR THE MANUFACTURE OF A LIGHT COLORED THERMOSTABLE CHLORINATED POLYOLEFIN

Helmut Klug, Aystetten; Ambar Nath Mukerjee, Geusthofen both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Dec. 13, 1973, Ser. No. 424,226

Claims priority, application Germany, Dec. 21, 1972, 2262536

Int. Cl. C08f 27/03

U.S. Cl. 260—88.2

3 Claims

1. A process for the manufacture of a light colored thermostable chloropolyolefin by chlorinating pulverulent polyethylene, polypropylene or a copolymer of ethylene with a straight chain or branched α -olefin having 3 to 6 carbon atoms, the molecular weight of the polymer being in the range of from about 20,000 to 2,000,000, with gaseous chlorine in a fluidized or moving bed, which comprises carrying out the chlorination with gaseous chlorine containing 0.01 to 1.5% by weight of steam.

3,856,767

POLYMERISATION PROCESS

Alan Charles Sturt, 10 Cunningham Ave., Guildford, Surrey, England

Filed Apr. 18, 1972, Ser. No. 245,193

Claims priority, application Great Britain, Apr. 21, 1971, 10396/71

Int. Cl. C08f 1/04, 1/11

U.S. Cl. 260—92.8 R

7 Claims

1. A process for the production of a vinyl chloride polymer containing a major proportion of vinyl chloride which comprises adding a seed vinyl chloride polymer or copolymer containing a major proportion of vinyl chloride in a finely divided form having an average particle size of less than 200 μ m and having an order factor above 16 or below 10, said seed polymer not having been prepared by a process defined in this claim, to vinyl chloride monomer and polymerising at a temperature in the range of 30°–80°C the vinyl chloride monomer in suspension or in mass using a free radical polymerisation initiator with said seed polymer or copolymer dispersed therein to produce a vinyl chloride containing polymer having an order factor above 16 or below 10, respectively, the weight ratio of said seed polymer or copolymer to vinyl chloride containing monomer being in the range of 0.1 : 99.9 to 50 : 50.

3,856,768

SODIUM OR POTASSIUM HYDROCARBON COMPOUND AND A CROWN ETHER AS A CATALYST COMPOSITION FOR POLYMERIZATION OF CONJUGATED DIENES

Adel F. Halasa, Bath, and Tai Chun Cheng, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 26, 1973, Ser. No. 335,962

Int. Cl. C08d 3/06

U.S. Cl. 260—94.2 M

17 Claims

1. A process for the hydrocarbon solution polymerization of a monomer composition containing at least 70 percent conjugated diene comprising the step of maintaining said monomer composition at a temperature of –50° to 150°C in intimate contact with a catalyst composition consisting essentially of: a. a sodium or potassium alkyl having 1–10 carbon atoms; and b. a crown ether consisting essentially of a heterocyclic structure of at least 3 oxygen atoms and aliphatic or aromatic hydrocarbon radicals, adjacent oxygen atoms in said heterocyclic structure being separated from and joined to each other by at least two carbon atoms of said hydrocarbon radicals and, where cycloaliphatic or aromatic rings are present, oxygen atoms in said heterocyclic structure are attached to adjacent carbon atoms in said rings;

the concentration of said catalyst composition being 1–10 millimoles of sodium or potassium alkyl per 100 grams of said monomer composition, said crown ether being present in said catalyst composition in a ratio of 0.01–1.0 mole per mole of sodium or potassium alkyl, said polymerization being conducted for a period of at least 2 hours.

3,856,769

METHOD FOR PREPARING BIOLOGICALLY ACTIVE (PYRO) GLUTAMYL-HISTIDYL-TRYPTOPHYL-SERYL-TYROSYL-GLYCYL-LEUCYL-ARGINYL-PROLYL-GLYCINE AMIDE

Shunpei Sakakibara, No. 23-3, Fujishirodai 2-chome, Suita-shi, Osaka; Yuichi Kumahara, No. 22-10, Takarayamamachi, Toyonaka-shi, Osaka, and Terutoshi Kimura, No. 14-3-102, Ohara-machi, Ashiya-shi, Hyogo, all of Japan

Filed Sept. 5, 1972, Ser. No. 286,394

Claims priority, application Japan, Sept. 2, 1971, 46-67745

Int. Cl. C07c 103/52, C07g 7/00, A61k 27/00

U.S. Cl. 260—112.5

1 Claim

1. A method for preparing biologically active (pyro)glutamyl-histidyl-tryptophyl-seryl-tyrosyl-glycyl-leucyl-arginyl-prolyl-glycine amide which comprises reacting an oligopeptide fragment identified as (I) with an oligopeptide fragment identified as (II), each of which are prepared according to the synthesis described below, to form the heptapeptide, seryl-tyrosyl-glycyl-leucyl-arginyl-prolyl-glycine amide having some corresponding protective groups thereon, and coupling the resulting heptapeptide with protected tryptophane, histidine and (pyro)glutamic acid in turn at the nitrogen terminal of the each resulting peptide by stepwise elongation to result in a protected decapeptide, and then removing all the protective groups by treating the protected decapeptide with hydrofluoric acid:

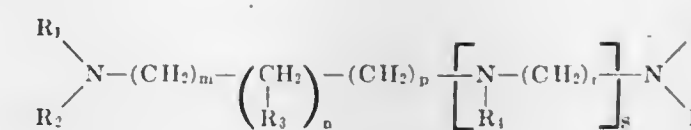
Fragment (I):

Leucyl-(N-protected)arginyl-prolyl-glycineamide is prepared by coupling protected arginine with proline whose carboxyl group is protected, to produce arginylproline, coupling glycine amide with the resulted arginyl-proline to produce arginyl-prolyl-glycine amide and further coupling leucine with the α -nitrogen terminal of the resulting tripeptide and then removing only the protective group on the nitrogen terminal of the leucine portion, and

Fragment (II):

(N- and O-protected)seryl-(O-protected)tyrosyl-glycine is prepared by coupling a lower alkyl ester of glycine to result in a corresponding seryl-tyrosyl-glycine lower alkyl

ester and hydrolyzing only the ester bond of the tripeptide, thus formed.



3,856,770

PSYCHOPHARMACOLOGICALLY ACTIVE TETRA-, PENTA-, HEXA-, AND HEPTAPEPTIDES

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 2, 1973, Ser. No. 337,507

Claims priority, application Netherlands, Mar. 8, 1972, 72.0342

Int. Cl. C07c 103/52; A61k 27/00

U.S. Cl. 260—112.5

4 Claims

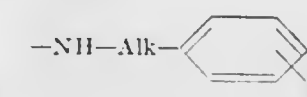
1. A peptide of the formula:

$$A-L-Glu(X)-L-His-L-Phe-O-Y$$

in which A is selected from the group consisting of H—L—Met, H—D—Met, H—L—Met (\rightarrow O), H—D—Met (\rightarrow O), H—L—Met (\rightarrow O₂), H—D—Met (\rightarrow O₂), desamino-Met, desamino—Met (\rightarrow O), desamino-Met (\rightarrow O₂), and the moiety: H₂N—B—CO, in which B is alkylene having 1–6 carbon atoms.

X is selected from the group consisting of OH and NH₂.

O is selected from the group consisting of L—Arg and L—Lys, and Y is selected from the group consisting of L—Phe—OH, L—Phe—Gly—OH, and (N-phenyl-alkyl) amino of the formula



in which ALK is alkylene with 1–6 carbon atoms and R is selected from the group consisting of hydrogen and hydroxy, and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6 C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or araliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.

3,856,771

PROCESS FOR MANUFACTURING ALKALI METAL OR AMMONIUM INSULIN

Richard L. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 16, 1973, Ser. No. 379,695

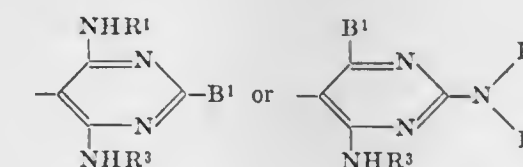
Int. Cl. C07c 103/52; C07g 7/00; A61k 17/02

U.S. Cl. 260—112.7

8 Claims

1. A process for preparing an alkali metal or ammonium insulin, which comprises the steps of:

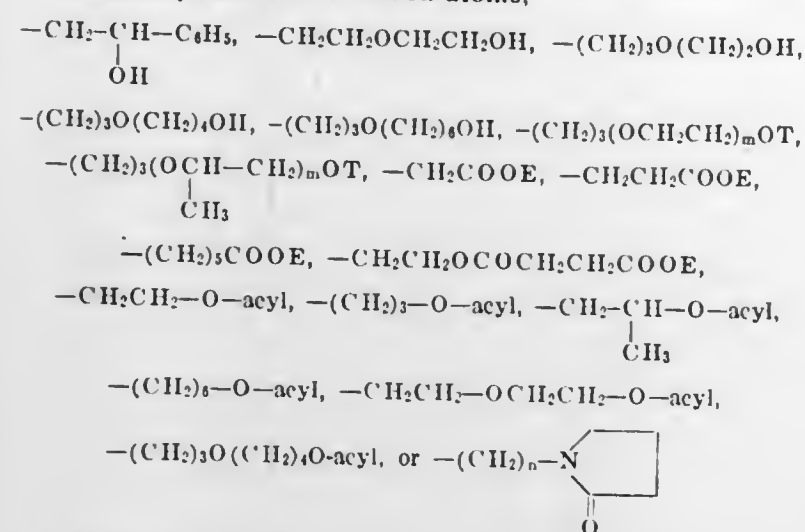
A. preparing an alkaline aqueous solution of a divalent metal insulin, a divalent metal ion chelating agent, and alkali metal or ammonium ions, wherein the concentration of divalent metal insulin is in the range of from about 10 to about 1,000 U/mg, the divalent metal is selected from the group consisting of manganese, iron, cobalt, nickel, copper, zinc, and cadmium, the concentration of alkali metal or ammonium ions is in the range of from about 0.2 to about 1.0 M, the pH of the solution is in the range of from about 7.6 to about 8.6, the concentration of chelating agent is in the range of from about 0.0002 to about 0.05 M, the molar ratio of chelating agent to divalent metal in the divalent metal insulin is at least about 3:1, and the chelating agent has the general formula,



B¹ is hydrogen, methyl, ethyl, propyl, butyl, α -ethylpentyl, benzyl, phenyl or phenyl substituted by methyl, ethyl, methoxy, ethoxy, chloro or nitro;

R¹ is hydrogen, alkyl of one to eight carbon atoms, cyanoalkyl of two to seven carbon atoms, hydroxyalkyl of two to nine carbon atoms, alkoxyl of a total of three to 13 carbon atoms, cyclohexyloxypropyl, benzyloxypropyl, β -phenylethoxypropyl, phenoxyethyl, phenoxypropyl, phenyl, phenyl substituted by hydroxy, chloro, methyl, ethyl, β -hydroxyethyl, methoxy, ethoxy, β -hydroxyethoxy, cyano or dialkylamino in which each alkyl has 1 to 2 carbon atoms, cycloalkyl of 5 to 8 ring

members, norbornyl, phenylalkyl or tolylalkyl in which said alkyl has 1 to 4 carbon atoms,



E is hydrogen, alkyl of 1 to 3 carbon atoms, benzyl, β -hydroxyethyl, ω -hydroxyhexyl, δ -hydroxybutyl, β -methoxyethyl, γ -methoxypropyl, γ -ethoxypropyl, β -phenoxyethyl or β -hydroxyethoxyethyl, acyl is $\text{CHO}-$, $\text{CH}_3\text{CO}-$, $\text{CH}_3\text{COCH}_2\text{CO}-$, $\text{C}_6\text{H}_5\text{OCH}_2\text{CO}-$, $\text{C}_6\text{H}_5\text{CH}_2\text{CO}-$ or $\text{C}_6\text{H}_5\text{CO}-$, m is 1 or 2, n is 2, 3 or 6, T is hydrogen, alkyl of 1 to 4 carbon atoms, cyclohexyl, benzyl, phenylethyl or phenyl; R^2 is hydrogen or alkyl of 1 to 8 carbon atoms; R^3 has the same meanings given for R^1 ; and R^1 and R^2 together with the nitrogen may also be pyrrolidino, piperidino, morpholino, piperazino, N-methylpiperazino or N- β -hydroxyethylpiperazino, with the proviso that one of R^1 , R^2 or R^3 is different from hydrogen.

3,856,773

WATER INSOLUBLE

4-(2'-CYANO-4'-NITROPHENYLazo)-2-CHLORO-N-(B-YANOETHYL)-ANILINE

Ernst Hoyer, and Hans Jakob Schladetsch, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 25, 1972, Ser. No. 274,837

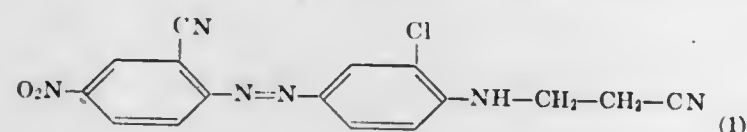
Claims priority, application Germany, July 27, 1971, 2137500

Int. Cl. C09b 29/08

U.S. Cl. 260-205

1 Claim

1. The water-insoluble azo-dyestuff of the formula



3,856,774

MICROBIAL SYNTHESIS FROM ALDEHYDE CONTAINING HYDROCARBON DERIVED PRODUCTS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 167,177, July 29, 1971, abandoned, which is a division of Ser. No. 751,926, Aug. 12, 1968, Pat. No. 3,642,578. This application June 4, 1973, Ser. No. 366,563

Int. Cl. C12d 13/00

U.S. Cl. 260-209 R

1 Claim

1. A polymeric gum possessing adhesive and water viscosifying qualities produced by a process of microbial synthesis of cellular production products from oxygenated hydrocarbon

feedstock containing aldehydes in addition to other oxygenated hydrocarbons, which process comprises the steps of:

a. adding to said oxygenated hydrocarbon feedstock containing aldehydes at least one nitrogen-containing compound reactive with said aldehydes whereby said aldehydes are rendered substantially innocuous,

b. culturing oxygenated hydrocarbon-utilizing microorganisms on said nitrogen-containing compound treated feedstock from said step (a), thereby producing said polymeric gum,

wherein said microorganism is selected from the group of genera *Pseudomonas*, *Methanomonas*, *Arthobacter*, *Corynebacterium*, *Bacillus*, *Mycobacterium*, *Actinomyces*, *Nocardia*, *Micrococcus*, *Rhodobacillus*, *Chromatium*, *Serratia*, *Rhizobium*, *Aerobacter*, *Escherichia*, and *Streptococcus*.

3,856,775

 β -(1 \rightarrow 3)-GLUCANS

Fumiko Fukuoka, Tokyo; Goro Chihara, Saitama-ken, and Junji Hamuro, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 53,470, July 9, 1970,

abandoned. This application Aug. 17, 1972, Ser. No. 281,425

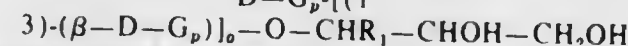
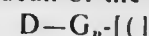
Claims priority, application Japan, July 14, 1969, 44-55612

Int. Cl. C07g 3/00

U.S. Cl. 260-209 R

2 Claims

1. A β -(1 \rightarrow 3)-glucan of the formula



wherein R_1 is hydroxymethyl or hydrogen, G_p is glucopyranosyl, and n is an integer and at least 60.

3,856,776

DERIVATIVES OF CYCLO ADENOSINE-3',5'-PHOSPHORIC ACID AND THEIR PREPARATION

Georges Cehovic, Val de Marne, France; Albert Gabbai, Ilan Marcus, and Theodore Posternak, all of Geneva, Switzerland, assignors to Agence Nationale De Valorisation De La Recherche, Towre Aurare, Paris-Defense, Courbevaie, Hauts de Seine, France

Filed Oct. 12, 1970, Ser. No. 80,223

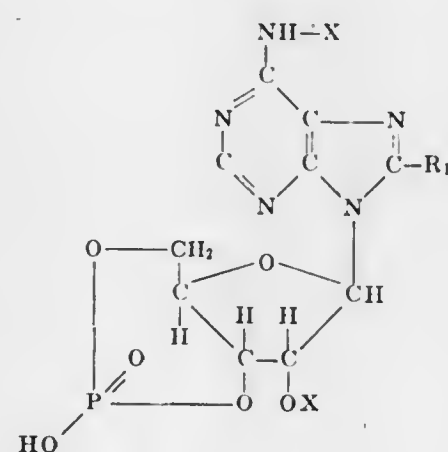
Claims priority, application France, Oct. 10, 1969, 69.34747; Oct. 2, 1970, 70.35682

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

16 Claims

1. Compounds having the structural formula



wherein X is selected from the group consisting of butyryl and H with the proviso that at least one X must be butyryl; R_1 is selected from the group consisting of SH, Br, OH, SCH_3 and NH_2 ; and their neutralization salts.

3,856,777

METHOD OF PRODUCING PYRIMIDINE NUCLEOSIDE DERIVATIVES

Yoshiharu Ishido, Kanagawa-ken; Teruo Yoshino, Saitama-ken; Hajime Komura; Katsumi Suzuki, both of Tokyo; Akihiro Yamasaki, and Masaru Okutsu, both of Kanagawa-ken, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,936

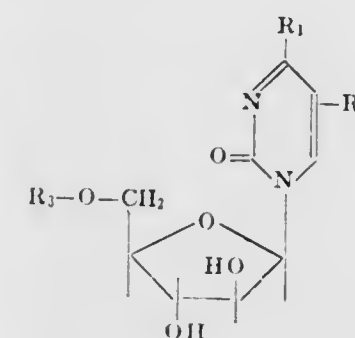
Claims priority, application Japan, Dec. 14, 1971, 46-101289

Int. Cl. C07d 51/52

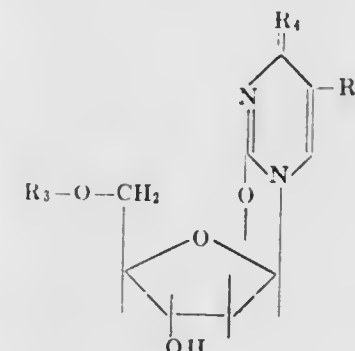
U.S. Cl. 260-211.5 R

4 Claims

1. A method of producing a pyrimidine derivative which comprises: reacting a compound of the formula



with an approximately equivalent amount of a cyclic alkylene or alkylene ester of carbonic acid at approximately 100° to 200°C until a 2,2'-anhydro derivative of said compound is formed, said anhydro derivative being of the formula



in said formulas: R_1 being hydroxy, mercapto, amino, acetylmino, or monoalkylamino,

R_2 being hydrogen, hydroxy, halogen, or alkyl,

R_3 being hydrogen, alkanoyl, or H_2PO_3 , and R_4 being oxygen, sulfur, imino, acetylmino, or alkylmino, said alkyl, alkanoyl, alkylene, and alkylene having not more than four carbon atoms.

3,856,778

PHARMACEUTICALLY ACTIVE NEW GUANIDINO-ALKYLCYCLO-IMINES

Jozsef Rakoczi, 17 Felvinczi ut., Budapest II; Ivan Beck, 27, Nepkoztarsasag ut., Budapest VI, both of Hungary; Endre Komlos, deceased, late of 1 Kando ku, Budapest II, Hungary (by Anna Komlos nee Kiss, administratrix); Lujza Petocz, 2 Rakoczi ter., Budapest VIII, and Katalin Grasser, 30 Ferenc Korut, Budapest IX, both of Hungary

Continuation of Ser. No. 34,901, May 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 691,131, Dec. 18, 1967, abandoned. This application July 18, 1973, Ser. No. 380,175

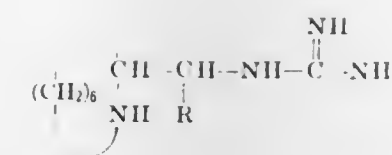
Claims priority, application Hungary, Dec. 30, 1966, OE 132

Int. Cl. C07d 41/00

U.S. Cl. 260-239 B

1 Claim

1. A compound of the formula



or pharmaceutically acceptable acid addition salts thereof, wherein R stands for hydrogen or methyl.

3,856,779

PROCESS FOR THE PREPARATION OF SODIUM SALT OF AMPICILLIN

Dennis Edward Clark, 239D Blossom Dr., R.D. No. 1, Basking Ridge, N.J. 07920, and Robert Christopher Hutton, 17 Withdean Ave., Goring, England

Continuation of Ser. No. 145,512, May 20, 1971. This application Feb. 23, 1973, Ser. No. 335,359

Claims priority, application Great Britain, Mar. 3, 1966, 9260/66

Int. Cl. C07d 99/16

U.S. Cl. 260-239.1

5 Claims

1. A process for the preparation of the sodium salt of the D-(-)-epimer of α -aminobenzylpenicillin which comprises forming a solution of the diethylamine salt of the said penicillin in methylene dichloride with only a small excess of diethylamine over the stoichiometric requirement and recovering the sodium salt of the said penicillin precipitated therefrom upon the addition of a sodium or sodio precipitant.

3,856,780

SYNTHESIS OF 25-HYDROXYCHOLESTEROL AND DERIVATIVES THEREOF

Thomas Albert Narwid, 7 Brooklawn Dr., Pompton Plains, N.J. 07444, and Milan Radoje Uskokovic, 253 Highland Ave., Upper Montclair, N.J. 07043

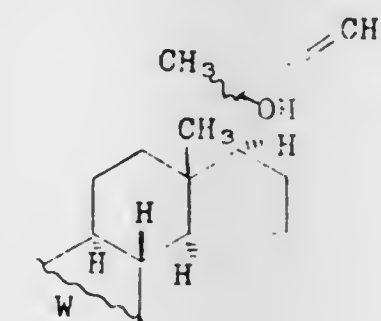
Continuation-in-part of Ser. No. 371,091, June 18, 1973. This application Oct. 23, 1973, Ser. No. 408,788

Int. Cl. C07c 173/00, 169/48

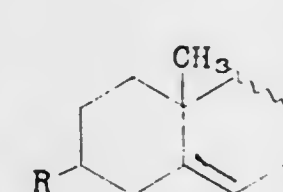
U.S. Cl. 260-239.55 R

31 Claims

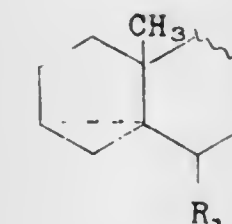
1. A compound of the formula



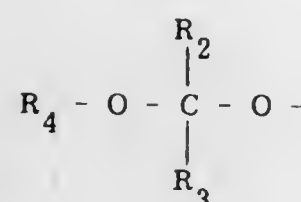
wherein W is one of the partial formulas



or



and R is hydroxy, tertiary lower alkoxy, benzyloxy, diphenylmethoxy, trityloxy, lower alkanoyloxy, benzyloxy, acetoacetoxy, or a group of the formula



wherein R₂ is hydrogen or lower alkyl, R₃ and R₄ taken independently are each lower alkyl and R₃ and R₄ taken together are lower alkylene of from 3 to 6 carbon atoms; and R₁ is hydroxy, lower alkoxy, phenyl lower alkoxy, lower alkanoyloxy, benzyloxy or acetoacetoxy.

3,856,781

2-PYRIDYLMETH

YL-3H,7H-QUINO(8,1-CD)(1,5)BENZOXAZEPIN-3-ONE COMPOUNDS

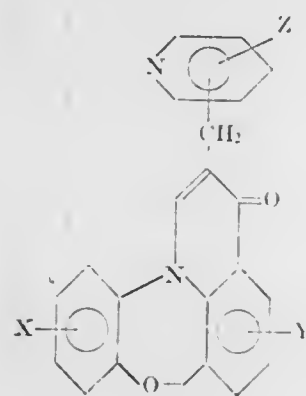
Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb and Sons, Inc., Princeton, N.J.

Filed May 23, 1973, Ser. No. 363,201

Int. Cl. C07d 39/00

U.S. Cl. 260-240 R

1. A compound of the formula:



wherein Z is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, bromo and chloro and (lower alkyl)₂amino-lower alkoxy and X and Y are selected from the group consisting of hydrogen, chloro, bromo, trifluoromethyl, (lower alkyl)₂sulfonamido, lower alkyl and lower alkoxy, with the proviso that at least one member selected from the group consisting of X and Y is hydrogen; and pharmaceutically acceptable acid addition salts thereof.

3,856,782

2-BENZYL-3H,7 H-QUINO(8,1-CD)(1,5)BENZOXAZEPIN-ONE

Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

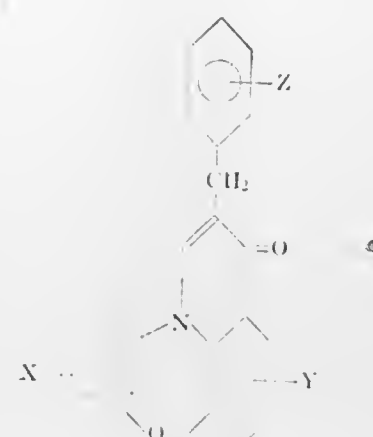
Filed May 23, 1973, Ser. No. 363,202

Int. Cl. C07d 39/00

U.S. Cl. 260-240 F

1. A compound of the formula:

14 Claims



wherein Z is selected from the group consisting of hydrogen, halo, trifluoromethyl, lower alkyl, lower alkoxy, di(lower alkoxy), tri(lower alkoxy), (lower alkyl)₂amino and (lower alkyl)₂amino-lower alkoxy and X and Y are selected from the group consisting of hydrogen, chloro, bromo, trifluoromethyl, (lower alkyl)₂sulfonamido, lower alkyl and lower alkoxy, with the proviso that at least one member selected from the group consisting of X and Y is hydrogen.

3,856,783

8-OXA-3-AZABICYCLO(3.2.1)OCTANE COMPOUNDS

Alfred D. Miller, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed June 14, 1973, Ser. No. 370,011

Int. Cl. C07d 87/28

U.S. Cl. 260-240 D

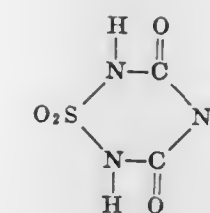
1. A compound represented by the formula

31 Claims



wherein R is a radical selected from the group consisting of benzyl; phenyl; aminoalkyl (C₁ to C₆); dimethylaminoalkyl (C₁ to C₆); phenylacetyle; quinoxalyle; mono-, di-, or tri-alkoxy (C₁ to C₄) substituted benzoyl; phenylalkyl where the alkyl constituent thereof contains from 1 to 4 carbon atoms; alkenyl (C₃); mono-, di-, or tri-halogen substituted phenylalkyl where the alkyl group contains from 1 to 4 carbon atoms and the halogen is substituted on the phenyl ring; guanadionalkyl (C₁ to C₄); mono-, di-, or tri-halogen substituted benzoyl; di- or tri-alkyl (C₁ to C₄) substituted benzoyl; mono-, di-, or tri-halogen substituted phenylalkanoyl wherein the alkanoyl group contains from 2 to 4 carbon atoms and the halogen is on the phenyl ring; hexahydrobenzoyl; phenylalkenyl wherein the alkenyl group is a lower alkenyl containing from 3 to 5 carbon atoms; phenylalkanoyl wherein the alkanoyl group contains from 2 to 4 carbon atoms; o- and p-alkyl (C₁ to C₄) substituted phenylalkanoyl where the alkanoyl group contains 2 to 4 carbon atoms and the alkyl group is substituted on the phenyl ring; alkyl (C₁ to C₄) substituted naphthylalkanoyl wherein the alkanoyl group contains 2 to 4 carbon atoms and the alkyl group or groups are attached to the naphthyl ring; alkanoyl (C₄ to C₁₈); haloalkyl (C₁ to C₄) mono-, di-, or tri-substituted benzoyl wherein the haloalkyl group contains from 1 to 5 halogen atoms; mono-, di-, or tri-alkoxy (C₁ to C₄) substituted phenylalkyl wherein the alkyl group contains 1 to 4 carbon atoms and the alkoxy is substituted on the phenyl ring; thienylalkyl wherein the alkyl group contains from 1 to 4 carbon atoms; anilino-carbonyl; adamantane-carbonyl; phenylsulfonyl; mono- or di-carboxyl substituted benzoyl; mono- or di-hydroxyl substituted benzoyl; nicotinoyl; mono- or di-alkanoyloxy (C₂ to C₄) substituted benzoyl; thenoyl; phenylglyoxyl; cycloalkyl (C₄ to C₈); N-(alkylene [C₁ to C₈]) α,ω-dicarbonyl)-8-oxa-3-azabicyclo(3.2.1)octane; N-(alkylene [C₁ to C₈])-8-oxa-3-

azabicyclo(3.2.1)octane; N-(terephthaloyl)-8-oxa-3-azabicyclo(3.2.1)octane; and the pharmacologically acceptable acid addition salts thereof.



3,856,784

ALKYLAMINOALKYL 4-HYDROXY-2-METHYL-2H-1,2-ENZOTHIAZINE-3-CARBOXYLATE 1,1-DIOXIDES AND N-ALKYLAMINOALKYL-4-HYDROXY-2-METHYL-2H-1,2-BENZOTHIAZINE-3-CARBOXAMIDE 1,1-DIOXIDES

Harold Zinnes, Rockaway; Jagadish C. Sircar, Dover, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

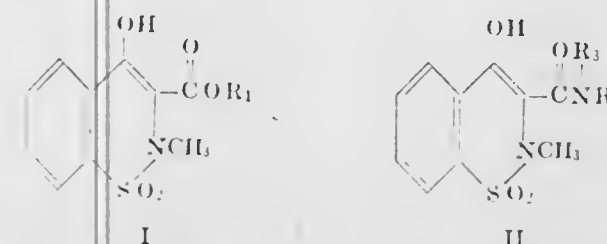
Filed Nov. 16, 1971, Ser. No. 199,342

Int. Cl. C07d 93/02

U.S. Cl. 260-243 R

15 Claims

1. A member selected from a group consisting of compounds of the formula:



wherein R₁ is dialkylaminoalkyl; R₂ is a member selected from a group consisting of dialkylaminoalkyl and monoalkylaminoalkyl and R₃ is a member selected from a group consisting of hydrogen and alkyl in which alkyl has 1-7 carbon atoms.

3,856,787

1-SUBSTITUTED-2-THIO-1H-1,4-BENZODIAZEPINES

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Bloomfield, N.J.

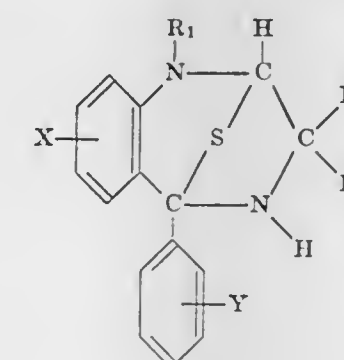
Filed Sept. 14, 1972, Ser. No. 289,023

Int. Cl. C07d 53/06

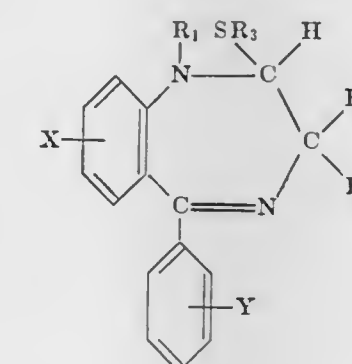
U.S. Cl. 260-243 R

9 Claims

1. A 1-substituted-2-thio-1H-1,4-benzodiazepine selected from the group represented by formula I:



and formula II:



wherein X is halogen, trifluoromethyl or nitro; R₁ is lower alkyl, polyfluoro-lower alkyl or phenyl-lower alkyl; R₂ is hydrogen or lower alkyl; R₃ is lower alkyl or

3,856,786

SULFONYLDIISOCYANATE ADDUCTS

Ludwig Konrad Huber, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

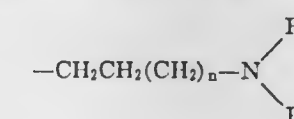
Filed July 25, 1972, Ser. No. 274,926

Int. Cl. C07d 93/00

U.S. Cl. 260-243 R

4 Claims

1. The cyclic compound represented by the structure



where n is 0 or 1 and R₆ and R₇ are each hydrogen or lower alkyl; Y is hydrogen, halogen or lower alkyl; and the 4-N-oxides and the pharmaceutically acceptable acid addition salts thereof.

3,856,788

DYESTUFF AND METHOD OF MAKING AND USING SAME

John Frank Corbett, Glenview, Ill., and Allen G. Fooks, File-hurst, Reading, England, assignors to The Gillette Company, Boston, Mass.

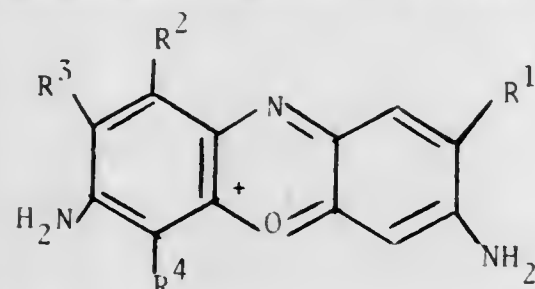
Division of Ser. No. 135,495, April 19, 1971, abandoned. This application June 26, 1972, Ser. No. 266,249

Int. Cl. C09b 19/00

U.S. Cl. 260-244 R

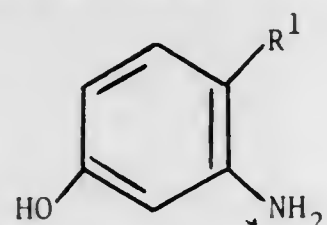
4 Claims

1. A process for the preparation of a 3,7-diaminophenoxazinium salt of the formula

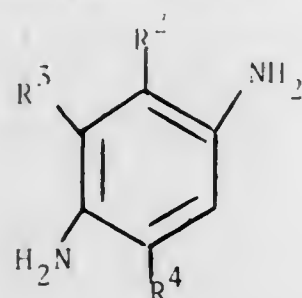


in which R¹ is an alkyl group having from 1 to 4 carbon atoms, R², R³ and R⁴, which may be the same or different, are selected from the group consisting of hydrogen, chlorine, bromine and an alkyl group having from 1 to 4 carbon atoms, and X is an anion, which process comprises preparing a solution containing dissolved

in a solvent inert to the reactants a mixture of a p-phenylenediamine of the formula



in which R², R³ and R⁴ have the meanings specified above, 3-amino-4-alkyl-phenol of the formula



in which R¹ has the meaning specified above, and an oxidizing agent selected from the group consisting of ferricyanides, dichromates and permanganates, heating said solution to cause oxidation to occur, then separating the product from the solution.

3,856,789

BIS-BASIC KETONES OF THIOXANTHENE

Robert W. Fleming, and Arthur D. Sill, both of Cincinnati, Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

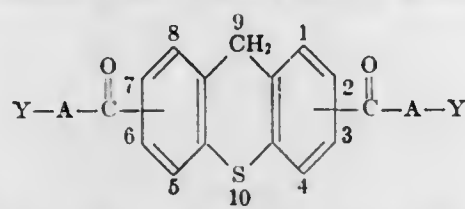
Filed Apr. 23, 1971, Ser. No. 137,055

Int. Cl. A61k 27/00; C07d 87/34

U.S. Cl. 260-246 B

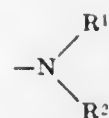
16 Claims

1. A compound selected from a base of the formula



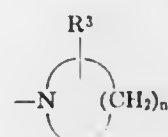
wherein A is a straight or branched alkylene chain having from 1 to 6 carbon atoms; and each Y is

A the group



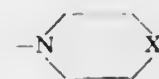
wherein R¹ and R² are individually hydrogen, allyl or lower alkyl having from 1 to about 4 carbon atoms; or

B. the group



wherein n is a whole integer of 4 or 5, and R³ is hydrogen or lower alkyl having from 1 to about 4 carbon atoms and can be linked to any one of the carbon atoms of the heterocyclic group, or

C. the group



wherein X is oxygen or NR⁴, and R⁴ is hydrogen or lower alkyl of from 1 to about 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,856,790

CYCLIC AMIDES OF 1,4-DIAMINO-2-BUT-2-YNE

Meier E. Freed, Philadelphia, Pa. and John L. Archibald, Windsor, England. Assignor: American Home Products Corporation, New York, N.Y.

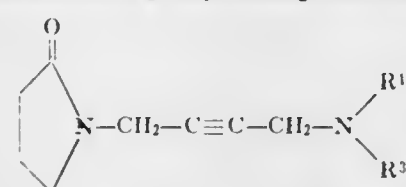
Continuation of Ser. No. 1,021, Jan. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 599,408, Dec. 16, 1966, abandoned. This application Sept. 18, 1972, Ser. No. 291,692

Int. Cl. C07d 87/42

U.S. Cl. 260-247.2 A

4 Claims

1. A compound of the group having the formula:



wherein R¹ and R², when separate, are each of the group consisting of lower alkyl consisting of from 1 to 4 carbon atoms and, when joined, complete a ring of the group consisting of piperidino and morpholino.

3,856,791

PREPARATION OF AMIDES

Francis A. Daniher, Darien, and Joel A. Zaslow, Olympia Fields, both of Ill., assignors to CPC International, Inc., Englewood Cliffs, N.J.

Filed Nov. 20, 1972, Ser. No. 308,213

Int. Cl. C07d 87/28, 87/36

U.S. Cl. 260-247.7 H

15 Claims

1. A process for preparing amides comprising contacting phosgene with an organic carboxylic acid and an acid salt of an amine, wherein said acid has a pK_a value not substantially above about 6.

3,856,792

2-[2-(SUBSTITUTED AMINOMETHYL)-4H-1,2,4-TRIAZOL-4-YL]BENZOPHENONES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 240,756, April 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 114,049, Feb. 9, 1971, Pat. No. 3,709,898. This application

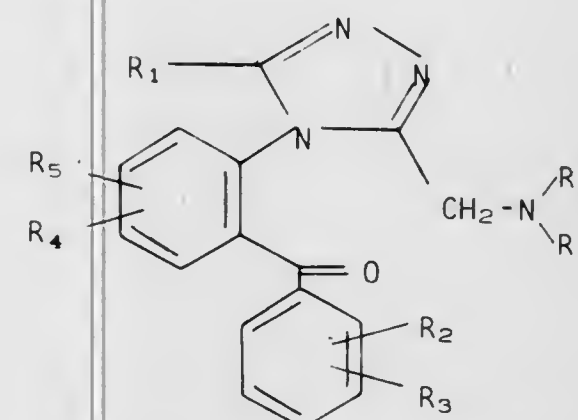
June 21, 1973, Ser. No. 372,313

Int. Cl. C07d 55/06, 57/00, 99/02

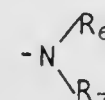
U.S. Cl. 260-247.5 R

13 Claims

1. A 2-[3-(substitutedaminomethyl)-4H-1,2,4-triazol-4-yl]benzophenone of the formula II:



wherein R₁ is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive and cyclopropyl; wherein R₂, R₃, R₄, and R₅ are selected from the group consisting of hydrogen, alkyl defined as above, fluorine, chlorine, bromine, nitro, trifluoromethyl, and alkylthio in which alkyl is defined as above, and wherein R₆ and R₇ are selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, inclusive, with the proviso that only one of the parameters R₆ or R₇ can be hydrogen, or together the group



is a heterocyclic amino group selected from pyrrolidino, piperidino, morpholino, and hexamethylenimino, and the pharmacologically acceptable acid addition salts thereof.

3,856,793

ALKYLOXYALYL AMINO-S-TRIAZINES

Alan A. MacDonald, Albany, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

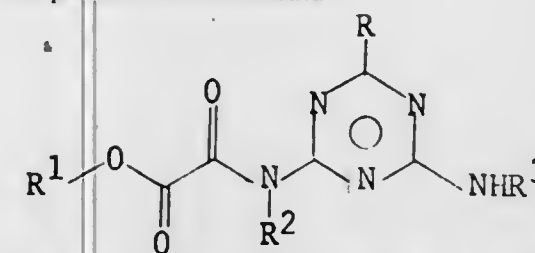
Filed Apr. 2, 1973, Ser. No. 347,296

Int. Cl. C07d 55/20

U.S. Cl. 260-249.8

7 Claims

1. A compound of the formula



where R is chlorine, methylthio or ethylthio; R¹ is alkyl having 1 to 4 carbon atoms; R² is alkyl having 1 to 4 carbon atoms; and R³ is alkyl having 1 to 4 carbon atoms.

3,856,794

1-PHENOXY-3-ARYLPYPERAZINYL-2-PROPANOL HYPOTENSIVES

John Christopher Danilewicz, Ash; John Edward Glyn Kemp, Canterbury; Michael Snarey, Sandwich, and James Robert Wright, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,729

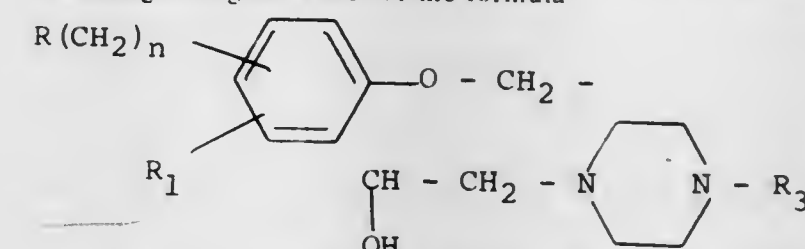
Claims priority, application Great Britain, Nov. 10, 1970, 53303/70

Int. Cl. C07d 51/70

U.S. Cl. 260-268 PH

10 Claims

1. A propanolpiperazine compound selected from the group consisting of organic bases of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein R(CH₂)_n is at the 2- or 4-position on the phenyl ring; R of R(CH₂)_n is carbamoyl and n is an integer of from one to two; inclusive; R₁ is hydrogen or a straight chain alkyl having from one to six carbon atoms; and R₃ is chlorophenyl or alkoxyphenyl having from one to six carbon atoms in the alkoxy moiety.

3,856,795

PROCESS FOR PREPARATION OF SECONDARY AMINES FROM TERTIARY AMINES

John P. Yardley, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

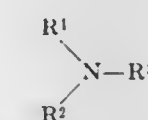
Filed Apr. 25, 1972, Ser. No. 247,438

Int. Cl. C07b 1/00, 3/00; C07d 41/08

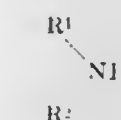
U.S. Cl. 260-283 SY

10 Claims

1. A process of converting a tertiary amine of the formula:



wherein R¹ and R² are each a radical selected from the class consisting of an alkyl group of 1 through 12 carbon atoms, a cycloalkyl group having 4 through 10 ring carbon atoms, phenyl, naphthyl and phenyl(lower)alkyl; R¹ and R² when joined together form with the N-atom a member selected from the class consisting of piperidino, pyrrolidino, piperazino, morpholino, hexamethylenimino, decahydroquinolino, and 1,2,3,4,5,6-hexahydro-6,11-dimethyl-2,6-methano-3-benzazocino-8-methanol, said groups defined by R¹ and R² being optionally substituted with a member selected from the class consisting of hydroxy and (lower)-alkoxy; and R³ is a member selected from the group consisting of allyl, dimethyl allyl, propargyl and benzyl; to a secondary amine of the formula:



which comprises reacting said tertiary amine with an organic peracid to form the N-oxide of said tertiary amine and reacting said N-oxide with an alkali metal in the presence of liquid ammonia to form the corresponding secondary amine by cleavage of said R³ group from said tertiary amine, the reaction of said tertiary amine with said organic peracid being

carried out at a temperature between about -40°C . and about $+32^{\circ}\text{C}$.

5. A process according to claim 1 wherein said tertiary amine is N-allyl dodecahydroquinoline.

9. A process according to claim 6 wherein said tertiary amine is benzyloxycarbonylmetine and the secondary amine obtained is 1',2',2'-secoemetine.

3,856,796

HYDROXYALKYL-SUBSTITUTED-AMINO-QUINOLINES AND NITRATES THEREOF

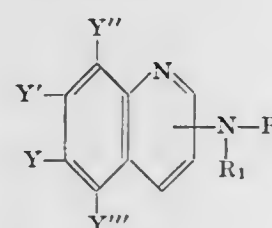
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 245,308, April 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 127,376, March 23, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 291,833

Int. Cl. C07d 33/50

U.S. Cl. 260—288 R

1. A compound of the formula:

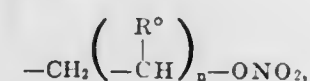


wherein

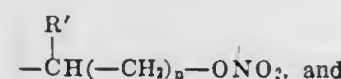
R is from the group of

a. $-\text{CH}_2(\text{CH}_2)_n\text{ONO}_2$

b)



c)

d. $-\text{CH}_2(\text{CH}_2)_2\text{N}[\text{CH}_2(\text{CH}_2)_y\text{ONO}_2]_2$

R1 is from the group of

e. $-\text{CH}_2(\text{CH}_2)_n\text{ONO}_2$ when R is (a) as above defined,

f. hydrogen, and

g. alkyl of 1 to 4 carbon atoms,

R' is $-(\text{CH}_2)_x\text{CH}_3$ or $-(\text{CH}_2)_y\text{ONO}_2$,

R'' is hydrogen, $-(\text{CH}_2)_n\text{CH}_3$ or $-(\text{CH}_2)_y\text{ONO}_2$, provided that one R'' (and only one) is other than hydrogen, that the sum of n and m does not exceed 7 and that the sum of n and y does not exceed 8,

 n is 1 to 7, m is 0 to 4, x is 0 or 1, y is 1 to 4, and

each of Y, Y', Y'' and Y''' is hydrogen, halo of atomic weight of from 18 to 80, alkoxy of 1 to 3 carbon atoms or alkyl of 1 to 3 carbon atoms or Y and Y' together form methylenedioxy, provided that at least 2 of Y, Y', Y'' and Y''' are hydrogen and further provided that when one of Y, Y', Y'' and Y''' is halo then the others are hydrogen; or a pharmaceutically acceptable acid addition salt thereof.

3,856,797 8-AMINOALKYL-3-OXO-1-THIA-4,8-DIAZASPIRO(4.5)DECANES AND ANALOGS THEREOF

Katsuo Arimura; Toshihiro Kobayakawa, both of Yoshitomimachi; Hideki Ao, Nakatsu, and Yoshiaki Tsuda, Yoshitomimachi, all of Japan, assignors to Yoshitomi Pharmaceutical, Osaka, Japan

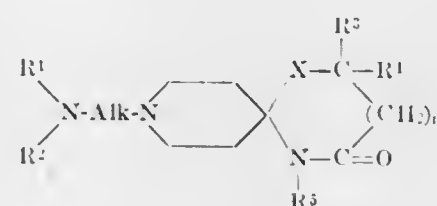
Filed Dec. 29, 1972, Ser. No. 319,808

Int. Cl. C07d 29/34

U.S. Cl. 260—293.66

13 Claims

1. A compound of the formula:



wherein X is a member selected from the group consisting of $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$ and $-\text{O}-$; each of R¹ and R² is a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a cyclohexyl group, a phenyl group, a chlorophenyl group, a benzyl group, a furyl-lower-alkyl group, a pyridyl group and a pyridyl-lower-alkyl group, or R¹ and R² together with the adjacent N atom form a heterocyclic ring selected from the group consisting of pyrrolidine, piperidine, morpholine, N'-methylpiperazine, N'-phenylpiperazine and N'-m-trifluoromethylphenylpiperazine; each of R³ and R⁴ is a member selected from the group consisting of a hydrogen atom, a lower alkyl group and a phenyl group; R⁵ is a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a phenyl group, a chlorophenyl group, a methoxyphenyl group, a tolyl group, a trifluoromethylphenyl group, a benzyl group, a furyl-lower-alkyl group and a pyridyl group; alk is an alkylene group having 1 to 4 carbon atoms; and n is a member selected from the group consisting of zero and 1; in which definitions the term "lower" in each occurrence means that the alkyl group or moiety recited has no more than 4 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,856,798

BICYCLIC DERIVATIVES OF 1,4-DIHYDROPYRIDINE

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1973, Ser. No. 336,477

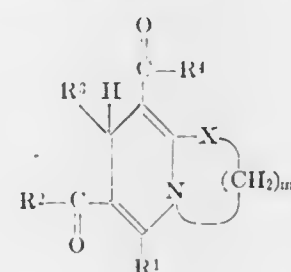
Claims priority, application Germany, Sept. 12, 1972, 2210633

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 C

16 Claims

1. A compound of the formula:



wherein

X is $-\text{O}-$ or $-\text{S}-$ m is 2, 3 or 4;R¹ is hydrogen or lower alkyl;

each of R² and R⁴, independent of the other, is lower alkoxy, lower alkoxy(lower alkyl) or alkynyloxy having 2 to 4 carbon atoms; and

R³ is lower alkyl; phenyl; phenyl substituted by one to three substituents selected from the group consisting of lower alkyl, trifluoromethyl, cyano, halo, nitro and carbo(lower alkoxy); pyridyl; furyl; thenyl; or naphthyl.

3,856,799

INTERMEDIATES FOR PRODUCTION OF AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Hans Hoehn, Tegernheim, and Theodor Denzel, Nurnberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

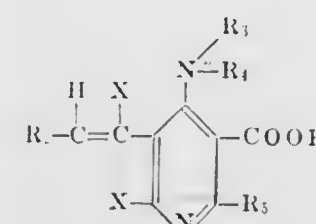
Division of Ser. No. 169,536, Aug. 5, 1971, Pat. No. 3,755,340, which is a continuation-in-part of Ser. No. 41,568, May 28, 1970, abandoned. This application June 11, 1973, Ser. No. 368,802

Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 R

7 Claims

1. A compound of the formula



wherein R is hydrogen or lower alkyl, R₂ is hydrogen or C₁ to C₃ alkyl, R₃ is hydrogen or lower alkyl, R₄ is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl, R₅ is hydrogen or C₁ to C₃ alkyl and X is chlorine or bromine.

3,856,800

PROCESS OF PREPARING

1,4-DIHYDRO-4-OXO-7-Q-3-UNSUBSTITUTED-1,8-NAPHTHYRIDINES FROM CYCLIC ALKYLIDENYL N-(6-Q-2-PYRIDYL) AMINOMETHYLENEMALONATES

Robert K. Bair, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,733

Int. Cl. C07d 31/42

U.S. Cl. 260—296 N

12 Claims

1. The process which comprises reacting cyclic alkylidenyl N-(6-Q-2-pyridyl)aminomethylenemalonate with an oxidizing agent capable of converting pyridines to pyridine N-oxides to produce cyclic alkylidenyl N-(6-Q'-1-oxo-2-pyridyl)aminomethylenemalonate, heating said 1-oxo-2-pyridyl compound to produce 1,4-dihydro-4-oxo-7-Q'-1,8-naphthyridine-8-oxide and converting said 8-oxide to 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine, where Q is lower-alkyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents and Q' is lower-alkyl, 1-oxo-4(or 3)-pyridyl or 1-oxo-4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,856,801

CERTAIN

6,7-DIHYDRO-PYRIDO[1,2-D][1,4,6]-BENZODIAZOCINES AND 6

H-PYRIDO[1,2-C][1,3,5]-BENZOXADIAZEPINES

Harry Louis Yale, New Brunswick, and Ramesh B. Petigara, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

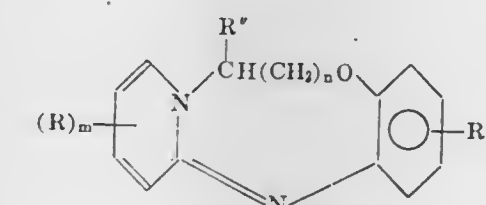
Filed Apr. 4, 1973, Ser. No. 347,939

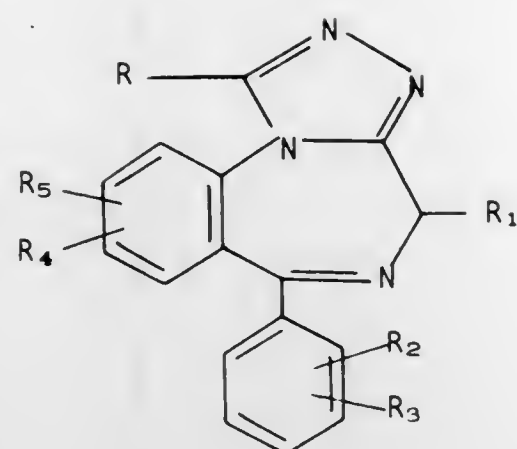
Int. Cl. C07d 31/42

U.S. Cl. 260—296 H

2 Claims

1. A compound of the formula





wherein R is an aromatic heterocyclic ring radical selected from the group consisting of 2-, 3-, and 4-pyridyl, 2-thienyl, and 2-furyl; wherein R₁ is hydrogen or alkyl of one to three carbon atoms, inclusive; and wherein R₂, R₃, R₄, and R₅ are selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, and alkylthio in which alkyl is defined as above; the 5-N-oxides and the pharmacologically acceptable salts thereof.

3,856,803

2-(SUBSTITUTED AMINO)QUINOLIZINIUM BROMIDES
Robert J. Alaimo, and Marvin M. Goldenburg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Division of Ser. No. 278,618, Aug. 17, 1972. This application Dec. 26, 1973, Ser. No. 430,945

Int. Cl. C07d 31/42

U.S. Cl. 260—296 B

1 Claim

1. The compound 2-[1-(2-hydroxyethyl)hydrazino]-6-methyl quinolizinium bromide.

3,856,804

2-(SUBSTITUTED AMINO)QUINOLIZINIUM BROMIDES
Robert J. Alaimo, and Marvin M. Goldenburg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Division of Ser. No. 278,618, Aug. 17, 1972. This application Dec. 26, 1973, Ser. No. 431,140

Int. Cl. C07d 31/42

U.S. Cl. 260—296 B

1 Claim

1. The compound 2-(2,3-dihydroxypropylamino)quinolizinium bromide.

3,856,805

SILVER ZINC ALLANTOIN COMPLEX

Harry W. Margraf, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed June 16, 1971, Ser. No. 153,820

Int. Cl. C07d 49/32

U.S. Cl. 260—299

7 Claims

1. Silver-zinc-allantoin of the formula $(C_4H_5O_3N_4Ag)_2 \cdot Zn(OH)_2$.

3,856,806

**THIAZOLECARBOXAMIDE SULFONYLUREA
HYPOGLYCEMIC AGENTS**

Donald E. Kuhla, Gales Ferry; Reinhard Sarges, Mystic, and Hans E. Wiedermann, Niantic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

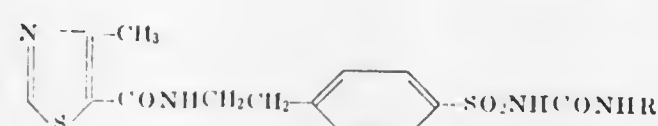
Filed Mar. 7, 1973, Ser. No. 338,965

Int. Cl. C07d 91/32

U.S. Cl. 260—302 R

4 Claims

1. A sulfonylurea compound selected from the group consisting of benzenesulfonylureas of the formula:



and the base salts thereof with pharmacologically acceptable cations, where R is bicyclo[2.2.1]hept-5-en-2-yl-endo-methyl or cycloalkyl having from five to seven carbon atoms.

3,856,807

**L-(αS,5S)-α-AMINO-3-CHLORO-2-ISOXAZOLINE-5-
ACETIC ACID**

Ladislav J. Hanka, and David G. Martin, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

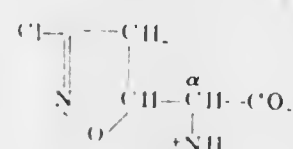
Continuation-in-part of Ser. No. 234,347, March 13, 1972, abandoned. This application Feb. 2, 1973, Ser. No. 329,001

Int. Cl. C07d 85/16

U.S. Cl. 260—307 F

5 Claims

1. A compound of the formula:



and its salts.

3,856,808

S-TRIAZOLO

**(4,3-D)(1,4)BENZOTHIAZEPIN-3(2H)-ONE-7,7-
DIOXIDES**

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

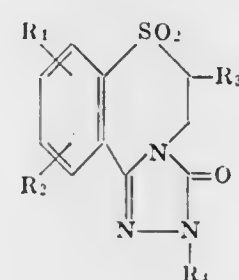
Filed Apr. 2, 1973, Ser. No. 346,721

Int. Cl. C07d 99/10

U.S. Cl. 260—308 C

9 Claims

1. A compound of the formula



wherein

R₁ and R₂ each independently represent hydrogen, halo having an atomic weight of 18 to 80, alkyl of 1 to 4 carbon atoms, nitro or trifluoromethyl, provided that when one of R₁ and R₂ is nitro or trifluoromethyl, the other is hydrogen, and

R₃ or alkyl of 1 to 4 carbon atoms, and

R₄ is hydrogen or alkyl of 1 to 4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,856,809

**PROCESS FOR PREPARING
2,4-DIHYDRO-6-PHENYL-1H-S-TRIAZOLO[4,3-
A][1,4]BENZODIAZEPIN-1-ONE COMPOUNDS**

Jackson B. Hester, Jr., Gelesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

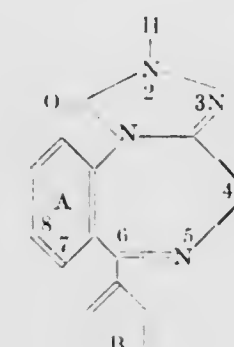
Filed Sept. 17, 1973, Ser. No. 397,966

Int. Cl. C07d 57/02

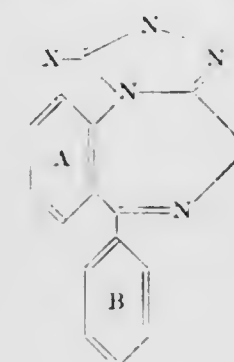
U.S. Cl. 260—308 C

4 Claims

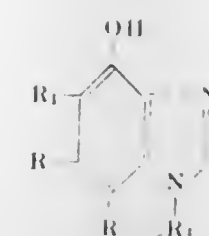
1. A process for the production of a 2,4-dihydro-6-phenyl-1H-s-triazolo[4,3-a][1,4]benzodiazepin-1-one of the formula II:



wherein the A ring is substituted in position 8 with hydrogen, chlorine or bromine, and wherein the B ring is substituted in the ortho positions with hydrogen, chlorine, or fluorine, which comprises heating between 100°-150° a compound of formula I



wherein X is chlorine or bromine and rings A and B are defined as above, with an aqueous mineral acid for 1 to 10 hours, to obtain the compound of formula II above.



3,856,811

**2-AMINO BENZIMIDAZOLE-1-CARBOXYLIC ACID
KETONE OXIME ESTERS**

Werner Daum, Krefeld-Bockum; Hans Scheinplug, and Paul-Ernst Frohberger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1972, Ser. No. 277,829

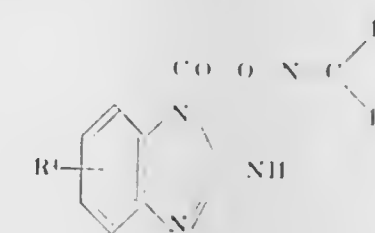
Claims priority, application Germany, Aug. 14, 1972, 2140863

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

10 Claims

1. A 2-aminobenzimidazole-1-carboxylic acid ketone oxime ester of the formula



in which

R² is lower alkyl or phenyl,

R³ is lower alkyl, or

R² and R³ together are alkylene of 4 to 10 carbon atoms, and

R⁴ is hydrogen or alkyl of up to 8 carbon atoms.

3,856,812

PYRROLE PHENOXYACETIC ACID DERIVATIVES

Johann Dahm; Joachim Borck; Herbert Nowak; Zdenek Simane, and Detlev Kayser, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

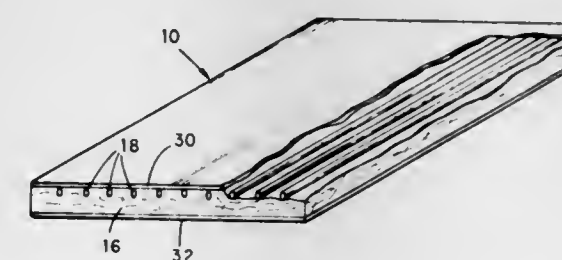
Division of Ser. No. 234,343, March 13, 1972, Pat. No. 3,804,839. This application Sept. 4, 1973, Ser. No. 393,934

Claims priority, application Germany, Mar. 15, 1971, 2312272

Int. Cl. C07d 27/24

U.S. Cl. 260—326.41

6 Claims



3,856,810

4-HYDROXY-7-METHYL-BENZIMIDAZOLE

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 832,867, June 12, 1969, Pat. No. 3,658,455. This application Jan. 19, 1972, Ser. No. 219,149

Int. Cl. C07d 49/38

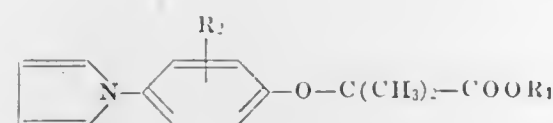
U.S. Cl. 260—309.2

2 Claims

1. A benzimidazole derivative selected from the group consisting of

a. a compound having the formula

1. A compound of the formula



wherein R_1 is the H or alkyl of 1-10 carbon atoms and R_2 is H, alkyl of 1-4 carbon atoms or halogen.

3,856,813

MACROCYCLIC SULFIDES

Charles J. Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 814,179, April 7, 1969, abandoned. This application Dec. 12, 1972, Ser. No. 314,408 Int. Cl. C07d 89/20

U.S. Cl. 260—327 B 17 Claims

1. A macrocyclic sulfide characterized by a macrocyclic ring of carbon and hetero atoms totaling 12-30 ring atoms, from 4-10 hetero atoms being present in the ring, at least one hetero atom being sulfur and the remainder being oxygen, each hetero atom in the ring being separated from its adjoining hetero atoms in the ring by a saturated 2 to 3 carbon atom chain and the macrocyclic ring being fused by vicinal carbon atoms to 1-4 carbocyclic rings selected from the group:

- phenylene and naphthylene,
- saturated analogs of (a) and
- substitution derivatives of (a) or (b) from the group halo, nitro, amino, C_1-C_4 alkyl, (C_2-C_4) alkenyl, C_6-C_{12} aryl, C_7-C_{16} aralkyl, C_1-C_4 alkoxy, cyano, hydroxy, carboxy or sulfo derivatives;

provided that a single pair of adjoining ring-sulfur atoms can be methylene-separated.

3,856,814

OLAN-2-YLIDENEMALONATES

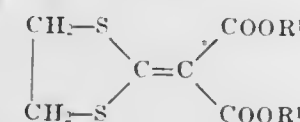
Kuniaki Taninaka, Ibaragi; Osamu Shioyama, Osaka, and Kikuzo Murata, Kawachinagano, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Division of Ser. No. 112,054, Feb. 2, 1971, Pat. No. 3,761,596. This application Feb. 27, 1973, Ser. No. 336,344

Int. Cl. C07d 71/00

U.S. Cl. 260—327 M 5 Claims

1. A compound of the formula



wherein R^1 is a lower alkyl of 3 or 4 carbon atoms or allyl.

3,856,815

PROCESS FOR THE PRODUCTION OF OXA-BICYCLOALKENES

Rudolf Hopp, and Kurt Bauer, both of Holzminden, Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany

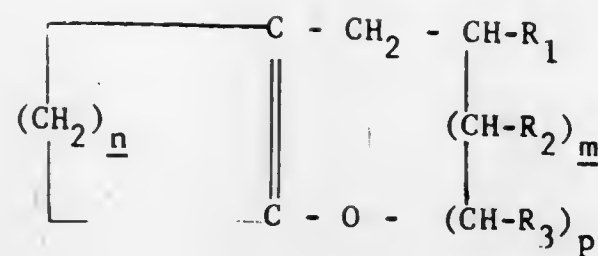
Filed July 21, 1972, Ser. No. 274,133

Claims priority, application Germany, July 21, 1971, 2136496

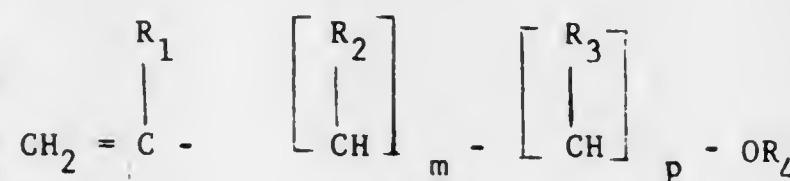
Int. Cl. C07d 9/00, 7/20

U.S. Cl. 260—333 14 Claims

1. Process for the production of an oxa-bicyclo alkene compound of the formula



which process comprises reacting in 1 to 20 hours at 40° to 200°C. a cycloalkanone of from 11 to 15 ring carbon atoms with an alkene compound of the formula



wherein

R_1 , R_2 and R_3 are individually hydrogen, methyl or ethyl; m and p are individually 0 or 1; R_4 , when m and p are both 0, is a lower aliphatic carboxylic acid radical, or when one of m and p is 1, is hydrogen or a lower aliphatic carboxylic acid radical;

in the presence of a radical initiator, separating the excess cycloalkanone following completion of said reaction, when R_4 is a lower aliphatic carboxylic acid radical hydrolyzing the reaction mixture with an alcoholic solution of an alkali hydroxide, and subsequently treating the reaction mixture with 0.01 to 5% by weight of an acid catalyst selected from the group consisting of mineral acids, organic acids, Lewis acids or acid solid catalysts for about 5 to 30 minutes at about 90° to 150° C. to form said oxa-bicyclo alkene compound.

3,856,816

PHENYL CARBAMATES

Erwin Nikles, Liestal; Volker Dittich, and Ladislaus Pinter, both of Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 197,474, Nov. 10, 1971, Pat. No. 3,781,301, which is a continuation of Ser. No. 2,445, Jan. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 728,335, May 13, 1968, abandoned, which is a division of Ser. No. 493,256, Oct. 5, 1965, abandoned. This application Oct. 1, 1973, Ser. No. 402,650

Claims priority, application Switzerland, Oct. 8, 1964, 13113/64

Int. Cl. C07d 17/00

U.S. Cl. 260—338 1 Claim
1. Ortho-(1,3-Dioxep-5-en-2-yl)-phenyl-N-methylcarbamate.

3,856,817

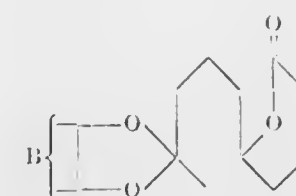
ARYL KETALS OF POLYCYCLIC OXO COMPOUNDS AND PROCESSES

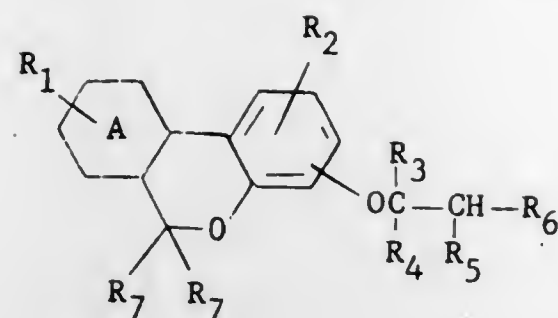
Michael Rosenberger, Bloomfield, and Gabriel Saucy, Essex Falls, both of N.J., assignors to Hoffman-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 11,025, Feb. 12, 1970, which is a continuation-in-part of Ser. Nos. 824,319, May 13, 1969, Pat. No. 3,544,600, and Ser. No. 825,389, May 16, 1969, abandoned. This application Sept. 14, 1972, Ser. No. 289,015

Int. Cl. C07d 13/10

U.S. Cl. 260—340.5 2 Claims
1. A compound of the formula





in which:

ring A is a benzene ring, a cyclohexane ring or a cyclohexene ring with the double bond being at position 6a-10a, 8 or 9;

R₁ is hydrogen, methyl or ethyl;

R₂ is hydrogen or OR' where R' is hydrogen or alkanoyl of from two to five carbon atoms;

R₃ is hydrogen, methyl or ethyl and R₄ and R₅ are hydrogen or methyl, at least one of R₃, R₄ and R₅ being other than hydrogen;

R₆ is alkyl of from four to eight carbon atoms; and R₇ is methyl or ethyl.

3,856,822

3-ALKENYL DIBENZO (B,D)PYRANS

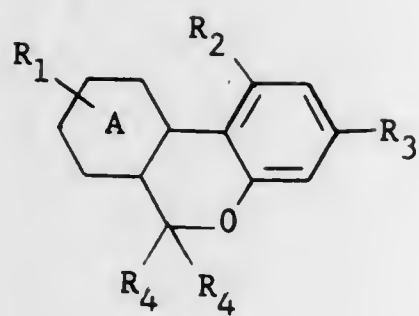
Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to Smith Kline Corporation, Philadelphia, Pa.

Filed July 18, 1973, Ser. No. 380,435

Int. Cl. C07d 7/20

U.S. Cl. 260—345.3

1. A compound of the formula:



in which:

ring A is a benzene ring or a cyclohexene ring with the double bond being at position 6a-10a, 8 or 9;

R₁ is hydrogen, methyl or ethyl;

R₂ is hydrogen or OR' where R' is hydrogen or lower alkanoyl of from two to five carbon atoms;

R₃ is an alkenyl group optionally branched with from one to three branches, each branch consisting of one or two carbon atoms, with R₃ containing one double bond and having a total of from five to twelve carbon atoms; and

R₄ is methyl or ethyl.

3,856,823

DIBENZO (B,D) PYRANS

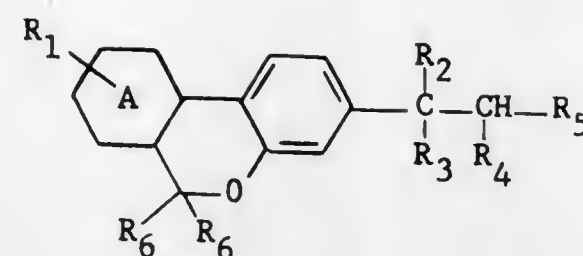
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed July 18, 1973, Ser. No. 380,447

Int. Cl. C07d 7/20

U.S. Cl. 260—345.3

1. A compound formula:



in which:

ring A is a benzene ring, a cyclohexane ring or a cyclohexene ring with the double bond being at position 6a-10a, 8 or 9;

R₁ is hydrogen, methyl or ethyl;

R₂ is hydrogen, methyl or ethyl and R₃ and R₄ are hydrogen or methyl, at least one of R₂, R₃ and R₄ being other than hydrogen;

R₅ is alkyl of from four to eight carbon atoms; and

R₆ is methyl or ethyl.

3,856,824

MODIFIED P-V-FE CATALYST FOR PRODUCTION OF MALEIC ANHYDRIDE FROM SATURATED ALIPHATIC HYDROCARBONS

Harold Raffelson, and Michael Suda, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1971, Ser. No. 212,795

Int. Cl. C07d 5/00

U.S. Cl. 260—346.8 A

10 Claims

1. In a process for producing maleic anhydride by the catalytic oxidation of a saturated aliphatic hydrocarbon having from 4 to 10 carbon atoms wherein a stream of oxygen or oxygen-containing gas containing from about 0.5 to about 10 mole percent hydrocarbon is passed over the catalyst at a space velocity of between about 200 and 7,000 reciprocal hours at a temperature of from about 400° to about 600°C. under a pressure ranging from about 0.5 to 10 atmospheres, the improvement which comprises conducting said oxidation in the presence of a catalyst complex consisting essentially of phosphorus, vanadium, iron, oxygen, and a catalyst modifier of chromium combined with an element selected from the group consisting of nickel, boron, silver, cadmium, barium and a mixture of said elements, wherein the atomic ratio of phosphorus to vanadium is from about 1:1 to about 15:1, the atomic ratio of iron to vanadium is from about 0.2:1 to about 6:1 and the catalyst modifier is present in the range of from about 2 to about 25 atomic percent of the active metals.

3,856,825

3-DIETHYLAMINO-2,2-DIMETHYLPROPYL 5-(SUBSTITUTED PHENYL)-2-FUROATES

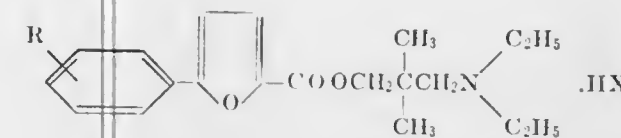
George C. Wright; Homer A. Burch, and Marvin M. Goldenberg, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 2, 1973, Ser. No. 412,264

Int. Cl. C07d 5/26

U.S. Cl. 260—347.5

1. A compound of the formula:



wherein R is a member of the group consisting of 4-nitro, 4-trifluoromethyl, 3,4-difluoro, 3-methoxy, 4-methyl, 4-methoxy, 4-bromo, 2,3-dichloro, 2-nitro-4-methyl, and 4-chloro, and HX is hydrochloride or fumarate.

3,856,826

PROCESS FOR OXIDIZING OLEFINS USING HYDROCARBON SOLUBLE PHOSPHORUS MODIFIED MOLYBDENUM CATALYSTS

Stanley Bruce Cavitt, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 102,138, Dec. 28, 1970, Pat. No.

3,784,482. This application July 26, 1973, Ser. No. 382,918

Int. Cl. C07d 1/08

U.S. Cl. 260—348.5 V

5 Claims

1. In a liquid phase process for oxidizing olefins to olefin oxides whereby the olefin is heated with oxygen in the presence of an oxidation catalyst and an organic solvent in liquid phase at a temperature sufficient to promote the oxidation reaction, the improvement which comprises

oxidizing the olefin in the presence of an effective amount of a hydrocarbon-soluble phosphorus molybdenum-hydroxy compound catalyst prepared by heating a phosphorus compound (A) with ammonium molybdate (B) and a hydroxy compound (C) containing from 3 to 30 carbon atoms per molecule selected from the group consisting of an organic hydrocarbon primary alcohol, organic hydrocarbon secondary alcohol, a phenol and an aliphatic hydrocarbyl glycol to a temperature which dissolves said ammonium molybdate (B) wherein said phosphorus compound (A) is one capable of reacting under said conditions with said hydroxy compound (C) selected from the group consisting of phosphorus pentoxide, phosphorus trichloride, phosphorus pentasulfide, phosphorus oxychloride, phosphorus sulfochloride, phosphoric acid and phosphorous acid and wherein the hydroxy concentration of (C) is in excess of the molybdate concentration of (B) and wherein the gram-atom weight ratio of phosphorus of said phosphorus compound (A) to molybdenum of said ammonium molybdate (B) is in the range from .25:1 to 30:1.

3,856,827

SILICON CONTAINING MOLYBDENUM CATALYSTS

Stanley Bruce Cavitt, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 102,137, Dec. 28, 1970, Pat. No.

3,787,329. This application July 26, 1973, Ser. No. 382,920

Int. Cl. C07d 1/08

U.S. Cl. 260—348.5 V

5 Claims

1. In a liquid phase process for oxidizing olefins to olefin oxides whereby the olefin is heated with oxygen in the presence of an oxidation catalyst and an organic solvent in liquid phase at a temperature sufficient to promote the oxidation reaction, the improvement which comprises

oxidizing the olefin in the presence of an effective amount of a hydrocarbon-soluble silicon-molybdenum-hydroxy compound catalyst prepared by reacting a silicon compound (A) at a temperature within the range of about room temperature to about 200°C for a time in the range of about 15 minutes to about 10 hours with a molybdenum-hydroxy compound (B) prepared by heating (1) ammonium molybdate and a (2) hydroxy compound containing from 3 to 30 carbon atoms per molecule selected from the group consisting of phenol, aliphatic hydrocarbyl glycol, organic hydrocarbon primary alco-

hol, and organic hydrocarbon secondary alcohol, wherein said heating is conducted to a temperature which dissolves said molybdate (1), wherein the hydroxy concentration of (2) is in excess of the molybdate concentration of (1), wherein the said silicon compound (A) is selected from the group consisting of a silicon halide, alkyl silicon halide, aryl silicon halide, alkoxy silicon halide, alkoxy silane, aryloxy silane, epoxyalkyl silane and an epoxy alkoxy silane and wherein the weight ratio of said silicon compound (A) to the molybdenumhydroxy compound (B) is such that the silicon to molybdenum gram atom weight ratio is in the range of 0.25 to 30.

3,856,828

ANTI-INFLAMMATORY STEROIDS OF THE ANDROSTANE SERIES HAVING A HALO-SUBSTITUTED C₁₇-C₂ ALKOXY CARBONYL GROUP AT THE 17β POSITION

Gordon Hanley Phillipps, Wembley; Peter John May, North Harrow; Brian McDonald, Chalfont St. Peter, and Edward Arthur Woollett, Fulmer, all of England, assignors to Glaxo Laboratories Limited, Middlesex, England

Filed July 16, 1973, Ser. No. 379,471

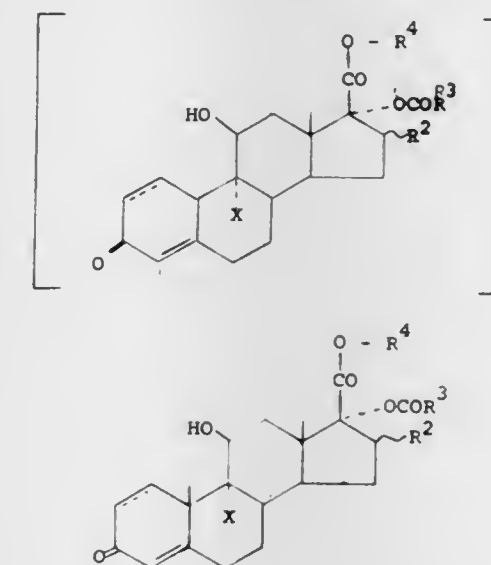
Claims priority, application Great Britain, July 19, 1972, 33834/72

Int. Cl. C07c 169/24

U.S. Cl. 260—397.1

19 Claims

1. A compound of the formula



wherein

X represents a hydrogen, chlorine or fluorine atom;

R² represents a hydrogen atom, a methylene group or an α- or β-methyl group;

R³ represents a hydrogen atom or C₁₋₄ alkyl group;

R⁴ represents a fluoro-, chloro- or bromomethyl group or a fluoroethyl group and represents a single or double bond.

3,856,829

16β-HYDROCARBON SUBSTITUTED ESTRANE COMPOUNDS

Kentaro Hiraga, Kyoto; Kouichi Yoshioka, Toyonaka; Giichi Goto, Suita; Ryo Nakayama, Kawanishi, and Michio Masuoka, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 102,271, Dec. 28, 1970, abandoned.

This application Mar. 5, 1973, Ser. No. 338,060

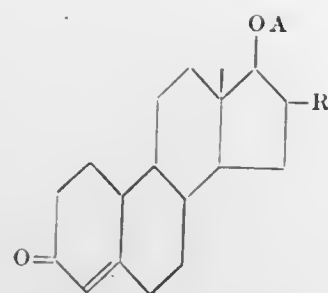
Claims priority, application Japan, Jan. 7, 1970, 45-2385

Int. Cl. C07c 169/22

U.S. Cl. 260—397.4

13 Claims

1. A compound of the formula:



wherein A is hydrogen, a tetrahydropiranyl, a tetrahydrofuryl, or a tetrahydrothienyl radical or an organic carboxylic acyl radical having up to 18 carbon atoms and R is a hydrocarbon radical having 2 to 6 carbon atoms.

3,856,830

POLYMERIZABLE URETHANE COMPOUNDS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 23, 1971, Ser. No. 211,670

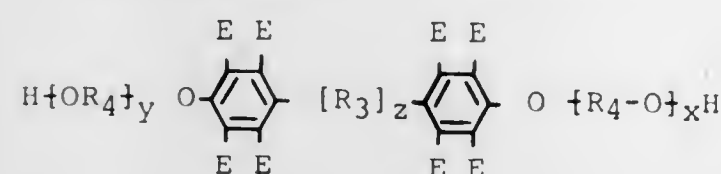
Int. Cl. C07c 125/06

U.S. Cl. 260—404.5

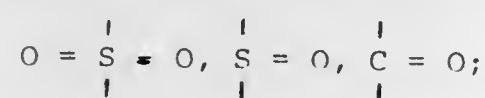
7 Claims

1. A polymerizable urethane compound, which is the reaction product of

- an organic polyisocyanate having at least 3 isocyanate groups, and
- a stoichiometric quantity of a hydroxyl terminated ethylenically unsaturated ester reaction product of an ethylenically unsaturated monocarboxylic acid having from 3 to 18 carbon atoms and an etherified diphenol represented by the formula



wherein z is 0 or 1; R_3 is an alkylene radical containing 1 to 5 carbon atoms, oxygen, sulfur or a divalent radical which may be represented by the following formulas:



R_4 is ethylene or propylene; each E is individually selected from the hydrogen atoms and halogen atoms, and x and y are integers from 1 through about 20 with the proviso that the sum of x and y is from about 2 through about 30, for reacting with each of said isocyanate groups wherein the reaction between reactants (a) and (b) is carried out at a temperature within the range of 40°C. to 100°C. at atmospheric pressure in an inert atmosphere.

3,856,831

PROCESS FOR PREPARING HARD BUTTER

Teizabro Tateishi, Toyonaka; Koichi Murase, Izumi, and Yukio Iwanaga, Tottori, all of Japan, assignors to Fuji Oil Company Ltd., Osaka-shi, Japan

Filed July 12, 1973, Ser. No. 378,593

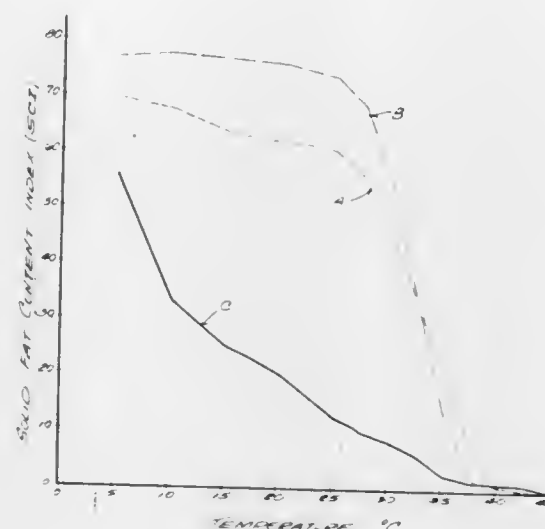
Int. Cl. C11c 3/12

U.S. Cl. 260—409

14 Claims

1. A process for preparing a hard butter, which is suitable for use as a cocoa butter substitute in the manufacture of confectioneries without tempering, comprising hydrogenating a fat or oil having an iodine value within the range of 60 to 78 and a total linoleic acid and linolenic acid content of less than

17 weight %, based on the total weight of the oil or fat and calculated as the fatty acid; with a nickel catalyst containing



6 to 21 parts by weight sulfur per 100 parts of nickel until the absorption of hydrogen has substantially ceased.

3,856,832

PROCESS FOR RECOVERING COBALT CATALYST IN AN ACTIVE FORM FROM A HYDROESTERIFICATION REACTION MIXTURE, assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 95,958, Dec. 7, 1970, abandoned. This application May 24, 1973, Ser. No. 363,492
Int. Cl. C07c 67/00; C01g 51/02

U.S. Cl. 260—410.9 R

48 Claims

1. A process for recovering cobalt containing catalyst in an active form from a reaction mixture containing ester product, alkanol and cobalt containing catalyst obtained from a cobalt catalyzed reaction of C_3 - C_{40} olefin, carbon monoxide and alkanol which comprises mixing said reaction mixture with a normally liquid hydrocarbon in an amount sufficient to extract the ester product whereby a normally liquid hydrocarbon phase and an alkanol phase are formed, and thereafter separating said alkanol phase from said normally liquid hydrocarbon phase, said alkanol phase containing substantially all of the cobalt containing catalyst in an active form suitable for use as a catalyst for said reaction of olefin, CO and alkanol.

3,856,833

METHOD FOR THE PRODUCTION OF ALDEHYDIC ACIDS

Francesco Siclari, Barlassina, and Pietro Rossi, Paolo, Garlasco, both of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 17, 1972, Ser. No. 227,268

Claims priority, application Italy, Feb. 19, 1971, 20802/71
Int. Cl. C08h 17/36

U.S. Cl. 260—413

11 Claims

1. A method for the production of high yields of an acidic aldehyde comprising subjecting the peroxide derivative of the ozonide of a cyclo-olefin to transposition in a polar solvent selected from the group consisting of lower alkanols and carboxylic acids by adding to the starting solution consisting of said derivative in said solvent a catalytic system which is soluble in said solvent and comprises an anhydride of an organic acid, non-reactive with carboxylic acid and a basic substance selected from the group consisting of alkali metal salts, alcoholates of an alkali metal, and organic bases.

3,856,834

GLYCERIDE OIL REFINING PROCESSES

Frank Charles Marsden, Priory Rd., St. Bees; John Maden, 10 Highfield Ct., and Paul Frederick Flanagan, 10 Standings Rise, all of Cumberland, England

Filed May 4, 1971, Ser. No. 140,231

Claims priority, application Great Britain, Aug. 28, 1970, 41619/70

Int. Cl. C11b 3/06

U.S. Cl. 260—425

7 Claims

1. A process of refining glyceride oils which comprises mixing the oil with a dilute aqueous solution of an alkali, together with an alkali metal, alkaline earth metal or ammonium salt of a phenyl or alkylphenyl sulphonic acid containing not more than 3 alkyl substituents having not more than 4 carbon atoms in the aggregate, the concentration of sulphate salt being from 4 to 9 percent w/w and the molar ratio of sulphate salt to soap present being from 0.25:1 to 0.5:1; allowing the mixture formed to separate into an oily layer and an aqueous layer containing in solution the free fatty acid present in the crude oil and removing the aqueous layer.

3,856,835

REACTION PRODUCT OF AN ORGANOMETALLIC COMPOUND AND AN AMINOPOLYOL

David G. Guillot, Pequannock, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 80,799, Oct. 14, 1970, Pat. No. 3,712,870.

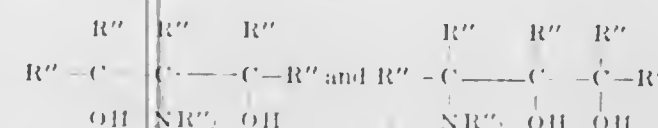
This application Nov. 8, 1972, Ser. No. 304,694

Int. Cl. C07f 3/06

U.S. Cl. 260—429.9

16 Claims

1. A composition which comprises the reaction product of (1) 0.9 to 20 moles of an organometallic compound selected from diarylmagnesium, dialkylmagnesium, dithienylmagnesium, trialkylaluminum, dialkylzinc, and arylmagnesium chloride; and (2) one mole of an aminopolyol corresponding to one of the general formulas:



where R'' is selected from hydrogen, an alkyl group having 1 to 12 carbon atoms, an aryl group having 1 to 4 rings, or a substituted alkyl or aryl group wherein the substituents are selected from hydroxyl, halo, phenyl, halophenyl, and alkoxy and alkylthio containing 1 to 5 carbon atoms.

3,856,836

METHOD FOR MANUFACTURING A STABILIZED MANGANESE ETHYLENEBISDITHIOCARBAMATE PRODUCT AND METHOD FOR MANUFACTURING FUNGICIDAL PREPARATIONS CONTAINING SUCH STABILIZED PRODUCT

Krijn Van Den Boogaart, and Meelis Nicolaus Louis, both of Vlaardingen, Netherlands, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed July 16, 1973, Ser. No. 379,693

Claims priority, application Netherlands, July 18, 1972, 7209913

Int. Cl. C07f 13/00

U.S. Cl. 260—429 K

8 Claims

1. A process for preparing a stabilized manganese ethylenebisdithiocarbamate composition which comprises admixing aqueous formaldehyde solution with precipitated manganese ethylenebisdithiocarbamate solids in aqueous medium obtained by reacting an aqueous solution of a water-soluble salt of ethylene bisdithiocarbamic acid with a water-soluble manganese salt, separating the formaldehyde-treated solids from the aqueous medium, washing the solids with water, and drying the solids.

3,856,837

SILICON-CONTAINING COMPLEXES

Grish Chandra, Glamorgan, Wales, assignor to Dow Corning Limited, London, England

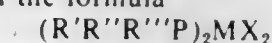
Filed Feb. 1, 1973, Ser. No. 328,566

Int. Cl. C07f 15/00, 15/04

U.S. Cl. 260—429 R

4 Claims

1. A complex of the formula



wherein R' represents the R_3SiQ group in which each R is a hydrocarbyl radical selected from the group consisting of alkyl, aryl, aralkyl, and alkaryl radicals having less than 19 carbon atoms and Q represents a divalent hydrocarbon radical having from 1 to 7 inclusive carbon atoms, R'' and R''' are each hydrocarbyl radicals selected from the group consisting of alkyl, aryl, aralkyl, and alkaryl radicals having less than 19 carbon atoms and the R_3SiQ radical, M is an atom selected from the group consisting of Ni, Pd and Pt and each X is an anionic ligand selected from the group consisting of H, Cl, Br, I, $-NO_2$, $-NO_3$, $-SCN$, $-OCOCH_3$, hydrocarbyl alkyl, hydrocarbyl aryl, hydrocarbyl alkaryl and hydrocarbyl aralkyl radicals having less than 19 carbon atoms or the two X substituents taken together represent the $-SO_4$ radical; not more than one X being a hydrogen atom and the remaining X being Cl, Br or I when one X is hydrogen.

3,856,838

BETA-NAPHTHYL ALKYLIDENE CARBAZIC ACID ESTERS

John Paul Dusza, Nanuet; Harry Lee Lindsay, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

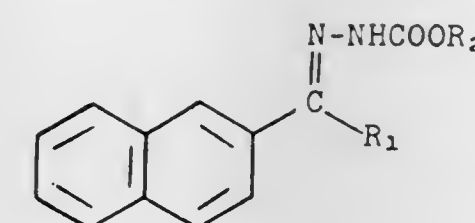
Filed Dec. 17, 1973, Ser. No. 425,420

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

5 Claims

1. A compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen and lower alkyl (C_1 - C_6), and R_2 is lower alkyl (C_1 - C_6).

3,856,839

ALKANEDIOXY TITANIUM CHELATES

Stanley D. Smith, Ballston Lake, and Stephen B. Hamilton, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 104,484, Jan. 6, 1971, abandoned.

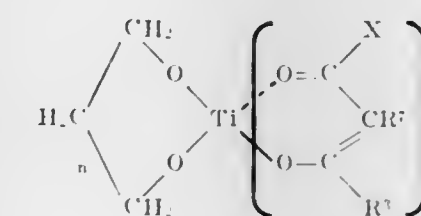
This application Nov. 22, 1972, Ser. No. 308,673

Int. Cl. C07f 7/28

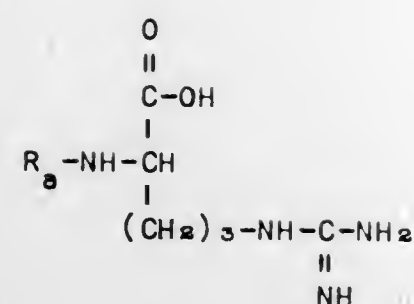
U.S. Cl. 260—429.5

3 Claims

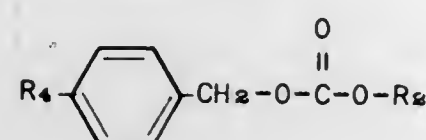
1. A titanium chelate of the formula:



wherein R^3 is a methyl radical, R^7 is selected from the group consisting of hydrogen, hydrocarbyl having not more than about 8 carbon atoms, haloalkyl having not more than about 8 carbon atoms, acyl having not more than about 8



in which R_a is hydrogen, benzyloxycarbonyl, benzoyl, p-methoxybenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, or t-butoxycarbonyl, in an N,N-disubstituted amide solvent with a compound of the formula



in which R_2 is pentachlorophenyl, 2,4,5-trichlorophenyl, or p-nitrophenyl, and R_4 is hydrogen or methoxy, at a temperature of from about 40°C. to about 90°C. for from about 12 to about 72 hours and in the presence of a silyl-amide and (b) treating the resulting N⁶-protected arginine derivative with at least about 4 molar equivalents of a lithium salt of an acid having a pK of from about 4 to about 6 in the presence of an alcohol of the formula $R_3\text{OH}$ in which R_3 is a C_1 to C_6 alkyl to produce said protected arginine in the form of its lithium salt.

3,856,849

CARBOXYLIC ACID PERFLUOROALKYL ESTERS
Helmut Huber-Emden, Basel, and Paul Schafer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,397

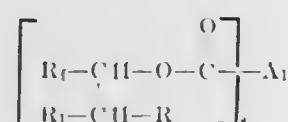
Claims priority, application Switzerland, Oct. 18, 1972, 15243/72

Int. Cl. C07c 69/54

U.S. Cl. 260-486 H

7 Claims

1. Carboxylic acid perfluoroalkyl esters corresponding to the formula



wherein R_1 represents a perfluorinated hydrocarbon radical with 1 to 22 carbon atoms, R represents hydrogen or methyl, R_1 represents chlorine or the radical $R_1'-\text{O}-$, in which R_1' represents alkyl with 1 to 12 carbon atoms, cycloalkyl with 5 or 6 ring carbon atoms, alkoxyalkyl with 2 to 10 carbon atoms, the radical $-(\text{CH}_2\text{CH}_2\text{O})_n-\text{R}'$, in which R' represents alkyl 1 to 6 carbon atoms and n is 1 or 2, or represents a phenyl radical or an alkylsubstituted phenyl radical with 1-4 carbon atoms in the alkyl chain, A_1 represents a hydrocarbon radical with 2 or 3 carbon atoms that is derived from monobasic, dibasic, or tribasic ethylenically unsaturated carboxylic acids, and s is a whole number from 1 to 3.

3,856,850

PLANT GROWTH REGULATING COMPOSITION
Hideshi Tsuchiya, Tokyo; Tetsuo Takematsu, Utsunomiya; Yoichi Hasegawa, Niigata, and Masakazu Furushima, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 11, 1972, Ser. No. 243,058

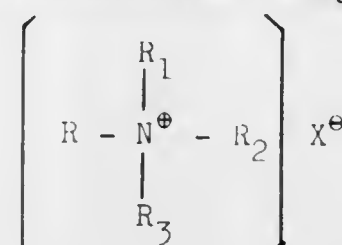
Claims priority, application Japan, Apr. 15, 1971, 46-23431

Int. Cl. C07c 103/30, 103/70; C07d 27/04

U.S. Cl. 260-501.13

3 Claims

1. A quaternary ammonium halide having the formula,



wherein R is



R_1 is methyl, ethyl or allyl group, R_2 and R_3 are both methyl or bonded to each other to form $-(\text{CH}_2)_4-$, and X is chlorine or bromine atom.

3,856,851

POTASSIUM

N-HYDROXYLMETHYL-N-METHYLDITHIOCARBAMATE

John D. Buckman, and John D. Pera, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Apr. 24, 1972, Ser. No. 246,961

Int. Cl. C07c 125/02

U.S. Cl. 260-513.5

1 Claim

1. The compound potassium N-hydroxymethyl-N-methyldithiocarbamate.

3,856,852

15(S),

18-DIHYDROXY-9-OXO-5-CIS-13-TRANS-PROSTADIENOIC ACID

Charles F. Hsu, Skokie; James Jiu, and Seth Setsuo Mizuba, both of Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 295,209, Oct. 5, 1972, Pat. No. 3,788,947. This application Sept. 17, 1973, Ser. No. 397,899

Int. Cl. C07c 61/36

U.S. Cl. 260-514 D

1 Claim

1. 15(S),18-Dihydroxy-9-oxo-5-cis-13-transprostadienoic acid.

3,856,853

IODINATED 5-SUBSTITUTED-1,3-BENZENEDIACRYLIC AND DIPROPIONIC ACIDS

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

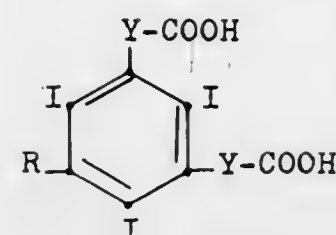
Division of Ser. No. 683,455, Nov. 16, 1967, Pat. No. 3,647,864. This application Mar. 29, 1971, Ser. No. 129,140

Int. Cl. C07c 103/32

U.S. Cl. 260-518 A

13 Claims

1. A compound of the formula



wherein R is H_2N , (lower-alkanoyl)NH, (lower-alkanoyl)N(lower-alkyl), (carboxy-lower-alkanoyl)NH, (carboxy-lower-alkanoyl)N(lower-alkyl), (lower-alkyl) $_2$ NCH=N, HO, (lower-alkanoyl)O, or (lower-alkyl)O; and Y is $-\text{CH}=\text{C}(\text{R}')-$ or $-\text{CH}_2-\text{CH}(\text{R}')-$, wherein R' is hydrogen, lower-alkyl or phenyl.

3,856,855

PROCESS FOR PREPARATION OF NAPHTHALENE MONOCARBOXYLIC ACID OR NAPHTHALENE DICARBOXYLIC ACID

Gentaro Yamashita, and Kiyoshi Yamamoto, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 10, 1971, Ser. No. 114,386

Claims priority, application Japan, Feb. 17, 1970, 45-13569; Feb. 17, 1970, 45-13571

Int. Cl. C07c 51/20, 63/36, 63/38

U.S. Cl. 260-524 R

5 Claims

1. A process for the preparation of naphthalene dicarboxylic acid which consists essentially of oxidizing dimethylnaphthalene with molecular oxygen at a temperature within a range of from 100° to 160°C. under an oxygen partial pressure of from 2 to 8 atmospheres (absolute pressure) in acetic acid of an amount of at least 4 parts by weight per part by weight of dimethylnaphthalene in the presence of a catalyst consisting essentially of the following three components:

- a cobalt compound soluble in said acetic acid under reaction conditions;
- a manganese compound soluble in said acetic acid under reaction conditions; and
- bromine or a bromine compound; in quantities meeting the following requirements:

$$3.0 \quad X + Y + Z \quad 8.0 \quad (1)$$

$$1.0 \quad Z/(X + Y) \quad 2.0 \quad (2)$$

$$0.2 \quad X/Y \quad 8 \quad (3)$$

wherein

X represents the amount of cobalt contained in said cobalt compound in terms of parts by weight per 100 parts by weight of dimethylnaphthalene,

Y represents the amount of manganese contained in said manganese compound in terms of parts by weight per 100 parts of dimethylnaphthalene, and

Z represents the amount of the bromine contained in said bromine or bromine compound in terms of parts by weight per 100 parts by weight of dimethylnaphthalene.

3,856,854

PROCESS OF PREPARING ALPHA-HYDROXYMETHYL AMINOACIDS

Richard A. Schnettler, 6234 W. Donges Ln., Brown Deer, Wis. 53223, and John T. Suh, 3709 W. Scenic Dr., 11 N. Mequon, Wis. 53092

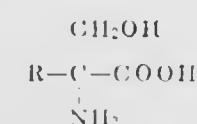
Filed Nov. 20, 1972, Ser. No. 307,947

Int. Cl. C07c 101/72

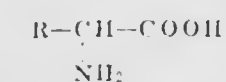
U.S. Cl. 260-519

3 Claims

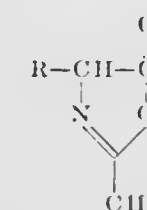
1. A method of preparing α -hydroxymethylated amino acids of the formula



in which R is an aminoacid residue selected from an alkyl group, phenyl, methoxyphenyl, dimethoxyphenyl, hydroxyphenyl, dihydroxyphenyl or halophenyl, which comprises reacting an aminoacid of the formula



with acetic anhydride in the presence of sodium acetate to form an azalactone of the formula



heating the resulting mixture on a steam bath and adding paraformaldehyde, then maintaining the mixture on a steam bath for about 4 to 6 hours to form the acetylated aminoacid and finally hydrolyzing that compound under acidic conditions to obtain the α -hydroxymethylated aminoacid of formula I.

3,856,856

PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS
Kenzie Nozaki, St. Louis, Mo., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 8, 1973, Ser. No. 321,896

Int. Cl. C07c 51/14, 67/00

U.S. Cl. 260-532

5 Claims

1. In the process for the production of carboxylic acids by contacting an alcohol having from 1 to 10 carbon atoms with carbon monoxide at a temperature of from about 50°C to about 250°C and at a pressure of from about 500 psig to about 5,000 psig in the presence of up to about 100% by weight water based on the weight of alcohol and a catalyst consisting essentially of cobalt and iodide ion constituents, the improvement consisting essentially of adding a platinum catalyst promoter selected from the group consisting of platinum, platinum salts, haloplatinic acids, platinum oxides and platinum complexes where the stabilizing ligand is represented by the formula:

R_3E
wherein E is phosphorus or arsenic and R independently is a monovalent organic moiety of from 1 to 20 carbon atoms, is free from aliphatic carbon-carbon unsaturation, is bonded to said E atom by a carbon-E bond and is selected from unsubstituted saturated aliphatic, unsubstituted phenyl, monosubstituted saturated aliphatic and monosubstituted phenyl wherein said substituent is free from aliphatic carbon-carbon unsaturation and is selected from alkoxy, carbalkoxy, trihalomethyl, halo, dialkylamino, alkanoyloxy and phenyl, said catalyst promoter being added in an amount from about 0.1% to 10%.

by weight of platinum based on the amount of cobalt in the catalyst.

3,856,857

AMINO ACIDS AND THEIR DERIVATIVES

Laszlo Beregi, Boulogne Sur Seine; Pierre Hugon, Rueil-Malmaison, and Jean-Claude Le Douarec, Suresnes, all of France, assignors to Societe en nom collectif "Science Union et Cie Societe Francaise De Recherche Medicale", Suresnes, France

Division of Ser. No. 11,330, Feb. 13, 1970, Pat. No. 3,760,009.

This application June 16, 1972, Ser. No. 263,572

Int. Cl. C07c 103/50

U.S. Cl. 260—553 E

3 Claims

1. N-Methyl[1-(3-trifluoromethyl-4-chlorophenyl) prop-2-yl]-amino acetamide.

3,856,858

SULFONAMIDES RELATED TO N,N,N'-TETRA ALLYL DIPHENYLETHER-4,4'-DISULFONAMIDE

Shrikant V. Dighe, Silver Spring, and Richard W. Bush, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

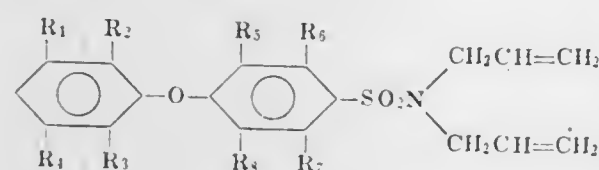
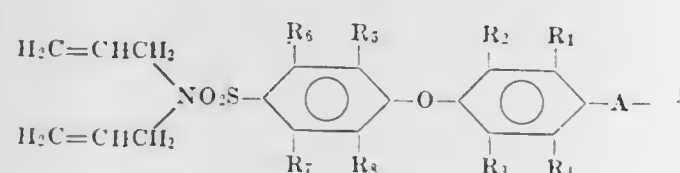
Filed Nov. 6, 1972, Ser. No. 303,848

Int. Cl. C07c 143/78

U.S. Cl. 260—556 AR

7 Claims

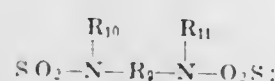
1. A compound having the formula



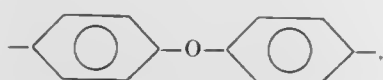
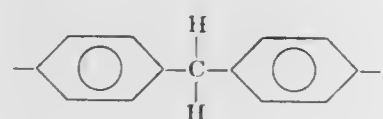
in which:

a. $R_1, R_2, R_3, R_4, R_5, R_6, R_7,$ and R_8 are independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, and lower alkyl;

b. A is



c. R_9 is



an alkylene group having 2–20 carbon atoms, a cycloalkylene group having 3–10 carbon atoms, or a phenylene group; and d. R_{10} and R_{11} are independently selected from a group consisting of hydrogen, lower alkyl, a cycloalkyl group having 3–10 carbon atoms, and a phenyl group.

3,856,859

SELECTIVE NITRATION PROCESS

George G. I. Moore, Birchwood, and Larry R. Lappi, Lake Elmo, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed June 8, 1973, Ser. No. 368,359

Int. Cl. C07c 143/74

U.S. Cl. 260—556 A

11 Claims

1. A process for the para nitration of haloalkylsulfonamides and alkylsulfonamides substituted by orthophenoxy, orthophenylthio, ortho-phenylsulfinyl or orthophenylsulfonyl groups comprising treating the substrate with at least an equimolar amount of a nitrating agent.

3,856,860

N-CYCLOPROPYLMETHYL HALO-ACETAMIDES

Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 58,672, July 27, 1970, Pat. No. 3,728,386.

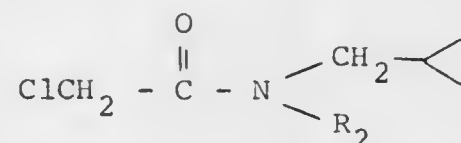
This application Feb. 12, 1973, Ser. No. 331,722

Int. Cl. C07c 103/30

U.S. Cl. 260—561 HL

7 Claims

1. A compound of the formula



in which R_2 is C_1 – C_4 alkyl, cyclopropyl methyl or allyl.

3,856,861

STEROIDAL INTERMEDIATES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,813,411,

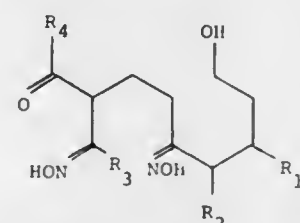
which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,415.

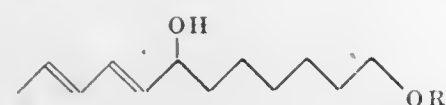
Int. Cl. C07c 131/00

U.S. Cl. 260—566 A

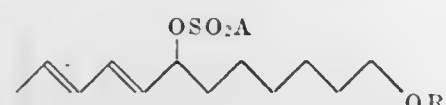
2 Claims

1. A compound of the formula





reacting said alcohol in an anhydrous inert solvent at 0° to -78°C with a sulfonic acid chloride to form an ester of the formula:



wherein A is methyl, toluene or a toluene derivative, maintaining the ester at below 0°C and reducing said ester with sodium amalgam, lithium aluminum hydride or sodium bis (2-methoxyethoxy) aluminum hydride to yield an ether of the formula:



and removing said base stable group by hydrolysis with dilute acid to form said alcohol (I).

3,856,867

PROCESS FOR THE PREPARATION OF GRIGNARD REAGENTS AND THEIR UTILIZATION IN ORGANIC SYNTHESSES

Hugh E. Ramsden, Scotch Plains, N.J., assignor to Rhodia, Inc., New York, N.Y.

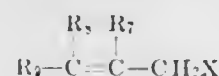
Filed Mar. 6, 1972, Ser. No. 232,257

Int. Cl. C07f 3/02

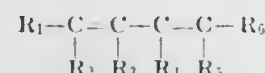
U.S. Cl. 260—665 G

12 Claims

1. A process for preparing a Grignard reagent which comprises reacting a conjugated diene and an alkyl halide together with magnesium metal in an organic ether solvent under anhydrous conditions at a temperature within the range from about 5° to about 200°C., at a molar ratio of conjugated diene:alkyl halide:magnesium within the range from about 0.5:1:1 to about 10:1:3, the alkyl halide having the formula:



and the conjugated diene having the formula:



wherein R₁, R₂, R₃, R₄, R₅, R₆, R₇, R₈ and R₉ are selected from the group consisting of hydrogen and hydrocarbon groups having from one to about 50 carbon atoms, and X is selected from the group consisting of chloride, bromide and iodide.

3,856,868

SYNTHESIS OF 5-VINYLCYCLOHEXA-1,3-DIENE

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 209,442, Dec. 17, 1971, abandoned.

This application Jan. 11, 1974, Ser. No. 432,442

Int. Cl. C07c 3/10

U.S. Cl. 260—666 A

10 Claims

1. A method for producing 5-vinylcyclohexa-1,3-diene which comprises reacting under suitable reaction conditions reactants consisting essentially of butadiene and acetylene in contact with a catalyst selected from the group consisting of: a. a reaction product obtained by the reduction of a nickel(II) compound in contact with a ligand having the formula R₂Z wherein Z is selected from the group consisting of phosphorus and arsenic, and each R is individually selected from the group

consisting of alkyl radicals having from 1 to 12 carbon atoms and no branching nearer the Z than the second carbon atom, said nickel(II) compound being selected from the group consisting of nickel chloride, nickel bromide, nickel acetate, nickel iodide, nickel propionate, nickel cyanide, nickel benzoate, nickel naphthenate, nickel oxalate, nickel acetylacetonate, nickel benzoylacetate, and combinations thereof;

b. a mixture of bis(1,5-cyclooctadiene)nickel(0) and tri-n-butyl phosphine; and

c. a reaction product obtained by the reduction of a nickel(II) complex selected from the group consisting of trans-bromo(o-tolyl)bis(triethylphosphine)nickel(II), trans-dichlorobis(triethylphosphine)nickel(II), trans-chloro(2,5-dichlorophenyl)bis(triethylphosphine)nickel(II), trans-dibromobis(triethylphosphine)nickel(II), trans-diiodobis(tri-n-butylarsine)nickel(II), and combinations thereof;

to produce 5-vinylcyclohexa-1,3-diene as a principal product of the reaction.

3,856,869

PROCESS FOR 6-ISOPROPYL-1,1,4-TRIMETHYLINDAN

Thomas F. Wood, Wayne, and Emanuel Heilweil, Fairfield, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed June 1, 1973, Ser. No. 365,883

Int. Cl. C07c 15/20

U.S. Cl. 260—668 F

9 Claims

1. A process for the preparation of 6-isopropyl-1,1,4-trimethylindan which comprises contacting 7-isopropyl-1,1,4-trimethylindan or a mixture of 7-isopropyl-1,1,4-trimethylindan and 6-isopropyl-1,1,4-trimethylindan, under isomerizing conditions with an effective amount of an aluminum halide catalyst.

3,856,870

DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 27,457, April 10, 1970,

abandoned. This application June 1, 1973, Ser. No. 365,877

Int. Cl. C07c 5/18

U.S. Cl. 260—668 D

16 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon with a nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to 2 wt. % iridium, about 0.01 to about 5 wt. % germanium and about 0.1 to about 5 wt. % of an alkali or alkaline earth metal, wherein the platinum or palladium, iridium, germanium and alkali or alkaline earth metal components are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium components are present in the corresponding elemental metallic state, wherein substantially all of the germanium component is present in an oxidation state above that of the elemental metal and wherein substantially all of the alkali or alkaline earth metal component is present in an oxidation state above that of the elemental metal at dehydrogenation conditions.

3,856,871

XYLENE ISOMERIZATION

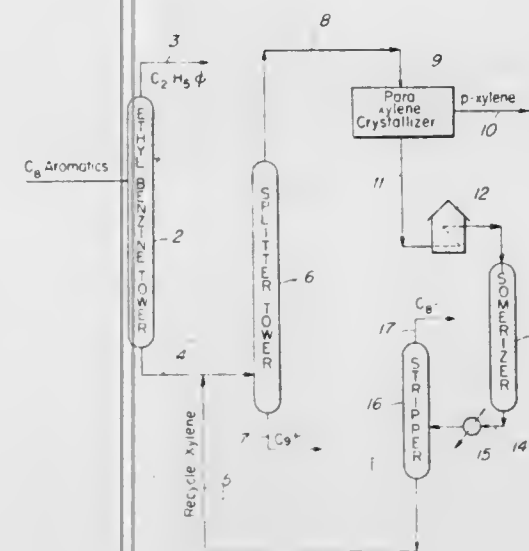
Werner O. Haag, Trenton, and David H. Olson, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,038

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

2 Claims



1. In a process for conversion of a mixture of aromatic compounds having 8 carbon atoms, said mixture containing ethyl benzene and xylenes, to isomerize xylenes contained in said mixture and convert at least part of ethyl benzene so contained to compounds readily separable by distillation from 8 carbon atom aromatics; the improvement which comprises containing such mixture of eight carbon atom aromatic compounds with a catalyst which comprises acid zeolite of the ZSM-5 type, acid zeolite ZSM-12 or acid zeolite ZSM-21 in liquid phase and in the absence of added hydrogen at a temperature of about 500°F. to about 660°F.

3,856,872

XYLENE ISOMERIZATION

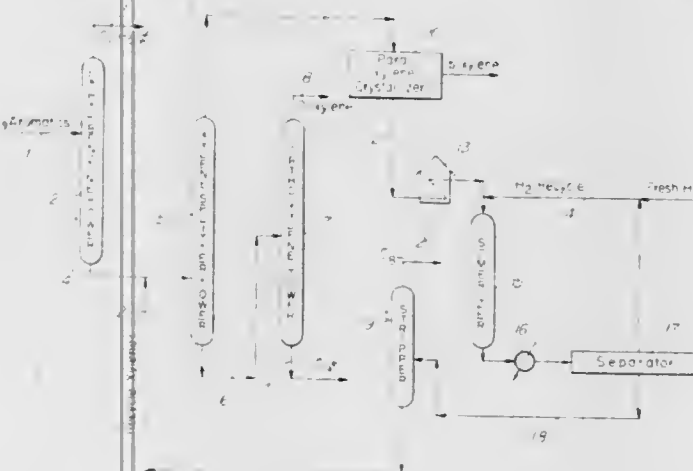
Roger A. Morrison, Woodbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,039

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

10 Claims



1. A new use of the known apparatus for simultaneously isomerizing xylenes and converting ethyl benzene to products readily separable by distillation from the mixture of C₈ aromatics by contacting a mixture of C₈ aromatics and hydrogen with a platinum on silica-alumina catalyst at pressure of 175 to 225 pounds per square inch, a temperature of 830 to 900°F. and liquid hourly space velocity of 0.6 to 1.6 liquid volumes of hydrocarbon per volume of catalyst per hour in a loop comprising an isomerization reactor for the contact aforesaid, distillation means for separating C₈ aromatics from lower

boiling and higher boiling hydrocarbons, means to transfer hydrocarbon effluent of said isomerization reactor to said distillation means, mixing means for mixing fresh feed C₈ aromatics containing xylenes and ethyl benzene with C₈ aromatics separated by distillation means, a xylene separator for recovery of para xylene, means for transfer of mixed C₈ aromatics from said mixing means to said xylene separator, and means to transfer C₈ aromatics lean in para xylene from said xylene separator to said isomerization reactor; which new use comprises contacting, in the isomerization reactor of said known apparatus, a vapor phase mixture of hydrogen and said C₈ aromatics lean in para xylene with a zeolite catalyst of the ZSM-5 type or zeolite ZSM-12 or zeolite ZSM-21 at a temperature of 550 to 900°F., a pressure of 150 to 300 pounds per square inch and a weight hourly space velocity with respect to said zeolite alone between about 1 and about 200.

3,856,873

XYLENE ISOMERIZATION

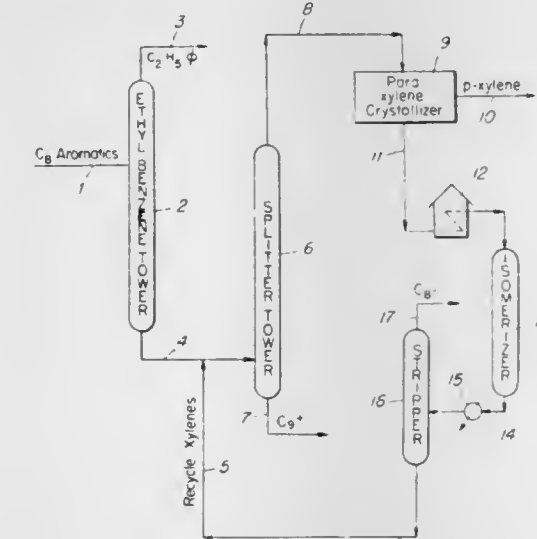
George T. Burgess, Somerville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,194

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

1 Claim



1. In a process for conversion of a mixture of aromatic compounds having eight carbon atoms, said mixture containing ethyl benzene and xylenes, to isomerize xylenes contained in said mixture and convert at least part of ethyl benzene so contained to xylene or to compounds readily separable by distillation from eight carbon atom aromatics; the improvement which comprises contacting such mixture of eight carbon atom aromatic compounds with a catalyst which comprises acid zeolite of the ZSM-5 type, acid zeolite ZSM-12 or acid zeolite ZSM-21 in vapor phase and in the absence of added hydrogen at a temperature of about 500°F. to about 1,000°F.

3,856,874

XYLENE ISOMERIZATION

Charles R. Hayward, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,195

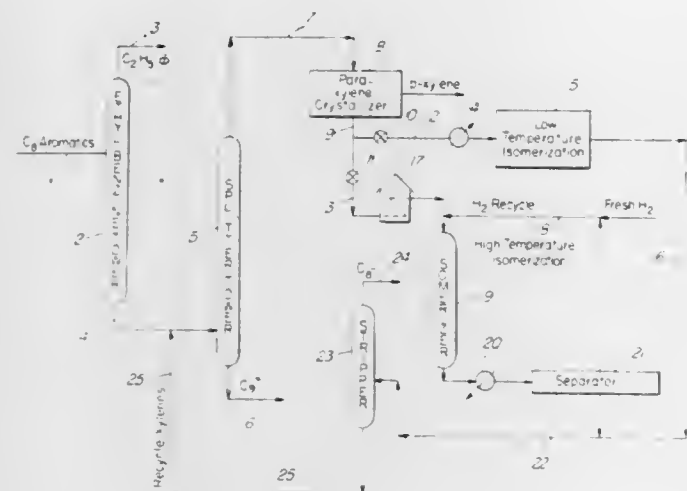
Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

2 Claims

1. In a process of selectively recovering one or more eight carbon atom aromatic isomer from a mixture of such isomers isomerizing a mixture of unrecovered isomers and recycling isomerizate to the selective recovery step; the improvement which comprises contacting a portion of said unrecovered isomers greater than half but less than 90 percent of the total with a crystalline aluminosilicate catalyst under isomerizing conditions at a temperature less than 600°F. and under pressure sufficient to maintain said unrecovered isomers in the liquid phase and contacting hydrogen and the remainder of

said unrecovered isomers in vapor phase with platinum on silica-alumina, a zeolite of the ZSM-5 type, zeolite-12 or zeolite 21 at a temperature of 550 to 900°F. and a pressure of



150 to 300 pounds per square inch; and thereafter blending the products of said contacting together for recycle as aforesaid.

3,856,875

PROCESS FOR PRODUCING 1,1,3,4,4,6-HEXAMETHYL-2,3,4-TETRAHYDRONAPHTHALENE (HMT)

Thomas F. Wood, Wayne, and Emanuel Heilweil, Fairfield, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Dec. 5, 1973, Ser. No. 422,035

Int. Cl. C07c 15/20

U.S. Cl. 260—668 F

24 Claims

1. A process for the preparation of 1,1,3,4,4,6-hexamethyl-2,3,4-tetrahydronaphthalene which comprises reacting p-cymene in equivalent or excess amounts with a substantially equimolar solution of neohexene and t-alkyl halide in the presence of an effective amount of an anhydrous aluminum halide catalyst suspended in a reaction compatible solvent.

3,856,876

DISPROPORTIONATION OF SATURATED HYDROCARBONS EMPLOYING A CATALYST THAT COMPRISES PLATINUM AND TUNGSTEN

Robert L. Burnett, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 108,377, Jan. 21, 1971. This application Feb. 8, 1973, Ser. No. 330,534

Int. Cl. C07c 9/00, 3/00

U.S. Cl. 260—676 R

6 Claims

1. A process for disproportionation of saturated hydrocarbons which comprises contacting the saturated hydrocarbons in a disproportionation reaction zone at a temperature between 400°F and below 800°F and a pressure between 100 and 2,000 psig and in the presence of no more than 5 weight percent olefins in said reaction zone with a catalyst mass comprising a platinum component and a tungsten component wherein the volumetric ratio of the platinum component to the tungsten component is greater than 2:7 and less than 7:2.

3,856,877 METHOD FOR ISOMERIZATION OF LOWER POLYMERS OF BUTADIENE

Yutaka Otsuki; Hirotsuke Imai, both of Yokohama; Atsushi Kaiya, Kawasaki, and Hideo Horii, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 414,624

Claims priority, application Japan, Nov. 15, 1972, 47-11444

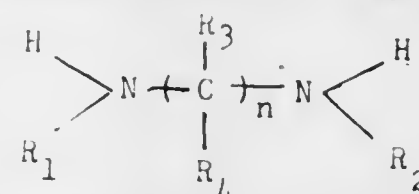
Int. Cl. C07c 5/24

U.S. Cl. 260—677 R

13 Claims

1. A method for the isomerization of a lower polymer of butadiene or lower copolymer of butadiene and at least one member selected from the group consisting of a conjugated diolefin and a vinyl-substituted aromatic compound, which is characterized in that the non-conjugated double bonds in said polymers and copolymers are isomerized to conjugated double bonds by treating said polymers and copolymers at a temperature of 0° to 200°C in the presence of a catalyst comprising:

a dispersion of an alkali metal selected from the group consisting of lithium, sodium and potassium, and a diamine compound represented by the general formula:



wherein n is an integer of 2 or 3, each of R₁, R₂, R₃ and R₄ is a hydrogen atom or an organic residual group having 1 to 20 carbon atoms, and R₁ and R₂ can be bonded together to form a cyclic structure.

3,856,878

PROCESS FOR THE ALKYLATION OF AROMATIC HYDROCARBONS

Giuseppe Messina, Alghero; Loreno Lorenzoni, Porto Torres, and Natale Bertolini, Milan, all of Italy, assignors to Societa Italiana Resine S.I.R.S.p.A., Milan, Italy

Filed Nov. 15, 1973, Ser. No. 416,138

Claims priority, application Italy, Nov. 30, 1972, 32270/72

Int. Cl. C07c 3/56

U.S. Cl. 260—671 C

3 Claims

1. A process for the alkylation of aromatic hydrocarbons by reaction of an olefin with an aromatic hydrocarbon in the presence of a complex catalyst comprising a metal halide and aromatic hydrocarbons, in which the activity of the complex catalyst is maintained by addition of fresh metal halide, characterized in that the activity of the catalyst is measured by determination of the ratio of the meta dialkylated products to the sum of ortho and para dialkylated derivatives in the complex catalyst or in the liquid alkylation product and fresh metal halide is added to the complex catalyst in such amounts as to maintain said ratio at predetermined values.

3,856,879

OXIDATIVE DEHYDROGENATION

Brent J. Bertus, and Darrell W. Walker, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

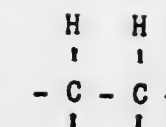
Filed Nov. 6, 1972, Ser. No. 303,766

Int. Cl. C07c 5/18

U.S. Cl. 260—680 E

10 Claims

1. A process for dehydrogenating at least one hydrocarbon containing at least one



grouping and having from 2 to 12 carbon atoms per molecule, said hydrocarbon being selected from the group consisting of cycloparaffins, acyclic paraffins, cyclic monoolefins, and acyclic monoolefins, which comprises contacting reactants consisting essentially of said at least one hydrocarbon and oxygen, under oxidative dehydrogenation conditions in the presence of a catalyst consisting of nickel sulfate and from 0 to 30 mol percent excess nickel in the form of free nickel or nickel oxide, to dehydrogenate said at least one hydrocarbon.

3,856,880

OXIDATIVE DEHYDROGENATION CATALYZED WITH PROMOTED ZINC FERRITE

Marvin Z. Woskow, Houston, and Harold F. Christmann, Seabrook, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 15,904, March 2, 1970, Pat. No. 3,751,512. This application July 23, 1973, Ser. No. 381,813

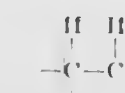
The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl. C07c 5/18

U.S. Cl. 260—680 E

6 Claims

1. In a process for the oxidative dehydrogenation of hydrocarbon compounds having 4 to 12 carbon atoms, at least one



grouping and having a boiling point below about 350°C, in the presence of oxygen and a metal ferrite catalyst consisting essentially of zinc ferrite the improvement consisting essentially of conducting said oxidative dehydrogenation process in the presence of said catalyst which contains a promoting amount in the range of 0.005 to 2 weight percent of a metal selected from the group consisting of rhenium, platinum, palladium, rhodium, ruthenium, osmium, and iridium, provided that ruthenium and rhodium are present in an amount of less than 0.1 percent.

3,856,881

METAL VANADATE CATALYZED OXIDATIVE DEHYDROGENATION PROCESS

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

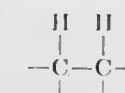
Continuation-in-part of Ser. No. 59,751, July 30, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 396,033

Int. Cl. C07c 5/18

U.S. Cl. 260—680 E

19 Claims

1. A process for the dehydrogenation of hydrocarbon compounds having 4 to 5 non-quaternary contiguous carbon atoms and having at least one



grouping or ethyl benzene to produce corresponding dehydrogenated compounds having the same number of carbon atoms as said compounds, said process comprising contacting in vapor phase at a temperature of greater than 250°C. a mixture of said compound or compounds to be dehydrogenated and from 0.2 to 2.5 moles of oxygen per mole of said compound or compounds to be dehydrogenated with a catalyst composition comprising crystalline spinel of the general formula M₂VO₄, MV₂O₄, between MV₂O₄ and M₂VO₄, or mixtures thereof wherein M is Mn.

3,856,882

PROCESS FOR PRODUCING 2,5-DIMETHYL-2,4-HEXADIENE

Kazumi Takagi; Masahiro Murakami, and Kuniyoshi Manabe, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sept. 5, 1972, Ser. No. 286,300

Claims priority, application Japan, Sept. 6, 1971, 46-69114; Dec. 29, 1971, 46-3184

Int. Cl. C07c 11/12

U.S. Cl. 260—681

10 Claims

1. A process for producing 2,5-dimethyl-2,4-hexadiene which comprises reacting at least one member selected from the group consisting of isobutylene and tertiary butanol with isobutyl aldehyde under pressure in a liquid phase at a temperature of 130–180°C in the presence of at least one catalyst selected from the group consisting of mineral acids, sulfonic acids, heteropoly acids and chlorides, sulfates and phosphates of metals and ammonia, at a molar ratio of isobutylene, tertiary butanol or mixture thereof to isobutyl aldehyde of 1–10, cooling the reaction product, separating the oil layer which has formed and successively distilling the oil layer to obtain 2,2,5,5-tetramethyl tetrahydrofuran and 2,5-dimethyl-2,4-hexadiene as separate fractions of the distillation, and incorporating the fraction of 2,2,5,5-tetramethyl tetrahydrofuran into the mixture of isobutyl aldehyde and at least one member selected from the group consisting of isobutylene and tertiary butanol.

3,856,883

GRADED RUBBER PARTICLES HAVING HYDROXY FUNCTIONALITY AND A POLYMERIC CROSSLINKING AGENT

Ray A. Dickie, Birmingham, and Seymour Newman, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 365,379, May 29, 1973, which is a division of Ser. No. 100,465, Dec. 21, 1970, abandoned. This application Mar. 15, 1974, Ser. No. 451,626

Int. Cl. C08g 45/04, 15/00

U.S. Cl. 260—836

16 Claims

1. In a method for forming a thermoset material wherein a crosslinkable resin and a crosslinking amount of a crosslinking agent reactive therewith are intimately mixed and reacted with each other, the improvement wherein:

A. said crosslinking agent is a graded-rubber particle consisting essentially of

1. about 10 to about 90 weight percent of a core of cross-linked acrylic polymer consisting essentially of

a. a minor and crosslinking amount of a di- or trifunctional monomer containing 2 or more non-conjugated terminal ethylenic groups, said minor and crosslinking amount not exceeding about 20 mole percent of the core reactants, and

b. a remainder consisting essentially of a monofunctional monoacrylate, said remainder constituting at a minimum about 80 mole percent of the core reactants,

2. about 90 to about 10 weight percent of an outer shell having glass transition temperature above that of said core and consisting essentially of the polymerization product of a mixture of about 30 to about 98 mole percent methyl methacrylate, 0 to about 68 mole percent of unsaturated monomers selected from monofunctional monoacrylates, diacrylates, monovinyl hydrocarbons, and about 2 to about 35 mole percent of a monomer having an olefinic group reactable with said methyl methacrylate and a hydroxyfunctional group which

a. remains unreacted in said polymerization and

b. provides said shell with hydroxy surface-functionality that is reactive with said crosslinkable resin, and

B. said crosslinkable resin is selected from melamine-formaldehyde resins, copolymers of unsaturated monomers having repeating functional groups selected from carboxy functionality, epoxy functionality, and hydroxy functionality, and a polyepoxide having at least two epoxide groups per molecule.

3,856,884

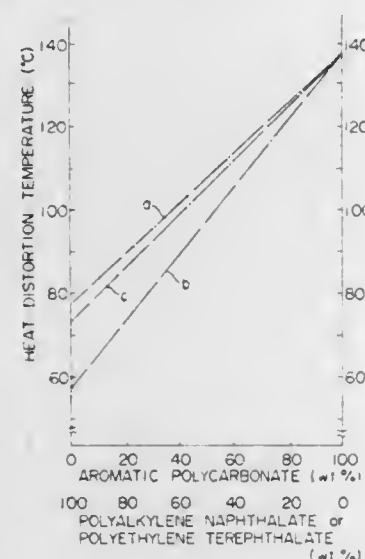
AN AROMATIC POLYCARBONATE/POLYALKYLENE NAPHTHALATE RESIN COMPOSITION HAVING A MARBLE-LIKE APPEARANCE

Kouichi Sakai; Yoshiaki Tokai, and Sadayoshi Matsunaka, all of Sagami, Japan, assignors to Teijin Limited, Osaka, Japan

Filed July 31, 1973, Ser. No. 384,263

Int. Cl. C08g 39/10

U.S. Cl. 260-860



1. A resin composition having a marble-like appearance, consisting essentially of the substantially unreacted mixture of from 5 to 90 % by weight, based on the weight of the composition, of an aromatic polycarbonate, and at least one polyalkylene naphthalate selected from the group consisting of polytetramethylene-2,6-naphthalate and polyhexamethylene-2,6-naphthalate.

3,856,885

PROCESS FOR MOLDING THERMOSETTING RESINOUS COMPOSITIONS

Akio Furuya, Yokohama, and Yukihiko Ishimaru, Ohtsu, both of Japan, assignors to Dai Nippon Toryo Co., Ltd. and Leben Utility Co., Ltd., both of Osaka-shi, Japan

Filed Oct. 26, 1972, Ser. No. 300,998

Claims priority, application Japan, Oct. 28, 1971, 46-85758; Oct. 28, 1971, 46-85757

Int. Cl. C08f 21/00

U.S. Cl. 260-862

10 Claims

1. A process for the preparation of a molded article from a thermosetting resin of the unsaturated alkyd type, which comprises heating at a temperature ranging from 80° to 160°C, a liquid composition obtained by sufficiently agitating and blending a mixture comprising (A) 5 to 70% by weight of an unsaturated alkyd resin having an average degree of condensation of at least 4 and a number average molecular weight of at least 1,000 and which is a condensation product of an unsaturated polycarboxylic acid with a polyhydric alcohol, (B) 20 to 70% by weight of a vinyl monomer selected from the group consisting of styrene, chlorostyrene, tert-butyl styrene, vinyl toluene, divinyl benzene, vinyl acetate and mono esters of acrylic acid or methacrylic acid, (C) 10 to 65% by weight of a vinyl chloride resin which is a homopolymer of vinyl chloride or a copolymer of vinyl chloride with a minor amount of a copolymerizable vinyl monomer and (D) 0.2 to 3% by weight of a polymerization initiator, to such an extent that the composition is not completely cured, cooling the composition

to obtain a partially-cured non-tacky solid composition of a moldable form, and heating the partially-cured composition at a temperature ranging from 120° to 180°C to complete the curing.

3,856,886

BLENDS OF POLYCARBONATE GRAFTS ON VINYL POLYMERS WITH POLYCARBONATES AND/OR VINYL POLYMERS

Dieter Margotte, Krefeld; Hugo Vernaleken, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 30, 1972, Ser. No. 239,717

Claims priority, application Germany, Apr. 24, 1970, 2019992; Apr. 24, 1970, 2019994; Apr. 24, 1970, 2019993

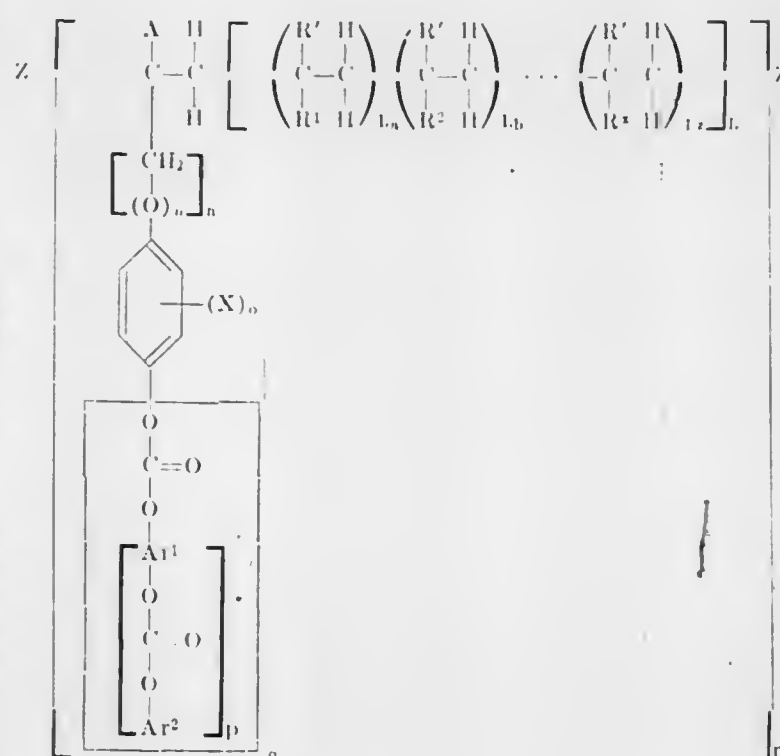
Int. Cl. C08g 39/10

U.S. Cl. 260-873

19 Claims

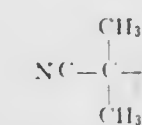
1. Blends comprising:

i. 5-95% by weight of a thermoplastic graft copolymer of a polymer backbone having from 0.1-1.5% by weight of aromatic hydroxyl groups, said polymer backbone being the reaction product of (a) an unsaturated monomer having aromatic hydroxyl groups and (b) an unsaturated monomer copolymerizable with (a), and ii. 95-50% by weight of an aromatic polycarbonate grafted onto the polymer backbone by way of the said aromatic hydroxy groups; said graft copolymer having a number average molecular weight of between 10,000 and 200,000 and corresponding to the formula:



in which R¹, and R², ..., R^f, which may be the same or different, are each a hydrogen or halogen atom or an alkyl radical having up to 6 carbon atoms or an aryl radical, or a monohydric alcohol ester radical, or an amide, nitrile, carboxylic acid ester or alkyl ether radical;

R¹ is a hydrogen atom or a methyl radical;
A is a hydrogen atom or a methyl radical;
X is a halogen atom or a methyl radical;
Ar¹ is a bivalent aromatic radical derived from a dihydric phenol and which may be substituted in the phenyl radical by chlorine, bromine or a methyl group;
Ar² is phenyl, halophenyl or alkylphenyl, or is the radical Ar¹ with one hydroxy group;
L is a number from 1 to 200;
L_a, L_b, ..., L_z are identical or different integers; the product (L_a + L_b + ... + L_z) · L is a number from 9 to 200;
m is zero or 1;
n is zero or 1;
o is zero, 1 or 2;
p is an integer from 5 to 100;
q is 1 or 2; and
r is an integer from 1 to 10; and
Z is



H-, C₆H₅COO- or C₆H₅-; and

B. 95-5% by weight of a thermoplastic-polymer of vinyl monomers selected from the group consisting of: ethylene, propylene, butadiene, vinyl acetate, vinyl benzoate, vinyl isobutylether, acrylamide, methacrylamide, N-methoxy-methyl-methacrylamide, acrylonitrile, methacrylonitrile, acrylic acid esters, methacrylic acid esters, styrene, vinyl toluene, 2,4-dimethyl-styrene, chlorostyrene and α-methyl-styrene.

3,856,887

FLAME RETARDANT POLYMER COMPOSITION

John B. Luce, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 215,155, Jan. 3, 1972, Pat. No. 3,796,772.

This application Oct. 15, 1973, Ser. No. 406,601

Int. Cl. C08d 7/10; C08f 45/56

U.S. Cl. 260-880 R

2 Claims

1. A flame retardant polymer composition comprising in admixture a styrene polymer selected from the group consisting of a styrene homopolymer and a copolymer of styrene of at least 50 weight percent styrene, 5-30 weight percent of a halogen containing flame retardant additive and 0.01 to about 20.0 weight percent of nickel titanate; said halogen being selected from the group consisting of bromine and chlorine.

3,856,888

FLAME RETARDANT COMPOSITIONS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

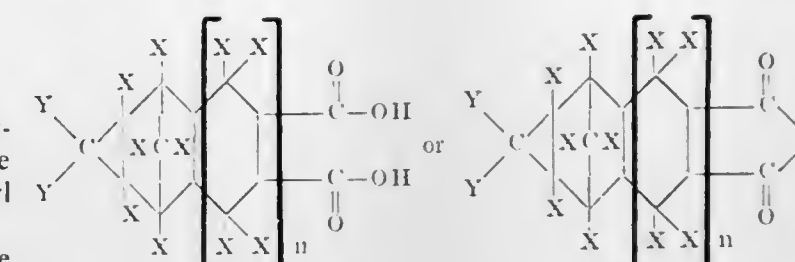
Continuation-in-part of Ser. No. 302,988, Nov. 1, 1972., This application Apr. 26, 1974, Ser. No. 464,709

Int. Cl. C08d 7/10; C08f 45/58; C08g 51/58

U.S. Cl. 260-881

8 Claims

1. A flame retardant composition of matter comprising a polymeric material and a polyhalo-substituted polyhydroxycyclohexanedicarboxylic acid or anhydride thereof having the formula:



in which Y is chlorine or bromine, X is hydrogen or halogen, at least two X's being halogen, and n is 0 or 1.

3,856,889

BLENDS CONTAINING POLYETHYLENE AND AN UNSATURATED POLYCARBOXYLIC ACID MODIFIED POLYOLEFIN

Richard L. McConnell, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,205

Int. Cl. C08f 29/12

U.S. Cl. 260-897 B

7 Claims

1. A blend containing polyethylene, useful as an adhesive and coating composition, comprising a blend of (1) polyethylene having a melt viscosity of from 100 to 100,000 cp. at 190°C. and a density of from about 0.90 to about 0.94 and (2) about 0.5 to 25 percent by weight of modified polyolefin prepared from monoolefins having at least 3 carbon atoms, prepared by reacting a thermally degraded polyolefin with an unsaturated polycarboxylic acid, said modified polyolefin having a saponification number of 6-60, and a melt viscosity of 100 to 150,000 cp. at 190°C.

3,856,890

FLAME RETARDANT COMPOSITIONS

William G. Biddell, San Mateo, Calif., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 23, 1973, Ser. No. 363,216

Int. Cl. C08f 45/58

U.S. Cl. 260-897 B

5 Claims

1. A cross-linkable, flame retardant polymeric composition comprising the following ingredients:

	Weight, %
(a) polymer blend of approximately equal amounts of low density polyethylene plus ethylene-vinyl acetate copolymer	50 to 75
(b) antimony trioxide	20 to 35
(c) 1,2,3,4,6,7,8,9,10,11,11-dodecachloro-1,4,4a,5a,6,9,9a,9b-octahydro-1,4,6,9-dimethanodibenzofuran;	1.0 to 30.

and wherein the weight ratio of the dimethanodibenzofuran compound to the antimony oxide is less than about 1 to 1.

3,856,891

INHERENTLY FLEXIBLE, HIGH STRENGTH SHEETING FROM BLENDS OF A SUSPENSION CHLORINATED OLEFIN POLYMER AND POST-CHLORINATED POLYVINYL CHLORIDE

Charles W. West, Cookeville, Tenn.; Glen H. Graham, Ashland, Ohio, and James S. Kennedy, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 235,006, March 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 51,680, July 1, 1970, abandoned. This application Oct. 9, 1973, Ser. No. 404,844

Int. Cl. C08f 29/24

U.S. Cl. 260-897 C

6 Claims

1. Inherently flexible, high strength sheeting material consisting essentially of a blend of

1. greater than 70 percent by weight of a chlorinated olefin polymer prepared by the suspension chlorination of an olefin polymer having an essentially linear structure, said olefin polymer being selected from the group consisting of polyethylene and interpolymers composed of at least about 90 mole percent ethylene with any remainder being at least one ethylenically unsaturated comonomer; such chlorinated olefin polymer containing from 25 to 50 weight percent of chemically combined chlorine wherein said chlorinated olefin polymer is characterized by regions in which a minor portion of the chlorine atoms along the polymer chain are distributed in a nonstatistical blocktype fashion while the remainder of the polymer is chlorinated in a random manner characteristic of that obtained by solution chlorination techniques, wherein said chlorinated olefin polymer has a relative crystallinity of less than about 10 percent and forms individual sheeting materials having a tensile strength of at least about 1,000 pounds per square inch, an elongation of between about 200 and 1,000 percent and a 100 percent modulus of between about 150 and 400 pounds per square inch; and
2. between about 5 and less than 30 percent by weight of a post-chlorinated polyvinyl chloride containing from about 60 to 72 percent chlorine; said thermoplastic sheeting material having a thickness of about 0.005 to 0.25 of an inch and having an ultimate tensile strength of at least about 1,200 pounds per square inch at 23°C. as determined by ASTM Test Number D-412 and a stiffness of less than about 2,500 pounds per square inch at 25°C. as determined by ASTM Test Number D-797.

3,856,892

O-(1-METHYL-2-ALKYLMERCAPTO-VINYL)-
PHOSPHORIC ACID ESTER AMIDES

Wilhelm Sirrenberg, Sprockhovel, and Ingeborg Hammann, Koeln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 31, 1973, Ser. No. 328,217

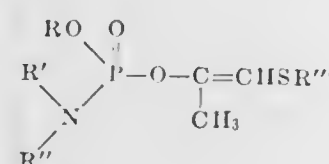
Claims priority, application Germany, Feb. 2, 1972, 2204770

Int. Cl. A01n 9/36; C07f 9/24

U.S. Cl. 260-948

7 Claims

1. An O-(1-methyl-2-alkylmercapto-vinyl)-phosphoric acid ester amide of the formula



in which

R is alkyl of up to 12 carbon atoms optionally substituted by phenyl or cycloalkyl or cyclo-alkenyl of 5 or 6 carbon atoms, halo-lower alkyl, alkoxyalkyl of up to 6 carbon atoms in each alkyl radical, alkenyl of up to 6 carbon atoms, phenyl, cycloalkyl or cycloalkenyl of 5 or 6 carbon atoms,

R'' is alkyl of up to 6 carbon atoms, and R' and R'' each independently is hydrogen, lower alkyl optionally substituted by phenyl or cycloalkyl of 5 or 6 carbon atoms, lower alkenyl, alkoxyalkyl of up to 6 carbon atoms in each alkyl radical, phenyl, or cycloalkyl of 5 or 6 carbon atoms.

3,856,893

HYBRID IONIC PHOSPHORUS COMPOUNDS

Helmut Diery, Kerkheim, Taunus, and Ulrich Cuntze, Hofheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Dec. 13, 1972, Ser. No. 314,753

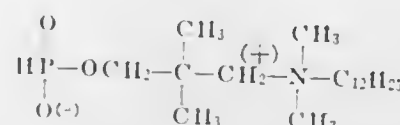
Claims priority, application Switzerland, Dec. 13, 1971, 18148/71

Int. Cl. C07f 9/08

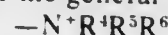
U.S. Cl. 260-924

4 Claims

1. Compounds of the general formula



in which R¹ represents hydrogen or the methyl group, R² and R³ which may be identical or different, each represent hydrogen or alkyl groups of 1 to 4 carbon atoms, and X represents an ammonium group of the general formula



in which R⁴ represents hydrogen, an alkyl or alkenyl group of 1 to 12 carbon atoms or a group of the formula $-(\text{C}_n\text{H}_{2n}\text{O})_z\text{H}$; R⁵ represents hydrogen or an alkyl or alkenyl radical of 1 to 20 carbon atoms or a group of the formula $-(\text{C}_n\text{H}_{2n}\text{O})_z\text{H}$ and R⁶ represents an alkyl or alkenyl radical of 1 to 20 carbon atoms or a group of the formula $-(\text{C}_n\text{H}_{2n}\text{O})_z\text{H}$ in which n stands for 2 or 3, and the sum of all values of z represents 1 to 50, and wherein at least one of the radicals R⁴, R⁵ and R⁶ represents an alkyl or alkenyl containing at least 8 carbon atoms.

3,856,894

VINYL CHLORIDE POLYMER COMPOSITION
CONTAINING A CROSS-LINKED METHYL
METHACRYLATE COPOLYMER

Fumio Ide, Mamoru Asao, both of Otake; Akira Hasegawa, Hiroshima, and Isao Sasaki, Iwakuni, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 211,663, Dec. 23, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,448

Claims priority, application Japan, Dec. 26, 1970, 45-129610

Int. Cl. C08f 29/24

U.S. Cl. 260-899

4 Claims

1. A vinyl chloride polymer composition comprising:
- 70 to 99.9 percent by weight of a vinyl chloride polymer containing 70 to 100 percent by weight of vinyl chloride and 0 to 30 percent by weight of at least one other copolymerizable monomer; and
 - 0.1 to 30 percent by weight of a copolymer consisting of methyl methacrylate, 5 to 39 percent by weight of at least one other copolymerizable monofunctional vinyl monomer and 0.005 to 2.0 percent by weight of at least one copolymerizable polyfunctional monomer.

3,856,895

PHOSPHONAMIDES

Fred S. Eiseman, Jr., 516 Summit Ave., Maplewood; Leslie M. Schenck, 1558 Grouse Ln., Mountinside, both of N.J., and John P. G. Beiswanger, 720 Coleman St., Easton, Pa.

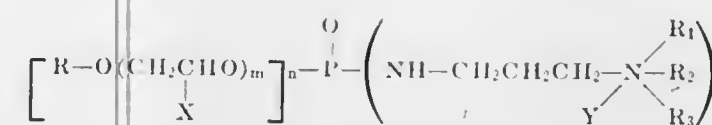
Filed Oct. 4, 1968, Ser. No. 765,001

Int. Cl. C07f 9/24

U.S. Cl. 260-945

7 Claims

1. A compound of the formula:



wherein R represents an alkyl, phenyl or alkylsubstituted phenyl radical having 7 to about 25 carbon atoms, X represents hydrogen, methyl or ethyl, R₁ and R₂ are members of the group consisting of alkyl and hydroxy alkyl radicals of from 1-3 carbon atoms, R₃ is a hydroxy alkyl radical of from 1-4 carbon atoms, Y is an anion, m is an integer of from 1-10, n is an integer of from 1-2, and p is an integer of from 1-2, and the sum of n + p = 3.

3,856,896

ALKYL PROPARGYL PHOSPHONATES

John D. Hagarty, Sturtevant, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

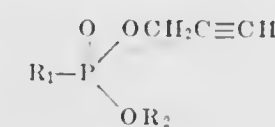
Filed Feb. 9, 1973, Ser. No. 331,165

Int. Cl. A01n 9/36; C07f 9/40

U.S. Cl. 260-956

9 Claims

1. A compound of the formula:



wherein R₁ is a straight or branched chain alkyl group having 2-12 carbon atoms and R₂ is propargyl, butyl carbetyl or a lower alkyl group having 1-5 carbon atoms.

3,856,897

PHOSPHORAMIDOTHIOATES

Hsing Y. Fan, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

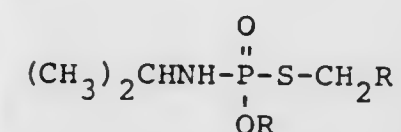
Filed May 15, 1972, Ser. No. 253,031

Int. Cl. A01n 9/36; C07f 9/24

U.S. Cl. 260-959

4 Claims

1. Isopropylphosphoramidothioates of the formula



where R is alkyl of one to five carbon atoms; and R' is naphthyl, or phenyl substituted by one or more substituents selected from halogen and alkyl of one to five carbon atoms or by halomethyl.

3,856,898

SEPARATION OF AMORPHOUS SULFUR AND
O,O-DI(C1-C8 ALKYL)
PHOSPHORO-CHLORIDOTHIOATE

William Russell Diveley, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 237,533, March 23, 1972,

abandoned. This application Jan. 21, 1974, Ser. No. 435,353

Int. Cl. C07f 9/14

U.S. Cl. 260-990

13 Claims

1. In a process for making O,O-(C₁-C₈ dialkyl) phosphorochloridothioate by the chlorination at -5° - 0° C. of O,O-(C₁-C₈ dialkyl) hydrogen phosphorodithioate or a salt thereof, followed by treatment with H₂S at 0°-25° C., whereby a reaction mixture consisting essentially of O,O-(C₁-C₈ alkyl) phosphorochloridothioate and thermally unstable amorphous sulfur at a concentration up to about one-third of the weight of

said phosphorochloridothioate is obtained, the improvement which comprises: establishing said mixture in a first temperature range in which substantially all of said amorphous sulfur can go into solution without substantial decomposition of the phosphorochloridothioate, and maintaining it in that range until substantially all of said sulfur has gone into solution; establishing the resulting solution in a lower temperature range in which the solubility of the sulfur in said solution is substantially decrease, and maintaining said solution in said range until precipitation of sulfur is substantially complete, whereby crystalline sulfur is obtained; and separating by settlement substantially all of the precipitated sulfur from the mother liquor.

3,856,899

METHODS FOR MAKING BEADS

Charles W. Schott, 175 Carmella Dr., Pittsburgh, Pa. 15131

Continuation-in-part of Ser. No. 35,962, May 11, 1970, Pat.

No. 3,694,528. This application Sept. 22, 1972, Ser. No.

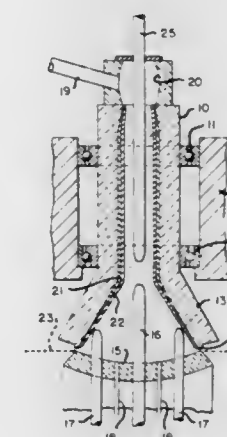
291,262 The portion of the term of this patent subsequent to

Sept. 26, 1989, has been disclaimed.

Int. Cl. B01j 2/12

U.S. Cl. 264-8

6 Claims



1. A method of making pellets comprising the steps of:
- continuously rotating a member having a generally hollow frusto conical end and carrying material to be pelletized about a vertical axis;
 - heating said material to be pelletized in a controlled atmosphere in said frusto conical end to maintain a molten generally frusto conical layer of material within said member sufficiently fluid to flow across the frusto conical end;
 - discharging the molten material as spheres from a rotating circular edge of said member at the large end of said frusto conical layer; and
 - cooling the discharged material to solidify the same.

3,856,900

PRODUCTION OF SPHERICAL POLYVINYL CHLORIDE
PARTICLES

Edward R. Erb, Milford Township, Bucks City, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 319,035

Int. Cl. B29b 1/00; B29c 23/00

U.S. Cl. 264-9

28 Claims

1. A method for the production of essentially spherical, plasticized polyvinyl chloride particles having an advantageously narrow particle size distribution comprising:

- gradually adding a liquid polyvinyl chloride plastisol composition to an agitated liquid medium substantially immiscible therewith and maintained at a temperature of from about 100° F to about 140° F, said plastisol being thereby dispersed as relatively small droplets of essentially spherical form having a particle size not exceeding about 0.03 inch;

b. heating said dispersion in liquid medium to a temperature within the range of from about 150° F to about 350° F with continued agitation to achieve gelation of said droplets at a desired size not exceeding about 0.03 inch, and c. separating the resulting plasticized polyvinyl chloride particles from said liquid medium, whereby the plasticized particles are obtained as small essentially spherical particles of relatively narrow particle size distribution with advantageous, essentially dust free and free flowing characteristics.

3,856,901

VAPOR INDUCTION SYSTEM

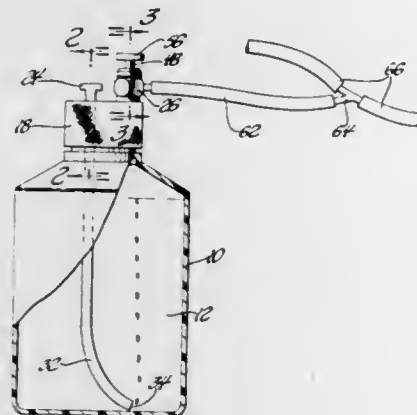
James W. Neumann, and Douglas L. Yielding, both of Port Huron, Mich., assignors to TVI marketing Inc., Lexington, Mich., by said Newman

Filed Oct. 25, 1972, Ser. No. 300,579

Int. Cl. F02m 25/02

U.S. Cl. 261-18 A

2 Claims



1. A catalytic fluid vapor mist induction system for use with internal combustion engines, and comprising; a fluid container having a closure member provided thereon and including a fresh air inlet and a vapor mist outlet provided within said closure member, a liquid level of vapor mist fluid provided within said container and an air inlet tube connected to the fresh air inlet and extending below said liquid level, and means connected to said vapor mist outlet and for connection to the induction system of an internal combustion engine for inducing air flow through the fresh air inlet and from the end of said tube beneath said liquid level for bubbling to the surface thereof, and a metering means within said vapor mist outlet for pre-determination of the extend of said bubbling and the vapor mist created thereby for induction to said engine, said fluid container being of a shatter-proof translucent plastic material for enabling relative care-free handling in the refilling thereof and visual inspection of the extent of bubbling occurring therewithin, a filler neck formed on said container centrally disposed and of lesser circumferential size than the fluid retaining portion of said container, said container including a relatively domed cover wall between the fluid retaining portion thereof and said filler neck for vapor mist collection and direction towards said filler neck and a return run-off of condensation towards said fluid retaining portion, a sealing bead provided peripherally about said filler neck for sealing engagement with said closure member, and said closure member including a metal closure cap of appropriate size threaded for engagement with said filler neck and for providing sealing engagement between said sealing bead and said cap; said fresh air inlet including an opening provided through the cover wall of said closure cap and a one piece member press fitted and sealed within said cover wall opening and having an air passage provided therethrough, said one piece member being of sufficient length to extend through said cover wall opening on opposite sides thereof for receiving said air inlet tube in self sealing engagement on the inner disposed end thereof and a filter screen member in self-sealing engagement on the outer disposed end thereof, and a filter screen member of such size and material as permits press fitted self-sealing engagement

over the outer disposed end of said one piece member and includes a relatively enlarged inlet end having a filter screen therein for the filter screen protection of said air passage and the terminal end protection of the otherwise exposed end of said one piece member through which said air passage extends, said vapor mist outlet including an opening through the cover wall of said closure cap next adjacent and apart from said fresh air inlet opening and threaded to receive a screw machine part in engagement therewithin, a screw machine part threaded for sealing and locking engagement within said outlet opening and having a flow metering orifice provided therewithin, and a barbed hose connection part having a flow passage therethrough for press fitted engagement into said screw machine part and providing outlet communication with the flow metering orifice therewithin and for vapor mist induction by said engine.

3,856,902

MOLDING PROCESS FOR FOAMED ARTICLES USING AN EXPANDABLE MOLD WITH INNER AND OUTER RESTRAINTS

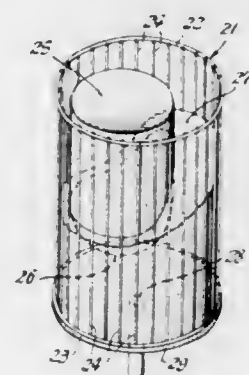
Harold B. Kirkpatrick, Easton, Conn., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,758

Int. Cl. C29d 27/00

U.S. Cl. 264-45.2

3 Claims



1. Process for molding foam-forming synthetic resinous compositions into predetermined shapes comprising the steps of providing an expandable mold formed of an elastomer capable of being expanded to a size greater than its original surface dimensions, positioning said mold so that its outward expansion is restrained by at least two exteriorly placed restraining elements which are not integral with said mold and which are capable of limiting the expansion of portions of the mold while other portions are free to undergo expansion, and by at least one interiorly placed inner restraint which is not integral with said mold and which is capable of limiting the expansion in an inner direction, inserting into said mold a predetermined amount of foam-forming synthetic resinous composition and expanding until restrained by said inner and outer restraints and allowing other portions of said mold to undergo unrestrained expansion and allowing said foamed composition to cure and solidify within said expandable mold.

3,856,903

METHOD OF MOLDING EXPANDABLE POLYSTYRENE

Paul R. Schaeffer, Paoli, Pa., assignor to The Alan I. W. Frank Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1973, Ser. No. 328,172

Int. Cl. B29d 27/00

U.S. Cl. 264-51

3 Claims

1. A method of molding expandable polystyrene comprising admixing expandable polystyrene beads with mineral oil in the proportions of 1 to 6 grams of mineral oil to 10 pounds of expandable polystyrene beads, expanding the polystyrene beads admixed with mineral oil, introducing the expanded polystyrene into a mold and applying heat to fuse the expanded polystyrene into an article having the shape of the

mold, the mineral oil having the effect of reducing the time of application of heat required for adequate fusion of the expanded polystyrene into the article having the shape of the mold.

3,856,904

PROCESS FOR MAKING EXPANDED SYNTHETIC RESINOUS BEADS

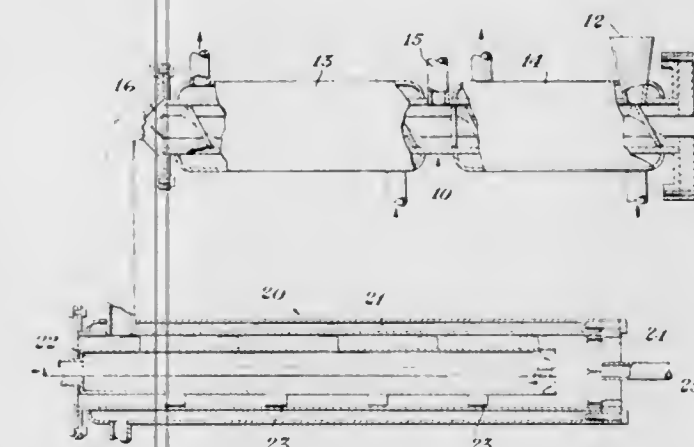
Ralph E. Ayres, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 162,252, July 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,747, April 24, 1970, abandoned. This application Oct. 19, 1973, Ser. No. 408,241

Int. Cl. B29d 27/00; B29f 3/04

U.S. Cl. 264-51

8 Claims



1. In a method for the preparation of foamed beads of synthetic resinous thermoplastic material from a foamable, extrudable synthetic thermoplastic resinous composition wherein the resinous composition is intermittently extruded in a heat plastified form, the composition comprising a synthetic thermoplastic resinous composition which is extrudable and foamable, the resinous composition being intermittently extruded under continuously applied pressure through a plurality of constricted passageways by a valving means into a plurality of open outlets in a zone of lower pressure to provide a plurality of closely adjacent sequentially extruded globules, the improvement which comprises permitting in said zone of lower pressure the sequentially extruded globules of the composition in closely adjacent relationship to expand and cause the globules to thereby adhere together to form strands, the strands consisting essentially of a plurality of foamed particles adhered together, and subsequently applying mechanical agitation to said strands sufficient to separate the strands into individual particles.

3,856,905

ORIENTED PLASTIC TUBE

David H. Dawson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 22, 1972, Ser. No. 291,288

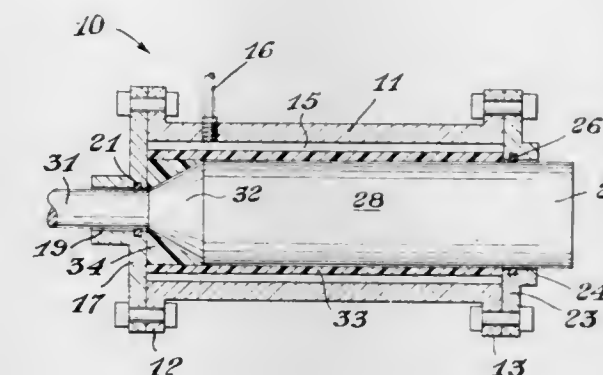
Int. Cl. B29c 17/07; B29d 23/03

U.S. Cl. 264-89

7 Claims

1. A method for the preparation of a conduit, the conduit having a plastic liner tube and an outer housing having a liner receiving cavity, the plastic liner tube being of a synthetic thermoplastic composition, the method comprising plastically deforming the tube at a temperature above its glass temperature and a temperature below its softening point to radially compress the tube to a diameter smaller than its original diameter without increasing the length of the tube, reducing the temperature of the tube below the temperature at which it was deformed, positioning the tube within an outer housing in a tube re-

ceiving cavity, and



heating the tube to a temperature above the temperature of plastic deformation and below its softening point to cause radial expansion of the tube within the cavity.

3,856,906

METHOD FOR FORMING THREADS ON PLASTIC NIPPLES

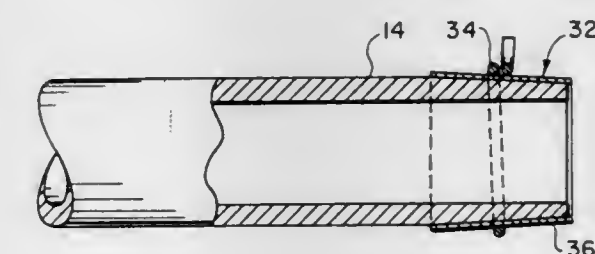
James S. Edgar, 1306 S. Columbus Airport No. 3, Columbus, Ohio 43207

Filed Mar. 12, 1973, Ser. No. 340,462

Int. Cl. B29c 11/12; B29d 1/00

U.S. Cl. 264-138

4 Claims



1. A process of forming threads on the end of a cylindrical plastic tube comprising:

- removing material from the inside surface of the tube at the end to be threaded, said removal comprising cutting the material away to form a frusto conical interior surface diverging toward the open end of the tube at an angle not substantially greater than 3½°;
- heating the end of the tube to be threaded and deforming it radially inward to reform the interior surface of the tube to roughly a cylindrical surface while reforming the exterior surface at the end of the tube to a frusto conical surface converging toward the end of the tube;
- gripping the heated and deformed end of the tube with segmented dies, said dies having a thread form pattern on their inner surface in contact with said heated tube end;
- applying radial pressure from within the tube against its interior surface to plastically deform said tube radially against the dies with force sufficient to cause plastic flow of the heated end into the thread form pattern of said dies and
- cooling the tube by application of cooling fluid to quickly freeze the thread form pattern on the end of the tube and prevent damage to the thread due to the soft nature of the hot plastic.

3,856,907

PROCESS FOR MANUFACTURING TOOTHED BELTS
Marion Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

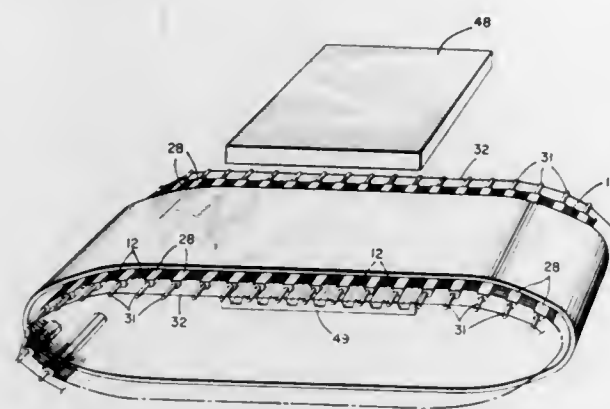
Filed Oct. 4, 1972, Ser. No. 294,982

Claims priority, application Italy, Oct. 6, 1971, 29542/71

Int. Cl. B29h 9/02

U.S. Cl. 264-254

2 Claims



1. A process for manufacturing toothed belts of elastomeric material, comprising applying transversally on a band of rubberized fabric a plurality of listels spaced apart at regular intervals from one another, causing said rubberized fabric to contact a part of the outer surface of said listels; closing the fabric provided with the listels in the form of a ring on a support; applying a winding of cords on the ring of fabric, provided with listels, while it is supported; forming a layer of elastomeric material on the winding of cords, originating in this way transversally rigid annular sleeve; removing the transversally rigid sleeve from the support; positioning a given portion of said annular sleeve in a mold cavity; removing the listels from said given portion of the transversally rigid sleeve; molding the elastomeric material of the sleeve portion into the mold cavity to fill said cavity including the space, from which the listels have been removed while simultaneously curing the sleeve portion, and repeating the removal of the listels and molding while curing until the whole sleeve has been treated.

3,856,908

PROCESS FOR MOLDING FROM A FLEXIBLE MOLD
Jack R. Harper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 816,779, April 16, 1969, Pat. No.

3,615,071. This application Oct. 12, 1970, Ser. No. 80,189

Int. Cl. B29c 1/04

U.S. Cl. 264-313

10 Claims

1. In a method of forming a shaped article consisting essentially of placing a curable, catalyzed, polymeric material selected from the group consisting of polyester, polyurethane and epoxy resin in a flexible mold, curing said polymeric material and thereafter removing the shaped article from the mold, the improvement consisting essentially of applying a thin continuous film of a methyl ethyl ketone soluble copolymer of vinylidene chloride and acrylonitrile on the shape forming surface of said flexible mold before placing the curable, catalyzed, polymeric material in the flexible mold.

3,856,909

NOVEL QUINOLINES IN THE TREATMENT OF PAIN AND INFLAMMATION

Andre Allais, Les Lilas; Jean Meier, Coeuilly-Champigny, and Jean Cerede, Dugny, all of France, assignors to Ranssel Uclaf, Paris, France

Division of Ser. No. 241,405, April 5, 1971, Pat. No.

3,808,216. This application Jan. 28, 1974, Ser. No. 437,151

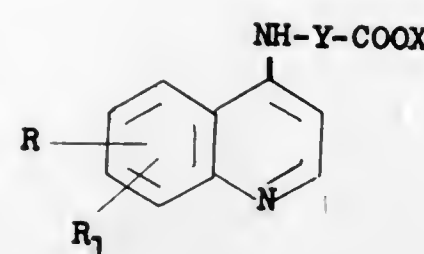
Claims priority, application France, Apr. 8, 1971, 71.12460

Int. Cl. A61k 27/00

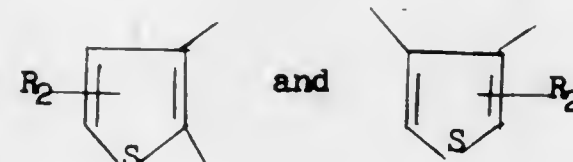
U.S. Cl. 424-258

19 Claims

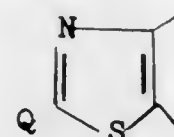
1. An analgesic and anti-inflammatory composition comprising an effective amount of a compound selected from the group consisting of 4-amino-quinolines of the formula



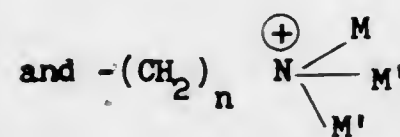
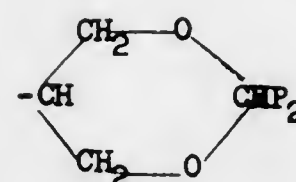
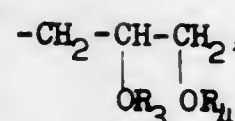
wherein R is selected from the group consisting of hydrogen, halogen, $-\text{CF}_3$, lower alkyl, lower alkoxy, lower alkylsulfonyloxy, lower alkylthio, nitro, lower alkylamino, lower alkanoylamino and cyano. R_1 is selected from the group consisting of hydrogen, chlorine and methyl, Y is selected from the group consisting of 2,3 and 3,4-disubstituted thiophenes of the formula



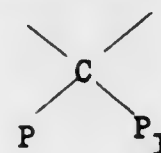
and 4, 5 disubstituted thiazoles of the formula



wherein R_2 and Q are selected from the group consisting of hydrogen and lower alkyl and X is selected from the group consisting of hydrogen, lower alkyl, phenyl, diloweralkylamino lower alkylene.



Z^- , R_3 and R_4 being hydrogen and taken together form



P and P_1 are lower alkyl, P_2 is selected from the group consisting of lower alkyl, M and M' are lower alkyl, Z is halogen and n is an integer from 1 to 6 and their non-toxic, pharmaceutically acceptable acid addition salts and a pharmaceutical carrier.

3,856,910

NOVEL THIENOBENZAZEPINES AS ANTI-DEPRESSANTS

Lucien Nedelec, Le Raincy; Jacques Guillaume, Aulnay-sous-Bois, and Andre Allais, Les Lilas, all of France, assignors to Roussel-Uclaf, Paris, France

Division of Ser. No. 230,124, Feb. 28, 1972, Pat. No.

3,787,445. This application Oct. 24, 1973, Ser. No. 409,144

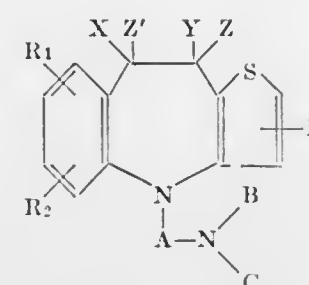
Claims priority, application France, Mar. 1, 1971, 71.06917

Int. Cl. A61k 27/00

U.S. Cl. 424-275

11 Claims

1. An antidepressant composition comprising an effective amount of a compound selected from the group consisting of 4-(α -alkylaminoalkyl)-[4H]-thieno-[3,2-b] [f]-benzazepine of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen, halogen, $-\text{CF}_3$, lower alkoxy, lower alkylthio, lower alkyl, sulfonamido and diloweralkylamino, R is selected from the group consisting of hydrogen and lower alkyl, A is alkylene of two to five carbon atoms optionally substituted by lower alkyl, B is selected from the group consisting of hydrogen and lower alkyl, C is lower alkyl, Y is selected from the group consisting of hydrogen, hydroxy, lower alkoxy and lower alkanoyloxy, X is hydrogen or taken together with Y forms a carbon-carbon double bond, z' is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy or taken with Y forms a member of the group consisting of $=\text{O}$, lower alkylendioxy, lower alkylenedithio and thioloweralkyleneoxy and a non-toxic, pharmaceutically acceptable acid addition salt thereof a pharmaceutical carrier therefor.

3,856,911

CHOLAGOGIC COMPOSITION CONTAINING PENTANEDIONE DERIVATIVES

Hajime Yokotani, Osaka; Masuo Miyamoto, Kyoto, and Tadakazu Murata, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 56,971, July 21, 1970, Pat. No. 3,708,540.

This application Sept. 28, 1972, Ser. No. 293,169

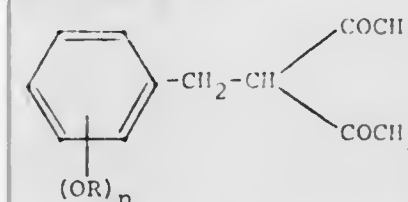
Claims priority, application Japan, July 21, 1969, 44-57562

Int. Cl. A61k 27/00

U.S. Cl. 424-331

3 Claims

1. A method of administering to a human in need of a cholagogic agent an effective cholagogic amount of a composition consisting essentially of, as the active ingredient, a compound of the formula:



wherein R is a hydrogen atom or a lower alkyl group and n is an integer of 1 to 3, and a pharmaceutical carrier therefor.

3,856,912

RECOVERY OF PLATINUM FROM DEACTIVATED CATALYSTS

Kenneth Donald Vesely, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 3, 1973, Ser. No. 357,042

Int. Cl. C01g 55/00

U.S. Cl. 423-22

2 Claims

1. A method for the recovery of platinum from a deactivated catalyst composite comprising platinum on an alumina support, which comprises the steps of digesting said composite in sulfuric acid to dissolve the alumina, separating the resultant aluminum sulfate solution from the undissolved platinum-containing residue, commingling said solution with a liquid trialkyl phosphate having from one to five carbon atoms in each of the alkyl groups, maintaining the resultant mixture at quiescent conditions to separate the same into upper and lower liquid layers with a platinum-containing residue at the interface, withdrawing the last-mentioned residue and com-

binning the same with said undissolved platinum-containing residue from the digesting step, digesting the combined residues with aqua regia to dissolve the platinum and form chloroplatinic acid, and recovering said chloroplatinic acid.

3,856,913

COPPER EXTRACTION BY RAPID BACTERIOLOGICAL PROCESS

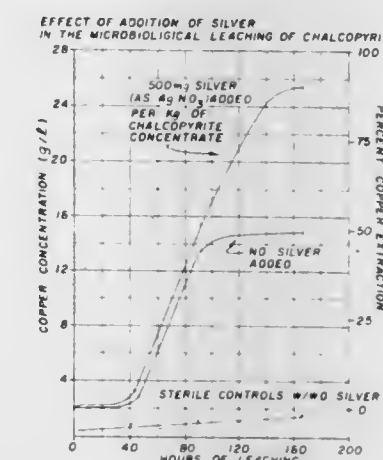
Roderick O. McElroy, Vancouver, British Columbia, and Douglas W. Duncan, W. Vancouver, British Columbia, both of Canada, assignors to British Columbia Research Council, Vancouver, British Columbia, Canada

Filed Sept. 21, 1972, Ser. No. 290,950

Int. Cl. B01d 11/00; B01f 1/00; C01g 5/00, 7/00

U.S. Cl. 423-27

13 Claims



1. In a process for rapid bacteriological extraction of copper by leaching from particulate materials in pulp form of a density of from about 2 to about 60% such as ores and concentrates containing chalcocyanide in an aqueous acidic leaching medium containing sulfide oxidizing bacteria and a nutrient for said bacteria and under agitation and aeration with air enriched with carbon dioxide, the step which comprises adding silver to said leaching pulp, said silver being in an amount of at least about 200 mg/Kg of solid material.

3,856,914

METHOD OF MAKING A POROUS POLYMERIC MATERIAL

Moriichi Maeda, Tokyo; Akio Onuki, Mitaka, and Kazuya Kusano, Tokyo, all of Japan, assignors to Kinyo-Sha Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 150,958, June 8, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,977

Claims priority, application Great Britain, June 8, 1971, 19452/71; Germany, June 15, 1971, 2129706; France, June 15, 1971, 71.21643

Int. Cl. B29d 27/00

U.S. Cl. 264-41

8 Claims

1. A method of making a porous polymeric material comprising a plurality of interconnected cells, which method comprises:

- mixing together 100 parts of a liquid prepolymer which can be converted from liquid to solid form by cross-linking during step (b), at least 40 parts of an inert organic liquid which is insoluble in the prepolymer and does not boil under the conditions of step (b) and 1.5 to 15 parts of an emulsifier the emulsifying action of which is progressively decreased when heated in the presence of the cross-linking agent for the prepolymer used in step (b) to form a stable emulsion of dispersed liquid prepolymer in the organic liquid;
- heating the emulsion to at least 90°C in the presence of a cross-linking agent for the prepolymer to coagulate the prepolymer dispersion into larger particles and to solidify these particles and bond them together to form a porous

polymeric material with a plurality of interconnected cells filled with the organic liquid; and
c. extracting the organic liquid from the cells.

3,856,915

SOLVENT RECYCLE PROCESS FOR RECOVERY OF RHENIUM FROM MOLYBDATE SOLUTIONS

L. Rita Pagnozzi; Tai K. Kim; John M. Laferty, and Martin B. MacInnis, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 19, 1972, Ser. No. 255,233

Int. Cl. C01g 47/00

U.S. Cl. 423-49

5 Claims

1. In a process for the recovery of rhenium from aqueous molybdate solutions wherein an organic extractant solution is used to selectively extract rhenium from said molybdate solution and is thereafter stripped with a rhenium stripping agent to remove rhenium from the organic, the improvement comprising:

- establishing an initial rhenium extraction efficiency of an organic extraction solution comprising a quaternary amine as the active extractant, a primary alcohol as a solubilizer and an aliphatic solvent,
- measuring the rhenium extraction efficiency of said organic extraction solution after contact with said molybdate solution and subsequent contact with said rhenium stripping agent,
- adding sufficient organic active extractant to said organic extraction solution to attain substantially the initial rhenium extraction efficiency, and
- recycling said organic after said addition to contact said molybdate solutions.

3,856,916

PROCESS FOR PREPARING CHROMIUM SULPHATE FROM RESIDUAL SOLUTIONS CONTAINING HEXAVALENT CHROMIUM COMPOUNDS

Robert Lefrançois; Jacques Denoyers, both of Paris, and Michel Gabriel, Casablanca, all of France, assignors to Societe Anonyme Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 12, 1973, Ser. No. 350,503

Int. Cl. C01g 37/08

U.S. Cl. 423-54

6 Claims

1. In a process for preparing a chromium sulphate from residual solutions containing hexavalent chromium compounds comprising contacting a residual solution containing hexavalent chromium compounds at a pH in the range of 0 to 6 with an anionic exchange resin whereby hexavalent chromium is fixed on said anionic exchange resin, eluting said anionic exchange resin containing fixed hexavalent chromium by contacting with an aqueous elution solution containing a reducing agent, and recovering an aqueous solution containing a chromium sulphate, the improvement consisting of utilizing an aqueous solution of sulphur dioxide in the presence of sulphuric acid as said aqueous elution solution.

5. A process for preparing a chromium sulphate from residual solutions containing hexavalent chromium compounds comprising contacting an aqueous acidic residual solution containing hexavalent chromium compounds with a water-insoluble organic solvent capable of dissolving hexavalent chromium compounds and resisting oxidation in a strongly acid medium, separating said organic solvent containing hexavalent chromium compounds dissolved therein from the aqueous acidic residual solution depleted in hexavalent chromium compounds, extracting said organic solvent containing hexavalent chromium compounds by contacting with an aqueous extraction solution of sulphur dioxide in the presence of sulphuric acid, separating the exhausted organic solvent for recycling, and recovering an aqueous solution containing a chromium sulphate.

3,856,917

PROCESS FOR TREATING RESIDUAL SOLUTIONS CONTAINING HEXAVALENT CHROMIUM COMPOUNDS

Nicole Texier, Paris; Jean-Pierre Cueur, Colombes, and Michel Gabriel, Casablanca, all of France, assignors to Societe Anonyme Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 12, 1973, Ser. No.

Claims priority, application France, Apr. 14, 1972, 72.13318

Int. Cl. C01g 37/14

U.S. Cl. 423-54

9 Claims

1. In a process for treatment of a residual solution containing a hexavalent chromium compound to render said solution non-polluting, comprising the steps of subjecting said solution to a liquid-liquid extraction with a water-insoluble organic solvent to dissolve substantially all of the said hexavalent chromium compound to form an organic solution thereof, and reextracting said dissolved hexavalent chromium compound from said organic solution with an aqueous solution; the improvement comprising using, for said reextraction of said dissolved hexavalent chromium compound from said organic solution, an aqueous sodium chromate solution, to produce a concentrated sodium bichromate solution.

3,856,918

PROCESS FOR THE BENEFICIATION OF TITANIFEROUS ORES UTILIZING HOT WALL CONTINUOUS PLASMA REACTOR

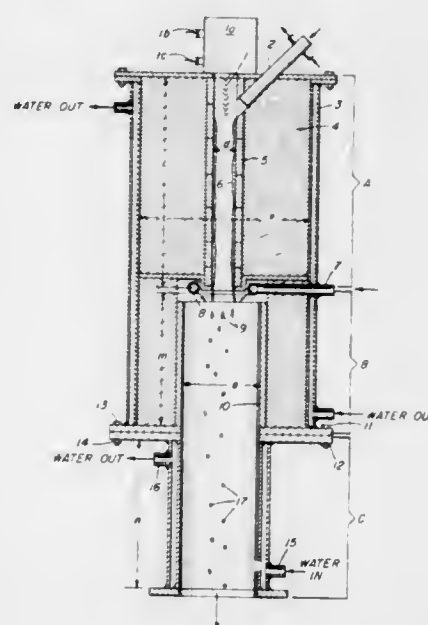
Joseph Francis Skrivan, and John Donald Chase, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 28, 1973, Ser. No. 345,606

Int. Cl. C01g 23/04

U.S. Cl. 423-69

8 Claims



1. A process for beneficiating titaniferous ores utilizing a hot wall continuous plasma jet reactor adapted for the production of at least a 90 percent TiO_2 material having in combination a vertically positioned, elongated, water-cooled casing having an upper hot wall reactor zone, a middle reactor base zone, and a lower cool wall zone, said upper hot wall reactor zone having means for introducing a plasma reducing gas, means for introducing titaniferous feed material into the latter chamber on which molten slag flows, said reactor zone having a length to diameter ratio greater than 3; said middle reactor base zone having a vertical chamber of diameter equal to at least three times that of the diameter in said upper hot wall reactor zone, and means for quenching said molten slag immediately emanating from the said upper reaction zone so as to form discrete drops or particles; and said lower cool-wall zone having a water-cooled chamber, which comprises the steps of: introducing a ground low-grade titaniferous ore comprising titanium and iron values into a reaction zone of said plasma jet

reactor where oxides of iron in the ore are partially or completely reduced by hot hydrocarbon gas in which the length to diameter ratio of the reaction zone is at least 3, contacting and melting said ore with a reducing gas effluent of a plasma torch or arc for a period from 0.01 to 5.0 minutes, flowing molten ore predominantly on the walls of said reaction zone, quenching the molten ore at the base of the said upper reaction zone so as to break-up molten ore into droplets thereby solidifying the molten ore after said quench in a reactor base zone, effecting free fall of the so broken-up and solidified material through said reactor base zone without touching the wall of said latter reactor, and recovering said solidified droplet containing at least about 90 percent TiO_2 .

3,856,919

OPHTHALMIC SOLUTION

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons Chemicals, Inc., Washington, D.C.

Division of Ser. No. 44,564, June 8, 1970, Pat. No. 3,767,788, which is a continuation-in-part of Ser. Nos. 773,947, Nov. 6, 1968, abandoned, and Ser. No. 881,336, Dec. 1, 1969, abandoned. This application Jan. 19, 1973, Ser. No. 324,983

Int. Cl. A61k 17/00

U.S. Cl. 424-78

14 Claims

1. An ophthalmic solution (comprising) consisting essentially of an aqueous solution of an ethylene oxide polymer, having a molecular weight of at least about 100,000, in an amount from about 0.05 to 2.0 weight percent sufficient to provide a viscosity of from about 0 to 30,000 cps. and up to about 500 weight percent, based on the weight of the ethylene oxide polymer, of an ophthalmic medicament.

3,856,920

RECOVERY OF GALLIUM OXIDE FROM SOLUTIONS

Harry C. Snyder, Jr., Belleville, Ill., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 22, 1972, Ser. No. 255,522

Int. Cl. C01f 7/18; C01g 15/00

U.S. Cl. 423-122

1 Claim

1. The method of precipitating gallium oxide from sodium aluminate solutions containing dissolved gallium, comprising feeding into the solution sufficient carbon dioxide to co-precipitate alumina and part of the gallium oxide from the solution and produce sodium bicarbonate in the solution, and thereafter co-precipitating further alumina and gallium oxide from the resultant solution by feeding sodium aluminate into that solution.

3,856,921

PROMOTING SCRUBBING OF ACID GASES

Adam L. Shrier, Montclair, N.J., and Peter V. Danckwerts, Cambridge, England, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 057,303, July 22, 1970, abandoned. This application Nov. 10, 1971, Ser. No. 197,370

Int. Cl. B01d 53/34

U.S. Cl. 423-228

9 Claims

1. In a process for the removal of acidic components, said acidic components being selected from the group consisting of H_2S , CO_2 , SO_2 , SO_3 , CS_2 , HCN , HCl , COS , and the oxygen and sulfur derivatives of C_1 to C_4 hydrocarbons from gases, which comprises contacting said gas with an aqueous solution comprising a basic salt, selected from the group consisting of potassium carbonate, sodium carbonate, potassium hydroxide and sodium hydroxide, the improvement comprising contacting said gas and said solution in the presence of an amine selected from the group consisting of 2-methylaminoethanol, 2-ethylaminoethanol, morpholine, and pyrrolidine.

3,856,922

PROCESS FOR PREPARING SUBSTANTIALLY NON-CAKING SODIUM CHLORIDE

Robert W. Bragdon, 10 Batchelder Rd., Marblehead, Mass. 01945

Filed Nov. 6, 1973, Ser. No. 413,345

Int. Cl. C01d 3/04

U.S. Cl. 423-268

6 Claims

3. A free-flowing non-caking sodium chloride composition consisting essentially of crystalline sodium chloride and N-2-acetamide iminodiacetic acid or N,N-bis-(2,2'-acetamido)-glycine in an amount effective for rendering the composition non-caking.

3,856,923

PROCESS FOR PREPARING

1,1'-PEROXYDICYCLOHEXYLAMINE

Terance Washford North, Teran, Laddingford, Maidstone, England

Filed Oct. 15, 1970, Ser. No. 81,146

Claims priority, application Great Britain, Oct. 17, 1969, 51094/69

Int. Cl. C07d 85/26

U.S. Cl. 260-307 F

6 Claims

1. A process for the production of 1,1'-peroxydicyclohexylamine comprising reacting together cyclohexanone, hydrogen peroxide and ammonia in the presence of ammonium at a temperature of from about 25° to 40°C nitrate.

3,856,924

PRODUCTION OF HYDROXYLAMMONIUM NITRATE

Klaus Kartte, Frankenthal; Hugo Fuchs; Kurt Jockers, both of Ludwigshafen; Kurt Kahr, Hambach, and Hermann Meier, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 27, 1971, Ser. No. 212,663

Claims priority, application Germany, Jan. 2, 1971, 2100036

Int. Cl. C01b 21/14

U.S. Cl. 423-387

5 Claims

1. A process for the production of an aqueous solution of hydroxylammonium nitrate by reduction of nitrogen monoxide with hydrogen in dilute aqueous nitric acid in the presence of a supported platinum catalyst wherein a platinum metal catalyst is used which has been partially poisoned with sulfur and prior to the beginning of said reduction has been activated with hydrogen in an aqueous suspension and wherein the nitric acid is supplied as the reaction proceeds in an amount required for the final concentration of hydroxylammonium nitrate.

3,856,925

METHOD FOR MANUFACTURE OF HYDROGEN AND CARBONYL SULFIDE FROM HYDROGEN SULFIDE AND CARBON MONOXIDE

Yoshihide Kodera, Kanagawa; Naoyuki Todo, and Kenzo Fukuda, both of Saitama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 17, 1972, Ser. No. 281,409

Claims priority, application Japan, Aug. 19, 1971, 46-62574

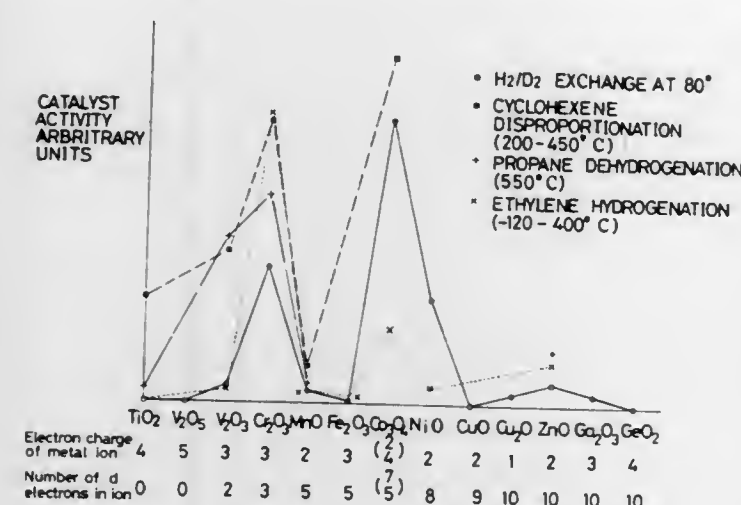
Int. Cl. C01b 31/26, 1/03

U.S. Cl. 423-416

3 Claims

1. A method for the manufacture of hydrogen and carbonyl sulfide from hydrogen sulfide and carbon monoxide, which comprises continuously supplying under normal pressure flow a mixed gas of hydrogen sulfide and carbon monoxide to a reaction vessel packed with a catalyst selected from the group consisting of vanadium sulfide, chromium sulfide, molybdenum sulfide, tungsten sulfide, iron sulfide, cobalt sulfide, nickel sulfide, rhodium sulfide, palladium sulfide and platinum

sulfide, said catalyst temperature being between room temperature and a temperature not higher than 500°C., thereby producing hydrogen and carbonyl sulfide from said hydrogen sulfide and carbon monoxide in said reaction vessel, continu-



ously discharging a mixture of hydrogen, carbonyl sulfide, non-reacted hydrogen sulfide and carbon monoxide from said reaction vessel, and separating said hydrogen and carbonyl sulfide from the discharged gas.

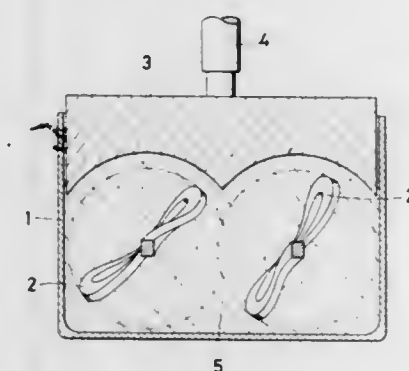
3,856,926

PROCESS FOR PREPARING CARBON PASTE

Tokuharu Yamaura, Tokyo; Masayuki Takeda, Ohmachi; Koi Tajima, Ohmachi, and Norio Koike, Ohmachi, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan. Continuation-in-part of Ser. No. 873,401, Nov. 3, 1969, abandoned. This application June 15, 1972, Ser. No. 263,120. Claims priority, application Japan, Nov. 6, 1968, 43-80627. Int. Cl. C01b 31/04

U.S. Cl. 423-448

1 Claim



1. In a method for producing a carbon body in which a carbon paste is kneaded in a kneader having a Σ or Z shaped rotating wing, the improvement in which:

- a mechanical pressure of 0.2 to 1.0 kg/cm² is applied to the carbon paste in said kneader during the kneading by pressing a plate thereagainst;
- the binder constitutes 19 to 28% of said paste;
- the paste is kneaded for a period of 5 to 60 minutes;
- the paste is kneaded at a temperature between 20°C and 60°C above the softening point of the binder;
- the kneaded paste is shaped and baked at a temperature of 800° to 1300°C; and
- the shaped baked paste is graphitized at a temperature between 2500° and 3400°C to yield said body.

3,856,927
ACCELERATION OF OXIDATION PROCESSES OVER VANADIA CATALYSTS

Peter L. Silveston, 550 Glasgow St., Kitchener, and Robert R. Hudgins, 196 Bellehaven Dr., Waterloo, Province of Ontario, both of Canada

Filed July 12, 1972, Ser. No. 270,933

Int. Cl. C01b 17/76, 17/68

U.S. Cl. 423-533

2 Claims

1. In a process for producing sulfur trioxide which comprises passing a gaseous reaction mixture comprising oxygen and sulfur dioxide over vanadium pentoxide catalyst, the improvement which comprises: carrying out the reaction while the ratio of partial pressure of sulfur dioxide to oxygen is varied in cycles from a value selected from the range of about 0.6 to about 1.1 and the positive and negative variations from said value are within the range from about 0.2 to about 0.5 and are of equal magnitude, said cycles being of about 2 to 8 hours duration;

3,856,928

OXYGEN PRODUCTION PROCESS

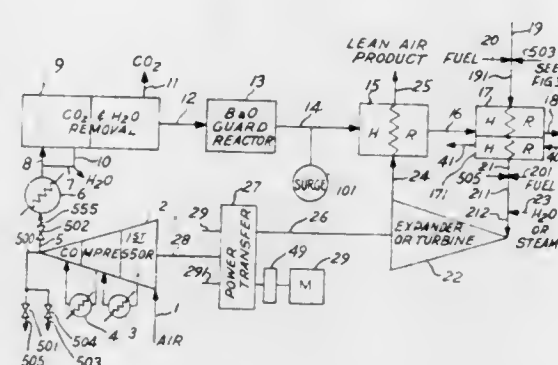
Paul B. Tarman, Elmhurst, Ill., and Lester G. Massey, Moreland Hills, Ohio, assignors to Consolidated Natural Gas Service Co. Inc., Cleveland, Ohio

Continuation-in-part of Ser. Nos. 242,153, April 7, 1972, Pat. No. 3,773,680, and Ser. No. 241,957, April 7, 1972, Pat. No. 3,773,680. This application June 7, 1972, Ser. No. 260,449. The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl. C01b 13/08, 15/04

U.S. Cl. 423-579

15 Claims



1. In a process for producing oxygen or enrichment of air by increasing its oxygen content which includes the steps of compressing and heating air to elevated pressure and temperature, passing said air into contact with a bed containing an oxygen acceptor compound to oxidize said compound in an oxidation half cycle, and reducing the pressure over said compound to effect reduction of said compound in a reduction half cycle and recovering an oxygen-containing gas therefrom, the improvement wherein:

- said bed compound is an active composition of a barium oxide with MgO and CaO,
- said bed is maintained at a temperature of from about 1,250°F to about 1,600°F,
- the pressure of air over said bed during said oxidation is maintained in a range of from about 14 to about 385 psia,
- the pressure over said bed during reduction of said bed is maintained in a range of from about 1 to about 45 psia,
- the ratio of said oxidation pressure to said reduction pressure is maintained in a range of from about 1.6 to about 15,
- said half cycles of reduction or oxidation, exclusive of pressurization or depressurization, are maintained for a time of from about 30 to about 360 seconds,
- said passing of said air through said bed during oxidation is maintained at a space velocity of from about 200 to about 5,000 SCF/cu. ft. bed-hr.,

- a lean gas is withdrawn from said bed during oxidation having an oxygen concentration of from about 5 to about 15 mole percent, and
- at least one fraction of product gas is withdrawn from said bed during reduction having an oxygen concentration of above about 22 mole percent.

3,856,929

PRODUCTION OF ANATASE TiO₂ BY THE CHLORIDE PROCESS

Albert Henry Angerman, and Carl Gordon Moore, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1972, Ser. No. 283,768

Int. Cl. C01g 23/04; C09c 1/36

U.S. Cl. 423-613

5 Claims

1. In the chloride process for producing TiO₂ pigment by the oxidation of titanium tetrachloride with an oxygen-containing gas in the vapor phase at an elevated temperature, the improvement for producing at least about 80 weight percentage of anatase of good dispersibility and undertone by effecting the oxidation in the presence of a silicon halide and a phosphorus halide, said halides being gaseous and oxidizable at said temperature, and said halides being present in amounts to provide weight percentage of 0.4 to 1 percent oxidized silicon halide, calculated as SiO₂, and 0.1 to 0.5 percent oxidized phosphorus halide, calculated as P₂O₅, in said pigment.

3,856,930

METHOD OF SCREENING TISSUE SPECIMENS FOR DIAGNOSTIC EXAMINATION

John H. Nodine, Wayne, Pa.; John Herbert Waite; Herbert Waite, both of Haddonfield, and Martin J. Fletcher, Belle Mead, all of N.J., assignors to Bio-Digital Sciences, Inc., Princeton, N.J.

Filed Aug. 16, 1972, Ser. No. 281,168

Int. Cl. A61k 27/04; G01n 23/00

U.S. Cl. 424-1

15 Claims



1. In a process for diagnosing specimens of cells for disease employing the process known per se of staining a specimen of cells with a radioactively tagged dye, rinsing excess radioactive dye material from the specimen of cells, sensing the level of radioactivity emitted by the specimen of cells,

comparing the radioactivity emitted by the specimen of cells relative to a standard of comparison obtained by having measured the level of radioactivity emitted by a similar kind of specimen of cells known to be normal, and rejecting from detailed diagnosis consideration of that specimen of cells if its level of radioactivity is less than a predetermined level of activity,

whereby specimens are screened prior to diagnostic examination to reduce the number of specimens to be examined, the improvement comprising,

prior to staining, counting-out a predetermined quantity of cells from a specimen to be diagnosed, adding a predetermined quantity of radioactive dye material to the predetermined quantity of cells in relation to the number of cells counted, and performing at least the step or steps involving radioactive measurement with the predetermined quantity of cells removed from supporting or surrounding matter in which staining was accomplished so that any supporting or surrounding matter which might have been subject to excess stain has been removed.

3,856,931

MEDICATED STICK

Peter Fuchs, and Gisela Schopflin, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Aug. 1, 1972, Ser. No. 277,122

Int. Cl. A61j 3/08; A61k 7/00, 9/06

U.S. Cl. 424-14

16 Claims

1. A solid cosmetic base composition in the shape of cosmetic stick characterized by having a lubricating and emollient effect on the skin without imparting a shine thereto and capable of being readily washed off with water, said composition consisting essentially of, in percent by weight based on the total composition,

- 10-70 percent solid wax;
- 4-35 percent fatty alcohols of 8-30 carbon atoms; and
- 15-70 percent polyol fatty acid ester mixture consisting essentially of a low-polyhydroxylated monoester mixture of glycerin and carboxylic acids of 8-18 carbon atoms wherein the molecular weight of the low-polyhydroxide is 200-600.

3,856,932

TABLET OF A CHLORINE RELEASING SOLID COMPOUND

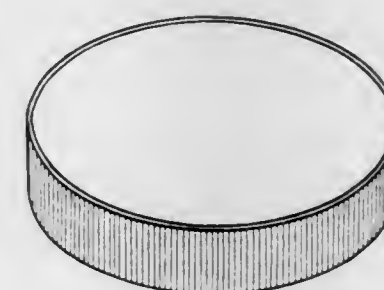
Michael Axton May, West Hanningfield, Gay Bower Farm, England

Filed Dec. 16, 1969, Ser. No. 885,494

Int. Cl. B65d 81/00; C02b 3/08; A01n 11/00

U.S. Cl. 424-16

6 Claims



1. A tablet comprised of a chlorine releasing solid chemical compound for use as an agent for sanitizing water, said tablet having substantially parallel plane faces, the surface of the edge between said substantially parallel plane faces is sealed by a continuous band of a water impervious and water insoluble waterproof material, at least one of said substantially parallel plane faces being left completely exposed for chlorine release when placed in said water so that the surface area of said tablet exposed for chlorine release in said water remains constant for substantially the entire life of said tablet.

3,856,933

PYROTECHNIC DISSEMINATING SYSTEM

Erwin M. Jankowiak, Sanford; Earl Thomas Niles, and George A. Lane, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 709,916, March 4, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,493 Int. Cl. C06d 3/00

U.S. Cl. 424-42

7 Claims

1. A pyrotechnic disseminating formulation comprising on a weight basis:

- from about 15 to about 35 per cent of an oxidizing agent selected from the group consisting of an alkali metal or ammonium nitrate, chlorate, perchlorate and mixtures thereof;
- from about 12 to about 25 per cent of a non-halogenated polyepoxide resin having a functionality greater than 1 and less than about 3, said polyepoxide resin being selected from the group of the glycidyl ether of bisphenol A, bis[p-(2,3-epoxypropoxy)-phenyl disulfide], glycerine glycidyl ether, 1,2,4-tris (2-(2,3-epoxypropylthio)ethyl) cyclohexane and 3,3'-(ethylenebis(thioethylene)bis(7-oxabicyclo[4.1.0]cycloheptane);
- from about 0.1 to about 10 per cent of an amine or a dicarboxylic acid or dicarboxylic acid anhydride as curing agent, said curing agent being selected from the group of ethylene diamine, ethylamine, isopropylamine, n-butylamine, isobutylamine, 2-ethylhexylamine, cyclohexylamine, oxalic acid, malonic acid, succinic acid, maleic acid, itaconic acid, succinic anhydride, maleic anhydride, itaconic anhydride and phthalic anhydride;
- from about 5 to about 20 per cent of a gas generating cooling agent selected from the group consisting of alkali metal acid carbonates, ammonium acid carbonates, guanidine carbonate, oxamide, oxalic dihydrazine and urea oxalate;
- from about 5 to about 20 per cent of auxiliary fuel, selected from the group consisting of thiourea, tetramethylthiuram disulfide, tetraethylthiuram disulfide, monoaminoguanidinium nitrate, diaminoguanidinium nitrate, triaminoguanidinium, ethylenebis(aminomonoguanidinium)dinitrate, 1-amino-2,5-hydrazine-triazol nitrate, 1-amino-2,5-hydrazine-triazol dinitrate, thiosemicarbazide, ethylenebis(thiosemicarbazide), thiocarbonylhydrazide, aminonitroguanidine and dithiobiurea; and
- the balance of an insecticide selected from the group of 0,0-diethyl-0,3,5,6-trichloro-2-pyridyl phosphorothioate and 0,0-dimethyl-0[2,4,5-trichlorophenyl] phosphorothioate.

3,856,934

SKIN DEPIGMENTATION

Albert Montgomery Kligman, 1940 Lombard St., Philadelphia, Pa. 19146

Continuation-in-part of Ser. No. 49,523, June 24, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,687 Int. Cl. A61k 7/12

U.S. Cl. 424-62

8 Claims

1. A skin depigmenting composition for topical application to the skin comprising a melanin inhibiting amount of hydroquinone, retinoic acid and a corticosteroid.

3,856,935

ORAL TYPHOID VACCINE AND METHOD OF PREPARING THE SAME

Rene Germanier, Muri, Switzerland, assignor to Schweizerisches Serum- und Impflaboratorium und Institut zur Erforschung der Infektionskrankheiten, Bern, Switzerland

Continuation of Ser. No. 169,076, Aug. 4, 1971. This application Feb. 12, 1973, Ser. No. 331,847

Claims priority, application, Switzerland, Apr. 29, 1971, 6319/71

Int. Cl. A61k 23/00

U.S. Cl. 424-92

8 Claims

1. A method of producing an oral typhoid vaccine free from tendencies to reversion to virulence which comprises:

- exposing a virulent strain of *Salmonella typhi* to a mutagenic agent until deletion mutants defective in the enzyme uridine diphosphogalactose-4-epimerase are formed;
- infecting the exposed strain with a smooth-specific bacteriophage until the smooth bacteria present undergo lysis while rough bacteria survive because their rough structure does not provide receptors for said bacteriophage;
- separating formed rough mutants identifiable by the sharply reduced galactokinase activity and galactose-1-phosphate uridylyl transferase activity thereof as compared to said virulent strain from other surviving rough mutants;
- culturing the separated mutants;
- harvesting the cells of the cultured mutants;
- suspending the harvested cells in a protective liquid medium consisting essentially of a dispersion of solid carrier material in a volatile liquid to form a suspension; and
- volatilizing said liquid from the solids in said suspension, 1. the amount of said harvested cells being sufficient to improve the resistance of a person to infection with *Salmonella typhi* after oral ingestion of said solids by said person.

3,856,936

COMPOSITION AND METHOD FOR CORTISOL CONTROL

James A. Vick, and Charles S. Castner, both of Reading, Pa., assignors to Schuyler Development Corporation, Reading, Pa.

Filed May 7, 1973, Ser. No. 357,670

Int. Cl. A61k 17/00

U.S. Cl. 424-98

8 Claims

1. A composition for cortisol level control in mammals by topical application consisting essentially of an effective amount of a member selected from the group consisting of whole bee venom and mellitin in a mixture of cocoa butter fatty acids containing 2 to 50% unreacted cocoa butter produced by partial hydrolysis of cocoa butter.

3,856,937

PROCESS FOR ISOLATION OF ANTIBIOTIC AV290

Jack Peter Waite, Fareham, England, assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 27, 1973, Ser. No. 355,240

Int. Cl. A61k 21/00

U.S. Cl. 424-115

5 Claims

1. A process of recovering an antibiotic AV290-alkyl sulfate complex from a fermentation whole harvest mash containing antibiotic AV290 which comprises the steps of:

- producing a fermentation liquor by filtering the whole harvest mash;
- acidifying the fermentation liquor to a pH of from 1.9 to 2.1 with a pharmacologically acceptable acid;
- adding to the acidified liquor a complexing agent selected from the group consisting of compounds of the formula: $\text{CH}_3-(\text{CH}_2)_n-\text{O}-\text{SO}_2-\text{OM}$ wherein n is an integer from 9 to 17, inclusive, and M is sodium or potassium, and mixtures thereof until a suffi-

- cient amount of the antibiotic AV290-alkyl sulfate complex is imparted to said medium;
- removing the precipitated antibiotic AV290-alkyl sulfate complex; and
- drying the antibiotic AV290-alkyl sulfate complex.

3,856,938

ANTIBIOTIC EM-49

Sawao Murao, 8-12, 2-Cho Horiage-Midori Machi, Osaka, Japan; Edward Meyers, 4 Plymouth Ln., East Brunswick, N.J. 08816, and William Lawrence Parker, 1410 Oak Tree Dr., Apt. E, North Brunswick, N.J. 08902

Continuation-in-part of Ser. No. 137,894, April 27, 1971, abandoned. This application Apr. 7, 1972, Ser. No. 242,047

Int. Cl. A61k 21/00

U.S. Cl. 424-116

10 Claims

1. A process for producing Antibiotic EM-49 which comprises cultivating *Bacillus circulans* ATCC 21656 in an aqueous nutrient medium comprising an assimilable carbohydrate and an assimilable nitrogen source under submerged aerobic conditions until substantial antibiotic activity is imparted to the medium.

3,856,939

ANTIBIOTIC BL869 BETA AND METHOD OF PREPARATION

George Alfred Ellestad, Pearl River; John Henry Edward James Martin, New City, both of N.Y., and John Norman Porter, Ramsey, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 17, 1973, Ser. No. 398,283

Int. Cl. A61k 21/00

U.S. Cl. 424-116

3 Claims

- Antibiotic BL869B hydrochloride, a compound which
- is effective in inhibiting the growth of bacteria; and in its essentially pure crystalline form
- has an optical rotation $[\alpha]_D^{25} = +11.1^\circ$ ($C=0.351$ in methanol);
- has the following elemental analysis (percent): C, 40.94; H, 5.42; N, 23.54; O, 11.63; Cl, 16.07;
- has ultraviolet absorption maxima $\lambda_{max}^{1\% 1\text{cm}}^{H_2O}$ 235 and 323 m μ (γ_1 cm.^{1%} 350 and 640);
- has a characteristic infrared absorption spectrum as shown in FIG. 1 of the drawings; and
- has a characteristic proton magnetic resonance spectrum as shown in FIG. 2 of the drawings.

3,856,940

RUMINANT FEED UTILIZATION IMPROVEMENT

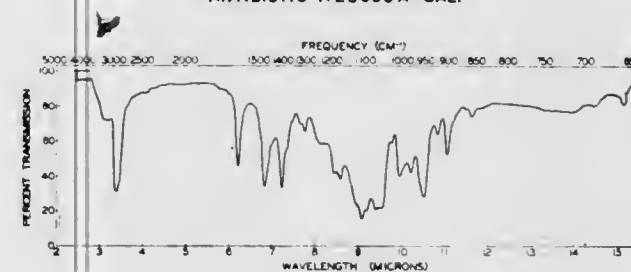
Robert L. Hamill, New Ross, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 211,231, Dec. 23, 1971. This application Sept. 27, 1972, Ser. No. 292,572

Int. Cl. A61k 21/00

U.S. Cl. 424-121

13 Claims

INFRARED ABSORPTION SPECTRUM OF ANTIBIOTIC A28695A SALT

1. A method of increasing the digestive efficiency of a ruminant animal having a developed rumen function which comprises the oral administration to said animal of a rumen-

affecting amount of an antibiotic selected from the group consisting of

- A28695A, which is a white crystalline compound melting at 97° to 99°C.; has an approximate molecular weight of 834 as determined by mass spectrometry; has the approximate elemental composition of 63.31% carbon, 8.83% hydrogen, and 28.03% oxygen; which in the form of its sodium salt has one titratable group having a pKa value of 5.51 as determined by electrometric titration in 66% aqueous ethanol; which in the form of its mixed sodium-potassium salt is a white crystalline compound melting at 161°-165°C.; which is insoluble in water, slightly soluble in methanol and is soluble in diethyl ether, ethyl acetate, acetone, chloroform and benzene; has a specific rotation $[\alpha]_D^{25} + 14.07^\circ$ ($C=1$, methanol); which as a solution in chloroform has the following distinguishable bands in its infrared absorption spectrum: 3.1-3.3, 3.4, 3.47, 6.24, 6.84, 7.00, 7.25, 7.37, 7.49, 7.68, 7.78, 8.1, 8.47, 8.61, 8.95, 9.11, 9.20, 9.42, 9.5, 9.80, 9.98, 10.24, 10.54, 10.87, 11.09, 11.5 and 11.66 microns; and which shows no significant absorption in the ultraviolet region of the spectrum;
- A28695B, which is a white crystalline compound melting at 122°-124°C.; has an approximate molecular weight of 846 as determined by mass spectrometry; has the approximate elemental composition of 60.49% carbon, 9.15% hydrogen, and 31.32% oxygen; which in the form of its sodium salt has one titratable group having a pKa value of 5.9 as determined by electrometric titration in 66% aqueous ethanol; which in the form of its mixed sodium-potassium salt is a white crystalline compound melting at 170°-172°C.; which salt is insoluble in water, slightly soluble in methanol, soluble in diethyl ether, ethyl acetate, acetone, chloroform and benzene; has a specific rotation $[\alpha]_D^{25} + 10.1^\circ$ ($C=1$, 95% aqueous ethanol); which as a solution in chloroform has the following distinguishable bands in its infrared spectrum: 3.0, 3.4, 3.47, 6.24, 6.85, 7.01, 7.26, 7.3, 7.68, 7.78, 8.1, 8.58, 8.82, 8.95, 9.11, 9.19, 9.45, 9.59, 9.82, 10.04, 10.28, 10.55, 11.10, 11.24 and 11.65 microns; and which has no significant absorption in the ultraviolet region of the spectrum; and
- the physiologically-acceptable salts thereof.

3,856,941

ASTRINGENT GEL, ITS PREPARATION AND USE

Robert A. Turner, Greenwich, Conn., assignor to Jack Sobel, Patchogue, N.Y.

Filed May 23, 1972, Ser. No. 256,039

Int. Cl. A61k 7/00, 27/00

U.S. Cl. 424-145

13 Claims

1. In a process of preparing an astringent gel, the steps which consist essentially of

- preparing an aqueous solution of a mixture of an astringent aluminum salt and at least one other astringent metal salt selected from the group consisting of zinc salts, zirconium salts, and magnesium salts, the concentration of said mixture of astringent salts in said solution exceeding 18%;
- dissolving therein a gelling agent selected from the group consisting of polyvinyl alcohol having a molecular weight between about 10,000 and 96,000 and up to 13% acetyl groups and methyl cellulose having a molecular weight between about 13,000 and 26,000 and a degree of substitution between about 1.3 and 2.6 in an amount insufficient to form a gel in said concentrated salt solution but sufficient to yield a gel when the resulting sol of the mixture of astringent metal salts and gelling agent is diluted with water to a metal salt concentration below 18%;
- adjusting the pH of the solution obtained in step (a) or step (b) to a value which does not have an irritating effect on human skin but which is below the level at which hydroxides of the astringent metals precipitate.

- d. adding to said sol an amount of water sufficient to reduce the astringent metal salt concentration in said sol to a concentration lower than 18% but not substantially below 13% and
- e. allowing the diluted sol to stand to form the astringent gel.

3,856,942

APPETITE CONTROL COMPOSITION

Paul L. Murphy, 831 Massachusetts Ave., Cambridge, Mass. 02139

Filed May 10, 1973, Ser. No. 359,056

Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424—180

28 Claims

1. An appetite control composition for oral administration to a human subject to aid him in controlling his weight, comprising, in combination, a carbohydrate in an amount to obtain the effect of carbohydrate on hunger, and a nontoxic local anesthetic and an alkaloid stimulant in amounts to control the appetite.

3,856,943

COMPOSITIONS AND PROCESS

Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 156,099, June 23, 1971, Pat. No. 3,787,390. This application Dec. 17, 1973, Ser. No.

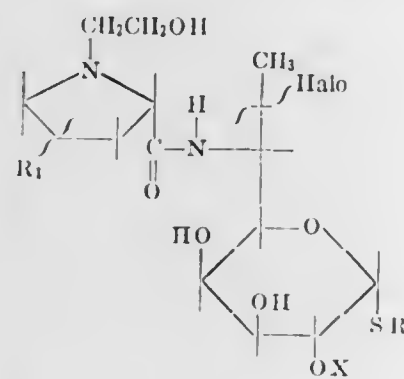
425,148

Int. Cl. A01n 9/00

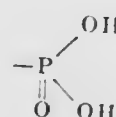
U.S. Cl. 424—180

10 Claims

1. A pharmaceutical composition comprising a compound of the formula:



or the acid addition salts thereof wherein Halo is chlorine, bromine, or iodine, X is a member selected from the group consisting of hydrogen, an acyl of an aliphatic carboxylic acid having from 2 to 18 carbon atoms, inclusive,



the zwitterion thereof or the hemi salt thereof; R is alkyl of not more than 4 carbon atoms wherein R₁ is alkyl of not more than 8 carbon atoms in association with a pharmaceutical carrier.

3,856,944

PHARMACEUTICAL COMPOSITIONS

Daisuke Satoh, Nishinomiya, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 18,337, March 10, 1970, Pat. No. 3,745,156. This application Nov. 10, 1972, Ser. No. 305,554

Claims priority, application Japan, Mar. 19, 1969, 44-20994

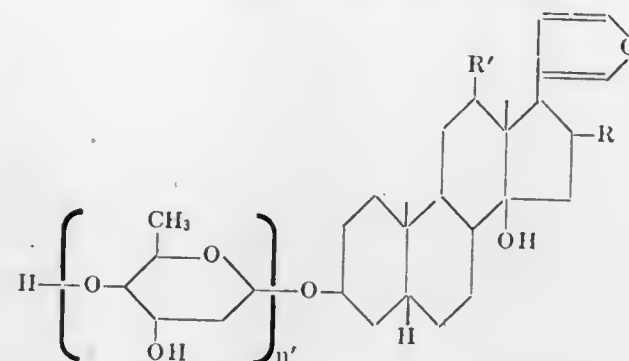
Int. Cl. A61k 27/14

U.S. Cl. 424—182

5 Claims

1. A process for the treatment of human, poultry or veterinary heart diseases which comprises the administration of a

medicament comprising a pharmaceutically effective amount of a cardiotonic compound of following formula



wherein at least one of R and R' is a hydroxy, and the remaining if any is a hydrogen, and n' is an integer of 1 or 2, or a lower alkanate thereof, in combination with a pharmaceutical carrier.

3,856,945

METHOD OF REDUCING SERUM CHOLESTEROL LEVEL WITH EXTRACT OF KONJAC MANNAN

Noboru Sugiyama, Tokyo, and Hideo Shimahara, Mihara, both of Japan, assignors to Kabushiki Kaisha Shimizu Manzo Shoten, Hiroshima-ken, Japan

Filed Sept. 9, 1971, Ser. No. 179,201

Claims priority, application Japan, Dec. 30, 1970, 45-12828

Int. Cl. A61k 27/14

U.S. Cl. 424—195

1 Claim

1. A method for reducing the serum cholesterol levels in hypercholesteremic warm-blooded animals which comprises orally administering a therapeutically effective dose of substantially pure, water-soluble konjac mannan in the range of 0.1–10 g. per kg of animal body weight per day, said konjac mannan being obtained by extracting with water the ground tuber of the konjac plant, dialyzing such extract against water and lyophilizing the thus dialyzed extract to remove water.

3,856,946

PRUNUS AFRICANA EXTRACT

Jacques Debat, Paris, France, assignor to Laboratoires du Dr. Debat, Paris, France

Continuation of Ser. No. 66,631, Aug. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 643,347, June 5,

1967, abandoned. This application Mar. 8, 1973, Ser. No. 339,205

Claims priority, application Great Britain, June 10, 1966, 25893/66

Int. Cl. A61k 27/00

U.S. Cl. 424—195

8 Claims

1. A process for preparing an extract of the bark of *Prunus africana* suitable for the treatment of prostatic adenoma, comprising contacting finely ground bark of *Prunus africana* with a solvent selected from the group consisting of methanol, an 80:20 mixture of methanol and water, chloroform, methylene chloride, benzene, cyclohexane, petroleum ether, diethyl ether, acetone, methylethylketone and mixtures thereof, said solvent being present in a proportion represented by 1 Kg of finely ground bark to at least 2 litres of solvent; separating the resulting solution of bark solubles from the finely ground bark and evaporating the solvent to yield said solubles.

3,856,947

INSECTICIDAL COMPOSITIONS AND METHODS OF KILLING INSECTS USING A MIXTURE OF CYTROLANE AND CHLORPHENAMIDINE

Menashe Hadomi, Tel-Aviv, Israel, assignor to C.T.S. Chemicals & Technical Supplies Ltd., Tel-Aviv, Israel

Filed Sept. 15, 1971, Ser. No. 180,881

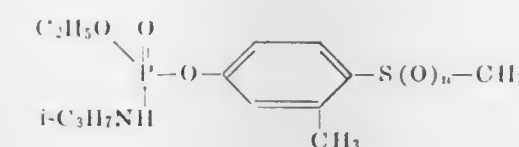
Claims priority, application Israel, Sept. 24, 1970, 35342

Int. Cl. A01n 9/02, 9/12, 9/22

U.S. Cl. 424—202

5 Claims

1. A synergistic insecticidal composition comprising N,N-dimethyl-N'-(2-methyl-4-chlorophenyl)-formamidinium and 2-(diethoxyphosphorylimino)-4-methyl-1,3-dithiolane in a ratio of 1:2 to 1:10, respectively.



in which
n is 1 or 2,
in admixture with a diluent.

3,856,950

METHOD OF COMBATING INSECTS

Alexis Herzog, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 252,784, May 12, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,613

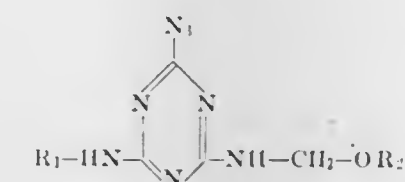
Claims priority, application Switzerland, June 1, 1971, 7926/71; Apr. 10, 1972, 5215/72

Int. Cl. A01n 9/22

U.S. Cl. 424—226

6 Claims

1. A method of combatting insects selected from the group consisting of Coleoptera and Diptera which comprises applying to said insects in their larval state a metamorphosis-inhibiting amount of an s-triazine derivative of the formula



wherein R₁ and R₂ represent lower alkyl having from one to five carbon atoms.

3,856,951

SUBSTITUTED BENZOIC ACID HYPOLIPHEMIC AGENTS

Gerald Fagan Holland, c/o Pfizer Inc., 235 E. 42nd St., New York, N.Y. 10017

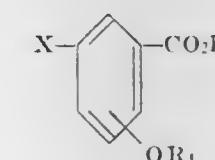
Division of Ser. No. 155,209, June 21, 1971. This application Nov. 7, 1972, Ser. No. 304,528

Int. Cl. A61k 27/00

U.S. Cl. 424—230

9 Claims

1. A method for reducing blood lipid levels which comprises administering to a hyperlipemic mammal a hypolipemic effective amount of a compound selected from those of the formula



and the pharmaceutically acceptable salts thereof wherein X is selected from the group consisting of fluorine, chlorine, bromine, methyl, methoxy and trifluoromethyl and R₁ is selected from the group consisting of methyl, benzyl and substituted benzyl wherein said substituent is selected from the group consisting of fluorine, chlorine, methyl, methoxy, trifluoromethyl and 3,4-dimethoxy.

3,856,949

N-ISOPROPYL-O-ETHYL-O-ARYLPHOSPHORIC ACID ESTER AMIDES AS ARTHROPODICIDES AND NEMATOCIDES

Gerhard Schrader, Kohlfurter Strasse 75, Wuppertal-Cronenberg, and Bernhard Homeyer, both of c/o Farbenfabriken Bayer AG, Leverkusen, both of Germany

Division of Ser. No. 47,137, June 17, 1970, Pat. No. 3,709,961

This application Oct. 13, 1972, Ser. No. 297,522

Int. Cl. A01n 9/36

U.S. Cl. 424—216

6 Claims

1. A nematocidal, acaricidal or insecticidal composition comprising a nematocidally, acaricidally or insecticidally effective amount of an N-isopropyl-O-ethyl-O-phenylphosphoric acid ester amide of the formula

3,856,952

**SYNERGISTIC ANTIMICROBIAL COMPOSITIONS
EMPLOYING CERTAIN
N-(PHENYL-CARBAMYL)AMINO-BENZENE SULFONYL
FLOURIDES**

Ludwig Konrad Huber, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

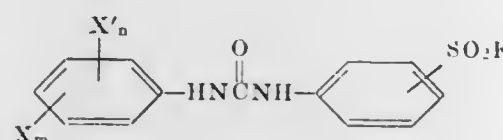
Filed Mar. 1, 1973, Ser. No. 337,047

Int. Cl. A01n 9/02

U.S. Cl. 424-233

7 Claims

1. An antibacterial and antifungal composition consisting essentially of an effective amount of a mixture of (A) an N-(phenyl-carbamyl) amino-benzene sulfonyl fluoride of the formula



where X is chlorine, bromine, trifluoromethyl, methoxy or fluorosulfonyl; X' is hydrogen, chlorine, bromine, trifluoromethyl, methoxy or fluorosulfonyl; m is a whole number from 1 to 3, and n is a whole number from 1 to 3, with (B) a compound selected from the group consisting of 3,4', 5-tribromosalicylanilide, 3,4,4'-trichlorocarbanilide, hexachlorophene, and 2,4,4'-trichloro-2'-hydroxydiphenyl ether, there being in the mixture 15 to 85% by weight of component (A) and, from 85 to 15% by weight of component (B).

3,856,953

METHOD OF TREATING FATTY LIVER

William H. Saltzman, New Rochelle, N.Y., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

Filed May 15, 1973, Ser. No. 360,572

Int. Cl. A61k 17/00

U.S. Cl. 424-238

3 Claims

1. A method for therapeutic treatment of a patient with fatty liver, which comprises:

- orally administering to a patient suffering from a fatty liver;
- a small but effective amount of a compound selected from the group consisting of, 3 α ,7 α ,12 α -trihydroxy-5 β -cholanolic acid; 3 α ,7 α -dihydroxy-12 α -acyloxy-5 β -cholanolic acid; 3 α ,7 α ,12 α -triacyloxy-5 β -cholanolic acid; 3 α -hydroxy-7 α ,12 α -diacyloxy-5 β -cholanolic acid; and the non-toxic, pharmaceutically acceptable salts thereof; wherein the acyloxy moiety is from a hydrocarbon carboxylic acid of less than 12 carbon atoms.

3,856,954

TOPICAL STEROID COMPOSITIONS

Ivan Jackson, St. John Forbes, Wirral, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 8, 1972, Ser. No. 304,690

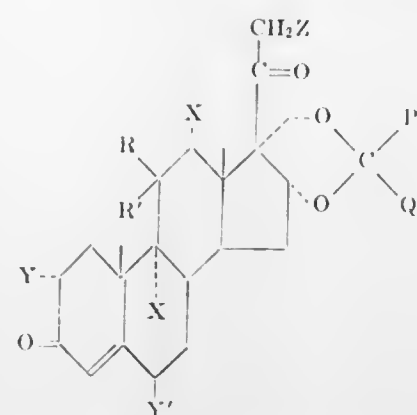
Claims priority, application Great Britain, Jan. 10, 1972, 1080/72

Int. Cl. A61k 17/00

U.S. Cl. 424-241

7 Claims

1. A gel composition comprising, by weight, about 0.01 to 1% of a topical steroid selected from the group having the formula



and the 1,2-dehydro and 6,7-dehydro derivatives thereof, wherein R is hydrogen, R' is β -hydroxy, and together R and R' is keto; X is hydrogen, halogen or lower alkyl, at least one X being hydrogen; Y and Y' each is hydrogen or methyl; Z is halogen, hydroxy or acyloxy; P is hydrogen, lower alkyl, halo-lower alkyl, carboxy-lower alkyl, monocyclic cycloalkyl, monocyclic aryl, monocyclic aryl-lower alkyl, monocyclic heterocyclic or monocyclic heterocyclic-lower alkyl; Q is lower alkyl, halo-lower alkyl, carboxy-lower alkyl, monocyclic cycloalkyl, monocyclic aryl, monocyclic aryl-lower alkyl, monocyclic heterocyclic or monocyclic heterocyclic-lower alkyl; and together with the carbon to which they are joined P and Q are cycloalkyl or monocyclic heterocyclic, about 0.5 to 2% of a carboxymethylene hydrocolloid polymer of acrylic acid cross linked with polyallyl sucrose, about 10 to 20% of propylene glycol, about 10 to 20% of isopropyl alcohol or ethyl alcohol and about 0.01 to 0.15% of alkali metal bisulfite.

3,856,955

**METHOD AND COMPOSITIONS FOR PREVENTING
RETENTION OF PLACENTA FOLLOWING INDUCED
PARTURITION IN CATTLE**

Donal C. Anderson, Whakatane, New Zealand, assignor to Ciba-Geigy Corporation, Greenburg, N.Y.

Continuation of Ser. No. 242,815, April 10, 1972, Pat. No. 3,775,539. This application July 24, 1973, Ser. No. 382,246

Int. Cl. A61k 17/00

U.S. Cl. 424-243

4 Claims

1. A method of preventing retention of placenta following induced parturition in cows which comprises parenterally administering to cows, pregnant for at least about 220 days, 10 to 60 mg. of a long-lasting parturition-inducing 21-esterified glucocorticoid with parturition taking place after a latent period of at least about seven days.

3,856,956

17-ACYLOXYSTEROIDS AND THEIR MANUFACTURE

Peter Oxley, and John Rosindale Housley, both of Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Division of Ser. No. 613,454, Feb. 2, 1967, Pat. No. 3,639,434. This application Jan. 28, 1972, Ser. No. 221,812

Int. Cl. A61k 17/00

U.S. Cl. 424-243

8 Claims

1. A therapeutic composition in a form suitable for topical administration which comprises an anti-inflammatory effective amount of a compound of the formula

3,856,958

**1-(5-PHENYL-4-OXO-2-OXAZOLIN-2-YL)-4-CINNAMOYLPIPERAZINES IN THE TREATMENT OF
DEPRESSION**

Cheuk Man Lee, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

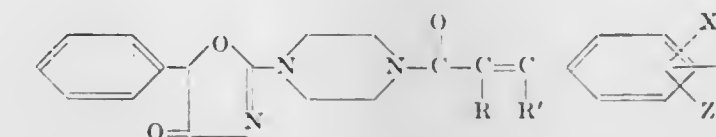
Continuation-in-part of Ser. No. 368,377, June 8, 1973, abandoned, which is a division of Ser. No. 258,144, May 31, 1972, Pat. No. 3,784,545. This application Dec. 17, 1973, Ser. No. 425,394

Int. Cl. A61k 27/00

U.S. Cl. 424-250

3 Claims

1. A method of treating a patient exhibiting symptoms of depression comprising the step of administering to said patient at least an effective dosage of the compound of the formula



wherein R is hydrogen or a loweralkyl of one to six carbon atoms; R' is hydrogen, halogen or a loweralkyl of one to six carbon atoms and X, Y and Z each are hydrogen, halogen or a loweralkoxy selected from the group consisting of methoxy, ethoxy, propoxy or butoxy.

3,856,957

**METHODS AND COMPOSITIONS FOR TREATING
BACTERIAL INFECTIONS EMPLOYING IMINES**

Florin Seng, Kurt Ley, and Karl Georg Metzger, all of Farbenfabriken Bayer AG, Leverkusen, Germany

Division of Ser. No. 130,007, March 31, 1971, This application Jan. 15, 1973, Ser. No. 323,953

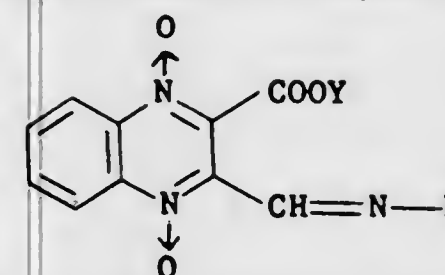
Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. A61k 27/00

U.S. Cl. 424-246

38 Claims

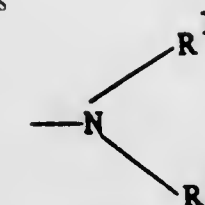
1. An antibacterial composition which comprises an antibacterially effective amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation

$R^5-NH_2^+$ and each of R and R⁵ is



in which

each of R¹ and R² when taken independently is identical to or different from the other, and is selected from the group consisting of hydrogen, alkyl of one to four carbon atoms and hydroxyalkyl of one to four carbon atoms, or

R¹ and R² together with the nitrogen atom to which they are attached form a 6-membered heterocyclic ring wherein the nitrogen atom is the only heteroatom or wherein oxygen or SO₂ is also present as a ring member in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,856,959

**INHIBITION OF LEUKEMIA UTILIZING
5-METHYLTETRAHYDROHOMOFOLATE**

John A. R. Mead, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed July 24, 1972, Ser. No. 274,749

Int. Cl. A61k 27/00

U.S. Cl. 424-251

3 Claims

1. A method of inhibiting L1210 leukemia in mice which consists of injecting in said mice an effective inhibition dosage of 5-methyltetrahydrohomofolate.

3,856,960

METHOD OF INHIBITING INFLAMMATION USING 1,4-ISUBSTITUTED-METHYLENEDIOXY-2(1H)-QUINAZOLINONES AND QUINAZOLINTHIONES

George A. Cooke, Denville, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

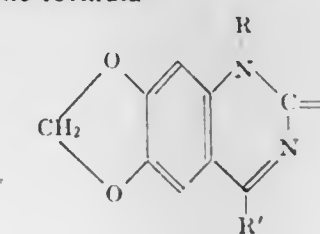
Division of Ser. No. 141,010, May 6, 1971, Pat. No. 3,748,331, which is a continuation-in-part of Ser. No. 34,902, May 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 881,325, Dec. 1, 1969, abandoned. This application Apr. 13, 1973, Ser. No. 351,093

Int. Cl. A61k 27/00

U.S. Cl. 424-251

2 Claims

1. The method of inhibiting inflammation in animals comprising administering a pharmacologically effective amount of a compound of the formula



wherein

Z is oxygen or sulfur
R is lower alkyl, cyclo(lower)alkyl, or cyclo(lower) alkyl-(lower)straight chain alkyl
R' is

3,856,972

CARBAMATE PESTICIDES

Keimei Fujimoto, 6-18-8 Uozaki-kita-machi, Kobe; Masachika Hirano, 4-9-17 Sakuragaka, Osaka; Hisami Takeda, and Shigehiro Ooba, both of 2-14-7 Mefu, Takarazuka-shi, all of Japan

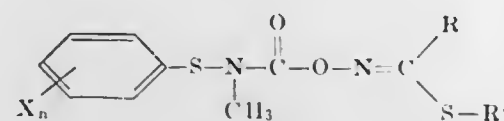
Division of Ser. No. 182,537, Sept. 21, 1971. This application Oct. 12, 1973, Ser. No. 405,788

Int. Cl. A01n 9/00

U.S. Cl. 424-298

7 Claims

1. A pesticidal composition comprising an insecticidally, acaricidally or nematocidally effective amount of a carbamate compound of the formula:



wherein X is hydrogen, lower alkyl, lower alkoxy, nitro, chloro, bromo or iodo, R and R' are each lower alkyl and n is an integer of 1 to 3, as the active ingredient, and an inert carrier.

3,856,973

CONTROL OF ACARINAE WITH CARBAMATES HAVING AN OXIME ETHER FUNCTION

Adolf Hubele, Riehen near Basel, Switzerland, assignor to Ciba-Geigy, Limited A. G., Basel, Switzerland

Division of Ser. No. 195,822, Nov. 4, 1971, Pat. No. 3,772,385, which is a continuation-in-part of Ser. No. 786,762, Dec. 24, 1968, abandoned. This application Aug. 24, 1973, Ser. No.

391,442

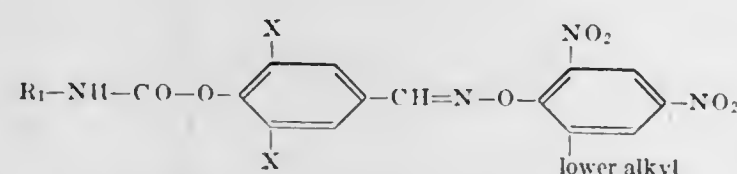
Claims priority, application Switzerland, Jan. 5, 1968, 121/68

Int. Cl. A01n 9/20

U.S. Cl. 424-300

3 Claims

1. A method for combating pests of the order acarinae comprising applying to sites infested with such pests an acaricidally effective amount of a compound of the formula



wherein R₁ is lower alkyl with one to four carbon atoms which is unsubstituted or substituted by a chlorine atom, phenyl which is unsubstituted or mono to trisubstituted by members selected from the group consisting of halogen, methyl, methoxy, trifluoromethyl and nitro, or R₁ is benzyl, phenylethyl or cyclohexyl; and X represents chlorine, bromine or iodine.

3,856,974

FUNGICIDAL USE OF 3,4-DIBROMOBUTYRONITRILE

Jacques Perronnet, and Pierre Girault, both of Paris, France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 10, 1973, Ser. No. 404,932

Claims priority, application France, Oct. 26, 1972, 72.37977

Int. Cl. A01n 9/06, 9/20

U.S. Cl. 424-304

2 Claims

1. A method of killing fungi comprising contacting fungi with a fungicidally effective amount of 3,4-dibromobutyronitrile.

3,856,975

ANTICOCCIDIAL COMPOSITION CONTAINING GUANIDINE DERIVATIVES

Bruce O. Linn, Somerville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

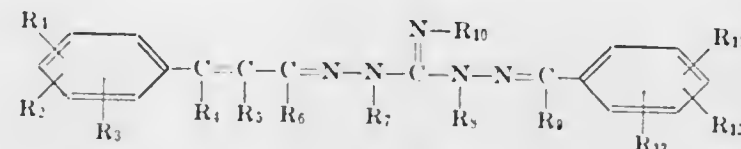
Division of Ser. No. 200,584, Nov. 19, 1971, Pat. No. 3,816,530. This application Mar. 15, 1974, Ser. No. 451,398

Int. Cl. A61k 27/00

U.S. Cl. 424-304

3 Claims

1. An anticoccidial composition comprising as an active anticoccidial agent a compound having the formula



and acid addition salts thereof, where R₁ and R₁₁ are each hydrogen, halogen, nitro, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, acetyl, carbamoyl, cyano, methylsulfinyl, methylsulfonyl, carbomethoxy or dimethylaminosulfonyl; R₂ and R₁₂ are each hydrogen, halogen or nitro; and R₃ and R₁₃ are each hydrogen or halogen, provided that at least one of said substituents is other than hydrogen; R₄ and R₅ are each hydrogen, halogen or lower alkyl; R₆ through R₉ are each hydrogen or loweralkyl; and R₁₀ is hydrogen, lower alkyl or loweralkanoyl, intimately dispersed in a carrier vehicle.

3,856,976

CYCLOPROPANE DERIVATIVE FUNGICIDES

Susan F. Hunter, Wye, near Ashford; Clive B. C. Boyce, Herne Bay; Brian P. Armitage, Sittingbourne; Pieter Ten Haken, Herne Bay, all of England, and Willem M. Wagner, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 246,226, April 21, 1972, abandoned. This application June 18, 1973, Ser. No. 371,214

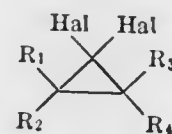
Claims priority, application Great Britain, Apr. 23, 1971, 011029/71

Int. Cl. A01n 9/24

U.S. Cl. 424-317

3 Claims

1. A method of combatting the fungus *P. oryzae* which comprises contacting said fungus with a fungus inhibiting amount of at least one compound of the formula



wherein each Hal is chlorine or bromine; R₁ is a hydrogen, alkyl of 1-6 carbon atoms or phenyl; R₂ and R₃ each is hydrogen or alkyl of 1-6 carbon atoms; and R₄ is carboxyl; or an alkali metal salt thereof.

3,856,977

FLUORENE-2-ACETIC ACIDS AND DERIVATIVES, COMPOSITION AND METHOD OF USING

Eric T. Stiller, Sarasota, Fla.; Seymour D. Levine, North Brunswick; Pacifico A. Principe, South River, and Patrick A. Diassi, Westfield, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 70,913, Sept. 9, 1970. This application Oct. 16, 1972, Ser. No. 298,102

Int. Cl. A61k 27/00

U.S. Cl. 424-317

8 Claims

1. A method for treating inflammatory conditions in a mammalian host responsive to treatment with anti-inflammatory agents which comprises orally administering to a mammalian host an effective amount of a compound having the structure



or a physiologically acceptable salt thereof, wherein R¹ is selected from the group consisting of hydrogen, hydroxy, lower alkyl having up to 8 carbon atoms and monocyclic cycloalkyl having from 3 to 6 carbon atoms and R² is selected from the group consisting of hydrogen, alkyl having from 1 to 12 carbon atoms, and monocyclic cycloalkyl having 3 to 6 carbon atoms, provided that at least one of R¹ and R² is other than hydrogen.

3,856,978

ADHERENT COATING FOR CAPTIVATING SMALL PARTICLES IN GAS-INSULATED ELECTRICAL EQUIPMENT

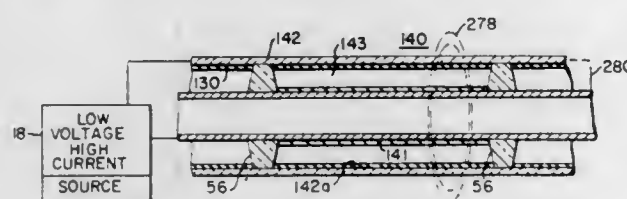
Andreas M. Sletten, and Alan H. Cookson, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,589

Int. Cl. H01b 9/04

U.S. Cl. 174-14

13 Claims



1. In gas-insulated electrical equipment, in combination,
 - a. means defining a pair of spaced metallic electrical members which are at different voltage potentials,
 - b. an insulating gas disposed in the region interposed between said spaced metallic electrical members for insulation purposes and to prevent voltage breakdown between said electrical members,
 - c. one or more members associated with said gas-insulated equipment,
 - d. means providing a hard coating on the surface of one or more of said members to enable the ready assembly of the electrical equipment,
 - e. means for rendering the surface of said hard coating subsequently sticky and tacky for causing the adherence thereto of minute contaminating particles and thereby effecting the trapping or captivity of said minute contaminating particles.

3,856,979

SEMICONDUCTING COATING FOR ELECTRICAL GLASS CONDUITS

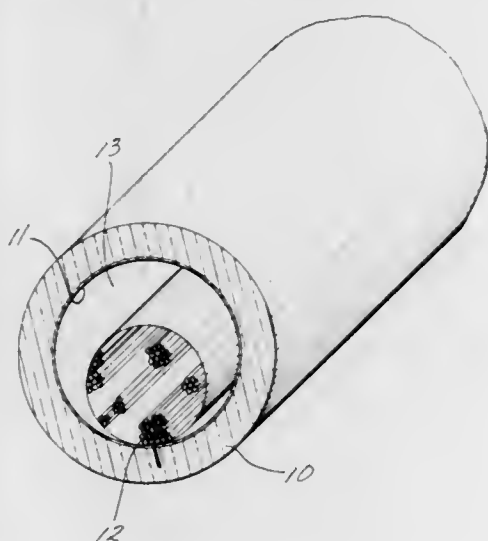
Anthony P. Schmid, Riga, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 14, 1973, Ser. No. 415,737

Int. Cl. H01b 7/34, 9/06

U.S. Cl. 174-15 C

2 Claims



1. In a tubular glass conduit loosely containing and electrically insulating an electrical power conductor capable of transmitting power in excess of 50 megawatts, wherein said conductor is supported by the internal surface of said conduit and the residual free volume in said conduit not occupied by the electrical conductor contains a heat transfer fluid, the improvement wherein said internal surface of said conduit is

provided with a thin, tenaciously adhering, abrasion resistant, semiconductive coating from the group consisting of tin oxide or titanium oxide, said coating having a surface resistivity in the range of about 300 to about 1,500 ohms per square.

3,856,980

TELECOMMUNICATION CABLES

Robert Tadeusz Puckowski; John Michael Richards Hagger, and Keith Robert McMillan Elder, all of London, England, assignors to British Insulated Callender's Cables Limited, London, England

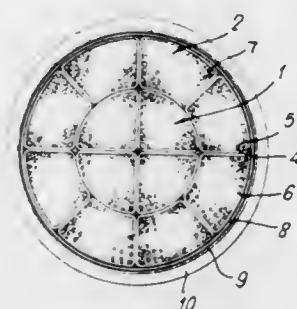
Filed Nov. 27, 1970, Ser. No. 92,992

Claims priority, application Great Britain, Nov. 28, 1969, 58358/69

Int. Cl. H01b 7/02

U.S. Cl. 174-23 C

10 Claims



1. As an article of manufacture, a telecommunication cable comprising a multiplicity of conductors each at least in part insulated with plastics material having an anti-oxidant therein and a water-proof sheath, the interstices between the insulated conductors and between the conductors and the water-proof sheath being filled with a water-impermeable medium which will not drain under the influence of gravity or such hydrostatic pressure as may arise in the event of damage to the cable sheath but which will permit relative sliding movement of the insulated conductors over one another during such bending of the cable as occurs during manufacture and installation of the cable and which comprises, as an essential ingredient, at least one synthetic polymeric material synthesised from petroleum products and, as another ingredient, at least one of a hydrocarbon wax, a hydrocarbon oil and a mixture of a hydrocarbon wax and oil, wherein sufficient of at least one anti-oxidant is incorporated in the water-impermeable medium that, while the cable is in service and anti-oxidant from the plastics insulation of the conductors is tending to permeate into the water-impermeable medium, the anti-oxidant incorporated in said water-impermeable medium will tend to permeate into the plastics insulation of the conductors thereby substantially to compensate for loss of anti-oxidant from the conductor insulation into the water-impermeable medium.

3,856,981

POWER PANEL ARRANGEMENT

Bruce K. Boundy, Holland, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1973, Ser. No. 392,131

Int. Cl. H02g 3/00

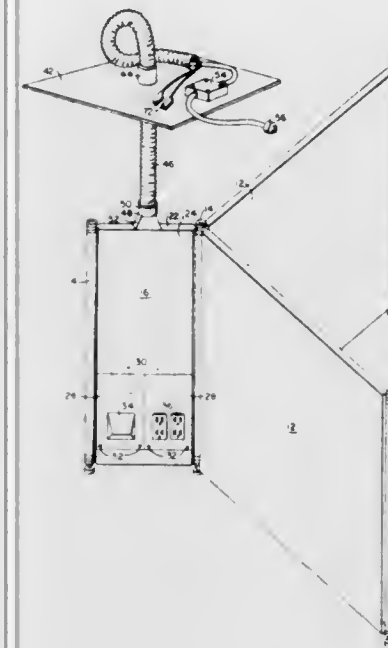
U.S. Cl. 174-48

12 Claims

1. A power panel arrangement for a free standing, space dividing, wall panel system comprising, in combination,
 - a ceiling panel adapted to be disposed in a suspended ceiling system, said ceiling panel having an aperture therethrough;
 - a hollow space dividing wall panel having a top edge adapted to be spaced a substantial distance below said ceiling panel, said top edge having an aperture therethrough communicating with the interior of said hollow space dividing wall panel;

a flexible tube interconnecting the aperture in said ceiling panel and the aperture in the top edge of said wall panel, and

and to the outpulsing unit, which capacitor is charged from the line while the latter is looped and by its charge maintains the power supply to the outpulsing unit during break impulses.



3,856,982

TELEPHONE DIALING ARRANGEMENT

Anthony Newton Lawson, London, and Camilo Manasala Tabalba, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,837

Claims priority, application Great Britain, May 11, 1972, 22131/72

Int. Cl. H04m 1/44

U.S. Cl. 179-90 K

5 Claims



1. An outpulsing-unit for a telephone subscriber's instrument of the type having a push-button unit, which includes an electronic store into which the digits corresponding to the push-buttons operated by the subscriber are entered in the same order as that in which the push-buttons are operated, pulse generation means adapted to generate pulses at the rate and of the characteristics acceptable by an exchange to which the instrument is connected, distribution means for transferring the digits in said store one after the other to a control counter, means under control of said counter to pass an impulse train from said pulse generation means for each digit transferred thereto, the number of impulses in each said train corresponding to the digital value of the digit in said counter, a connection to an impulsing means over which each said impulse train drives said means so that each said impulse train is repeated to the line to the exchange, connections from said circuit elements to the line so that the outpulsing unit is powered from the exchange, and a capacitor connected to the line

3,856,983

ELECTRICAL PENETRANT STRUCTURE

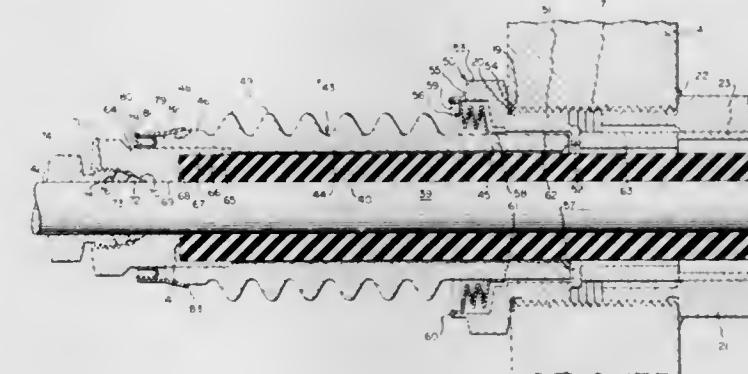
Edward Fisher, Buffalo; Wilbur S. Rautio, East Aurora; Roman Jankowiak, Cheektowaga, and Richard W. Natell, Eggersville, all of N.Y., assignors to Conax Corporation, Buffalo, N.Y.

Filed June 30, 1972, Ser. No. 267,971

Int. Cl. G21c 13/04; H01b 17/30

U.S. Cl. 174-151

13 Claims



at least one power outlet in at least one wall of said space dividing wall panel.

1. In an electrical penetrant structure, the combination comprising a wall member having an opening therethrough, a conductor extending through said opening, and means mounting said conductor on said wall member so as to allow longitudinal and lateral movement of said conductor relative to said wall member including a tubular sleeve of rigid electrical insulating material surrounding said conductor and having inner and outer end portions, said inner end portion being arranged adjacent said opening in spaced relation to said wall member to provide an annular space therebetween, first seal means sealingly connected to said wall member and sleeve and closing said space and allowing longitudinal and lateral movement of said sleeve relative to said wall member, and second seal means sealingly rigidly connecting said outer end portion to said conductor.

3,856,984

SYSTEM FOR ANTICIPATING AN IMPENDING LOSS OF INFORMATION AND FOR GENERATING A RESTRAINT SIGNAL IN RESPONSE THERETO

Eugene L. Merlino, Jr., Dearborn Heights; Roger S. Naeyaert, Jr., Grosse Point Woods, and Jonas Ellis, Birmingham, all of Mich., assignors to Burroughs Corporation, Detroit, Mich. Continuation-in-part of Ser. No. 116,799, Feb. 19, 1971, abandoned. This application Sept. 19, 1972, Ser. No. 290,317

Int. Cl. H04I 1/00

U.S. Cl. 178-23 A

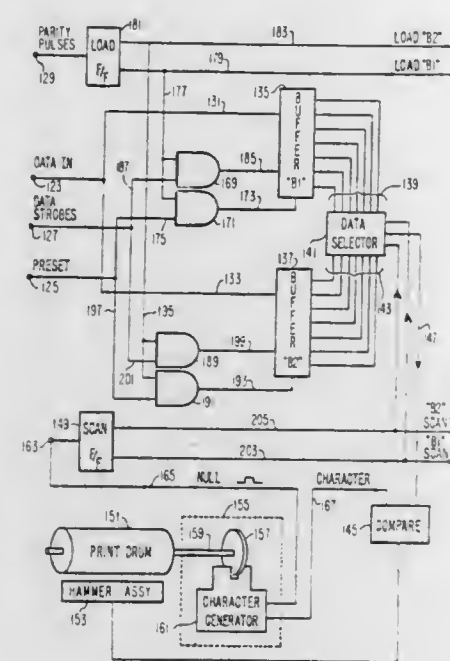
7 Claims

1. In a data transmission system including means for transmitting coded representations of characters in a stream of data, a pair of buffer storage units for alternately and individually receiving a coded representation of a character, a rotating print element having a plurality of characters and a reference location on the periphery thereof, means for alternately and individually scanning said buffer storage units and means for comparing the coded representation of a character stored therein with the characters on the periphery of said printing element for utilizing the character in printing and wherein the transmission of said representations of characters, and the utilization of character representations stored in said buffer storage units, as timed to the operation of said rotating print element, normally exist in a state of synchronization, a logic circuit for preventing a loss of information due to a variance from said normal state of synchronization comprising:
 - first means for detecting the satisfaction of a first logic condition wherein one of said pair of buffer storage units is scheduled to receive the next coded representation of

a character to arrive and is simultaneously being scanned for comparing the coded representation stored therein with the characters on the periphery of said rotating print element;

second means for detecting the satisfaction of a second logic condition, said second logic condition requiring the simultaneous occurrence of a pulse indicative of the frequency of rotation of said print element and a pulse indicative of the frequency of transmission of said coded representations;

means responsive to the simultaneous detection of the satisfaction of said first and second logic conditions for generating a triggering pulse;



first bistable means responsive to said triggering pulse for generating a restraint pulse and inhibiting the further transmission of said coded representations of characters;

second bistable means for normally enabling said restraint pulse-generating means, said means being responsive to said triggering pulse for disabling said generating means and preventing the generation of more than one restraint pulse until said normal state of synchronization is restored; and

means responsive to conditions indicative of the restoration of said normal state of synchronization for returning said second bistable means to its normally enabling state.

3,856,985

ULTRASONIC DIAGNOSTIC APPARATUS

Hiromj Yokoi, Osaka; Kenichi Ito, Yokohama, and Kenji Mizobuchi, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Tokyo Electronic Industry Co., Ltd., Tokyo, both of Japan

Filed May 17, 1973, Ser. No. 361,044

Int. Cl. H04m 7/18

U.S. Cl. 178-6

36 Claims

1. In ultrasonic diagnostic apparatus of the type including an ultrasonic wave transducer for transmitting an ultrasonic wave toward an object to be examined and for converting the ultrasonic wave reflected by said object into an electric signal; and television means responsive to the electric signal for displaying the image of said object;

the improvement comprising:

means for energizing said ultrasonic wave transducer; means for moving said transducer along said object; means for producing a position signal representing the position of said transducer;

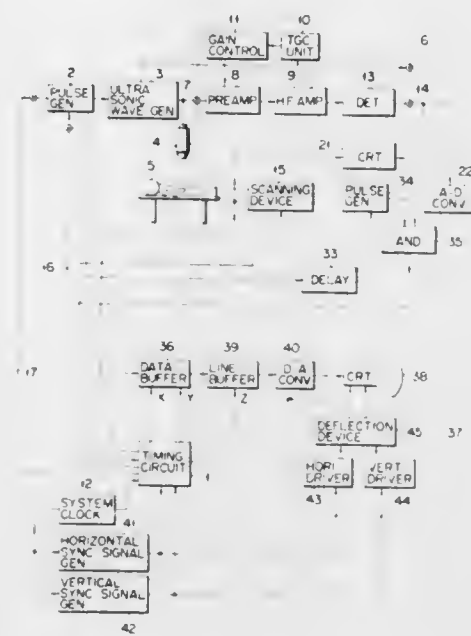
said means for energizing said ultrasonic wave transducer including a first pulse generator for generating a pulse signal in response to said position signal, means driven by

the output pulse from said first pulse generator for forming an ultrasonic oscillation signal, and means for applying said ultrasonic oscillation signal to said ultrasonic wave transducer;

a receiver for receiving the output signal from said transducer;

an analogue-digital converter for converting an analogue output from said receiver into a digital signal;

a data buffer means for storing the output from said converter;



a line buffer means for temporarily storing line data of the quantity corresponding to one horizontal scanning line of a television set, said line data being read out from said data buffer means;

means for converting the output signal from said line buffer means into a signal suitable to be displayed on said television means; and

said television means including television display means responsive to the output from said signal converting means for displaying the image of said object.

3,856,986

SCANNED HOLOGRAPHY SYSTEMS USING TEMPORAL MODULATION

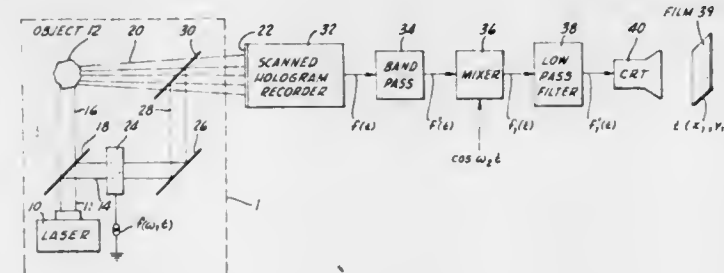
Albert Macovski, Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed Dec. 6, 1968, Ser. No. 781,842

Int. Cl. G02b 27/22; H04n 9/54

U.S. Cl. 178-6.5

26 Claims



1. In a system for producing a hologram recording from which a three-dimensional image of a three-dimensional object may be reconstructed,

A. Means for illuminating the said object with an incident beam of light whereby said light is scattered by said object forming an object beam;

B. means for forming an image-information beam which includes

1. means for forming a light reference beam having substantially the same frequency spectrum as said object beam;
2. means for cyclically temporally offsetting the phase relationship between said reference and object beams, in a continuous manner over the period of a cycle;
3. means for combining said light reference beam and said object beam thereby to provide a light interference pattern containing information relative to conjugate images of the said object.

3,856,987

HORIZONTAL STABILIZING SYSTEM FOR FILM SCANNER

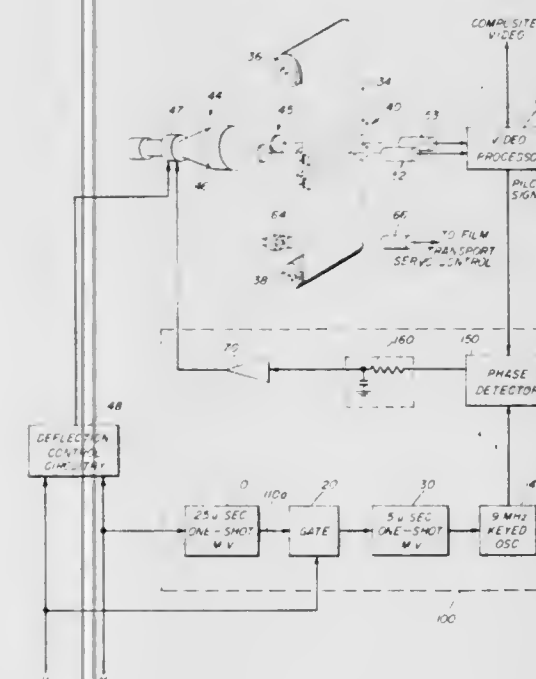
Renville H. McMann, New Canaan, and Joseph G. Petit, Stamford, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,534

Int. Cl. H04n 5/84

U.S. Cl. 178-6.7 A

4 Claims



1. In an apparatus for scanning a record medium having a succession of data frames along its length, said frames having recorded horizontally thereon a pilot pattern of constant predetermined frequency, said apparatus including a film transport for moving said film at a substantially uniform rate past a scanning position, beam scanning means including horizontal deflection means for scanning said frames with a beam in a horizontal scanline pattern at the scanning position, and means for deriving a pilot signal from the scanned pilot pattern, an improved system for continuously maintaining horizontal registration between frames being scanned and the scanning beam comprising:

means for generating, during horizontal scanlines, a reference signal of constant frequency;

means for comparing the phase of the derived pilot signal to the phase of the reference signal and for generating a correction signal in accordance with the comparison;

means for averaging said correction signal over a number of horizontal lines; and

means for applying said correction signal to said horizontal deflection means.

3,856,988

SCANNING OPTICAL IMAGING SYSTEM WITH REAL-TIME IMAGE THRESHOLDING FOR THE ELIMINATION OF BACKSCATTERED LIGHT

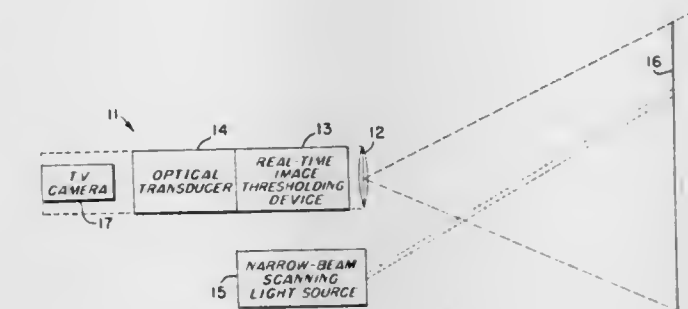
Clarence J. Funk, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,397

Int. Cl. H04m 3/12

U.S. Cl. 178-6.8

10 Claims



1. A light modulation system to recreate an image field comprising:

illuminating means for illumination of a field object zone;

optical imaging means for providing an image of said field object zone;

first photoelectric transducer means positioned with respect to said optical imaging means to receive the image produced thereby for producing electrical analog signal of the image;

threshold means connected to said transducer means having a plurality of discrete areas for independently responding to electrical analog signal components having predetermined intensity characteristics;

optical transducer means connected to said threshold means and positioned to create an optical analog of the signals to which said threshold means has responded for recreating an optical image of only a predetermined portion of the original image; and

viewing means positioned with respect to said second photoelectric transducer means for utilizing the optical image recreated by said second photoelectric transducer means.

3,856,989

SENSORS HAVING CHARGE TRANSFER RECYCLING MEANS

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,628

Claims priority, application Great Britain, Sept. 25, 1972, 44295/72

Int. Cl. H04n 5/30

U.S. Cl. 178-7.1

14 Claims

1. The combination comprising:

an array of sensing elements arranged in rows and columns, said elements producing a signal in response to electromagnetic radiation;

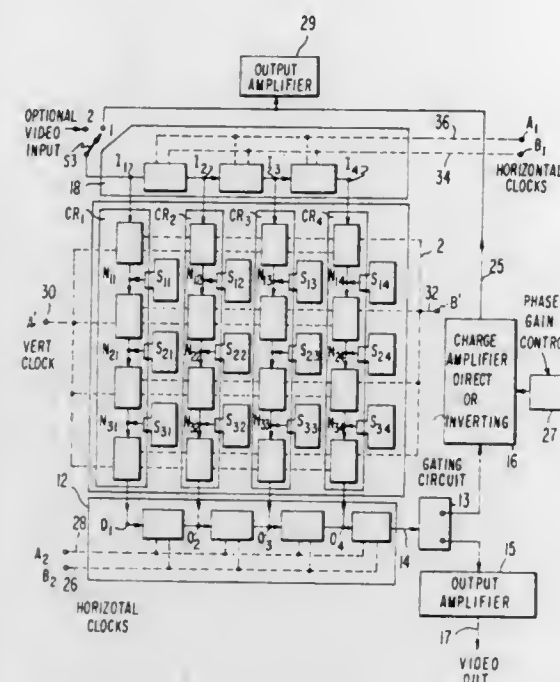
a number of nodes equal to the number of elements;

means for transferring, in parallel, the signal produced at each one of said elements to a different one of said nodes;

amplifying means having an input and an output;

charge transfer means coupled between each one of said nodes and the input of said amplifying means for transferring the signal from each node, to said amplifying means; and

charge transfer means coupled between the output of said amplifying means and each one of said nodes for recircu-



lating the signal, from a given node back to said given node.

3,856,990

CONTINUOUS FILM DRIVE FOR A TELECINE EQUIPMENT

Michel Favreau, and Serge Vidal, both of Paris, France, assignors to Thomson-CSF, Paris, France

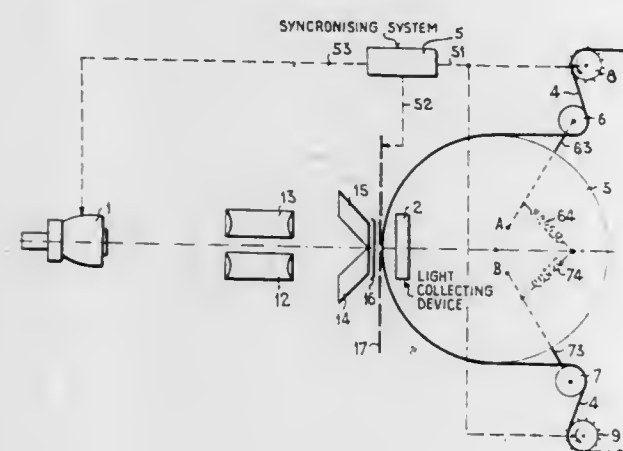
Filed Sept. 28, 1972, Ser. No. 292,941

Claims priority, application France, Oct. 22, 1971, 71.38066

Int. Cl. H04n 1/06

U.S. Cl. 178-7.2

7 Claims



1. A continuous film drive device for a telecine equipment comprising a flying spot scanner tube, said flying spot scanner tube having a line sweep direction and a field sweep direction, an optical system, and modulated light collecting means, said drive device including a drum, the diameter of which is large as compared with the height of the frame of the films to be analysed, the circumference of which is in the form of a groove for receiving and supporting the portion of the film being scanned and the axis of which is parallel to said line sweep direction, an optical path between said optical system and said modulated light collecting means being provided inside said drum.

1. A signal-processing apparatus for use in the production or reproduction of multidirectional audio signals comprising matrixing means for producing a set of output signals from a set of input signals, each signal of at least one of said sets being identified with a different sound-direction bearing angle, means for mixing the input signals with mixing coefficients defined for each respective value of a 360° repetitive single-variable function of bearing angle for each output signal to provide the respective output signals, said single-variable functions having the characteristic that when each output signal is multiplied by the complex conjugate of the respective function of another bearing angle and all such products are added, the sum produced thereby is a sum of input signals each multiplied by a coefficient that is a function solely of the difference between both bearing angles.

3,856,991 METHOD AND APPARATUS FOR CONTROLLING VEHICLE NOISE

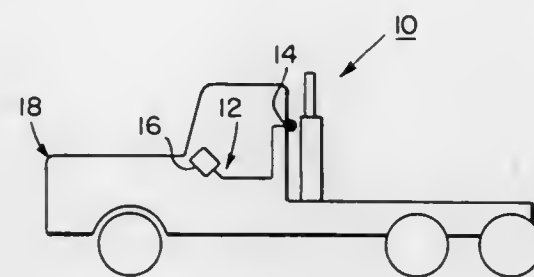
Kenneth C. Kirkland, Jr., and Raymon E. Hunt, both of Longview, Tex., assignors to Garlock Inc., Palmyra, N.Y.

Filed May 7, 1973, Ser. No. 357,858

Int. Cl. G08g 1/10

U.S. Cl. 179-1 P

26 Claims



1. Apparatus for use in controlling the amount of noise made by a truck so that the truck can be operated in such a manner as to maintain the noise it makes within the legal range, comprising:

- a transducer adapted to be mounted on a truck for sensing the amount of noise made by a truck, and
- a noisometer connected to said transducer and adapted to be mounted on a truck, and said noisometer being calibrated to indicate the level of noise made by a truck on which said transducer is mounted and existing at a predetermined distance away from said transducer, said indicated level thus being less than the actual level of noise existing at said transducer.

3,856,992

MULTIDIRECTIONAL SOUND REPRODUCTION

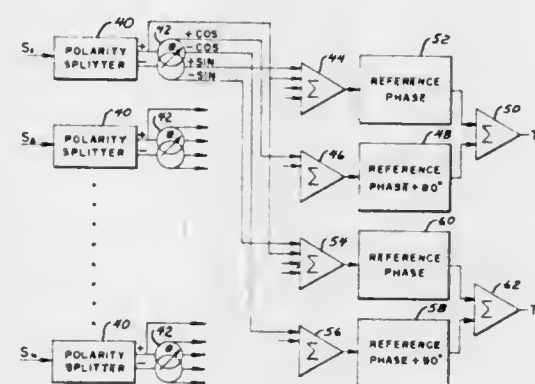
Duane H. Cooper, 918 West Daniel St., Champaign, Ill. 61820

Filed Oct. 6, 1971, Ser. No. 187,065

Int. Cl. H04r 5/00

U.S. Cl. 179-1 GQ

17 Claims



1. A signal-processing apparatus for use in the production or reproduction of multidirectional audio signals comprising matrixing means for producing a set of output signals from a set of input signals, each signal of at least one of said sets being identified with a different sound-direction bearing angle, means for mixing the input signals with mixing coefficients defined for each respective value of a 360° repetitive single-variable function of bearing angle for each output signal to provide the respective output signals, said single-variable functions having the characteristic that when each output signal is multiplied by the complex conjugate of the respective function of another bearing angle and all such products are added, the sum produced thereby is a sum of input signals each multiplied by a coefficient that is a function solely of the difference between both bearing angles.

3,856,993

TIME DIVISION MULTIPLEX EXCHANGE

Felix H. Closs; Hans R. Mueller, both of Adliswil, and Daniel Wild, Kilchberg, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

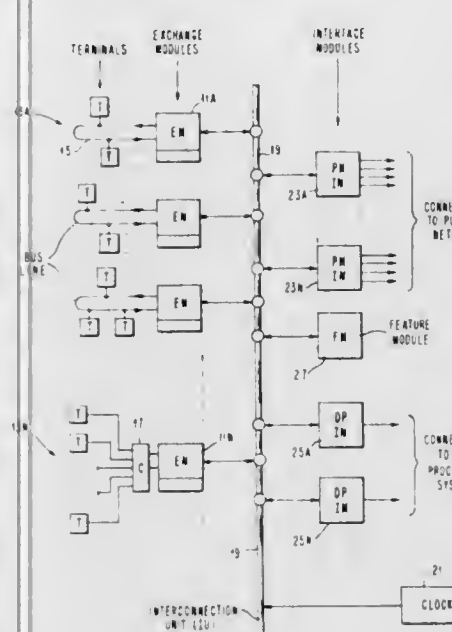
Continuation of Ser. No. 206,614, Dec. 10, 1971, abandoned.

This application Oct. 16, 1973, Ser. No. 407,003

Int. Cl. H04j 3/06

U.S. Cl. 179-15 AT

9 Claims



1. A time division multiplex communication system for exchanging information between any pair of a plurality of system terminals, comprising:

- a plurality of exchange module means each having a bus line coupled thereto for connecting therewith any of a plurality of associated bus line terminals which are fewer in number than the number of system terminals, each of said exchange module means including bus line input and output means for exchanging information in first order time frames by synchronous time division multiplex between each of the respective said exchange module means and any of the said associated bus line terminals connected thereto, said bus line and output means including means to transmit and receive information to and from connected terminals over time channels in said first order time frames exclusively assigned to that purpose, each of said exchange module means also including storage means coupled to its said bus line input means for receiving information from sending terminals connected thereto and storing said information for readout at a time corresponding to the time assigned to the terminal to receive said stored information;

interconnection unit means for interconnection each of said exchange module means with all of the others;

each of said exchange module means further including interconnection unit input and output means for exchanging information in second order time frames by synchronous time division multiplex between each of said exchange module means and the others, and interconnection unit input and output means further including selection and control means to cause said information to be exchanged between each of said exchange module means and the others by transmitting said information within time segments of said second order time frames with said time segments being divided into time slots equal in number to the number of exchange module means so that each said exchange module means is assigned an exclusive time slot within each time segment and with said time segments being equal in number to the number of said time channels in said first order time frames, said selection and control means being coupled to said storage means for causing said storage means to read out the appropriate stored information therein during the time slot and time segment respectively assigned to the ex-

change module means and associated receiving terminal to which said stored information is to be sent.

3,856,994

KEY TELEPHONE UNIT LINE CARD

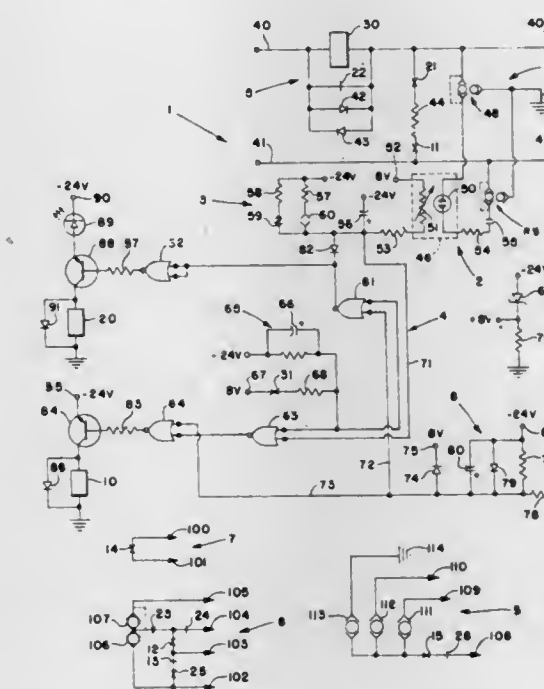
Anthony T. Ozechoski, Erie, Pa., assignor to Basic, Inc., Cleveland, Ohio

Filed July 13, 1973, Ser. No. 379,174

Int. Cl. H04m 1/00

U.S. Cl. 179-99

21 Claims



1. A circuit for use in a key telephone system having a line capable of being in seized and unseized conditions, such line including input conductors on which periodic ring signals occur, comprising means for coupling said circuit to at least one of said input conductors to receive said ring signals, said means for coupling including means electrically isolating said circuit from said at least one of said input conductors for producing isolated signals in response to said ring signals and capacitive means for blocking DC signals on said input conductors from said circuit precluding false production of such isolated signals from noise, extraneous signals and the like on such input conductors, means coupled to said means for coupling for temporarily storing said isolated signals as stored isolated signals, means including selective resistor means for varying the duration for which said stored isolated signals are temporarily stored, logic circuit means coupled to said means for temporarily storing and responsive to said seized and unseized conditions of said line and to said stored isolated signals for producing logic output signals, said logic circuit means including a plurality of NOR gate circuits, and means responsive to said logic output signals for effecting indications of occurrence of said ring signals and of said seized and unseized conditions of said line.

3,856,995

PRESSURE GRADIENT PIEZOELECTRIC MICROPHONE

William Donald Cragg, and Stuart Bradley, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 190,839, Oct. 20, 1971, abandoned.

This application May 11, 1973, Ser. No. 359,300

Claims priority, application Great Britain, Oct. 22, 1970, 50130/70

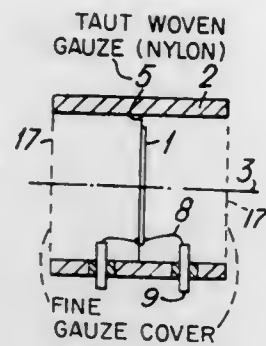
Int. Cl. H04r 19/04, 1/02

U.S. Cl. 179-121 R

11 Claims

1. A pressure gradient microphone comprising: a hollow cylinder having two open ends of equal diameter; a piezoelectric disc transducer; and

means for mounting said disc transducer within said cylinder such that the major surfaces of said disc transducer are normal to the longitudinal axis of the cylinder, said means for mounting including a foraminated membrane peripherally fastened to the inside surface of said cylinder, with said disc having one major surface thereof cen-



trally arranged relative to said foraminated membrane and directly attached thereto; said disc transducer when mounted in said cylinder by said means for mounting forming two empty chambers within said cylinder, each of said two chambers providing unrestricted air flow therein.

3,856,996

SELF-TEST ARRANGEMENT FOR AN ENTERTAINMENT-SERVICE SYSTEM

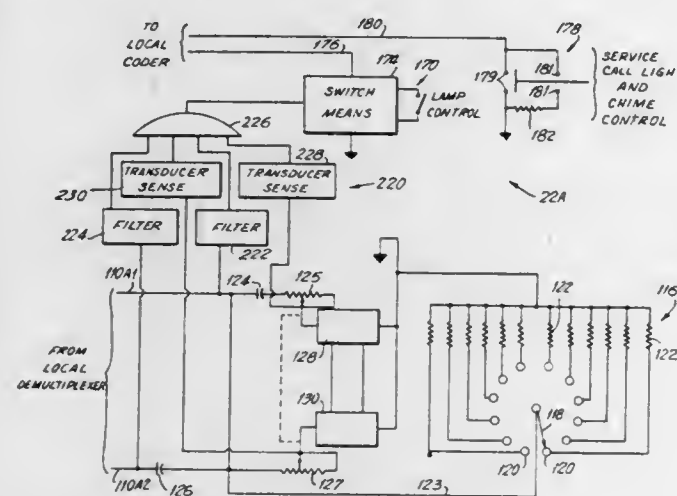
David R. Greenberg, 16 Serpentine Ln., Old Bethpage, Long Island, N.Y. 11804

Continuation of Ser. No. 152,645, June 14, 1971, abandoned, which is a division of Ser. No. 800,941, Feb. 20, 1969. This application July 6, 1973, Ser. No. 376,982

Int. Cl. H04r 29/00

U.S. Cl. 179—175

5 Claims



1. A self-test arrangement for connection in a system having an output, an input, lamp means normally in an illumination mode in which said lamp means can provide illumination independent of any test function and capable of serving as a test-result indicator when disposed in a predetermined test state, manual switch means for selectively controlling said lamp means when said lamp means is in its illumination mode by providing signals for turning said lamp means on and off, and signal transmission means interconnecting said input, output and lamp means for transmitting at least said signals for turning said lamp means on and off when said lamp means is in said illumination mode comprising, means for selectively applying a test signal to said system input for transmission through said signal transmission means to said output, filter means connected to said system output for passing only an output signal substantially equal to the frequency of said test signal applied to said system input, and second switch means connected to said lamp means through said signal transmission means and to said filter means for disposing said lamp means

in said predetermined test state without regard to the state of said manual switch means in response to said output signal from said filter means.

3,856,997

INDICATING AND SWITCHING APPARATUS

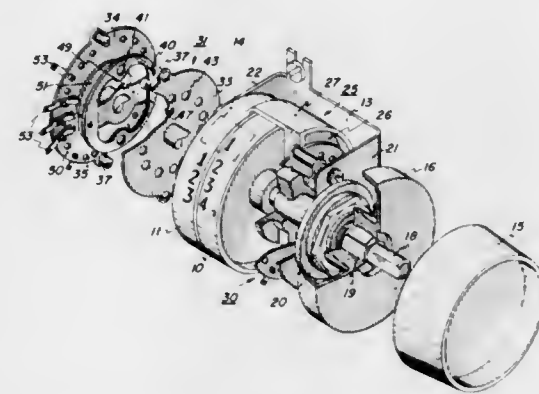
Robert J. Kilkes, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1972, Ser. No. 318,347

Int. Cl. H01h 19/58

U.S. Cl. 200—5 R

9 Claims



1. A selector apparatus for programming an automatic device comprising:
a shaft mounted for rotation;
a first rotary selector mounted to said shaft;
a second rotary selector rotatably supported about said shaft, said first and second rotary selectors being axially aligned along said shaft in a given sequence;
a first number indicator drum spaced from said rotary selectors, and mounted to said shaft, said first drum being connected to said first selector;
a second number indicator drum spaced from said rotary selectors, and rotatably supported about said shaft;
motion imparting means connecting said second rotary selector to said second drum, said motion imparting means including a hollow member connected to said second selector and means spanning said first drum for connecting said hollow member to said second drum, said first and second drums respectively being axially aligned along said shaft in said same given sequence as said rotary selectors, for presenting a pre-selected count at a viewing station;
switching means operatively associated with each of said drums for generating an electrical signal indicative of a number presented within the viewing station.

3,856,998

KEYBOARD SWITCH ASSEMBLY WITH IMPROVED OPERATING MEANS

Dewey M. Sims, Jr., Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 1, 1973, Ser. No. 366,128

Int. Cl. H01h 13/70

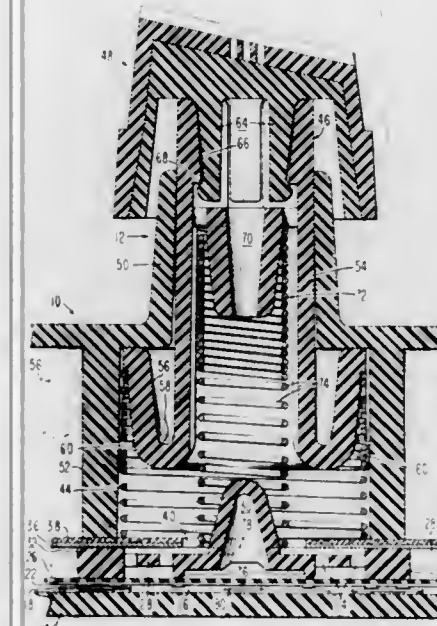
U.S. Cl. 200—5 A

24 Claims

11. In a keyboard-type switch construction in which laminates are superposed in close proximity to one another, the combination:

- a base panel having an electrically insulating surface divided into a plurality of switching areas;
- an electrical conducting switch contact element carried upon said surface of the base panel within each of said switching areas;
- a flexible diaphragm overlying the said plurality of switching areas of the base panel and normally supported in spaced relation thereto, said diaphragm carrying an electrical conductive switch contact element on the side thereof facing said base panel and within each of said switching areas thereof;

d. a depressible switch operating member located on the side of the diaphragm opposite to said base panel within each of said switching areas thereof and supported for movement toward and away from the base panel, each said member being effective upon depressive movement to engage and depress an adjacent portion of said diaphragm and thence to bring the switch contact element which is carried thereby within the switching area of the



depressed member into engagement with the fixed contact element within the corresponding switching area of the base panel; and
e. spring means opposing the depression of said member and resisting each such movement with a relatively low spring rate prior to engagement of said contact elements with one another and with a second higher spring rate following engagement of the contacts with one another.

3,856,999

ROTARY ELECTRICAL SWITCH WITH BRIDGING CONTACTOR

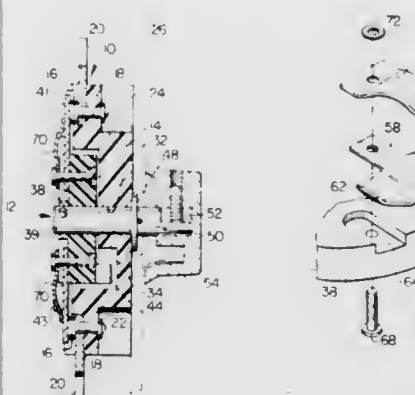
Stanley M. Terry, deceased, late of Dayton, Maine; Third National Bank of Springfield, executor, Springfield, Mass., and Alden J. Gray, Biddeford, Mass., assignors to Maremont Corporation, Saco, Mass.

Filed Jan. 3, 1974, Ser. No. 430,533

Int. Cl. H01h 19/58, 1/48

U.S. Cl. 200—11 K

4 Claims



1. An electrical switch for concurrently switching a plurality of circuits, said switch comprising a stator block of electrically non-conductive material, a rotor block of electrically non-conductive material, means supporting said rotor block for rotation relative to said stator block about a first axis fixed relative to both of said blocks, stop means for limiting said rotation of said rotor block to rotation between first and

second positions of said rotor block relative to said stator block, a plurality of groups of contacts on said stator block each of which groups of contacts includes a plurality of individual contacts angularly spaced from one another about said first axis and located in a plane generally perpendicular to said first axis, a plurality of contactors carried by said rotor block and each associated with a respective one of said groups of stator contacts, each of said contactors having a generally flat face located in a plane generally perpendicular to said first axis and arranged to wipe over its associated group of said stator contacts when said rotor block is rotated relative to said stator block, connecting means connecting each of said contactors to said rotor block and constraining said contactor to rotate with said rotor block about said first axis as said rotor block is rotated between said first and second positions, said connecting means including means providing a limited amount of looseness between said contactor and said rotor block in two degrees of freedom of movement, one of said two degrees of freedom involving movement of said face of said contactor toward and away from said plane of its associated stator contacts and the other of said two degrees of freedom involving rotation of said face of said contactor about a radial axis generally perpendicular to said first axis, said generally flat face of each contactor being of such length arcuately about said first axis as to contact and bridge two of said stator contacts when said rotor block is in said first position, and the angular displacement of said rotor block permitted by said stop means being such that as said rotor block is moved from said first position to said second position and said generally flat face of each contactor is moved out of contact with at least one of the two of said contacts contacted by said flat face in said first position of said rotor block, and a spring means for applying to each of said contactors a force urging the face of such contactor toward and against its associated contacts, said force being applied to such contactor at a point thereon which is located angularly between the two contacts bridged by said contactor when said rotor block is in said first position.

3,857,000

MULTI-POSITION SLIDE SWITCH ASSEMBLY WITH HOUSING MEANS HOLDING COMMON CONDUCTIVE RAIL IN FIXED ABUTTING RELATIONSHIP WITH END TERMINALS OF FIXED CONTACT ARRAY

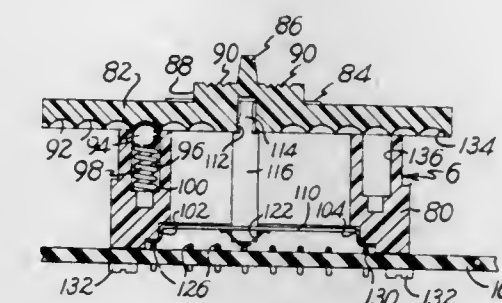
Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 5, 1973, Ser. No. 376,638

Int. Cl. H01h 15/06

U.S. Cl. 200—16 D

11 Claims



1. A multiposition switch comprising a base, a plurality of stationary contacts mounted on the base electrically separated from one another and arranged in a row, a housing mounted on the base over the row of stationary contacts, a slide member, means for slidably mounting the slide member on the housing, the slide member slidable to and from a plurality of stable positions, an electrically conductive retainer mounted in the housing and electrically connected to one of the contacts in the row, a movable contact member disposed in the housing, the movable contact member in continuous electrical connection with the electrically conductive retainer, means operatively connecting the movable contact member with the slide member for movement therewith, the movable

contact member being in electrical engagement with another respective stationary contact when the slide member is in each of its stable positions.

3,857,001

LOCK RELEASE WITH ALARM SWITCH MOUNTING MEANS

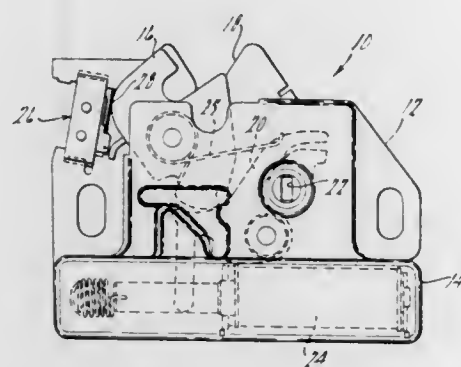
Norman G. Quantz, Algonac, Mich., assignor to Lectron Products Inc., Troy, Mich.

Filed June 20, 1973, Ser. No. 371,719

Int. Cl. H01h 9/02

U.S. Cl. 200-61.64

4 Claims



1. A locking mechanism for releasably securing a hinged member to an associated frame, said mechanism including movable latch means having securing and releasing positions and housing means attachable to one of said hinged member and said frame for operatively supporting said latch means in combination with a security system for detecting a forced opening of said hinged member including switch means for inactivating said system in response to movement of said latch means from said securing to said releasing position, said housing means including locator means comprising a cut-out portion having a pair of oppositely spaced parallel edges for operatively positioning said switch in an actuable position relative to said latch means; and cooperative interlocking means including a clip having at least one end portion compressively engaged to one of said edges associated with said switch and said locator means for immovably retaining said switch in said operative position.

3,857,002

SAFETY MECHANISM FOR LAUNDRY APPLIANCES WITH DOOR LATCH FOR ACTUATING MAIN SWITCH

Robert Lay, Shelby, and Clayton L. Haller, Mansfield, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1973, Ser. No. 387,392

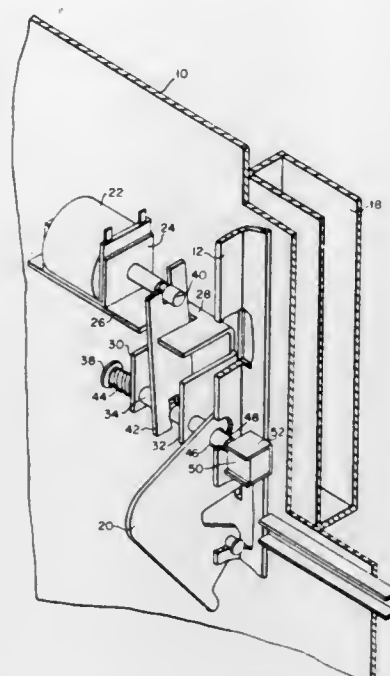
Int. Cl. H01h 3/16

U.S. Cl. 200-61.64

8 Claims

1. A safety mechanism for an automatic laundry appliance having a cabinet defining an access opening, door means hingedly supported on said cabinet for movement between open and closed positions and electrical circuit means for energizing said appliance in accordance with a predetermined program including energization of a main drive motor to a high speed drive operation and including a manually controlled main line switch, said mechanism comprising: means for locking said door means in said closed position, said locking means including: a locking pin movable between a first position preventing opening of said door means and a second position permitting opening of said door means; spring means normally biasing said pin toward said second position; electrically actuated means for moving said pin from said second position to said first position, said means elec-

trically connected in said control circuit through first switch means; and, second switch means connected in said circuit for energizing said main motor when closed, said second switch



means being mounted generally adjacent and in the path of movement of said locking pin so as to be moved to a closed position in response to said pin moving from said second position to said first position.

3,857,003

MICROSWITCH

Minoru Nishio, Neyagawa, and Norio Sagawa, Osaka, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

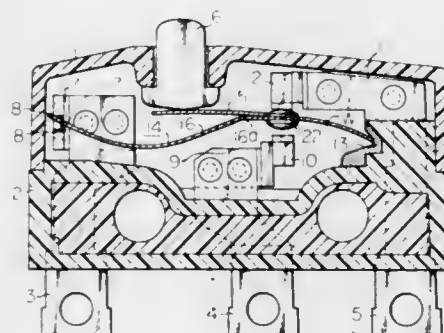
Filed Sept. 12, 1973, Ser. No. 396,487

Claims priority, application Japan, Sept. 14, 1972, 47-107490

Int. Cl. H01h 13/36

U.S. Cl. 200-67 DB

9 Claims



1. In a microswitch the combination comprising a case, a push button slidably fitted to said case, an actuating plate spring to be pushed by said push button, a supporting member engaging with an end of said actuating plate spring, said supporting member being fixed to a common terminal metal fitting, a pair of fixed contacts opposed to a movable contact provided on said actuating plate spring, said fixed contacts being fixed respectively to a terminal metal fitting through a supporting member, a bearing section engaging with the other end of said actuating plate spring and an insulating base supporting said terminal metal fittings, wherein said actuating plate spring has a pair of legs formed by punching so as to extend respectively toward each end substantially from intermediate part of the spring, one of said legs has a movable contact near the base and the free end of the other leg is opposed to the push button.

3,857,004

LIQUID LEVEL SENSOR

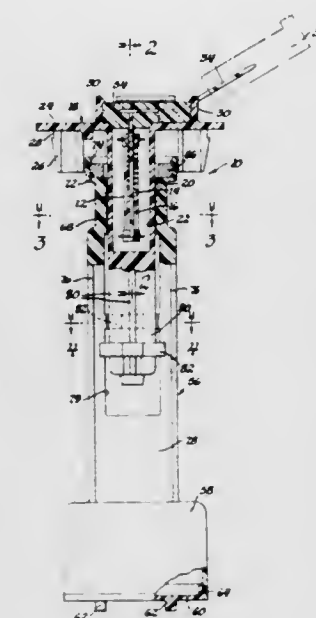
Keshav S. Kavthekar, Melvindale, and Edwin F. Clemett, Jr., Detroit, both of Mich., assignors to McCord Corporation, Detroit, Mich.

Filed June 8, 1973, Ser. No. 368,368

Int. Cl. H01h 35/18

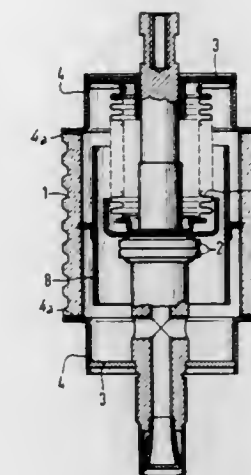
U.S. Cl. 200-84 C

16 Claims



1. A liquid level sensor assembly for indicating, through an electrically-operated warning circuit, the liquid level of a fluid in a container comprising magnetic responsive switch means for movement between an open and closed position to control an electric circuit, support means for supporting said switch means, float means responsive to the level of the fluid, and magnet means supported by and movable with said float means for actuating said switch means; said support means including a top portion and guide means depending therefrom for guiding said float means, said guide means having a housing portion housing said switch means and a pilot portion having radially extending members with said housing means disposed adjacent said support means and said pilot portion disposed axially below said housing portion, said float means being adapted to move axially of said guide means and including a barrel portion guided by and surrounding said housing portion and supporting said magnet means and a follower portion depending axially below said barrel portion and having means for engaging said radially extending members to facilitate guided movement of said float means; said float means further including a buoyant member disposed axially below said follower portion.

flange surface in contact with a flat end surface of said cylindrical member; a pair of counter rings composed of a ceramic material, each of said counter rings having a flat end surface in contact with a flat flange surface of a flange ring away from said cylindrical flat end surface; and



3,857,006

GAS INSULATED SWITCHING APPARATUS

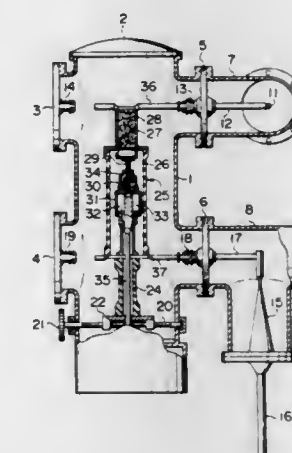
Goro Daimon, Seizo Nakano, and Tunes Kishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 411,055

Int. Cl. H01h 33/80

U.S. Cl. 200-148 F

10 Claims



1. A gas insulated switching apparatus comprising a closed vessel filled with an electrical insulating gas, a circuit breaker unit disposed within said closed vessel and provided with an input side terminal conductor and an output side terminal conductor, drive means for causing reciprocating movement of said circuit breaker unit within said closed vessel, actuating means for actuating said circuit breaker unit for making and breaking the circuit, and disconnecting switch means connected to an input side electrical path and an output side electrical path respectively and adapted to be urged to one of the closed and open positions depending on the movement of said terminal conductors due to the movement of said circuit breaker unit.

3,857,005

VACUUM SWITCH ASSEMBLY

Gerhard Peche, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 17, 1972, Ser. No. 218,249

Int. Cl. H01h 33/66

U.S. Cl. 200-144 B

1 Claim

1. A vacuum switch contact assembly comprising: a unitary hollow cylindrical member composed of a ceramic material and having flat end surfaces; a pair of metallic end plates for sealing the respective ends of said cylindrical member; switch contact means supported by said end plates; a pair of flange rings composed of an iron-nickel-cobalt alloy in contact with said end plates and with said flat end surfaces of the cylindrical member, each of said flange rings having an upstanding surface in vacuum-tight contact with one of said end plates and a horizontal flat

3,857,007

ELECTRIC SWITCH

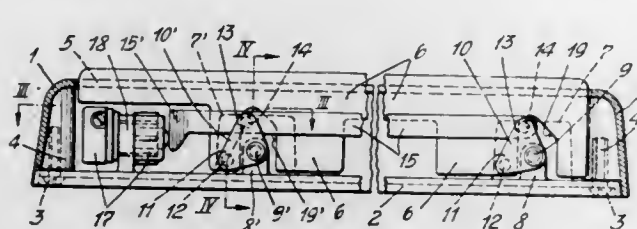
Gottfried Leuenberger, Schlieren, Switzerland, assignor to Peter Leuenberger, Zurcherstrasse, Switzerland
Filed Mar. 5, 1973, Ser. No. 337,819

Claims priority, application Switzerland, Mar. 8, 1972, 3491/72

Int. Cl. H01h 3/00

U.S. Cl. 200—153 H

7 Claims



1. An electric switch comprising:

- a housing having a bar form with stationary supports extending inwardly,
- a press key having a strip form which protrudes partially from the housing and is mounted for upward and downward movement within the housing,
- said key extending approximately over the length of the housing,
- a press switch mounted in the housing,
- an operating rod being displaceable beside and extending in the longitudinal direction of the press key, and
- at least two rotatable members having spindles and acting as bell-crank levers being mounted on the stationary supports and articulatedly connected to the operating rod,
- said key being effective to rotate said rotatable members for displacing the operating rod in a longitudinal direction thereby operating the press switch,
- said stationary supports having laterally protruding bearing projections for supporting said spindles,
- said key having cutaway portions which bridge over the laterally protruding bearing projections.

3,857,008

ALTERNATE MAKE-BREAK TYPE SLIDE SWITCH WITH IMPROVED MOVABLE CONTACT

Johannes Martinus Augustines Henricus Van Der Donk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,590

Claims priority, application Netherlands, Aug. 11, 1972, 7210971

Int. Cl. H01h 13/56, 1/44

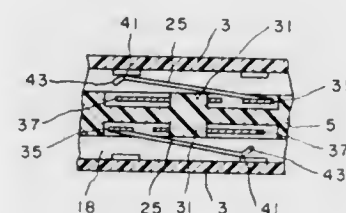
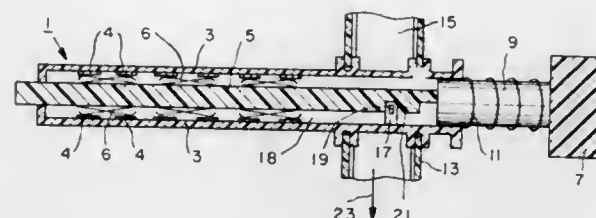
U.S. Cl. 200—153 J

10 Claims

5. A slide switch comprising a housing having a wall defining a longitudinal direction, two stationary contact members carried on said wall within said housing, a strip-like slide mounted for longitudinal movement between first and second operative positions within said housing, a movable contact member carried on said slide for cooperative engagement with a stationary contact member, and means connected to said slide for causing longitudinal movement thereof, said movable contact comprising a central part, means carried by said central part for attaching said movable contact to said slide, two extension members extending in diametrically opposed directions from said central part, a connecting strip extending from each of said extensions in opposite directions and substantially perpendicular to said extensions and having a length greater than its width, a pair of resilient fingers each connected at one end thereof to one of said connecting strips, said fingers extending in parallel opposed directions and being located on opposite sides of said central part, and a contact area carried on the free end of each of said fingers for contact with a stationary contact member, said central part and said pair of

fingers being integrally formed of a substantially flat plate-like material.

8. The slide switch according to claim 5 further comprising locking means for locking said slide in said second position,



reset means for releasing said locking means for returning said slide to said first position, and enlarged contact areas carried by said stationary contacts for maintaining contact with said movable contacts when said slide is moved to said second position.

3,857,009

MICROWAVE BROWNING MEANS

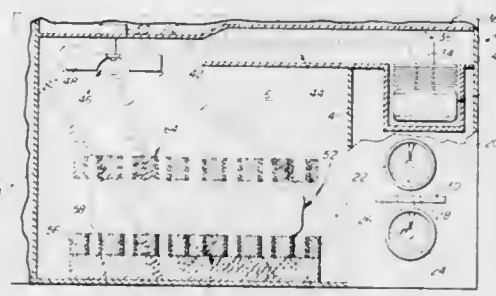
George H. MacMaster, Lexington, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 10, 1973, Ser. No. 395,469

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

14 Claims



1. In combination:

- an enclosure;
- means for radiating microwave electromagnetic energy within said enclosure;
- a load; and
- means for supporting said load within said enclosure comprising means for converting and transforming free space energy waves into a fringing electric field pattern having a substantially 180° phase differential in close proximity to the exterior surfaces of said load;
- said converting and transformer means comprising alternate regions of high and low dielectric loss characteristics

3,857,010

METHOD FOR WELDING MULTI-LAYER LAMINATED WORK PIECES

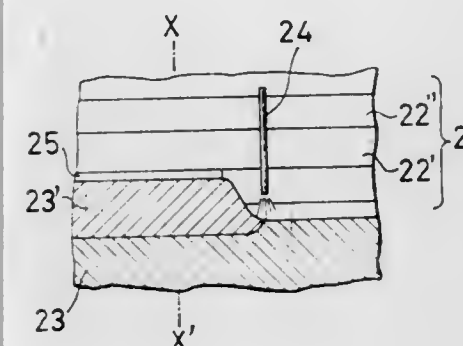
Yasuhiro Nishio; Yoshiriro Yamamoto; Zenichiro Okamoto; Nagio Minami, and Masazumi Nagareda, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1973, Ser. No. 345,306

Int. Cl. B23k 31/06

U.S. Cl. 219—61

5 Claims



1. A method of butt-welding multi-layer laminated metal work pieces in end-to-end relation by multi-pass deposition of molten weld metal between facing ends of the laminated work pieces to weld-unite the same, comprising the steps of, during each pass, depositing molten metal between the facing ends, from a metal welding rod; performing successive passes by moving the welding rod along a line extending at an acute angle to the contacting surfaces of adjacent layers of the work pieces to form a series of superposed welding beads extending at such acute angle to the contacting surfaces.

3,857,011

METHOD AND APPARATUS FOR CONTROLLING ELECTRICAL DISCHARGE SHAPING

Nagao Saito; Kazuhiko Kobayashi, and Naokazu Tomimoto, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

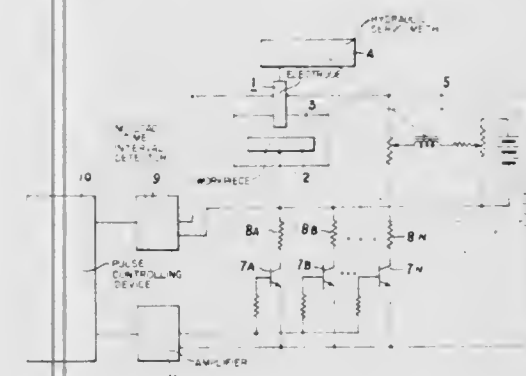
Filed Sept. 27, 1973, Ser. No. 401,141

Claims priority, application Japan, Sept. 30, 1972, 47-98386

Int. Cl. B23p 1/08

U.S. Cl. 219—69 P

5 Claims



1. In a method for controlling an electrical discharge shaping by intermittently applying a discharge current pulse across a working gap with a quiescent time interval, the improvement which comprises the steps of detecting a no-load interval between discharge pulses before applying a voltage across the working gap to generate the discharge; and controlling said quiescent time interval as a function of said no-load time interval.

3,857,012

METHOD OF REPAIRING SPINNERETTES

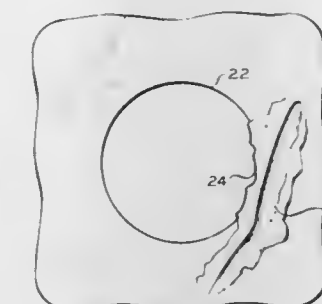
Albert F. Stegelman, Greenville, and Arnold Michalski, Piedmont, both of S.C., assignors to Phillips Fiber Corporation

Filed Aug. 20, 1973, Ser. No. 389,734

Int. Cl. B23k 9/16

U.S. Cl. 219—69 M

13 Claims



1. A method for repairing a spinnerette having on its face a damaged area bordered by an undamaged area, which method comprises:

- electrically removing metal from said damaged area and said bordering undamaged area of said face by electrical discharge machining and thereby blending the surface of said damaged area into the surface of said undamaged area.

3,857,013

METHODS OF AND APPARATUS FOR JOINING MATERIALS

Paul Joseph Niesse, Norcross, Ga., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 178,921, Sept. 9, 1971, abandoned.

This application June 25, 1973, Ser. No. 373,349

Int. Cl. B23k 1/00

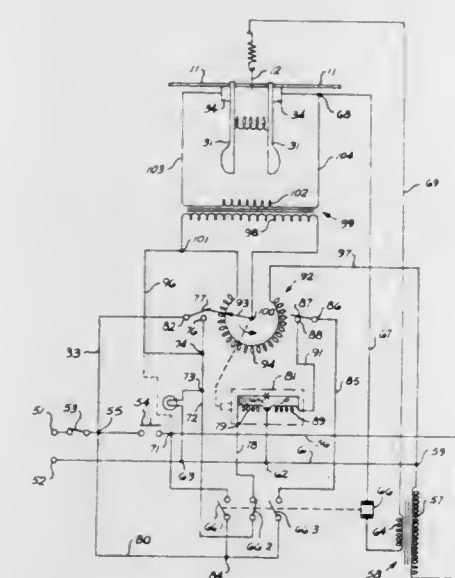
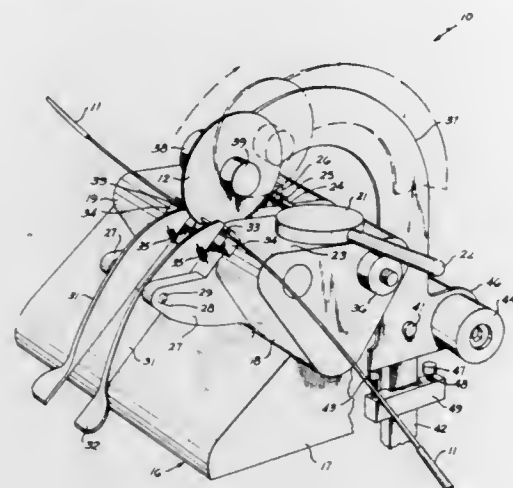
U.S. Cl. 219—85

15 Claims

1. A method of joining an end portion of one conductor to an end portion of another conductor, which includes the steps of:

- supporting a disc of fusible material;
- holding the end portions of the conductors aligned axially and in engagement with each other;
- spacing the end portions of the conductors from each other;
- moving the disc of fusible material in a first direction and between the end portions of the conductors;
- arresting the movement of the disc when at least the required amount of fusible material to form a joint is positioned between the conductors;
- subjecting the disc of fusible material to forces to urge the disc in a second direction opposite to the first direction to a position spaced from the end portions of the conductors;
- urging the end portions of the conductors axially into compressive engagement with the disc, the compressive frictional forces with the disc being sufficient to overcome the forces urging the disc in the second direction and hold the fusible material therebetween and enable a first electrical circuit through the conductors and the portion of the fusible material held therebetween and to enable a second electrical circuit through the portion of the fusible material in the joint and portions of the disc spaced therefrom;
- connecting the first circuit across a source of electrical current;
- the first circuit being normally disabled prior to the energization of the second circuit, the first circuit being in a first mode and capable of increasing the amount of current to the joint when the second circuit is energized and being in a second mode capable of reducing the amount of current to the joint when the second circuit is de-energized;

energizing the second circuit to switch the first circuit to the first mode;
controlling the application of current through the first circuit and the conductors and the fusible material therebetween to increase gradually the current to melt the fusible material between the conductors and permit the forces to urge the unmelted portion of the disc in the second direction out of engagement with the melted portion and inter-



rupt the second circuit to de-energize the second circuit and switch the first circuit to the second mode;
further controlling the application of current through the joint to decrease the current supplied thereto to cool the joint and solidify the fusible material; and
discontinuing the application of current to the joint while disabling the first circuit and conditioning the first circuit for another cycle of operation.

3,857,014

ELECTRON BEAM GENERATOR

Gerald Petrovich Prudkovsky, Lomonosovsky prospekt, 18, kv. 534; Alexandra Vasilievna Khotina, ulitsa Zelenodolskaya, 14, kv. 35, korpus 2; Nikolai Gavrilovich Sushkin, ulitsa Chernyshevskogo, 37, kv. 13; Lev Nikolaevich Kopnev, ulitsa Chertanovskaya, 4, korpus 1, kv. 142, and Sergei Filippovich Merzlikin, ulitsa Neglinnaya, 9, kv. 6, all of Moscow, U.S.S.R.

Continuation of Ser. No. 174,771, Aug. 25, 1971, abandoned.

This application Jan. 2, 1973, Ser. No. 320,678

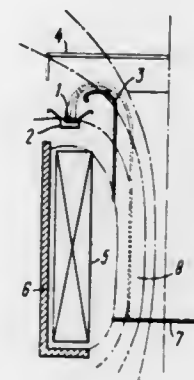
Int. Cl. B23k 15/00

U.S. Cl. 219-121 EB

8 Claims

1. An electron-beam generator, comprising: a cathode with a thermionic emitter and emitting an electron-beam, an anode, an acceleration and shaping region where the electron

beam is accelerated and shaped, an additional electrode disposed opposite said emitter and having a negative potential relative to said anode; an electromagnetic system means for establishing a magnetic field with the lines of force thereof curved through an angle substantially equal to 90°, said cathode, anode, additional electrode and electromagnetic system means being disposed and orientated with respect to one another so as to define field generating means providing a combined electric and magnetic field acting upon the electron



beam in the direction of said curve of the magnetic field lines of force for bending the electron beam in a plane of the magnetic field lines through an angle larger than said angle of curvature of the magnetic field lines by a value substantially equal to 90°, with the result that in said acceleration and shaping region the electron beam travels across the magnetic field lines of force and upon completion of said acceleration and shaping the electron beam travels along said lines without undesirable transverse pulsations.

3,857,015

ELECTRICALLY HEATED HEAT SEALING IMPLEMENT

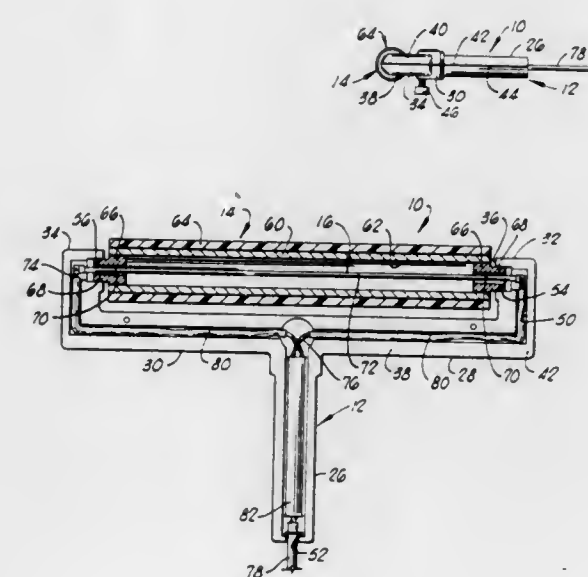
Glenn W. Clark, Topeka, Kans., and Oliver F. Richardson, 6223 Rex Dr., Dallas, Tex., assignors to Oliver F. Richardson, Dallas, Tex. and Shirley Fleshman, Oklahoma City, Okla.

Filed Nov. 8, 1972, Ser. No. 304,600

Int. Cl. H05b 1/00; D06f 75/00

U.S. Cl. 219-244

6 Claims



1. A heat seal implement for applying heat to portions of a heat sealable wrapping material, comprising:
a roller assembly, comprising:

a cylindrically shaped roller base having an opening extending therethrough intersecting the opposite sides thereof;
a roller contacting surface formed about the outer surface of the roller base contactable with the wrapping material constructed of a material substantially reducing adhesion between contacted portions of the wrapping material and the roller contacting surface; and,
a bearing member connected to each end of the roller base;
roller support means rotatably supporting said roller assembly, comprising:
a lower support element, having an upwardly facing surface, a cavity formed in the upwardly facing surface, portions of the cavity engaging in supporting a portion of each bearing member; and,
an upper support element, having a downwardly facing surface engaging the upwardly facing surface of the lower support element in an assembled position and cooperating with the lower support element to form the roller support means, a portion of the assembled upper and lower support elements forming a handle portion in the assembled position; and,
means heating the roller contacting surface, comprising:
a heating element extending through a portion of the opening through the roller base; and,
conductor means connected to the heating element and connectable to an electrical energy source for supplying electrical energy to the heating element when in electrical communication therewith, a portion of the conductor means disposed within a portion of the cavity of the lower support element.

3,857,016

DEVICE FOR DRYING HAIR

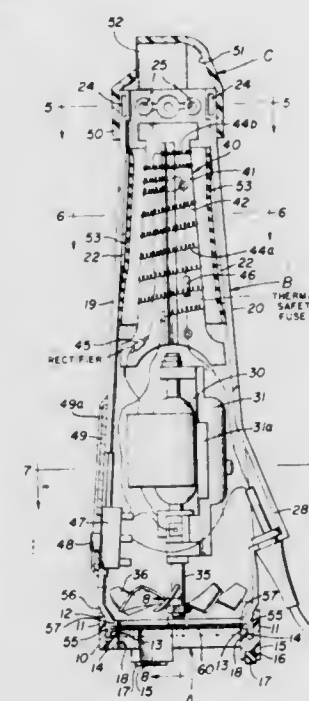
Roy E. Meyer, and John F. Wahl, both of Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.

Filed May 17, 1973, Ser. No. 361,219

Int. Cl. H05b 1/00; A45d 20/08; F24h 3/04

U.S. Cl. 219-368

4 Claims



1. A device for drying hair comprising a base having a circular rim providing a circular inlet opening at the bottom of said rim and having at least three radially spaced legs depending from said rim, said rim containing a circular downwardly extending groove, an elongated tubular casing frustoconical in shape having a circular lower edge engaging said groove said casing having its longitudinal axis extending vertically from the center of said base, a hollow cap having rigid walls and having a lower cylindrical portion which extends over the upper portion of said casing, said cap having an internal passage through which air may exit from said device,

said passage containing an exit opening facing in a horizontal direction, a fan in the lower portion of said casing, a motor within said casing and arranged to drive said fan, and an electrical heating element in the upper portion of said casing, said base being adapted to set on a horizontal surface with said legs resting on said surface, whereby rotation of said fan draws air horizontally between said surface and said rim and passes the air upwardly within said casing and cap and outwardly from said cap in a horizontal direction

3,857,017

UNITARY THERMAL REFERENCE SOURCE

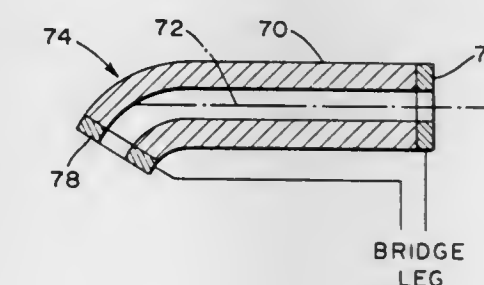
Carl H. Whittier, Wayland, Mass., assignor to Dynarad, Inc., Norwood, Mass.

Filed Apr. 20, 1972, Ser. No. 245,773

Int. Cl. H05b 1/02

U.S. Cl. 219-501

4 Claims



1. A thermal reference comprising:

a generally hollow, cylindrical structure open at each end and formed of an electrically resistive material having a significantly non-zero resistance temperature coefficient; said cylindrical structure having an elbow curve in a portion thereof whereby an interior surface of said structure occludes the view through said cylindrical structure from end to end;

first and second terminals on said structure at said ends for receiving electrical current;

means for applying electrical current to said structure at said first and second terminals to provide a distributed current through said structure;

the flow of electrical current through said structure being directly operative to simultaneously affect the temperature, radiation, and resistance of said structure.

3,857,018

CONTROLLED ACCESS SYSTEMS

Richard M. Stark, Long Lake, and Ronald G. Beachem, Mound, both of Minn., assignors to Business Electronics, Inc., Minneapolis, Minn.

Filed Dec. 7, 1973, Ser. No. 422,753

Int. Cl. G06k 5/00; H04q 3/00

U.S. Cl. 235-61.7 B

15 Claims

1. A system for security control of a desired operation comprising:

a series of identification cards having individually distinct but nondiscrete information as a part of each card;

means for programming said system with a system program to read a random selection of information from the cards; input means for entering the system program and for enabling a user to enter memorized information into the system;

information sensing means to read the random selection of information in accordance with the system program;

which corresponds with the deviation of BW_c from BW_i and increasing the speed of the overfeed means when the signal BW_c is less than the signal BW_i and decreasing the speed of the overfeed means when the signal BW_c is greater than the signal BW_i .

3,857,024

METHOD FOR COMPUTING MAIN, FLASH AND BUMP EXPOSURES FOR DIRECT SCREENING

Takeshi Kosaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

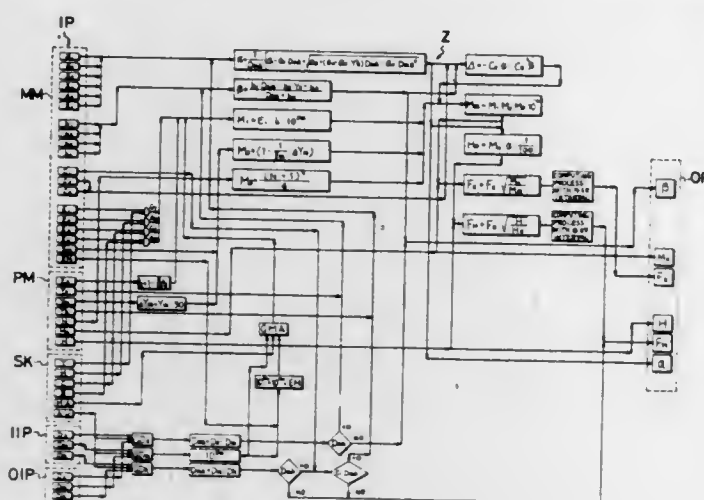
Filed Jan. 30, 1973, Ser. No. 327,919

Claims priority, application Japan, Feb. 4, 1972, 47-12972

Int. Cl. G06f 15/20; G03b 27/78

U.S. Cl. 235-151.3

2 Claims



1. A method for computing main, flash and bump exposures for direct screening comprising the steps of:

- preparing a graph of experimental values giving as parameters densities of highlight, intermediate tone and shadow areas of an original plotted respectively against dot percent and parallelly shifting the curves representing the relation between the dot percent and the density of the original at varying bump exposure percents to concentrate their 50% points at the 50% point of a curve representing the case in which only a main exposure is made and to thereby obtain a graph of bump exposure showing the relation between the dot percent and density difference,
- determining from the graph of bump exposure values of coefficient to obtain an equation of lower degree for computing a bump exposure percent,
- parallelly shifting curves in the graph of experimental values representing the relation between the dot percent and the density of the original at varying amounts of flash exposure to concentrate their 50% points at the 50% point of a curve representing the case in which only a main exposure is made and to thereby obtain a graph of flash exposure showing the relation between the dot percent and density difference,
- determining from the graph of flash exposure values of coefficients to obtain an equation of lower degree for computing an amount of flash exposure,
- forming an equation of lower degree for computing an amount of main exposure from an energy of light providing a predetermined density to the original, the effects of the bump exposure and flash exposure on the intermediate tone area, the sensitivity of a negative film including the conditions for developing the same, the diaphragm aperture value for setting the amount of the main exposure, the variation of the dot percent set for the intermediate tone area from the 50% point, and determined coefficients
- forming an equation of lower degree for computing an amount of bump exposure from the amount of main exposure, the bump exposure percent, a film speed for each color plate and developing conditions,

- forming an equation of lower degrees for computing the diaphragm aperture value for main exposure photography from the main exposure amount computing equation,
- forming an equation of lower degree for computing the diaphragm aperture value for bump exposure from the bump exposure amount computing equation, and
- feeding the foregoing parameters and the determined coefficients in a desired combination to a computer incorporating electrical digital computing circuits for calculating from the equations the main, flash, and bump exposure amounts for direct screening.

3,857,025

NUMERICALLY CONTROLLED ENGRAVING MACHINE SYSTEM

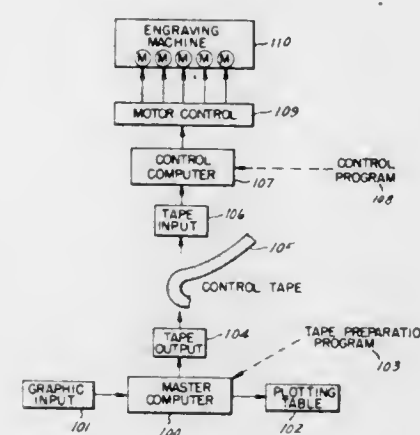
Myrle H. English, West Chester, Pa.; Laurence Goodstal, Ilion, N.Y.; Wayne E. Leek, Mohawk, N.Y.; Robert J. Sanzo, Ilion, N.Y.; Robert L. Turner, Newark, Del.; Clark B. Workman, Mohawk, N.Y., and Edward W. Yetter, West Chester, Pa., assignors to Remington Armo Company, Inc., Bridgeport, Conn.

Filed May 7, 1971, Ser. No. 141,136

Int. Cl. G05b 19/42; B23c 1/16

U.S. Cl. 235-151.11

28 Claims



1. The method of translating into numerical indicia the course of a hand-held engraving tool having a tip making an engraving cut in the face plane of a substantially flat workpiece so that said cut may be automatically simulated by a computer-controlled, powered engraving tool, comprising the steps of:

- defining the course of the hand-held tool as a plurality of component motions given as independent variables X , Y , Z , α , and a dependent variable θ , where:
 X is the lateral motion of the tool substantially parallel to the face plane of the workpiece;
 Y is the motion of the tool perpendicular to X and substantially parallel to the face plane of the workpiece;
 Z is the depth motion of the tool substantially perpendicular to the face plane of the workpiece;
 α is the tilting motion of the tool about an axis passing through the cutting tip of the tool and substantially parallel to the face plane of the workpiece; and
 θ is the rotational motion of the tool about an axis passing through the cutting tip of the tool and substantially perpendicular to the face plane of the workpiece, and further wherein θ is the heading of the tool defined as the angle of the tangent to the tool path at the cutting tip of the tool;
- defining each variable as a function of a common parameter: the string length " u " along the cutter point path, thus:

$$\begin{aligned} X &= f_x(u) \\ Y &= f_y(u) \\ Z &= f_z(u) \\ \theta &= f_\theta(u) \\ \alpha &= f_\alpha(u); \end{aligned}$$

- expressing each variable as a polynomial in u ; such as:

$$\begin{aligned} X &= a + bu + cu^2 + du^3 + \dots \\ Y &= e + fu + gu^2 + hu^3 + \dots \\ Z &= i + ju + ku^2 + lu^3 + \dots \\ \theta &= m + nu + pu^2 + qu^3 + \dots \\ \alpha &= r + su + tu^2 + vu^3 + \dots \end{aligned}$$

- programming a digital computer to derive the coefficients of the polynomial equations of (c);
- deriving by means of said digital computer said coefficients and
- controlling the course of the powered engraving tool by means of said coefficients to regenerate the course of said hand-held engraving tool making an engraving cut.

3,857,026

PROPORTIONAL PULSE GENERATOR

Gerarous Adrianus Mous, Overloon, Netherlands, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

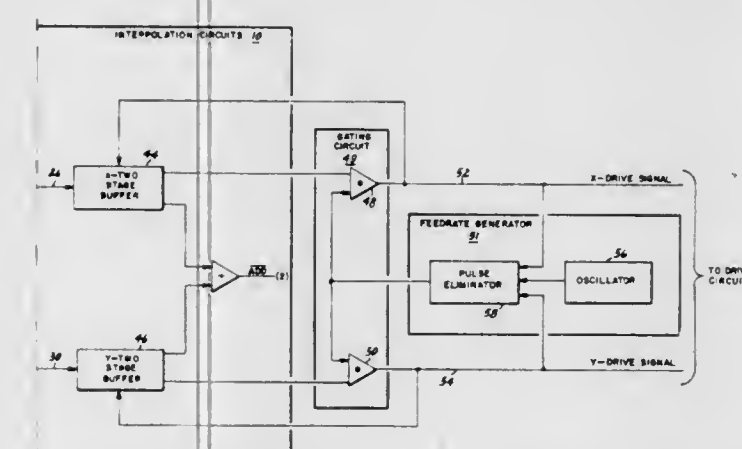
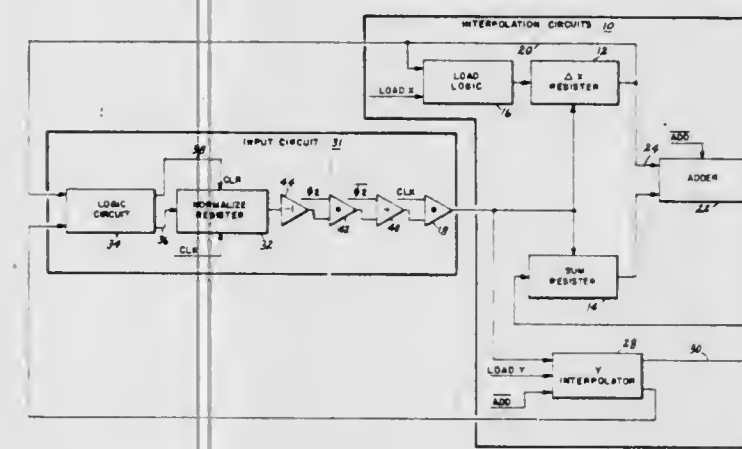
Filed Oct. 29, 1973, Ser. No. 410,880

Claims priority, application Great Britain, Mar. 1, 1973, 10035/73

Int. Cl. G06f 15/46

U.S. Cl. 235-151.11

6 Claims



1. An apparatus for generating at least two sets of drive pulses causing a movable member to move along at least two axes of motion at a predetermined velocity along a predetermined path, said path being defined by input signals representing displacements along each axis of motion, the apparatus comprising:

- means responsive to the drive pulses for producing a feedrate signal representing a velocity along one of the axes of motion having the largest displacement;
- means responsive to the input signals and the drive pulses for generating a set of overflow pulses for each axis of motion by iteratively incrementing the magnitude of the input signals at a fixed rate, said generating means being interrupted upon a number of overflow pulses for the one of the axes of motion exceeding by a predetermined number the number of corresponding drive pulses produced; and
- means responsive to the generating means and the feedrate signal for producing a set of drive pulses for each axis of motion, said drive pulses causing the movable member to move at the predetermined velocity along the predetermined path.

3,857,027

D.C. MODULES EMPLOYED FOR SIMULATING ELECTRIC POWER SYSTEM FOR LOADFLOW AND TRANSIENT STABILITY STUDIES

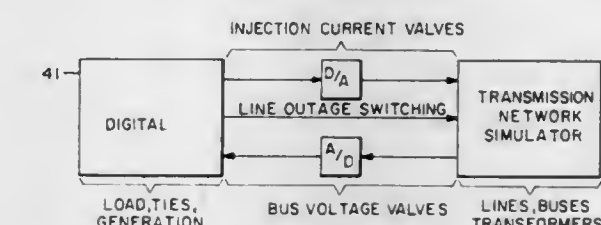
Norman R. Carlson, Export, and William E. Zitelli, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,048

Int. Cl. G06j 1/00; G06f 15/06, 15/56

U.S. Cl. 235-151.21

22 Claims



1. A DC circuit for representing an electric power system load for operation under steady state and transient conditions and comprising a first circuit for generating at least one output current phasor signal corresponding to a first coordinate component of at least the bus to load current from the actual bus to which the load is connected, a second circuit for generating at least one other output current phasor signal corresponding to a second coordinate component of at least the bus to load current from the actual bus to which the load is connected, each of said first and second circuits including means for receiving input phasor voltage signals corresponding to first and second coordinate components of actual bus voltage, and means for representing the load admittance in each of said first and second circuits so as to generate said output current phasor signals with the desired correspondence.

3,857,028

BATTERY OPERATED LAMP

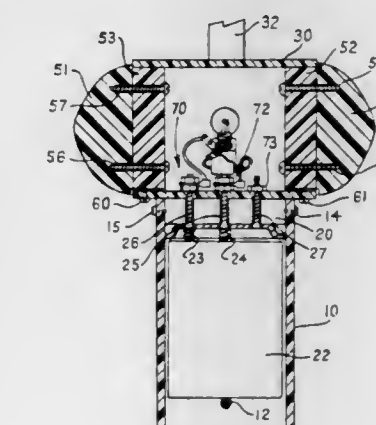
Leslie E. Olsen, 1894 Locust St., Reno, Nev. 89502

Filed Sept. 7, 1973, Ser. No. 394,974

Int. Cl. F21L 1/100

U.S. Cl. 240-10.63

7 Claims



1. A roadway signaling device comprising: A tubular base having one end open and one end closed; A battery located within said base; Means cooperative with said base and said battery suspending said battery at a distance from the open end of said base; A circular battery terminal contact ring having two planes, a first plane being elevated with reference to a second plane, wherein said ring may be mounted against the base by the use of screws or the like in said second plane, which contacts said inner side of the closed end of said base, and in which the first plane extends at a distance from said mounting screws or the like toward the open end of said base, so that a battery terminal may contact said first plane of the ring without directly contacting said screws; Screws or the like mounting said ring to the said inner side of the closed end of said base, in such manner that one of the terminals of said battery is in contact with said ring; Tubular lamp and lense

holding means fastened flush against the outer surface of said closed end of said tubular base, in immediate relationship to battery terminal contact within said base, in such manner that mounting screws extending from the interior of said base to said lamp and lense holding means perform the added function of holding a lamp within said lamp and lense holding means and providing electrical contact to said lamp; And lense means mounted in each end of said lamp and lense holding means in such manner that a portion of said lense slides within said lamp and lense holding means and is held in position by screws providing for lateral adjustment of the location of each lense as well as providing for distortion of the said lamp and lense holding means to allow drainage of moisture from within said lamp and lense holding means to without the same.

3,857,029

ILLUMINATING DEVICE

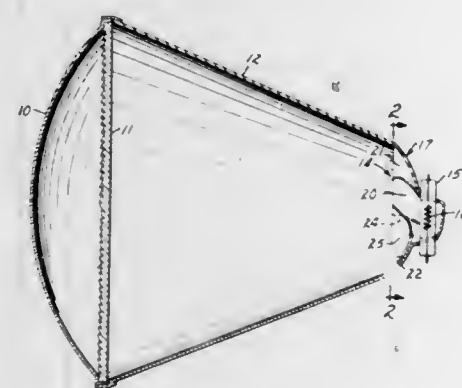
Harlan L. Krinke, May Twp., Washington Co., Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 247,960, April 27, 1972, Pat. No. 3,764,797. This application Jan. 26, 1973, Ser. No. 326,825. The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl. F21m 3/04; F21v 7/00

U.S. Cl. 240-41.3

6 Claims



1. An illuminating device comprising a condensing lens having a focal plane; a reflector having concave areas the surfaces of which have a diffuse reflective coating facing said lens and disposed in said focal plane, and a filament positioned at the focus of said lens.

3,857,030

REFLECTOR FOR LIGHT FIXTURES

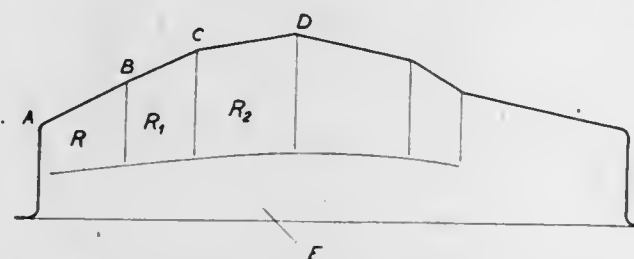
Marie Henri Hubert Adam, Lorey-par-Bayon, France, assignor to Societe Anonyme L'Eclairage Technique, Meurthe et Moselle, France

Continuation of Ser. No. 233,620, March 10, 1972, abandoned. This application July 19, 1973, Ser. No. 380,596

Int. Cl. F21v 7/12

U.S. Cl. 240-103 B

1 Claim



1. A luminaire capable of receiving different light sources whose length along an axis may vary between two known values comprising in combination a reflector having a plurality of juxtaposed reflecting surfaces arranged so that the section of said reflector through a set of planes passing through the axis of the light source is a broken line formed by segments of

straight lines, each segment forming with the adjacent segment an obtuse angle, said segments being, in each of said sets of planes chords of the arc of a parabola assuring in each plane of the set a good photometric distribution for the light source of a large dimension, the length of each of said chords being greater than the length of the smaller of the two known values and less than the length of the greater of the two known values.

3,857,031

AUTOMATIC FOCUS CONTROL FOR FACSIMILE CAMERAS

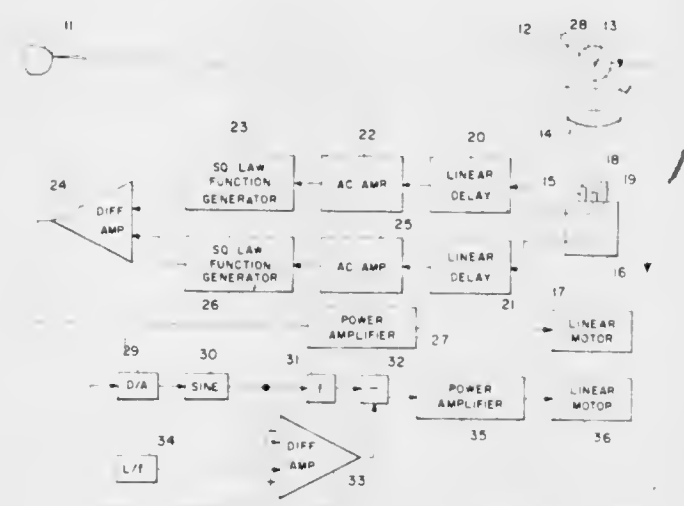
Archibald R. Sinclair, Hampton; Ernest E. Bucher, Newport News, and Stephen J. Katzberg, Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 15, 1973, Ser. No. 406,715

Int. Cl. G01j 1/20

U.S. Cl. 250-201

6 Claims



1. An automatic focus control for a facsimile camera that includes a scanning means, a lens, a focal plane and an imaging detector for producing electrical signals of the picture elements viewed by the imaging detector comprising:

a movable stage with the imaging detector of said facsimile camera mounted thereon in the focal plane of said facsimile camera;

means including a first photodetector mounted on said movable stage closer to said lens than said imaging detector for producing first electrical signals of the picture elements viewed by the imaging detector and in phase with the electrical signals produced by the imaging detector;

means including a second photodetector mounted on said movable stage farther from said lens than said imaging detector for producing second electrical signals of the picture elements viewed by the imaging detector and in phase with the electrical signals produced by the imaging detector; and

servo means receiving said first and second electrical signals for moving said movable means along a line in the direction of the lens of said facsimile camera so as to maintain said first and second electrical signals equal.

3,857,032

OPTICAL COURSE DATUM HEADING SELECTION TRANSDUCER

Clarence Van Englehoven, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Mar. 28, 1973, Ser. No. 345,487

Int. Cl. G01d 5/34

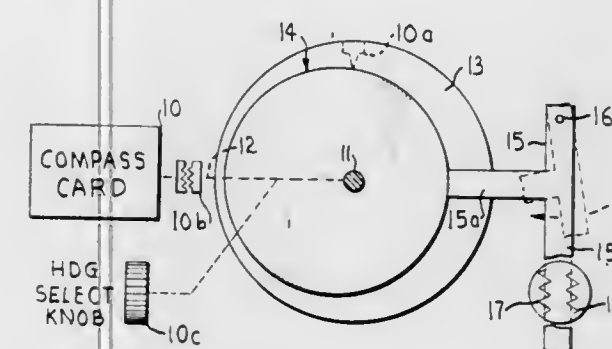
U.S. Cl. 250-231 R

3 Claims

1. In an avionics system having a compass card and a manu-

ally movable heading select indicator therein, the improvement comprising

a shutter,
a light source,
a light sensitive detector, said detector having an electrical signal output therefrom,
a cam surface operatively coupled to said compass card said surface contacting said shutter,



means for moving said cam surface in accordance with the relative angular positions of said heading select indicator and said compass card, and

means for movably mounting and locating said shutter between said light source and said light sensitive detector to thereby preclude at least a portion of said light from impinging on said detector when said shutter occupies a preselected position, said detector signal output corresponding to the angular position of said heading select indicator with respect to said compass card.

3,857,033

DETECTING MALIGNANT CELLS

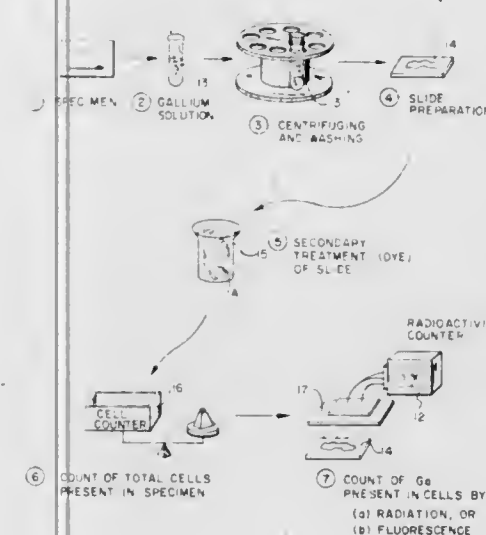
Carolus M. Cobb, Arlington, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Apr. 26, 1972, Ser. No. 247,740

Int. Cl. G21h 5/02

U.S. Cl. 250-303

27 Claims



1. A method of detecting malignant cells which method includes the steps of gathering a sample of exfoliated cells that may include malignant cells,

placing the cells in a solution containing a gallium compound and allowing the gallium to be absorbed from the solution by the cells,

washing out the gallium from the solution except for that absorbed by the cells,

and detecting the gallium in the cells in said solution.

3,857,034

SCANNING CHARGED BEAM PARTICLE BEAM MICROSCOPE

Walter Hoppe, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Germany

Continuation of Ser. No. 161,137, July 9, 1971, abandoned.

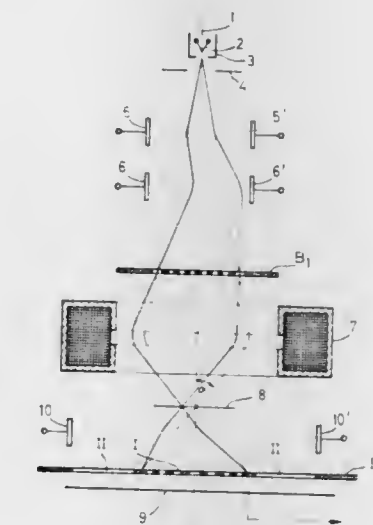
This application May 7, 1973, Ser. No. 358,080

Claims priority, application Germany, Aug. 31, 1970, 2043749

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250-311

9 Claims



1. A scanning charged particle beam microscope comprising a charged particle beam generator for generating a beam having a radiation cone having a primary longitudinal beam axis extending between said generator and a specimen, a system adjacent said generator for deflecting said beam perpendicular to the axis in accordance with a set of raster coordinates, a charged particle beam optical condenser lens disposed about said axis for focusing the beam into a small spot in the plane of said specimen for scanning thereof, said lens being disposed between said deflecting system and said specimen, a detector arrangement for providing a signal of those portions of the beam which are scattered when the specimen is irradiated, said detector being disposed about the axis under said specimen, and an aperture combination arrangement having dimensions independent of the size of the radiation cone through said condenser lens, said aperture combination comprising a first, input aperture disposed about the beam axis between said deflecting system and said condenser lens, and a second output aperture between said specimen and said detector complementary to said first aperture and having a first inner portion which is radiation opaque with respect to the unscattered portions of the beam complementary to said input aperture and permeable to the scattered portions of the beam and a second outer portion having a portion totally permeable in respect to scattered charged particles, the areas of said first aperture and the complementary areas of the first portion of said second aperture being ring-shaped and concentric, the outer portion of the output aperture having a radial width at least equal to one half of the radius of the inner portion, whereby the ratio between primary radiation intensity and detected scattered radiation is improved for the wide primary radiation cone required for high resolution and least possible radiation loading of the specimen.

3,857,035

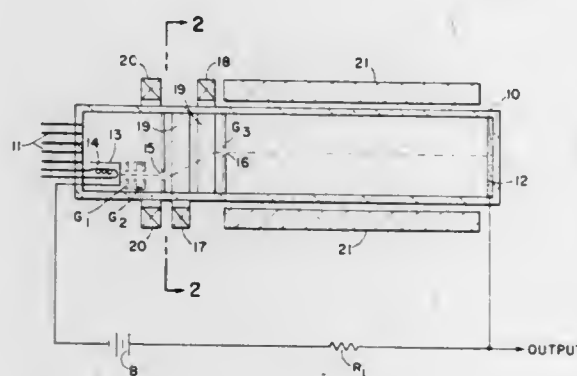
INFRARED VIDICON WITH OFF-AXIS ELECTRON GUN
Louis D. Miller, Leola, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 411,611

Int. Cl. G01t 1/16

U.S. Cl. 250-338

4 Claims



1. An infrared vidicon having an elongated sealed envelope with a central longitudinal axis and with an electron gun in one end and an infrared sensitive surface in the other end, and electron beam deflection means:

said electron gun including a thermionic cathode, at least one control grid, and having a longitudinal axis parallel to but offset from the longitudinal axis of said envelope,

said vidicon further including electron beam bending means including means for deflecting the beam from said gun first toward and then coaxial with the longitudinal axis of said envelope.

3,857,036

ENCAPSULATED SCINTILLATION PHOSPHOR

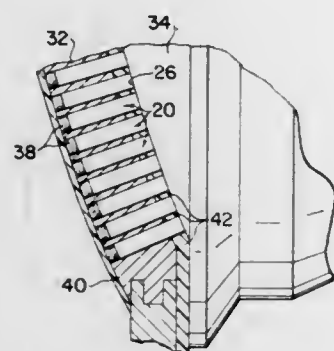
William P. Novak, 15180 Lake Ave., Middlefield, Ohio 44062

Filed June 1, 1972, Ser. No. 258,521

Int. Cl. G01t 1/20

U.S. Cl. 250-367

8 Claims



1. An encapsulated radiation detector comprising a shaped scintillation phosphor sensitive to ionizing radiation so as to emit flashes of light upon impingement of said radiation within said phosphor, a reflective foil to provide specular reflection on all surfaces of said crystal except a surface through which said flashes of light are to be essentially, uniformly collected independent of scintillation site, said foil being fixedly disposed upon said surface by means of a shrink-fitted jacket provided by a thermoplastic synthetic resinous material permeable to said ionizing radiation, disposed upon said foil.

3,857,037

COLOR CAMERA TUBE HAVING COLOR STRIP FILTER AND AN INDEX ELECTRODE

Kaoru Tomii, and Hiroshi Miyama, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

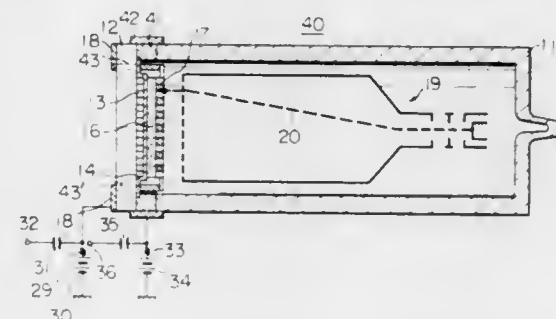
Filed Sept. 29, 1972, Ser. No. 293,515

Claims priority, application Japan, Sept. 29, 1971, 46-76473; May 24, 1972, 47-52029; May 24, 1972, 47-52030; May 24, 1972, 47-52031; May 24, 1972, 47-52032

Int. Cl. H01j 31/26

U.S. Cl. 313-65 R

5 Claims



1. In a color television camera tube adapted to be supported within a camera case, the tube having a cylindrical evacuated body, a face plate coupled to said body at one end thereof, a target assembly disposed on one side of said face plate and having a color filter, a photoconductive layer and a pair of index electrodes, the improvement which comprises a pair of electrically conductive studs embedded in said face plate and extending there through, first ends of said studs connected respectively to said index electrodes, the other ends of said studs projecting beyond a surface of said face plate, support members disposed between the camera case and the camera tube for supporting the camera tube body, and a pair of conductive resilient members mounted on said support members and contacting the other ends of said studs for electrically coupling said studs with said support members, thereby picking up electrical signals through said studs.

3,857,038

GLOW-TUBE FOR X-RAY SPECTROMETRY WITH DIRECTLY EXCITED SAMPLES

Jean Sahores, Route De Morlaas, France, assignor to Societe Nationale Des Petroles D'Aquitaine, Paris, France

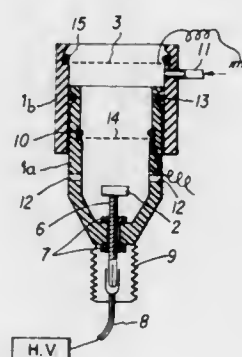
Filed Dec. 26, 1972, Ser. No. 318,198

Claims priority, application France, Dec. 29, 1971, 71.47290

Int. Cl. H01j 39/28

U.S. Cl. 250-374

6 Claims



1. A glow-tube for use in X-ray spectrometry with directly excited samples, said glow-tube comprising at least one elongated insulating casing having an opening in one end thereof and containing a disc-shaped cathode and a grid-shaped anode, said cathode and anode being aligned longitudinally of said casing with said anode between said cathode and opening, said tube being adapted to propagate an electron beam which passes through said opening when said cathode is connected

to a high voltage source and said anode is connected to ground.

3,857,039

X-RAY DEVICE

Kurt Franke, Erlangen, and Johann Finkenzeller, Tennenlohe, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

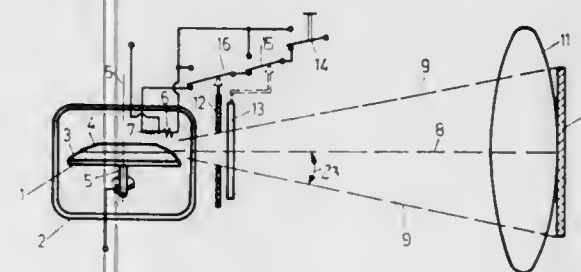
Filed Jan. 3, 1973, Ser. No. 320,757

Claims priority, application Germany, Jan. 5, 1972, 2200510

Int. Cl. G03b 41/16

U.S. Cl. 250-402

1 Claim



1. An X-ray device, comprising in combination, an X-ray tube of the rotating anode type having a rotatable stem and an anode plate mounted upon said rotatable stem, at least two electron-emitting cathodes spaced from said anode plate, and at least two concentric annular target tracks of different obtuse face angles formed on said anode plate, each of said target tracks being associated to one of said cathodes, a manually operated switch for selecting one of said cathodes to be activated, an X-ray screen for fluoroscopy mounted at a radial distance from the anode in a plane parallel to the axis of revolution of said rotating anode and being adjusted to X-rays emitted from the target tracks in a radial direction rectangular to said axis of revolution, two pairs of adjustable collimator plates mounted between the target tracks and said X-ray screen parallel to said X-ray screen and an automatic switching device comprising at least one changeover switch for said cathodes, actuated by said pair of collimator plates adjustable in a direction parallel to the axis of revolution, said automatic switching device switching on said cathode being associated to the target track having the bigger face angle when the selected adjustment of said pair of collimator plates exceeds a predetermined opening of the radiation beam larger than twice the angle of the surface of said target track having the smaller face angle with a plane normal to the axis of revolution, said switching device switching out said cathode being associated to the target track having the smaller face angle even when it has been manually selected, and wherein said predetermined opening of the radiation beam is effected when the planes of the X-ray emitting areas of the respective target tracks touch the edges of the collimator plates and the opposed edges of the usual film sizes being fixed in the plane of said X-ray screen.

3,857,040

AUTOMATIC FILM PROCESSING MACHINE

Ernst Zwettler, 2101 Hollister Ter., Glendale, Calif. 91206, and Siegmund E. Goebels, 1734 S. Barrington Ave., West Los Angeles, Calif. 90025

Division of Ser. No. 221,228, Jan. 27, 1972. This application

Oct. 15, 1973, Ser. No. 406,541

Int. Cl. G01n 23/04

U.S. Cl. 250-481

3 Claims

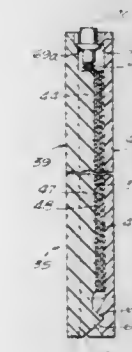
1. An X-ray film cassette for use in a daylight processor having an entrance slot with side abutments therein, the combination comprising:

a first vertically disposed rectangular cover having a well formed on the inner central portion thereof and having longitudinal sides,

a second vertically disposed opposing rectangular cover having a complementary land formed on the inner central portion thereof for fitting in the well of the first cover and having longitudinal marginal sidewalls for slideably extending over the longitudinal sides of said first cover to exclude passage of outside light into the interior of said cassette,

a pair of vertically spaced transverse angular projecting portions on the inner lower surface of one of said covers, the region between the peaks of said pair of angular projecting portions forming a transverse angular receding portion,

a single transverse angular projecting portion on the inner lower surface of the other of said covers, and



spring biased fasteners on the longitudinal sides of said cassette for resiliently holding the inner central portions of said covers together to accommodate a film therebetween with the transverse angular receding portion on the inner lower surface of said one cover mating with the single transverse angular projecting portion on the inner lower surface of the other cover, and

means on either side of the bottom of said cassette operable upon the seating of said means against the abutments on the sides of the entrance slot of said processor to separate said covers against the action of said spring biased fasteners to enable the film to drop out of said cassette past the peaks of the angular projecting portions on the respective covers into said processor.

3,857,041

ELECTRON BEAM PATTERNING SYSTEM FOR USE IN PRODUCTION OF SEMICONDUCTOR DEVICES

Denis Frank Spicer, Putnoe, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

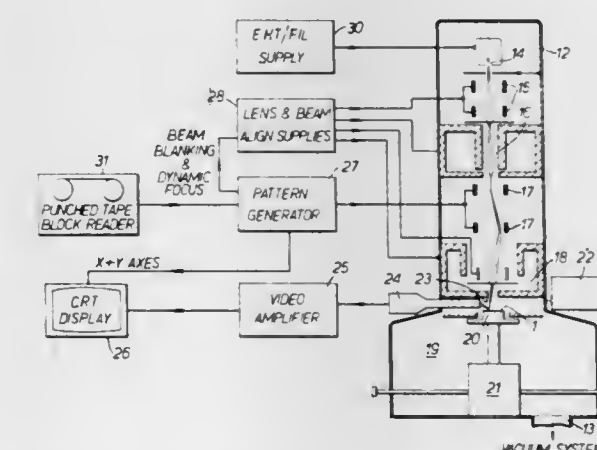
Division of Ser. No. 51,257, June 30, 1970. This application Nov. 13, 1972, Ser. No. 306,069

Claims priority, application Great Britain, July 3, 1969, 33555/69

Int. Cl. B23k 5/00

U.S. Cl. 250-492

4 Claims



1. A system for aligning a semiconductor slice having a selectively positioned reference alignment pattern and an

electron-sensitive film thereon, by consecutively exposing a plurality of patterns in said electron-sensitive film, comprising:

- means for generating an electron beam focused on said film
- electron beam deflection control means for sequentially step scanning the electron beam in an uninterrupted sequence over said electron-sensitive film in a pattern corresponding with said reference alignment pattern;
- means responsive to said scanning of the electron beam to generate positional data signals corresponding to said scanned pattern and said alignment marker pattern;
- means responsive to said positional data signals to generate error data indicating positional errors of said scanned patterns relative to said alignment marker pattern for enabling the said scanned patterns and said alignment marker pattern to be brought into alignment.

3,857,042

LASER SEEKER TEST SET

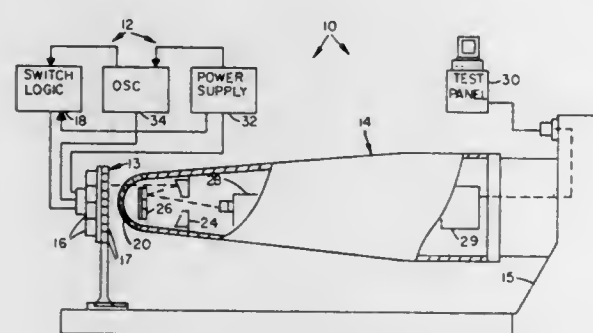
Don E. LaGrange, Los Angeles; Edward J. Davis, China Lake; Eugene R. Sheer, Ridgecrest; Ralph E. Brewer, Ridgecrest, and Curtis A. Hamilton, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 409,996

Int. Cl. G21h 5/00

U.S. Cl. 250-495

8 Claims



1. Target simulating apparatus for investigating operational efficiency of a light energy sensitive tracking system having a finite viewing envelope;

said target simulating apparatus including;

- a plurality of illuminable elements arranged to emit radiant energy waves toward said tracking system within the viewing envelope of said system;
- means for individually illuminating selected ones of said elements; and
- means for illuminating said elements in timed sequence.

3,857,043

INTERLOCK CIRCUIT FOR BLOCKING OPERATION OF STARTER MOTOR OF A COMBUSTION ENGINE

Ahmed Habasch, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 15, 1973, Ser. No. 323,719

Claims priority, application Germany, Feb. 21, 1972, 2208045

Int. Cl. F02n 17/00

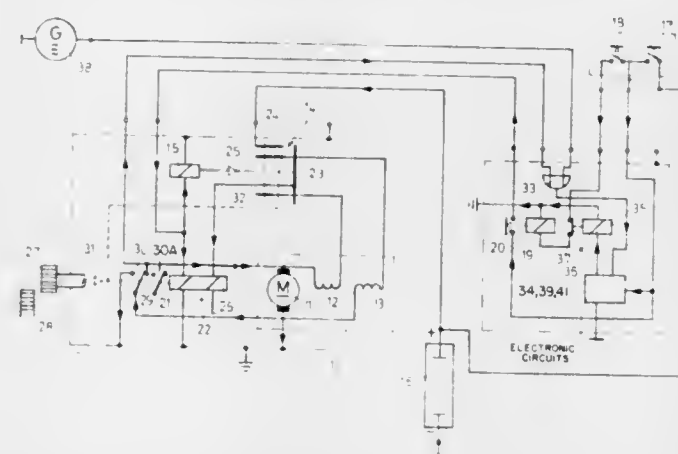
U.S. Cl. 290-38

15 Claims

1. An interlock system for cutting off or blocking the operation of the starter motor of a combustion engine, comprising:

- a generator (38) for charging said battery coupled to said engine so as to be driven thereby;
- an engine ignition switch connected to one pole of said battery;
- a starter motor having an armature winding and at least one stator winding;
- a manual starter switch connectable to said battery through said engine ignition switch and connected in circuit with said starter motor;

an electrically controlled starter switch means (14, 15) in circuit with said starter motor and said starter switch, and means for blocking operation of said electrically controlled starter switch means in response to voltage generated in a winding of said starter motor (10) by the revolution of said armature of said starter motor (10) when said starter motor is running and to the voltage generated by the revolution of the rotor of said generator (38) when said starter motor is quiescent, said blocking means including OR-gate means having one input responsive to



said voltage generated by revolution of said armature of said starter motor while said starter motor is energized, threshold switch means responsive to said OR-gate means, circuit breaker means for breaking the operating circuit of said electrically controlled starter switch means and circuit means interconnecting said threshold switch means and said circuit breaker means and having delay means for prolonging operation of said circuit breaker means for a predetermined interval after return of said threshold switch means to its quiescent condition.

3,857,044

COMBINATION POWER CONVERTER-DISTRIBUTION PANEL UNIT FOR RECREATIONAL VEHICLES

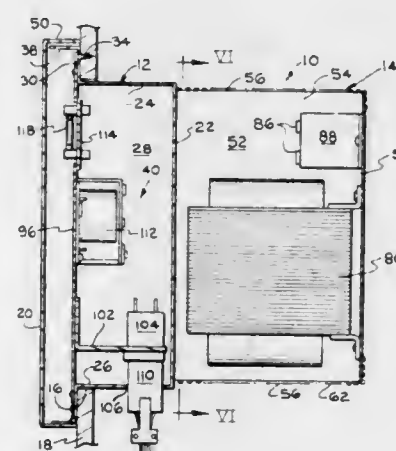
Michael S. Papoi, Kalamazoo, and Max E. Barritt, Marshall, both of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Filed Aug. 2, 1973, Ser. No. 385,103

Int. Cl. H02b 1/08

U.S. Cl. 307-9

5 Claims



1. A combination distribution panel and power converter unit for recreational vehicles including AC and DC distribution circuits and power converter apparatus characterized by the ability of the unit to separate heat generating components from distribution components and permit access to the distribution circuits from within the vehicle interior and provide access to the power converter apparatus exteriorly from the vehicle interior comprising, in combination, a housing including a distribution portion and a power converter portion, said distribution portion including a primary partition, front ex-

tending sidewalls depending from said partition having flanged edges for mounting said housing within a vertical wall, said partition and sidewalls defining an electrical distribution apparatus receiving chamber, an AC circuit breaker mounted within said chamber having input terminals and output terminals, a DC distribution system within said chamber spaced from said circuit breaker having a supply conductor and output conductors, receptacles mounted on said housing distribution portion respectively connected to said output terminals and said supply and output conductors, said power converter portion including rear extending sidewalls extending from said primary partition in the opposite direction therefrom with respect to said front extending sidewalls, a rear wall interconnecting said rear extending sidewalls in spaced relationship to said partition wherein said partition, rear extending sidewalls and rear wall define a power converter receiving chamber, a voltage reducing power converter transformer circuit within said power converter receiving chamber having a DC low voltage output, an electrical conductor connecting said low voltage output to said receptacles connected to said DC distribution system supply conductor, cover plate means mounted on said flanged edges disposed over said electrical distribution apparatus receiving chamber, an opening defined in said cover plate means providing access to said AC circuit breaker, and a door mounted upon said housing adjacent said flanged edges positional between open and closed positions selectively providing access to said housing distribution portion.

3,857,045

FOUR-PHASE LOGIC SYSTEMS

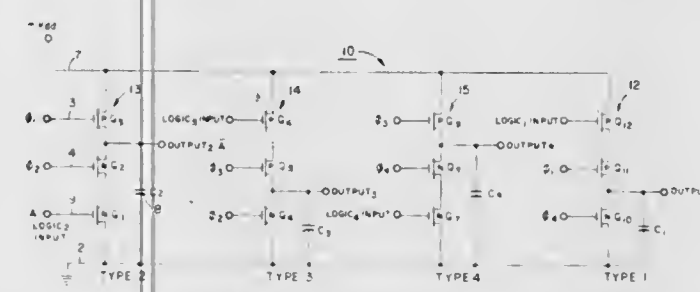
George M. Low, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Howard L. Petersen, 13192 Paramount Drive, Saratoga, and Donald K. Kinell, 2420 Whitney Drive, Mountain View, both of Calif.

Filed Apr. 17, 1973, Ser. No. 351,929

Int. Cl. H03k 3/64

U.S. Cl. 307-208

3 Claims



1. A four-phase logic system comprising:

at least four logic networks connected in parallel between a voltage source and a reference potential;

each said logic network including a pair of CMOS, and a logic MOST circuit connected in series with the pair of CMOS, and wherein each said pair comprises a P type conductivity transistor and an N type conductivity transistor with their conductive paths in series connection adjacent series CMOS pairs and logic MOSTS alternating in position in said series between said voltage source and said reference potential,

a four-phase clock generator adapted to generate a four-phase clock waveform signal,

each said CMOS in each pair of CMOS being respectively coupled to adjacent phases of said clock generator which turns it ON and OFF,

each said logic MOST circuit being responsive to a logic input signal, and

each junction terminal between each pair of CMOS constituting an output terminal for its associated logic network with the stray capacitance between said junction terminal and the reference potential constituting a storage means for storing the desired logic output of said

associated logic network where it is available for readout from said output terminal.

3,857,046

SHIFT REGISTER-DECODED CIRCUIT FOR ADDRESSING PERMANENT STORAGE MEMORY

Andrew G. Varadibiarwood; Richard B. Rubinstein, both of New York, N.Y., and Steven Radoff, Nashua, N.H., assignors to General Instrument Corporation, Newark, N.J.

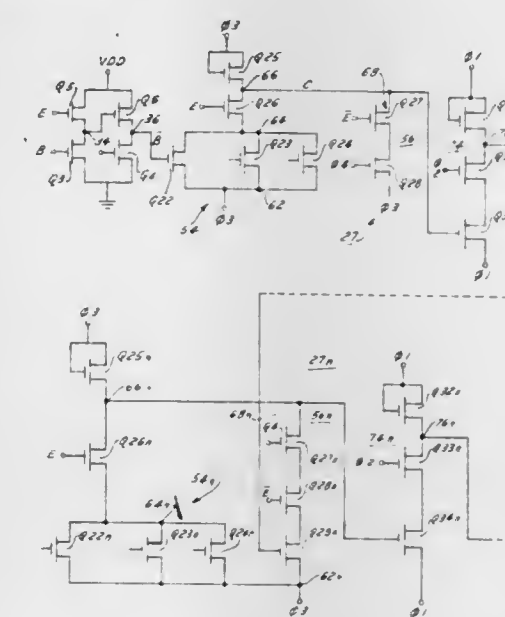
Division of Ser. No. 86,882, Nov. 4, 1970, Pat. No. 3,691,534.

This application May 8, 1972, Ser. No. 251,525

Int. Cl. G11c 11/00

U.S. Cl. 307-221 R

2 Claims



1. A shift register circuit comprising a plurality of shift register stages each operably connected to a source of timed signals, a plurality of logic stages each having a logic terminal and receiving a set of input signals different from said timed signals which are effective to establish a unique condition at one of said logic stages and to establish a unique signal level at a corresponding one of said logic terminals, a plurality of nodes, means actuable by an enabling signal and effective when actuated to respectively operatively connect each of said logic terminals to said nodes thereby to establish a unique logic level at one of said nodes so connected to said one of said logic terminals, and effective in the subsequent absence of said enabling signal to disconnect said logic terminals from said nodes and to operatively connect said register stages to said nodes and thereafter to sequentially transfer said unique logic level from said one of said nodes to a succeeding one of said nodes during subsequent one of said timed signals.

3,857,047

DETECTOR EMPLOYING A CURRENT MIRROR

Mark Berwyn Knight, North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 8, 1973, Ser. No. 368,176

Int. Cl. H03k 9/02; H03d 1/18

U.S. Cl. 307-231

16 Claims

1. A detector for amplitude modulated input signals comprising:

current source means for producing an operating current; current divider means for dividing said operating current into first and second paths and proportioning the current therebetween in response to said amplitude modulated input signal;

a circuit node for receiving the second path current; a current mirror having an input terminal for receiving the first path current, a common terminal for receiving a reference potential, and an output terminal connected to said node; and

diode means and load means connected in series between said node and said common terminal, said diode means

3,857,053 SYNCHRONOUS MOTOR STATOR POLE ARRANGEMENT

Kenji Yatsushiro, Chicago, and George F. Kuchuris, Bloomington, Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Apr. 9, 1973, Ser. No. 348,916

Int. Cl. H02k 21/14

U.S. Cl. 310-162

9 Claims



3,857,060

GLOW DISCHARGE TUBE IGNITION CIRCUIT FOR ELECTRIC DISCHARGE TUBE

Hubertus Mathias Jozef Chermin, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

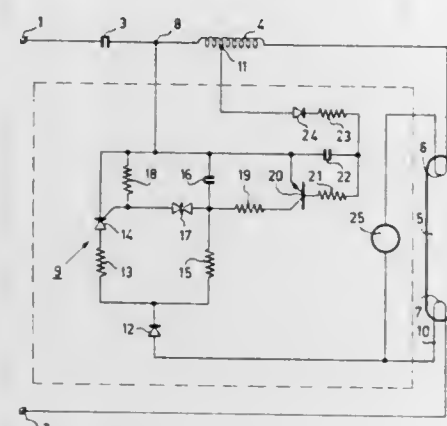
Filed Mar. 12, 1973, Ser. No. 340,052

Claims priority, application Netherlands, Mar. 17, 1972, 7203554

Int. Cl. H05b 41/18

U.S. Cl. 315—99

15 Claims



1. An arrangement for starting and operating an electric discharge tube having two electrodes comprising, two input terminals adapted to be connected to an alternating voltage source, the cold ignition voltage of the discharge tube being higher than the voltage of the alternating voltage source, an inductor, means connecting the series arrangement of the inductor and the discharge tube across said two input terminals, auxiliary circuit means including a controlled semiconductor rectifier coupled to the input terminals and to the tube electrodes for generating ignition voltage between the tube electrodes before the tube is ignited of a value which is higher than the voltage of the alternating voltage source, and means connecting the electrodes of the discharge tube together through a glow discharge starter whose ignition voltage is higher than the voltage of the alternating voltage source and lower than the voltage to be generated by the auxiliary circuit means.

3,857,061

SAFETY CIRCUIT FOR THE DETECTION OF THE SIMULTANEOUS ACTUATION OF TWO ANTAGONIZING UNITS

Robert Boudault, Limours, and Christian Guion, Verrieres Le Buisson, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,377

Claims priority, application France, Nov. 15, 1972, 72.40508

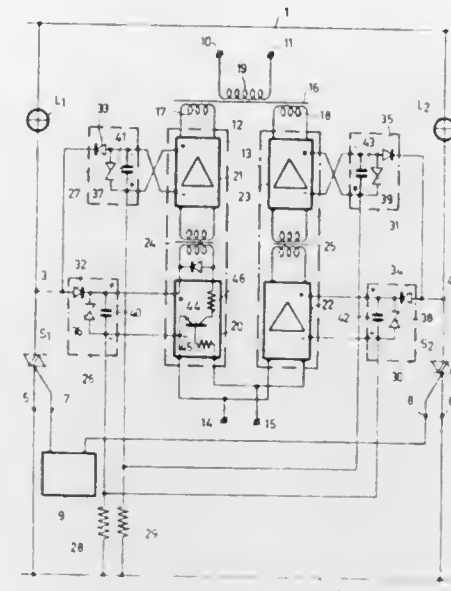
Int. Cl. H01j 7/42

U.S. Cl. 315—130

2 Claims

1. A safety circuit for the detection of the simultaneous actuation of two antagonizing units, each of which is supplied with an alternating voltage via a static switch, said safety circuit supplying an approval signal if no supply voltage is simultaneously applied to the antagonizing units, characterized in that it comprises two amplification channels which receive an approval signal of a given frequency, the outputs thereof being coupled to the output of the safety circuit, each amplification channel comprising a cascade-connection of two amplifiers, the direct current supply for these two amplification channels being provided for one of the amplification channels by a pair of supply circuits which are each connected to the terminals of the switch which controls one of the antagonizing units, and for the other amplification channel by another pair of supply circuits, each of which is connected to the terminals of the switch which controls the other antagonizing unit, both supply circuits of each pair comprising a rectifier

which is arranged in one supply circuit so as to rectify the positive half-cycles of the alternating voltage and in the other



3,857,062

FLASHING LAMP CIRCUITS

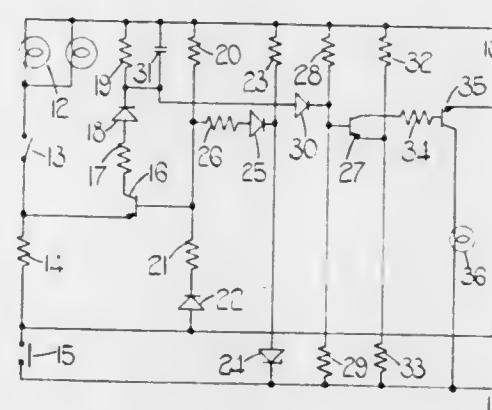
Gordon Harris Leonard, Gerrards Cross, Bucks., and Anthony John Ramshaw, Middlesex, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Aug. 27, 1973, Ser. No. 391,768

Int. Cl. H01j 7/42

U.S. Cl. 315—136

3 Claims



1. A flashing lamp circuit comprising a pair of supply terminals, contact means connected in series with the lamp to be flashed, a resistor connected in series with said lamp and across which when said contact means is closed is developed a voltage indicative of the current flow through said lamp, a warning lamp, a transistor switch including a transistor having its collector emitter path connected in series with said warning lamp across said contact means, said transistor switch being operable to cause illumination of said warning lamp when said contact means is open, voltage sensing means for sensing the voltage developed across said resistor, a capacitor associated with said voltage sensing means, said voltage sensing means establishing a charging path for said capacitor in the event that the voltage across said resistor falls below a predetermined value when the contact means is closed, the voltage across said capacitor acting to prevent conduction of said transistor when said contact means is next opened and thereby preventing illumination of the warning lamp.

3,857,063

BALLAST CIRCUITS FOR DISCHARGE LAMPS

Peter Colin Major, and Kenneth Whittier Ogden, both of London, England, assignors to Thorn Electrical Industries Limited, London, England

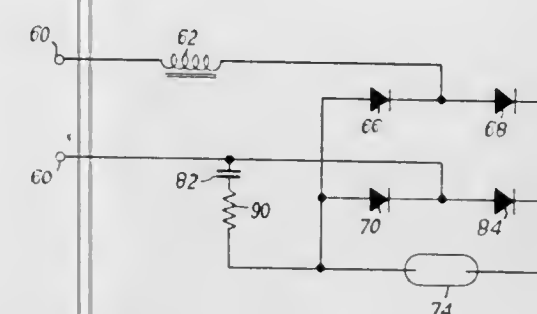
Filed Feb. 15, 1973, Ser. No. 332,717

Claims priority, application Great Britain, Feb. 16, 1972, 7257/72

Int. Cl. H05b 41/23

U.S. Cl. 315—170

4 Claims



1. A transformerless ballast circuit for a metal halide discharge lamp, comprising:
two input terminals for connection to an a.c. source of supply;
two output terminals for supplying direct current to the metal halide discharge lamp;
a bridge rectifier coupling said two input terminals and said two output terminals; and
a capacitor and resistor connected in series circuit in parallel with said bridge circuit and coupling one of said input terminals and one of said output terminals, said series circuit presenting a sufficiently high capacitance to be effective during starting of said discharge lamp and a sufficiently high impedance to be substantially ineffective during run-up and normal running of said lamp.

3,857,064

AUTOMATIC CONTROL OF LIGHT FLASH PULSES

Zoltan Vital, Uccle, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder & Best, Inc., Los Angeles, Calif.

Continuation of Ser. No. 799,554, Feb. 13, 1969, abandoned.

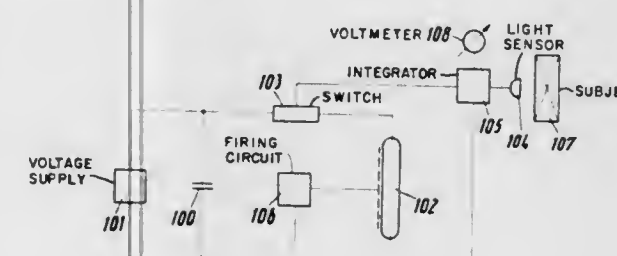
This application Apr. 14, 1972, Ser. No. 244,279

Claims priority, application Belgium, Feb. 13, 1968, 54471; Nov. 21, 1968, 66425; Dec. 27, 1968, 68017; Jan. 20, 1969, 68982

Int. Cl. H05b 37/02

U.S. Cl. 315—241 P

23 Claims



1. In a device for controlling the operation of an element which converts an electric current into a light flash and including a storage capacitor storing energy for supplying the element, a light sensor arranged for sensing light produced by the element and reflected from an object and for producing an electrical output proportional to the intensity of the light which it receives, and an integrator connected to receive the output from the sensor and to produce a control signal representing the time integral of the received light intensity, the improvement comprising an electronic switch having two main electrodes via which said switch is connected in series between said capacitor and said element, and having a control electrode connected to said integrator to receive the control signal from said integrator, the application of the control

signal to said control electrode rendering said switch nonconductive and thus opening the circuit between said capacitor and said element and halting the discharge of said capacitor for generally conserving energy from said capacitor when the control signal from said integrator reaches a predetermined value.

3,857,065

GAS-FILLED TUBE CONTROL APPARATUS AND METHOD

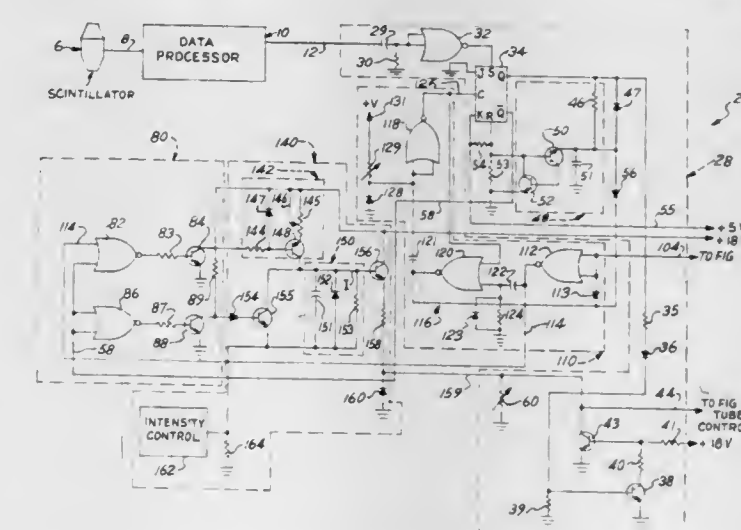
Arthur H. Hutchison, and Lonnie S. McMillian, both of Huntsville, Ala., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 228,174

Int. Cl. H05b 37/00

U.S. Cl. 315—340

25 Claims



1. In a system comprising a gas-filled tube that produces light by conducting current after a predetermined voltage is applied across the tube, improved apparatus for maintaining the light intensity at a predetermined value comprising:
control means for applying the predetermined voltage across the tube at a predetermined time and for controlling the amount of current flowing through the tube in response to a control signal;
first means for generating a first operating signal in response to the predetermined voltage applied across the tube;
second means for generating a second operating signal in response to the current flowing through the tube;
generating means for generating a first control signal monotonically varying in a first direction in response to the first operating signal, for terminating the generation of said first control signal in response to the second operating signal and for generating a second control signal monotonically varying in a second direction in response to the second operating signal; and
means for transmitting the first and second control signals to the control means, whereby the initial amount of current flow through the tube is proportional to the length of time between the application of voltage across the tube and the commencement of current conduction through the tube and wherein the current flow through the tube decreases subsequent to the initial current flow so that the intensity of light produced by the tube remains substantially constant.

3,857,066

ELECTROSTATIC CHARGE SENSING PROBE

Jay D. Cline, and Don S. Grant, both of Fort Lauderdale, Fla., assignors to Dayton Aircraft Products, Inc., Fort Lauderdale, Fla.

Filed July 6, 1973, Ser. No. 377,060

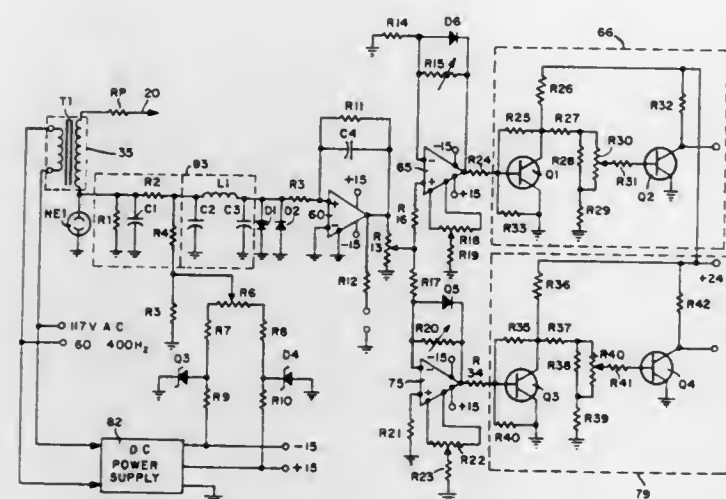
Int. Cl. H05f 3/06

U.S. Cl. 317—2 R

7 Claims

1. Apparatus for discharging an electrostatic charge accumulated on a body, said apparatus including

a probe extending from said body into the atmosphere, a high voltage sensor power supply connected between said probe and said body, said sensor power supply having an output voltage of sufficient magnitude to cause current to flow through said probe to the atmosphere,



sensing means for sensing the magnitude and polarity of said current flow in said probe as an indication of an electrostatic charge on said body, separate electrostatic discharge means, and means responsive to said sensing means for controlling the operation of said electrostatic discharge means to neutralize the electrostatic charge.

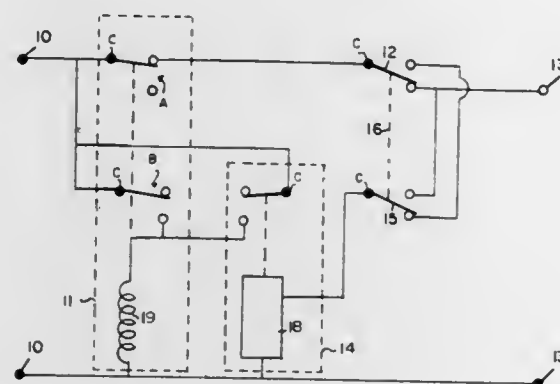
3,857,067

SWITCH FAILURE MONITORING DEVICE
Mohammed H. Zanoorie, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Department of Health Education and Welfare, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,508
Int. Cl. H02h 3/00

U.S. Cl. 317-9 A

5 Claims



1. An electrical circuit for deenergizing a load device in case of improper functioning in microwave ovens and cabinet radiographic units comprising:

an operating circuit;
a monitoring circuit connected to the operating circuit;
first means in the operating circuit for removing potential therefrom;
first switch means in the operating circuit for applying potential to a load device, said first means being a power relay connected in series with said first switch;
second switch means in the monitoring circuit; and
time delay means in the monitoring circuit connected between the second switch and the power relay and arranged to energize the first means should either the first or second switches fail to function or should one of said switches be activated prematurely irrespective of whether a continuity through the load is maintained.

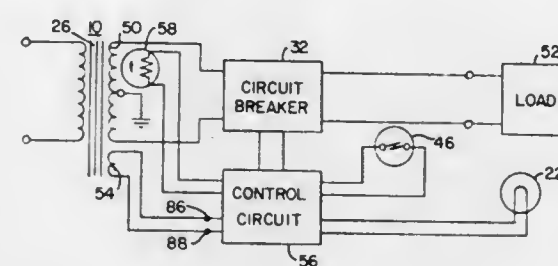
3,857,068 TRANSFORMER HAVING A THYRISTOR CONTROLLED CIRCUIT BREAKER

Harry R. Braunstein, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 26, 1973, Ser. No. 401,095
Int. Cl. H02h 7/04

U.S. Cl. 317-15

12 Claims



1. A transformer comprising:
a magnetic core;
a winding assembly inductively coupled to said magnetic core;
a circuit breaker capable of interrupting power supplied by the transformer;
electrical heat sensing means which is responsive to the temperature of said winding assembly;
electrical control means which is responsive to said heat sensing means; and
electromechanical tripping means which trips said circuit breaker when the temperature sensed by said heat sensing means exceeds a first predetermined value, said tripping means being activated by an electrical signal from said control means.

3,857,069

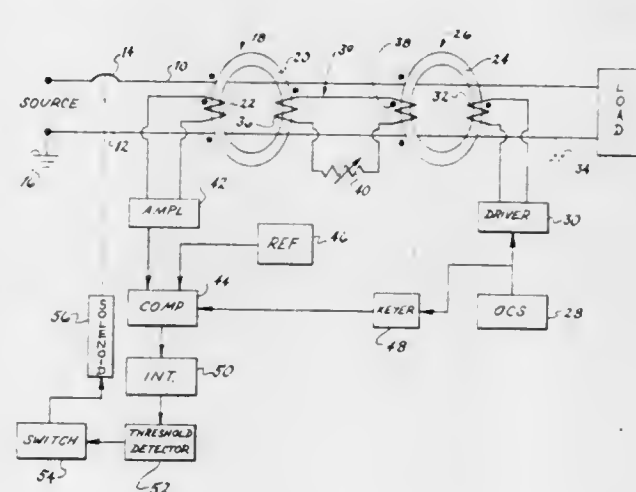
GROUND FAULT CIRCUIT INTERRUPTER AND MODULE THEREFOR

Edward Keith Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,496
Int. Cl. H02h 3/28

U.S. Cl. 317-18 D

15 Claims



1. A ground fault circuit interrupter comprising, in combination:

A. circuit interrupter contacts for connection in the line side of a power distribution circuit including a line conductor and a neutral conductor grounded at the power source;
B. means for sensing a current imbalance in the line and neutral conductors and developing an output signal proportional to any such current imbalance;
C. a signal source including an auxiliary transformer for inducing a first signal on the neutral conductor effective to produce a current imbalance sensible by said sensing means in the event of a low impedance neutral conductor ground fault;

D. means coupling a second signal to said sensing means effective to counteract the imbalancing effect thereon of said first signal; and
E. signal processing means for processing said output signal such as to initiate circuit interrupting operation of said interrupter contacts when said output signal is substantially zero.

3,857,070

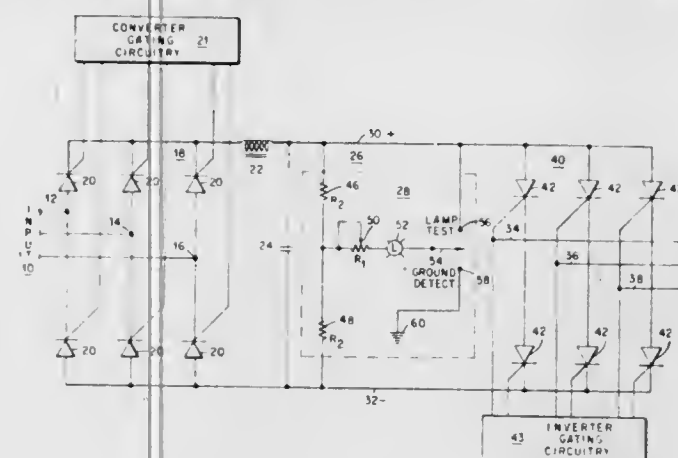
SINGLE-LAMP GROUND DETECTOR FOR CONVERTER-INVERTER POWER SUPPLIES

Jay E. Smith, Pittsburgh, Pa., assignor to The United States of America as represented by the U.S. Atomic Energy Commission, Washington, D.C.

Filed Sept. 7, 1973, Ser. No. 395,328
Int. Cl. H02h 7/14

U.S. Cl. 317-18 R

4 Claims



1. A ground detector system for a converter-inverter power supply comprising an AC input converter section, a DC link with a positive and negative line and an AC output inverter section in combination with a fault detecting circuit on the DC link, said fault detecting circuit being connected between the positive and negative lines and comprising a ground detector two-position switch in series with a lamp and a tapped resistor, the ground detector switch having a Lamp Test position connected to the positive line and a Ground Detect position connected to the sole ground, the tapped end of the resistor connected to a common point of two series resistors which are connected between the positive and negative lines, the switch providing that the lamp will light only if there is a fault or non-infinite resistance to ground in one of the AC input lines, AC output lines or DC link when the Ground Detect position is actuated.

3,857,071

BONDING CIRCUIT FOR REDUCING SHEATH CURRENT OF POWER CABLE LINE

Teruji Nikaido, Kaoru Haga, both of Tokyo; Norio Sugiyama, Mayama-machi, and Yasutaka Fujiwara, Yokohama, all of Japan, assignors to Tokyo Denryoku Kabushiki Kaisha, Tokyo and Showa Densen Denran Kabushiki Kaishi, Kanagawa-ken, both of Japan

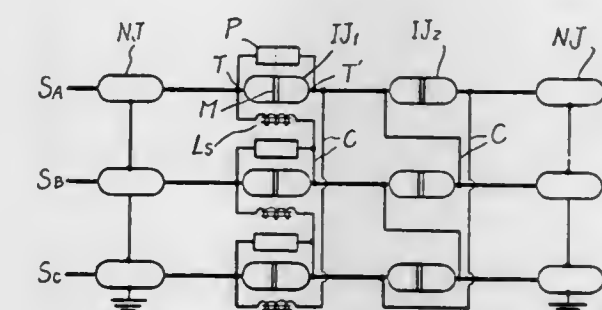
Filed June 1, 1973, Ser. No. 366,165
Claims priority, application Japan, June 16, 1972, 47-60658
Int. Cl. H02h 7/22

U.S. Cl. 317-44

3 Claims

1. A circuit for reducing sheath current in an alternating current three phase line of a single core power cable in which anti-corrosive layers cover the outer surface of the metal sheath, comprising first normal joint box means in each of said phase lines; first wire means connecting the boxes in the respective lines and being grounded; each of said phase lines including first insulated joint box means having back and front contact points, said first insulated joint box means being serially connected via said back contact point to said first normal joint box means, a protective device connected in parallel via said back and front contact points with said first insulated

joint box means, second insulated joint box means serially connected to said parallel combination via said front contact point; saturable reactor means coupled between the back contact point of one line with the front contact point of another line, respectively, each of said saturable reactor means reducing the current in said phase lines; each of said phase lines including second insulated joint box means having rear and forward contact points; second wire means connecting the rear contact of said second insulated joint box means of one line with the forward contact point of said second insulated joint box means of another line, respectively; each of said phase lines including second normal joint box means serially



connected via said forward contact point to said second insulated joint box means; third wire means connecting the second normal joint box means in the respective lines and being grounded; each of said protective devices including a first set of parallel connected nonlinear resistance elements for operatively protecting one part of said first insulated joint box means, and being grounded through a discharging gap, and a second set of parallel connected nonlinear resistance elements for operatively protecting another part of said first insulated joint box means, and being grounded through a discharging gap, said protective devices operatively preventing the dielectric break-down in said anticorrosive layers and simultaneously the entering of surge voltages.

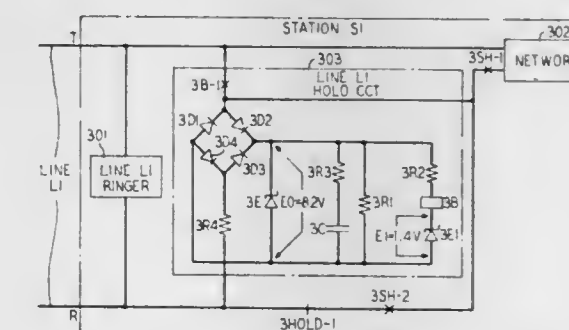
3,857,072

RELAY RELEASE TIMING CONTROL CIRCUIT
Dennis Bryan James, Rumson, and James Royce McEowen, Holmdel Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Bell Telephone Laboratories, Incorporated, Berkeley Heights, both of N.J.

Filed Dec. 12, 1973, Ser. No. 426,649
Int. Cl. H01h 47/18

U.S. Cl. 317-141 R

7 Claims



5. A relay control circuit comprising means for maintaining said relay operated when operate current over a pair of leads is interrupted for a period of time less than a first fixed interval and for insuring that said relay releases when said operate current over said pair of leads is interrupted longer than said first fixed interval but prior to a second fixed interval, said means comprising:

breakdown means having a well-defined voltage level above which current flows through said device and below which current will not flow therethrough, said breakdown means in series with said relay winding, said breakdown means and said relay winding forming a series network;

means concurrently connected to said pair of leads and to said series network for establishing a fixed reference voltage across said series network for maintaining said relay operated, said reference voltage being generated from said operate current;

a timing capacitor concurrently connected in parallel with said series network and with said fixed reference voltage means;

a resistor connected in parallel with said series network; means responsive to the interruption of said operate current for generating an RC decaying curve of said reference voltage formed by said capacitor and the circuit resistance;

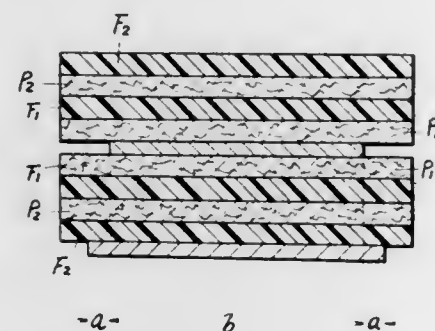
said resistor having a value to adjust said RC decaying curve so that a rapidly decaying voltage portion thereof falls between said first and second intervals, and wherein said well-defined voltage level of said breakdown device is such that said decaying reference voltage reaches said level between first and second fixed intervals.

3,857,073

CAPACITOR WITH POLYPROPYLENE DIELECTRIC
Takayuki Yagitani, Hyogo, Japan, assignor to Shizuki Electrical Mfg., Co., Ltd., Nishinomiya, Hyogo, Japan
Filed Apr. 10, 1973, Ser. No. 349,838
Int. Cl. H01g 3/195

U.S. Cl. 317-258

2 Claims



1. In a dielectric liquid impregnated paper/polypropylene film composite wound foil type dielectric capacitor including a first electrode and a second electrode positioned in parallel with and opposite to said first electrode, said first electrode being narrower in width than said second electrode and said capacitor having interleaved layers of said paper and polypropylene film, the improvement comprising both sides of said first electrode being in contact with said paper and said second electrode being in contact with said polypropylene film, said electrodes being separated by at least one layer of interspaced film and paper.

3,857,074

ELECTRICAL CAPACITORS AND METHOD OF MAKING SAME

Hermann Heywang; Manfred Kobale, both of Munich; Karl-Heinz Preissinger, Taufkirchen; Dietrich Ristow, Neubiberg, and Ulrich Wehnelt, Starnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 19, 1973, Ser. No. 398,864

Claims priority, application Germany, Sept. 27, 1972, 2247260

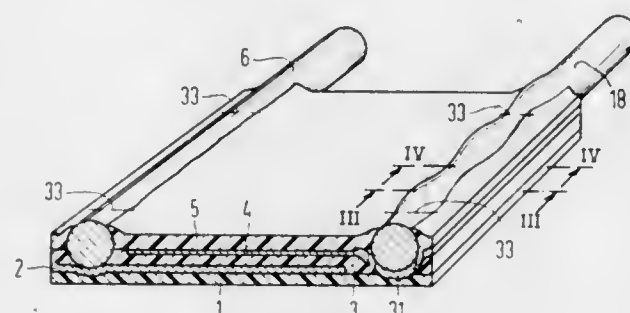
Int. Cl. H01g 1/14

U.S. Cl. 317-258

35 Claims

1. An electrical capacitor comprising at least two aluminum metal layers, a dielectric layer of synthetic resin material interposed between each adjacent pair of metal layers, said metal and dielectric layers being substantially flat and arranged between a first and second outer cover foil to form a stack, with each of said metal layers, which serves as one

electrode of the capacitor, extending to one edge of the stack but not to the opposite edge so as to leave a metal-free edge zone at said opposite edge, and each of said metal layers, which serves as the other electrode of the capacitor, extending to said opposite edge but not to said one edge of the stack, so as to leave a metal-free edge zone at said one edge, and a connecting wire extending longitudinally on said first cover foil along each of said metal-free edge zones, at least specific points on the length of said wires being fused through said first



cover foil and the dielectric layer into electrical contact with the metal layer in the edge zone by an alloy zone between the metal layer and wire so that the wires are mechanically stably secured therein and at least one wire is mechanically stably secured to each of the two cover foils the dielectric layer and the metal layer extending into said edge zone therebeneath two cover foils, the dielectric layer and the metal layer extending into said edge zone therebeneath mechanically connected in a stable manner.

3,857,075

POSITIONING DEVICE

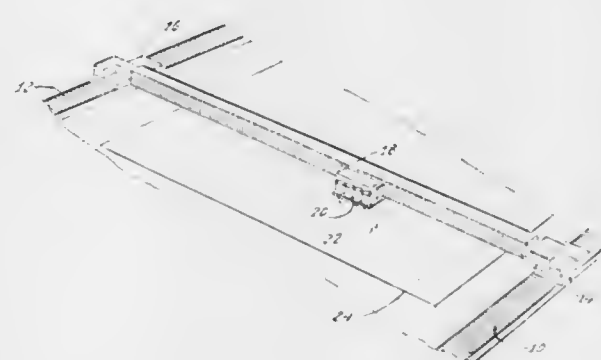
Bruce A. Sawyer, 20120 Allentown Dr., Woodland Hills, Calif. 91364

Continuation of Ser. No. 163,597, July 19, 1971, abandoned.
This application Jan. 15, 1973, Ser. No. 323,408

Int. Cl. H02k 41/02

U.S. Cl. 318-38

34 Claims



1. In a system for providing a controlled movement of an output member along first and second coordinate axes, the combination of:

at least a pair of tracks disposed in spaced relationship to each other,

a beam disposed in spaced and perpendicular relationship to the tracks and disposed between the tracks and movable along the tracks in the spaced and perpendicular relationship to the tracks,

first motor means disposed on the beam in spaced but cooperative relationship with one of the tracks for cooperating with that track to produce with that track a motor for providing a controlled movement of the beam along that track in the spaced and perpendicular relationship to the track, and

second motor means disposed on the beam in spaced but cooperative relationship with the other one of the tracks for cooperating with that track to produce with that track a motor for providing a controlled movement of the beam

along that track in the spaced and perpendicular relationship to that track,

the first and second motor means being constructed to receive first polyphase signals and being disposed relative to their associated tracks to provide identical displacements of the beam relative to the tracks at the opposite ends without any rotation of the beam relative to the tracks,

third motor means disposed on the beam in spaced but cooperative relationship with the beam and supporting the output member and cooperating with the beam to produce with the beam a motor for providing a controlled movement of such second means along the beam in the spaced but cooperative relationship with the beam and for providing a movement of the output member with such means.

first signal means operatively coupled to the first and second motor means for introducing the first polyphase signals to the first and second motor means to energize the first and second motor means, and

second signal means operatively coupled to the third motor means for introducing second polyphase signals to the third motor means to energize the third motor means.

3,857,076

UPRIGHT VACUUM CLEANER-DRIVE MOTOR CONTROL

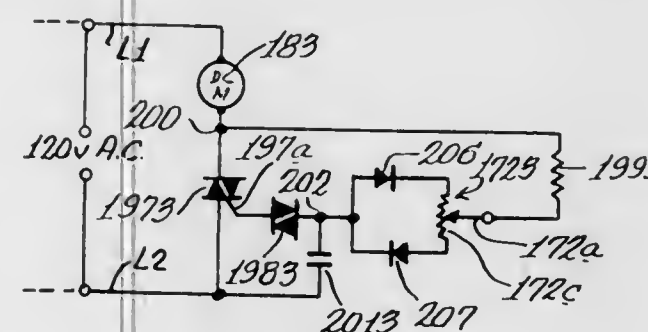
Thomas Erwin Hetland, White Bear Lake, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 15, 1973, Ser. No. 323,780

Int. Cl. H02p 5/16

U.S. Cl. 318-257

11 Claims



1. In a vacuum cleaner having a selectively positionable operating handle and a wheeled drive including an electric drive motor, conductor means for connecting the vacuum cleaner to an alternating current power supply, the wheels driven by said motor, control means for controlling the propelling of the vacuum cleaner by said wheeled drive comprising: a direct current motor; a bidirectional triode thyristor in series with said motor and said conductor means and having a control gate element; and means responsive to the position of said operating handle relative to an "Off" position thereof for controlling said control gate element and correspondingly providing phase controlled conduction of direct current through said motor during similar polarity half cycles of the alternating current power, including a bidirectional trigger diode having one terminal connected to said control gate element, parallel connected inverse diodes connected to the other terminal of said trigger diode, a capacitor connected between said other terminal of the trigger diode and said conductor means, and adjustable means including adjustable resistance means electrically connected in series with said inverse diodes and said trigger diode, and to said conductor means, said adjustable resistance means including a first resistance portion having a terminal connected to one of said diodes, a second resistance portion having a terminal connected to the other of said diodes, and means interconnecting said resistance portions opposite from said terminals to said conduction means, the adjustable resistance means being adjusted in response to positioning of said handle relative to

said Off position and providing preferential current flow through a selected one of said diodes depending on the direction of movement of said handle from said Off position.

3,857,077

SPEED AND DIRECTION CONTROL APPARATUS FOR DC MOTORS

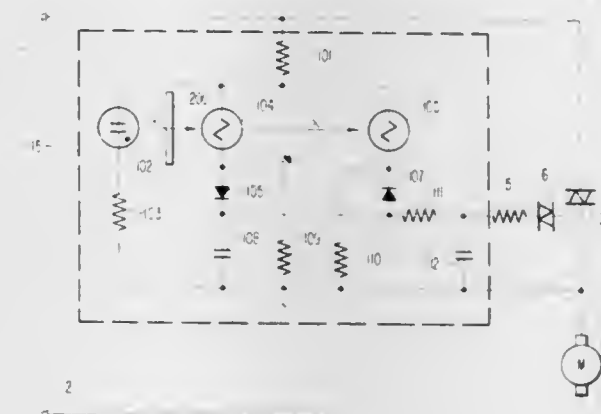
Thomas E. Kasmer, Endicott, N.Y., assignor to Magnetic Laboratories, Inc., Halstead, Pa.

Filed Apr. 27, 1973, Ser. No. 355,109

Int. Cl. H02p 5/16

U.S. Cl. 318-257

7 Claims



3,857,078

ACTUATING SYSTEM

Bruce A. Sawyer, 20120 Allentown Dr., Woodland Hills, Calif. 91364

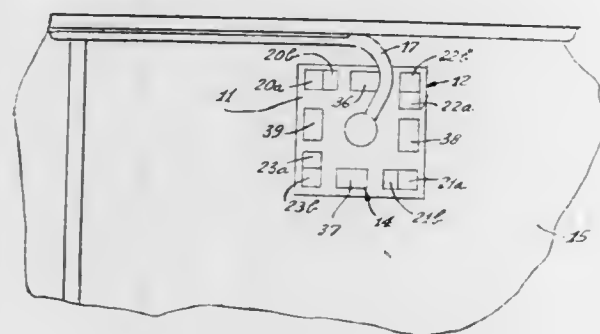
Continuation of Ser. No. 157,100, June 28, 1971, abandoned.

This application Mar. 26, 1973, Ser. No. 344,563

Int. Cl. G05b 1/01

U.S. Cl. 318-608

24 Claims



1. In combination,
 - a platen having a planar configuration and having a plurality of poles disposed at spaced positions along a particular axis,
 - first pickoff means having poles disposed relative to the poles on the platen to move along the particular axis relative to the platen and to generate a first periodic function in accordance with the movement of the poles on the first pickoff means along the particular axis relative to the poles on the platen,
 - second pickoff means having poles disposed relative to the poles on the platen to move along the particular axis relative to the platen and disposed relative to the first pickoff means to generate a second periodic function in accordance with the movement of the poles on the second pickoff means along the particular axis relative to the poles on the platen,
 - means responsive to the generation of the first periodic function in accordance with the movement of the first pickoff means along the first particular axis relative to the platen for generating signals representing the first periodic function,
 - means responsive to the generation of the second periodic function in accordance with the movement of the second pickoff means along the second particular axis relative to the platen for generating signals representing the second periodic function,
 - first actuator means having poles disposed relative to the poles on the platen to move along the particular axis relative to the platen and operatively coupled to the first and second pickoff means, the first actuator means being responsive to the signals representing the first periodic function for producing forces for driving the first and second pickoff means in accordance with the characteristics of such signals,
 - second actuator means having poles disposed relative to the poles on the platen to move along the particular axis relative to the platen and operatively coupled to the first and second pickoff means, the second actuator means being responsive to the signals representing the second periodic function for producing forces for driving the first and second pickoff means in accordance with the characteristics of such signals, and
 - means responsive to the signals generated by the first and second pickoff means for controlling the operation of the actuator means to prevent the pickoff means and the actuator means from rotating about an axis substantially normal to a surface including the particular axis.

3,857,079
MACHINE TOOL UTILIZING A POTENTIOMETER FOR DETERMINING VARIOUS POSITIONS

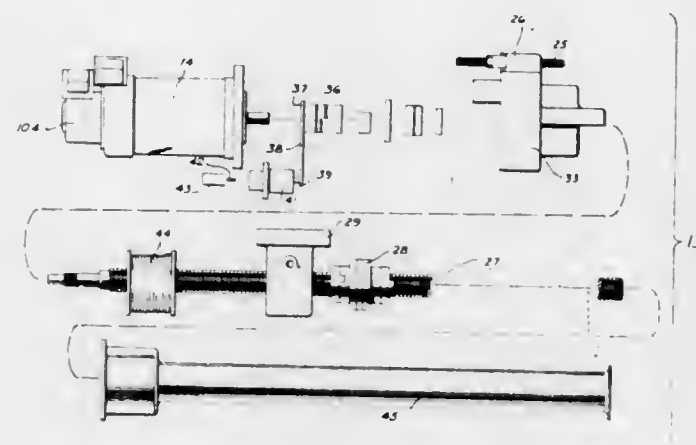
John A. Wake, Auburn, and Arthur F. St. Andre, Marlboro, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Mar. 9, 1973, Ser. No. 339,705

Int. Cl. G05b 1/06

U.S. Cl. 318-663

8 Claims



1. A machine tool, comprising
 - a. a base,
 - b. a table mounted for sliding movement on the base,
 - c. an actuator operative between the base and the table, the torque and speed of the actuator being controllable,
 - d. a primary potentiometer connected to the actuator,
 - e. a plurality of secondary potentiometers set at selected values,
 - f. a control for comparing signals from the secondary potentiometers with a signal from the primary potentiometers, and
 - g. a stop element on the base engaging a stop element on the table at a point in the sliding movement, and
 - h. means causing the torque generated by the actuator to remain at a pre-selected value during engagement between the stop elements.

3,857,080

PROPORTIONAL CONTROL FOR GUIDANCE SYSTEMS, AND THE LIKE

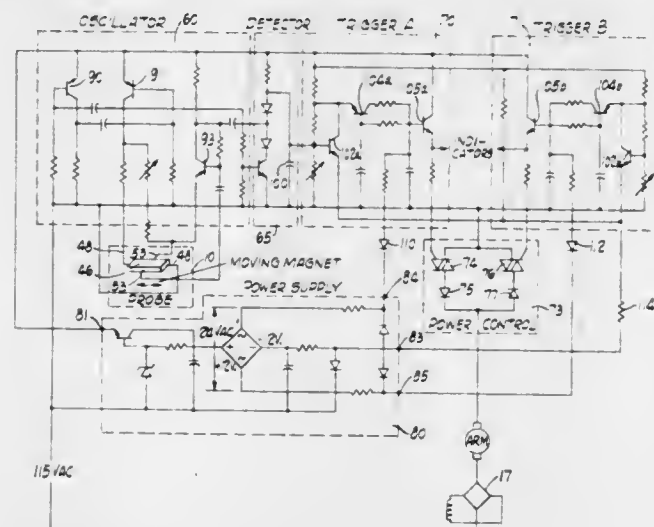
Shelby Cecil, Brunswick, and Dean D. Riggs, Avon Lake, both of Ohio, assignors to Cecil Equipment Co., Inc., Cleveland, Ohio

Filed Nov. 16, 1972, Ser. No. 307,203

Int. Cl. G05f 1/08

U.S. Cl. 318-681

12 Claims



1. Apparatus for correcting the path of a moving slave device to compensate for variations detected in said path comprising means for converting each detected variation to an

electrical signal modulated in accordance with the variations detected indicating the magnitude and direction of said variation, a motor for moving said slave device to correct its path, a source of time-varying voltage, controllably conductive means between said voltage source and said motor for supplying current to said motor in one or the other direction to cause said motor to move said slave to correct its path, a first trigger circuit responsive to said electrical signals which indicate a variation in one direction for providing trigger signals to said controllably conductive means to cause it to supply current to said motor in a direction to correct the path of said slave device, said trigger signals being provided during each cycle of said time-varying voltage and later in said cycles in proportion to decreasing magnitude of said electrical signals, and a second trigger circuit responsive to said electrical signals which indicate a variation in the opposite direction for providing trigger signals to said controllably conductive means to cause it to supply current to said motor in a direction to correct the path of said slave, said trigger signals being provided during each cycle of said time-varying voltage and later in said cycles in proportion to the decreasing magnitude of said electrical signals, whereby said motor moves said slave device in a direction to correct its path and at a rate proportional to the magnitude of said variations.

3,857,081

PROPORTIONAL SOLENOID ACTUATOR

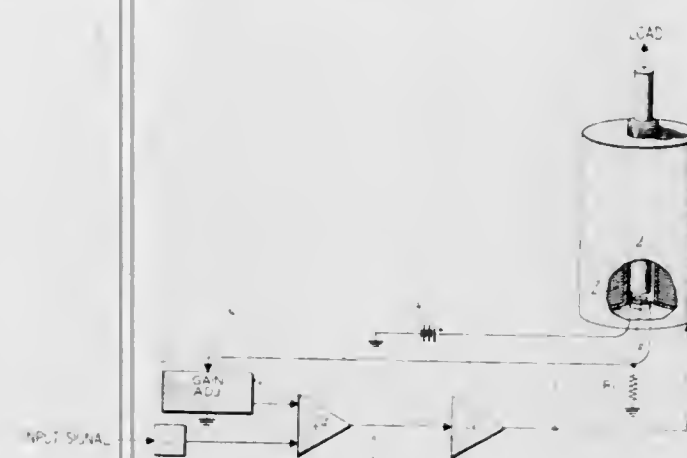
Edward F. Gebelein, Jr., Harwinton, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed June 25, 1973, Ser. No. 373,001

Int. Cl. G05b 1/00

U.S. Cl. 318-687

3 Claims



1. A solenoid actuator system comprising:
 - a solenoid, said solenoid having a coil defining an air gap and a plunger movable in said air gap in response to the magnetic field generated as a result of the passage of excitation current through said coil, said plunger being coupled to a load and generating a system output force;
 - non-contacting transducer means positioned in said solenoid air gap, said transducer means including a magneto-resistor for generating an output signal which is a function of solenoid flux density;
 - comparator means connected to said transducer means and responsive to the flux density signal provided thereby, said comparator means also being responsive to an input signal commensurate with a desired system output force, said comparator means generating an output signal commensurate with the differences between actual solenoid air gap flux density and the flux density which corresponds to the desired plunger output force; and
 - means responsive to the output signal generated by said comparator means for varying the excitation current delivered to said solenoid coil in accordance with the difference between the actual and desired system output force.

3,857,082

ELECTRONIC VOLTAGE REGULATOR FOR BATTERY CHARGING

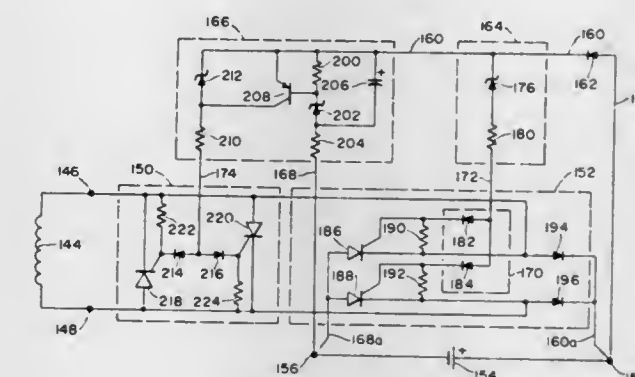
L. J. Koenraad van Opijnen, Needham, Mass., assignor to Tympanium Corporation, Woburn, Mass.

Filed Sept. 29, 1972, Ser. No. 293,493

Int. Cl. H02j 7/10

U.S. Cl. 320-25

7 Claims



1. A regulator for charging an energy storage element from a source of fluctuating electric potential said regulator comprising:
 - means for receiving an AC charging current from said source of fluctuating electric potential;
 - first and second terminals for application of rectified charging current to an electrical energy storage element;
 - controlled conduction means including a controlled rectifier responsive to AC charging current from said source of fluctuating electrical potential for controlled rectification thereof to provide said rectified charging current across said terminals of said energy storage element;
 - means for sensing the voltage across said terminals;
 - means responsive to said sensed voltage being above a predetermined voltage level greater than zero and of the same polarity as said charging signal applied to said first and second terminals representative of the presence of an energy storage element in polarity for charging across said terminals for enabling said controlled conduction means to permit rectified conduction from said source of fluctuating electrical potential to said terminals;
 - said enabling means including:
 - means for detecting said first predetermined level to provide a first signal;
 - means for applying a control signal to said controlled rectifier to provide conduction thereby in response to said first signal;
 - means responsive to said sensed voltage being above a second predetermined level higher than said first predetermined level and of the same polarity for inhibiting conduction by said controlled conduction means;
 - said inhibiting means including:
 - means for detecting said second predetermined level to provide a second signal; and
 - controlled rectifier means connected for providing a current shunt across said source of fluctuating potential in response to said second signal.

3,857,083

CONVERTOR EQUIPMENT COMPRISING A PLURALITY OF SINGLE-PHASE CONVERTOR BRIDGES

Harry Lundstrom, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 25, 1974, Ser. No. 436,619

Claims priority, application Sweden, Feb. 2, 1973, 73014326

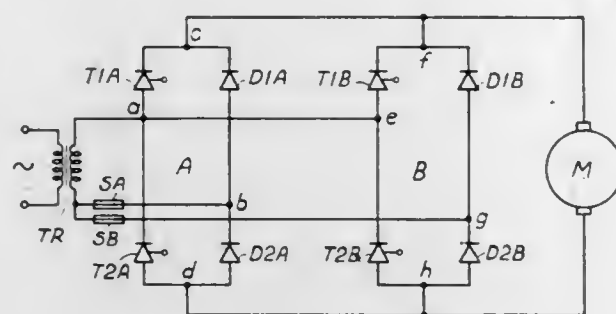
Int. Cl. H02h 7/14

U.S. Cl. 321-14

1 Claim

1. Converter equipment comprising a plurality of single-phase convertor bridges connected in parallel on their DC sides, and having DC terminals and having AC terminals

connected to a common AC voltage source for the bridges, each bridge comprising two controllable and two non-controllable rectifier branches, in which the two controllable rectifier branches are connected in series with each other between the DC terminals of the bridge and the two non-controllable rectifier branches are connected in series with



each other between the DC terminals of the bridge, said equipment comprising fuses for protecting the rectifiers against over-currents, in which each bridge is provided with a fuse arranged in the AC lead which is connected to the connecting point between the two non-controllable rectifier branches of the bridge.

3,857,084

BATTERY CHARGING SYSTEMS

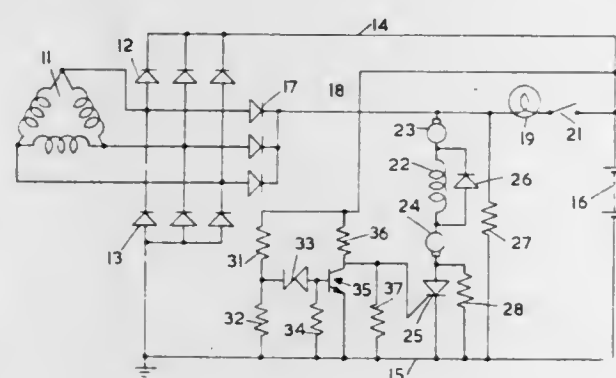
Maurice James Allport, Stourbridge, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed July 25, 1973, Ser. No. 382,381

Claims priority, application Great Britain, Mar. 8, 1972, 36223/72

Int. Cl. H02j 7/16

U.S. Cl. 322-28

7 Claims



1. A battery charging system including a wound-field alternator charging a battery, and a voltage regulator for controlling the output of the alternator, the voltage regulator including a thyristor in series with the field winding of the alternator, means for providing gate current to the thyristor when the battery voltage is below a predetermined value, and the system further including a pair of slip rings providing the required electrical connection to the field winding, one of said slip rings being interrupted so that the anode-cathode path of the thyristor is interrupted from time-to-time to turn the thyristor off.

3,857,085

PULSE GENERATOR OUTPUT REGULATOR

Pieter M. J. Mulier, Minneapolis; Thomas L. Jirak, Crystal, and Lawrence M. Kane, St. Paul, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 24, 1972, Ser. No. 256,330

Int. Cl. G01r 19/16; A61n 1/08, 1/36

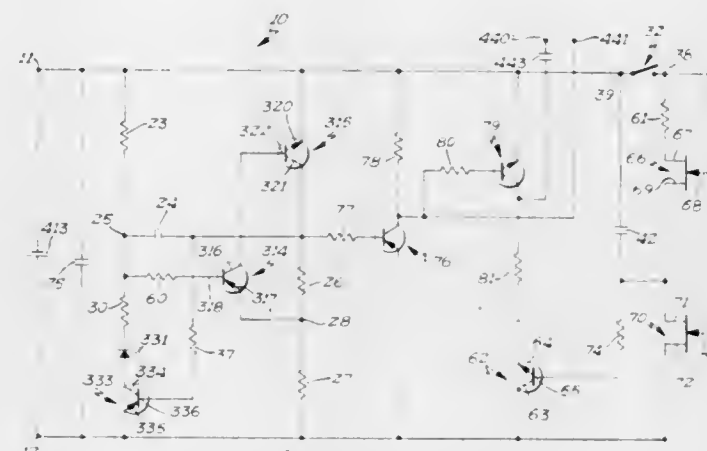
U.S. Cl. 323-22 T

6 Claims

1. In combination with a pulse generator having power input terminals and an output capacitor, an output voltage regulator for selectively reducing the amplitude of successive output pulses in a generally linear fashion such that each pulse has an

amplitude which is lower than the amplitude of the preceding pulse by a generally constant amount which is independent of the amplitude of the preceding pulse comprising:

- normally open switch means;
- energy storage means;
- means connected to said energy storage means and responsive thereto for controlling the charge on said output capacitor;



circuit means connected to said energy storage means and said normally open switch means for charging said energy storage means when said normally open switch means is open; and
constant current means connected to said energy storage means and said normally open switch means for continuously discharging said energy storage means at a generally constant rate when said normally open switch means is closed.

3,857,086

PROCESS FOR ESTABLISHING IGNITION TIMING OF A RECIPROCATING INTERNAL COMBUSTION ENGINE

Robert A. Mooney, Orchard Lake, and John M. Bell, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 124,080, March 15, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 312,996

Int. Cl. F02p 17/00

U.S. Cl. 324-16 R

12 Claims



1. A process for reliably and repeatably establishing the ignition timing of a reciprocating internal combustion engine having an engine crankshaft mounted rotatably in an engine block, at least one piston connected to said crankshaft for reciprocating movement in said block, and an ignition mechanism for applying an ignition pulse to the combustion chamber for said piston comprising:

- permanently positioning a timing plate having a socket therein on the engine block by locating the timing plate at at least two points of the engine block, said timing plate being fastened to the engine block and remaining fastened to the engine block during normal engine use, said

socket being located adjacent a member that is rotated by the engine crankshaft and has a means representative of the position of a piston, at least one of the two locating points being more remote from the rotated member than is the socket,

removably positioning a pickup device in said socket to produce an electrical signal representative of the position of said piston, whereby the socket defines a permanent reference point available for periodic repositioning of a pickup device to accurately reproduce the established ignition timing, and

comparing the signal from said pickup device with a signal representative of said ignition pulse to establish ignition timing.

3,857,087

LEAD-ACID BATTERY TEST METHOD

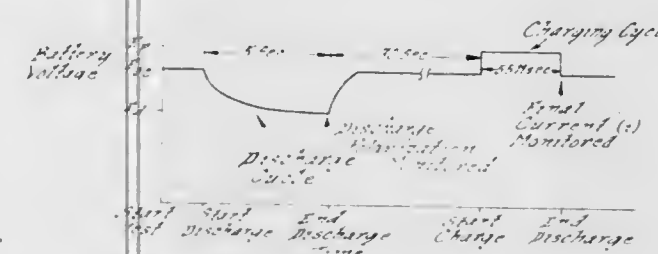
David C. Jones, Austin, Tex., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 12, 1973, Ser. No. 350,434

Int. Cl. G01n 27/42; H02j 7/00

U.S. Cl. 324-29.5

7 Claims



1. A method for testing a lead-acid battery, the steps comprising:

- a. subjecting a battery to both transient discharging and transient charging separated by a period of time to allow the battery to recover from either ion depletion or ion adsorption, said transient charging being carried out to obtain a predetermined level of polarization of the battery electrodes and the transient discharging being carried out to obtain a voltage change due to current flow to determine the polarization resulting from discharging,
- b. at a predetermined time before the end of said transient charging, measure the transient current,
- c. at a predetermined time before the end of the discharging period, measure the transient voltage, and
- d. compare the difference between the starting voltage of the battery and the measured transient voltage, and compare the difference between the transient current and a predetermined reference current, whereby if both the voltage difference is above a predetermined polarization reference value and the transient current is less than said predetermined reference current value, the battery can be deemed defective.

3,857,088

APPARATUS FOR CLEANING A MERCURY-DROPPING ELECTRODE OF A THROUGH-FLOW POLAROGRAPHIC ANALYZER

Miloslav Vesely, and Zdenek Bohac, both of Pardubice, Czechoslovakia, assignors to Vyzkumny ustav organickych syntez, Pardubice, Czechoslovakia

Filed Apr. 7, 1972, Ser. No. 242,044

Claims priority, application Czechoslovakia, Apr. 7, 1971, 2462-71

Int. Cl. G01n 27/42

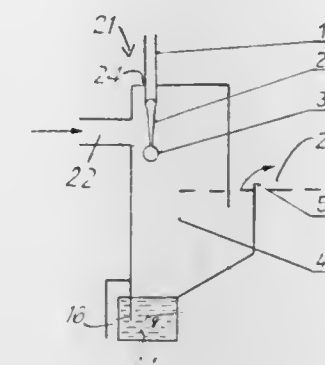
U.S. Cl. 324-31

2 Claims

1. In a polarographic analyzer including a first input port, an output port having an overflow port at a first vertical level within the analyzer, a measuring space defined between the first input port and the output port, means for introducing into the first input port a test liquid having solid impurities therein, and electrode means disposed in the measuring space for

dropping mercury through the test liquid introduced into the first input port, the improvement which comprises:

- means including a second input port for introducing into the measuring space a solvent for the solid impurities; and



3,857,089

MAGNETIC POSITION INDICATOR

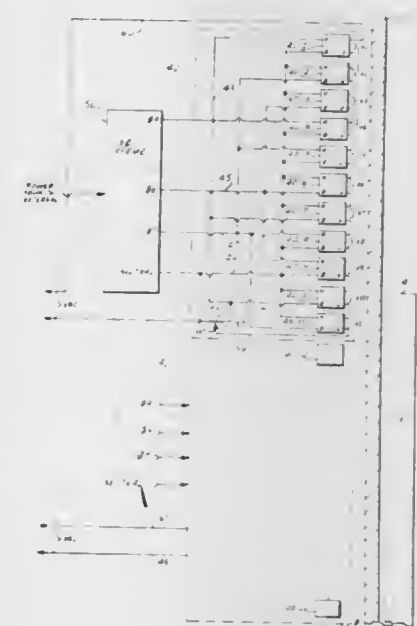
Jason A. Adler, Costa Mesa, and David R. Bartlett, Huntington Beach, both of Calif., assignors to Royal Industries, Santa Ana, Calif.

Filed June 8, 1972, Ser. No. 261,009

Int. Cl. G01r 33/00

U.S. Cl. 324-34 PS

11 Claims



1. Apparatus for indicating the position of a movable member, which comprises:

- signal generating means for producing a variable-phase oscillating electrical signal the phase of which uniquely indicates for a predetermined range of motion the position of the movable member, the signal generating means including means for simultaneously producing a plurality of variable-amplitude, constant-phase oscillating electrical signals, each associated with a different successive one of a plurality of contiguous portions of the predetermined range, having first and second limiting amplitude values, and varying therebetween in accordance with the position of the movable member while the movable member is in the associated portion, each pair of variable-amplitude signals associated with successive portions

having a preselected constant phase between them, and means for forming the variable-phase signal from the variable-amplitude signals; and phase detecting and indicating means responsive to the variable-phase signal for producing a direct current signal having a magnitude that varies in accordance with changes in phase of the variable-phase signal.

3,857,090

GENERATION OF BEAMS OF CHARGED PARTICLES
Douglas Richard Chick, Seale, Nr. Farnham, England, assignor to National Research Development Corporation, London, England

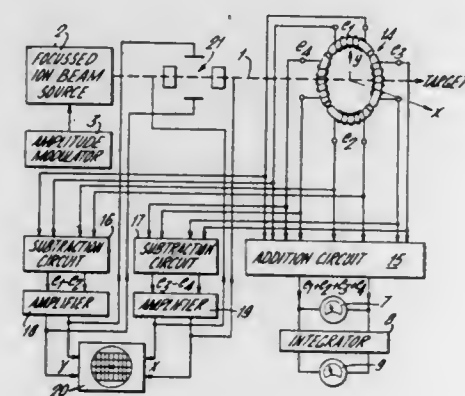
Filed June 4, 1973, Ser. No. 366,522

Claims priority, application Great Britain, June 7, 1972, 26558/72

Int. Cl. G01r 33/02

U.S. Cl. 324-47

20 Claims



1. Apparatus for monitoring the current comprised by a beam of charged particles, comprising means for modulating the amplitude of said beam to thereby correspondingly modulate the strength of the magnetic field of said beam, detector means responsive to the magnetic field of said beam to provide at least three output signals each corresponding to the modulation of the strength of the magnetic field of said beam at a respective one of a plurality of positions equally spaced around a desired path of movement of said beam, and means for comparing and developing from said at least three output signals a pair of position signals each indicating the position of said beam along a respective one of a pair of orthogonal axes perpendicular to and passing through said desired path of movement of said beam.

3,857,091

APPARATUS HAVING ULTRASONIC TRANSDUCER FOR DETECTING CABLE DIELECTRIC FAULTS

Sam Kalifon, Old Bridge, N.J., assignor to Continental Copper & Steel Industries, Inc., New York, N.Y.

Filed July 24, 1972, Ser. No. 274,485

Int. Cl. G01r 31/02, 31/08, 31/12

U.S. Cl. 324-52

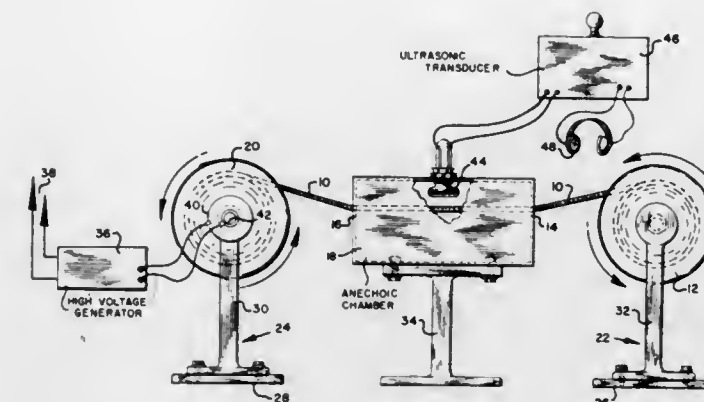
7 Claims

1. An apparatus for detecting and locating a dielectric fault within a multiconductor cable comprising

- a supply reel;
- a take-up reel;
- an anechoic chamber having inlet and outlet orifices;
- said cable being supplied from said supply reel through said inlet orifice of said anechoic chamber to said take-up reel from the outlet orifice;
- a source of high potential connected between the faulty conductor and another conductor at one end of said multiconductor cable and adapted to cause sparking effects adapted to produce high frequency sound waves at uninsulated conductor segments of the cable in the region between the two reels and within the anechoic chamber;

a probe sensitive to high frequency sound waves mounted within said anechoic chamber;

clamp means and guide means to position and guide said cable to maintain a predetermined spacing and separation



of the cable within the said chamber relative to the said probe, and audio means coupled to said probe means for producing an audible signal when said dielectric fault is detected at the uninsulated cable portion within the chamber.

3,857,092

ELECTRICAL LENGTH MEASURING SYSTEM

Hans Ulrich Meyer, 5, Chemin du Moulin, Morges, Vaud, Switzerland

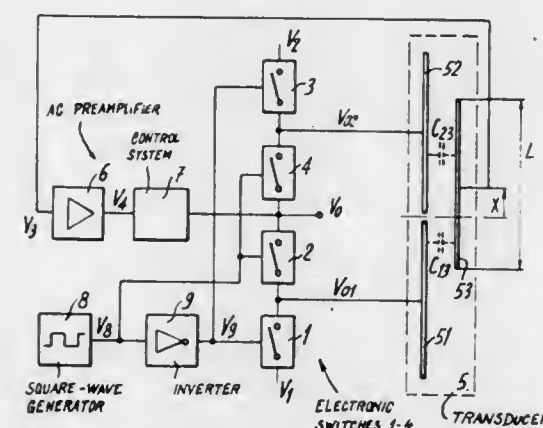
Filed Mar. 12, 1973, Ser. No. 340,065

Claims priority, application Switzerland, Mar. 22, 1972, 4241/72

Int. Cl. G01r 27/26

U.S. Cl. 324-61 R

12 Claims



1. Electrical length measuring system comprising a differential capacitor transducer, at least one receiving plate on one side of the capacitor, at least two transmitting plates on the other side of the capacitor, means for moving the sides of capacitor relatively to and in parallel with each other; a control system having an input and an output; a plurality of reference DC voltage sources; switching means for alternately connecting each transmitting plate between the output voltage of the control system and one of the reference DC voltage sources; means for feeding back the alternating voltage picked up by the receiving plate as a result of relative movement between said plates to the input of the control system in such a way that the signal on said at least one receiving plate is driven back to zero whereby to ensure that the output voltage of said control system is in a linear relationship with the relative displacement of the plates of said capacitor.

3,857,093

VEHICLE LOAD MEASURING USING A SHOCK ABSORBER AND VARIABLE RESISTOR

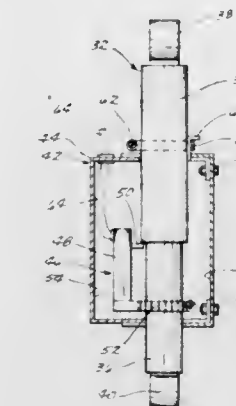
Donald R. Green, 3838 N.E. 44th Dr., Des Moines, Iowa 50317

Filed Aug. 17, 1973, Ser. No. 389,390

Int. Cl. G01r 27/02

U.S. Cl. 324-65 R

7 Claims



1. A device for measuring the load applied to a given axle of a vehicle, said vehicle having a frame and spring means yieldably supporting said frame with respect to said axle, said device comprising in combination,

- a shock absorber having an elongated upper member having means for attachment thereof to said frame,
- an elongated lower member having means thereon for attachment of said lower member to said axle,
- means for movably connecting said upper and lower members whereby movement of said frame with respect to said axle causes said upper and lower members to move,
- a variable resistor adjustably attached to said lower member, said resistor having a vertically movable sensor thereon for varying the resistance of said resistor, said sensor being responsive to relative movement of said upper member of said shock absorber with respect to said lower member of said shock absorber, and
- a gauge associated with said resistor for registering the variance in resistance as said sensor moves responsive to movement of said upper and lower shock absorber members.

3,857,094

ELECTRICAL BRIDGE ELEMENT ASSEMBLY FOR CORROSION MEASUREMENT

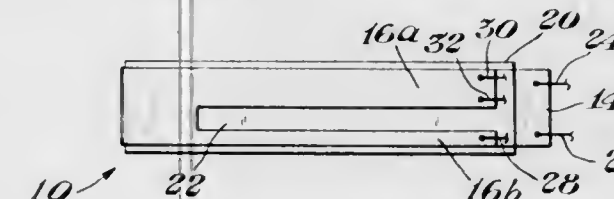
Victor J. Caldecourt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1974, Ser. No. 430,309

Int. Cl. G01r 27/02

U.S. Cl. 324-65 CR

8 Claims



1. An electrical bridge member assembly for use in making measurements of corrosivity of a fluid, comprising a thin strip having at least one metal surface, said strip being folded back on itself to form two arm parts, one arm being split along at least a substantial part of its length, said arms being spaced apart and bonded to electrically insulating heat transfer means which is in layer-like form, said heat transfer means extending from adjacent to the common end of said arms to at least the other end of one of said arms, means for electrically coupling said assembly to external bridge measurement apparatus, and means for shielding all but one surface of one of said arms from said fluid.

3,857,095

METHOD AND APPARATUS FOR MEASURING THE THICKNESS OF A COATING ON A SUBSTRATE

Robert Edward Mitchie, Weybridge, and Peter Michael Hyatt Price, Virginia Water, both of England, assignors to Vickers Limited, London, England

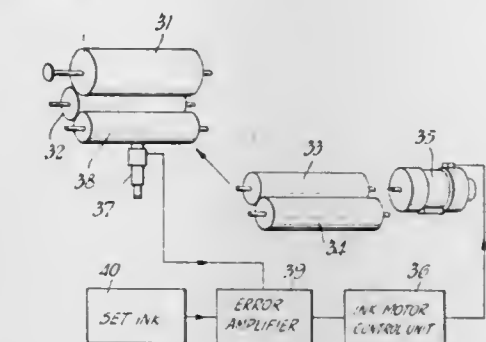
Filed July 25, 1972, Ser. No. 275,109

Claims priority, application Great Britain, July 26, 1971, 35047/71

Int. Cl. G01n 27/00; G01r 33/00

U.S. Cl. 324-71 R

12 Claims



7. A device for determining the thickness of a coating on the surface of a substrate, which device comprises;

- i. a support member to be secured adjacent to the substrate,
- ii. a pad-like element displaceable with respect to the member towards or away from the substrate, which element has a face provided with gas outlets and includes a transducer having an electrical property which is dependent upon its proximity to an electrically conductive material,
- iii. a means of displacing the element with respect to the member towards the substrate, and
- iv. a means of conducting gas to the discharge outlets to maintain the face of the element at a constant distance from the surface of the coating on the substrate.

3,857,096

ELECTRICAL CURRENT LEAKAGE DETECTOR

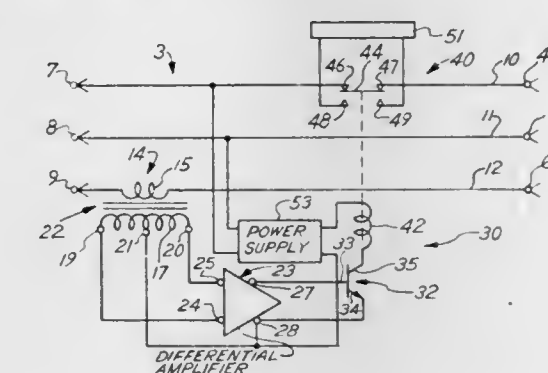
Lawrence A. Gregory, 1785 Glenview Ave., St. Paul, Minn. 55112

Continuation-in-part of Ser. No. 212,037, Dec. 27, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,247

Int. Cl. G01r 1/24, 19/16

U.S. Cl. 324-127

3 Claims



1. A method of detecting the flow of electrical current having a predetermined frequency in a conductor by means of a primary coil, a secondary coil, core means, and a test coil, said method comprising the steps of:

- placing the test coil around the core means;
- passing an AC current having substantially the predetermined frequency through the test coil;
- measuring the flux density and magnetizing force resulting from the passage of the AC current through the test coil to form a hysteresis loop;
- determining the core loss resulting from the passage of the AC current through the test coil;

recording the maximum flux density, B_m , of the hysteresis loop;
calculating the resistivity coefficient, K_r , of the core means by the equation $K_r = CB_m^2 f^2 / \text{core loss}$, where C equals a constant;
calculating the permeability, μ_0 , of the core means by dividing B_m by the corresponding magnetizing force indicated by the hysteresis loop;
calculating the hysteresis coefficient, K_Q , of the core means by the equation $K_Q = (\mu_0 C f K_r)^2 / (\mu_0 C f)^2 + K_r^2$, where C equals a constant;
altering the core means until K_Q/K_r is 0.03 or greater;
connecting the primary coil in series with the conductor;
magnetically coupling the secondary coil to the primary coil with the core means;
detecting the secondary voltage induced across at least a portion of the secondary coil due to the flow of current in the conductor; and
providing an indication when the secondary voltage exceeds a predetermined value.

3,857,097

COMPENSATING TECHNIQUES FOR SENSITIVE WIDE BAND VOLTMETERS

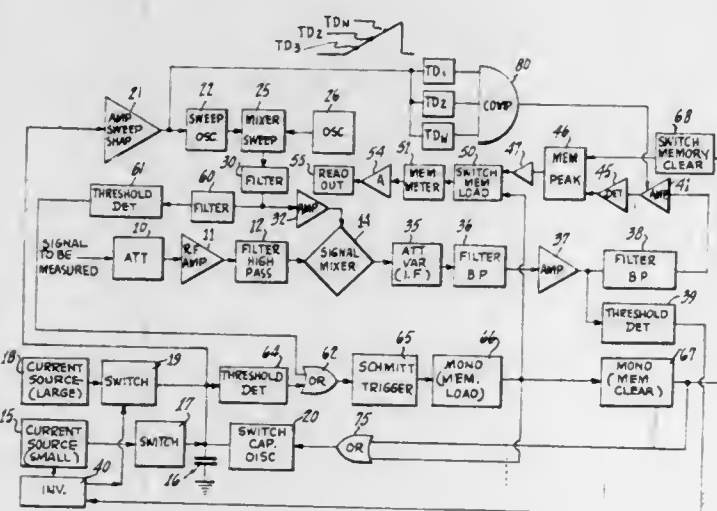
Ronald J. Juels, Freeport, N.Y., assignor to Comstron Corporation, Richmond Hill, N.Y.

Filed July 16, 1973, Ser. No. 379,582

Int. Cl. G01r 15/10, 19/26

U.S. Cl. 324-132

10 Claims



8. In apparatus for measuring the amplitude of an AC signal of the type including a mixing circuit having first and second inputs, said first input adapted to receive said AC signal via amplifying means and a second input adapted to receive a signal from a variable oscillator, said oscillator having a control terminal for application of a sawtooth voltage to said control terminal to vary the frequency to provide at the output of said mixing circuit a difference signal frequency indicative of the difference in frequency between the AC signal and the oscillator signal, said mixing circuit and said amplifying means undesirably providing a non-linear output for AC frequency signals within a predetermined range, in combination therewith the improvement of apparatus for compensating for said non-linearity comprising:

- level detecting means responsive to said sawtooth voltage for providing a control signal when said sawtooth is at a level manifesting non-linear operation, and
- means coupled to said mixing means and responsive to said control signal to substantially compensate for said non-linearity.

3,857,098 PROCESS FOR MEASURING THE REVOLUTION SPEED OF A FALSE TWIST TUBE

Peter Dosch, Jona, and Dieter Dorsch, Ebnat-Kappel, both of Switzerland, assignors to Heberlein & Co., AG, Wattwil, Canton of St. Gall, Switzerland

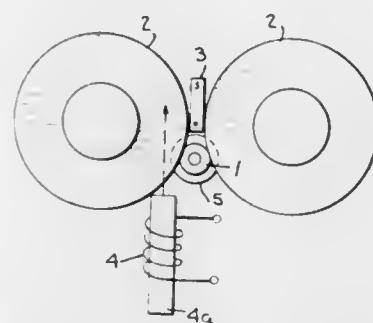
Filed June 20, 1973, Ser. No. 371,593

Claims priority, application Switzerland, June 26, 1972, 9566/72

Int. Cl. G01p 3/48

U.S. Cl. 324-174

3 Claims



1. Process for electromagnetic measurement of the speed of revolution of a twist tube of a false twisting device wherein said twist tube is fabricated from magnetically susceptible material and has a bore extending transversely of the longitudinal axis thereof, said process comprising the steps of positioning the twist tube in contact with the peripheries of a pair of discs and in a magnetic field to maintain said twist tube pressed against the peripheries of said discs, one of which discs is driven, and positioning an induction measuring probe in the vicinity of said twist tube on the level of said bore and with its longitudinal axis directed towards a point lying beside said twist tube along a radial line through said twist tube and at an angle with respect to the longitudinal axis of said probe, whereby field lines issuing from said twist tube intersect said induction coil obliquely.

3,857,099

MIXER FOR CONTROLLING THE FREQUENCY ACCURACY OF A VARIABLE FREQUENCY OSCILLATOR

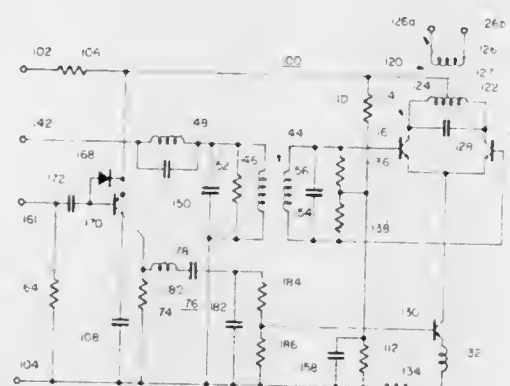
Dieter R. Lohrmann, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1973, Ser. No. 358,423

Int. Cl. H04b 1/26

U.S. Cl. 325-436

6 Claims



1. A mixer comprising:
means for delivering a single frequency from within a predetermined band,
conversion means operable on received sinusoidal energy for delivering periodic pulses that contain a fundamental frequency and a predetermined number of successive harmonics, that have maximum amplitude deviation on the order of 3db within a combined bandwidth slightly

greater than one-half said predetermined band harmonics outside the bandwidth being attenuated,
means for mixing single frequency energy delivered by said first recited means and said periodic pulses and providing an output frequency band of bandwidth numerically less than said fundamental frequency and centered at the center of said predetermined band.

3,857,100

ELECTRONIC SWITCHING ARRANGEMENT HAVING A TOUCH CONTACT

Nicolaas Joris Baars, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

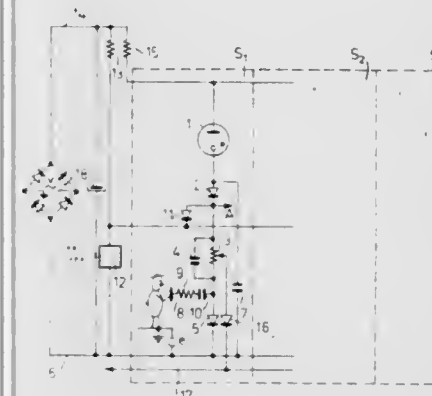
Filed Mar. 23, 1973, Ser. No. 344,265

Claims priority, application Netherlands, Apr. 14, 1972, 7204999

Int. Cl. H01h 35/00

U.S. Cl. 328-5

5 Claims



1. An electronic switching arrangement having a touch contact, a bistable switching element having an input, a coupling between the touch contact and said input, and an alternating voltage source which is activated when the touch contact is touched for switching over the switching element, characterized in that the said coupling comprises a rectifier circuit for rectifying the alternating voltage and successively a series capacitor, a parallel rectifier element, a series impedance, and a charge capacitor, and said series capacitor has a value which is at least several times lower than that of the charge capacitor, and that the charge time constant of the rectifier circuit is essentially longer than one cycle of the alternating voltage.

3,857,101

VARIABLE BURST LENGTH WAVEFORM GENERATOR

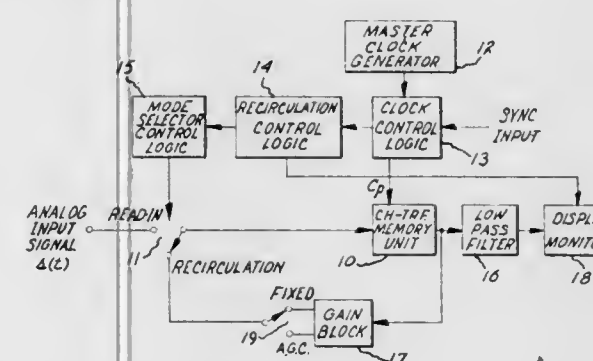
Charles McD. Puckette, and Walter J. Butler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 319,352, Dec. 29, 1972, Pat. No. 3,774,167. This application May 31, 1973, Ser. No. 365,513

Int. Cl. H03k 3/78

U.S. Cl. 328-72

5 Claims



1. A variable burst length waveform generator programmable as to the number of pulses in each burst and comprising

at least one counter having a CLEAR input, CLOCK input, DATA inputs and a CARRY output, said CLEAR input connected to a first source of continuous rectangular waveform voltage signals having a particular repetition rate,

a multi-state switch device having a plurality of outputs connected to the DATA inputs of said counter, said switch device having means for selecting the state thereof so as to selectively provide at least one of the DATA inputs of said counter with a high state input characterized by a high voltage condition, and
first logic NAND gate circuit means for gating on and off rectangular waveform voltage signals supplied from a second source of continuous rectangular waveform voltage signals to form bursts thereof, said first logic NAND gate circuit means having a first input connected to the first source of continuous rectangular waveform voltage signals, a second input connected to the CARRY output of said counter, and a third input connected to the second source of continuous rectangular waveform voltage signals having a fixed repetition rate greater than the repetition rate of the first source signals, output of said first logic NAND gate circuit means connected to the CLOCK input of said counter and also providing the bursts of the second source rectangular waveform voltage signals wherein the number of pulses in each burst is determined by the high state DATA input to said counter to thereby provide a burst waveform generator having a variable burst length output which is programmable as to the number of pulses in each burst for fixed repetition rates of the voltage signals supplied from the first and second signal sources by means of selection of the state of said switch device alone.

3,857,102

PULSE COUNTER

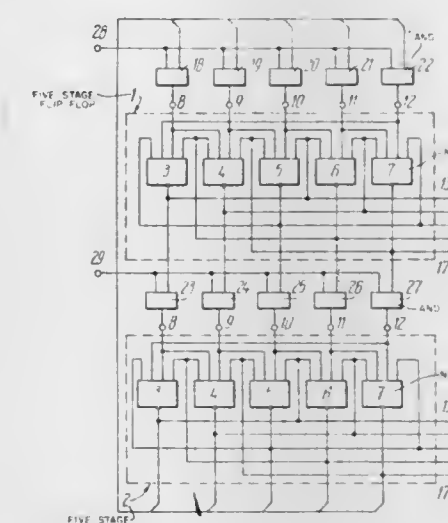
Dzintar Karlovich Zibin, ulitsa Kveles, 15, korpus 6, kv. 10, Riga, U.S.S.R.

Filed Feb. 13, 1973, Ser. No. 332,138

Int. Cl. H03k 23/02, 23/08

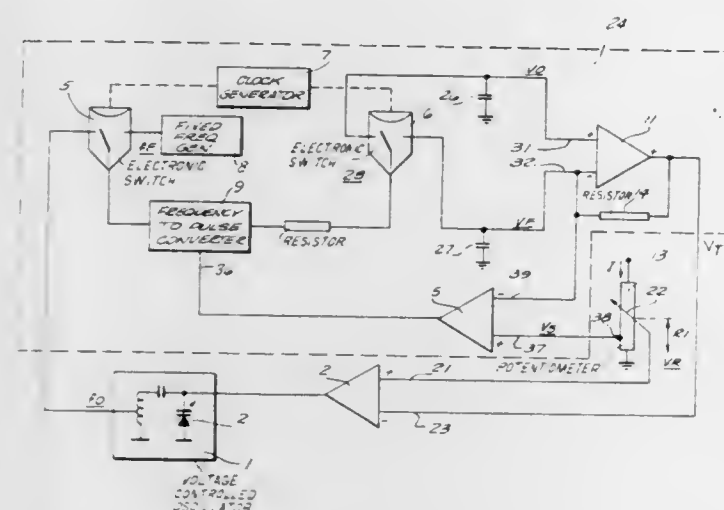
U.S. Cl. 328-41

1 Claim



1. A pulse counting circuit comprising; a first n -stage flip-flop, each stage having a plurality of inputs, and an output; a second n -stage flip-flop, each stage having a plurality of inputs, and an output; a first group of logic elements including n logic AND-gates, each gate having two inputs, and an output; a second group of logic elements including " n " logic AND-gates, each gate having two inputs, and an output; said output from each respective stage of said first n -stage flip-flop being connected to a respective input of a different AND-gate of said second group of elements, the output from each said AND-gate of said second group being connected to a respective input of a different stage of said second n -stage flip-flop; said output from each respective stage of said second n -stage

converting means during a second portion of each clock period; second switching means operable at the clock rate in synchronism with the first switching means for coupling the output of the converting means to the first capacitor during the first portion of each clock period and for coupling the output of the converting means to the second capacitor during the second portion of each clock period; means for operating



the first and second switching means at the clock rate; a first differential amplifier having first and second inputs; means for coupling the output of the first capacitor to the first input of the first amplifier; and means for coupling the output of the second capacitor to the second input of the first amplifier, the output of the first amplifier constituting the tuning control voltage.

3,857,109

LONGITUDINALLY-PUMPED TWO-WAVELENGTH LASERS

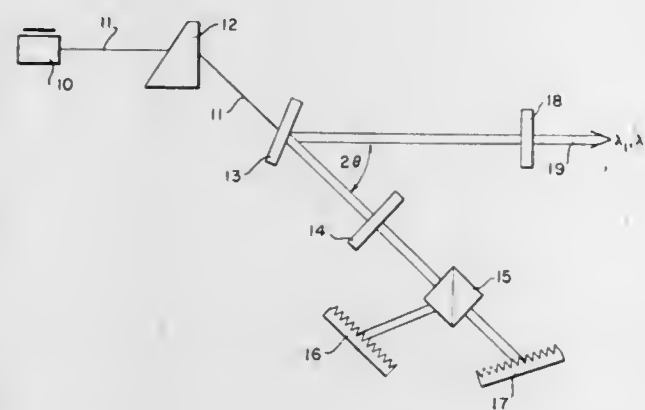
Herschel S. Pilloff, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1973, Ser. No. 418,016

Int. Cl. H01s 3/20

U.S. Cl. 331-94.5

3 Claims



1. A laser system with simultaneous two wavelength operation; which comprises,
a laser for producing an exciting laser beam,
an optical beam deviating prism in optical alignment with said laser for deviating the optical path of said exciting laser beam,
a first mirror in optical alignment with said deviating prism for transmitting the incident deviated exciting laser beam toward an active optical material cell,
said first mirror having high transmission at the wavelength of the exciting laser beam and very high reflectivity at the two wavelength operation of said system,
an active optical material cell so positioned to receive the exciting laser beam transmitted by said first mirror for excitation thereof,

a polarizer adjacent said cell in optical alignment therewith, first and second wavelength selective elements optically positioned to receive mutually polarized light and reflecting a desired beam therefrom, and
an output coupler partially reflective mirror in optical alignment with radiation reflected by said first mirror.

3,857,110

VOLTAGE CONTROLLED OSCILLATOR WITH TEMPERATURE COMPENSATING BIAS SOURCE

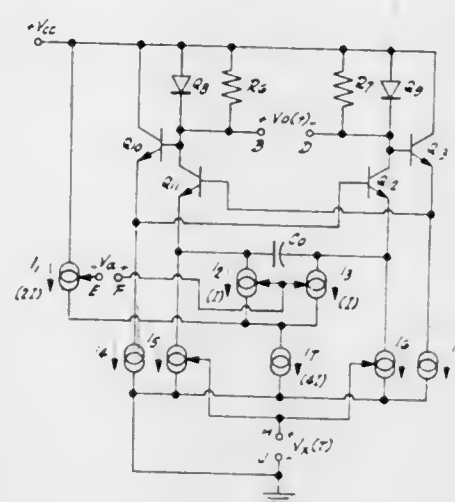
Alan B. Grebene, Saratoga, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 283,555, Aug. 24, 1972, abandoned, which is a continuation of Ser. No. 105,538, Jan. 11, 1971, abandoned. This application July 20, 1973, Ser. No. 381,041

Int. Cl. H03k 3/282

U.S. Cl. 331-108 D

12 Claims



1. A voltage controlled oscillator responsive to the magnitude of an input control signal for producing a frequency related to such magnitude comprising: a semiconductor substrate; a multivibrator having timing capacitor means; current source means integrated into said substrate, coupled to said capacitor means, and responsive to said control signal for determining the frequency of oscillation of said multivibrator, and a temperature dependent network integrated into said substrate for biasing said current source means, said network including balanced bridge means having a center leg carrying negligible current for providing a biasing voltage for said current source means.

3,857,111

SYLLABIC ADAPTIVE DELTA MODULATION SYSTEM

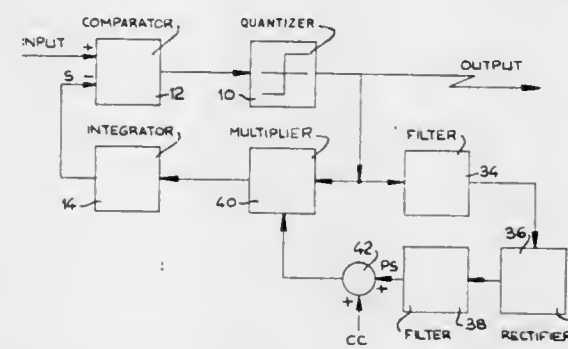
Pierre A. Deschenes, Sherbrooke; Hubert Stephenne, Rock Forest, and Michel Villeret, Sherbrooke, all of Quebec, Canada, assignors to Universite De Sherbrooke, Sherbrooke, Quebec, Canada

Filed Mar. 20, 1973, Ser. No. 342,945

Int. Cl. H03k 13/22

U.S. Cl. 332-11 D

9 Claims



1. A syllabic adaptive delta modulator comprising:
a. a comparator having a first input, a second input and a single output, an analog signal being fed to said first input;

b. quantizing means for sampling the output signal of said comparator to generate delta modulated pulses having low frequency components;
c. a syllabic filter connected to the output of said quantizing means for filtering the low frequency components of said delta modulated pulses;
d. a multiplier connected to the output of said quantizing means and responsive to said syllabic filter for modulating the amplitude of said delta modulated pulses with the low frequency components detected by the syllabic filter; and
e. an integrator connected to said multiplier for integrating the amplitude modulated delta pulses, the output of said integrator being applied to the second input of said comparator for comparing the output signal of the integrator with the input analog signal and for generating a signal depending upon the difference between the two signals.

3,857,112

BROADBAND QUARTER-WAVE PLATE ASSEMBLY

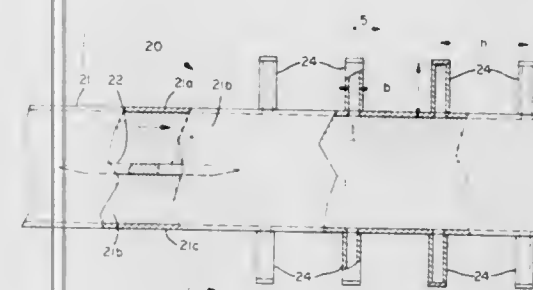
James J. Epis, Sunnyvale, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Nov. 2, 1973, Ser. No. 412,297

Int. Cl. H01p 1/18

U.S. Cl. 333-21 A

18 Claims



1. A broadband quarter-wave plate assembly comprising a waveguide having a wall and adapted to propagate electromagnetic waves therethrough, a substantially planar phase changing element extending transversely of the interior of said waveguide, and
at least one waveguide stub having a rectangular cross-section with one dimension longer than the other and communicating with the interior of said waveguide through said wall with the axis of said stub at said wall normal to the plane of said element,
the longer of the cross-sectional dimensions of said stub being smaller than the width of the interior of said waveguide.

3,857,113

MICROWAVE ACOUSTIC DELAY LINE

Ho-Chung Huang, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 437,968

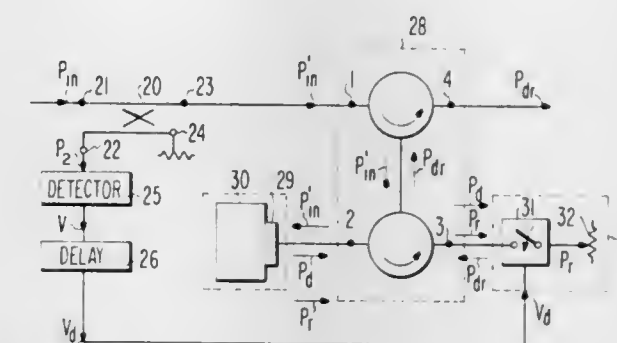
Int. Cl. H03h 7/30; H01p 1/10, 1/32

U.S. Cl. 333-30 R

10 Claims

1. A delay line having an input terminal and an output terminal for providing a predetermined delay for input signals, comprising:
sampling means coupled to said input terminal for sampling a predetermined portion of said input signal;
detector means coupled to said sampling means for detecting and converting said sampled input signal to a D.C. voltage signal;
first delay means coupled to said detector means for delaying said D.C. voltage signal, for said predetermined delay;
second delay means providing a delayed portion and an undelayed portion of said input signal;

signal directing means having a first terminal coupled to said sampling means and a second terminal coupled to said second delay means, said directing means providing a conductive path for said input signal from said sampling means to said second delay means; and



switching means coupled to said first delay means, a third terminal of said directing means and said output terminal, said switching means operating in response to said delayed D.C. voltage signal to selectively provide a signal absorbing termination for said undelayed portion of said input signal and a conductive path to said output terminal for said delayed portion of said input signal.

3,857,114

SUPERCONDUCTIVE MICROWAVE FILTER

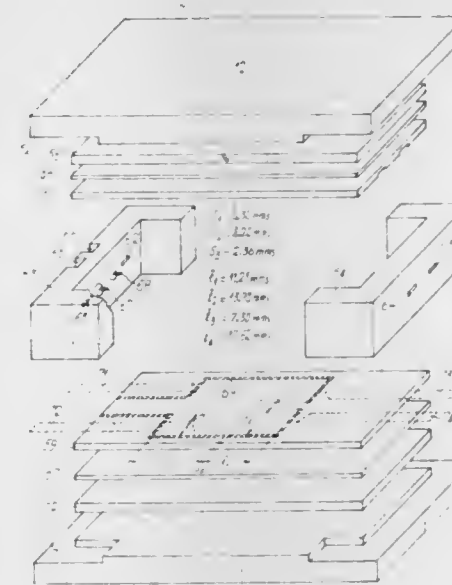
Roger P. Minet; Jean H. Debeau, both of 60 Residence Corlay, 22300 Lannion, and Ernest L. Thepault, 2 Rue du Docteur Roux, 22700 Perros-Guirec, all of France

Filed Feb. 20, 1974, Ser. No. 444,103

Int. Cl. H01p 1/20, 3/08, 7/00

U.S. Cl. 333-73 S

4 Claims

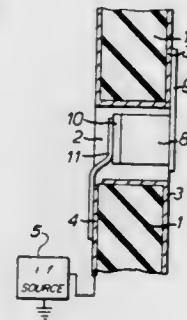


1. A superconductive multiresonator microwave filter of strip transmission line structure housed in a cryostat comprising ground plates made of a superconductive metal, dielectric sheets bonded to said ground plates, a central metallic strip conductor bonded to said dielectric sheets, said ground plates, dielectric sheets and central conductor forming sections of strip-line, the resonance frequency of the resonators of the filter depending upon the lengths of said strip-line sections, pads of dielectric material having a tapered end portion, notches in said dielectric sheets forming sliding paths for said pads intersecting said strip-line sections and control means for remotely positioning said pads from the outside of said cryostat.

3,857,115
SEMICONDUCTOR DEVICE MOUNTING
ARRANGEMENTS

Philip Henry Wisbey, Braintree, England, assignor to The
Marconi Company Limited, Chelmsford, Essex, England
Filed May 30, 1972, Ser. No. 257,679
Int. Cl. H01p 3/00

U.S. Cl. 333—84 M



13 Claims

13. A combined waveguide component-stripline circuit assembly comprising, in combination;

an insulating block having an aperture therethrough defining a waveguide portion guiding microwave energy, at least a portion of the internal surface of said block which defines said aperture having a metallic film thereon forming part of said strip-line circuit;
semiconductor means disposed within said aperture for modifying microwave energy in said aperture and having a pair of terminals;
a metallic strip electrically connecting one of said pair of terminals to said metallic film;
a stripline on said block extending transverse to the axis of said aperture and leading thereto;
a second metallic strip electrically connecting the other terminal of said semiconductor means to said stripline, the metallic strip first mentioned and said second metallic strip serving also to locate and support said semiconductor means in said aperture; and
r.f. by-pass capacitor means formed between said metallic film within the aperture and that end of said stripline adjacent said aperture for reducing loss of microwave power from said waveguide portion into said stripline.

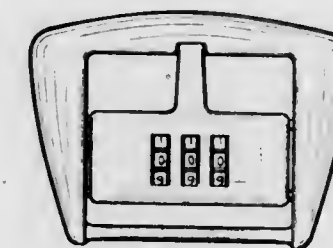
DESIGNS

DECEMBER 24, 1974

233,959
COMBINED BUCKLE AND COMBINATION LOCK
Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Co., Division of Walter Kidde & Company, Inc., Clifton, N.J.

Filed Jan. 26, 1972, Ser. No. 221,133
Term of patent 14 years
Int. Cl. D2—07

U.S. Cl. D2—42



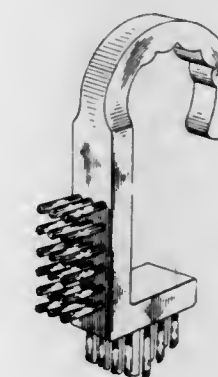
233,960
DRESS
Karen M. Bentley, 40355 Dutton,
Cherry Valley, Calif. 92223
Filed Feb. 26, 1973, Ser. No. 335,790
Term of patent 14 years
Int. Cl. D2—02

U.S. Cl. D2—72



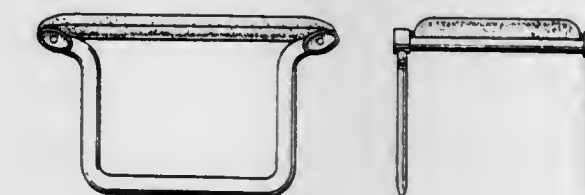
233,961
DENTURE BRUSH
Lols H. Crawford, 2949 N. Jackson,
Fresno, Calif. 93703
Filed July 11, 1973, Ser. No. 378,333
Term of patent 14 years
Int. Cl. D4—02

U.S. Cl. D4—24



233,962
BENCH OR SIMILAR ARTICLE
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah,
Staten Island, N.Y., assignors to Knoll International,
Inc., New York, N.Y.
Original design application May 18, 1970, Ser. No. 23,026,
now Patent No. 225,923. Divided and this application
Oct. 24, 1972, Ser. No. 299,647
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—35



233,963

T-SLING CHAIR

Gerry D. Welton, 910 E. Tripp, Peoria, Ill. 61603

Filed May 1, 1973, Ser. No. 356,104

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—55



233,965

CHAIR OR SIMILAR ARTICLE

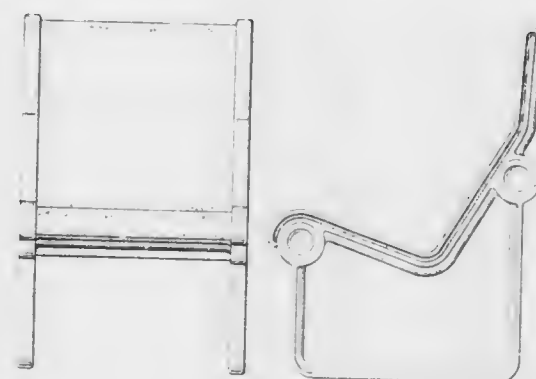
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.

Original design application May 18, 1970, Ser. No. 23,025, now Patent No. 225,946. Divided and this application Oct. 24, 1972, Ser. No. 299,645

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—66



233,966

CHAIR OR SIMILAR ARTICLE

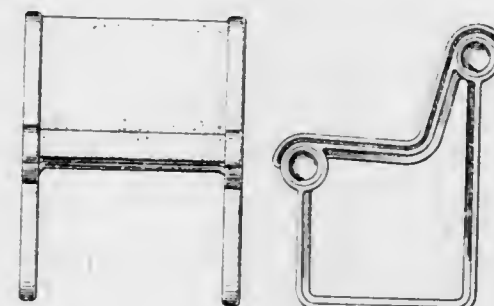
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.

Original design application May 18, 1970, Ser. No. 23,025, now Patent No. 225,946. Divided and this application Oct. 24, 1972, Ser. No. 299,646

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—66



233,967

CHAIR OR SIMILAR ARTICLE

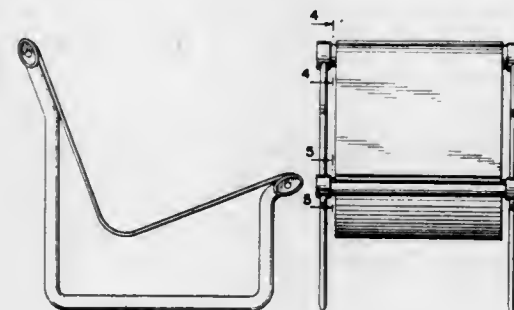
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.

Original design application May 18, 1970, Ser. No. 23,026, now Patent No. 225,923. Divided and this application Oct. 24, 1972, Ser. No. 299,648

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—66



233,964

ARMCHAIR OR SIMILAR ARTICLE

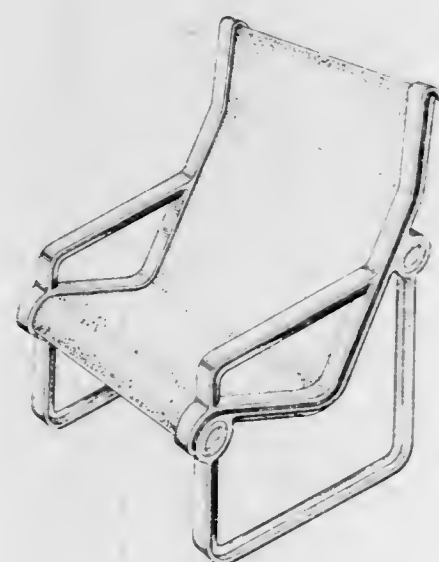
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.

Original design application May 18, 1970, Ser. No. 23,025, now Patent No. 225,923. Divided and this application Oct. 24, 1972, Ser. No. 299,644

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—66



233,968

ARMCHAIR OR SIMILAR ARTICLE

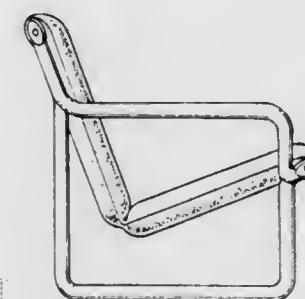
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.

Original design application May 18, 1970, Ser. No. 23,026, now Patent No. 225,923. Divided and this application Oct. 24, 1972, Ser. No. 299,649

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—66



233,969

CHAIR

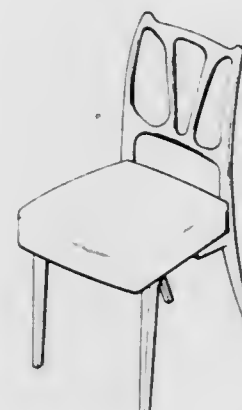
Kenichi Katoda, Otsuki, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,484

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—76



233,970

STORAGE UNIT

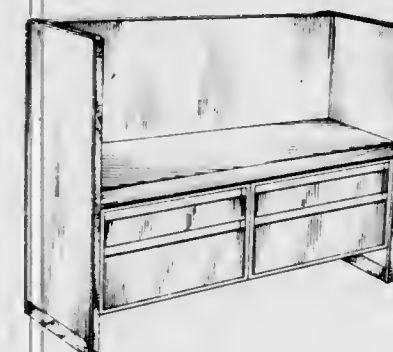
Ronald R. Hodges, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed May 22, 1973, Ser. No. 362,847

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—166



233,971

TABLE

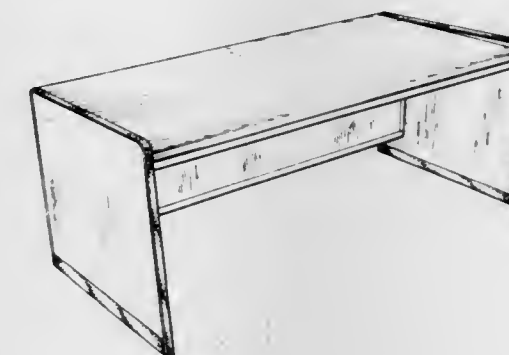
Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 22, 1973, Ser. No. 362,851

Term of patent 14 years

Int. Cl. D6—03

U.S. Cl. D6—177



233,972

CHILD'S DRINKING MUG AND LID THEREFOR

Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden

Filed June 19, 1972, Ser. No. 264,251

Claims priority, application Sweden Dec. 21, 1971

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D7—10



233,973

DISPENSER FOR GRANULAR MATERIALS

Paul V. Jensen, 3731 NE. 68th Terrace, Kansas City, Mo. 64119

Filed Apr. 19, 1973, Ser. No. 352,641

Term of patent 3½ years

Int. Cl. D7—01

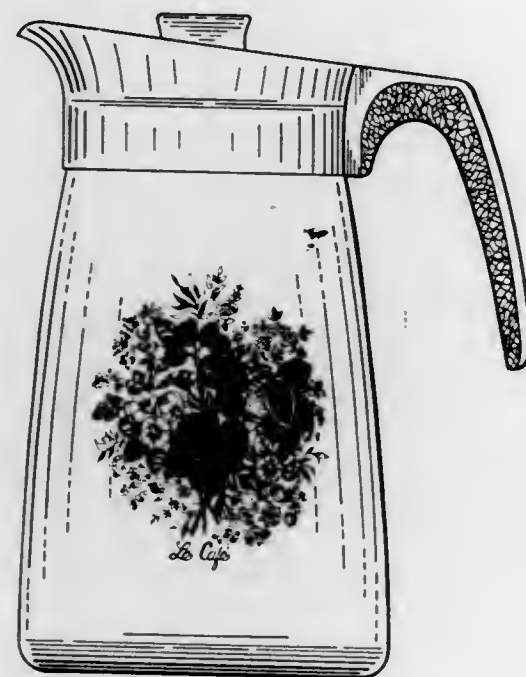
U.S. Cl. D7—17



233,974
COFFEEMAKER

Alice Klernan, Lewiston, Maine, and Patricia A. Luzier and Gregory Mirow, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 20, 1973, Ser. No. 353,120
Term of patent 14 years
Int. Cl. D7—02

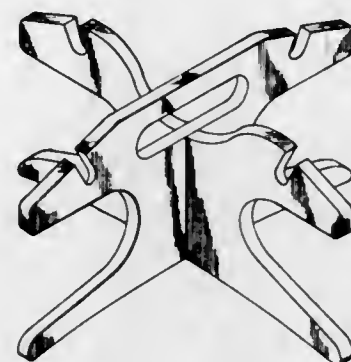
U.S. Cl. D7—65



233,977
PORTABLE CORD AND ROPE STORAGE RACK

Gilbert A. Dyal, 4715 W. Anton Road, Tucson, Ariz. 85706
Filed Jan. 28, 1974, Ser. No. 437,046
Term of patent 14 years
Int. Cl. D8—99

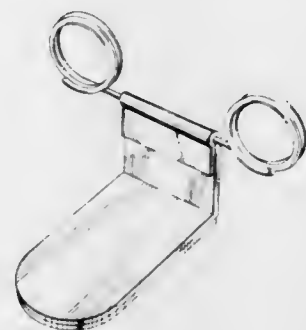
U.S. Cl. D8—220



233,978
TAG HOLDER

Donald M. Palmer, 2627 SE. 68th Ave., Portland, Ore. 97206
Original design application May 17, 1971, Ser. No. 144,395, now Patent No. 227,194. Divided and this application Apr. 16, 1973, Ser. No. 351,499
Term of patent 14 years
Int. Cl. D8—08

U.S. Cl. D8—243



233,979
BOTTLE

Emiliano P. Latorre, Fuenmayor, Logrono, Spain, assignor to A.G.E. Bodegas Unidas S.A., Rioja, Logrono, Spain
Filed Aug. 17, 1972, Ser. No. 281,506
Claims priority, application Spain Mar. 23, 1972
Term of patent 14 years
Int. Cl. D9—01

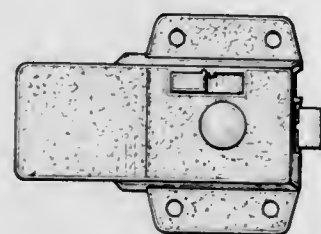
U.S. Cl. D9—54



233,976
BATHROOM DOOR LOCK

Keith E. Ridgway, West Covina, Roger Dahl, La Puente, and Howard B. Gorton, San Gabriel, Calif., assignors to Ajax Hardware Corporation
Filed Aug. 3, 1973, Ser. No. 385,585
Term of patent 14 years
Int. Cl. D8—07

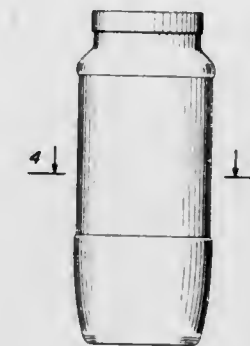
U.S. Cl. D8—133



233,980
BOTTLE

Donald George Watt, Toronto, Ontario, Canada, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Mar. 2, 1973, Ser. No. 337,679
Term of patent 14 years
Int. Cl. D9—01

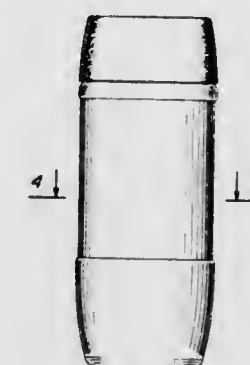
U.S. Cl. D9—115



233,981
COMBINED BOTTLE AND CAP THEREFOR

Donald George Watt, Toronto, Ontario, Canada, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Mar. 2, 1973, Ser. No. 337,673
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—117



233,982
BOTTLE

William E. De Graw, Modesto, Calif., assignor to E. & J. Gallo Winery, Modesto, Calif.
Filed May 9, 1973, Ser. No. 358,666
Term of patent 14 years
Int. Cl. D9—01

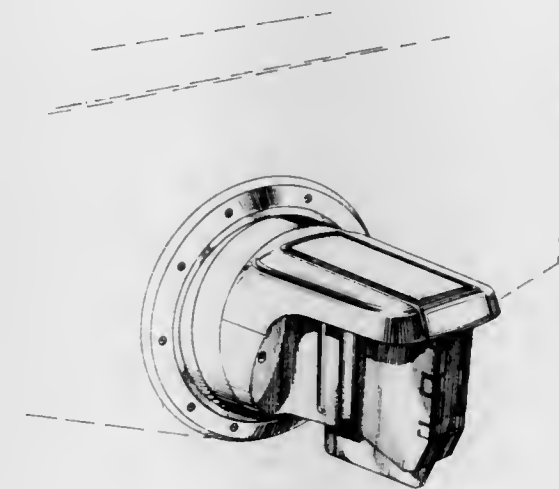
U.S. Cl. D9—148



233,983
HYDROJET BOAT DRIVE

Kenneth R. Baker, Encino, and Ronald E. Plescia, San Jose, Calif., assignors to Marine Propulsion Systems, Inc.
Filed Mar. 1, 1973, Ser. No. 337,192
Term of patent 14 years
Int. Cl. D12—99

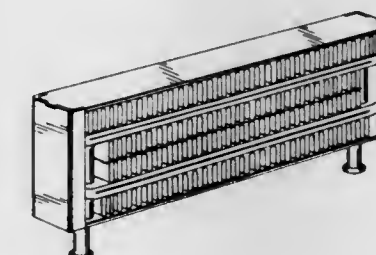
U.S. Cl. D12—70



233,984
OIL COOLER FOR MOTORCYCLES

William C. Hauser, Hacienda Heights, Calif., assignor to Lockhart Industries, Inc., Paramount, Calif.
Filed June 1, 1973, Ser. No. 356,138
Term of patent 14 years
Int. Cl. D12—11

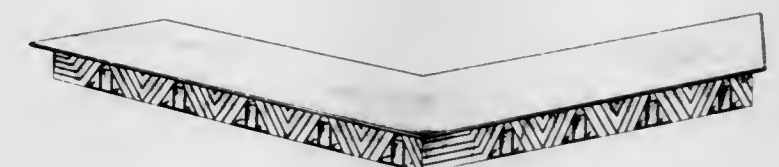
U.S. Cl. D12—114



233,985
MOTEL ROOM BUILDING

Jimmie L. Jones, Salt Lake City, Utah, assignor to Ute Indian Tribe of the Uintah and Ouray Reservation, Uintah County, Utah
Filed May 2, 1972, Ser. No. 249,746
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1 B



233,986

PUBLIC BUILDING

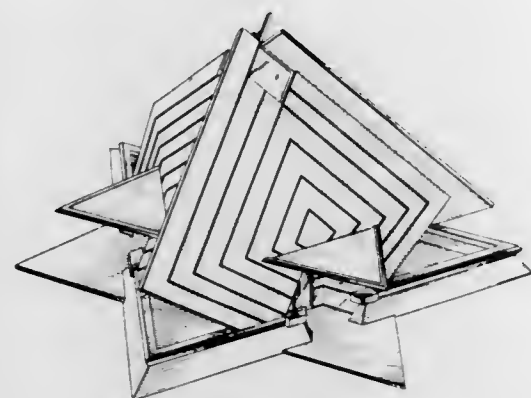
Jimmie L. Jones, Salt Lake City, Utah, assignor to Ute Indian Tribe of the Uintah and Ouray Reservation, Uintah County, Utah

Filed May 2, 1972, Ser. No. 249,750

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D13—1 B



233,989

FOUNTAIN

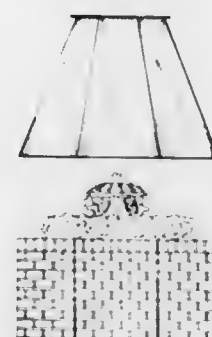
Virgil C. Camp, 3749 Cornell, Des Moines, Iowa 50313

Filed Oct. 11, 1972, Ser. No. 296,662

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—13



233,990

CONTROL CENTER SUPPORT ARM FOR DENTAL CHAIRS

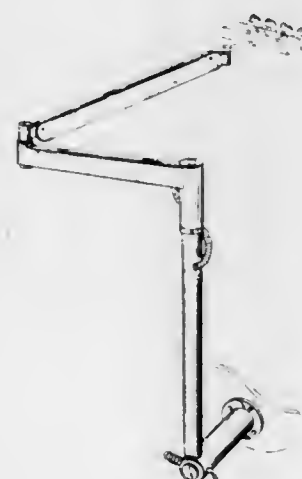
Dwight A. Booth, Portland, Oreg., assignor to MDT Instrument Company, Gardena, Calif.

Filed Nov. 3, 1973, Ser. No. 412,303

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D24—1 B



233,987

RESTAURANT BUILDING

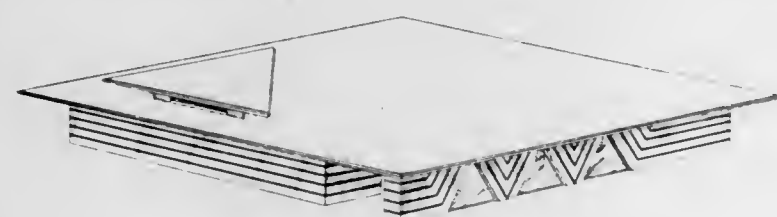
Jimmie L. Jones, Salt Lake City, Utah, assignor to Ute Indian Tribe of the Uintah and Ouray Reservation, Uintah County, Utah

Filed May 2, 1972, Ser. No. 249,751

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D13—1 B



233,988

FISHING LURE

Don A. Best, 1512 Barclay Road, Oklahoma City, Okla. 73120

Filed Apr. 23, 1973, Ser. No. 353,826

Term of patent 7 years

Int. Cl. D22—05

U.S. Cl. D22—27



233,991

ELECTRICAL CONNECTOR

Henry Oliver John Smith, 23 Howland St., London, W1p 6 Hq, England, and Edward Arnold Summerfield, 7 Broadmead, Close Hatch End, Pinner, Middlesex, England

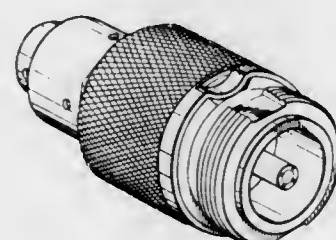
Filed Sept. 25, 1972, Ser. No. 291,549

Claims priority, application Great Britain Mar. 30, 1972

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—1 A



233,992

ELECTRICAL WIRE CONNECTOR

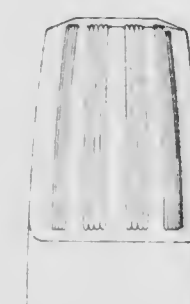
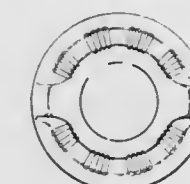
Donald P. Marr, Islington, Ontario, and Thomas A. Corbett, Toronto, Ontario, Canada, assignors to Marr Electric Limited, Mississauga, Ontario, Canada

Filed Nov. 2, 1973, Ser. No. 412,176

Term of patent 14 years

Int. Cl. D15—03

U.S. Cl. D26—1 C



233,993

COMBINED CROSS AND PEACE SYMBOL

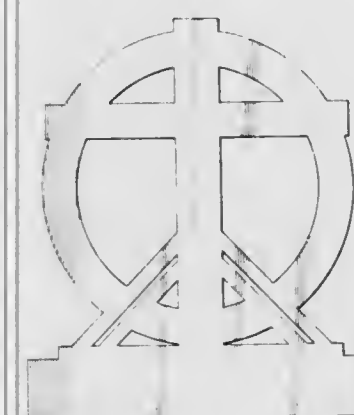
Marvin L. Hicks, 22 Melville Ave., Greenville, S.C. 29605

Original design application Apr. 11, 1973, Ser. No. 349,964. Divided and this application Mar. 27, 1974, Ser. No. 455,313

Term of patent 14 years

Int. Cl. D11—02

U.S. Cl. D29—23 A



233,994

MULTICOMPARTMENT BIRDHOUSE

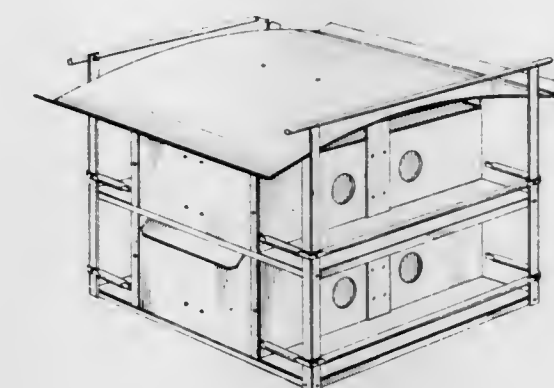
James K. Bishop, Sr., Box 117A, Rte. 2, Buffalo, Mo. 65622

Filed Apr. 19, 1973, Ser. No. 352,642

Term of patent 14 years

Int. Cl. D30—02

U.S. Cl. D30—3



233,995

MEDICAL TUBING RESTRAINT HOLDER OR SIMILAR ARTICLE

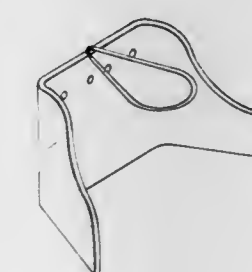
Bruce B. Miller, 3417 Canfield Road, Eaton Rapids, Mich. 48827

Filed Mar. 22, 1973, Ser. No. 343,739

Term of patent 14 years

Int. Cl. D24—99

U.S. Cl. D32—1 R



233,996

COMBINATION INTEGRAL POCKET LINER AND GULLEY BOOT FOR A BILLIARD TABLE OR THE LIKE

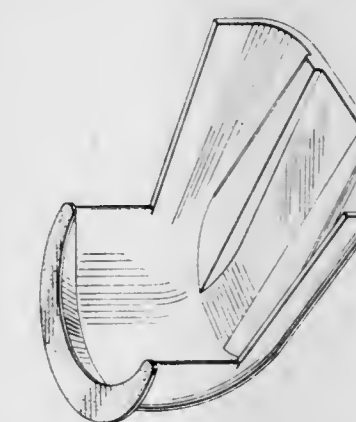
Gordon W. Murrey, 14150 S. Figueroa, Los Angeles, Calif. 90061

Filed Apr. 5, 1973, Ser. No. 348,194

Term of patent 14 years

Int. Cl. D21—01

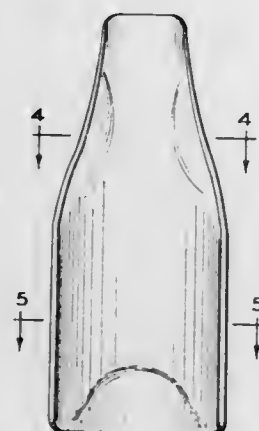
U.S. Cl. D34—3



233,997

TURRET BOWLING PIN HOLDER
Charles E. Schallitz, 10351 Lakewood Drive,
Luna Pier, Mich. 48157
Filed Apr. 9, 1973, Ser. No. 348,930
Term of patent 14 years
Int. Cl. D21-01

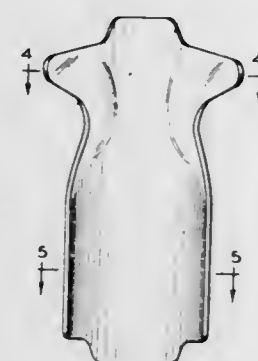
U.S. Cl. D34-5 DD



233,998

TURRET BOWLING PIN HOLDER
Charles E. Schallitz, 10351 Lakewood Drive,
Luna Pier, Mich. 48157
Filed Apr. 9, 1973, Ser. No. 348,931
Term of patent 14 years
Int. Cl. D21-01

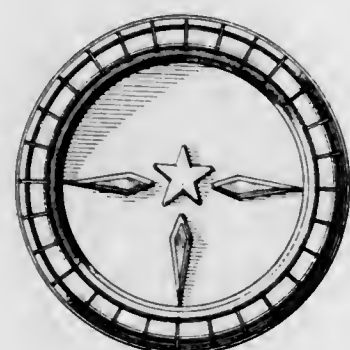
U.S. Cl. D34-5 DD



233,999

AERIAL TOY
John W. Potter, 3375 Rancho Del Monico,
Covina, Calif. 91722
Filed June 26, 1972, Ser. No. 266,485
Term of patent 14 years
Int. Cl. D21-01

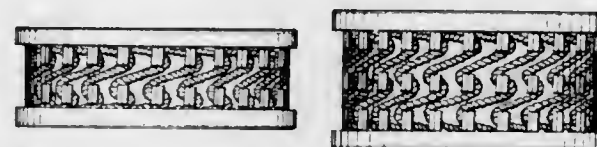
U.S. Cl. D34-15 HS



234,000

FINGER RING
Larry Grun, 64-11 99th St., Rego Park, N.Y. 11374,
and Max Bogner, 2 W. 47th St., New York, N.Y.
10036
Filed Aug. 27, 1973, Ser. No. 391,629
Term of patent 14 years
Int. Cl. D11-01

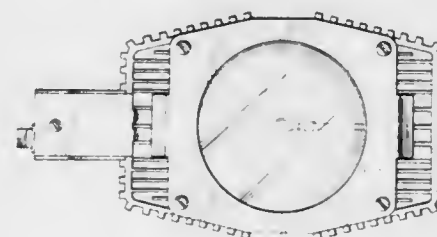
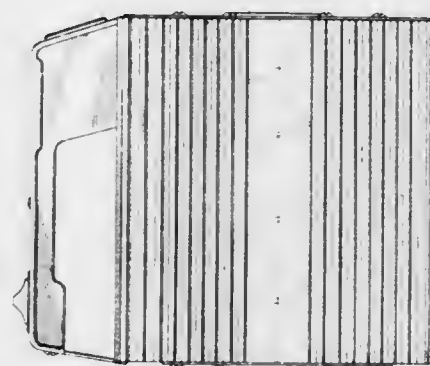
U.S. Cl. D45-10 A



234,001

SEARCHLIGHT
Robert J. Strowe, Lake Hopatcong, and George E. Olson,
Morris Plains, N.J., assignors to Streamlight, Inc., King
of Prussia, Pa.
Filed May 7, 1973, Ser. No. 358,165
Term of patent 14 years
Int. Cl. D26-02

U.S. Cl. D48-24 R



234,002

FLOODLIGHT
Fred M. Gore, Dallas, and Glen H. McReynolds, Jr.,
Houston, Tex., assignors to Esquire, Inc., New York,
N.Y.
Filed Apr. 11, 1973, Ser. No. 350,152
Term of patent 14 years
Int. Cl. D26-03

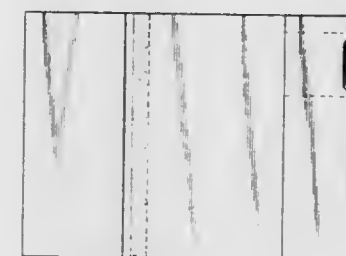
U.S. Cl. D48-20 K



234,003

**COMBINED ENVELOPE AND SHEET FOR
ADVERTISEMENT**
Robert E. Katz, Livingston, N.J., assignor to
Beatrice Foods Co., Chicago, Ill.
Filed Apr. 13, 1972, Ser. No. 243,900
Term of patent 14 years
Int. Cl. D19-01

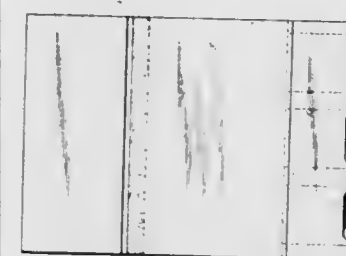
U.S. Cl. D59-8



234,004

**COMBINED ENVELOPE AND SHEET FOR
ADVERTISEMENT**
Robert E. Katz, Livingston, N.J., assignor to
Beatrice Foods Co., Chicago, Ill.
Filed Apr. 13, 1972, Ser. No. 243,901
Term of patent 14 years
Int. Cl. D19-01

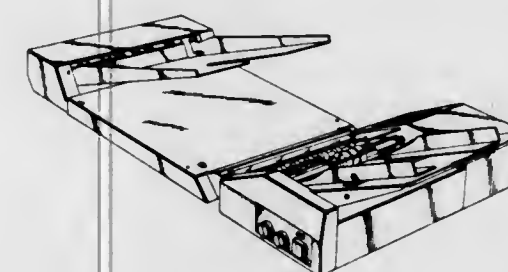
U.S. Cl. D59-8



234,005

AUTOMATIC COPY SHEET FEEDER FOR COPIERS
Ohiko Yagi and Toshio Shiina, Yokohama, Japan,
assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 14, 1973, Ser. No. 360,380
Term of patent 14 years
Int. Cl. D16-04

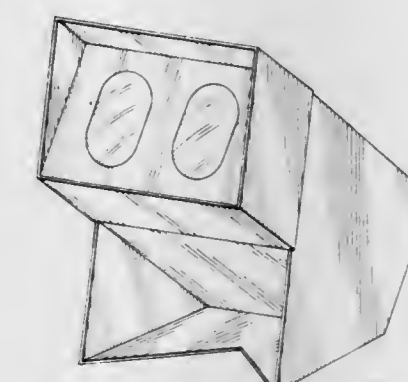
U.S. Cl. D61-1 Q



234,006

STEREO PHOTO VIEWER
Daniel Wang and Cynthia Wong, both of 7356 Ontario
St., Vancouver 15, British Columbia, Canada
Filed Nov. 30, 1972, Ser. No. 310,802
Term of patent 7 years
Int. Cl. D16-99

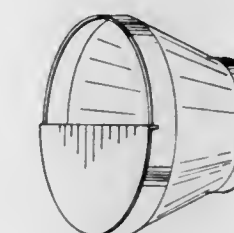
U.S. Cl. D61-1 M



234,007

IMAGE SPLITTER
Jack V. Ritter, 14901 80th E., Puyallup, Wash. 98371
Filed June 18, 1973, Ser. No. 371,120
Term of patent 7 years
Int. Cl. D16-05

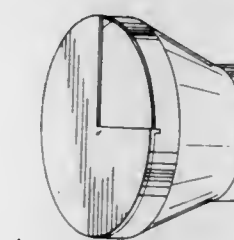
U.S. Cl. D61-1 E



234,008

IMAGE SPLITTER
Jack V. Ritter, 14901 80th E., Puyallup, Wash. 98371
Filed June 18, 1973, Ser. No. 371,121
Term of patent 7 years
Int. Cl. D16-05

U.S. Cl. D61-1 E



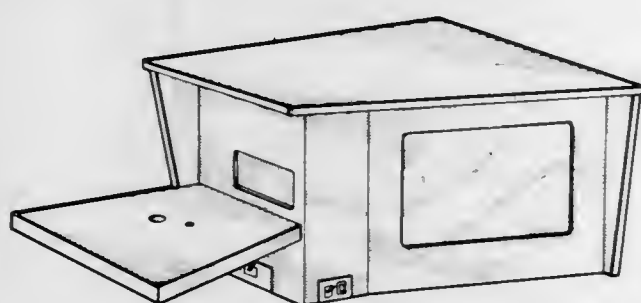
234,009
MOTION PICTURE/SLIDE PROJECTOR CONSOLE
 Allan B. Corderman, 161 Ramblewood Road, and Philip
 B. Flagler, 670 Chester Ave., both of Moorestown,
 N.J. 08057

Filed June 19, 1973, Ser. No. 371,359

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D61—1 N



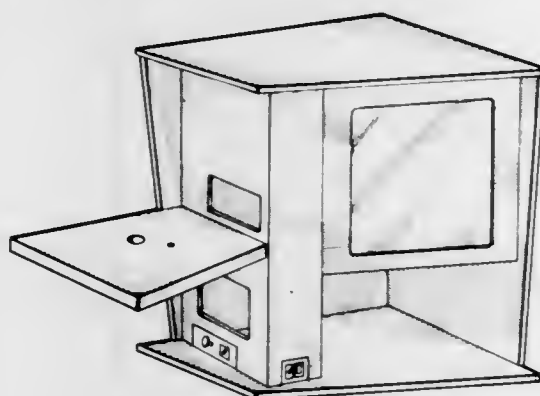
234,010
MOTION PICTURE/SLIDE PROJECTOR CONSOLE
 Allan B. Corderman, 161 Ramblewood Road, and Philip
 B. Flagler, 670 Chester Ave., both of Moorestown,
 N.J. 08057

Filed June 19, 1973, Ser. No. 371,358

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D61—1 N



234,011
ENGINE MANIFOLD
 Walter John Warneford, 60-66 Nicholson St., Potts Point,
 New South Wales, Australia

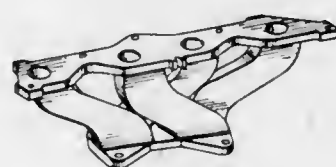
Filed Dec. 11, 1972, Ser. No. 314,183

Claims priority, application Australia Aug. 23, 1972

Term of patent 14 years

Int. Cl. D15—01

U.S. Cl. D77—1 A



234,012
**COMBINED OPTICAL AND NASAL AIR
 FILTER MASK**

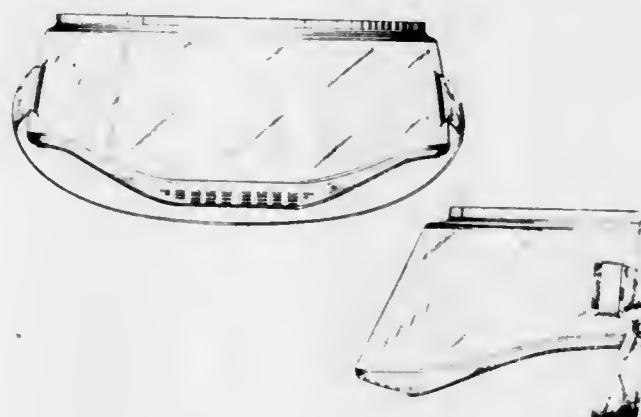
Robert A. Stegman, 2151 NE. 124th St.,
 Miami, Fla. 33161

Filed May 14, 1973, Ser. No. 359,660

Term of patent 14 years

Int. Cl. D24—99; D2—03

U.S. Cl. D83—1 K



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aagaard de Hidalgo, Antonia: *See—*
 Hidalgo-Briceno, Miguel, 3,855,998.
- AB Welin: *See—*
 Nilsson, Per, 3,856,110.
- Abbott Laboratories: *See—*
 Hutchison, Arthur H.; and McMillan, Lonnie S., 3,857,065.
- Abe, Eiichi: *See—*
 Usui, Keizaburo; Abe, Eiichi; and Hayama, Isao, 3,856,121.
- Abramoff, Charles, to Argus Chemical Corporation. Acrylonitrile-butadiene-styrene polymers having improved resistance to discoloration. 3,856,728. Cl. 260-23.70n.
- ACF Industries, Incorporated: *See—*
 Jourdan, Jerry W., 3,856,261.
- Ackerman, James H., to Sterling Drug Inc. Iodinated 5-substituted-1,3-benzenediacrylic and -dipropionic acids. 3,856,853. Cl. 260-518.00a.
- Acorn Engineering Company: *See—*
 Morris, Earl L.; and Sally, Theodore J., 3,855,649.
- Adachi, Shigeru: *See—*
 Sato, Wasuke; Yamamoto, Seijiro; Kuwabara, Nobuaki; and Asachi, Shigeru, 3,856,025.
- Adair, James C.; and Luke, Robert R., to Shell Oil Company. Apparatus for forming and loading a shot-hole. 3,856,095. Cl. 175-203.000.
- Adam, Marie Henri Hubert, to Societe Anonyme l'Eclairage Technique. Reflector for light fixtures. 3,857,030. Cl. 240-103.00b.
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- Adams, Robert B., to Moore Products Co. Flowmeter. 3,855,859. Cl. 73-194.00b.
- Adams, Robert D.: *See—*
 Rabett, Reginald George Edward, 3,856,107.
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 Andrako, Thomas E., 3,855,969.
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 Martin, Lawrence L.; Martin, Ronald C.; and Sixt, Marty E., 3,855,799.
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 Perez, Manuel, 3,856,487.
- Agence Nationale de Valorisation de la Recherche pour l'Aurore: *See—*
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- Agency of Industrial Science & Technology: *See—*
 Kodera, Yoshihide; Todo, Naoyuki; and Fukuda, Kenzo, 3,856,925.
- Agfa-Gevaert N.V.: *See—*
 Van Paesschen, August Jean; Herbots, Joseph Antoine; and Timmerman, Daniel Maurice, 3,856,530.
- Aida, Yoshiaki: *See—*
 Takahashi, Naoya; Aida, Yoshiaki; and Shimizu, Isao, 3,856,740.
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- Air Factors, Inc.: *See—*
 Lambert, Robert R., 3,855,909.
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 Cebalo, Tony, 3,856,503.
- Delamater, George B.; and Milligan, Barton, 3,856,673.
- Iacoviello, John G., 3,856,734.
- Miller, Keith A., 3,856,457.
- Aircraft Armaments, Inc.: *See—*
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- Aisin Seiki Kabushiki Kaisha: *See—*
 Takayama, Katsuki, 3,856,047.
- Ajinomoto Co., Inc.: *See—*
 Fukuoka, Fumiko; Chihara, Goro; and Hamuro, Junji, 3,856,775.
- Ishido, Yoshiharu; Yoshino, Teruo; Komura, Hajime; Suzuki, Katsumi; Yamasaki, Akihiro; and Okutsu, Masaru, 3,856,777.
- Akiyama, Hiroyuki: *See—*
 Miyamoto, Akira; Akiyama, Hiroyuki; Noguchi, Toshiaki; and Ohtsuka, Isao, 3,856,719.
- Aktiebolaget Asea-Atom: *See—*
 Suvanto, Antti; and Fries, Ake, 3,856,621.
- Aktiebolaget Atomenergi: *See—*
 Johnsson, Erik Borje, 3,856,338.
- Aktiebolaget Electrolux: *See—*
 Eriksson, Bolik Anders; and Vukotic, Milos, 3,855,666.
- Schwartz, Osten, 3,855,665.
- Akzona Incorporated: *See—*
 Greven, Hendrik Marie, 3,856,770.
- Henry, Charles Leroy; and McNeely, Gerald Willard, 3,856,753.
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- Albright & Wilson Limited: *See—*
 Fothergill, Bernard Henry; Earle, Henry; and Kelly, William John, 3,856,269.
- Aleksoff, Carl C.: *See—*
 Cindrich, Ivan; Aleksoff, Carl C.; and Klooster, Alex, Jr., 3,856,409.
- Alkaline Batteries Limited: *See—*
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- All American Industries, Inc.: *See—*
 Doolittle, Donald B., 3,856,236.
- Allais, Andre: *See—*
 Nedelec, Lucien; Guillaume, Jacques; and Allais, Andre, 3,856,910.
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- Allais, Andre; Lilas, Les; and Nomine, Gerard, to Roussel-UCLAF. Novel indoles in the treatment of pain. 3,856,967. Cl. 424-274.000.
- Allen, Archelaus Dawson; and Small, Fred, to Gullick Dobson Limited. Method of mining mineral. 3,856,356. Cl. 299-11.000.
- Allen, Maurice, to Imperial Chemical Industries, Limited. Controlling setting of plasters. 3,856,543. Cl. 106-110.000.
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 Scholz, Hansjürgen; Brambilla, Luigi; and Allgaier, Rudolf, 3,856,103.
- Allied Chemical Corporation: *See—*
 Brandt, Adolph John; and Muthig, James Vincent, 3,855,778.
- Chen, Ho-Sou; and Polk, Donald E., 3,856,513.
- Kavesh, Sheldon, 3,856,074.
- Taub, Bernard, 3,856,718.
- Allis-Chalmers Corporation: *See—*
 Hansen, Kenneth N., 3,855,875.
- Allison, William D., to Ford Motor Company. Power steering device. 3,856,101. Cl. 180-79.20r.
- Allman, Denis John; and Seager, Robert Vincent, to Allman, E., and Company Limited. Pumps. 3,856,437. Cl. 417-241.000.
- Allman, E., and Company Limited: *See—*
 Allman, Denis John; and Seager, Robert Vincent, 3,856,437.
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 Lundstrom, Harry, 3,857,083.
- Allport, Maurice James, to Lucas Electrical Company Limited. The Battery charging systems. 3,857,084. Cl. 322-28.000.
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- Altherr, Russell George, to Amsted Industries Incorporated. Railway coupling. 3,856,155. Cl. 213-142.000.
- Aluma-Form, Inc.: *See—*
 Farmer, Marion R., 3,856,250.
- Aluminum Company of America: *See—*
 Howle, Clement Roger, 3,856,479.
- Pohlenz, Elmer E., 3,855,759.
- Snyder, Harry C., Jr., 3,856,920.
- Alvarez, Bernard V. Multistage spring assembly. 3,856,288. Cl. 267-73.000.
- Amada Company Limited: *See—*
 Kawano, Susumu, 3,855,840.
- Amado, Juan Jose, Jr. Apparatus for centrifugally casting hollow spheres. 3,856,452. Cl. 425-429.000.

- Amagi, Yasuo; and Skiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Electrode and method of manufacture. 3,856,574, Cl. 136-120.0fc.
- Amalgamated Dental Company, Limited, The: See—
Foster, John; and Henry, Ernest, 3,856,737.
- American Chemical & Refining Company, Incorporated: See—
Rogers, Orris A.; Camp, Eldridge K.; and Borgmann, John P., 3,856,653.
- American Colloid Company: See—
Langan, Maurice W., 3,855,747.
- American Cyanamid Company: See—
Dusza, John Paul; Lindsay, Harry Lee; and Bernstein, Seymour, 3,856,838.
- Ellestad, George Alfred; Martin, John Henry Edward James; and Porter, John Norman, 3,856,939.
- Skrivan, Joseph Francis; and Chase, John Donald, 3,856,918.
- Vitalis, Emil Alfred; and Tracey, Donald John, Jr., 3,856,722.
- Waite, Jack Peter, 3,856,937.
- American Express Investment Management Company, mesne: See—
Macovski, Albert, 3,856,986.
- American Flange & Manufacturing Co., Inc.: See—
Jesevich, John; and Simkus, Vito, 3,856,162.
- American Home Products Corporation: See—
Freed, Meier E.; and Archibald, John L., 3,856,790.
- Yardley, John P., 3,856,795.
- American Potato Company: See—
Harmon, James F.; Johnston, Richard D.; Lach, John H.; von der Lieth, William H.; and Murphy, Thomas L., 3,855,913.
- American Science & Engineering, Inc.: See—
Cobb, Carolus M., 3,857,033.
- American Screen Process Equipment Company, mesne: See—
Kinney, Layton C.; and Tompkins, Edwin H., 3,855,928.
- American Standard Inc.: See—
Bales, Emmett Robert, 3,855,946.
- Dunham, Gerald Pitman, 3,855,648.
- American Standard Inc., mesne: See—
Bell, Edward H.; and Bell, John R., 3,856,206.
- American Trading and Production Corporation: See—
Seebinger, Frederick L., 3,856,253.
- Amerikanische Gummiwerke AG: See—
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- Amerola Products Corporation: See—
Merola, Anthony, 3,856,292.
- Ameron, Inc.: See—
Loeber, Frederick W., 3,856,344.
- Wells, Frank M.; and Black, Gordon J., 3,856,453.
- Amidon, Alan B.: See—
Mammino, Joseph; and Amidon, Alan B., 3,856,692.
- Amity Leather Products Company: See—
Dengel, Jan Peter, 3,856,063.
- Amoco Production Company: See—
Blenkarn, Kenneth A., 3,855,656.
- Amsted Industries Incorporated: See—
Altherr, Russell George, 3,856,155.
- Mulcahy, Harry W., 3,855,942.
- Andersen, Kare. Fluid seal for bearing assembly. 3,856,368, Cl. 308-187.200.
- Anderson Company, The: See—
Wubbe, Leo J., 3,855,664.
- Anderson, Donald C., to Ciba-Geigy Corporation. Method and composition for preventing retention of placenta following induced parturition in cattle. 3,856,955, Cl. 424-243.000.
- Anderson, Glenn W.: See—
Hutchison, Stanley O.; Anderson, Glenn W.; and Newby, Gordon L., 3,855,854.
- Hutchison, Stanley O.; Anderson, Glenn W.; and Newby, Gordon L., 3,855,855.
- Hutchison, Stanley O.; Anderson, Glenn W.; and Newby, Gordon L., 3,855,856.
- Andrako, Thomas E., to Addressograph-Multigraph Corporation. Quality control of electrostatic image developer mix. 3,855,969, Cl. 118-637.000.
- Andrews, Ronald A.: See—
Burns, William K.; and Andrews, Ronald A., 3,856,379.
- Andrews, Theodore E., to Armstrong Cork Company. Conduit-slitting method. 3,855,886, Cl. 83-7.000.
- Andriola, Achilles D.; Kuehn, Howard E.; Whittum, Warren C.; and Wink, Donald E., to USM Corporation. Drive for shell-type rolls. 3,855,681, Cl. 29-115.000.
- Angerman, Albert Henry; and Moore, Carl Gordon, to Du Pont de Nemours, E. I., and Company. Production of anatase TiO₂ by the chloride process. 3,856,929, Cl. 423-613.000.
- Anonima Castelli S.A.: See—
Piretti, Giancarlo, 3,856,147.
- Antonini, Walter W.: See—
Karcher, Thomas D.; and Antonini, Walter W., 3,856,336.
- Ao, Hideki: See—
Arimura, Katsuo; Kobayakawa, Toshihiro; Ao, Hideki; and Tsuda, Yoshiaki, 3,856,797.
- Aoki, Katashi. Rotary type injection molding machine. 3,856,454, Cl. 425-451.000.
- Aoki, Masaru: See—
Matsumoto, Takao; and Aoki, Masaru, 3,856,304.
- Appleby, Paul E.: See—

- Christie, Christopher E.; Appleby, Paul E.; and Tully, Frank R., 3,856,070.
- Arai, Ryozi: See—
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- Archibald, John L.: See—
Freed, Meier E.; and Archibald, John L., 3,856,790.
- Arenson, A., Limited: See—
Duke, Dennis; Swain, Michael James; and Cracknell, Alan, 3,856,350.
- Argus Chemical Corporation: See—
Abramoff, Charles, 3,856,728.
- Arick, Robert E.; and Vogel, Ralph A., to Essex International, Inc. Push-pull stator winding apparatus and method. 3,856,221, Cl. 242-1.10r.
- Arimura, Katsuo; Kobayakawa, Toshihiro; Ao, Hideki; and Tsuda, Yoshiaki, to Yoshitomi Pharmaceutical. 8-Aminoalkyl-3-oxo-1-thia-4,8-diazaspiro(4.5) decanes and analogs thereof. 3,856,797, Cl. 260-293.660.
- Armitage, Brian P.: See—
Hunter, Susan E.; Boyce, Clive B. C.; Armitage, Brian P.; Haken, Pieter Ten; and Wagner, Willem M., 3,856,976.
- Armstrong Cork Company: See—
Andrews, Theodore E., 3,855,886.
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Lindberg, Richard S.; and Armstrong, G. Leslie, 3,856,360.
- Arning, Klaus H.; and Rumpf, Robert J., to Ford Motor Company. Motor vehicle chassis subassembly. 3,856,323, Cl. 280-96.20r.
- Arnold, Anthony Francis, to RCA Corporation. Method of electrolessly plating a metal on a body which includes lead. 3,856,565, Cl. 117-212.000.
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- Arroyo, Mario Saenz, to Articulos Medicos Mexicanos, S.A. Sphygmomanometer. 3,855,999, Cl. 128-2.05g.
- Articulos Medicos Mexicanos, S.A.: See—
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- Arundel Corporation, The: See—
Foxton, Sidney Brian, 3,856,495.
- Asada, Chiaki; and Watanabe, Toshiyuki, to Daido Seiko Kabushiki Kaisha. Cold workable and age-hardenable steel. 3,856,514, Cl. 75-124.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: See—
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- Ayres, Ralph E., to Dow Chemical Company, The. Process for making expanded synthetic resinous beads. 3,856,904, Cl. 264-51.000.
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- Bales, Emmett Robert, to American Standard Inc. Adjustable leg structure. 3,855,946, Cl. 108-144.000.
- Ballard, Neiland H., to Graham, M. H., Corporation. Coffee maker. 3,856,435, Cl. 417-158.000.
- Balsacq, Guy. Anti-fouling polyester resin. 3,856,743, Cl. 260-40.00r.
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- Becker, Raymond M. Rotary internal combustion engine. 3,855,978, Cl. 123-44.00c.
- Becker, Warren E.; Johnston, James D.; and Hildreth, Clarence L., to Ethyl Corporation. Purification of crude aluminum. 3,856,511, Cl. 75-68.00b.
- Becking, Donald H., to Oxy Metal Finishing Corporation. Process for stripping nickel from articles and composition utilized therein. 3,856,694, Cl. 252-101.000.
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- Bens, Everett M.; and Holt, Lloyd J., to United States of America, Navy. Fluorescent visual augmentation composition. 3,856,550, Cl. 117-33.50r.
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- Biddell, William G., to National Distillers and Chemical Corporation. Flame retardant compositions. 3,856,890, Cl. 260-897.00b.
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- Blenkarn, Kenneth A., to Amoco Production Company. Underwater buoy for a riser pipe. 3,855,656, Cl. 9-8.00r.
- Blich, William E., to Weblene Corporation, The. Splash guard for bath tub showers. 3,855,642, Cl. 4-149.000.
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- Boulanger, Henry J., to Texas Instruments Incorporated. Multi-position slide switch assembly with housing means holding common conductive rail in fixed abutting relationship with end terminals of fixed contact array. 3,857,000, Cl. 200-16.00d.
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- Bourton, Dennis Frederick, to Canterbury Precision Engineering, Limited. Heaters. 3,856,459, Cl. 432-58.000.
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- Brandt, Gerlad B.; and Gottlieb, Milton, to Westinghouse Electric Corporation. Method and means for modulating light propagating in an optical waveguide by bulk acoustic waves. 3,856,378, Cl. 350-96.0wg.
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- Brindley, Robert E., to Union Carbide Corporation. Display tray with merchandise-mounted card packages. 3,856,137, Cl. 206-73.000.
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- Hayashi, Takao; Matsukawa, Hiroharu; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Light-resistant-color developing sheet for pressure-sensitive copying paper. 3,856,553, Cl. 117-36.200.
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- Helfgott, Saul, to Field Manufacturing Co., Inc. Chess piece with removable instructional base. 3,856,309, Cl. 273-137.00r.
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- Herzog, Alexis, to Ciba-Geigy Corporation. Method of combating insects. 3,856,950, Cl. 424-225.000.
- Hess, Rollie O. Combination granary and feeder for livestock. 3,855,971, Cl. 119-52.0af.
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- Hickson, John D. Pressure spray can holding and operating apparatus. 3,856,209, Cl. 239-532.000.
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- Kikuno, Hideo: See—
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- Kilkes, Robert J., to Xerox Corporation. Indicating and switching apparatus. 3,856,997, Cl. 200-5,000.
- Kim, He B.; and Driver, Michael C., to Westinghouse Electric Corporation. Application of facet-growth to self-aligned schottky barrier gate field effect transistors. 3,855,690, Cl. 29-571,000.
- Kim, Tai K.: See—
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- Kim, You Song, to Bell Telephone Laboratories, Incorporated. Method for producing lead zirconate titanate polycrystalline ceramics. 3,856,693, Cl. 252-62,900.
- Kimura, Makoto: See—
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- Kimura, Shunichiro: See—
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- Kimura, Terutoshi: See—
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- Kinney, Layton C.; and Tompkins, Edwin H., to American Screen Process Equipment Company, mesne. Method and apparatus for printing. 3,855,928, Cl. 101-471,000.
- Kinsey, Lewis R. Handlebar-mounted clutch actuating and gear shifting device for motorcycles. 3,856,123, Cl. 192-3,620.
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- Kiritani, Masataka: See—
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- Kirkham, William Brian, to Domtar Limited. Paper coated with clay and asbestos. 3,856,564, Cl. 117-155,000.
- Kirkland, Kenneth C., Jr.; and Hunt, Raymon E., to Garlock, Inc., mesne. Method and apparatus for controlling vehicle noise. 3,856,991, Cl. 179-1,000.
- Kirkpatrick, Harold B., to Reichhold Chemicals, Inc. Molding process for foamed articles using an expandable mold with inner and outer restraints. 3,856,902, Cl. 264-45,200.
- Kirst, Rudi, to Hofmann & Co. KG. Cylinder piston unit for a power operated revolving chuck. 3,855,902, Cl. 91-420,000.
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- Kishida, Takashi; and Kadokura, Sadao, to Teijin Limited. Apparatus for drawing, separating and winding filament. 3,855,676, Cl. 28-71,300.
- Kishimoto, Hiroyuki; and Morozumi, Eiichi, to Honeywell Inc. Temperature sensing apparatus having a gas adsorbing element contained in the sensing bulb. 3,855,865, Cl. 73-368,200.
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- Kitanosono, Hidehiro; Kubo, Takeaki; and Shida, Shigeru, to Hitachi Ltd. Method and apparatus for controlling plate thickness in a rolling mill. 3,855,830, Cl. 72-8,000.

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- Kligman, Albert Montgomery. Skin depigmentation. 3,856,934, Cl. 424-62,000.
- Klinger, Josef F.; and Terrill, John Mark, to Termex, Inc. Thermometer readout means. 3,855,866, Cl. 73-372,000.
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- Kloss, Wilfred: See—
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- Knight, Mark Berwyn, to RCA Corporation. Detector employing a current mirror. 3,857,047, Cl. 307-231,000.
- Knize, James J.: See—
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- Knobl, Friedrich Karl, to Illinois Tool Works Inc. Stapling method. 3,855,688, Cl. 29-432,000.
- Knoll International, Inc.: See—
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- Kobale, Manfred: See—
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- Kobayakawa, Toshihiro: See—
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- Kobayashi, Hisamine, to Shikishima Tipton Mfg., Co., Ltd. Centrifugal barrel finishing apparatus having tiltable tubs. 3,855,740, Cl. 51-164,000.
- Kobayashi, Juichi: See—
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- Kodera, Yoshihide; Todo, Naoyuki; and Fukuda, Kenzo, to Agency of Industrial Science & Technology. Method for manufacture of hydrogen and carbonyl sulfide from hydrogen sulfide and carbon monoxide. 3,856,925, Cl. 423-416,000.
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- Kohase, Shigeru: See—
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- Kohmoto, Keisuke; and Miyazaki, Koshin, to Nippon Soda Company, Limited. Metal salts of bis-thioureido benzenes. 3,856,847, Cl. 260-470,000.
- Koike, Norio: See—
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- Kokusen Denki Co., Ltd.: See—
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- Kolshi, Hitoshi; Takao, Michio; Oda, Yasuhiro; Iguchi, Hideo; and Kohase, Shigeru, to Tokyo Printing Ink Mfg. Co., Ltd. Vehicles for printing ink. 3,856,759, Cl. 260-78,400.
- Komlos, Anna, nee Kiss: See—
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- Komlos, Endre: See—
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- Kraus, Alfred P.; Kraus, Lorraine M.; and Wood, John L., to University of Tennessee Research Corporation, The. Protein molecular prosthesis mediated by carbamyl phosphate and carbamyl phosphate derivations. 3,856,624, Cl. 195-1,800.
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- Krembel, Frank, Jr., to Columbia Marking Tools, Inc. Combination of apparatus and buffer structure. 3,855,922, Cl. 101-3,000.
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- Krishnan, Kamala S., to United States of America, Navy. Prism to separate a second harmonic from its fundamental frequency. 3,856,380, Cl. 350-157,000.
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- Krzewinski, Henrietta K., to Johnson & Johnson. Surgical drapes with improved arm coverage. 3,856,006, Cl. 128-132,000.
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- Kuehn, Erich, to Atlas Chemical Industries, Inc. Polymerizable urethane compounds. 3,856,830, Cl. 260-404,000.
- Kuehn, Howard E.: See—
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- Kuehn, Lorne A.; and McHattie, Lloyd E., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Method and apparatus for determining wet bulb globe temperature. 3,855,863, Cl. 73-339,000.
- Kugler, Tibor; and Rieger, Hans Wolfhart, to Swiss Aluminium Ltd. Cathode for an aluminum fusion electrolysis cell and method of making the same. 3,856,650, Cl. 204-243,000.
- Kuhla, Donald E.; Sarges, Reinhard; and Wiedermann, Hans E., to Pfizer Inc. Thiazolecarboxamide sulfonylurea hypoglycemic agents. 3,856,806, Cl. 260-302,000.
- Kuhnle, Ernst, to Bizerba-Werke Wilhelm Kraut KG. Spring balance apparatus provided with compensation for measuring error due to temperature changes. 3,856,098, Cl. 177-227,000.
- Kulo Herman & Modell: See—
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- Kupperman, Sam; and Kupperman, Dennis I., to RB Toy Development Co. Knockdown kite. 3,856,241, Cl. 244-154,000.
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- Kuribayashi, Atushi: See—
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- Kusano, Kazuya: *See—*
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- Kuwabara, Nobuaki: *See—*
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- La Costa, Nicholas J.: *See—*
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- La Fortune, Robert, to Diamond Shamrock Corporation. Degassing of brine. 3,856,482, Cl. 55-36.000.
- Labelle, Donald J. Appliance leveling device. 3,856,248, Cl. 248-188.200.
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- Lach, John H.: *See—*
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- Laferty, John M.: *See—*
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- Lagrange, Don E.; Davis, Edward J.; Scheer, Eugene R.; Brewer, Ralph E.; and Hamilton, Curtis A., to United States of America, Navy. Laser seeker test set. 3,857,042, Cl. 250-495.000.
- Lambert, Robert R., to Air Factors, Inc. Mounting arrangement for air diffuser in a kerfed ceiling. 3,855,909, Cl. 98-40.00d.
- Lamberti, John J. Rigid reamer type smoking pipe cleaner. 3,856,024, Cl. 131-243.000.
- Lambou, Madeline G.; and Spadaro, James J., to United States of America, Agriculture. Precursor compositions from animal hide glues for dry-structured foams. 3,856,700, Cl. 252-354.000.
- Lamer, Gerald P., to Case, J. I. Company. Telescopic boom and jib assembly with means to maintain a predetermined angular position therebetween. 3,856,151, Cl. 212-55.000.
- Landrum, Aubrey O.: *See—*
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- Laney, Bill C.: *See—*
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- Langan, Maurice W., to American Colloid Company. Deck construction. 3,855,747, Cl. 52-404.000.
- Lange, Hermann Paul. Apparatus for attaching a hot and cold water plumbing fixture to building water pipes. 3,856,334, Cl. 285-137.00r.
- Lange, Michael: *See—*
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- Langham, Stephen, to General Motors Corporation. Diffuser with boundary layer removal. 3,856,430, Cl. 415-207.000.
- Laporte Industries Limited: *See—*
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- Larkin, Sam. Apparatus for preventing displacement of molds. 3,856,075, Cl. 164-323.000.
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- Larson, Charles O., to Larson, Chas. O., Co. Display rack construction. 3,855,943, Cl. 108-28.000.
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- Larson, Dennis H.: *See—*
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- Larson, Lester L., to Tektronix, Inc. Oscilloscope sweep system with two sweep generators having speed rate switches and sweep mode switches operated by a control knob. 3,857,059, Cl. 315-391.000.
- Larson, Richard Kendall: *See—*
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- Lawson, Anthony Newton; and Tabalba, Camilo Manasala, to International Standard Electric Corporation. Telephone dialing arrangement. 3,856,982, Cl. 179-90.00r.
- Lay, Robert; and Haller, Clayton L., to Westinghouse Electric Corporation. Safety mechanism for laundry appliances with door latch for actuating main switch. 3,857,002, Cl. 200-61.640.
- Lazarus, Martin, to United States of America, Army. Method for color temperature calibration of tungsten. 3,856,405, Cl. 356-46.000.
- Lazzarini, Henri: *See—*
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- Lazzarini, Louis P. Dry peeling apparatus. 3,855,916, Cl. 99-625.000.
- Le Clair, Joseph A. R. Orthodontic appliance. 3,855,701, Cl. 32-14.00a.
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- Leben Utility Co. Ltd.: *See—*
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- Lee, Billy M., to Burlington Industries, Inc. Circular knitting machine takeup with a slitting device. 3,855,822, Cl. 66-147.000.
- Lee, Cheuk Man, to Abbott Laboratories. 1-(5-Phenyl-4-oxo-2-oxazolyn-2-yl)-4-cinnamoylpiperazines in the treatment of depression. 3,856,958, Cl. 424-250.000.
- Lee, Haju; and Rosen, Harvey Milton, to Grace, W. R., & Co. Closed-loop ozone generating and contacting system. 3,856,671, Cl. 210-63.000.
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- Senkyrik, Frank, 3,855,831.
- Leek, Wayne E.: *See—*
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- Legere, Allan E., to Cesari and McKenna. Hair grooming aid. 3,856,027, Cl. 132-148.000.
- Leggiere, Robert. Multi-purpose trim for door and window frames. 3,855,746, Cl. 52-213.000.
- Lehberger, Erich: *See—*
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- Lehmann, Willi; and Wachtel, Anselm, to Westinghouse Electric Corporation. Discharge device and method for generating near infrared radiations. 3,857,054, Cl. 313-486.000.
- Leibach, Heinrich, to Motoren- und Turbinen-Union Munchen GmbH. Apparatus for thrust reversal. 3,856,239, Cl. 244-12.00d.
- Leichtner, Wayne K., to Eaton Corporation. Viscous coupling. 3,856,122, Cl. 192-58.00b.
- Leigh, Roland Albert: *See—*
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- Leight, Howard S. Ear protector assembly. 3,856,007, Cl. 128-152.000.
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- Leitz, Ernst GmbH: *See—*
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- Leonard, Gordon Harris; and Ramshaw, Anthony John, to C.A.V. Limited. Flashing lamp circuits. 3,857,062, Cl. 315-136.000.
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- Leschonski, Kurt P.: *See—*
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- Lever Brothers Company: *See—*
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- Levine, Ira A.: *See—*
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- Levine, Irving. Hanging merchandise display and containing apparatus. 3,856,146, Cl. 211-134.000.
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- Scott, James E., Jr.; and Woodward, Ernest Ray, to Pacific Resins & Chemicals, Inc. Phenolic resin-containing cellulosic overlays for woody substrates. 3,856,616, Cl. 162-165,000.
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- Sebilleau, Roger V.; and Eklund, Kurt I. Wood and metal pallet. 3,855,945, Cl. 108-57,000.
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- Semon, Howard W., to General Electric Company. Closure for fire resistant structure. 3,855,741, Cl. 52-19,000.
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Ishido, Yoshiharu; Yoshino, Teruo; Komura, Hajime; Suzuki, Katsumi; Yamasaki, Akihiro; and Okutsu, Masaru. 3,856,777.
- Suzuki, Kazaburo. *See—*
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- Svenska Traforskningsinstitutet. *See—*
Hill, Jan Erik; Eriksson, Erik Lennart, and Lennartsson, Mats. 3,856,408.
- Swain, Michael James. *See—*
Duke, Dennis; Swain, Michael James; and Cracknell, Alan. 3,856,350.
- Swallert, Sven Arild. Open-topped foldable receptacle. 3,856,064, Cl. 150-49,000.
- Swanson, Allan R., to Clark Equipment Company. Vehicle braking system. 3,856,361, Cl. 303-6,000.
- Swasey, Warner R., Company, The. *See—*
Fournier, Roger H. 3,855,734.
- Swatko, Albert, to Royer Foundry and Machine Co. Feeding assist means for a wood chipper. 3,856,212, Cl. 241-56,000.
- Sweeney, Roy P., and Shull, Robert W., to Owens-Illinois, Inc. Load stabilization. 3,855,756, Cl. 53-26,000.
- Sweeton, David C., to Prince Manufacturing, Inc. Ball throwing machine. 3,855,988, Cl. 124-11,000.
- Swered, Paul. *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; and Swered, Paul. 3,856,961.
- Swift, Gilbert; Moore, William M.; and Milberger, Lionel J., to Tracker, Martin, Corporation. Method and apparatus for testing bladed rotors. 3,856,410, Cl. 356-167,000.
- Swiss Aluminium Ltd. *See—*
Kugler, Tibor; and Rieger, Hans Wolfhart. 3,856,650.
- Syva Corporation. *See—*
Schneider, Richard S., and Ullman, Edwin F. 3,856,469.
- Sze, Morgan C.; and Snell, George J., to Lummus Company, The. Coal liquefaction. 3,856,675, Cl. 210-73,000.
- Szmuskowicz, Jacob, to Upjohn Company, The. 1,6-Disubstituted-4H-s-[4,3]-benzodiazepines. 3,856,802, Cl. 260-296,000.
- Tabalba, Camilo Manasala. *See—*
Lawson, Anthony Newton; and Tabalba, Camilo Manasala. 3,856,982.
- Tada, Siro, to Matsushita Electric Industrial Co., Ltd. Channel indicator. 3,855,963, Cl. 116-124,100.
- Tadlock, Guy M. *See—*
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- Taggart, James A., to Sperry Rand Corporation. Printer variable form length controller. 3,856,128, Cl. 197-133,000.
- Tateyoko Coal Mining Co., Ltd. *See—*
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- Tajima, Koi. *See—*
Yamaura, Tokuharu; Takeda, Masayuki; Tajima, Koi; and Koike, Norio. 3,856,926.
- Takagi, Kazumi; Murakami, Masahiro; and Manabe, Kuniyoshi, to Sumitomo Chemical Company. Process for producing 2,5-dimethyl 2,4-hexadiene. 3,856,882, Cl. 260-681,000.
- Takahashi, Nagashige, and Oouchi, Teruo. Method of protecting a bundle of flexible optical fibers. 3,855,897, Cl. 87-1,000.
- Takahashi, Naoya; Aida, Yoshiaki, and Shimizu, Isao, to Nippon Petrochemicals Co., Ltd. Polysulfide rubber sealant composition. 3,856,740, Cl. 260-33,600.
- Takahashi, Reijiro; Kanemoto, Kazuo, and Ito, Toshikatu, to Hitachi, Ltd. Device for controlling coolant pressure in evaporator. 3,855,836, Cl. 62-217,000.
- Takahashi, Syozo. *See—*
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- Takahashi, Yasuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide-angle lens assembly of retrofocus type. 3,856,385, Cl. 350-214,000.
- Takamatsu, Ikuro, to Yoshida Kogyo Kabushiki Kaisha. Concealed zip fasteners. 3,855,672, Cl. 24-205,100.
- Takano, Koichi. *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Takano, Koichi, and Kosikawa, Kiyoshi. 3,856,614.
- Takao, Michio. *See—*
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- Takata, Toshihiko. *See—*
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- Takayama, Katsuki, to Aisin Seiki Kabushiki Kaisha. Pressure control valve. 3,856,047, Cl. 137-625,610.
- Takeda Chemical Industries, Ltd. *See—*
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- Yokotani, Hajime; Miyamoto, Masuo, and Murata, Tadakazu. 3,856,911.
- Takeda, Hideomi; and Kawasaki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focusing device. 3,856,407, Cl. 356-123,000.
- Takeda, Hisami. *See—*
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- Takeda, Masayuki. *See—*
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- Takematsu, Tetsuo. *See—*
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- Takeuchi, Tetsuo. *See—*
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- Takeuchi, Tomio. *See—*
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- Takizawa, Muneto. *See—*
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- Tamura, Mituo. *See—*
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- Tanaka, Osamu; Yamamoto, Takaaki, and Takata, Toshihiko, to Nippon Steel Corporation. Method for forming an insulating film on an oriented silicon steel sheet. 3,856,568, Cl. 117-70,000.
- Tanaka, Susumu. *See—*
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- Taniguchi, Toshinori. *See—*
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- Taninaka, Kuniaki; Shioyama, Osamu; and Murata, Kikuzo, to Nihon Nohyaku Co., Ltd. Dithiolan-2-ylidenemalonates. 3,856,814, Cl. 260-327,000.
- Tann, Lewis H.; Carroll, Robert J.; and Lipke, Donald L., to Candid Logic, Inc. Self-actuated digital location sensor. 3,855,708, Cl. 33-169,000.
- Tarman, Paul B.; and Massey, Lester G., to Consolidated Natural Gas Service Co., Inc. Oxygen production process. 3,856,928, Cl. 423-579,000.
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- Tateishi, Teizabro; Murase, Koichi; and Iwanaga, Yukio, to Fuji Oil Company, Ltd. Process for preparing hard butter. 3,856,831, Cl. 260-409,000.
- Tateisi, Hiromiti; and Tamura, Mituo, to Toyo Bearing Manufacturing Company Limited. Dimensional control gauge for internal grinders. 3,855,735, Cl. 51-165,000.
- Taub, Bernard, to Allied Chemical Corporation. Molded flexible polyurethane foams. 3,856,718, Cl. 260-2,500.

- Taylor, Dermot B. Apparatus and method for wide area, dark field, high resolution autoradiography. 3,856,398, Cl. 355-63,000.
- Taylor, Thomas W.; Ciuffini, Anthony J.; and Gerace, Paul L., to Xerox Corporation. Strippable overcoating for improved xerographic plates. 3,856,548, Cl. 117-6,000.
- Teague, Roger W.; and Snyder, Richard Paul, to General Signal Corporation. System and apparatus for cleaning bar grid. 3,856,216, Cl. 241-46,000.
- Technical Processing, Inc. *See—*
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- Teijin Limited. *See—*
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- Sakai, Kouichi; Tokai, Yoshiaki; and Matsunaka, Sadayoshi. 3,856,884.
- Yamashita, Gentaro, and Yamamoto, Kiyoshi. 3,856,855.
- Tektronix, Inc. *See—*
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- Telesco Brophy Limited. *See—*
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- Weber, Heinz. 3,856,031.
- Tennakoon, Charles Lionel Kasturiratne. *See—*
Fleischmann, Martin; King, Christopher John Hall; Oldfield, John Wilfred; Plimley, Raymond Ernest; and Tennakoon, Charles Lionel Kasturiratne. 3,856,652.
- Tension Structures Co. *See—*
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- Tenteris, Ansis U. *See—*
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- Termex, Inc. *See—*
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- Terrill, John Mark. *See—*
Klinger, Josef F.; and Terrill, John Mark. 3,855,866.
- Terry, Cameron D. Tile and tile roofing. 3,855,753, Cl. 52-520,000.
- Terry, Stanley M.; deceased (by Third National Bank of Springfield, The; executor); and Gray, Alden J., to Maremont Corporation. Rotary electrical switch with bridging contactor. 3,856,999, Cl. 200-11,000.
- Tesch, Gunter Horst. *See—*
Colijn, Johannes Jakobus Vincent; and Tesch, Gunter Horst. 3,856,602.
- Texaco Inc. *See—*
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- Haugen, Haakon; and Weetman, David G. 3,856,691.
- Homolka, George A. J. 3,855,845.
- O'Connor, James J.; and Nolan, John T., Jr. 3,856,724.
- Texas Dynamatics, Inc. *See—*
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- Texas Instruments Incorporated. *See—*
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- Doherty, John, Jr. 3,856,259.
- Fuller, Clyde Rhea; and Ghate, Prabhakar Bhimrao. 3,856,648.
- Spicer, Denis Frank. 3,857,041.
- Texier, Nicole; Cuet, Jean-Pierre; and Gabriel, Michel, to Societe Anonyme Produits Chimiques Ugine Kuhlmann. Process for treating residual solutions containing hexavalent chromium compounds. 3,856,917, Cl. 423-54,000.
- Textron, Inc. *See—*
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- Thaler, Warren A.; Buckley, Donald J., Sr.; and Kennedy, Joseph P., to Exxon Research & Engineering Co. Process for the preparation of high molecular weight, high unsaturation isobutylene-conjugated diene copolymers. 3,856,763, Cl. 260-80,700.
- Theard, Leslie Peter; Peterson, Frank Clyde; Russell, John Lynn, Jr.; and Reiferson, Robert L., to Gulf Research & Development Company. Rigid polyethylene foam. 3,856,717, Cl. 260-2,500.
- Theobald, Erwin F. *See—*
DuLaney, Lucius B.; and Theobald, Erwin F. 3,856,213.
- Dillon, Glenn W. 3,856,473.
- Thesier, Patrick A. *See—*
Kwolk, John P.; and Thesier, Patrick A. 3,856,120.
- Thiel, Ralph. Automatic separable fastener. 3,855,674, Cl. 24-230,000.
- Third National Bank of Springfield, The. *See—*
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- Thoma, Jozef A. *See—*
Deumens, Johannes J. M.; Verheijen, Egidius J. M.; and Thoma, Jozef A. 3,856,819.
- Thomas, Charles C., to Mississippi State University Development Foundation, Inc. Thread tensioning device. 3,856,233, Cl. 242-156,000.
- Thomas, Evelyn. *See—*
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- Thomas, Howard M.; and Olszowka, Robert F., to Wurlitzer Company, The. Key assembly. 3,855,894, Cl. 84-423,000.
- Thomas, Jacob E. Playground assembly set. 3,855,748, Cl. 52-585,000.
- Thompson, Charles R.; and Hidalgo, John, to Cutter Laboratories, Inc. Use of injectable compositions of the (plus)-optical isomer of the alpha racemate of 2-(2-ethyl-2-phenyl-1,3-dioxolan-4-yl)piperidine to control pain. 3,856,963, Cl. 424-267,000.
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- Thomson-CSF. *See—*
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- Favreau, Michel; and Vidal, Serge. 3,856,990.
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- Thorn Electrical Industries Limited. *See—*
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- Thorwaldsen, Stanley E. *See—*
Seifert, Lester H.; Powers, Raymond P.; Schmidt, William M.; Thorwaldsen, Stanley E.; Smith, Frederick W.; McElroy, David C.; and Dunton, Roy P. 3,855,763.
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- Thumma, Francis L. Portable wheel stand. 3,856,264, Cl. 254-88,000.
- Thurston, Elvin Frederick William; and Scott, John Gabriel Valentine, to Ilford Limited. Photographic silver halide emulsion containing a supersensitizing combination. 3,856,532, Cl. 96-124,000.
- Tierney, David P. Golf putting apparatus with ball return. 3,856,313, Cl. 273-176,000.
- Tieszen, Dale O.; and Edmonds, James T., Jr., to Phillips Petroleum Company. Incorporation of high molecular weight fluorocarbon polymer in arylene sulfide polymer. 3,856,736, Cl. 260-29,600.
- Timmerman, Daniel Maurice. *See—*
Van Paesschen, August Jean; Herbots, Joseph Antoine; and Timmerman, Daniel Maurice. 3,856,530.
- Tinman, Hugh J. Electrically-operable game apparatus. 3,856,307, Cl. 273-134,000.
- Tiramani, Marco, to Gloucester Engineering Co., Inc. Screen assembly for processing plastic. 3,856,277, Cl. 259-185,000.
- Tisdale, Benjamin Cornwall, III; and Nicholson, William Buford. Apparatus for laying pipelines. 3,855,835, Cl. 72-183,000.
- Todo, Naoyuki. *See—*
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- Tokai, Yoshiaki. *See—*
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- Tokyo Denryoku Kabushiki Kaisha. *See—*
Nikaido, Teruji; Haga, Kaoru; Sugiyama, Norio; and Fujiwara, Yasutaka. 3,857,071.
- Tokyo Electronic Industry Co., Ltd. *See—*
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- Tokyo Printing Ink Mfg. Co., Ltd. *See—*
Kolshi, Hitoshi; Takao, Michio; Oda, Yasuhiro; Iguchi, Hideo; and Kohase, Shigeru. 3,856,759.
- Tokyo Shibaura Electric Co., Ltd. *See—*
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- Yokoi, Hiromu; Ito, Kenichi; and Mizobuchi, Kenji. 3,856,985.
- Tollefson, James T. Spinning toy. 3,855,725, Cl. 46-1,000.
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- Tomii, Kaoru; and Miyama, Hiroshi, to Matsushita Electric Industrial Company, Limited. Color camera tube having color strip filter and an index electrode. 3,857,037, Cl. 313-371,000.
- Tomimoto, Naokazu. *See—*
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- Tompkins, Edwin H. *See—*
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- Tomy Kogyo Co., Ltd. *See—*
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- Tool & Instruments Associates, Inc. *See—*
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- Torian, John T.; and Safford, Richard W., to Fairchild Hiller Corporation. Guidance system. 3,856,237, Cl. 244-3,110.
- Tornoe, John A.; and Dyer, Curtis A., to Schlage Lock Company. Resealable knob for a lock. 3,856,339, Cl. 292-336,300.
- Torvund, Bjarne. Tippable containers. 3,856,164, Cl. 214-315,000.
- Towner Manufacturing Company. *See—*
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- Toyo Bearing Manufacturing Company Limited. *See—*
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- Toyo Soda Manufacturing Co., Ltd. *See—*
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- Tracey, Donald John, Jr. *See—*
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- Tracker, Martin, Corporation. *See—*
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- Traenckner, Hans-Joachim; Rudolph, Hans; Rosenkranz, Hans Jurgen; Fuhr, Karl; and Patheiger, Manfred, to Bayer Aktiengesellschaft. Highly reactive unsaturated polyester resin compositions which contain acrylamide-methylol-ethers and can be cured by UV-light. 3,856,644, Cl. 204-159,150.
- Trajbart, Branko. Refuse compactor. 3,855,918, Cl. 100-49,000.
- Traylor, Donald R. Tactile drawing and writing device. 3,855,707, Cl. 33-24,000.

- Trefry, William A. Retention clip for ball and socket joint. 3,856,422. Cl. 403-122.000.
- Triggs, Henry Francis, to Remalo Engineering Company Limited. Machine for pushing pegs out of a game board. 3,856,311. Cl. 273-139.000.
- Tropicana Products, Inc.: *See—*
- Rossi, Anthony T., 3,856,171.
- Trouilhet, Maurice Marie Achille, to SEB S.A. Small-sized linen ironing machine. 3,855,717. Cl. 38-60.000.
- Truman, Norman Nathan: *See—*
- Cuttell, Willis Robert; and Truman, Norman Nathan, 3,856,557.
- TRW Inc.: *See—*
- Dardick, David, 3,855,931.
- Porter, Wallace M., Jr., 3,855,736.
- Tsuchiya, Hideshi; Takematsu, Tetsuo; Hasegawa, Yoichi; and Furushima, Masakazu, to Mitsubishi Gas Chemical Company, Inc. Plant growth regulating composition. 3,856,850. Cl. 260-501.130.
- Tsuda, Yoshiaki: *See—*
- Arimura, Katsuo; Kobayakawa, Toshihiro; Ao, Hideki; and Tsuda, Yoshiaki, 3,856,797.
- Tucich, Paul J. File drawers lock. 3,856,373. Cl. 312-216.000.
- Tucker, Carl L., to Singer Company, The. Side expansion scroll-type blowers. 3,856,431. Cl. 415-219.000.
- Tudor Games, Incorporated: *See—*
- Payne, Calvin L., Jr.; Gambello, Vincent J.; and Molnar, John A., 3,856,303.
- Tully, Frank R.: *See—*
- Christie, Christopher E.; Appleby, Paul E.; and Tully, Frank R., 3,856,070.
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- Turner, Robert L.: *See—*
- English, Myrle H.; Goodstal, Laurence; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., 3,857,025.
- TVI Marketing, Inc.: *See—*
- Neumann, James W.; and Yielding, Douglas L. (said Neumann assor. to), 3,856,901.
- Twiford Moors (Aircraft & Engineering) Limited: *See—*
- Doe, Ewart H.; and Linforth, William J., 3,856,197.
- Tyler, Hugh Jean: *See—*
- Mitts, Richard K.; and Tyler, Hugh Jean, 3,856,057.
- Tympanium Corporation: *See—*
- Van Opijnen, L. J., 3,857,082.
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- UBE Industries, Ltd.: *See—*
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- Uchida, Haruo: *See—*
- Shirai, Shogo; and Uchida, Haruo, 3,857,055.
- Uchida, Kosaku; Ide, Susumu; Kanamaru, Toshiji; and Kitamura, Sadafumi, to Matsushita Electric Industrial Co., Ltd. Channel indicating device for television receivers. 3,855,962. Cl. 116-124.100.
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- Schneider, Richard S.; and Ullman, Edwin F., 3,856,469.
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- Gibson, John; and Nelson, James, 3,855,871.
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- Union Carbide Corporation: *See—*
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- Fan, You Ling; and Greggshaw, Richard, 3,856,606.
- Papa, Anthony Joseph; Proops, William Robert; and Shields, Theodore Curtis, 3,856,865.
- Union Oil Company of California: *See—*
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- McArthur, Dennis P., 3,856,702.
- McArthur, Dennis P., 3,856,705.
- Uniroyal, Inc.: *See—*
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- Uniroyal Ltd.: *See—*
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- United Merchants and Manufacturers, Inc.: *See—*
- Gregorian, Razmie S.; and Hoernle, Hans R., 3,856,598.
- United States of America
- Agriculture: *See—*
- Kenney, Harold E.; and Donahue, Edward T., 3,856,688.
- Lambou, Madeline G.; and Spadaro, James J., 3,856,700.
- Moulton, Karl J.; and Beal, Robert E., 3,856,710.
- Air Force: *See—*
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- Snyder, Ronald R., 3,855,686.
- Army: *See—*
- Campagnuolo, Carl J.; and Curto, Paul A., 3,856,432.
- Harris, Fred T.; and Resler, Edwin L., Jr., 3,857,050.
- Lazarus, Martin, 3,856,405.
- Lohrmann, Dieter R., 3,857,099.
- Messineo, Joseph R., 3,855,933.
- Miller, Louis D., 3,857,035.
- Nett, Rudolph E., 3,855,934.
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- Pollock, Charles B.; Scott, James L.; and Leitnaker, James M., 3,856,622.
- Steinberg, Meyer; Colombo, Peter; and Farber, Gerald, 3,856,054.
- Atomic Energy Commission, mesne: *See—*
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- Smith, Jay E., 3,857,070.
- Health, Education and Welfare: *See—*
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- Mead, John A. R., 3,856,959.
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- Health, Education, and Welfare, mesne: *See—*
- Noble, Jack E.; Riggie, Peter; Emigh, Stuart G.; and Martini, William R., 3,855,795.
- National Aeronautics and Space Administration: *See—*
- Sinclair, Archibald R.; Burcher, Ernest E.; and Katzberg, Stephen J., 3,857,031.
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- Woskow, Marvin Z., and Christmann, Harold F., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation catalyzed with promoted zinc ferrite. 3,856,880, Cl. 260-680,00c.
- Wray, Gary O.; See—
- Holden, John C.; and Wray, Gary O., 3,856,085.
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- Wray, William R.; and Stella, Joseph A., to Polaroid Corporation. Sound editor for sound motion picture projector. 3,856,387, Cl. 352-5,000.
- Wright, Charles A.; See—
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- Wright, George C.; Burch, Homer A.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 3-Diethylamino-2,2-dimethylpropyl 5-(substituted phenyl)-2-furoates. 3,856,825, Cl. 260-347,500.
- Wright, H. Dudley; See—
- Halfar, Kurt; Hitchman, Michael L.; and Mehl, Wolfgang, 3,856,640.
- Wright, James Robert; See—
- Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, 3,856,794.
- Wright, James T., to Carlson-Diamond & Wright, Inc. Adjustable safety die block-radial lobe design. 3,855,920, Cl. 100-53,000.
- Wright, James T., to Carlson-Diamond & Wright, Inc. Adjustable U-shape safety die block. 3,855,921, Cl. 100-53,000.
- Wubbe, Leo J., to Anderson Company, The. Wiper blade refill element. 3,855,664, Cl. 15-250,420.
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- Wust, Olivier, to Rieter Machine Works Ltd. Method of automatically changing winding tubes and winding apparatus for implementing the aforesaid method and improved spool doffing mechanism. 3,856,222, Cl. 242-18,00a.
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- Hynes, Frank R.; May, Joseph N.; and Thompson, David M., 3,856,460.
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- Yale, Harry Louis; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. 2-Pyridylmethyl-3H,7H-quinol(8,1-e)(1,5) benzoxazepin-3-one compounds. 3,856,781, Cl. 260-240,00r.
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- Yamauchi, Akira, to Jex Co., Ltd. Sanitary napkin with porous resin powder deodorant. 3,856,014, Cl. 128-290,000.
- Yamaura, Tokuharu; Takeda, Masayuki; Tajima, Koi; and Koike, Norio, to Showa Denko Kabushiki Kaisha. Process for preparing carbon paste. 3,856,926, Cl. 423-448,000.
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 Smith, Henry O. J., and E. A. Summerfield. Electrical connec-
 tor. 233,991, 12-24-74, Cl. D26—1.
 Societe d'Assistance Technique pour produits Nestle S.A.:
See—
 Watt, Donald G. 233,980.
 Watt, Donald G. 233,981.
 Steele Inc.: *See*—
 Hodges, Ronald R. 233,970.
 Hodges, Ronald R., and Hockenberry. 233,971.
 Stegman, Robert A. Combined optical and nasal air filter
 mask. 234,012, 12-24-74, Cl. D83—1.
 Streamlight, Inc.: *See*—
 Strowe, Robert J., and Olson. 234,001.
 Strowe, Robert J., and G. E. Olson, to Streamlight, Inc.
 Searchlight. 234,001, 12-24-74, Cl. D48—24.
 Summerfield, Edward A.: *See*—
 Smith, Henry O. J., and Summerfield. 233,991.
 Ute Indian Tribe of the Utah and Ouray Reservation: *See*—
 Jones, Jimmie L. 233,985.
 Jones, Jimmie L. 233,986.
 Jones, Jimmie L. 233,987.
 Wang, Daniel, and C. Wong. Stereo photo viewer. 234,006,
 12-24-74, Cl. D61—1.
 Warneford, Walter J. Engine manifold. 234,011, 12-24-74, Cl.
 D77—1.
 Watt, Donald G., to Societe d'Assistance Technique pour pro-
 duits Nestle S.A. Bottle. 233,980, 12-24-74, Cl. D9—115.
 Watt, Donald G., to Societe d'Assistance Technique pour pro-
 duits Nestle S.A. Combined bottle and cap therefor. 233,
 981, 12-24-74, Cl. D9—117.
 Welton, Gerry D. T-sling chair. 233,963, 12-24-74, Cl. D6—55.
 Wong, Cynthia: *See*—
 Wang, Daniel, and Wong. 234,006.
 Yagi, Ohilo, and T. Shiina, to Kabushiki Kaisha Ricoh. Auto-
 matic copy sheet feeder for copiers. 234,005, 12-24-74, Cl.
 D61—1.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 24, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	208E	3,855,686	188	3,855,757	29	3,856,496	124	3,856,514	CLASS 102		
2	3,855,631	211C	3,855,687	226	3,855,758	33	3,856,497	126C	3,856,515	24HC	3,855,929
25	3,855,632	432	3,855,688	306	3,855,749	60	3,856,498	128A	3,856,517	344	3,855,930
18	3,855,633	433	3,855,689	342	3,855,759	104	3,856,499	128W	3,856,516	38	3,855,931
114	3,855,635	571	3,855,690							49.5	3,855,932
153	3,855,636	605	3,855,694	36	3,856,482	50R	3,855,819	15.7	3,855,881	56	3,855,933
172	3,855,634	608	3,855,691	38	3,856,483	87	3,855,820	121R	3,855,882	70R	3,855,934
301	3,855,637	625	3,855,692	48	3,856,484	132	3,855,821	125	3,855,883		
		626	3,855,693	73	3,856,485	147	3,855,822	177UJ	3,855,884	48	3,855,935
CLASS 3	1	3,855,638								63	3,855,936
			CLASS 30	210	3,856,486					94	3,855,937
CLASS 4	30	3,855,695				32	3,855,823	34B	3,855,885	130	3,855,938
7	3,855,639		3,855,696	300	3,856,488					148MS	3,855,939
	3,855,640	341	3,855,697	379	3,856,489						
10	3,855,641	124	3,855,698	420	3,856,490	14	3,855,825				
131	3,855,645	135	3,855,699	478	3,856,491	38A	3,855,824	7	3,855,886		
149	3,855,642	162	3,855,700					49	3,855,887		
17212	3,855,643							303	3,855,888		
185B	3,855,644	CLASS 32	132	3,855,760				331	3,855,890		
185S	3,855,646	14A	3,855,701	275	3,855,762	134	3,855,826	490	3,855,889		
187A	3,855,647	15	3,855,702	51	3,855,761	362	3,855,829	582	3,855,891		
199	3,855,648	17	3,855,703	3202	3,855,763			835	3,855,892		
252R	3,855,649	28	3,855,704	327A	3,855,764	34	3,856,500				
		40R	3,855,705	340	3,855,765	76	3,856,501				
				40018	3,855,766	77	3,856,502				
		CLASS 33				90	3,856,503				
		1SD	3,855,706								
CLASS 5	21	3,855,650									
248	3,855,651	24C	3,855,707	18	3,855,767	121	3,856,504				
317R	3,855,655	169R	3,855,708	24	3,855,768						
327R	3,855,652	20315	3,855,709	34R	3,855,769	8	3,855,830				
331	3,855,654	295	3,855,710	345	3,855,770	32	3,855,831				
351	3,855,653	327	3,855,711	53	3,855,771	84	3,855,832				
				5883	3,855,773	91	3,855,833				
CLASS 8	1275	5	3,855,712	5895	3,855,772	179	3,855,834				
		9	3,855,719	81	3,855,774	183	3,855,835				
CLASS 9	8R	122	3,855,713	140BY	3,855,775	334	3,855,862				
				153	3,855,776	354	3,855,837				
CLASS 12	142RS	17	3,855,714	156	3,855,777	389	3,855,838				
					3,855,778	417	3,855,839				
		CLASS 36									
		25AL	3,855,716								
CLASS 15	77	3,855,658		4A	3,855,780						
181	3,855,659	50	3,855,715		3,855,781	11	3,855,841				
	3,855,660				3,855,782	13	3,855,842				
25001	3,855,661	60	3,855,717	23R	3,855,783	30	3,855,845				
	3,855,662	1022	3,855,718	50R	3,855,784	37	3,855,843				
25004	3,855,663			58	3,855,785	40.7	3,855,844				
25042	3,855,664	25	3,855,720	82A	3,855,779	611C	3,855,846				
339	3,855,665	4232	3,855,721	88C	3,855,786	714	3,855,847				
372	3,855,666	4234	3,855,722	126D	3,855,787	81	3,855,848				
		4483	3,855,723			86	3,855,849				
CLASS 16	168	65	3,855,727			88B	3,855,850				
		92	3,855,724	3903	3,855,788	115	3,855,851				
CLASS 17	71			225	3,855,789	135	3,855,852				
				361	3,855,790	151	3,855,853				
CLASS 23	230EP	10H	3,856,481	380	3,855,791		3,855,854				
	3,856,468			421	3,855,792		3,855,855				
230B	3,856,469	1C	3,855,725	431	3,855,793		3,855,856				
230L	3,856,465	34	3,855,726	524	3,855,795		3,855,857				
230R	3,856,466	74D	3,855,728	546	3,855,794		3,855,858				
	3,856,467	116	3,855,729	547	3,855,796	194EM	3,855,859				
252	3,856,472	158	3,855,730		3,855,797	194B	3,855,859				
253R	3,856,470			585	3,855,798	243	3,855,860				
	3,856,471	70	3,855,731			304R	3,855,861				
254E	3,856,473	425	3,855,732			339C	3,855,863				
2585	3,856,475	488	3,855,733	11	3,855,799	355R	3,855,864				
267R	3,856,474			29	3,855,800	368.2	3,855,865				
284	3,856,476			45D	3,855,802	372	3,855,866				
294	3,856,477	164	3,855,740		3,855,805	425.6	3,855,867				
		165R	3,855,734		3,855,808		3,855,868				
			3,855,735		3,855,801						
CLASS 24	16PB	16575	3,855,736		3,855,803						
	3,855,669	216R	3,855,737		3,855,804						
2051C	3,855,671	217R	3,855,738		3,855,806						
	3,855,672	234	3,855,739		3,855,807						
	3,855,673										
230A	3,855,674										
		19	3,855,741		3,855,810						
CLASS 28	713	65	3,855,755		3,855,811						
	3,855,676	79	3,855,743		3,856,492						
72R	3,855,677	98	3,855,742		3,855,812						
74R	3,855,678	126	3,855,744		3,855,813						
		159	3,855,745		3,855,816						
CLASS 29	105A	213	3,855,746		3,855,814						
	3,855,680	363	3,855,750		3,855,815						
115	3,855,681	404	3,855,747		3,855,816						
1573R	3,855,682	520	3,855,753		3,856,493						
15901	3,855,683	585	3,855,748								
182	3,856,478	603	3,855,751								
183	3,856,479	605	3,855,752								
195	3,856,480	755	3,855,754								
197	3,855,679										
200D	3,855,684										
203L	3,855,685	26	3,855,756								

25	3.856,271	299	3.856,805	45.2	3.856,902	CLASS 298	41	3.857,102	CLASS 417		
95	3.856,272	302R	3.856,806	51	3.856,903	10	3.856,354	122	3.857,101	158	3.856,435
99	3.856,273	307F	3.856,807		3.856,904			73	3.857,103	212	3.856,436
109	3.856,274		3.856,923	89	3.856,905	8	CLASS 299	167	3.857,104	241	3.856,437
161	3.856,275	308C	3.856,808	138	3.856,906	8	3.856,355			270	3.856,438
183	3.856,276		3.856,809	254	3.856,907	11	3.856,356	CLASS 330		312	3.856,439
185	3.856,277	309 2	3.856,810	313	3.856,908	12	3.856,357	17	3.857,105		
192	3.856,278		3.856,811			82	3.856,358	53	3.857,106	CLASS 418	
				CLASS 266		92	3.856,359	CLASS 331	195	3.856,440	
CLASS 260	326.41		3.856,812	3R	3.856,281	CLASS 301	1A	3.857,107	CLASS 423		
2P	3.856,712	327B	3.856,813	23NN	3.856,283	65	3.856,360	14	3.857,108	22	3.856,912
	3.856,713	327M	3.856,814	23H	3.856,282			94.5	3.857,109	27	3.856,913
2R	3.856,714	333	3.856,815	34PP	3.856,284	CLASS 303		10RD	3.857,110	49	3.856,915
2.1R	3.856,715	338	3.856,816			6R	3.856,361			54	3.856,916
2.5AO	3.856,718	340.5	3.856,817	CLASS 267		7	3.856,362	CLASS 332			
2.5BD	3.856,716	343 2R	3.856,818	9C	3.856,285		3.856,363	11D	3.857,111	69	3.856,917
2.5HA	3.856,717	345.3	3.856,819	57	3.856,286	21BE	3.856,365	CLASS 333			
	3.856,719		3.856,820	64R	3.856,287	21F	3.856,364	21A	3.857,112	122	3.856,920
2.5A	3.856,720		3.856,821	73	3.856,288	CLASS 307		30R	3.857,113	228	3.856,922
2.5B	3.856,721		3.856,822	154	3.856,289	9	3.857,044	715	3.857,114	268	3.856,926
2.5L	3.856,722		3.856,823	CLASS 269		208	3.857,045	84M	3.857,115	387	3.856,924
4	3.856,723	346.8A	3.856,824	14	3.856,290	221R	3.857,046			416	3.856,925
17.4CL	3.856,724	347.5	3.856,825	22	3.856,291	231	3.857,047	CLASS 339		448	3.856,926
1KEP	3.856,724	348.5V	3.856,826	135	3.856,292	261	3.857,048	31R	3.856,375	533	3.856,927
23XA	3.856,725		3.856,827	CLASS 270		CLASS 308		107	3.856,376	579	3.856,928
23H	3.856,726	397.1	3.856,828	68A	3.856,293	2A	3.856,365	CLASS 340		613	3.856,929
23.7M	3.856,726	397.4	3.856,829	CLASS 271		9	3.856,367	149R	3.857,052	CLASS 424	
23.7N	3.856,729	40.5	3.856,830	10	3.856,294	187.2	3.856,368	CLASS 350		1	3.856,930
27R	3.856,730	409	3.856,831	65	3.856,295	CLASS 310		6	3.856,377	14	3.856,931
28.5AS	3.856,732	410.9R	3.856,832	CLASS 272		8.1	3.857,049	96WG	3.856,378	16	3.856,932
28.5B	3.856,731	413	3.856,833	66	3.856,296	13	3.857,050		3.856,379	62	3.856,934
29.6RB	3.856,733	429K	3.856,836	79B	3.856,297	36	3.857,051	157	3.856,380	78	3.856,939
29.6TA	3.856,734	429R	3.856,837	CLASS 273		162	3.857,053	160LC	3.856,381	92	3.856,935
29.6F	3.856,735	429.5	3.856,839	1B	3.856,298	CLASS 312		214	3.856,385	98	3.856,936
	3.856,736	429.7	3.856,840	1M	3.856,299	107	3.856,369		3.856,386	115	3.856,937
30.8R	3.856,738	429.9	3.856,835	25	3.856,300	118	3.856,370	285	3.856,382	116	3.856,938
33.2R	3.856,739	448.2E	3.856,841	55B	3.856,301	195	3.856,371	302	3.856,383	3.856,939	
33.6AO	3.856,740	448.8R	3.856,842	55R	3.856,302	209	3.856,372	310	3.856,384	121	3.856,940
37N	3.856,741	465.D	3.856,843	85B	3.856,303	216	3.856,373	CLASS 352		145	3.856,941
	3.856,742	465.5A	3.856,844	85F	3.856,304	263	3.856,374	5	3.856,387	180	3.856,942
40R	3.856,743	465.9	3.856,844	95A	3.856,305	320	Re 28,280	40	3.856,388	182	3.856,944
	3.856,744	470	3.856,845	98	3.856,306	CLASS 313		129	3.856,389	195	3.856,945
42.14	3.856,745	471C	3.856,847	134A	3.856,307	237	3.857,055	130	3.856,390	CLASS 353	202
42.24	3.856,746	482C	3.856,848	135R	3.856,308	318	3.857,056			88	3.856,948
45.7P	3.856,747	486H	3.856,849	137R	3.856,309	371	3.857,037	101	3.856,392	216	3.856,949
45.75S	3.856,750	501.13	3.856,850	138A	3.856,310	412	3.857,057	88	3.856,391	226	3.856,950
45.9NC	3.856,748	513.5	3.856,851	139	3.856,311	417	3.857,058	230	3.856,951	233	3.856,952
	3.856,749	514D	3.856,852	144A	3.856,312	486	3.857,054	CLASS 354		238	3.856,954
47C	3.856,751	518A	3.856,853	176FB	3.856,313	CLASS 315		258	3.856,393	241	3.856,955
65	3.856,752	519	3.856,854	CLASS 277		99	3.857,060	275	3.856,394	243	3.856,956
75N	3.856,753	524R	3.856,855	1	3.856,314	130	3.857,061	299	3.856,395	246	3.856,957
	3.856,754	532	3.856,856	188	3.856,315	136	3.857,062	CLASS 355		250	3.856,958
77.5AO	3.856,756	553E	3.856,857	CLASS 280		170	3.857,063	40	3.856,396	251	3.856,960
77.5CR	3.856,757	556AR	3.856,858	5A	3.856,316	241P	3.857,064	15	3.856,397	263	3.856,961
78.4D	3.856,759	556A	3.856,859	11.35T	3.856,317	340	3.857,065	45	3.856,398	267	3.856,962
78.4N	3.856,758	561HL	3.856,860	28	3.856,318	391	3.857,059	63	3.856,398	273	3.856,963
78.5BB	3.856,760	563B	3.856,862	43.18	3.856,319	CLASS 317		36	3.856,403	276	3.856,964
78.5T	3.856,755	566A	3.856,861	47.35	3.856,320	2R	3.857,066	-1	3.856,399	283	3.856,969
79.5B	3.856,761	570.7	3.856,863	79.1	3.856,322	9A	3.857,067	5	3.856,402	297	3.856,971
	3.856,762	590	3.856,864	87.04	3.856,321	18D	3.857,069	28	3.856,400	298	3.856,972
80.7	3.856,763	615R	3.856,865	96.2R	3.856,323	18R	3.857,070		3.856,403	300	3.856,973
80.73	3.856,765	632B	3.856,866	106R	3.856,324	44	3.857,071	36	3.856,404	304	3.856,975
82.1	3.856,764	665G	3.856,867	124R	3.856,325	44R	3.857,072	46	3.856,405	317	3.856,976
88.2	3.856,766	666A	3.856,868	150AB	3.856,326	258	3.857,073	106S	3.856,406	319	3.856,977
92.8R	3.856,767	668A	3.856,871	150SB	3.856,327	CLASS 318		114	3.856,408	331	3.856,978
94.2M	3.856,768		3.856,872	432	3.856,329	38	3.857,075	123	3.856,407	340	3.856,979
112.5	3.856,769		3.856,873	433	3.856,330	257	3.857,076	167	3.856,411	344	3.856,981
	3.856,770		3.856,874	479R	3.856,331	608	3.857,077	175	3.856,413	349	3.856,982
112.7	3.856,771	668D	3.856,875	CLASS 283		663	3.857,079	200	3.856,414	357	3.856,984
154	3.856,772	668F	3.856,869	57	3.856,332	681	3.857,080	205	3.856,415	361	3.856,985
205	3.856,773		3.856,876	CLASS 285		687	3.857,081	219	3.856,417	365	3.856,986
209R	3.856,774	671C	3.856,878	14	3.856,333	25	3.857,082	233	3.856,418	CLASS 425	
	3.856,775	676R	3.856,876	137R	3.856,334	CLASS 321		14	3.857,083	4C	3.856,442
211.5R	3.856,776	677R	3.856,877	286	3.856,335	CLASS 322		5	3.856,419	7	3.856,443
	3.856,777	680E	3.856,879	316	3.856,336	CLASS 323		109	3.856,420	9	3.856,444
239B	3.856,778		3.856,880	334	3.856,337	CLASS 324				60	3.856,445
239.5R	3.856,780	681	3.856,882	CLASS 290		28	3.857,084	CLASS 403		71	3.856,446
240D	3.856,783	836	3.856,883	38	3.857,043	22T	3.857,085	118	3.856,421	113	3.856,447
240F	3.856,782	860	3.856,884	CLASS 292		CLASS 324		122	3.856,422	114	3.856,448
240R	3.856,781	862	3.856,885	256	3.856,338	16R	3.857,086	140	3.856,423	133.1	3.856,449
243C	3.856,785	873	3.856,886	336.3	3.856,339	29.5	3.857,087	227	3.856,424	308	3.856,450
243R	3.856,784	880R	3.856,887	CLASS 294		34PS	3.857,088	CLASS 404		398	3.856,451
	3.856,786	881	3.856,888	19R	3.856,340	47	3.857,089	84	3.856,425	429	3.856,452
	3.856,787	897B	3.856,889	24	3.856,341	52	3.857,091	133	3.856,426	447	3.856,453
244R	3.856,788		3.856,890	67R	3.856,342	61R	3.857,092	182	3.856,427	451	3.856,454
246B	3.856,789	897C	3.856,891	99R	3.856,343	65CR	3.857,094	240	3.856,428	CLASS 408	
247.2A	3.856,790	899	3.856,894	CLASS 296		71R	3.857,095	CLASS 415		11	3.856,455
247.5A	3.856,792	924	3.856,895	28M	3.856,344	127	3.857,096	53	3.856,429	92	3.856,456
247.7H	3.856,791	945	3.856,896	CLASS 297		132	3.857,097	207	3.856,430	353	3.856,457
249.8	3.856,793	948	3.856,897	CLASS 300		174	3.857,098	219	3.856,431	5	3.856,458
268PH	3.856,794	956	3.856,898	CLASS 301		436	3.857,099	CLASS 416		58	3.856,459
283SY	3.856,795	959	3.856,899	CLASS 302		5	3.857,100	45	3.856,432	59	3.856,460
288R	3.856,796	990	3.856,898	CLASS 303		CLASS 328		97	3.856,433	60	3.856,461
293.66	3.856,797	CLASS 261		16	3.856,345	184	3.856,434	CLASS 417		96	3.856,462
294.8C	3.856,798	18A	3.856,901	61	3.856,346			CLASS 418			
295.5R	3.856,799	80	3.856,279	92	3.856,347			CLASS 419			
296B	3.856,803	90	3.856,280	195	3.856,348			CLASS 420			
	3.856,804										

CLASSIFICATION OF DESIGNS

D2—	72	233,960		233,968	220	233,977		233,986	D32—	IR	233,995		234,004		
	427	233,959		76	233,969	243	233,978		233,987	D34—	3	233,996		234,007	
D4—	24	233,961		166	233,970	D9—	54	233,979	D22—	27	233,988		234,006		
D6—	35	233,962		177	233,971		115	233,980	D23—	13	233,989		234,008		
	55	233,963	D7—	10	233,972		117	233,981	D24—	1B	233,990		M	234,006	
	66	233,964		17	233,973		148	233,982	D26—	A	233,991		N	234,009	
		233,965		65	233,974	D12—	70	233,983		C	233,992		O	234,010	
		233,966		16	233,975		114	233,984	D29—	23A	233,993		Q	234,005	
		233,967	D8—	133	233,976	D13—	1B	233,985	D30—	3	233,994		D77—	A	234,011
									D59—	24R	234,001		D83—	K	234,012
										8	234,003				

CLASSIFICATION OF PLANTS

P —	11	3,670	P —	74	3,671	P —	3,672	P —	78	3,673		
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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1	3,855,634	3,855,932	3,856,589	3,856,609	17	Re 28,280	3,856,496
	3,856,218	3,855,934	3,856,590	3,856,653		Re 28,281	3,856,536
	3,856,402	3,855,947	3,856,593	3,856,722		3,855,639	3,856,571
	3,856,562	3,855,949	3,856,603	3,856,862		3,855,640	3,856,616
	3,857,065	3,855,957	3,856,631	3,856,902		3,855,688	3,856,619
2	3,855,710	3,855,970	3,856,670	3,856,918		3,855,689	3,856,639
4	3,855,693	3,855,984	3,856,687	3,856,941		3,855,730	3,856,662
	3,855,884	3,855,991	3,856,702	3,856,951		3,855,747	3,856,710
	3,855,898	3,855,995	3,856,705	3,856,987		3,855,750	3,856,744
	3,856,123	3,856,003	3,856,717	3,857,069		3,855,764	3,856,788
	3,856,264	3,856,007	3,856,793	3,857,081		3,855,815	3,856,791
5	3,855,990	3,856,011	3,856,866	3,856,236		3,855,851	3,856,852
	3,856,043	3,856,019	3,856,876	3,856,445		3,855,862	3,856,870
	3,856,090	3,856,028	3,856,890	3,856,446		3,855,866	3,856,888
	3,856,708	3,856,042	3,856,897	3,856,480		3,855,907	3,856,912
6	3,855,641	3,856,057	3,856,963	3,856,535		3,855,919	3,856,920
	3,855,643	3,856,099	3,856,986	3,856,605		3,855,928	3,856,958
	3,855,649	3,856,112	3,856,988	3,856,646		3,855,935	3,856,992
	3,855,661	3,856,127	3,857,022	3,856,749		3,855,942	3,857,016
	3,855,674	3,856,146	3,857,040	3,856,765		3,855,943	3,857,053
	3,855,692	3,856,158	3,857,042	3,856,783		3,855,953	3,857,064
	3,855,701	3,856,176	3,857,045	3,856,830		3,855,983	3,857,099
	3,855,716	3,856,188	3,857,052	3,856,898		3,855,997	3,857,112
	3,855,720	3,856,204	3,857,075	3,856,929		3,856,009	3,857,144
	3,855,729	3,856,207	3,857,078	3,856,345		3,856,040	3,857,196
	3,855,736	3,856,219	3,857,089	3,856,418		3,856,041	3,857,244
	3,855,744	3,856,235	3,857,104	3,856,419		3,856,045	3,857,246
	3,855,753	3,856,245	3,857,110	3,856,658		3,856,066	3,857,273
	3,855,755	3,856,248	3,857,112	3,856,706		3,856,088	3,857,285
	3,855,756	3,856,274	3,855,817	3,855,721		3,856,092	3,857,288
	3,855,789	3,856,283	3,855,870	3,855,723		3,856,104	3,857,289
	3,855,807	3,856,300	3,856,068	3,855,765		3,856,129	3,857,291
	3,855,824	3,856,331	3,856,087	3,855,917		3,856,162	3,857,292
	3,855,825	3,856,339	3,856,238	3,856,171		3,856,175	3,857,293
	3,855,849	3,856,344	3,856,254	3,856,216		3,856,178	3,857,294
	3,855,850	3,856,346	3,856,333	3,856,265		3,856,241	3,857,295
	3,855,852	3,856,352	3,856,544	3,856,332		3,856,272	3,857,296
	3,855,854	3,856,355	3,856,656	3,856,977		3,856,273	3,857,297
	3,855,855	3,856,380	3,856,739	3,857,020		3,856,302	3,857,298
	3,855,856	3,856,381	3,855,635	3,857,066		3,856,306	3,857,299
	3,855,860	3,856,382	3,855,681	3,855,645		3,856,307	3,857,300
	3,855,867	3,856,392	3,855,714	3,856,060		3,856,308	3,857,301
	3,855,873	3,856,398	3,855,791	3,856,111		3,856,360	3,857,302
	3,855,877	3,856,403	3,855,887	3,856,231		3,856,368	3,857,303
	3,855,889	3,856,468	3,856,130	3,856,257		3,856,414	3,857,304
	3,855,893	3,856,469	3,856,159	3,856,465		3,856,425	3,857,305
	3,855,909	3,856,471	3,856,267	3,857,013		3,856,427	3,857,306
	3,855,916	3,856,491	3,856,268	3,857,068		3,856,428	3,857,307
	3,855,926	3,856,550	3,856,411	3,855,913		3,856,458	3,857,308
	3,855,930	3,856,576	3,856,493	3,855,982		3,856,489	3,857,309
	3,855,931	3,856,585	3,856,523	3,856,597		3,856,492	3,857,310

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3,856,634	3,856,100	3,856,613	3,855,882	3,855,774	3,856,166
3,856,683	3,856,101	3,856,615	3,855,890	3,855,794	3,856,184
3,857,093	3,856,106	3,855,648	3,855,891	3,855,796	3,856,206
3,855,915	3,856,122	3,855,659	3,855,894	3,855,838	3,856,212
3,855,979	3,856,134	3,855,695	3,855,918	3,855,881	3,856,215
3,856,966	3,856,148	3,855,696	3,855,948	3,855,969	3,856,262
3,857,015	3,856,152	3,855,749	3,855,951	3,855,994	3,856,270
3,857,032	3,856,168	3,855,783	3,855,988	3,856,008	3,856,276
3,855,718	3,856,172	3,855,895	3,855,989	3,856,013	3,856,292
3,856,058	3,856,193	3,855,912	3,856,024	3,856,022	3,856,341
3,855,835	3,856,194	3,855,933	3,856,054	3,856,026	3,856,371
3,855,929	3,856,230	3,855,956	3,856,062	3,856,052	3,856,378
3,856,354	3,856,246	3,855,966	3,856,069	3,856,065	3,856,439
3,856,511	3,856,266	3,855,967	3,856,093	3,856,070	3,856,457
3,856,583	3,856,279	3,855,972	3,856,116	3,856,145	3,856,479
3,856,630	3,856,289	3,855,980	3,856,120	3,856,154	3,856,497
3,856,700	3,856,298	3,856,005	3,856,124	3,856,156	3,856,499
3,856,844	3,856,318	3,856,006	3,856,125	3,856,161	3,856,516
3,855,846	3,856,326	3,856,015	3,856,137	3,856,170	3,856,538
3,856,999	3,856,329	3,856,049	3,856,153	3,856,180	3,856,606
3,855,652	3,856,349	3,856,074	3,856,173	3,856,181	3,856,673
3,855,762	3,856,351	3,856,075	3,856,190	3,856,183	3,856,688
3,855,858	3,856,361	3,856,117	3,856,192	3,856,186	3,856,693
3,855,900	3,856,372	3,856,136	3,856,234	3,856,201	3,856,786
3,856,016	3,856,373	3,856,253	3,856,237	3,856,205	3,856,790
3,856,275	3,856,409	3,856,310	3,856,286	3,856,211	3,856,795
3,856,413	3,856,422	3,856,366	3,856,295	3,856,232	3,856,820
3,856,432	3,856,424	3,856,405	3,856,299	3,856,258	3,856,821
3,856,470	3,856,436	3,856,431	3,856,303	3,856,293	3,856,823
3,856,495	3,856,438	3,856,449	3,856,309	3,856,322	3,856,840
3,856,645	3,856,485	3,856,466	3,856,320	3,856,336	3,856,899
3,856,669	3,856,490	3,856,487	3,856,321	3,856,340	3,856,900
3,856,671	3,856,502	3,856,513	3,856,325	3,856,348	3,856,903
3,856,858	3,856,610	3,856,528	3,856,353	3,856,358	3,856,915
3,856,919	3,856,611	3,856,545	3,856,376	3,856,359	3,856,930
3,856,959	3,856,635	3,856,546	3,856,377	3,856,365	3,856,934
3,857,067	3,856,672	3,856,547	3,856,391	3,856,482	3,856,936
3,857,107	3,856,694	3,856,554	3,856,404	3,856,507	3,856,952
3,857,109	3,856,720	3,856,561	3,856,406	3,856,549	3,856,961
3,855,646	3,856,792	3,856,563	3,856,417	3,856,594	3,856,978
3,855,650	3,856,802	3,856,565	3,856,433	3,856,642	3,856,994
3,855,657	3,856,807	3,856,578	3,856,440	3,856,665	3,857,025
3,855,700	3,856,809	3,856,591	3,856,450	3,856,689	3,857,027
3,855,734	3,856,832	3,856,595	3,856,456	3,856,698	3,857,035
3,855,883	3,856,883	3,856,607	3,856,460	3,856,712	3,857,054
3,855,923	3,856,901	3,856,626	3,856,461	3,856,713	3,857,058
3,856,027	3,856,904	3,856,638	3,856,462	3,856,721	3,857,070
3,856,144	3,856,905	3,856,657	3,856,476	3,856,741	3,855,636
3,856,157	3,856,908	3,856,658	3,856,498	3,856,761	3,855,769
3,856,198	3,856,933	3,856,659	3,856,508	3,856,762	3,857,000
3,856,214	3,856,943	3,856,663	3,856,524	3,856,764	3,855,728
3,856,242	3,856,965	3,856,664	3,856,526	3,856,768	3,855,773
3,856,251	3,856,979	3,856,675	3,856,527	3,856,779	3,855,778
3,856,259	3,856,981	3,856,690	3,856,531	3,856,789	3,856,059
3,856,277	3,856,984	3,856,704	3,856,548	3,856,906	3,856,179
3,856,294	3,856,998	3,856,711	3,856,580	3,856,928	3,856,187
3,856,312	3,857,001	3,856,734	3,856,581	3,857,002	3,856,288
3,856,342	3,857,004	3,856,747	3,856,582	3,857,023	3,856,598
3,856,387	3,857,044	3,856,763	3,856,592	3,857,036	3,856,599
3,856,389	3,857,086	3,856,780	3,856,636	3,857,049	3,857,012
3,856,390	3,857,094	3,856,781	3,856,637	3,857,080	3,856,323
3,856,434	3,855,725	3,856,782	3,856,647	3,855,656	3,855,722
3,856,473	3,855,996	3,856,784	3,856,680	3,855,745	3,855,960
3,856,520	3,856,115	3,856,787	3,856,692	3,855,754	3,856,044
3,856,521	3,856,177	3,856,796	3,856,701	3,855,965	3,856,250
3,856,522	3,856,243	3,856,801	3,856,718	3,856,079	3,856,622
3,856,555	3,856,249	3,856,803	3,856,724	3,856,084	3,856,624
3,856,558	3,856,280	3,856,808	3,856,728	3,856,085	3,856,706
3,856,567	3,856,290	3,856,813	3,856,748	3,856,319	3,856,851
3,856,628	3,856,395	3,856,817	3,856,751	3,856,541	3,856,889
3,856,633	3,856,352	3,856,818	3,856,752	3,856,560	3,856,891
3,856,654	3,856,359	3,856,822	3,856,800	3,856,629	3,855,707
3,856,679	3,857,018	3,856,835	3,856,804	3,856,660	3,855,742
3,856,922	3,857,029	3,856,841	3,856,825	3,856,732	3,855,809
3,856,942	3,857,076	3,856,860	3,856,838	3,856,735	3,855,814
3,857,009	3,857,085	3,856,861	3,856,839	3,856,736	3,855,816
3,857,017	3,857,096	3,856,864	3,856,853	3,856,750	3,855,831
3,857,019	3,855,924	3,856,867	3,856,939	3,856,774	3,855,845
3,857,021	3,856,004	3,856,869	3,856,953	3,856,868	3,855,853
3,857,033	3,856,140	3,856,871	3,856,983	3,856,879	3,855,857
3,857,079	3,856,233	3,856,872	3,856,996	3,855,704	3,856,037
3,857,082	3,856,435	3,856,873	3,856,997	3,855,713	3,856,046
3,855,632	3,856,504	3,856,874	3,857,046	3,856,039	3,856,050
3,855,647	3,855,631	3,856,875	3,857,050	3,856,061	3,856,080
3,855,655	3,855,841	3,856,895	3,857,077	3,856,600	3,856,081
3,855,669	3,856,020	3,856,921	3,857,097	3,857,059	3,856,082
3,855,679	3,856,038	3,856,960	3,857,101	3,855,690	3,856,083
3,855,684	3,856,191	3,856,975	3,855,642	3,855,699	3,856,086
3,855,708	3,856,296	3,856,989	3,855,760	3,855,703	3,856,091
3,855,743	3,856,313	3,857,047	3,855,822	3,855,731	3,856,094
3,855,758	3,856,314	3,857,072	3,855,834	3,855,733	3,856,095
3,855,792	3,856,330	3,857,091	3,856,139	3,855,741	3,856,096
3,855,832	3,856,388	3,857,099	3,856,229	3,855,777	3,856,165
3,855,843	3,856,566	3,857,106	3,856,612	3,855,784	3,856,213
3,855,901	3,856,676	3,857,113	3,856,753	3,855,788	3,856,261
3,855,920	3,856,805	3,856,453	3,856,089	3,855,839	3,856,305
3,855,921	3,856,824	Re.28,282	3,856,109	3,855,847	3,856,410
3,855,922	3,856,856	3,855,637	Re.28,279	3,855,859	3,856,500
3,855,955	3,855,727	3,855,651	3,855,653	3,855,886	3,856,534
3,855,978	3,856,316	3,855,698	3,855,892	3,855,892	3,856,539
3,855,981	3,857,028	3,855,737	3,855,660	3,855,986	3,856,570
3,855,987	3,855,685	3,855,738	3,855,678	3,856,001	3,856,648
3,856,029	3,855,757	3,855,746	3,855,702	3,856,073	3,856,651
3,856,033	3,856,185	3,855,813	3,855,705	3,856,076	3,856,677
3,856,036	3,856,196	3,855,828	3,855,732	3,856,108	3,856,826

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,856,827	50	3,855,686	3,856,667	3,855,977	3,856,845	3,856,114
3,856,880	51	3,855,633	3,856,668	3,856,240	3,856,714	3,856,151
3,856,881		3,855,668	3,856,682	3,856,301	3,856,760	3,856,374
3,856,991		3,855,950	3,856,962	3,856,315	3,856,865	3,856,618
3,857,087		3,856,203	3,857,031	3,856,517	3,855,763	3,856,854
3,856,010		3,856,225	3,855,748	3,856,537	3,855,875	3,856,896
3,856,128		3,856,226	3,855,795	3,856,579	3,856,063	3,857,051
3,856,217		3,856,357	3,855,937	3,856,681	3,856,097	3,856,220
3,856,474		3,856,379				

DESIGN PATENTS

4	233,977	233,996	233,995	234,003	233,966	45	233,993
6	233,960	233,999	233,997	234,004	233,967	48	234,002
	12	234,012	233,998	234,009	233,968	49	233,985
	17	233,963	233,973	234,010	234,000		233,986
	19	233,989	233,994	233,962	233,988		233,987
	23	233,974	233,959	233,964	233,978	53	234,007
	26	233,970	234,001	233,965	233,990		234,008
	233,984	233,971					

PLANT PATENTS

6	3,670	39	3,671	3,672	3,673		
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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

PATENT OFFICE
C. Marshall Dann, Commissioner

A UNITED STATES
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PUBLICATION



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Office

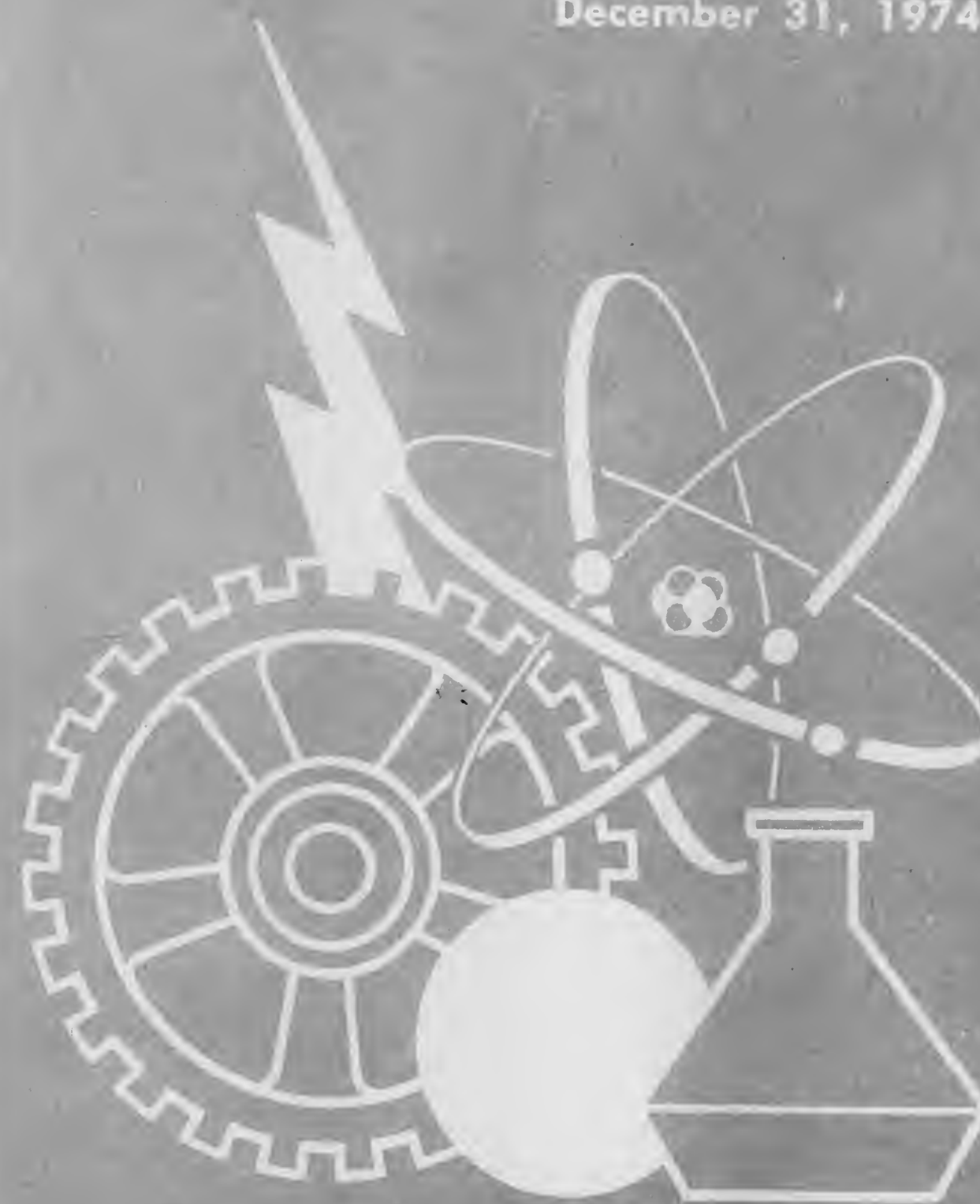
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PATENT OFFICE NOTICES

Publication of Applications Under Trial Voluntary Protest Program

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is \$6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Commissioner of Patents.

Dec. 2, 1974

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before January 21, 1975.

Edwards, David, 800 Southern Ave., S.E., #522, Washington, D.C. 20032

Gause, Robert F., 6621 N. 19th St., Arlington, Va. 22205

Lange, Richard P., 2810 Seattle First Nat'l Bank Bldg., Seattle, Wash. 98040

Ruegg, Arnold, Jr., 6307 Valley Road, Bethesda, Md. 22034

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Board of Appeals Decisions Rendered in the Month of November 1974

Examiner affirmed	202
Examiner affirmed in part	40
Examiner reversed	88
Total	330

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,033,354, P. Della Porta, GETTER DEVICE; 3,151,736, same, GETTER DEVICES OF THE RING SHAPED KIND; 3,225,911, same, RING-SHAPED GETTER WITH TOP DEFLECTOR, FOR IMPROVING AND/OR KEEPING UP VACUUM IN ELECTRONIC TUBES; 3,388,955, Della Porta, Giorgi and Rabusin, PROCESS FOR PRODUCING WITHIN ELECTRON TUBES, IN PARTICULAR TELEVISION PICTURE TUBES, A THIN METALLIC FILM CAPABLE OF SORBING THEIR RESIDUAL GASES; 3,389,288, same, GETTERING DEVICE INCLUDING A GETTER METAL AND

A GAS RELEASING MATERIAL, filed June 6, 1974, D.C., N.D. Ohio (Cleveland), Doc. C74-510, S.A.E.S. Getters S.p.A. v. Union Carbide Corporation.

3,151,736. (See 3,033,354.)

3,180,639, Cotler and Lemelson, INFLATABLE TOY AND DISPLAY DEVICE, filed June 9, 1970, D.C., S.D.N.Y., Doc. 70-C-2409, Jules Cotler v. Ideal Toy Corporation. Filed stipulation and order that action is dismissed, Jan. 30, 1974.

3,200,149, Blackwood, Rennhard, Beereboom and Stephens, a-6-DEONY-TETRACYCLINE DERIVATIVES AND PROCESS, filed July 9, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-1927-LTL, Pfizer Inc. v. Revlon, Inc.

3,225,911. (See 3,033,354.)

3,236,664, R. E. Wilson, PITCH-BONDED REFRACTORY COMPOSITION; Re. 27,111, same, filed May 3, 1974, D.C., N.D. Ohio (Toledo), Doc. C-74-168, Basic Incorporated v. Kaiser Aluminum and Chemical Corporation. Same, filed July 22, 1974, D.C., N.D. Ind. (Fort Wayne), Doc. F-74-85, Basic Incorporated v. International Minerals & Chemical Corporation.

3,249,270, B. Zuckerman, GARMENT SUPPORT MEANS, filed Aug. 31, 1971, D.C., S.D.N.Y., Doc. 71-C-3876, Mr. Hanger, Inc. v. W. R. Grace & Co. Filed stipulation and order of dismissal without prejudice, June 4, 1973.

3,287,063, A. S. Nicholas, RETRACTOR HOUSING, filed May 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1486, U.S. Industries, Inc. v. Gateway Industries. Stipulation, order cause dismissed without prejudice, July 19, 1974.

3,332,289, Welchsbaum and Horn, MEANS FOR MEASURING THE SPECIFIC GRAVITY OF LIQUIDS AND SOLUTIONS, filed June 7, 1971, D.C., S.D.N.Y., Doc. 71-C-2527, Add A Bin Co. v. Michael Dydzik. Filed order of discontinuance without prejudice, Mar. 14, 1974.

3,362,627, H. Papst, VENTILATOR, filed Aug. 18, 1970, D.C., S.D.N.Y., Doc. 70-3569, Papst Motoren KG v. Rotron Incorporated. Filed stipulation of dismissal with prejudice, May 17, 1974.

3,388,574, V. Ignoffo, ATTACHMENT FOR A TUBING BENDER FOR CONTROLLING THE DEPTH OF BEND OF TUBING, filed Mar. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c710, Vincent E. Ignoffo v. Midas International Corp. and Huth Manufacturing Corporation. Dismissal order, ordered that cause as to Midas and Huth is hereby dismissed with prejudice, and counterclaim of Midas and Huth against Ignoffo are hereby dismissed with prejudice, Nov. 30, 1973.

3,388,955. (See 3,033,354.)

3,389,288. (See 3,033,354.)

3,590,689, M. Newman, ARRANGEMENT FOR TREATING HAIR, filed Sept. 8, 1969, D.C., S.D.N.Y., Doc. 69-C-3900, Martin Newman and Pig-n-Puff Inc. v. Uniroyal Inc. et al. Filed order of dismissal with prejudice, May 25, 1973.

3,400,461, T. L. Faul, CARRIAGE-TYPE DRAWING APPARATUS, filed Aug. 16, 1972, D.C., S.D.N.Y., Doc. 72-C-3494, Firma Albert Nesetler, AG v. Keuffel & Esser Co. Filed stipulation and order of dismissal without prejudice, Feb. 28, 1974.

3,440,144, H. W. Andersen, METHOD AND APPARATUS FOR CHECKING AND TESTING THE EFFECTIVENESS OF STERILIZATION, filed July 6, 1970, D.C., S.D.N.Y., Doc. 70-C-2891, H. W. Andersen Products, Inc. v. 3M Company. Filed stipulation and order of dismissal, Apr. 28, 1972.

3,443,684, R. E. Taylor, CORNER PROTECTORS, filed July 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1943, Redi Container Corporation v. The Packaging House, Inc. et al.

3,459,248, R. E. Waller, WIRE INSERT, filed Dec. 18, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-2961-HP, Microdot, Inc. v. Inserts International Inc.

3,460,125, Liebermann and Lal, METHOD AND APPARATUS FOR DETECTING GASEOUS IMPURITIES, filed June 7, 1974, D.C., E.D. Mich. (Detroit), Doc. 74-1830, Tif Instruments, Inc. v. Michael Colette, doing business as Colectric Co. and Colette Electric Co.

DECEMBER 31, 1974

U. S. PATENT OFFICE

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3,460,495, W. L. Cobb, METHOD FOR EMBROIDERING TUFTS, filed Feb. 2, 1970, D.C., S.D.N.Y., Doc. 70-406, Cobb Industries Inc. v. Park Schiffli Inc. et ano. Filed judgment dismissing complaint, Dec. 21, 1972.

3,487,999, Nash, La Branche, Newman and Smith, ROADWAY TOY, filed Jan. 9, 1970, D.C., S.D.N.Y., Doc. 70-62, Mattel Inc. v. Topper Corporation. Filed plaintiff's stipulation and order dismissing without prejudice, Apr. 9, 1974.

3,502,293, M. Bard, SHELF-SUPPORTING STANDARD WITH REMOVABLE HEAD, filed July 24, 1970, D.C., S.D.N.Y., Doc. 70-C-3200, Martin Bard v. Quality Steel Products, Inc. Filed voluntary dismissal, Apr. 30, 1973.

3,502,785, A. D. Nickola, MOUNTING PEDESTAL FOR UTILITIES; Re. 27,400, same, filed June 14, 1974, D.C., E.D. Mich. (Detroit), Doc. 74-71890, Ann D. Nickola v. Eaton Installation Company, Inc.

3,570,018, Sargent, Sargent and Sargent, PORTABLE TOILET, filed May 30, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1205-AAH, Monogram Industries, Inc. v. Thetford Corporation. Filed stipulation of dismissal of the complaint and counterclaim with prejudice, July 11, 1974.

3,576,099, R. S. Walton, SOLID STATE TIME PIECE HAVING ELECTRO OPTICAL TIME DISPLAY; 3,664,118, same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; 3,672,155, Bergey and Walton, SOLID STATE WATCH, filed Oct. 6, 1972, D.C., S.D.N.Y., Doc. 72-C-4261, HMW Industries Inc. v. Uranus Electronics, Inc. and Elgin National Industries, Inc. Filed order and stipulation of discontinuance without prejudice, Oct. 29, 1973.

3,611,910, J. S. Hughes, CORN POPPER, filed Jan. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c260, Ropat Corporation v. National Presto Industries Inc. The defendant's motion to dismiss because of improper venue is granted, Apr. 25, 1974.

3,614,741, McFarland, Jr. and O'Loughlin, DATA PROCESSING SYSTEM WITH INSTRUCTION ADDRESSES IDENTIFYING ONE OF A PLURALITY OF REGISTERS INCLUDING THE PROGRAM COUNTER; 3,710,324, Cohen, Janson, McFarland, Jr. and Young, DATA PROCESSING SYSTEM; Reg. No. 807,243 (POP), Digital Equipment Corporation, filed May 29, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-1486-HP, Digital Equipment Corporation v. California Data Processors.

3,644,681, D. E. Rice, CORDLESS TELEPHONE SYSTEM, filed July 22, 1974, D.C., S.D. Calif. (San Diego), Doc. 74-356-E, Bison Enterprises, Ltd. v. Howard Gutzmer, doing business as Gutzmer International & Fonetron, Inc.

3,664,118. (See 3,576,099.)

3,672,155. (See 3,576,099.)

3,692,349, D. J. Ehrlich, TRAILER CONSTRUCTION, filed July 22, 1974, D.C., W.D. Wis. (Madison), Doc. 74-C-261, Evans Products Company v. Stoughton Truck Body, Inc.

3,694,993, J. L. East, AUTOMATIC BOTTLE PACKING METHOD AND APPARATUS, filed Mar. 8, 1974, D.C., W.D. Va. (Lynchburg), Doc. 74-17, Simplimatic Engineering Company v. Alliance Industrial Corporation. Consent judgment entered in which plaintiff declared owner of patent and defendant permanently enjoined from use or infringement, July 23, 1974.

3,710,324. (See 3,614,741.)

3,724,720, K. W. Bullivant, DIGITAL MASS FLOW CONTROL SYSTEM, filed July 3, 1974, D.C.N.J. (Camden), Doc. 74-1019, Merrick Scale Mfg. Company v. K-Tron Corporation. Same, filed July 16, 1974, D.C.N.J. (Newark), Doc. 74-1063, K-Tron Corporation v. Merrick Scale Mfg. Company. Notice of dismissal of action filed July 20, 1974.

3,751,649, T. W. Hart, Jr., MEMORY SYSTEM EXERCISER, filed July 16, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-2016-DWW, Macrodata Corporation v. Xincom Corp. and Tektronix, Inc.

3,765,527, J. W. Vargo, DUAL-COMPARTMENT PACKAGE, filed July 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2062, Filter Dynamics International, Inc. et al. v. Astron Battery Incorporated et al.

Re. 27,111. (See 3,236,664.)

Re. 27,400. (See 3,502,785.)

D. 205,660, S. Goldman, CERAMIC TILE UNIT, filed Dec. 18, 1968, D.C., S.D.N.Y., Doc. 68-C-5048, International Tile Corp. v. Kova American Corp. Filed stipulation and order of settlement with prejudice, Nov. 8, 1972.

D. 219,118, Baker and Plecla, BOAT, filed Nov. 14, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-2669-LTL, Side-sinder Marine, Inc. v. Glen-Coe Boat Mfg., Inc. Filed Stipulation for dismissal; filed judgment and order thereon in favor of plaintiff and against defendants. Filed permanent injunction and order thereon against defendants from infringing plaintiff's patent, entered July 17, 1974.

D. 227,632, E. S. Gilbert, UPHOLSTERED SEAT, filed July 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1867, Evalin S. Gilbert v. Fitchmun Company. Final judgment, by agreement cause dismissed, July 19, 1974.

D. 230,353, P. J. Mochel, AUTOMOBILE WHEEL, filed July 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. C 74-2089-RE, W. R. Grace & Co. v. E.T. Industries, Inc. and Pyramid Enterprises.

Reg. No. 807,243. (See 3,614,741.)

Certificates of Correction for the Week of Dec. 31, 1974

Re. 28,162	3,802,892	3,830,932	3,839,300
D. 232,529	3,803,105	3,831,011	3,839,363
D. 232,872	3,803,147	3,831,348	3,839,567
D. 233,264	3,804,562	3,831,770	3,839,924
D. 233,265	3,805,265	3,832,281	3,839,949
3,211,709	3,807,653	3,832,299	3,840,145
3,597,530	3,807,791	3,832,301	3,840,182
3,622,256	3,808,345	3,832,421	3,840,297
3,666,782	3,808,554	3,832,677	3,840,511
3,684,477	3,809,826	3,833,451	3,840,521
3,690,988	3,810,415	3,833,642	3,840,921
3,691,370	3,811,420	3,833,783	3,841,004
3,697,543	3,812,810	3,834,091	3,841,113
3,699,145	3,812,882	3,834,115	3,841,141
3,704,322	3,813,409	3,834,605	3,841,144
3,717,451	3,813,416	3,834,805	3,841,215
3,728,116	3,814,561	3,834,918	3,841,295
3,728,355	3,815,007	3,834,991	3,841,321
3,745,575	3,816,806	3,835,001	3,841,399
3,747,778	3,817,338	3,835,186	3,841,440
3,748,756	3,817,420	3,835,298	3,841,521
3,749,694	3,818,055	3,835,419	3,841,555
3,751,426	3,818,783	3,835,495	3,841,833
3,755,270	3,818,980	3,835,714	3,841,972
3,755,745	3,819,516	3,835,850	3,842,033
3,758,236	3,820,069	3,835,905	3,842,344
3,758,434	3,820,113	3,836,015	3,842,395
3,759,902	3,820,665	3,836,632	3,842,406
3,760,164	3,820,757	3,836,646	3,842,446
3,760,375	3,822,647	3,836,720	3,842,638
3,763,354	3,823,116	3,836,766	3,842,767
3,764,459	3,823,206	3,836,903	3,842,941
3,765,268	3,823,767	3,836,997	3,842,971
3,770,418	3,826,707	3,837,016	3,842,973
3,771,236	3,826,724	3,837,106	3,842,975
3,773,071	3,826,768	3,837,214	3,843,249
3,773,688	3,826,836	3,837,526	3,843,340
3,773,697	3,827,931	3,837,586	3,843,409
3,773,721	3,827,948	3,837,911	3,843,514
3,774,120	3,828,258	3,837,935	3,843,546
3,775,349	3,828,873	3,838,114	3,843,588
3,776,253	3,829,194	3,838,147	3,843,641
3,779,781	3,829,228	3,838,183	3,843,720
3,787,211	3,829,293	3,838,224	3,843,735
3,787,463	3,829,343	3,838,525	3,843,758
3,789,092	3,829,353	3,838,650	3,844,202
3,790,451	3,829,489	3,838,704	3,844,337
3,792,060	3,829,785	3,838,719	3,844,662
3,792,625	3,829,867	3,838,887	3,845,385
3,793,295	3,829,943	3,838,889	3,845,399
3,793,370	3,830,068	3,838,999	3,845,502
3,796,694	3,830,090	3,839,040	3,845,872
3,800,181	3,830,254	3,839,042	3,846,006
3,800,296	3,830,506	3,839,084	3,846,109
3,801,972	3,830,791	3,839,215	
3,802,507	3,830,792	3,839,222	

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELE-VISED IMAGE. Samuel Freeman, 13 Birchwood Court, East Syosset, N.Y., 11791.

3,302,810. SELF LOADING FORK LIFT TRUCK. R. R. Pollock, Rte. 4, Box 1218-D-2, Woodland, Calif. 95695.

3,408,921. BEVERAGE MAKING ARRANGEMENT. B. M. L., Staff Vice President, Domestic Licensing, P.O. Box 6512, San Jose, Calif., 95150.

3,505,678. MULTIPURPOSE HAIR NET. Gladys B. Key, 404 4th Isle South, Port Richey, Fla., 33568.

3,760,963. LIFTING ATTACHMENT FOR A CRANE. Forrest D. Welch, Correspondence to: Ronald P. Kananen, 1828 L St., N.W., Washington, D.C., 20036.

3,711,215. DRILLING BOLT HOLES. John V. Brown, Correspondence to: Caesar, Rivise, et al. Suite 804, Stephen Girard Bldg., 21 S. 12th St., Philadelphia, Pa., 19107.

3,774,193. WATCHMAN'S TOUR ALARM SYSTEM. Tulio Vasquez Restrepo, Carrera 43A No. 30-91, Medellin, Colombia.

3,778,931. THRESHOLD ANCHOR DEVICE. T. C. Donaldson, P.O. Box 1567, Odessa, Tex., 79760.

3,791,601. TISSUE ROLL DISPENSER. Kenneth J. Broden, 15 Barberrry Drive, Rumford, R.I., 02916.

3,811,990. THERMALLY ACTUATED MOBILE. Nagel K. G., Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,813,958. LOCKING DEVICE FOR A WINDING ARRANGEMENT. GFA-Antriebsstechnik, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,832,501. JAY-JAY BREAKAWAY TRAILER SAFETY SWITCH BRACKET KIT. John J. Amotte, Town & Country Mobile Pk., Sp. 12, Box 2708, Harbor, Oreg., 97415.

3,840,113. TOTEM NAME BATIK KIT. Francis E. Bartleson, 109 Woodland Drive, Big Flats, N.Y., 14814.

3,838,854. GYMNY-G-EXERIDE. William H. Hendrickson, Rte. 2, Box 17-A, Mancos, Colo., 81328.

3,843,133. GAME APPARATUS FOR PLAYING AND RECORDING SUCCESSIVE PLAYS IN A GAME. Paul D. Brown, Correspondence to: Gustave Miller, 1700 N.E. 191st St., 409, Miami, Fla., 33162.

3,844,873. CHRISTMAS TREE CONSTRUCTION. Sylvester A. Dalske, 110 Caselli Circle #1, Sacramento, Calif., 95823.

The following 2 patents are offered by: Susan M. Peoples, 5201 Belleville Ave., Baltimore, Md., 21207.

D. 213,627. PORTABLE TWO-WAY COIN OPERATED TELEPHONE FOR INSTITUTIONS AND HOSPITALS.

D. 217,156. PORTABLE TWO-WAY COIN OPERATED TELEPHONE.

The following 2 patents are offered by: John O. Richards, 980 Mill Circle, Apt. 99, Alliance, Ohio, 44601.

3,578,840. REVOLVING REFLECTOR.

3,835,507. ROPE HOLDING DEVICE.

The following 2 patents are offered by: Clarke's Sheet Metal, Inc. Correspondence to: Daniel P. Chernoff, Chernoff & Vilhauer, 400 Oregon National Bldg., 610 S.W. Alder, Portland, Oreg., 97205.

3,749,030. HEATING AND EXHAUST EMISSION CONTROL SYSTEM AND METHOD FOR MATERIAL DRYERS.

3,749,031. CONTROLLED ATMOSPHERE INCINERATOR.

The following 3 patents are offered by: Billy R. Garrett. Correspondence to: J. Bruce Synnott, Jr., University Park Apartments, Revere House, Apt. A. 300 S. Rankin, Edmond, Okla., 73034.

3,843,082. HOLDER FOR GASOLINE LANTERN.

3,844,519. HOLDER FOR GASOLINE LANTERN.

3,847,286. HOLDER FOR GASOLINE LANTERN.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 4 patents upon reasonable terms.

Applications for licenses may be addressed to the Director, Plant Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,642,343. LINEAR OPTICAL SCANNING DEVICES.

3,644,059. COOLED AIRFOIL.

3,644,060. COOLED AIRFOIL.

3,645,592. LUBRICANT CIRCULATING ANGULAR CONTACT BALL BEARING.

General Electric Company is prepared to grant non-exclusive licenses under the following 42 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,822,401. MEAN SQUARE TRANSDUCER.

3,842,187. ELECTRIC BUS WITH JOINT FOR ACCOMMODATING EARTHQUAKE - PRODUCED MOTION OF PARTS.

Applications for licenses under the following 4 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,986,623. TIP SHIELDED ELECTRODES FOR ELECTRIC BOILERS.

3,138,696. ELECTRODE HOT WATER GENERATORS.

3,595,476. HTS HEATING SYSTEMS.

3,824,372. LOW VOLTAGE ELECTRIC BOILERS.

Applications for licenses under the following 5 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,762,154. SIMULATED PENDULUM CLOCK.

3,762,155. SIMULATED PENDULUM CLOCK.

3,731,396. HAIR DRYER WITH SELECTIVE TILTABLE HOOD.

3,735,091. ELECTRICALLY HEATED HAIR CURLING APPARATUS.

3,769,718. HAIR DRYER WITH RELEASE MECHANISM.

Applications for licenses under the following 5 patents may be addressed to: General Electric Co., Transportation Systems Business Division, 2901 E. Lake Road, Erie, Pa., 16531.

3,775,663. INVERTER WITH ELECTRONICALLY CONTROLLED NEUTRAL TERMINAL.

3,806,746. DEVICE FOR PROTECTING BRUSHHOLDERS STUDS.

3,823,278. AERODYNAMICALLY ADJUSTABLE PANTOGRAPH.

3,824,419. TRACTION MOTOR INSPECTION COVER.

3,830,990. PANTOGRAPH WEARING STRIP SUPPORT.

Applications for licenses under the following 7 patents may be addressed to: Patent Counsel, STG PRODS. Division, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12345.

3,808,489. COOLED FLUX SHIELD FOR GENERATOR TERMINAL BOX.

3,812,392. COMPOSITE ARMATURE CORE FOR DYNAMOELECTRIC MACHINE.

3,821,573. MULTISET POLYPHASE WINDING.

3,822,389. LIQUID COOLANT PRESSURIZING DEVICE FOR DYNAMOELECTRIC MACHINES.

3,830,620. GAS BURNER FOR HEAT-RECOVERY STEAM GENERATOR.

3,831,160. VOLTAGE AND CURRENT MONITORING SYSTEM.

3,833,826. GAS-COOLED DYNAMOELECTRIC MACHINE.

Applications for licenses under the following 20 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

2,959,966. JOINING MEMBER FOR PROVIDING A FLEXIBLE CONNECTION BETWEEN TWO MOVABLE MEMBERS.

3,003,345. CONTROL CIRCUIT IN AN AUTOMATIC CLOTHES WASHING MACHINE.

3,024,637. AUTOMATIC WASHING MACHINE WITH LID SWITCH CONTROL.

3,440,373. COMBINED HINGE AND SWITCH MECHANISM WITH PIN AND SLOT CONNECTION.

3,479,845. ADDITIVE DISPENSING MEANS FOR A WASHING MACHINE.

3,504,777. COMBINED UNBALANCE AND LID SWITCH.

3,815,942. THERMALLY RESPONSIVE LOCKING MEANS FOR OVEN DOOR LATCHING MECHANISM.

3,817,590. MEANS FOR SUPPORTING ROLLER ASSEMBLIES IN A DISHWASHER TUB.

3,821,594. TWO-STEP MAGNETRON START CIRCUIT.

3,821,681. DUAL RANGE HYDRAULIC THERMOSTATIC CONTROL DEVICE.

3,821,683. THERMAL SWITCH.

3,823,295. ELECTRONIC OVEN WITH MODE EXCITER AND TUNING PROBES.

3,828,251. PORTABLE MICROWAVE RADIATION SENSING AND MEASURING DEVICE.

3,828,763. OVEN DOOR CONSTRUCTION WITH FRONT GLASS PANEL.

3,829,191. MEANS FOR SEALING A COMPONENT SUPPORTING ASSEMBLY IN A WASHING APPLIANCE TUB.

3,832,863. ICE TUNNEL MOUNTING.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 74 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,828,121. COLOR SIGNAL PRODUCING SYSTEM UTILIZING SPATIAL COLOR ENCODING AND COMB FILTERING.

3,828,206. HIGH SPEED DRIVING CIRCUIT FOR PRODUCING TWO IN-PHASE AND TWO OUT-OF-PHASE SIGNALS.

3,828,234. MOTOR SPEED CONTROL SYSTEM.

3,828,258. SIGNAL DURATION SENSING CIRCUIT.

3,828,996. RECORD WEB CONTROL AND DRIVE APPARATUS.

3,829,612. VIDEO DISC PLAYBACK EDDY CURRENT SPEED CONTROL SYSTEM.

3,829,716. WIDE RANGE MONOSTABLE MULTIVIBRATOR CIRCUIT HAVING A CONSTANT CURRENT SOURCE.

3,829,853. HIGH-SPEED ANALOG-TO-DIGITAL CONVERTER.

3,830,447. ACTIVE NUTATION DAMPING IN DUAL-SPIN SPACECRAFT.

3,830,959. AUTOMATIC CENTERING CONTROL SYSTEM FOR TELEVISION APPARATUS.

3,831,037. PARAMETRIC AMPLIFIER HAVING AN IDLER CIRCUIT REDUCING SPURIOUS IDLER SIGNAL MAGNITUDE.

3,831,054. STORAGE TUBE ERASE CONTROL.

3,831,056. BEAM CURRENT STABILIZATION AND BLANKING APPARATUS.

3,831,074. ROTATOR SYSTEM INCLUDING A REMOTE DRIVE MOTOR AND A LOCAL INDICATOR CONTROL MOTOR.

3,831,113. RELAXATION OSCILLATOR.

3,831,114. ENCAPSULATED MICROSTRIP CIRCULATOR WITH MODE ELIMINATION MEANS.

3,831,187. THYRISTOR HAVING CAPACITIVELY COUPLED CONTROL ELECTRODE.

3,832,495. INFORMATION TRANSFER SYSTEM FOR A PBX.

3,832,595. HORIZONTAL DEFLECTION SYSTEM WITH BOOSTED B PLUS.

3,832,651. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY TWO.

3,832,652. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY AT LEAST THREE.

3,833,375. METHOD OF REPAIRING AN IMPERFECT PATTERN OF METALIZED PORTIONS ON A SUBSTRATE.

3,833,383. HOLOGRAPHIC RECORDING MEDIUM.

3,833,408. VIDEO DISCS HAVING A METHYL ALKYL SILICONE COATING.

3,833,893. HOLOGRAPHIC MEMORY INCLUDING CORNER REFLECTORS.

3,834,653. CLOSED LOOP ROLL AND YAW CONTROL FOR SATELLITES.

3,834,905. METHOD OF MAKING ELLIPTICALLY OR RECTANGULARLY GRADED PHOTOPRINTING MASTERS.

3,835,248. KEYED AGC CIRCUIT.

3,835,253. TELEVISION COMMUNICATION SYSTEM WITH TIME DELAY COMPENSATION.

3,835,336. PULSE WIDTH SENSING CIRCUIT.

3,835,410. CURRENT AMPLIFIER.

3,835,421. MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS.

3,836,825. HEAT DISSIPATION FOR POWER INTEGRATED CIRCUIT DEVICES.

3,836,845. APPARATUS FOR TESTING THE LINEARITY OF A CIRCUIT BY USING RATIO DETERMINING MEANS.

3,836,969. GEO-SYNCHRONOUS SATELLITES IN QUASI-EQUATORIAL ORBITS.

3,836,995. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,836,996. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,836,997. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,837,071. METHOD OF SIMULTANEOUSLY MAKING A SIGFET AND A MOSFET.

3,837,856. CHIP REMOVAL IN THE MASTERING OF FINE-GROOVED DISCS.	3,842,217. RECORD FABRICATION OF A CAPACITIVE TYPE STORAGE MEDIUM.
3,838,240. BONDING TOOL AND METHOD OF BONDING THEREWITH.	3,842,276. THERMAL RADIATION DETECTOR.
3,838,304. METHOD OF MAKING A BIALKALI PHOTO-CATHODE WITH IMPROVED SENSITIVITY AND HIGH TEMPERATURE OPERATING CHARACTERISTICS.	3,843,399. METALLIZED VIDEO DISC HAVING AN INSULATING LAYER THEREON.
3,838,311. STORAGE TUBE FOCUS CONTROL.	3,843,420. SPUTTERED GRANULAR FERROMAGNETIC IRON-NICKEL-SILICA FILMS.
3,838,834. SOLAR TORQUE COMPENSATION FOR A SATELLITE.	3,843,425. OVERLAY TRANSISTOR EMPLOYING HIGHLY CONDUCTIVE SEMICONDUCTOR GRID AND METHOD FOR MAKING.
3,838,908. GUIDED LIGHT STRUCTURES EMPLOYING LIQUID CRYSTAL.	3,843,836. COLOR MOTION PICTURE FILM PLAYBACK SYSTEM.
3,839,111. METHOD OF ETCHING SILICON OXIDE TO PRODUCE A TAPERED EDGE THEREON.	3,843,837. APPARATUS FOR GENERATING SAMPLE PULSES IN A TELEPHONE IMAGE TRANSMISSION SYSTEM.
3,839,644. LABEL WRITING APPARATUS.	3,843,843. TIME DIVISION MULTIPLE ACCESS SYNCHRONIZATION TECHNIQUE.
3,839,906. APPARATUS FOR ENGINE COMPRESSION TESTING.	3,843,846. DEMOUNTABLE CAPACITIVE PROTECTIVE COUPLING FOR PICKUP TRANSDUCERS.
3,839,907. ENGINE PERFORMANCE ANALYZER USING SIMULATED LOAD.	3,843,933. CURRENT AMPLIFIER.
3,840,174. PRECISION DIGITAL INTERPOLATOR.	3,845,295. CHARGE-COUPLED RADIATION SENSING CIRCUIT WITH CHARGE SKIM-OFF AND RESET.
3,840,819. SIGNAL COMBINING CIRCUIT.	3,845,328. TRI-STATE LOGIC CIRCUIT.
3,840,826. VARIABLE DELAY DEVICES USING FERRO-ELASTIC-FERROELECTRIC MATERIALS.	3,845,403. AMPLIFIER FOR AMPLITUDE MODULATED WAVES WITH MEANS FOR IMPROVING SIDEBAND RESPONSE.
3,840,889. LASER DIODE PACKAGE FORMED OF CERAMIC AND METAL MATERIALS HAVING HIGH ELECTRICAL AND THERMAL CONDUCTIVITY.	3,845,405. COMPOSITE TRANSISTOR DEVICE WITH OVER CURRENT PROTECTION.
3,840,893. TRACK FOLLOWING SERVO SYSTEM.	3,845,496. INFRARED PHOTOCATHODE.
3,841,881. METHOD FOR ELECTROLESS DEPOSITION OF METAL USING IMPROVED COLLOIDAL CATALYZING SOLUTION.	
3,841,904. METHOD OF MAKING A METAL SILICIDE-SILICON SCHOTTKY BARRIER.	
3,842,189. CONTACT ARRAY AND METHOD OF MAKING THE SAME.	
3,842,194. INFORMATION RECORDS AND RECORDING/PLAYBACK SYSTEMS THEREFOR.	
3,842,199. TELEPHONE IMAGE TRANSMISSION SYSTEM.	

Patents Withdrawn From Register

General Electric Company, Division Patent Counsel, Lamp Business Division, Nela Park, Cleveland, Ohio 44112, hereby withdraws the following patent from the Register of Patents Available for Licensing or Sale. The patent was listed as being available in the OFFICIAL GAZETTE as indicated below:

3,527,982. DISCHARGE LAMP BALLASTING.
Oct. 5, 1971.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 7, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-29-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-19-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director.... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-14-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director.. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	6-13-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director.. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-17-74

Expiration of patents: The patents within the range of numbers indicated below expire during November 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,666 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 31, 1974

ERRATA

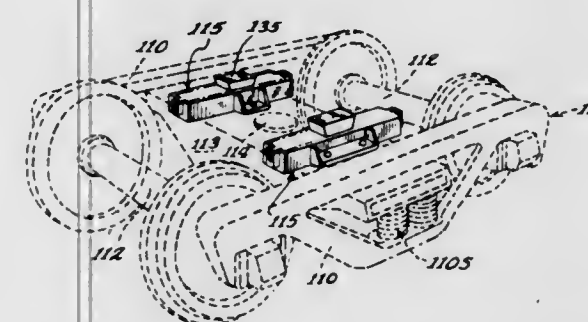
For CLASS	See PATENT NO.
224-028.....	28,289
235-061.....	28,285
238-349.....	28,291
242-084.....	28,286
308-138.....	28,284
260-561.....	28,288
424-244.....	28,287
360-016.....	28,290

REISSUES

DECEMBER 31, 1974

Matter enclosed in heavy brackets **[]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,284
SELF-LUBRICATING SIDE BEARING
 Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.
 Original No. 3,514,169, dated May 26, 1970, Ser. No. 760,019, Sept. 16, 1968, which is a continuation-in-part of application Ser. No. 676,259, Oct. 18, 1967, now Patent No. 3,401,991. Application for reissue May 24, 1972, Ser. No. 256,354
 The term of this patent subsequent to Sept. 17, 1985, has been disclaimed
 Int. Cl. F16c 17/00, 19/00
 U.S. Cl. 308—138 **12 Claims**

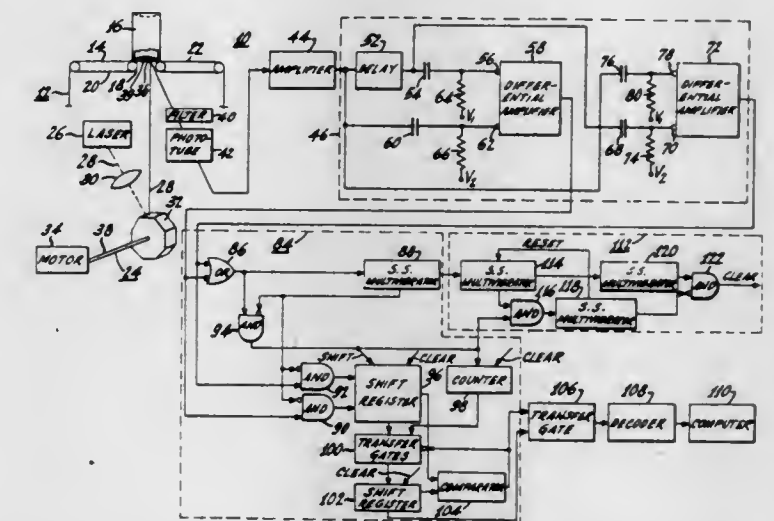


1. A side bearing assembly comprising a box-like support having a bottom wall, a pair of upstanding end walls, means to secure said support to a railway truck bolster, a pair of wedge blocks slidably mounted on said bottom wall, said wedge blocks having oppositely inclined downwardly converging surfaces, an upper plunger wedge mounted on said wedge blocks and having oppositely inclined downwardly converging underface portions slidably engaged on and mating with said inclined block surfaces, and compression spring means resiliently biasing said wedge blocks oppositely inwardly to establish a normal position for said wedge blocks and said plunger wedge wherein a central clearance space extends full length there between and wherein the force of said spring means reacts oppositely outwardly on said end walls, said plunger wedge having a recessed top wall provided with partly projecting roller means to supportingly engage the bottom surface portion of a railway car body located above the bolster and transmit vertical forces between the car and the side bearing assembly for stabilizing the car supported on said bolster and for accommodating swivel movement of said car.

28,285
ARTICLE LABELING AND IDENTIFICATION SYSTEM
 Joseph F. Schanne, Cheltenham, Pa., assignor to RCA Corporation
 Original No. 3,622,758, dated Nov. 23, 1971, Ser. No. 88,075, Nov. 9, 1970, which is a continuation of abandoned application Ser. No. 740,624, June 27, 1968. Application for reissue Nov. 20, 1973, Ser. No. 417,562
 Int. Cl. G06k 5/00
 U.S. Cl. 235—61.11 E **14 Claims**

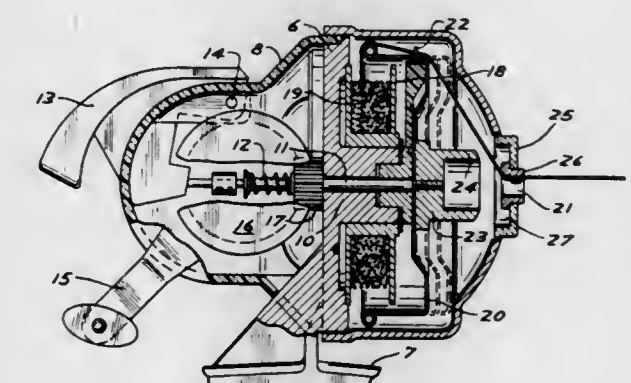
1. A system for classifying articles comprising, in combination:
 means providing a plurality of coded designators with each one of said designators affixed to a corresponding article, said coded designators each exhibiting a

plurality of information cells of first and second light-reflecting properties with the occurrence of transitions between said properties of a designator defining a binary number;



means for deriving from each of said coded designators a readback signal which includes first and second levels corresponding to said first and second properties, respectively; and
 means for detecting transitions between said first and second levels to provide the binary number defined by said transitions.

28,286
LINE CONTROL FOR SPIN CASTING REELS
 Lloyd E. Johnson, deceased, late of Mankato, Minn., by Johnson Diversified, Inc., Mankato, Minn., assignee
 Original No. 3,498,562, dated Mar. 3, 1970, Ser. No. 682,208, Nov. 13, 1967. Application for reissue July 27, 1972, Ser. No. 275,847
 Int. Cl. A01k 89/00
 U.S. Cl. 242—84.2 A **4 Claims**



1. For a fishing reel in which a body member has a forwardly disposed cover with a line opening, a line spool mounted in the body member on a fore-and-aft axis, a shaft extending through the spool and mounted in the frame for rotary and axial movement, a circular line pick-up member carried on the forward end of the shaft, manually controlled means for moving the shaft and pick-up member between fore-and-aft axial positions with the line passing from the spool over the periphery

of the pick-up member and thence to and out through said opening, means for rotating the shaft when the pick-up member is in one of said two positions to engage the line and wind it on the spool as it is being retrieved rearwardly through said opening, the line being free of winding engagement with the pick-up member when the latter is moved axially away from such position, and means for snubbing the line to stop its forward movement when the pick-up member reaches the other of said positions, means for controlling the forward movement of the line from the reel during the time that the pick-up member is being moved from the first to the second of the aforesaid two positions, comprising a pair of cooperating circular elements carried, one by the cover and one by the pick-up member, and which are axially spaced to allow unobstructed passage of the line when the pick-up member is initially moved from its first of said two positions, but which elements have telescopically overlapping surfaces for frictionally engaging the line and forming reverse bends therein to thereby create progressively increasing resistance to movement of the line outwardly from the cover opening as the pick-up member approaches the other of said two positions, the cover having a rearwardly opening recess formed in part by its aforesaid circular element, said recess having an inside lateral surface, and the circular element of the pick-up member being a forwardly directed cylindrical flange the forward edge of which is adapted to project into said recess to effect such telescoping overlapping of surfaces, said flange being spaced from said inside lateral surface, as said pick-up member approaches said other of two positions, by a distance greater than the thickness of the line to be used.

28,287

PROCESS FOR THE RESOLUTION OF RACEMIC 3-SUCCINYLOXY - 5 - PHENYL - 1,3-DIHYDRO-2H-1,4-BENZODIAZEPINE - 2-ONE-DERIVATIVES INTO OPTICAL ANTIPODES

Giancarlo Jommi, Giovanna Riva, Francesco Mauri, and Luigi Mauri, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

No Drawing. Original No. 3,654,267, dated Apr. 4, 1972, Ser. No. 22,673, Mar. 25, 1970. Application for reissue Sept. 11, 1972, Ser. No. 287,734

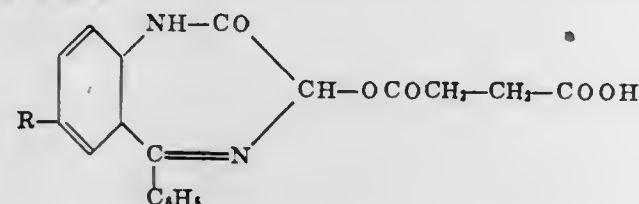
Claims priority, application Great Britain, Apr. 8, 1969, 18,034/69; Feb. 28, 1970, 9,759/70

Int. Cl. C07d 53/06

U.S. Cl. 424-244

11 Claims

1. Process for the resolution into optical antipodes of racemic 3 - succinyloxy - 5 - phenyl - 1,3 - dihydro - 2H-1,4-benzodiazepine-2-one derivatives i.e., the compound of the formula



wherein R is NO₂, Cl, Br, F,

through selective solubilization in ethylacetate of their salts with optically active ephedrine.

28,288

CATALYZED HYDROLYSIS OF NITRILES TO AMIDES

Richard W. Goetz and Irving L. Mador, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

No Drawing. Original No. 3,670,021, dated June 13, 1972, Ser. No. 690,431, Dec. 14, 1967. Application for reissue Apr. 12, 1973, Ser. No. 350,661

Int. Cl. C07c 103/08

U.S. Cl. 260-561 R

12 Claims

1. A process for the preparation of organic amides which comprises hydrolyzing an organic nitrile, in an

aqueous reaction mixture having [a] an initial pH range of 6 to 12.5, in the presence of a catalyst which is a compound of a metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum, at a temperature of from 25° to 250° C.

28,289

PEN HOLDER ATTACHMENT DEVICE

Forrest I. Calkins, 3340 Allen Court,

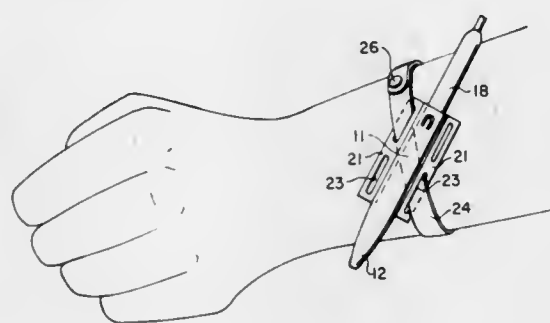
Santa Clara, Calif. 95051

Original No. 3,627,182, dated Dec. 14, 1971, Ser. No. 882,475, Dec. 5, 1969. Application for reissue May 14, 1973, Ser. No. 359,659

Int. Cl. A45c 11/34

U.S. Cl. 224-28 D

8 Claims



1. A holder of the character described comprising a sheath shaped to receive a writing implement, ears projecting laterally on either side of said sheath, said holder formed with an elongated flat surface in back of said ears and said sheath, a piece of fiber having self-adhering adhesive on both surfaces thereof, one said surface adhering to said elongated flat surface, and being removable therefrom, the other said surface covered with a removable protective paper, each said ear being formed with a first long, narrow slot, and a second long, narrow slot spaced longitudinally relative to said first slot, and a wrist-encircling strap fitting through a slot [an aperture] in each said ear when said fiber is removed, whereby said strap may fit through the lower slot of one ear and the upper slot of the other ear, disposed at an angle relative to said sheath.

28,290

CURIE POINT MAGNETIC RECORDING PROCESS

Joachim Greiner, Wolfgang Eichler, and Friedrich Krones, Leverkusen, Germany, by Agfa Aktiengesellschaft, Leverkusen, Germany, assignee

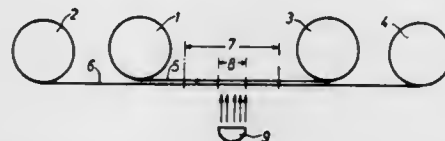
Original No. 3,364,496, dated Jan. 16, 1968, Ser. No. 432,796, Feb. 15, 1965. Application for reissue Aug. 23, 1973, Ser. No. 390,777

Claims priority, application Germany, Feb. 29, 1964, A 45,360

Int. Cl. G11b 5/02, 5/86

U.S. Cl. 360-16

10 Claims



1. A process for recording a sequence of time-varying magnetic information signals on a magnetizable recording member, which member comprises a magnetizable layer containing a magnetizable compound including the steps of

(a) heating the magnetizable recording member onto which [the] said magnetic signal is to be recorded to a temperature of at least the Curie point of the magnetizable compound,

- (b) subjecting the magnetizable recording member while being kept at said temperature to the magnetic field of [the] said magnetic signal to be recorded, and
- (c) cooling the magnetizable recording member to a temperature below the Curie point of the magnetizable compound while said member is under the action of the magnetic field of [the] said magnetic signal.

28,291

SPRING-LOADED CLAMPING DEVICES FOR FASTENING RAILROAD RAILS

Alf Lennart Borup, Bromma, and Karl Rune Hamrin, Lesjofors, Sweden, assignors to Lesjofors AB, Lesjofors, Sweden

Original No. 3,749,310, dated July 31, 1973, Ser. No. 152,154, June 11, 1971. Application for reissue Oct. 29, 1973, Ser. No. 410,379

Claims priority, application Switzerland, June 12, 1970, 8,162/70

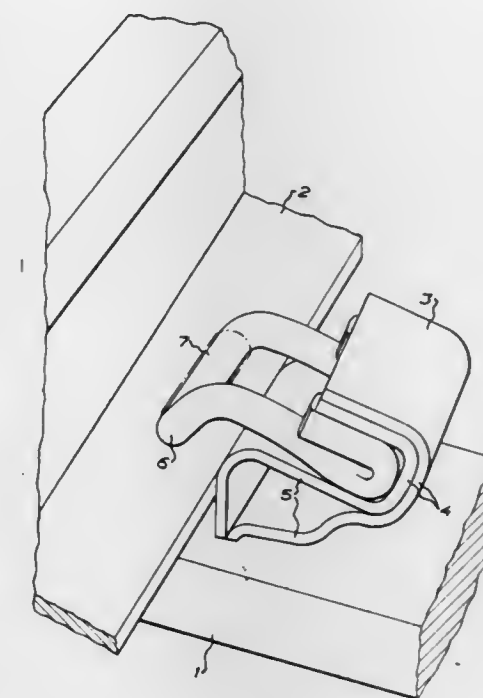
Int. Cl. E01b 9/02

U.S. Cl. 238-349

3 Claims

1. A clamping device for fastening a railroad rail to a support, comprising a fastening which is fixedly arranged in the rail support, and a clamping means disposed between the fastening and the rail foot, wherein the fastening consists of two spring leaves which have their end portions connected together and disposed in the support while the intermediary portions of the spring leaves are bent apart, the spring part facing the support having a large surface of engagement therewith and the

U-shaped holder for one end portion of said clamping means, the other end portion of which is adapted to bear against the rail foot.



PATENTS

GRANTED DECEMBER 31, 1974

ERRATA

For CLASS	See PATENT NO.
099-499.....	3,857,328
137-001.....	3,857,401
137-013.....	3,857,402
173-134.....	3,857,448
355-003.....	3,857,549
273-038.....	3,857,562
055-029.....	3,857,686
055-337.....	3,857,687
055-483.....	3,857,688
250-544.....	3,857,779

PATENTS

GRANTED DECEMBER 31, 1974

GENERAL AND MECHANICAL

3,857,116

METHOD OF MAKING TOWEL BIBS

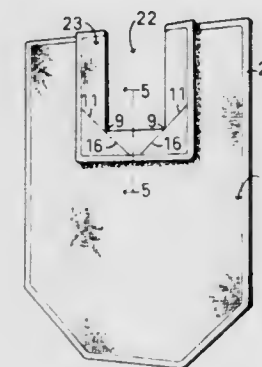
Donald W. Meeker, 100 E. Ocean Front, Newport Beach, Calif. 92661

Filed July 23, 1974, Ser. No. 491,163

Int. Cl. A41b 13/10

U.S. Cl. 2-50

1 Claim



1. The method of making towel bibs which includes providing rectangular sheets of absorbent material positioned with the short sides at the top and bottom, cutting from the center of the top edge of each sheet an inverted Y-shaped slit with an angle of ninety degrees between the branches of the fork in the cut, folding the material adjacent to the inverted Y-shaped slit to the back of the material and thereby producing in the center of the top edge of each sheet a rectangular opening sufficiently large to admit and encompass the base of the neck of the wearer and to allow open access to the neck of the wearer when in place on the wearer, cutting from each of the two bottom corners of each sheet a piece of material in the shape of a right isosceles triangle, attaching the hypotenuse edge of each of the two triangular pieces to each of the two straight edges of folded material formed by the opened branch lines of the inverted Y-shaped slit and thereby completing a flap of uniform width extended from the three borders of the rectangular opening, and binding all the outer edges of the material in one continuous operation.

3,857,117

WATERPROOF APPAREL

Samuel Matis Tenowitz, 58 Pitzer Rd., Glen Austin, Transvaal Province, South Africa

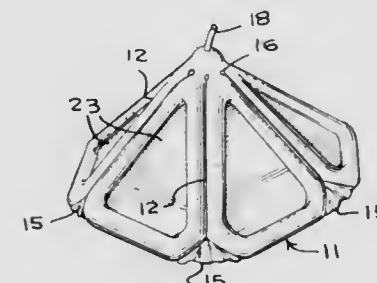
Filed Oct. 1, 1973, Ser. No. 402,631

Claims priority, application South Africa, May 17, 1973, 73/3327; Oct. 6, 1972, 72/7151

Int. Cl. A42b 1/20, 1/18

U.S. Cl. 2-177

10 Claims



1. An article of waterproof apparel comprising an inflatable canopy which is flat in its uninflated state composed of two superimposed sheets of flexible impervious material bonded together along lines defining a plurality of interconnected panels, each panel comprising at least one inflatable

area and one non-inflatable area, the inflatable areas each substantially surrounding the non-inflatable areas and being mutually interconnected, and wherein said inflatable areas include a plurality of radially extending areas joined at the center of said article, bifurcated portions at the outer ends of said radially extending areas and linear peripheral portions extending between said bifurcated portions of adjacent radially extending areas, the panels further being arranged to mutually support each other.

3,857,118

STABILIZED PLINTH ASSEMBLY FOR A HYDROTHERAPY TREATMENT SYSTEM

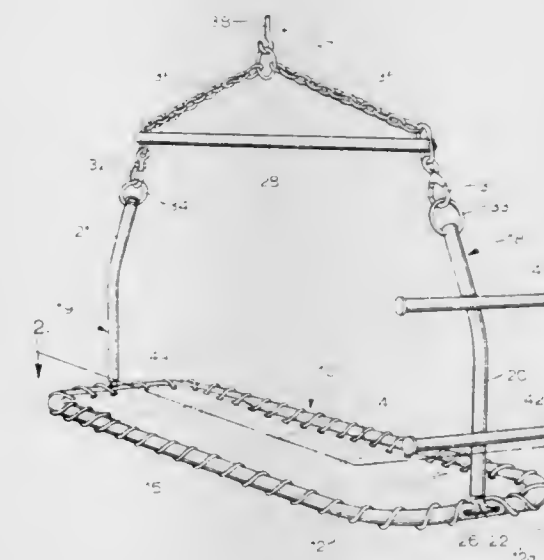
Anthony C. Mamo, Arlington Heights; Donald L. Paulson, Rolling Meadows, and Gustav Ozag, Chicago, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,468

Int. Cl. A47k 3/12

U.S. Cl. 4-185 L

5 Claims



1. A stabilized plinth assembly for supporting a patient partially immersed in a water-filled tank of a hydrotherapy treatment system, wherein the assembly is upwardly connected to and held by a hoist mechanism, comprising: an elongated plinth having a longitudinal axis and including a generally rectangular rigid open frame with head and foot ends and across which frame flexible material is stretched to support a patient; a pair of elongated rigid end supports each of which is pivotally coupled to said frame at a respective one of its two ends and on the plinth's longitudinal axis, and each of which supports is pivotable to an upright position wherein at least its lower portion is generally perpendicular to said plinth, each of said end supports, when held in its upright position, being rigidly locked to said frame so that no relative movement therebetween may occur; an elongated rigid spreader bar parallel spaced above said plinth and coupled between and to said end supports to maintain said supports locked in their upright positions to enhance the stability, and thereby to preclude tipping, of said plinth when a patient is lying thereon; and means for upwardly connecting the ends of said spreader bar to the hoist mechanism.

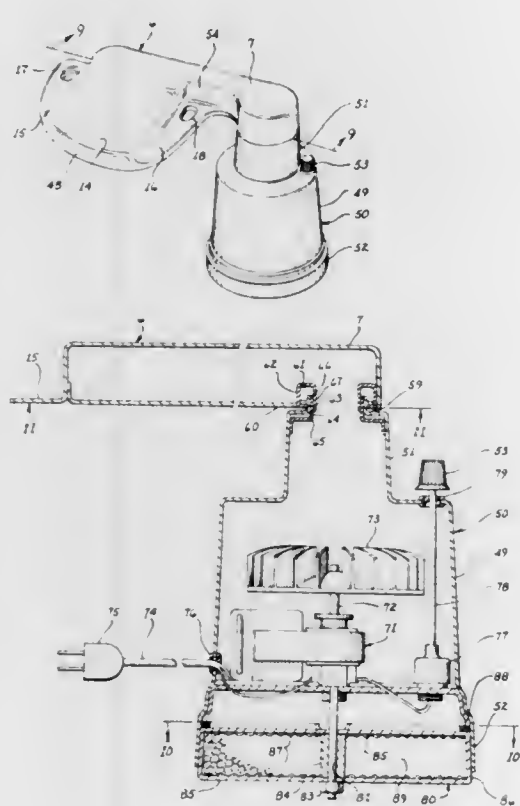
3,857,119

VENTILATING ATTACHMENT FOR WATER CLOSET
Clyde J. Hunnicutt, Jr., 3026 E. Garfield St., Phoenix, Ariz. 85008

Continuation-in-part of Ser. No. 301,581, Oct. 27, 1972, Pat. No. 3,824,637. This application Nov. 15, 1973, Ser. No. 415,964

Int. Cl. A47k 3/22; E03d 9/04, 13/00
U.S. Cl. 4—213

9 Claims



1. An improved apparatus for ventilating the bowl of a commode within a water closet, said apparatus comprising in combination:

a. a collector unit mounted at the rear of the commode for receiving and channeling gas away from the bowl, said collector unit including:

1. an inlet aperture extending within the periphery of said bowl;
2. a hollow neck extending lateral to the commode and serving as a conduit; and
3. an offset portion disposed at the extremity of said neck, said offset portion including a downwardly directed outlet;

b. a canister depending from said offset portion for drawing gas from the bowl, through said collector unit and exhausting the gas to the environment, said canister including:

1. impeller means for generating a gas flow;
2. power means for driving said impeller means; and
3. filter means for purifying the gas exhausted from said canister;

c. means for detachably connecting said canister to said offset portion, said connecting means being the sole support for said canister; whereby, said collector unit in combination with said canister are supported off the floor of the water closet and serve as a complete unit to withdraw and purify the gases within the bowl of the commode.

3,857,120

SOFA WITH DETACHABLE BOLSTER

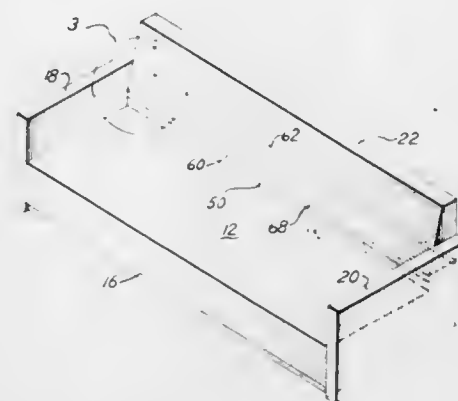
Donald J. Acker, 220 Dushane St., Elkhart, Ind. 46514

Filed Aug. 29, 1973, Ser. No. 392,771

Int. Cl. A47c 17/14, 4/02

U.S. Cl. 5—12 R

9 Claims



1. A sofa comprising a frame, a seat portion, means supporting said seat portion on said frame, a platform rigidly connected to the frame along the rear of said seat portion and extending a substantial distance in parallel relationship with the rear edge of the seat portion, a back substantially taller than said platform seated on and supported by said platform and projecting generally vertically upwardly from the forward and rear edges of the platform, and fastening means having one part along the lower front and rear edges of said back and another part engageable by said first mentioned part along the front and rear upper margins of said platform for securing said back firmly and releasably in place on the platform.

3,857,121

SOFA BEDS

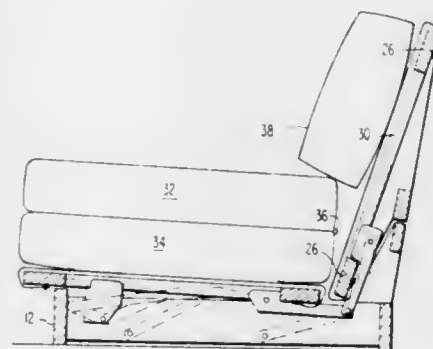
Walter Clark Rogers, Jr., 3101 N. Main St., High Point, N.C. 27260, and Morton Snitzer, 3301 Albemarle Dr., Greensboro, N.C. 27401

Filed Apr. 2, 1973, Ser. No. 347,310

Int. Cl. A47c 17/14

U.S. Cl. 5—29

7 Claims



1. In a sofa bed including, a seat, a backrest movably connected to the seat for movement between an upright position extending upwardly at an angle to the seat for use as a sofa and a generally horizontal position extending generally coplanar with the seat for use as a bed, said seat including a frame extending generally in a horizontal plane, a mattress overlying the frame, and connecting means interconnecting the mattress to the frame at a point under the mattress and spaced inwardly from the front edge portions of the mattress to define a recess between the mattress and the front edge portions of the frame for receiving a bedding sheet or the like covering the mattress and tucked into said recess, and wherein said connecting means extends continuously along the front and sides of the mattress and frame but spaced inwardly from the edges thereof to define a continuous recess along the front and sides thereof for receiving a sheet in the recess, and wherein said

3,857,122

SAFETY TOE TRIP FOR CRIB DROP SIDES

Robert G. Bryant, Gardner, Mass., assignor to Gem Industries, Inc., Gardner, Mass.

Filed Jan. 11, 1974, Ser. No. 432,770

Int. Cl. A47d 9/00

U.S. Cl. 5—100

9 Claims



1. A safety latch construction for a crib having a drop side, said crib including a stabilizer bar,

a movable latch on the stabilizer bar and means to be latched thereby on the drop side, resilient means associated with said latch and tending to maintain the same in latching condition with respect to said means,

and a foot pedal, said foot pedal having an operative connection with respect to said latch to move it to release said means, and a second resilient means for said foot pedal tending to maintain the same in a position wherein the latch is in its latching position, said second resilient means being isolated from the latch, wherein the connection between the movable latch and the pedal comprises an elongated longitudinally movable bar and a pivoted connection between the bar and the pedal.

3,857,123

APPARATUS FOR WAXLESS POLISHING OF THIN WAFERS

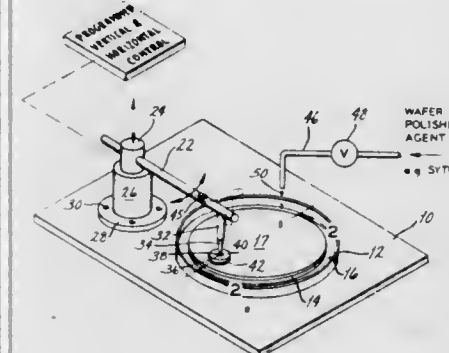
Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 82,673, Oct. 21, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,554

Int. Cl. B24b 7/00

U.S. Cl. 51—131

4 Claims



1. Apparatus for polishing a wafer, said apparatus comprising a polishing turntable including a polishing pad having first

and second polishing surfaces, a rotatable, wafer pressure disk for pressing the surface of a wafer against either of said polishing surfaces, said pressure disk having a wafer retention pad for retaining a wafer beneath said pressure disk and in contact with either of said polishing surfaces during polishing of said wafer, means for causing rotation of said turntable to cause relative movement of said polishing surfaces with respect to the surface of said wafer when in contact with either of said polishing surfaces, means for positioning said pressure disk for initial contact of said wafer with said first polishing surface, and for repositioning said pressure disk for subsequent contact of said wafer with said second polishing surface without interrupting the contact of said wafer with said polishing pad, said first polishing surface being adapted to provide initial polishing of said wafer and having coefficients of static and kinetic friction with respect to said wafer both of which are less than the coefficient of static friction of said wafer retention pad with respect to said wafer, whereby said wafer is retained under said retention pad and in contact with said first polishing surface both prior to and during rotation of said turntable, said second polishing surface being adapted to provide finish polishing of said wafer and having a coefficient of kinetic friction with respect to said wafer which is less than the coefficient of static friction of said wafer retention pad with respect to said wafer but said second polishing surface having a coefficient of static friction with respect to said wafer which is greater than the coefficient of static friction of said wafer retention pad with respect to said wafer, whereby said wafer is retained under said retention pad and in contact with said polishing surface during polishing but is removed by frictional force from under said retention pad when said turntable is brought to rest.

3,857,124

BEDCLOTHES

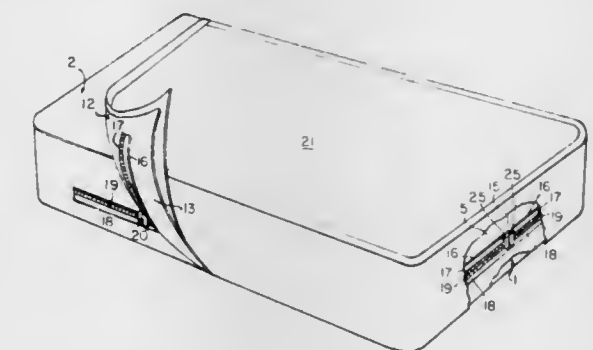
Belva D. Hadley, Rt. 2, Box 97, Scio, Ore. 97374

Filed July 2, 1973, Ser. No. 375,870

Int. Cl. A47c 23/00

U.S. Cl. 5—334 R

3 Claims



1. In combination, a mattress having upper and lower surfaces, a pair of longitudinal side edges and a pair of end edges, a bottom sheet removably positioned on said mattress, said bottom sheet having an upper surface superimposed upon the upper surface of said mattress and having a pair of longitudinal side edge portions and a pair of end edges enclosing the respective side edges and end edges of said mattress, first fastening means on the side edge portions of the bottom sheet, top sheet means overlying said bottom sheet and having a pair of downturned longitudinal side edge portions hanging over and covering the fastening means and a downturned end portion overlying the corresponding portions of said bottom sheet, and second fastening means secured to inner face portions of the side edge portions of the top sheet means and releasably secured to the first fastening means for removably attaching top sheet means to the bottom sheet, the top sheet means covering both fastening means.

3,857,125

SLEEPING BAG CONSTRUCTION

Harry Hunt, Boulder, Colo., assignor to Alpine Designs, Boulder, Colo.

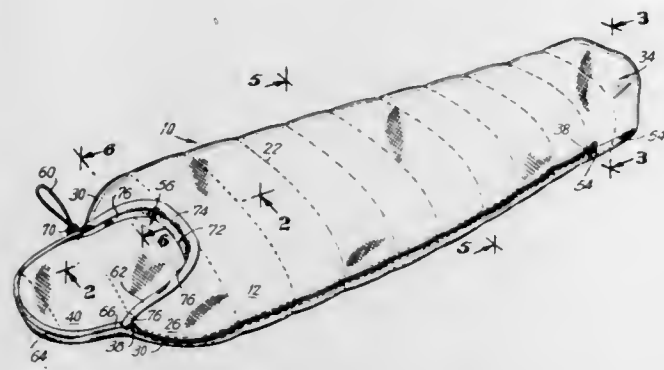
Filed May 21, 1973, Ser. No. 362,497

Claims priority, application Sweden, June 1, 1972, 7223/72; June 2, 1972, 7293/72; Sept. 21, 1972, 12215/72; Jan. 12, 1973, 7300439/73

Int. Cl. A47g 9/00

U.S. Cl. 5-343

11 Claims



1. Sleeping bag comprising inner and outer shell layers formed of thin, highly flexible, substantially non-elastic fabric, baffle fabric means extending therebetween defining a plurality of separate compartments therewithin, and a plurality of portions of a highly resilient insulating fill material having the characteristics of down contained within said compartments urging separation of said inner and outer shell layers, defining an insulated bag-like structure extending from a neck opening, wherein said inner and outer shell layers within a shoulder encompassing region are non-differentially cut and seamed generally curvilinearly extending medially across the shoulder region between the side edges of the bag and the side edges of a neck opening to define a contoured shoulder portion enabling the outer shell to be fully lofted thereat by pressure of the fill material away from an occupant's shoulders while the inner shell is lofted inwardly thereby to self-adjustably accommodate to the shoulders of such occupant and wherein said inner and outer shell layers, said shoulder encompassing region and a foot encompassing region are differentially cut enabling said outer shell to be fully lofted from said inner shell so that body pressures against said inner shell produce minimal compression of the fill thereat.

3,857,126

IGNITION RESISTANT MATTRESS CONSTRUCTION

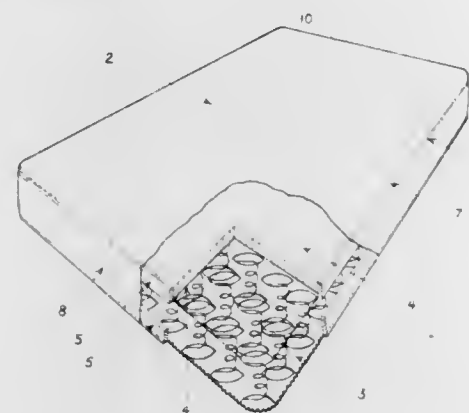
Douglas Woodruff, Woodstock, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed July 16, 1973, Ser. No. 379,618

Int. Cl. A47c 23/00, 27/00

U.S. Cl. 5-345 R

15 Claims



1. In a mattress construction comprising an outer casing, a yieldable interior filling having inherent flammability resistance to a lighted cigarette, a support core and a flange cir-

cumscribing the periphery of said mattress, the improvement which comprises providing said flange as a laminate of a scrim substrate and aluminum foil to render said mattress resistant to ignition by a lighted cigarette.

3,857,127

BOARDING PLATFORM FOR BOATS

Roger L. Hendrickson, Rt. 1, Bradshaw Rd., Mount Vernon, Wash. 98273

Filed Feb. 11, 1974, Ser. No. 441,011

Int. Cl. B63b 23/32

U.S. Cl. 9-1 R

6 Claims



1. A boarding platform for a boat hull, comprising: a pair of spaced-apart brackets for the hull of the boat disposed in overlying relation to the waterline thereof; each said bracket having vertically disposed base structure adjacent the hull including an upstanding pair of spaced-apart ears between which extends a through pin disposed in a generally horizontal axis parallel to the hull surface; each said bracket supporting in cantilevered fashion, below said ears and above the lower reaches of said base structure, an outstanding arm; the upper surfaces of said bracket arms lying in a common plane; an elongated plank secured to said arm upper surfaces in overlying substantially parallel relation to the water line of said boat hull; and a bolt engaged about each said through pin between the upstanding ears of a bracket and anchored inwardly to said hull.

3,857,128

WHEELED CARRIER FOR SAILING VESSEL

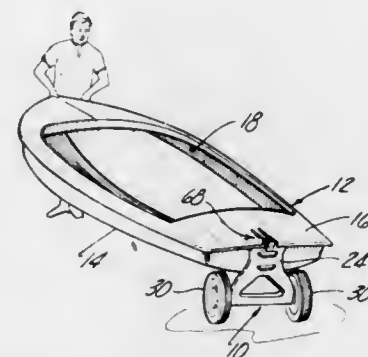
William James Gilster, 6800 Telegraph, Apt. 18, Birmingham, Mich. 48010

Filed Dec. 12, 1973, Ser. No. 423,889

Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

7 Claims



1. A wheeled carrier for sailing boats of the type having a transom and a deck overhanging said transom, and a rudder fitting carried by said transom for removably supporting a rudder assembly, said carrier comprising: a carrier body positionable in an upright position against said transom;

wheel means; means for rotatably mounting said wheel means to the lower portion of said carrier body; the upper portion of said carrier body having support means for supportably engaging the underside of said overhanging deck when said carrier body is positioned in said upright manner; and means carried by said carrier body for releasably attaching said carrier body to said rudder fitting when said carrier body is positioned in said upright manner such that said wheel means are disposed below said transom to support the stern of said boat above the ground.

3,857,129

DEVICE FOR ASSEMBLING SHOE COMPONENTS

Jean-Gabriel Barre, Lyon, France, assignor to Centre Technique Du Cuir, Lyon, France

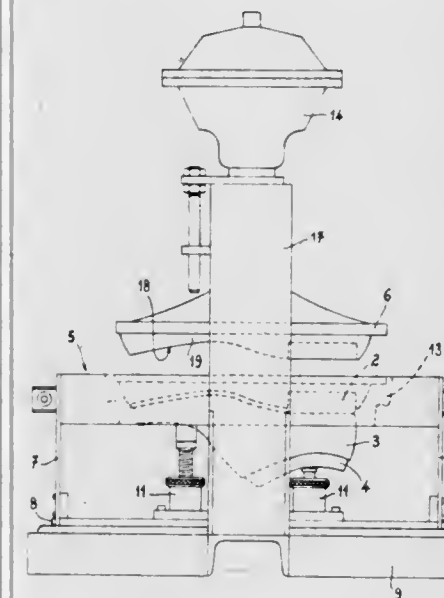
Filed Mar. 26, 1973, Ser. No. 345,218

Claims priority, application France, Mar. 31, 1972, 72.12192

Int. Cl. A43d

U.S. Cl. 12-1 F

8 Claims



1. An apparatus for automatically assembling a sole and an upper of a shoe, comprising: a substantially rectangular frame having an inner face with an outline accommodating exactly the outer periphery of of said upper along a marginal assembling portion thereof, said inner face being formed with a peripheral groove adapted to receive the edge of a sole to be applied to said upper; means supporting a last within said frame; and means for supporting said sole within said frame, the inner face of said frame being composed of flexible soft material moldable to the configuration of a shoe to be formed.

3,857,130

SUSPENSION BRIDGE

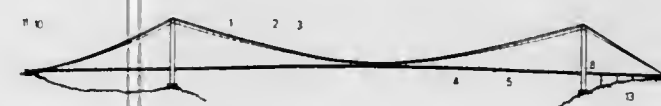
Ramiro Sofronie, Bucharest, Rumania, assignor to Intreprinderea Industriala De Stat Energo Reparatii, Bucharest, Rumania

Filed Apr. 10, 1972, Ser. No. 242,357

Int. Cl. E01d 11/00

U.S. Cl. 14-19

2 Claims



1. A suspension bridge comprising:

a pair of upright support towers; at least three horizontally spaced catenary cables spanned longitudinally between said towers; a plurality of connecting cables extending transversely between said catenary cables and connected thereto at mutual junctions, said cables defining a cable net of longitudinally upwardly concave and transversely downwardly concave curvature; a plurality of hangers formed by extensions of the connecting cables and depending from the outermost two of said catenary cables; and an elongated load suspended from said hangers below said net, said towers being Y-shaped with upwardly diverging arms, said load being received in the crotches between the Y-arms of said towers, said cable net being supported by said arms, each tower having a downwardly concave upwardly convex arch spanning its arms, said catenary cables resting on said arch and being provided at their ends with means anchoring them to the ground, said outermost catenary cables being spaced apart by a transverse width several times greater than the transverse width of said load, said cables being under tension against each other and against said load whereby said net is under stress.

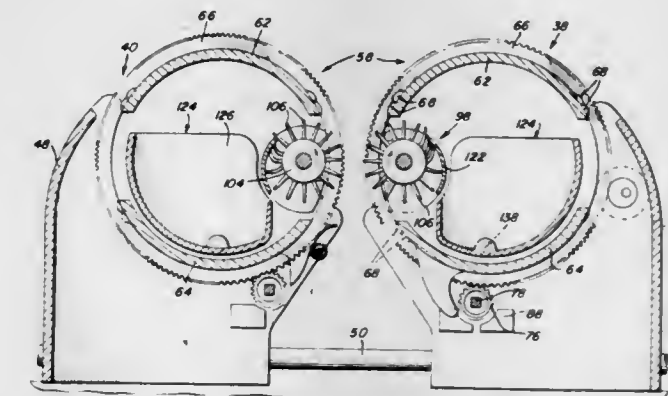
3,857,131

MEAT HANDLING EQUIPMENTHerman F. Russell, Detroit, Mich., assignor to The Hobart Manufacturing Company, Troy, Ohio
Division of Ser. No. 177,302, Sept. 2, 1971, which is a continuation-in-part of Ser. No. 877,229, Nov. 17, 1969, Pat. No. 3,606,628. This application May 18, 1973, Ser. No. 361,786

Int. Cl. A22c 17/08

U.S. Cl. 15-3.17

13 Claims



1. In a meat cleaning machine, a meat cleaning brush comprising at least one brushing unit, said unit including a central hub and a plurality of flexible scraping members supported at one end by said hub and extending outwardly therefrom, each member having a wide, generally continuous, flat scraping surface on the other end thereof, and including a scraper plate located lengthwise along said brush and having a leading edge located within the circle defined by the outer edges of the flexible scraping members and a trailing edge located outside the circle defined by the outer edges of the flexible scraping members and a body portion joining said leading and trailing edges to unflex said scraping members slowly and smoothly during release of engagement between said scraping members and said scraper plate, avoiding possibly detrimental flapping action.

3,857,132

PIPELINE PIG OPERABLE IN TWO DIRECTIONS

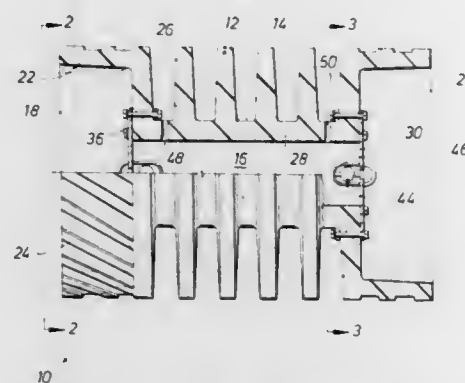
Kenneth M. Knapp, and Charles C. Knapp, both of P.O. Box 2261, Houston, Tex. 77001

Filed Nov. 24, 1972, Ser. No. 309,059

Int. Cl. B08b 9/04

U.S. Cl. 15—104.06 R

11 Claims



1. A pig for use in a pipeline comprising:
a body formed of resilient material and having at least one outwardly directed fin which is adapted to contact the internal periphery of a pipe;
said pig body further including a forward and rearward facing surface adapted to contact the internal periphery of a pipe and across which a pressure differential in the pipeline creates a pushing force enabling the pig to travel through the pipeline; and,
passage means in said pig extending between said faces and including a blockage means cooperating with said passage means to admit fluid pressure from one face of said pig body to create a pulling force acting on said body away from said one face which receives a pushing force from pressure differential and wherein said blockage means acts selectively at either end to form a pulling force at least one-half the length of said body from the pushing force.

3,857,133

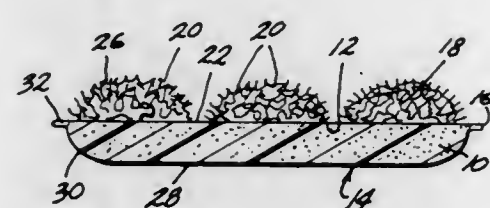
COMBINATION SCRUBBING AND WIPING SPONGE
Carl J. Linenfelder, Brooklyn, Mich., assignor to Brooklyn Products, Inc., Brooklyn, Mich.

Filed Mar. 29, 1973, Ser. No. 345,884

Int. Cl. A47I 13/16; B32b 5/18

U.S. Cl. 15—118

1 Claim



1. A scrubbing and wiping sponge comprising, in combination, a body of open cell foamed polyurethane ester having a periphery and first and second sides oppositely disposed with respect to each other, a relatively thick sheet of open cell reticulated foamed polyurethane ester having an exterior side and an interior side disposed over said body first side having cells of a dimension greater than that of said body foam and having a plurality of sharp projections formed thereon defining an abrasive outer surface at said exterior side, a plurality of elongated thermal joining strips defined in said foam sheet by compressing portions of said sheet exterior and interior sides into engagement with said body first side and thermally bonding said sheet to said body only at spaced locations defining said sheet into an embossed pattern, said sheet and said body also being thermally bonded throughout said body periphery, said strips comprising two sets of strips each comprising parallel spaced linear strips, the strips of said sets obliquely

intersecting defining a raised self-cleaning embossed diamond pattern on said sheet, and said foam body at said second side defining a skin layer of higher density foam resistant to abrasive wear.

3,857,134

TUFTED STYLE BRUSH

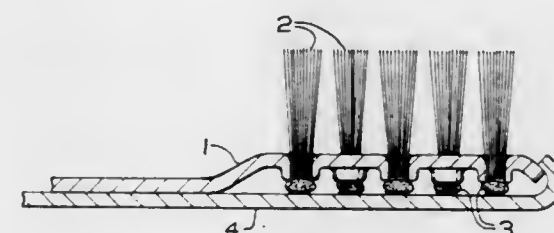
Carlton C. Wells, Baltimore, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 19, 1973, Ser. No. 352,837

Int. Cl. A46b 3/16

U.S. Cl. 15—199

7 Claims



1. A brush comprising:
A. a plate having a plurality of holes pierced therethrough, said plate being relatively smooth on the obverse side thereof, and having flanged or raised areas circumferentially surrounding each of said holes on the reverse side thereof;
B. substantially U-shaped tufts located in each of said holes and extending from below the flanged or raised areas to above said relatively smooth obverse side, wherein the apices of said U-shaped tufts extend completely through said flanged or raised areas;
C. a first means for preventing said tufts from being pulled through said holes from the obverse side of said plate, said means pressing against said flanged or raised areas and extending through the apices of said U-shaped tufts, said means comprising substantially U-shaped, relatively stiff components which have been formed into generally ring-shaped configurations and wherein the diameters of said configurations are greater than the diameters of said holes; and
D. a second means for preventing said tufts from being pulled through said holes from the reverse side of the plate.

3,857,135

VEHICLE POLISHING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Japan

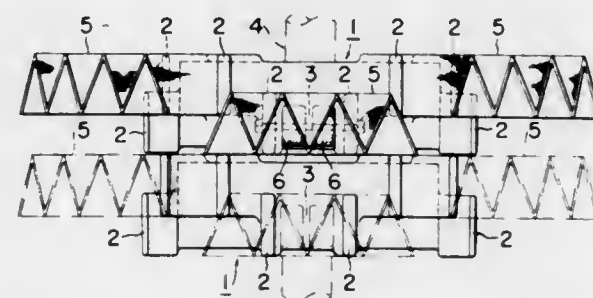
Filed July 3, 1973, Ser. No. 376,212

Claims priority, application Japan, Sept. 16, 1972, 47-106980

Int. Cl. B24d 13/06; B60s 3/06

U.S. Cl. 15—230.14

1 Claim



1. A cylindrical rotary buff assembly for use in vehicle polishing apparatus, comprising: a rotatable shaft, a stack of relatively short cylindrical segments closely and removably fitted over said shaft, each of said cylindrical segments being formed on their outer peripheral surfaces with a plurality of

circumferentially spaced, radial projections, adjacent ones of said projections defining recesses; a plurality of radially fluted fan-shaped pliable elementary buffs being positioned in the plane of said cylindrical segments, each of said buffs having an inner end and an outer end and expanding outwardly from its inner end to its outer end with its outer peripheral edge formed in zigzag form, said buffs being individually removably fixed at their inner ends in alternate ones of said recesses of said projections by fastener means, said elementary buffs on each of said cylindrical segments being spaced from each other at their adjacent outer ends and being in staggered relation with those on adjacent ones of said cylindrical segments.

3,857,136

CABLE BUSHING APPARATUS

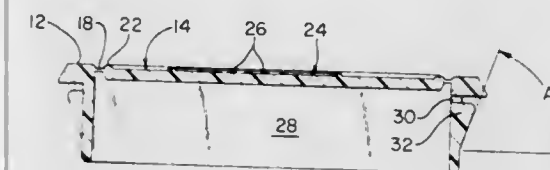
Carl J. Dean, Southbridge, Mass., assignor to Barry-Wright Corporation, Watertown, Mass.

Filed July 6, 1973, Ser. No. 376,969

Int. Cl. B65d 7/48

U.S. Cl. 16—2

5 Claims



1. Cable bushing apparatus comprising,
means defining a frame,
means defining a central removable portion at least partially enclosed by said frame and spaced therefrom,
means defining a plurality of thin strips spanning the distance from the frame to said central removable portion for removably and hingeably supporting said central portion,
said thin strips being breakable with the tip of a knife and sufficiently flexible to function as a hinge when said central portion is otherwise free to move and may then function as a hinged door,
means defining an elongated protrusion of the frame coextensive therewith,
and means defining a plurality of yieldable tabs along an outer surface of said protrusion arranged adjacent to said frame to define multiple pairs of panel gripping jaws, said frame and central removable portion defining a common plane and said protrusion being arranged orthogonally to said common plane.

3,857,137

PROCESS AND DEVICE FOR EXTRACTING BLOOD FROM SLAUGHTERED ANIMALS

Roger Baud, Prangins (Vaud), Switzerland

Filed Dec. 13, 1972, Ser. No. 314,597

Claims priority, application Switzerland, Dec. 22, 1971, 18792/71; Mar. 8, 1972, 3487/72

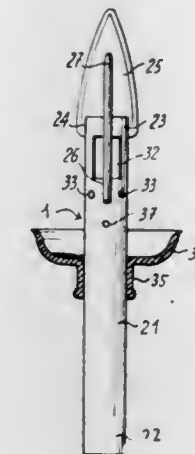
Int. Cl. A22c

U.S. Cl. 17—1 C

5 Claims

1. A device for extracting blood from slaughtered animals comprising a cutting tool including a tubular body open at first and second ends, a blade at the first end of said tubular body, a crown-like array of rods removably mounted on said tubular body and disposed on either side of said blade, a guard piece adjacent the first end of said tubular body and projecting laterally therefrom, said guard piece including a sleeve surrounding said tubular body and slidable thereon, said sleeve flared outwardly toward said blade to provide a cup-shaped portion to be applied in a substantially fluid-tight manner against the neck of an animal to be bled, means connecting the second end of the body with a receptacle, and means for maintaining the receptacle at low pressure and for applying a

suction to a cut made by piercing said blade into an animal, for example, in its neck in the region of the arch of the aorta



and the upper vena cava to activate the flow of blood through said tubular body into the recipient.

3,857,138

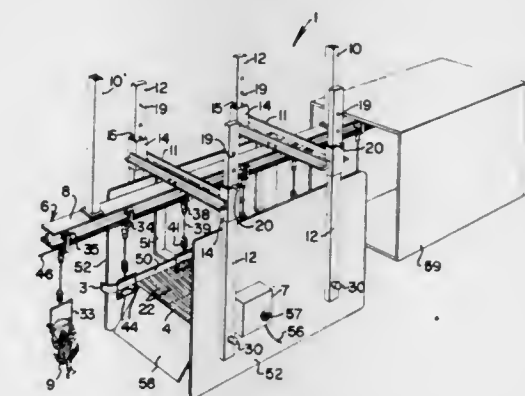
ELECTRONIC RELAXER AND STABILIZER
Garland McWhirter, deceased, late of Kansas City, Mo., assignor to Jerry McWhirter, by said Nell J. McWhirter

Filed Jan. 22, 1973, Ser. No. 325,664

Int. Cl. A22b 3/08

U.S. Cl. 17—11

11 Claims



1. Apparatus for electrically shocking poultry in a poultry processing operation comprising:
a. a poultry conveyor having a track with a plurality of poultry supporting shackles spaced therealong and movable in a defined path, said shackles engaging legs of poultry to support same head down;
b. an electrical conductor positioned in a portion of said path for electrical circuit making contact with said poultry as it moves thereby;
c. an electrically conductive grid located in said portion of the path and spaced below said shackles a distance for contact with the heads of the poultry suspended from said shackles as they move thereby whereby said poultry heads electrically contact said grid during electrical contact between the poultry and said conductor, said grid having upwardly facing surface portions inclined and having a plurality of through openings permitting drainage of waste material from said upwardly facing surface portions;
d. means applying an electric potential difference between said conductor and said grid whereby poultry in electrical contact with said conductor and said grid complete an electric circuit therebetween and is shocked by an electric current passing into portions of the poultry between the conductor and the grid; and
e. means electrically insulating said grid and said conductor from said track.

3,857,139

BI-COLORED WRAPPER TWIST TIE

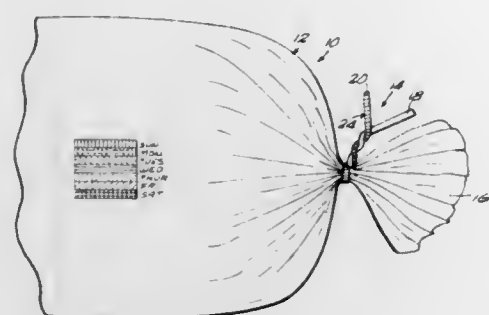
Jack Bond Turner, 234 Pinecrest Dr., Miami Spring, Fla. 33166

Filed July 30, 1973, Ser. No. 384,065

Int. Cl. B65d 77/18, 65/04

U.S. Cl. 24—30.5 T

1 Claim



1. A Twist Tie Strip for use in providing an air tight closure for the normally open end of a wrapper of the types of bakery products such as bread, rolls, buns, etc., comprising an elongated, narrow strip of any suitable material with a thin wire embedded therein generally along the length of its longitudinal axis, said strip being generally, vertically divided into two halves defined by two contrasting colors, wherein said strip is provided in a plurality of different contrasting colors one color of each strip designating a particular day of the week on which the product in the wrapper was baked, including a color key on said wrapper, associated with said plurality of different contrasting colors to identify the days of the week.

3,857,140

DETACHABLE BANDAGE CLASP

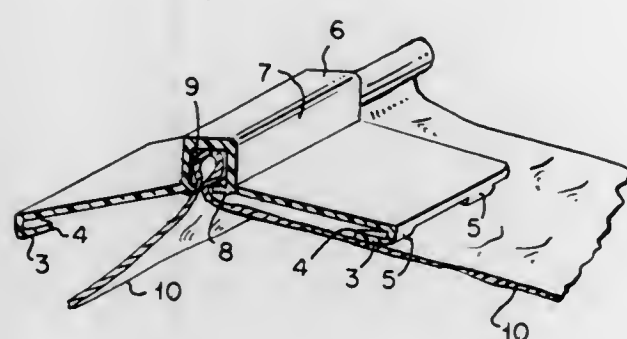
Harry H. Leveen, Brooklyn, N.Y., assignor to Jeanette L. Rubricius; Robert F. Laveen; Eric G. Laveen; Frank A. Santageta, all of Brooklyn, N.Y. and Patrick J. Joyce, Stamford, Conn., part interest to each

Filed Feb. 28, 1973, Ser. No. 336,778

Int. Cl. A44b 9/00; A61f 13/00, 15/00

U.S. Cl. 24—87 TB

6 Claims



1. A fastener for bandages which comprises a plastic resilient frame consisting of a centrally positioned set of jaws having interposed therebetween a torsion actuated spring hinge and a set of lateral wing plates which control the opening and closing of the said jaws when pressures are applied or released thereon, a bandage securing means positioned distally on each lateral wing plate and adapted to engage an underlying layer of wrapped bandage, said jaws capable of clamping releasably a segment of the bandage in an opposed set of teeth located thereon and holding the same until released by a second application of torsion.

3,857,141

END STOP FOR SLIDING CLASP FASTENERS

Hiroyuki Ebata, No. 1-5-25, Shinkanaya, Uozu-ohi, Toyama-Ken, Japan

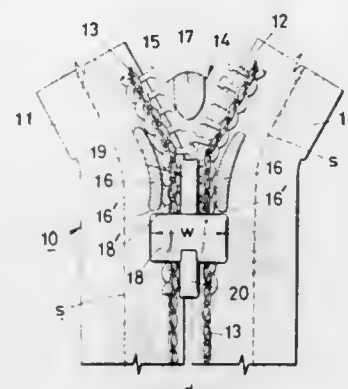
Filed July 17, 1973, Ser. No. 379,964

Claims priority, application Japan, July 18, 1972, 47-85301

Int. Cl. A44b 19/00

U.S. Cl. 24—205.11 F

5 Claims



1. In a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastic filament and a slider having side flanges and mounted on the fastener for reciprocal movement along the said longitudinal edges, the improved bottom end stop for restricting the movement of the slider which comprises a thermoplastic strip laid over a group of fastener elements adjacent the bottom end of the fastener, means securing said strip to said fastener, said strip being substantially square in shape and having a width corresponding substantially to the distance between the side flange ends of the slider, and a tongue formed by deforming a group of interengaged parts of fastener elements adjacent to the forward marginal end of said square strip, said tongue being joined integrally with said strip.

3,857,142

SNAP HOOK

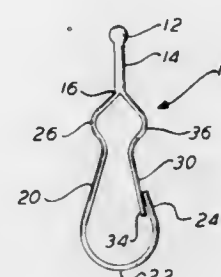
Marvin S. Hills, 125 Springfield Rd., Elizabeth, N.J. 07208

Filed Aug. 27, 1973, Ser. No. 391,913

Int. Cl. A44b 13/02; B21f 13/00

U.S. Cl. 24—237

7 Claims



1. A unitary suspendable one piece snap hook comprising a head portion, a shank portion, the head portion being affixed to one end of said shank portion wherein the maximum thickness of said head member measured perpendicular to the principal axis of said shank portion exceeds the thickness of said shank portion measured perpendicular to the axis of said shank portion, said head portion being anchorable in a suitable external retaining means a body portion unitary with said shank portion comprising a shorter segment and a longer segment extending from the other end of said shank portion in divergent relation to each other.

3,857,145

METHOD OF PRODUCING SPARK PLUG CENTER ELECTRODE

Terumoto Yamaguchi, Anjo, and Kanemichi Izumi, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

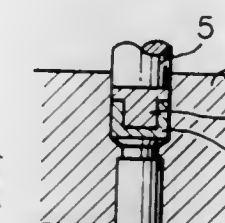
Filed Aug. 1, 1972, Ser. No. 277,044

Claims priority, application Japan, Apr. 14, 1972, 47-38172

Int. Cl. F23q 3/70; H01t 13/00

U.S. Cl. 29—25.12

5 Claims



1. A method of producing a spark plug center electrode of the type which comprises a core member consisting of a good heat conducting metal having a corrosion-resistant metal enclosing the sparking end portion and the side portions thereof, said method comprising the steps of:

forming said good heat conducting metal into a protrudent shape by only one plastic-working step, the protrudent portion of the shaped good heat conducting metal being at least as great as one-half the height of said shaped good heat conducting metal,

forming a corrosion-resistant metal piece into a cup shape by only one plastic working step, the depth of the cavity of said cup-shaped metal being at least as great as one-half the height of said cup-shaped metal,

preparing an extrusion metal by fitting the protruding portion of said protrudent shaped good heat conducting metal piece into the recess portion of said cup-shaped corrosion resistant metal piece, and

shaping said extrusion metal into a rod formed by the process of cold extrusion, wherein said good heat conducting metal is covered by said corrosion resistant metal.

3,857,143

YARN MEASURING CUTTER

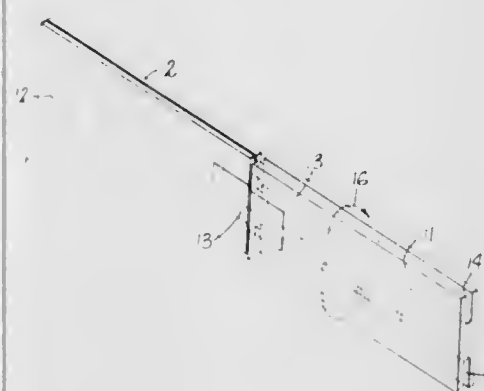
Daniel A. Montory, and Katherine L. Montory, both of 213 Oak St., Waterbury, Conn.

Filed Mar. 11, 1974, Ser. No. 449,852

Int. Cl. D04d 7/08

U.S. Cl. 28—2

4 Claims



1. A yarn measuring cutter comprising an elongated body portion having a plurality of longitudinal slots in its surface, the perimetric distances between adjacent slots in either direction being equal, each said slot being of a size to receive a cutting tool, and means for clamping yarn against the body portion in areas between said slots.

3,857,144

METHOD OF EMBOSSING LIMP PLASTIC SHEET MATERIAL

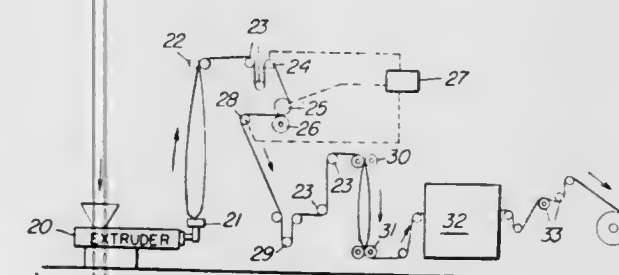
Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 159,531, July 2, 1971, Pat. No. 3,760,940, which is a continuation of Ser. No. 808,922, March 20, 1969, abandoned. This application Aug. 23, 1972, Ser. No. 283,016

Int. Cl. D06c 23/04

U.S. Cl. 28—72 R

19 Claims



1. A method for embossing limp plastic sheet material suitable for forming a structure which comprises feeding the material to a rotating roll provided with a multiplicity of depressions at a rate relative to the linear peripheral speed of the roll to permit the embossing of said material, and pressing the material into contact with the curved surface of the roll and into the depressions to emboss the sheet material thereby allowing for the production of a continuous roll of embossed limp bag structure.

3,857,146

METHOD OF MAKING A QUARTZ BAR RESONATOR

Jean Engdahl, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services SA, Bienne Canton, Berne, Switzerland

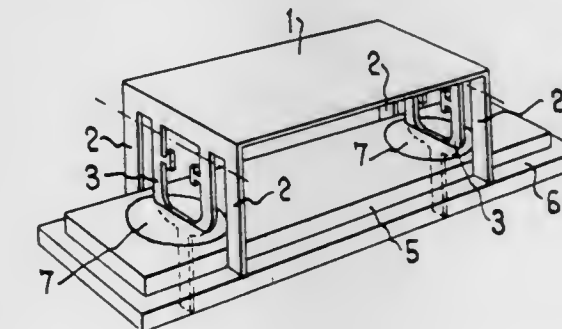
Filed Apr. 10, 1973, Ser. No. 349,674

Claims priority, application Switzerland, Apr. 13, 1972, 5472/72

Int. Cl. B01j 17/00

U.S. Cl. 29—25.35

9 Claims



1. A method of fabrication of a quartz bar resonator comprising the steps of forming at least a pair of spaced, forked electrodes interconnected by a blank in a single metallic sheet, folding said electrodes with respect to said blank, fixedly supporting at least a part of each of said electrodes from a base plate, removing said blank leaving said electrodes separately extending from said base plate, mounting a quartz bar

3,857,139

BI-COLORED WRAPPER TWIST TIE

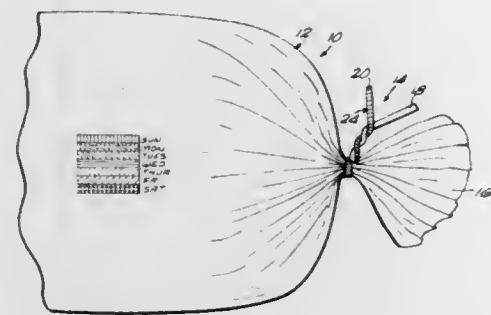
Jack Bond Turner, 234 Pinecrest Dr., Miami Spring, Fla. 33166

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Int. Cl. B65d 77/18, 65/04

U.S. Cl. 24—30.5 T

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3,857,140

DETACHABLE BANDAGE CLASP

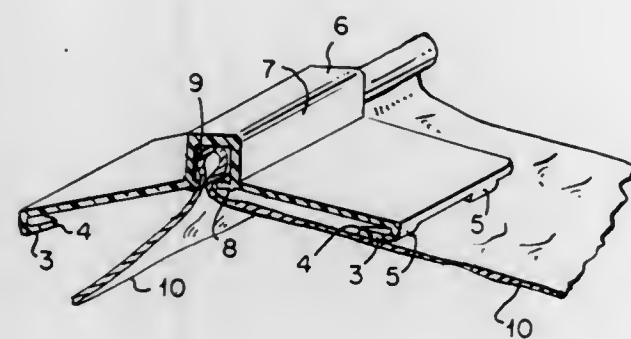
Harry H. Leveen, Brooklyn, N.Y., assignor to Jeanette L. Rubricius; Robert F. Laveen; Eric G. Laveen; Frank A. Santageta, all of Brooklyn, N.Y. and Patrick J. Joyce, Stamford, Conn., part interest to each

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Int. Cl. A44b 9/00; A61f 13/00, 15/00

U.S. Cl. 24—87 TB

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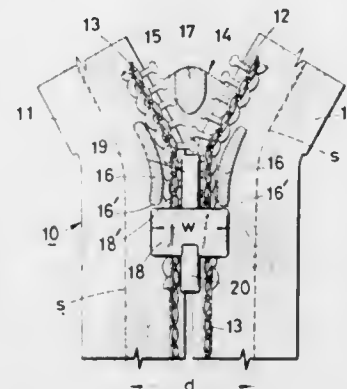
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Int. Cl. A44b 19/00

U.S. Cl. 24—205.11 F

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3,857,142
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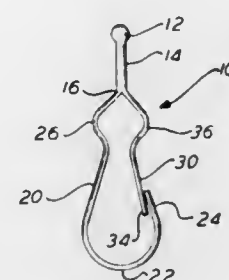
Marvin S. Hills, 125 Springfield Rd., Elizabeth, N.J. 07208

Filed Aug. 27, 1973, Ser. No. 391,913

Int. Cl. A44b 13/02; B21f 13/00

U.S. Cl. 24—237

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3,857,145

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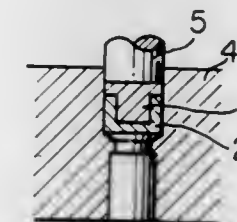
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Claims priority, application Japan, Apr. 14, 1972, 47-38172

Int. Cl. F23q 3/70; H01t 13/00

U.S. Cl. 29—25.12

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preparing an extrusion metal by fitting the protruding portion of said protrudent shaped good heat conducting metal piece into the recess portion of said cup-shaped corrosion resistant metal piece, and

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3,857,143

YARN MEASURING CUTTER

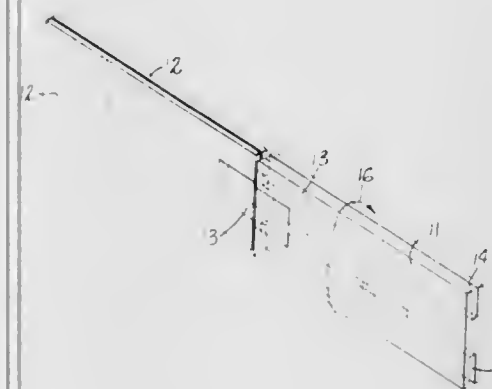
Daniel A. Montory, and Katherine L. Montory, both of 213 Oak St., Waterbury, Conn.

Filed Mar. 11, 1974, Ser. No. 449,852

Int. Cl. D04d 7/08

U.S. Cl. 28—2

4 Claims



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3,857,144

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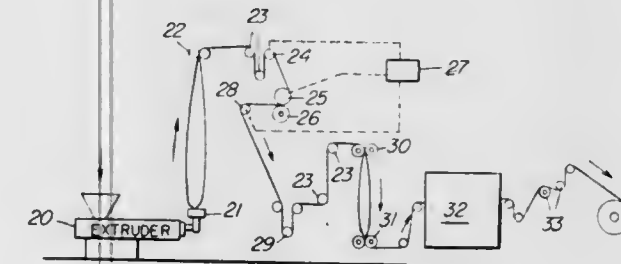
Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 159,531, July 2, 1971, Pat. No. 3,760,940, which is a continuation of Ser. No. 808,922, March 20, 1969, abandoned. This application Aug. 23, 1972, Ser. No. 283,016

Int. Cl. D06c 23/04

U.S. Cl. 28—72 R

19 Claims



1. A method for embossing limp plastic sheet material suitable for forming a structure which comprises feeding the material to a rotating roll provided with a multiplicity of depressions at a rate relative to the linear peripheral speed of the roll to permit the embossing of said material, and pressing the material into contact with the curved surface of the roll and into the depressions to emboss the sheet material thereby allowing for the production of a continuous roll of embossed limp bag structure.

3,857,146

METHOD OF MAKING A QUARTZ BAR RESONATOR

Jean Engdahl, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services SA, Bienne Canton, Berne, Switzerland

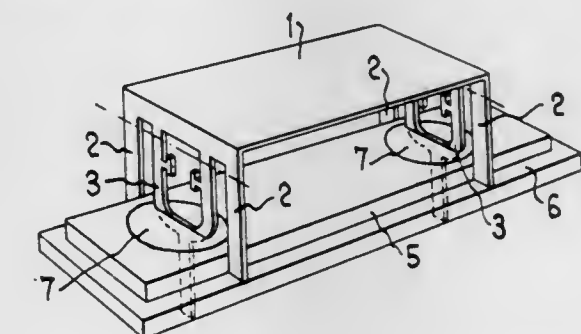
Filed Apr. 10, 1973, Ser. No. 349,674

Claims priority, application Switzerland, Apr. 13, 1972, 5472/72

Int. Cl. B01j 17/00

U.S. Cl. 29—25.35

9 Claims



1. A method of fabrication of a quartz bar resonator comprising the steps of forming at least a pair of spaced, forked electrodes interconnected by a blank in a single metallic sheet, folding said electrodes with respect to said blank, fixedly supporting at least a part of each of said electrodes from a base plate, removing said blank leaving said electrodes separately extending from said base plate, mounting a quartz bar

at one end on one of said spaced electrodes and at the other end on another of said spaced electrodes, and connecting said quartz bar to said electrodes.

3,857,147

METHOD OF MANUFACTURING BEARING RACES BY ROLLING

Jean Gerat, Annecy, France, assignor to Societe Nouvelle De Roulements, Annecy, France

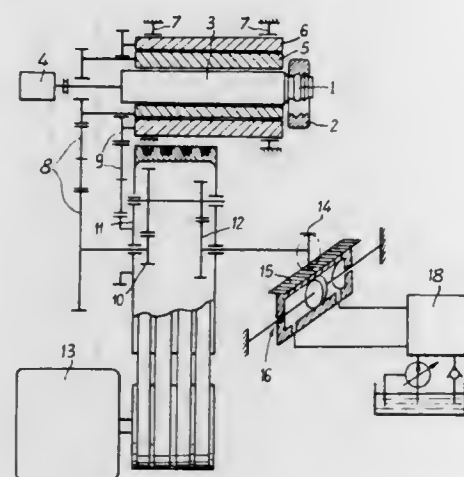
Filed July 9, 1973, Ser. No. 377,653

Claims priority, application France, Aug. 9, 1972, 72.28787

Int. Cl. B21h 1/12

U.S. Cl. 29—148.4 R

2 Claims



1. Method of rolling outer races of bearings in a die by means of a rolling tool roller operating under overhanging conditions in a race blank to be rolled, wherein a race blank having a smaller diameter than said die is subjected to a cold treatment comprising the following steps: rotatably driving the tool roller on itself at a speed corresponding to its rolling speed within the blank; causing the tool roller to penetrate into the blank until it engages the entire rolling surface, by producing a constant stress feed, after absorbing its elastic deformation; rolling the blank in the die by producing an additional feed under constant stress of the tool roller, until the blank fills completely the die with its outer surface; driving the blank laterally by producing an additional feed under constant stress, this action being followed by a gauging rolling action without any feed until the final dimensions of the race are obtained; and producing a slow initial backward movement for absorbing the strain distortions of the means driving the roller tool in order to preserve the aforesaid gauging.

3,857,148

METHOD OF ASSEMBLING A FULL TYPE BALL BEARING

Toshio Hata, 14-403, No. 11, 1-chome, Denenchofu, Ohta-ku, Tokyo, Japan

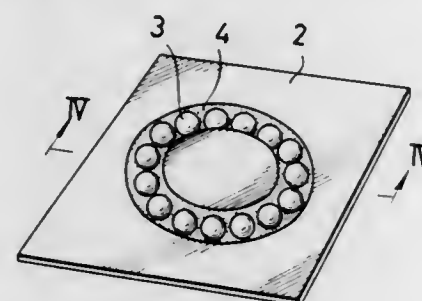
Filed Nov. 6, 1973, Ser. No. 413,383

Claims priority, application Japan, Jan. 20, 1973, 48-8284

Int. Cl. B23p 11/00

U.S. Cl. 29—148.4 A

2 Claims



1. A method of assembling a full type ball bearing device which comprises the steps of:

covering a ring like arrangement of a required quantity of grease and a required number of balls embedded in the grease with a thermoplastic resin film to form a thermoplastic resin ring body; mounting the thermoplastic resin ring body between races of a bearing, rotating the bearing; the rotative force generating a frictional effect at the contact track surfaces of the races with the thermoplastic resin ring body and rupturing the resin film of the thermoplastic resin ring body and thus disposing the grease embedded balls in selective operative locations in the bearing races.

3,857,149

METHOD OF MAKING A BALL JOINT

Morris Hassan, Trenton, N.J., assignor to Chrysler Corporation, Highland Park, Mich.

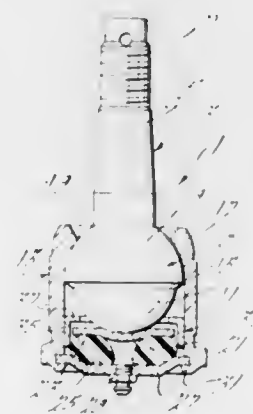
Division of Ser. No. 303,728, Nov. 6, 1972, This application

Dec. 3, 1973, Ser. No. 421,309

Int. Cl. B23p 11/00

U.S. Cl. 29—149.5 B

2 Claims



1. A method of making a ball joint comprising the steps of placing a stud having a ball portion through an opening in a housing having a socket, forcing the ball portion of said stud to seat in said socket and placing a retainer in said housing with a radially extending portion thereof a predetermined distance from a specified point on the ball portion, placing a pressure plate against said ball portion with one face thereof being said predetermined distance from said radially extending portion and resiliently holding said pressure plate against said ball portion while forming a closure in the housing.

3,857,150

METHOD OF ASSEMBLING A FRAMEWORK

Pierre Faucheux, Paris, France, assignor to Etablissement Fresa, Vaduz, Liechtenstein

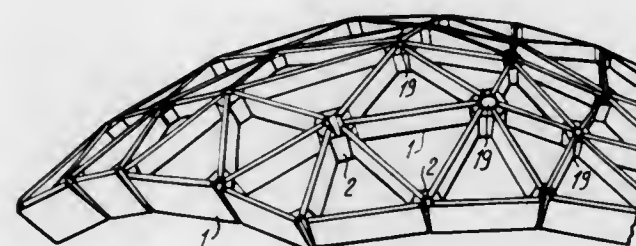
Filed Jan. 24, 1973, Ser. No. 326,273

Claims priority, application Switzerland, Jan. 28, 1972, 1291/72

Int. Cl. B23p 17/00

U.S. Cl. 29—155 R

5 Claims



1. Method of assembling a spherical framework including a plurality of rib members, comprising fastening at least a portion of its rib members to one another at their ends by means of wedge shaped elements, and driving a member of generally

frustoconic shape into the framework at the point of convergence of at least three rib members to render it rigid.

3,857,151

METHOD OF MAKING A RADIATOR CORE

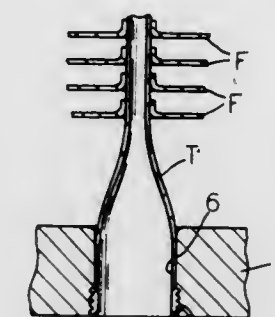
Fred M. Young, and William V. Astrup, both of Racine, Wis., assignors to Young Radiation Company, Racine, Wis.

Filed Oct. 15, 1973, Ser. No. 406,388

Int. Cl. B21d 53/02; B23p 15/26

U.S. Cl. 29—157.3 B

4 Claims



1. The process of making a radiator core having flat tubes with circular cross section ends in complementary holes in a header plate comprising, assembling fins on the flat tubes and securing them thereto, expanding and forming the ends of the flat tubes into circular cross section by pressing a tool into said ends without rotating the tool and without work hardening thereof, forming threads of a size of about 40 threads per inch in said holes of said header plate in which the circular ends are to be inserted, inserting said circular ends in said threads, expanding said circular ends to cause the metal of said ends to be deformed into said threads of said holes and create a fluid tight and solderless joint between said tube ends and said header plate.

3,857,152

TOOTHED COUPLING FOR ROTATABLE MEMBERS

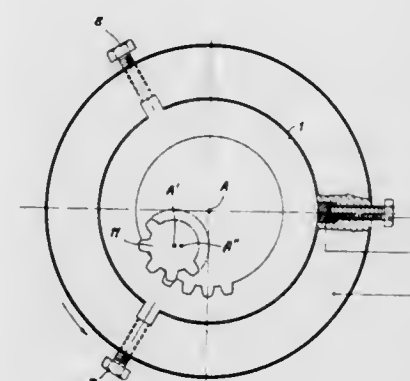
Albin Wolf, Augsburg, Germany, assignor to Zahnradfabrik Renk AG, Augsburg, Germany

Division of Ser. No. 241,550, April 6, 1972, Pat. No. 3,803,872. This application Jan. 2, 1974, Ser. No. 429,764

Int. Cl. B23p 15/14

U.S. Cl. 29—159.2

5 Claims



1. A method of making a gear comprising the steps of: elastically deforming a circular blank to impart a noncircular shape thereto; machining teeth in the deformed blank in a circular array; and restoring said blank to its original shape whereby said circular array of teeth becomes noncircular.

3,857,153

FILM CASSETTE COVER OPENER

Sunichi Takiguchi; Yasuhiko Satoyoshi; Shinji Hamada; Takeshi Nakamura; Sadaaki Koba, and Noboru Shimoda, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

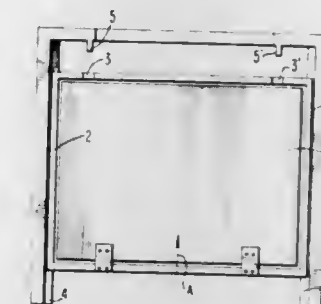
Filed Apr. 19, 1973, Ser. No. 352,818

Claims priority, application Japan, Apr. 19, 1972, 47-39470

Int. Cl. B23p 19/00

U.S. Cl. 29—200 D

10 Claims



1. A cover opener for use with a film cassette having a cover hingedly overlying the side of the cassette, the improvement wherein:

said cover opener comprises guide means for slidably supporting said cassette for movement longitudinally on said guide means and at right angles to the hinge axis and at least one projection carried by said guide means positioned within the path of movement of said cassette and facing the leading end of said cassette opposite that end to which the cover is hinged, and a notch or hole within the leading end of said cassette in alignment with said projection to permit entrance of a cover opening projection.

3,857,154

APPARATUS FOR POSITIONING AN END OF A BENDABLE WIRE-LIKE ARTICLE AT A PREDETERMINED LOCATION ON ANOTHER ARTICLE

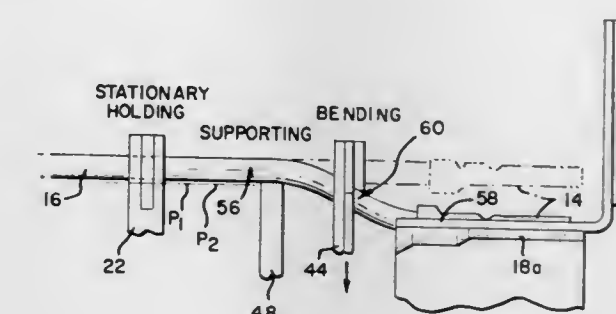
James Woodrow Hammond, Camp Hill, and Eugene Phillip Loomis, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 7, 1973, Ser. No. 367,916

Int. Cl. H01r

U.S. Cl. 29—203 P

9 Claims



1. Apparatus for displacing the free end of a bendable wire-like article to a predetermined location relative to another article; said apparatus comprising:

first and second spaced apart means for supporting spaced apart first and second portions of said wire-like article, said first and second spaced apart portions of the wire-like article being remote from its free end, said free end being disposed above said predetermined location when said wire-like article is supported only by said first and second means; and

positioning means for engaging and moving a third section of said wire-like article to displace its free end to said predetermined location, said third section being located between and located away from said second section and

said free end of the wire-like article, said positioning means including opposed members movable from an initial spaced apart position through an overlapping position to a final operative position, and means operative to move said opposed members towards and away from each other, the parts being so arranged and constructed that the third section of said wire-like article is initially engaged and moved into a position in vertical alignment with said predetermined location as said opposed members are moved from their spaced apart position to their overlapping position, continued movement of said opposed members from their overlapping position to their final operative position moving said third section downwardly to cause the free end to be placed downwardly to said predetermined location.

3,857,155

CORE STRINGING APPARATUS

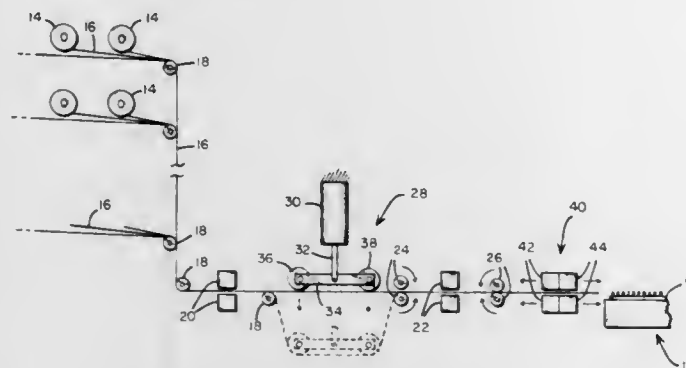
Ronald A. Beck, Bloomington, and Dennis L. Breu, Stillwater, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,256

Int. Cl. H05k 13/04; B23p 19/04

U.S. Cl. 29—203 MM

4 Claims



1. In a machine for threading filaments simultaneously through a plurality of apertured elements of the type including means for holding said elements in at least one row with their apertures aligned, means for supplying a continuous filament for said row; and a pair of drive rollers adapted to frictionally engage said filaments for advancing said filaments into said aligned apertures, the improvement comprising: means cooperating with said rollers for imparting a pulsating step motion to said filaments as they are advanced into said apertures.

3,857,156

METHOD OF MAKING TETRAFLUOROETHYLENE SEALING ELEMENTS WITH HYDRODYNAMIC ACTION

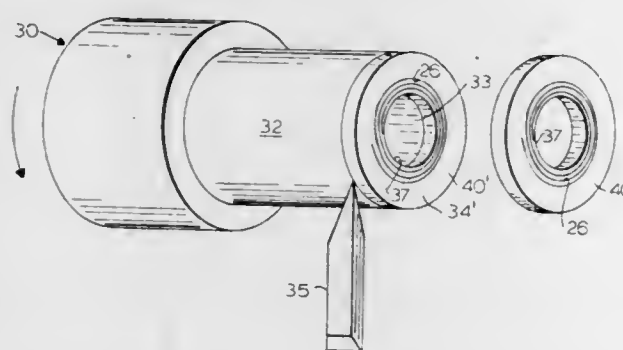
William E. Clark, Chelsea, Calif., assignor to Federal-Mongul Corporation, Southfield, Mich.

Filed Dec. 19, 1973, Ser. No. 426,373

Int. Cl. B23p 17/00

U.S. Cl. 29—417

6 Claims



1. A method for manufacturing an oil seal element from polytetrafluoroethylene and the like from a tubular billet of

polytetrafluoroethylene or the like having an outer cylindrical surface of a desired diameter, a concentric inner cylindrical surface of a desired diameter, and an annular body between said cylindrical surfaces, comprising the steps of:

- facing-off one end wall perpendicular to said cylindrical surface,
- machining the faced end wall to provide a spiral groove leading from the intersection of said wall with said inner cylindrical surface and extending for a desired width,
- slicing said billet at a desired thin distance from said faced and machined end wall to provide a washer having a spiral groove on one surface and to provide a newly faced end wall which is thereafter machined with a spiral groove prior to another slicing, and
- proceeding thusly through said billet to provide a plurality of said washers, each with a spiral groove on one surface.

3,857,157

METHOD OF PRODUCING HOT PRESSED COMPONENTS

Dexter William Smith, and Roland John Lumby, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 4, 1973, Ser. No. 357,278

Claims priority, application Great Britain, May 16, 1972, 22811/72

Int. Cl. B22f 3/24

U.S. Cl. 29—420.5

5 Claims

1. A method of producing a hot pressed component, comprising the steps of:

- i. forming a first, hot pressing die part suitable for only a single hot pressing operation by:
 - a. mixing boron nitride powder with a refractory, non-sinterable powder other than boron nitride and an organic carrier liquid to produce a slurry,
 - b. causing the slurry to flow into the shape of said first die part, and
 - c. removing the organic carrier liquid from the slurry to produce said first die part in the form of a powder compact which is compressible during hot pressing and is of substantially uniform density,
- ii. positioning said first die part together with a second, hot pressing die part within a die cavity and with material to be hot pressed being received between the die parts,
- iii. applying pressure to the die parts at an elevated temperature to hot press the material into the required hot pressed component and simultaneously hot press said first die part, the ratio of the density of said first die part, after hot pressing, to the density of the first die part, prior to hot pressing, being substantially equal to the ratio of the density of the hot pressed component to the density of said material to be hot pressed, and
- iv. separating the die parts from said hot pressed component.

3,857,158

METHOD AND APPARATUS FOR REMOVING CONDENSER TUBES FROM SURFACE CONDENSERS

Dennis W. Costello, 306 Kemerer Dr., McCabe Acres, Greensburg, Pa. 15601

Filed Dec. 19, 1972, Ser. No. 316,584

Int. Cl. B23p 19/02

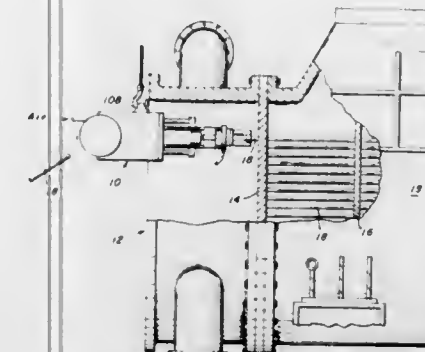
U.S. Cl. 29—427

8 Claims

1. A method of removing a tube from a surface condenser comprising:

- a. loosening said tube;
- b. pulling said tube out of the surface condenser a sufficient distance to allow an external grasping apparatus to obtain a purchase on the tube;
- c. grasping the external surface at the end of said tube with a pulling apparatus;

- d. pulling said tube out of the condenser a predetermined distance;



- e. releasing said tube;
- f. moving the grasping apparatus relative to the tube to obtain a new purchase on the tube; and
- g. repeating steps c through f until the tube has been pulled completely free of the condenser.

3,857,159

PIPE FORMING METHOD

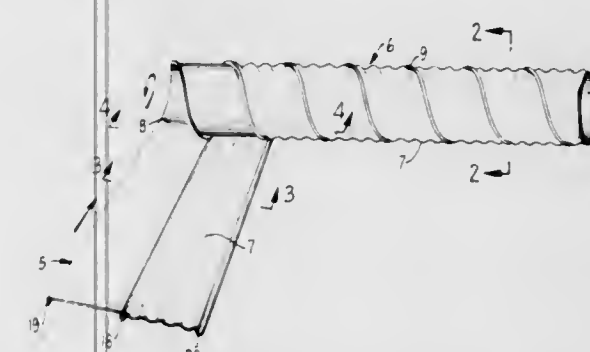
Paul Knight Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.

Filed Sept. 27, 1973, Ser. No. 401,167

Int. Cl. B23p 19/00

U.S. Cl. 29—429

8 Claims



1. A method for forming double wall helical seam pipe from a single elongated strip having parallel side edges, comprising:
 - a. forming first and second pipe seam elements respectively along the opposite said side edge portions of said strip;
 - b. forming a third pipe seam element longitudinally in said strip midway between said first and second seam elements;
 - c. curling said strip into helical convolutions about an axis extending at an oblique angle with respect to the longitudinal axis of said strip such that the strip portion between said first and said third elements and the strip portion between said second and said third seam elements are curved into superposed relationship.

3,857,160

HOT TOP INSTALLATION METHOD

Ferd A. Mueller, Canon City, Colo., assignor to Colorado Refractories Corporation, Canon City, Colo.

Filed Aug. 20, 1973, Ser. No. 390,081

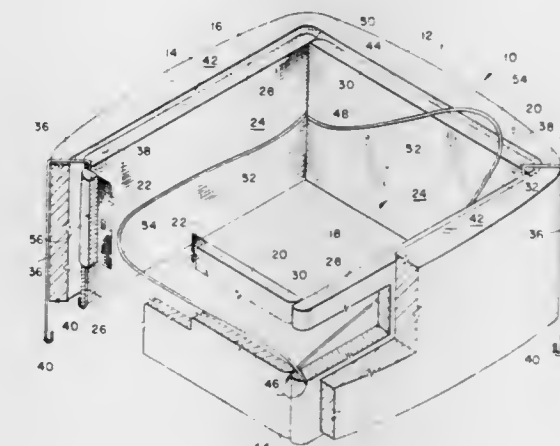
Int. Cl. B21d 39/02

U.S. Cl. 29—463

3 Claims

1. The method of installing a two-piece hot top of the type consisting of a pair of identical foldable refractory panel sub-assemblies within the generally rectangular throat in the hollow neck of an ingot mould which comprises the steps of: placing the foldable joints between panels of the respective panel subassemblies in opposite corners of the mould throat, suspending the subassemblies thus positioned from the rim of the neck bordering the mouth into the throat thereof, unfolding the panels of each panel subassembly to the point where

the free edges of one engage those of the other to define butt joints therebetween, inserting the ends of a pair of spring wire spreaders through the butt joints thus formed and into those corners of the mould throat remote from the ones occupied by the foldable joints, independently bending those portions of each spreader adjacent its midsection inwardly so as to locate the latter sections diagonally opposite one another in position



to enter the foldable joints, and releasing the spreaders into positions such that the midsections thereof engage the inside panel faces at spaced points on opposite sides of the foldable joint while those portions adjacent the spreader ends pivot around the free edges of their respective panel subassemblies and cooperate with said midsections thereof to bias the panels outward into tight face-to-face contact with the mould walls therebehind.

3,857,161

METHOD OF MAKING A DUCTILE HERMETIC INDIUM SEAL

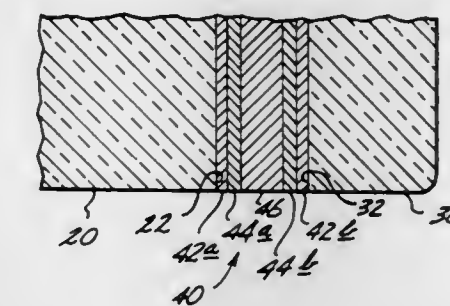
Thomas B. Hutchins, IV, 310 N.W. Brynwood Ln., Portland, Oreg. 97229

Filed Feb. 9, 1973, Ser. No. 331,038

Int. Cl. B23k 31/02

U.S. Cl. 29—472.7

12 Claims



7. A method for forming a ductile hermetic seal between a pair of surfaces, one comprising a vitreous material, and the other a surface wettable by molten indium, said method comprising the subsequent steps of: adhering to said one surface a coating of a platinum group metal, adhering to said coating of said metal a coating of gold, placing the thus-coated surface and said other surface together, and heating them in a reducing atmosphere to a temperature at least equal to the melting point of indium, spreading molten indium along an interface between the heated surfaces, and reducing said temperature below said melting point whereby said indium solidifies, bonding the surfaces together and forming a ductile hermetic seal between them.

3,857,162

METHOD FOR THE PRODUCTION AND/OR TESTING OF WELDED HELICAL SEAM PIPE

Ralf Hoffmann, Dortmund-Solde, and Werner Wennemann, Dortmund-Kirchhorde, both of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Germany

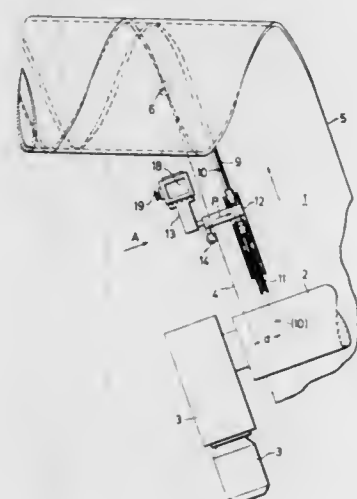
Filed Mar. 14, 1973, Ser. No. 341,281

Claims priority, application Germany, Mar. 15, 1972, 2212382

Int. Cl. B23k 31/02

U.S. Cl. 29—477.3

4 Claims



1. In a method of producing welded helical seam pipe from steel sheet wound into pipe formation, wherein prior to the welding of the wound sheet, an optically scannable reference line is applied to the steel sheet, which reference line extends parallel to and spaced from one of the edges of the sheet, and wherein the welding is effected by applying a first welding seam with a first welding head located within the pipe, and a second welding seam with a second welding head located outside the pipe, the improvement which comprises applying said optically scannable reference line to that face of the sheet which forms the inner surface of the welded pipe, optically scanning said reference line to obtain scanning information and controlling the welding movements of both said first and second welding heads in dependence on said scanning information, said wound sheet, after application of said reference line, being first tack-welded and then transferred to a finish welding station where the welding by means of said first and second welding heads is performed in dependence on said scanning information.

3,857,163

FORMING PRESSURE-WELDED JOINTS

John Alfred Hirschfield; Johannes Franciscus Lablans, and William Shankland, all of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Dec. 13, 1972, Ser. No. 314,666

Claims priority, application Great Britain, Dec. 14, 1971, 58111/71

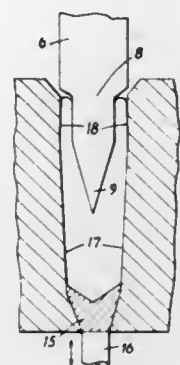
Int. Cl. B23k 31/02

U.S. Cl. 29—482

11 Claims

1. A method of forming a welded joint between aluminium and steel without formation of significant quantities of inter-metallic phases at the steel-aluminium interface which comprises driving a straight-edged steel wedge member into one end of a heated aluminium member located in a restraining die having side walls and a closed end remote from said one end of said aluminium member, the die and aluminium member being so mutually shaped that a clearance is provided initially between the aluminium and the side wall of the die adjacent said one end of the aluminium member to avoid the introduc-

tion of extraneous material from the side surface of the aluminium to the aluminium/steel interface, said wedge member having bare steel surfaces for direct contact with aluminium and further having a wedge-shaped edge portion and a shank portion, while maintaining the shank portion spaced from the



die walls, and extruding aluminium of said aluminium member into the space between the die walls and the shank during the driving of the wedge member under conditions arranged to develop at the steel-aluminium interface, a pressure sufficient to cause pressure welding of aluminium to steel without fusion of the aluminium.

3,857,164

METHOD FOR BRAZING RADIATORS MADE OF ALUMINUM

Andre Chartet, Hauts de Seine, France, assignor to Societe Anonyme des Ueines Chausson, Asnieres, France

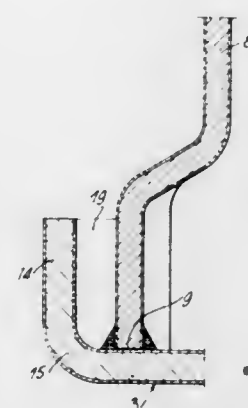
Filed Aug. 4, 1972, Ser. No. 278,085

Claims priority, application France, Aug. 6, 1971, 71.28868; Mar. 17, 1972, 72.09446

Int. Cl. B23k 1/20, 31/02

U.S. Cl. 29—483

6 Claims



1. A method for brazing radiators made of aluminum of which the parts are at least partly covered with a brazing film, comprising the steps of shaping the parts, providing said parts with contacting portions along the brazed junction to be made, said contacting portions comprising a substantially flat surface of one of the parts and a substantially linear portion of the other part, assembling the parts in relationship for which the contacting portions are substantially T-assembled in cross-section thus delimiting between said parts a continuous capillary passageway the width of which corresponds substantially to said linear portion, depositing a liquid flux only on the outside of the assembled parts whereby said flux is drawn through said continuous capillary passageway and in the vicinity thereof and wets only through capillary action a very small inner portion of said parts in the vicinity of said capillary passageway within the assembled parts, dehydrating the flux, heating the radiator to the melting temperature of the flux, whereby said parts are fluxed only on said portions wet by said flux, and comprising the further step of delimiting on said parts in the immediate vicinity of the brazed connections to be made narrow canals defined by the outer walls of the parts,

3,857,167

METHOD FOR CENTRIFUGALLY CASTING AN ANNULUS OF METAL ABOUT A HUB

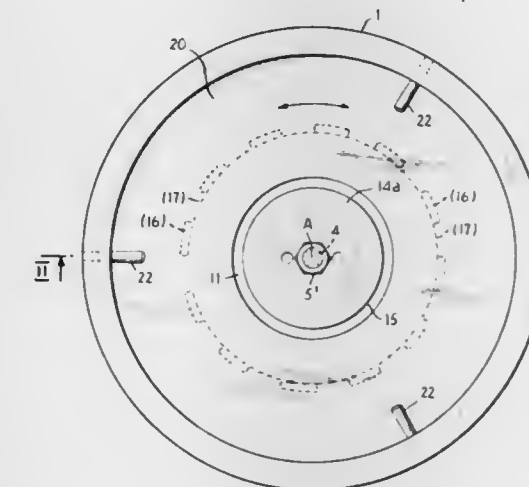
Willi Schmitz, Andernach/Rhine, Germany, assignor to H. Beyer KG Mittelrheinische Metallgiesserei, Andernach, Germany

Division of Ser. No. 254,365, May 18, 1972, Pat. No. 3,823,764. This application Nov. 6, 1973, Ser. No. 413,226

Int. Cl. B22d 31/00

U.S. Cl. 29—527.6

9 Claims



3,857,165

WELDING ALUMINUM

William D. Vernam, New Kensington, and William A. Anderson, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 4, 1973, Ser. No. 357,199

Int. Cl. B23k 35/24

U.S. Cl. 29—504

24 Claims

1. A method of fusion welding structural members of an aluminum alloy parent metal consisting essentially of 0.8 to 7% copper, not more than 3% magnesium, 1.2% silicon, 1.2% manganese, 0.7% iron, 0.15% titanium, 0.15% vanadium, 0.25% zirconium, 0.25% zinc, 0.1% chromium, 0.02% cadmium, 0.05% others each, and 0.15% others total as impurities, balance aluminum, comprising forming a welded joint between said members with a filler metal consisting essentially of 5 to 7% copper, 1 to 2.5% magnesium, and 0.1 to 3.3% silicon, not more than 0.25% zirconium, 0.15% titanium, 0.8% manganese, 0.7% iron, 0.02% vanadium, 0.25% zinc, 0.1% chromium, 0.05% others each, and 0.15% others total as impurities, balance aluminum.

3,857,166

METHOD OF RIVETING A PULL TAB TO A CAN TOP

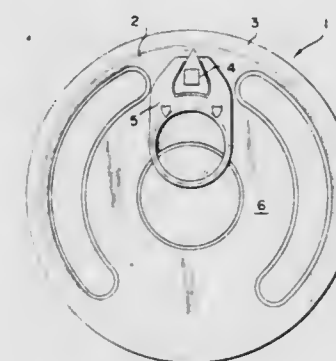
Christian Gaillard, La Fleche, France, assignor to Cebal GP, Paris, France

Filed Oct. 12, 1972, Ser. No. 296,964

Int. Cl. B21d 39/00; B23p 11/00

U.S. Cl. 29—509

3 Claims



1. The method of nonrotatably securing a prehension member to the removable portion of a thin walled metallic container opening comprising the steps of forming a spherical excrescence in the removable portion without substantially reducing the thickness thereof, reducing said excrescence in at least one further step to a substantially cylindrical shape, shaping without substantial thinning the cylindrical walls of said excrescence to define a substantially square walled rivet configuration, positioning a complementary opening in said prehension member over said square walled excrescence and deforming the portion of said excrescence extending through said prehension member to nonrotatably stake said prehension member to said removable portion of said container by said deformation of said rivet.

3,857,168

SQUARE CYLINDRICAL PACKAGED SEMICONDUCTOR DEVICE

Shinzo Anazawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Division of Ser. No. 299,855, Oct. 24, 1972, Pat. No.

3,801,881. This application Oct. 9, 1973, Ser. No. 404,730

Claims priority, application Japan, Oct. 30, 1971, 46-85967

Int. Cl. B01j 17/00

U.S. Cl. 29—583

5 Claims



1. A method of making a packaged semiconductor device including the steps of metallizing a principal surface of a sheet-like insulator member to provide a plurality of conductors electrically insulated from each other on said one principal surface, providing conductive means through said member to connect said metallization to an opposite surface of said member, thereafter hermetically sealing spacer means onto said one principal surface to define a plurality of areas on said

one principal surface with a lesser plurality of portions of said conductors appearing in each of said areas, thereafter separating said metallized member into pieces to provide individual assemblies each having one of said areas and placing a semiconductor element on a first predetermined one of said conductor portions with the electrodes of said semiconductor element being electrically connected to said conductor portions, and thereafter attaching a top member to the free end of said spacer means of each of said assemblies to provide a packaged semiconductor device, said spacer means being a sheet-like member made, prior to said hermetically sealing step, of the same material as said insulator member into a lattice-like configuration having laths of a substantially constant width crossing substantially at right angles to provide columns and rows of apertures defining said areas, said metallized member and said spacer means being separated into pieces along substantially the center lines of said laths.

3,857,169

METHOD OF MAKING JUNCTION DIODES

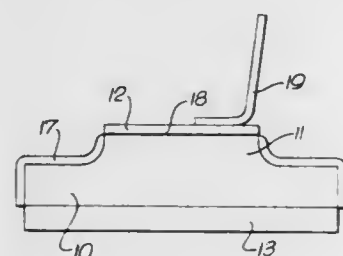
Yuji Okuto, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed June 21, 1973, Ser. No. 372,310

Int. Cl. H01L 7/48

U.S. Cl. 29—590

5 Claims



1. A method of making a diode with a Schottky barrier rectifying contact, including the steps of:
depositing a metal on a portion of a surface of a semiconductor; and
growing a semiconductor oxide layer on the semiconductor surface about said portion and simultaneously forming an alloy of the metal and semiconductor at said portion producing the rectifying contact at the metal and semiconductor alloy junction.

3,857,170

METHOD AND APPARATUS FOR POSITIONING COMPONENTS OF DYNAMOELECTRIC MACHINE FOR ASSEMBLY

Jesse A. Stoner, Dekalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 14, 1973, Ser. No. 397,297

Int. Cl. H02K 15/00

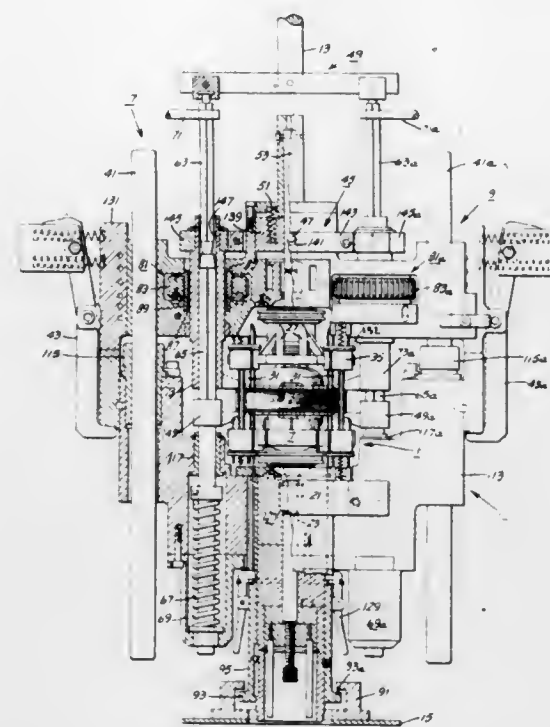
U.S. Cl. 29—596

76 Claims

1. A method of positioning components of a dynamoelectric machine for assembly and compensating for an out-of-square stator comprising the steps of:

- supporting a rotatable assembly of the dynamoelectric machine in at least one end frame thereof and having the stator disposed about the rotatable assembly;
- displacing a pair of means for clamping the stator into engagement with a high portion and a low portion on an end of the stator; and

- moving the stator and the clamping means conjointly generally coaxially with the axis of the rotatable assembly



toward a position for assembly without skewing the stator with respect to the axis.

3,857,171

METHOD OF DRAWING IN THE STATOR WINDING OF AN ELECTRIC MOTOR

Egon Lund, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

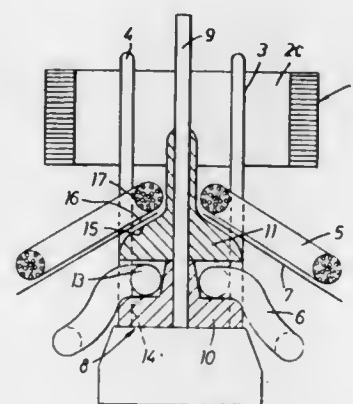
Filed Nov. 12, 1973, Ser. No. 415,120

Claims priority, application Germany, Nov. 11, 1972, 2255345

Int. Cl. H02K 15/00

U.S. Cl. 29—596

6 Claims



1. A method of drawing in the stator winding into stator grooves of an electric motor in which winding strands from two different coils are superposed in said grooves and their end windings are separated by insulating foils of insulating inserts which foils are connected in pairs by means of insulating strips of said insulating inserts which are likewise fitted in said grooves, the coils being arranged on pins which extend between said grooves at the inner periphery of the stator, and thereafter the head portions of the coils disposed within the inner periphery are moved through the stator by means of axial forces applied at an end face, and the adjacent coil parts are at the same time held at a diameter which is at least equal to the inside diameter of the stator, wherein all the coils, with the insulating inserts interposed, are arranged in at least two layers on the pins in such manner that on the one hand winding strands in the same one of said grooves and from different coils and, on the other hand, insulating strips and in each case at least one winding strand are superposed, and in that the

axial forces are applied not only at an end face to the head ends of the coils of the first layer, but also on the end winding insulating foils disposed within the inner periphery of the stator.

3,857,172

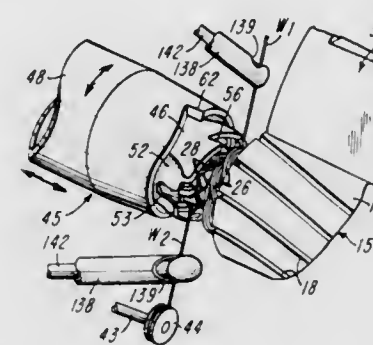
APPARATUS AND METHOD FOR WINDING ARMATURES

Robert D. George, Waynesville; Alvin C. Banner, Kettering, and George W. Morrison, Dayton, all of Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Mar. 27, 1972, Ser. No. 238,246

Int. Cl. H01r 43/00

U.S. Cl. 29—597



1. In apparatus for winding coils of wire on an armature core mounted on a shaft supporting a commutator having tangs to which armature wire leads are attached to the commutator, the combination of an inner sleeve surrounding the commutator to shield the tangs, an outer sleeve surrounding said inner sleeve, at least one wire shearing surface on said inner sleeve, at least one wire shearing surface on said outer sleeve, said sleeves being rotatable between a first position where a wire lead extends from a commutator tang between said first and second shearing surfaces and a second position to effect shearing of the wire lead by said first and second shearing surfaces, and power operated means for producing relative rotative movement of said sleeves between said first and second positions.

3,857,173

METHOD OF PRODUCING A COMPOSITE SUPERCONDUCTOR

Kyoji Tachikawa, and Yuji Yoshida, both of Tokyo, Japan, assignors to The Director of National Research Institute for Metals, Tomoyoshi, Kawada, Tokyo, Japan

Continuation of Ser. No. 112,748, Feb. 4, 1971, abandoned.

This application June 22, 1973, Ser. No. 372,693

Claims priority, application Japan, Feb. 9, 1970, 45-10730

Int. Cl. H01v 11/14

U.S. Cl. 29—599

7 Claims



1. A method of producing a superconductor element having an outer protective layer, wherein said element includes a superconductor selected from the group consisting of V_3Ga and V_3Si superconductors, which comprises the steps of: providing an elongated composite member having an outer sheath comprising a material selected from a first group of

materials consisting of copper, silver and a copper-silver alloy, each of them containing 0.1 to 30 atomic percent gallium or 0.1 to 10 atomic percent silicon, and having a core material encompassed by said outer sheath and selected from a second group of materials consisting of a vanadium alloy containing 0.1 to 10 atomic percent titanium, zirconium or hafnium, and subjecting said composite member to a heat treatment to provide said superconductor of V_3Ga or V_3Si having a said protective layer comprising said material selected from said first group.

3,857,174

METHOD OF MAKING VARISTOR WITH PASSIVATING COATING

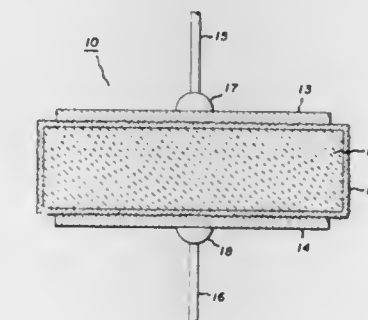
John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,334

Int. Cl. H01c 1/14, 17/00

U.S. Cl. 29—621

7 Claims



1. A method for manufacturing a varistor comprising the steps of:

- providing a body portion consisting essentially of a metal oxide and a relatively small portion of a reaction product obtained by melting together a plurality of preselected additives;
- applying a passivating coating to said body portion, said coating comprising a small quantity of the reaction product; and
- heating said body portion with said coating thereon.

3,857,175

METHOD OF MANUFACTURING REED SWITCHES WITH OXIDIZED RHODIUM CONTACTS

Toshiki Yokokawa and Chihiro Kawakita, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 327,098, Jan. 26, 1973, Pat. No. 3,813,508. This application Dec. 5, 1973, Ser. No. 421,788

Int. Cl. H01h 11/00

U.S. Cl. 29—622

3 Claims



1. A method of manufacturing a reed switch comprising the steps of forming rhodium contacts on leads, oxidizing said rhodium contact and sealing said leads with said oxidized rhodium contacts in a sealed envelope.

3,857,176

KNIFE WITH A RETRACTABLE BLADE

Michel Quenot, Besancon, France, assignor to Stanley-Mabo, Besancon, France

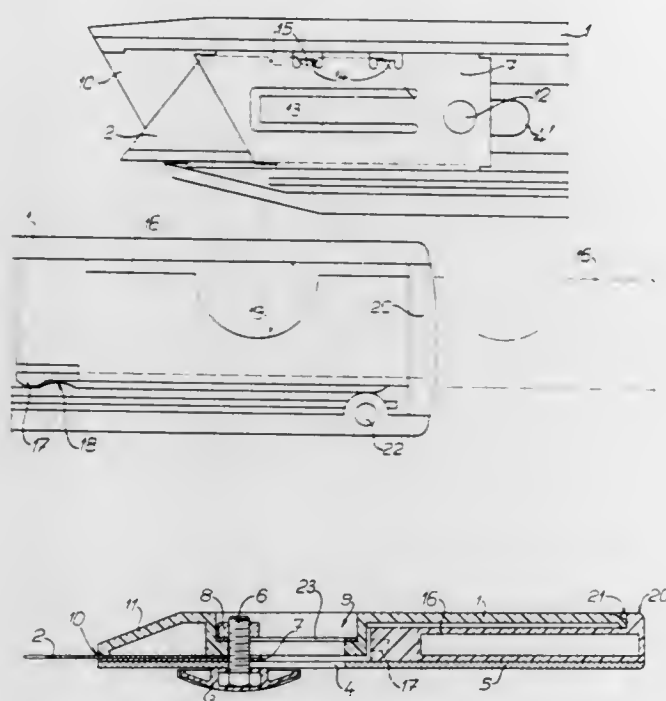
Filed Dec. 10, 1973, Ser. No. 423,084

Claims priority, application France, Dec. 11, 1972, 72.44004

Int. Cl. B26b 1/08

U.S. Cl. 30-162

5 Claims



1. A knife handle comprising a hollow elongate shell, a rigid elongate side plate, a blade-carrying carriage movably mounted between the shell and side plate, and means for gripping the carriage between the shell and side plate in selected positions along the handle, said carriage gripping means including: means defining registering elongate slots along the side plate and the shell, the slot in the shell communicating with an enlarged elongate rail-forming channel towards the outer face of the shell, a screw having an enlarged head bearing against the side plate and a shank passing through said slots into said channel, a nut threadably engaged on said shank, the nut being held in said channel for sliding movement therealong but against rotation relative to the shell, and means defining an aperture in the carriage for receiving said screw, said enlarged head being manually rotatable between a first position in which it can be moved bodily with the screw, nut and carriage by sliding of said shank along said slots, and a second position in which it is fixed with the carriage firmly gripped between the shell and plate in any given position of said shank along said slots, said carriage including blade engaging means for movement of a blade with the carriage and automatic blade releasing means operably responsive upon movement of said head toward and beyond said first position to release the blade from said blade engaging means without relative angular movement of said shell and said side plate.

3,857,177

DEHIDING APPARATUS

Ralph Karubian, 2001 W. Gage Ave., Los Angeles, Calif. 90047, and Elias D. Quintana, Huntington Beach, Calif., assignors to said Karubian, by said Quintana

Filed Apr. 13, 1973, Ser. No. 350,991

Int. Cl. B26b 19/12

U.S. Cl. 30-216

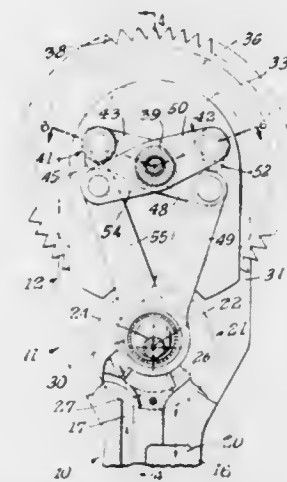
4 Claims

1. Dehiding apparatus in the form of a hand tool comprising, in combination:

an elongated handle section having two longitudinal, side-by-side passages, one for passing inlet compressed air to the forward end of said section and the other for passing exhaust air received by said forward end, to and out of the

rearward end of the handle, said handle being provided with a normally closed valve across the passage passing the inlet air and having a control lever operable by the hand that grips the handle section for opening said inlet passage to flow of compressed air forwardly, the exhaust air passage being constantly open,

an intermediate section extending from the forward end of the handle section provided with a transversely disposed air motor connected to receive compressed air from the above-mentioned inlet passage and discharge exhaust air into the mentioned exhaust passage, said motor having a rotor disposed on an axis transverse to the longitudinal extent of the handle section and provided at one end with and eccentric cam having a rotational collar thereon,



an elongated forwardly extending forward section having a transverse axle parallel to the axis of the air motor, a pair of cutter discs mounted to rotate on said axle, means to operatively connect said rotational collar and said discs comprising lever means mounted for oscillating movement on said axle and having arms connected to said discs outwardly of said axle, and connecting rod means engaged at one end with the above-mentioned rotational collar, and at the other end with the mentioned lever means, whereby rotational movement of the rotor of the air motor produces opposite oscillatory movement of the shearing discs.

3,857,178

DERMATONE CUTTING BLADE ASSEMBLY

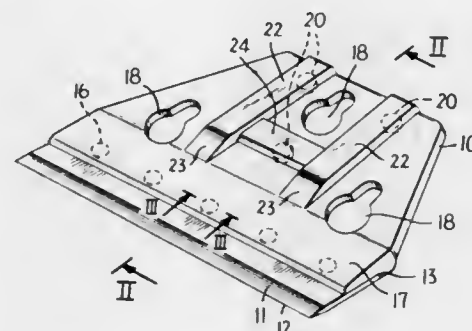
William Henry Stevens, II, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 23, 1973, Ser. No. 362,956

Int. Cl. B25g 3/36

U.S. Cl. 30-344

4 Claims



1. A dermatone cutting blade assembly comprising a support member of moldable plastic and a blade element of metal having a forward cutting edge permanently secured to a forward edge part of said member, said member having raised ribs on its upper surface extending rearwardly transverse to said cutting edge, said ribs having ramps facing toward the cutting edge inclined upwardly and rearwardly to guide the

3,857,179

CHAIN SAW

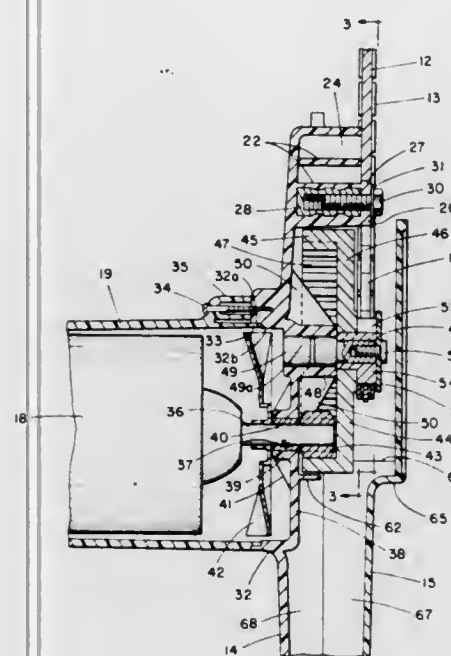
Eugene J. Haupt, Flossmoor, and Robert M. Shymkus, Country Club Hills, both of Ill., assignors to Desa Industries, Inc., Cockeysville, Md.

Filed Apr. 22, 1974, Ser. No. 462,975

Int. Cl. B27b 17/08

U.S. Cl. 30-381

11 Claims



1. In a chain saw having a housing, a guide bar mounted on the housing, a saw chain extending around the guide bar and slidably supported thereby, and power means for driving the chain around the guide bar, the improved drive means for connecting the power means and the chain comprising a generally cup-shaped first gear rotatably mounted in the housing, the first gear having a cylindrical side wall and an end wall having inner and outer surfaces, the side wall of the first gear having gear teeth on the inside surface thereof, a sprocket mounted on the outer surface of the end wall of the first gear and drivingly engaging the chain, a drive shaft connected to the power means for rotation thereby, a second gear mounted on the drive shaft and meshing with the gear teeth of the first gear whereby rotation of the drive shaft rotates the sprocket and drives the chain around the guide bar.

3,857,180

CHAIN SAW INERTIA CLUTCH ASSEMBLY

James L. Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles

Filed Mar. 22, 1973, Ser. No. 343,978

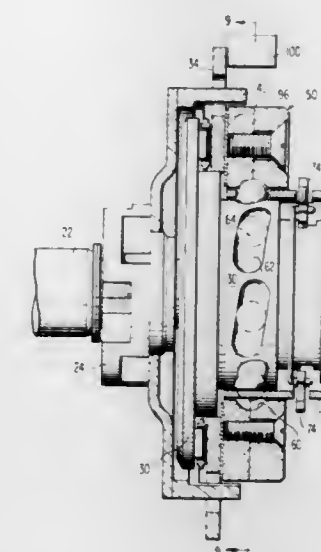
Int. Cl. B27b 17/10; F16d 43/24

U.S. Cl. 30-383

41 Claims

1. A chain saw comprising:
a housing including manual gripping means;
an internal combustion engine carried by said housing;
a guide bar connected to and projecting from said housing;
a drive wheel rotatably mounted adjacent an inner end of said guide bar;
an endless cutter chain entrained around said bar and said drive wheel;
a drive train for drivingly interconnecting the engine to the drive wheel to drive said cutter chain;
said drive train including engine-driven rotary means;
inertia clutch means operably connected to the drive train and comprising:
inertia means drivingly coupled to said rotary means and being axially displaceable relative to said rotary means into a clutching posture in response to acceleration of said rotary means relative to said inertia means, and into a declutching posture in response to deceleration of said rotary means relative to said inertia means; and

restraining means operably connected to said inertia means and being responsive to operation of said engine below a predetermined speed to restrain said inertia means



from axial movement into said clutching posture, and being responsive to operation of said engine above the predetermined speed to permit axial movement of said inertia means into said clutching posture.

3,857,181

DENTAL SHIELD

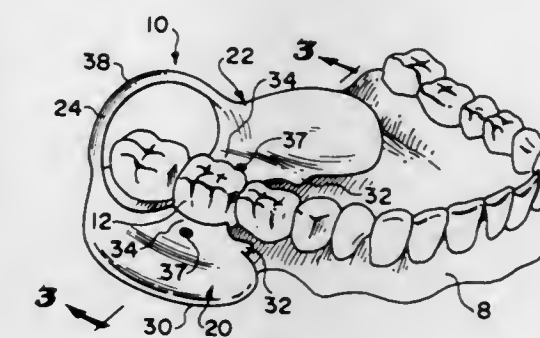
Bernard B. Rappaport, 179 E. Lake Shore Dr., Chicago, Ill. 60611

Filed July 26, 1973, Ser. No. 382,822

Int. Cl. A61c 5/12

U.S. Cl. 32-36

8 Claims



1. A unitary one-piece dental shield designed for removable attachment to a selected molar or bicuspid within the oral cavity of a human being, said shield being formed of resilient material and comprising a pair of forwardly disposed, spaced apart, shallow, dished, wing-like portions of relatively small sheet-like thickness and an interconnecting rearwardly disposed, upwardly arched and rearwardly and upwardly inclined bight portion, said wing-like portions being substantially identical in size and shape but being substantial mirror images of each other, the opposite ends of said bight portion being connected to the rear edges of said wing-like portions, each wing-like portion having a generally horizontal bottom wall from which there extends outwardly and upwardly an inclined side wall portion having an outer upper edge which is curved through and of involute contour with progressively increasing radii in a rearward direction the horizontal bottom walls of said wing-like portion lying substantially in the same horizontal plane and presenting opposed edges adapted to straddle the tooth to which the shield is attached and, by a clamping action incident to flexion of the bight portion, fixedly attach the dental shield to such tooth, the over-all height of said bight portion being not appreciably greater than the over-all height of said wing-like portions.

3,857,182

APPARATUS FOR INSPECTION PURPOSES, INTENDED TO BE MOVED THROUGH A PIPELINE

Arnoldus J. Van Riemsdijk, and Waldo van den Berg, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

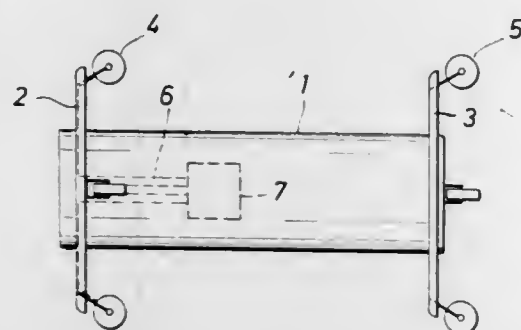
Filed Sept. 6, 1973, Ser. No. 394,903

Claims priority, application Netherlands, Oct. 30, 1972, 7214646

Int. Cl. G01b 3/12; G01m 3/28

U.S. Cl. 33-141 G

5 Claims



1. In a pipeline leak detecting instrument of the type wherein an instrument is transported through the pipeline by fluid flow and the distance the pig travels is determined by a measuring wheel that contacts the wall of the pipeline and produces an electrical signal related to the rotation of the wheel, the improvement comprising:

- at least two measuring wheels, said wheels being disposed on opposite sides of said pig; and
- an auctioneering circuit, said circuit being coupled to both of said measuring wheels to select for recording on a single recorder the signal from the measuring wheel producing the largest signal.

3,857,183

MOBILE TRACK SURVEY APPARATUS

Erna Plasser; Josef Theurer, both of Johannesgasse 3, Vienna, Austria (A-1010), and Franz Eglseer, Kleinreith Nr. 32, Ohlsdorf, Austria (A-4694)

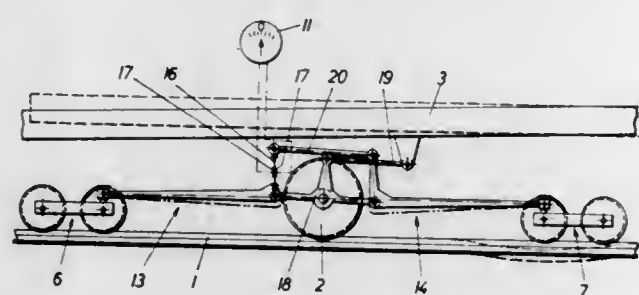
Filed July 9, 1973, Ser. No. 377,453

Claims priority, application Austria, Aug. 3, 1972, 6692/72

Int. Cl. B61k 9/00

U.S. Cl. 33-174 R

9 Claims



1. A mobile apparatus for surveying the vertical position or warpage of the rails of a track whereon the apparatus is adapted to run, comprising

1. a frame,
2. undercarriages supporting the frame for movement on the track,
3. three rail sensing means spaced apart in the direction of track elongation and being vertically movable with respect of the frame for surveying at least one of the track rails,
 - a. at least the intermediate one of the sensing means being constituted by one of the undercarriages,
4. connecting elements extending substantially in the direction of track elongation and linking each of the two other

sensing means to the intermediate sensing means constituted by the one undercarriage,

5. universal joint means connecting the connecting elements to the rail sensing means,
6. transducer means converting any relative movement of the connected rail sensing means in respect of each other into an electrical signal proportional to the relative movement, and
7. recording means connected to the transducer means for indicating the error signal.

3,857,184

MASK FOR MANUFACTURING MEMORY MATRICES

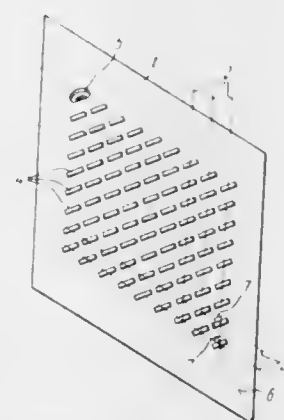
Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd, 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Nov. 12, 1973, Ser. No. 415,165

Int. Cl. G06f 13/06; G01b 5/14

U.S. Cl. 33-174 G

1 Claim



1. A mask for manufacturing memory matrices comprising a plate with slots for toroidal pole cores to be disposed therein; said slots being arranged upon said plate in parallel rows intersecting other parallel rows of slots at an angle other than a substantially 90° angle, the intersecting rows of slots making up a parallelogram; said slots at the vertices of the opposed acute angles of said parallelogram being arranged in such a way that the axis of each pole core disposed in said slots is positioned parallel to the direction of the bisectors of said acute angles.

3,857,185

APPARATUS FOR INSPECTING THE ACCURACY OF COMPLEXLY CONTOURED PRECISION SURFACES

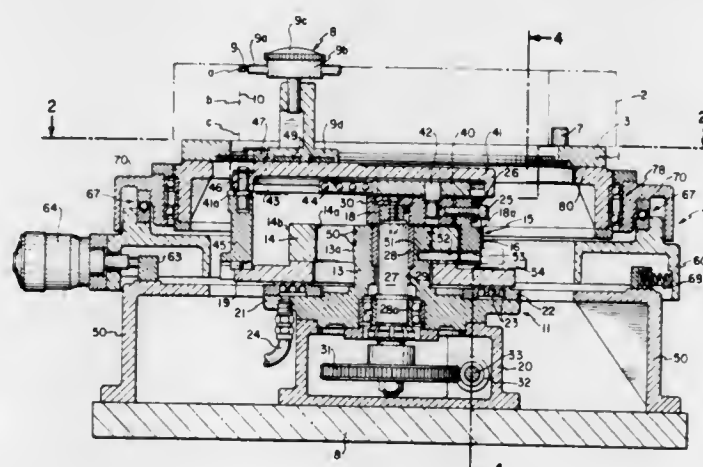
Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed July 12, 1973, Ser. No. 378,438

Int. Cl. G01b 5/20

U.S. Cl. 33-174 P

16 Claims



1. Apparatus for inspecting a surface on a workpiece having

3,857,187

MECHANICAL MOTION DEVICE

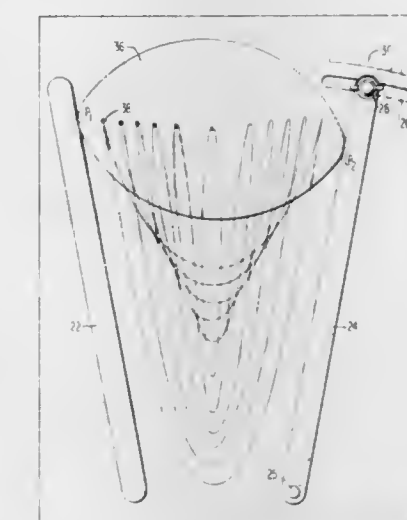
Preben W. Jensen, 21 Southside Ave., Sommerville, N.J. 08876, and Ole R. Jensen, 126 Nottingham St., Montvale, N.J. 07645

Filed Oct. 8, 1970, Ser. No. 79,107

Int. Cl. B43I 11/00

U.S. Cl. 33-27 L

6 Claims



a contour of changing radius of curvature along said surface, said apparatus comprising:

- a. a frame;
- b. a workpiece supporting table mounted on the frame;
- c. indicator means including a sensing member engaging along the surface of the workpiece to be inspected at a predetermined point lying along a predetermined line extending normal to the workpiece surface at said point, said sensing member being movable along said predetermined line in response to a positional variation in the surface of the workpiece to be inspected from a predetermined known contour; and
- d. motion generating means mounting the indicator means for movement relative to the workpiece surface along a path corresponding to said predetermined contour, said generating means including:
 2. a pair of cooperatively engaging members mounted for relative movement with respect to each other with the indicator means mounted on one of said members for movement along the path corresponding to said predetermined known contour as said members move relative to each other, neither of the contacting surfaces of said members alone having a contour corresponding to said predetermined contour,
 2. drive means for moving said members relative to each other, and
 3. control means for continuously holding the sensing member for movement along said predetermined line during movement of the indicator means along said path to sense positional variations in the actual contour of the workpiece surface.

3,857,186

METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF A SKI BINDING ON A SKI IN ACCORDANCE WITH THE SIZE OF A SKIER'S BOOT

Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Nancy, France

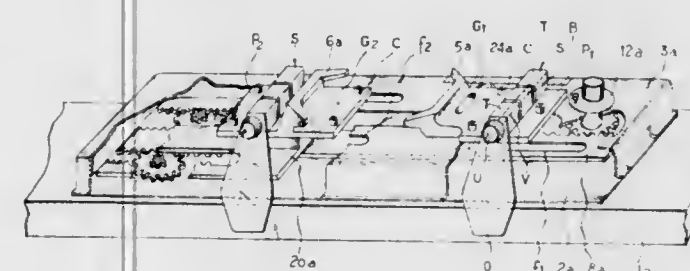
Filed Sept. 7, 1972, Ser. No. 287,072

Claims priority, application France, Sept. 8, 1971, 71.32449

Int. Cl. B43I 9/08; A63c 9/00

U.S. Cl. 33-192

14 Claims



1. A templet device for drilling a ski in order to locate along the longitudinal axis of the ski the positions for securing to the ski, front and rear parts of a safety ski binding relative to a reference position carried by the ski and corresponding to a standard ski boot, whatever the size of the ski boot, said device comprising:

- a housing carrying clamping means for detachably securing said housing on said ski, said housing having a longitudinally elongated slot;
- a front plate and a rear plate engaged in said slot of said housing and slidable therein, said front and rear plates having drill jigs;
- a reverse drive mechanism located in said housing and connecting said front and rear plates for moving said plates along the longitudinal axis of the ski in opposite directions; and
- a single control means acting on said drive mechanism for moving said plates.

3,857,188

CALCULATING INCLINOMETER FOR LEVELLING RECREATION VEHICLES

Jack B. Foster, Anaheim, and Jack F. Antes, Tustin, both of Calif., assignors to Super Seer Corporation, Evergreen, Colo.

Filed Feb. 13, 1974, Ser. No. 441,949

Int. Cl. G01c 9/28

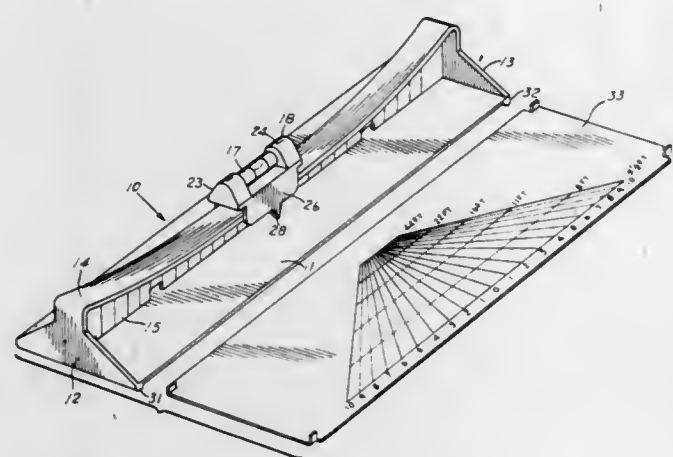
U.S. Cl. 33-388

8 Claims

1. A calculating inclinometer for levelling recreation vehicles, such as pickup campers, trailers, mobile homes or the like, the levelling device comprising:

- a. mounting means arranged to be positioned on said vehicle, said mounting means having a planar base member and an arcuate concave slide rail mounted in spaced relation above said base member;
- b. slide means inclusive of bubble level indicator means arranged for slidable movement along said rail, said slide

means having depending pointer means disposed toward said flat base member, and
c. scale support means having indicia imprinted thereon comprising an elevational correction scale and a length scale, said support means being arranged to be slidably moved over said flat base member and below said indica-



tor pointer means, said movement being perpendicular to said movement of said slide means and serving to position a portion of said length scale adjacent to said pointer in order to indicate the elevational correction for a selected length of said vehicle when said slide means is slidably moved along said rail so that the bubble level indicates a level position.

3,857,189

DEVICE FOR DRYING AND FIXING COPYING MATERIAL

Hajime Katayama; Hiroshi Nitanda, and Koichi Miyamoto, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

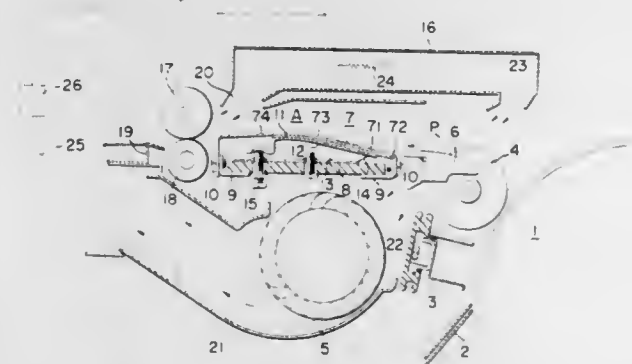
Filed May 14, 1973, Ser. No. 359,626

Claims priority, application Japan, May 19, 1972, 47-49719; July 5, 1972, 47-66648; July 5, 1972, 47-66649; June 5, 1972, 47-66294

Int. Cl. H05b 1/00; F26b 3/18

U.S. Cl. 34-95

6 Claims



1. A drying-fixing device for a copying material bearing a visualized image thereon after development, comprising a heat plate having a convex surface portion on its upper surface for improving the contacting pressure of the copying material moving on said upper surface of the heat plate, plate heater means disposed on the back side surface of said heat plate, adjustably mounted compressing means engageable with said plate heater means for bringing said plate heater means into uniform and intimate contact with the back side surface of said heat plate, and means for transmitting the copying material from the liquid developing means to tray means through said heat plate.

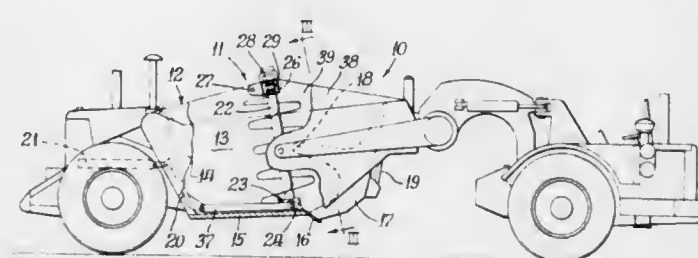
3,857,190
AUGER SCRAPER AND EJECTOR SYSTEM
James E. Gee, Washington, and Robert N. Stedman, Chilli-
cothe, both of Ill., assignors to Caterpillar Tractor Co.,
Peoria, Ill.

Filed Oct. 1, 1973, Ser. No. 402,345

Int. Cl. E02f 3/62

U.S. Cl. 37-8

12 Claims



1. A self-loading auger scraper comprising
a bowl having a pair of laterally spaced and vertically dis-
posed sidewalls, a generally horizontally disposed floor
connected between said sidewalls and a cutting edge
secured to a forward end of said floor,
a generally vertically disposed ejector, extending between
said sidewalls, normally positioned at a rearward end of
said bowl,
actuating means for selectively moving said ejector from the
rearward end towards an open, forward end of said bowl,
an auger rotatably mounted in said bowl and having its
upper end pivotally mounted thereon for swinging move-
ments from a normal generally vertically disposed posi-
tion, whereat a lower end of said auger is positioned
adjacent to said cutting edge,
means for rotating said auger, and
linkage means pivotally interconnected between said eje-
ctor and said auger for automatically pivoting said auger to
move the lower end thereof upwardly and forwardly
towards the forward end of said bowl.

3,857,191

VISUAL-AUDIO DEVICE

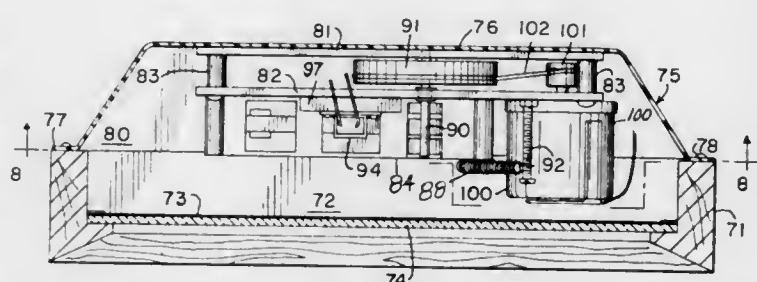
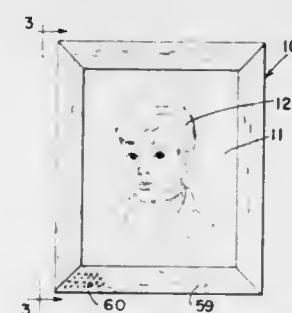
George P. Sadorus, Decatur, Ill., assignor to Talkies U.S.A.,
Inc., Argenta, Ill.

Continuation-in-part of Ser. No. 113,564, Feb. 8, 1971,
abandoned. This application Nov. 20, 1972, Ser. No. 307,837

Int. Cl. G09f 27/00

U.S. Cl. 40-28.1

2 Claims



1. A personalized visual-audio recording of a particular
person, comprising, a combination picture frame and housing
having picture-receiving frame at the front and a rear wall, a
picture of said person mounted facing forward in said frame,

a mounting plate supported within said housing in spaced
parallel relation with respect to said picture and rear wall, and
sound producing means within said housing for reproducing
utterings made by said person, comprising, a tape cartridge
pivotally mounted flatwise on the front side of said mounting
plate and containing a magnetic tape on which said utterings
are recorded and a drive pulley adapted to be driven by fric-
tional engagement with a fly wheel shaft, an electric motor
mounted on the front side of said mounting plate and having
a drive shaft projecting rearwardly therefrom, a pulley
mounted on the rearward end of said motor drive shaft, a fly
wheel mounted on a fly wheel shaft journaled between said
rear wall and said mounting plate and having a portion fric-
tionally engageable with said cartridge drive pulley, spring
means biasing said cartridge toward said fly wheel shaft and
said cartridge drive pulley into driving engagement with said
shaft, a tape pickup head mounted on the front side of said
mounting plate in signal pickup engagement with said tape, a
speaker mounted on said rear wall to one side of said mount-
ing plate, amplifier means mounted on said planar rear wall to
one side of said mounting plate, a switch mounted on said
housing, electrical conductor means interconnecting said
switch, motor, pickup head and amplifier in circuit relation-
ship with a current source.

3,857,192

DISPLAY DEVICE

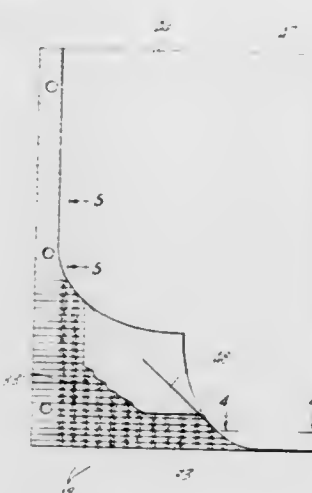
Benjamin R. Mascolo, deceased, late of Brownsville, Tenn. (by
Peter R. Mascolo, executor), assignor to Kleer-Vu Indus-
tries, Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,327

Int. Cl. G09f 1/10

U.S. Cl. 40-158 R

8 Claims



1. A composite sheet consisting essentially of a layer of
board having two sides and at least one layer of flexible, trans-
parent film, said film being releasably adhered to a first side
of the board by a plurality of lines of pressure sensitive adhe-
sive, said lines of adhesive being intersected by a plurality of
grooves formed in the board and formed in the adhesive lines
effective to create a plurality of operative adhesive points and
a plurality of inoperative adhesive points, wherein the opera-
tive adhesive points are co-planar in a first plane and the
inoperative adhesive points are co-planar within a second
plane offset from the first plane, and wherein said inoperative
adhesive points form a controlled and uniform spread of adhe-
sive within said grooves extending beyond said operative
adhesive points and said operative adhesive points form a
controlled and uniform pattern.

3,857,193

TOY VEHICLE AND TRACK SET

Adolph E. Goldgarb, 4614 Monarca Dr., Tarzana, Calif.
91356

Filed Nov. 30, 1972, Ser. No. 310,936

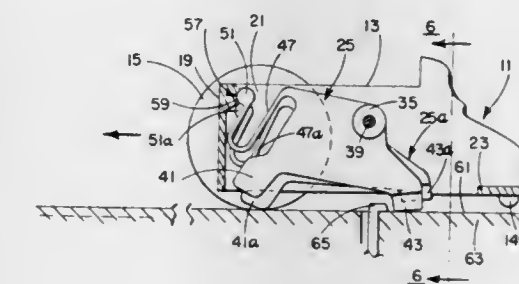
Int. Cl. A63h 1/10

U.S. Cl. 46-202

30 Claims

1. A toy vehicle and track set comprising in combination:
a track having a main track portion and at least one inter-
secting branch track portion,

a fixed track guide means at the surface of said track for
guiding a vehicle from the main track portion onto said
branch track portion, and
a toy vehicle movable along said track and having movable
vehicle guide means affixed thereto for being movable
independent of said guide means on said track and prior



to operation of the vehicle to an inoperative position
where it will not engage the fixed track guide means or to
an operative position where it will engage the fixed track
guide means, whereby said vehicle may be pre-
programmed prior to operation to be guided onto said
branch track portion.

3,857,194

MODEL AUTO-GIRO

Murray Guttman, 250 Johnochs Dr., Saddle Brook, N.J.
07662

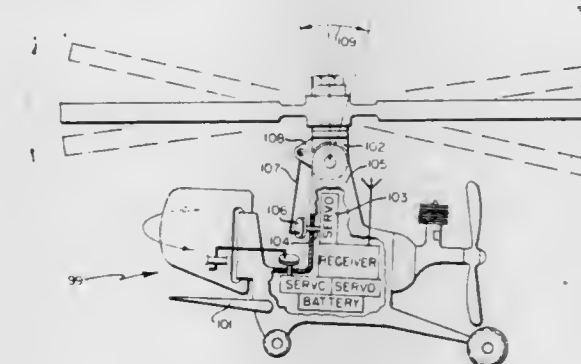
Division of Ser. No. 264,269, June 20, 1972, Pat. No.

3,791,067. This application Nov. 29, 1973, Ser. No. 420,054

Int. Cl. A63h 27/12

U.S. Cl. 46-244 B

4 Claims



1. In a model rotary wing aircraft comprising:
a fuselage;
an operable engine means mounted on said fuselage along
the longitudinal axis of the fuselage;
a propeller mounted on said engine means, said engine and
propeller enabling the forward driving of said aircraft as
an autogyro for take-off, landing or normal translational
flight;
a general upwardly extending vertical rotor mast mounted
on said fuselage and adapted to receive a rotor;
a free spinning rotor mounted on said mast having a plural-
ity of rotor blades extending outwardly and generally
horizontally from said mast; the rotor being disposed in
the path of the air flow from the propeller;
landing gear mounted on said fuselage;
radio control means for providing aerodynamic control in
various flight attitudes of said model rotary wing aircraft;

3,857,195

MULCH PACKET

Arthur L. Johnson, 1129 Erin St., Madison, Wis. 53715

Filed Oct. 1, 1973, Ser. No. 402,100

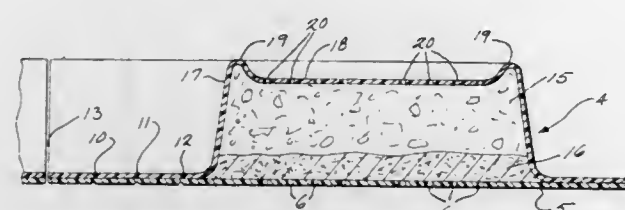
Int. Cl. A01g 13/10

U.S. Cl. 47-32

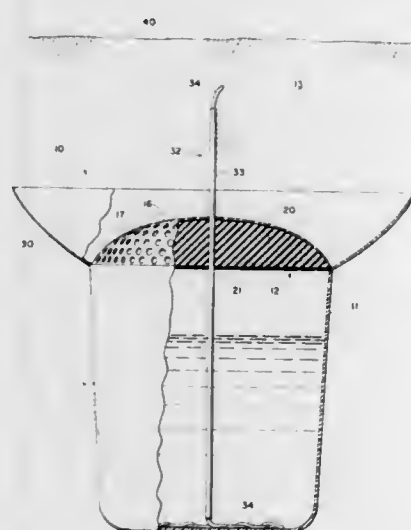
6 Claims

1. A mulch packet for application to soil surrounding a
plant, comprising a base formed of a sheet of perforated plas-

tic, a moisture permeable cover formed of a moisture degradable material, the peripheral edge portion of said cover being attached to the peripheral edge portion of the base and the central portion of the cover being attached flatwise to the central portion of the base, the portion of the cover disposed



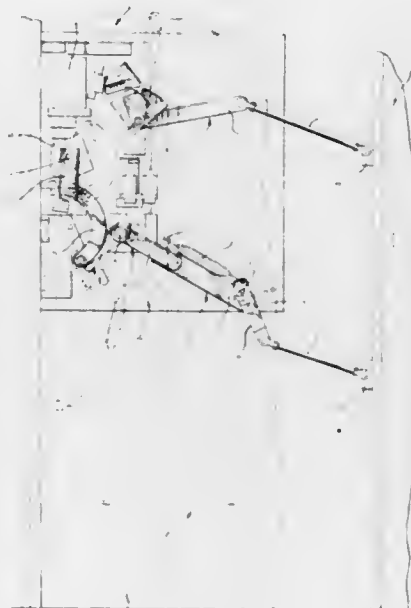
3,857,196
MOISTURE SAVING APPARATUS
Carl M. Alkire, Rt. 1, Rose, Okla. 74364
Filed Aug. 15, 1973, Ser. No. 388,613
Int. Cl. A01g 25/00
U.S. Cl. 47-48.5



1. A unitary moisture saving apparatus adapted to be entirely buried in the ground for catching and saving moisture comprising, a moisture receiving container having an upwardly disposed opening, a top covering the opening having a plurality of openings to permit water to flow therethrough into said container, a porous isolation member interposed between said top and a perforate support means therebeneath, whereby said top, isolation member, and support means prevent the ground materials from falling into said container, an upwardly extending saucer surrounding and extending outwardly from said top to catch water and conduct it into said container, and wick means extending from a location outside the container in the ground into said container to conduct the water therein to a point remote from the container.

3,857,197
DOOR OPERATOR WITH DOOR PANEL POSITION SENSING AND LOCKING DEVICE
Redreddy Sukumar Reddy, Chicago; Carl W. Roth, Arlington Hts.; Richard A. Rago, Elmhurst, and Kristupas Daugirdas, Wilmette, all of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Nov. 9, 1972, Ser. No. 304,907
Int. Cl. 105 341; E05b 47/00; E05f 15/14
U.S. Cl. 49-13 16 Claims

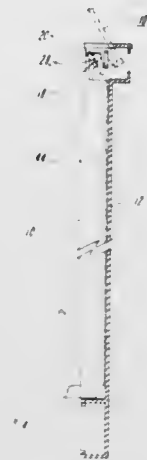


3 Claims

1. In a vehicle having a door opening in a side wall with inner and outer panels and a slidable door selectively movable between open and closed positions relative to the door opening, a door operator for driving said door between open and closed positions relative to said door opening, said door operator being mounted above the floor in the side wall between the inner and outer panels thereof and adjacent to the door opening, said door operator including an upstanding mounting plate, a reversible motor mounted on said plate with its axis of rotation extending substantially parallel thereto, a gear box mounted on the motor and in driving relation therewith, said gear box having an output shaft extending normal to the axis of the motor and substantially transverse the side wall, primary driving linkage means connecting said output shaft and door to drive same between open and closed positions including lever means extending from said output shaft, said lever means moving to overcenter position relative to the output shaft when the door is in closed position to lock the door against movement, a primary linkage extension arm having one end pivotally mounted to the mounting plate and pivotally connected to said lever means, a primary linkage connecting rod pivotally connected to the other end of the primary linkage extension arm and to the trailing edge of the door, means on the mounting plate coacting with the lever means to monitor the door position, and secondary linkage means connected between the mounting plate and door and driven by said door, said secondary linkage means including a secondary linkage extension arm pivotally mounted at one end to the mounting plate, a secondary linkage connecting rod pivotally connected to the other end of the secondary linkage extension arm and to the trailing edge of the door, means on the mounting plate coacting with the secondary linkage extension arm for monitoring the door position, said door position monitor means of the primary and secondary linkage means including switches having contacts in said circuit which open the circuit when the door is in open position and close the circuit as the door reaches closed position, and said contacts of said switches being connected in series, whereby both linkage means must monitor the door closed position before the traction interlock circuit is closed.

3,857,198
REMOVABLE DOOR FOR INSTRUMENT CASING
Melvin J. Post, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,138
Int. Cl. E05f 1/10
U.S. Cl. 49-386 3 Claims



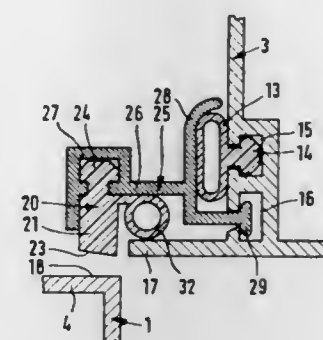
1. In combination with a planar shaped cover and a housing having a planar side for receiving the cover the improvement comprising:
a pair of pins on said housing aligned along a common axis defining an axis of rotation for the cover
a pair of open sockets mounted on said cover to mate with said pins when the cover is positioned on said housing;
a leaf spring mounted, at the central portion thereof, to said cover to have its free ends extend across the open portion of the sockets and beyond said sockets, with the flat portion of the springs facing said socket.
a cam positioned on each of said pins for engaging opposite ends of said leaf spring so that when said cover is being positioned on said housing said cams urge said leaf spring away from said socket to allow the insertion of the pins into said sockets and thereafter maintain the pins in the sockets, wherein one surface of each of said cams and said axis of rotation define triangles having unequal sides, the longest side thereof defining a balanced rotational position of said cover so that when said cover is rotated from a closed position parallel to the plane of the housing to less than the angle defined by the balanced position the cover is urged by said cams and leaf spring to the closed position and when said cover is rotated beyond the balanced position the cam and resilient means urge the cover to an open position.

3,857,199
SEAL FOR A SLIDING DOOR, A SLIDING WINDOW OR THE LIKE
Werner Frach, Friedenstr. 16, and Bernhard Janke, Humboldtstr. 4, both of 8580 Bayreuth, Germany
Filed Nov. 15, 1972, Ser. No. 306,590
Claims priority, application Germany, Nov. 22, 1971, 2157832

Int. Cl. E06b 7/16
U.S. Cl. 49-477 12 Claims

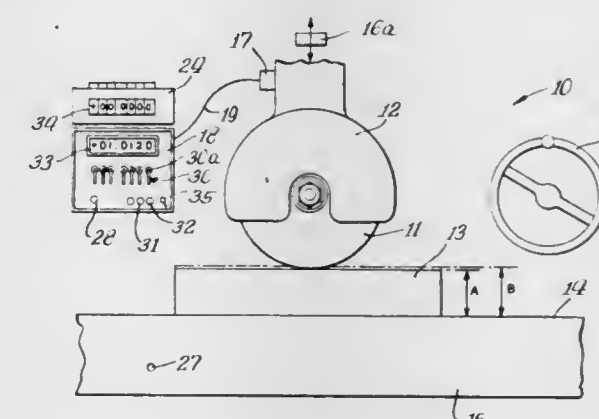
1. A mechanism for a sliding door, window and the like, comprising: a stationary frame; a profiled elastic sealing strip and a circumferential pressure hose inflatable by a pressure fluid; a pressure transmission bar mounted by way of a pivot, arranged at least partly between and contacting both said hose and said strip; said bar having a surface which is substantially normal to the plane of said frame and is subjected to the action of said hose, said bar pressing said strip against a counter-surface associated with said strip; at least one sash slidable in said frame; wherein one of said frame and said sashes constitutes an operative member having a lateral surface thereon, substantially parallel to said plane, which surface constitutes

said counter-surface; means for supporting said hose between said operative member and said bar; and a lever arm associated with said bar substantially parallel to said lateral counter-surface; and wherein a component of a pivotal movement



performed by said lever arm, directed transversely to said plane, is utilized for pressing said strip, wherein terminal portions of said hose and said bar are held by said supporting means in said operative member, a terminal portion of said bar constituting said pivot.

3,857,200
DIGITAL READOUT METHOD AND APPARATUS
Richard D. Hill, Glen Ellyn, Ill., assignor to A & A Engineering Company, Franklin Park, Ill.
Filed Mar. 15, 1973, Ser. No. 341,340
Int. Cl. B24b 49/02, 49/08, 51/00
U.S. Cl. 51-5 D 29 Claims



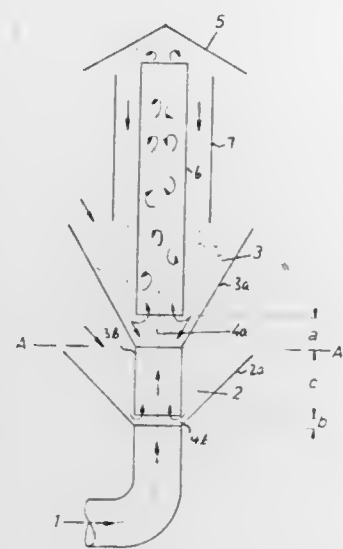
13. Apparatus for grinding a plurality of workpieces each to a preselected linear dimension, comprising:
a grinding wheel;
means for translating the grinding wheel;
readout display means for providing a digital display of the spacing of a grinding wheel from a reference position;
means for holding the workpieces in a preselected disposition relative to said reference position;
fixed means for dressing the grinding wheel at a position having a preselected fixed relationship to said reference position; and
reference display means adjacent said display means for maintaining an indication of the linear dimension representing said fixed preselected relationship.

3,857,201
REGENERATING OF CASTING SAND
Hermann Jacob, Fachenfelder Weg 115, 2092 Horst, Germany
Filed July 2, 1973, Ser. No. 376,004
Claims priority, application Germany, July 6, 1972, 2233111

Int. Cl. B24c 1/00, 3/12; B02c 19/06
U.S. Cl. 51-8 R 8 Claims

1. In a method of regenerating casting sand, the steps of subjecting contaminant-coated spent casting sand to mechanical agitation; accelerating fresh uncontaminated casting sand; and contacting the accelerated fresh casting sand with said

spent casting sand so that said fresh and said spent casting sand are admixed and the contaminant coating on said spent



casting sand is at least partially scoured off by said fresh casting sand.

3,857,202

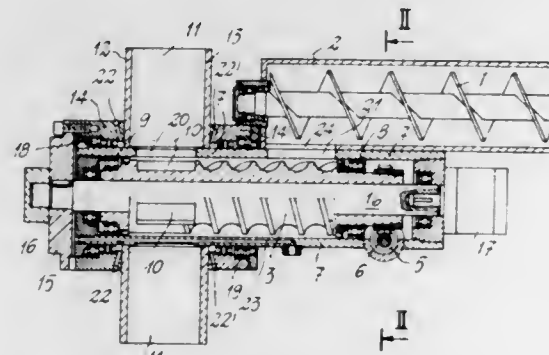
DEVICE FOR SURFACE SANDBLASTING BY METAL GRIT OR THE LIKE

Antonio Cavallucci, Corso Plebisciti 11, Milan, Italy (20129)
Filed Aug. 8, 1973, Ser. No. 386,700

Claims priority, application Italy, Aug. 16, 1972, 28222/72
Int. Cl. B24c 7/00

U.S. Cl. 51-9 R

8 Claims



1. A device for abrading the inner surfaces of tubes, comprising:

- a first motor-driven screw;
- a first tubular casing rotatably mounting said first screw;
- a second motor-driven screw axially aligned with said first screw;
- a second tubular casing having first and second ends and rotatably mounting said second screw; and
- an impeller rotatably mounted axially of and adjacent said first end of said second casing for rotation independent of the rotation of said second screw;

said first casing having an opening adjacent one of its ends, the second end of said second casing being fixedly connected to said one end of said first casing in overlapping fashion, said second casing having an opening therein aligned with the opening in said first casing, said second screw adapted to rotate at a different rotational velocity than said first screw;

whereby the rotational velocity of said first screw is effective to feed abrasive grit to the receiving end of said second screw through said openings, and whereby the rotational velocity of said second screw is effective to feed abrasive grit to the central area of said impeller which imparts substantial radial velocity to said grit by centrifugal force.

3,857,203 GRINDING MACHINE FOR GENERATING AN EPITROCHOIDAL SURFACE ON A WORK

Hiroaki Asano, Chiryu, and Kazuhiro Sakane, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

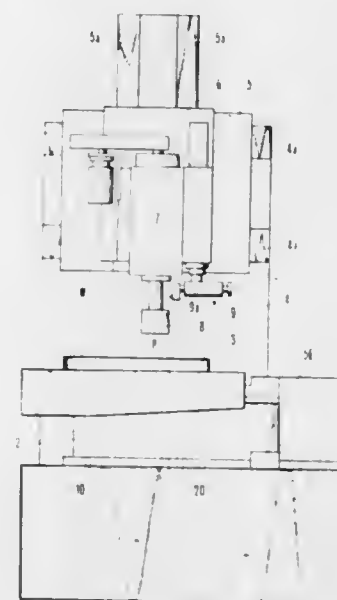
Filed Mar. 12, 1973, Ser. No. 340,101

Claims priority, application Japan, Mar. 21, 1972, 47-33220[U]

Int. Cl. B24b 5/16

U.S. Cl. 51-46

6 Claims



1. In a grinding machine for generating an epitrochoidal surface including a rotating sleeve which rotatably carries a work spindle at a given eccentricity with respect to the rotating sleeve, said rotating sleeve being mounted on a work head and adapted for a pivotal motion about the grinding point of a grinding tool rotatably carried by a tool rest to which is imparted a feeding motion, and a drive means to which said rotating sleeve is connected, the improvement comprising a first gear secured to the pivotable work head in concentric relationship with the rotating sleeve, a second gear secured to one end of the work spindle, third and fourth gears meshing with the first and second gears, respectively, and a support shaft rotatably carried by the rotating sleeve and on which said third and fourth gears are fixedly mounted in coaxial relationship with each other, whereby the work spindle is rotated at a given rate of rotation relative to the revolution of the sleeve through the first to fourth gears.

3,857,204

CENTERLESS GRINDING APPARATUS

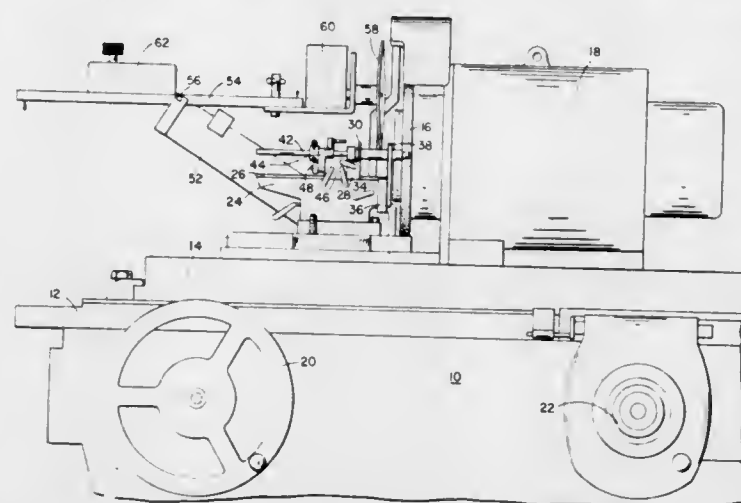
Albert R. Richard, Weymouth, Mass., assignor to Richards Micro-Tool Co., Inc., Plymouth, Mass.

Filed Nov. 27, 1972, Ser. No. 309,706

Int. Cl. B24b 5/18

U.S. Cl. 51-103 WH

4 Claims



1. A centerless grinding apparatus especially adapted for a thin, flexible work piece comprising a base, a pair of spaced-

apart work supports on the base for receiving a cylindrical portion of the work piece, a grinding wheel adapted to operate upon a portion of the work piece extending beyond the work supports, a balanced arm medially pivoted on the base, a driven driving wheel rotatably supported on one end of the arm and adapted drivingly to engage the portion of the work piece between the supports, means on the other end of the arm for counterbalancing the arm and means for adjusting the position of the counterbalancing means to vary the force with which the driving wheel engages the work piece in full floating engagement, whereby the bearing force of the driving wheel is sufficient to drive without distorting the work piece.

3,857,205

DEVICE FOR THE FEEDING OF OPTICAL GLASSES, PARTICULARLY FOR SPECTACLES, TO A GLASS-TREATING MACHINE AND FOR THE REMOVAL OF SAID GLASSES THEREFROM

Camille Cesar Van Hove, Kapellen, Belgium, assignor to Buchmann Optical Industries, Kapellen, Belgium

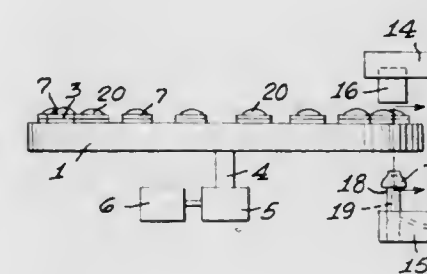
Filed Dec. 12, 1973, Ser. No. 423,892

Claims priority, application Belgium, Dec. 12, 1972, 125232

Int. Cl. B24b 5/00

U.S. Cl. 51-134

8 Claims



1. Device for the feeding of optical glasses, particularly for spectacles, to a glass-treating machine and for the removal of said glasses therefrom, said machine comprising a tool, means for rotating said tool, a head lying thereunder which is movable up and down and rotatable about a vertical axis, and means for moving said head to and away from said tool, with a glass holder and means to bring a glass in said holder between said head and tool and away from between said head and tool, which comprises a movable support provided with openings through which the glass-treating machine head can pass partly at least, a plurality of glass holders which bear with the lower part thereof at least in the support openings, and means for moving the support intermittently in such a way that each support opening can come in succession between the head and tool of the glass-treating machine.

3,857,206

COMPOUND MOTION RUBBING MACHINE

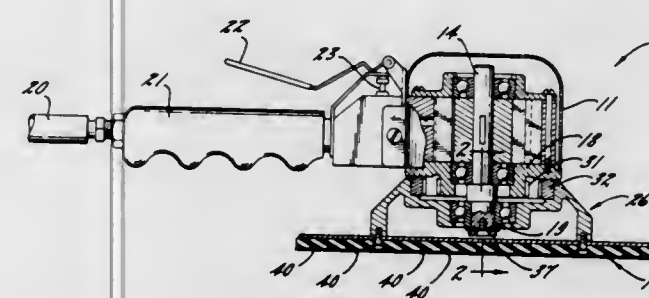
Edward B. Helfran, Jr., c/o National Detroit, Inc., 2810 Auburn St., Winnebago, Ill. 61103

Filed Mar. 8, 1973, Ser. No. 339,164

Int. Cl. B24b 23/04

U.S. Cl. 51-170 MT

9 Claims



1. In a compound motion rubbing machine, the combination of, a frame, a drive shaft journaled on said frame with one

end portion projecting downwardly therefrom, an eccentric shaft mounted on the projecting end portion of said drive shaft in radially offset parallel relation therewith, an inverted cup-shaped casing disposed around said eccentric shaft and rotatably mounted thereon for gyratory motion about the axis of said drive shaft as the latter rotates, a pinion gear stationarily mounted on the underside of said frame in coaxial relation with said drive shaft, said casing having a coaxial annular rim loosely encircling said pinion gear, a ring gear larger than said pinion gear fast in said rim and disposed around the pinion gear in meshing engagement with one side of the latter, and a rubbing shoe mounted on the lower end of said casing for movement therewith in rubbing engagement with a work surface, the amount of eccentricity of said eccentric shaft and the sizes of said gears being correlated to produce simultaneous gyrating and rotating motion of said casing during rotation of said drive shaft and generally epicycloidal motion of abrasive particles on said shoe relative to a work surface.

3,857,207

DEVICE FOR SUPPORTING A WORKPIECE FOR ROTATION

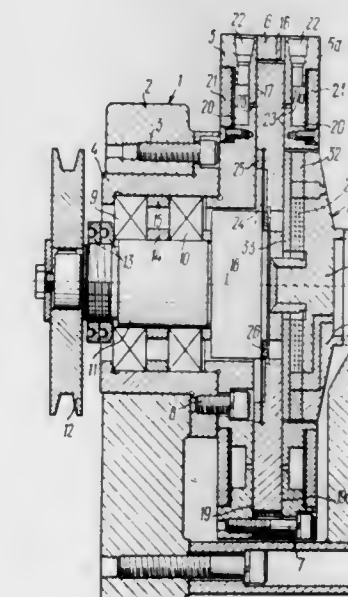
July Davidovich Avrutin, Grazhdansky prospekt 83/2, kv. 67; Iosif Davydovich Gebel, Svetlanovsky prospekt 35, kv. 94; Askold Ivanovich Nefedov, 2 Nikitinskaya ulitsa 8, kv. 5, all of Leningrad, and Solomon Abramovich Khilevich, ulitsa Tsvyachaus 10, kv. 56, Vilnius, all of U.S.S.R.

Filed Mar. 21, 1973, Ser. No. 343,408

Int. Cl. B24b 41/04

U.S. Cl. 51-237 R

5 Claims



1. A device for supporting a workpiece for rotation, comprising: a casing; a rotor installed in said casing; said rotor having axially spaced ends with means for securing a workpiece to one of said ends; said rotor having at least two opposite circular supporting surfaces which are flat, parallel and perpendicular to the axis of rotation of said rotor and serve as its supporting surfaces; said casing having at least two circular flat, parallel supporting surfaces arranged adjacent a respective supporting surface of said rotor; means for forming a layer of a working pressure medium between said corresponding supporting surfaces of the said rotor and casing to separate them from one another; drive means for rotating said rotor; and means drivingly connecting said rotor to said drive means while providing radial support for said rotor and including a membrane whose stiffness in the axial direction is negligibly small as compared to the stiffness of said layer of the working medium, thus reducing to a minimum the effect produced by axial vibrations of the drive means for said rotor on the axial accuracy of rotation of the latter, said membrane extending perpendicularly to the axis of rotation of the rotor and being axially disposed between said ends of the rotor.

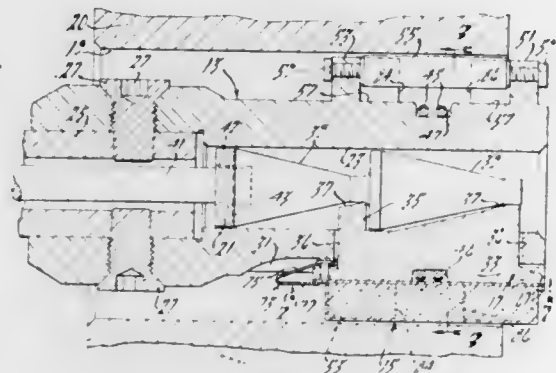
3,857,208

HONING TOOL

William H. Harris, Jr., Holland, Mich., assignor to Micromatic Industries, Inc., Detroit, Mich.

Continuation of Ser. No. 235,606, March 17, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,360
Int. Cl. B24b 5/06

U.S. Cl. 51—346



1. A honing tool comprising, in combination, a body adapted to be supported for rotational movement about a longitudinal axis in the bore of a workpiece, said body forming a longitudinally extending outwardly opening slot therein, a carrier member disposed in said slot for radial sliding movement relative to said body, means to move said carrier member radially relative to said body to selected positions, means connecting said carrier member to said body for limited tilting movement relative to the axis of rotation of said body, an abrasive honing member, means detachably connecting said abrasive honing member to said carrier member for movement therewith into and out of engagement with the bore of said workpiece, said body including shoulder portions longitudinally spaced on said body adjacent at least one side of said slot, said means connecting said carrier member to said body including an abutment portion formed on at least one side of said carrier member and disposed between said shoulder portions to limit longitudinal movement of said carrier member relative to said body, said abutment portion being disposed intermediate longitudinally spaced opposite ends of said carrier member about a median portion thereof relative to said body.

3,857,209

INFLATABLE SHELTER AND FLEXIBLE WALL THEREFOR

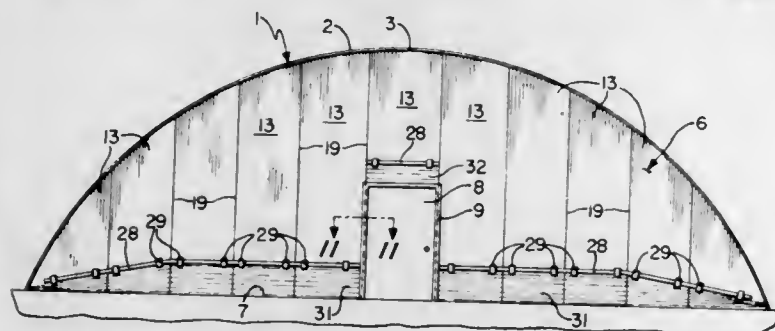
Paul E. Milliken, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 2, 1973, Ser. No. 412,073

Int. Cl. E04b 1/345

U.S. Cl. 52—2

15 Claims



1. A flexible wall for use in an inflatable enclosure having a flexible roof comprising:
A. a vertical flexible wall suspended inside the enclosure;
B. means connecting the wall to the roof of the enclosure;
C. means connecting the wall to the floor of the enclosure; and
D. adjustment means permitting expansion and contraction of the wall to continuously adjust the height of the wall in response to any changes in the height of the roof when the

enclosure is in an inflated condition, while maintaining the wall under vertical tension to prevent excessive horizontal movement of the wall.

3,857,210

INTERLOCKING PANEL HAYSTACK COVER

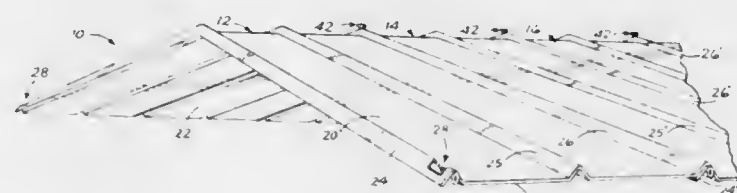
Harold V. Austin, P.O. Box 26, Beatty, Oreg. 97621

Filed May 4, 1973, Ser. No. 357,480

Int. Cl. E04d 1/34

U.S. Cl. 52—4

1 Claim



1. The combination of a stack of baled agricultural feed material and a frameless, stack-supported gable roof therefor, said stack including a row of bales forming a ridge extending along the top of the stack intermediate its lateral edges, with the roof resting directly on the bales and spanning the lateral edges and ridge-forming row, said roof comprising

a multiplicity of elongate flexible panels having corrugations extending along their length, each of said panels including a pair of oppositely inclined gable expanses integrally joined together at an apex in an inverted-V configuration, said panels being disposed side-to-side, transversely of said ridge, with their adjacent margins overlapped and with the apex of each panel disposed above the ridge-forming row of bales,

means interconnecting the overlapping adjacent margins of the panels, each expanse of one panel including female connector means in operative interconnection with male connector means on an adjacent expanse of another panel, said female and male connector means being disposed within similar marginal corrugations in said one and other panels, respectively, configured and positioned to interengage during an assembly sequence for said roof which comprises first lifting of said one panel at its apex, whereupon its oppositely inclined gable expanses flex toward each other, then lowering the panel onto said other panel in marginal overlapping relationship, whereupon engagement of the respective male and female connector means occurs as the gable expanses flex away from each other, and

means extending between the panels and the stack, tying them to the stack.

3,857,211

MULTILEVEL COMPONENTIAL HOUSE TRAILER

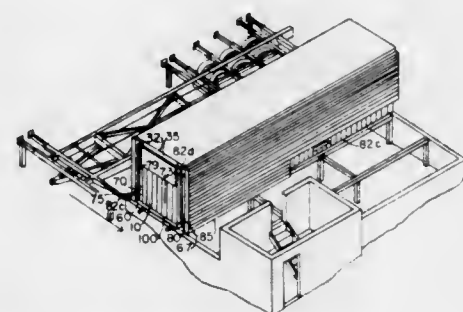
George Sharpton, 104 N. Tenth St., Lyons, Ga. 30436

Filed June 25, 1973, Ser. No. 372,939

Int. Cl. E04b 1/344

U.S. Cl. 52—65

1 Claim



1. A multilevel housetrailer comprising:
1. a lower story living unit including,

3,857,213

SIMPLIFIED CONSTRUCTION

Minoru Miyake, 194 of 1 Shimoshakujii, Nerima-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 13,003, Feb. 20, 1970, Pat. No. 3,708,944. This application Dec. 12, 1972, Ser. No.

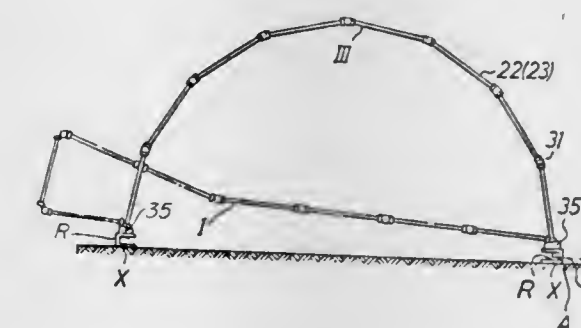
314,326

Claims priority, Application Japan, Oct. 31, 1969, 44-87390

Int. Cl. E04b 1/32

U.S. Cl. 52—86

8 Claims



a. a floor and ceiling having an outer periphery and means connecting said floor and ceiling in vertically spaced relation at said outer periphery;
b. at least one floor and one ceiling extension pivotally attached to said floor and ceiling periphery respectively;
c. a plurality of wall panels enclosing at least portions of said floor and floor extension;
d. a split level component pivotally attached to said lower story living unit at the outer periphery intermediate said floor and ceiling thereof; and
II. an upper living unit having,
a. the said ceiling as a floor, an upper ceiling, and a means connecting said ceiling and said upper ceiling;
b. at least one upper floor extension formed by said at least one ceiling extension unit;
c. at least one upper ceiling extension above said at least one ceiling extension; and
d. a plurality of second wall panels enclosing at least a portion of said upper living unit, and said at least one upper level floor extension.

3,857,212

HUB JOINTS FOR GEODESIC DOMES

Harry Reagan Barnett, 127 Sharon Dr., Pomona, Calif. 91767

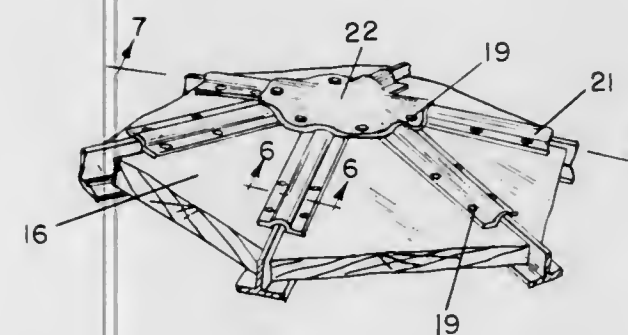
Continuation of Ser. No. 279,457, Aug. 10, 1972, abandoned.

This application Mar. 18, 1974, Ser. No. 451,771

Int. Cl. F16b 7/04; E04b 1/58

U.S. Cl. 52—81

6 Claims



1. A Hub joint structure for geodesic domes including a foundation base, generally flat circular hub plates with each plate having first apertures therein adjacent its circumference, and second apertures therein spaced inwardly of said first apertures, T-section strut members attachable at opposing ends to said hub plates with each member having an outwardly extending vertical flange and a transverse horizontal flange, a portion of said vertical flange being removed at each end for a distance slightly greater than each hub plate radius to provide extended horizontal flanges, said horizontal flanges being angled away from said vertical flanges so as to flatly engage the outer surfaces of said hub plates and being tapered so that said strut ends abut and nest on said plates, and spaced apertures in said extended horizontal flanges aligned with said first and second apertures in said hub plates for receiving mounting elements therethrough for radially connecting said strut members to said hub plates, whereby the first connection of said hub plates to said foundation base and subsequent successive interconnection of said strut members and hub plates enables the upward formation and erection of a completed dome framework.

1. In combination:
a. a foundation,
b. a first anchor and a second anchor in spaced relation in said foundation,
c. a flexible strand anchored at one end to one anchor of said first anchor and said second anchor,
1. said flexible strand having its other end passing through the other anchor of said first anchor and said second anchor,
d. tension means adjacent said other anchor and connected to said other end of said flexible strand,
e. a plurality of hollow frame members serially slidably disposed on said flexible strand and provided with a planar surface on each end of each frame member,
f. joint members on said flexible strand between adjacent frame members and having a joint planar surface adjacent each adjacent planar surface on each adjacent end of said adjacent frame member,
g. said tension means being operable to force each of said joint planar surfaces into engagement with the adjacent planar surface on said adjacent frame members,
h. said tension means being operable to concentrate tension upon said strand to cause said frame members to assume an erected arch configuration with said planar surfaces in contacting engagement,
i. said tension means being then operable to maintain a minimum level of tension forces on said strand sufficient to maintain said configuration,
j. said planar surfaces having a relatively low coefficient of friction, and
k. said joint member is provided with a spanning frame member aperture and a spanning frame member extends through said spanning frame member aperture.

3,857,214

METHOD OF MAKING TOMBSTONES AND PRODUCT THEREOF

Carl D. Hedges, 1806 East 3rd St., Pueblo, Colo. 81001

Filed Nov. 15, 1972, Ser. No. 306,576

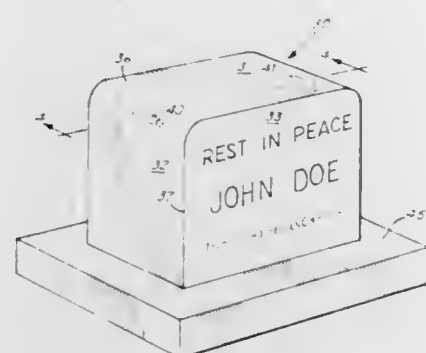
Int. Cl. E04h 13/00; E01f 9/02

U.S. Cl. 52—103

3 Claims

1. A composite tombstone comprising:
a. an exterior, unitarily formed one-piece hollow shell of fiber reinforced synthetic resin, said shell having at least one flat outer surface arranged for engraving an inscription thereon, said shell further including at least one open end with the open end being arranged to be inserted into a base at a point of use;
b. a solid, interior body formed from a heavy, hardened material and arranged to fill the interior of said exterior

shell, said body material being introduced into said shell in a semi-fluid state and allowed to harden, and
c. said shell includes a plurality of hollow, cylindrical tubes each having a longitudinal axis, each of said tubes being fixedly embedded along a portion of its outer surface into the inside surface of said shell and having its ends open,



the longitudinal axis of each of said tubes being arranged parallel to a plane defined by the open end of said shell, the open ends of said tubes being arranged to communicate with the hollow interior of said shell so that the hardenable body material will at least partially fill said tubes to securely join said body to said shell.

3,857,215

CAN-CONTAINING CONSTRUCTION MEMBER

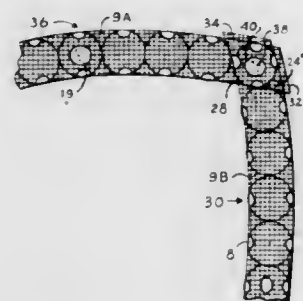
Alvin Edward Moore, Manini Way, Diamondhead, Bay St. Louis, Waveland, Miss. 39520

Filed Dec. 8, 1972, Ser. No. 313,454

Int. Cl. E04c 1/06

U.S. Cl. 52-259

22 Claims



1. A strength-providing, plural-sided construction member, comprising:

a plurality of end-joined can rows, each of said rows comprising: cans having substantially parallel axes that extend transversely to the length of the row; at least one can-holding strip of row-strength-providing material on cans of the row; and bonding material between said strip and cans; and

means fastening together each adjacent pair of rows at row ends in a strength-providing corner of said member, comprising: a row-end flange of a said strip in one of said pair of can rows, extending beyond the cans to which the strip is attached, and at said corner overlapping a portion of a strip of a second can row and overlapping an end can of said second row; and a rod-like element, passing thru said row-end flange, thru said overlapped strip portions, and fastened to said end can.

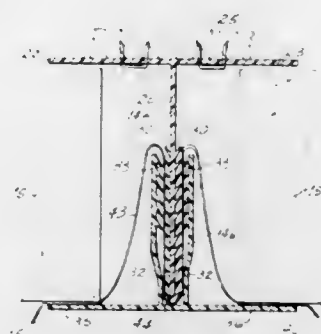
3,857,216
EASY RELEASE SUSPENSION SYSTEM
Morton Sherman, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Filed Aug. 7, 1973, Ser. No. 386,460

Int. Cl. E04b 5/57

U.S. Cl. 52-489

4 Claims



1. A panel suspension system for forming a ceiling by means of a grid of suspension members supporting panels spanning the area between prefixed members comprising at least a first and a second mating element, said first mating element having a depending web portion with parallel, horizontal rows of teeth extending outwardly from both sides thereof,

said second mating element having a bifurcated upstanding web with parallel rows of teeth extending inwardly toward each other and adapted to engage said rows of teeth of said first mating element

and a strip of flexible material, narrow with respect to the length of the mating elements, positioned between said first and second mating elements and at one end of said mating elements so as to prevent engagement of said rows of teeth of said first and said second elements for a minor portion of their length, whereby said first and said second elements can be easily disengaged to remove said ceiling panels.

3,857,217
LIGHTWEIGHT, RIGID STRUCTURAL PANEL FOR WALLS, CEILINGS AND THE LIKE

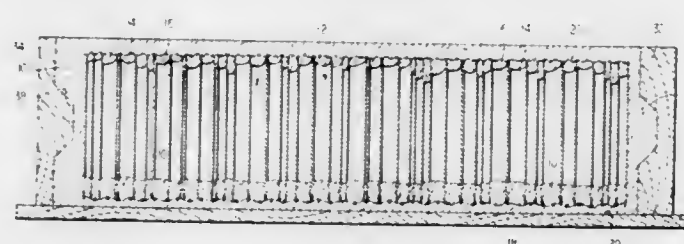
William F. Reys, Route 355 and Route 80, Urbana, Md.

Filed Nov. 15, 1972, Ser. No. 306,928

Int. Cl. E04c 1/10, 2/36

U.S. Cl. 52-589

7 Claims



1. A lightweight, rigid, structural panel of cementitious material comprising:

a. a core consisting of webbed material having a plurality of open-ended, separate tubular recesses of substantially equal height, a layer of very fine mesh reinforcing material adjacent to and covering one end of said recesses, said fine mesh material having a mesh on the order of ten per linear inch to insure the passage therethrough of only a sufficient amount of said cementitious material into said recesses to secure said layer of fine mesh material to said core, and a layer of coarse mesh material adjacent and covering the other end of said recesses, said coarse mesh material having a mesh on the order of four per linear inch to insure the ready passage therethrough of a greater amount of said cementitious material into said recesses than said first layer to secure said permeable material to said core, and

b. cementitious material covering said fine and coarse mesh material and said entire core to form a monolithic panel, said layers of fine and coarse mesh reinforcing material, when secured to said webbed material by said cementitious material, serve to prevent said panel from flexing under applied loads.

3,857,218
TRUSS JOISTS HAVING EDGE PIN CONNECTORS
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed July 18, 1973, Ser. No. 380,215

Int. Cl. E04c 3/18

U.S. Cl. 52-694

9 Claims



1. A truss joist comprising:

a. upper and lower wood chords, each having flat inner and outer faces and said chords having a width greater than their depth;

b. a plurality of sheet metal connectors mounted on said chords;

c. a plurality of strut members having openings formed in their ends and extending between said chords;

d. a plurality of pins mounted transversely of said chords pivotally securing the ends of said struts at the midpoint of said pins to said connectors wherein the pivot points are located at said inner faces of each of said chords;

e. said chords being formed with transverse semi-circular grooves having a depth approximately one-half the diameter of said pin for receiving said partially embedded pins; f. said chords being formed with slots joining said inner and outer faces at the approximate center lines of said chords;

g. each of said connectors including a pair of seats engaging the outside faces of said chords, each connector having a pair of legs disposed in close fitting relation to the outside edges of said chords and connecting said seats and opposite ends of said pin and each of said connectors having an arm mounted in said slot connecting said seats and the mid portion of said pin;

h. said seats and legs of said connector and pin completely encapsulating said chords at their inner and outer faces and edges;

i. said connector arm being formed with an edge flange extending a substantial portion therealong and extending transversely of said chord for close fitting engagement therewith for transmitting forces from said strut members to the mid portions of said chords; and

j. said chords being formed with channels extending from their outer faces toward their inner faces at the approximate center line of said chords for force fit receipt of said flange of said connector.

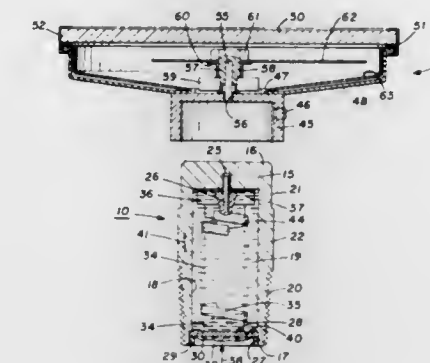
3,857,219
OVERLOAD PROTECTED BOURDON TUBE
Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 283,003, Aug. 23, 1972, Pat. No. 3,789,668. This application Sept. 19, 1973, Ser. No. 398,738

Int. Cl. B65b 3/04

U.S. Cl. 53-37

4 Claims



1. A method of pre-conditioning a Bourdon tube adapted for response to pressure variations acting externally thereon comprising the steps of providing a controlled volume of incompressible fluid internally of said tube corresponding substantially to the decreased internal volume of the tube when exposed to a predetermined value of increasing external pressure and sealing said tube to permanently contain said controlled fluid volume, said controlled fluid volume being less than the internal volume of said tube when said tube is exposed to values of external pressure below said predetermined value.

3,857,220

ARRANGEMENT FOR PROCESSING PRINTING ORDERS

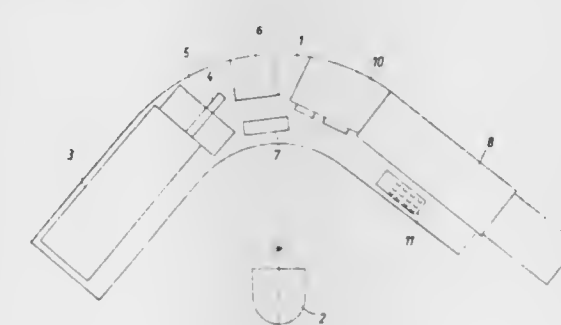
Horst Schneider, Horrem; Berthold Fergg; Wolfgang Zahn, both of Munich; Friedrich Hujer, Grunwald, and Erich Nagel, Anzing, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 185,163, Sept. 30, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,563

Claims priority, application Germany, Oct. 2, 1970, 2048552

U.S. Cl. 53-59 R

17 Claims



1. Photographic arrangement, comprising, in combination, first elongated signal carrier means having a plurality of first frames and a plurality of first frame lines each separating two consecutive ones of said plurality of first frames, each of said first frames having an original; second elongated signal carrier means having a plurality of prints, each constituting a reproduction of a corresponding one of said originals; first cutting means for cutting said first elongated signal carrier means at said frame lines into strips having a predetermined maximum length, upon receipt of a first start signal; second cutting means for cutting said second elongated signal carrier means upon receipt of a second start signal; and control means interconnected between said first and second cutting means, for

furnishing said first start signal in dependence upon the operation of said second cutting means.

3,857,221

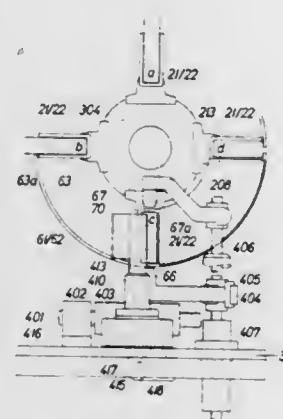
FOLDING DEVICE FOR PACKAGING MATERIAL
Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsburg, Germany

Filed Nov. 27, 1973, Ser. No. 419,467

Int. Cl. B65b 11/32

U.S. Cl. 53—234

5 Claims



1. A device for folding a sheet of wrapping material around external surfaces of an article of parallelepipedal shape, said device comprising, in combination:

a support;

article receiving means rotatably mounted on said support to be rotatable about an axis;

cell defining means provided by wall members of said article receiving means to define a plurality of cells spaced at angular intervals about said axis and extending in a generally radial direction relative thereto, each cell being adapted to receive one said article;

means to rotate said article receiving means stepwise about said axis to cause each said cell to be arrested successively at a first station, a second station, a third station and a fourth station of said device;

means to introduce a sheet of wrapping material into one said cell when the latter is located at said first station;

means to introduce said article into said cell when the latter is located at said second station, whereby said sheet of wrapping material is disposed between said article and walls of said cell in which said article is received, with lobes of said sheet projecting beyond an end face of said article and in a direction parallel to said axis;

carrier means disposed at said third station;

guide means co-operating with said carrier means;

a folder member rotatably supported on said carrier means; a roller member connected to said folder member to rotate therewith and rollably engaging said guide means; and

means to reciprocally displace said carrier means along said guide means, thereby to impart simultaneous rotational and translational motion to said folder member, whereby the latter is moved towards and along the axial end face of said cell located at said third station when said carrier means is displaced along said guide means in a first direction and said folder member is moved away from said cell when said carrier means is displaced in a direction opposite to said first direction, said displacement of said carrier means in said first direction causing said folder member to engage one of said projecting lobes and to fold the latter against said face of said article in said cell at said third station.

3,857,222

PACKING MACHINE

Ludwig Grebe, Wallau, Germany, assignor to Kramer & Grebe KG Maschinen und Moldellfabrik, Wallau/Lahn, Germany

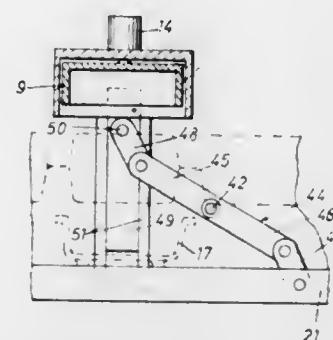
Filed Apr. 13, 1973, Ser. No. 350,911

Claims priority, application Germany, Apr. 15, 1972, 2218334

Int. Cl. B65b 31/02

U.S. Cl. 53—112 A

7 Claims



1. In a packing machine have a framelike welding mechanism which is provided with a separate drive for welding of two container-like deformed foil sheets and having an evacuating chamber composed of two boxlike halves, a first half of which is mounted liftably and lowerably below, and the second half above, said foils and wherein one said half houses the framelike welding mechanism, the improvement comprising at least one rack system at each of two opposite sides of said chamber, each rack system having a pinion and two racks connected pairlike to each other by said pinion and in turn connected to respective chamber halves.

3,857,223

PACKAGE FORMING DEVICE

Antonio Dominici, 8 Via Ruggero d'Andreotto, Perugia, Italy

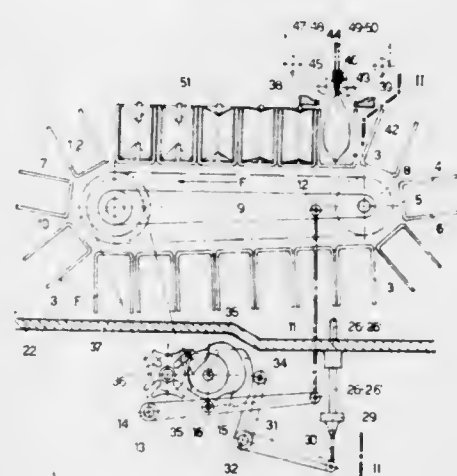
Filed Feb. 7, 1974, Ser. No. 440,542

Claims priority, application Italy, Feb. 13, 1973, 48212/73

Int. Cl. B65b 1/24

U.S. Cl. 53—124 A

5 Claims



1. A device for forming containers into prismatic packages and to thereafter convey and discharge them, said device comprising:

two lateral mold plates movable towards each other;

an upper mold plate positioned above said lateral mold plates, said three mold plates forming a molding station; a plurality of U-shaped trays to receive said containers; a vertically oscillatable and intermittently movable conveyor to lead said trays in succession through said molding station;

first actuating means to press a container in one of said trays against said upper mold plate by lifting a free end of said conveyor;

second actuating means positively associated with said first means to lift said lateral mold plates concomitantly with said upward lifting of the conveyor and press them against the two sides of an unformed container;

Geneva motion means associated with said first and second means, to stop said conveyor when a tray with an unformed container reaches the location of said mold plates and during said container-molding operation and remove it successively from said station to convey another tray to said molding station.

3,857,224

COIN PACKAGING APPARATUS

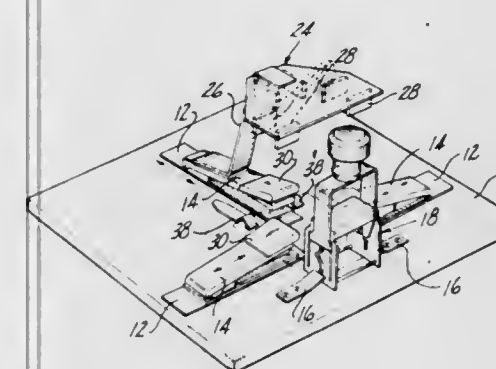
John G. Hewitt, 9344 E. Bristol, Davison, Mich.

Filed Oct. 30, 1972, Ser. No. 302,012

Int. Cl. B65b 61/00

U.S. Cl. 53—131

1 Claim



1. An apparatus for packaging coins in individual folders, the folders being adapted to be folded in half over the coin to form a closed side and three open sides, the apparatus comprising a base, clip means on said base for retaining and positioning the folder, three elongated rectangular magnetic members fixed to said base, said magnetic members disposed in the form of a T with each of said magnetic members having one of its short sides disposed to be adjacent an open side of the folder when the folder is mounted to said base, said clip means being disposed to be adjacent the open side of said folder opposite the closed side of said folder, a stapler disposed on each of said magnetic members whereby said staplers can be removed to permit said folder to be mounted to said base and then can be moved longitudinally along said magnetic members to the proper position to staple the three open sides of said folder, a stamper mounted to said base along the closed side of said folder and having a stamper positioned above said folder and operable when actuated to provide indicia on said folder, and means for simultaneously actuating said staplers, said means comprising an actuating member fixed to one of said staplers to be disposed over said staplers and operable upon being pushed downwardly to simultaneously engage and actuate said staplers.

3,857,225

BEAN THINNING AND CUTTING DEVICE

Glenn C. Knudson, Larimore, N. Dak. 58251

Continuation-in-part of Ser. No. 233,218, March 9, 1972, abandoned. This application Nov. 30, 1972, Ser. No. 310,906

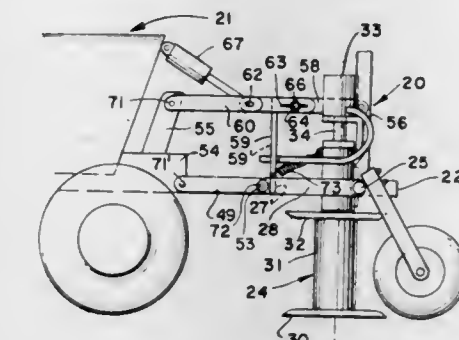
Int. Cl. A01d 55/26

U.S. Cl. 56—13.6

1 Claim

1. A bean cutting device adapted to be mounted to a tractor, said device comprising a frame, wheels mounted to the outer opposing ends of the frame for supporting the frame on the tractor, a plurality of sets of cutter blade mechanisms mounted to said frame, each cutter blade mechanism having a blade, a circular drum, a shaft, a hydraulic motor, and a bracket, said blades being flat disc-like with a circular outer circumferential cutting edge, said blade being mounted to the lower end of the circular drum with the outer circular edge of the blade projecting outward beyond the outer circumference

of the drum, said shaft being of reduced size in relation to said drum and fixed coaxially to the upper end of said drum and projecting upward therefrom, said shaft being rotatably mounted to said bracket, so that said shaft can rotate about its center axis to rotate said drum and blade, said hydraulic motor being fixed to said bracket and having an output drive to drive said shaft to rotate said shaft to thereby individually power the blade in each mechanism said drum having a radius of at least



approximately one third the radius of said blade and larger than said shaft, said brackets of each set of blade mechanism being pivotally mounted about a horizontal axis to said frame to pivot said blade, drive shaft and hydraulic motor about said horizontal axis and to individually pivot said blade and drum toward the rear of said tractor, stop means to prevent said blades in said sets from pivoting forward, and spring means to urge said blade sets forward against said stop means.

3,857,226

THATCHER

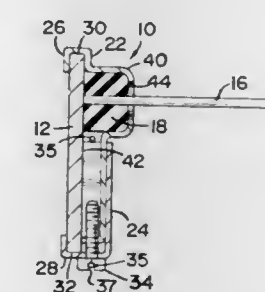
Costas Sifakas, 4803 Arcadia Rd., Holiday, Fla. 33589

Filed Oct. 11, 1973, Ser. No. 405,589

Int. Cl. A01d 55/18

U.S. Cl. 56—295

10 Claims



1. An agricultural implement designed to be used as a thatcher in combination with a rotary blade of a lawnmower, said implement comprising: a raking means, attachment means mounted on said blade in predetermined spaced distance from one end thereof, anchor means securely fastened to said raking means, said attachment means comprising a first and a second bracket movably engaging one another and interconnecting the blade and said anchor means.

3,857,227

CUTTER HEAD FOR PICKING FRUIT

Baruch Rosenberg, 4 Hadekalim St., Hod Hasharon, Israel

Filed Jan. 31, 1974, Ser. No. 438,409

Claims priority, application Israel, Jan. 31, 1973, 41435

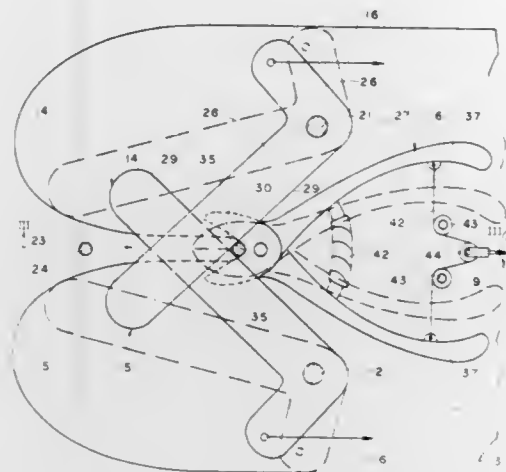
Int. Cl. A01g 19/08

U.S. Cl. 56—335

11 Claims

1. A cutter head for picking fruit growing on a tree comprising a base plate adapted to be supported on one end of an elongated rod and having a guide slot that opens at the unsupported end of the plate and is adapted to receive the stem of a piece of fruit growing on a tree, means on said base plate for urging a stem in the slot toward the crotch thereof, a cutter mounted on the plate having a pair of cutter bars positioned

adjacent the crotch of the slot, and a selectively operable cutter actuating mechanism for imparting relative movement



to the cutter bars thereby severing a stem captured in the crotch.

3,857,228

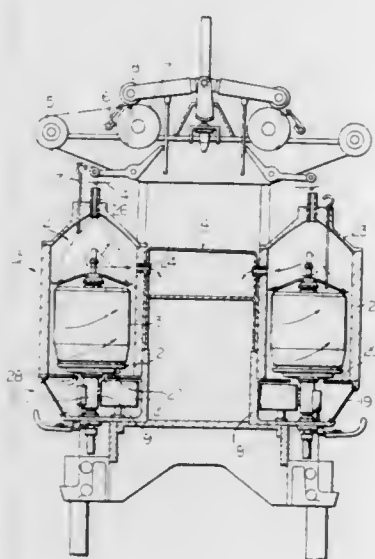
TWISTING FRAME

Teiji Nakahara; Misao Ueda, both of Kyoto; Minoru Kuninaga, Nagoakakyo, and Junichi Teranishi, Joyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Oct. 18, 1973, Ser. No. 407,621

Claims priority, application Japan, Oct. 25, 1972, 47-107393; Feb. 16, 1973, 48-19512; Feb. 22, 1973, 48-21855
Int. Cl. D01h 11/00

U.S. Cl. 57-56

8 Claims



1. A twisting frame provided with a plurality of twisting spindles, each of said spindles being driven by a tangential belt running along the length of the frame, wherein a duct assembly comprises a belt covering duct (11), which covers said tangential belt;

a plurality of twisting units;
a twisting zone covering duct (13) for each said twisting unit, said twisting units each being provided with a twisting spindle;
a main duct (14) mounted on and extending along the whole length of the frame;
first means for connecting said belt covering duct to said twisting unit covering duct of the twisting zone; and second means for connecting said twisting zone covering ducts to said main duct.

3,857,229 REINFORCEMENT FOR TIRES AND METHOD OF MAKING SAME

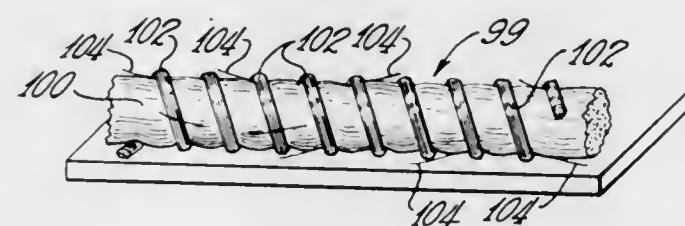
Alfred Marzocchi, Cumberland, R.I., assignor to Owens Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 107,193, Jan. 18, 1971, Pat. No. 3,776,293, which is a division of Ser. No. 664,020, Aug. 29, 1967, Pat. No. 3,631,667. This application Dec. 4, 1972, Ser. No. 312,003

Int. Cl. D02g 3/40, 3/48, 3/18

U.S. Cl. 57-140 C

4 Claims



1. A reinforcement cord construction adapted for incorporation into vulcanized rubber products, said cord construction comprising:

a core formed of a plurality of gathered-together staple glass fibers, said core having random staple fiber ends protruding from the main body of the core, and
a continuous assembled plurality of continuous glass filaments wound in repeating spirals to yield repeated winds or courses about said core, said repeated winds or courses being spaced apart sufficient to provide an exposure of a plurality of staple fiber ends.

3,857,230

YARNLIKE PRODUCT WITH SPACED POLYMER RINGS

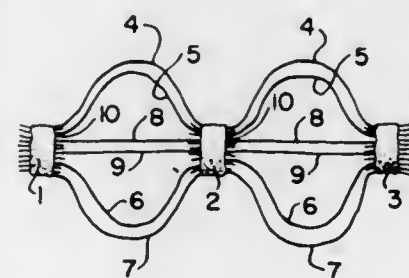
Ole-Bendt Rasmussen, Topstykke 7, Copenhagen, Denmark

Division of Ser. No. 120,186, March 2, 1971, Pat. No. 3,762,142. This application July 20, 1973, Ser. No. 380,978
Claims priority, application Denmark, Apr. 2, 1970, 1664/70

Int. Cl. D02g 3/00; B02g 3/40

U.S. Cl. 57-140 J

8 Claims



1. A yarnlike product formed of a plurality of filamentitious structures arranged in a substantially untwisted elongated coherent bundle, said bundle having at each of a plurality of spaced points along the length thereof a distinct applied band of solid polymer extending as a continuous ring around the periphery of a small localized compact section of the bundle and holding said structures in said coherent bundled relation, the intervening sections of said bundle between adjacent pairs of rings being substantially greater in length than said localized sections and having the filamentitious structures therein in loose unrestrained condition of substantially greater bulk than said compact sections.

3,857,231 METHOD FOR DOUBLE CREELING FEED YARN

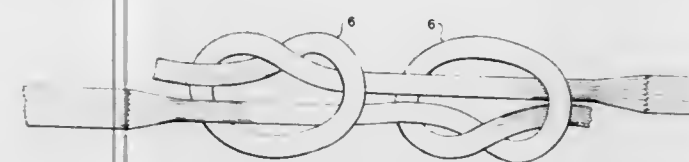
Walter D. Womer, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1972, Ser. No. 284,461

Int. Cl. D02g 3/02

U.S. Cl. 57-156

6 Claims



1. A method for double creeling feed yarn, comprising: drawing the tail end yarn of an emptying package and the free end yarn of a full package; and then establishing a connection between the drawn tail end yarn and the drawn free end yarn at a location in the drawn portions of said yarns said yarn being drawn to have a diameter in the range of about 40 percent to about 90 percent of its undrawn diameter prior to establishing said connection so that the connection will pass through yarn processing guides without being hung up or caught in said guides.

3,857,232

FILAMENT YARN AND PROCESS TO PREPARE SAME

Karl Heinrich, Bobingen, and Norbert Heichlinger, Konigsbrunn, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Lucius & Bruning, Frankfurt/Main, Germany

Filed July 10, 1973, Ser. No. 378,017

Claims priority, application Germany, Feb. 19, 1973, 2308138

Int. Cl. D02g 3/34

U.S. Cl. 57-157 R

6 Claims

1. A process for preparing essentially smooth filament yarns having several loose filament ends sticking out, wherein at least a portion of the filaments used have a flex abrasion resistance of below about 1,500 cycles and wherein a filament bonding is imparted to the filament yarns subject to this treatment and wherein same are then submitted to a transversal stress, at which occasion the filaments having a flex abrasion resistance of below about 1,500 cycles break in irregular intervals.

3,857,233

VOLUMINOUS FILAMENT YARN AND PROCESS TO PREPARE SAME

Jutta Cardinal, Hofheim, Taunus; Karl Heinrich, and Gunther Bauer, both of Bobingen, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

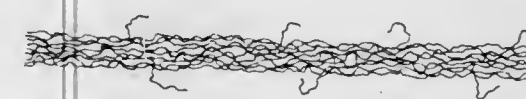
Filed July 10, 1973, Ser. No. 378,018

Claims priority, application Germany, Feb. 19, 1973, 2308031

Int. Cl. D02g 3/00, 3/34

U.S. Cl. 57-157 R

8 Claims



1. Process for preparing a voluminous filament yarn with several loose filament ends sticking out by means of false twist texturization including the use of filaments having — at least partially — a flex abrasion resistance of less than about 1,500 cycles, said filament yarns being fed into known false twist texturizing devices and texturized therein, whereby the filaments having flex abrasion resistance values of less than about

1,500 cycles break in irregular intervals due to the transversal stress applied within the texturization area, interlacing the thus obtained loose filament ends sticking out, at least temporarily.

3,857,234

DIGITAL TIMER MEANS AND METHOD OF MAKING THE SAME

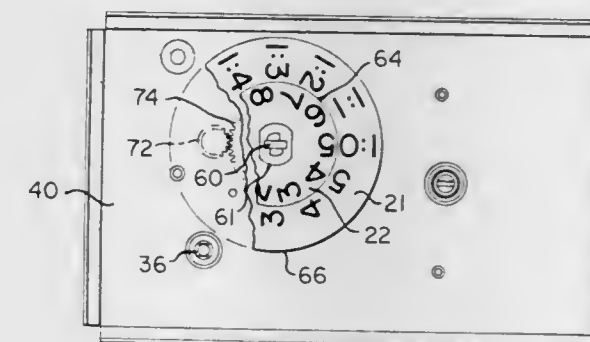
Paul T. Flumm, Oakville, and Vernon B. Harris, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 20, 1973, Ser. No. 390,024

Int. Cl. G04f 3/04

U.S. Cl. 58-21.14

4 Claims



1. In combination, a frame means, a clock means carried by said frame means for providing time of day readings, a motor means carried by said frame means for driving said clock means, a digital timer means carried by said frame means for being set for a desired period of time within limits of said digital timer means, and means carried by said frame means for interconnecting together said motor means and said digital timer means to run said digital timer means for said set period of time thereof, said digital timer means having digital reading means for indicating the set period of time thereof, said reading means comprising two concentrically disposed different sized discs having time indicating indicia on the outer peripheries thereof, the smaller disc having said time indicating indicia comprising numerals from "0" to "9" to respectively represent unit minutes, the larger disc having said time indicating indicia comprising numerals from "0" to "5" and "1:0" to "1:5" to respectively represent tens of minutes coupled respectively with no hours and 1 hour whereby said digital timer means can be set for a desired period of time between 1 minute and 1 hour and 59 minutes.

3,857,235

ELECTRICAL CLOCK MOVEMENT

Robert Wolber, Lauterbach/Wurt, Germany, assignor to Firma Gebrüder Junghans G.m.b.H.

Continuation of Ser. No. 144,625, May 18, 1971, abandoned, which is a continuation of Ser. No. 680,069, Nov. 2, 1967, abandoned, which is a division of Ser. No. 471,207, July 12, 1965, Pat. No. 3,375,653. This application Aug. 1, 1972, Ser. No. 277,514

Int. Cl. G04c 3/04; G04b 13/02

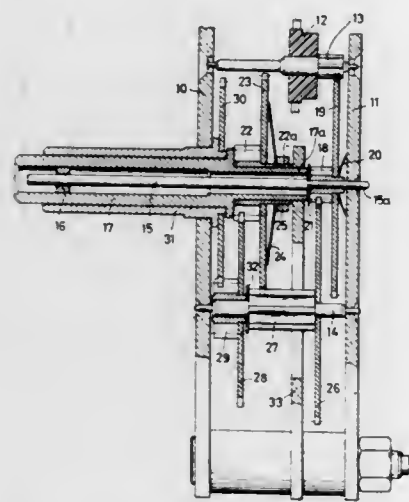
U.S. Cl. 58-23 D

1 Claim

1. A movement for a balance wheel driven electric time-piece comprising:

a front bearing plate;
a rear bearing plate spaced from said front bearing plate;
an intermediate bridge disposed between said plates;
a generally cylindrical hour shaft mounted for rotation in said front bearing plate;
an hour wheel coaxially mounted on one end of the hour shaft between the front bearing plate and the bridge for rotation with the hour shaft;
a generally cylindrical minute shaft mounted for rotation within said hour shaft and in said bridge;
a minute wheel and a minute pinion coaxially mounted on said minute shaft between the hour wheel and the bridge for rotation with the minute shaft;

a second shaft mounted for rotation within said minute shaft and in said rear bearing plate;
a second wheel and a second pinion coaxially mounted on the second shaft between the bridge and the rear bearing plate for rotation with the second shaft;
an arbor extending between said plates in parallelism with said shafts and spaced laterally therefrom, said bridge partially embracing said arbor;
a first intermediate wheel and pinion mechanism mounted for rotation on the axis of said arbor and mechanically



interconnecting the second pinion and the minute wheel;
a second intermediate wheel and pinion mechanism mounted for rotation on the axis of said arbor and mechanically interconnecting the minute pinion and the hour wheel.
said mechanisms being relatively rotatable and disposed between the plates; and
a balance wheel driven ratchet and stepping wheel mechanism rotatably mounted between said plates, said mechanism being connected to the second wheel for driving the latter to operate the entire movement.

3,857,236

POSITIONING ARRANGEMENT FOR A ROTATING PART IN A TIMEPIECE

Hugues Burki, L'Orient, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

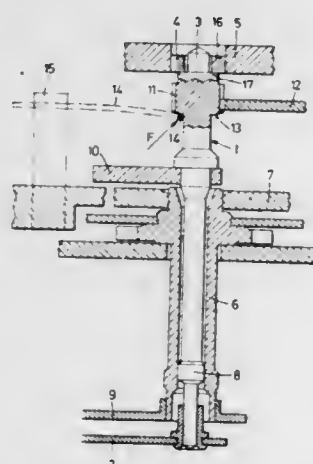
Filed July 5, 1974, Ser. No. 486,106

Claims priority, application Switzerland, July 10, 1973, 10035/73

Int. Cl. G04b 33/00, 13/02

U.S. Cl. 58-59

6 Claims



1. A positioning arrangement for a rotating part in a timepiece having a toothing engaged with a driving toothing, wherein said rotating part pivots with play in at least one bearing and comprises a shoulder against which a resilient

element presses continuously, exerting upon said rotating part a force having an axial component and a horizontal component, said horizontal component being directed towards the axis of said driving toothing.

3,857,237

WRISTLET

Andre Brauchi, President Wilson 4, 2300 La Chaux-de-Fonds, Switzerland

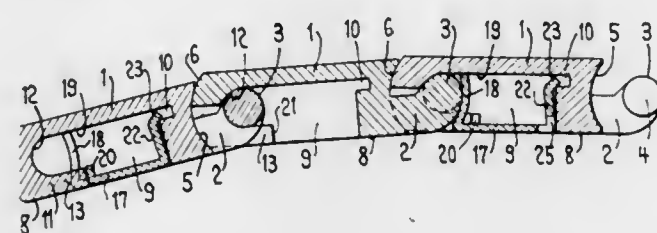
Filed June 11, 1973, Ser. No. 368,491

Claims priority, application Switzerland, June 19, 1972, 9168/72

Int. Cl. F16g 13/00

U.S. Cl. 59-80

13 Claims



1. A wristlet comprising links articulated together, said links having unbroken top and longitudinal side surfaces and defining a chamber closed along the top and longitudinal sides of the link, a hinge member at one end of the link, a holding portion in said chamber at the end of the link opposite to said hinge member to receive the hinge member of an adjacent link, and locking means to lock said hinge member in said holding portion, the length of said hinge member being less than the whole width of the wristlet.

3,857,238

CONNECTOR HOOK HAVING ARCUATE CHANNEL ON FACE OF FLARED HEAD

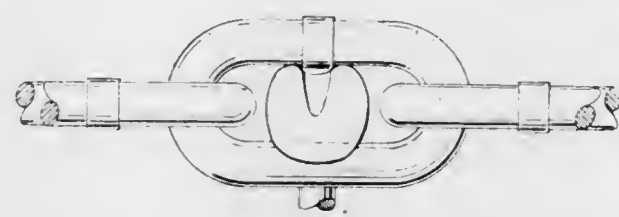
Roger L. Gower, Suite 302, 1911 Jefferson Davis Hwy., Arlington, Va. 22202

Filed Mar. 19, 1973, Ser. No. 342,352

Int. Cl. F16g 15/04; B60c 27/08

U.S. Cl. 59-93

3 Claims



1. In combination, a hook having a shank, a throat, a plate-like head having a face, said head being formed integrally with the said shank, and upon the face of said head, an arcuate channel beginning at a substantially central point on said face and extending toward the border thereof where it will terminate adjacent the side of said shank outermost from said throat, said channel thus permitting movement of said plate past the flash of a link of electric welded chain.

3,857,239

SELECTABLE-IMPULSE SOLID PROPELLANT ROCKET MOTOR

Winford G. Brock, Athens, and James C. Hodges, Jr., Huntsville, both of Ala., assignors to The United States of America are represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1966, Ser. No. 571,143

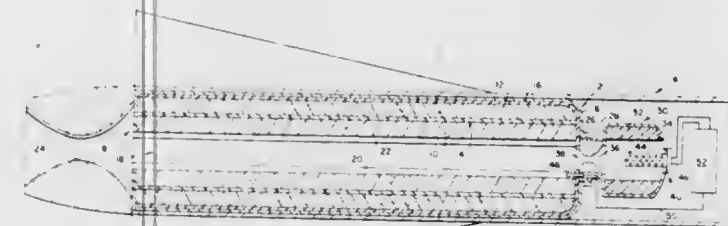
Int. Cl. B63h 11/00; F03h

U.S. Cl. 60-204

10 Claims

1. A selectable-impulse solid propellant rocket motor comprising, in combination: a motor case having a substantially

cylindrical external wall which forms a chamber, said wall being formed on its aft end with a converging-diverging nozzle, said wall also closing the forward end of the chamber except for a coaxial opening in communication with said chamber whereby hot gas can be introduced into said chamber; a solid rocket propellant grain disposed in said chamber, said grain including a plurality of adjacent zones of propellant, the center of the grain having an axial perforation extending from end to end therethrough along the center axis thereof; a



thin inhibitive barrier completely separating said adjacent propellant zones and formed of a material incapable of supporting its own combustion; and a rocket-type gas generator unit having exhaust nozzle means on its aft end, said means being secured to said motor case about said coaxial case opening, whereby hot gases produced by said unit may be directed through said opening and said axial perforation for removing each said inhibitive barrier between adjacent propellant zones.

3,857,240

PRIME MOVERS

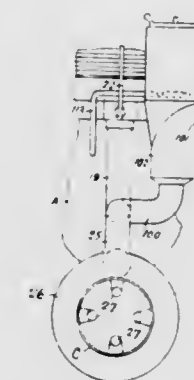
Thomas McIntyre, Barrack St., Perth 6000, Australia

Filed Feb. 28, 1972, Ser. No. 229,643

Int. Cl. B63h 11/02

U.S. Cl. 60-221

16 Claims



1. A prime mover comprising a gas generating unit including a combustion chamber having a gas outlet, a gas duct connected to said gas outlet, a first automatic mechanism for pumping a measured quantity of air into the combustion chamber once per working cycle of the unit, a second automatic mechanism for pumping a measured quantity of liquid fuel into the combustion chamber once per working cycle of the unit, an automatic shutter mechanism for momentarily blocking the passage of gas from the gas outlet to the gas duct at the end of each working cycle, and an interlinking mechanism for sequentially operating the first and second automatic mechanisms and the automatic shutter mechanism; and a liquid filled pipeline into which combustion gases of the unit are discharge by jet means by way of said gas duct; said prime mover further comprising means for venting the combustion chamber of the gas generating unit once per working cycle of the unit whenever during said working cycle the gas pressure in the combustion chamber falls to a value below a predetermined value, said venting means comprising valve means connected to said gas duct for automatically venting said gas duct in response to gas pressure changes in the combustion chamber.

3,857,241

FUEL CONTROL APPARATUS FOR GAS TURBINE ENGINE REHEAT SYSTEMS

Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

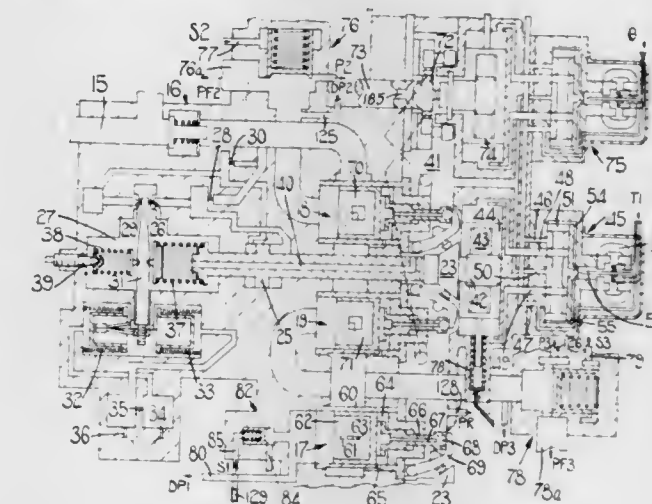
Filed Apr. 6, 1973, Ser. No. 348,634

Claims priority, application Great Britain, June 21, 1972, 29000/72

Int. Cl. F02c 9/06, 9/08

U.S. Cl. 60-243

4 Claims



1. A fuel control apparatus for a gas turbine engine reheat system having a plurality of burners, comprising a pump, first, second and third variable metering orifices in parallel, for controlling fuel flow from said pump to first, second and third reheat burners respectively, said variable metering orifices including control members respectively positioned by first, second and third servo pressure signals, means responsive to operating parameters of the engine to derive said servo pressure signals from the pressure upstream of said metering orifices and from a reference pressure, first, second and third throttle valves between said first, second and third metering orifices respectively and the associated burners, said first, second and third throttle valves being respectively responsive to first, second and third signal pressures, means responsive to a first difference in pressure between the pressures downstream of the first and second metering orifices for generating said second signal pressure, said second signal pressure thereby actuating said second throttle valve to maintain the pressure downstream of said second metering orifice equal to the pressure downstream of said first metering orifice, means responsive to a second difference in pressure between the pressures downstream of the first and third metering orifices for generating said third signal pressure, said third signal pressure thereby actuating said third throttle valve to maintain the pressure downstream of said third metering orifice equal to the pressure downstream of said first metering orifice, means for maintaining the pressure difference across the first metering orifice substantially constant for a given engine speed, and selector means for providing said first signal pressure from whichever of the pressures downstream of said second and third throttle valves or said reference pressure is the highest.

3,857,242

GRAVITY-BUOYANCY MOTOR

Ralph W. Gilmore, P.O. Box 426, Brundage, Ala. 36010

Filed Mar. 25, 1974, Ser. No. 454,456

Int. Cl. F01k 7/00; F03g 7/00

U.S. Cl. 60-495

9 Claims

1. A gravity-buoyancy motor comprising: a fluid-filled receptacle; a first vertically disposed conveyor mounted within said receptacle, said conveyor having downwardly open bracket arms mounted thereon at vertically spaced intervals; a first means for moving a plurality of closed and hollow tanks one-at-a-time through an opening near the bottom of said receptacle so as to place said tanks beneath said brackets; a first output shaft connected to said conveyor for rotation therewith as said tanks are buoyed upwardly as each are

placed beneath said brackets; a second vertically disposed conveyor having upwardly open bracket arms mounted thereon at vertically spaced intervals; a second means for moving said tanks one-at-a-time from the upper portion of said receptacle onto each of said second conveyor bracket arms; said first moving means being so disposed as to move said tanks away

means, the ratio of said second area to said first area being said predetermined ratio.

3,857,244

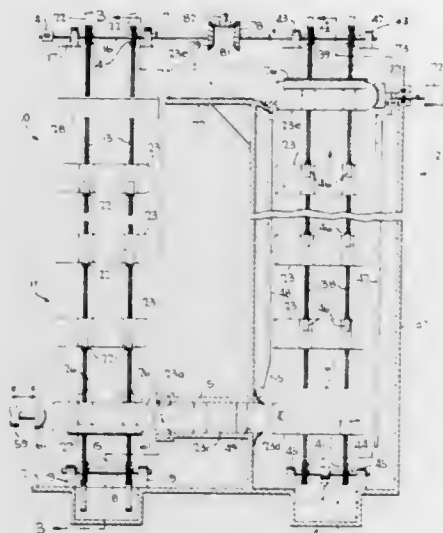
ENERGY RECOVERY AND CONVERSION SYSTEM
Reese E. Faucette, 11315 Crestfield Dr., Huntsville, Ala. 35803

Filed Nov. 2, 1973, Ser. No. 412,340

Int. Cl. F03g 7/00

U.S. Cl. 60-641

26 Claims



from said second conveyor at the lower portion thereof and through said opening as said tanks are lowered by gravity from the top of said bottom portion of said second conveyor; a second output shaft connected to said second conveyor for rotation therewith as said tanks are so lowered by gravity; and a power output means interconnecting said first and said second output shafts.

3,857,243

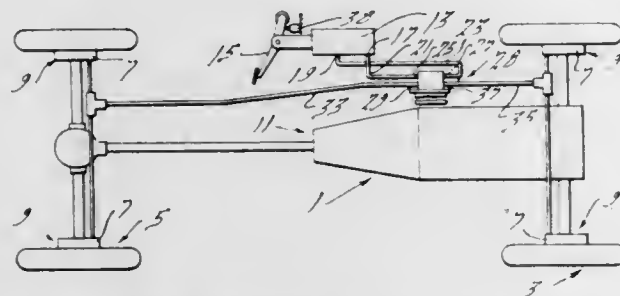
HYDRAULIC BRAKE BOOSTER AND SYSTEM
Joseph W. Douglas, Chelsea, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 30, 1972, Ser. No. 311,029

Int. Cl. F01b 9/00

U.S. Cl. 60-538

14 Claims



1. Hydraulic booster apparatus for a hydraulic brake system of a vehicle comprising a housing, an inlet and an outlet in said housing, pressure boosting and control means in said housing, first passage means connecting said inlet to said pressure boosting and control means for supplying fluid to the latter, second passage means connecting said pressure boosting and control means to said outlet for supplying fluid from the pressure boosting and control means to said outlet, means for actuating said pressure boosting and control means to increase the pressure of fluid in said second passage means over the pressure of fluid in said first passage means, and prevent means for preventing the ratio of the pressure of fluid in said second passage means to the pressure of fluid in said first passage means from exceeding a predetermined ratio, said prevent means including a member movable in said housing, a first area of said member being subjected to the pressure of fluid in said first passage means, a second area of said member being subjected to the pressure of fluid in said second passage

1. An energy conversion system comprising:
a first pipe extending downward into a cavity containing environmental heat;
a heat absorbing heat exchanger positioned in said cavity proximate to the lower end of said first pipe and said heat absorbing means having an inlet and outlet;
a uni-directional flow nozzle interconnecting the lower end of said first pipe and the inlet of said heat absorbing means, said uni-directional nozzle enabling flow through it from said first pipe to said heat absorbing means;
a second pipe extending from said outlet of said heat absorbing means upward to the upper end of said cavity;
a fluid; and
a heat load connected to the upper end of said first and second pipes and enclosing said fluid whereby said fluid is vaporized in said heat absorbing means by environmental heat, the resulting vapor flows upward through the said second pipe through said heat load after which it liquifies and forms a pressure head in said first pipe above said nozzle creating the pressure causing the fluid to be forced through said nozzle and again vaporized and the cycle repeated.

3,857,245

RELIEQUEFACTION OF BOIL OFF GAS
James Kevin Jones, 2, Cranbourne Close, Ashton-under-Lyne, Lancashire, England

Filed July 20, 1973, Ser. No. 381,235

Claims priority, application Great Britain, June 27, 1973, 30455/73

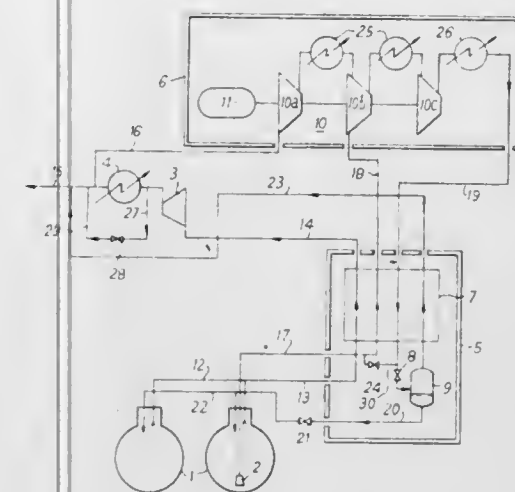
Int. Cl. F01k 25/08

U.S. Cl. 60-651

12 Claims

1. A method of reliequifying a part of the boil-off gas from a ship's cargo of liquefied natural gas, which boil-off gas has been compressed for feeding as fuel to the ship's motor, said method comprising the steps of separating a portion of the boil-off gas stream that has been compressed for feeding to the ship's boilers, further compressing said separated portion to a

higher pressure, cooling said further compressed portion to condense it, the cooling being effected in part by utilizing at least part of the sensible cold in the boil-off gas prior to compression and in part by cold obtained by expanding the con-



densate, recovering reliquified boil-off gas from the liquid fraction of the expanded condensate, and injecting liquified natural gas into the boil-off gas at a point before the further compressed portion is cooled to condense it.

3,857,246

APPARATUS FOR ADVANCING CONVEYORS OF MINING MACHINES IN UNDERGROUND EXCAVATIONS
Hans-Christian Roenspies, Bochum-Langendreer, and Manfred Vogt, Herne, both of Germany, assignors to Kloeckner-Werke AG, Duisburg, Germany

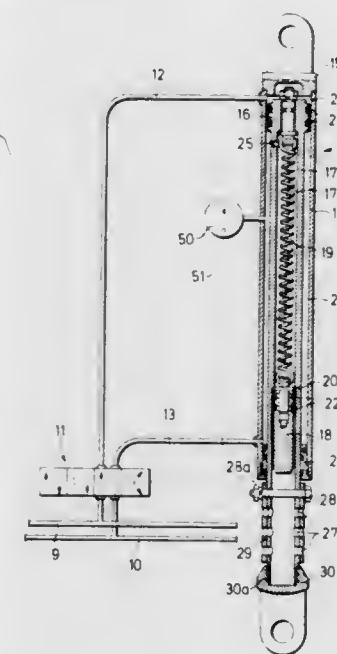
Filed Apr. 12, 1973, Ser. No. 350,469

Claims priority, application Germany, Apr. 26, 1972, 2220452

Int. Cl. E21d 11/00; F15b 13/04, 15/24

U.S. Cl. 61-45 D

21 Claims



1. Apparatus for displacing heavy and bulky structures, particularly for pushing a material evacuating conveyor and material removing means toward the mine face in an underground excavation, comprising an anchor; a fluid-operated motor including a cylinder having a closed end, a piston reciprocable in and defining with said cylinder a first chamber adjacent to said closed end, a hollow piston rod connected to said piston and having an end extending from said cylinder in a direction away from said closed end, one of said ends being connected to said anchor and said piston rod having a fluid-filled compartment and defining with said cylinder and with said piston a fluid-filled second chamber, means communicating said second chamber with said compartment, an axially

movable plunger in said compartment, first and second stops provided in said piston rod to limit the extent of movement of said plunger, said first stop being engaged by said plunger when the latter is nearest to said piston, and biasing means for urging said plunger against said first stop; a source of pressurized fluid; and valve means actuatable in one position to block fluid flow from said second chamber and to connect said source with said first chamber to thereby increase the distance between said closed end and said piston so that the other of said ends moves away from said anchor and the volumes of said first and second chambers respectively increase and decrease whereby the fluid flowing from said second chamber into said compartment moves said plunger from said first against said second stop to thus terminate the admission of fluid into said first chamber, said valve means being further actuatable to a second position to permit the outflow of fluid from said second chamber and to thus permit said plunger to return into engagement with said first stop under the action of said biasing means while said first chamber remains sealed by said valve means, said piston being movable in said cylinder through a predetermined maximum distance exceeding that distance which said piston must cover to transfer from said second chamber into said compartment enough fluid to move said plunger from said first stop against said second stop so that said piston can cover said maximum distance in at least two stages the second of which takes place in response to renewed admission of fluid into said first chamber upon completed return movement of said plunger against said first stop.

3,857,247

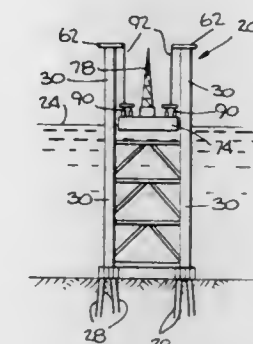
OFFSHORE TOWER ERECTION TECHNIQUE
Lindsey J. Phares, Sugar Lane, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Feb. 6, 1974, Ser. No. 440,122

Int. Cl. E02b 17/04; E02d 21/00

U.S. Cl. 61-46.5

6 Claims



1. A method of erecting an offshore tower comprising the steps of positioning a template on a sea bed with the upper end of the template extending above the sea surface, floating a barge out to the template and positioning the barge between the legs of the template, jacking the barge up on the legs of the template and out from the water, driving anchor piles from the barge down through the bottom of the template and into the sea bed to anchor the template in place on the sea bed, thereafter lowering said barge to a floating position, floating said barge away from said template, floating a permanent tower platform to the anchored in place template and jacking the platform up on the template to a raised position above the surface of the sea.

3,857,248

PLATFORM LEVELING DEVICE
Henry A. Rutter, 820 W. 10th, Claremore, Okla. 74017

Filed Mar. 8, 1973, Ser. No. 339,277

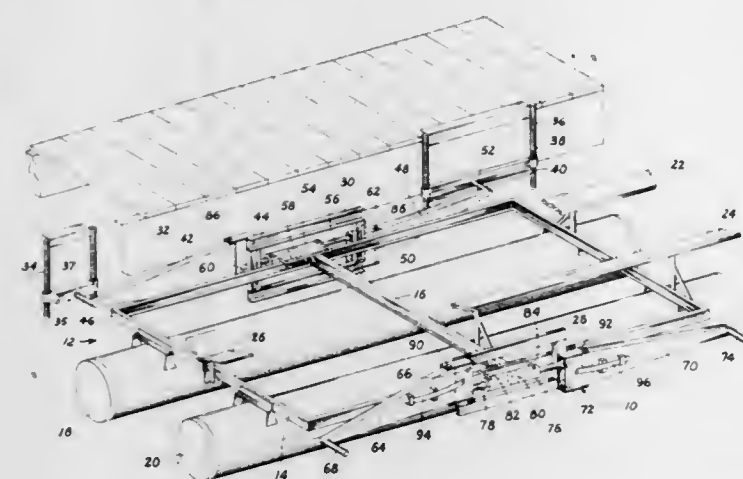
Int. Cl. B63c 5/00

U.S. Cl. 61-65

2 Claims

1. In combination with a boat hoisting apparatus of the type having a pontoon-supported and vertically movable platform disposed for vertical up and down movement within a boat slip

within a dock structure and wherein the vertical up and down movement is effected by the introduction of air into and the removal of air from, respectively, the pontoon portion of said apparatus, a platform leveling device comprising platform suspension means operably connected between the platform and the dock structure, and leveling means provided on the suspension means and operably connected to the platform for maintaining a constant attitude of the platform during static conditions and during hoisting operations regardless of the load distribution on the platform and regardless of any unevenness of the hoisting by the hoisting means, said platform suspension means comprising a first pair of oppositely disposed lever arm members pivotally connected to the platform about a common transverse axis, one said lever arm member being disposed on each side of the platform, the said first pair of lever arm members being also pivotally secured to the dock structure, a second pair of oppositely disposed lever arm members pivotally secured to each side of the platform about a common transverse axis, said axis being spaced from the axis of the first pair of lever arm members, the said second pair of lever arm members being also pivotally secured to the dock structure, the first pair of lever arm members being pivotally connected to each side of the platform near the center portion thereof and extending forwardly therefrom, the forwardly



extending ends thereof being pivotally connected to the dock structure and wherein the second pair of lever arm members are pivotally connected to each side of the platform near the rear portion thereof, said second pair of lever arm members extending forwardly from their pivotal connection, the forwardly extending ends thereof being pivotally connected to the dock structure, said leveling means comprising a first pair of longitudinally disposed vertically spaced linkage rods having one end thereof secured between the rear ends of the lever arm members on one side of the platform, said first pair of linkage rods vertically spaced on either side of the axis of rotation of the said lever arm members on one side of the platform, and an oppositely disposed second pair of longitudinally disposed vertically spaced linkage rods being secured between the rear ends of the lever arm members on the opposite side of the platform, said second pair of linkage rods vertically spaced on either side of the axis of rotation of the said lever arm members for providing simultaneous rotation of both lever arm members on one side of the platform and for providing simultaneous rotation of both lever arm members on the opposite side of the platform, said leveling means also comprising rotational transfer means for providing simultaneous rotation of both lever arm members of each pair of lever arm members.

3,857,249
COFFERDAM

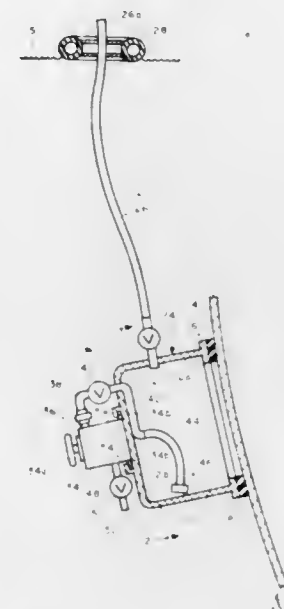
Thomas E. Kelly, 20110 S.W. 316th St., Homestead, Fla. 33030, and James K. Shelton, 1915 Monroe Ave., Panama City, Fla. 32401

Filed Mar. 22, 1973, Ser. No. 344,003

Int. Cl. B63c 11/34

U.S. Cl. 61-68

3 Claims



1. A cofferdam device for excluding water from a predetermined area of an underwater surface, said device comprising in combination:

- a cup-shaped body having sidewalls and an end wall defining a cavity having one side open;
- gasket means, attached to the edges of said side walls, for effecting a sealing engagement of said device to said underwater surface with the latter closing said cavity;
- a vent hose having its upper end in open communication with atmospheric pressure above the surface of said water;
- a first valve, connected between said hose and said body, said first valve being operative to selectively place said cavity into or out of communication with said atmospheric pressure;
- a pump having intake and discharge connections;
- lug means for removably securing said pump to said end wall;
- a second valve;
- union means for separably connecting one side of said second valve to said intake connection of said pump;
- a flexible hose disposed into said cavity, said hose having one end connected to said second valve and having its other end free for movement within said cavity; and
- a weight attached to said free end of said hose whereby said free end is adapted to be positioned at the lowermost portions of said cavity irrespective of the orientation of said body.

3,857,250

UNDERWATER VEHICLE FOR LAYING UNDERGROUND CABLES AND PIPELINES

Vincenzo Di Tella, Capella di Torre Gaveta, and Adolfo Rodighiero, Venezia, both of Italy, assignors to Tecnomare S.p.A., Venezia, Italy

Filed Apr. 4, 1973, Ser. No. 347,542

Claims priority, application Italy, Apr. 7, 1972, 22855/72

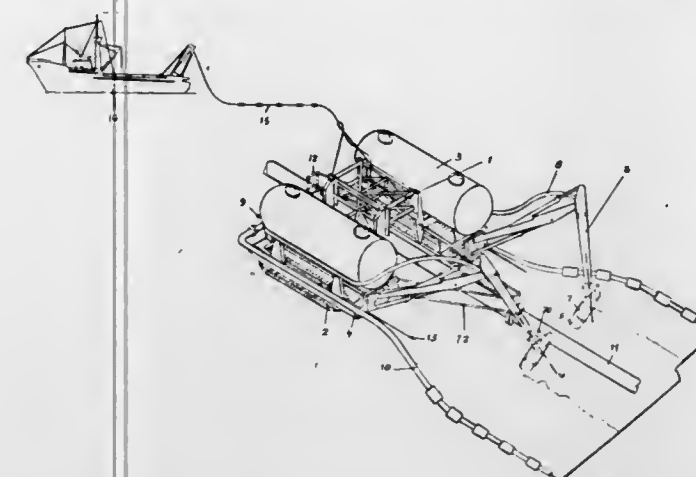
Int. Cl. E02f 5/06

U.S. Cl. 61-72.4

6 Claims

1. A vehicle for underwater entrenching of a pipeline or cable in a sea bed comprising: frame means adapted to be positioned in overlying relationship with said pipeline; drive means on said frame means adapted to propel the vehicle along the sea bed; survey means mounted on said frame means and adapted to be in contact with said pipeline for sensing

deviations of the movement of the vehicle from the path of the pipeline; servo means adapted to receive a signal output from said survey means, said servo means being operatively coupled to said drive means whereby the direction of movement of the



vehicle relative to the pipeline is controlled; and articulated arms mounted at one end to said frame means and having digging tools articulately mounted at the other end thereof, whereby a trench may be dug beneath said pipeline.

3,857,251

LNG STORAGE TANK VAPOR RECOVERY BY NITROGEN CYCLE REFRIGERATION WITH REFRIGERATION MAKE-UP PROVIDED BY SEPARATION OF SAME VAPOR

Jean Alleaume, Saint-Cloud, France, assignor to Technigaz, Paris, France

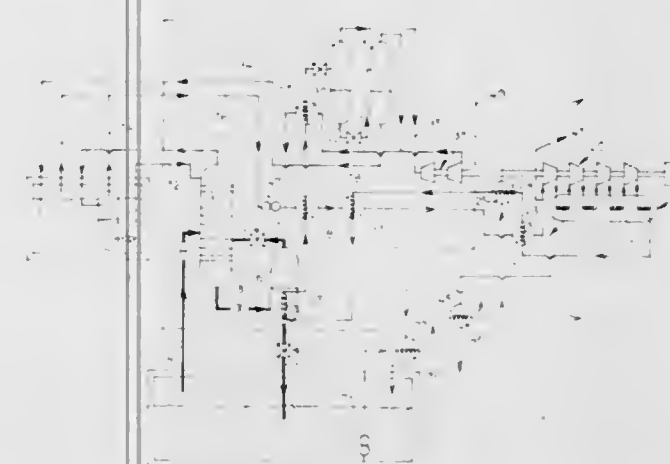
Filed Dec. 18, 1972, Ser. No. 315,931

Claims priority, application France, Dec. 27, 1971, 71.46842

Int. Cl. F25j 3/02

U.S. Cl. 62-28

18 Claims



1. A device for treatment of natural gas stored in liquefied state, comprising: tank means containing said liquefied natural gas and including a stop vapor space filled with the gaseous phase consisting of the vapors resulting from the boil-off of said liquefied-natural-gas; fractional distilling column means comprising a bottom collecting sump portion for holding reliquefied-natural-gas, an overhead vapor space collecting top portion for confining separated gaseous nitrogen and intermediate upper and lower portions and a sump portion; first vapor conveying duct means connecting said top vapor space of said tank means to said intermediate lower portion of said fractional distilling column means; first vapor pump means inserted in said first duct means and having its suction side communicating with said top vapor space and its discharge side communicating with said fractional distilling column means; reboiler vessel means including a lower liquid phase holding portion for containing reboiling liquefied-natural-gas and an upper gaseous phase holding portion for confining vapors of liquefied-natural-gas; heat exchange pipe

coil means contained within said lower liquid phase holding portion; first liquid-conveying duct means connecting said sump portion of said fractional distilling column means to the inlet of said lower liquid phase holding portion of said reboiler vessel means; first liquid pump means inserted in said second cut means and having its suction side communicating with said sump portion of said fractional distilling column means and its discharge side in communication in communication with said lower liquid phase holding portion of said reboiler vessel means; second liquid-conveying duct means connecting the outlet of said lower liquid phase holding portion of said reboiler vessel means with said top vapor space of said tank means; second vapor-conveying duct means connecting said upper gaseous phase holding portion of said reboiler vessel means to said intermediate lower portion of said fractional distilling column means; container means containing liquid-nitrogen and including a top vapor space filled with the gaseous phase released by the boil-off of said liquid-nitrogen; reflux condenser drum means immersed in said liquid-nitrogen within said container means and including a condensate holding portion containing liquid-nitrogen and a vapor holding portion filled with gaseous nitrogen; third liquid-conveying duct means connecting said condensate holding portion of said reflux condenser drum means to said intermediate upper portion of said fractional distilling column means; second liquid pump means inserted in said third liquid-conveying duct means and having its suction side communicating with said condensate holding portion of said reflux condenser drum means and its discharge side communicating with said intermediate upper portion of said fractional distilling column means; third vapor-conveying duct means connecting said overhead collecting top portion of said fractional distilling column means to the inlet of an immersed portion of said vapor holding portion of said reflux condenser drum means; main gaseous flow heat exchanger means having a refrigerating medium flow path and a heating medium flow path respectively interconnected in series, said treating medium flow path including pipe coil means interconnected in series within said heating medium flow path of said main heat exchanger means; fourth vapor-conveying duct means connecting the outlet of said top vapor space of said container means to the inlet of said refrigerating medium flow path of said main gaseous flow heat exchanger means; second gas pump means inserted in said fourth vapor-conveying duct means and having its suction side communicating with said top vapor space of said container and its discharge side communicating with said refrigerating medium flow path of said main gaseous flow heat exchanger means; power driven compressor means with at least one compression stage having an inlet and an outlet connected to the refrigerating medium flow path and to the heating medium flow path, respectively, of said main heat exchanger means; and cold phase separator means including a condensate holding portion for containing liquid-nitrogen and a vapor holding portion for confining non-condensed gaseous nitrogen; fourth liquid-conveying duct means connecting said condensate holding portion of said cold phase separator means into the body of liquid nitrogen contained in said container; an outlet and an inlet of said vapor holding portion of said cold phase separator being connected to the inlet of the refrigerating medium flow path and to the outlet of the heating medium flow path, respectively, of said main heat exchanger means.

3,857,252

FOOD PRODUCT FREEZING APPARATUS

Edward M. Wight, Austin, Tex., assignor to Glacier Industries, Inc., Austin, Tex.

Filed Jan. 17, 1973, Ser. No. 324,432

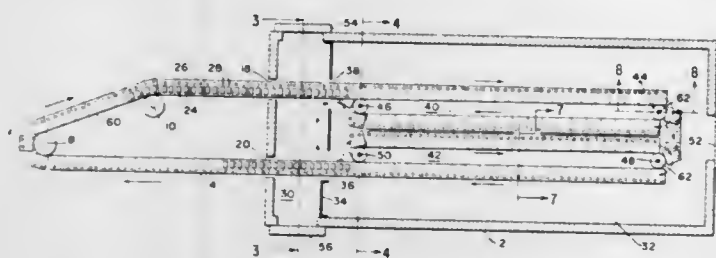
Int. Cl. F25d 23/02

U.S. Cl. 62-266

32 Claims

1. A food freezing apparatus comprising:

a vault;
a continuous conveying means for transporting food products into, through and out of said vault, said conveying means traveling primarily in at least one network along substantially parallel planes within said vault;
a refrigeration coil;
means for circulating air in heat exchange with said coil and over said products in a direction substantially parallel to a plane perpendicular to the primary planes of travel of



said conveying means within said vault; and a bulkhead within said vault forming a first and second chamber within said vault, said food products passing into and out of said vault through said first chamber, said second chamber containing said means for circulating air, said coil and said networks, wherein said bulkhead is positioned substantially perpendicular to the primary planes of travel of said conveying means and parallel to said air circulation direction.

3,857,253

UNITARY AIR COOLED CENTRIFUGAL REFRIGERATION WATER CHILLER

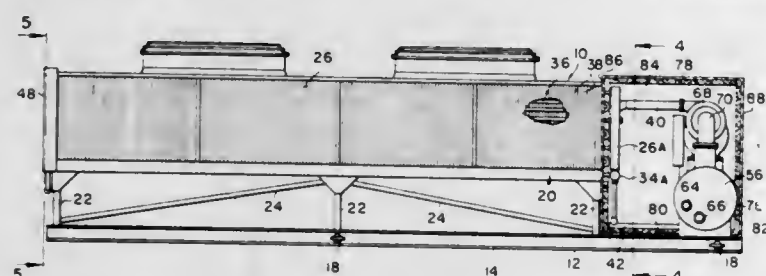
Lee W. Burgett; Chester D. Ware, and Duane F. Sanborn, all of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Continuation of Ser. No. 292,051, Sept. 25, 1972, This application Feb. 11, 1974, Ser. No. 441,633

Int. Cl. F25b 39/04

U.S. Cl. 62—289

8 Claims



1. A portable self-contained unitary water chiller machine comprising: an elongated air cooled heat exchanger having a generally U-shaped vertical cross section normal to the longitudinal axis thereof; each of the leg and bottom portions of said U-shaped section including a plurality of parallel spaced horizontally conducting refrigerant tubes extending longitudinally from one end to the other end thereof through a plurality of longitudinally and horizontally spaced heat exchanger fins; an elongated portable subframe disposed beneath said air cooled heat exchanger having a portion extending longitudinally beyond one end of said air cooled heat exchanger; first elongated header means at said one end of said air cooled heat exchanger extending transversely to said portable subframe for conducting refrigerant with respect to one longitudinal end of said tubes; second header means at the other end of said air cooled heat exchanger extending transversely to said portable subframe for conducting condensed refrigerant with respect to the other longitudinal end of said tubes; means for supporting said air cooled heat exchanger in spaced relation above said subframe to provide a space for passing air above said subframe below said bottom portion of said U-shaped section; a plurality of longitudinally spaced fan means disposed above said bottom portion and intermediate said leg portions of said U-shaped section for drawing air through each of said bottom

and leg portions; an elongated shell-and-tube refrigerant evaporator heat exchanger disposed entirely at said one end of said air cooled heat exchanger supported transversely on said portion of said elongated portable subframe extending beyond said one end of said air cooled heat exchanger; a centrifugal refrigerant compressor at said one end of said air cooled heat exchanger supported by said portion of said portable subframe extending beyond said one end of said air cooled heat exchanger; first conduit means for conducting refrigerant from the shell of said evaporator heat exchanger to the inlet of said compressor; second conduit means for conducting refrigerant gas from said compressor longitudinally of said portable subframe to said first header means at said one end of said air cooled heat exchanger; third conduit means for conducting condensed refrigerant from said second header at the other end of said air cooled heat exchanger longitudinally of said portable subframe to said evaporator heat exchanger; and means for conducting water to be chilled transversely of said portable subframe within the tubes of said shell-and-tube evaporator heat exchanger.

3,857,254

MEAT TREATING APPLIANCE

Stanley Lobel, 1096 Madison Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 208,164, Dec. 15, 1971, Pat.

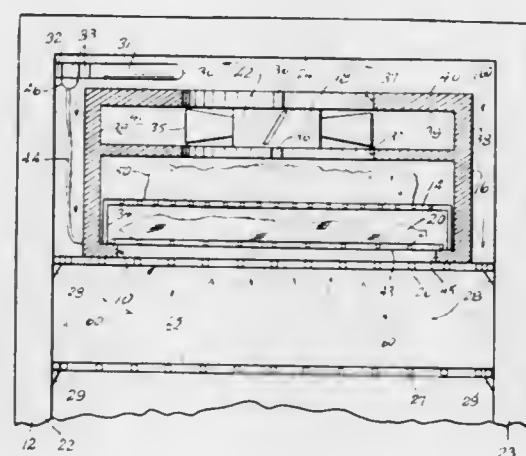
No. 3,821,454. This application July 23, 1973, Ser. No.

381,689

Int. Cl. F25d 17/02

U.S. Cl. 62—373

1 Claim



1. Structure for the simultaneous ageing, defrosting and marinating of meat or the like comprising: a refrigerator, an open vessel containing a marinade, a support for said vessel in said refrigerator, and fan means positioned to direct a current of air upon said open vessel to impinge upon said marinade to cause turbulence in the surface thereof, whereby meat disposed within said vessel is marinated at an accelerated rate.

3,857,255

CRYOGENIC CONTROL VALVE

Albert A. Elwood, 301 Broadway, Riviera Beach, and James Patterson, 2195 Ibis Isle Rd., Palm Beach, both of Fla. 33404

Filed Nov. 26, 1971, Ser. No. 168,331

Int. Cl. F25d 3/00

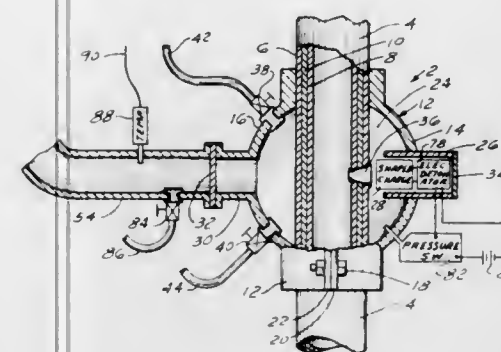
U.S. Cl. 62—293

7 Claims

1. A cryogenic valve for regulating the flow of fluid in a conduit by supplying a cryogenic coolant into the conduit to create a gating means including:

a cryogenic coolant source,
a body connectable to the conduit, said body including a cryogenic inlet connected to said coolant source, means for directing the movement of the cryogenic coolant from said coolant source into the body to cool the fluids in the conduit to regulate the conduit fluid flow rate, and control means connected to said body including means for

opening a passage into the conduit to provide a passage-way to allow at least a portion of the cryogenic coolant to



mix with the fluids in the conduit whereby said mixture forms the gating means to regulate the flow of the fluids.

3,857,256

MULTIPLE UNIVERSAL JOINT

Sobhy Labib Girgis, Troisdorf, Germany, assignor to Uni-Cardan A.G., Lohmar/Rheinl, Postfach, Germany

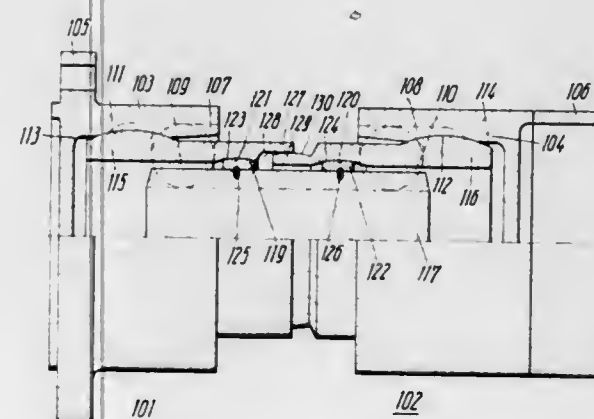
Filed Feb. 8, 1973, Ser. No. 330,480

Claims priority, application Germany, Feb. 8, 1972, 2205802

Int. Cl. F16d 3/30

U.S. Cl. 64—21

14 Claims



1. In a universal joint, the combination of a plurality of constant velocity universal joints, each constant velocity universal joint comprising an outer joint element and an inner joint element having mutually opposed axially extending grooves, balls in said mutually opposed grooves to transmit torque between the joint elements, a cage between the inner and outer joint elements of each constant velocity universal joint to retain said balls therebetween, one of the corresponding joint elements of the constant velocity universal joints connected to each other, control means for guiding the cages and balls of two adjacent constant velocity universal joints to maintain constant velocity transmission, each of said cages having an axial extension on the end thereof facing the other cage, and means for guiding the mutually facing axial extensions opposite each other such that upon bending of the universal joint the said constant velocity universal joints are bent at angles which are less than the total bending angle and having a predetermined relationship to each other.

3,857,257

COUPLING WITH MECHANICAL OVERLOAD SAFETY DEVICE

Gerd Steiner, Darmstadt-Arheilgen, and Rainer Kuhnpast, Dusseldorf, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

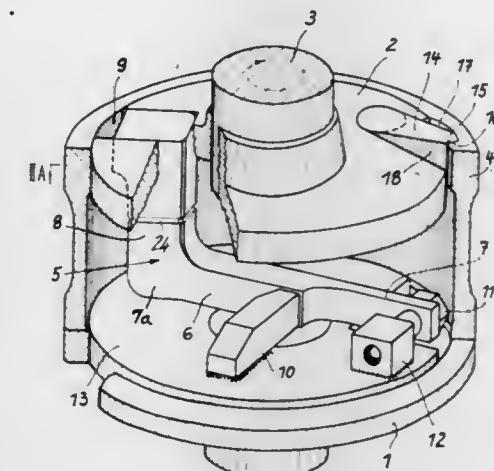
Filed July 27, 1973, Ser. No. 383,249

Claims priority, application Germany, July 27, 1972, 2236856

Int. Cl. F16d 9/00

U.S. Cl. 64—28 R

10 Claims



1. A coupling for transmitting torque between two rotary members, the coupling comprising:-

a driving coupling part;
a driven coupling part;
abutment means on said coupling parts, respective said abutment means engaging and preventing relative rotation between said coupling parts in a direction opposite to that of relative rotation which said torque transmitted by said coupling tends to cause;

at least one coupling member which couples said coupling parts together at at least one position spaced from the axis of said coupling, said coupling member having a zone of reduced strength, which zone fractures when a predetermined overload on said coupling is exceeded, thereby interrupting effective transmission between said coupling parts;

means for subjecting said zone of reduced strength to an additional force when a predetermined load, less than said predetermined overload, on said coupling is exceeded; and

means for pre-stressing said coupling member and thereby applying a pre-stressing torque to both said coupling parts which is substantially equal to said predetermined load and is in a direction urging said abutment means together.

3,857,258

PATTERN WHEEL WITH PIVOTED JACKS SUPPORTED BY INSERTED WALL MEMBERS

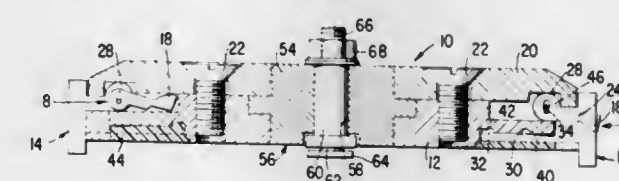
Harry Agulnek, and Lester Mishcon, both of Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,630

Int. Cl. D04b 15/76

U.S. Cl. 66—50 A

2 Claims



1. A pattern wheel comprising a ring with slots in a peripheral marginal portion thereof; an insert in each slot, the inserts extending beyond the slots and defining walls for the pattern

wheels, each insert including a jack supporting arm and an additional arm; a bonding agent solidified in place against each of the additional arms and the ring for securing the inserts to the ring; a plurality of pivotally mounted needle-actuating jacks in said wheel supported by and situated between said walls, the jacks being movable between a needle-actuating and a non-actuating position; and a cover secured to said ring for holding down jacks in the actuating position and extending over jacks in the non-actuating position.

3,857,259

KNITTING MACHINE PATTERN WHEEL

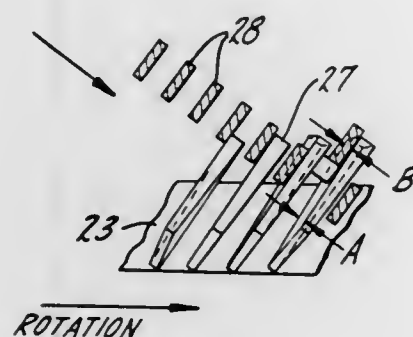
John E. Press, Park Ridge, Ill., assignor to Harig Precision, Inc., Elgin, Ill.

Filed Sept. 10, 1973, Ser. No. 395,829

Int. Cl. D04b 15/76

U.S. Cl. 66-50 A

4 Claims



1. In a pattern wheel for use in a knitting machine, the combination of
a wheel disc having integral peripheral teeth formed thereon,
each peripheral wheel disc tooth being disposed at a generally helical angle with respect to the wheel disc and having a configuration generally conforming to the configuration of a helical gear tooth,
said wheel disc being made from a material having the characteristic, with respect to yieldability, of plastic to thereby accommodate misalignment between the pattern wheel and a knitting needle,
a metal jack plate mounted on one side of said wheel disc in flush engagement therewith over at least a portion of its overlapping area,
said metal jack plate having a plurality of jacks thereon disposed between the wheel disc teeth,
each jack plate jack being integrally formed with the jack plate,
at least that radial portion of each integrally formed jack plate jack which radially overlaps an adjacent wheel disc tooth being angularly disposed so as to closely interfit with flanking wheel disc teeth, and
means for releasably fastening the jack plate to the wheel disc,
each of said jack plate jacks being severable at an area of weakness located radially inwardly from its extremity a distance sufficient to provide clearance for the butt of a knitting needle.

3,857,260

SINKER ARRANGEMENT FOR WARP KNITTING AND RASCHEL MACHINES

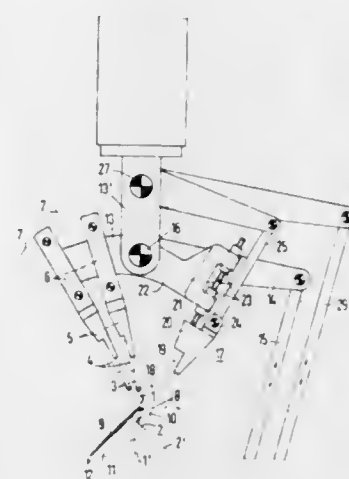
Arno Zwingenberger, Blumenstr. 15, 8671 Marxgrun, Bayern; Roland Wunner, Hauptstrasse 30, 8671 Bernstein/Wald, Bayern, both of Germany; Karl Liebrandt, deceased, late of Griesbacher Weg 3, 8674 Naila, Bayern, Germany (by Sophia Liebrandt, nee Saalfrank, heir and legal representative), and Gunnar Liebrandt, Pitschhausenweg 1a, 8674 Naila, Bayern, Germany (heir and legal representative)

Filed June 5, 1972, Ser. No. 259,785

Int. Cl. D04b 23/12, 15/06

U.S. Cl. 66-84

1 Claim



1. A warp knitting or Raschel machine comprising a row of vertical needles, a plurality of vertical needles, a plurality of thread guides for supplying warp thread to said needles, means for feeding weft or filler thread to said needles for producing knitted fabric, said weft or filler thread extending over the entire width of the machine, and means for reciprocating said needles mainly vertically and said thread guides mainly horizontally during a knitting cycle, a sinker arrangement comprising a plurality of sinkers movably mounted above said needles and capable of performing a substantially circular or orbital movement, and means for moving said sinkers horizontally in timed relationship with the movement of said thread guides, and vertically in timed relationship with the movement of said needles, the sinkers thus performing said substantially circular or orbital movement serving to hold said weft or filler thread in place during the rising movement of the needles.

3,857,261

TEXTILE SCOURING RANGE

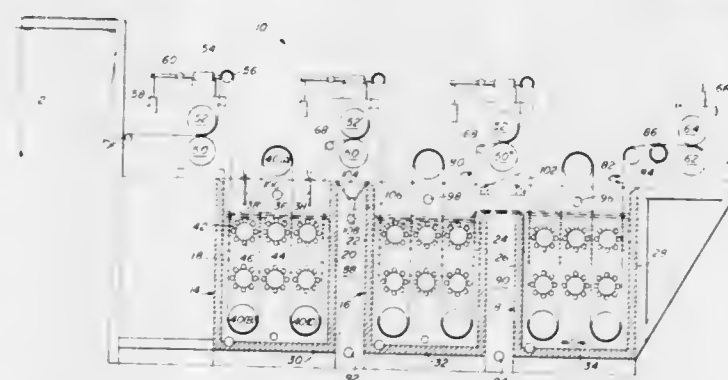
Harold R. Wilcox, Maynard, Mass. Assignor to Riggs & Lombard, Inc., Lowell, Mass.

Filed Aug. 27, 1973, Ser. No. 391,609

Int. Cl. B05c 3/04, 3/138

U.S. Cl. 68-22 R

5 Claims



1. A range for treating a running web with a scouring liquid or the like, comprising
a. a plurality of tanks spaced along the path of travel of said web and adapted to contain a quantity of liquid,

- b. an overflow compartment disposed between adjacent tanks to receive excess liquid from said adjacent tanks,
- c. drain means connected to each of said compartments for removing liquid from said compartments,
- d. valve means connected to said drain means for selectively opening and closing said drain means whereby liquid accumulated in said compartments may overflow into an adjacent tank or into said drain means,
- e. a pair of nip rolls mounted above each of said compartments for squeezing liquid from said web passing therebetween,
- f. deflecting means disposed below at least one of said pair of nip rolls for selectively directing liquid from said nip rolls into a compartment or into a tank, and,
- g. guide means for guiding said web into and out of said tanks and through said pairs of nip rolls.

3,857,262

MAGNETIC LOCKING MECHANISM

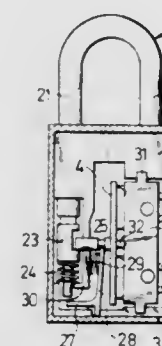
Konstantin Sidiropoulos, Liechtensteinerstrasse 4, 6800 Feldkirch, Austria

Filed Feb. 8, 1973, Ser. No. 330,667

Int. Cl. E05b 47/00

U.S. Cl. 70-276

10 Claims



1. A locking mechanism comprising, in combination:
 - a. a casing;
 - b. a first locking element fixedly fastened in said casing;
 - c. a second locking element guided in said casing for movement relative to said first element,
 1. one of said elements being formed with a plurality of apertures directed toward the other element;
 - d. a plurality of elongated pin members of magnetically susceptible material mounted on the other element for movement between respective operative and rest positions,
 1. said pin members, when in said operative position, being longitudinally directed toward said apertures and entering respective ones of said apertures when said second element approaches said first element,
 2. said pin members, when in said rest positions, being out of alignment with said apertures and limiting movement of said second element toward said first element in a position in which said pin members are outside said apertures;
 - e. first magnetic means fixedly mounted on said other element and biasing said pin members toward said rest positions thereof;
 - f. a key carrying a plurality of second magnetic means; and
 - g. guide means on said casing for guiding said key toward and away from an unlocking position in which said second magnetic means bias said pin members toward the operative positions thereof with a force sufficient to overcome the biasing force of said first magnetic means; and
 - h. latching means operatively connected to said second locking element for simultaneous movement therewith.

3,857,263

PICK RESISTANT CYLINDER LOCK

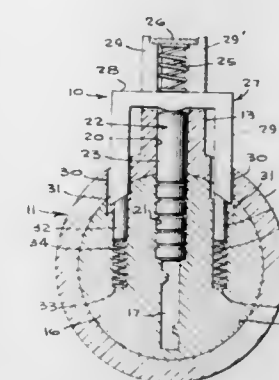
Klaus W. Gartner, 363 W. Squire Dr., No. 4, Rochester, N.Y. 14623

Filed Aug. 3, 1973, Ser. No. 385,230

Int. Cl. E05b 15/14, 63/00

U.S. Cl. 70-364 A

14 Claims



1. A cylinder lock adapted to be unlocked by a key, comprising a lock casing having a forwardly opening, axially elongated cylindrical bore therein a cylindrical key plug rotatably disposed in said bore for rotation about the bore axis having a key slot therein and a cylindrical surface closely conforming to and located immediately adjacent the bounding surface of said bore defining a shear line at the interface therebetween, said lock casing and key plug each having mating bore sections alinable along pin axes intersecting the shear line at the locked position of the plug to form tumbler bores, tumbler pin assemblies in each of said tumbler bores each including a rigid pin locking segment resiliently biased to a normal position extending into both said bore sections crossing said shear line and a plurality of inner pin segments in the plug bore section defining plural planes of separation for each pin assembly spaced radially inwardly of the shear line, and locking members for the respective pin assemblies coupled for reciprocal movement with the associated pin assemblies along paths generally paralleling and laterally spaced from the associated pin axes and each having a rigid elongated locking leg crossing said shear line to block rotary movement of the plug from said locked position, said casing and plug having recesses alinable at the locked position of the plug to receive said legs of said locking members, and said legs having end surfaces positioned to align with said shear line when the pin assemblies are moved to a release position aligning selected planes of separation defined by said pin segments with the shear line to release the plug for rotation to unlocked position.

3,857,264

PROTECTIVE SHIELD FOR COIN BOX LOCKS AND KEY THEREFOR

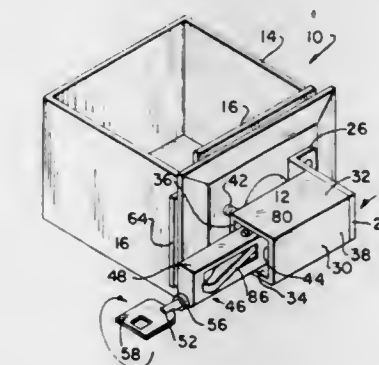
Lawrence S. Fowler, 135 Kearney, Denver, Colo. 80220

Filed July 5, 1973, Ser. No. 376,729

Int. Cl. E05b 17/14

U.S. Cl. 70-423

19 Claims



1. Anti-probe apparatus for use with a lock of the type actuated by insertion of a key into a keyway followed by rotation thereof which comprises in combination: guard means defining a tunnel having an opening in the side thereof

intermediate its ends sized to provide access to the keyway when attached so as to register therewith and a second opening at one end displaced to one side of said access opening and disposed at right angles thereto; and, lock-actuating means including a housing insertable into said tunnel through the open end thereof, said housing being sized for relative transverse movement therein between a retracted position remote from the access opening in the side thereof and an extended position in close proximity to the latter, a key operative to actuate the lock journalled for rotation in the housing in position to enter the keyway upon relative transverse movement of said housing from its retracted into extended position, right angle drive means within said housing connected to said key and operative upon actuation to rotate same, and actuating means accessible through the open end of the tunnel operatively connected to said drive means.

3,857,265

APPARATUS FOR ELECTROHYDRAULICALLY FORMING TUBULAR ELEMENTS

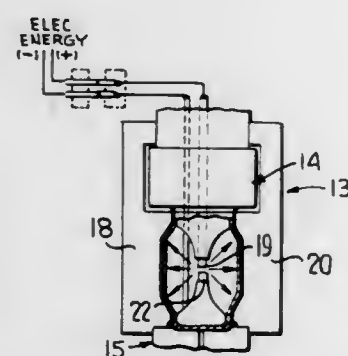
Warren F. Howler, Oak Lawn; Lubi Radosh, Palos Heights; Donald J. Roth, Chicago Heights; Norbert L. Wright, Park Ridge; John W. Grek, Lisle; Kent B. Godsted, Dolton, all of Ill., and Joseph A. Geuss, Erie, Pa., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 749,885, Aug. 2, 1968, abandoned. This application May 12, 1972, Ser. No. 252,829

Int. Cl. B21d 26/12

U.S. Cl. 72-56

7 Claims



1. Apparatus for reforming tubular elements comprising means for conveying tubular elements between loading and discharging stations, mold means carried by said conveying means for receiving the tubular elements in cavities of said mold means, flexible chamber means internally of each mold means and in telescopic relationship to the tubular element therein, means for periodically conducting a fluid medium into said chamber means, means for generating an electrical discharge in said chamber means whereby each tubular element is reformed by the fluid medium to the configuration of the cavities, means for opening each mold means for the removal of each reformed tubular element therefrom, means surrounding said chamber means for clamping a peripheral edge of each tubular element against cooperating clamping surface means of each mold means, means for increasing the pressure of the fluid medium in the chamber means prior to the operation of said generating means, and means for increasing the clamping force between said clamping means and said clamping surface means depending upon the increase of pressure of the fluid medium in the chamber means.

3,857,266

ROTARY ARBOR WIRE STRAIGHTENER

David J. Wilke, York, Pa., assignor to Handy & Harman Specialty Metals Group, Cockeysville, Md.

Filed Aug. 24, 1973, Ser. No. 391,497

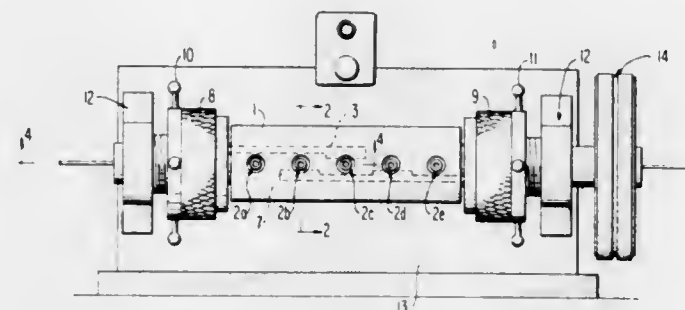
Int. Cl. B21f 1/04

U.S. Cl. 72-79

4 Claims

1. A rotary arbor wire straightener comprising stationary frame means, an arbor rotatably mounted on said frame

means, adjustable die means mounted within said arbor and rotatable therewith, rack means slidably mounted in said arbor, pinion means connected to said die means, one end of said rack means engaging said pinion means, a collar thread-



3,857,267

PROCESS AND INSTALLATION FOR PRODUCING METAL TUBES WITHOUT WELDING

Jean Paul Lemaire, Saint Saulve, and Philippe Malicet, Valenciennes, both of France, assignors to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

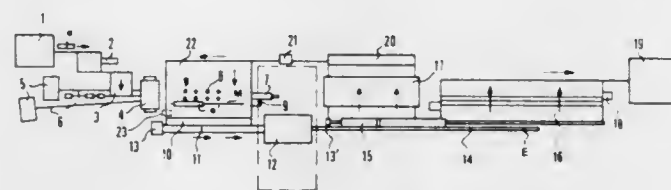
Filed Sept. 5, 1973, Ser. No. 394,603

Claims priority, application France, Sept. 8, 1972, 72.31888

Int. Cl. B21b 23/00

U.S. Cl. 72-209

6 Claims



1. A process for producing metal tubes without welding, comprising the steps of:

- boring a solid bar with a mandrel, to produce a tube blank surrounding the mandrel.
- introducing the combined blank and mandrel into a continuous mill,
- moving the mandrel within the mill at a speed such that during the rolling operation the available length of the mandrel is at least equal to the length required for the rolling operation, but such that upon completion of the rolling operation only a small fraction of the rolled blank has the mandrel within it,
- releasing the mandrel after rolling of the blank has been completed so that the mandrel discontinues its movement through the mill,
- removing the mandrel from the rolled blank,
- subjecting the rolled blank to further processing, and
- cooling, inspecting, and lubricating the mandrel and returning it to its original position for boring another solid bar.

3,857,268

ROLLING MILL AND ROLLING METHOD

Toshiyuki Kajiwaka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

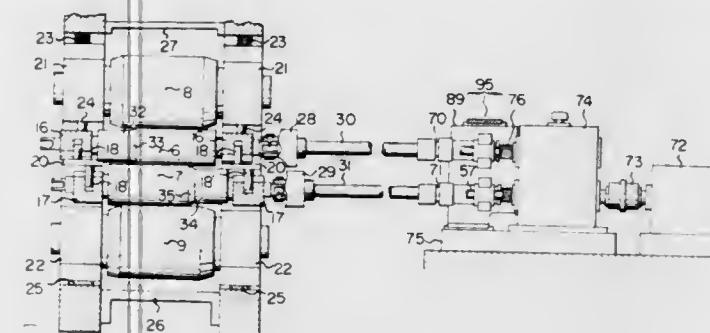
Filed Dec. 6, 1972, Ser. No. 312,784

Claims priority, application Japan, Dec. 10, 1971, 46-99450

Int. Cl. B21b 31/18

U.S. Cl. 72-247

15 Claims



1. A rolling mill comprising: a pair of upper and lower working rolls each contacting a material being rolled, a pair of back up rolls backing up said working rolls, one of said back up rolls being positioned on said upper working roll and the other of said back up rolls being positioned under said lower working roll; said working rolls and said back up rolls being arranged in a vertical plane, means for shifting said upper working roll in the axial direction to locate one terminal end of the working surface of said upper working roll between the adjacent end of the associated back up roll and the adjacent edge of the material being rolled, and means for shifting said lower working roll in the axial direction to locate the terminal end of the working surface of said lower working roll which is opposite to said terminal end of the upper working roll between the adjacent end of the associated back up roll and the adjacent edge of said material being rolled, whereby the flatness of the rolled material is controlled.

mined minimum area remote from the supply, and length and breadth sufficient to allow coiled loops of said tubing being pulled therethrough to attain a relatively straight configuration near the end of their travel through said structure, serially pulling coiled loops of tubing from the supply thereof into and through said hollow structure, the coils of said tubing traveling through said elongated structure in gradually decreasing diameters towards said minimum opening, and directing the tubing from said elongated structure in a manner that allows the tube to assume a change in direction.

3,857,270

METHOD OF SHAPING SHEET MATERIAL

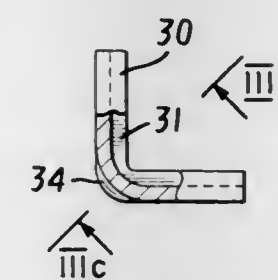
Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,864

Int. Cl. B21d 5/00

U.S. Cl. 72-324

7 Claims



1. A method of shaping sheet material comprising relieving the material at an area at one side of the sheet, and bending the sheet about an axis through said area with the area on the inside of the bend, thereby drawing in the sheet material at the apex of the angle formed by the bend.

3,857,271

BENDING MACHINE FOR ROD OR STRIP MATERIAL

Hans Gott; Klaus Ritter; Josef Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H., Graz, Austria

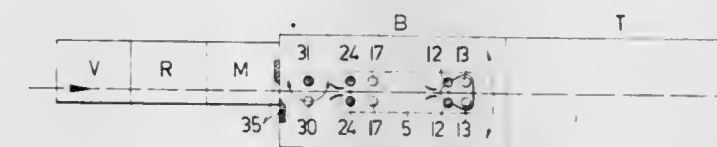
Filed May 2, 1973, Ser. No. 356,383

Claims priority, application Austria, May 2, 1972, 3792/72

Int. Cl. B21d 5/02

U.S. Cl. 72-383

6 Claims



1. A bending machine for rod or strip material, such as reinforcing pieces for concrete, said machine comprising feed means for feeding into a feed path material to be bent, a first bending head defining an axis of bend mounted at a fixed position along said path, a second bending head mounted downstream of said first bending head, first movement means adjustably separating said first and said second bending heads, each of said bending heads comprising a pair of movable bending tools and a pair of fixed bending mandrels forming guides for said material, said pairs of movable bending tools being actuated in opposite directions, pivot means pivotally mounting said second bending head about the axis of bend of said first bending head out of said path, said pivot means being coupled to said first bending head, whereby said first and said second bending heads simultaneously bend said material in a plane in opposite senses to substantially the same extent, and second movement means for moving said second bending head and at least one of said bending tools of said first bending head out of the plane of bend of said material.

3,857,269

NON-ROTATABLE TUBE PAY-OFF APPARATUS

Guy E. Martin, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

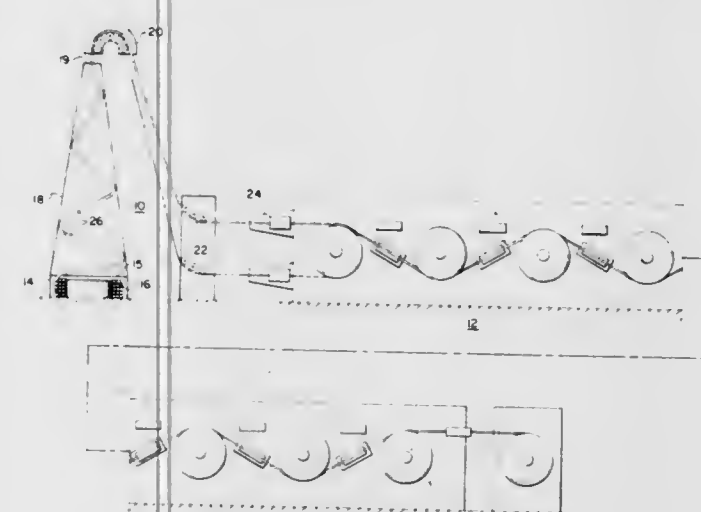
Continuation-in-part of Ser. No. 219,641, Jan. 21, 1972, Pat. No. 3,765,215. This application Apr. 30, 1973, Ser. No. 355,886

355,886

Int. Cl. B21c 1/04

U.S. Cl. 72-287

8 Claims



1. The method of paying off coiled tubing in a low inertia manner from a non-rotatable supply of said tubing, the method comprising the steps of

providing a hollow, elongated structure having a cross sectional area that gradually decreases in a direction away from the supply of tubing to an opening of a predeter-

3,857,272 COUNTERSTROKE HAMMER

Bogdan Vyacheslavovich Voitsekhnovskiy, ulitsa Akademicheskaya, kottedzh, 2; Valentin Pavlovich Nikolaev, ulitsa Maltseva 1, kv. 8, and Grigory Yankelevich Shoikhet, ulitsa Pravdy, 1, kv. 34, all of Novosibirsk, U.S.S.R.

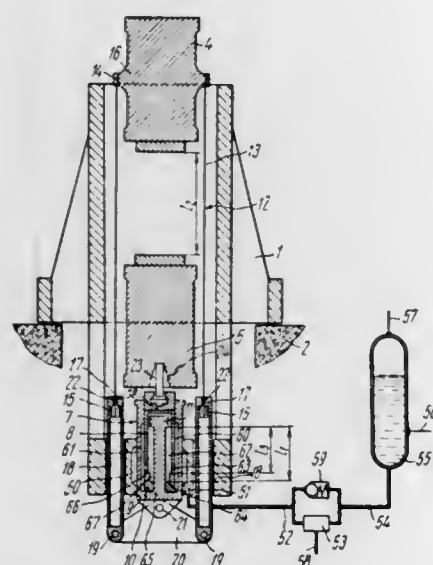
Filed June 13, 1973, Ser. No. 369,549

Claims priority, application U.S.S.R., June 13, 1972, 796429; Aug. 26, 1971, 687061

Int. Cl. B21j 9/12

U.S. Cl. 72-407

12 Claims



1. A counterstroke hammer comprising: a frame; two rams moving towards each other from their initial positions until they come into interaction in a zone for processing a workpiece and return to their initial positions; guides secured to the frame along which movements of the rams are effected; an acceleration drive for the rams made as a pair of reciprocatingly moving parts, cylinder-plunger, which move relative to the frame and both rams in the direction that the latter move during acceleration, the value of mutual relative displacement of both parts of the drive being less than the total distance travelled by said rams from their said initial positions until they come into interaction; tie-rods intended to ensure simultaneous interaction with one of said rams and one of said moving parts of the drive in order to impart an acceleration force to said ram and further disconnect the ram-drive moving part system to ensure movement of the ram free from the drive action following the acceleration; the other moving part of the drive being adapted to contact the other said ram for transmitting an acceleration force and is disconnected from said contact after the ram is accelerated to perform a movement free from the action of the drive, resulting in that the impact interaction of the rams is effected with the disconnected drive, the kinetic energy obtained during their acceleration being damped, while the kinetic energy of both parts of the drive being damped during their interaction independently of the rams.

3,857,273 TOOTHED FORMING TOOL

Robert L. Miller, Warren, and Louis M. Fisset, Roseville, both of Mich., assignors to Ex-Cell-O Corporation, Highland Park, Mich.

Filed June 22, 1973, Ser. No. 372,683

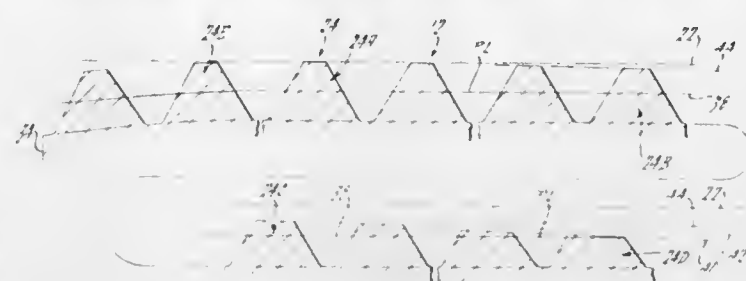
Int. Cl. B21d 5/02

U.S. Cl. 72-469

11 Claims

1. A tool for pressure forming teeth on the periphery of a cylindrical workpiece, said tool including a body having a leading end and a trailing end and being provided with a working face having a plurality of teeth thereon, a first section of said teeth being disposed between said leading end and said trailing end, each of said teeth in said first section having a configuration conjugate to the configuration of the teeth to be formed on the workpiece and having a pitch line, second, third

and fourth sections of teeth being disposed between said first section of teeth and said leading end, the tops of the teeth in



said second, third and fourth sections sloping toward said leading end at successively increasing angles.

3,857,274 APPARATUS FOR RAPIDLY EVALUATING THE RATE OF A TIMEKEEPER

Pierre Desarzens, and Jacques Vogt, both of Bienne, Switzerland, assignors to Omega Louis Brandt & Trere S.A., Berne, Canada

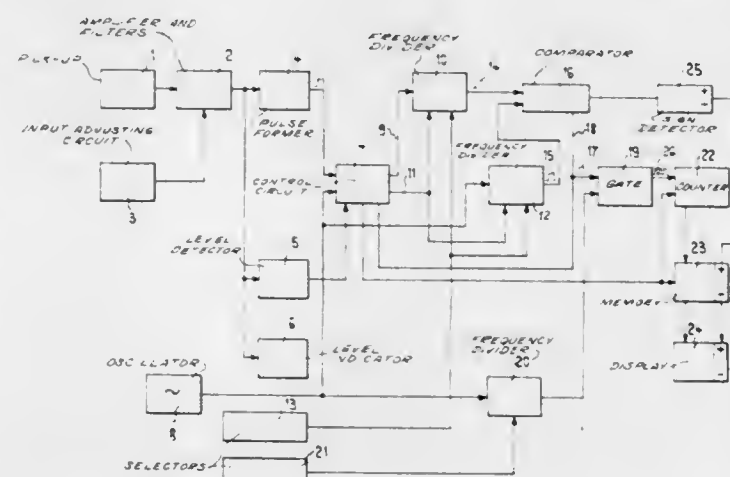
Filed Aug. 10, 1971, Ser. No. 170,523

Claims priority, application Switzerland, Sept. 15, 1970, 13662/70

Int. Cl. G04d 7/12

U.S. Cl. 73-6

8 Claims



1. Measuring apparatus for measurement of the instantaneous rate of a time-keeper, comprising a pick-up for detecting the beats of said timekeeper, a standard oscillator, and means for counting a number of periods of said standard oscillator during an interval of time depending upon the instantaneous rate of said timekeeper, wherein said means comprises a first divider for the frequency of said timekeeper, said first divider being adjustable to any of a plurality of timekeeper oscillation rates, a filter regulatable to the frequencies of different timekeepers preceding said first divider, and a second divider for said standard frequency, the two frequencies being divided to produce each an output pulse of the same nominal duration, a comparator to determine an interval of time equal to the difference between the duration of the output impulses of said two dividers, a gate controlled by said comparator to transmit said standard frequency during said interval and a counter-display means to receive, count and display the number of periods of said standard frequency transmitted by said gate.

3,857,275 SHOCK ABSORBER TESTING MACHINE

Homer S. Youngs, 8718 Dunaway Dr., La Jolla, Calif. 92037

Filed Dec. 4, 1972, Ser. No. 312,054

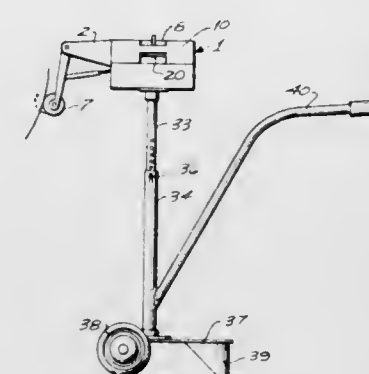
Int. Cl. G01m 17/04

U.S. Cl. 73-11

6 Claims

1. A vehicle shock absorber testing machine, comprising:
a. a movable supporting structure including a yieldable member movable in an essentially horizontal direction,

the yieldable member terminating in an indicator wheel;
b. the supporting structure being manually movable into a position adjacent a side of a vehicle having shock absorbers to be tested until the indicator wheel is in bearing contact with the vehicle side, for rolling movement when the vehicle side is depressed, and then permitted to rebound;



c. a recording means carried by the supporting structure and including a movable stylus;
d. and a drive means interconnecting the wheel and stylus to cause recording movement when the wheel rotates in response to depression and rebound of the vehicle side.

3,857,276 SHOCK ABSORBER TESTING APPARATUS

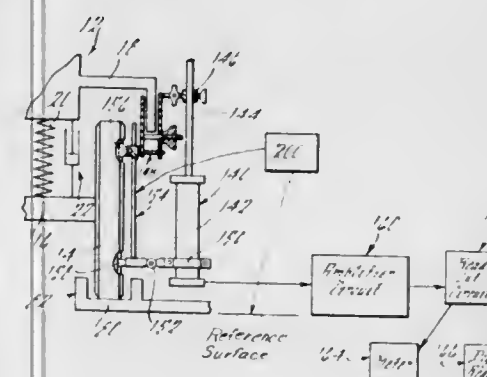
John H. Fader, Johan H. Keijzer, both of Hasselt, and Reinhart A. Versehoore, Wondelgem, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Continuation of Ser. No. 20,932, March 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 876,546, Nov. 13, 1969, abandoned. This application Dec. 8, 1972, Ser. No. 313,459

Int. Cl. G01m 17/04

U.S. Cl. 73-11

17 Claims



1. In an apparatus for testing vehicular shock absorbers in situ upon a braked, parked or otherwise relatively stationary vehicle having a sprung portion supported by associated suspension springs from an unsprung portion with the unsprung portion including road contacting wheels, the apparatus comprising: a support structure adapted to be fixedly mounted relative to a reference surface; an elevatable platform supported by said structure for upward and downward movement relative to said structure and for supporting one road contacting wheel of said vehicle; ramp means supported by said structure for permitting said vehicle to be driven to a point wherein said wheel is located on said platform; means operatively connected between said platform and said support structure for elevating said platform and thereby raising said wheel and that portion of the vehicle supported thereon from a relatively non-elevated position to a relatively elevated position and simultaneously compressing the suspension spring associated with said wheel; means for permitting said platform and said elevated portions of the vehicle to fall from said elevated position to said non-elevated position whereby said elevated

wheel will be ejected downwardly under the influence of the compressed spring, means for sensing the rate of movement of one of the vehicle portions with respect to said reference surface during the fall thereof for determining the operational characteristics of the associated shock absorber; and resilient means located below said platform for cushioning said fall.

3,857,277 FLOW INDICATOR

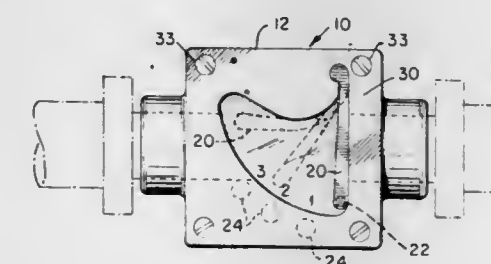
Edward H. Moore, Avon, Conn., assignor to DeLaval Turbine, Inc., Princeton, N.J.

Filed Dec. 29, 1972, Ser. No. 319,662

Int. Cl. G01f 1/06

U.S. Cl. 73-28

9 Claims



1. A flow indicator comprising a housing having a chamber and including fluid inlet and outlet openings respectively communicating with opposite ends of said chamber, a flexible flap, means supporting said flap within said chamber at the inlet end thereof to depend from the upper wall of said chamber for hinged flexure about generally parallel axes and generally toward said outlet opening in response to fluid flow through said housing from said inlet to said outlet opening, said flap under condition of no flow from said inlet to said outlet opening providing a closure for said inlet opening to prevent fluid flow through said housing from said outlet opening to and through said inlet opening, said upper wall curving arcuately downwardly from said flap supporting means and generally toward said outlet opening and comprising means for changing the axis of hinged flexure of said flexible flap in response to change in the rate of fluid flow through said chamber from said inlet to said outlet opening, a magnet carried by said flexible flap, and at least one magnetically responsive switch supported by said housing and adapted for connection in an external circuit, said one switch being within the magnetic influence of said magnet during a portion of the flexure of said flap toward said outlet opening.

3,857,278 METHOD AND APPARATUS FOR LEAK TESTING SEALED CONTAINERS

Anthony Jenkins, and Colin Jeffrey Vincett, both c/o Analytical Instruments Ltd., Green Lane, Fowlmere, Royston, Hertfordshire, England

Filed Jan. 29, 1973, Ser. No. 327,823

Claims priority, application Great Britain, Feb. 1, 1972, 4585/72

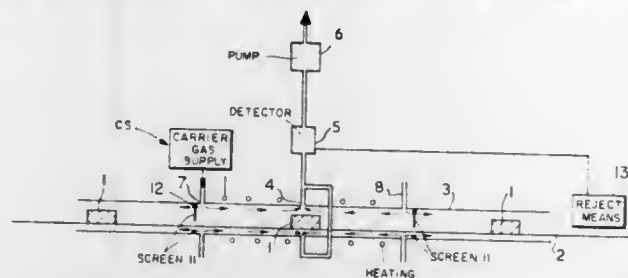
Int. Cl. G01m 3/04

U.S. Cl. 73-40.7

16 Claims

1. A method of leak testing sealed containers comprising establishing an atmosphere of a carrier gas within an intermediate portion of an open ended, elongate chamber remote from both open chamber ends, passing a succession of said

containers through the length of the chamber, and introducing carrier gas together with any gaseous leakage from each con-



tainer as it passes through said intermediate portion from said intermediate portion into a detector sensitive to the leakage.

3,857,279 MONITORING AND CONTROL MEANS FOR EVALUATING THE PERFORMANCE OF VIBRATORY-TYPE DEVICES

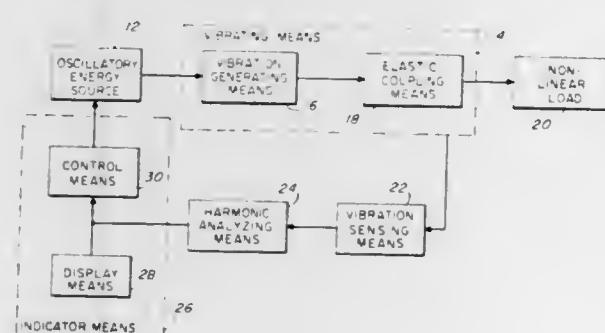
Thomas Salzer, Bedford, and Charles T. Martin, Jr., Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 358,215, May 7, 1973, Pat. No. 3,794,236, which is a continuation of Ser. No. 168,231, Aug. 2, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,064

Int. Cl. G01h 13/00; B23k 5/20

U.S. Cl. 73-67.2

8 Claims



1. In combination:

a source of oscillatory energy;

vibrating means operatively connected to said source and disposed to vibrate at a predetermined excitation frequency;

the vibrating means including vibration generating means for converting oscillatory energy from said source into vibration of the vibrating means at said predetermined excitation frequency, and coupling means for connecting the vibrating means to a non-linear load;

vibration sensing means operatively connected to the vibrating means and disposed to detect harmonic vibrational modes of the vibrating means;

harmonic analyzing means operatively connected to the vibration sensing means; and

indicator means operatively connected to the harmonic analyzing means.

3,857,280 EXTENSOMETRIC TORQUE METER FOR MEASURING SMALL TORQUES

Cesare Panzeri, Macherio, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed June 18, 1973, Ser. No. 371,020

Claims priority, application Italy, June 22, 1972, 69018/72

Int. Cl. G01l 3/10

U.S. Cl. 73-136 A

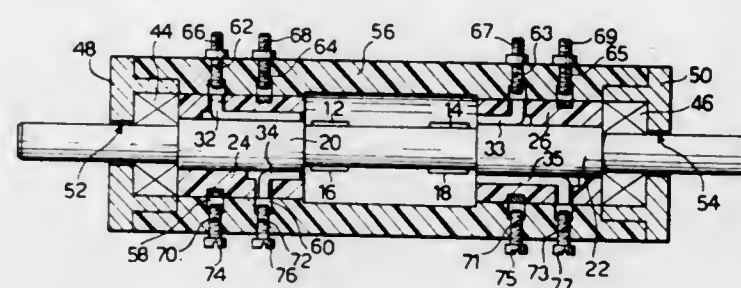
12 Claims

1. An extensometric torque meter for measuring small torques, comprising a rotatable shaft which in use of the meter is subjected to the torque to be measured, four extensometric elements attached in symmetrical positions to the surface of the shaft, and electrical connection means for connecting the

extensometric elements to an external bridge measuring circuit, said connection means comprising:

a. two electrically insulating sleeves attached to said shaft on opposite sides of said extensometric elements;

b. two contact rings embedded in the external surface of each of said sleeves, each said contact rings having an outside annular contact surface which is flush with the outside surface of the respective sleeve, each of said rings being connected to a respective one of said extensometric elements;



c. a tubular insulating stator surrounding said sleeves with a sliding fit, said stator being provided with four annular grooves on its internal surface opposite to said contact rings, each of said grooves being filled with mercury, and

d. conductor means extending through the wall of said stator and into respective annular grooves, said conductor means being connectible to said external measuring circuit.

3,857,281 METHOD AND APPARATUS FOR DETECTING POTENTIALLY DANGEROUS CONDITIONS IN A WELL BORE DURING TRIPS OF THE WELL STRING IN AND OUT OF THE WELL BORE

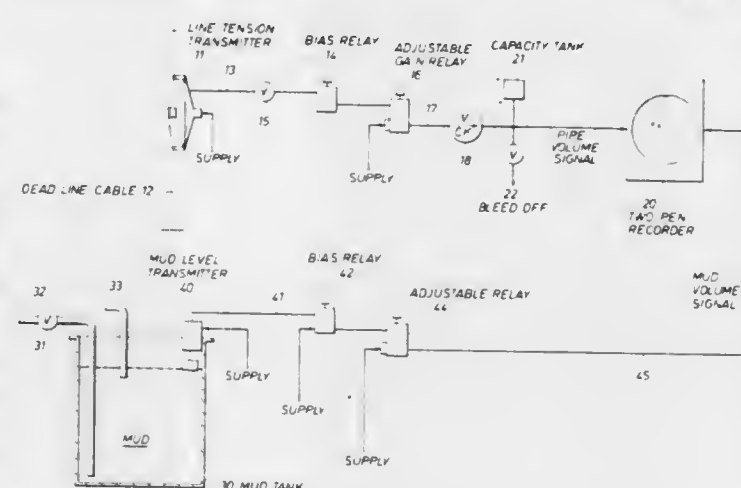
Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed Mar. 22, 1973, Ser. No. 343,787

Int. Cl. E21b 47/10

U.S. Cl. 73-155

10 Claims



1. In a method of detecting potentially dangerous conditions in a well bore which is being drilled by the use of a drill string suspended in said well bore and with a drilling mud system, which method is arranged for detecting losses of drilling mud to the well bore formation and the incursion of fluid into the well bore from the formation during times when the drill string is being run into and taken out of the well bore, the combination of steps comprising:

sensing the weight of the drill string suspended in said well bore during said running in and coming out as an indication of the volume of space in said well bore occupied by said drill string;

generating a first signal representative of said suspended drill string volume;

sensing the volume of drilling mud in said drilling mud system outside of said well bore during said running in and coming out operations;

generating a second signal representative of said mud volume outside said well bore; and monitoring variations in the difference between said first and second signals as indications of loss of drilling mud to the formation and the incursion of fluid from the formation.

3,857,282 PORTABLE TESTER FOR HYDRAULIC POWER CIRCUITS

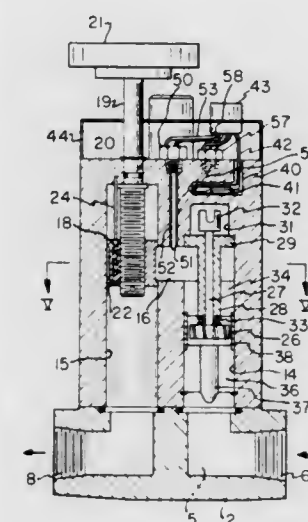
Richard B. Doorley, Pittsburgh, and Emeric Gaslevic, Glenshaw, both of Pa., assignors to Trace, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 355,559

Int. Cl. G01f 1/06

U.S. Cl. 73-168

7 Claims



1. A hydraulic circuit tester comprising a housing provided with a mounting surface at one end and with a pair of bores extending inwardly beside each other from said surface to provide at said end an inlet port and an outlet port to register with side-by-side outlet and inlet ports in a fluid line, the inner end portions of the two bores communicating with each other, a valve member in the bore with said outlet port for throttling fluid flow therethrough, means for adjusting said valve member in said bore, electric signal emitting means associated with the other bore and responsive to fluid flowing through the housing, and means for electrically connecting said signal emitting means to means for indicating the flow rate of said fluid.

3,857,283 DEPTHOMETER

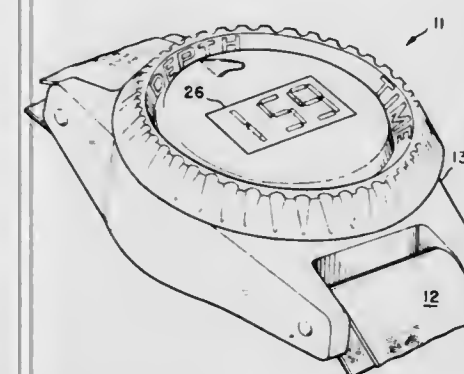
Kirk E. Jennings, Kaneohe, and Ronald L. Seiple, Kailua, both of Hawaii, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 424,149

Int. Cl. G01f 23/18

U.S. Cl. 73-300

13 Claims



1. A diver-worn depthometer comprising:

a case configured to have a sealable compartment therein having one wall which is shaped to be flexed by a predetermined external water pressure;

attaching means connected to said case for securing said case to the person of a user;

an electromechanical strain transducer attached to said one all so as to provide an electrical analog signal of the pressure-caused flexure of said one wall;

circuit means positioned within the sealable compartment of said case and electrically connected to said electromechanical transducer for converting the electrical analog signal to an electrical, readout signal representative of the depth of water necessary to produce the measured flexure; and

electrooptical means electrically connected to said circuit means for converting the electrical, readout signal to a visual signal, whereby the diver wearing the depthometer may determine his operating depth.

3,857,284 DEVICE AND METHOD FOR MEASURING THE WATER-VAPOR CONTENT OF A LIQUID OR GASEOUS MEDIUM

Georges Carron; Gaetan Pleyber, and Jean-Louis Violet, all of Grenoble, France, assignors to Commissariat A L'Energie Atomique, Paris, France

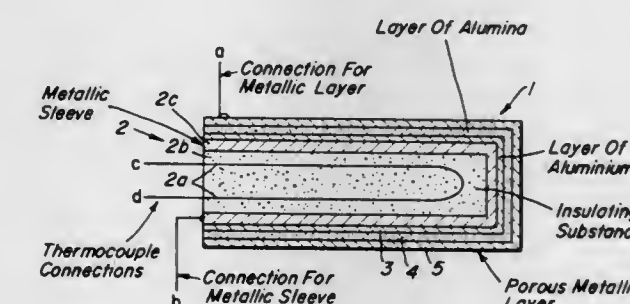
Filed June 21, 1972, Ser. No. 264,707

Claims priority, application France, June 21, 1971, 71.22451

Int. Cl. G01n 25/66

U.S. Cl. 73-336.5

13 Claims



1. A device for measuring the water-vapor content of a liquid or gaseous medium, wherein said device includes at least a hygrometer probe of the type which is based on the principle of adsorption of water-vapor on a film-layer of porous alumina, said probe comprising a thermocouple assembly including a thermocouple arranged within a metallic sleeve member and insulated therefrom, a coating around said thermocouple assembly and comprising successively formed layers including a layer of aluminum covering said metallic sleeve, a layer of alumina covering said aluminum layer and an outer porous metallic layer covering said alumina layer, said layers being bonded to each other and said aluminum layer being bonded to said metallic sleeve, and connections for measuring means being provided at least at predetermined points at each of said thermocouple, metallic sleeve and metallic layer.

3,857,285 ELECTRONIC THERMOMETER

Stuart E. Athey, 1914 Westwood; Robert R. C. Buchan, 404 S. Plum St., and Glenn M. Nally, 923 Maplecrest, all of Troy, Ohio 45373

Filed Sept. 14, 1972, Ser. No. 289,124

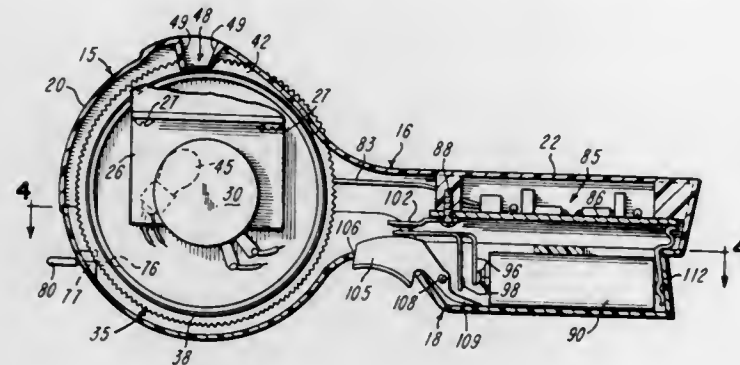
Int. Cl. G01k 7/24

U.S. Cl. 73-362 AR

12 Claims

1. An electronic thermometer comprising a housing, a variable resistor disposed within said housing, means for varying the resistance of said resistor, a temperature sensing probe adapted to change resistance in response to changes in tem-

perature a digital temperature indicating scale calibrated according to a range of temperatures adapted to be sensed by said probe, said scale being movable in response to varying said resistor, a light source within said housing and positioned to illuminate at least a portion of said scale, an electrical power supply within said housing, a plurality of operational amplifiers within said housing, circuit means connecting said operational amplifiers, said variable resistor, said light source and said probe to said power supply, said circuit means being



effective to actuate said light source when said scale indicates the temperature being sensed by said probe in response to varying said resistor, a cord reel supported for rotation within said housing, said circuit means includes an elongated flexible conductor wound on said reel and connected to said temperature sensing probe, a portion of said conductor being arranged to twist relative to the axis of said reel in response to extension and retraction of said conductor and probe, and spring means for urging said reel in a direction to retract said conductor.

3,857,286

ZERO ADJUSTMENT GAUGE INSTRUMENT

Robert Donald Bissell, Orange, and Edward Joseph Plavcan, Stratford, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

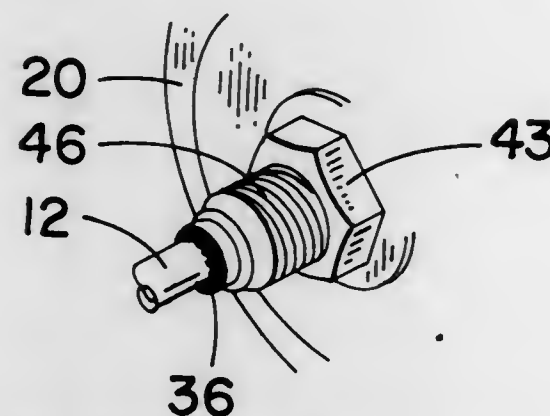
Continuation of Ser. No. 190,026, Oct. 18, 1971, abandoned.

This application Sept. 19, 1973, Ser. No. 398,717

Int. Cl. G01k 5/64, 15/00

U.S. Cl. 73—363.9

5 Claims



1. In a gauge instrument including a casing of assembled axially contiguous first and second coaxial components in which the first of said components comprises a cup-like case containing calibrated indicia of condition values and the second of said components comprises a relatively rotatable tubular stem containing a condition responsive means operably cooperative with said indicia for visual indication of condition values being measured and means forming an interlock against axial self disassembly of said components, the improvement for zero adjustment comprising mounting means securing said casing components for coaxial angular displacement therebetween, said mounting means consisting essentially of an annular sheet metal sleeve of diameter larger than said stem coaxially secured permanently thereon for relative rotation therewith and terminating in an annular flange enlargement extending predominantly in a radial direction, said sleeve being secured with the contiguous peripheral face surface of its

flange in axially forced engagement against an external facing surface of said case axially deflecting said flange enlargement for said engaging surfaces to provide a predetermined frictional restraint against said angular displacement.

3,857,287

PRESSURE TRANSDUCERS

Hans Conrad Sonderegger, Neftenbach; Paul Engeler, Ober-Ohringen, and Eugen Lutz Jun, Winterthur, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

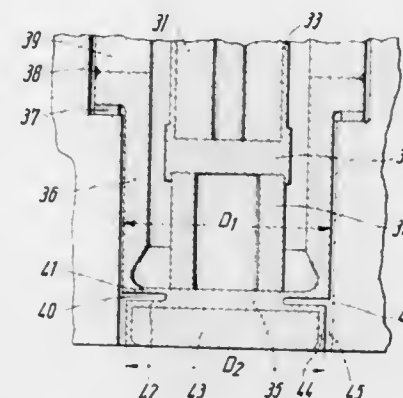
Filed Apr. 27, 1973, Ser. No. 355,096

Claims priority, application Switzerland, May 8, 1972, 6820/72

Int. Cl. G01i 7/08, 9/08

U.S. Cl. 73—395

12 Claims



1. A transducer for measuring pressures during combustion processes comprising:

- a housing;
- a tubular body fitted to said housing;
- a measuring element disposed within said tubular body;
- a disc-shaped diaphragm fitted to said measuring element under a preload, said diaphragm having an outer flexible diaphragm portion and a cylindrically-shaped flexible holder portion, for retaining a heat protective disc, separated from said flexible diaphragm portion by a radial recess which extends approximately to at least half the diameter of said disc-shaped diaphragm, and wherein the outer diameter of said cylindrically-shaped flexible holder is less than the diameter of said tubular body.

3,857,288

MANOMETER WITH SAFETY DEVICE

Gerhard Neugebauer, Trennfurt, Germany, assignor to Alexander Wiegand Armaturen- und Manometerfabrik, Klingenberg, Germany

Filed Dec. 13, 1972, Ser. No. 314,745

Claims priority, application Germany, May 25, 1972, 7219617

Int. Cl. G01i 7/04

U.S. Cl. 73—416

7 Claims



1. A pressure gauge and safety device in combination comprising:

3,857,290

SOLDERABILITY TESTING

John Stuart Aitken, Windyshield; Bernard Leslie Green, Cleghorn, and William Alexander Cormie, Strathaven, all of England, assignors to Honeywell Information Systems Limited, Brentford, Middlesex, England

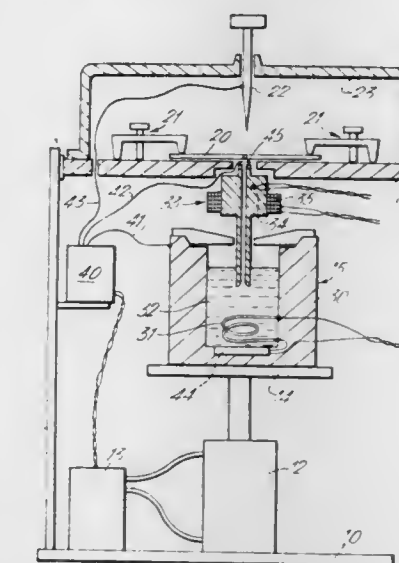
Filed Nov. 30, 1973, Ser. No. 420,476

Claims priority, application Great Britain, Dec. 2, 1972, 55755/72

Int. Cl. G01n 13/00

U.S. Cl. 73—432 R

4 Claims



- a. a pressure gauge having a rupturable pressure measuring means;
- b. a connector adapter to be coupled to said pressure gauge, said connector including a pressure conduit arranged to apply fluid under pressure to said pressure measuring means of said pressure gauge;
- c. a branch conduit leading from said pressure conduit;
- d. A closure member defined by a diaphragm having at least one line of weakness extending in a direction over the surface thereof for separating said branch conduit from the external atmosphere, said closure member being arranged to rupture before said pressure measuring means ruptures when the fluid pressure in said branch conduit exceeds a predetermined level, the material of said closure member being the same as that of the pressure measuring means in the pressure gauge whereby said closure member is subjected to corrosion at the same rate as the pressure measuring means; and
- e. a support secured in the outer end of said branch conduit for carrying said diaphragm whereby when said diaphragm ruptured all of said diaphragm will be retained in said support while providing fluid communication between said pressure conduit, said branch conduit and the external atmosphere.--

3,857,289

SOIL SAMPLING AUGER

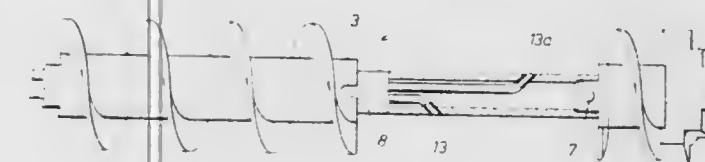
Harold L. Wise; Harry H. Pearce; Milton H. Schreider, and Arley Walters, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1973, Ser. No. 390,646

Int. Cl. G01n 1/22

U.S. Cl. 73—421.5 R

7 Claims



- 1. A soil sampling process comprising: penetrating the soil being sampled by drilling-in an auger having bit teeth and cuttings-transporting flightings arranged to form a substantially cylindrical borehole while avoiding any significant soil regrinding or compacting; terminating the auger rotation and moving at least some of the auger flights away from the bottom of the borehole without removing them from the borehole; opening a pair of conduits into fluid communication with the space between the so-moved auger flights and borehole bottom; and circulating fluid to flow repeatedly through the conduits, through the exposed portion of the borehole and through a measuring device, in order to entrain and measure at least one component of the fluid in the soil being sampled.

3,857,291

SPEED RESPONSIVE GOVERNOR MECHANISMS

Joseph Louis Bloom, Droitwich, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 4, 1972, Ser. No. 278,011

Claims priority, application Great Britain, Aug. 4, 1971, 36625/71

Int. Cl. G05d 13/26

U.S. Cl. 73—541

4 Claims



- 1. A speed-responsive governor mechanism comprising a body, a governor arrangement rotatable within the body and including an output member a first lever pivotally mounted on the body and movable by the output member in response to changes in the speed of a shaft which provides a drive for the governor arrangement, said first lever having thereon a cam surface, a second lever having a cam surface spaced from, and directed towards, the cam surface on the first lever, means for varying the position of the second lever to move the cam

surface thereon relative to the cam surface on the first lever, a member angularly movable with respect to the pivotal axis of the first lever, third and fourth levers pivotally mounted on the said member, a tension spring engaging one end of each of said third and fourth levers, the other ends of said third and fourth levers being biased by said spring towards the cam surfaces of said first and second levers respectively to urge the latter apart, movement of said angularly movable member varying the moment of the force of the spring on the first lever.

3,857,292

LINEAR INDEXING MECHANISM

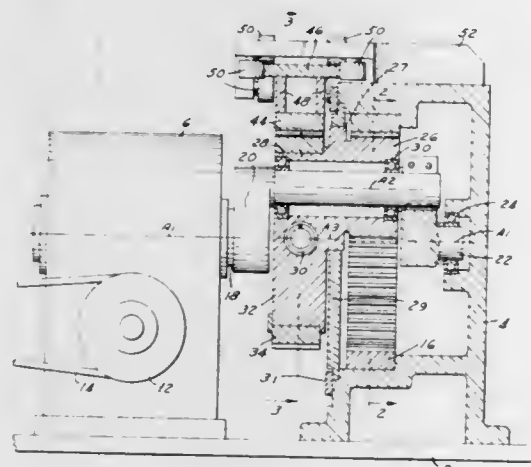
John Henry Brems, 32867 White Oaks Trl., Birmingham, Mich. 48010

Filed Apr. 30, 1973, Ser. No. 355,700

Int. Cl. F16h 37/12

U.S. Cl. 74—52

11 Claims



1. A mechanism for generating a substantially cycloidal output movement comprising:
 - a. a support frame,
 - b. an input shaft, to be driven by a prime mover, mounted on said frame to rotate about a fixed first axis,
 - c. an eccentric shaft having a second axis parallel to said first axis,
 - d. a first means mounting said eccentric shaft to revolve about said first axis in response to rotation of said input shaft,
 - e. an output member guided in said frame for motion in a prescribed path,
 - f. a first rotary member eccentrically journaled on said eccentric shaft and in tangential driving engagement with said output member, and
 - g. a second means to cause rotation of said first rotary member on said eccentric shaft at an angular velocity substantially equal to but in a direction opposite to the angular velocity of said eccentric shaft about said input shaft, whereby the motion of the output member varies in a cycloidal manner relative to the acceleration and velocity of the input member.

3,857,293
TIMER

George A. Godwin, and William E. Wagle, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Feb. 7, 1974, Ser. No. 440,595

Int. Cl. F16h 27/04

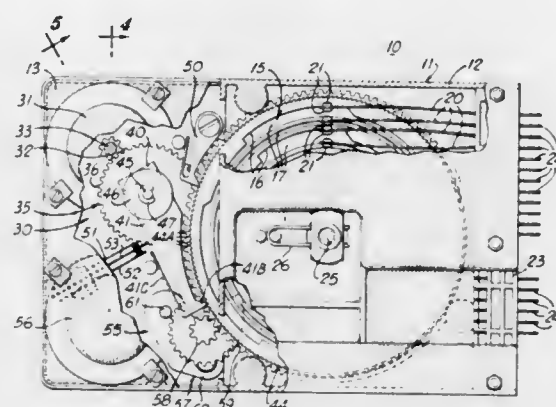
U.S. Cl. 74—118

4 Claims

1. A multispeed drive mechanism for a timing device and the like comprising:
 - a control cam for connection to a timer shaft;
 - a first ratchet track in the periphery of said control cam having ratchet teeth for slow speed rotation of said control cam;

a second ratchet track in the periphery of said control cam being segmented to provide ratchet teeth and smooth areas and having a pitch of a multiple of the pitch of the first set of ratchet teeth;

first and second pawls operatively associated respectively with said first and second sets of ratchet teeth; and



pawl drive means operatively associated with the first and second pawls to advance and retract said pawls synchronously, each through a stroke a distance equal the pitch of its associated ratchet teeth.

3,857,294

ADJUSTABLE LENGTH ENDLESS TRANSMISSION BELT

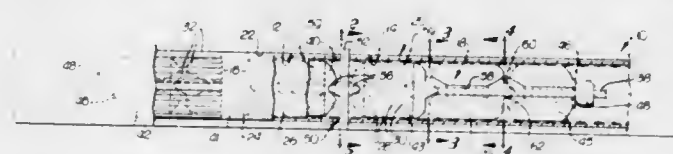
Robert F. Edouart, P.O. Box 1, Malibu, Calif. 90265

Filed Oct. 5, 1972, Ser. No. 295,139

Int. Cl. F16g 5/00

U.S. Cl. 74—231 J

12 Claims



1. An endless transmission belt comprising:
 - an elongated transmission belt having cavities in opposite ends thereof; and
 - coupling means for connecting together said opposite ends to form a continuous transmission belt, said coupling means including
 - an axially compressible-radially expandable and axially expandable-radially compressible sleeve of soft elastomeric material secured to axially extending inner walls of each of said cavities,
 - a sleeve of open cell mesh on an inner surface of said sleeve of soft elastomeric material including a series of axially spaced helical strands curling in a first direction and intertwined with a similar series of axially spaced helical strands curling in an opposite direction to form said open mesh, and
 - an elongated flexible coupler having a circumferential dimension slightly larger than a normal inner circumferential dimension of said sleeve of soft elastomeric material for insertion into said sleeve of open cell mesh for gripping thereby upon axial expansion of said sleeves as by an axial tensioning of said belt, said coupler comprising
 - a length of flexible cable,
 - a plurality of beads including central openings for receiving said cable,
 - means on opposite ends of said cable for retaining said beads thereon, and
 - center stop means on said cable between particular ones of said beads for engaging said opposite ends of said belt as said beads on one side of said center stop are inserted into one of said cavities and beads on

another side of said center stop are inserted into the other of said cavities, said beads being dimensioned to have a circumference slightly greater than the inner circumference of said sleeve of soft elastomeric material to be tightly gripped thereby upon an exertion of an axial force on said belt.

3,857,295

TRAPEZIUM POWER TRANSMISSION BELT

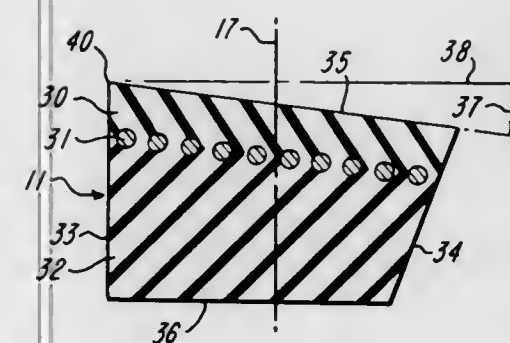
Donald D. Hall; Leonard J. Confer, and James A. Lewis, all of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed May 11, 1973, Ser. No. 359,575

Int. Cl. F16g 5/00

U.S. Cl. 74—234

22 Claims



1. A power transmission belt adapted to be operated in a running plane and when viewed in cross section said belt comprising, a pair of oppositely arranged sides with one of said sides being arranged at a greater angle than the other side relative to said plane, a top wall extending between the top edges of said sides, and a bottom wall extending between the bottom edges of said sides, at least one of said walls being arranged at an acute angle beneath a plane arranged perpendicular to said running plane, said sides and walls defining a cross-sectional configuration of a trapezium which utilizes the material of the belt to effectively resist and retard the tendency of said belt to distort when running in associated sheaves wherein each sheave has a wide angle sheave side which engages said other side of said belt.

3,857,296

VIBRATION-DAMPED ROTATABLE DRIVE MEMBER
Kenneth Tsunoda, Closter, N.J., assignor to Paul W. Garbo, Freeport, N.Y., a part interest

Division of Ser. No. 165,498, July 23, 1971, Pat. No.

3,799,025. This application Feb. 11, 1974, Ser. No. 441,430

Int. Cl. F16h 55/14

U.S. Cl. 74—443

10 Claims



1. A vibration-damped rotatable drive disk that contacts a movable element during rotation, which comprises a layer of viscoelastic material adherent to one face of said disk, and a relatively rigid sheet of a thickness less than that of said disk bonded to said layer of viscoelastic material.

3,857,297

METALLURGY OF CHAINS

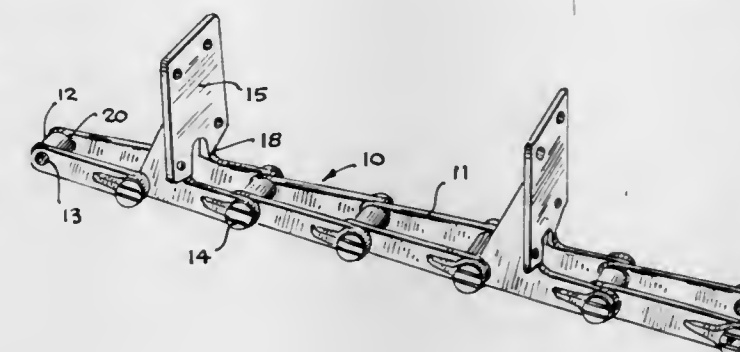
George H. Fashfellow, St. Charles; Dort Fauntleroy, Geneva, and Arnold A. Goetze, St. Charles, all of Ill., assignors to Moline Corporation, St. Charles, Ill.

Filed Sept. 13, 1973, Ser. No. 397,119

Int. Cl. F16g 13/02

U.S. Cl. 74—245 R

4 Claims



1. A sprocket-driven chain having links each comprising a side bar part and an end part by which one link is articulated to another, each link in the chain being formed from a ferrous material selected from the group consisting of malleable cast iron and medium carbon steel in which the microstructure is essentially bainite.

3,857,298

NEUTRAL SAFETY LOCK FOR HYDRAULIC IMPLEMENT CONTROLS

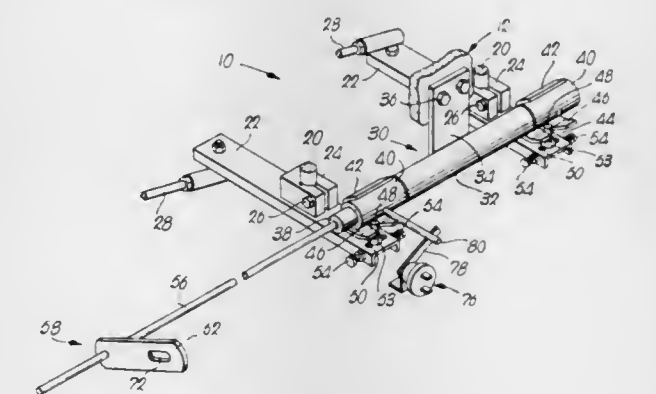
Cecil L. Case; Ferol S. Fell, and Merle K. Burkhart, all of Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed July 16, 1973, Ser. No. 379,556

Int. Cl. G05g 5/08

U.S. Cl. 74—469

15 Claims



1. In a hydraulic control:
 - a pair of individually operable, variable displacement, fluid-regulating devices each having a rotatable control member;
 - an actuating lever for each of said members;
 - a first lock component on each of said levers and swingable therewith during actuation of the devices by the levers; and
 - a pair of second lock components mounted for movement in unison and in spaced-apart relationship along fixed, respective paths of travel intersecting those of the corresponding first components for releasably holding the levers against swinging when the first and second components are interengaged.

3,857,299

CONTROL MECHANISMS FOR GEAR BOXES

William McKenzie Meek Morrison, Wolverhampton, England, assignor to Turner Manufacturing Company Limited, Wolverhampton, Stafford, England

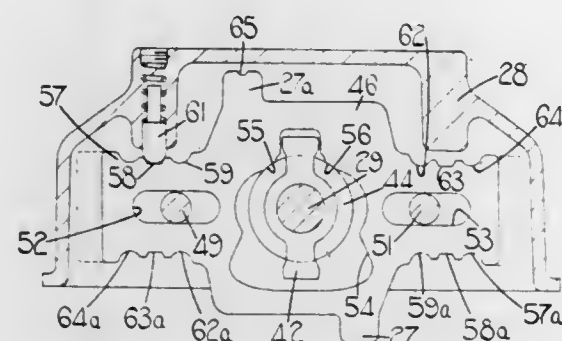
Filed Mar. 1, 1973, Ser. No. 337,097

Claims priority, application Great Britain, Mar. 17, 1972, 12534/72

Int. Cl. G05g 9/00

U.S. Cl. 74—473 R

13 Claims



1. A control mechanism for a gear box comprising a body, a control rod in the body and connectible to an external control lever, the control rod carrying an actuating member and being movable angularly as well as axially in the body, the body containing a number of independently movable plates which are arranged transversely of the length of the control rod, axial movement of the rod between successive positions serving to align the actuating member with respective plates, and angular movement of the rod causing the actuating member to produce linear movement of a plate which is aligned therewith, said plates having respective operating elements arranged to engage gear ratio selector devices in the gear box, said plates being identical and each of which is symmetrical about a first plane containing the axis of the control rod and containing the center of a shaped hole through which the control rod passes, each of said plates having pairs of tongues arranged to engage gear ratio selector devices, said tongues being disposed symmetrically on a respective plate at opposite sides of said first plane, said control rod having portions which are alternatively engageable with a recess formed in the periphery of said hole through which said control rod passes.

3,857,300

FOLDING HANDWHEEL HANDLE

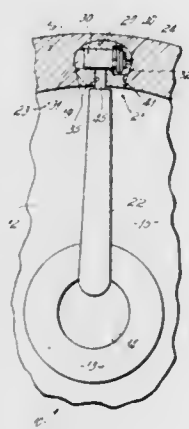
David L. O'Dell, South Bend, and Leo A. Shaffer, Mishawaka, both of Ind., assignors to Wheelabrator-Frye Inc., Mishawaka, Ind.

Filed Jan. 16, 1974, Ser. No. 433,680

Int. Cl. G05g 1/10

U.S. Cl. 74—557

10 Claims



1. In combination, a folding safety handle and a handwheel comprising:

a handwheel having an outer face with an outer circumferential portion and a recess therein,
a handle mounting element adapted to be secured in said recess, said element having a bore and a slot transverse to said bore,
an arbor disposed in said bore and rotatable therein,
a handle and extension means for connecting said handle to said arbor, said extension means passing through said slot and into said arbor, and
spring means connected between said arbor and said mounting element for biasing said handle into an inoperative position along the outer face of said handwheel.

3,857,301

SPEED REDUCER

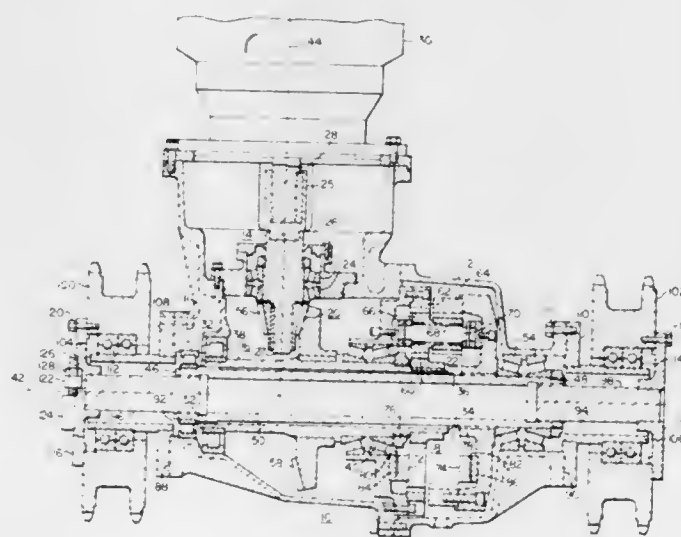
Jack G. Hanks, Bethel Park; Mohammed A. El Taher, Gettysburg; Eugene H. Seidling, Monroeville, and James R. Farley, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,240

Int. Cl. F16h 37/06

U.S. Cl. 74—665 GE

14 Claims



1. A speed reducer, comprising:
a housing,
an input shaft journaled in bearings for rotation relative to said housing,
a tubular intermediate shaft journaled in bearings for rotation relative to said housing,
first meshing gearing means coupling said input and intermediate shafts,
an output shaft having first and second ends, said output shaft extending through said tubular intermediate shaft and journaled in bearings for rotation relative to said housing,
second meshing gearing means coupling said intermediate and output shafts,
said housing including first and second tubular projections coaxial with said output shaft which surround its first and second ends, respectively,
first and second sprocket wheels journaled in bearings on said first and second tubular projections, respectively,
and first and second means coupling the first and second ends of the output shaft to said first and second sprocket wheels, respectively, whereby bending moments applied to the sprocket wheels are resisted by said first and second tubular projections.

3,857,302

TRANSMISSION AND SPEED CONTROLLED LOCK-UP CLUTCH

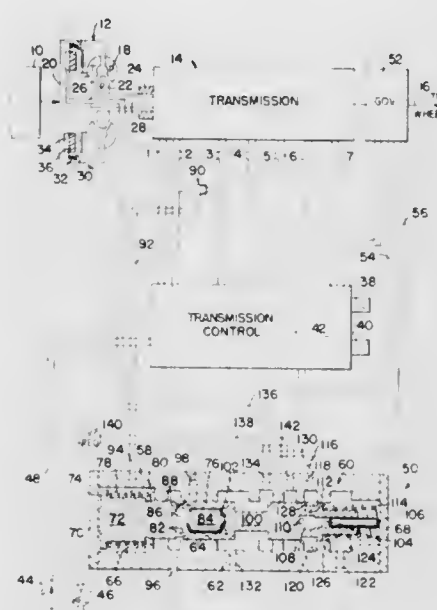
Hugh C. Morris, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 25, 1973, Ser. No. 373,245

Int. Cl. F16h 45/02; B60k 21/00

U.S. Cl. 74—733

10 Claims



1. A transmission assembly comprising
a torque converter for coupling a power input member with a transmission speed ratio section, hydraulically actuated lock-up clutch arranged to selectively by-pass the torque converter and effectively couple the input means directly with the transmission speed ratio section, and
a control valve assembly for regulating engagement of the clutch, the control valve assembly, including
a source of fluid under pressure
a control valve for selectively communicating the clutch with the source and with a fluid drain,
the control valve including a valve body having a bore, a control spool being movable in the bore to communicate the clutch with the source or drain and resilient means urging the spool toward a position where the clutch is in communication with the drain,
speed sensing means providing a fluid signal having a pressure proportional to rotating speed of a member in the transmission assembly,
conditioning means operatively communicating the fluid signal to the control valve in response to the transmission speed ratio section having a selected speed gear or relatively higher speed ratio established therein, the control valve being responsive to the fluid signal for effecting both disengagement and engagement of the clutch in the selected speed gear, the control valve being responsive to the fluid signal for maintaining engagement of the clutch in each of the relatively higher speed gears, the conditioning means operatively communicating the fluid signal into the bore to act on one end of the control spool and urge it against the resilient means, and
means tending to maintain positive engagement or disengagement of the clutch, the means for maintaining positive engagement or disengagement of the clutch comprising a reaction piston slidably arranged in a bore of effectively reduced diameter at the other end of the control spool to form a reaction chamber therein and means for selectively communicating the chamber with the fluid signal from the speed sensing means and with a fluid drain.

3,857,303

EPICYCLIC GEAR BOXES

Andre Mouttet, Billancourt, France, assignor to Regie Nationale des Usines, Billancourt, France and Ste des Automobiles Peugeot, Paris, France

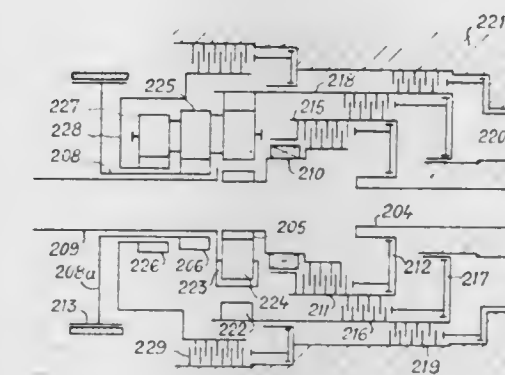
Filed Apr. 2, 1973, Ser. No. 347,929

Claims priority, application France, Aug. 6, 1972, 72.20670

Int. Cl. F16h 57/10

U.S. Cl. 74—761

3 Claims



1. In an epicyclic gear box having four forward speed ratios and one reverse speed ratio,
input shaft means,
output shaft means,
first sun gear means,
second sun gear means,
annulus gear means,
planet gear carrier means,
first planet gear means carried by the carrier means,
second planet gear means carried by the carrier means, said first and second planet gear means being in mesh with each other, said first planet gear means being in mesh with the first sun gear means, and said second planet gear means being in mesh with the second sun gear means and with the annulus gear means,
a first immobilizing device having a rotary drum rotatable with said second sun gear means,
a second immobilizing device connected with said annulus gear means,
a first clutch means connected to said input shaft means and associated with said first sun gear means, and
a second clutch means connected to said input shaft means and associated with said annulus gear means, the improvement comprising:
third sun gear means, and
a third immobilizing device including hub means rotatable with the third sun gear means, the hub means of the third immobilizing device being located axially beside the rotary drum of the first immobilizing device and between the rotary drum of the first immobilizing device and the planet gear carrier means, said third sun gear means co-operating with the third immobilizing device whereby the third immobilizing device is operative to selectively hold stationary the third sun gear means, and the third sun gear means meshing with the second planet gear means, said immobilizing devices and said first and second clutch means being selectively operative independently of each other to provide the selected forward or reverse speed ratio.

3,857,304

GAS PEDAL ARRANGEMENT

Wilhelm Berndt, Meine, Germany, assignor to Volkswagenwerk AG, Wolfsburg, Germany

Continuation of Ser. No. 315,576, Dec. 15, 1972, abandoned.

This application Aug. 15, 1973, Ser. No. 388,431

Claims priority, application Germany, Dec. 18, 1971, 2162940

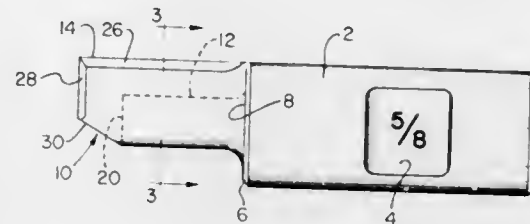
Int. Cl. B60k; G05g

U.S. Cl. 74-877

7 Claims



extending surface that has a circular curvature in cross-section with the center of curvature being aligned with said center axis, said flute section having first and second flat longitudinally-extending side surfaces that are at least coextensive with and also extend laterally of said heel section, said flute section having a third flat longitudinally-extending surface that is radially spaced from said heel



section and intersects said first and second side surfaces, with the intersection of said first and third surfaces forming a straight cutting edge that extends parallel to and is radially spaced from said axis, and means on said cutter head for indicating the maximum depth to which said cutting edge can be cut back without intruding into said heel section.

3,857,306

CABLE CUTTING AND STRIPPING MACHINE

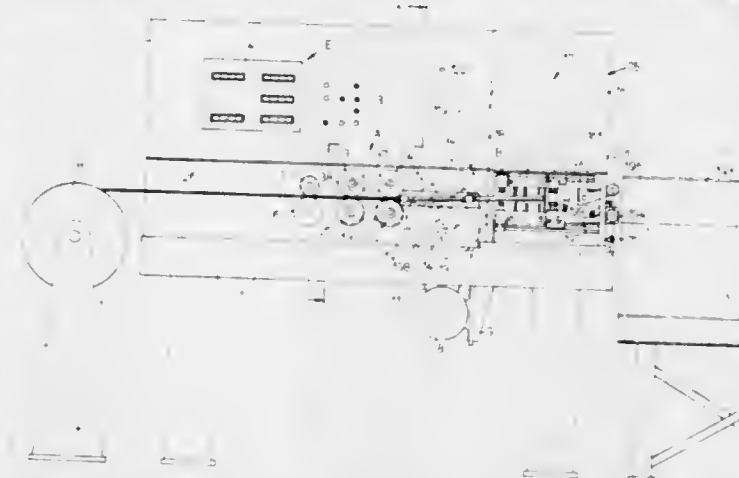
Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed June 15, 1973, Ser. No. 370,217

Int. Cl. H02g 1/12

U.S. Cl. 81-9.51

18 Claims



1. In a gas pedal arrangement for an internal combustion engine including a gas pedal and an associated switch movable with the gas pedal and actuated by the gas pedal when the gas pedal is moved beyond a full throttle position, the improvement comprising linkage means responsive to the gas pedal for transmitting movement of the gas pedal to an engine carburetor, stop means for preventing the linkage means from transmitting to the engine carburetor movement of the gas pedal beyond the full throttle position, a rocker member pivotally and detachably mounted at one end on the gas pedal, at least one spring located between the rocker member and the gas pedal for biasing the rocker member away from the gas pedal, and two supports for the rocker member, against which supports the rocker member is biased by said at least one spring, one support being located adjacent the one end of the rocker member and the other support being located in a zone wherein the linkage means is releasably coupled to the rocker member, said zone being spaced from the one end of the rocker member, the two supports including an opening formed in an edge portion of the gas pedal and an axle associated with the gas pedal and traversing the rocker member, relative movement of the rocker member toward the gas pedal occurring when the gas pedal is moved beyond the full throttle position such that the linkage means effects said relative movement against the biasing of said at least one spring and said relative movement of the rocker member toward the gas pedal actuates the switch.

3,857,305

MILLING CUTTERS

Philip Lichtman, 3 Valley Spring Rd., Newton, Mass. 02194

Filed Apr. 5, 1974, Ser. No. 458,332

Int. Cl. B21k 5/12

U.S. Cl. 76-101 A

10 Claims

1. A milling cutter blank for use in making special purpose cutters comprising:

a shank having a center axis;
a cutter head formed as an integral longitudinal extension of said shank, said cutter head comprising a single cutter flute section and a heel section formed integral with said flute section, said heel section having a longitudinally-

1. In an insulated wire cutting and stripping machine, the combination of a frame extending lengthwise between opposite ends thereof; wire stock feeding means operatively mounted on said frame adjacent one of said ends thereof; wire stock clamping means operatively mounted on said frame between said stock feeding means and said other end of said frame at a predetermined distance from said feeding means; wire stock cutting means operatively mounted on said frame between said clamping means and said other end of said frame in lengthwise back and forth shiftable relation thereto; and actuating means operable to move said clamping means and said cutting means into and out of cooperative engagement with stock played out by said feeding means and to shift said cutting means in the longitudinal direction of said played out stock alternately toward and away from said clamping means.

3,857,307

SHOCK ABSORBER ASSEMBLY TOOL

Robert W. Hegel, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed July 11, 1973, Ser. No. 378,380

Int. Cl. B25b 13/48

U.S. Cl. 81-90 C

16 Claims

1. For use with a cartridge shock absorber in a vehicle suspension including a generally cylindrical housing having at

least one open end, a shock absorber cartridge adapted to be removably inserted within the housing and have its piston rod project from the open end thereof, and an annular retaining member adapted to be operatively mounted adjacent the open end of the housing for securing the cartridge therein, the retaining member including at least two connecting elements for use in applying a rotational force thereto, the improvement which comprises,

a tool for assembling and disassembling said retaining member and said shock absorber housing,
said tool comprising a pair of spaced-apart handle portions, an intermediate portion connected to said handle portions and defining a recessed area therewith,
an adjustable member movably secured to one of said handle portions adjacent one side of said recessed area, and first and second connecting parts mounted one on said

a. a cylindrical screw member,
b. a base on said fixed jaw having
c. an aperture therein
d. a first socket formed in said base in alignment with said aperture,
e. a second socket formed in said base in alignment with said aperture and said first socket,
f. socket means formed in said screw member, including a bore extending axially through said screw member,
g. a first ball member interposed between said first socket of said base and the bore on one end of said screw member,
h. a second ball interposed between said second socket of said base and the bore on the other end of said screw, and
i. spring means in said bore for urging said first and second balls into said first and second sockets.

3,857,309

FILAMENT BREAKAGE DETECTION AND CORRECTION

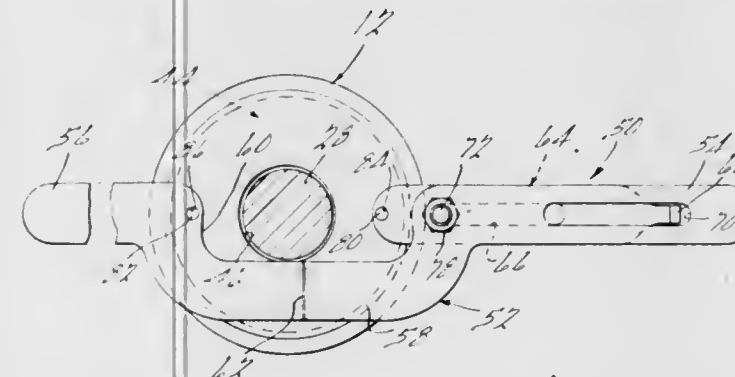
Walter Eugene Bradley, Fort Mill, S.C.; Raeford Warren Clontz, Charlotte; Terry Stephen Floyd, Matthews, and James Reed Honeycutt, Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,109

Int. Cl. B26d 5/28

U.S. Cl. 83-13

9 Claims



adjustable member and the other on the handle portion and located on the opposite side of said recessed area from said adjustable member,

said handle portions being offset from one another whereby said handle portions lie in spaced parallel planes, said handle portions being offset a distance equal to approximately the thickness of said adjustable member, whereby said connecting parts are located in a common plane extending generally parallel to but spaced from said first and second first-mentioned planes,

said tool being positionable such that the piston rod of the shock absorber is received within the recessed area and said connecting parts are engageable with said first and said connecting elements on said retaining member, whereby a rotational force applied against said handle portions results in rotation of said retaining member relative to said housing.

3,857,308

ADJUSTABLE WRENCH

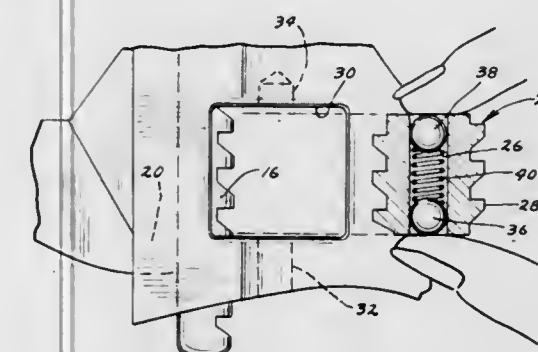
Carl R. Lindgren, 1432 S. Arlington Ave., Duluth, Minn. 55811

Filed June 15, 1973, Ser. No. 370,202

Int. Cl. B25b 13/16

U.S. Cl. 81-157

2 Claims



1. In a wrench having a fixed jaw and a movable jaw slidably mounted on said fixed jaw, a cylindrical screw member rotatably mounted in an aperture formed on the base of the fixed jaw engaged with a rack on the movable jaw for moving said movable jaw, the improvement in the rotatably mounted screw member, said improvement including

1. Apparatus for feeding continuous filamentary material to a continuous multifilament structure comprising: a source of continuous filamentary material; guide means defining a path along which said filamentary material is moved; means for forwarding said material along said path, said means comprising a plurality of pressurized fluid supply means directed in a shallow angle of tangential convergence with the path of said material; means for clamping and cutting said material, said means movably mounted to move from a position of engaging said material to a position of nonengagement; means for initiating flow of said pressurized fluid and movement of said clamping and cutting means from a position of engaging said material to a position of nonengagement, to feed said material to said multifilament structure.

3,857,310

FOOD CUTTING AND DICING APPARATUS

Gerard A. Tiby, Ivry S/Seine, France, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Dec. 18, 1972, Ser. No. 316,281

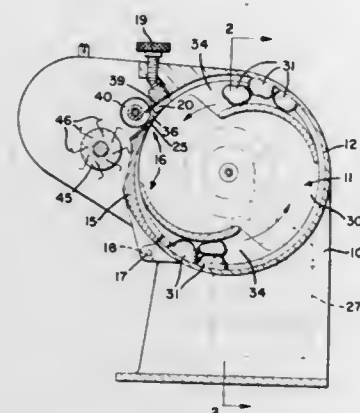
Int. Cl. B26d 7/06

U.S. Cl. 83-26

14 Claims

1. In an apparatus for cutting food articles such as vegetables and fruits, including a housing having wall means, a passage through the wall means, feed means for receiving food articles and moving them adjacent the passage through the wall means, and slicer blade means adjacent the passage for cutting the food articles into slices as they are moved therepast and directing the cut portions through the passage, the improvement comprising:

- a. strip blade means adjacent the passage for cutting the slices into strips,
- b. means mounting said strip blade means for removal when it is desired to cut the articles into slices,
- c. a rotatable cutter member mounted opposite the discharge of strips from the strip blade means and having peripheral knife means for cutting the strip portions generally into cubes,
- d. means for moving the feed means and the cutter member in timed relationship to cut the strips into cubes,



- e. a port in the wall means,
- f. a door removably attachable over said port and forming a portion of the wall means,
- g. the passage through the wall means being through said door,
- h. The cutter member being attached to said removable door for removal therefrom when it is desired to cut the articles into strips, and
- i. said slicer and strip blade means being attached to said door.

3,857,311

METHOD AND APPARATUS FOR MANUFACTURING WIRE SECTIONS WITH RELIEVED ENDS

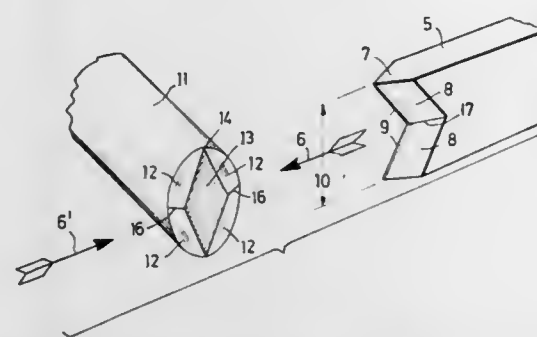
Paul Esser, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany
Filed Aug. 8, 1972, Ser. No. 278,868

Claims priority, application Germany, Aug. 19, 1971, 2141513

Int. Cl. B23d 15/00; B26d 3/16

U.S. Cl. 83-51

4 Claims



1. In an apparatus for shearing sections of wire preparatory to welding the sheared sections from an inwardly disposed axial core defined by rearwardly disposed relief surfaces, said apparatus including a pair of shear blades movable from opposite directions in proximal relation during a single shear stroke effected by simultaneous movement of said shear blades transversely of the longitudinal axis of the wire being sheared, the improvement in which said blades each have a generally V-shaped profile both in top plan and in side elevation and define a leading, notched, transverse cutting edge along its entire length corresponding to a corresponding transverse demension of the wire being sheared, the cutting edge of the respective blades comprising a plurality of planar surfaces converging toward each other and toward the leading cutting edge, the cutting edges of the respective blades cooperating

and forming a rhombic opening when viewed in side elevation and meeting in proximal relation substantially coincident with the outer surface of the wire section being severed during a single shear stroke.

3,857,312

LOW DRAG VARIABLE DEMAND STRIP FEED

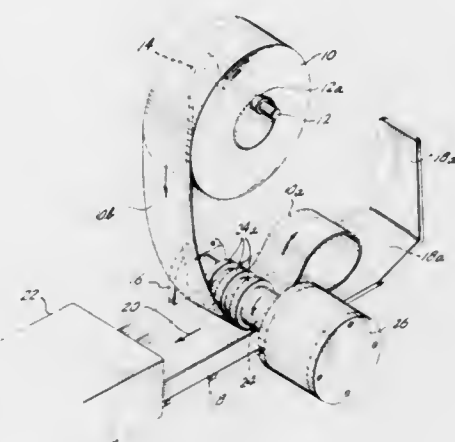
Paul A. Carlstedt, Seattle, Wash., assignor to CX Corporation, Seattle, Wash.

Filed Sept. 7, 1973, Ser. No. 395,368

Int. Cl. B65h 17/42

U.S. Cl. 83-236

12 Claims



1. Apparatus wherein strip material of resilient stiffness is supplied and received by progressive endwise movement of the strip, comprising supply means from which strip material may be forcibly drawn; strip receiving means operable to draw strip material to it at variable rate but operable with a drawing force below that required to draw the strip material from the supply means at such variable rate, and strip feed means acting on the strip material intermediate said supply and receiving means comprising a substantially constantly rotated first element having a peripheral portion frictionally engageable with one face of the sheet strip and by such engagement operable to draw sheet strip material forcibly from the supply means, and a second element stationed adjacent to the first element across a gap to permit forming a running slack loop of the strip with the sides of such loop passing between such elements and the width of the base of such loop exceeding the width of the gap, the first and second elements being so positionally related that incidence of the strip from the supply means to a first side of the loop requires deflection of the strip partially around the peripheral portion of the first element, and departure of the strip from the opposite side of the loop toward the receiving means moves it across the second element, whereby drawing of the strip from said opposite side of the loop toward the receiving means shortens the loop and as a result of such shortening together with the resilient stiffness of the loop forces the first side thereof into frictional engagement with the peripheral portion of the first element so as to draw more strip material from the supply means and thereby lengthen the loop.

3,857,313

APPARATUS FOR SEVERING CONTINUOUS WIRE TO PREDETERMINED LENGTH AND DELIVERING SEVERED WIRE TO CONVEYOR

Shigeru Endo, Toda, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, a/k/a The Pilot Pen Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1973, Ser. No. 410,752

Claims priority, application Japan, Nov. 1, 1972, 47-109614

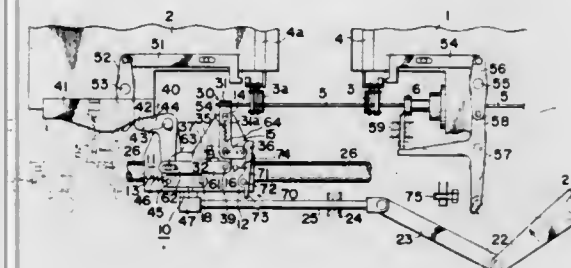
Int. Cl. B26d 5/22

U.S. Cl. 83-277

8 Claims

1. An apparatus for severing a wire drawn from continuous wire stock to a predetermined length and delivering the severed wire to conveyor, said apparatus comprising:

a pair of movable and immovable opposite blocks (1,2) each having a periodically and successively rotated conveyor means gripping jaws of a pair on the opposite conveyor means being faced with each other in alignment; a carrier means (10) movable in the direction perpendicular to the conveyor moving direction, said carrier means comprising a lower carrier member (11) reciprocable for a predetermined length and an upper carrier member (12) placed upon said lower carrier member to be slidable relative to the latter in the reciprocating direction of said lower carrier member, said upper carrier member having a clamp (30) for drawing the wire from the continuous wire stock through said gripping jaws at a wire severing and delivery zone while said gripping jaws are open;



means (40) for stopping the movement of said upper carrier member in cooperation with a stopper member (41) secured to said movable block while said lower carrier member is moving forwardly; means for opening said clamp by advancing movement of said lower carrier member while the movement of said upper carrier member is stopped; means for retreating said carrier means after said clamp has opened, said retreating means closing said clamp at the most retreated position of said carrier means; means (50) for closing said gripping jaws locating at said wire severing and delivery zone just before said clamp is open; and wire severing means provided near the most retreated position of said clamp.

3,857,314

ROTARY CUTTER

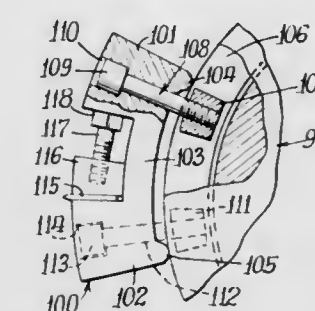
Clyde G. Gregoire, 4N194 Brier Ln, Bensenville, Ill. 60106

Filed July 13, 1973, Ser. No. 378,956

Int. Cl. B23d 25/12

U.S. Cl. 83-346

4 Claims



1. A cutter for the printing industry comprising a pair of cooperative spaced apart parallel rollers, one of said cooperative rollers constituting a knife holding roller and the other of said cooperative rollers constituting an anvil roller, knife mounting members, means on the under surfaces of said knife mounting members arranged and constructed to provide for snug and stable engagement with the outer cylindrical surface of said knife holding roller, a knife extending axially of the cooperative rollers, means supporting the knife on the knife mounting members in a manner to project generally radially from said knife mounting members, and means securing said knife mounting members on the outer surface of the knife holding roller, said means on the under surfaces of said knife

mounting members including arcuately spaced apart projection means extending longitudinally and axially of the knife holding roller for arcuate spaced apart engagement with the outer cylindrical surface of the knife holding roller.

3,857,315

DEVICE FOR SETTING KNIFE HOLDERS, PARTICULARLY AT A BAND CUTTING MACHINE

Sven Gerhard Andersson, Ljungskile, Sweden

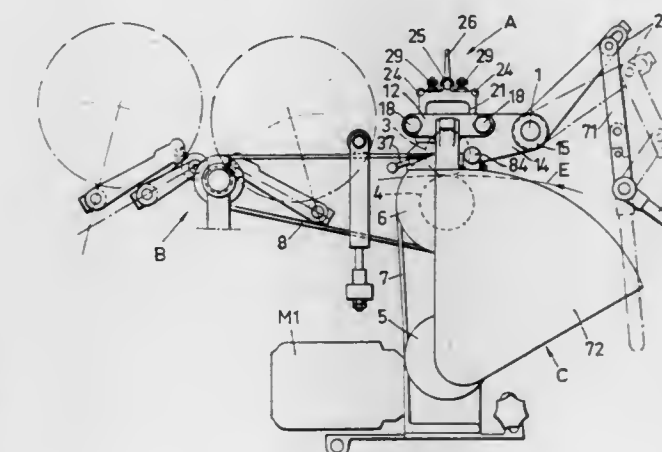
Filed Aug. 14, 1972, Ser. No. 280,302

Claims priority, application Sweden, Aug. 20, 1971, 10584/71; Aug. 20, 1971, 10585/71

Int. Cl. B26d 1/22

U.S. Cl. 83-504

39 Claims



1. A device for use in cutting machines for cutting fabrics into bands, comprising:

- a. at least one set of a plurality of knife holders,
- b. at least one slide shaft along which the knife holders are arranged with an equal spacing between the knives,
- c. at least one ball bushing on each knife holder and having a surrounding contact with said slide shaft,
- d. at least one wire drawn from each knife holder, said wires from the different knife holders in each set of knife holders running substantially in parallel with each other and with said slide shaft to a position remote from said slide shaft, and
- e. a common setting means arranged at said position to which setting means all said wires of said set of knife holders are attached, said setting means and said wires being so arranged that upon actuation of said setting means all said knife holders are moved along said slide shaft in the same direction while permanently maintaining the equal spacing between the knives.
- f. at least one counter-cutting roll coacting with the knives during the cutting operation,
- g. means for moving the knives into and out of contact with said counter-cutting roll,
- h. means for holding the knives in their cutting position in pressing abutment to said counter-cutting roll, and
- i. means for entirely relieving said slide shaft from the pressure the knives are subjected to during the cutting operation, the entire pressure being taken up by said means for holding the knives in pressing abutment to said counter-cutting roll.

3,857,316

SHEAR CUTTER

Alan Roy Handley, 6 Oak Tree Gdns., Wordesley, England

Filed Sept. 10, 1973, Ser. No. 395,639

Claims priority, application Great Britain, Sept. 9, 1972, 41975/72

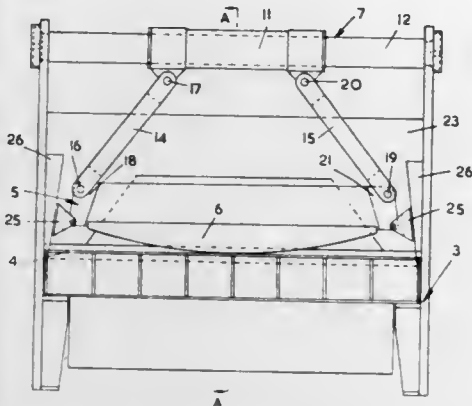
Int. Cl. B26d 5/08; B26f 1/44

U.S. Cl. 83-644

14 Claims

1. A shear cutter comprising a first blade, a second blade having a curved cutting edge co-operating with the first blade, and means for oscillating the second blade, said oscillating

means being adapted, in use, to move the second blade in such a manner that the pivot point of the second blade moves along the said curved cutting edge, said oscillating means including a member which is linearly oscillatable in or parallel to the



plane of oscillation of the second blade, and a pair of spaced links which are pivotally attached to the member at one of their respective ends and are pivotally connected with the second blade at spaced locations at the other of their respective ends.

3,857,317

MUSICAL INSTRUMENT SPATULATE KEY

Robert V. Carree, Mantes-la-Ville, France, assignor to Buffet Crampon, Paris, France

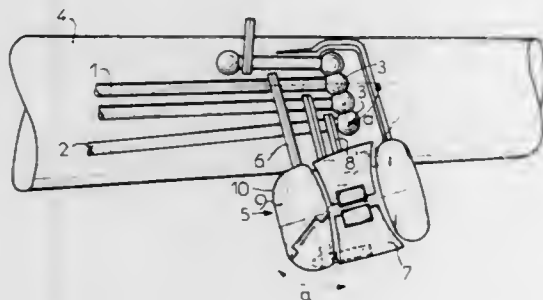
Filed Apr. 9, 1974, Ser. No. 459,322

Claims priority, application France, May 2, 1973, 73.15659

Int. Cl. G10d 7/00

U.S. Cl. 84—380

9 Claims



1. In a musical instrument, a spatulate key comprising a plate, a tab, means pivotally connecting the tab to the plate with one edge of said tab adjacent the plate and parallel to the pivot axis, and an entraining member fixed to the tab at a predetermined distance from the pivotal connection.

3,857,318

IMPROVEMENTS IN DEVICE AT MUSICAL INSTRUMENTS WITH A PIANO KEYBOARD OR THE LIKE

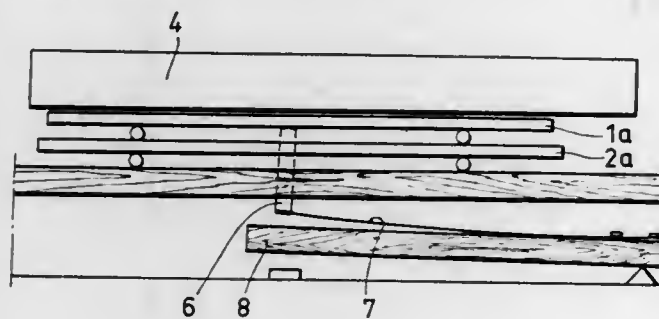
Klas Einar Jansson, 60, Järnvägsgränd, Motala, and Staffan Gunnar Sjöstrand, 3, Axgrand, Linköping, both of Sweden

Filed Feb. 27, 1973, Ser. No. 336,300

Int. Cl. G01d 13/08

U.S. Cl. 84—403

4 Claims



1. A musical instrument comprising in combination:

a plurality of tone bars for the respective individual tones of the instrument, said tone bars being disposed in two parallel rows one overlying the other, tone bar striking means comprising a plurality of keys and a hammer for each key adapted to be actuated by the associated key for striking the related tone bar, said hammers being positioned generally along one of said rows of tone bars, at least some of the tone bars in said one row defining a recess for permitting a hammer to pass therethrough and strike an associated tone bar in the other said row, and a resonance box positioned over said tone bars and defining therein apertures in the side of the resonance box disposed opposite said tone bars, at least some of said apertures which are disposed opposite those tone bars in the row more remote from said resonance box being larger than those apertures which are disposed opposite tone bars in the row closer to said resonance box.

3,857,319

SMALL ARMS CARTRIDGE RELOADER PRESS

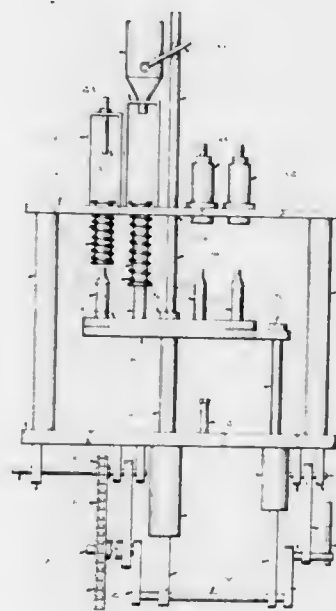
Arthur L. Welch, Rt. 4, Box 157, Merrill, Wis.

Filed May 29, 1973, Ser. No. 364,604

Int. Cl. F42b 33/02

U.S. Cl. 86—23

1 Claim



1. In a small arms cartridge reloader press, a frame comprising a base, support posts extending upward from said base, and a die carrying platform mounted on said support posts, said die carrying platform having a number of die holding stations arranged thereon; a single throw crankshaft pendulously mounted under said base, a first ram and a second ram operatively connected to the throw of said crankshaft and slidably guided in vertical guide sleeves attached to the bottom of said base, a support plate mounted on top of said rams, a shell holder plate rotatably riding on said support plate and centered by the first of said rams, an extension of said first ram extending through the center of said die platform, said shell holder plate having a number of shell holders thereon, said shell holder plate being indexable to align the shell holders with said die holding stations to form shell reloading stations, said second ram supporting the edge of said support plate; one of the reloading stations having means to meter powder to a primed case, and one station having means to seat a bullet in the case, said means for metering powder including a powder measure mounted above the die platform and operated by the first ram extension and a powder metering die vertically slidably mounted in the die carrier platform, said powder metering die having a secondary die vertically slidably contained therein, said secondary die having a powder funnel portion above a case receiving chamber, said powder funnel serving to

extend the time in which powder can run into the cartridge case, said bullet seating means including a bullet seating punch mounted above the die platform and a vertically slidable bullet seating die mounted in said platform.

3,857,320

NODE SUSPENDED FLEXIBLE ROCKET

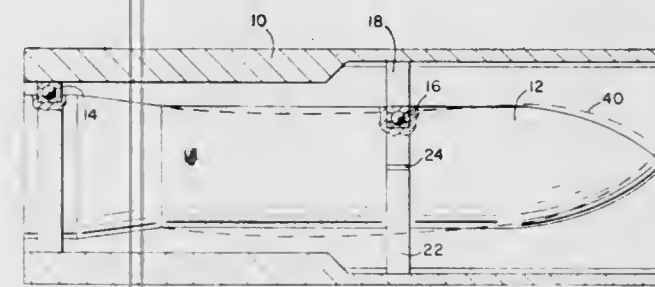
Robert G. Conard, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1973, Ser. No. 327,517

Int. Cl. F41f 3/04

U.S. Cl. 89—1.808

1 Claim U.S. Cl. 89—145



1. In combination with a launch tube having a rear smaller diameter portion and a forward larger diameter portion, a spin stabilized missile having two ball bearing assemblies mounted thereon, each of said bearing assemblies comprising an inner and an outer race and a series of balls therebetween, the inner race of the rearmost bearing assembly being mounted on said missile at the rear bending node of the missile and the outer race bearing against the wall of the smaller diameter rear portion of said launcher, a plurality of longitudinally extending slotted rails mounted in the forward larger diameter portion of said launcher, the inner race of the forward bearing assembly being mounted on said missile at the forward bending node of said missile, fins attached to the outer race of said forward bearing assembly and slideably received in the slots in said rails, whereby the support being at the node points wherein there is no movement relative to said launcher the missile principal longitudinal axis of inertia will remain coincident with the longitudinal axis of the launcher regardless of any bending of the missile induced by rotation thereof.

3,857,321

SUBMARINE MISSILE LAUNCH SYSTEM

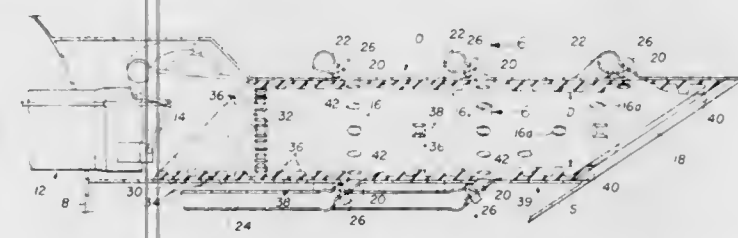
Paul Cohen, Glen Cove, N.Y., assignor to Subcom, Inc., Glen Cove, N.Y.

Filed July 30, 1973, Ser. No. 383,586

Int. Cl. F41f 3/08

U.S. Cl. 89—1.81

21 Claims



1. A submarine missile launcher for a submarine having a propulsion tube and a tunnel connecting the interior propulsion tube and the exterior of the submarine comprising a circumferential resilient covering lining a lengthwise extent of the interior of said tunnel, flexible means projecting to extend from said covering radially inwardly toward the tunnel axis for engagement with a missile being launched from said tunnel,

a plurality of fluid dispensing jets relatively spaced about the tunnel, and sensor means connected with said jets and responsive to the flexing of said flexible means during the movement of a missile through the tunnel to cause said jets to apply a stream of fluid laterally to the missile.

3,857,322

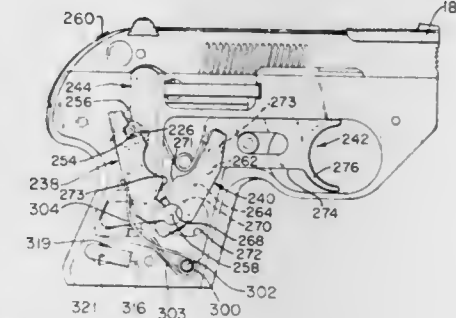
FIREARM

Philip R. Lichtman, 3 Valley Spring Rd., Newton, Mass. 02192

Filed Dec. 10, 1973, Ser. No. 423,477

Int. Cl. F41c 17/08, 19/14

20 Claims



1. A firearm comprising: a frame; a hammer in said frame pivotable between cocked and firing positions; a spring mounted in said frame for urging said hammer to its firing position; a sear movable to a position to hold the hammer cocked and to another position to release the cocked hammer so that the hammer can fire the firearm; a movable sear drawbar having sear-engaging means for engaging the sear and moving it to hammer-releasing position; a movable hammer drawbar having cocking means operative during double action for moving said hammer for firing position to cocked position and thereafter releasing said hammer so that said hammer can fire said firearm; a trigger movably mounted to said frame; a pivoting lever pivotally mounted to said frame and pivotally connected to said sear drawbar and said hammer drawbar; and means pivotally connecting said pivoting lever to said trigger, said pivoting lever being arranged so that when said trigger is pulled said pivoting lever will (a) cause said sear drawbar during single action to move said sear to hammer releasing position and (b) cause said hammer drawbar during double action to move said hammer from firing position to cocked position and thereafter to release said hammer so said hammer can fire said firearm.

3,857,323

SLIDE GUIDE FOR RIFLES

William B. Ruger, Southport, and Harry H. Sefried, II, New Haven, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.

Filed Oct. 2, 1972, Ser. No. 293,757

Int. Cl. F41d 5/10

U.S. Cl. 89—191 R

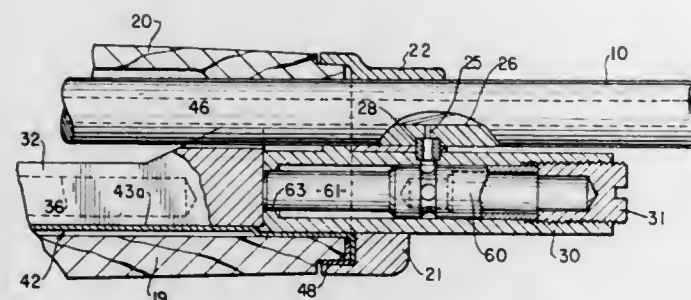
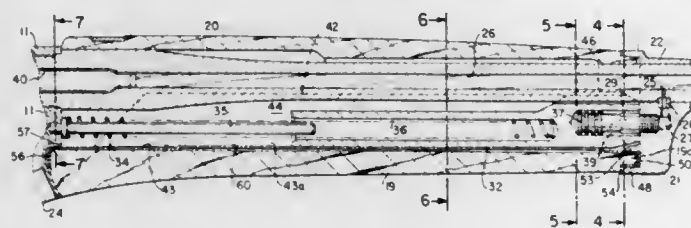
12 Claims

1. In a gas operated auto-loading rifle having a receiver, a barrel secured to the receiver, a gas pipe mounted on the barrel with the axis thereof generally parallel to the bore of the barrel, the gas pipe being closed at its forward end and having an opening at its rearward end, a gas port for powder combustion gases formed in the side wall of the barrel and communicating with the bore of the barrel and with the gas pipe, a bolt slidably mounted for longitudinal travel in the receiver behind the barrel, a slide having a slide handle connected to the bolt and a slide block disposed adjacent the opening at the rear-

ward end of the gas pipe, said slide being movable longitudinally with respect to the barrel from a forward position at which the bolt is closed to a rearward position at which the bolt is open, a slide spring urging the slide to its forward bolt closed position, co-acting slide drive means associated with the slide and the gas pipe for driving the slide to its rearward bolt open position when powder combustion gases enter the gas pipe, and guide means for guiding the slide block, the improvement which comprises;

slide guide means for guiding the slide block as the slide moves longitudinally with respect to the barrel, said guide means comprising:

an elongated generally channel-shaped member that is disposed beneath the barrel and that extends along the slide from adjacent the gas pipe to adjacent the receiver, said channel-shaped member having a bottom wall, two side walls and an open top, the bottom wall and the up-



standing side walls of the channel-shaped members being disposed in close proximity to the bottom and side surfaces of the slide block and the underside of the barrel being disposed in close proximity to the top surface of the slide block whereby said bottom wall and side walls of the channel-shaped member and the underside of the barrel cooperate to guide the slide block and to maintain it in alignment with the gas pipe as the slide moves longitudinally with respect to the barrel,

means for releasably securing the forward end of the channel-shaped member to the barrel in position relative to the gas pipe to insure that the co-acting slide drive means of the slide and the gas pipe are disposed in operational relationship when the slide is moved to its forward position, and

means for releasably securing the rearward end of the channel-shaped member at the receiver.

3,857,324

SEMI-AUTOMATIC FIREARM

William A. Tant, 1220 Daladams St., Raleigh, N.C. 27603

Filed Apr. 13, 1973, Ser. No. 350,747

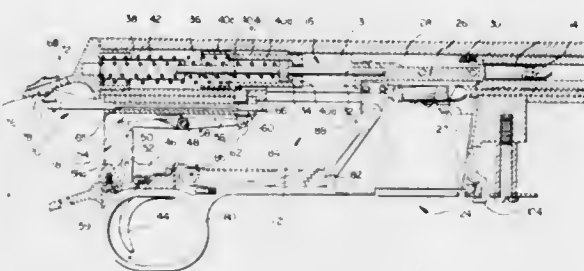
Int. Cl. F41d 5/00, 11/02

U.S. Cl. 89-197

14 Claims

1. A semi-automatic firearm comprising: a receiver having a longitudinal chamber formed therein; means for inserting one cartridge at a time into said receiver and moving the inserted cartridge to a firing chamber; a firing pin means movably mounted in said longitudinal chamber for striking and firing a respective cartridge positioned in said firing chamber; a striker assembly mounted in said chamber in alignment with and biased toward said firing pin means, said striker being movable between a cocked position and firing pin striking position; a movably mounted sear rearwardly spaced from said firing pin means and movable between a striker engaged position and a disengaged position, said sear normally assuming

said striker engaged position where it acts to hold said striker in said cocked position, said sear being further operative to disengage said striker allowing the latter to strike said firing pin means; a trigger mechanism operatively connected to said sear for moving the same from said striker engaged position to said disengaged position and back to said striker engaged position; a safety interlock mechanism associated with said receiver and operative to lock and unlock said sear; a bolt slidably mounted in said chamber between said striker and firing point and biased toward said firing point, said bolt being aligned with said striker and operative upon firing to recoil and engage said striker, causing said striker to be moved back



to said cocked position for engagement with said sear; a bolt shaft fixed to said bolt and extending rearwardly therefrom through the internal chamber formed within said receiver; a stop fixed intermediately on said bolt shaft; a bolt return spring disposed between said stop and the rear portion of said receiver, thereby biasing said bolt toward said firing point; an extractor and ejector assembly carried by said bolt; means for actuating said extractor and ejector assembly in response to the recoil movement of said bolt; and means for manually moving said striker back to said cocked position where said striker is engaged and held by said sear, thereby enabling said firearm to be cocked in the absence of a recoil movement from said bolt.

3,857,325

SEMI-AUTOMATIC FIREARM

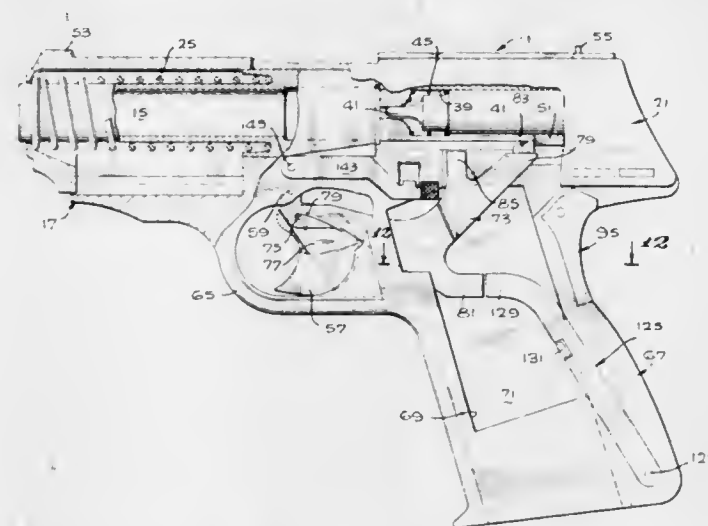
Frank S. Thomas, 1715 Camden Ave., Los Angeles, Calif. 90024

Filed Sept. 4, 1973, Ser. No. 393,709

Int. Cl. F41d 11/02

U.S. Cl. 89-138

18 Claims



1. A semi-automatic double action firearm comprising: a frame including a hand grip adapted to be grasped by the user when the firearm is fired; a barrel affixed to said frame having a muzzle and a firing chamber adapted to receive a cartridge; a slide member surrounding said barrel mounted for axial movement on said frame; first resilient means between said slide member and said barrel urging said slide member toward the muzzle of said barrel;

a firing pin mounted for axial movement within said slide member;

second resilient means between said firing pin and said slide member urging said firing pin toward the muzzle of said barrel with a force greater than that exerted by said first resilient means on said slide member;

a trigger mounted for motion relative to said frame;

a trigger bar articulated to said trigger and adapted to engage said firing pin and move it in the direction away from said muzzle in response to movement of said trigger and to release said firing pin when the trigger has moved a predetermined distance; and

lever means pivotably mounted on said frame and adapted to restrain said slide member against movement relative to said frame when said hand grip is grasped for firing.

3,857,326

ROTARY HYDRAULIC MACHINES

George Alvah Blandford, Coventry, England, assignor to Lucas Aerospace Limited, Birmingham, England

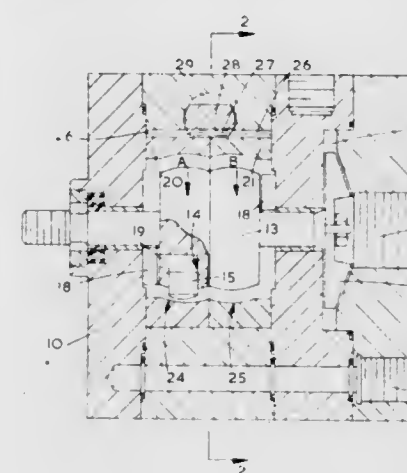
Filed Aug. 16, 1972, Ser. No. 281,239

Claims priority, application Great Britain, Aug. 17, 1971, 38469/71

Int. Cl. F04b 13/06

U.S. Cl. 91-492

4 Claims



1. A rotary hydraulic machine comprising a housing having an inlet and an outlet, a rotor mounted within the housing, a plurality of pistons slidable in radial bores in the rotor, the said bores successively communicating, in use, with the inlet and the outlet, a port plate fixed in the housing and engaged by the rotor to act as a valve to control communication between said bores in the rotor and the inlet and outlet, said rotor including ports communicating respectively with the bores and opening onto a face of the rotor which is engaged by said port plate, said port plate having a kidney-shaped port spaced from the edge of the port plate in the path of movement of the rotor ports thereover, by a distance greater than the width of each of said rotor ports, and a cam ring surrounding the rotor and having an internal cam surface engageable by the pistons, the cam ring also having an external surface of revolution which engages a corresponding surface within the housing, and the cam ring being rotatable within the housing about the axis of said outer surface, said outer surface being eccentric with respect both to the axis of the cam surface and the axis of the rotor, and means for rotating the cam ring within the housing, the cam ring being positioned so as to provide movement of said piston while said ports are shut, whereby, in use, there is a period in each revolution of the rotor when each port is shut off by the port plate so that liquid in the associated bore is subjected to a change of volume and pressure, said machine further including two cam rings arranged with the areas of their external surfaces equally spaced from the axis of the rotor, said axes lying in a common plane and which the rotor has two rows of radial bores slidably containing pistons engaged with the internal cam surfaces of the cam rings respectively.

3,857,327

DOUBLE EGG SEPARATOR

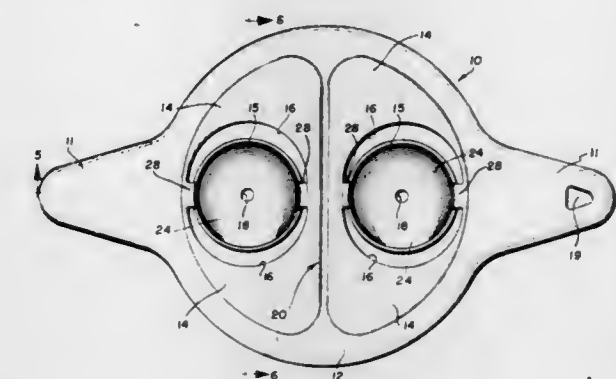
Samuel Joseph Popeil, Chicago, Ill., assignor to Popeil Brothers Inc., Chicago, Ill.

Filed May 18, 1973, Ser. No. 361,430

Int. Cl. A47j 43/14

U.S. Cl. 99-499

7 Claims



1. A double egg separator comprising in combination, a support rim surrounding a substantially circular central portion, said substantially circular central portion defined by a depending arcuate drain wall thereby substantially to close off the lower portion of the central portion, a stand ring depending from said support rim circumferentially thereabout to render the egg separator self standing, said drain wall provided with an egg cracker wall separating said central portion into two distinct egg containing portions, each of said egg portions provided with a yolk cup said yolk cup being surrounded by interrupted first drain means, said first drain means comprising crescent-shaped slots interrupted by at least one support spider attached between the yolk cup and drain wall thereby to support each of said yolk cups from said drain wall, and support means extending laterally from the rim for supporting the egg separator atop a mixing bowl, the entire unit being oriented in proportion for molding from a single piece of material.

3,857,328

CONCRETE PLACER ASSEMBLY

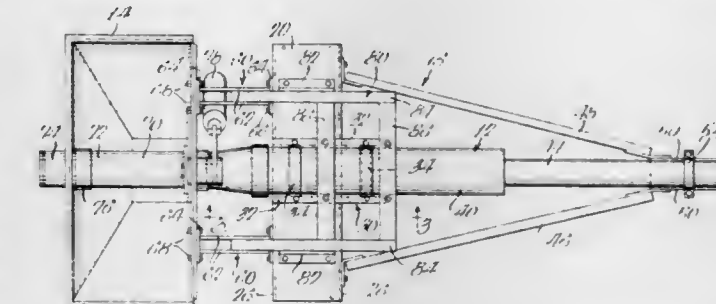
Eugene D. Taylor, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sept. 20, 1973, Ser. No. 399,103

Int. Cl. F04b 15/02, 11/00

U.S. Cl. 92-129

5 Claims



1. Concrete pumping apparatus including an elongate pumping cylinder, a concrete receiving hopper, and a support, said support comprising an elongate member having wheels at opposite ends; clamp means connecting an intermediate portion of said cylinder directly to an intermediate portion of said member with said cylinder extending substantially perpendicular to said elongated member; connecting means connecting an open end of said cylinder to said hopper; brace means having one end connected to said member and an opposite end connected to said hopper; first and second elongate braces, said braces each having one end connected to said

member adjacent respective ends of said member, said braces having opposite ends connected to said cylinder adjacent the free end thereof so that said cylinder forms a major part of said support.

3,857,329

FABRICATION OF A CARRYING BAG FROM THERMOPLASTIC SYNTHETIC FILM

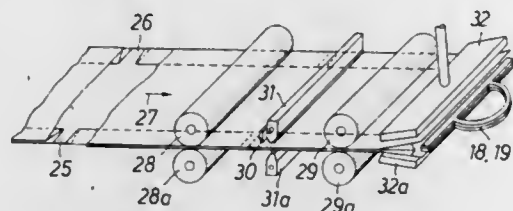
Michael Lehmacher, and Hans Lehmacher, both of 5215 Mondorf Ub., Troisdorf, Germany

Division of Ser. No. 5,417, Jan. 5, 1970, abandoned. This application July 18, 1973, Ser. No. 380,257

Int. Cl. B31b 1/86

U.S. Cl. 93—35 H

9 Claims



1. A method for fabrication of carrying bags from thermoplastic synthetic plastic film, each bag with its longitudinal sides infolded throughout their lengths to form respective like infold panels joining respective edges of two opposed generally rectangular walls to constitute a bag body, and at the bag mouth having a carrying grip structure comprised of opposed parallel grip bars extending substantially across the bag body width and attached to a mouth inner margin of a respective wall; said method comprising the steps of;

providing a continuous web of flattened tubular thermoplastic synthetic plastic film comprised of two film layers continuously longitudinally connected at both edges, and advancing the web longitudinally;

at longitudinal spacing corresponding to desired product bag length, producing successively spaced pairs of edge notches through both web layers, the notches of each pair at opposite locations in the respective web edges, each notch having a depth corresponding substantially to the depth of the product side fold panel width; producing in the advancing web after said notches like longitudinal side infolds on both edges;

transversely severing the advancing web across the leading edges of the successive notch pairs, to separate successive bag sections from the leading end of the web, the severance of each bag section defining the mouth margins of a following bag section;

spreading the film layers at successively defined mouth margins and inserting the said grip bars between the spread layers at the mouth region;

and transversely welding the respective bag wall mouth margins to the inserted grip bars.

3,857,330

APPARATUS AND METHOD FOR MANUFACTURING A TOROID SHAPED HOT DOG

George A. Ruckstaetter, 9586 W. Gullway, Richland, Mich.

Filed Dec. 6, 1973, Ser. No. 422,558

Int. Cl. A22c 7/00, 11/04

U.S. Cl. 99—354

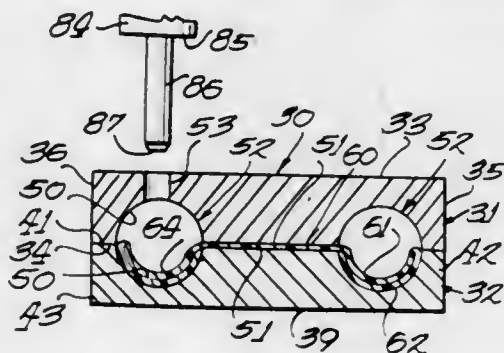
3 Claims

1. An apparatus for manufacturing a circular doughnut shaped hot dog comprising:

a flattened hollow circular casing having a top layer and an interconnected bottom layer, the top and bottom layers defining a compartment therebetween, and an opening disposed in the top layer communicating with the compartment;

a mold in the form of an elongated box-like member, the mold divided into a top half section and a bottom half section, the top half section having opposed interior and exterior surfaces, opposed side edges, and opposed end

edges, the bottom half section having opposed interior and exterior surfaces, opposed side edges, and opposed end edges, the top and bottom half sections adapted to have their respective interior surfaces placed in engaging juxtaposition when the mold is assembled, means adapted for orienting and aligning the top section relative to the bottom section and for detachably securing said sections together, each interior surface of each top and bottom section having provided therealong a series of longitudinally aligned spaced apart recesses, each recess being generally ring-shaped and having a boss member projecting through the central portion thereof and terminating at a top surface co-planar with the associated section interior surface, each ring-shaped recess having a semi-circular cross-section, each recess in the interior bottom section cooperating with a substantially identically



shaped recess in the interior top section surface to define therebetween when the mold is assembled a doughnut shaped recess having a circular cross-section, each recess adapted to receive therein a casing in a manner draping the casing over the boss member with the peripheral edges of the casing disposed in the recess, and a series of longitudinally aligned spaced apart apertures disposed in the top member and extending therethrough, each aperture in communication with an associated one of the top section recesses, and the casings when placed in the recesses having the casing openings disposed in axial alignment with the associated aperture in the mold top section;

a moving belt conveyor adapted to have the mold longitudinally aligned therewith and rested thereon to be carried therealong;

a stuffing apparatus mounted for reciprocating movement normal to the plane of the mold when resting on the conveyor belt, the stuffing apparatus including a hollow nozzle having a tip end and a top end and being of a diameter adapted to be axially inserted through a mold aperture to gain access to the mold recess with the tip end adapted to engage the casing opening in the mold recess, the top end of the hollow nozzle connected to the bottom end of a tubing having a diameter larger than the nozzle such that the bottom end of the tubing defines an annular shoulder about the nozzle, the tubing shoulder adapted to engage the exterior surface of the top section of the mold to limit the engagement of the nozzle in the mold recess, the tube housing having a hollow compartment defined therein which is in engagement with the hollow nozzle having a passageway formed therein, and a source of pressurized food product connected to the tubing and adapted to deliver food product into the tubing chamber and interconnected nozzle passageway for delivery into the casing in the recess when the nozzle tip is in engagement with the casing opening;

a sealing apparatus including a hollow nozzle having a tip end and an outer end with a cylindrical hollow body member interconnecting said ends, the nozzle member adapted to be axially inserted into a mold aperture to place the nozzle tip end in communication with the opening of the casing disposed in the associated recess, the nozzle having a passageway extending therethrough, and a source of pressurized sealant interconnected to the nozzle and selectively deliverable thereto when the nozzle

is in engagement with a mold aperture for the spraying of sealant thereout of onto the casing disposed therebeneath in a manner to form an integral patch on the casing to seal the casing opening;

an oven for the cooking of the casings and food products contained therein;

a transporting means for receiving the stuffed and sealed casings from the mold and transporting the same in a manner to be cooked to the oven;

a stripping apparatus operable to engage and sever the casing in a manner to permit separation of the casing from the cooked hot dog, the stripping apparatus including a shaft reciprocal in opposite directions and disposed axially with a stuffed and sealed cooked casing disposed therebeneath, the bottom end of the shaft having a circular frame support member mounted thereto, the frame being concentric with the stuffed casing disposed therebeneath, an electrically energizable heating wire disposed about the outermost peripheral ends of the frame in a manner defining a plane substantially parallel to the plane of the casing disposed therebeneath, the wire being disposed in a circular configuration on the frame with said circular configuration being of a diameter less than the diameter of the casing, the wire adapted to engage the peripheral edge surfaces of the casing upon being brought into engagement thereof by operation of the shaft, the wire severing the casing along the circular line of contact therewith to divide the casing into a top section and a bottom section to permit ease of separation of the casing from the hot dog;

carrying means adapted to receive the sealed casings and cooked hot dogs in a series of aligned spaced apart positions therealong to carry the same to the stripping apparatus and position the same relative to the stripping apparatus for proper engagement thereby of the severing wire; and

means adapted to electrically interconnect the severing wire to a suitable source of electrical energy.

3,857,331

METHOD OF AND APPARATUS FOR MAKING WAFERS

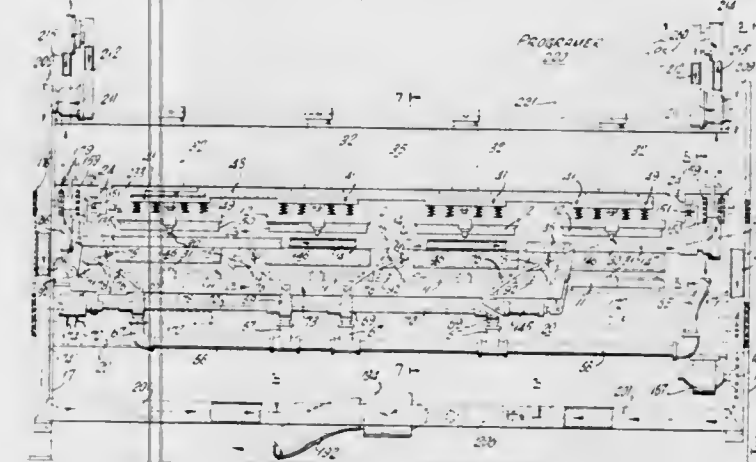
Arthur J. Griner, Wyckoff, N.J., assignor to Nabisco, Inc., New York, N.Y.

Filed Sept. 19, 1972, Ser. No. 290,329

Int. Cl. A21b 5/02; A47j 37/01

U.S. Cl. 99—373

47 Claims



1. Wafer-baking apparatus comprising, a fixedly positioned platen set comprising upper and lower platens, means selectively to advance the platens relatively to each other to form a wafer-shaping cavity therebetween and to separate the platens to permit the removal of the baked wafer from the cavity, means for heating the platens to predetermined desired baking temperatures, means introducible between the separated platens for grasping a wafer on the lower platen and then moving with it from between the platens, a second platen set similar to the first-recited platen set fixedly disposed in alignment therewith and spaced laterally thereof, and means controlling the separation and relative advance of the two platen sets so

that the first platen set is closed and baking a wafer when the second platen set is being opened and having its baked wafer removed therefrom, the means for removing a baked wafer from the first platen set when the platens thereof are separated being so constructed and arranged as to remove the wafer from the second platen set when the platens thereof are opened.

3,857,332

APPARATUS FOR THE CONTINUOUS EXTRACTION IN COUNTERFLOW OF POWDERED MATERIALS

Erik Houghton-Larsen, Fredensborg, and Ole Gronning Kjaergaard, Lyngby, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

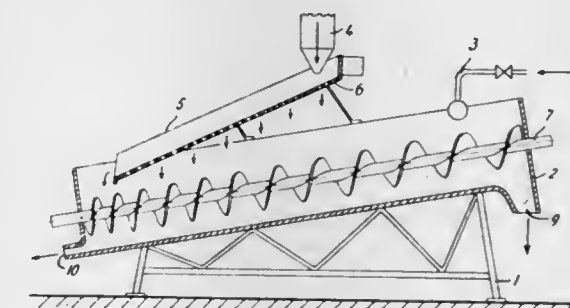
Filed Oct. 30, 1972, Ser. No. 301,926

Claims priority, application Denmark, Nov. 4, 1971, 5410/71

Int. Cl. A47j 31/00

U.S. Cl. 99—536

9 Claims



3. An apparatus as claimed in claim 1, characterized in that the transport members comprise two conveyor worms with parallel axes and with helical surfaces running in opposite directions.

3,857,333

HULLER

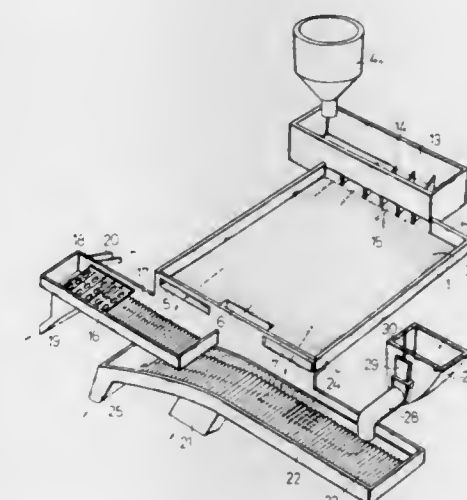
Toshihiko Satake, 2-38, Saijyo-cho, Nishihon-machi, Kamogun, Hiroshima-ken, Japan

Filed Apr. 5, 1973, Ser. No. 348,306

Int. Cl. B02b 3/04; B07b 13/08

U.S. Cl. 99—601

10 Claims



1. In a huller comprising: separating means for separating hulled grain from unhulled grain, including:

a separating pan having a rough sorting surface and a supply side and a discharge side, said supply side being elevated above said discharge side;

a first discharge opening for hulled grain located in said discharge side;

a second discharge opening for a mixture of hulled grain and unhulled grain located in said discharge side;

a third discharge opening for unhulled grain located in said discharge side;
 said separating pan being further inclined such that said first discharge opening is elevated above second discharge opening and said second discharge opening is elevated above said third discharge opening;
 means for reciprocating said separating pan in an obliquely upward direction with reference to the plane of said sorting surface;
 means adjacent said supply side for supplying hulled and unhulled grain to said separating surface;
 means for removing said hulled grain from said first discharge opening;
 means for removing said mixture from said second discharge opening; and
 means for removing said unhulled grain from said third discharge opening;
 the improvement wherein said means for removing said unhulled grain comprises:
 a vibration conveyor integrally mounted at one end thereof to said hulled grain discharge opening, said vibration conveyor being reciprocated by said means for reciprocating said separating pan;
 a discharge funnel at the other end of said vibration conveyor;
 said reciprocating vibration conveyor being operative to laterally upwardly transfer said unhulled grain from said unhulled grain discharge opening to said discharge funnel; and
 hulling means spaced below said discharge funnel to receive and hull said unhulled grain.

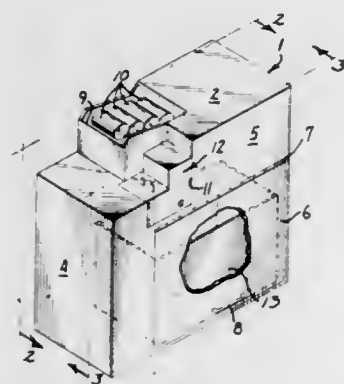
3,857,334

APPARATUS FOR CRUSHING CONTAINERS AND DISPENSING TOKENS

Ewald A. Arp, Hopkins, Minn., assignor to Arnold W. G. Larson and Gene S. Moody, both of Minneapolis, Minn., part interest to each
 Division of Ser. No. 233,178, March 9, 1972, Pat. No. 3,792,765. This application Oct. 26, 1973, Ser. No. 410,018
 Int. Cl. B30b 9/32, 15/30

U.S. Cl. 100-53

13 Claims



1. Apparatus for crushing containers comprising:
 - a. a frame structure;
 - b. a ram including a container-engaging head mounted in said frame structure for predetermined reciprocatory movement;
 - c. a platen facing said ram head;
 - d. collapsible means mounting said platen in said frame structure for movement toward and away from a normal operative position facing said ram head at a predetermined distance therefrom;
 - e. yielding means urging said collapsible means in a direction to normally hold said platen in said operative position thereof with a predetermined pressure greater than the pressure required to crush a given container, the arrangement being such that the bias of said yielding means imparted to said platen will be substantially reduced upon initial collapsing movement of said collapsible means responsive to exertion of ram pressure against said platen greater than said predetermined pressure;
 - f. container-feeding means for feeding containers successively to the space between said platens and ram head when said ram is moved to a predetermined position remote from said platen;
 - g. a movable gate element limiting movement of a container delivered to said space;
 - h. and drive means for imparting movement to said container-feeding means, ram and gate element, for successively feeding a container, moving said ram in a container-crushing direction toward said platen, and moving said gate element out of the path of movement of a container and away from said spaced.

duced upon initial collapsing movement of said collapsible means responsive to exertion of ram pressure against said platen greater than said predetermined pressure;
 f. container-feeding means for feeding containers successively to the space between said platens and ram head when said ram is moved to a predetermined position remote from said platen;
 g. a movable gate element limiting movement of a container delivered to said space;
 h. and drive means for imparting movement to said container-feeding means, ram and gate element, for successively feeding a container, moving said ram in a container-crushing direction toward said platen, and moving said gate element out of the path of movement of a container and away from said spaced.

3,857,335

LANDFILL CRUSHER

Allen Wagley, c/o Wendell Coffee, P.O. Box 2036, Lubbock Tex. 79408

Filed Dec. 13, 1972, Ser. No. 314,824

Int. Cl. B30b 15/30

U.S. Cl. 100-73

5 Claims



1. A machine to crush garbage and fill land comprising:
 - a. a vehicle having front and rear ends and
 - i. a plurality of ground engaging elements, forming
 - ii. means to propel itself from one location to another in a direction of travel,
 - iii. rotary crusher elements that continually move toward one another mounted on said vehicle and extending within the confines of said vehicle forming means for crushing and flattening material therebetween,
 - b. a belt intake conveyor suspended from the front end of said vehicle adapted to have garbage dumped from trucks thereinto, said conveyor extending in said direction of travel in use,
 - c. said belt intake conveyor forming means for feeding garbage to said crusher elements, and
 - d. a belt placement conveyor which
 - e. forms means for conveying crushed garbage from the vehicle to the land to be filled,
 - f. said belt placement conveyor being suspended from the rear end of said vehicle.

3,857,336

AUTOMATIC FILTERMASS PRESS

Erwin J. Nunlist, Penfield; Lionel J. Pontes, Gates, and Gus M. Irving, Jr., Rochester, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,755

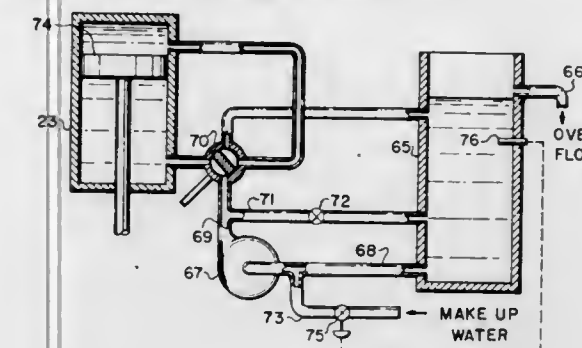
Int. Cl. B30b 1/32, 9/06

U.S. Cl. 100-269

1 Claim

1. In a filtermass press having a vertically movable ram powered by a double-acting hydraulic cylinder, the improvement comprising a recirculating system for supplying water to said hydraulic cylinder comprising:
 - a. a reservoir with an overflow that maintains a substantially constant volume of water in the reservoir;
 - b. a centrifugal pump having its inlet connected to said reservoir;
 - c. a four-way valve adapted to connect either end of said cylinder to the discharge of said pump, while connecting the other end of said cylinder to said reservoir;

- d. a bleed line connecting the pump discharge directly to the reservoir, said bleed line containing flow restricting means, whereby when the ram reaches the end of its stroke, the pump operates at a lower flow rate and produces a higher discharge pressure; and



- e. a make-up water supply line for supplying water to said system between said reservoir and said pump inlet, an automatic valve in said supply line, and a temperature sensor mounted on said reservoir, said temperature sensor being adapted to open said automatic valve when the temperature in the reservoir exceeds a certain level.

3,857,337

SCREEN PRINT TABLE WITH CONVEYING AND SHEET REGISTERING MEANS

Genzo Tsuji, Saitama; Takashi Sekikawa, and Morio Yamaguchi, both of Tokyo, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

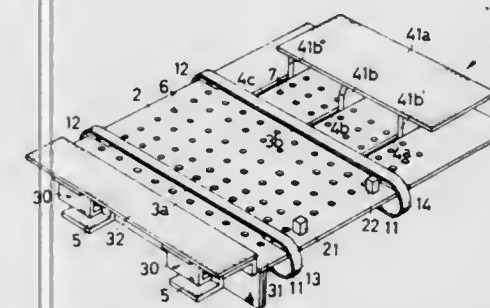
Filed Feb. 9, 1973, Ser. No. 330,976

Claims priority, application Japan, July 10, 1972, 47-68805

Int. Cl. B41f 15/08, 15/20

U.S. Cl. 101-123

3 Claims



1. A screen printing apparatus comprising a table having a top surface with plurality of apertures, therethrough means connecting each of said apertures with a vacuum source, said table top surface having a plurality of elongated openings, a pair of belt conveyors which are parallel and are provided through said elongated table openings for feeding a sheet material to be printed on said table, first stop means for checking the feeding movement of the sheet material fed onto said table by said belt conveyors, means to move said first stop means vertically, a second stop means provided at one end of said table parallel to said belt conveyors, a diverting means for pushing the sheet material against said second stop means, means for lifting said table to a predetermined printing position with said belt conveyors remaining below the top surface of said table, a screen provided above said table, and a squeegee above said screen and movable in a direction transverse to the feed movement of said belt conveyors, wherein said second stop means is a plate having a flat upper surface whose level is on the same horizontal plane as the upper surface of the sheet material when said table is lifted to said predetermined printing position; said table having a plurality of slots, and said diverting means comprises a flat upper plate and vertical plates attached to said flat upper plate and guided through said slots formed in said table for pushing the sheet material against said second stop means, said flat upper plate having substantially the same thickness as the sheet material, whereby in said printing position the squeegee may move

smoothly over the flat surface formed by said upper surface of said second stop means, said upper surface of the sheet material and the upper surface of said flat upper plate of said diverting means.

3,857,338
WARHEAD

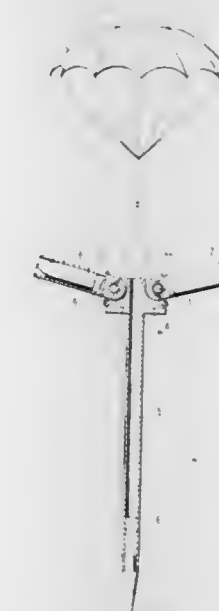
Ludwig Bucklisch, Unterach, Austria, assignor to Dynamit Nobel AG, Troisdorf, Germany

Continuation-in-part of Ser. No. 112,379, Feb. 3, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 300,226
 Claims priority, application Germany, Feb. 3, 1970, 2004637

Int. Cl. F42b 25/00

U.S. Cl. 102-4

12 Claims



1. An independent weapon unit for use with warheads in bombs, rockets and the like, of the type which accommodate a plurality of independent weapon units in a single warhead; said independent weapon unit comprising: common central connecting means having a centrally disposed longitudinally extending axis, a plurality of launcher tubes connected to said central connecting means, each of said launcher tubes including means for accommodating at least one projectile, descent retarding means connected to said central connecting means for controlling the rate of descent of said weapon unit, and stabilizing means connected to said central connecting means for stabilizing the weapon unit during the descent thereof, said descent retarding means and said stabilizing means being spaced from one another along said longitudinal axis at opposite sides of said central connecting means,

wherein said stabilizing means includes a rigid rod member connected to said central connecting means and a stabilizing weight supported by said rod member at a position spaced from said central connecting means along said longitudinal axis at the side of said central connecting means which is opposite the descent retarding means, wherein said central connecting means includes an opening therethrough which extends along said longitudinal axis, wherein said descent retarding means includes an opening therethrough which extends along said longitudinal axis when said descent retarding means in a stored condition, and wherein said rigid rod includes an opening aligned with said openings in said central connecting means and said descent retarding means for accommodating storage of a plurality of said weapon units with insertion of a rigid rod of an adjacent weapon unit into said openings in telescoping relationship to the rigid rod of said weapon unit, whereby a plurality of said weapon units can be stored adjacent one another extending in the direction of said

longitudinal axis with the combined length of the stabilizing means of said plurality of independent weapon units in the stored condition being less than the sum of the length of the individual stabilizing means when the independent weapon units are in an operative descent condition.

3,857,339

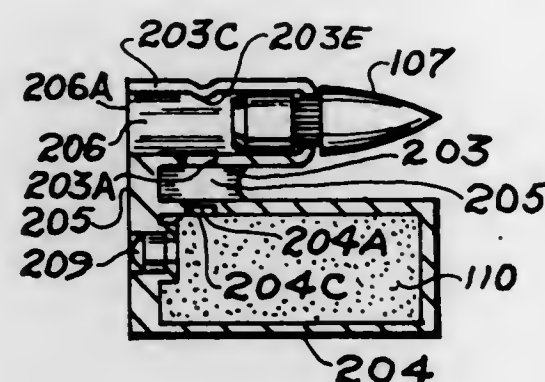
AMMUNITION AND WEAPON SYSTEMS

Andrew J. Grandy, 2707 Grant Ave., North Hills, Pa. 19038
Filed Mar. 30, 1972, Ser. No. 239,595

Int. Cl. F42b 5/02

U.S. Cl. 102-38

102 Claims



1. An ammunition capsule comprising,
 - a unitary capsule body having an elongated longitudinally extending cylindrical chamber, said chamber having a forward barrel portion for slidably receiving a projectile and a pressure chamber portion aligned with and rearward of said barrel portion,
 - a one-piece imperforate propellant capsule chamber which remains imperforate and is integral with and laterally offset from said elongated chamber,
 - said propellant capsule chamber having metering orifice means for fluidly communicating the propellant capsule chamber with said pressure chamber, and
 - a primer carried by an exterior surface of said ammunition capsule body for igniting a capsule propellant charge.

3,857,340

RETURN BULL WHEEL AND CABLE CLAMP FOR CABLE-DRIVEN CHAIR LIFT

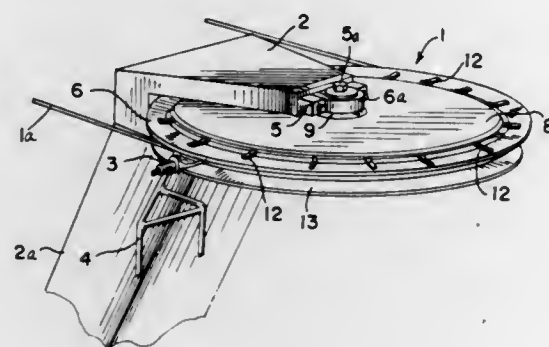
James C. Wright, Golden, Colo., assignor to Berry Metal Company, Harmony, Pa.

Filed Dec. 20, 1973, Ser. No. 426,747

Int. Cl. B61b 7/04

U.S. Cl. 104-173

10 Claims



1. A bull wheel construction for receiving a cable or the like thereabout including:

- a central hub,
- a plurality of spokes extending radially outward from the hub,
- a cover in the form of a flanged head disposed over the spokes and connecting with the hub.

an outer peripheral cable receiving portion coupled at the outer periphery of the flanged head, and said flanged head including a horizontally extending portion generally radially of the hub and a downwardly extending portion generally axially of the hub.

3,857,341

SNUBBED BOLSTER

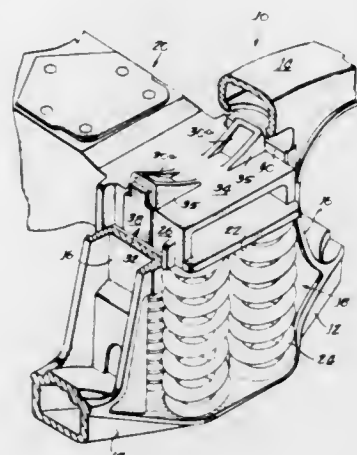
Otto Walter Neumann, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Oct. 10, 1972, Ser. No. 295,871

Int. Cl. B61f 5/06, 5/12; F16f 1/06

U.S. Cl. 105-197 DB

2 Claims



1. In a railway car truck bolster; the combination of top and bottom walls, spaced side walls interconnecting said top and bottom walls, said spaced side walls defining inboard and outboard sides of a friction shoe pocket, an opening in the bottom wall affording access to said pocket by an associated shoe-actuating spring, a sloping wedge wall having inboard and outboard edges, said wedge wall being integral with said side walls and extending above said top wall to afford a downwardly facing wedge surface for an associated shoe in said pocket, and a hood integral with said inboard and outboard edges of said wedge wall and with said top wall along said edges, the outer edge of said hood being substantially coplanar with said side walls along their outer surfaces and defining therewith the outer extremity of said pocket.

3,857,342

MODULAR NESTABLE PALLET

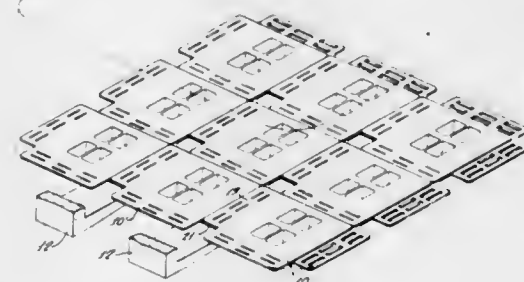
Burton A. Johns, Santa Ana, Calif., assignor to John M. Lochnner, John K. Griff, Gary J. Griff and Burton A. Johns, Palos Verdes Estates, Calif. a part interest to each.

Filed June 27, 1973, Ser. No. 374,087

Int. Cl. B65d 19/38, 19/12

U.S. Cl. 108-53

18 Claims



1. A pallet module molded from plastic material comprising:
 - a generally rectangular upper panel;

leg means formed integral with the upper panel and depending from the central portion of the panel; four flanges formed integral with the panel and respectively extending outwardly from the four edges of the panel supported in cantilever fashion; and means formed on each of said flanges for overlapping and interlocking with flanges of similar modules such that a plurality of modules may be assembled to form a complete pallet, the distance between the outer edge of a flange and said leg means of said module being such that with two modules interconnected there is ample room between the leg means of adjacent modules for a tine of a forklift truck, said interlocking means permitting a complete pallet to be moved as a unit in any position, with or without a pallet load.

o. whereby each leg assembly can be manually swung into operative or inoperative position while the table top is held in horizontal position.

3,857,344

FURNACE SEAL

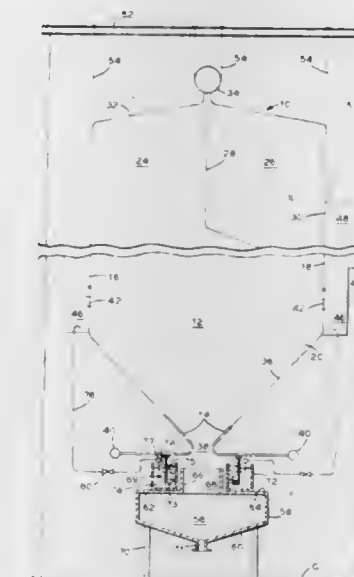
Earl E. Coulter, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,537

Int. Cl. F23j 1/00

U.S. Cl. 110-165 R

10 Claims



3,857,343

FOLDING TABLE

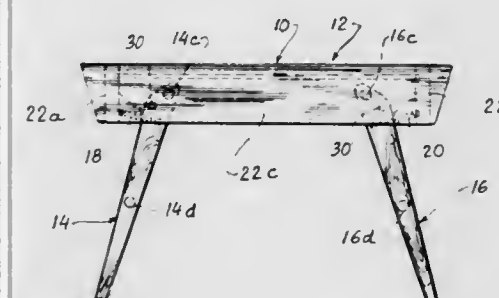
Seymour Greenberg, 213 William St., Lakewood, N.J. 08701

Filed May 10, 1973, Ser. No. 356,439

Int. Cl. A47b 3/00

U.S. Cl. 108-133

1 Claim



1. A folding table, comprising:

- a. a table top,
- b. a pair of leg assemblies pivotally connected to said table top,
- c. said leg assemblies being swingable about their respective pivotal axes between a generally vertical operative position and a generally horizontal inoperative position, and
- d. spring toggle means for holding said leg assemblies in either of said positions,
- e. said spring toggle means comprising a coiled tension spring,
- f. said tension spring being connected at one end to the table top,
- g. said tension spring being connected at its opposite end to its associated leg assembly below the pivotal axis thereof,
- h. whereby the tension spring moves across said pivotal axis when the leg assembly is pivoted between its said vertical and horizontal positions,
- i. each leg assembly comprising a pair of legs and cross-bracing between them,
- j. whereby said pair of legs and said cross-bracing constitute an integral unit, integrally movable about a common axis extending through both legs,
- k. there being a single spring toggle means connected to said integral unit,
- l. the cross-bracing of each leg assembly including a cross-bar which is secured to the upper ends of the two legs of said leg assembly, above its pivotal axis,
- m. said cross-bar, pivotal axis and spring connection with the leg assembly defining a three-point isosceles triangle pattern, wherein the pivotal axis represents the apex and the cross-bar and spring connection represent the base angles,
- n. said cross-bar being situated adjacent the table top and end members provided adjacent said table top with hand grip cutouts allowing said cross-bar to be engageable by the fingers of one hand when the table top is held by the palm of the same hand,

1. The combination of a furnace chamber having a bottom outlet, a hopper disposed thereunder and including a top opening spaced from said outlet for receiving discharges therefrom, means for passing combustion gases through said chamber, an improved seal for preventing leakage from between the chamber and hopper and comprising a liquid containing trough extending around the outer periphery of said opening, plate means depending from the furnace bottom and forming an endless skirt extending into the liquid within said trough, shielding means disposed within said trough and comprised of packed material forming a porous construction extending along the inner periphery of the skirt in contiguity therewith, and means introducing a gas into said shielding means to prevent combustion gas infiltration therein.

3,857,345

VARIABLE ECCENTRIC AND LOCATING PLATE

John Higgins, Goose Green, England, assignor to The Singer Company, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 439,481

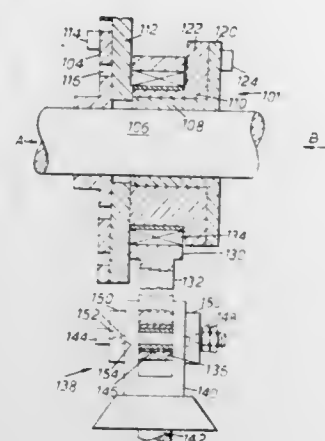
Int. Cl. D05c 11/06

U.S. Cl. 112-79 R

6 Claims

1. In a tufting machine having a drive shaft, a connecting rod operably connected thereto for reciprocating movement, a needle bar drivable reciprocally by said connecting rod, and double eccentric means for regulating the stroke of said needle bar, the improvement comprising a first eccentric rotatable on said drive shaft into any one of a plurality of preselected positions and a second eccentric carried by said first eccentric and rotatable into any one of a plurality of preselected positions relative to said first eccentric to thereby establish the desired stroke for said needle bar, means for locking said first and second eccentrics in fixed relation to each other and in preselected position relative to said drive shaft,

and adjusting means associated with said connecting rod for maintaining the bottom dead centre position of said needle

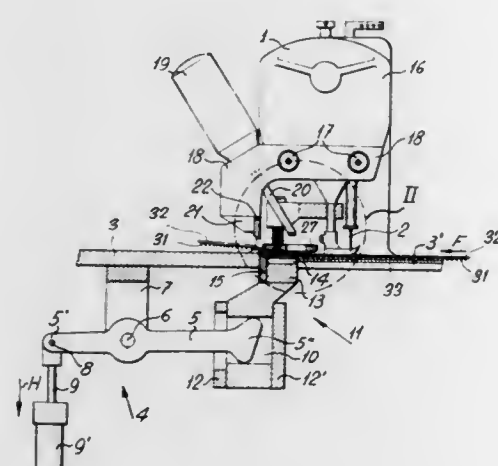


bar at a predetermined position regardless of the variation in stroke effected for said needle bar.

3,857,346

CUTTING IMPLEMENT FOR FLAT-BED SEWING MACHINE

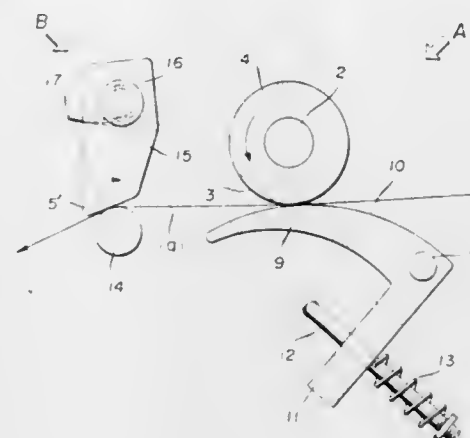
Ruggero Dal Negro, Via Cusani 10, Milan, Italy
Filed Apr. 15, 1974, Ser. No. 461,144
Claims priority, application Italy, Apr. 19, 1973, 23176/73
Int. Cl. D05b 37/04; B23k 27/00
U.S. Cl. 112—130 9 Claims



1. In a sewing machine for slide fasteners comprising a flat bed provided with a gap and a pair of parallel needles aligned with said gap for straddling two interlinked slide-fastener halves while stitching same onto a workpiece moving along said bed, the combination therewith of:

- a fixed cutter blade spacedly disposed above said gap downstream of said needles;
- a movable cutter blade confronting said fixed blade in operative alignment therewith;
- a support for said movable blade normally withdrawn below the upper surface of said bed;
- actuating means operable to elevate said support together with said movable blade through said gap for coaction with said fixed blade to sever a slide-fastener section overlying said gap from an adjoining section; and
- a spring-loaded shoe overhanging said gap above said support between said fixed blade and said needles, said shoe having a bottom surface normally disposed below the level of a cutting edge of said fixed blade but elevatable above said level upon entrainment by said support whereby said overlying section is clamped between said shoe and said support.

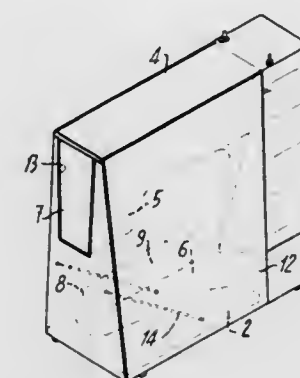
3,857,347
SEWING MACHINE
Mitsuo Matsumoto, Tokyo, Japan, assignor to Nara Sewing Machine Industrial Co., Ltd., Tokyo, Japan
Filed Mar. 16, 1973, Ser. No. 342,246
Claims priority, application Japan, June 7, 1972, 47-056050
Int. Cl. D05b 47/04
U.S. Cl. 112—255 4 Claims



1. In a sewing machine: a sewing machine body; means for imparting tension to a thread being fed comprising:

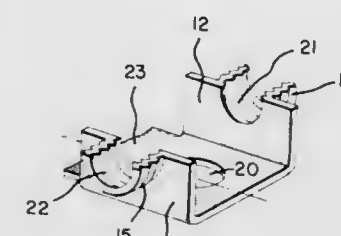
- a roller;
- means journalling the roller said body and rotating the roller opposite to the direction of the thread being fed;
- means defining a generally tangentially proceeding notch in the radially outer periphery of the roller, said notch being of less than circumferential extent, the radial extent of the roller thus being greater angularly beyond the notch than within the notch;
- a generally L-shape thread urging member having means defining a convex arcuate surface on one leg thereof;
- pin means pivotally mounting the thread urging member on the body; and
- means resiliently biasing the thread urging member about the pin means in a sense to bias the convex arcuate surface of the thread urging member into resilient contact with the radially outer periphery of the roller;
- the shape and extent of the convex arcuate surface relative to the shape and extent of the radially outer periphery of the roller being such that the convex arcuate surface fails to fully obstruct the notch and defines a gap that is open from one angular extreme of the notch to the other when the notch is presented toward the convex arcuate surface, said gap being sufficient in thickness to permit the thread being fed between the roller and the convex arcuate surface to slip forwards when the notch is presented toward the convex arcuate surface; and
- a thread retrogression preventing means comprising:
 - fixed pin means mounted on said body;
 - a movable member mounted on said body; resilient means biasing the movable member into resilient engagement with the fixed pin;
 - the thread retrogression preventing means being interposed in the path of the thread downstream from the tension imparting means, and positioned to resiliently engage and pass the thread between the fixed pin means and the movable member;
 - the resiliency provided by the resilient biasing means associated with the movable member being sufficiently strong compared to the resiliency provided by the resilient biasing means associated with the thread urging member, that should the thread become severed downstream from the thread retrogression preventing means during sewing, the latter will prevent the tension imparting means from pulling the thread back upstream through the thread retrogression preventing means and into entanglement with said roller.

3,857,348
SEWING MACHINE
Florian Robert-Nicoud, Cointin, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed May 23, 1973, Ser. No. 363,242
Claims priority, application Switzerland, June 9, 1972, 8565/72
Int. Cl. D05b 73/10, 77/00
U.S. Cl. 112—258 7 Claims



1. In a sewing machine comprising a frame including a base, a pillar, an upper arm, a head and a free arm, the improvement comprising three adjacent panels hinged to each other along their facing edges and cooperating with said frame to provide a protective case for the machine for storage, the edges of the front face of the head being of a shape substantially corresponding to the edges of the upper face of the free arm, one of said panels having a cut-out area the edges of which surround the edges of the front face of the head when the panels are in a storage position, said panel having the cut-out area disposed between said other two panels, the edges of said cut-out area surrounding the edges of the upper face of said free arm when said panels are in a position permitting use of the machine, said panel with the cut-out area then providing, in cooperation with the upper face of said free arm, a widened work surface.

3,857,349
METHOD FOR FABRICATING A THREADED TAP BY STAMPING
James Pritulsky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 19, 1973, Ser. No. 380,921
Int. Cl. B21d 53/24
U.S. Cl. 113—119 6 Claims



1. A method for forming an electrical terminal having a cylindrically shaped element with internal and external threads thereon from a continuously fed supply of flat stock material and comprising the steps of:

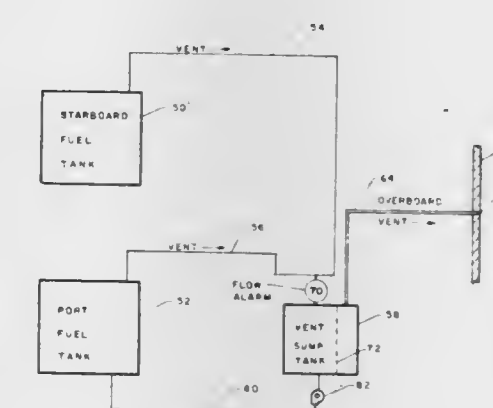
- feeding a predetermined section of said flat stock material into at least one given work area containing cutting and forming dies;
- cutting the predetermined section of flat stock into a shape having thereon first and second rectangularly shaped tabs of equal shape and positioned such that corresponding lines of each rectangularly shaped tab are symmetrical mirrored about a centerline lying therebetween;

forming corresponding portions of each tab into curved surfaces which are mirrored images of each other about said centerline to define a pair of truncated, half cylinders, with a first end of each half cylinder being integrally secured to the remainder of said section of flat stock and the second end thereof terminating in a plane substantially normal to the longitudinal axis of said half cylinder; cold working the half cylinders to form threads thereon; and

folding said half cylinders towards each other through a predetermined arc and about folding lines located in said remainder of said section and bisecting those portions of said remainder of said section of said flat stock lying between said centerline and the junctions of said tabs and said section so that the concave surfaces of each of said half cylinders approach each other and the corresponding longitudinal edges of each half cylinder are spatially positioned substantially coincident with each other to form a complete, truncated, threaded cylinder.

3,857,350
FUEL VENT TANK

James E. Rohan, 3101 N.E. 47th Ct., Fort Lauderdale, Fla. 33308
Continuation of Ser. No. 328,326, Jan. 31, 1973, abandoned.
This application Feb. 13, 1974, Ser. No. 442,042
Int. Cl. B63b 17/00; F16k 37/00; G01p 13/00
U.S. Cl. 114—5 R 2 Claims



3,857,351

SUBSURFACE SUBMERSIBLE MATING SYSTEM

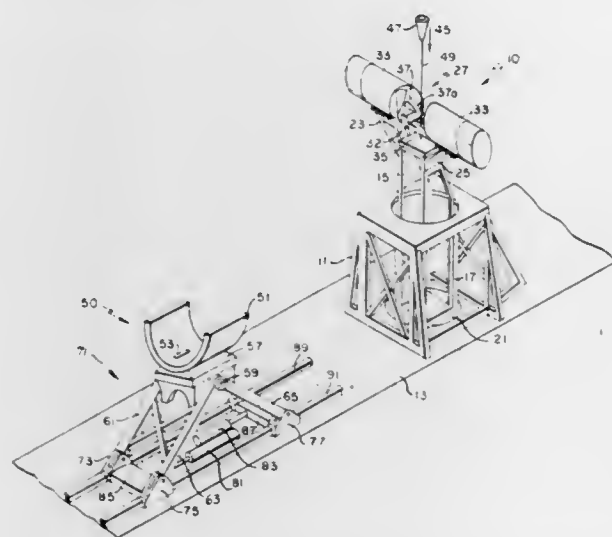
John F. Wynn, Jr., Landover, Md., and Clifford F. Trowbridge, Martinez, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1971, Ser. No. 128,104

Int. Cl. B63g 8/40

U.S. Cl. 114-16.4

10 Claims



1. A subsurface submersible system for mating with and deploying a vehicle from a submerged carrier vessel, comprising:

- a forward portion having means for connecting to a submerged vehicle and a support structure mounted to the upper deck of the carrier;
- means for extending said connecting means in a vertical plane away from the upper deck of the carrier and for forcing the submerged vehicle, when engaged with said connecting means, down towards the upper deck of the carrier;
- a stern portion comprising a means for receiving and holding the stern of said submerged vehicle;
- means for locking said submerged vehicle to said stern receiving means; and
- means for moving said stern receiving means along the deck of the carrier and for moving said receiving means in a vertical plane towards and away from the deck of the carrier.

3,857,352

PONTOON BOAT

Lawrence A. Schott, 13930 Stansbury, Detroit, Mich. 48227

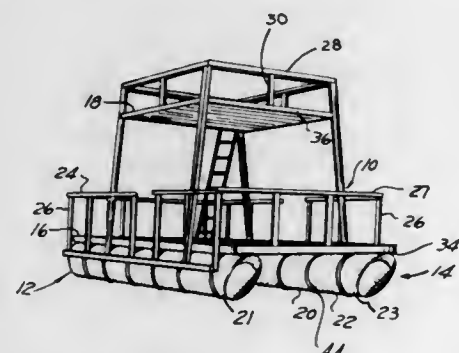
Continuation-in-part of Ser. No. 282,963, Aug. 23, 1972,

abandoned. This application Aug. 29, 1973, Ser. No. 392,675

Int. Cl. B63h 1/12, 3/08

U.S. Cl. 114-61

3 Claims



1. A pontoon boat comprising:

- a pair of substantially parallel pontoons each made of a plurality of water-tight drums axially aligned in end-to-end alignment, each of said drums having a peripheral flange with a radial extending portion at each end thereof;
- a ring clamp for clamping together the two juxtaposed

flanges of two abutting drums, said ring clamp having side flanges disposed at a diverging angle for forcing said peripheral flanges of said abutting drums axially toward each other; and

- a superstructure attached to said ring clamp; wherein said ring clamp comprises:
 - a middle substantially flat portion in a spaced apart parallel relationship from said juxtaposed flanges of abutting drums, said side flanges extending inwardly from each side of said middle portion of said ring clamp and intersecting said middle portion at an angle of between 50 and 70 radial degrees;
 - a segmental opening provided with outwardly extending radial flanges and a bolt threadedly engaged with said radial flanges in a manner such that turning of said bolt respectively tightens and loosens said ring clamp;
 - a first means positioned on the top of said ring clamp for securing a horizontally extending structural element thereto for supporting said superstructure, a second means positioned on the inward side of said ring clamp, displaced about 90 radial degrees from said first means and adapted to secure a first vertically extending structural element thereto for supporting said superstructure, and a third means positioned on the outward side of said ring clamp, displaced about 70 to 75 radial degrees from said first means and adapted to secure a second vertically extending structural element thereto for supporting said superstructure, wherein said first, second, and third means comprise an outwardly extending conical protrusion on said ring clamp extending through a receiving aperture in said respective structural element and an axially aligned aperture through said conical protrusion adapted to receive a bolt therethrough.

3,857,353

SAILING VESSEL SELF-STEERING SYSTEM

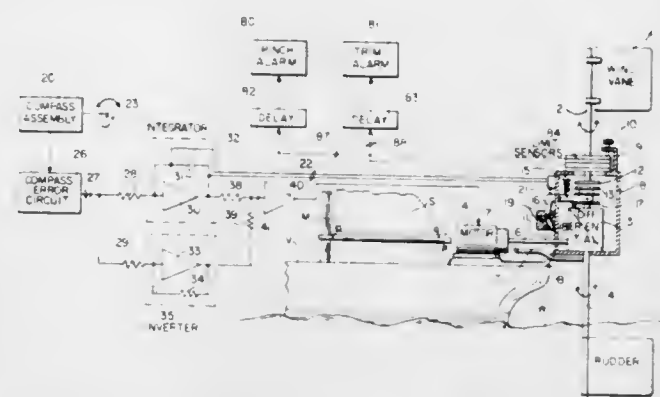
George R. Mounce, 18 Bridle Path, Willowdale, Ontario M2L 1C8, Canada

Filed Feb. 5, 1974, Ser. No. 439,738

Int. Cl. B63n 25/00, 25/04

U.S. Cl. 114-144 C

10 Claims



1. A self-steering system for a sailing vessel having a rudder and having a compass, comprising:

- a. a wind vane mounted on the vessel to sense and follow the direction of the wind;
- b. a differential mechanism coupling the wind vane directly with the rudder so that the wind vane and the rudder move so as to balance turning forces acting on the vane and the rudder, said differential mechanism further including adjustment means for selectively adjusting the angular relationship between the rudder and the vane;
- c. compass sensor means settable to sense deviations of the vessel's heading from a preset compass heading and operative to deliver error signals representative of the sense and magnitude of such deviations; and
- d. servo circuitry coupled to said sensor means and to said adjustment means and responsive to said error signals to adjust said mechanism to alter said angular relationship such that the pressure of the wind on the vane will move

the rudder to reduce the magnitude of the error signals toward zero.

3,857,354

CHASSIS FOR WATER-SKI TOWING DEVICE

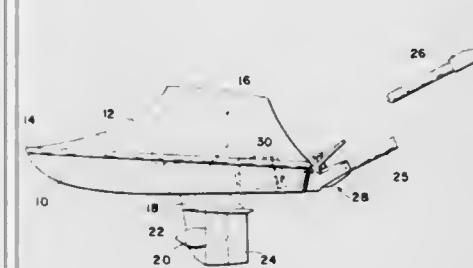
Miroslav Uroshevich, 2505 Fleetwood Ave., Cincinnati, Ohio 45211

Filed Oct. 12, 1973, Ser. No. 405,895

Int. Cl. A63c 11/10; B62d 25/00

U.S. Cl. 115-6.1

14 Claims



1. A water-ski towing device comprising:

- a buoyant hull having a floor and an aft transom extending out of the plane of the said floor, the configuration of said floor including a recess for accommodating the passage of an engine shaft;
- a unitary structural chassis positioned in said hull, said chassis having a forward engine mounting section, an elongated fore and aft extending base section, and an aft mounting pad, said sections having a configuration complementary to a portion of said hull, said portion including said recess, said aft mounting pad having a configuration complementary to said aft transom;
- means for securing said chassis and said hull; and
- an operator tow bar assembly secured to said aft mounting pad through said transom.

3,857,355

MARINE JET DRIVE PROPULSION APPARATUS

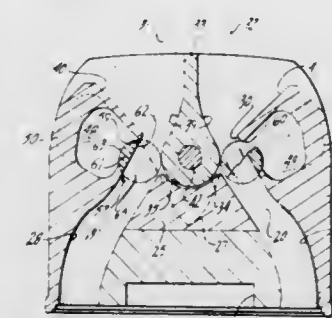
William L. Woodfill, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1972, Ser. No. 317,200

Int. Cl. B63h 11/10

U.S. Cl. 115-12 R

27 Claims



- 1. A directional thrust control system for a jet propulsion means for propelling of a marine device comprising a housing means having a central wall and outer walls forming a pair of separate jet nozzle means and establishing a pair of individual jets, said central wall preventing lateral flow from the one jet nozzle means to the opposite jet nozzle means and having a common directional control means for said pair of individual jets forming a portion of said central wall including the opposite inner walls of said central wall, said nozzle means having angularly oriented wall means angularly directing said individual jet streams toward each other and into engagement with the inner walls of said control means, said control means being rotatably mounted for selective angular orientation between said jets and including an inner portion movable to maintain said central wall and the separate jet nozzle means with the

inner walls being angularly reoriented whereby said individual jets are individually maintained for all positions of said control means and move along the corresponding surface of the control means and are redirected as relatively rectilinear straight line jets with the control means located in a first position therebetween, and rotation of said control means from said first position causing a complete one of the jets to increasingly deflect laterally as a result of engagement with the control means while the opposite complete jet is allowed to exit generally increasingly closer to the predicted line.

3,857,356

FRONTWARD-ROWING BOAT SPANNING ANGULAR OARS HAVING SELF-SURFACING BLADES

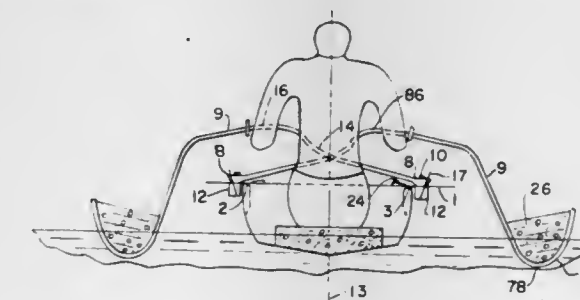
Harold A. Jewett, 5451 42nd St. N.W., Washington, D.C. 20015

Filed July 27, 1973, Ser. No. 383,379

Int. Cl. B63h 16/04

U.S. Cl. 115-24.1

21 Claims



- 1. A rowing oar formed of metal tubing and terminating in a blade-end portion comprising a throat and a cradle segment having an upwardly divergent cross-sectional contour, said blade-end portion also comprising a slab-shaped blade whose thickness is both less than its breadth and less than its length, said blade being carried by said cradle segment, The outer terminal portion of such cradle segment consisting of an upwardly angled extension of the bottom portion of such cradle segment, The throat end of such cradle segment and the upper end of said outer terminal portion constituting a cradle mouth for reception of said blade when fed directly therethrough into seating engagement on said cradle segment, The throatward, bottom and outward edge surfaces of said blade containing a peripheral trough defined by walls complementary to said upwardly convergent cross-sectional contour, Said blade being secured in place by close juxtaposition of said walls to side portions of said bottom portion of said cradle segment.

3,857,357

TORQUE COMPENSATING MECHANISM FOR BOAT DRIVES

Karl Abdon Bergstedt, Gothenburg, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Apr. 17, 1973, Ser. No. 352,063

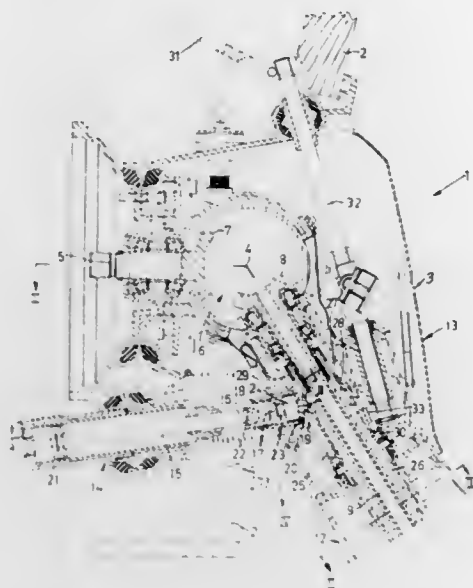
Int. Cl. B63h 5/12

U.S. Cl. 115-41 R

22 Claims

- 1. In a boat propulsion system wherein a propeller housing is mounted on the stern of a vessel, pressure means mounted between said stern and said housing for tilting and trimming said housing in a vertical plane, said housing when untilted and in operation having a downwardly extending power transmitting intermediate shaft around which a portion of said housing is rotatable for steering and another portion of said housing is non-rotatable, a mechanism for counteracting undesired torques on said rotatable portion comprising: a pressure element disposed for engagement by said pressure means mounted on said non-rotatable housing portion for axial

movement of said element therein, a cam carried on said rotatable housing portion, said cam being operatively associated with said pressure element for movement of said element with respect to said non-rotatable housing portion corre-



sponding to the positioning of said cam, said cam laterally displacing the contact point of the bearing surface on which the propeller pressure is taken up by said pressure element thereby providing a steering moment for compensating for said undesired torque on said rotatable portion.

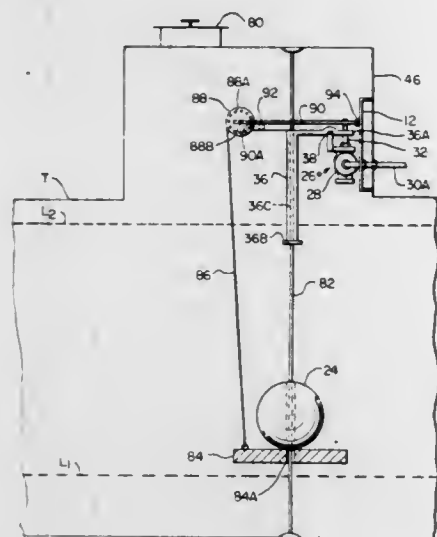
3,857,358

FLUID LEVEL ALARM AND CONTROL DEVICE
John T. Ward, 6279 W. Rockburn Hill, Elkridge, Md. 21227, and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md. 21234

Division of Ser. No. 370,548, June 15, 1974, Pat. No. 3,807,899. This application Nov. 27, 1973, Ser. No. 419,361
Int. Cl. G01f 23/00

U.S. Cl. 116—110

4 Claims



1. An audible alarm device for detecting and signalling the advent of a leakage condition in a fluid storage tank, comprising:

a source of dry nitrogen gas under pressure;
gas operated audible means external of said storage tank;
pneumatic valve means mounted internally of said storage tank including pneumatic pressure line interconnecting opposite sides of said valve means with said source and said audible means, respectively;
float means mounted internally of said storage tank, interconnected with said valve means, and responsive to predetermined fluid levels representing the advent of a leakage condition in said storage tank to actuate said valve means to transmit gas from said source through said pneumatic lines to sound said audible means, said float

means in said tank being mounted for slidable movement on vertical rod means in response to varying fluid levels in said tank;

an operating plunger for said valve means;
lever means pivotally mounted at a first end thereof adjacent said valve means and having reel means mounted on a second end thereof, said lever means being constrained to engage and depress said plunger when pivoted downwardly about said first end;

disc means mounted for vertical movement on said rod below said float and being adapted to engage said float in response to said second fluid level corresponding to a leakage condition; and

cable means connecting said disc means to said reel means on said second end of said lever means.

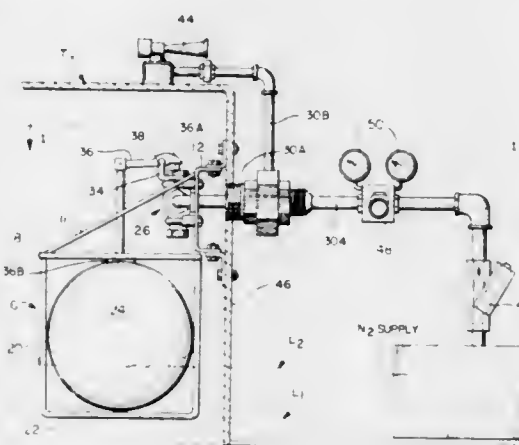
3,857,359

FLUID LEVEL ALARM AND CONTROL DEVICE
John T. Ward, 6279 W. Rockburn Hill, Elkridge, Md. 21227, and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md. 21234

Division of Ser. No. 370,548, June 15, 1973, Pat. No. 3,807,899. This application Nov. 27, 1973, Ser. No. 419,362
Int. Cl. G01f 23/00

U.S. Cl. 116—110

21 Claims



1. An audible alarm device for detecting and signalling the advent of an overflow condition in a fluid storage tank, comprising:

a source of dry nitrogen gas under pressure;
gas operated audible means external of said storage tank;
valve means mounted internally of said storage tank including pneumatic pressure lines interconnecting opposite sides of said valve means with said source and said audible means, respectively; and

float means mounted internally of said storage tank, interconnected with said valve means, and responsive to a predetermined fluid level representing the advent of an overflow condition in said storage tank to actuate said valve means to transmit gas from said source through said pneumatic lines to said audible means, said float means including a float in said tank, a fluid pervious float cage containing said float and constraining the same to a limited vertical displacement in response to varying fluid levels in said tank, and linkage means extending from said float cage to said valve means for actuating said valve means, said float rising in said float cage and engaging said linkage means in response to said predetermined fluid level to constrain said linkage means to actuate said valve means and effect actuation of said audible means; pivot means on said valve means;

an operating plunger for said valve means; and
a bell crank lever pivoted intermediate the ends thereof on said pivot means;
said bell crank lever being rigidly affixed to said float on one end thereof and means engaging said operating plunger on the other end thereof.

3,857,360

UHF CHANNEL INDICATING MECHANISM
Hirohiko Tonari, Kyoto; Satoshi Kitaichi, and Masaru Imai, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

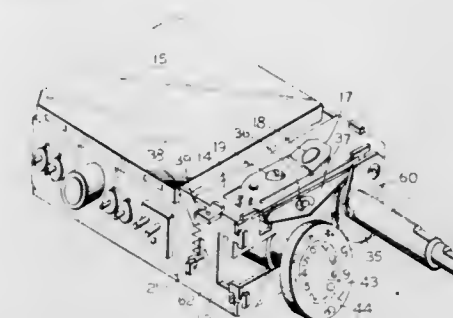
Claims priority, application Japan, June 18, 1971, 46-44400

Filed June 14, 1972, Ser. No. 262,469

Int. Cl. N03j 1/02

U.S. Cl. 116—124.2

3 Claims



1. A channel indicating mechanism for a UHF tuner having a tuner control shaft adjustable to tune said UHF tuner to any one of the UHF television channels and tuning means having a tuning shaft coupled to and driving said tuner control shaft through a series of rotational steps of predetermined angles and a fine tuning shaft coupled to and continuously rotating said tuner control shaft a small rotational angle within the angle of any angular step, said indicating mechanism comprising:

a detent element mounted on said tuning shaft and having a plurality of gear teeth on the periphery thereof;
spring loaded detent means engaged between adjacent teeth of said detent element so as to impart a click motion during rotation of said tuning shaft; and
channel indicating means with which said detent element teeth are meshed and driven step-by-step by said tuning shaft through said detent element upon rotation of said tuning shaft under the control of said detent means for indicating the channel to which the UHF tuner is tuned.

3,857,361

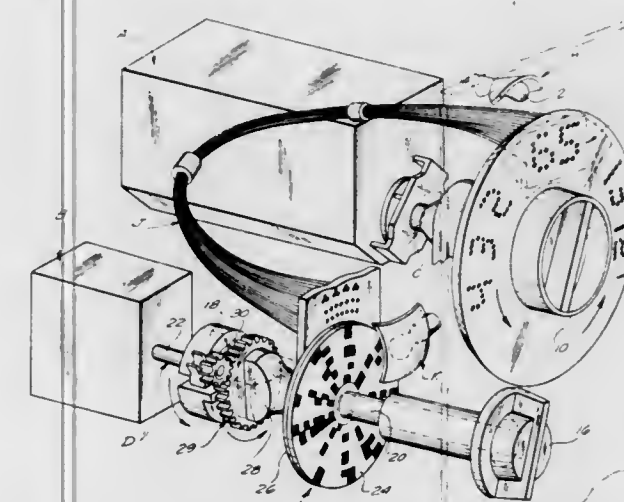
COMBINED VHF AND UHF DISPLAY SYSTEM
Richard D. Gibson, Wilbraham, and Robert D. Whelan, West Springfield, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

Filed Dec. 19, 1973, Ser. No. 426,331

Int. Cl. H03j 1/04

U.S. Cl. 116—124.4

9 Claims



1. A channel indicia display system for use in television tuners or the like of the type having first and second frequency band tuners and separate rotary control shafts to condition each of the tuners, the display comprising a stationary mask having a transparent portion, a first movable mask having a plurality of active portions and a passive portion, said first

mask being operably connected to one of the shafts to be driven thereby and means illuminating said first movable mask such that the portion thereof aligned with the transparent portion of said stationary mask is visible, a second movable mask, said second movable mask operably connected to the other of the shafts to be driven thereby, a fiber optic bundle having a light input end and a light output end, said light input end being situated adjacent said second mask and said light output end being situated in alignment with said transparent portion of said stationary mask with said first movable mask interposed therebetween, means for directing light through said second movable mask to said light input end, and switch means for de-energizing said illuminating means and energizing said light directing means when said passive portion of said first movable mask is aligned with said transparent portion of said stationary mask.

3,857,362

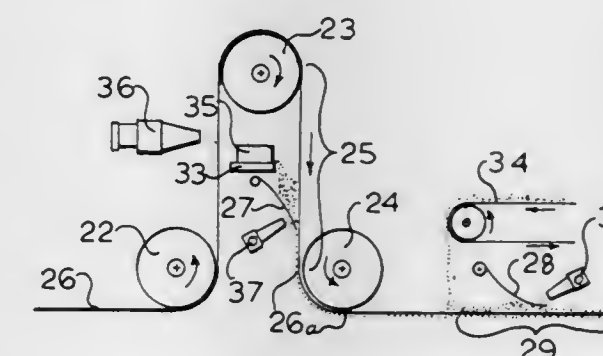
METAL POWDER COATING APPARATUS
Donald Herbert Brooks, P.O. Box 816, Vanderbijlpark, South Africa

Filed May 23, 1972, Ser. No. 255,989

Int. Cl. B44d 1/00, 1/094

U.S. Cl. 118—59

3 Claims



1. Apparatus for coating a metal article which comprises a flexible acting wiper blade, means adapted to locate a metal surface of said article to be coated adjacent the blade, so that the leading edge of said blade may press lightly against the surface, heating means for the metal surface of said article located adjacent thereto, means adapted to cause a relative wiping movement between the blade and the surface, means adapted to put a thermoplastic flowable powder coating blend onto the surface, the blade being at an acute angle with the surface to be coated in that direction to form a wedge shaped trough for the powder, and means for cooling the blade, the metal surface and the coating, said cooling means located proximate to the locus of connection between the blade, the powder, and the metal surface.

3,857,363

DEVICE FOR THE MIST LUBRICATION OF DIES FOR SINTERING

Guisepp Ferlito, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea (Torino), Italy

Filed July 16, 1973, Ser. No. 379,895

Claims priority, application Italy, Aug. 14, 1972, 69640/72; Aug. 31, 1972, 69779/72

Int. Cl. B05c 7/02

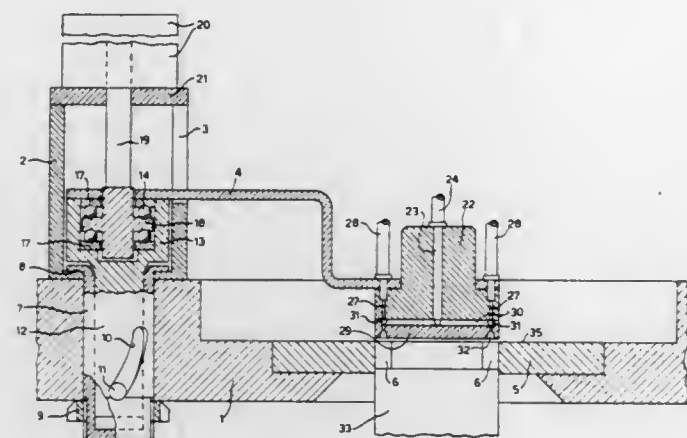
U.S. Cl. 118—300

5 Claims

1. A device for lubricating the walls of a mould cavity of press dies for forming sintering blanks, said press having a parking remote position and an operative position adjacent the mould cavity comprising:

a die-carrying plate having a coupling element, means for creating a mist of lubricant in air, an arm having one end mounting said creating means and another end having a pivot coupled to said coupling element,

means for simultaneously turning the arm about said pivot and for moving said other end of the arm along said



coupling element, whereby said creating means are moved along a helical arc between said parking position and said operative position.

3,857,364

ADJUSTABLE ANIMAL MAZE DEVICE

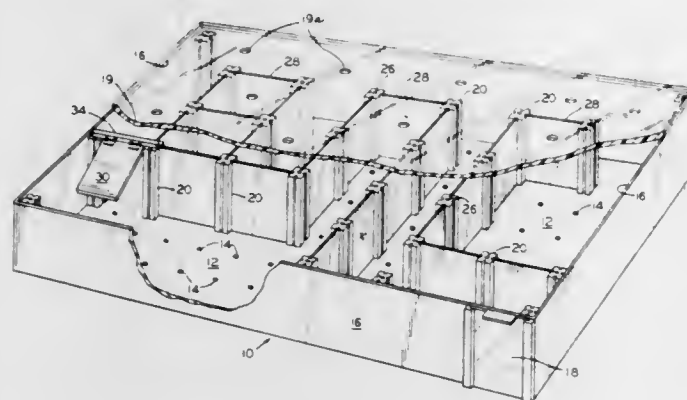
Frederick Henry Miller, Jr., 3884 Kingsberry, Nassau, N.Y. 12123

Filed Mar. 30, 1973, Ser. No. 346,315

Int. Cl. A01k 29/00

U.S. Cl. 119-1

13 Claims

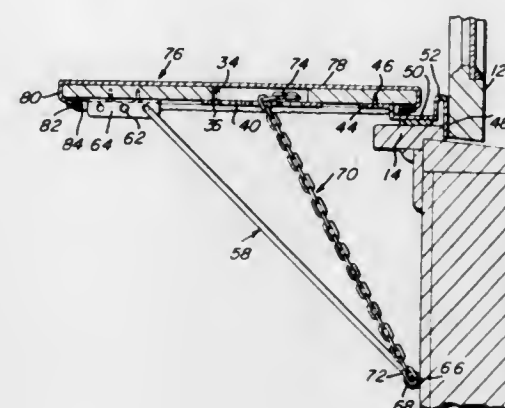


1. An animal maze device comprises a floor unit having a plurality of holes therein, means to form a maze structure of selected pattern on said floor unit to provide pathways thereon, maze periphery walls structurally engageable with said floor unit to encircle said maze structure, said means to form a maze structure including a plurality of discrete wall panels and wall panel support means, said panels being structurally engageable with said panel support means, said panel support means being removably engageable with selected ones of the holes in said floor unit, whereby upon such engagement of said support means with selected ones of said holes, and upon such structural engagement of said wall panels with hole-engaged support means, said wall panels cooperate one with the other and with said panel support means to form said maze structure upon said floor unit, apertures provided at the upper ends of said wall panel support means to removably receive and support an accessory support means whereby a movable obstruction may be positioned by said posts within a pathway, and closeable access means to provide access for a small animal into said maze structure.

3,857,365
WINDOW MOUNTED PLATFORM
Paul H. Mueller, P.O. Box 654, Ferndale, Calif. 95536
Filed Aug. 8, 1973, Ser. No. 387,214
Int. Cl. A01k 29/00

U.S. Cl. 119-1

8 Claims



1. A multipurpose panel designed for indoors attachment to and use in conjunction with a window structure embodying a vertical window and a complementary horizontal sill, said panel being adapted to occupy an elevated plane overhanging a room floor, constituting a shelf-like platform, and being usable as a reclining platform for a household pet, a cat for example, a readily applicable and removable comfortable and washable cover spread tautly and overlying the top surface of said platform, said cover having marginal edges fittingly encompassing coacting edges of said panel and having an elastic-equipped hem snugly and retentively bordering said marginal edges and holding the cover in a given usable position, a stabilizing prop having an upper end attached to an underneath inward edge portion of said panel and a freely positionable lower end adapted to be propped and braced against a vertical wall surface below the plane of said sill, and bracket means secured to an underneath surface of an outwardly positionable edge portion of said panel and detachably but supportively and useably cooperable with portions of the window and sill, respectively, and prop retaining means having an upper end detachably and adjustably connected to a median underneath surface of said panel and a lower end fastened to the lower end of said prop.

3,857,366

HINGED AQUARIUM COVER

Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed Feb. 16, 1973, Ser. No. 333,193

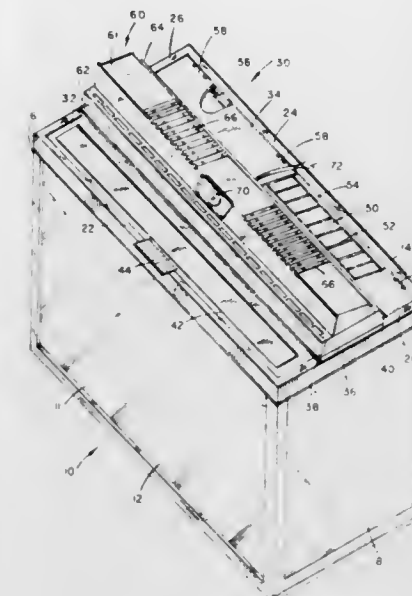
Int. Cl. A01k 64/00

U.S. Cl. 119-5

13 Claims

1. An aquarium cover comprising an elongated plastic planar frame member having two longitudinal weakened line portions and an opening therein; light transmitting means extending across and covering said opening; a first elongate side panel generally of the same length as said frame member and hingedly connected to the latter along one of said longitudinal weakened line portions; a second elongate side panel generally of the same length as said frame member and hingedly connected to the other of said longitudinal weakened line portions, said panels being arranged to be placed in extended positions wherein said panels are co-planar with said frame member; said panels also being arranged to be placed in folded positions wherein said panels are disposed adjacent the planar surface of said frame member in substantially coex-

tensive relation thereto, whereby the cover is adapted to cover an aquarium in the extended positions of said panels while the



cover can be conveniently stored and shipped in the folded positions of said panels.

3,857,367
BOILER

Gerardus Johannes Giesen, Tegelen, Netherlands, assignor to Beondu A.G., Vanduz, Liechtenstien

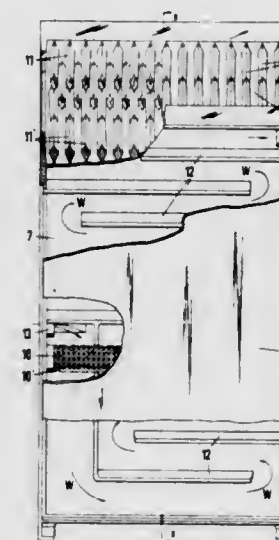
Filed May 21, 1973, Ser. No. 362,414

Claims priority, application Netherlands, May 23, 1972, 7206921

Int. Cl. F22b 37/10

U.S. Cl. 122-367 R

10 Claims



1. A boiler comprising a vertically extending outer wall, a burner means, two vertically extending heat conducting elements secured parallel to and at a distance inside of said outer wall, a fire duct defined between said heat conducting elements, said burner means being located in said fire duct, and water ducts extending between said heat conducting elements and said outer wall for circulating a heat transferring medium therethrough, each of said heat conducting element being a single separately cast piece of light metal.

3,857,368
IGNITION SYSTEM OF ROTARY PISTON ENGINE
Kyuji Kishimoto, and Hiraki Sawada, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

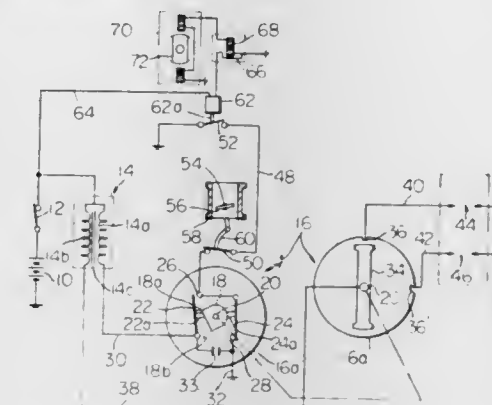
Filed Mar. 30, 1973, Ser. No. 346,318

Claims priority, application Japan, Mar. 31, 1972, 47-38208; Mar. 31, 1972, 47-38209

Int. Cl. F02b 53/12

U.S. Cl. 123-8.09

5 Claims



1. In an ignition system for a rotary internal combustion engine having two rotary engine units including two ignition plugs carried by the two rotary engine units respectively, and an ignition circuit for said two ignition plugs including two sets of contact points for the two ignition plugs respectively opening at predetermined timing positions for the respective plugs, the improvement wherein said system further comprises means for disabling one of said two set of contact points when said engine operates during engine braking condition.

3,857,369

ROTARY PISTON ENGINE WITH AUXILIARY CHAMBER ON ITS CASING

Huschang Sabet, Eduard-Pfeiffer-Strasse 67, 7 Stuttgart 1, Germany

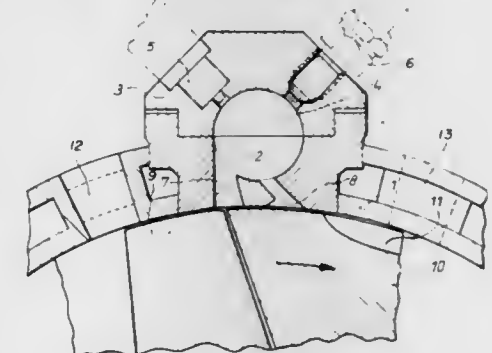
Continuation-in-part of Ser. Nos. 137,870, April 27, 1971, Pat. No. 3,376,080, and Ser. No. 284,896, Aug. 30, 1972, Pat. No. 3,779,215. This application Mar. 13, 1973, Ser. No. 340,645

Claims priority, application Germany, Mar. 22, 1972, 2213965 The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl. F02b 53/10

U.S. Cl. 123-8.13

3 Claims



1. In a rotary-piston, internal-combustion engine having an axis, a casing bounding a cavity of circular cross section about said axis, two pairs of pistons mounted on said cavity for simultaneous rotation about said axis, each piston having a circumferential face sealingly engaging said casing during said rotation, one of said pairs rotating at uniform angular speed and the other pair rotating at cyclically varying angular speed during operation of said engine, each piston of said one pair being interposed angularly between the pistons of the other pair and said circumferential face thereof having a circumfer-

ential width greater than the corresponding dimension of the pistons of the other pair, whereby chambers of cyclically varying volume are bounded by said pistons in said casing, said circumferential faces of the pistons of said one pair being each formed with two axially spaced, radially open grooves circumferentially open in respective opposite circumferential directions, said casing being formed with an intake port and an exhaust port in axially spaced respective radial planes for communication with said grooves respectively during operation of said engine, the improvement which comprises:

- a. an auxiliary chamber mounted on said casing outside said cavity and enclosing an interior space therein,
 1. said casing being formed with an aperture substantially in the radial plane of said intake port and connecting the interior space of said chamber with said cavity,
 2. the circumferential width of said aperture being substantially equal to the corresponding width of said circumferential face of each piston of said other pair; and
- b. a partition member axially extending in said aperture and circumferentially dividing the same into two separate openings.

3,857,370

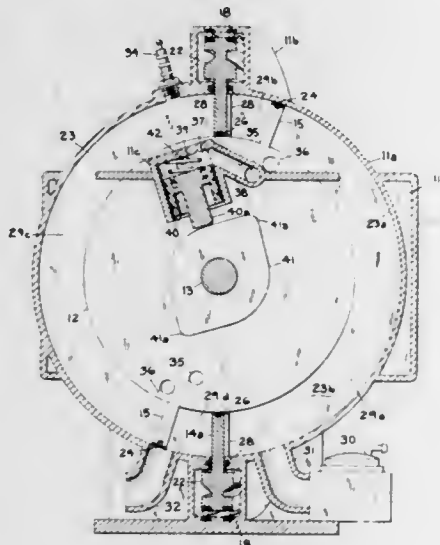
ROTARY INTERNAL COMBUSTION ENGINE

Wayne A. Hemenway, Rt. No. 4, Edgerton, Wis. 53534

Filed Aug. 23, 1973, Ser. No. 391,155

Int. Cl. F02b 53/06

U.S. Cl. 123—8.33



1. A rotary internal combustion engine comprising:
 - a. a case having a substantially cylindrical cavity and a storage chamber therein;
 - b. a substantially cylindrical rotor rotatably mounted within said cavity, said rotor having a plurality of radially extending pistons thereon;
 - c. an annular abutment disk rotatably mounted within said case on an axis of rotation substantially transverse to the axis of rotation of said rotor, said disk having a central opening within which said rotor fits and at least one opening radially disposed from said central opening to allow the passage of said pistons through said disk as said rotor rotates;
 - d. means for synchronously transmitting the rotation of said rotor to said disk;
 - e. said rotor and pistons thereon and said disk being in slidable sealing engagement with the walls defining said cylindrical cavity to form an expanding intake chamber, a contracting compression chamber, an expanding combustion chamber, and a contracting exhaust chamber when said disk is blocking said cylindrical cavity;
 - f. means for supplying a fuel and air mixture to said intake chamber, said fuel and air mixture being transferred to said compression chamber for compression therein upon passage of said pistons through said disk;

- g. a plurality of passageways in said rotor, one passageway for each of said pistons, each of said passageways having one end which is located rotationally ahead of the one of said pistons and is in communication with said cylindrical cavity, the other end of each of said rotor passageways being normally closed by said case;
- h. a passageway in said case having one end in communication with said storage chamber, and a second end which is normally closed by said rotor but is periodically in communication with the ends of said rotor passageways as said rotor rotates to thereby transfer the compressed fuel and air mixture from said compression chamber to said storage chamber;
- i. transfer means for transferring the compressed fuel and air mixture from said storage chamber to said combustion chamber including means for substantially maintaining the compression of the fuel and air mixture during transfer from said storage chamber to said combustion chamber;
- j. means for igniting the compressed fuel and air mixture in said combustion chamber, the products of combustion therefrom being transferred to said exhaust chamber upon passage of said pistons through said disk; and
- k. means for exhausting said products of combustion from said exhaust chamber.

3,857,371

ROTARY INTERNAL COMBUSTION ENGINE

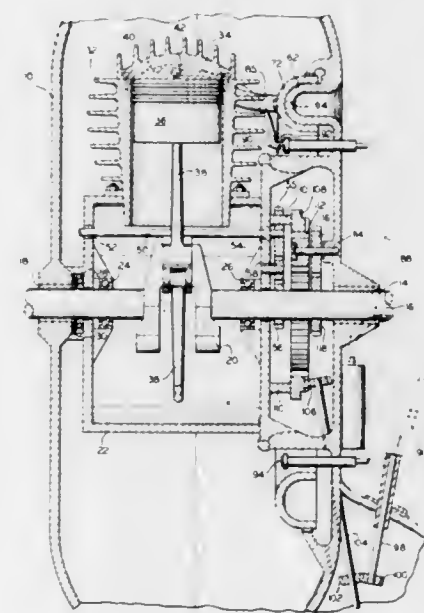
Troy W. Gibson, 74 Milan Ave., Norwalk, Ohio 44857

Filed June 4, 1973, Ser. No. 366,723

Int. Cl. F02b 57/00

U.S. Cl. 123—44 R

7 Claims



1. A rotary internal combustion engine comprising:
 - a. a crankshaft journaled for rotation about an axis;
 - a. a crankcase journaled for rotation about the axis of said crankshaft and encompassing a portion of said crankshaft;
 - cylinder means radially mounted on said crankcase in spaced relation about said crankshaft;
 - a reciprocating piston disposed within each of said cylinder means and coupled with said crankshaft for driving the same in one direction upon reciprocation of said pistons in said cylinders and said crankcase and cylinders in an opposite direction, whereby said pistons alternately compress an explosive mixture in each cylinder and are displaced by explosion of the compressed mixture therein;
 - gear means drivingly interconnecting said rotating crankcase to said crankshaft whereby when said pistons impart rotary motion to said crankshaft, said gear means trans-

- mits synchronized rotary motion to said crankshaft from said crankcase; and
- a stationary outer housing within which said crankshaft is journaled and wherein said outer housing contains diametrically opposed inlet ports.

3,857,372

ROTARY INTERNAL COMBUSTION ENGINE

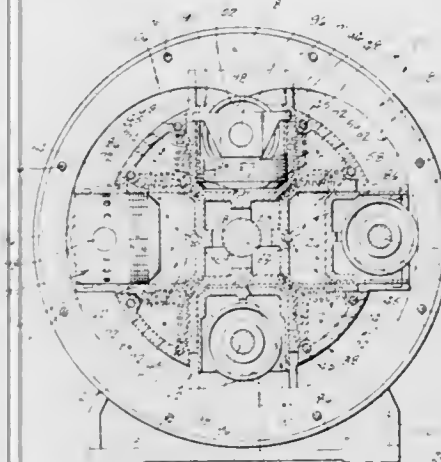
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 286,189, Sept. 5, 1972. This application Oct. 26, 1972, Ser. No. 301,096

Int. Cl. F02b 57/00

U.S. Cl. 123—44 E

33 Claims



1. A rotary internal combustion engine comprising,
 - an engine frame means having a rotatable shaft extending outwardly therefrom,
 - a rotor means mounted on said shaft for rotation therewith, a plurality of cylinders mounted on said rotor means,
 - a piston movably mounted in each of said cylinders and being movable between compression and expansion positions with respect thereto,
 - a cam plate means on said frame means extending around said rotor means and having a cam surface,
 - a roller means mounted on each of said pistons which engages and rolls upon said cam surface to cause said piston to be moved in said cylinder as said rotor means is rotated with respect to said cam plate,
 - said cam surface being generally circular but having at least one lobe provided thereon which extends towards said rotor means, said lobe having a flattened portion thereon to provide a dwell time for said piston during firing each of said pistons being moved to its maximum compression position as the roller means thereon engages said lobe,
 - supply means for supplying air and fuel to said cylinders, and means for exhausting the exhaust gases from the engine after the fuel and air mixture has been ignited by the compression thereof.

3,857,373

VACUUM DELAY VALVE

Frank J. Martin, and Rex R. Holbrook, both of Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 1, 1972, Ser. No. 311,090

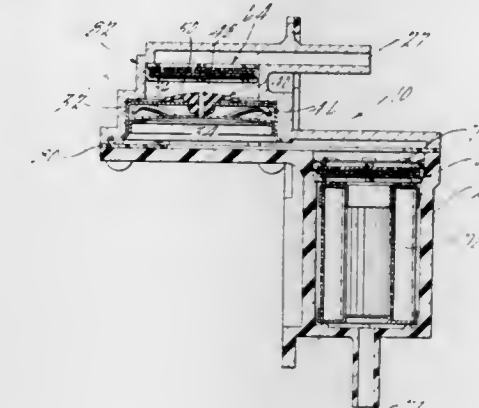
Int. Cl. F02p 5/04

U.S. Cl. 123—117 A

5 Claims

1. A vacuum delay valve comprising:
 - a housing defining an enclosed chamber having at least two ports therein;
 - plate means having an aperture therein and supported within said chamber for dividing said chamber into first and second separate pressure chambers each of which chambers has a port connected thereto for fluid communication therewith;

- unidirectional valve means located within said aperture for sealing said aperture from fluid communication between said chambers when the vacuum in the first chamber is greater than the vacuum in the second chamber and operable for conducting fluid communication between said chambers when the vacuum in second chamber is greater than the vacuum in the first chamber;
- a delay valve means located in said plate means and controlling the rate of fluid communication between said chambers when the vacuum in the first chamber is greater than the vacuum in the second chamber; and
- filter means positioned between said plate means and each of said ports and comprising:



- a first filter member for dispersing the fluid flow there-through and trapping large dirt particles travelling in the fluid;
- a second filter member positioned for receiving the fluid flow from said first filter member for removing dirt particles larger than a predetermined size travelling in the fluid between said first member and second filter member;
- a third filter member positioned for receiving the fluid flow from said second filter member for removing dirt particles larger than a predetermined size travelling in the fluid between said second filter member and the third filter member; and
- a housing member for retaining said first, second and third filter members in a unitary structure.

3,857,374

LIQUID FUEL INJECTION PUMPING APPARATUS

Paul Edgar Glikin; Zdzislaw Stanislaw Miracki, both of London, and Ronald Phillips, Northolt, all of England, assignors to Simms Group Research & Development Limited, London, England

Filed June 21, 1973, Ser. No. 372,494

Claims priority, application Great Britain, July 13, 1972, 32776/72

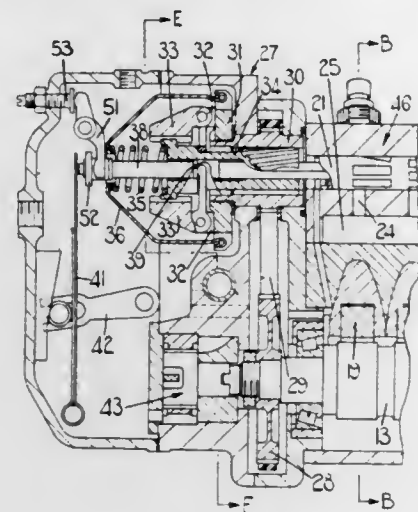
Int. Cl. F02d 1/12

U.S. Cl. 123—139 AP

6 Claims

1. A liquid fuel injection pumping apparatus comprising in combination, an injection pump adapted to be driven in timed relationship with an associated engine, said injection pump defining a pumping chamber, an outlet from the pumping chamber and which in use is connected to a nozzle mounted in an engine cylinder, a spill port extending from the pumping chamber, a spill valve rotatable in synchronism with the injection pump for controlling the flow of fuel through the spill port during a pumping stroke of the injection pump, the axial setting of said spill valve determining the quantity of fuel supplied through the outlet and the angular setting of the spill valve relative to the injection pump serving to alter the timing of injection of fuel through said outlet to the engine, a pulley rotatable in synchronism with the injection pump, means restraining the pulley against axial movement, a flange mounted on said pulley and rotatable therewith, a first centrifugal weight pivotally mounted on said flange, a hollow cylindrical member located within a bore formed in the pulley, a

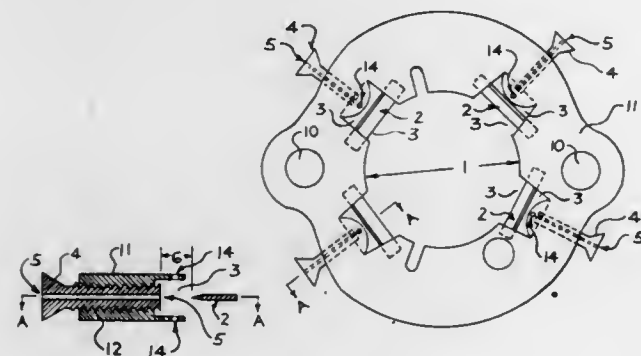
helical spline connection between the pulley and said hollow cylindrical member, a rod extending within said hollow cylindrical member, said rod being coupled to said spill valve, means connecting said rod to said hollow cylindrical member whereby relative axial movement of the rod and cylindrical member can occur, a lever integral with said first weight, said lever extending through an aperture in said hollow cylindrical member and engaging said rod for moving with increasing engine speed the spill valve axially in a direction to reduce the



3,857,376
REGULATED IGNITION AMPLIFIER CIRCUIT
Edward L. Williams, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.
Filed Feb. 9, 1973, Ser. No. 330,915
Int. Cl. F02p 1/00
U.S. Cl. 123-148 E 7 Claims

amount of fuel supplied to the engine, first resilient means acting on the rod in opposition to the force exerted by said first centrifugal weight operator adjustable means for varying the force exerted by the first resilient means, and a second centrifugal weight carried by said flange, a lever connected to said second weight, said lever engaging said hollow cylindrical member whereby with varying engine speed the axial position of the hollow cylindrical member will vary to effect angular movement of the spill valve relative to said pulley.

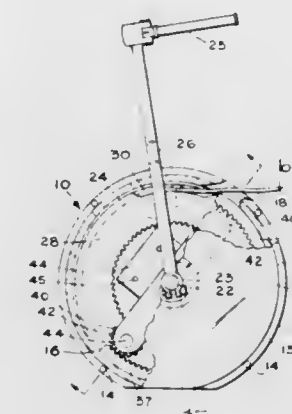
3,857,375
ULTRASONIC CARBURETION ENHANCER
Walter G. Jackson, 9631 Lawyers Rd., Vienna, Va. 22180
Filed Apr. 20, 1973, Ser. No. 352,960
Int. Cl. F02m 29/00
U.S. Cl. 123-141 6 Claims



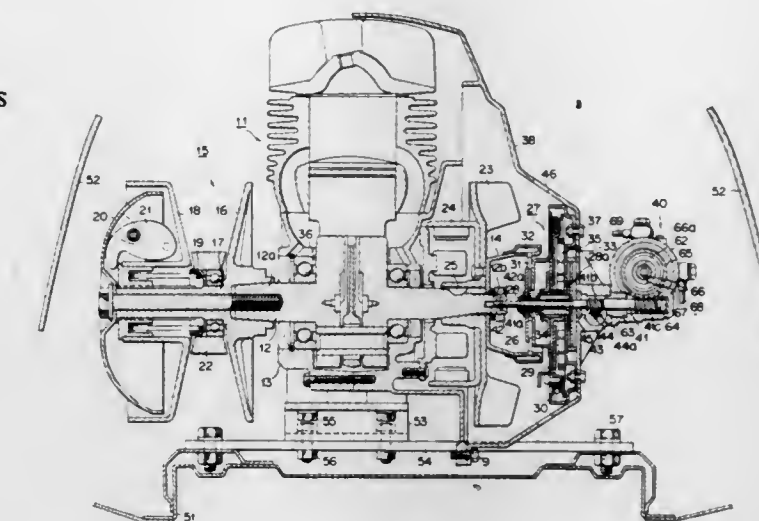
1. In an internal combustion engine, in which fuel is mixed with air prior to induction into a combustion chamber, a carburetor in which the fuel and air are mixed, a passage through which the fuel-air mixture flows from the carburetor to the combustion chamber, a valve in said passage for regulating the rate of flow, an air operated ultrasonic sound generator mounted in a location downstream from the valve and in

position to impress an ultrasonic jet upon the fuel-air mixture, for the purpose of improved fuel vaporization, said generator having a chamber opening directly into the fuel-air mixture passage, an orifice of said generator through which an air jet flows through a wall of said passage and into the generator chamber, and a blade in line with the air jet at a location where the air jet has unrestrained flow past said blade and into the fuel-air mixture in the passage leading from the valve to the combustion chamber, the air jet impingement with an edge of the blade setting up an ultrasonic vibration of the jet where it merges with the fuel-air mixture in said passage.

3,857,377
KICK-STARTER MECHANISM FOR SNOWMOBILES AND THE LIKE
Frank G. Christensen, 62 Camwood Cres., Don Mills, Ontario, and Rafael T. Wulff, Dorset Post Office, Dorset, Ontario, both of Canada
Filed Apr. 13, 1973, Ser. No. 350,896
Int. Cl. F02h 3/04
U.S. Cl. 123-185 BB 8 Claims



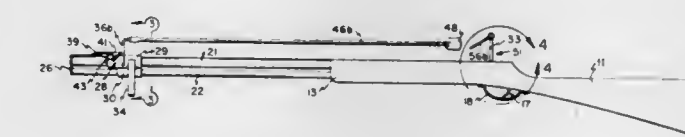
lubricating system, and a driving shaft fitted through a cylindrical through bore provided in said main shaft and drivingly



and detachably coupled to one end of the crank shaft so as to drive said oil pump.

1. For starting an internal combustion engine of the type startable by pulling on a rope or other windable member, a kick-starter mechanism comprising a winding drum onto which such windable member may be engaged and wound, the winding drum mounting a concentric, outward-toothed gear, a housing formed about a central axis having inward of its outer periphery an internal sector gear whose pitch radius, measured from said axis, is spacedly outward of the pitch radius of said winding drum gear, and central shaft means supported in said housing for angular rotation on said housing axis, on which shaft means said winding drum and its gear are supported for rotation within said housing, said shaft means having secured thereto a kick-start lever external of the housing and a planetary cage lever within said housing, together with a planetary gear mounted on said cage lever for rotation intermeshed between said internal sector gear and said winding drum gear, whereby angular movement of the kick-start lever from upward position to downward position rotates the winding drum.

3,857,379
SLINGSHOT-TYPE DEVICE WITH ELASTIC PROPULSION MEANS
Edward Lewis Burghardt, P.O. Box 130, Vernal, Utah 84078
Filed Apr. 11, 1973, Ser. No. 350,055
Int. Cl. F41b 7/00
U.S. Cl. 124-20 R 8 Claims



3,857,378
INTERNAL COMBUSTION ENGINE
Toshiaki Nakamura, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata-shi, Shizuoka-ken, Japan
Filed Aug. 7, 1973, Ser. No. 386,375
Claims priority, application Japan, Aug. 9, 1972, 47-93443
Int. Cl. F16n 13/10
U.S. Cl. 123-196 R 5 Claims

1. In combination with an internal combustion engine a crank case, a crank shaft rotatably supported by and extending from the crank case through a main bearing, a recoil starter means located at one end of the crank shaft and having a starter housing supported by the crank case, and a main shaft fixed to the starter housing and arranged coaxially on the extension of the crank shaft, the improvement comprising: an oil pump mounted on the starter housing for a separate engine

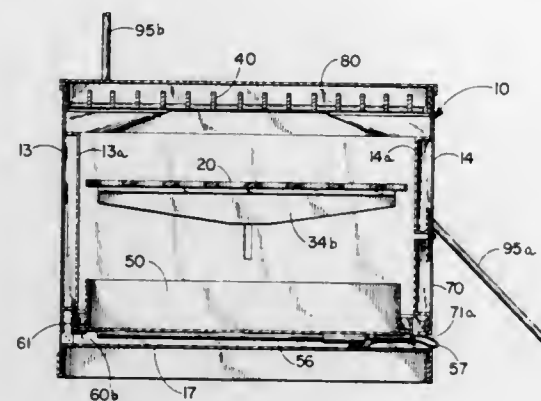
1. A sling-shot type device comprising:
a. a frame;
b. a guide having a free end and being fixedly connected to said frame and extending from said frame;
c. a carriage means adapted to slide forwardly along the guide while tensioning elastic members anchored thereto so as to project a projectile, said carriage means includes an integral lever member for use in pressing said carriage toward the free end of said guide and a pair of bifurcated members fixedly connected to the carriage means, and which extend outwardly from said carriage means;
d. catch means connected to said free end of said guide and adapted to selectively catch and hold said carriage near said free end;
e. a pair of elongated elastic members, each of which is connected at one end to a corresponding one of said bifurcated members;
f. means flexibly connecting the other ends of said elastic members together;
g. gate means mounted on said frame for selectively and directly holding said connecting means when said carriage means is slid towards and caught at said free end of said guide thereby to place said elastic members in tension and for selectively releasing said elastic members through a pivotal movement thereof under bias of the elastic members to permit disengagement of the connecting means from said gate means; and
h. trigger means mounted on said frame and operatively connected to said gate means to release the same by moving said trigger means.

3,857,380

BARBECUE GRILL

John E. Hansman, 660 Belmont Ln., St. Paul, Minn. 55102
Continuation-in-part of Ser. No. 165,135, July 22, 1971. This
application Aug. 27, 1973, Ser. No. 391,948
Int. Cl. A47j 37/07; F24b 3/00
U.S. Cl. 126—25 A

2 Claims



2. A barbecue grill, comprising:

- A firebox, open at the top, comprising sheet metal vertically extending sidewalls and a bottom panel integral with said sidewalls; a door for partially closing off an elongated opening in one of said sidewalls and for defining a slot-like vent means; each of said sidewalls and said door comprising spaced apart sheet metal panels shaped to enclose a hollow space therebetween extending from a point spaced above said bottom panel to the top of said firebox;
- A grate member for supporting charcoal fuel and supported within said firebox housing in spaced apart relation from said bottom panel and the top of said firebox; said bottom panel, sidewall means and grate member defining a lower burning chamber for receiving a paper-like solid starter fuel material;
- An adjustable grate support mechanism for adjusting the position of said grate member upwardly or downwardly, including (1) position adjustment means, (2) adjustable support members integral with said position adjustment means for supporting said grate member within said firebox, and (3) an adjusting tab for facilitating manual adjustment of said position adjustment means;
- A broiling grill member, supported in closely spaced relation to the open top of said firebox and in spaced apart relation from said grate member;
- A removable ash drawer, supported within said lower burning chamber and above the bottom edge of said slotlike vent means but in spaced apart relation from said grate member; and
- Drawer support means, resting on said bottom panel, for supporting said ash drawer means in spaced apart relation above said bottom panel.

3,857,381

FRYING PAN SPLASH SHIELDING DEVICE

Kyosuke Kato, 58-21, Gejo-cho, Kasugai City, Aichi Prefecture, Japan

Filed Mar. 29, 1974, Ser. No. 455,962

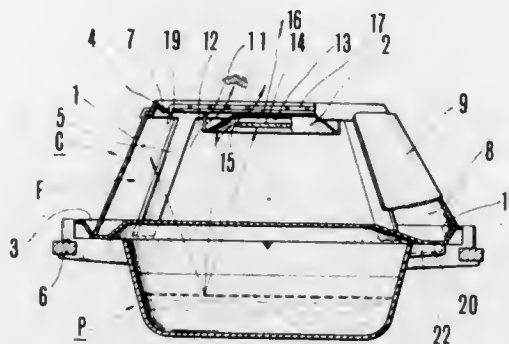
Int. Cl. B65d 51/02; A47j 27/58

U.S. Cl. 126—384

5 Claims

- A device comprising a food frying pan and a hood mounted thereon and covering the open area of said pan; said hood being formed of an inclined-mounted side wall member and a top wall member attached to a frame structure and embracing a space of an appropriate height over the open area of said pan, said frame structure having a lower portion and an upper portion, said side wall member being provided with a transparent portion and having an opening passage in one portion thereof for loading and unloading food to the interior area of said device, a door means for closing said opening

passage and being hinged at its lower edge to said lower frame portion whereby said door means can be moved to a closed position leaning on the outside of said inclined-mounted side wall member, said top wall member being suspended from said upper frame portion at an appropriate distance therefrom, and said hood being provided with a first vent passage formed between said upper frame portion and said top wall member, and a second vent passage formed between a central opening



of said top wall member and a disc suspended from said top wall member at an appropriate downward distance therefrom; a rack means installed on the top of said top wall member for the purpose of draining the dripping cooking oil therefrom; and an oil return means associated with said pan and said hood and utilizing the inclined surface of said top wall member for the purpose of returning the dripping oil splashes to the oil bath in said pan.

3,857,382

PIEZOELECTRIC HEART ASSIST APPARATUS

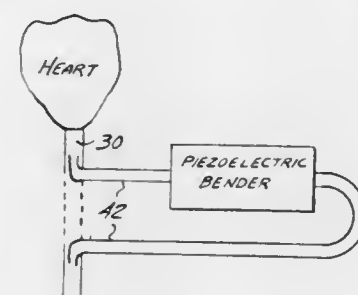
Maryon J. Williams, Jr., Augusta, Ga.; Walter Welkowitz, Metuchen; Sylvan Fich, Edison, both of N.J.; Dov Jaron, Detroit; Adrian Kantrowitz, Pontiac, both of Mich., and Donald A. Molony, Vienna, Austria, assignors to Sinai Hospital of Detroit, Detroit, Mich.

Continuation-in-part of Ser. No. 301,553, Oct. 27, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,799

Int. Cl. A61m 01/03; A61f 01/24

U.S. Cl. 128—1 D

6 Claims



- Apparatus for providing mechanical assistance to a heart by generating pressure waves in the bloodstream, the pressure waves being introduced in the bloodstream so that diastolic pressure is increased; the apparatus comprising:

a tubular fluid path of resilient material adapted to be surgically connected to the bloodstream;

piezoelectric means for alternately compressing and releasing said tubular fluid path and for generating sinusoidal pressure waves in said tubular fluid path in response to a driving signal; and

a frame;

said piezoelectric means including at least two piezoelectric bender means each bender means having a central support and a piezoelectric ceramic bonded thereto, each bender means configured as a cantilever with one end fixed to said frame and the other end free, and having a mass operably loading the free end thereof to provide a predetermined resonant frequency;

whereby upon application of said driving signal, each piezoelectric bender means resonates at a frequency in the

range of the heart frequency to generate pressure waves in said tubular fluid path thereby increasing the mean arterial blood flow.

3,857,383

MULTIPHASIC HEALTH SCREENING METHOD AND MODULE

Irwin H. Sommerfeld, Mount Prospect; Edmond L. Morgan, Des Plaines; Ethan J. Allen, Northbrook, and Charles N. Dewey, Palatine, all of Ill., assignors to International Health Systems, Inc., Des Plaines, Ill.

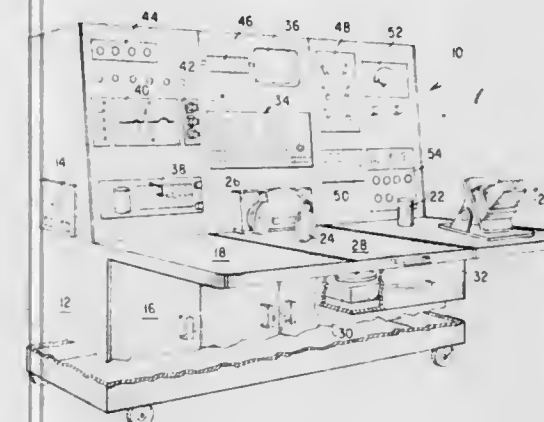
Continuation of Ser. No. 36,132, May 11, 1970, abandoned.

This application Nov. 17, 1972, Ser. No. 307,485

Int. Cl. A61b 5/00

U.S. Cl. 128—2 D

10 Claims



- A semi-automatic, multiphasic health screening method for human individuals comprising the steps of: orienting at least two individuals adjacent to a multiphasic health screening module having therein a plurality of different electronically operable health parameter measuring test devices coupled to a common group of test readout recorders, whereby the entire screening is accomplished adjacent the module; electronically coupling each individual to the one module by way of a plurality of sensors and leads which transmit a plurality of different health parameters to at least some of the test devices in the module; automatically selecting a predetermined sequence of health screening tests to be performed on each individual by use of the test devices said selecting including the step of directing electrically which test is being performed upon each individual, such that at any one time a different test is being directed to each individual; performing each selected test for a relatively short period of time, and only once per individual by way of said automatically selecting; encoding, at least in part by the readout recorders, the data results from each test prior to advancing to the next test; and automatically enabling the performing of the next of the predetermined sequence of health tests and then accomplishing said steps of performing and encoding.

3,857,384

CERVICAL TISSUE CELL SPECIMEN GATHERING DEVICE

George W. Watson, 2159 Downingtown Ave., Salt Lake City, Utah 84108

Filed Apr. 9, 1973, Ser. No. 348,960

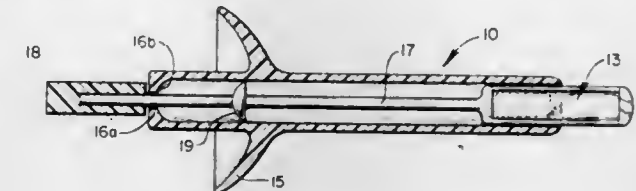
Int. Cl. A61b 10/00

U.S. Cl. 128—2 B

7 Claims

- A cervical tissue cell specimen gathering device comprising an elongate, tubular insertion housing having an open insertion end and a rear end with a hole therethrough; a slide carrier including a shaft extending slidably and rotatably from a handle larger than said hole in the rear end, through said hole and into said housing, a collar on the shaft within the housing limiting travel of the shaft through the rear end in the direction of the handle, and a support frame for a slide at the end of the shaft opposite

to the handle, said support frame being entirely within the housing when the collar is in engagement with the rear end of the housing, and projecting at least partially from the housing when the handle is in engagement with the rear end of the housing; and



a microscope slide having a collection surface thereon, said slide being removably secured to the support frame, whereby said collection surface on the slide is outside the housing when the handle is in engagement with the rear end of the housing.

3,857,385

DIRECT INDICATING DEVICES FOR MEASURING RESPIRATORY RESISTANCE

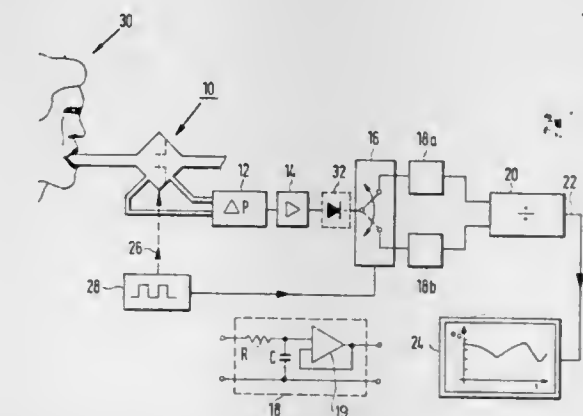
Franz Hampl, Hoechberg, Germany, assignor to Erich Jaeger, Wurzburg, Germany

Continuation of Ser. No. 129,678, March 31, 1973, abandoned. This application June 5, 1973, Ser. No. 367,344

Int. Cl. A61b 5/08

U.S. Cl. 128—2.08

7 Claims



- A direct indicating device for continuously measuring the internal resistance of a person's respiratory system comprising:

a flow resistance chamber having a connection adapted for the person's mouth or nose and a connection to the atmosphere and having an interposed variable resistance means, switchable between two finite values of resistance, through which air breathed by said person through said mouth or nose connection must pass;

flow resistance switching means operatively connected with said variable resistance means for switching said resistance means between said two values of resistance;

pressure sensing means connected to said chamber and responsive to the pressure difference across said flow resistance means and including means for providing an electrical output representative of said pressure difference;

two electrical storage means for storing differential pressure output signals of said pressure sensing means respectively related to said two resistance values, each of said storage means having an input and an output connection and includes means capable of following a signal provided to said input connection and of storing the last value of the signal so provided when said input connection is disconnected from said pressure sensing means;

signal switching means synchronized with said flow resistance switching means arranged for alternately connecting each of said storage means to said electrical output of said pressure sensing means;

timing means including means for causing repetitive back-and-forth operation, in synchronism, of said flow resistance switching means and for said signal switching means at intervals short compared with a person's normal breathing cycle;
 quotient producing means responsive to the respective signals present in said two storage means, and
 indicating means responsive to said quotient producing means for continuously indicating respiratory resistance of said person during at least one direction of breathing, said indicating means being capable of and arranged for responding to variations of the output of said quotient producing means within any unidirectional breath flow period of the person's breathing cycle.

3,857,386

SURGICAL DEVICE FOR HOLDING AND RETRACTING SKIN OR BONE

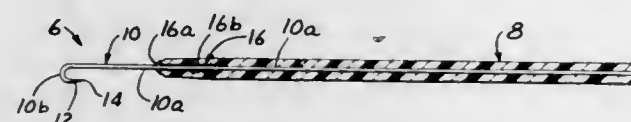
Theodore Shelly Ashbell, 900 N. Michigan Ave., Chicago, Ill. 60611

Filed Aug. 17, 1973, Ser. No. 389,254

Int. Cl. A61b 17/02, 17/18

U.S. Cl. 128-20

11 Claims



1. A disposable surgical device for holding and retracting skin or small bones or bone fragments, said device including a sterilizable skin or bone-engaging hook member made of a thin metal stock and having a pointed hook-shaped end portion terminating in a shank portion, and a handle-forming member to be grasped during use of the device made of a sterilizable synthetic plastic material permanently integrally connected to said shank portion of the skin or bone-engaging member.

3,857,387

ULTRASONIC CATARACT REMOVAL METHOD AND APPARATUS

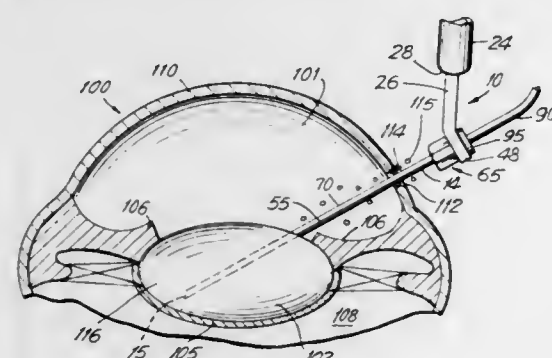
John P. Shock, San Rafael, Calif., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,429

Int. Cl. A61h 23/00; A61f 9/00

U.S. Cl. 128-24 A

24 Claims



1. The method of removing a cataract mass of tissue, from its enclosed area in the eye, comprising the steps of:
 A. forming an incision on the eye in order to gain access to the cataract,
 B. inserting a tool member having an output edge through the incision,
 C. engaging the output edge of said tool member with the surface of the cataract,

D. reducing the size of the cataract in its enclosed area by:
 1. vibrating the tool member to provide peak accelerations of at least 1,000g, to transmit said vibrations to the tissue of the cataract in engagement therewith,
 2. moving said vibrating tool member relative to said cataract to form an aperture in said cataract to reduce the volume thereof,
 3. retracting said vibrating tool member from the aperture formed within said cataract, and
 E. removing the cataract from the incision.

3,857,388

UNIVERSAL CLAVICLE SPLINT

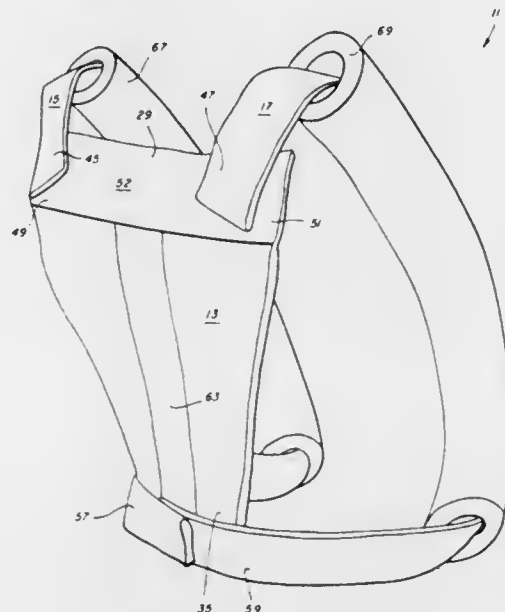
Sylvan A. Frankel, Billings, Mont., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Oct. 18, 1973, Ser. No. 407,428

Int. Cl. A61f 5/04

U.S. Cl. 128-87 R

8 Claims



8. A clavicle splint comprising a backplate member for contiguously engaging the back of the user, horizontal means fixedly attached to said backplate member and extending in a direction along the width thereof so as to extend substantially parallel with and along the lengths of the clavicle bones of the user, vertical means fixedly attached to said backplate member and extending in a direction along the length thereof so as to extend substantially along the midline posterior of the user, first and second flexible shoulder strap means for engaging the shoulders of the user to restrict his movement thereof, the upper ends of said first and second strap means respectively including means for grippingly engaging said horizontal means selectively along the length thereof, means for adjustably attaching the lower ends of said first and second strap means one to the other and means attached to the lower ends of one of said strap means for grippingly engaging said vertical means selectively along the length thereof whereby tension may be applied to said first and second strap means.

3,857,389

PROSTHESIS HOLDER

Harlan C. Amstutz, 433 Burlingame Ave., Los Angeles, Calif. 90049

Filed June 6, 1973, Ser. No. 367,694

Int. Cl. A61f 5/04

U.S. Cl. 128-92 EC

7 Claims

1. A prosthesis holder including a pair of opposing jaws adapted for grasping a prosthesis, a short and a long locking stud, one stud mounted on each jaw for angular motion therewith, a locking member carried on the long stud for selectively engaging the short stud and urging the short stud into angular superposition over the long stud, thereby simultaneously urging said holder jaws into their prosthesis grasping position

and hinge means for mounting the jaws to one another so as to permit relative angular motion therebetween, said hinge

3,857,391

UNIVERSAL TUBULAR INSERTER FOR INTRAUTERINE DEVICES

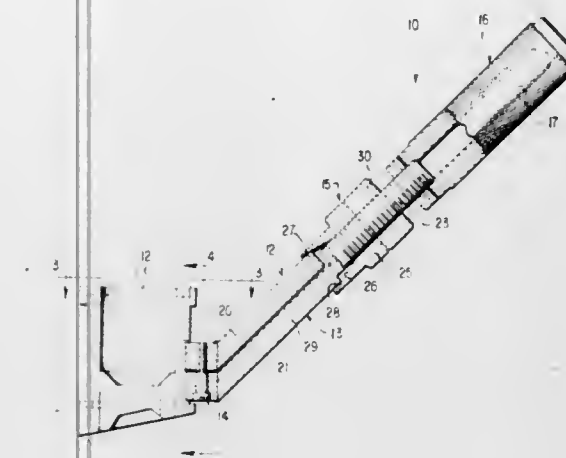
Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Mar. 1, 1974, Ser. No. 447,262

Int. Cl. A61f 5/46

U.S. Cl. 128-127

35 Claims



means being located between said jaws and said locking member.

3,857,390

FRACTURE BOX

Howard D. Harrison, 16 Pine St., Lowell, Mass. 01851

Filed Oct. 19, 1973, Ser. No. 407,869

Int. Cl. A61f 5/04

U.S. Cl. 128-93

9 Claims



1. A fracture box comprising:
 a. a leg supporting section including a substantially rectangular planar panel,
 b. a pair of planar side wall members hingedly connected to opposite sides of said panel by a pair of hinged connections, each of said hinged connections being displaced from the upper edge of each of said side wall members whereby a leg-receiving channel is provided between said panel and the upper portions of said side wall members;
 c. each of said side wall members having a bottom edge, said bottom edges defining the base plane of said fracture box;
 d. each of said hinged connections being disposed at a predetermined acute angle with respect to said base plane;
 e. said side wall members being rotatable about said hinged connections from a collapsed position, in which the plane of each of said side wall members and the plane of said panel are superposed, to an assembled position in which the plane of each of said side wall members is substantially perpendicular to the plane of said panel with the plane of said panel also being disposed at said predetermined acute angle with respect to said base plane;
 f. and means for maintaining said side wall members in said assembled position.



3,857,392

INTRAVENOUS CONTAINER WITH DISLODGEABLE SEPTUM AND DISLODGING PIERCER

Robert W. Ogle, Newport Beach, Calif., assignor to IMS, Wilmington, Del.

Continuation-in-part of Ser. No. 195,886, Nov. 4, 1971, which is a division of Ser. No. 830,311, June 4, 1969, Pat. No. 3,674,028. This application Nov. 1, 1972, Ser. No. 302,782

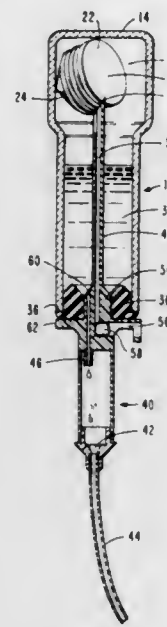
Int. Cl. A61m 5/16

U.S. Cl. 128-214 C

7 Claims

1. A novel device for the mixing and administration of intravenous fluid comprising a vial having an open end and a closed end, a dislodgeable septum intermediate said open and closed ends, an imperforate stopper in said open end, said vial being adapted to contain two liquids or a liquid and a dry material in separated state, a non-opaque drip meter having a fluid outlet at one end and a fluid inlet, said inlet comprising a tubular member terminating within said drip meter whereby drops can be visually observed at the end of said tubular member through said drip meter, extending from said drip meter a hollow elongated rigid spike having an enlarged base adjacent said drip meter, said spike terminating in a scarf at its other end, the hollow interior of said spike communicating with the exterior through a filtered air inlet positioned in

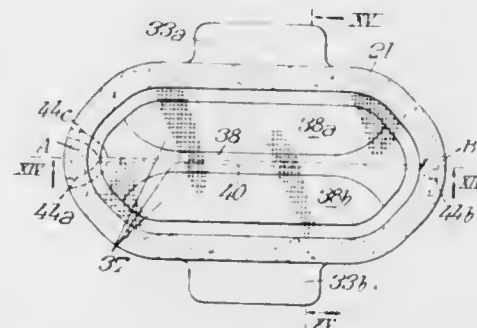
proximity to the base of said spike, a fluid passage running through said base and having one end adjacent the spike at the exterior of said base so that essentially all of the fluid within said vial can drain out by gravity through said fluid passage, and the other end of said fluid passage communicating with said tubular member, said spike piercing said stopper and



- c. means connected to the separating means for intravascularly returning the separated lymph cells to the patient; and
- d. means connected to the separating means for removing the specific antibody from the lymph fluid of the lymph from which the lymph cells have been separated.

3,857,394
GYNAECOLOGICAL DEVICE
Raymond Alemany, 2, rue Gervex, Paris (17e), France
Filed Sept. 8, 1972, Ser. No. 287,469
Claims priority, application France, Sept. 17, 1971, 71.33617

Int. Cl. A61m 31/00
U.S. Cl. 128-260 9 Claims

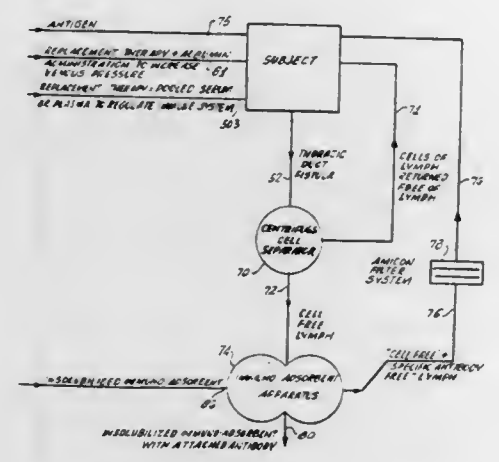


being adapted to dislodge said septum whereby the contents of the vial can be mixed without contamination from the exterior and the fluid contents of said vial can flow through said fluid passage and said drip meter while filtered air passes through said hollow spike and is discharged within said vial in the head-space above the fluid level within said vial.

1. Gynaecological device constituting a vulvar compress, of oblong shape, said device comprising a peripheral rim of absorbent material, a continuous substantially oblong support sheet of a flexible and impermeable material bounded by said rim, and a sheet of a material of the gauze type forming an inner lining on said support sheet, said lining being adapted to match the anatomical contours and said rim constituting the only absorbent part of the device.

3,857,393
APPARATUS FOR USE IN THE AUGMENTATION OF THE PRODUCTION OF ANTIBODIES IN ANIMALS AND HUMANS AND THE COLLECTION THEREOF
Samuel Rose, La Jolla, Calif., assignor to Bio-Response, Inc., New York, N.Y.

Continuation of Ser. No. 136,476, April 22, 1971, Pat. No. 3,719,182. This application Jan. 30, 1973, Ser. No. 328,048
Int. Cl. A61m 1/03
U.S. Cl. 128-214 R 12 Claims

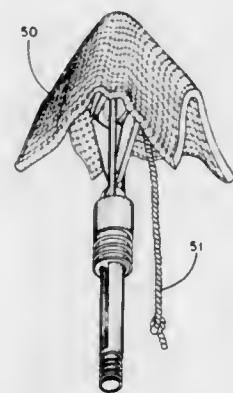


1. Apparatus for the augmentation of production of a specific antibody from a patient upon whom there has been performed a thoracic duct fistula comprising:

- a. means adapted to be inserted into the fistula for removing lymph including lymph cells and lymph fluid from the thoracic duct, the lymph fluid including the specific antibody;
- b. means connected to the lymph removing means for separating lymph cells from lymph fluid of the lymph removed from the thoracic duct, the separated lymph cells lacking specific antibody;

3,857,395
CONFORMABLE ABSORBENT TAMPON AND INSERTER DEVICE THEREFOR
Russell L. Johnson, Weyauwega; Robert J. Peerenboom, Little Chute; Donald M. Fries, Combined Locks; Leonard M. Kaczmarzyk, Neenah, and Arnold J. Buss, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

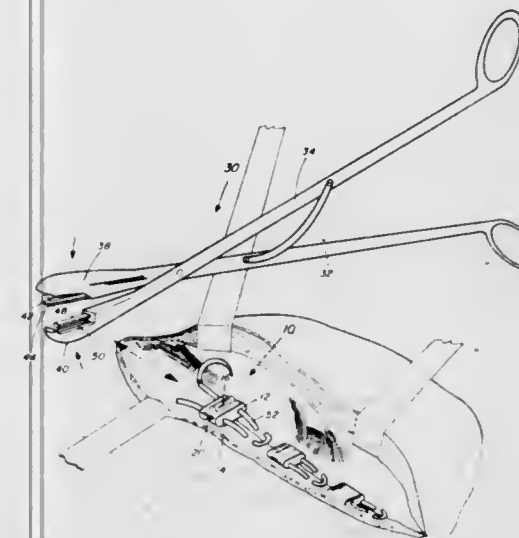
Filed Jan. 28, 1974, Ser. No. 437,044
Int. Cl. A61f 15/00; A61m 29/00
U.S. Cl. 128-263 30 Claims



1. In combination, a conformable absorbent tampon and an elongate inserter means; said inserter means having a bilaterally spreadable forward end portion and a trailing end portion for grasping by the user when inserting said tampon; said tampon comprising a flat absorbent pad draped over and enclosing the forward end portion of said inserter means; said forward end portion being of hinged construction; said hinged construction comprising a pair of flexible arms having a means for bilaterally diverging the arms from each other at an intermediate portion of their length when longitudinal pressure is exerted against one end of said arms by said trailing end portion

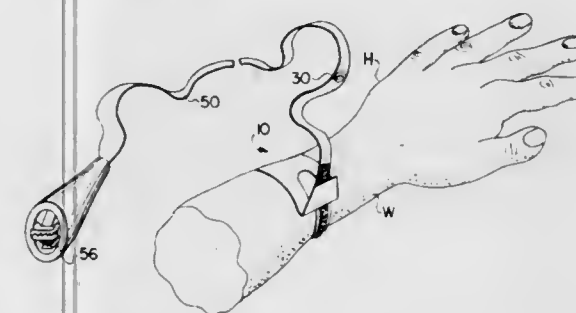
tion; said inserter means being adapted to insert said tampon into the vagina while said tampon is draped over said forward end and to bilaterally spread said tampon within the vaginal cavity after insertion therein.

3,857,396
SUTURE CLAMP
Charles W. Hardwick, 600 W. 27th St., Sanford, Fla. 32771
Filed Aug. 22, 1973, Ser. No. 390,514
Int. Cl. A61b 17/04
U.S. Cl. 128-335 6 Claims



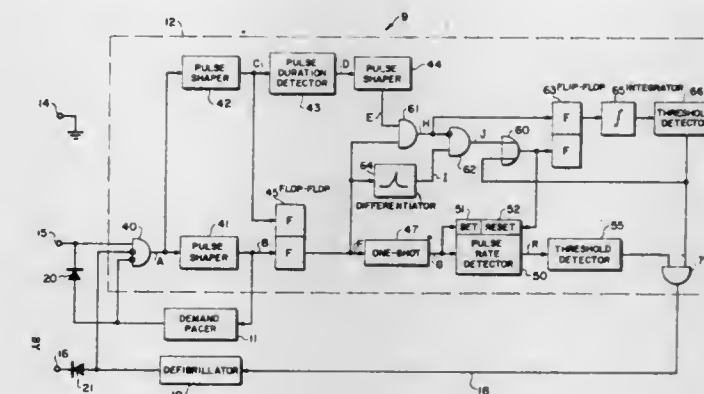
1. Suture clamping means comprising:
a compressible member having a hole extending there-through;
means for locking a suture in said hole, said locking means comprising a ridge extending along a first outer surface of said member substantially transverse to said hole and wherein compression of said ridge reduces the cross-sectional area of said hole to lock suture therein.

3,857,397
ELECTRICALLY CONDUCTIVE WRIST STRAP
Alfred J. Brosseau, Natick, Mass., assignor to Custom Materials, Inc., Chelmsford, Mass.
Filed Nov. 27, 1972, Ser. No. 309,867
Int. Cl. A61n 1/04
U.S. Cl. 128-384 12 Claims



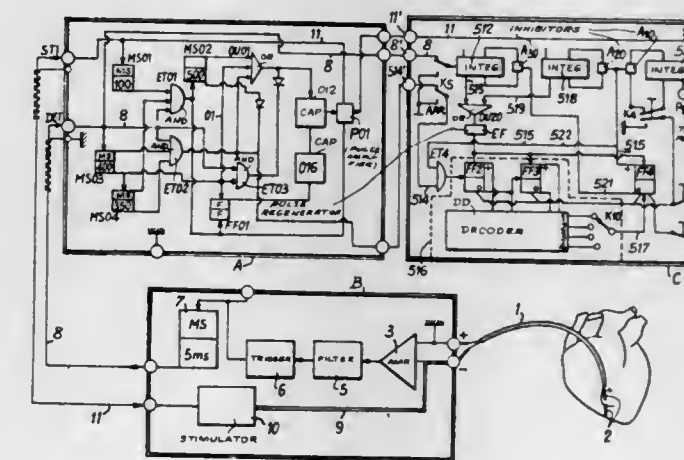
1. An electrically conductive wrist strap comprising:
a. an electrically conductive flexible strip having first and second ends,
b. means comprising an opening in said strip spaced from and adjacent to the first end for permitting passage there-through of the second end of said strip;
c. first cooperating fastening means on said strip between said opening and said first end and second cooperating fastening means on said strip between said opening and said second end for adjustably fastening an intermediate portion of said strip to said strip at the first end thereof, and
d. conductive terminal means on said strip, whereby a person wearing said strap may be connected to ground.

3,857,398
ELECTRICAL CARDIAC DEFIBRILLATOR
Leo Rubin, 301-17 Spring St., Red Bank, N.J.
Filed Dec. 13, 1971, Ser. No. 207,148
Int. Cl. A61n 1/36
U.S. Cl. 128-419 D 12 Claims



1. Apparatus for electrically stimulating the heart comprising: electrode means;
Sensing means having an input connected to said electrode means for sensing cardiac electrical signals;
pulse rate detector means for detecting the average rate of occurrence of the QRS complexes of said cardiac electrical signals over a predetermined time period;
pulse duration detector means for detecting the Q to S period of each said QRS complex in said cardiac electrical signal, said pulse duration detector means being connected to said pulse rate detector means to permit rate detection for pulses whose duration is greater than a predetermined value;
threshold logic means connected to said pulse rate detector means and said pulse duration detector means for providing an output pulse when the average rate of occurrence of said QRS complexes exceeds a predetermined value and a predetermined number of said Q to S periods exceed a predetermined time period; and
defibrillator means connected to the output of said logic means for generating a defibrillating pulse on said electrode means in response to receiving a pulse from said threshold logic means.

3,857,399
HEART PACER
Fred Zacouto, 16, rue de la Convention, Paris 15eme, France
Filed Mar. 19, 1971, Ser. No. 126,069
Int. Cl. A61n 1/36
U.S. Cl. 128-419 P 61 Claims



1. Method of electrically stimulating the cardiac muscle by means of an automatic device comprising heart stimulating and detecting means, which method comprises the steps of:
A. detecting spontaneous heart signals,

- B. transmitting electrical stimulating pulses to the cardiac muscle at predetermined intervals in the absence of a spontaneous heart signal,
- C. sensing the time between the occurrence of an electrical stimulating pulse and the detection of a directly successive spontaneous heart signal,
- D. suspending the transmission of an electrical stimulating pulse for one of at least two waiting periods when a spontaneous heart signal is detected after a stimulating pulse, the length of at least one of said at least two waiting periods being no greater than said predetermined interval, and
- E. selecting said one of at least two waiting periods in dependence upon said sensed time, the length of said selected waiting period being an increasing function of said sensed time over at least part of the range of variation of said sensed time.

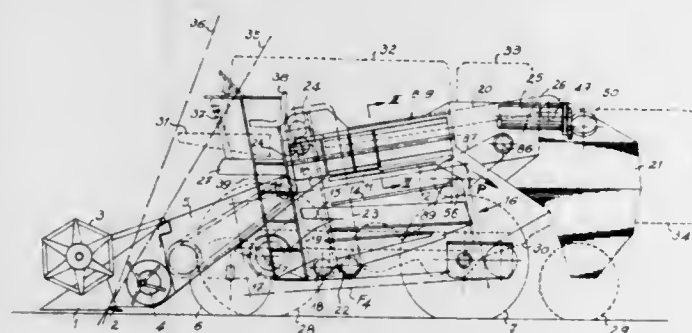
3,857,400

COMBINE HARVESTER

Frans J. G. C. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium
Filed Oct. 20, 1972, Ser. No. 299,474
Int. Cl. A01F 7/06

U.S. Cl. 130—27 T

9 Claims



1. In an axial flow combine having a main frame adapted to travel across a field, means for harvesting crop material, means mounted on the frame for conveying the crop material to the frame, means mounted on the frame for threshing and separating said crop material conveyed to said frame, the threshing and separating means extending longitudinally on said frame, wherein the improvement comprises: means mounted on the frame for cleaning said threshed and separated material comprising;

a first cleaning receptacle mounted directly below the threshing and separating means and adapted to receive said threshed and separated material,

a second cleaning receptacle mounted directly below the first cleaning receptacle and which is adapted to receive a portion of said material contained on said first cleaning receptacle,

means mounted forwardly and below said second cleaning receptacle for supplying and directing an air stream across both said first and second receptacles to remove any impurities contained in said material on said first and second receptacles, and

means interposed between said threshing and separating means and said first receptacle for controlling the movement of said threshed and separated material received from said threshing and separating means as well as shielding said first receptacle from the draft generated by said threshing and separating means.

3,857,401

METHOD OF ELIMINATING VIBRATIONS OF THE REGULATING VALVE

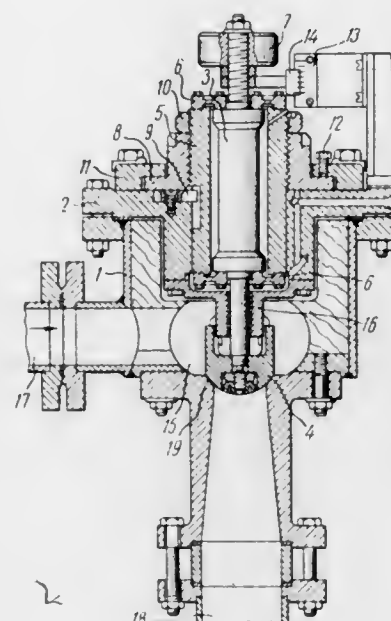
Grigory Alexandrovich Khanin, Institutsky prospekt 29, kv. 45, Leningrad, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,803

Int. Cl. F16k 47/00

U.S. Cl. 137—1

5 Claims



1. A method for eliminating vibrations of a regulating valve provided in a working fluid medium feed line and including a flow chamber and an actuation system comprising a stem coupled with an actuator, a head accommodated in said flow chamber of the valve to control the working fluid medium flow rate, characterized by the steps of: determining the natural frequency of the mechanical vibration of said actuation system of said valve during a stem uplift corresponding to the mode of vibration of said valve; determining, during the same stem uplift, the natural frequency of the acoustic vibration of the working fluid medium in said flow chamber of said valve; and comparing the obtained frequencies and bringing the natural frequency of the working medium out of coincidence with the natural frequency of the mechanical vibration of said actuation system of said valve.

3,857,402

TRANSMISSION OF OIL

Theodore R. Schuh, North Riverside, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 31, 1972, Ser. No. 285,511

Int. Cl. F17d 1/16, 1/18

U.S. Cl. 137—13

1 Claim

1. A method of improving transmission efficiency of oil in a pipe comprising: introducing into the pipe containing the oil being transmitted a latex containing a friction reducing polymer selected from the group consisting of cis 1-4 polyisoprene and polyisobutylene dispersed in water, and inverting the latex to disperse the polymer in the oil by concurrently adding an oil soluble non-ionic surfactant selected from the group consisting of sorbitan trioleate and alkylphenoxypoly (ethyleneoxy) ethanol.

3,857,403

FLAVORED TOBACCO PRODUCT

Edouard P. Demole, Coppet/Vaud, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed June 14, 1973, Ser. No. 370,050

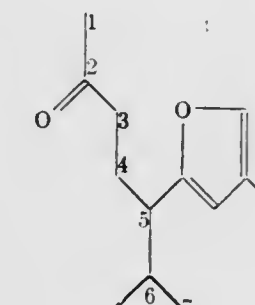
Claims priority, application Switzerland, June 16, 1972, 9075/72

Int. Cl. A24b 15/04

U.S. Cl. 131—17 R

1 Claim

1: A tobacco product selected from the group consisting essentially of tobacco and tobacco substitutes which has added thereto of between about 1 to 500 ppm by weight of the flavouring compound consisting essentially of 5-(4-methyl-2-furyl)-6-methyl-heptan-2-one which manifests the following formula:



3,857,404

HYDRAULICALLY OPERATED LOCK VALVE ASSEMBLY

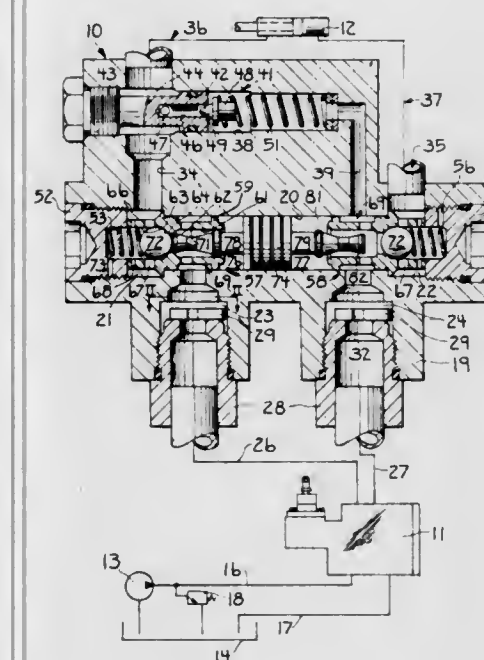
Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1973, Ser. No. 355,473

Int. Cl. F15b 15/00

U.S. Cl. 137—102

11 Claims



1. A lock valve assembly for controlling fluid flow in a hydraulic jack having inlet and outlet means for selectively supplying fluid to either end of the jack cylinder while exhausting fluid from the opposite end comprising:

a valve housing;

a bore formed in said housing;

a first pair of ports in spaced communication with said bore for communicating with a source of pressurized fluid;

a second pair of ports communicating with said bore and opposite ends of the jack cylinder;

3,857,405

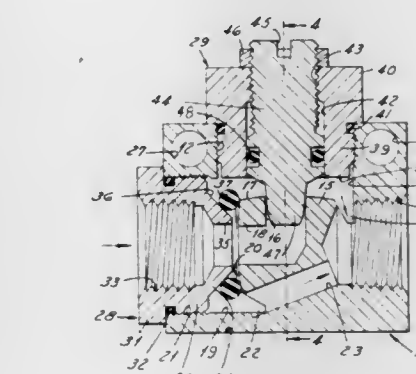
INTERCHANGEABLE RIGHT ANGLE OR INLINE FLOW CONTROL VALVE

Robert J. Heideman, 16137 W. Parkway, Detroit, Mich. 48219
Filed Nov. 30, 1973, Ser. No. 420,631

Int. Cl. F16k 11/10

U.S. Cl. 137—269.5

6 Claims



1. In an interchangeable fluid flow control valve, the combination comprising:

a. a valve body having an outlet port with a longitudinal axis;

- b. a first valve chamber in said valve body and having a longitudinal axis perpendicular to the longitudinal axis of said outlet port and an opening communicating the first valve chamber to the exterior of the valve body;
- c. a second valve chamber in said valve body and having a longitudinal axis inline with the longitudinal axis of said outlet port and an opening communicating the second valve chamber to the exterior of the valve body;
- d. each of said openings communicating said valve chambers to the exterior of the valve body being of equal size;
- e. a first flow passage means formed in said valve body for communicating each of said valve chambers with said outlet port;
- f. a second flow passage means formed in said valve body with a first end communicating with said first valve chamber and a second end communicating with said second valve chamber;
- g. a check valve retainer assembly means, selectively mounted in one of said valve chamber openings and extended into the respective chamber for said one opening, and including an inlet port communicating with the respective end of said second flow passage means communicating with the last mentioned chamber for conducting fluid into said second flow passage means;
- h. said check valve retainer assembly means including a one-way check valve for controlling flow of fluid from said inlet port into said last mentioned valve chamber and to check fluid flow from said last mentioned valve chamber into said inlet port; and,
- i. a flow control needle valve assembly means selectively mounted in the other of said valve chamber openings and extended into the respective chamber for said other opening for operative engagement with the respective end of said second flow passage means communicating with the last mentioned chamber for controlling fluid flow between said second flow passage means and said last mentioned chamber.

3,857,406 VALVE

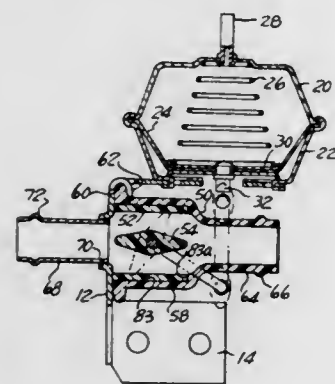
Anthony Dorling, St. Clair Shores, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Jan. 2, 1973, Ser. No. 320,104

Int. Cl. F16k 27/00

U.S. Cl. 137-315

10 Claims



1. A valve assembly comprising a valve body having a cylindrical chamber therein and having at opposite sides of said chamber a pair of diametrically opposed aligned cylindrical shaft receiving openings, one of said openings being closed at its outer end, a pivot shaft having aligned spaced cylindrical portions in said openings, a valve having a peripheral outline substantially generally in the form of an ellipse fixed to said shaft within said chamber, said valve being flattened and movable between an open position in which it extends gener-

ally parallel to the axis of said chamber and an inclined closed position in which its peripheral surface engages the inner surface of said chamber, said valve having a centrally located diametrically extending transverse opening therethrough and at least the portion of said valve provided with said transverse opening being formed of elastically deformable material to provide for insertion of said shaft through one opening in the valve body and the opening through said valve while said valve is located in said chamber, said shaft having a serrated central portion intermediate said spaced cylindrical portions provided with longitudinally extending radially outwardly formed serrations dimensioned relative to the transverse opening through said valve to be slidable therethrough and to deform the material of said valve to establish a driving connection thereto.

3,857,407 PRESSURE REGULATOR

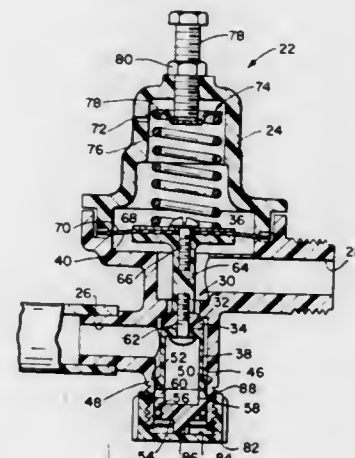
Donald O. Olson, 5885 Darmouth St., Chula Vista, Calif. 92010

Filed Sept. 24, 1973, Ser. No. 399,844

Int. Cl. F16k 31/14

U.S. Cl. 137-495

2 Claims



1. A pressure regulator of the kind used in irrigation systems for shutting off the flow through the regulator without changing the effective biasing force which regulates the pressure output, said pressure regulator comprising, a housing, an inlet for fluid at a high inlet pressure, an outlet for fluid at a lower, regulated outlet pressure, valve means including a valve seat and a movable valve element for controlling the fluid flow between the inlet and outlet, pressure responsive means responsive to the inlet and outlet pressures for positioning the valve element, said pressure responsive means including a piston connected to the movable valve element and having a surface exposed to the inlet pressure and a diaphragm connected to the movable valve element and having one surface exposed to the outlet pressure, adjustable calibration means associated with the pressure responsive means for applying a selected amount of a biasing force to the diaphragm and valve element, said adjustable calibration means including a spring engaged with the diaphragm on the side opposite the side exposed to the inlet pressure and a screw for varying the force exerted by the spring on the diaphragm and movable valve element, a cylindrical boss extending outward of the housing, a cylinder in the boss mounting the piston for reciprocation therein, retaining means for limiting outward movement of the piston under the biasing force exerted by said spring in the full open position of the valve means, an extension formed inte-

grally with the piston and dimensioned to extend outward beyond the end of the boss when the piston is engaged with the snap ring, and a cap threaded on the end of the boss and engageable with said extension to move the valve element into engagement with the valve seat against the bias of the spring when the cap is turned down on the boss and also rotatable outward on the boss to a position in which the cap is disengaged from the extension as the piston engages the retaining means whereby the cap can be used to close and to open the pressure regulator to fluid flow without changing the effective biasing force set by the screw on the spring.

3,857,408

SEAT AND SEALING MEANS FOR CLAPPER-TYPE CHECK VALVE

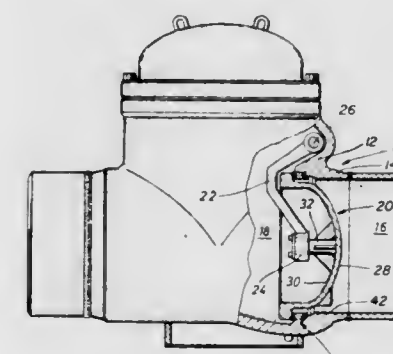
Allen F. Rhodes, Riverside, Conn., and Ruben G. Alaniz, Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,979

Int. Cl. F16k 15/03

U.S. Cl. 137-514

7 Claims



1. A check valve structure comprising, a valve body having a conduit forming a flow passage with an end of the flow passage being recessed, a seat ring received within the recessed end of the conduit and mounted for movement axially of the conduit between an extended position and a retracted position, a clapper-type valve member mounted for swinging movement within the body and adapted to contact and seat on said seat ring when in a closed position, a fluid chamber formed between opposed facing surfaces on said seat ring and said recessed end, first port means permitting a limited flow of fluid between the fluid chamber and the flow passage from one end of the seat ring, second port means permitting a limited flow of fluid between the fluid chamber and the flow

3,857,409

LIQUID MIXING APPARATUS

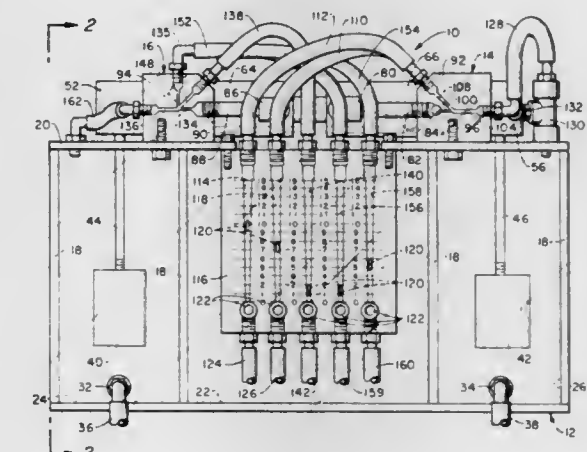
William B. Aubrey, 8424 Yolander Ave., Northridge, Calif. 91324; Angelo A. Giordano, 21716 Napa St., and Raymond Giordano, 7815 Vicky Ave., both of Canoga Park, Calif. 91304

Filed Mar. 26, 1973, Ser. No. 345,004

Int. Cl. F16k 19/00

U.S. Cl. 137-604

11 Claims



1. A liquid mixing apparatus comprising:
a housing;

a first mixing section and a second mixing section, each of said mixing sections being mounted upon said housing; said first mixing section having a first inlet and a second inlet and a water inlet, said first mixing section having first means to intermix the liquid of said first inlet with a portion of said water and conduct such into a first conduit, said first mixing section having second means to intermix the liquid of said second inlet with a portion of said water and conduct such into a second conduit, both said first conduit and said second conduit extend exteriorly of said first mixing section and deposit both the respective liquids into a first reservoir tank; said second mixing section having a third inlet and a fourth inlet and a water inlet, said second mixing section having third means to intermix said water and the liquids of said third, fourth and fifth inlets and conduct such into a third conduit, said third conduit extends exteriorly of said second mixing section and deposits its liquid into a second reservoir tank; and means for separately removing the liquids from said first and said second reservoir tanks.

3,857,410 SWITCHING VALVE

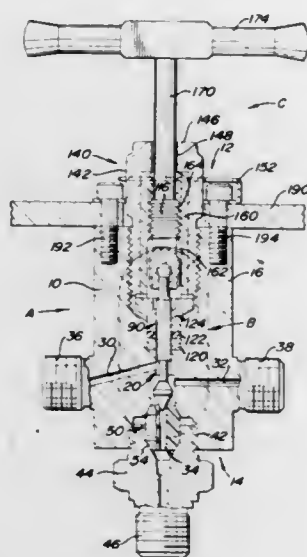
Alfred Bedo, Walton Hills, and Edward Beck, Cleveland Heights, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio

Filed May 7, 1973, Ser. No. 357,558

Int. Cl. F16k 11/04

U.S. Cl. 137-625.27

13 Claims



1. A switching valve for controlling fluid flow between three separate fluid flow passages, said valve comprising:
 - a valve body including an elongated bore extending therethrough, a portion of said bore adjacent one end thereof defining a generally cylindrical valve chamber;
 - first and second axially aligned valve seats including fluid openings therethrough disposed in said bore to define first and second axially spaced ends for said chamber;
 - a first fluid flow passage extending between the exterior of said valve body and the side wall of said bore adjacent said first end;
 - a second fluid flow passage extending between the exterior of said valve body and the side wall of said valve chamber;
 - a third fluid flow passage extending between the exterior of said valve body and the side wall of said bore adjacent said second end;
 - a valve operating stem extending axially into said valve chamber through said first valve seat, said stem being dimensioned to provide a substantial flow area through said first valve seat and into said chamber about said stem, said valve stem further including a valve plug disposed in said chamber adjacent the end of said stem, said valve plug comprising unitary body having opposed, generally conically shaped end portions and a cylindrical center section being greater than the diameter of the fluid openings of said first and second seats;
 - means for selectively reciprocating said stem between a first seated position with said valve plug in a fluid flow blocking relationship with the fluid opening of the first seat to permit fluid flow between said second and third fluid flow passages and a second seated position with said valve plug in a fluid flow blocking relationship with the fluid opening of said second seat to permit fluid flow between said first and second fluid flow passages;
 - a sealing washer received in said bore on the other side of said first fluid passage from said first valve seat, said washer having a bore therethrough slightly larger than the diameter of said stem;
 - a sealing member closely received over said stem and spaced outwardly along said bore adjacent said sealing washer;

- a bushing received over said stem and spaced outwardly along said bore adjacent said sealing member;
- a packing nut threadedly received in said bore adjacent the other end thereof from said bore one end, said nut adapted to contact said bushing and to apply a compressive force to said sealing member; and,
- a liner sleeve disposed in said packing unit, said liner sleeve housing the connection between said operating stem and said reciprocating means.

3,857,411 RELAY CONSTRUCTION AND PARTS THEREFOR OR THE LIKE

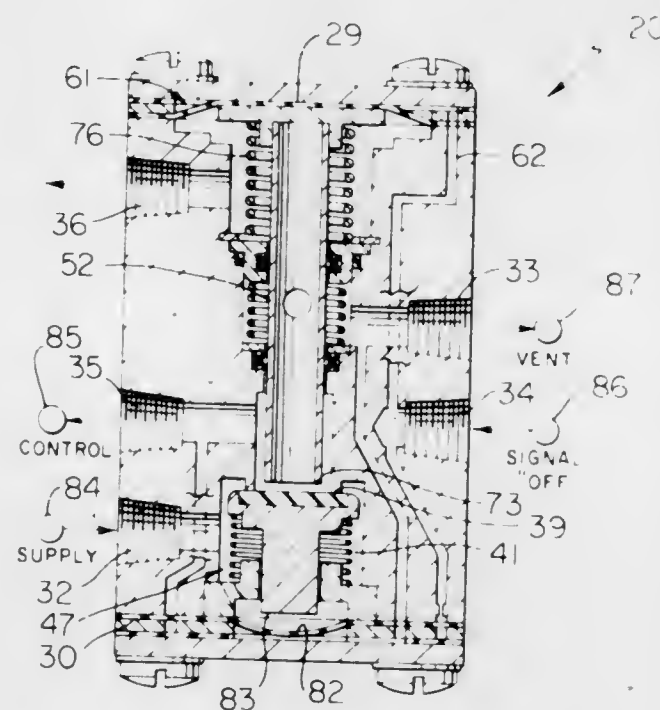
William T. Moon, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 27, 1973, Ser. No. 373,941

Int. Cl. F16k 11/14

U.S. Cl. 137-627.5

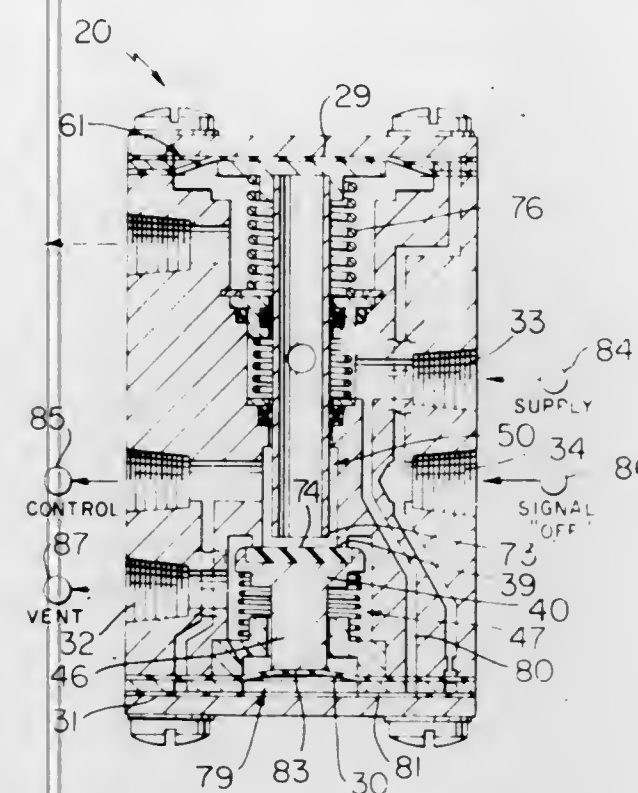
20 Claims



1. A relay construction comprising a housing having port means, said housing having passage means and valve means interconnecting with said port means, said housing having control means for causing said relay construction to selectively act as a normally closed relay, as a normally open relay or as a diverting relay, said control means comprising a movable valve member, said housing having balancing means for balancing said movable valve member under certain conditions of operation of said relay construction, said balancing means comprising a flexible diaphragm for engaging against said valve member when balancing the same and for being out

of contact with said valve member when not balancing said valve member, said housing having means for causing said

signals on said fluidic input; and said third fluid path including fluidic means for introducing a time lag and a gain k to signals on said fluidic input whereby k is greater than 1; and a fluidic phase discriminator having fluid control inputs and a fluid output, with said control fluid inputs connected to said common fluidic signal input and said fluidic output summer and said fluid output connected to said means in said third path.

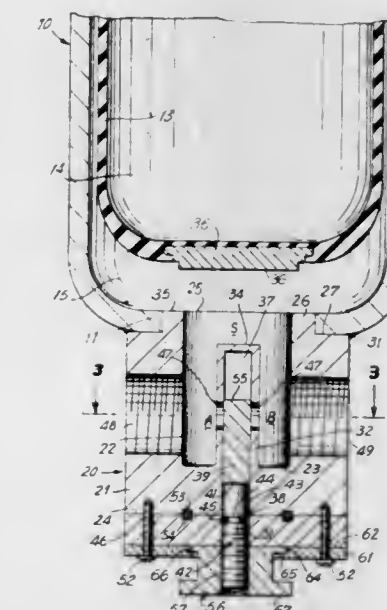


3,857,413
PRESSURE PULSE DAMPENER DEVICE
Abdus Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 195,243, Nov. 3, 1971, Pat. No. 3,782,418. This application Oct. 12, 1973, Ser. No. 405,914. The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.

Int. Cl. F16l 55/04

U.S. Cl. 138-26

6 Claims



diaphragm to balance said valve member and for causing said diaphragm not to balance said valve member.

3,857,412
NOTCH TRACKING FLUIDIC FREQUENCY FILTER
Carl G. Ringwall, Scotia, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 12, 1973, Ser. No. 378,486

Int. Cl. F15c 1/14

U.S. Cl. 137-814

10 Claims



1. A notch tracking fluidic frequency filter including first, second, and third parallel fluid paths having a common bipolar fluidic signal input; a fluidic output summer for said fluid paths; said first fluid path including fluidic means for introducing a time lag to signals on said input; said second fluid path including fluidic means for providing a proportional gain to

1. A pressure pulse dampener comprising a pressure vessel having a movable partition therein defining two chambers each having a port in communication therewith, one of said ports defining a gas port for charging of one of said chambers with gas under pressure and the other an oil port, valve means controlled by the movement of said partition to close said oil port, an oil port fitting comprising a hollow member having an opening axially aligned with said oil port and being rigidly secured thereto and in communication therewith, said member having a fixed partition therein defining two chambers, said fixed partition extending longitudinally of said oil port and being substantially axially aligned therewith, each chamber in said hollow member having one end spaced outwardly from said oil port, said member having two spaced openings extending thereinto and in communication respectively with said chambers, said fixed partition having fluid passage means therethrough aligned with said two openings, whereby a first tortuous path is provided for oil under pressure from one of said openings to the other of said openings, said oil port being in communication with said tortuous path, and a second direct path is provided by said fluid passage means from one of said openings to the other of said openings for a portion of the oil under pressure entering said first spaced opening and means to vary the size of said fluid passage means.

3,857,414

INTERNAL THREADED FITTING CONNECTOR

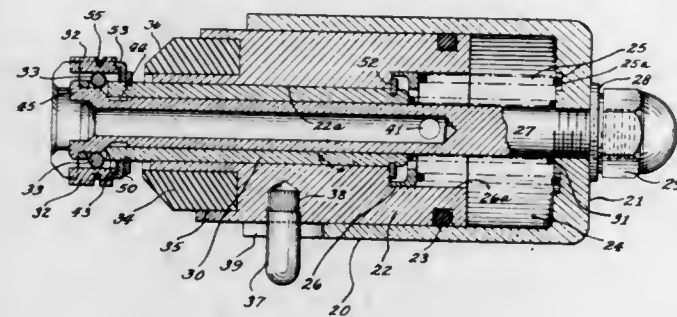
William D. Richardson, Palos Heights, and Ronald A. Zurawski, Chicago Ridge, both of Ill., assignors to Tuthill Pump Company, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 335,932

Int. Cl. F16I 55/10

U.S. Cl. 138—90

11 Claims



1. A quickly attachable and detachable test plug for fluid conduits including a housing having a plunger slidably mounted therein, seal means disposed between said housing and said plunger, an actuating stem carried by said housing and positioned coaxially with said housing and plunger, said stem extending through and beyond said plunger, an actuating sleeve carried by said plunger and positioned coaxially with said stem and adapted for relative axial movement with respect to said stem, a plurality of tube gripping jaws carried by said sleeve on an outer end of said sleeve, a seal on the outer end of said plunger and positioned inwardly of said jaws, said jaws being confined axially of said sleeve and ball means associated with said jaws, said stem and said sleeve, operative, upon relative axial movement between said stem and said sleeve in one direction to cause radial outward movement of said jaws with respect to the axis of said stem to thereby provide an internal gripping connection with a fitting being tested.

3,857,415

REINFORCED CONVULUTED TUBING OF POLYTETRAFLUOROETHYLENE

Louis F. Morin, and Edgar L. McNeil, both of Springfield, Mass., assignors to Everflex Products, Inc., Ludlow, Mass.

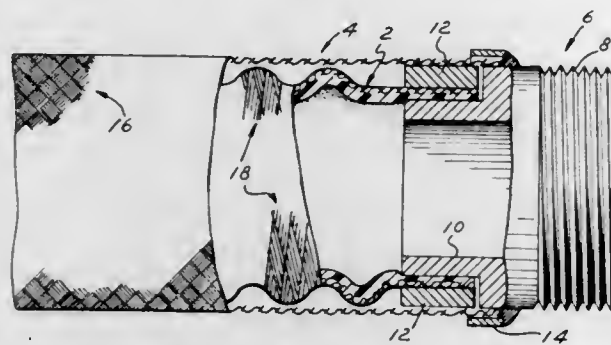
Continuation-in-part of Ser. No. 72,441, Sept. 15, 1970,

abandoned. This application Apr. 6, 1972, Ser. No. 241,760

Int. Cl. F16I 9/12

U.S. Cl. 138—122

3 Claims



1. Reinforced tubing comprising a wall of cured PTFE material and a reinforcing contour braid integral therewith, said wall, including said braid, being of convolute configuration formed by alternate ridges and grooves, said braid being formed of component metal or glass strands disposed at a lead angle relative to the transverse direction of the tubing to follow said convolute configuration including the ridges and grooves thereof and being in generally uniform tension throughout said convoluted wall, said strands being at least partially embedded in said cured PTFE material.

3,857,416

HINGE FOR HINGED STIRRUP FABRIC

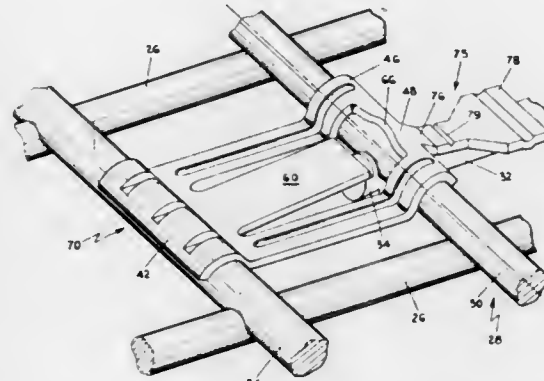
Daniel J. Borodin, and Mort W. Henry, both of Detroit, Mich., assignors to New York Wire Mills Corp., Tonawanda, N.Y.

Filed July 23, 1973, Ser. No. 381,694

Int. Cl. F16I 9/08

U.S. Cl. 138—175

28 Claims



1. A fabric for reinforcing concrete pipe and the like including a plurality of longitudinal and circumferential cage defining strands; a plurality of elongated stirrup members hingedly joined to said fabric, each member defining a plurality of stirrup projections; hinge means for joining said stirrup members to said fabric such that said stirrup members are rotatable between a non-erect position and an erect position; said hinge means including yieldable restraining means secured to each said stirrup member for holding said stirrup member in said non-erect position, said yieldable restraining means being yieldable on application of a force to said stirrup member whereby said stirrup member can be erected.

3,857,417

HARNESS MECHANISMS FOR TRAVELLING WAVE SHEDDING LOOMS

Anatoly Grigorievich Selivanov, ulitsa Lobachevskogo, 44, kv. 59; Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa, 27, korpus 2, kv. 49, both of Moscow, and Alexandr Mikhailovich Dyachkov, Roschinskaya ulitsa, 1, kv. 14, Klimovsk, all of U.S.S.R.

Continuation of Ser. No. 180,622, Sept. 15, 1971, abandoned.

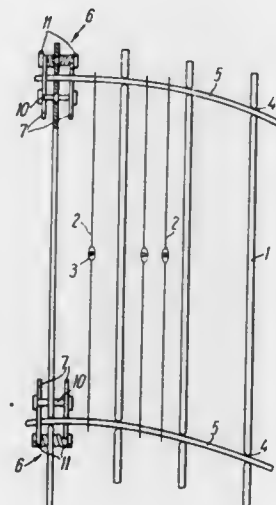
This application Dec. 14, 1972, Ser. No. 315,009

Claims priority, application U.S.S.R., Sept. 18, 1970, 1477601

Int. Cl. D03d 47/26; D03c 9/06

U.S. Cl. 139—12

2 Claims



1. A harness mechanism for a travelling wave shedding loom comprising: a plurality of spatially arranged shaft rods, the two opposite lateral sides at predetermined points longitudinally thereof being provided with slots; an extended flexible element passing through the laterally opposed slots of consec-

3,857,419

WEFT GRIPPER FOR SHUTTLELESS LOOMS

W. Denis Grenville Mackie, Templepatrick, Northern Ireland, assignor to James Mackie & Sons, Limited, Belfast, Northern Ireland

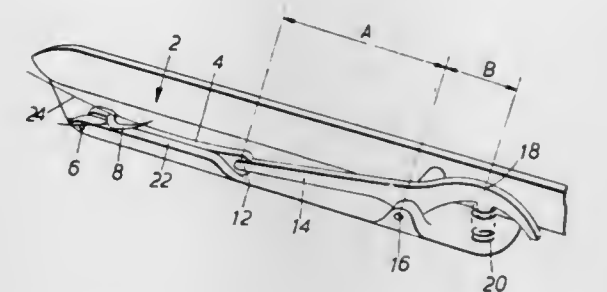
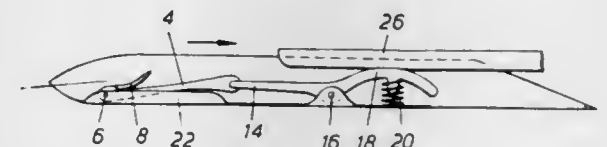
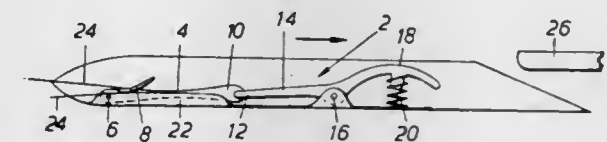
Filed Aug. 30, 1973, Ser. No. 392,906

Claims priority, application Great Britain, Aug. 31, 1972, 40498/72

Int. Cl. D03d 47/20

U.S. Cl. 139—122 N

9 Claims



1. A weft inserter for a shuttleless loom of the transfer type having a pivoted lever, a yarn hook formed integrally with one end of said lever, said hook being located adjacent the leading end of the inserter and the lever being pivotally mounted to the inserter adjacent the hook.

3,857,420

CIRCUIT MODULE LEAD FORMING MACHINE

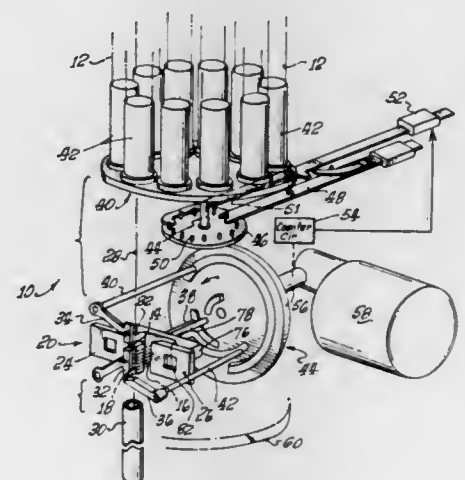
Reginald F. Newman, Sherman Oaks, Calif., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.

Filed Nov. 6, 1972, Ser. No. 304,041

Int. Cl. B21f 45/00

U.S. Cl. 140—71 R

5 Claims



1. A method of forming a plurality of sheds and thereby weaving a plurality of fabrics in a shuttleless loom comprising dividing a primary warp yarn group unwound from at least one warp beam into warp yarn sub-groups arranged in a direction of shedding motion, the warp line of each warp yarn sub-group gradually and continuously approaching each other warp yarn sub-group and converging ahead of a cloth fell but behind the take-up rolls; forming a shed for each warp yarn sub-group such that the adjacent warp yarn systems of sheds cross each other between a reed and a cloth fell at the time of maximum shedding; inserting a pick of weft into each shed by fluid jet; and beating up the pick into the cloth with a common reed.

5. A method for forming the leads of circuit modules that each include a body with opposite sides and leads extending from the opposite sides of the body, comprising

holding a circuit module against a die apparatus; slideably holding a plurality of said modules in a vertical stack above said die apparatus so they are free to fall when the bottommost module is released; moving a middle finger between hold and release positions wherein it respectively holds the bottommost module against said die apparatus and releases the module to fall away from the die apparatus and stack; maintaining an upper finger in a hold position above the die apparatus and against a penultimate module of the stack to prevent its free fall until a time after the middle finger moves to its release position, then moving the upper finger to a release position to permit free fall of the stack of modules, and then moving the upper finger back to its hold position; and maintaining a lower finger in a hold position beneath the die apparatus and beneath the stack of modules when both said first and second fingers are in their release positions, and maintaining the lower finger in a release position out of the downward path of the modules at a time when the middle finger is in its release position and the upper finger is in its hold position to permit the bottommost module to fall away from the stack.

3,857,421

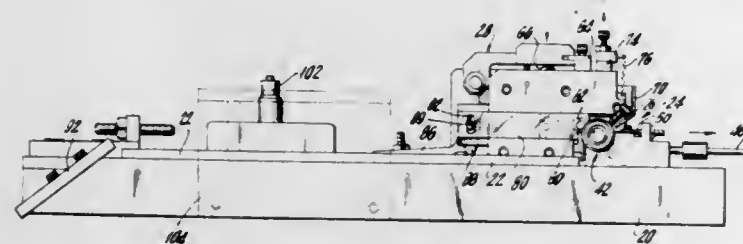
APPARATUS FOR FORMING LOOPS FROM SPRINGS
Joseph T. Gelardi, Yonkers, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.

Filed July 16, 1973, Ser. No. 379,245

Int. Cl. B21f 15/02, 45/00

U.S. Cl. 140—71 R

11 Claims



1. An apparatus for forming a loop from a helical spring having first and second hook portions at its opposite ends comprising means for holding the spring, said means including a pin for insertion into said first hook portion of the spring, a spring bending member defining a cavity for receiving the spring starting with the second hook portion and bending it toward the first hook portion, and guide means for controlling relative movement between the holding means and the spring bending member to cause engagement of the first and second hook portions when the second hook portion is inserted into the first hook portion to remain in engagement therewith after the pin is withdrawn.

3,857,422

AEROSOL CONTAINER FILLING APPARATUS AND METHOD

Ernest R. Cunningham, Libertyville, Ill., assignor to Barr-Stallfort Company, Division Pittway Corporation, Niles, Ill.

Filed Feb. 4, 1972, Ser. No. 223,646

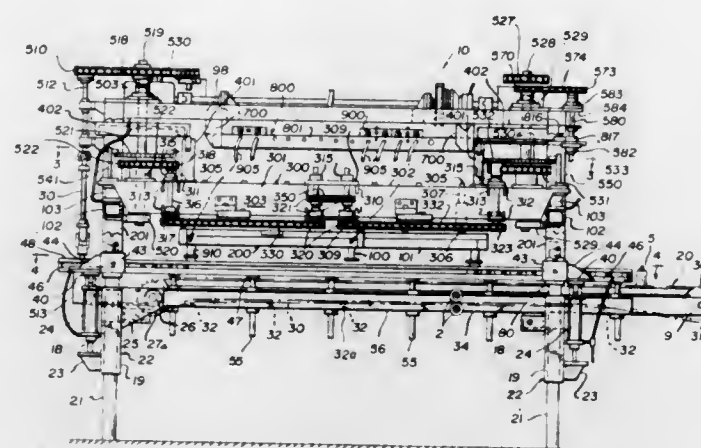
Int. Cl. B65b 3/04

U.S. Cl. 141—3

24 Claims

1. An apparatus for fluid filling of containers traveling in a linear path and at a continuous motion, said apparatus comprising:
means for conveying containers to be filled in a linear path along the length of said apparatus;
means for supporting and maintaining each of said containers in spaced position from adjacent containers;
a dancer beam assembly means adapted for vertical reciprocating movement, said dancer beam assembly means positioned above said conveying means;

at least one walking beam means attached to said dancer beam assembly means;
said walking beam assembly means including drive means whereby said walking beam assembly means is adapted to move in an orbital path, a portion of said path being linear



and in vertical alignment with the linear path of said containers when containers pass through said apparatus; and, filling means connected to said walking beam assembly means for fluid filling containers when containers pass through said apparatus.

3,857,423

TOPICAL MEDICAMENT KIT WITH INTERLOCKING COMPONENTS

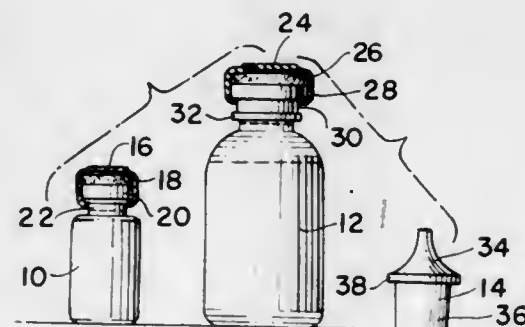
William E. Ronca, Jr., B4 Palma Sola, Garden Hills, Guaynabo, P.R. 00657

Continuation-in-part of Ser. No. 211,953, Dec. 27, 1971, abandoned. This application July 31, 1973, Ser. No. 384,376

Int. Cl. B65b 3/04

U.S. Cl. 141—5

6 Claims



1. A kit for the sanitary preparation of a solution of predetermined concentration of a substance unstable in said solution comprising:

- a small sealed glass vial having an annular collar and a neck of reduced diameter at its open upper end;
- said vial containing a measured amount of said substance in concentrated form; and
- a larger sealed resilient plastic bottle having an annular collar and a neck of reduced diameter at its open upper end;
- said bottle containing a measured amount of a diluent for said concentrated substance;
- the diameter of the annular collar of said glass vial being slightly different than the diameter of the annular collar of said plastic bottle so that the annular collar of said glass vial can be engaged with the neck of said plastic bottle in piggyback arrangement so that the contents of the vial and bottle can be shaken without spillage; and
- the pressure within the piggyback arrangement can be altered by manual compression of the walls of said resilient plastic bottle, to accelerate the formation of said solution of predetermined concentration.

3,857,424

PISTON PRODUCT FILLER

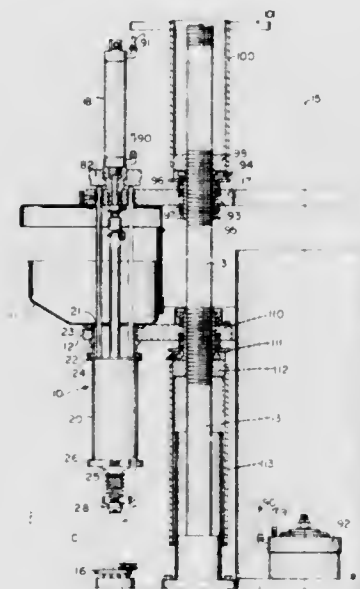
Gary Francis Roberts, East Moline, Ill., assignor to The Kartridge Pak Co., Davenport, Iowa

Continuation-in-part of Ser. No. 209,813, Dec. 20, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,822

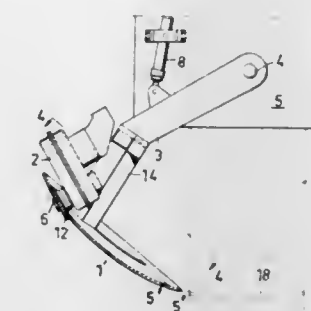
Int. Cl. B65b 3/32; B67c 3/26

U.S. Cl. 141—275

23 Claims



series of saw teeth about the periphery thereof, means mounting said saw blade for pendulous motion around the centroid



of said concave blade, and means for rotating said saw blade about an axis passing through said centroid.

3,857,426

TREAD COVER FOR PNEUMATIC TIRE

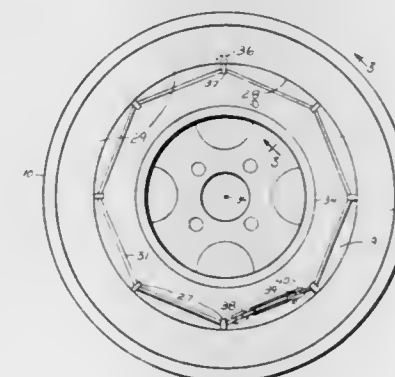
James W. Reed, 1648 Vernon Dicks Dr., Eau Gallie, Fla. 32935

Filed Feb. 14, 1974, Ser. No. 442,591

Int. Cl. B60c 27/10

U.S. Cl. 152—185

4 Claims



1. In an apparatus for filling containers with a measured amount of a liquid product from a source of supply which apparatus comprises elevated support means, at least one filling head mounted on said support means, each said filling head including a metering cylinder fixedly mounted on said support means and in communication with said source of supply through an inlet in the upper portion of said cylinder, a hollow nozzle in the bottom of said metering cylinder with an associated valve which is opened by upward pressure of a container to be filled, a hollow piston member movable in said cylinder, an adjustable stop limiting the upward movement of said hollow piston, a valve member operable to close on the piston member and thereby isolate a quantity of the liquid product in the bottom of each said metering cylinder and means to operate said valve member and thereafter to move said piston member when the valve associated with said nozzle is opened so as to discharge a predetermined amount of the liquid product through the nozzle and into the container.

3,857,425

TREE-FELLING DEVICE

Per Martin Wiklund, Taby, Sweden, assignor to Stiftelsen Skogsmekanisering, Bromma, Sweden

Filed Sept. 10, 1973, Ser. No. 395,503

Claims priority, application Sweden, Sept. 22, 1972, 12269/72

Int. Cl. A01g 23/08

U.S. Cl. 144—34 R

6 Claims

1. Apparatus for felling trees and/or cutting wood with a saw blade, comprising a concave saw blade having a circular

1. A tread cover for a pneumatic tire comprising an endless annular casing having an axis and a matrix of pliable vulcanized rubber material, said casing comprising an annular center portion which has opposite sides and is adapted to overlay the tread on the tire, and opposite annular marginal portions which are integrally joined to the center portion at the respective opposite sides thereof and which are spaced apart and respectively adapted to overlay the opposite side walls of the tire, each of said marginal portions having an endless edge that is offset from said center portion toward said axis, flexible annular means that is circumferentially inextensible and embedded in the casing matrix along the edge of one of said marginal portions, a plurality of elements which are fixed to and circumferentially spaced apart along the edge of the other marginal portion, reinforcing means having cord lengths which are embedded in said matrix and which extend transversely of the center portion to interconnect said elements and said flexible annular means, said other marginal portion having elastically deformable areas respectively located in the spaces between said elements, releasable means connected to said elements for maintaining said elements inwardly of said center portion during use of said cover, and a tread of vulcanized rubber material integrally joined to the center portion of said casing.

3,857,427

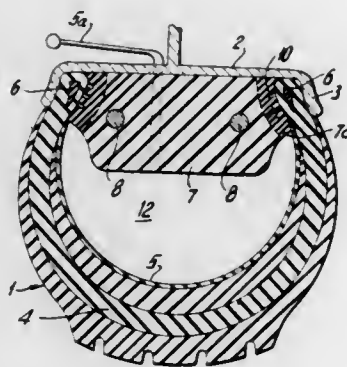
BULLET-PROOF TIRE

Josef Soucek, Av. Mofarrej, 476/500, Sao Paulo, Brazil
Filed Oct. 27, 1972, Ser. No. 301,265

Claims priority, application Brazil, Oct. 27, 1971, 007184
Int. Cl. B60c 17/04, 21/08, 9/02

U.S. Cl. 152-196

26 Claims



1. An inflatable tubeless tire for a motor vehicle, especially adapted for use as a bullet-proof tire capable of continued use though the pressurization of the tire is lost, including an outer surface forming the wearing surface and outside walls of the tire, an inner surface defining the inner space within the tire and beads formed along the free edges of the tire at the entrance to its interior space for seating the tire within the rim of a wheel, wherein the improvement comprises a separate elastic separating ring extending circumferentially for the full extent of the entrance to the interior space within said tire and extending between the oppositely disposed sides of the inner surface of said tire at the entrance to the interior space, said separating ring forcing said beads outwardly and securing them in a tightly held manner against the rim of a wheel, said elastic separating ring having a radially inwardly facing surface arranged to contact the rim of a wheel and a radially outwardly facing surface arranged in spaced relationship from the oppositely disposed inner surface of said tire, the radial dimension between the radially inwardly facing surface and the radially outwardly facing surface being appreciably greater than the radial dimension of the free edges of the tire which contact the rim of the wheel so that the radially outwardly facing surface is spaced radially into the interior space in said tire in spaced relationship from the radially outer portion of the free edges of the tire which contact the rim, said radially outwardly facing surface of said ring being spaced radially inwardly from the oppositely disposed inner surface of the tire which is located opposite the wearing surface, and means associated with said elastic separating ring for supplying air into the interior space defined by the inner surface of said tire and the radially outwardly facing surface of said separating ring so that under ordinary operating conditions when pressurized air is filled into the interior space said radially outwardly facing surface of said ring and the oppositely disposed inner surface of the tire are maintained in spaced relationship and, when the pressurized condition within the interior space in the tire is lost, the inner surface of the wearing surface of the tire is forced inwardly into contact with said radially outwardly facing surface of said ring with the side surfaces of the tire remaining spaced radially outwardly from the rim of the wheel so that the tire can continue to be used without damage to the side walls of the tire by the rim.

3,857,428

INSTANT TIRE CHAINS

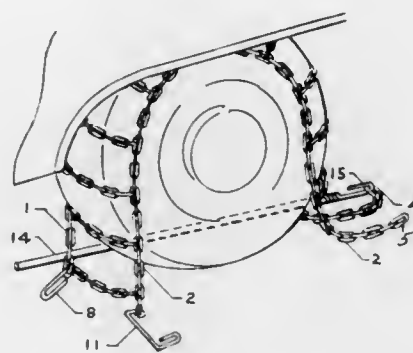
Joseph R. Dolphin, 313 S. Davies Rd., Lake Stevens, Wash. 98258

Continuation-in-part of Ser. No. 212,216, Feb. 29, 1972., This application May 30, 1973, Ser. No. 365,141

Int. Cl. B60c 27/06

U.S. Cl. 152-241

6 Claims



1. An elongated skid chain construction comprising a pair of spaced opposite side link chains and a plurality of cross link chains extending between and secured to pairs of corresponding links of said side chains at points spaced generally equally along said side chains, the spacing between corresponding end links of said side chains at one end of said skid chain construction and the adjacent cross link chain being at least generally equal to twice the spacing between pairs of adjacent cross link chains, an elongated hook member having a deep throated hook portion on one opening toward the other end of the hook member and an attaching eye on its other end engaged with one end link of one of said side link chains, said deep throated hook portion being removably engaged with the end link at the other end of said one side link chain, and an elongated cinching hook including an elongated arm portion terminating at one end in an outwardly directed and slightly backturned short arm portion terminating at its end remote from said elongated arm portion in an attaching eye engaged with one end link of the other side link chain, the other end of said elongated arm portion terminating in a U-shaped member disposed generally normal to said elongated arm member and opening toward the side of said elongated arm member opposite the side thereof from which said short arm portion projects, said U-shaped member being removably engaged with said other side link chain spaced from said one end link thereof.

3,857,429

TIRE AND WHEEL ASSEMBLIES

Reginald H. Edwards, Sutton Coldfield, England, assignor to Dunlop House, London, England

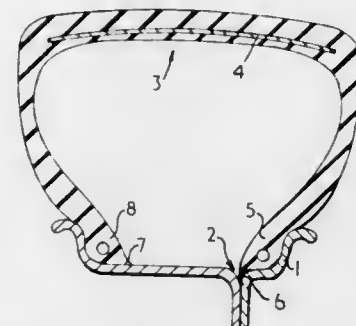
Filed July 31, 1972, Ser. No. 276,449

Claims priority, application Great Britain, Aug. 21, 1971, 39344/71

Int. Cl. B60c 17/00, 15/00

U.S. Cl. 152-379

17 Claims



1. A pneumatic tire and wheel assembly capable of being run in a deflated condition comprising a wheel rim having a pair of flanges and bead seats and in which, adjacent at least

one bead seat, there is a circumferential notch; and a pneumatic tire comprising a tread, sidewalls and rubber covered beads for seating on the bead seats of the wheel rim, at least the bead on the bead seat adjacent said notch having a heel portion adjacent a wheel rim flange and a toe portion extending radially inwardly of the base of the bead, as a radially inwardly directed annulus the distal end of the annulus projecting freely into said notch and the extended toe and the notch being of a cross-sectional shape and size which permits said toe to be compressed into said notch upon tilting of the bead under the influence of lateral forces on the tire whereby said bead is restrained from movement axially across the wheel rim.

3,857,430

TIRE REMOVING APPARATUS

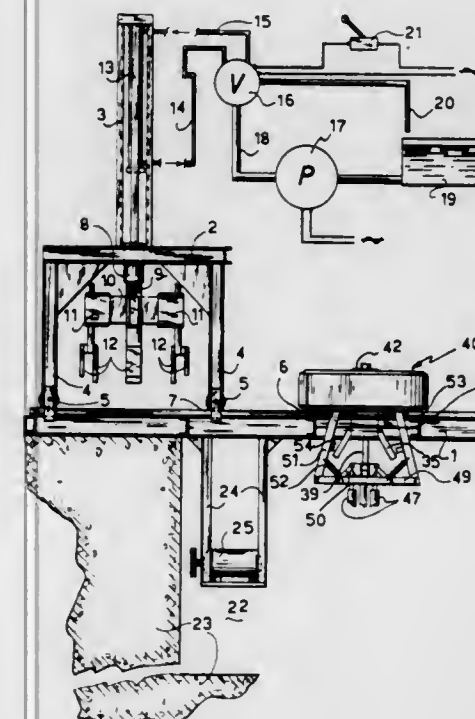
Paul-Emile Harnois, 76 Roy St., Notre Dame des Prairies, Quebec, and Raymond Lepine, 588 Querbes St., Joliette, Quebec, both of Canada

Filed Oct. 1, 1973, Ser. No. 402,352

Int. Cl. B60c 25/06

U.S. Cl. 157-1.2

7 Claims



1. A tire removing apparatus operatively comprising, in combination, a fixed post, a wheel support fixedly mounted relative to and around said post and including fixedly spaced-apart wheel rests of graded sizes gradually decreasing toward one end of said post, an actuation device reciprocally displaceable along said post toward and away from said wheel support, tire pushing members, each having a tire engaging portion engageable with the side wall of the tire of a wheel mounted on one of said rests, linkage assemblies pivotally connecting said tire pushing members respectively to said actuation device and to said post, camming elements fixedly secured relative to said wheel support and said post, and means engaging said tire pushing members and biasing the latter toward cam following engagement with said camming elements respectively.

3,857,431

TIRE REMOVAL TOOL

Elbert I. Boyle, Rt. 1, Ripley, Okla.

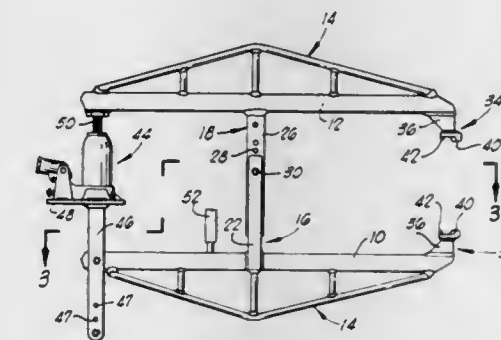
Filed Oct. 10, 1972, Ser. No. 296,337

Int. Cl. B60c 25/06

U.S. Cl. 157-1.26

6 Claims

1. A tire removal tool comprising:
a pair of elongated arms pivotally interconnected intermediate their length;



a mounting plate secured to the end of said jack supporting rod nearest said other arm;
a hydraulic jack having a base secured to said mounting plate and extending from said mounting plate to said other arm at its end opposite the end which carries said jaw for biasing the jaws in pivotal movement relative to each other; and
a handle projecting from one of the arms toward the other arm for holding the tool in a tire removing position.

3,857,432

CURTAIN AND ATTACHED AIR SEAL

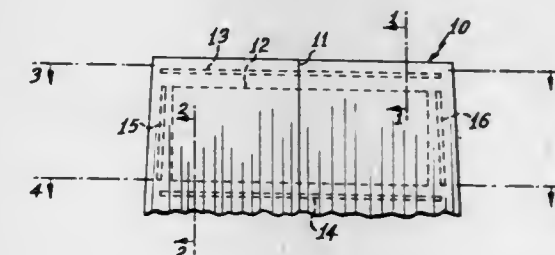
David E. Russell, 110 Riverside Ave., Jacksonville, Fla. 32202

Filed Dec. 3, 1973, Ser. No. 420,927

Int. Cl. A47h 1/00

U.S. Cl. 160-124

10 Claims



1. In combination a curtain for hanging over a window or the like subject to convective air currents in space between a window or the like and said curtain, and a sealing means including connecting means attached to said curtain and extending substantially fully thereacross to dispose said sealing means in a generally horizontal position in space between said curtain and adjacent a window or the like when said curtain is hung in a position overlying a window or the like, said sealing means being effective to close a portion of space between said curtain and adjacent a window or the like thereby to reduce vertical air flow therefrom, said sealing means being foldable with said curtain.

3,857,433

FOLDABLE SHUTTER

Walter Gatz, Zurich, Switzerland, assignor to Matallbau AG Zurich, Zurich, Switzerland

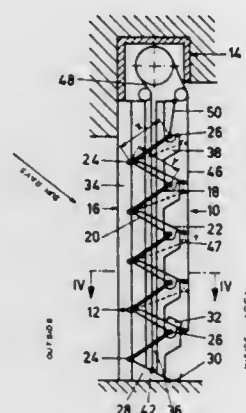
Filed Mar. 19, 1973, Ser. No. 342,866

Claims priority, application Switzerland, Mar. 23, 1972, 4312/72

Int. Cl. E06b 9/30

U.S. Cl. 160—172

20 Claims



1. A foldable shutter comprising slats, means for hingedly connecting the slats with one another, said slats having operatively associated with each of their respective opposed ends a respective guide bolt, guide rail means having guide surface means with which cooperate said guide bolts, said guide rail means further incorporating control channel means extending substantially parallel to the associated guide surface means of the guide rail means and in which there is guided an associated end portion of the shutter, a drawband for the shutter, support means provided for said guide rail means, each end of the slats carrying a stop pin arranged in substantially parallel offset relationship with respect to the associated guide bolt and cooperating with said support means provided for the guide rail means, the spacing of the support means from the guide surface means of the guide rail means being smaller than the spacing between the guide bolts and the stop pins and wherein the control channel means extends between the guide, surface means and the support means.

3,857,434

ROLL-COUPLE, CONTINUOUS-STRIP CASTING

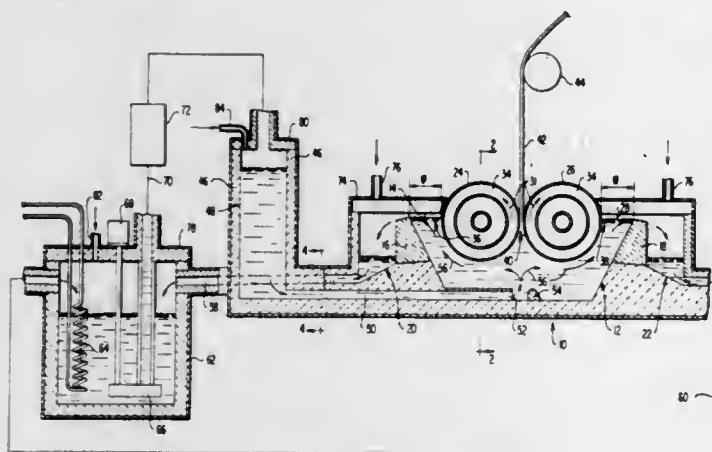
Erich F. Wondris, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,493

Int. Cl. B22d 11/06

U.S. Cl. 164—5

26 Claims



1. Continuous-strip casting apparatus, comprising means including walls defining a vessel for molten material having a surface, strip-forming means including a pair of roll members having length, means mounting the roll members to provide a roll nip therebetween and to position the roll members in the

vessel with the peripheries of the roll members being partially immersed in the molten material along at least a portion of the length of the roll members, the walls of the vessel comprising means including a pair of opposed weir members for overflowing molten material from the vessel, the roll members being positioned between the weir members, each weir member being spaced across an unobstructed portion of the surface of the molten material from an adjacent roll member, and conduit means for feeding molten material into the vessel below the surface of the molten material for flow upwardly toward the roll nip and toward the unobstructed portion of the surface between each weir and the adjacent roll member.

3,857,435

PROCESS FOR MAKING SOLUBLE CORES

Edward F. Burkert, Garfield Heights, and Paul A. Guinn, Brecksville, both of Ohio, assignors to The Freeman Supply Company, Toledo, Ohio

Continuation-in-part of Ser. No. 245,302, April 19, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,897

Int. Cl. B22c 9/04, 7/02

U.S. Cl. 164—36

17 Claims

1. In the process of producing investment castings wherein a pattern that is removable by heating is coated with a refractory forming material, the material is hardened, the pattern is removed to leave a void, and molten metal is put into the void to form a casting, the improvement comprising:

- forming at least a portion of the pattern from a water decomposable form that contains an organo-ring material from the group consisting of: 5 and 6 membered nitrogen containing organo-ring compounds, fused 5 and/or 6 membered organo-ring compounds having as a ring constituent at least one nitrogen atom per every two rings of the compound, water soluble substitution products of said compounds, polymers of said compounds, and polymers of said substitution products of said compounds;
- and washing the decomposable form away with an aqueous liquid before coating the remaining pattern with the refractory forming material.

3,857,436

METHOD AND APPARATUS FOR MANUFACTURING MONOCRYSTALLINE ARTICLES

Dmitry Andreevich Petrov, ulitsa Chkalova, 21, kv. 80, and Alexei Tikhonovich Tumanov, ulitsa B. Gruzinskaya, 36, kv. 58, both of Moscow, U.S.S.R.

Filed Feb. 13, 1973, Ser. No. 332,208

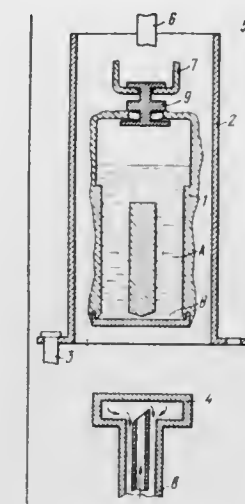
Int. Cl. B22d 25/06

U.S. Cl. 164—60

10 Claims

1. A method of manufacturing monocrystalline articles comprising the steps of pouring molten metal into a mould comprising a main top cavity following the article shape and an auxiliary bottom cavity adjacent thereto and made in the form of a downwardly enlarging truncated cone, said cone having a horizontally extending wedge-shaped projection at the lower base thereof, which defines the base of said mould; cooling the base of said mould by means for cooling thereof so as to create the most abrupt supercooling of the melt at the point of said wedge-shaped projection, to form at this point a

sole natural crystal seed and to ensure its rapid propagation over the entire perimeter of said base; and subsequent gradual



cooling of said mould from the bottom up to effect the crystallization proper.

3,857,437

METHOD AND APPARATUS FOR CONTINUOUSLY CASTING METALS

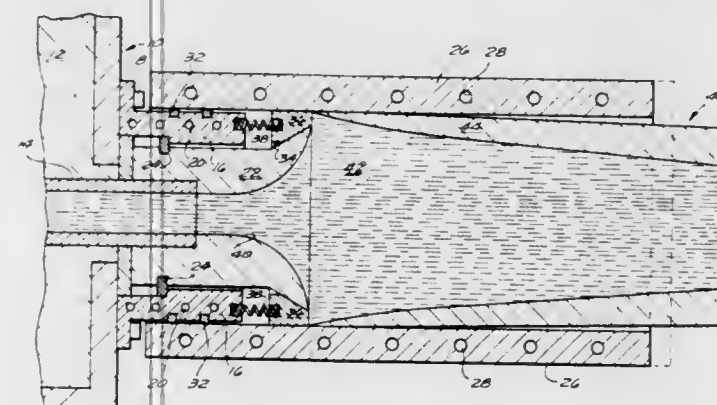
Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,755

Int. Cl. B22d 11/10

U.S. Cl. 164—83

15 Claims



1. A process of continuously casting an elongated metal article, utilizing a mold having a molten metal inlet, a cooled tubular wall structure and an open outlet end for the issuance of a casting therefrom in at least partially solidified form, and comprising the steps of:

- introducing molten metal into said mold from a source for contact and solidification against said wall structure to form a casting skin which increases in thickness in the direction of said mold outlet as the casting is relatively moved along the mold in the casting direction;
- relatively withdrawing the casting from the mold at the open outlet end continuously at an average casting rate;
- oscillating said mold relatively to the casting for movement forwardly in the casting direction and rearwardly, at least a portion of said forward mold movement being faster than said casting rate; and
- compressing the casting skin axially and radially inwardly by the mold during each forward movement of the mold for enhanced thermal transfer from the casting.

10. Apparatus for continuously casting an elongated metal article, comprising: a mold having a molten metal inlet in communication with a source of molten metal and having a cooled tubular wall structure and an open outlet end for issuance of a casting therefrom in at least partially solidified form, said wall structure having an internal surface area against which the molten metal has contact and forms a skin increas-

ing in thickness in a direction toward said mold outlet end as the casting is relatively moved along the mold in a casting direction, said wall structure having in said area a surface portion gradually increasing in cross sectional size in the direction of said mold outlet end for contact with and thermal transfer from the casting in the area of the latter initially undergoing solidification, means relatively withdrawing the casting continuously from said mold, and an oscillating device oscillating said mold relatively to the casting for movement of the former forwardly in the casting direction and rearwardly in the opposite direction, at least a portion of said forward mold movement being faster than the rate at which the casting is relatively withdrawn from the mold.

3,857,438

COMBINATION PLUG-SPLASH CAN AND METHOD OF USING SAME DURING CASTING

Raymond Snowden, Birmingham, England, assignor to Fosco Trading A.G., Chur, Switzerland

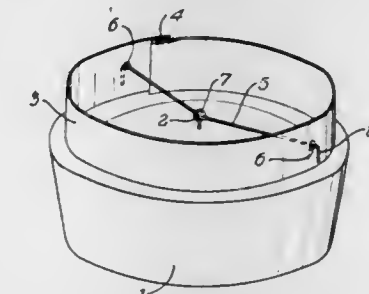
Filed May 24, 1973, Ser. No. 363,315

Claims priority, application Great Britain, May 26, 1972, 25059/72

Int. Cl. B22d 7/12

U.S. Cl. 164—137

3 Claims



1. The combination for use in casting molten metal into ingot moulds having an apertured base plate comprising a plug for the aperture in the base plate, said plug being a solid frusto-cone of refractory material, a splash can, and means for fixing the splash can to the plug, said splash can being a hollow metal cylinder coaxial with the frusto-conical plug, the height: diameter ratio of the cylinder being 1:10 to 1:1, and the fixing means comprising a ring set in the upper face of the plug with a wire rod engaging the splash can at two opposite points and passing through the ring.

3,857,439

CONTINUOUS KINEMATIC TYPE MACHINE FOR PRODUCING FOUNDRY CORES

Gerard Bardet, Paris, France, assignor to Automatisme Et Technique, Arcueil, France

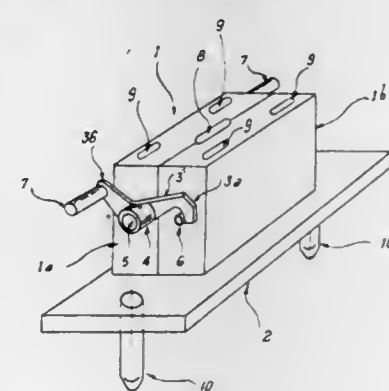
Filed Jan. 26, 1973, Ser. No. 326,875

Claims priority, application France, Feb. 2, 1972, 72.03503

Int. Cl. B22c 13/12

U.S. Cl. 164—186

10 Claims



1. A machine operable in a continuous kinematic manner for the production of foundry cores with the aid of core boxes,

the machine comprising a rotatable feed barrel for receiving such boxes, a rotatable shot injection barrel for filling the boxes with a moulding mixture, a rotatable hardening barrel for hardening the moulding mixture in the boxes to form cores, a rotatable barrel for ejecting the cores from the boxes and cleaning the boxes, means for receiving ejected cores from said last-mentioned barrel and conveying them away, driving means for continuously rotating all of said barrels in synchronism, and means for transferring the boxes from each of said barrels to the next barrel in succession in a closed circuit in which said ejecting and cleaning barrel transfers cleaned empty boxes to said feed barrel for recirculation in said circuit.

3,857,440

DIE CASTING MACHINE

Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG

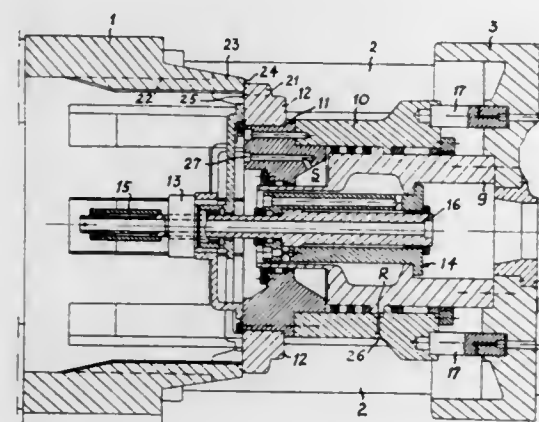
Filed Mar. 14, 1973, Ser. No. 341,111

Claims priority, application Switzerland, Mar. 22, 1972, 4236/72

Int. Cl. B22d 33/04

U.S. Cl. 164—341

9 Claims



1. In a die casting machine having a mold closing and locking unit including a first hydraulic device operable to move a movable mold support, guided on columns extending between a supporting yoke and another mold support at the injection side, from an open position to a closed position and inversely, and a second hydraulic device operable to produce the mold locking force, with the first hydraulic device including pistons secured to the movable mold support and arranged symmetrically to the axis of movement thereof, and operating in working cylinders mounted in the supporting yoke, the improvement comprising, in combination, said second hydraulic device comprising a piston secured centrally to said movable mold support and operating in a non-rotatable locking force cylinder; four guide rods reciprocable in said supporting yoke and secured to said movable mold support to absorb the tilting moment produced by said second hydraulic device; a force transmitting ring embracing said locking force cylinder and fixed against axial displacement thereon; said ring being angularly adjustable on said locking force cylinder between a first position, in which it can be moved axially into openings in the adjacent surface of said yoke, and a second position, in which it bears axially against said adjacent surface to transmit the loading of said locking force cylinder to said adjacent surface of said supporting yoke; whereby a pressure loading of said locking force cylinder produces a locking stroke, of said second hydraulic device, of only a few millimeters in length, said piston of said second hydraulic device being a tubular piston; and a hydraulic ejector device concentrically disposed within and axially reciprocable through said tubular piston.

3,857,441

HEAT PIPE WICK RESTRAINER

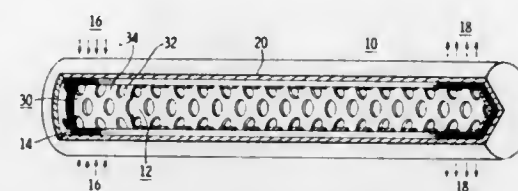
Frank G. Arcella, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,106

Int. Cl. F28d 15/00

U.S. Cl. 165—105

7 Claims



1. A heat pipe comprising a sealed tubular outer casing, a tubular wick structure positioned in said outer casing and closely received by the inner surface thereof, and a tubular substantially nonresilient, wick restrainer positioned within said casing and closely received by the inner surface of said wick structure, said wick restrainer being formed to provide uniform support to said wick structure, to maintain the same in engagement with said inner surface of said outer casing.

3,857,442

HEAT EXCHANGER HAVING A HEAD WITH AN INTEGRAL RADIATION SHIELD

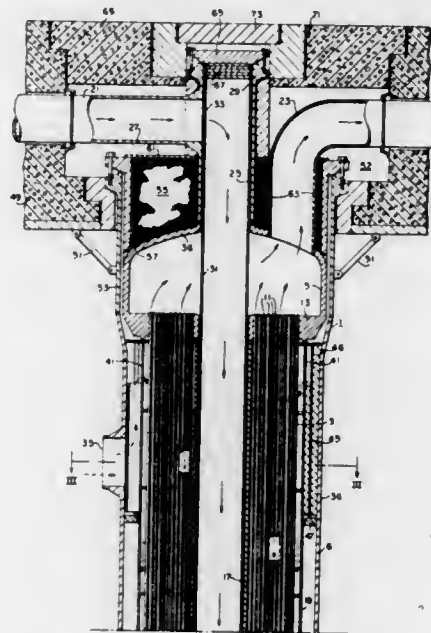
Louis A. Sturiale, Tampa, and Remco P. Waszink, St. Petersburg, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 12, 1971, Ser. No. 132,975

Int. Cl. F28f 19/00

U.S. Cl. 165—134

4 Claims



1. A heat exchanger for transferring heat from a primary radioactive fluid to a secondary fluid, said heat exchanger comprising a shell, and a tube bundle disposed in said shell, said tube bundle having a stationary head and a floating head, a plurality of generally straight tubes extending between said heads, a centrally disposed tube substantially larger than said generally straight tube, and an outer sleeve enwrapping the generally straight tubes, said centrally disposed tube and said outer sleeve forming an annular space through which the generally straight tubes extend, the outer sleeve having a plurality of openings adjacent the stationary head and adjacent the floating head, said stationary head having inlet and outlet conduits for allowing secondary fluid to flow through said tube bundle, and a radioactive shield associated therewith

so that said secondary fluid inlet and outlet conduits may be disconnected from said stationary head and said stationary head can be disconnected from said shell and said heat exchanger further comprising primary fluid inlet and outlet conduits and a seal ring disposed between said shell and said outer sleeve to cause the primary fluid to flow from said primary inlet conduit through said openings in one end of said outer sleeve, through said annular space in counterflow relation to the secondary fluid flowing through said straight tubes and through openings in the other end of said outer sleeve, and then to said primary outlet conduit, and a space between said outer sleeve and said shell providing a quiescent zone for said primary liquid.

3,857,443

SEALANT

Robert C. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 771,631, Oct. 29, 1968, Pat. No.

3,649,574, This application July 29, 1971, Ser. No. 167,447

Int. Cl. E21b 33/13, 33/14; E21d 5/11

U.S. Cl. 166—295

21 Claims

1. A method of filling a void contained in an earth formation with a flexible material comprising dissolving an acrylamide monomer, which exhibits hydrogen bonding, and a polyfunctional crosslinking agent, selected from the group consisting of alkylidene bisacrylamide, polyethylenic compounds derived from allyl alcohol and mixtures thereof, in a diol, selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, polyethylene glycol, propylene glycol, 1,4-butene glycol and mixtures thereof; mixing the resulting solution with a polyol containing at least three hydroxyl groups; and injecting the resulting composition into a void in an earth formation.

3,857,444

METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A SUBTERRANEAN FORMATION

Claude T. Copeland, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 295,732, Oct. 6, 1972, abandoned. This application Feb. 2, 1973, Ser. No. 329,139

Int. Cl. E21b 43/02

U.S. Cl. 166—276

12 Claims

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:

- forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, a coupling agent and a carrier liquid, said particulate material is present in an amount ranging from about 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprises an epoxy resin and an organic solvent for said resin comprising a mixture of an acetate and a glycol ether, and said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material,
- introducing said slurry through a well bore and into communication with said permeable formation, and
- curing said slurry in place to form a consolidated permeable mass.

3,857,445

CONTROLLED CASING SLEEVE

Lawrence N. Mower, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Mar. 2, 1973, Ser. No. 337,612

Int. Cl. E21b 33/00

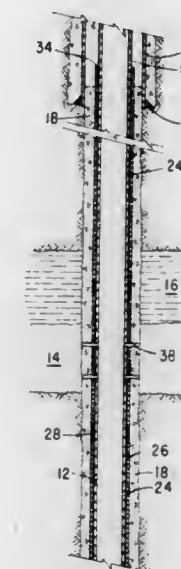
U.S. Cl. 166—285

7 Claims

1. A method of completing a well drilled in a subterranean formation in which at least a portion of said formation is

subject to being compacted as fluid is produced therefrom which comprises:

- providing a section of casing with a sleeve means to form a modified casing section in which said sleeve means includes at least one cylindrical sleeve element held to



said casing by means having less shear bond strength than normal well cement,
b. connecting said section of casing into a casing string,
c. lowering said casing string into said wellbore until said modified section is the same level as said portion of said formation which is subject to compaction.

3,857,446

TEMPERATURE-SENSITIVE SNAP-ACTION VALVE

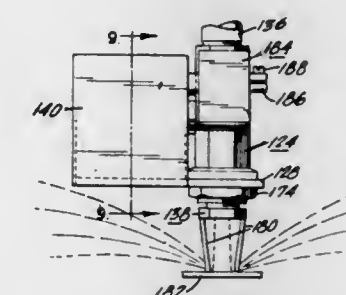
Thomas M. Kenny, 13 Cobblestone Dr., Paoli, Pa. 19301

Filed May 22, 1974, Ser. No. 472,095

Int. Cl. A62c 37/06

U.S. Cl. 169—60

4 Claims



1. A fire extinguishing system automatic thermally actuated sprinkler valve assembly comprising a base, a fluid conduit on said base adapted for connection to a source of high pressure fluid, valve means in said fluid conduit for controlling flow therethrough, a splash plate assembly secured beneath said base aligned with said fluid conduit, a temperature-sensitive actuator mounted on said base, and a spring linkage assembly operatively connecting said actuator with said valve means, said spring linkage assembly comprising a valve member pivotally mounted on said base and operatively connected with said valve means, an actuator member pivotally mounted on said base for rotation about an axis spaced from and parallel to the pivot axis of said valve member, said actuator operatively engaging said actuator member to permit rotation of said actuator member in response to temperature variations, and a tension spring having one end thereof attached to said actuator member at a point remote from its pivot axis, the opposite end of said spring being connected to said valve member at a point remote from its pivot axis, said spring urging said actuator member in rotation toward said actuator, said spring normally urging said valve member in rotation to hold said valve means fully closed, said spring passing over center upon a predetermined temperature condition to urge

said valve member in the opposite rotational direction, thereby fully opening said valve means with a snap action and permitting high pressure fluid to strike said splash plate assembly.

3,857,447

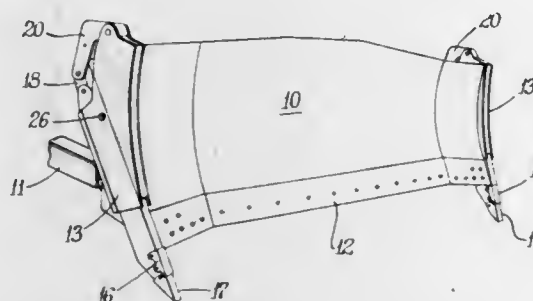
BULLDOZER BLADE WITH VIBRATING RIPPER SHANK

Ronald E. Adams, Dubuque, Iowa, and Eugene M. Wilson, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 11, 1974, Ser. No. 432,495

Int. Cl. E02f 3/12

U.S. Cl. 172-777

7 Claims



1. In combination with a bulldozer having a blade with a lower ground-engaging edge, the improvement comprising: a socket forming at least one end of said blade and positioned so that the lower portion of said socket is forward of the upper portion with respect to the direction of travel of the bulldozer, a ripper shank mounted within said socket and movable between an extended position wherein it extends below said ground-engaging edge, means in said socket intermediate the ends of said ripper shank to support said ripper shank and define a pivot point for said ripper, means connected to the upper portion of said ripper shank to move said shank in a generally oscillatory motion about said pivot point in a direction corresponding to the forward and backward motion of the bulldozer, and means to extend said ripper from and retract said ripper into said socket.

3,857,448

HYDRAULICALLY OPERATED TAMPER

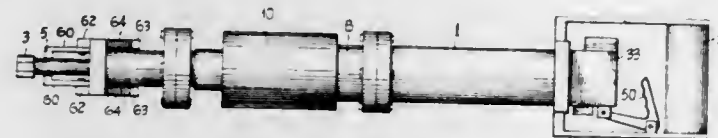
Raydon A. Lines, Elizabeth West, Australia, assignor to Proline Industries Pty. Ltd., Elizabeth West, Australia
Filed Nov. 10, 1972, Ser. No. 305,356

Claims priority, application Australia, Nov. 15, 1971, 7030/71

Int. Cl. B25d 9/14

U.S. Cl. 173-134

2 Claims



1. In a fluid operated tamper comprising a housing providing a cylinder bore in which a piston rod supporting a hammer head is disposed for reciprocation during forward and return strokes: a pressure chamber in the housing for receiving operating fluid under pressure to be communicated to said cylinder bore through supply port means located along the axis of the cylinder bore, said piston rod presenting a piston of predetermined large area and a rear wall of smaller area, first and second ducts within said housing communicating with the bore of the cylinder and each duct opening respectively into opposite ends of a valve chamber which has a fluid operated shuttle valve therein, said valve being cycled by alternately pressurizing and exhausting the opposite ends of said valve

chamber, valve means on said piston rod whereby said ducts in the cylinder bore are alternately covered and uncovered with respect to said supply port means during reciprocation of the piston rod thereby to furnish operating fluid alternately to said ducts for pressurizing alternate ends of said valve chamber to operate the shuttle valve, pressure and exhaust ports in said valve chamber for translating fluid to and from the piston and the piston rod rear wall, said shuttle valve in one position communicating said pressure port to the head of the piston while concurrently communicating the exhaust port to said rear wall and vice versa in a second position of the shuttle valve thereby to reciprocate the piston rod in forward and return strokes, and a starting valve means to start reciprocation of the piston rod when the valving means on the piston rod close both of said ducts, said starting valve means comprising a three position manually operated valve operating in a valve bore and affording:

- a main port for fluid under pressure to operate said tamper, being closed by the starting valve in a first position, and passage means for connecting said main port to the pressure chamber in the housing and to one of the ends of the shuttle valve chamber and to the pressure port of the shuttle valve;
- said starting valve having a second position where said main port is so connected to said passage means thereby to furnish operating fluid under pressure to said pressure chamber, to one end of said shuttle valve chamber and to the pressure port of the shuttle valve; and
- said starting valve having a third position where communication is disestablished between said main port and said one end of the shuttle valve chamber while maintaining communication between said main port and the passages leading therefrom to said supply chamber and the pressure port of the shuttle valve.

3,857,449

APPARATUS FOR PRECISELY THRUSTING PIPES INTO THE GROUND

Yoshita Kimura, c/o Kogane; Sky-cooporas 807, No. 40-1, 3-chome, Maehara-cho, Tokyo, Japan

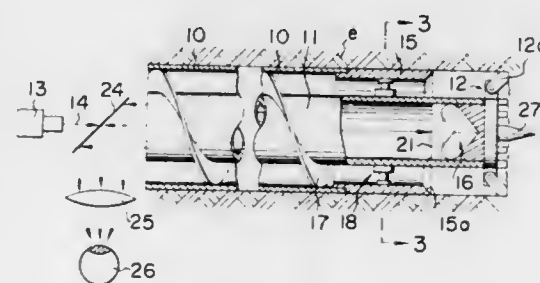
Filed July 5, 1973, Ser. No. 376,316

Claims priority, application Japan, July 11, 1972, 47-69239; Dec. 15, 1972, 47-125981; Feb. 26, 1973, 48-22978; Apr. 20, 1973, 48-37575

Int. Cl. E21b 47/02

U.S. Cl. 175-26

10 Claims



1. An apparatus for precisely thrusting a pipe into the ground along a predetermined straight guide line, comprising: a straight guide tube normally substantially coaxially inserted in the pipe and having its foremost end extending therefrom, said guide tube being axially and rotationally movable relative to the pipe;

auger means coaxially removably attached to the foremost end of said guide tube for excavating the front soil when rotated and thrust forward together with said guide tube;

a parallel reflector mounted in a relatively front portion of said guide tube in the vicinity of said auger means and having a critical optical path coincident with the axis of said auger means, said parallel reflector having such optical characteristics as to have reflected light rays fol-

low said critical optical path, when incident light rays follow the same, and as to produce reflected light rays in parallel with incident light rays which have missed said critical optical path;

a highly directive light source disposed on a rear extension of the axis of said guide tube for normally emitting as the guide line a highly directive light beam in the forward direction along said critical optical path;

displacement detecting means for detecting displacement, if any abnormally, of the common axis of said auger means and said guide tube from the guide line in terms of displacement of the backward highly directive light beam, which is reflected on said parallel reflector, from the forward highly directive light beam which is emitted from said light source; and

displacement correcting means interposed between the relatively front portion of said guide tube and a corresponding front portion of the pipe and responsive to the displacement of the highly directive light beam for deflecting said guide tube relative to the pipe in the direction to reduce the last-mentioned displacement substantially to zero, so that the course of said guide tube and accordingly of the pipe may follow precisely in the guide line.

3,857,450

DRILLING APPARATUS

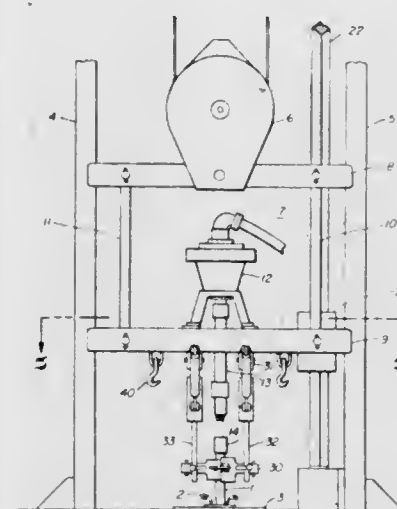
William Guier, 3100 E. 71st St., Tulsa, Okla. 74136

Filed Aug. 2, 1973, Ser. No. 384,802

Int. Cl. E21b 19/06, 19/16

U.S. Cl. 175-85

6 Claims



1. A drilling rig structure, including, a rail extended vertically adjacent a bore, a frame arranged to be guided in vertical travel on the rail and over the bore, a traveling block attached to the frame, a drawworks connected to the traveling block so the drawworks can raise and lower the frame over the bore, a swivel mounted on the frame and below the traveling block, the swivel arranged to be connected to receive drilling fluid from a source and deliver the fluid to a hollow sub, a sub in the form of a hollow driving shaft mounted on the swivel so as to extend down into alignment with the bore and connect with drill pipe to deliver drilling fluid to the drill pipe while rotating the drill pipe, a gear train extended to connect the sub to the drawworks for selective rotation of the sub, a bail pivoted by one end from and extending below the frame, a power means connected to the frame and to the bail below its pivot point to move the other end of the bail through a predetermined arc,

and an elevator mounted on the lower end of the bail so the elevator is pivoted to latch about pipe and move the pipe into and out of vertical alignment with the bore for connection and disconnection with the sub without the remaining structure on the frame being moved from its vertical alignment with the bore.

3,857,451

INVERTIBLE DRILLING MACHINE

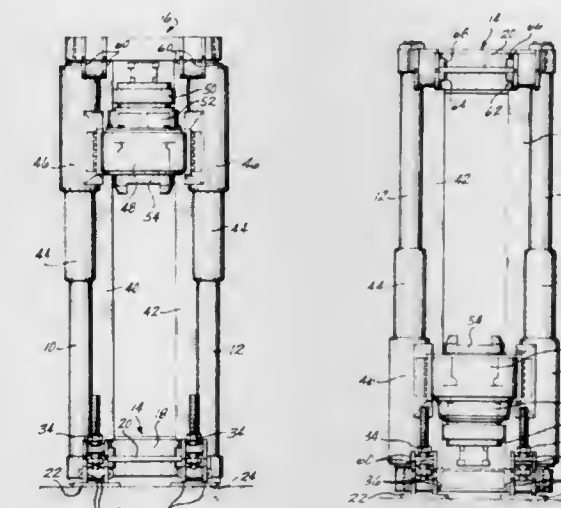
William C. Williams, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Mar. 15, 1973, Ser. No. 341,558

Int. Cl. E21c 5/11; E21b 19/16

U.S. Cl. 173-152

4 Claims



1. An end mounted invertible drilling machine that is detachably mountable onto a floor emplaced base structure, said machine comprising:

- first and second opposite end frame members, each said end frame member including pivot pin receiving means to receive a pivot pin for pivotally attaching it to the base structure and connector means spaced therefrom, for connection to an end of at least one adjustable connector which is interconnectable between the base structure and the end frame member that is selected for connection to the base structure, to provide a way of adjusting the angle of the drilling line regardless of which end frame member is mounted onto the base structure, said first end frame member including a worktable, a drill pipe avenue formed through said worktable, an inboard holding wrench retainer on said worktable for use during down drilling, and an outboard holding wrench retainer on said worktable for use during up drilling;
- guide column means including at least two laterally spaced apart guide columns which are rigidly interconnected between said end frame members;
- rotary drive means including a drive head connectable to drill pipe sections, said drive head being directed towards the drill pipe avenue in said first end frame member, and motor means for rotating said drive head and any drill pipe connected thereto;
- travelling cross-frame means mounting said rotary drive means onto said guide column means for travel therealong; and
- linear drive means for moving said cross-frame means along said guide column means both towards and away from said first end frame member.

3,857,452

DUMP TRUCK LOAD-SENSING ASSEMBLY

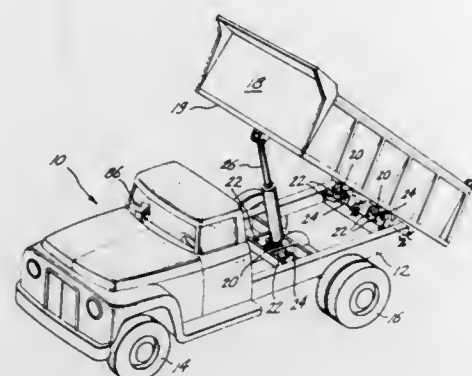
James M. Hartman, Renton, Wash., assignor to Tri-Coastal Industries Inc., Seattle, Wash.

Filed Feb. 14, 1974, Ser. No. 442,375

Int. Cl. G01g 19/08, 3/14

U.S. Cl. 177-139

11 Claims



1. A pin load-sensing apparatus for measuring the load between a load transferring member and load receiving members comprising an essentially cylindrical load cell integral with and surrounded by a tubular collar wherein said tubular collar comprises a plurality of cylindrical sections adapted to engage with and join said load transferring and load receiving members in pivotal coupling relationship, and wherein said essentially cylindrical load cell comprises longitudinally spaced peripheral land surfaces adapted to engage the cylindrical sections of said tubular collar, and peripheral recessed surfaces intermediate said land surfaces and positioned to concentrate axial moment stresses at the bottom peripheral portions of said recessed surfaces when a load is applied to said cell, there being a set of electrical strain gauges operationally bonded directly to the bottom peripheral portion of each of said peripheral recessed surfaces in a manner to enable said gauges to respond to differential axial moment stresses therein resulting from deformation of said load cell due to a loading force being exerted on said load cell by said load transferring member.

3,857,453

NOISE SUPPRESSION MEANS FOR TRACTORS

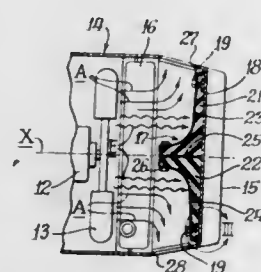
Frederic P. Buttk, Peoria, and Theodore D. Mathewson, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 21, 1974, Ser. No. 444,316

Int. Cl. B60k 1/00

U.S. Cl. 180-54 A

9 Claims



1. A mobile vehicle disposed for movement along a longitudinal axis thereof comprising
an engine,
an enclosure for said engine having at least one air outlet formed through a lateral side thereof adjacent to a forward end of said engine and terminating at its forward end at a guard member completely covering a forward end of said engine and
acoustical energy absorption means extending transversely relative to said axis and disposed between a forward end of said engine and said guard member to completely

cover a back side of said guard member and disposed thereon to guide air from said engine towards said air outlet.

3,857,454

SWITCHES MOUNTING MEANS FOR USE IN A MOTOR-VEHICLE

Hirotosugi Kobayashi, Nagoya; Takehiko Nishikawa, Inazawa; Shinya Ito, and Yasuhiko Ibuka, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

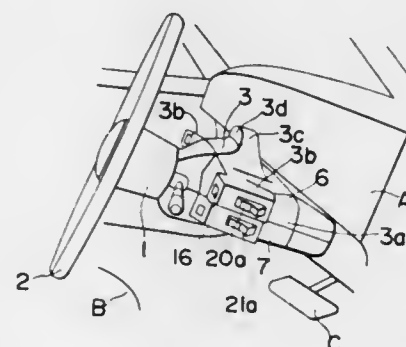
Filed Mar. 2, 1973, Ser. No. 337,368

Claims priority, application Japan, Mar. 3, 1972, 47-26268

Int. Cl. B60k 27/00

U.S. Cl. 180-78

7 Claims



1. An apparatus for mounting various switches controlling different mechanisms in a motor-vehicle comprising:
a housing mounted around a motor-vehicle steering column, said housing having a plurality of different extremity portions, and said housing including first and second sections, said first and second sections being connected together to form said housing, wherein each of said first and second sections of said housing are provided with at least one of said plurality of different extremity portions of said housing, and
a plurality of switch means for controlling various motor-vehicle mechanisms, at least one of said plurality of switch means being disposed at a respective one of each of said plurality of different extremity portions, each of said plurality of switch means including a switch and a transparent indicator panel,
wherein each of said first and second sections of said housing include oppositely extending first and second wing members, each of said first and second wing members having a flat end part, each said flat end part forming said respective one of said plurality of different extremity portions of said housing.

3,857,455

ROW CENTERING GUIDE CONTROL DEVICE FOR BUSH BEAN HARVESTER

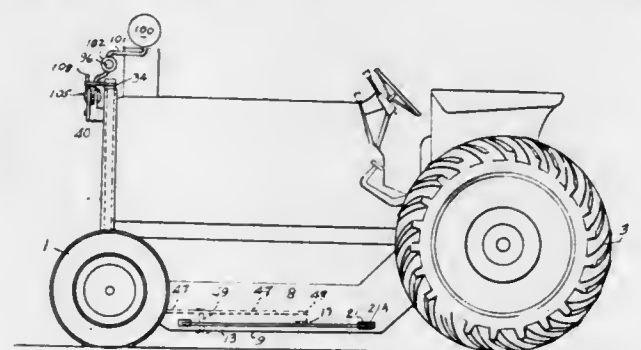
James E. Ernst, Star Rt., Box 58 A, St. Paul, Ore. 97137

Filed May 21, 1973, Ser. No. 361,889

Int. Cl. B62d 5/06

U.S. Cl. 180-79.2 R

3 Claims

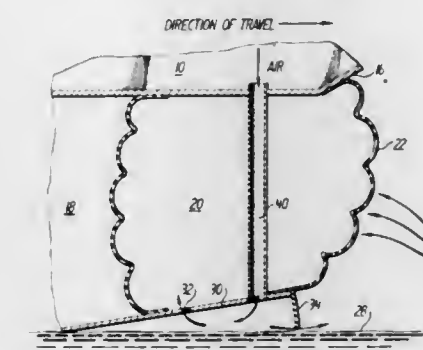


1. In an agricultural harvesting machine having a chassis supported upon steerable ground engaging front wheels and

ground engaging rear traction wheels, the improvement comprising:

an underslung scow carried by the machine and extending lengthwise thereof,
a frame pivotally attached to said scow and extending outwardly and rearwardly relative thereto for engagement with proximal row crops,
a switch actuating arm pivotally attached at one of its ends to said frame and pivotally attached intermediate its ends to said scow,
the forward end of said switch actuating arm movable between a first pair of spaced apart steering control switches and adapted to alternately actuate said switches upon right or left deviation in the course of travel of said machine along the row crops,
said chassis including a steering yoke supporting said steerable front wheels,
a tierod carried by said yoke and connected to said steering wheels for steering the same,
a steering cylinder carried by said yoke and having a piston operable therein and connected to said tierod whereby movement of the piston to the right or left within said cylinder will impart corresponding steering angles to said steering wheels,
a fluid pressure cylinder carried by said machine, a valve operable within said fluid pressure cylinder, one side of said fluid pressure cylinder in communication at both of its ends with the corresponding ends of said steering cylinder,
the other side of said fluid pressure cylinder connected to a fluid pump and a fluid reservoir,
said valve connected at each of its ends to a solenoid mounted upon each end of said fluid pressure cylinder, a second pair of electric switches each in circuit with a solenoid and each operable by movement of said tierod to maintain said steering wheels in alignment with the tractor centerline after return of the chassis to a desired path between the row crops causing deactivation of said steering control switches,
all of said switches in electric circuitry with each other and with a source of electric current carried by said machine, each of said switches being of the single pole double throw type,
each of said solenoids having a core connected to said valve, one end of each of said solenoids having a ground connection to said source of electric current,
the opposite end of one solenoid electrically connected to one side of one switch in said first pair of switches and to the corresponding side of the other switch in said second pair of switches, and
the opposite end of the other side of said solenoids electrically connected to one side of the other switch in said first pair of switches and to the corresponding side of the other switch in said second pair of switches.

rigid base disposed oriented at a planing angle relative to said surface, and having a portion of said rigid base in substantial contact with the said surface;
d. a chamber of air defined between the said surface and the lower side of said rigid base; and



e. air conduit means disposed in pneumatic contact beneath said rigid base with said chamber, said conduit means receiving air under pressure from a central air pressure source.

3,857,457

DEVICE FOR INHIBITING VIBRATORY ROOF NOISE

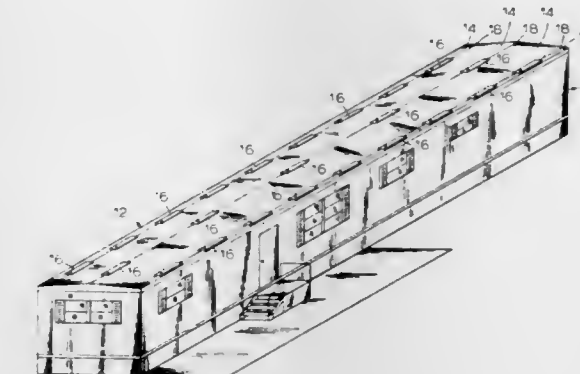
Richard B. Fox, R.D. No. 1, York Haven, Pa. 17370

Filed Dec. 11, 1973, Ser. No. 423,755

Int. Cl. E04b 1/84

U.S. Cl. 181-33 A

5 Claims



1. A mobile home type structure having sheet-like roof panels covering the top thereof, in combination with means to prevent vibration of said roof members from wind and the like, said means comprising a plurality of weight members positioned upon said roof in spaced relationship to each other, said weight members comprising flexible liquid-tight bag-like containers containing an amount of fluid less than the full capacity of said members so that when spatially positioned upon said roof said members will stabilize said roof panels against vibration, whereby the flexible nature of said containers minimizes possible abrasion or other damage to said roof resulting from said weight members being supported upon said roof by gravity and the limited amount of fluid therein permits said members to flexibly engage said roof panels in close adaptability thereto, thus enabling said weighted members to conform to any irregularities in said roof panels and thereby prevent dislodgment of said weighted members from said roof panels consequent from the effects of wind or other vibratory causing effects.

3,857,456

AIR CUSHION CRAFT AIR SUPPLY

John R. Schrink, Gautier, Miss., assignor to Little Systems, Inc., Beverly Hills, Calif.

Filed Apr. 30, 1973, Ser. No. 355,509

Int. Cl. B60v 1/00

U.S. Cl. 180-121

5 Claims

1. A vessel having a periphery about a hull and suspended upon a large, central air cushion during transport over a surface comprising:

a. at least one air cushion cell disposed depending from at least a bow section of said periphery forming a bow seal for said larger, central air cushion;
b. each said cell including a flexible wall and capable of vertical compression, and being fixed at its upper end to said periphery of said vessel;
c. each said cell further including a rigid base having an orifice therein for allowing air to pass therethrough, said

3,857,458

EXHAUST GAS OUTLET MEANS FOR AN INTERNAL COMBUSTION ENGINE

Toshio Ohtani, Takahiro Sato, and Fukishi Sumitomo, all of Hiroshima-ken, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

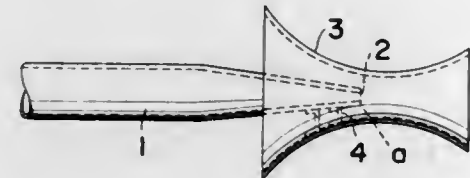
Filed Sept. 6, 1973, Ser. No. 394,817

Claims priority, application Japan, Sept. 11, 1972, 47-106373; Oct. 17, 1972, 47-120380

Int. Cl. F01n 1/14, 3/04

U.S. Cl. 181-43

4 Claims



1. Exhaust gas outlet means for an internal combustion engine, the outlet means comprising: an elongated exhaust pipe having a predetermined diameter through a portion of its length, and an outlet end whose cross-sectional configuration is gradually flattened in a first plane into a converging nozzle, and whose cross-sectional configuration is V-shaped in a second plane transverse to said first plane to define a diverging nozzle, the cross-sectional area of said outlet end being at least equal to that of the exhaust pipe in the said portion of its length having a predetermined diameter, and an open-ended fresh air suction pipe disposed around and with a clearance from the exhaust pipe and having a portion of reduced cross-sectional area around the outlet end of the exhaust pipe so as to define a suction throat at said outlet end.

3,857,459

SOUND-ABSORBING WEDGE

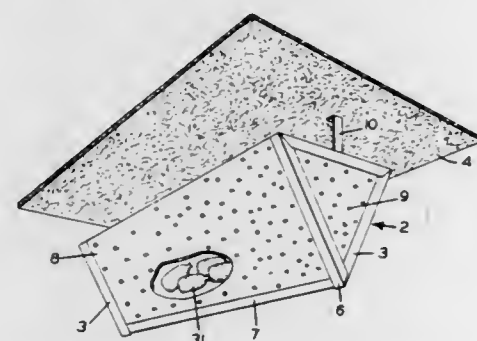
George R. Adams, Lancaster, and William T. Meisenbach, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 302,653, Nov. 1, 1972, Pat. No. 3,819,010. This application Apr. 12, 1974, Ser. No. 460,387

Int. Cl. E04g 1/99; G10k 11/04

U.S. Cl. 181-33 GD

7 Claims



1. In a room which is subjected to a high decibel noise level and where there is a closed room structure with a ceiling therein, the improvement comprising the placing of sound-absorbing wedges suspended from the ceiling, said sound-absorbing wedges constituting a support means into which is placed a plurality of sound-absorbing boards to form a wedge-shaped structure which is triangular in cross section, said support means being composed of triangular-shaped end members and an interconnecting member connecting together one corner of each of the triangular end members, said corners of the triangular end members which are connected together by the interconnecting member being positioned facing downwardly toward the area below the ceiling, said sound-absorbing boards being triangular boards which fit within the triangular end members to form the ends of the wedge structure and rectangular sound-absorbing board struc-

tures which fit within the support means resting upon the interconnecting member and the sides of the end members, said support means and boards forming a wedge-shaped sound-absorbing structure which increases the sound-absorbing ability of the overlying ceiling system and a plurality of wedge structures are placed in an abutting relationship to form a continuous wedge structure which may extend from one side to an opposite side of the room.

3,857,460

COMBINATION LADDER AND TOOL CART

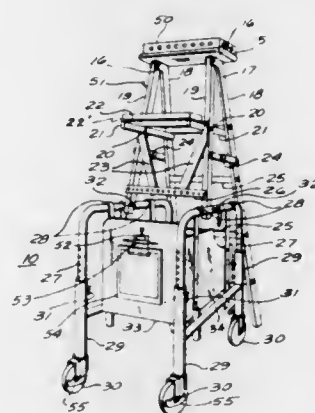
Raymond B. Nini, 3329 3rd St., Berwick, La. 70380

Filed Apr. 10, 1974, Ser. No. 459,630

Int. Cl. E06c 5/24

U.S. Cl. 182-17

10 Claims



1. A combined ladder and tool cart comprising:
a step ladder having one set of its lower legs substantially shorter than the other;
a collapsible dolly defining a generally open interior when in its erected disposition; said shorter legs of said ladder including ladder fastening means for fastening them to said collapsible dolly; and
a storage bin having a cross-section which at least generally conforms to said open interior of said dolly when erected and having bin fastening means for fastening it to said dolly within the interior thereof; said ladder, said dolly and said bin capable of being easily separated for compact storage when not in use.

3,857,461

BIDIRECTIONAL PUMP SYSTEM HAVING PLURAL LUBRICATION CIRCUITS

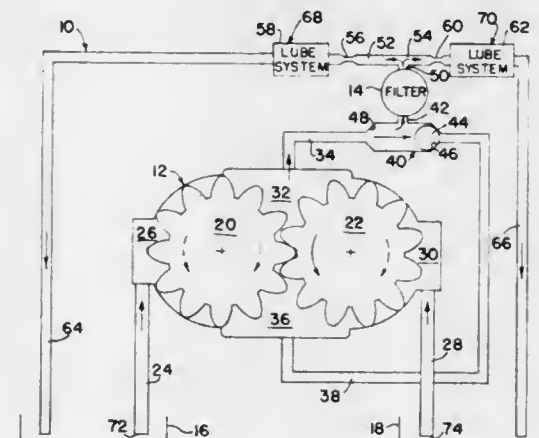
James L. Schmitt, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 16, 1973, Ser. No. 351,479

Int. Cl. F04b 19/04

U.S. Cl. 184-6.2

7 Claims



1. In a fluid system,

a bidirectional pump including a housing defining first and second chambers,
first and second horizontally spaced apart sumps at substantially the same vertical level,
means communicating said first sump with said first chamber and separate means communicating said second sump with said second chamber,
first and second separate lubricant systems intercommunicating with said first and second sumps, respectively,
check valve means comprising
a check valve,
a first discharge conduit communicating said first chamber with said check valve, and
a second discharge conduit communicating said second chamber with said check valve, said check valve means operable to direct fluid flow to said first and second lubricant systems in either flow direction of the bidirectional pump whereby fluid supply is maintained to said first and second fluid systems regardless of pump flow direction and tilting of said system which causes disproportionate flow distribution, means communicating said first and second lubricant systems with said first and second sumps, respectively, for returning fluid thereto, and,
flow control means intermediate said check valve means and said lubricant systems, for proportioning flow between said first and second lubricant systems.

3,857,462

LUBRICATION FOR HEAVY DUTY THRUST BEARINGS

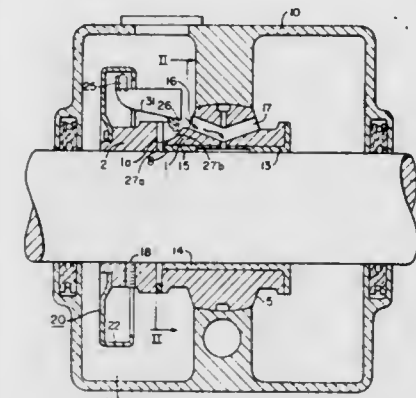
Howard N. Kaufman, and Albert A. Raimondi, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,772

Int. Cl. F16n 7/16

U.S. Cl. 184-11 A

2 Claims



1. A sleeve and thrust bearing configuration to journal a rotating shaft having a sleeve bearing surface and a thrust bearing surface, said thrust surface being arranged perpendicularly with respect to said sleeve bearing surface and said sleeve bearing having an upper and a lower half, a lubrication port extending through said upper sleeve bearing half for communication with said sleeve bearing surface and adapted to convey a supply of lubricant to said sleeve bearing surface and subsequently to said thrust bearing surface, a lubricant receiving slot circumferentially disposed in said upper half of said sleeve bearing, at least one lubricant feeding groove disposed in the thrust face of the upper half of said sleeve bearing, means to distribute a supply of lubricant to said sleeve bearing lubrication port and to said lubrication receiving slot, and passage means adapted to divert a portion of said lubricant supply from said circumferential lubricant receiving slot to said lubricant feeding groove, whereby the diverted lubricant portion can be fed downwardly through said at least one lubricant feeding groove and directly to said thrust bearing surface by means of gravity to thereby augment the lubrication of said thrust surface.

3,857,463

ARRANGEMENT FOR THE DOSING AND DISTRIBUTION OF FOOD

Gunter Wagenfuhrer, Bruno Hartmann, and Hans-Werner Rothmann, all of Gelsenkirchen, Germany, assignors to F. Kuppersbusch & Sohne AG, Gelsenkirchen, Germany

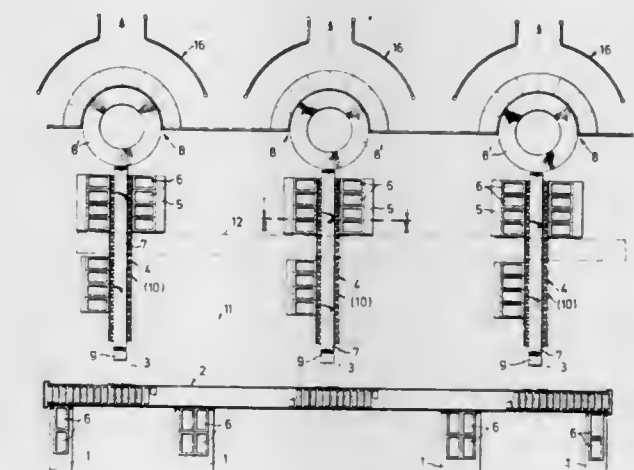
Filed Sept. 7, 1973, Ser. No. 395,258

Claims priority, application Germany, Aug. 12, 1972, 2239722; Aug. 12, 1972, 7229898

Int. Cl. E04h 3/04

U.S. Cl. 186-1 R

9 Claims



1. An arrangement for the dosing and distribution of food forming part of a large-scale food preparing system which has at least one loading station where transportable containers are charged with food, at least one dosing station where food trays are charged with a predetermined portion of food taken from the food containers, and at least one food outlet station to which the filled food trays are introduced from the dosing station, comprising in combination:

- a first conveyor means defining at least one accumulation path for the filled food containers and being disposed between said loading station and said dosing station;
- a second distributor conveyor means situated adjacent said accumulation path for receiving said filled food containers therefrom;
- a third conveyor means extending from said second conveyor means to said dosing station for receiving said filled food containers from said second conveyor means and carrying them to said dosing station;
- a fourth conveyor means extending through said dosing station to said food outlet station for carrying food trays filled in said dosing station to said food outlet station;
- a multi-zone movable means forming part of said food outlet station for receiving in each successive zone thereof, a filled food tray from said fourth conveyor means;
- a mechanical accumulation system for said loaded food containers, arranged at said dosing station;
- a tray feeding device arranged at said fourth conveyor means for introducing said filled food trays from said fourth conveyor means to said food outlet station; and
- a synchronizing mechanism arranged at said fourth conveyor means and associated with said food outlet station.

3,857,464

ALKALI METAL ALUMINO SILICATES, METHODS FOR THEIR PRODUCTION AND COMPOSITIONS THEREOF
Lowell E. Hackbarth, Bel Air, Md., and Joseph T. Crockett, Auburn, Ala., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 112,469, Feb. 3, 1971, which is a continuation-in-part of Ser. No. 730,892, May 21, 1968, Pat. No. 3,582,379. This application July 20, 1972, Ser. No. 273,675

Int. Cl. C08h 17/02

U.S. Cl. 106—288 B

1 Claim

1. In a composition of matter comprising finely divided precipitated pigments composed of the oxides of sodium, aluminum and silicon produced by reacting sodium silicate and aluminum sulfate in an aqueous medium, the improvement comprising finely divided precipitated sodium aluminosilicates consisting essentially of the oxides of sodium, aluminum and silicon, said aluminosilicates being produced by reacting sodium silicate and aluminum sulfate in an aqueous medium containing sodium sulfate in an amount equal to at least 1% by weight based on the weight of the silicate and wherein at least about 0.1% of which sulfate is provided in said aqueous medium from the inception of the reaction to thereby form an improved pigment having increased surface areas and oil absorption characteristics.

3,857,465

ELEVATOR CONTROL DEVICE

Tatsuo Iwasaka; Takeo Yuminaka; Hideto Matsuzawa, all of Katsuta, and Taiji Ishizuka, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

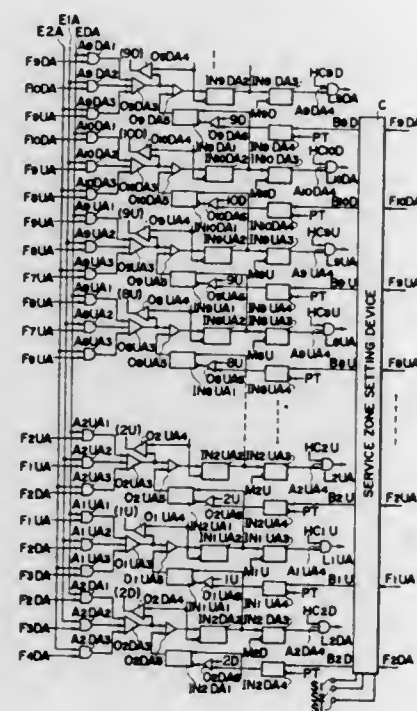
Filed Apr. 18, 1973, Ser. No. 352,480

Claims priority, application Japan, Apr. 19, 1972, 47-38630; May 19, 1972, 47-49073; May 26, 1972, 47-51718

Int. Cl. B66b 1/18

U.S. Cl. 187—29 R

25 Claims



1. An elevator control device for an elevator system having a multiplicity of elevator cars serving a multiplicity of floors, said control device comprising means for determining the service zone of each car at each moment, the car being able to respond only to a hall call from floors within the zone, means for transmitting a hall call generated from a floor to a car whose service zone includes said floor, means for setting the maximum size of the service zone of each car, and means for limiting the forward extent of said service zone in response to the operation of said means for setting the maximum size of service zone.

3,857,466

CLOSURE SYSTEM

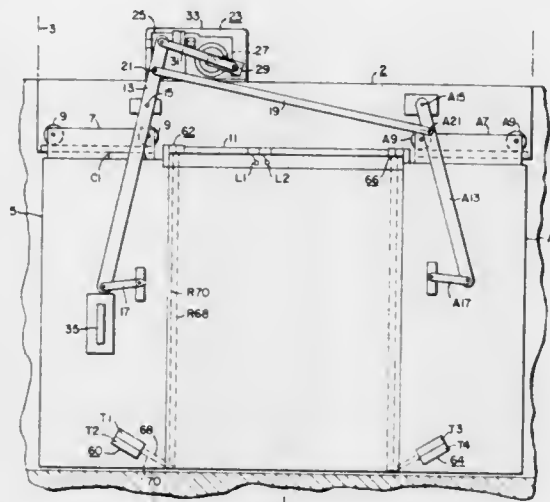
Harry Berkovitz, Glenrock, and Lawrence Tosato, Millburn, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 426,261

Int. Cl. B66b 13/26; E05f 15/20

U.S. Cl. 187—52

16 Claims



1. A closure system, comprising:
an entranceway,
a sill associated with said entranceway, at least a portion of said sill having a non-specular surface,
a door for said entranceway,
means mounting said door for movement to open and close said entranceway,
an object detecting means including transmitter means providing at least one beam of radiant energy, and detector means responsive to such energy,
said transmitter means being mounted on said door for movement therewith and positioned to direct a beam of radiant energy at said non-specular surface of the sill, said beam of radiant energy forming a predetermined angle with the normal of said sill,
said detector means being mounted on said door for movement therewith and positioned to intersect said beam of radiant energy at said sill, with the angle of reflection from the sill to said detector means relative to the normal thereof, being other than said predetermined angle,
said detector means being responsive to an interruption of reflected radiant energy from said sill for controlling the operation of said door.

3,857,467

RELAY CLUTCH TIMER

Harold D. Hulterstrum, Baraboo, Wis., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed June 1, 1973, Ser. No. 365,848

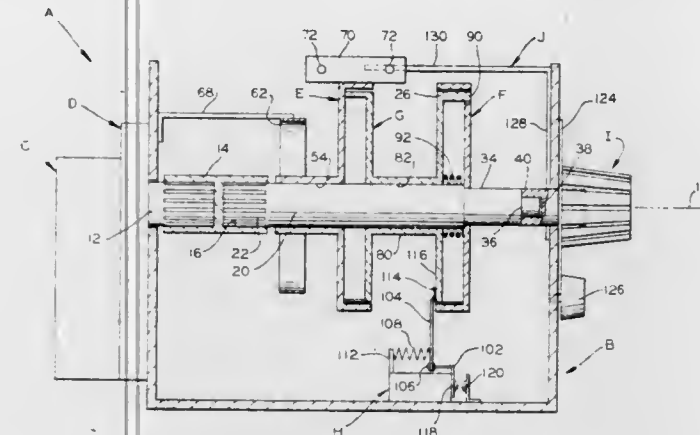
Int. Cl. F16d 43/26

U.S. Cl. 192—33 R

14 Claims

1. A relay clutch timer having a clutch means for driving a cam means, said clutch means including: a pair of opposite, axially spaced clutch elements and a central clutch element positioned between said opposite clutch elements; said central clutch element being movable axially between said opposite clutch elements and including a structural element on one axial end and a clutch member on the opposite axial end; each of said opposite clutch elements having connecting means for drivingly receiving said structural element of said central clutch element, said connecting means allowing axial movement of said central clutch element while maintaining said driving connection with said structural element; each of said opposite clutch elements having a clutch member adapted to drivingly engage said clutch member of said central clutch element; means for mounting said central clutch element with

said clutch member adjacent one of said opposite clutch elements and said structural element receiving by said connecting means of the other clutch element; and, relay means for moving said central clutch element between a first position



with said clutch member of said central clutch element engaged with said clutch member of said one opposite clutch element and a second position with said clutch member of said central clutch element disengaged from said clutch member of said one opposite clutch element.

3,857,468

SELF-ADJUSTING CLUTCH OR BRAKE

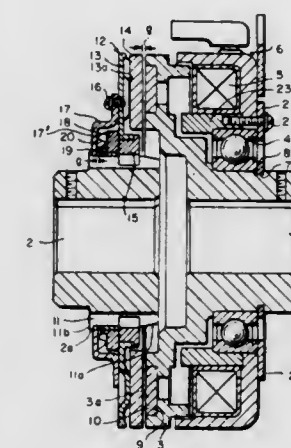
Yoshihisa Iritono, and Mitsuo Sakurai, both of Kiryu, Japan, assignors to Ogura Clutch Co., Ltd., Kiryu City, Gunma Prefecture, Japan

Filed Apr. 5, 1973, Ser. No. 348,151

Int. Cl. F16d 13/75, 27/10

U.S. Cl. 192—84 C

7 Claims



1. An electromagnetic device comprising a friction disc mounted on a drive shaft, a driven member mounted on a driven shaft to be slidable in the axial direction, said driven member confronting said friction disc with a definite gap therebetween in an inoperated condition, an electromagnet to attract said driven member into engagement with said friction member, characterized in that there are provided an annular spring seat secured to the side of said driven member opposite said friction disc, the radially inner end of said spring seat being bent to define an annular space between said driven member, said driven shaft and said spring seat, a slide ring contained in said annular space, said slide ring being provided with a friction member adapted to frictionally engage said driven shaft, and a spring interposed between said spring seat and said slide ring, whereby when said driven member is brought into frictional engagement with said friction disc, said slide ring is moved toward said friction disc by said spring seat.

3,857,469

IMPROVEMENTS IN COMPOSITE ARTICLES

Ian Leonard Stimson, Rugby, England, assignor to Dunlop Limited, London, England

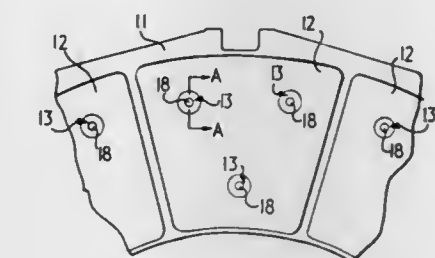
Filed Oct. 30, 1972, Ser. No. 301,818

Claims priority, application Great Britain, Nov. 4, 1971, 51277/71

Int. Cl. F16d 69/00

U.S. Cl. 192—107 M

18 Claims



1. A friction member for a brake or clutch comprising a friction element having at least one aperture through the element and spaced from the peripheral edges thereof, and a metal backing member, the aperture having an enlarged end remote from the backing member, the material of the friction element being more brittle and of higher specific heat than that of the backing member, the friction element being clamped to the backing member by a spigot located in said aperture with its axis normal to the plane of the friction element and a fastening device extending from one end of the spigot through the backing member, the other end of the spigot being enlarged and co-operating with the enlarged end of the aperture to prevent displacement of the friction element away from the backing member, the spigot being reinforced by filamentary carbon and being of a material compatible with that of the friction element.

3,857,470

PRINTER FOR ALPHANUMERIC CHARACTERS

Gilbert Bastard, Onex, Geneva, and Michel Moulin, Lausanne, both of Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneve, Switzerland

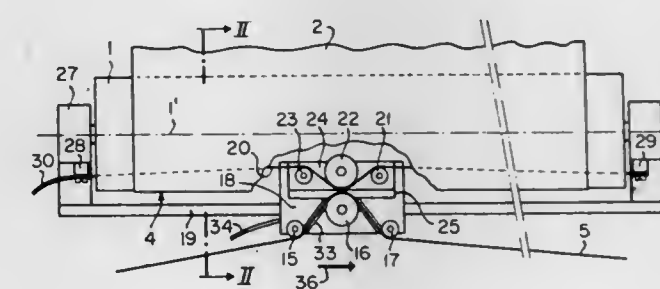
Filed May 3, 1973, Ser. No. 356,943

Claims priority, application Switzerland, May 31, 1972, 8011/72

Int. Cl. B41j 3/44

U.S. Cl. 197—1 R

8 Claims



1. A printer for the sequential printing of a series of alphanumeric characters forming a printing line, each of such characters being reproduced in the form of an assembly of dotted marks arranged in accordance with a fixed outline formed by the nodes of an orthogonal grid, the printer being composed of a printing support and an ink support covered with a layer of thermofusible and electrically conducting ink;

a tightening and separating device actuatable in such a manner as to apply the ink support against the printing support and separate the two supports from each other; a first displacement means actuatable in such a manner as to move the tightening and separating device along the printing line;

a second displacement means actuatable in such a manner as to move the printing support at right angles to the printing line;

a selection device actuatable in such a manner as to select the points of the outline corresponding to the character to be printed; and

an electrical melting device actuatable in such a manner as to bring about the melting of the sections of ink situated in such selected points, said electrical melting device comprising a group of m parallel tracks of electrodes, m being the number of dots forming the outline in the direction of its length, each of such tracks comprising pairs of pointed electrodes, each of which is immersed in a portion of the layer of ink and defines the boundaries of such portion of ink, the pairs of electrodes of each group of tracks being aligned in accordance with transverse lines perpendicular to such tracks; a group of $(m+1)$ parallel contact tracks, each of such tracks comprising a set of pointed contacts arranged in an unlinked part of the ink support and parallel to the electrode tracks, the contacts of such group of tracks being aligned in accordance with lines perpendicular to such tracks, one electrode of each pair of electrodes of the same row being connected to the same contact of a corresponding transverse row of contacts, the other electrodes of each of the pairs of electrodes of this transverse row being connected one by one to the other contact of the corresponding row in such a way that the electrode tracks correspond one by one to the contact tracks, the additional contact track being common to all the electrode tracks; and $(m+1)$ contact lines arranged on a lengthwise support in such a manner that each line faces a contact track, the contact lines being connected to the selection device; said melting device further comprising means for the application of the support for the contact lines against the ink support in such a way that the $(m+1)$ contact lines are simultaneously in contact, one by one, with the contact lines on the corresponding track on the same transverse row; said tightening separating device including at least one pressure roller encircled by the ink support in such a way that the ink support forms a loop projecting towards the printing support, the axis of the roller being at right angles to the printing line in such a manner that the ink support touches the printing support while following a generatrix of the roller; said first displacement means being actuatable in such a way that when the tightening and separating device is shifted in the direction of the printing, the roller is made to turn on the ink support and when the tightening and separating device is shifted in the opposite direction, it keeps the roller apart from the printing support, keeps the contact support apart from the ink support, and entrains the ink support in a travel movement that replaces the used section of the ink layer with a virgin section of the same; and the selection device includes a synchronization track formed of a set of reference groups kinematically integral with the ink support, each group being comprised of n references, where n is the number of dots in the outline in the direction of its length, a detection device actuatable in such a manner as to deliver electrical signals on the passage of these marks, the detection device being kinematically integral with the tightening and separating device in its lengthwise motion, and a generator of electrical pulses actuatable in such a way as to deliver to the contact lines which correspond to the points chosen by the selection device electrical pulses carrying enough current to bring about the melting of the section of ink, such generator being operated by the signals generated by the selection device.

3,857,471
TAPELESS PAPER MOTION CONTROL SYSTEM
PROVIDING SENSING CIRCUITS TO GOVERN MOTOR INCREMENTING

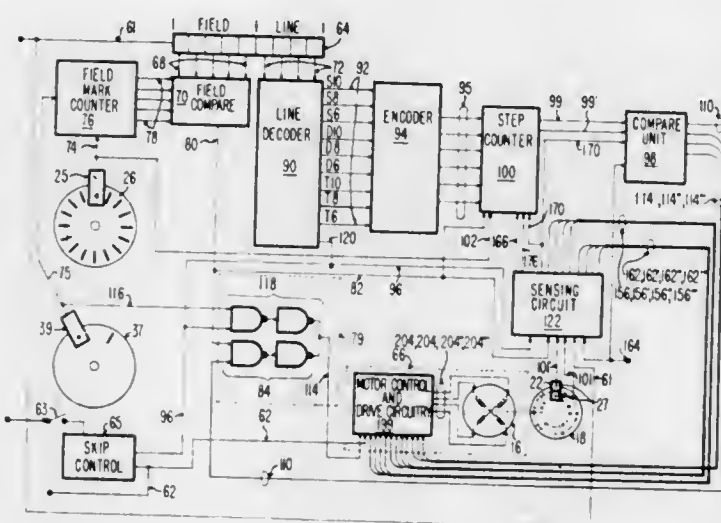
Paul R. Hoffman, Farmington, and Roger S. Naeyaert, Warren, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,353

Int. Cl. B41j 15/04

U.S. Cl. 197—133 R

42 Claims



1. A tapeless format control apparatus for use in a line printer for printing on web paper, said printer having web paper handling and positioning means associated with a printing position thereof, said apparatus comprising:

- a stepping motor for operatively advancing said web paper relative to said printing position, said motor being coupled to said web paper handling and positioning means,
- motor control means associated with said stepping motor and effective for stopping and detenting said stepping motor,
- means for selectively determining the length of the web paper upon which lines of information are to be printed, such selected web paper length constituting a selected form length,
- means for receiving and storing externally originated print spacing instructions,
- a plurality of pulse generating means effective for identifying each increment of rotational motion of said stepping motor according to a gray coded scheme, each increment of advancement of said web paper, and the passage of each unit of selected form length, and
- means cooperating with said motor control means and responsive to said print spacing instructions for controllably coordinating said plurality of identifying pulses such that each line of information printed on said selected form length is properly spaced from the preceding line and all of the lines of printed information conform to a preselected format represented by said externally originated print spacing instructions wherein said controllably coordinating means includes:

sensing means responsive to said pulse generating means effective for identifying each increment of rotational motion of said stepping motor and cooperating with said motor control means for allowing said stepping motor to increment only upon ascertaining that its preceding increment was properly executed, and

first comparator means responsive to said print spacing instructions and interacting with said motor control means for controllably retarding the speed of said stepping motor as a print line on said web paper corresponding to said print spacing instructions approaches said printing position.

3,857,472
CONVEYOR FOR ADVANCING AND ORIENTING EGGS
AND TRANSFERRING THE EGGS TO GRIPPER UNITS OF
AN EGG BREAKING MACHINE

Jan Tavsén Klint, No. 33 Havnegade, 5100 Odense, Denmark

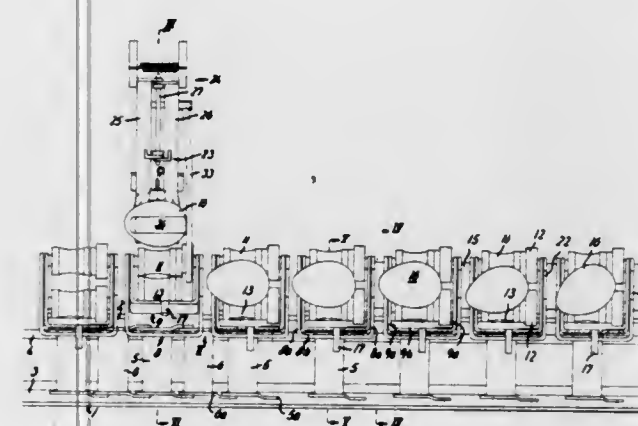
Filed Mar. 23, 1973, Ser. No. 344,396

Claims priority, application Denmark, Apr. 5, 1972, 1627/72

Int. Cl. B65g 47/00, 47/24

U.S. Cl. 198—20 R

10 Claims



1. A conveyor for advancing and orienting eggs and transferring the eggs to gripper units of an egg breaking machine, said conveyor comprising

- an endless flexible carrier element, such as a chain, drive means for moving said carrier element in an endless path including an egg transfer station,
- a plurality of pairs of spool shaped egg supporting rollers, means rotatably mounting said pairs of rollers on said carrier element so that each roller has its axis of rotation parallel with the direction of travel of the conveyor, and the two rollers of each pair are mounted side by side to form in cooperation an egg receiving and supporting seat, drive means for synchronously driving both rollers of each roller pair in the same direction including a drive roller and stationary means for rotatably supporting said drive roller with its axis parallel to a rectilinear portion of said conveyor upstream of said egg transfer station,
- and transfer means in the region of said transfer station for imparting to the eggs a movement transversely of the direction of travel of the conveyor and without changing the orientation of the eggs, whereby the eggs are transferred from said supporting rollers to said gripper units.

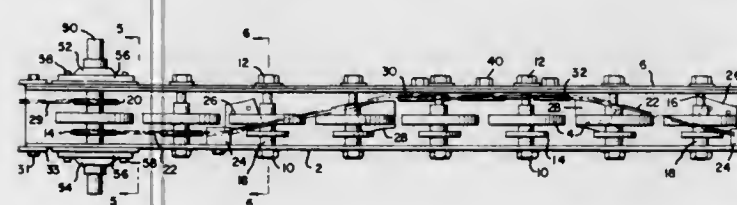
3,857,473
POWERED RAIL CONVEYOR
 Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed June 5, 1972, Ser. No. 259,601

Int. Cl. B65g 13/07

U.S. Cl. 198—127 R

10 Claims



1. A power rail comprising an elongated channel of U shape cross section, a series of rollers rotatably mounted in the channel with the peripheries of the rollers extending above the arms of the U, a sprocket secured to each roller, and an endless chain engaged along one run with the sprockets for simultaneously rotating all the rollers, and means for adjusting the slack in the chain, said means for adjusting comprising means for shifting and guiding at least a portion of the return run of the chain in a plane laterally displaced from and parallel to the

plane containing the sprockets, and means for urging a segment of the displaced portion of the chain in said laterally displaced plane to tighten the chain.

3,857,474
ADJUSTABLE CONTAINER CONVEYOR FOR FILLING
MACHINE

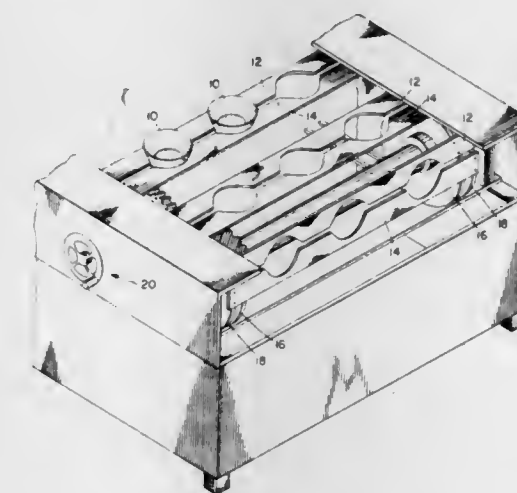
George Ernest Hutson, Minneapolis, Minn., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 25, 1973, Ser. No. 400,470

Int. Cl. B65g 15/24

U.S. Cl. 198—131

6 Claims



1. An adjustable container conveyor comprising:

- a first conveyor having a plurality of first container supports;
- a second conveyor having a coincident center of rotation with said first conveyor and having a plurality of second container supports, said first and second container supports defining an opening therebetween for holding containers;
- first and second helical gears, said gears being of opposite hand, said first helical gear operatively connected to said first conveyor and said second gear operatively connected to said second conveyor; and
- third and fourth rigidly interconnected helical gears, said gears being of opposite hand, said third helical gear intermeshing with said first helical gear and said fourth helical gear intermeshing with said second helical gear, said third and fourth helical gears being transversely movable with respect to said first and second helical gears and said third and fourth helical gears adapted to be rotationally driven to drive said conveyors, said transverse movement of said third and fourth helical gears rotating said first and second helical gears in opposite directions thereby adjusting the opening between said first and second container supports.

3,857,475
FEEDING APPARATUS FOR ELONGATED MASSES OF
MATERIAL

Robert Lewis Smith, Hinsdale, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Sept. 28, 1972, Ser. No. 293,166

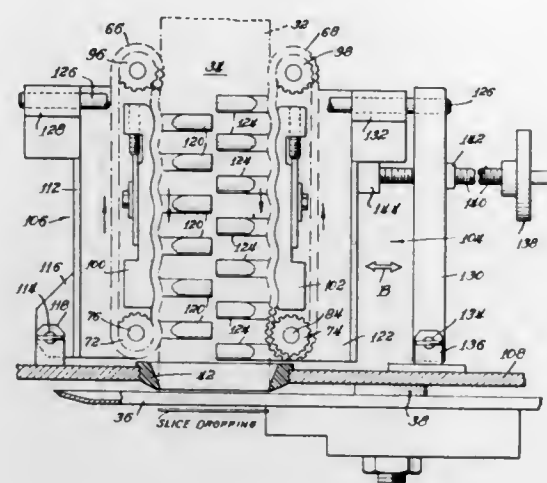
Int. Cl. B65g 15/00

U.S. Cl. 198—137

2 Claims

1. Apparatus for feeding an elongated mass of substantially uniform transverse dimension longitudinally along a feed path intersecting the cutting path of a rotary knife, said apparatus comprising a pair of spaced apart endless belts having driving runs disposed on opposite sides of said feed path for driving engagement with said mass, a pair of undulated surfaces positioned to hold said driving runs in driving engagement with a mass being fed along said feed path, a pair of lateral guides for said mass normal to said undulated surfaces, one of said lateral guides comprises a plurality of intermeshing fingers spaced

apart and transverse to the longitudinal axis of said loaf, said fingers supported relative to said undulated guide surfaces



maximum length as to minimize the orientative wandering of the slats during their travel under the influence of said sprockets, whereby loadless slats are confined to move sequentially in a twisted, ribbon-like non-planar mode and whereby the ends of deflected slats move in groups in supportive planal contact with transported dishtrays, such supportive slats being selectively independently flexed according to the weight disposition of any particular dishtray.

3,857,477

TRAY TURNOVER DEVICE

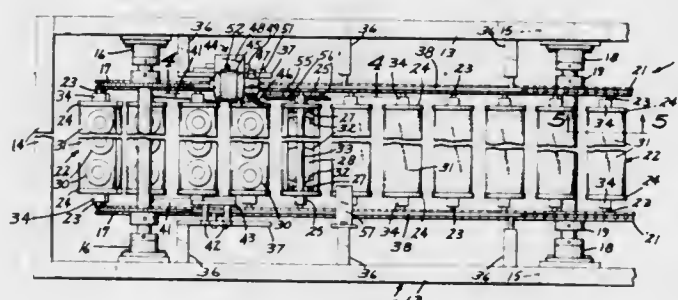
Frank D. Chipchase, West Milford, N.J., assignor to International Multifoods Corporation, Minneapolis, Minn.

Filed Aug. 24, 1972, Ser. No. 283,532

Int. Cl. B65g 17/00

U.S. Cl. 198—155

5 Claims



with alternate ones movable toward and away from the others, and means for moving said belts along said driving runs in a common direction.

3,857,476

HELICAL ENDLESS-BELT MECHANISMS FOR FUEL OR EMPTY DISHTRAY TRANSPORTING AND LIFTING

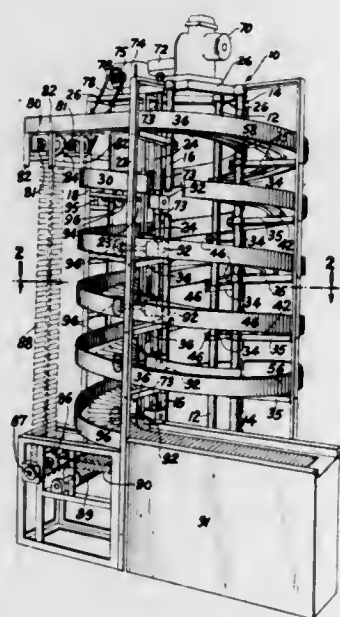
Sidney T. Heifetz, New York, N.Y., and George Ran, Fort Lee, N.J., assignors to Theodore Equipment Corporation, Wood-Ridge, N.J.

Filed Jan. 29, 1973, Ser. No. 327,417

Int. Cl. B65g 17/06

U.S. Cl. 198—136

9 Claims



1. In a multi-convoluted helical conveyor of the character described for transporting substantially flat-bottomed full or empty dishtrays, the combination of a supporting structure, a pair of helically-parallel track bars supported by said structure, a plurality of chain-driving sprockets, and an endless, slatted, link-chain belt comprised of a bowable and twistable link-chain, a plurality of separate, independent, free-ended, semi-flexible plastic slats, the free and deflectable ends of said slats extending transversely over and substantially beyond the track bars, said track bars disposed at an inclined angle not over the friction angle of the dishtrays upon the slats, said slats having integral, bifurcated chain-engaging and track bar engaging means at their mid-lengths to fixedly engage said chain and to slidably engage said track bars flanking said bifurcated means, said bifurcated means having outwardly directed and opposed recesses to snugly yet slidably fit said track bars, said recesses being in close sliding relationship with the upper, nether and inner surfaces of said track bars to prevent uplift, tilting and lateral shifting of the slats, said recesses being of

1. In bakery apparatus including means for advancing a tray of bakery products, invertible about a first axis thereof, in a direction orthogonal to the first axis to a location where the products are unloaded by inverting the tray, the improvement which comprises:

- a disc rotatable about a second axis parallel to said first axis;
- variable speed drive means independent of the tray advancing means for causing rotation of said disc at any speed within a predetermined range;
- resilient means mounting said drive means for limited independent motion of said second axis transverse to itself and to the direction of movement of said tray;
- and a wheel member carried by said tray concentrically with the axis of inversion thereof, and positioned so that the advance of said tray brings said member into a position of tangential contact with said disc, so that further advance of the tray causes said independent motion while said disc and said member remain in contact for a period determined by the rate of movement of the tray.

3,857,478

SYSTEM OF AND A METHOD FOR TRANSPORTING HEAVY OR BULKY ARTICLES

Pieter Meeusen, Barendrecht, Netherlands, assignor to H. Nielsen & Son Maskin-Fabrik A/S, Copenhagen, Denmark

Continuation of Ser. No. 72,974, Sept. 17, 1970, abandoned.

This application Feb. 1, 1973, Ser. No. 328,720

Claims priority, application Netherlands, Sept. 17, 1969, 6914089

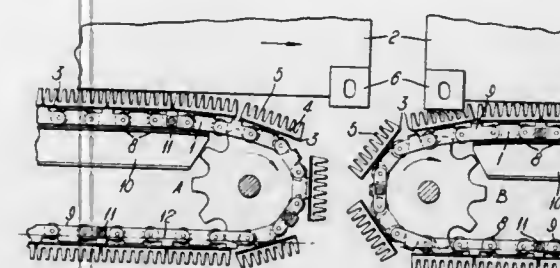
Int. Cl. B65g 15/30

U.S. Cl. 198—195

3 Claims

1. An endless chain system for transporting bulk containers, said system comprising endless chain conveyor means and sprocket means therefor; means for driving said sprocket means; load-supporting members connected in said chain conveyor means to permit them to be carried round with said conveyor means and to pivot in relation to one another in passing round said sprocket means, said chain conveyor means and said load-supporting members forming a transporting unit, rollers rotatably supported by said unit and, transportable therewith, and, rails upon which said rollers run during transportation; said load-supporting members being directly supported at each side thereof by said rollers on said

rails and having resilient load-supporting toothed pads, each pad having a plurality of teeth which project upwardly with



respect to said rails and which are deflectable in a direction parallel to said rails and yield elastically to the container supported thereby.

3,857,479

PRIME MOVER MECHANISM AND TRANSFER SYSTEM

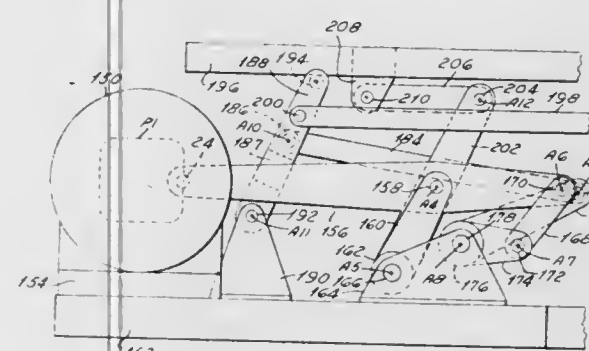
John Henry Brems, 32867 White Oaks Tr., Birmingham, Mich.

Filed June 26, 1972, Ser. No. 266,335

Int. Cl. B65g 25/04

U.S. Cl. 198—219

9 Claims



1. In a transfer system in which a series of workpieces is transferred from one work station to another through a sequential motion pattern along a transfer path which consists of a first motion in which the workpiece is moved a distance in a direction substantially transverse to the transfer path, a second motion in which the workpiece is advanced in a direction parallel to the transfer path to the next station, a third motion in which the workpiece is lowered in a direction substantially opposite to the direction of the first motion, and a fourth motion in which the transfer system returns along the transfer path to its original starting position during which the workpieces are not returned, a mechanical driving means comprising:

- a frame structure,
- a motion generating means on said frame structure having an output member movable around a substantially square path comprising four substantially equal isolated strokes, two primary strokes parallel to each other, and two secondary strokes parallel to each other and substantially perpendicular to said primary strokes,
- a transfer means operatively associated with said output member to be driven thereby to transfer workpieces from one work station to the next in a lift and carry and lower motion which comprises a transfer means extending along a transfer path, first means supporting said transfer means for motion transverse of the length of said transfer path and in the direction of the length of said path, and second means connecting said first supporting means with said output member to effect lifting and lowering of said bar means in two of the parallel strokes of the output path of said output member and advance and retraction of said bar means in the other two parallel strokes, and
- said first means supporting said bar means comprising a first link supported at one end by said second means on said output member, third means movably mounting the

other end of said link, and fourth means connecting said link and said transfer bar means, said third means comprising a lever pivotally associated with said frame and to said link, and said fourth means comprising a pair of levers pivoted on said frame, one to contact said bar means in a raise and lower motion, and one associated with said bar means to shift it in the transfer path.

3,857,480

CONTACT LENS FILING AND RECLASSIFYING CARD

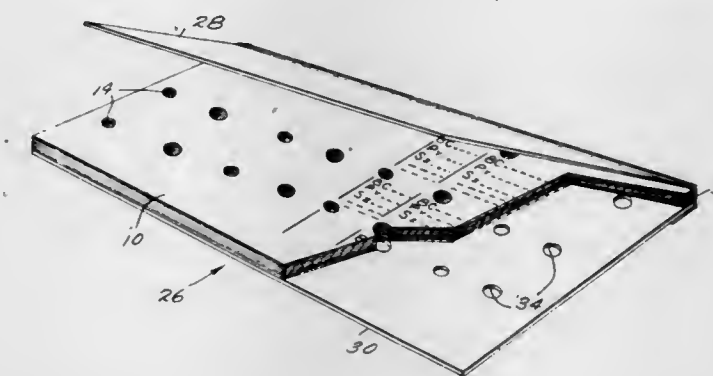
Francis H. McClernon, P.O. Box 1601, Springfield, Mo. 65805

Filed July 31, 1973, Ser. No. 384,394

Int. Cl. A45c 11/04

U.S. Cl. 206—5.1

6 Claims



1. An article for use in reclassifying contact lenses comprising:

- a rectangular card containing at separate locations thereon a plurality of regularly arranged sets of the same indicia for recording at each set in writing several specifications of a concavo-convex contact lens; and
- a circular aperture in said card adjacent each said indicia set, said aperture being of a diameter slightly smaller than that of a contact lens, whereby a lens being reclassified and to have its specifications recorded on said card at one of said indicia sets may be positioned, convex side down, in the aperture adjacent said one set to inhibit displacement of the lens while supported on said card.

3,857,481

DISPLAY CONTAINER

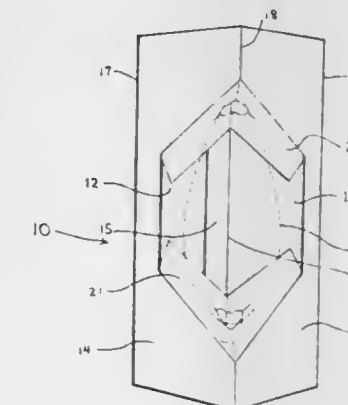
Irving Morton Koltz, 28 Livingston Rd., No. 50, Toronto, Ontario, Canada

Filed Mar. 19, 1973, Ser. No. 342,443

Int. Cl. B65d 5/50, 85/42

U.S. Cl. 206—45.14

6 Claims



1. A package for packaging articles having upper and lower ends which are of reduced dimension in relation to intermediate portions of the article, said package comprising:

- a tubular member of generally rectangular cross section, and having width and breadth dimensions greater than the cross section or dimension of said intermediate portion of said article, and defining four generally planar side walls;

upper and lower suspension flap means formed by symmetrical portions of a pair of adjacent said side walls, each of said suspension flap means being divided symmetrically in two by a single fold line;

generally V-shaped fold lines joining each of said suspension flap means to its respective pair of side walls, said flap means being dimensioned and arranged whereby, when the same are infolded into said tubular member, portions thereof extend across the interior of said container, and contact the other pair of said side walls, thereby to maintain said tubular member in its rectangular configuration,

and, article retaining openings formed in said suspension flap means, and adapted and dimensioned to receive respective upper and lower ends of said article, and to support said article within said tubular member, with its intermediate portions free of contact with said side walls thereof.

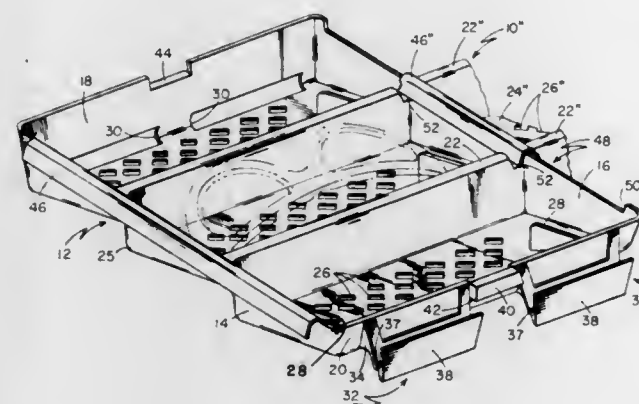
3,857,482 DISPLAY TRAY

Robert N. Shelton, Windham, N.H., assignor to Foster Grant Co., Inc., Windham, N.H.

Filed Nov. 12, 1973, Ser. No. 415,071
Int. Cl. B65d 21/02, 1/34

U.S. Cl. 206-72

8 Claims



1. A display tray comprising:

a bottom,
a pair of upstanding side walls extending upwardly from said bottom,
a pair of end walls extending upwardly from said bottom;
a first one of said end walls having at least one opening in the vicinity of a bottom portion thereof and a second one of said end walls having at least one joining member extending outwardly thereof and adapted to co-act with the opening in the first end wall portion of a similar tray whereby two of such trays may be joined together in end-to-end relationship, said joining member having a guiding portion which extends through said opening in said first end wall of a similar tray in joined position and an upwardly facing gripping portion which engages the wall portion bordering said opening;

a lug extending outwardly of said second one of said end walls, said lug being positioned above said joining member and having a downwardly facing clamping surface opposing said gripping portion for engagement with a portion of the first end wall of a similar tray for joining purposes, said clamping surface of said lug being spaced apart a predetermined distance from the gripping portion of said joining member so that there is a substantially tight friction fit of the end wall portion between said clamping surface and said gripping portion of said joining member when two of such trays are joined together.

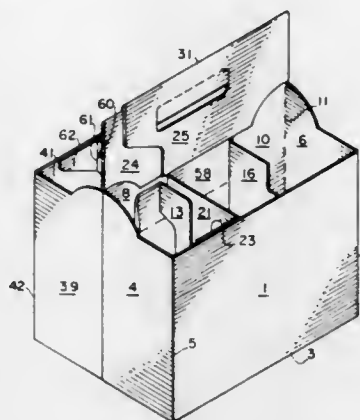
3,857,483 ARTICLE CARRIER

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 26, 1973, Ser. No. 335,495
Int. Cl. B65d 75/00

U.S. Cl. 206-187

4 Claims



1. A collapsible article carrier formed from a unitary blank comprising a bottom wall, opposed side walls joined to said bottom wall along opposite side edges thereof, end wall panels joined to the ends of said side walls and extending transversely inward therefrom, riser panels joined to the inwardly extending edges of said end wall panels and extending medially inward of the carrier, a multiple-ply handle secured at its ends to said riser panels, a first transverse partition panel joined to at least one of said riser panels at one end of the carrier, a transverse partition tab struck from the portion of the blank between the top of one side wall and the handle and having its inner portion secured in face contacting relation with said transverse partition panel and arranged with its outer end adjacent said one side wall to define an end cell at said one end of the carrier, and an anchoring flap struck from the portion of the blank between the top of said one side wall and the handle and secured to the inner surface of said one side wall and foldably joined to the top edge of said one side wall intermediate said partition tab and said one end of the carrier, said anchoring flap being joined to the outer end of said transverse partition tab.

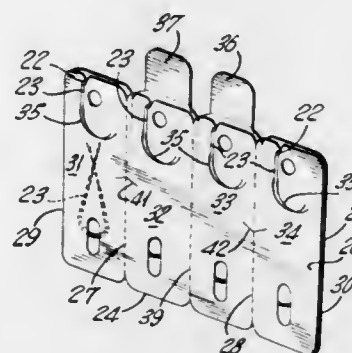
3,857,484 SUTURE PACKAGE

Eberhard Heinrich Thyen, Middlesex, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jan. 26, 1973, Ser. No. 326,634
Int. Cl. A61I 17/02; B65d 75/04

U.S. Cl. 206-227

4 Claims



1. A multi-strand suture package comprising a card of relatively stiff material rectangular in shape having first and second flaps extending from one end thereof and folded along its center line to form overlying panels having a bottom edge along said fold, a top edge with said flaps extending therefrom, and two side edges; said panels being folded inwardly along fold lines parallel to said side edges to form first and second adjacent compartments and third and fourth adjacent com-

partments that are open at the top edge; each compartment containing a double-armed suture wound in the form of a coil comprising a multiplicity of figure-eight convolutions each of which comprise a centrally located suture crossing and opposed loops on each side of said crossing and integral with the suture portions forming the crossing, the suture crossing of successive figure-eight convolutions being superimposed one upon the other to dispose the convolutions in successive layers; a needle affixed to each end of each suture and extending from the open end of each compartment toward the bottom edge; said first flap being folded over the first and second compartments, and said second flap being folded over the third and fourth compartments, thereby closing the open end and retaining the needles in position between adjacent compartments; said first and second compartments being folded inwardly toward the third and fourth compartments to bring the first and second flaps together; and means for retaining the first and second flaps and adjacent compartments together in the folded position to form a suture package; whereby as the package is unfolded, said needles are exposed sequentially facilitating removal by the surgeon of each suture from its compartment one at a time without tangling or kinking.

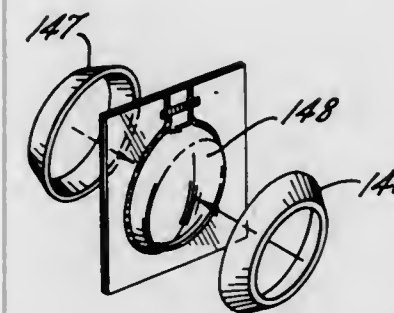
3,857,485 FLEXIBLE CONTAINERS FOR LIQUID SAMPLE SPECTROMETRY AND METHODS AND APPARATUS FOR FORMING, FILLING AND HANDLING THE SAME

Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed June 5, 1972, Ser. No. 259,767
Int. Cl. B65d 65/16; G21f 5/00

U.S. Cl. 206-305

4 Claims



1. In a sample container for liquid scintillation spectrometry analysis including at least a pair of layers of flexible, light-transmissive, polyester film,
means defining a joint between said layers to form an enclosed bag portion for holding said liquid sample,
means for filling said bag portion,
the filling means being sealable when the bag portion is filled with sample to form the liquid tight seal with said sample within the container bag portion, the improvement comprising,
annular light reflective means disposed about the periphery of said bag portion and the central portion of said bag remaining light-transmissive.

3,857,486 WEB MATERIAL ROLL WITH END PROTECTORS AND METHOD FOR MAKING SAME

Gregory Klebanoff, Jr., Loves Park, Ill., assignor to Beloit Corporation, Beloit, Wis.

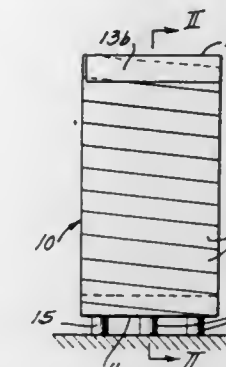
Filed Dec. 26, 1972, Ser. No. 318,499
Int. Cl. B65d 19/04, 19/40, 85/66, 85/67

U.S. Cl. 206-386

17 Claims

1. A protectively wrapped roll of web material, comprising an end protector on one end of the roll;
a continuous strip of protective material wrapped retainingly in a straight circular starting lap about the end

protector at one end of the roll and then continuing spirally wrapped throughout the length of the roll; and



a final lap of the protective strip material secured about the opposite end of the roll.

3,857,487 BLISTER PACKAGE

Raphael Charles Misslin, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

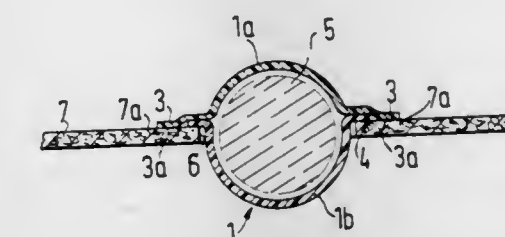
Filed Dec. 29, 1972, Ser. No. 319,708

Claims priority, application Switzerland, Dec. 30, 1971, 19176/71

Int. Cl. B65d 73/00

U.S. Cl. 206-463

3 Claims



1. A blister package comprising:

a double blister serving to enclose an article and consisting of two halves each with a securing flange and foldable along a common folding edge;
a display card provided with an opening into which the double blister fits;
the securing flange of one half of the blister being wider than that of the other half;
both of said securing flanges of the closed double blister containing therein an article resting on one and the same surface of said display card and in the vicinity of said opening therein;
the narrower of said flanges being located directly against said surface of said display card;
the wider of said flanges having an inner portion non-fixedly and loosely covering said narrower flange;
said wider flange having an outer portion directly resting on said surface of said display card; and
said outer portion of said wider flange being fixed to said surface in a manner enabling said outer portion to be pulled off to thus effect the easy removal of the double blister from said display card.

3,857,488 DYNAMIC WEIGHING APPARATUS

Roger Le Cren, 4, Avenue Odette, Nogent Sur Marne, France (94130)

Filed Sept. 6, 1973, Ser. No. 394,662

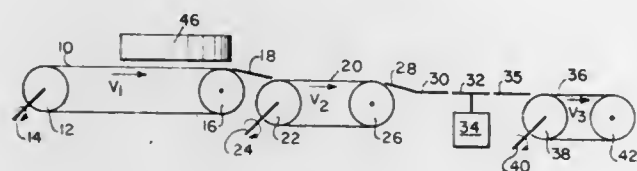
Claims priority, application France, Sept. 7, 1972, 72.31713
Int. Cl. B07c 5/16

U.S. Cl. 209-73

17 Claims

1. Dynamic weighing apparatus for articles of comparable weight and bulk, comprising

weight transducer means having a pass-band adapted to the desired rate of measurement and a range of measurement adapted to the weight of the said articles,
a weighing platform, in said weight transducer means, the dimension in the direction of advance of the articles of said platform being at least equal to the maximum dimension of the articles in the said direction,
handling means for causing the said articles to advance in translation on the said platform, separated from one another by a minimum distance, equal to the said dimension of the platform,



integration means for integrating the signal derived linearly from the signal supplied by the said transducer means during the entire duration of the passage of the article on the said platform,
means for generating a transit-time correction signal inversely proportional to the mean speed of the crossing of the platform by the said article, and
means for dividing the integrated signal by the said correction signal for generating an elaborated measuring signal representing the static weight of the article.

3,857,489

STABILIZATION OF SUSPENSIONS USED IN HEAVY-MEDIA SEPARATION PROCESSES

Laszlo Valentyk, and John T. Patton, both of Houghton, Mich., assignors to Board of Control Michigan Technological University, Houghton, Mich.

Continuation-in-part of Ser. No. 225,609, Feb. 11, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,381
Int. Cl. B03b 3/40

U.S. Cl. 209—172.5

3 Claims

1. In a heavy-media separation process for separating materials of a particulate feed wherein the feed is charged into a heavy-media suspension which is maintained at a specific gravity intermediate between the specific gravities of the components of the feed so that the components are separated into a float and a sink product, the improvement comprising, adding to the suspension about 0.01 to about 1 weight percent, based on the total weight of the water of the suspension, of a water-soluble heteropolysaccharide produced by the action of bacteria of the genus *Xanthomonas* on a carbohydrate so as to produce a stability in excess of about 50 percent and a plastic viscosity less than about 55 centipoises.

3,857,490

METHOD OF PNEUMATICALLY CONVEYING COAL AND APPARATUS THEREFOR

John L. Wilcox, Nimitz, W. Va. 25978

Filed Jan. 15, 1973, Ser. No. 323,700

Int. Cl. B01d 46/12

U.S. Cl. 209—250

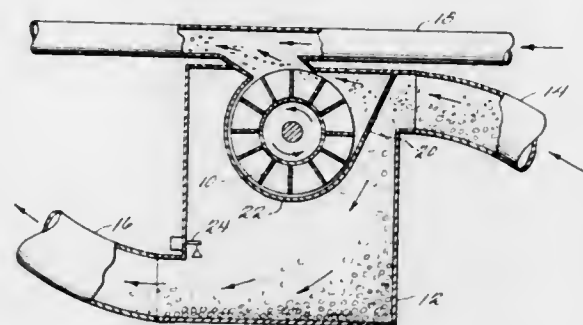
2 Claims

1. A pneumatic coal conveying system comprising: a plurality of spaced housings disposable within a mine shaft and interconnected so as to extend from a position adjacent the face of the shaft from which coal is being removed to a remote location;

each of said housings having:

- a. an input duct opening into a front portion of said housing,
- b. an output duct opening into a rear portion of said housing,
- c. an exhaust duct also opening into a rear portion of said housing,

- d. impeller means disposed within said housing between said input duct and said exhaust duct, and
- e. screen means disposed between said impeller means and said input duct for separating finer particles of coal from coarser particles of coal wherein said screen means is disposed so as to permit only said finer particles of coal to pass through said impeller means and into said exhaust duct and said coarser particles of material are permitted to fall into the lower portion of said housing where they are subsequently removed from;



each said output duct is connected to said input duct of the immediately succeeding housing, and each said exhaust duct is connected to each subsequent exhaust duct;
each said impeller means (1) causing a first airflow between said input duct and said exhaust duct in said housing in which it is mounted for maintaining an airflow sufficient to transport smaller particles of coal from said input duct to said exhaust duct and into each subsequent exhaust duct, and (2) causing an airflow from each preceding output duct to each subsequent input duct sufficient to transport said larger particles of coal from each said housing into each subsequent housing.

3,857,491

VEHICLE MOUNTED GUN RACK

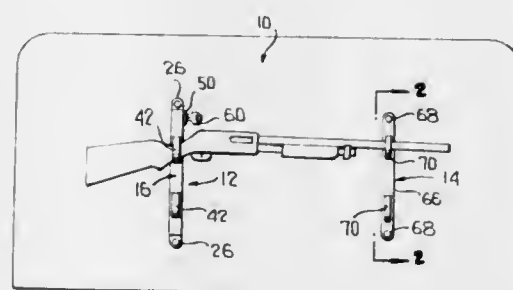
Henry M. Townsend, 1257 8th P.O. Box 43, Coos Bay, and James E. Gillilan, 2121 17th St., North Bend, both of Oreg.

Filed Feb. 14, 1973, Ser. No. 332,481

Int. Cl. A47b 81/00

U.S. Cl. 211—8

1 Claim



1. A gun rack comprising a pair of rack sections, one of said rack sections comprising a housing having a front and side walls mounted on a backing strip, the other of said rack sections having at least one loop member for receiving the barrel portion of a gun, a plurality of slots formed in the front wall of said housing, opposed flanges extending from the said side walls and spaced from said front wall, a slidable member disposed in the area defined by said flanges and said front wall, a plurality of openings formed in said slidable member, said openings terminating in an opening of reduced area, a C-shaped clamp member having a pair of opposed notches formed at each end thereof, a key operated lock, a link connecting said lock and said slidable member, said C-shaped clamp member encircling the stock portion of said gun, the said openings in said slidable member and the said slots in the front wall of said housing being aligned, each said pair of opposed notches on said C-shaped clamp member engaging

with the said reduced area of the openings formed in said slidable member when said slidable member is moved by actuation of said key lock from a lowermost locking position to an uppermost releasing position whereupon said C-shaped clamp member and gun stock supported thereby can be removed from said gun rack.

3,857,492

LOOSE LEAF BINDER STORAGE SYSTEM

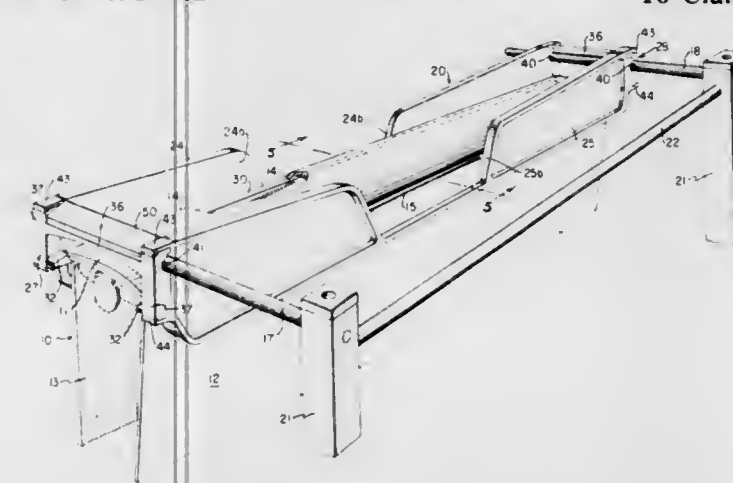
Jack Michaelis, Elmhurst, and Frank J. Malcik, Berwyn, both of Ill., assignors to Swingline Inc., Long Island City, N.Y.

Filed Mar. 15, 1973, Ser. No. 334,962

Int. Cl. A47b 63/00; B42d 17/00

U.S. Cl. 211—42

10 Claims



1. Loose leaf binder suspension system for storing side-by-side and back-side-up a plurality of binders having laterally projecting flanges extending longitudinally along both side edges of the back of the binder, said system comprising:

- a pair of longitudinally spaced parallel hanger rods that extend transversely with respect to the binders and a plurality of generally longitudinally disposed binder suspender assemblies mounted on said hanger rods,

each suspender assembly comprising a pair of transversely spaced longitudinal support members that extend from one hanger rod to the other hanger rod and a pair of transverse end caps one of which end caps is detachably secured to the ends of the support members adjacent one hanger rod and the other of which end caps is detachably secured to the opposite ends of the support members adjacent the other hanger rod, the ends of the longitudinal support members and the facing surfaces of the transverse end cap detachably secured thereto being configured to define transverse openings through which the adjacent hanger rod extends,

longitudinal binder support rails disposed on the facing inner surfaces of the transversely spaced longitudinal support members, said longitudinal support rails being adapted to engage and support the laterally extending flanges on the back of a binder positioned between the longitudinal support members,

interlock means for the support members and the end caps secured thereto for preventing relative transverse and vertical movement of said support members and said end caps, and

releasable latch means for the longitudinal support members and the transverse end caps detachably secured thereto.

3,857,493

COLLAPSIBLE GARMENT DRYER

Walter R. Bourne, 15 Woodridge Cres., Apt. 604, Ottawa, Ontario, Canada

Filed Sept. 26, 1973, Ser. No. 400,940

Claims priority, application Canada, June 29, 1973, 175337

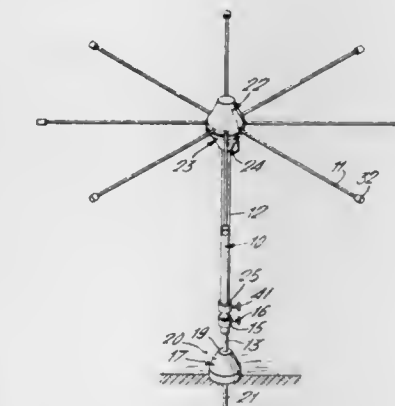
Int. Cl. A47f 5/10

U.S. Cl. 211—178 A

5 Claims

1. A collapsible garment dryer comprising:

- a. a rigid standard;
- b. a head member secured to said standard adjacent one end thereof and having an end face circumscribing said standard and facing the opposite end thereof, said end face having an annular groove therein;
- c. an annular ring located in said annular groove and securely fastened to said head member;
- d. a plurality of arms each having a hooked end embracing said annular ring and thereby pivotally attaching the same for free pivotal movement between an operative position wherein they radiate outwardly from the standard to a collapsed position wherein they extend longitudinally along the standard;



- e. a collar slidably mounted on said standard and supportingly engageable with the arms respectively in each of the operative and collapsed position of the arms to retain them in their respective positions;
- f. lock means for retaining said collar in supporting engagement with the arms in the operative position of the latter to support the same adjacent their pivotal connection to the standard;
- g. lock means for retaining the collar adjacent the free end of the arms in their collapsed position; and
- h. means on said collar to retain the free end of said arms adjacent said standard when the arms are in their collapsed position.

3,857,494

MODULAR RACK ASSEMBLY

Emidio D. Giardini, New Castle, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed July 16, 1973, Ser. No. 379,789

Int. Cl. A47f 5/10

U.S. Cl. 211—177

13 Claims

1. A modular rack assembly for storing and shipping massive metal articles comprising,

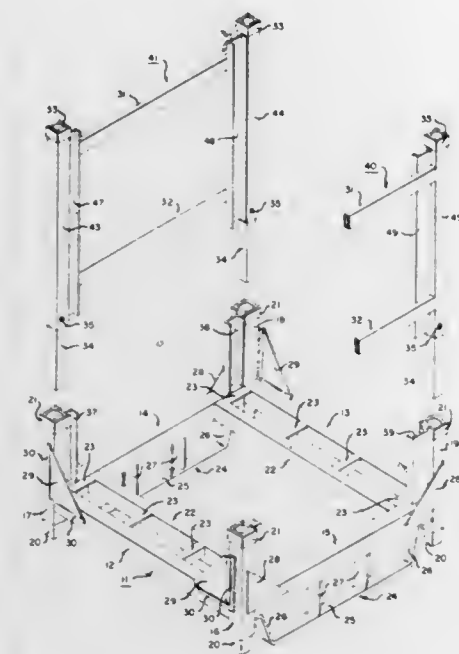
- a rectangular shaped rigid metal base including a pair of oppositely disposed side rails, a pair of oppositely disposed end rails, and a vertically disposed leg member fixed at each corner of said base,

each of said leg members including means providing a vertically extending leg groove open in a direction facing the opposite end of said base and in substantial vertical alignment with a leg groove at the opposite end of said base, an upstanding metal post member at each corner of said rack assembly and means engaging each of said post members with the leg member at that corner to support said post members above said leg members,

each of said post members including means providing a vertically extending groove open in a direction facing the opposite end of said rack assembly and in substantial vertical alignment with the leg groove therebelow to provide a pair of open interfacing vertically aligned grooves extending along a substantial length of said leg members and post members at each side of the rack assembly, and

- a plurality of wooden boards disposed along each side of said rack assembly to provide a load bearing wall at each

respective side thereof, the plurality of boards at each respective side being superimposed one on top of another with each successive board supported on its edge above



3,857,495

KNUCKLE STRUCTURE FOR COUPLER

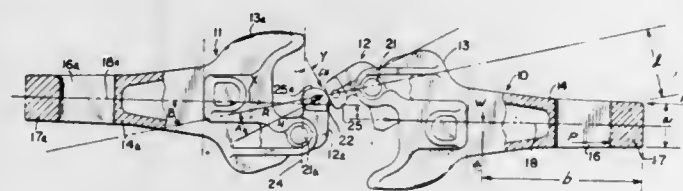
Horst Thomas Kauffhold, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,256

Int. Cl. B61g 3/04

U.S. Cl. 213-151

2 Claims



1. A railway vehicle car coupler comprising a shank and a coupler housing having a guard arm side and a knuckle side, a knuckle, pivot means including pin protector radius means mounting said knuckle on said housing for movement between an open position and a closed position, friction forces resisting turning of said knuckle about said pivot means represented by a friction circle having a radius r_f ; wherein r is the radius of said pin protector radius means and f is the coefficient of friction at said pin protector radius means, said knuckle having a nose, a flat gathering surface of maximum length on said nose, said flat gathering surface being sloped such that in the open position of said coupler a mating closed coupler is slideable therealong with the resultant force of the force normal to said flat gathering surface and the friction force with said mating coupler at one end of the flat gathering surface imparts a moment arm to said coupler capable of swinging said coupler about the butt of said shank, said mating coupler being slideable along said flat face while said knuckle remains in said open position, and said slope of said gathering surface being such that the resultant force at the other end of said gathering surface in the open position of said knuckle lies along a line located approximately tangent to the friction circle.

3,857,496
PLACEMENT ROBOT PROVIDING A VERTICAL AND HORIZONTAL DISPLACEMENT OUTPUT

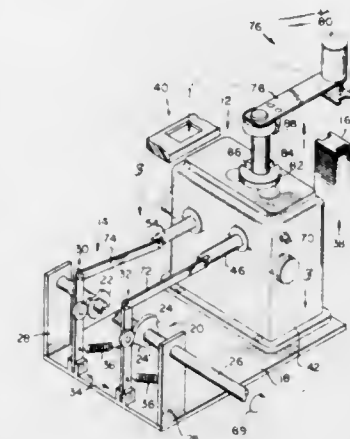
J. Tim Gonzales, Carmel, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Oct. 10, 1972, Ser. No. 296,292

Int. Cl. B66c 1/02

U.S. Cl. 214-1 BT

6 Claims



1. A workpiece handling device including:
 - a. a housing,
 - b. a single output shaft extending from said housing,
 - c. first and second control racks supported by said housing and responsive to a control means,
 - d. said output shaft rotationally responsive to said first rack through a splined periphery on said output shaft,
 - e. a rack carriage disposed in said housing,
 - f. said output shaft axially moved by said rack carriage,
 - g. said rack carriage responsive to a splined shaft lying in a plane transverse to said output shaft,
 - h. said splined shaft responsive to said second control rack, and
 - i. a work handling means coupled to said output shaft to be displaced axially and rotationally thereby.

3,857,497

APPARATUS FOR MOUNTING BUILDING PANELS

Joseph R. Shannon, Jr., P.O. Box 40006, Houston, Tex. 77040

Division of Ser. No. 297,996, Oct. 16, 1972, Pat. No.

3,791,094. This application Oct. 4, 1973, Ser. No. 403,511

Int. Cl. B66c 1/00

U.S. Cl. 214-1 H

9 Claims



1. An apparatus for mounting building panels on a building structure, comprising:

a platform adapted to receive at least one man thereon and a plurality of building panels;
panel transferring means mounted on said platform and movable therewith for raising the panels separately off of the platform and for laterally moving the raised panel relative to said platform for positioning same for mounting on a building structure; and
means for lifting said platform and said panel transferring means together from a lower level to an elevated position.

3,857,498

BALE WAGON

Donald M. Grey, Selma, and Lee D. Butler, Kingsburg, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

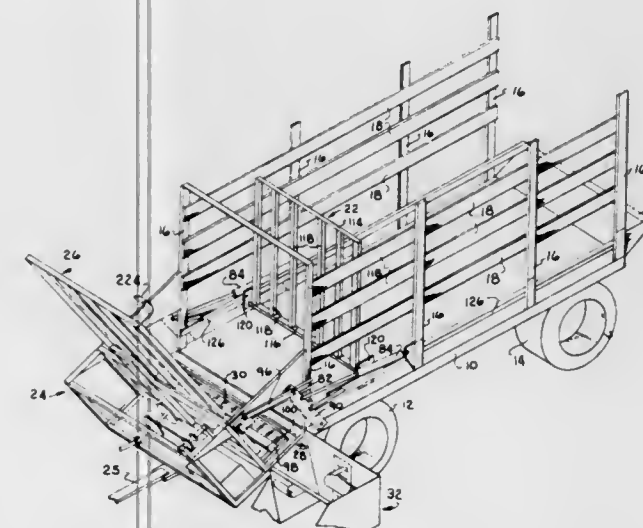
Continuation of Ser. No. 139,324, May 3, 1971, abandoned.

This application Aug. 27, 1973, Ser. No. 392,138

Int. Cl. B65g 59/06

U.S. Cl. 214-8.5 A

3 Claims



1. In a bale unloading wagon of the type which includes a wheel supported chassis, a generally flat load rack mounted on said chassis and being capable of supporting a stack of bales thereon formed of a plurality of vertical tiers of bales arranged transversely of said load rack, a transfer table disposed adjacent an end of said load rack and being capable of successively receiving a tier of bales from said load rack, bale unloading means capable of unloading said bales in said tier received by said transfer table, and rack means disposed transversely of said load rack and mounted on said load rack for movement in a fore-and-aft direction along said load rack toward said load rack end for advancing said stack in said fore-and-aft direction toward said transfer table at said load rack end, the improvement comprising:

- a frame structure mounted at said load rack end including transversely spaced apart guide means which extend generally in said fore-and-aft direction toward said load rack end and mount said transfer table for reciprocatory movement in said fore-and-aft direction between a first position adjacent to said load rack end at which position said table is capable of receiving said tier of bales from said load rack and a second position spaced from said load rack end at which position said table disposes said tier of bales for unloading by said bale unloading means from said wagon;
- an indexing mechanism including first means mounted in said fore-and-aft direction along said load rack for reciprocatory movement toward and away from said transfer table and said load rack end and second means mounted to said moveable rack means for connecting said rack means to said first means during movement of said first means toward said transfer table and said load rack end and for disconnecting said rack means from said first means and maintaining said rack means at rest during

movement of said first means away from said transfer table and said load rack end;
means pivotally mounted at one end to said load rack end for pivotal movement in said fore-and-aft direction, said means further being pivotally coupled at a first location spaced from its one end to said transfer table and at a second location spaced from its one end to said first means of said indexing mechanism; and
a source of motive power for selectively pivotally moving said means mounted at said load rack end in a reciprocatory manner in said fore-and-aft direction through predetermined forward and reverse strokes to respectively cause during said forward stroke substantially simultaneous movements of said transfer table from its first position to its second position and of said first means of said indexing mechanism toward said load rack end which advances said rack means, being connected to said first means by said second means, toward said load rack end and cause during said reverse stroke substantially simultaneous movements of said transfer table from its second position back to its first position and of said first means of said indexing mechanism away from said load rack end while said rack means, being disconnected from said first means by said second means, is maintained by said second means at rest at said previously advanced position.

3,857,499

CARGO HANDLING EQUIPMENT

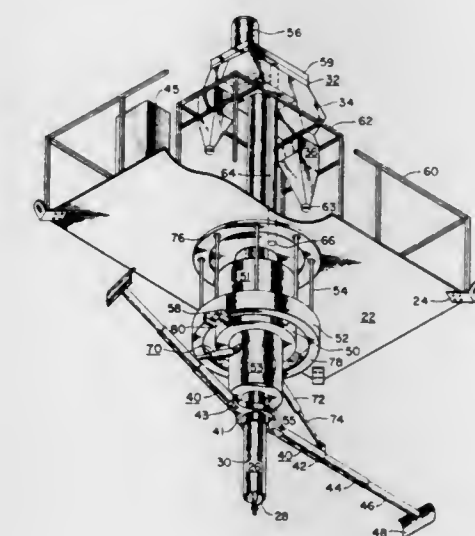
Bruce A. Harbolt, Northridge; David A. Claghorn, Los Angeles, both of Calif., and Delbert W. Block, Jerome, Idaho, assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 31, 1973, Ser. No. 411,357

Int. Cl. B65g 33/14

U.S. Cl. 214-15 D

15 Claims



1. A device for transferring bulk granular material such as granular fertilizer and the like that comprises:
 - a platform;
 - cable attachment means on said platform whereby said platform can be suspended from a surrounding structure;
 - at least one solids lift mounted on said platform with granular material inlet means below and granular material discharge means located at a solids receiving station above said platform;
 - at least one solids conveying means supported by said platform and operative to convey granular material laterally towards a solids transfer station beneath said platform and adjacent the lower end of said lift means; and
 - granular material receiving means carried by said platform at said solids receiving station and in communication with the said discharge means of said solids lift and including at least one solids measuring means carried by said platform and operative to dispense measured masses of a predetermined amount of said granular material at se-

lected intervals whereby said solids can be transferred into containers of uniform amounts.

3,857,500

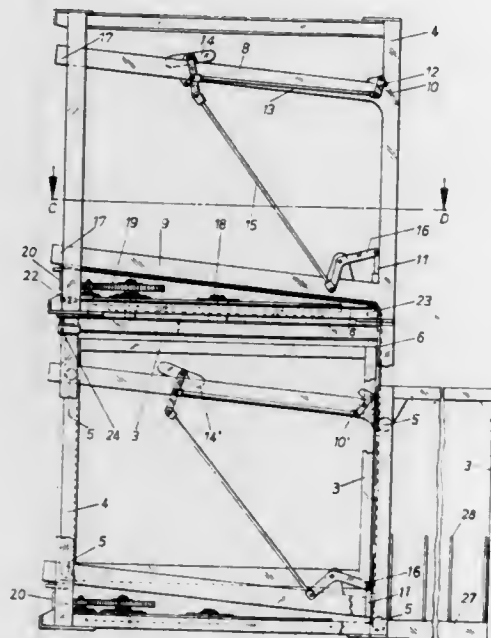
APPARATUS FOR STORING AND STACKING VEHICLES
Alois Goldhofer, Siechenreuteweg, Germany, assignor to Tewi-Pat Anstalt, Vaduz, Liechtenstein

Filed Sept. 5, 1972, Ser. No. 286,070

Int. Cl. E04h 6/06

U.S. Cl. 214-16.1 CE

2 Claims



1. Apparatus for storing and stacking vehicles or other goods comprising: a plurality of superimposed box frames having a front side, each of said box frames being of a size to receive a cage therein, vertical guide means fixed to said front side, a plurality of cages with rollers thereon movable in said guide means, a hoisting mechanism mounted in each of said box frame, means connecting a respective hoist mechanism to a respective one of said cages, vertically spaced guide rails mounted in each of said box frames, said vertically spaced guide rails being slightly inclined toward the front side of said box frame, the respective ends of said vertically spaced guide rails located most remotely relative to said front side being closer together than the respective ends of said vertically spaced guide rails adjacent the front side of said box frames, movable roller engaging flap means mounted on each of said vertically spaced guide rails, lever means connecting said flap means, and lever means operated by the rollers on said cages to selectively guide said cages into and out of a respective one of said box frames relative to said vertical guide means.

3,857,501

APPARATUS FOR LOADING CONTAINERS WITH CARGO

Harry Lassig, and Anton Grosshauser, both of Hamburg-Schenefeld, Germany, assignors to Fordertechnische Forschungsgesellschaft mbH Hamburg-Schenefeld, Germany

Division of Ser. No. 247,287, April 25, 1972, Pat. No.

3,780,893. This application Sept. 21, 1973, Ser. No. 399,471

Claims priority, application Germany, Feb. 5, 1972,

2205505

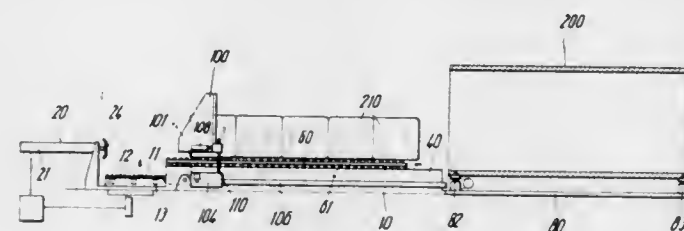
Int. Cl. B65g 67/04

U.S. Cl. 214-41

17 Claims

1. An apparatus for loading containers with cargo, preferably cargo on pallets, and for putting down such cargo on loading platforms of transport vehicles and in storage areas in warehouses, storage yards and the like, said apparatus comprising a base with a track for supporting and guiding a movable conveying carriage adapted to receive a plurality of cargo-carrying pallets arranged in a predetermined manner and occupying a total area substantially corresponding to the freight space area of a container to be loaded; a vertically adjustable support disposed at the track end facing said con-

tainer and adapted to mount a container which is to be loaded and to raise or lower said container so that the upper surface of the floor of said container is substantially coplanar with the pallet receiving upper surface of said conveying carriage to achieve a step-free transition from said conveying carriage to said container floor; and a gate-like clearance indicator frame in the region of said conveying carriage, said frame movable in the longitudinal direction of said track, having a width corresponding substantially to the width of the internal freight space of a container to be loaded and being adapted to align said load-carrying pallets on said conveying carriage, said frame further including gate wings adapted to be moved towards and away from the feed path of said loaded pallets, control means for controlling the movements of said conveying carriage and of said clearance frame as well as the pivotal movements of said gate wings in such a manner that when a



pair of pallets having a combined overall length corresponding substantially to the width of said container internal freight space passes through said clearance frame, when said frame is disposed at the feeding end of said conveying carriage, with said gate wings being in an open position, the advancing movement of said pallets on said conveying carriage will be stopped if the combined overall length of said pallets exceeds the width of said container internal freight space and that after said pallets having been arranged on said conveying carriage, said clearance indicator frame will be moved to a position in front of the loading opening of said container, said conveying carriage with said pallets thereon will be moved into said container interior, said clearance frame gate wings will be closed, and after retracting said conveying carriage from said container interior said clearance frame will be moved back into its initial position and said gate wings will be opened.

3,857,502

SELF-UNLOADING PARTICULATE MATERIAL DELIVERY SYSTEM

John H. Holland, and Gene O. Fox, both of Norman, Okla. Assignors to Arkansas Rock and Gravel Co., Mufreesboro, Ark.

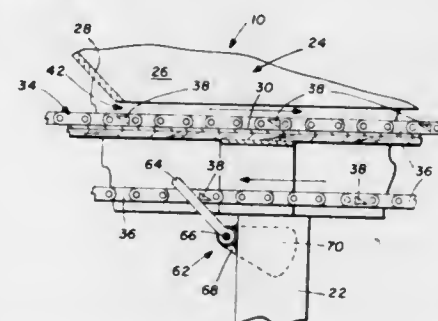
Division of Ser. No. 203,740, Dec. 1, 1971, Pat. No. 3,731,825.

This application Feb. 26, 1973, Ser. No. 335,722

Int. Cl. B60p 1/38

U.S. Cl. 214-83.36

18 Claims



1. A self-unloading particulate material delivery apparatus comprising:
a particulate material receiving hopper defined by opposed side walls and a floor;
a conveyor including a pair of drive chains and a plurality of flights extending between the drive chains;
means for driving the conveyor around a course including a portion extending through the lower portion of the particulate material through to the hopper; and

means mounted at one point on said apparatus to provide an indication of a predetermined relationship between the position of at least one of said flights on said course and another point on said apparatus.

3,857,503

REFUSE CONTAINER RETAINING MEANS FOR INVERTABLE CONTAINER RACK OF REFUSE TRUCK

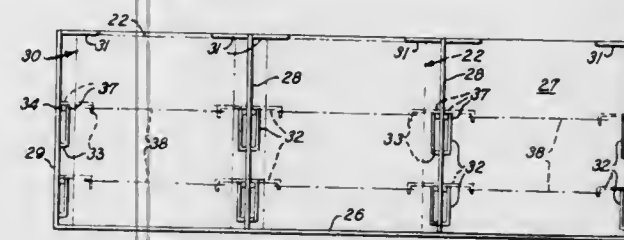
Donald C. Brown, Box 194, Botkins, Ohio 45306

Filed Oct. 30, 1973, Ser. No. 411,339

Int. Cl. B65f 3/02

U.S. Cl. 214-302

6 Claims



1. A refuse container lifting and inverting rack for use with a refuse truck or the like having power means to move the rack between a ground level upright position and an overhead inverted container dumping position, said rack comprising a body portion having a floor and side walls defining at least one compartment for a refuse container, said compartment having an open side through which a container may be placed in the rack or removed therefrom and having an open top, a pair of fixed retainer elements on said side walls at the top of the rack and projecting over said open top of the compartment to prevent endwise movement of a container therein when the rack is inverted, a pair of generally triangular gravity activated retainer plates pivotally mounted in opposing relation on said side walls near and inwardly of the open side of the compartment, the pivot axes of said retainer plates being parallel and somewhat inclined to the horizontal when said rack is at said ground level upright position, said retainer plates then hanging freely and lying substantially flush against said side walls with corresponding vertexes arranged lowermost and corresponding lowermost side edges facing downwardly, and means on said retainer plates for limiting movement of said retainer plates beyond a position where they are substantially perpendicular to said side walls, whereby when said rack is moved toward said overhead inverted dumping position said pivoted retainer plates move by gravity to substantially horizontal opposing positions with their last-named corresponding side edges converging toward the open side of said compartment and projecting inwardly of said side walls to block the movement of a container in the compartment through said open side.

3,857,504

MECHANISM FOR LOCKING REFUSE CONTAINER ON TRUCK PLATFORM

Arthur E. Bausenbach, Rockville Centre, and Frank Palopoli, Massapequa Park, both of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,181

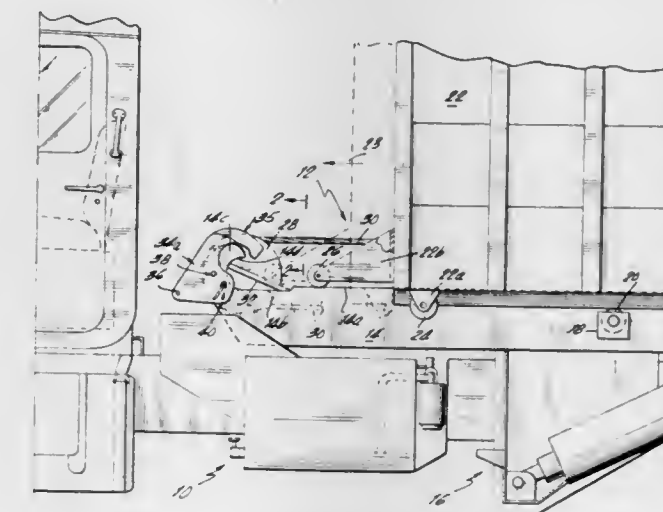
Int. Cl. B60p 1/64

U.S. Cl. 214-517

6 Claims

1. For use with the combination of a container and a truck having an elongated platform with means for pulling the container along the platform on the truck, the improvement comprising:
a locking member carried by the container,
a locking mechanism including a locking element, the element having an inner surface defining a cavity adapted to engage the locking member when the container is on the platform and the locking member is adjacent to the locking mechanism,

a pivot mounted on the platform substantially in the plane of movement of said locking member,
means mounting the locking element on the platform for movement about said pivot between an open, disengaged position disposed away from the locking member and a closed, engaged position partially enveloping the locking member,
means biasing the locking element to its open position, the cavity-defining surface of the locking element having an arcuate camming segment shaped so that (1) contact with the locking member of the container, when the locking element is in its open position and when the container is pulled to the end of said platform, forces the locking element to move in only one direction from its open to its closed position against the force of the biasing means, and



(2) forward or rearward movement of the container along the platform does not substantially tend to force said locking element to move from its closed to its open position,
a major portion of the cavity-defining surface of the locking element being circular in shape and serving to partially envelop said locking member when the locking element is in its closed position, the locking element terminating in a head which protrudes between said locking member and said container when the locking element is in its closed position to engage said locking member,
and means releasably latching said locking element in its closed position after it is forced to move to its closed position by contact with the locking member of the container.

3,857,505

SAFETY CLOSURE

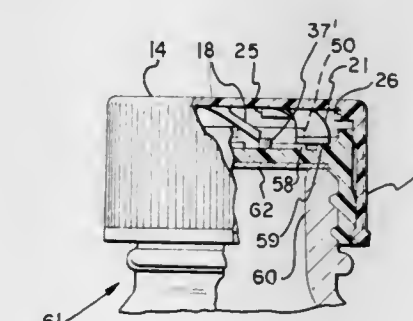
G. Victor Mumford, and Richard C. Williams, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 1, 1973, Ser. No. 402,199

Int. Cl. B65d 43/02

U.S. Cl. 215-9

8 Claims



1. A child-resistant closure for containers having an exteriorly threaded finish portion comprising, in combination: an inner cap member having a top panel integrally formed with

a depending skirt portion, said depending skirt portion having threads formed on the interior surface thereof for engagement with said finish portion of said container, an axially extending ring wall integrally formed with the periphery of said inner member top panel, a plurality of spaced apart drive members formed in the outer extremity of said ring wall; an outer cap member having a top panel integrally formed with a depending skirt portion, said depending skirt portion of said outer member loosely encompassing said depending skirt portion of said inner cap member to allow relative rotary and axial movement between said inner and outer members, a plurality of downwardly directed drive lugs integrally formed on the interior of the top panel of said outer member, said drive lugs engaging the spaces between said drive members in one position of axial displacement of said inner and outer members and being disengaged therefrom in a second axial position of said inner and outer members; ratchet lug means formed on one of said inner and outer members and interposed said members; a plurality of inclined leaf spring members, formed on one of said inner and outer members and interposed said members, said leaf spring members providing a biasing force to maintain said inner and outer members in said second axial position and to drivingly engage said ratchet lug means in said second axial position to drive said inner and outer members as a unit in the tightening direction of said closure but slip over said ratchet lug means freely in the untightening direction to prevent unscrewing of said inner member, downward pressure on said outer member overcoming the bias of said leaf spring members to place said inner and outer members in said first axial position; and means for loosely retaining said inner member within said outer member.

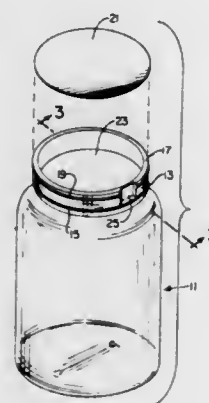
3,857,506

PLASTIC CONTAINER

Robert X. Hafele, Overland Park, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed July 16, 1973, Ser. No. 379,450
Int. Cl. B65d 1/02

U.S. Cl. 215-31

5 Claims

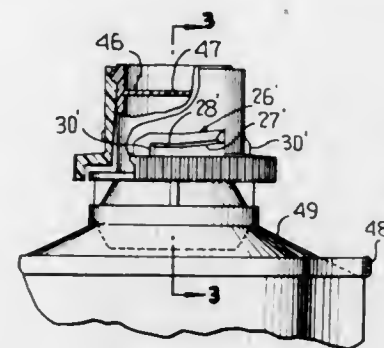


1. A hollow, thin-walled, plastic container having
 - a. a neck portion defining a mouth for said container, said neck having a substantially uniform wall thickness;
 - b. an inwardly extending sealing web at the uppermost extent of said mouth for hermetically receiving a peelable sealing diaphragm; and
 - c. an inward indentation on said neck which intersects said sealing web for aiding the removal of said diaphragm upon its being sealed to said sealing web.

3,857,507
SAFETY CLOSURE FITMENT AND FINISH
Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 260,105, June 6, 1972, Pat. No. 3,836,034. This application Oct. 16, 1972, Ser. No. 297,734

Int. Cl. B65d 55/02, 55/56; A61j 1/00
U.S. Cl. 215-218

15 Claims



1. A closure comprising a tubular fitment and a cap assembled together for subsequent telescopic press application onto a container finish, said fitment having a frusto-conical interior surface said cap having an end panel and a peripheral skirt with means reinforcing a part of said fitment against outward deflection, said tubular fitment having an interior surface reducing in diameter from a leading surface portion thereof remote from said end panel toward the opposite end thereof adjacent said end panel, said leading surface portion in the area of said reinforcing means having a diameter sufficient to permit telescopic assembly of the cap and fitment on an associated container finish with little initial resistance to the relative telescopic movement, and the diminishing diameter of said fitment above said surface portion thereafter increasing the resistance of telescopic assembly to a point of interference which if offset by radial outward deflection of said fitment above said surface portion, and said fitment terminates at said opposite end thereof in means for axially opposing abutment of an associated container finish thereby precluding unauthorized removal of said fitment and/or cap from a container finish.

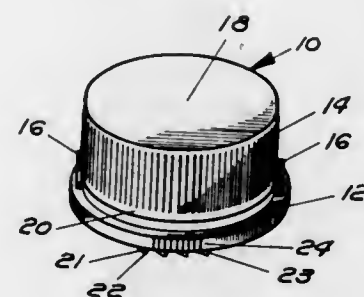
3,857,508

SAFETY CLOSURE AND CONTAINER

Robert L. LaBarge, Ben Avon, Pa., and Charles J. Leftault, Jr., Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 3, 1973, Ser. No. 402,974
Int. Cl. B65d 55/02, 85/56; A61j 1/00
U.S. Cl. 215-221

14 Claims



1. A molded plastic safety closure adapted to close a container having a neck portion with an opening therein, inclined closure retaining means on the exterior of the neck portion and detent means adjacent the neck portion having at least one substantially vertical surface disposed in a plane extending substantially radially of the container neck, said closure comprising a top end wall for closing the opening in the container neck, a depending skirt with internal means for engaging the inclined retaining means on the container neck to secure the closure on the container, and an integral resiliently

deflectable annular band around the bottom of said closure and rigidly connected to said closure skirt by at least one relatively narrow bridge, said band having at least one downwardly projecting ratchet tooth thereon for engagement against the vertical surface on the detent means on the container when the closure is closed on the container whereby said engagement prevents counter-clockwise rotation of said closure with respect to said container unless said band is deflected upwardly to disengage said tooth from said detent means.

3,857,509

BOTTLE

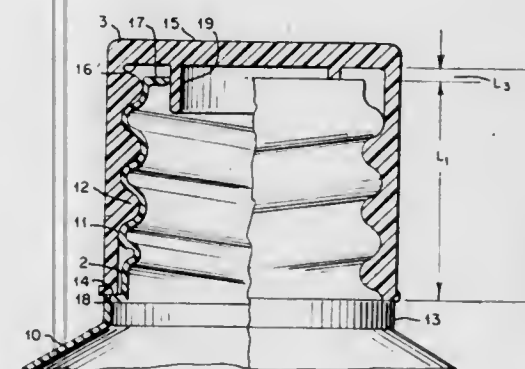
Marshall Glenn Baldwin, Westport, Conn., and Gilbert Dwayne Miles, Ossining, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,656

Int. Cl. B65d 41/04

U.S. Cl. 215-329

8 Claims



1. A container comprising
 - a. a body portion,
 - b. a hollow open-ended cylindrical neck portion protruding from said body portion,
 - c. said neck portion having a first sealing surface disposed on its top surface and a threaded exterior surface,
 - d. an annular shoulder disposed around said neck portion,
 - e. said shoulder being adjacent said body portion and having a first seating surface lying in a plane transverse to the axis of said neck portion,
 - f. said neck portion having a predetermined height measured from said first seating surface to said first sealing surface,
 - g. a cap member having a threaded inner surface adapted to engage the threaded exterior surface of said neck portion,
 - h. said cap member having an open base end, a closed top end, and a second sealing surface, adapted to engage said first sealing surface, disposed on the inner surface of said closed top end,
 - i. said base end defining an annular second seating surface corresponding to said first seating surface,
 - j. said cap member having a predetermined depth, measured from said second seating surface to said second sealing surface,
 - k. said predetermined height of said neck portion being less than the predetermined depth of said cap member.

3,857,510

KETONE CLEAVAGE AND PRODUCTS THEREFROM

Milorad M. Rogic, Wippany, and Robert Fuhrmann, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 189,373, Oct. 14, 1971., This application Sept. 1, 1972, Ser. No. 285,681

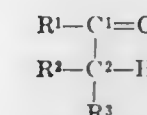
Int. Cl. C07d 53/06

U.S. Cl. 230-239.3 A

26 Claims

1. In a process of nitrosating ketones at a C-C bond adjacent to the ketonic carbon: the combination of features resulting in cleavage to produce a terminal carboxylic acid ester group

and an oxime group, which comprises admixing (1) a ketone of the formula



wherein R¹ and R² can be each a saturated aliphatic or cyclic hydrocarbon radical containing 1 to 20 carbon atoms, or together form a saturated cyclic hydrocarbon radical, having 5-12 carbon atom in the ring and R³ is H or R¹; and (2) a nitrosating agent at about equimolar proportion with the ketone; and (3) an alcohol at molar proportion at least about equal to the ketone, in a polar aprotic solvent having a dielectric constant of at least about 12 for a time sufficient to effect scission at the C¹-C² carbon bond, to produce a carboxylic ester group at the C¹ carbon, and an oxime group at the C² carbon.

24. The process as claimed in claim 21 wherein said ω-aminohexanoate ester is cyclized to produce ε-caprolactam.

3,857,511

PROCESS FOR THE SPRAY APPLICATION OF AQUEOUS PAINTS BY UTILIZING AN AIR SHROUD

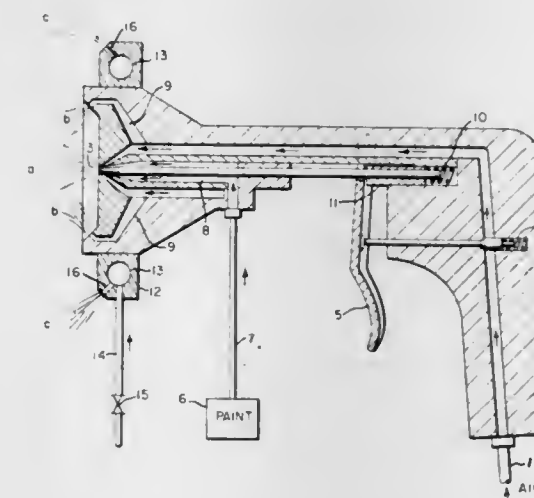
Tirunillai S. Govindan, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed July 31, 1973, Ser. No. 384,354

Int. Cl. B05b 1/06

U.S. Cl. 239-11

11 Claims



1. In the process for applying an aqueous paint of a thermosetting acrylic enamel to a substrate by air-spraying the paint with a spray gun utilizing atomized air at a flow rate of 5-40 cubic feet per minute and at an air pressure of 30-95 pounds per square inch at the spray gun and a paint flow rate of 5-30 ounces per minute which forms a cone of air atomized paint which is applied to the substrate and baked to form a uniform finish on the substrate, the improvement in the use therewith comprising

an air shroud that substantially encircles the cone of air atomized paint, wherein the air of the shroud is at 15°-95°C. and the air flow rate is 10-250 cubic feet per minute, and wherein the air shroud provides a uniform atmosphere for drying the aqueous paint during spraying of the substrate.

3,857,512

REFILL FOR A ROOM DEODORIZER, AND METHOD OF MANUFACTURING AND USING THE SAME

John S. Levey, Westlake Village, Calif., assignor to Days-Ease Home Products Corporation, North Hollywood, Calif.

Filed Jan. 21, 1974, Ser. No. 434,851

Int. Cl. A24f 25/00; A61l 9/04

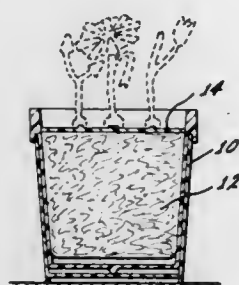
U.S. Cl. 239-34

4 Claims

1. A refill for a flower pot type room deodorizer wherein a cake of an evaporative deodorizing gel is disposed in an inverted frusto-conical type vessel removably capped at the top

end and comprised of an inner windowed shell and an outer windowed co-axial housing within which said shell is rotatable from a first position wherein the windows in the shell and said housing are in register, to a second position wherein none of said windows is in register, said refill comprising:

- A. an inverted frusto-conical flexible walled cup-like container, said container having at least a portion of its inside dimensions corresponding to at least a substantial portion of the inside dimensions of said shell;
- B. a frusto-conical cake of deodorizing gel, said cake being disposed within said container with the lowermost end of



said cake spaced from the bottom of said container thereby to provide an air pocket intermediate said lower end of the cake and the bottom of the container; and

- C. a closure member removably secured over the top edges of said container,

whereby, when said container is removed and placed on a horizontal surface and the thus-filled container is inverted and held over said closure and its flexible wall defining said air pocket is squeezed, the cake will be ejected from the container onto said closure so that it may then be inserted in said shell when the vessel cap is removed, and will be seated in a close fit in said shell.

3,857,513

SEMI-AUTOMATIC COLOR CHANGE SYSTEM FOR PAINT SPRAY INSTALLATION

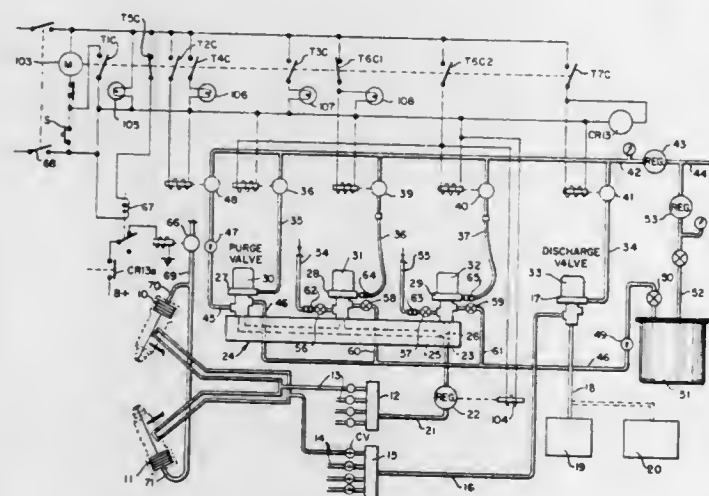
Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratfield, Conn.

Continuation-in-part of Ser. No. 676,824, Oct. 20, 1967, Pat. No. 3,572,366, which is a continuation-in-part of Ser. No. 440,736, March 18, 1965, Pat. No. 3,348,774. This application Nov. 9, 1970, Ser. No. 87,813

Int. Cl. B05b 15/02

U.S. Cl. 239-70

5 Claims



1. A semi-automatic color change system for a paint spray installation having predetermined color change cycles having multiple stages including at least one solvent flush stage, said system comprising

- a. plural fluid delivery lines including at least two paint lines and one solvent line;
- b. a valve controlled paint spray nozzle;

- c. a fluid supply line communicating between said plural fluid delivery lines and said spray nozzle;
- d. a fluid pressure regulator interposed in said fluid supply line and being selectively controllable between first and second conditions in which fluid leaves said regulator at comparatively high pressures and comparatively low pressures, respectively;
- e. fluid pressure control means for said fluid pressure regulator to select the first or second of said conditions of operation in accordance with predetermined stages of said cycles; and
- f. selective fluid delivery control means permitting the communication with said supply line of only one of said fluid delivery lines at a time.

3,857,514

STEAM DISPERSION MANIFOLD

Arthur E. Clifton, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.

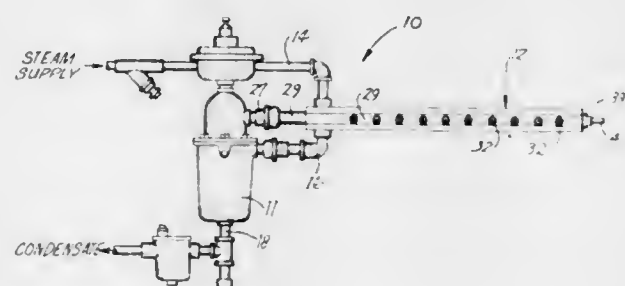
Continuation of Ser. No. 69,215, Sept. 3, 1970, abandoned.

This application May 25, 1972, Ser. No. 257,057

Int. Cl. B05b 1/24

U.S. Cl. 239-132

11 Claims



1. A humidifier for discharging dry steam, comprising: an elongated hollow steam discharge conduit, said steam discharge conduit being closed at one end thereof and being adapted to be connected to a supply of steam adjacent the other end thereof for permitting steam to flow longitudinally through said discharge conduit;
- a row of spaced flow nozzles attached to said steam discharge conduit along one side thereof, said flow nozzles each having a discharge orifice therethrough in communication with the interior of said discharge conduit, said nozzles including a tubular wall extending inwardly into the interior of said discharge conduit so that the inner end of said discharge orifice is disposed inwardly from the inner peripheral wall of said discharge conduit to disrupt the free flow of steam in said discharge conduit;
- an elongated second conduit outside of and extending along the length of said discharge conduit and defining a steam receiving chamber in heat transfer relationship with said discharge conduit;
- inlet and outlet couplings connected to said second conduit and adapted for connection to a supply of steam so that flow of steam into and through said chamber at least minimizes condensation of the steam flowing within said discharge conduit, the outer ends of the discharge orifices formed in said flow nozzles communicating directly with the atmosphere surrounding said conduits for permitting dry steam within said discharge conduit to flow directly into said atmosphere; and
- a steam control unit connected between said outlet coupling and the other end of said steam discharge conduit, said steam control unit having means for separating condensate from the steam leaving said second conduit so that dry steam is supplied to said steam discharge conduit, said steam control unit having a flow control orifice, the cross-sectional area of said flow control orifice being selected with respect to the sum of the cross-sectional areas of the discharge orifices so that the steam in the steam discharge conduit is at least slightly pressurized.

3,857,515

LIQUID SPRAY DEVICE

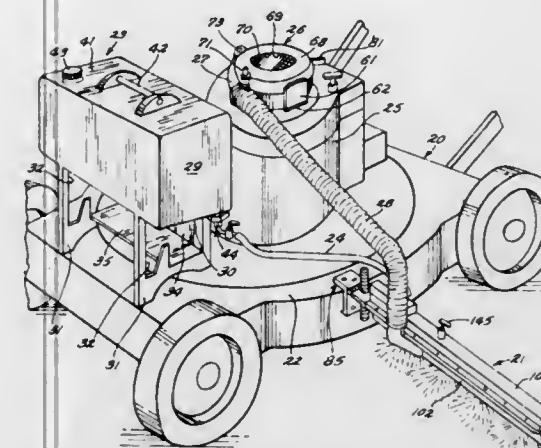
Michael Maurice Zennie, 1274 Morten St., Cincinnati, Ohio 45208

Filed Apr. 4, 1974, Ser. No. 457,799

Int. Cl. B05b 7/26

U.S. Cl. 239-169

18 Claims



1. A liquid spray device comprising a wheeled ground vehicle, an elongated spray head mounted on the vehicle adjacent the ground and disposed normal to the path of travel of the vehicle, said spray head having an upper liquid reservoir and an air pressure chamber positioned below the reservoir, an engine on the vehicle, a blower mounted on the vehicle, power transmission means between the blower and the engine, and liquid tank on the vehicle positioned on a level above the spray head, a gravity flow hose connecting the tank and the liquid reservoir in the spray head, an air pressure conduit between the blower and the air pressure chamber, a number of longitudinally spaced apart nozzles in the bottom of the spray head, a liquid flow tube depending through the chamber and connecting each nozzle with the reservoir, air passage-ways connecting each nozzle with the air pressure chamber, valve means interposed between the reservoir and each liquid flow tube, and means uniformly controlling the flow of liquid through all of the tubes.

12. A liquid spray device for rotary lawnmowers having a deck supported upon ground engaging wheels and an engine housing supported upon the deck comprising an elongated spray head adjacent to the ground and disposed normal to the path of travel of the lawnmower, said spray head having an upper liquid reservoir and an air pressure chamber positioned below the reservoir, mounting means positioning the spray head on the deck of the lawnmower, a liquid tank, a frame resting upon the deck and supporting the tank on a level above the spray head, a blower means mounting the blower on the engine housing, a clutch means interposed between the blower and the lawnmower engine, a flexible conduit connecting the pressure outlet of the blower to the air pressure chamber in the spray head, a flexible hose connected to the fluid chamber in the spray head, a valved fitting connecting said flexible hose with the tank, nozzle means along the bottom of the spray head, and control means within the spray head metering the flow of liquid and pressure air to the nozzle means.

3,857,516

ROCK-CUTTING MACHINES

Nicholas Simon Hall Taylor, Sturevagen 11, 133 00 Salt-sjobaden, and Carl Anders Noren, Kocktorpsvagen 55 a, 132 00 Saltsjo-Boo, both of Sweden

Filed July 7, 1972, Ser. No. 269,835

Claims priority, application South Africa, July 8, 1971, 71/4521

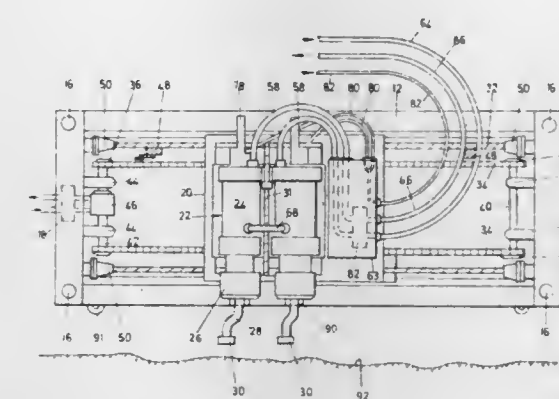
Int. Cl. B05b 15/06

U.S. Cl. 239-186

8 Claims

1. A cutter comprising means adapted to be fixed at least temporarily in position, a nozzle operatively connected to the fixed means and being movable relative thereto and generator

means carried by the fixed means and operatively connected to and movable together with the nozzle and being adapted to supply fluid under pressure to the nozzle to produce a high velocity jet, said generator means comprising an ejector piston and an ejector cylinder discharging through said nozzle; means for actuating said generator means comprising a power piston co-axial with said ejector piston and a power cylinder



3,857,517

ANTI-SIPHON AND PUMP PRIMING FOR SEWAGE GRINDER PUMP

Richard C. Grace, Star Route, and Frank W. Van Luik, Jr., Schenectady, both of N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

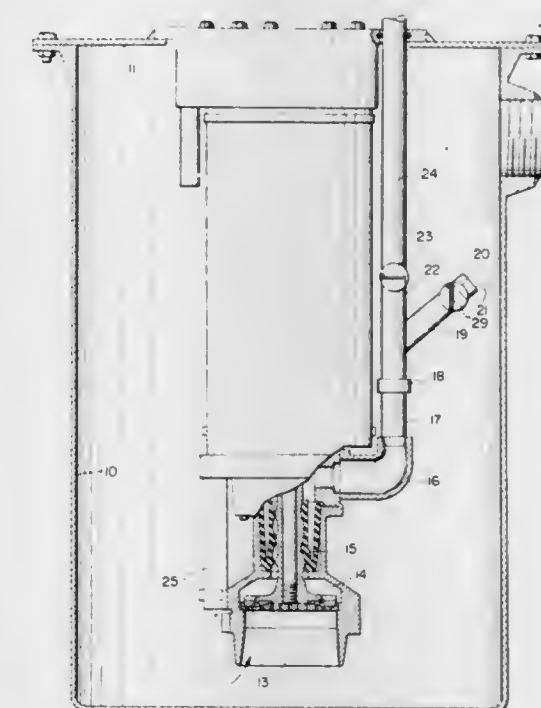
Continuation of Ser. No. 305,712, Nov. 13, 1972, abandoned.

This application Sept. 18, 1973, Ser. No. 398,469

Int. Cl. B02c 13/18

U.S. Cl. 241-36

17 Claims



1. An anti-siphoning pumping system for liquids comprising a receiving tank having an inlet and an outlet, pump means having a suction inlet below the liquid level in said tank for tanking suction on the contents of the tank and discharging the same under increased pressure from an outlet, a discharge passage connected to the outlet from said pump means for discharging liquid from said tank under pressure through said tank outlet, first check valve means coupled to said discharge

passage permitting fluid flow only in the direction from said pump outlet to said tank outlet and to prevent backflow of pressurized liquid, conduit means connected at one end to said discharge passage between said first check valve means and said pump outlet, said conduit means being freely open at its other end to a source of venting gas, and second differentially operable check valve means within said conduit means for passing gaseous fluids through said conduit means in either direction and for preventing the passage of liquid from said one end to said open end of said conduit means.

3,857,518

MACHINE FOR PRODUCING HIGH GRADE COARSE GROUND LEAN MEAT

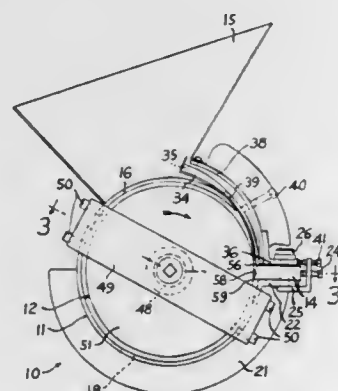
Stephen A. Paoli, 520 Sixth St., Rockford, Ill. 61108

Filed Oct. 16, 1972, Ser. No. 297,634

Int. Cl. A22c 17/00

U.S. Cl. 241-68

7 Claims



1. A machine for mechanically separating high grade lean meat in coarse ground form from low grade meat containing undesirable tissues such as sinew, cartilage, and stringy connective tissue, said machine comprising, in combination:

- a machine casing;
- a hollow, power driven rotor journaled in said casing;
- a plurality of helical cutting elements each having a concave side and a convex side and disposed in axially spaced, nested overlapping relation on the periphery of said rotor;
- said overlapping helical cutting elements defining initially constricted helical passages opening generally axially of said rotor and communicating with the interior thereof;
- a pressure bar extending axially of said rotor and spaced from the periphery thereof by an amount not substantially greater than the initial constriction of said helical passages;
- means for feeding raw material in the form of low grade meat between said rotor and said pressure bar;
- power means for turning said rotor relative to said pressure bar and thereby forcing the meat axially of said rotor through the constricted helical passages and into the interior of said rotor, leaving the waste tissue on the exterior thereof;
- means for collecting the lean meat from the interior of said rotor;
- said helical cutting elements and said pressure bar being adapted to eject the waste from the exterior of said rotor.

3,857,519

HAMMER BREAKER FOR BREAKING-UP BULKY REFUSE MATERIAL

Anton Schafer, Langenfeld, and Karl Probst, Solingen, both of Germany, assignors to Lindemann Maschinenfabrik GmbH, Dusseldorf, Germany

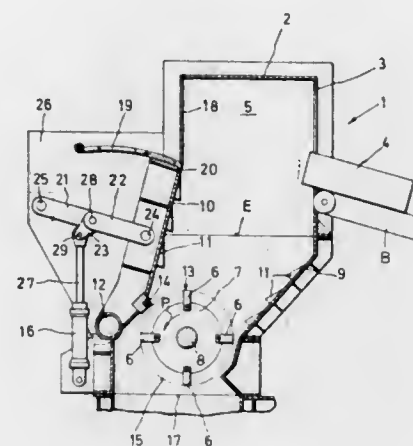
Filed May 23, 1973, Ser. No. 362,914

Claims priority, application Germany, June 10, 1972, 2228408

Int. Cl. B02c 13/04

U.S. Cl. 241-186 R

4 Claims



1. A hammer breaker for breaking up bulky refuse material, said breaker including a rotor, a plurality of breaking hammers attached to said rotor spaced apart about the radially outer periphery thereof, a rotor housing, means rotatably supporting said rotor in said housing with the axis of rotation thereof extending substantially horizontally, means for rotating said rotor in said housing so that said rotor rotates about its axis of rotation in a vertical plane and the radially outer surfaces of said breaking hammers attached to said rotor pass along a vertically arranged outer rotational circle, said housing having means defining an open end thereof below said rotor and walls extending upwardly from said rotor housing to form a supply hopper for conducting the bulky refuse materials downwardly into contact with said breaking hammers on said rotor, said upwardly extending walls including a side wall extending transversely of the plane of the outer rotational circle of said breaking hammers and said side wall being positioned adjacent the periphery of said outer rotational circle along which said breaking hammers move downwardly when said rotor is rotated by said driving means, at least one counter-tool fixed to said side wall, means hingedly mounting said side wall at its lower end for pivotal movement about an axis parallel to said axis of rotation of said rotor and means for moving said side wall about said pivotal axis to move said side wall and said counter-tool toward and away from the outer rotational circle of said breaking hammers, said pivotal axis of said side wall being at substantially the same level as said axis of rotation of said rotor and said side wall extending upwardly from said pivotal axis to above the top-center of the outer rotational circle of said hammers as said rotor is rotated by said driving means, said means for moving said side wall including means for supporting said side wall in a rigid position with said counter-tool immediately adjacent to and radially outwardly of the outer rotational circle so that said counter-tool cooperates with but does not contact said breaking hammers in breaking up the bulky refuse material, said means for moving said side wall being arranged to displace said side wall from the rigid position with said counter-tool located adjacent the outer rotational circle outwardly away from the outer rotational circle while retaining said side wall positioned relative to the remaining said walls so that said supply hopper formed thereby can be increased in cross sectional flow area for relieving any bridging of the bulky refuse material moving downwardly toward said rotor.

3,857,520

OSCILLATING ANVIL DISINTEGRATOR

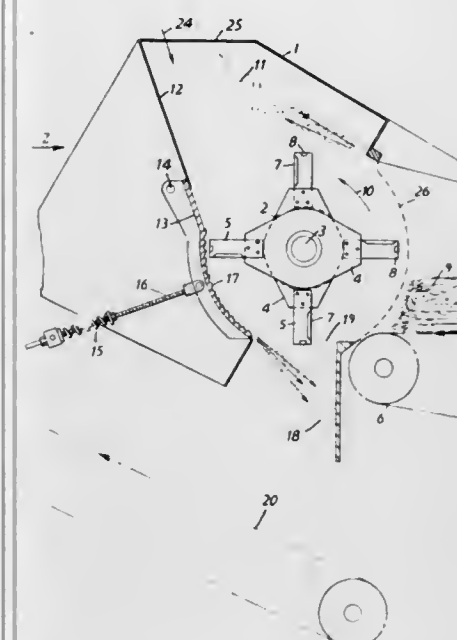
Joseph Christophe Victor Ducasse, Papaaloo, Hawaii, assignor to Unice Machine Company, San Francisco, Calif.

Filed Oct. 27, 1972, Ser. No. 301,442

Int. Cl. B02c 13/09

U.S. Cl. 241-189 R

23 Claims



1. A machine for simultaneously cutting and shredding plant products, such as sugar cane stalks, said machine comprising:

- a casing;
- a rotor mounted to rotate about an axis thereof in said casing;
- a feed opening in said casing, at one side thereof with respect to said rotor;
- means for feeding plant products through said feed opening toward said rotor in a direction substantially perpendicular to said axis of said rotor;
- anvil means yieldably mounted to said casing, at a side thereof with respect to said rotor opposite said feed opening;
- said casing having a chute surface directly above said anvil means;
- a plurality of blades rigidly mounted to the periphery of said rotor to rotate therewith;
- each of said blades having on the leading edge thereof, with respect to the direction of rotation of said rotor, cutting edge means for cutting into pieces said plant products fed through said feed opening; and
- each of said blades having at the outermost end thereof, extending in opposite directions parallel to said axis of said rotor and perpendicular to the plane of said blade, means for throwing the cut pieces of plant products upwardly onto said chute surface, whereafter said pieces of plant products slide downwardly to said anvil means, and for shredding said pieces of plant products against said anvil means.

3,857,521

SHREDDER-BAGGER HAVING BLADE ASSEMBLY

Byron T. Asland; Douglas D. Dankel, both of Kankakee, and Richard W. Franklin, Mokenca, all of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Sept. 4, 1973, Ser. No. 393,825

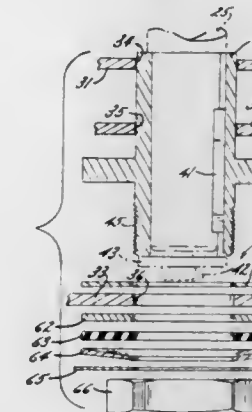
Int. Cl. B02c 18/18

U.S. Cl. 241-243

6 Claims

1. In a shredder-bagger for shredding garden debris, the combination comprising a frame defining a shredding chamber of flat cylindrical construction having a top wall, flat bottom wall and circular side wall, means defining a receptacle in the top wall and a discharge chute in the side wall, an

engine having a shaft extending axially into the shredding chamber, a blade assembly secured to the shaft, said blade assembly having a hub keyed to the shaft and having a plurality of blades telescoped over the hub, means for clamping the blades together in stacked and spaced relation for rotation as a unit independently of the hub, breakers spaced about the side wall having teeth interdigitated with the tips of the blades,



a friction clutch interposed between the lowermost blade and the hub for driving the blades, the blades being offset with respect to one another for acting progressively upon debris introduced into the receptacle, the degree of offset being sufficiently small so that the bodies of blades are largely overlapping the clamping means including spacers interposed between the overlapped bodies of the blades of that the blades together form a rigid box-like assembly.

3,857,522

CONTINUOUS YARN WINDING APPARATUS

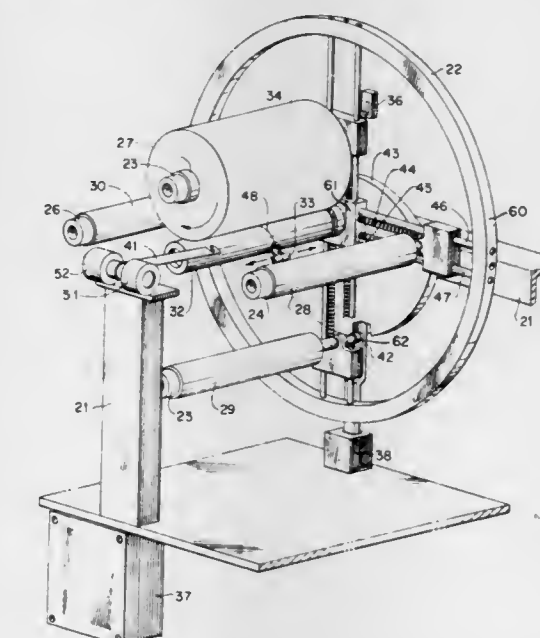
Roger H. Fink, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 1, 1971, Ser. No. 203,760

Int. Cl. B65h 54/02

U.S. Cl. 242-18 A

2 Claims



1. A continuous yarn winding apparatus comprising a frame, an incrementally rotatable turret attached to said frame by a hub and series of spokes; an arbor driving roller attached to said frame concentric to the turret; first and second yarn winding arbors slidably attached to said spokes to move in and out of engagement with said arbor driving roller; yarn traversing means adjacent said driving roller for depositing yarn from a yarn supply onto the winding arbors to form a yarn package; spring means for urging the winding arbors toward said hub and into engagement with said arbor driving roller; a cam guide having an arbor engaging face continuous through the rotational increment of the turret from an outermost position of the second winding arbor to a position adja-

cent said driving roller the interaction of the cam guide and spring means tending to cause rotation of the turret around the arbor driving roller while simultaneously guiding the second winding arbor along the spokes and into contact with the arbor driving rollers; turret detent means for restraining rotation of the turret with said second yarn winding arbor in the outermost position until a yarn package has been formed on said first yarn winding arbor; and means for transferring yarn from the yarn traversing means to the second yarn winding arbor after it has engaged the driving roller.

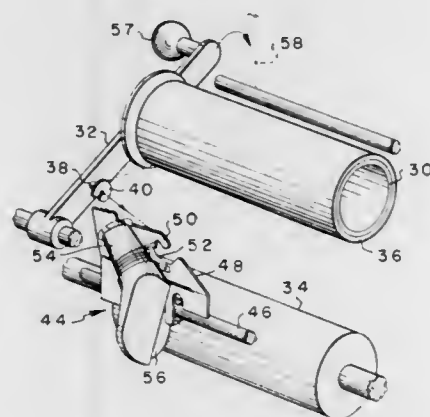
3,857,523

YARN TAKE-UP

Alton L. Lenderman, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 239,874, March 31, 1972. This application Feb. 7, 1974, Ser. No. 431,248
Int. Cl. B65h 54/02, 54/42

U.S. Cl. 242-18 DD

1 Claim



1. A yarn winding arrangement comprising: a drive roll, a pivotally mounted lever arm, a take-up roll rotatably mounted on said lever arm, said lever arm being pivoted to move said take-up roll into and out of engagement with said drive roll, a yarn transfer mechanism having a severing means and being operably associated with and driven by said drive roll to take up yarn when a completed yarn package is moved out of engagement with said drive roll and is being doffed from said take-up roll and means connected to said lever arm to hold yarn in a predetermined position when the yarn is being taken up by said yarn transfer mechanism and when the take-up roll is being pivoted into operative position adjacent said drive roll, said means having a notch therein to hold and guide yarn from the yarn supply until it is severed by said yarn transfer mechanism.

3,857,524

SURFACE ENVELOPER TRANSFER WINDER

James J. Melead, Roscoe, Ill., and Stanley C. Zink, Fulton, N.Y., assignors to Beloit Corporation, Beloit, Wis.
Filed Oct. 5, 1973, Ser. No. 404,107

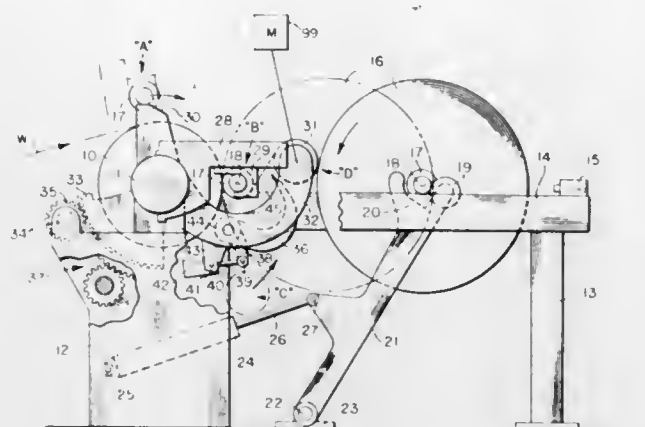
Int. Cl. B65h 19/26

U.S. Cl. 242-56 R

23 Claims

1. An apparatus for continuously winding a web into a plurality of spools comprising:
a surface winding drum having a fixed rotational axis;
a core;
means to position said core into contact with said winding drum to receive the web to be wound into spools on the core;
an enveloper roll;
guide means to position said enveloper roll to engage the spool as it moves away from said winding drum while maintaining surface winding of the web between said enveloper roll and said spool;
a web severing means;
said severing means being positionable between said wind-

ing drum and said enveloper roll to sever said web and urge transfer of the web leading edge between said wind-



ing drum and said core to cause winding of said web about said core.

3,857,525

PLOTING SYSTEM

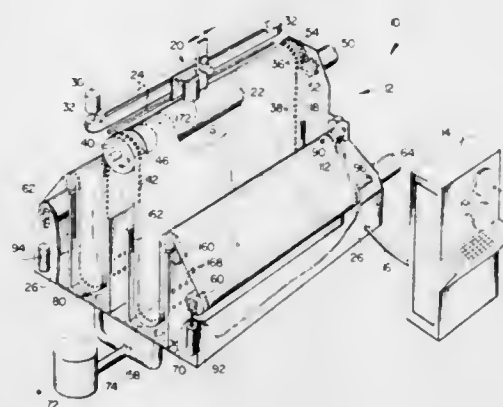
Heinz Joseph Gerber; Leonard G. Rich, both of West Hartford; Ronald Bruce Webster, Melrose; Robert Louis Martino, Ellington, all of Conn.; Earle Merritt Chase, Wilbraham, Mass., and Anthony D'Onofrio, West Hartford, Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 20, 1973, Ser. No. 353,117

Int. Cl. G65h 25/26

U.S. Cl. 242-57.1

20 Claims



1. Apparatus for winding a strip of sheet material onto a rotatably driven reel comprising:
adjustable support means including a reel support having an adjustable member at one end of the reel defining the tram of the reel in the support for holding the strip and the rotatably driven reel with the axial direction of the reel and the longitudinal direction of the strip angularly adjustable relative to one another;
motor means connected with the adjustable member in the adjustable support means for varying the angular adjustment of the axial direction of the reel and the longitudinal direction of the strip;
sensing means for detecting the lateral position of the strip; and
motor control means interconnecting the sensing means and the motor means for causing the angular adjustment of said axial and longitudinal directions to be varied to thereby limit the axial shifting of the strip as the strip is wound onto the reel.

3,857,526

REEL MOUNTING APPARATUS

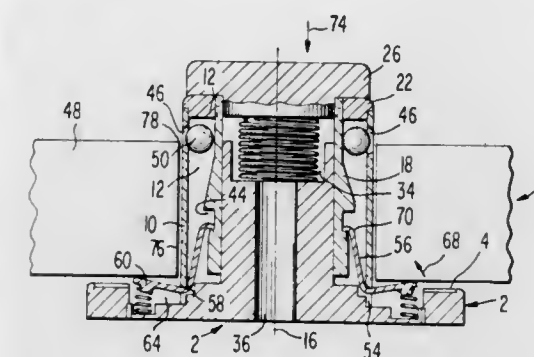
William Arnold Dischert, Burlington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,321

Int. Cl. B65h 17/02

U.S. Cl. 242-68.3

10 Claims



1. A device for maintaining a reel thereon, comprising: a base member, a housing on said base member surrounding a central axis and having a plurality of spaced tapered apertures in the periphery thereof, a corresponding plurality of first elements within said housing freely movable toward and away from said axis, a plurality of second elements passing through a portion of the periphery of said housing, actuating means mounted within said housing and having two stable positions, means including said second elements for placing said actuating means in one of said two stable positions, the device being so constructed and arranged that with said actuating means in one of said positions, said first elements communicate through said apertures to urge said reel toward said base member and away from said axis.

3,857,527

PRECISION PAPER TAKE-UP DEVICE FOR HIGH SPEED WEB FEED PRINTER

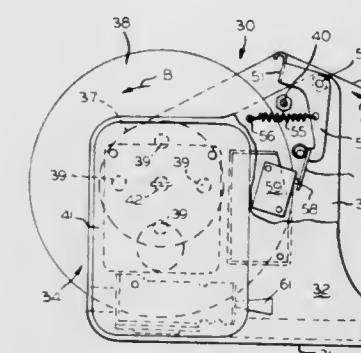
Raymond E. Kranz, Mount Prospect, Ill., assignor to Extel Corporation, Chicago, Ill.

Filed Sept. 13, 1972, Ser. No. 288,486

Int. Cl. B65h 17/02, 25/22

U.S. Cl. 242-75.5

2 Claims



1. A precision paper take-up device for a high speed printer utilizing a web as a record medium and advancing the web from the printer in intermittent steps, comprising:
a reel for storing a web;
a bail for engaging the web at a location adjacent the reel, the bail being pivotally movable between a home position and an actuated position;
a bail stop member on the bail;
a fixed stop member positioned in the path of the bail stop member, the two stop members conjointly defining the home position for the bail;
a normally energized electric motor, operatively connected to the reel to apply a limited torque to the reel tending to rotate the reel in a take-up direction to wind the web on

the reel and maintaining the web under limited tension; sensing means, responsive to movement of the bail, for de-energizing the motor whenever the bail moves from its home position toward its actuated position;
and bias means, comprising a spring connected to the bail, biasing the bail toward and tending to maintain the bail in its home position, but permitting movement of the bail toward its actuated position in response to an abrupt engagement of the web with the bail in a take-up movement of the web;
the bias means applying sufficient force to the bail to pull a limited portion of the web from the reel, with the motor de-energized, and return the bail to its home position, thereby again energizing the motor so that the motor is maintained energized continuously except for brief intervals when the bail is moved away from its home position as aforesaid;
the bias means further comprising a retainer device for releasably retaining the bail in its home position, preventing bouncing of the bail or reel on return of the bail to its home position.

3,857,528

SAFETY BELT REEL WITH TORSION ROD

Ernst Fiala, Braunschweig-Querum, Germany, assignor to Wolf-Dieter Klink, Lindach, Germany

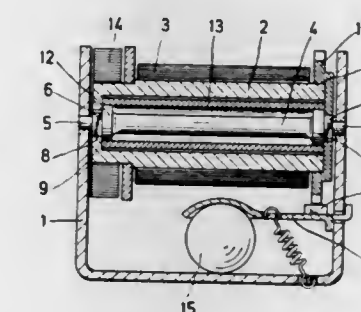
Filed May 8, 1973, Ser. No. 358,289

Claims priority, application Germany, May 9, 1972, 2222742

Int. Cl. B65h 75/48

U.S. Cl. 242-107.4

5 Claims



1. In a safety belt wind-up device having a belt wind-up drum with a hollow interior, an energy conversion device comprising a torsion rod mounted in the hollow interior of the wind-up drum and having a first and second ends corresponding to respective first and second ends of the wind-up drum, means for rigidly connecting said first end of said torsion rod to the corresponding first end of the wind-up drum, the second end of the wind-up drum being freely rotatable, means actuable for anchoring said torsion rod against rotation at said second end thereof so that when said second end of said torsion rod is anchored against rotation, said torsion rod absorbs energy by torsion of said first end thereof relative to said anchored second end thereof, a rigid tube surrounding said torsion rod and having a peripheral wall disposed between said torsion rod and the inner surface of the belt wind-up drum for limiting bending of said torsion rod and for preventing a bent torsion rod from jamming against the drum and interfering with the energy conversion characteristics of said torsion rod.

3,857,529

BOBBIN

Thomas Edgar Pitts, Cranston; Robert Earl Morton, Warwick, and Manuel G. Teixeira, Cumberland, all of R.I., assignors to Lessona Corporation, Warwick, R.I.

Filed Sept. 13, 1973, Ser. No. 396,727

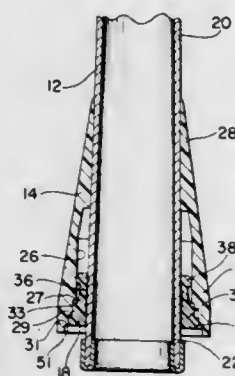
Int. Cl. B65h 75/12

U.S. Cl. 242-118.3

5 Claims

1. A bobbin for receiving strand material comprising,

an elongated generally tubular member having forward and base ends,
 an element having a generally frusto-conical outer strand receiving surface positioned on said base end of said tubular member with the base of said element orientated towards the base of said member to provide a zone of enlarged diameter around said member and
 a generally circular collar positioned on said member and intermediate between said member and said element, said collar having means for positive connection to both said member and said element,



said means for connecting said collar to said member comprising a plurality of teeth on an inner surface thereof,
 said teeth in engagement with outer surface portions of said member, and
 said collar having forward and base ends correspondingly orientated with said forward end having a plurality of longitudinally orientated deflectable legs extending therefrom, each of said legs having a terminal foot having upper and lower surfaces, said upper surface in engagement with inner surface portions of said element and said inner surface having an inwardly extending tooth of such connecting means thereon.

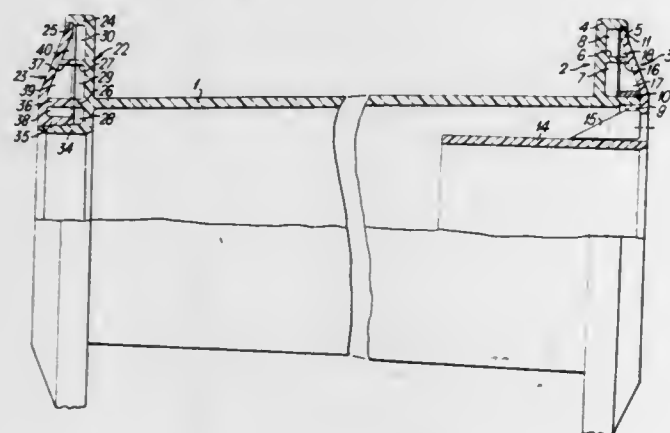
3,857,530 REEL

Hubert Brian Mobey, Upholland, nr. Wigan, England, assignor to Industrial Reels Limited, Lancashire, England
 Filed Nov. 13, 1972, Ser. No. 305,714
 Claims priority, application Great Britain, Nov. 12, 1971; 52748/71

Int. Cl. B65h 75/14

U.S. Cl. 242-118.7

9 Claims



1. A plastics reel comprising a tubular core and two end flanges of circular cross-section at least one of which flanges comprises two annular flange discs secured face to face, wherein one of the flange discs is integral with the tubular core and the flange discs of said flange have on their adjoining faces at least one pair of ribs lying between and concentric with the radially inner and outer edges of the flange, the end surfaces

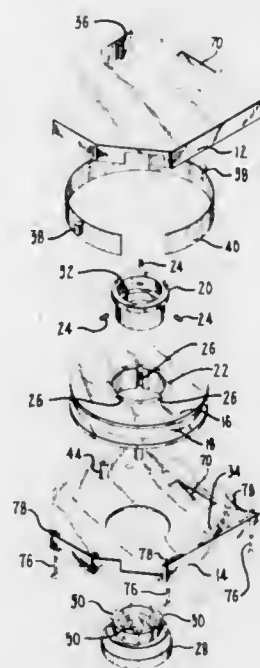
of said concentric ribs abutting and being joined by an adhesive, and a plurality of pairs of ribs which extend radially between the pair of abutting concentric ribs and each adjoining edge of the flange or, where at least two pairs of abutting concentric ribs are present, between each edge and the neighbouring pair of abutting concentric ribs, the radially extending ribs on one end flange disc corresponding with the radially extending ribs of the other reel flange disc.

3,857,531

TAPE REEL CARTRIDGE

Johannes K. Jantzen, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.
 Continuation-in-part of Ser. No. 301,105, Oct. 26, 1972. This application Mar. 29, 1973, Ser. No. 346,945
 Int. Cl. G03b 1/04; G11b 15/32, 23/04
 U.S. Cl. 242-197

8 Claims



1. In a tape reel cartridge having a top, a bottom and side walls adapted to form an enclosure structure for containing a tape reel on which is wound a magnetic tape, wherein the enclosure structure has a first opening in a side wall through which a magnetic tape is extendible and a second opening in the bottom through which a drive spindle is insertable, the improvement comprising:

- a tape reel contained in said cartridge, said tape reel having a hub,
- a displaceable adapter ring inserted in said tape reel hub, said adapter ring adapted for releasable engagement by said hub spindle to support and rotate said tape reel in the cartridge,
- a first tape guide fixed to the enclosure structure, said first tape guide extending from immediately adjacent the first opening around a portion of the periphery of said contained tape reel, and
- a second tape guide displaceable from the enclosure structure, said second tape guide extending from said first tape guide, around and within the periphery of said contained tape reel and hence adjacent the first opening in the enclosure structure opposite said first guide.

3,857,532

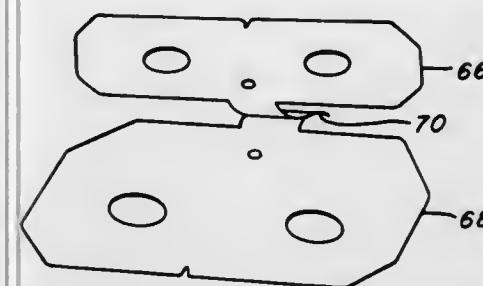
HIGH SPEED TAPE CASSETTE

Cedric R. Bastiaans, 133 Glenhurst Dr., Verona, Pa. 15147
 Division of Ser. No. 254,691, May 18, 1972. This application Aug. 8, 1973, Ser. No. 386,685
 Int. Cl. G11b 23/10; H05f 3/00
 U.S. Cl. 242-199

2 Claims

1. A magnetic tape cassette comprising a casing of upper and lower mating halves, a pair of spaced reel hubs within the

casing, a plurality of tape guides within the casing, a magnetic tape extending from one of said reel hubs around said guides to the other of said reel hubs, sheets of electrically conductive material lining the inner surfaces of the upper and lower walls



of said casing above and below said reel hubs, said upper and lower sheets being provided with tabs which pass through a side wall of the cassette for engagement with ground potential to prevent the buildup of the electrostatic charge on said magnetic tape.

3,857,533

HELICOPTER SELF-LEVELING LANDING GEAR

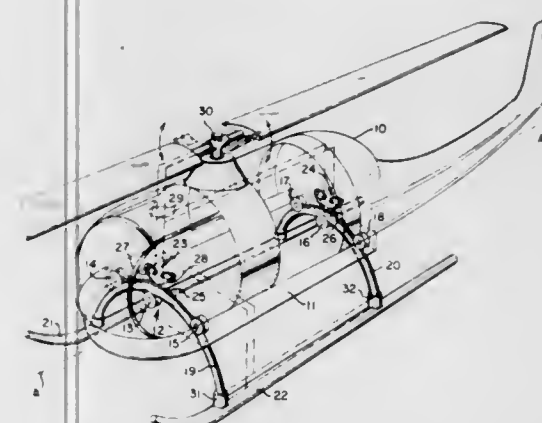
Samuel H. Mason, 603 Virginia Ter., Santa Paula, Calif. 93060

Filed Jan. 28, 1974, Ser. No. 437,347

Int. Cl. B64c 25/32

U.S. Cl. 244-17.17

10 Claims



1. A helicopter self-leveling landing gear including:

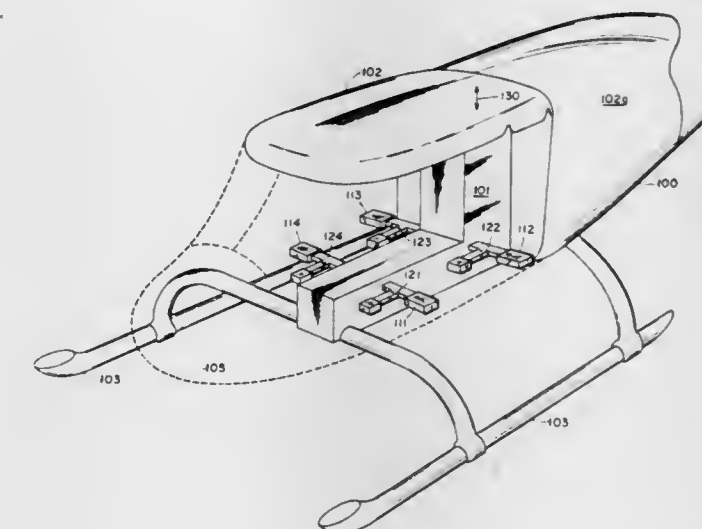
- a. a helicopter having a lower base frame;
- b. guide means on said base frame;
- c. at least one curved track member of inverted U-shape having a central portion passing through said guide means and its opposite end portions curving downwardly from the central portion toward the ground, the track member lying in a plane normal to the longitudinal axis of the helicopter and being movable through the guide means to thereby vary the distance between each end and the ground;
- d. landing skids extending generally parallel to the longitudinal axis of the helicopter secured respectively to the ends of the track member; and,
- e. locking means on the base frame coupled to the central portion of said track member for locking the track member to the base frame in an immovable position, whereby the level of one landing skid relative to the other may vary by movement of the track member through the guide means such that said base frame and helicopter may be maintained at a level position when said landing skids engage uneven terrain during landing wherein one landing skid is at a higher level than the other, and said locking means actuated to lock the track member and thus the skids relative to the base frame after landing to maintain the base frame and helicopter level.

3,857,534 MULTI-FREQUENCY HELICOPTER VIBRATION ISOLATION

Jan M. Drees, Dallas, and David Shipman, Arlington, both of Tex., assignors to Textron Inc., Providence, R.I.
 Continuation-in-part of Ser. No. 223,442, Feb. 4, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 346,951
 Int. Cl. B64c 27/04

U.S. Cl. 244-17.27

7 Claims



1. A system for multi-frequency vibration isolation of a load in an aircraft which comprises:

- a. a first beam cantilever supported from said fuselage and extending longitudinally in a plane perpendicular to the direction of vibration to be isolated and exhibiting a vibration node at a primary frequency,
- b. a second beam cantilever supported from said primary beam in the region of said node and exhibiting a vibrational node at a location spaced from said first beam and at a frequency which is a multiple of said primary frequency, and
- c. linkage means supporting said load in the region of said second node.

3,857,535

MONITOR FOR THE ELASTIC MODE STABILIZING CHANNELS OF AN AUTOMATIC FLIGHT CONTROL SYSTEM

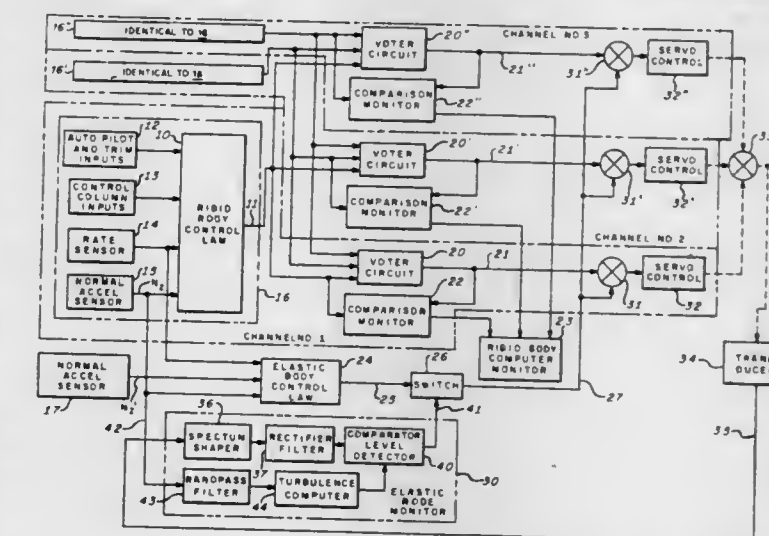
Stephen S. Osder, Scottsdale, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,441

Int. Cl. B64c 13/18

U.S. Cl. 244-77 M

11 Claims



1. In an automatic flight control system for aeroelastic navigable craft having a control surface, said automatic flight control system having an elastic mode stabilizing channel for controlling said control surface in a manner normally to reduce bending motions of said craft, the combination comprising

sensor means for effectively detecting the level of control activity applied to said control surface and providing a sensor signal in accordance therewith,
 frequency spectrum shaping means responsive to said sensor signal for transmitting only elastic mode frequencies within the normal elastic mode bandwidth of said craft to provide a filtered sensor signal representative of the level of control activity applied by said elastic mode stabilizing channel to said control surface,
 means for establishing a threshold greater than the normal level of said control activity,
 detector means responsive to said filtered sensor signal and to said threshold for providing a disabling signal in accordance with said filtered sensor signal exceeding said threshold,
 and
 disabling means responsive to said disabling signal for disabling said elastic mode stabilizing channel in accordance with said filtered sensor signal exceeding said threshold, thereby rendering said elastic mode stabilizing channel ineffective in controlling said control surface.

3,857,536

FROG WITH CLOSABLE WHEEL OVER-RUN

Ruthard Dohse, Essen-Bredeney; Curt Edeling, Essen-Rellinghausen, and Josef Eismann, both of Munchen, all of Germany, assignors to Elektro-Thermit GmbH, Berlin, Germany

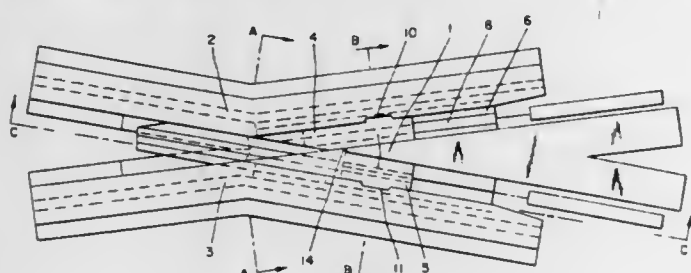
Filed Oct. 15, 1971, Ser. No. 189,603

Claims priority, application Germany, Oct. 24, 1970, 2052349

Int. Cl. E01b 7/10

U.S. Cl. 246—435

7 Claims



1. A switch point comprising a rigid frog point, rigid wing rails, filler means in the interstice between the frog point and wing rails, said filler means being mounted in vertically extending guide means, and wedge means for raising and lowering said filler means.

3,857,537

HOLDER FOR A PAINT PAIL AND APPLICATOR

Joseph E. Swalinkavich, Jr., 3440 Kyle Ave. North, Robbinsdale, Minn. 55422

Filed May 11, 1973, Ser. No. 359,508

Int. Cl. B44d 3/14

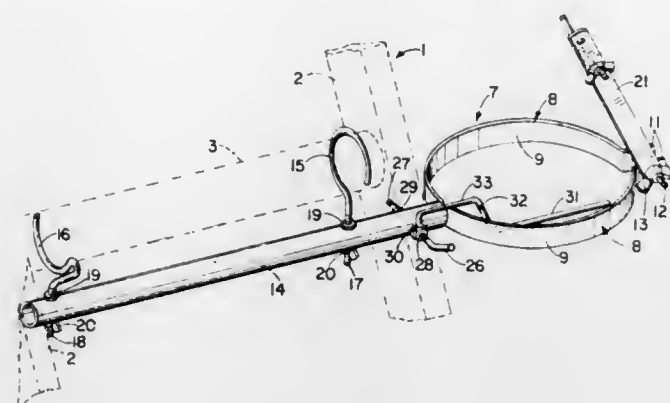
U.S. Cl. 248—210

3 Claims

1. For use with ladders comprising laterally spaced longitudinal side rails and generally horizontal portions including transverse rungs connecting the side rails, a holder for a paint pail and an applicator comprising:

- a generally horizontally disposed circular clamp for encompassing engagement with the upper end portion of a pail and including a pair of opposed clamping members having opposed arcuate intermediate portions, mounting end portions, and outer end portions projecting generally radially outwardly from said arcuate portions;
- support means including a support rod normally disposed in generally parallel relationship to the rungs of a ladder when mounted on the ladder and having a hollow end portion, said mounting end portions of the clamping member extending axially within said hollow end portion;
- a tool supporting member having a mounting shank

extending transversely through said hollow end portion and said mounting end portions of said clamp;
 d. means for releasably locking said tool supporting member on said support rod;



- mounting means carried by said clamp for supporting a paint applicator above said clamp;
- and clamping screw means connecting said outer end portions of the clamping members and operative to exert clamping pressure thereon.

3,857,538

CURTAIN ROD BRACKET

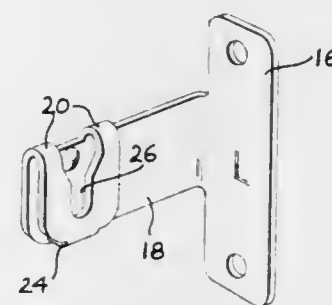
John E. Williamson, West Barrington, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Oct. 12, 1970, Ser. No. 80,057

Int. Cl. A47h 1/10, 5/14

U.S. Cl. 248—263

9 Claims



1. For a curtain rod having a stud mounted on one end for supporting that end of the rod, which stud has a shank portion adjacent the rod and a flat head portion of greater dimension transverse to the rod axis than the corresponding dimension of said shank portion, a support bracket comprising: a base, a support web on said base extending outwardly therefrom, a generally U-shaped receptacle having upwardly extending arms, the upper portions of said arms spaced from each other by an amount greater than said transverse dimension of said stud head portion, the lower portions of said arms spaced from each other by an amount less than said transverse dimension of said stud head portion but greater than the corresponding dimension of said stud shank portion whereby said rod when engaged in said bracket is supported against downward tilting forces by the pressure of said arms and support web against said stud head, means for connecting the upper ends of said arms to said web and for holding said upper ends in fixed spacial relation to said web, and stop means on a lower margin of said receptacle bridging the space between said lower margin and said web to prevent motion of the lower portion of said receptacle toward said web.

3,857,539

SAFETY MIRROR ASSEMBLY

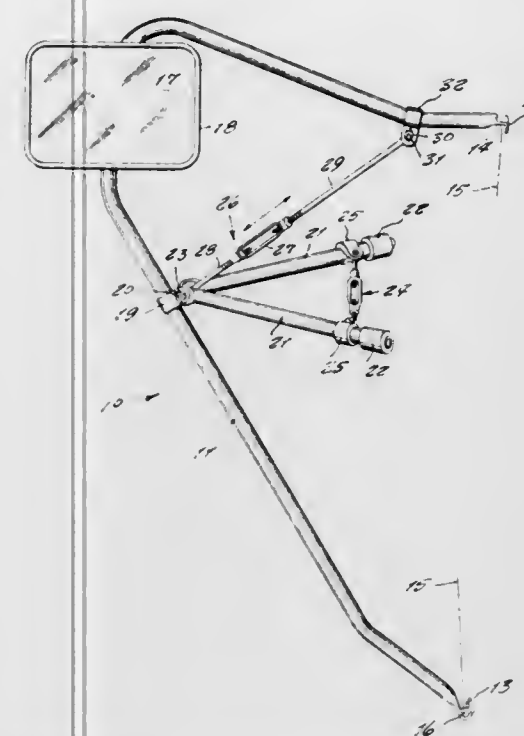
Harry H. Kavanaugh, 4101 N. Grand Blvd., Peoria, Ill. 61614

Continuation-in-part of Ser. No. 201,001, Nov. 22, 1971, abandoned. This application May 10, 1973, Ser. No. 359,068

Int. Cl. B60r 1/00

U.S. Cl. 248—475 R

8 Claims



1. A safety mirror assembly comprising:
 a a bracket bar supporting a mirror,
 b said bracket bar having an angle shaped hook formed on an upper end and a U-shaped hook formed on a lower end thereof,
 c a pair of diverging legs supported at one end by a clip fitted around an intermediate portion of said bracket bar,
 d the opposite diverging ends of said pair of legs being fitted with a tip for positioning against the outer side of a vehicle door,
 e a first turnbuckle unit disposed between diverging ends of said legs to maintain said diverging ends at a fixed distance, and
 f a second turnbuckle unit disposed between an upper and lower portion of said bracket bar for firmly retaining said upper and lower hook ends firmly against the upper and lower edges, respectively, of said vehicle door.

3,857,540

APPARATUS FOR CASTING MATERIAL USING A COLLAPSIBLE STRUCTURE

Fred L. Ecker, 1905 Liliano Pl., Sierra Madre, Calif. 91024

Division of Ser. No. 158,490, June 30, 1971, Pat. No. 3,705,220, which is a continuation-in-part of Ser. No. 12,759,

Feb. 19, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,857

Int. Cl. E04g 13/02

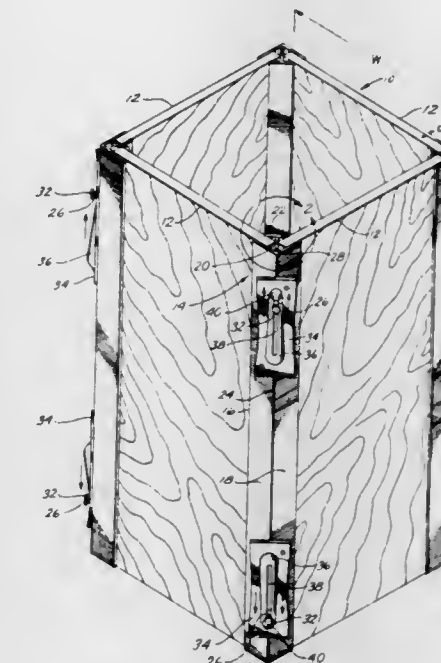
U.S. Cl. 249—48

16 Claims

1. Collapsible apparatus for rigidly locking together a collapsible form structure comprising:

- an outer clamping structure having diverging first and second interconnected sides, facing and diverging surfaces, one on each of the sides, for engaging and supporting one of a pair of form sides to be clamped, a stop affixed on each of said surfaces and spaced away from the edge of the respective side opposite from the interconnection, each stop defining a plane against which the edge of one of such form sides may be positioned, the outer clamping structure having at least one opening there-through intermediate said sides;
- a "T" shaped wedge comprising an elongated, substantially flat rectangular-shaped wedge member in between

the planes formed by the diverging surfaces and a leg member intersecting the wedge member comprising first and second spaced apart sharp corners on the wedge member each associated with a different one of the diverging surfaces to engage and wedge in between such pair of form sides and thereby lock the form sides in place against the diverging surfaces, said sharp corners each being defined by two further surfaces on the wedge member, the planes of each such two further surfaces each



3,857,541

SERVOVALVE WITH OSCILLATION FILTER

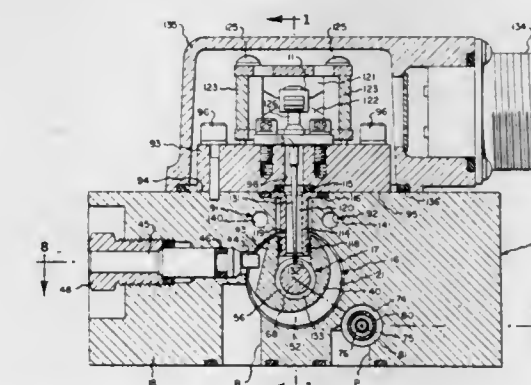
Daniel C. Clark, Waldaecker, Germany, assignor to Moog Inc., East Aurora, N.Y.

Filed June 14, 1973, Ser. No. 369,789

Int. Cl. F16k 31/40; F15b 13/043; F16k 47/00

U.S. Cl. 251—30

7 Claims



1. In an electrohydraulic servo valve including a body having a compartment in which a valve spool is slidably arranged leaving chambers at opposite ends of said spool, said servo valve being prone to oscillate at one or more characteristic resonant frequencies resulting in pressure variations in such spool end chambers, the improvement thereof which comprises acoustic filter means for each of said spool end chambers and severally arranged to provide a wave tube having an open end communicating with its corresponding one of said

spool end chambers and having a length to provide anti-resonance for one characteristic frequency.

3,857,542

NOISE SUPPRESSING THROTTLE VALVE

Frank J. Heymann, Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

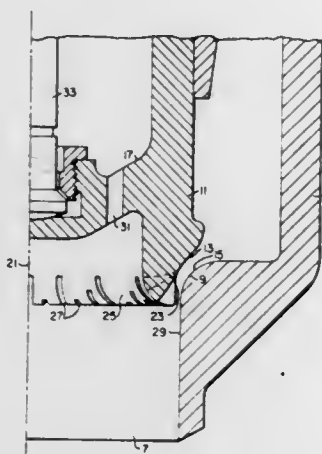
Continuation of Ser. No. 260,226, June 6, 1972, abandoned.

This application Sept. 7, 1973, Ser. No. 395,311

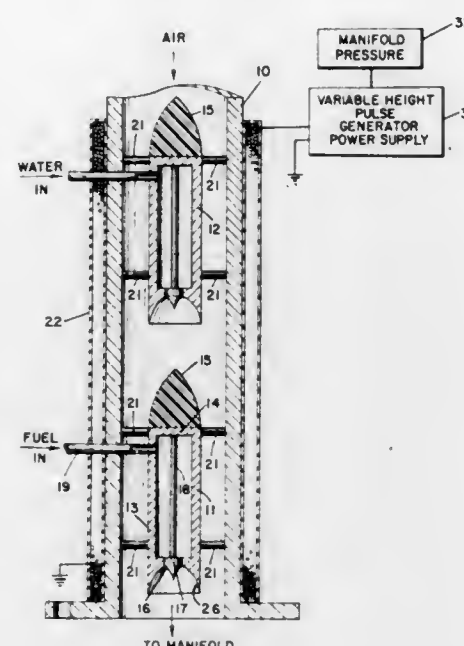
Int. Cl. F16k 47/02

U.S. Cl. 251-120

7 Claims



partment;
said rod and said housing being made of a material which,



when under the influence of a magnetic material, will cause said head to retract into said compartment.

3,857,544

ELECTRICALLY OPERATED RELIEF VALVES

Ronald William Rigby, Dorridge, England, assignor to Lucas Aerospace Limited, Birmingham, England

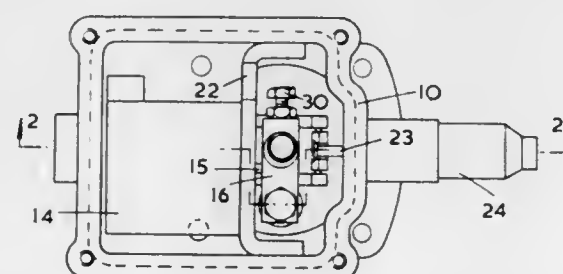
Filed Dec. 15, 1972, Ser. No. 315,403

Claims priority, application Great Britain, Dec. 15, 1971, 58166/71

Int. Cl. F16k 31/02

U.S. Cl. 251-133

8 Claims



1. A valve for a fluid, said valve comprising a fluid inlet port and a fluid outlet port, a plug and a seat, said seat being interposed between said ports and adapted to cooperate with the plug to block the flow of fluid between said ports, when the plug is seated; said plug having a seating surface, which registers with the seating surface of said seat, a hollow cylindrical portion, a web portion which traverses the cylindrical portion and is disposed adjacent the plug's seating surface, and a relatively thin wall skirt portion disposed downstream of the plug's seating surface to form a cavity within the downstream end of the plug; said skirt having a plurality of different depth serrations, which generally originate an equal distance from the plug's seating surface and extend through said skirt into said cavity; said serrations being disposed in a predetermined irregular order to provide a plurality of passageways of different depth to the inside of said cavity, whereby as the plug separates from said seat, the fluid begins flowing through all the passageways to the inside of said cavity producing incoherent shock waves, which inhibit shock cell oscillations to attenuate the noise produced by the high velocity fluid.

3,857,543

LIQUID METERING DEVICE

Joseph E. McKeen, 10861 Elm Ave., Lynwood, Calif. 90262

Filed Mar. 16, 1973, Ser. No. 342,235

Int. Cl. B05b 3/14; F16k 31/02

U.S. Cl. 251-129

7 Claims

1. A liquid metering device comprising:
a compartment having an opening therein;
a head slidably disposed within said opening;
a rod disposed within said compartment having one end connected to said head and the other end to said com-

1. A pressure relief valve comprising a housing having an inlet and an outlet, a closure member movable in response to a pressure in said inlet to open the valve, a torque motor, a linkage operatively connecting a shaft of said torque motor to said closure member, said shaft being rotatable in a direction to open the valve in response to an electrical control signal, biasing means urging the shaft to rotate in a direction to shut the valve and means for adjustably varying movement of the closure member in response to a given angular movement of the shaft, said linkage including a part secured to said shaft for rotation therewith and a stem extending transversely of the axis of said shaft and engaging said part and said closure member, the axis of said stem being spaced from the axis of said shaft.

3,857,545

VALVE FOR DEEP VACUUM CHAMBERS

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed June 14, 1973, Ser. No. 369,839

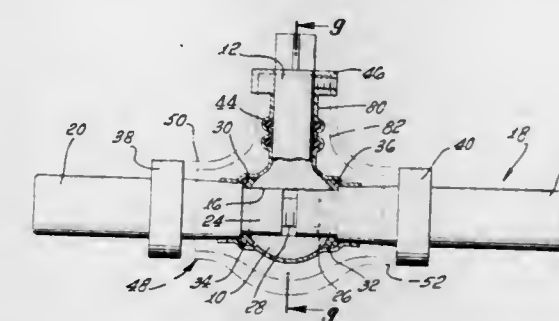
Int. Cl. F16k 31/524

U.S. Cl. 251-229

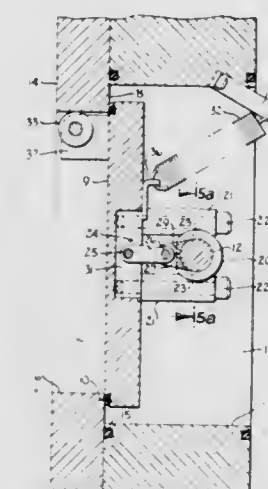
8 Claims

1. A valve for a vacuum chamber or the like comprising:

- A. a valve body in which there is a passage and which has an annular surface in said passage that faces in one axial direction and defines a valve seat;
- B. a disc-like valve member having a front face with a circumferential portion that can be sealingly engaged with said valve seat in a closed position of the valve member, said valve member leaving said passage substantially unobstructed when it is in an open position in which its front face is substantially parallel to the passage axis;
- C. a shaft extending substantially diametrically to the passage and which is spaced in said one axial direction from the valve seat, said shaft being constrained to rotation about its axis;
- D. means providing a first connection between the valve member and the shaft by which the valve member is supported on the shaft with its front face substantially parallel to the shaft axis, said first connection providing for rotation of the shaft relative to the valve member and for bodily flatwise motion of the valve member relative to the shaft between the closed position of the valve member and another position thereof in which the valve member is between the shaft and the valve seat and is spaced from the latter;



passage of said valve body with said ball, an annular stem seal embedded in said neck portion of said valve body and encircling said stem, said valve body, including said neck portion thereof, comprising a plurality of layers of a resin-impregnated filament wound around said ball and around said ball and stem seals, and a membrane enclosing said ball, said stem, and said ball and stem seals, and over which filament is wound.



- E. means providing a second connection between the valve member and the shaft by which rotation of the shaft through one predetermined angle effects flatwise motion of the valve member between its closed position and said other position and by which rotation of the shaft through another predetermined angle effects flatwise rotational motion of the valve member between its said other position and its open position, the last mentioned means comprising a link having at one end thereof a pivotal connection with the valve member and at its other end a pivotal connection with the shaft that is eccentric to the axis thereof;
- F. yielding biasing means reacting between the valve body and the valve member to urge the latter from its open position towards its said other position; and
- G. cooperating slidable stop means on the valve body and on the valve member, spaced from the shaft, engageable upon swinging of the valve member from its open position to its said other position to define the latter and cooperating with the biasing means to confine the valve member to flatwise motion between its said other position and its closed position.

3,857,546

BALL VALVE WITH FILAMENT WOUND BODY

Robert W. Quirk, Los Angeles, Calif., assignor to Valve Systems International, Inc., Chatsworth, Calif.

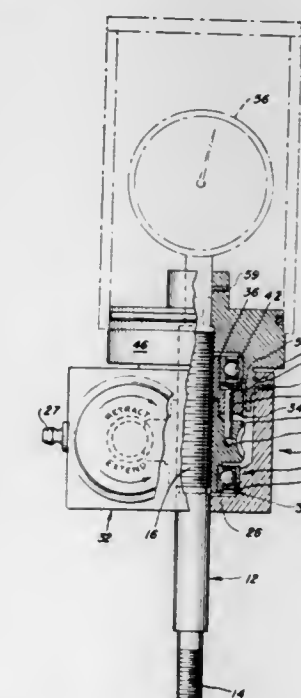
Filed July 23, 1971, Ser. No. 165,622

Int. Cl. F16k 27/06, 5/06

U.S. Cl. 251-315

3 Claims

1. A ball-type valve comprising a valve body having a flow passage extending therethrough and having a laterally extending neck portion, a generally spherical ball having a flow



1. In a jack construction of the type described, the combination comprising a load-moving screw, a worm gear having a threaded portion threadedly engaging said screw and imparting axial movement thereto upon worm gear rotation, an automatically compensating nut spaced from said worm gear having a threaded portion threadedly engaging said screw, means interconnecting said worm gear and said automatically compensating nut for rotating said worm gear and automatically compensating nut as a unit relative to said screw and permitting variances in the spacing between said worm gear and automatically compensating nut along an axis parallel to the axis of said screw, and means resiliently loading said automatically compensating nut whereby the threads thereof urge one face of the screw threads in one axial direction, and the opposed face of said screw threads is loaded in an opposed

axial direction by the threads of said worm gear in the normal course of extended jack use.

3,857,548

PANTOGRAPH-TYPE JACK

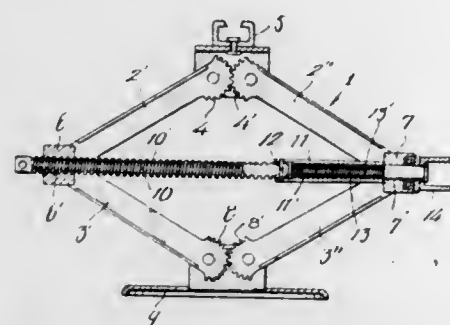
Tsuneo Takeuchi, No. 1-1-chome, Kiyokawa-cho, Nakagawa-ku, Nagoyo, Japan

Filed June 28, 1973, Ser. No. 374,579

Int. Cl. B66f 3/12

U.S. Cl. 254-126

10 Claims



1. A pantograph-type jack comprising a plurality of upper jack arm assemblies each of which comprises a pair of opposite jack arms having oppositely engaged inner toothed ends pivoted to a movable support member; a plurality of lower jack arm assemblies each of which includes a pair of opposite jack arms having the oppositely engaged inner toothed ends pivoted to a stationary base member; spaced movable support blocks for pivotally supporting the outer ends of said jack arms of said plurality of upper and lower jack arm assemblies, one of said supporting blocks having a center coarsely threaded bore, the other of said support blocks having a plain bore; a first operation rod having a coarsely threaded outer surface in threaded engagement in said one support block; a sleeve having one end portion for fixedly receiving an adjacent inner end of said first operation rod and an other end portion of said sleeve having a finely threaded inner surface; and a second operation rod having a finely threaded outer surface portion in threaded engagement with said inner threaded surface of the other end portion of the sleeve, said second operation rod further having a plain surface portion received in said plain bore of the other block.

3,857,549

PHOTOELECTROPHORETIC IMAGING APPARATUS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

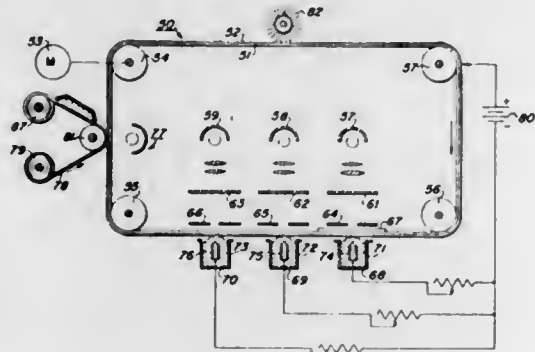
Division of Ser. No. 144,215, May 17, 1971, which is a continuation of Ser. No. 707,871, Feb. 23, 1968, abandoned.

This application Jan. 26, 1973, Ser. No. 326,939

Int. Cl. G03b 15/00

U.S. Cl. 355-3 P

2 Claims



1. A photoelectrophoretic imaging apparatus comprising in combination; an optically transparent electrode, means for presenting a photoelectrophoretic imaging suspension to said transparent electrode, said means comprising at least one container and spaced apart from said electrode, means to

selectively deform the surface of a photoelectrophoretic imaging suspension so as to cause it to contact the imaging surface of said electrode, said means comprising at least one coronode positioned in said container, said coronode being spaced apart from and in electrical contact with said electrode, and means for projecting an image onto said electrode at the station where said electrode is selectively contacted by said imaging suspension opposite said coronode.

3,857,550

MACHINE FOR PRODUCING FOAMS, HOMOGENEOUS OR STRUCTURAL MATERIALS FROM AT LEAST TWO LIQUID REACTION COMPONENTS

Ulrich Knipp, Schildgen; Heinrich Boden, Opladen; Heinrich Ersfeld, Bergisch-Neukirchen; Walter Schneider, Bensberg, and Reiner Moeres, Siegburg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

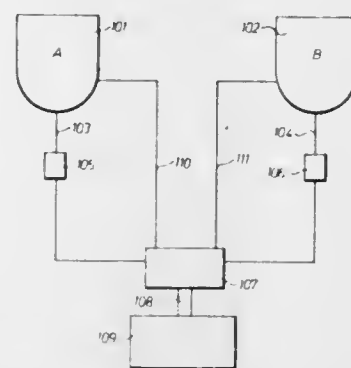
Filed Apr. 12, 1973, Ser. No. 350,675

Claims priority, application Germany, Apr. 20, 1972, 2219389

Int. Cl. B01f 15/02

U.S. Cl. 259-4

15 Claims



1. An apparatus for mixing at least two liquid reaction components, and molding the resulting reaction product comprising a storage container for each reaction component, delivery pipes which lead from each storage container to a mixer comprising a mixing chamber, a slide valve being arranged at the end of each delivery pipe, the slide valves being coupled with one another for movement, wherein each slide valve comprises an injection opening and is arranged in a cut-out in opposite walls of the mixing chamber, so that part of the wall surface of the slide valve forms the wall of the mixing chamber and the injection openings may be aligned with the cut-outs.

3,857,551

DEVICE TO DAMPEN FLUCTUATIONS IN THE CONCENTRATION OF A SUBSTANCE IN A FLOWING STREAM OF FLUID

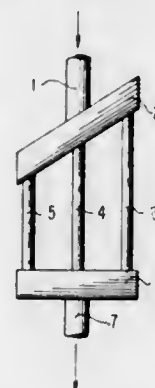
Joseph C. Troy, Pittsburgh, Pa., assignor to NUS Corporation, Rockville, Md.

Filed June 21, 1973, Ser. No. 372,366

Int. Cl. B01f 15/02

U.S. Cl. 259-4

4 Claims



1. An apparatus for damping variable concentrations of a substance in a liquid stream, said apparatus comprising:

3,857,553

HEAT TREATMENT FURNACE AND METHOD

Philip John Griffiths, Sutton Coldfield, England, assignor to Actric Limited, Bromwich, Staffordshire, England

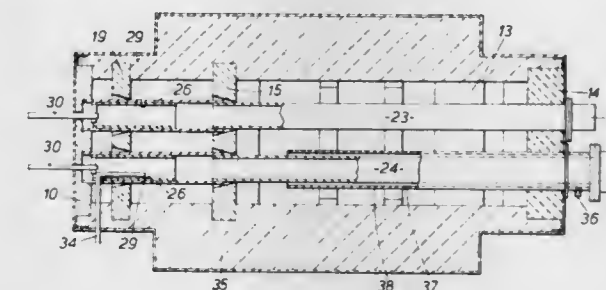
Filed Oct. 24, 1972, Ser. No. 300,356

Claims priority, application Great Britain, Oct. 27, 1971, 49856/71

Int. Cl. C21d 9/00

U.S. Cl. 266-5 R

7 Claims



a triangular-shaped liquid container, means for feeding said liquid stream into said liquid container including a first, inlet manifold located along the hypotenuse of said triangle, means including said first inlet manifold for dividing said stream into a plurality of substreams, and means for collecting said substreams at a common point comprising a second, liquid outlet manifold located along one of the opposite sides of said triangle; whereby, said substreams dividing at said first inlet manifold and being collected by said outlet manifold at said hypotenuse and said side opposite thereto, respectively, imparts time delays to each substream for arrival at said common point to provide a single liquid stream which has a substantially constant concentration of said substreams which is substantially lower than the peak or highest concentration of said substreams in said stream prior to treatment with said apparatus.

3,857,552

ASPHALT MIXING PLANTS FOR MAKING ASPHALT CONCRETE MIX

Karl Gunnar Ohlson, 28015 Finja Kyrkby, Sweden

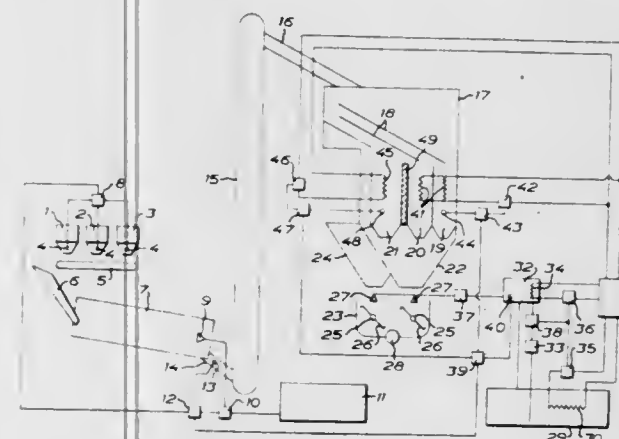
Filed Mar. 27, 1973, Ser. No. 345,409

Claims priority, application Sweden, Mar. 28, 1972, 3988/72

Int. Cl. B28c 7/04

U.S. Cl. 259-156

3 Claims



1. In an asphalt mixing plant for making asphalt concrete mix having mineral aggregate supplying and heating means, a mixer for receiving the heated mineral aggregate, and binder supplying means including heating means for introducing heated bitumen into the mixer, the improvement comprising viscosity sensing means for sensing the viscosity of the heated binder, binder temperature regulating means for controlling the heating means of the binder supplying means, said binder temperature regulating means being operatively connected to said viscosity sensing means for controlling the temperature of the binder in relation to the viscosity of the binder, binder temperature sensing means for sensing the temperature of the binder in the binder supplying means, and aggregate temperature regulating means for the mineral aggregate supplying and heating means, said aggregate temperature regulating means being connected to said binder temperature sensing means for controlling the temperature of the mineral aggregate in relation to the temperature of the binder.

1. In a furnace of the kind used for heat treatment of workpieces and comprising an entry through which the workpieces enter the furnace, an exit through which workpieces leave the furnace and a treatment chamber through which the workpieces are conveyed between the entry and exit and in which the workpieces are heated to the required treatment temperature,

the improvement wherein the furnace comprises: an ante-chamber adjacent to the treatment chamber and into which ante-chamber the furnace entry leads; means defining an opening affording communication between the ante-chamber and the treatment chamber; at least one heating tube disposed at least partly within the treatment chamber and communicating with the ante-chamber; means for supplying fuel and air to the heating tube; and a gas outlet leading out of the ante-chamber; whereby fuel can be burned inside the heating tube to cause the tube to radiate heat to the contents of the treatment chamber, and the products of combustion pass from the heating tube into the ante-chamber and thence through the gas outlet.

3,857,554

STEEL CONVERSION

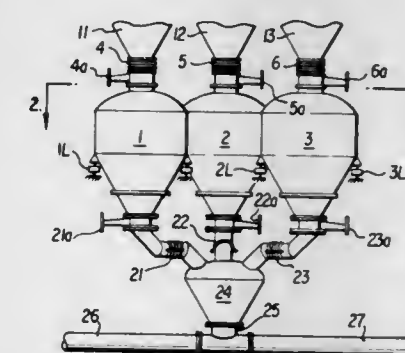
Frithjof Eichinger, Buxtehude, Germany, assignor to Claudius Peters AG, Hamburg, Germany

Filed Jan. 30, 1973, Ser. No. 328,110

Int. Cl. C21c 7/00

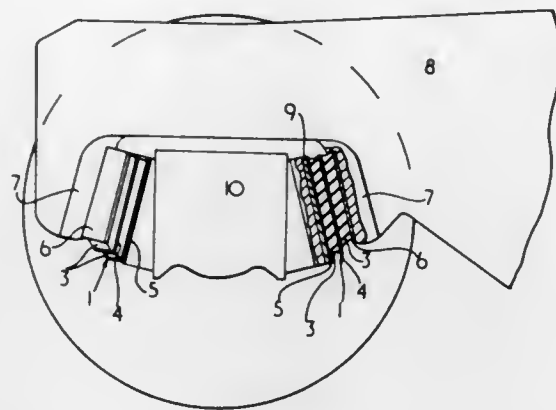
U.S. Cl. 266-34 T

4 Claims



1. In a steel-converter system including a converter vessel having tuyers for the introduction of gases and loose-solid matter below the level of the molten metal in the converter by weighing and pressure-conveying said loose solids through the bottom of said converter, the improvement comprising: a. a plurality of weighing tanks, b. means for supplying different solid materials to different weighing tanks,

- c. cycling means for cycling the filling and emptying said weighing tanks,
 d. pressure-conveying means for receiving and pressure conveying different materials from said different weighing tanks at different intervals to said converter,
 e. said cycling means including a valve at the inlet of each weighing tank and
 f. a valve at the outlet of each weighing tank,
 g. a flexible joint associated with the inlet of each weighing tank,
 h. a flexible outlet joint associated with the outlet of each weighing tank, said flexible outlet joint including
 i. a flexible duct section arranged at an angle closely approaching the horizontal,
 j. means for conveying solids in said flexible outlet joint from the inlet to the outlet thereof, and
 k. means for stabilizing each flexible outlet joint against changes in longitudinal dimension under changes of internal pressure.



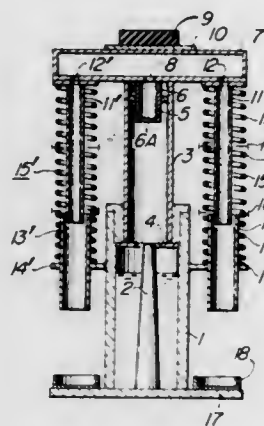
of projections between the end plate and the bearing to form a space for the air to pass therethrough.

3,857,555 OIL BUFFER

Akihiro Mori, and Norihiko Mitsui, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Sept. 26, 1973, Ser. No. 400,738
 Claims priority, application Japan, Sept. 29, 1972, 47-96988

Int. Cl. B60g 11/56

U.S. Cl. 267-34



1. An oil buffer in which a tapered control rod is provided in a cylinder fixedly erected on a base and an oil injection hole arranged to allow passage of said control rod is provided at the bottom of a plunger arranged slidably in said cylinder so that oil in said cylinder will be injected into said plunger through the space between said control rod and injection hole so as to produce a buffer action, and further characterized in that an oil check is provided at the inside top of said plunger, said oil check having the underside positioned above said injection hole so as to force back downwardly the oil which gushes out from said injection hole, and that air holes for ejecting air in the plunger are provided in the upper parts of said oil check.

3,857,556 VEHICLE SUSPENSIONS

Bernard Ridge Wing, Leicester, England, assignor to Dunlop Limited, London, England
 Filed Feb. 21, 1973, Ser. No. 334,201
 Claims priority, application Great Britain, Feb. 26, 1972, 8964/72

Int. Cl. B60g 11/24

U.S. Cl. 267-63 A

7 Claims

1. A vehicle suspension comprising a spring of elastomeric material having means at one end for attachment to a vehicle, an end plate at the other end connected to a vehicle wheel

bearing, means for limiting the rate of heat transfer between the bearing and the elastomeric material comprising a series

3,857,557

WEB HANDLING APPARATUS

Edward William Gill; Derek Arthur Vincent, and John Peace, all of Canning Town, England, assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

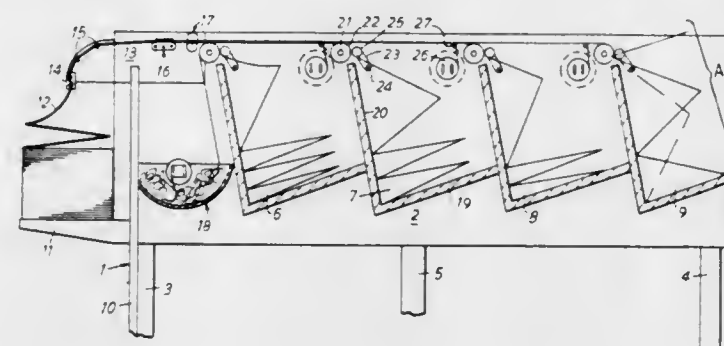
Filed Oct. 18, 1972, Ser. No. 298,546

Int. Cl. B65h 41/00

U.S. Cl. 270-52.5

12 Claims

5 Claims



1. Apparatus for handling a multi-part manifold business forms continuous web including, a frame, pairs of respectively contacting rollers rotatably mounted on said frame and being associated with parts of said web, first trays mounted on said frame below each said pair of rollers, said parts of said web respectively passing between respective nips of said contacting rollers and into said first trays, and means on said frame for rewinding a portion of said web, said rewind means comprising a rotatable disc having a plurality of parallel elongated first members extending outwardly therefrom, and a plurality of parallel elongated second members removably mounted on said first members, whereby said portion of said web may be wound onto said second members upon rotation of said disc, and said wound portion may be removed from said first members along with said second members.

3,857,558

PAPER CASSETTE DESIGN WITH IRREGULAR BOTTOM
 Sumant Patel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 21, 1973, Ser. No. 372,437

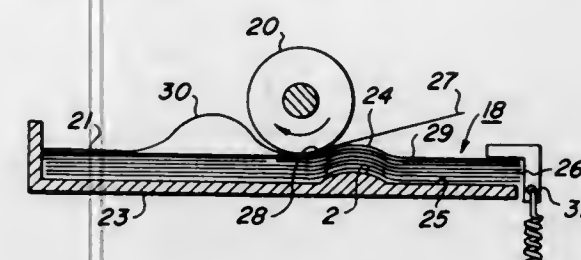
Int. Cl. B65h 3/06, 3/46

U.S. Cl. 271-22

10 Claims

1. A sheet feeding apparatus comprising: support means for supporting a stack of sheet material on top thereof, said support means including at least one inclined surface for deforming said sheet material supported thereon to form a protuberance in the top most sheet, means coaxing with said protuberance for elevating the leading edge of said top sheet as it is fed from said stack, said elevating means including feeding means

arranged to contact the top most sheet of said stack for feeding the top most sheet from said stack, said inclined surface



being positioned between the leading edge of said stack and said feeding means.

3,857,559

MECHANISM FOR FEEDING, SEPARATING AND STACKING SHEETS

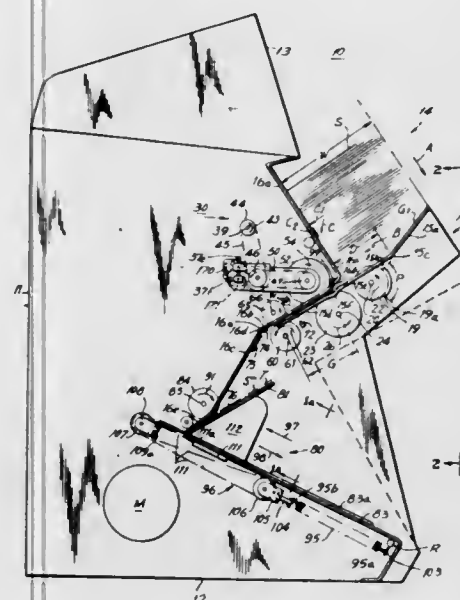
George P. McInerney, Andalusia, Pa., assignor to Pennsylvania Research Associates, Inc., Philadelphia, Pa.

Division of Ser. No. 227,847, Feb. 22, 1972, Pat. No. 3,771,783. This application Mar. 26, 1973, Ser. No. 344,999

Int. Cl. B65h 3/52

U.S. Cl. 271-122

3 Claims



1. Apparatus for accepting sheets received from an infeed location and delivering said sheets along a feed path one at a time in spaced sequential fashion to an outfeed location comprising

drive means having continuously rotating rollers having peripheries adapted to make sliding engagement with a sheet delivered thereto;

stripper means positioned adjacent said drive means for preventing more than one sheet at a time from being advanced by said drive means toward said outfeed location, said stripper means comprising:

a machine frame;

stripper support means;

a first shaft freely wheelingly mounted to said frame for pivotally mounting a first end of said support means;

a second shaft free wheelingly mounted to the second end of said support means;

a stripper roller for engaging said sheets being mounted on said second shaft;

each of said shafts having a pulley;

a third shaft free wheelingly mounted to said frame and having a drive pulley;

means for rotating said third shaft and said drive means;

first coupling means entrained between said drive pulley and said first shaft pulley;

second coupling means entrained about said first and second shaft pulleys whereby said first and second coupling

means cooperate to couple rotational movement from said drive pulley to said second shaft stripper roller in a direction opposite that of the drive means rollers while permitting said support means to freely pivot about said first shaft completely independent of said rotational driving function.

3,857,560

ADHESIVE PAPER PICK-OFF SYSTEM

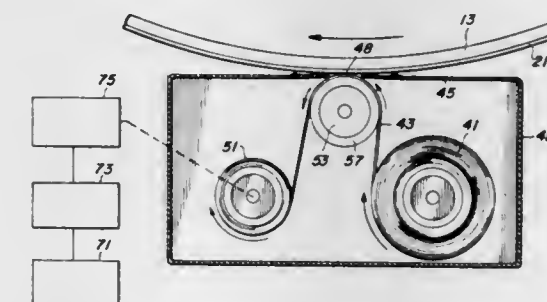
Robert William Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 23, 1973, Ser. No. 381,933

Int. Cl. B65h 29/54

U.S. Cl. 271-174

15 Claims



1. An apparatus for stripping a sheet adherent to a surface, comprising:

a member having an opening;

an adhesive tape;

a mesh of a plurality of non-sticky wires positioned in the opening and forming a grid screen thin enough to allow contact of the adhesive tape to the sheet through the openings of said mesh but strong enough to prevent the paper from deforming into the openings;

means for positioning the adhesive tape against said grid mesh for pressure contacting the sticky side of the adhesive tape to the sheet through the grid.

3,857,561

GYMNASTIC APPARATUS

Giancarlo Cecchetti, Schleissheimer Strasse 110, D-8000 Munich 40, Germany, and Antonio Paludetti, Vittorio Veneto, Italy, assignors to said Cecchetti, by said Paludetti

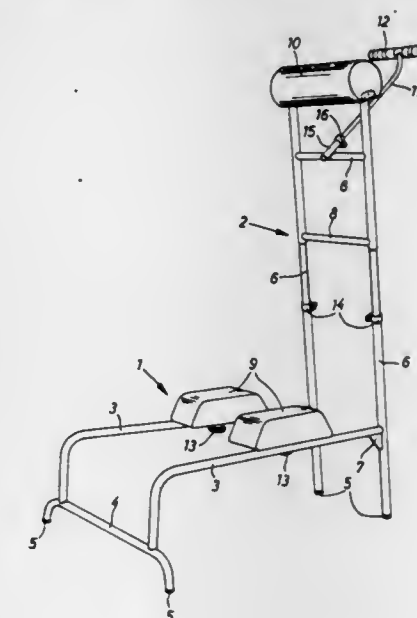
Filed June 27, 1973, Ser. No. 374,238

Claims priority, application Germany, Nov. 2, 1972, 2253767

Int. Cl. A63b 1/00, 3/00

U.S. Cl. 272-58

43 Claims



1. A gymnastic apparatus for accommodating exercises by

a person with selective alternative positioning of the person's head; said apparatus comprising:
 substantially horizontally extending bar means,
 shoulder support means mounted on said bar means for supporting shoulders of said person,
 an upright frame connected to said bar means,
 knee support means disposed adjacent an upper end of said upright frame for supporting bends of knees of said person,
 cantilever means connected to said upright frame,
 and feet support means mounted in spaced relation from said knee support means by said cantilever means for supporting the feet of said person,
 wherein said upright frame is inclined at an angle with respect to said bar means such that the knee support means are spaced in the horizontal direction from said shoulder support means by a distance less than the horizontal distance between said shoulder support means and lower portions of said upright frame.

3,857,562

MINIATURE BOWLING GAME APPARATUS

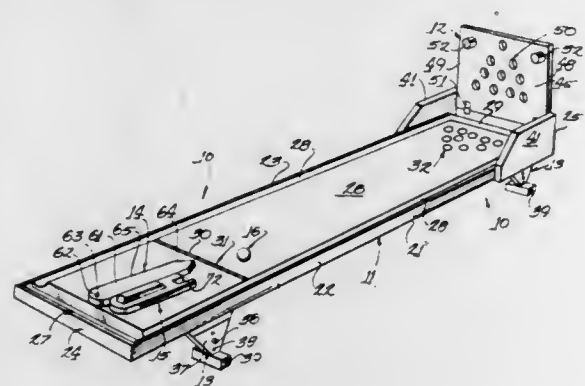
Edward H. Rardon, and E. Jeffrey Rardon, both of 2646 McVey Blvd., W., Worthington, Ohio 43085

Filed Jan. 3, 1974, Ser. No. 430,479

Int. Cl. A63d 3/02

U.S. Cl. 273—38

4 Claims



1. A miniature bowling game apparatus comprising:
 a playing board having a substantially flat rectangularly shaped bottom surface, a top surface defining a playing field in the form of a bowling alley, opposed longitudinally extending vertically disposed side edges, and opposed end edges defining a playing end and a bowling pin end respectively;
 a back-stop associated with said bowling pin end of said alley and comprising a pair of transversely spaced apart side wall surfaces each associated with a respective side edge of said playing board and projecting vertically thereabove, and a vertically extending back wall surface interconnecting the back edges of said side wall surfaces and extending vertically above the alley;
 a pin resetting plate of a substantially flat rectangular configuration having a bottom surface, a top surface, a front edge, a bottom edge, and opposed side edges, said bottom edge hingedly connected to said back wall surface to provide swinging movement of said pin resetting plate between a substantially vertical inoperative position and a substantially horizontal position overlying the bowling pin end of said alley, ten separate spaced apart bowling pin receiving apertures forming a triangular shape on said plate and extending completely therethrough with the apex of said shape disposed centrally of and inwardly of the front edge of said plate, and spacing means affixed to said bottom surface of said plate and projecting outwardly therefrom and adapted to engage said alley when said plate is in said horizontal position;
 a guide arm of an elongated configuration having a back end, a front end, and at least one substantially straight side edge, said guide arm pivotally attached by a pivot pin

to the top surface of said alley on said playing end thereof in a manner providing swinging movement of said guide arm in a horizontal plane about the surface of said alley in a manner to selectively point the guide arm in the direction of the bowling pins resting on the bowling pin end of said alley;

- a ball guide device of an elongated substantially flat configuration having a flat bottom surface, a back end, a front end, and at least one substantially straight side edge, said bottom surface adapted to slide along said alley at the playing end thereof, said front end provided with a longitudinally inwardly projecting slot centrally thereof, said straight edge adapted to be placed in sliding juxtaposition with said straight edge of said guide arm for guiding the movement of said guide device therealong; and
- a bowling ball of a size and configuration adapted to be freely received in said guide device slot for guiding movement therein in a manner providing initial direction and velocity to said ball as said guiding device is slid along said guiding arm to propel the ball down the alley into the bowling pins.

3,857,563

DEVICE FOR PRACTICING GYMNASTICS

Isidro Gimenez Azara, Avenida Bruselas 42, Madrid (2), Spain

Continuation of Ser. No. 198,131, Nov. 12, 1971, abandoned.

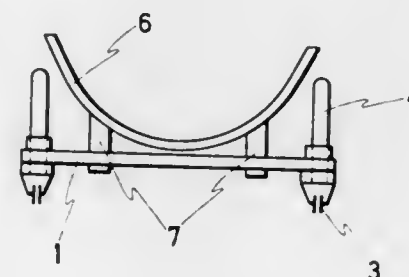
This application June 15, 1973, Ser. No. 370,454

Claims priority, application Spain, Dec. 12, 1970, 164193

Int. Cl. A63b 2/00

U.S. Cl. 272—58

1 Claim



1. A device for practicing gymnastics, said device comprising:
 a horizontally positioned rectangular platform having opposite parallel edges;
 two supports parallelly attached to the underside of said platform adjacent two of said opposite parallel edges thereof, said supports extending along the entire lengths of said two opposite parallel edges;
 rollers mounted on opposite ends of each of said two supports; and
 two parallelly mounted gripping handles attached to the upper side of said platform, each of said handles comprising an arched bridge having a straight horizontal central portion and vertically extending free ends, said handles extending along substantially the entire length of said two opposite parallel edges, each of said handles being attached to said platform with the central portion thereof extending above and parallel with one of said supports, said free ends of each of said handles extending through said platform and the corresponding support positioned thereunder.

3,857,564

DISC PROJECTION APPARATUS

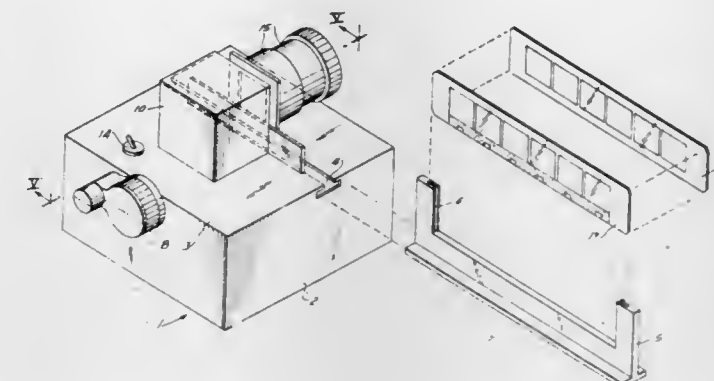
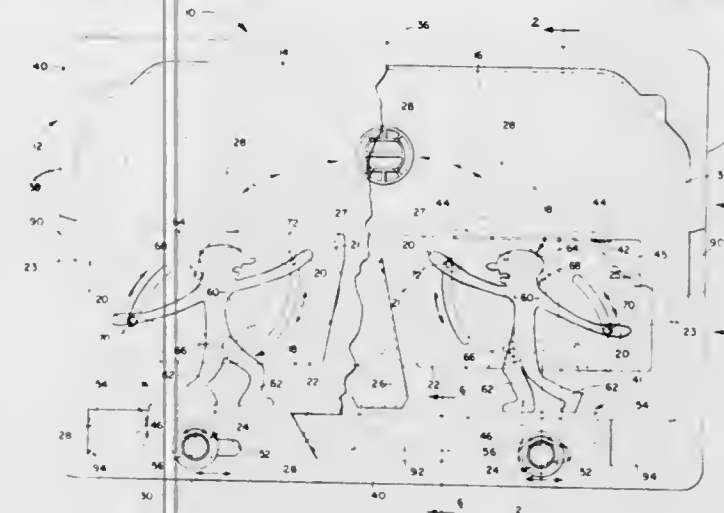
Adolph E. Goldfarb, 4614 Monarea Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,382

Int. Cl. A63b 71/02

U.S. Cl. 273—85 F

15 Claims



projection, so that the remaining uncovered portion of each window is just large enough to show only such an indicium which may be present on the exposed portion of the associated first frame.

1. Play apparatus for competitive play between two or more players, comprising:

- a housing having a transparent window and defining a compartment therein, said compartment having a generally flat configuration defining a generally upright plane of reference, said compartment having a width generally transverse to said generally upright plane of reference,
- a pair of figures disposed within said compartment, each of said figures having at least one movable limb, said figures being disposed parallel to said plane for translational movement parallel to said plane,
- a barrier region disposed in a lower portion of the compartment between the figures and extending substantially the full width of the compartment, said barrier region comprising a solid barrier member disposed in said lower portion of the compartment and extending sufficiently far along said width of the compartment to block passage of said playpiece through said barrier region,
- a playpiece within said compartment for being propelled by said figures back and forth between them and over the barrier region, and
- remote control means in said housing operatively associated with said figures so that each figure can be separately and individually controlled in its movement from outside of said housing.

3,857,566

ADHESIVE SURFACE DART AND SHOCK ABSORBING TARGET

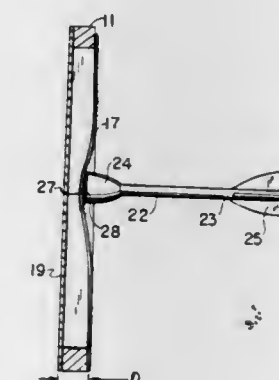
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Allan M. Elfman, 219 E. 83rd St., New York, N.Y. 10028

Filed Jan. 24, 1974, Ser. No. 436,045

Int. Cl. A63b 71/02

U.S. Cl. 273—95 R

5 Claims



3,857,565
 STOP-ACTION SPORTS GAME
 Sol Friedman, 10 Ronald Dr., Monsey, N.Y. 10950
 Filed Sept. 17, 1973, Ser. No. 397,636
 Int. Cl. A63f 7/06

U.S. Cl. 273—85 R

12 Claims

1. Stop-action sports game, comprising a set of first transparencies each having a plurality of frames which show images of at least one offensive player in different offensive playing situations, some of said first frames being provided with one or more indicia indicative of respective playing results; a set of second transparencies each having a corresponding plurality of second frames which show images of at least one defensive player in different defensive playing situations, each of said second frames being provided with an opaque area having a window large enough to show at least one indicium of a first frame which is overlies; means for holding any two first and second transparencies in overlying relationship in which said first frame thereof is in registry with a second frame thereof and forms a projectable composite having a composite image formed by the individual images of the overlying first and second frames of the composite; means for projecting the

1. A target game comprising:
 a missile having at least a portion of its surface defined by a multitude of irregular filamentary formations,
 a target adapted to be secured adjacent an upstanding support such as a vertical wall and composed of an assembly including a support,
 a sheet of pile textile material having a central target portion and border portions supported by said support and being composed of upstanding hook-like filamentary formations which are adapted to be engaged and retained by the irregular filamentary formations of said missile when said missile is directed at said target and to removably retain said missile thereagainst in the area of impact, said central portion of said sheet of textile material being normally disposed by said support away from the wall against which said target is supported and being deflectable inwardly towards said wall when struck by a missile so as to yield during the deceleration of said missile to permit the filamentary hook-like formations of said target and the irregular formations of said missile to engage and become interlocked in a manner such as to retain the two in assembly so as to indicate the location of the portion of the target struck by said missile.

3,857,567

BUMPER POOL GAME WITH IMPACT RESPONSIVE ACTUATION-DEACTUATION STRUCTURE FOR MARKING AND UNMARKING OF SELECTED BUMPER ELEMENTS

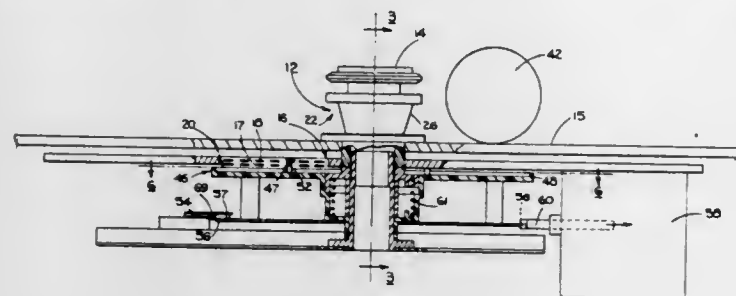
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,221

Int. Cl. A63f 7/00; H01h 3/16

U.S. Cl. 273-123 A

21 Claims



1. Bumper pool game apparatus comprising:
 - a rollable striking element;
 - a substantially horizontal playing surface for the striking element to roll upon, the playing surface having a periphery;
 - wall means disposed at the periphery of the playing surface and comprising a boundary therefor to confine the striking element, the wall means being configured to provide access to the playing surface from above the surface for permitting play thereon;
 - a plurality of bumper means for being struck by the striking element, the bumper means being disposed in an arrangement at the playing surface and extending thereabove;
 - marker means on the bumper means, the marker means being actuable to mark the bumper means to distinguish the latter means from unmarked bumper means and thereby indicate the next bumper means to be struck by the striking element; and
 - control and selection means coupled to the bumper means and to the marker means, and being responsive to impact of the striking element upon a marked bumper means to:
 - a. deactuate the marker means of that bumper means,
 - b. select the next bumper means to be struck by the striking element, and
 - c. actuate the marker means on the selected bumper means.

3,857,568

SIMULATED GOLF BOARD GAME APPARATUS

Donald E. Yoder, 9519 Melrose, Apt. 3, Overland Park, Kans. 66214

Filed Dec. 3, 1973, Ser. No. 421,477

Int. Cl. A63f 3/00

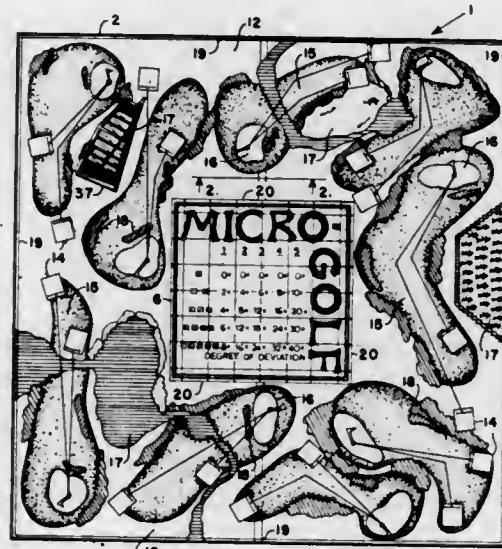
U.S. Cl. 273-134 CG

6 Claims

1. A game device in which the game of golf can be simulated, said game device comprising:
 - a. a game board having a simulated golf course depicted thereon, the golf course including areas simulating a plurality of tees, fairways, greens, hazards, in-the-rough areas, and boundary lines for the fairways and the course;
 - b. a plurality of game tokens each representing a golf ball for a respective player;
 - c. chance means for manipulation by a player for randomly signifying travel of a respective golf ball, said chance means signifying distance of travel and degrees of deviation of travel from an intended path of travel, said chance means comprising:
 1. a throwing cup and a plurality of dice from which any number may be selected and placed in and thrown from said cup, each player being permitted to select the number of dice for each throw, the total number of top

spots of said dice when thrown signifying the distance of travel; and

2. a grid layout on said game board to receive said selected number of dice thrown from said cup, said grid layout having a table thereon with a plurality of parallel columns each having a plurality of designations representing degrees of deviation of travel from an intended path, said designations in said columns being arranged in longitudinally spaced lines of aligned designations, each column being headed by a designation representing the numerical difference between the top spots on the outermost right and left dice as faced by a player, said table having a column of designations arranged parallel with said first named columns and each aligned with a respective one of said lines and in consecutively increasing numbers repre-



- senting numbers of dice thrown onto said grid layout whereby the numerical difference between the top spots on the outermost right and left dice as faced by a player and the number of dice thrown cooperate to determine one designation representing degrees of deviation of travel from the intended path; and
- d. means to be placed on said game board for designating the intended path of travel and for measuring the actual distance and degrees of deviation of travel for each manipulation of said chance means to determine the lie of the game token representing the respective golf ball.

5. A measuring device for use in a simulated game, said measuring device comprising:

- a. a first tool having an elongated portion with one end thereof adapted to be positioned at a selected location on a game board and having a V-notch therein adapted to receive and be in engagement with a stem of a game token at the selected location, said first tool being pivotal about the stem of the game token at the selected location to designate an intended path of travel of a game ball, the elongated portion of said first tool having one edge alignable with the center of the game token whereby the one edge is alignable with the intended path of travel of the game ball;
- b. an arcuate end member on the other end of said elongated portion of said first tool and having indicia thereon designating degrees of deviation from the intended path of travel of the game ball, said indicia extending circumferentially right and left from the one edge of the elongated portion of said first tool, said indicia having zero deviation aligned with the one edge of the elongated portion of said first tool;
- c. an elongated second tool pivotally mounted on said first tool for pivotal movement relative to the selected location, said second tool having one edge alignable with the one edge of the elongated portion of said first tool and with the stem of the game token at the selected location, the movement of said second tool being along said end member to designate direction of travel of the game ball;

- and
- d. indicia on said second tool to designate distance of travel of the game ball along a determined path.

3,857,569

DEXTERITY GAME WITH INDICIA BOARDS AND PLAY PIECES MATCHING THE INDICIA

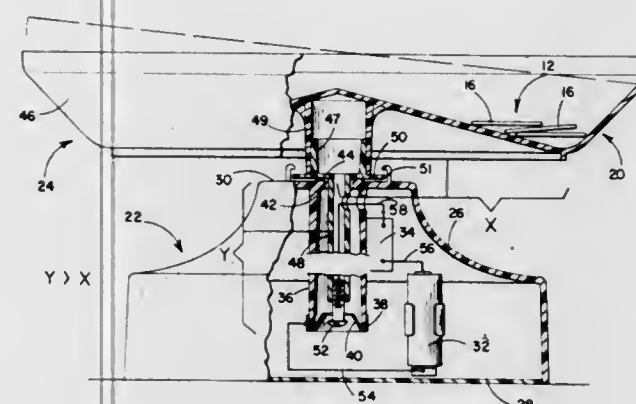
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,219

Int. Cl. A63f 3/06

U.S. Cl. 273-135 A

10 Claims



1. Competitive play apparatus for play of a game by two or more players, comprising in combination:
 - a plurality of play pieces having different indicia thereon,
 - a plurality of board surfaces each board surface assigned to one player, said board surfaces having indicia thereon matching the indicia on said play pieces,
 - a sensitively supported receptacle means for receiving said play pieces therein and for retaining said play pieces so that a player may selectively remove a play piece having an indicium thereon matching an indicium on said player's board surface, and
 - a base having signal means for providing a signal when actuated and means supporting said receptacle means in a said sensitively supported manner so that if said receptacle means is inadvertently engaged by a player when he attempts to remove a play piece from the receptacle means, said receptacle means will be moved relative to said base to actuate said signal means.

3,857,570

GOLF PUTTING TRAINING DEVICE

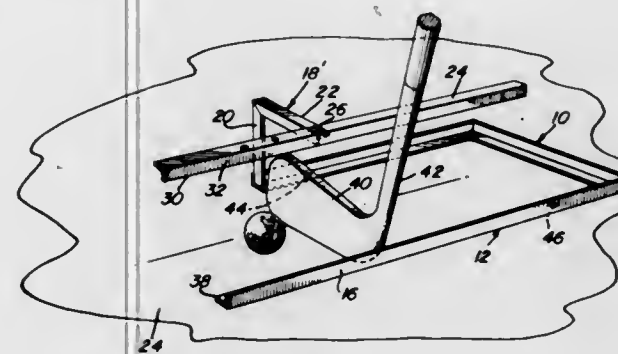
Miramón Gutierrez, 415 Fifth, Albuquerque, N. Mex. 87101, and Ricardo Gutierrez, 1600 Girard S.W., Albuquerque, N. Mex. 87106

Filed Apr. 24, 1974, Ser. No. 463,811

Int. Cl. A63b 69/36

U.S. Cl. 273-186 C

7 Claims



1. A golf putting practice device comprising a horizontal frame including a pair of parallel elongated opposite side members interconnected at one pair of corresponding ends by

means of a transverse member extending and connected therebetween, an elongated guide bar supported from said frame in elevated position relative thereto with said guide bar generally paralleling said side members and disposed in a vertical plane spaced centrally intermediate said side members, the space between said guide bar and at least one of said side members being unobstructed, the spacing between said side members being slightly greater than the length of the head of a conventional putter and the height of said guide bar above the undersurface of said side members being slightly greater than the height of a conventional putter head.

3,857,571

RECORD REPRODUCING METHOD

Hiroshi Yamamoto, Tokyo, Japan assignor to Synaps, Tokyo, Japan

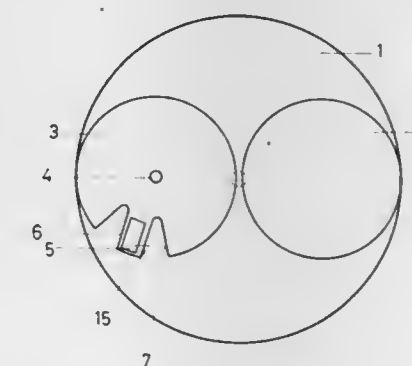
Filed Nov. 2, 1972, Ser. No. 303,214

Claims priority, application Japan, Nov. 6, 1971, 46-88388

Int. Cl. G11b 3/40, 25/04

U.S. Cl. 274-9 C

1 Claim



1. An apparatus for reproducing recorded information from a phonograph record having a spiral groove, comprising a turntable, a pickup disc rotatably mounted on one side of said turntable, a balancing means fixed on one side of said turntable opposite to said arm disc to maintain the turntable in equilibrium, a cartridge mounted on a peripheral portion of said pickup disc, said pickup disc having two cut out sections in the vicinity of the cartridge to offset the weight of said cartridge thereby maintaining said pickup disc in equilibrium, an upwardly pointed reproducing stylus provided on said cartridge, and a record support means positioned above said turntable whereby a phonograph record having visual information on an upper side thereof and a record groove on a lower side thereof may be placed with its upper side up and remain stationary while the reproducing stylus pointed upwardly to contact the record groove travels along the groove with rotation of the cartridge.

3,857,572

E-RING SEAL ASSEMBLY

Dudley D. Taylor, Beltsville, and Horace P. Halling, Laurel, both of Md., assignors to Pressure Science, Inc., Beltsville, Md.

Filed Oct. 18, 1973, Ser. No. 407,653

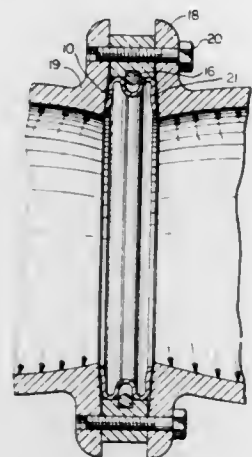
Int. Cl. F16j 15/00

U.S. Cl. 277-9.5

7 Claims

1. A sealing ring assembly comprising a spacer plate and at least one resilient metal sealing ring approximately E-shaped in radial cross section secured inside an aperture in said spacer plate, the outer arms of said E-sealing ring having a sinuous configuration, the central arm of said E-sealing ring being a loop open on the outer edge thereof and having at least a portion of its two sides out of contact with each other, the portion of said spacer plate defining said aperture encircling said E-sealing ring and having an annular groove on the inner surface thereof, said groove being aligned with the opening of the loop on the central arm of said E-sealing ring, another ring

encircling said E-sealing ring and being situated so that a portion thereof extends into said annular groove and another



portion thereof extends into the opening in the central arm of said E-sealing ring.

3,857,573

MOUNTING ARRANGEMENTS FOR INJECTORS FOR I.C. ENGINE FUEL INJECTION SYSTEMS

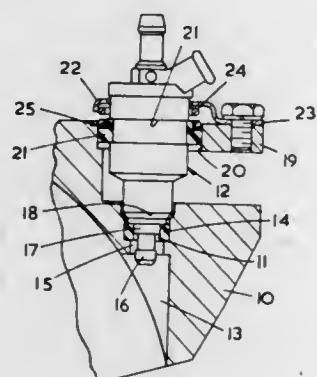
Michael Stephen Pugh, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed July 30, 1973, Ser. No. 383,607

Claims priority, application Great Britain, July 28, 1972, 36361/72

Int. Cl. F16j 15/06

U.S. Cl. 277-102

5 Claims



1. A mounting arrangement for an injector on an engine intake manifold, said mounting arrangement comprising a sealing ring in a bore in said manifold, an abutment mounted on said manifold and a spring acting between said abutment and said injector through the intermediary of a flexible means so as to urge said injector into sealing engagement with said sealing ring.

3,857,574

GASKET ASSEMBLY

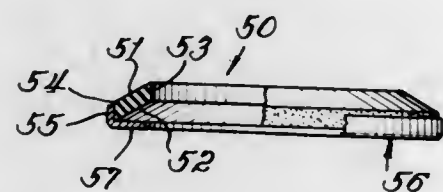
Paul J. Artzer, Arvada, Colo., assignor to Appleton Electric Company, Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,149

Int. Cl. F16j 15/12

U.S. Cl. 277-183

3 Claims



1. In the combination of electrical fitting means and a gas-

ket between said fitting means, the improvement wherein said gasket comprises:

an annular, elastomeric member having parallel upper and lower walls, said walls being in the shape of a frustum of a cone, said walls being joined by inner and outer walls, said inner and outer walls being cylindrical in configuration with the inner wall having a smaller radius than that of the outer wall, said inner and outer walls having a common height;

a cup-shaped member having a generally flat annular base with an annular flange about the periphery of the base and at right angles to said base, said flange having an inside wall with a height above said base less than said common height, said cup-shaped member being relatively rigid compared to said elastomeric member, said elastomeric member being positioned within said cup-shaped member with said lower wall in juxtaposition to said base and with said outer wall of said elastomeric member in juxtaposition to said inside wall of said cup-shaped member; and

an adhesive between the outer wall of the elastomeric member and the inside wall of said cup-shaped member and bonding the two together.

3,857,575

SECURITY TRAILER HITCHING POST

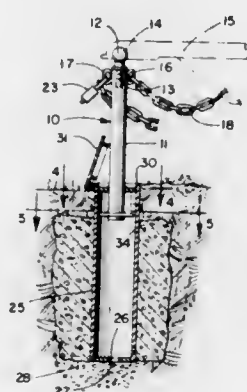
James F. Lee, Rt. 4, Box 363, Darlington, S.C. 29532

Filed Dec. 28, 1973, Ser. No. 429,108

Int. Cl. B60r 27/00

U.S. Cl. 280-1

9 Claims



1. A telescoping hitching post assembly device comprising a fixed ground receptacle, a post member adapted to be completely housed within the receptacle or to be withdrawn from the receptacle for attachment to a tongue portion of a trailer for boats or the like, coating means carried by the post member and receptacle for retaining the post member secured to the receptacle when in the withdrawn position, means carried at the top of the post member for ready attachment to a complementary member carried by the trailer tongue, and other means for securing the trailer to the post member to prevent theft, said post member being provided with a pair of spaced discs near the bottom thereof and the receptacle is provided with an internal rib, the upper of said discs being provided with a slot to permit the discs to pass the rib when the rib and slot are in alignment, and the lower of said discs being adapted to engage the rib to prevent complete removal of the post member from the receptacle when the post member is in raised position, said discs and rib comprising said coating means.

3,857,576

TANK MOUNTING STRUCTURE

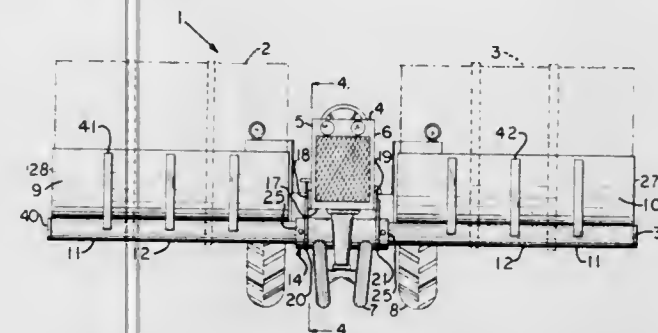
Theodore G. Wilt, c/o T. G. Wilt Farm Employment, Box 397, Shelbyville, Mo. 63468

Filed Mar. 18, 1974, Ser. No. 452,423

Int. Cl. B60p 3/22

U.S. Cl. 280-5 A

12 Claims



1. A tank mounting structure for use with a tractor having a longitudinally extending frame, said tank mounting structure comprising:

a. a mounting assembly removably attached to a frame of a tractor, said mounting assembly including a plurality of spaced mounting members each extending transversely of the frame of the tractor and each having opposite end portions;

b. a first and second tank support frame each adapted to be positioned on a respective side of the frame of the tractor and each having a plurality of elongated support members extending outwardly therefrom and each in removably supported engagement with a respective one of said mounting members of said mounting assembly;

c. an elongated transversely arcuate cradle member for each of said first and second tank support frames, each cradle member being secured to said respective tank support frame and adapted to receive a respective tank therein; and

d. fastening means engaging each of said elongated support members of each of said first and second tank support frames and respective mounting members of said mounting assembly for retaining said first and second tank support frames in supported engagement with said mounting assembly.

3,857,577

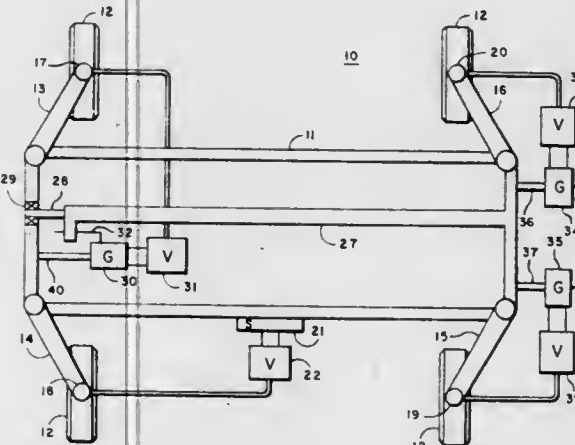
PROPORTIONAL FRAME TWIST SLOPE CONTROL
Leland Kuntz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 28, 1973, Ser. No. 401,927

Int. Cl. B60g 17/04

U.S. Cl. 280-6.1

8 Claims



1. A control system for an earth working machine having earth-support means and a frame having a front end and a rear end and power means for adjusting the grade and slope of the frame relative to said support means, said system comprising:

slope sensing means for providing an output dependent upon the deviation of the actual slope across one of said ends from a predetermined setpoint;

first connecting means adapted to connect said output to said power means for controlling the slope of said one end;

frame twist sensing means for providing a twist output proportional to the deviation of the actual slope across the other of said ends of said frame from the actual slope across said one end;

control means for receiving said twist output and for providing a control output proportional to the deviation of said twist output from a predetermined setpoint; and,

second connecting means adapted to connect said control output to said power means for controlling the slope across said other end of said frame.

3,857,578

WEAR BAR FOR A SNOWMOBILE SKI

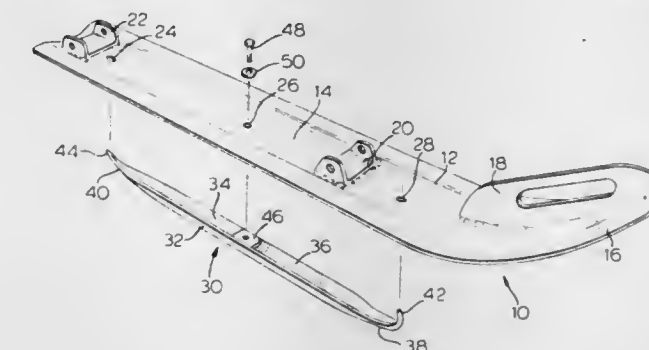
James Gowan Alton, Willowdale, Ontario, Canada, assignor to James G. Alton Equipment Co., Limited

Filed Mar. 4, 1974, Ser. No. 447,750

Int. Cl. B62b 17/02

U.S. Cl. 280-28

10 Claims



1. A wear bar for a snowmobile ski comprising two opposing steel sides which are downwardly depending and which meet to form an integral joint longitudinally of said wear bar, said joint having at least one longitudinal edge for contacting a ground surface which supports said snowmobile ski; said wear bar being adapted to correspond with the contour of the underside of said snowmobile ski where fastening means for securing said wear bar to the underside of said snowmobile ski is positioned in a depression defined between said opposing sides, the longitudinal axis of each said edge being parallel to the longitudinal axis of said snowmobile ski.

3,857,579

CART FOR MOVING TELEVISION, HI-FI CABINETS AND THE LIKE

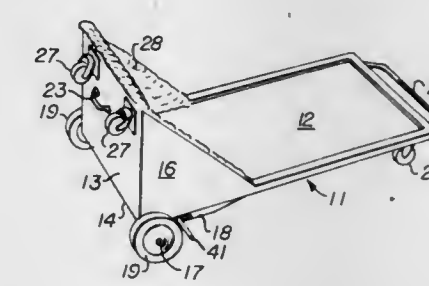
James A. Hoodenpyle, 910 Pershing Ave., San Jose, Calif. 95126

Filed Apr. 6, 1973, Ser. No. 348,677

Int. Cl. B62b 1/08

U.S. Cl. 280-47.2

4 Claims



1. A cart having a longer end, a shorter end at right angles to said longer end joined at a transverse corner, triangular sides permanently fixed to said ends on each side of said dolly extending from the outer end of said shorter end across said

transverse corner, said sides holding said ends in said right-angle relation to each other and also preventing objects on said cart from falling off the sides, said ends and said sides comprising flat, thin sheets of material, said sheets being substantially impervious throughout most of their areas, an axle adjacent said corner, wheels on the ends of said axle, a first pair of casters on the back of said longer end adjacent the outer end of said longer end, a second pair of casters on the back of said shorter end adjacent the outer end of said shorter end, at least one first handle on the back of said longer end inward of said first pair of casters, at least one first handle on the back of said shorter end inward of said second pair of casters, and a U-shaped second handle fixed to and projecting outward beyond the outer end of said longer end.

3,857,580

VEHICLE LEVELING SYSTEM

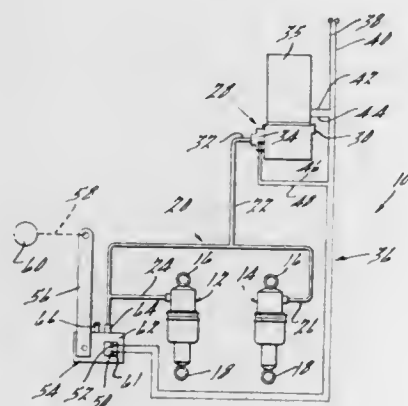
Johan H. Keijzer; J. Hans Van Den Berg; Willy R. J. Pierle, all of Tienen, and Louis Joseph Jossa, St. Truiden, all of Belgium, assignors to Monroe Belgium, N.V., St. Truiden, Belgium

Continuation of Ser. No. 217,016, Jan. 11, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,470

Int. Cl. B60g 17/06

U.S. Cl. 280—124 F

33 Claims



1. A leveling system for a vehicle having sprung and unsprung portions, at least one air pressure operated leveling strut for varying the attitude between the sprung and unsprung vehicle portions, an electrically energized source of pressurized gas for supplying pressurized gas to said strut, a pressurized gas circuit including a gas conduit directly connecting said source with said strut for directly communicating pressurized gas between said source and said strut, an electrical circuit for communicating electrical energy to said compressor from a source thereof, and a vehicle attitude sensing device responsive to variations in attitude between the sprung and unsprung portions of a vehicle, said device including a valve communicable with said gas circuit and an electrical switch for opening and closing said electrical circuit, and actuating means responsive to orientation of the sprung vehicle portion below some predetermined position for closing said valve and actuating said switch so as to energize said gas source and cause pressurized gas to be communicated from said gas source to said strut and thus expand said strut, and to orientation of said sprung vehicle portion above some predetermined position for opening said valve means and deactivating said switch, whereby a portion of said gas circuit is connected with a relatively lower pressure condition to permit said strut to collapse.

3,857,581

SAFETY BELT DEVICE FOR VEHICLES

Yuichiro Kaneko; Fuminori Teraoka; Tatsushi Kubota, and Takehiko Nishikawa, all of Aichi, Japan, assignors to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai-gun, Japan

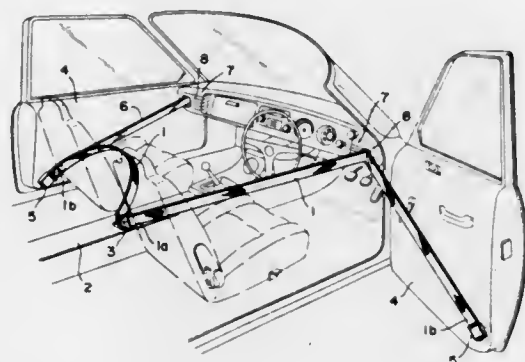
Filed Oct. 26, 1972, Ser. No. 300,976

Claims priority, application Japan, Nov. 4, 1971, 46-87869

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

4 Claims



1. A safety belt device for use in a vehicle including a door, which comprises a belt webbing having one end secured to a body of the vehicle on one side of a seat and the other end engaged to a winding means on the other side of the seat, said belt webbing extending across the seat in both first and second positions, said first position being an occupant restraining position when the door is closed and said second position being an occupant nonrestraining position when the door is open; an energy accumulator means for displacing said belt webbing to said second position; and a connecting means having one end bonded to said belt webbing and the other end connected to a first sector gear pivotally mounted on a first shaft, a second gear engaging with said first gear and fixed to a third gear in axial relationship to the latter; one-way clutch bodies mounted on said first gear for engaging with the third gear, and means energized by the winding of a spiral spring secured at one end to a second shaft by angular movement of said first gear through the rod means.

3,857,582

VEHICLE LEVELING SYSTEM

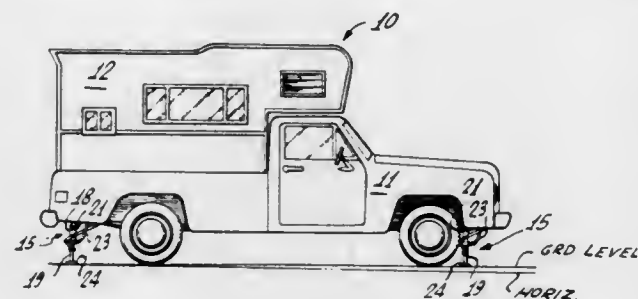
Michael Hartog, 650 N. Bronson Ave., Los Angeles, Calif. 90004

Filed May 17, 1974, Ser. No. 470,986

Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

17 Claims



1. A retractable jack assembly for a vehicle, comprising: a longitudinally extendable and contractable jack having an upper end portion for attachment to the vehicle and an extendable lower end portion for engagement with the ground; means on said upper end for mounting said jack on the vehicle including

a base, a pivot defining a substantially horizontal axis for said jack supporting the latter on said base for swinging between an upright, active position and an upwardly folded, retracted position; means guiding said pivot for back and forth movement along said base transversely of said axis; and linkage means connected between said base and said jack for swinging the jack to said active position and shifting said pivot along said base in one direction in response to extension of the jack when the latter is in said retracted position, said linkage means also being responsive to contraction of said jack when the latter is in said active position to swing the jack back to the retracted position while shifting said pivot back along said base in the opposite direction.

of said tricycle and including a central flange member which receives a goose-neck portion of a handle bar of said tricycle and which extends from a sleeve of a fork carrying a front wheel of said tricycle; opposite end portions of said tubular member being angled outwards on each side of said front wheel so as to provide stop means against a ground when said tricycle starts to tilt and said front U-shaped tube acting in conjunction with said rear tubular member to prevent said excessive tipping, said rear tube member having leg means secured fixedly to a rear portion over an axle carrying said rear wheels, said rear tubular member including outwardly extending and over hanging opposite ends, said over hanging ends extending over said rear wheels, said ends being angled downwardly outwardly and spaced apart from side faces of said rear wheels in order to provide stop means upon a ground when said tricycle starts in to a tilt.

3,857,583

OCCUPANT PROPELLED QUADRACYCLE

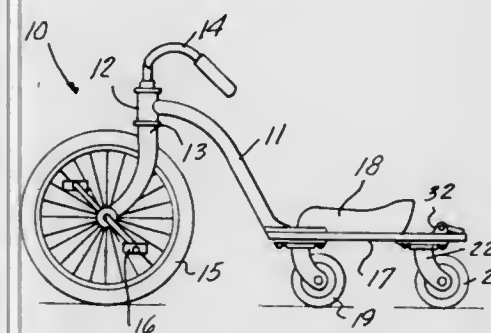
Henry R. Vanover, 822 Highmoor St., Stockton, Calif. 95207

Filed May 18, 1973, Ser. No. 361,615

Int. Cl. B62k 9/00

U.S. Cl. 280—282

4 Claims



1. A quadracycle comprising a frame, a steerable front wheel mounted in said frame, a generally horizontal plate secured to the rear of said frame, a pair of castering outrigger wheels supporting the opposed side edges of said plate, a rear wheel, means mounting said rear wheel on said plate for castering about a vertical pivot, and means movably mounted on said plate for latching said rear wheel against castering movement.

3,857,584

TRICYCLE ANTITIPPING DEVICE

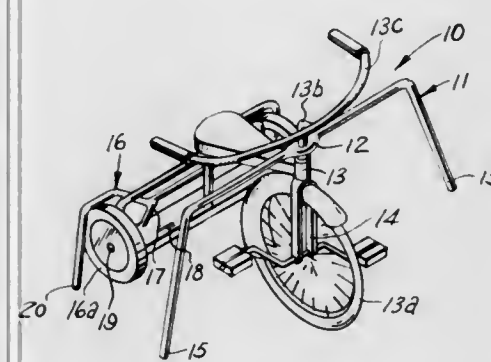
Theodore J. Nohava, 1102 Jefferson St., and David C. Girsh, 940 N.E. 170 St., Apt. 104, both of North Miami Beach, Fla. 33020

Filed Sept. 10, 1973, Ser. No. 395,702

Int. Cl. B62h 7/00

U.S. Cl. 280—293

1 Claim



1. A tricycle comprising a U-shaped tubular member with mounting means for placement over a front wheel of a tricycle, a rear tubular member carried by said tricycle providing excessive non-tipping means for a rear end of said tricycle, said tubular member having mounting means for a front end

3,857,585

SUPPORT STAND FOR A RACER-TYPE BICYCLE

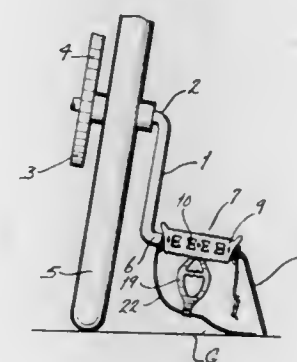
Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78767

Filed Oct. 3, 1973, Ser. No. 403,168

Int. Cl. B62h 1/04

U.S. Cl. 280—294

6 Claims



1. The combination with a racer-type bicycle pedal having normally front and rear parallel end plates, inner and outer parallel side plates, means inter-engaging said end plates and said side plates, a pedal axle extending transversely of said pedal in axially parallel relationship to said front and rear end plates, means rendering said pedal rotatable upon said pedal axle of a bicycle support stand, having a body with a normally upper portion presented to the outer face of said outer side plate between said normally front plate and said pedal axle, means engaging said body upper portion to said outer side plate, said stand body including a horizontal portion proximate its upper end for displacing said body laterally outwardly of said outer side plate, said body having forwardly and rearwardly projecting side portions, and a base portion, the distance between said body upper portion and said base portion being less than the distance between said pedal and the ground support surface when said pedal is in operative condition.

3,857,586

ANTI-JACKKNIFE DEVICE HITCH

Joseph J. Mascuch, 63 Sagamore Rd., Milburn, N.J. 07041

Filed June 11, 1973, Ser. No. 368,536

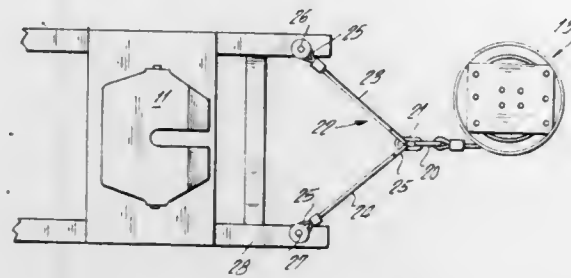
Int. Cl. B60d 7/00

U.S. Cl. 280—432

3 Claims

1. An anti-jackknife device hitch for use with a tractor trailer rig having a braking device in the form of an axle mounted on one end of the elements of the rig, a brake stator secured to the free end of the axle, a complementary brake means freely carried upon the axle, a cable drum assembly rotatably mounted on the axle and coupled to the brake means and a cable secured at one end and received upon the cable

drum, the improvement which comprises a Y-shaped hitch secured at one end to the free end of the cable and at its other



two ends to spaced pivot points carried by the other member of the tractor trailer rig.

3,857,587 BOOK INDEXING MEANS

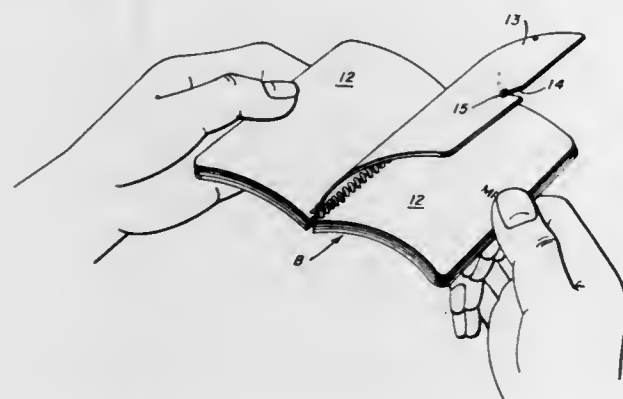
Arthur S. Friedman, 509 Madison Ave., Room 914, New York, N.Y. 10022

Filed July 19, 1973, Ser. No. 380,599

Int. Cl. B42f 21/00

U.S. Cl. 283-42

2 Claims



1. In a book having its leaves constructed and arranged for progressive flexing in a thumbing operation and disposed as a sequential series of individual groups of consecutive leaves wherein the groups are separated by an indexing leaf immediately preceding the first leaf of each group and having therein a slit open to its outer side edge, each slit extending inwardly therein and making the area of that leaf adjacent the slit a pressure point more flexible under thumb pressure applied to that point than the remainder of the leaf, and all said indexing leaf slits being in a single plane common thereto and angled relative to the turning axis of the leaves.

3,857,588 PIPE COUPLING

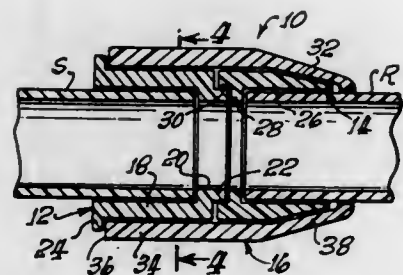
Hoyt S. Curtin, 104 Laramie Ave., Chatsworth, Calif. 91311

Filed Feb. 5, 1973, Ser. No. 329,727

Int. Cl. F16l 13/10, 47/00

U.S. Cl. 285-31

6 Claims



1. A pipe coupling for first and second pipes of predetermined size, comprising:

a first end cap with a pipe portion that has an inside diameter slightly larger than the pipe diameter for adhesive mounting on the end of the first pipe, and with an inwardly-extending flange for abutting the end of the first pipe to determine the position of the cap thereon;

a sleeve slideable along its entire length along said second pipe and having a forward end with an inside diameter slightly larger than an outer diameter portion of the cap for sliding thereover, said sleeve having means for limiting sliding thereof towards said cap so that a rearward end portion of the sleeve extends rearwardly of the end cap and around said second pipe; and

a second end cap for adhesive mounting on an end of the second pipe opposite the first end cap, said second cap having an inwardly-extending flange for abutting the end of the second pipe to determine the position of the second cap thereon;

each of said caps having a short tubular portion extending beyond the flange thereof, with the tubular portion of one cap receivable in the tubular portion of the other;

said first end cap having a predetermined first outside diameter along most of its length, said second end cap having a forward portion of said predetermined first diameter and a rearward portion tapered to increasingly smaller outside diameters at increasingly rearward locations thereof;

said sleeve having a substantially smooth internal surface with a forward portion slightly greater than said predetermined first outside diameter and a rearward portion tapered complementary to said rearward portion of said second cap for axial sliding movement of said sleeve over said caps for adhesive securement thereto, said sleeve having a substantially smooth external surface free of securing means.

3,857,589

PIPE CONNECTION WITH CLAMPING RING

Albertus Anthony Oostenbrink, Hardenberg, Netherlands, assignor to Industriële Onderneming Wavin N.V., Handell-aan, Zwolle, Netherlands

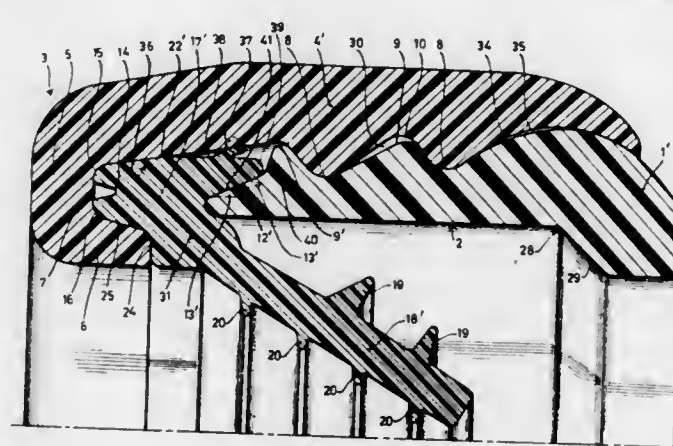
Filed Dec. 12, 1972, Ser. No. 314,359

Claims priority, application Netherlands, Dec. 14, 1971, 7117153

Int. Cl. F16l 17/00

U.S. Cl. 285-110

8 Claims



1. A pipe connection comprising a penetrating pipe part and a receiving pipe part, the latter being provided with a cylindrical widened end, the axial end of the cylindrical widened end cooperating clampingly with a retaining ring of generally J-shaped longitudinal cross-section; the part of the ring, which extends in the direction of the inner side of the receiving pipe part ending at a short distance from the free end of said receiving pipe part, the inner diameter of the retaining ring being substantially equal to the inner diameter of the receiving pipe part, and a sealing ring having a sealing body part clamped between the bottom of the retaining ring and the axial end of the receiving pipe part, said sealing ring further including a portion which is connected with the sealing body part and

which contacts at least partially the inner side of the widened end of the receiving pipe part and the outer side of the penetrating pipe part, wherein the sealing body only cooperates resiliently with the bottom of the retaining ring and cooperates resiliently with the axial end of the receiving pipe part, said pipe connection including means for absorbing shock as a result of impact thereto, said means for absorbing shock comprising the sealing body part, the retaining ring provided with hollows and elevations which cooperate with corresponding hollows and elevations provided on the radial outer surface of the receiving pipe part, such that when said retaining ring and receiving pipe part are coupled together spaces remain between engaging hollows and elevations to permit displacement of said retaining ring relative to said receiving pipe part thereby compressing said sealing body part without damaging said respective hollows and elevations when said pipe connection is subjected to impact by being dropped or the like.

3,857,590 AIR DUCT

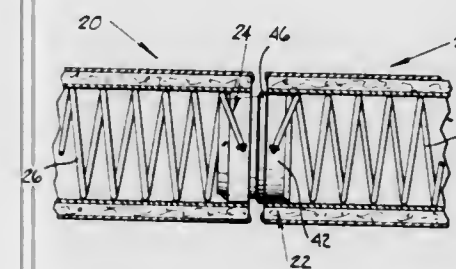
Brian Lee Meeker, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Filed Jan. 17, 1973, Ser. No. 324,274

Int. Cl. F16l 37/00

U.S. Cl. 285-305

7 Claims



1. Flexible air duct comprising:

- a tubular member, said tubular member having a first end portion and a second end portion,
- a female ring, said female ring being affixed to said first end portion;
- a male ring, said male ring being affixed to said second end portion, said male ring having an extended portion which extends beyond the second end portion and an inner portion which is within the second end portion, said extended portion having an outside diameter less than the internal diameter of the female ring whereby the extended portion is adapted to be inserted into a female ring of another of the ducts, and said extended portion having resilient tabs extending outward from an outer surface of said extended portion to define a diameter greater than the internal diameter of the female ring, and the spacing between the tabs and the juncture between the extended portion and the inner portion of the male ring being greater than the width of the female ring whereby the tabs are adapted to cooperate with an inner annular edge of the female ring of another of the ducts to prevent removal of the male ring from the female ring.

3,857,591 PIPE COUPLING

Hans Hermann Voss, Donrgaul über Wipperfurth, Germany, assignor to Armaturenfabrik Hermann Voss, Wipperfurth/Rhld., Germany

Filed Dec. 8, 1972, Ser. No. 313,361

Claims priority, application Germany, Dec. 11, 1971, 7146704

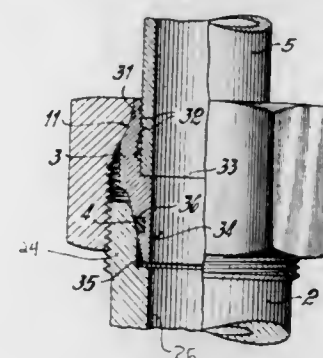
Int. Cl. F16l 19/06

U.S. Cl. 285-341

3 Claims

1. A pipe coupling comprising, in combination: two threadably engageable coupling members (1, 2) one (2) of which is

in the form of a body member and the other (1) is in the form of a nut member, including thread means for interengagement between said coupling members, thereby to connect sealingly a pipe section (5) to said body member, the pipe section having an axial passage for conveying a medium therethrough; sealing means (3, 4) between said coupling members and said pipe section, including a first metallic ring (3) interposed between said nut member and said pipe section and a second elastic sealing ring (4) in fluid-tight but resilient engagement with said body member and with said metallic ring; said nut member including an arcuate inner abutment surface (11) as a continuation of its thread means for tight metallic engagement with said metallic ring; the latter having an annular groove (36) for receiving therein said sealing ring; the surfaces of said metallic ring that are immediately adjacent said sealing ring on both sides of said groove providing additional tight metallic engagement with said body member; said metallic ring and said body member having respective axial passages (34, 26) therein substantially contiguous with said axial pas-



of the pipe section; wherein said metallic ring has a stepped axial bore (32, 33, 34) for receiving therein an end portion of the pipe section, including a first step region (34) with a smaller inner diameter that substantially corresponds to the diameter of said axial passage of the pipe section and a second axially spaced-apart step region (32) with a larger diameter that at least corresponds to the external diameter of the pipe section; the outer surface (35) of said first region conically tapering to the free end (24) of said body member; annular tooth means (32) on the inner wall portions of said second step region for tight radial engagement with outer wall portions of the pipe section when said nut member is tightened about said body member and said metallic ring; outer wall portions of said second step region being in the form of a frustoconical end portion (31) directed to said arcuate abutment surface of the nut member; and wherein said metallic ring has a radially inwardly drawn circularly shaped abutment surface (33) between said step regions, contiguous with said end portion of the pipe section.

3,857,592

HANDICRAFT TOOL

Fuji Koike, 2006-143 Aza-Akane, Oaza Nonami, Nagoya, Japan

Filed Nov. 5, 1973, Ser. No. 412,974

Claims priority, application Japan, Nov. 8, 1972, 47-128801; Sept. 3, 1973, 47-103386

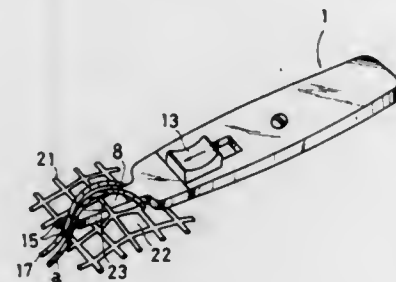
Int. Cl. D03j 3/00

U.S. Cl. 289-17

7 Claims

1. A handicraft tool for forming a piled sheet article by knotting a plurality of cut loops of yarn one by one at the bent root portion thereof to each of filaments forming a plurality of meshes of a meshed sheet base, comprising an elongated hollow body member to be gripped, a thin sleeve connected with said body member at the forward end thereof so as to produce opposite shoulders at the body member forward end for holding a yarn cut loop with the bent root thereof abutting on the lower surface of said sleeve and with the legs of said loop each extending upwardly and abutting on each of said shoulders, said sleeve being of such diameter as allowing same to pass through each of said meshes, a reciprocatingly mov-

able member disposed in said body member so as to be manually moved relative thereto between the forwarded position and the retracted position, and the pair of resilient hook levers arranged in said sleeve extending over a length thereof, said hook levers having their inner ends connected together with said reciprocatingly movable member and the outer free ends



designed to be normally separated from each other to form an open hook slightly protruded out of said sleeve when said reciprocatingly movable member is in said forwarded position but forcibly engaged with each other to produce the closed hook against the elasticity due to being pulled into the sleeve when said reciprocatingly movable member is brought into said retracted position.

3,857,593

GATE LATCH ASSEMBLY

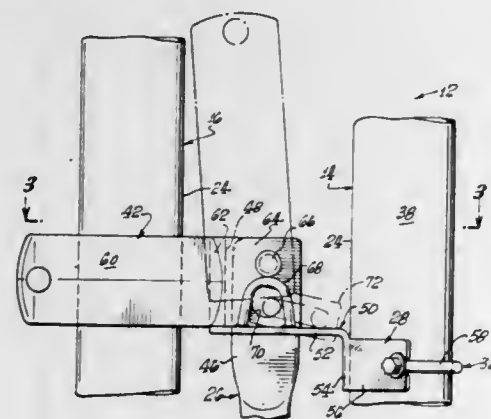
George O. Lening, 1867 S. Valencia, Rowland Heights, Calif. 91745

Filed May 30, 1973, Ser. No. 365,255

Int. Cl. E05c 5/02

U.S. Cl. 292-5

8 Claims



1. A latch assembly for a hinged double gate structure including a pair of hinged gates swingable to and from closed positions wherein the gates are located substantially in a common plane with vertical edges of the gates adjacent one another comprising:

a normally generally vertical latch rod having a normally upper end, mounting bracket means slidably receiving said rod including means for attaching said bracket means to said edge of one gate with said rod extending along the edge, anti-rotation means for restraining said rod against rotation on its longitudinal axes relative to said bracket means, a latch yoke including a pair of spaced yoke arms, a connecting portion joining said arms at one end, and a tongue extending from said connecting portion, and means pivotally connecting said yoke tongue to the upper end of said rod on a pivot axis transverse to the rod for swinging of the yoke between a gate latching position wherein said yoke arms extend transversely of the rod for straddling said edge of the other gate and gate releasing position wherein said yoke arms extend generally longitudinally of said rod.

3,857,594

DOOR LOCK ASSEMBLY

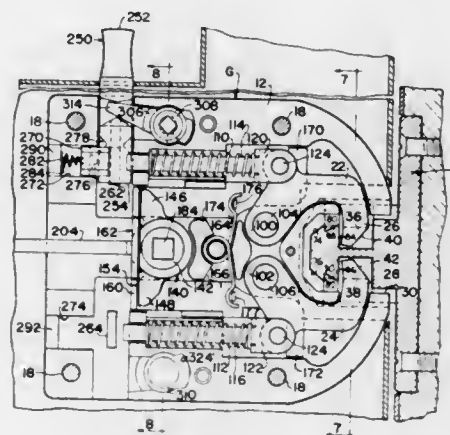
John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Aug. 30, 1972, Ser. No. 285,044

Int. Cl. E05c 3/34

U.S. Cl. 292-27

17 Claims



1. A lock assembly comprising: a multi-part housing having apertures, grooves and channels therein supporting operating parts; a pair of latch members in one of said cavities and pivoted to said housing about spaced parallel axes; said latch members having opposed jaw parts spring-biased towards one another projecting from said housing, said jaw parts having on one side of their distal ends surface portions converging toward one another and facing in the same direction axially of the pivot axes; a member slidably supported within said housing and operably connected to said latch members for moving said latch members about their pivoted connection to said housing in the direction to move said jaw parts away from one another; and a keeper member adapted to be engaged by said jaw parts, said keeper member having surface portions converging towards one another facing in one direction to be engaged by said converging surface portions of said jaw parts and aligned surface portions spaced from said converging surface portions and facing in the opposite direction.

3,857,595

SHOCK-ABSORBER FOR VEHICLES AND THE LIKE

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

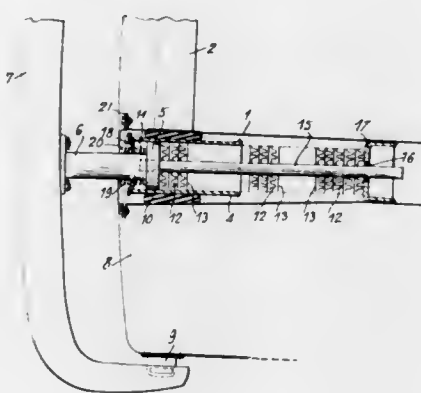
Filed Aug. 27, 1973, Ser. No. 392,066

Claims priority, application France, Oct. 27, 1973, 72.38253

Int. Cl. B60r 19/02; B61f 19/04

U.S. Cl. 293-71 R

20 Claims



1. A shock-absorber for absorbing shock to a vehicle body comprising:
a bumper;
a support for said bumper, said support being slidably mounted with respect to said vehicle body;

a pile of distortable elements interposed between said support and said vehicle body; and resilient means urging said distortable elements one against the other and said slidable member against said vehicle body, whereby said distortable elements are always in slight pressure relationship and said slidable support is maintained without any play with respect to the vehicle even though said distortable elements are in part at least distorted during a crush in absorbing the shock energy.

3,857,596

AUTOMOBILE BUMPER ASSEMBLY

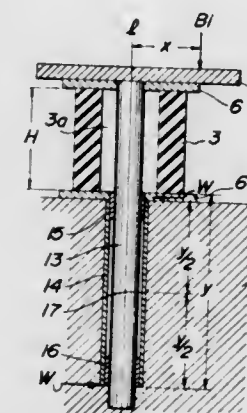
Kihei Nakamura, Yokohama; Harumichi Yamazaki; Kazuo Takeguchi, and Yoshikazu Kondo, all of Tokyo, Japan, assignors to Bridgestone Tire Company, Inc., Tokyo, Japan Division of Ser. No. 260,331, June 6, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,681

Claims priority, application Japan, Aug. 13, 1971, 46-60962

Int. Cl. B60r 19/06

U.S. Cl. 293-88

4 Claims



1. An automobile bumper assembly, comprising an automobile body, a fender rod spaced from the automobile body, and a plurality of hollow tubular elastomer members disposed between said automobile body and said fender rod so as to cause the longitudinal central axis of each of said tubular elastomer members to extend from said body to said fender rod, each said elastomer member consisting of an elastomeric material with a Shore A hardness of 63° to 104° and a cross sectional area ratio (S_1/S_2) of 1.44 to 4.0, S_1 being a cross sectional area of the elastomer member taken at right angles to the axial center line thereof and S_2 being a cross sectional area of the hollow space within the elastomer member taken in the plane of the area S_1 , S_1 including S_2 , a plurality of paired mounting rings, each pair of mounting rings being secured to opposite longitudinal ends of one of said tubular elastomer members, a plurality of core rods each being secured to one of the paired mounting rings of corresponding one of the elastomer members so as to extend in alignment with the longitudinal axial center line of the elastomer member, guide members formed in said automobile body so as to guide corresponding one of said core rods, and a plurality of paired bearing sleeves, each pair of sleeves being disposed between said guide and said core rod for slidably supporting said core rod at two axially spaced points.

3,857,597

DISPOSABLE CONTAINER MEANS

Carl Young, 7411 Fourth Ave., Melrose Park, Pa. 19126 Division of Ser. No. 215,792, Jan. 7, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,346

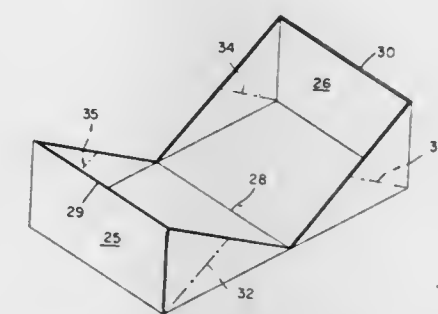
Int. Cl. A47I 13/52

U.S. Cl. 294-1 R

4 Claims

1. Disposable container means for inexpensively disposing of refuse and adapted to be transported in a substantially compact state, said container means comprising a unitary structure having two identical semirigid members hinged

together and biased in an open position, each member consisting of four pieces joined together including two rectangular pieces joined together at a right angle and joined to two opposing end pieces having a triangular shaped configuration forming a right angle, the sides of each triangular shaped end



3,857,598

HOT TUBE HANDLING DEVICE

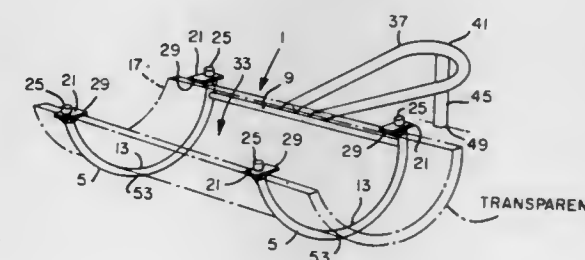
George W. Jelich, 871 Tulane Ct., Mountain View, Calif. 94040

Filed Sept. 24, 1973, Ser. No. 400,007

Int. Cl. B65d 61/00

U.S. Cl. 294-27 R

4 Claims



1. A device for holding a semi-conductor wafer containing boat in a substantially horizontal and non-rotating position within a tubular or hemi-tubular recess while transporting the boat and for holding the tubular or hemi-tubular recess and the boat in a substantially horizontal position upon a horizontal plane or surface, comprising:

a frame including two rigid spaced ribs, each of said ribs being adapted to mateably receive a cylindrical surface of a body having at least a partial cylindrical surface, and a rigid member spanning the space between said ribs, said body having a recess adapted to receive a semi-conductor wafer containing boat;
a plurality of washers, each detachably and adjustably attached to the end of one of said ribs by bolts passing therethrough and into the end of said one of said ribs, each of said washers extending beyond the cross section of the end of each of said ribs, said washers serving to secure said cylindrical surface to said frame and to prevent rotation of said body about the longitudinal axis of said cylindrical surface;
a handle attached orthogonally to said rigid member so that said handle is perpendicular thereto and substantially parallel to a generally horizontal surface and a post attached to the other end of said handle, said post in conjunction with said ribs and said handle serving to hold said frame above said generally horizontal plane in such a manner that the longitudinal axis of said cylindrical surface is above and substantially parallel to said plane.

3,857,599

GRIPPER DEVICE

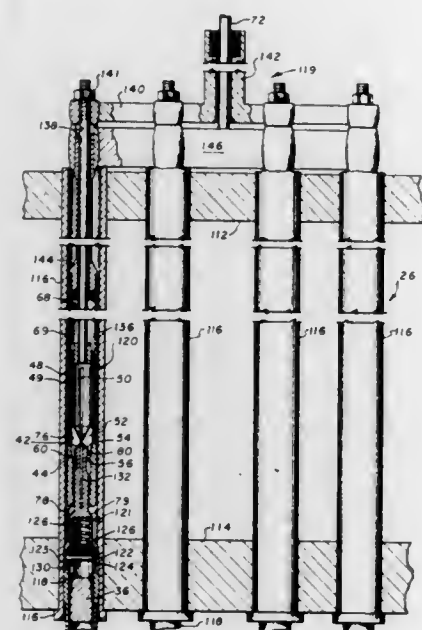
Thomas Alan Jones, Bolton, and Andrew James Anthony, Tariffville, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 1, 1972, Ser. No. 311,186

Int. Cl. G21c 19/10; E21b 31/02

U.S. Cl. 294-90

13 Claims



1. A gripper device for remotely coupling a linearly moving drive member to a member to be driven, said gripper device comprising:

longitudinally extending gripping means movable into and out of gripping engagement with the member to be driven, said gripping means having mutually opposed, longitudinally spaced upper and lower gripping surfaces defined therealong, said upper and lower gripping surfaces each being obliquely disposed relative to the longitudinal direction and being the sole surfaces of said gripping means to engage the member to be driven;

a gripper support member supporting said gripping means and connected to the drive member;

a gripper operating member relatively longitudinally movable between a first position and a second position relative to said gripping means, said gripper operating member when in said first position continuously applying an obliquely oriented force relative to said gripping means to force said gripping means into gripping engagement with the member to be driven, and said gripper operating member when in said second position releasing the obliquely oriented force;

means for moving said gripper operating member between said first and second positions; and

means for locking said gripper operating member in said first position.

3,857,600

LOCKING MEANS FOR CLAMPS

Shojiro Hasegawa, Osaka, Japan, assignor to Nittan Kohki Kabushiki Kaisha also known as Nittan Konki Co., Ltd., Sakai City, Osaka, Japan

Filed Sept. 21, 1973, Ser. No. 399,308

Claims priority, application Japan, Oct. 25, 1972, 47-123696

Int. Cl. B66c 1/44

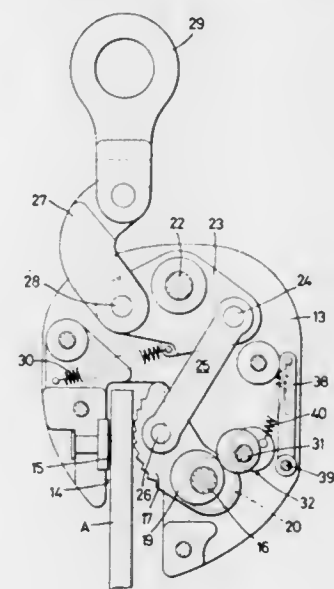
U.S. Cl. 294-104

1 Claim

1. A lock apparatus for a clamp, said clamp having a clamp body, a clamping piece rotatably pivoted at its base end on said clamp body, an abutment plate affixed to said clamp body opposite the clamping piece, and lifting means pivotally at-

tached to said clamp body and to said clamping piece, whereby said clamping piece will rotate in the clamping direction toward the abutment plate when the clamp body is suspended by the lifting means and the item to be held will be clamped therebetween, said lock apparatus comprising

a pair of base cam members located on the base end of said clamp piece eccentric with regard to each other and the pivotal axis of the base end portion of the clamp piece, a lock cam comprising a pair of lock cam members eccentric with regard to each other rotatably mounted for rotation between two positions on the clamp body at a position adjacent the base end of the clamp piece, one of said lock cam members engaging one of said base cam



members when the lock cam is rotated in one direction, and the other of said lock cam members engaging the other of said cam members when the lock cam is rotated in the opposite direction, whereby movement of the clamping piece is restricted and said clamping piece is locked into position,

a lever mounted on the clamp body with its fixed base end pivoted adjacent the lock cam, and

a spring attached between the free end of the lever and the lock cam, whereby moving the lever upward will cause the lock cam to rotate in one direction and moving the lever downward will cause the lock cam to rotate in the opposite direction.

3,857,601

CANOPY FOR PICKUP TRUCKS

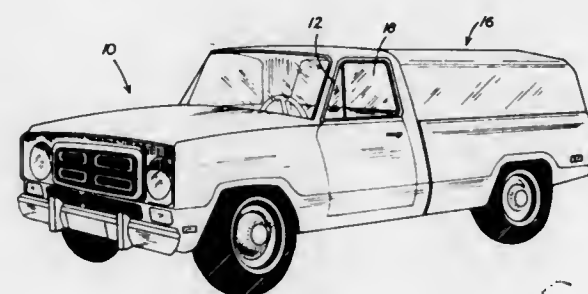
Joseph W. Robbins, 1395 W. Jones Creek Rd., Grants Pass, Oreg. 97526

Filed Mar. 8, 1973, Ser. No. 339,140

Int. Cl. B60p 7/02

U.S. Cl. 296-10

1 Claim



1. A complete, unitary, camper canopy for pickup trucks having

a. a top and side wall member composed chiefly of a single piece of strong, tough, tinted, optically transparent plastic, adapted to extend from tray wall to opposite tray wall of the pickup,

3,857,603

CLAMPING LINKAGE FOR AUTOMOBILE SLIDING ROOFS

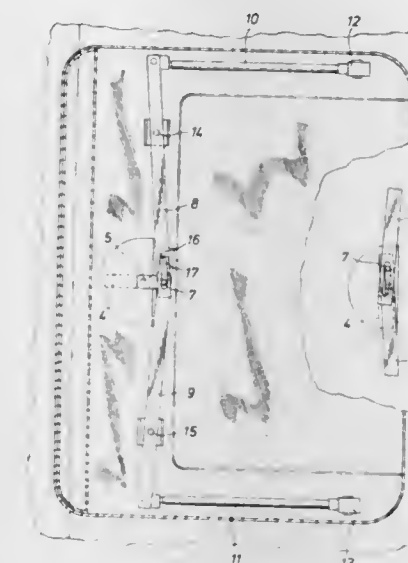
Hans Jardin, Krailling, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf/Munchen, Germany

Filed Apr. 9, 1973, Ser. No. 349,184

Claims priority, application Austria, Apr. 10, 1972, 3066/72 Int. Cl. B60j 7/00

U.S. Cl. 296-137 F

6 Claims



b. a front wall of strong, tough, clear, untinted, optically transparent plastic, adapted to extend from the tray wall to the top of the canopy,

c. rigid attaching means through which the side walls of the canopy may be continuously marginally attached to the pickup body,

d. resilient cushioning means continuously interposed between the lower canopy side wall margins and the attaching means and secured to both through adhesion, and

e. a rear wall composed chiefly of the same, strong, tough, tinted, optically transparent plastic as the top and side wall member, which rear wall extends from the tail gate to the top of the canopy, the cushioning means consisting of strips of deformable, resilient rubbery material, and the rigid attaching means at each side of the canopy consisting of an angle bar that extends substantially the full length of the canopy, each such angle bar having a substantially horizontal web through which connection to the pickup body may be mechanically effected, and an angularly related web having the slope of the associated canopy side wall through which the cushioned connection to the canopy is maintained by adhesion.

3,857,602

MOUNTING FOR TILT CAB VEHICLES

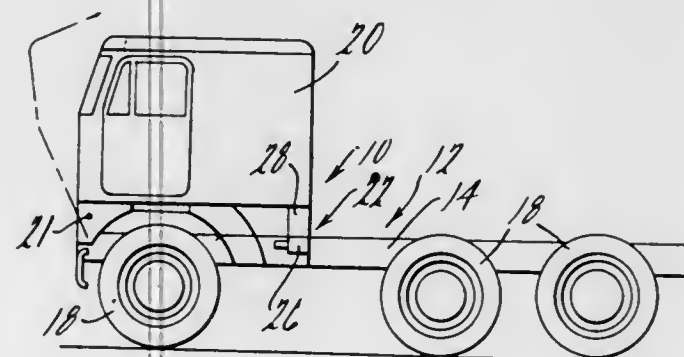
Lawrence E. Karkau, Lansing, and Samuel G. Rusco, Diamondale, both of Mich., assignors to Diamond Reo Trucks, Inc., Lansing, Mich.

Filed Jan. 29, 1973, Ser. No. 327,665

Int. Cl. B62d 33/06

U.S. Cl. 296-35 A

10 Claims



1. A mounting mechanism for detachable securing a tilting cab on the chassis frame of a motor vehicle comprising, a first pivot element adapted to be releasably supported in a fixed position relative to said frame for release upon tilting of said cab relative to said frame, a second pivot element adapted to be supported in a fixed position relative to said cab, a guide link pivotally connected to said first pivot element, a master link connected to said second pivot element, and a third pivot element connecting said links to each other for relative movement thereof, all of said pivot elements having pivot axes disposed parallel to each other and normally being disposed in a common plane to position said links to restrain movement of said first pivot element relative to said second pivot element, said guide link being movable in response to movement of said first and second pivot elements laterally of each other to move said third pivot element out of said plane and permit limited separation of said first and second pivot elements relative to each other when said first pivot element is in said fixed position relative to said frame.

1. In a mechanism for the blocking and release of the longitudinal mobility of a rigid automobile sliding roof by means of oppositely arranged lateral clamping devices or the like, an actuating device comprising in combination:

two clamping rods extending near the longitudinal sides of the sliding roof, a first end of each rod being connected to one of said clamping devices, the clamping rods being movable longitudinally between a set position in which the mobility of the sliding roof is blocked and a released position in which the sliding roof is movable longitudinally between its open and closed positions;

two transversely extending rocking levers mounted in the sliding roof structure, the levers including: outer ends by which they are connected to the second ends of the clamping rods, inner end portions vertically overlapping one another in the midportion of the sliding roof, and a vertical-axis pivot between their outer and inner ends;

an operating handle positioned adjacent said overlapping inner end portions of the rocking levers, the handle being mounted on the sliding roof and rotatably connected thereto by a vertical-axis pivot; and

actuating means defined by said overlapping inner end portions and by the operating handle for obtaining a fore and aft pivoting motion of the rocking levers from a rotary motion of the operating handle so as to set and release said clamping devices, said actuating means being of the cam and cam follower type.

3,857,604

FOLDING CHAIRS

Frederick Scott, Ross on Wye, England, assignor to Hille International Limited, Watford, Hertfordshire, England

Filed July 5, 1973, Ser. No. 376,569

Claims priority, application Great Britain, July 13, 1972, 32818/72

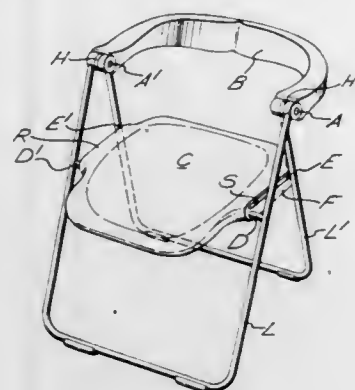
Int. Cl. A47c 4/00

U.S. Cl. 297-16

5 Claims

1. A folding chair comprising a back rest member having opposite arm rests which include terminal ends, a pair of front legs, a pair of rear legs, a seat, a pivotal connection joining one of said terminal ends to one front leg and one rear leg, a pivotal connection joining the other of said terminal ends to the other front leg and the other rear leg, said back rest and said legs being relatively movable about said pivotal connections between a folded position in which the back rest and legs

extend in opposite directions from the pivots in a substantially common plane and an erected position in which the front and rear legs extend at an acute angle to one another, abutment means between at least one of said terminal ends and one of said legs pivotally connected thereto for supporting said back



rest in a substantially horizontal plane, pivots connecting said seats to the legs of one of said pairs, and sliding connections connecting the seat to the legs of the other of said pairs for movement of said seat between a folded position substantially in said common plane and an erected position in a substantially horizontal plane.

3,857,605

ARM FOR A CHAIR

Marco Fantoni, Milan, Italy, assignor to Tecno S.p.A. Mobili e furniture per arredament, Milan, Italy

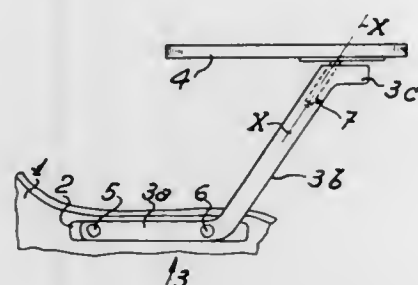
Filed Dec. 22, 1972, Ser. No. 317,517

Claims priority, application Italy, Jan. 13, 1972, 020503/72

Int. Cl. A47b 39/00

U.S. Cl. 297-162

2 Claims



1. A chair mountable arm and writing table which comprises in combination, an arm having means for securing to the side of a chair, said arm having a forwardly inclined body member terminating in an end portion, said end portion having a bore the axis of which is inclined forwardly, upwardly and outwardly relative to a horizontal plane, a rotatable cylindrical pivot disposed within the bore, one end of said pivot being connected to a writing table, said writing table being pivotally rotatable backwardly, outwardly and downwardly from a horizontal writing position to a vertical non-use position.

3,857,606

SWING-AWAY DETACHABLE WHEELCHAIR FOOTREST

Keith S. Rodaway, Culver City, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Nov. 29, 1973, Ser. No. 419,955

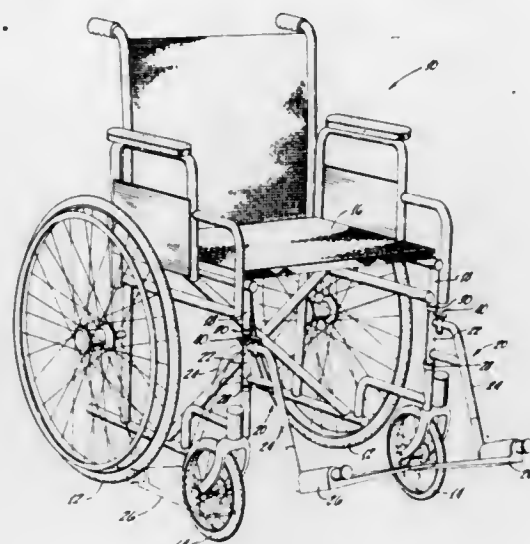
Int. Cl. A47c 7/50

U.S. Cl. 297-429

6 Claims

1. A swing-away footrest for connection to a wheelchair having a front member, said footrest comprising: a hanger plate mounted in face-to-face relation on said front member;

a downward extending collar flange around said front member forming an upper circular channel; an upward extending collar flange around said front member forming a lower circular channel, said upper and lower circular channels facing each other to receive the upper and lower ends of said hanger plate;



a footrest support member connected to said hanger plate; and means acting cooperatively with said front member and said footrest support member for locking said footrest in the forward position.

3,857,607

DEVICE FOR SHIFTING A BUCKET PIVOTED TO A VEHICLE

Henri-Jean Daubresse, Paris, France, assignor to Decauville, S.A., Corbeil-Essonnes, France

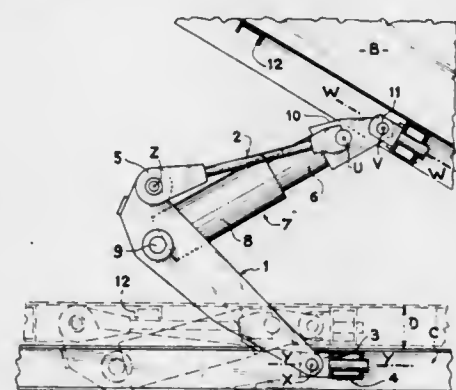
Filed May 9, 1973, Ser. No. 358,612

Claims priority, application France, May 24, 1972, 72.18409

Int. Cl. B61d 9/10

U.S. Cl. 298-22 J

7 Claims



1. A device for shifting an element constituted by a bucket which is mounted to pivot on an element constituted by a chassis of a vehicle, comprising a compass-like arrangement of two pivotably interconnected arms having free ends, and a hydraulic cylinder device having a piston part and a cylinder part which are relatively slidable in a rectilinear path, a first of said arms being combined with a first pivot for pivotally connecting the first arm to a first of said elements, a first of said slidable parts having a rigid outer end portion combined with a second pivot for pivotally connecting the first part to a second of said elements and a third pivot combined with the end portion in spaced relation to the second pivot for pivotally connecting the first part to the second arm adjacent the free end of the second arm, a second of said parts being combined with a fourth pivot for pivotally connecting the second part to the first arm, the fourth pivot being intermediate the first pivot and the pivotal interconnection of the arms.

3,857,608

ANCHOR FOR TRAILER SUPPORTED HOPPER

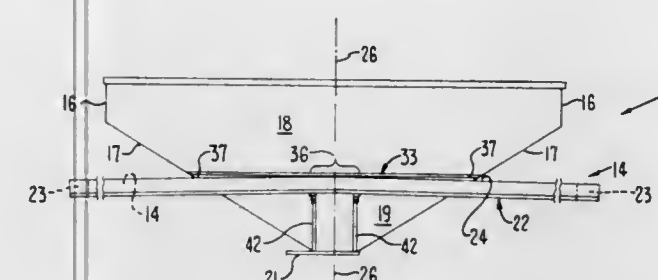
Morrison Kai Norton, and Lawrence Raymond Timko, both of Woodland, Calif., assignors to Titan Trailer Corporation, Woodland, Calif.

Filed Mar. 23, 1973, Ser. No. 344,427

Int. Cl. B60p 1/56

U.S. Cl. 298-35 M

8 Claims



1. Anchor for trailer-supported hopper comprising:

- a hopper supporting frame including an elongated, fore and aft saddle mounted on each side of a hopper for supporting engagement with a respective one of a pair of underlying longitudinal side rails of a trailer, said fore and aft saddle including an inverted L-shape in section member having a horizontal portion supported on top of the respective subjacent side rail and a vertical portion depending from the inner edge of said horizontal portion and terminating in a lower fore and aft margin, said hopper supporting frame further including a hopper floor support channel secured at its upper end to said vertical portion of said saddle and extending transversely angularly downwardly and inwardly below the hopper floor in supporting relation thereto;
- an adapter frame mounted on each side of the hopper below and adjacent the transverse center line of each of said saddles;
- a rail frame mounted on the bottom of each of the rails in register with a respective one of said adapter frames; and,
- means for attaching said adapter frames to said rail frames, said attaching means being effective to transfer thrust forces between said rail frames, said adapter frames and said hopper supporting frames.

3,857,609

IMPACT RIPPER SHANK

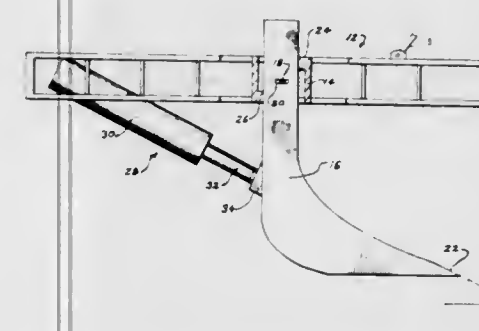
Henry T. Felix, P.O. Box 1132, Ozona, Tex. 76943

Filed Sept. 27, 1973, Ser. No. 401,356

Int. Cl. A01b 13/08

U.S. Cl. 299-37

8 Claims



1. An impact ripper COMPRISING:

- a frame,
- a ripper in the frame,
- an anvil on the back of the ripper integral therewith,
- draft means attached to the frame for drawing the frame forward,
- an impact device for driving the ripper forward and downward including:

- a hammer mounted in
- a cylinder,
- said cylinder being means for shooting the hammer forward and downward against said anvil,
- the axis of the cylinder aligned with the anvil and with the forward lower most tip of the ripper,
- said ripper including a vertical extending shank connected into said frame by a lost motion connection above the line extending from the axis of the cylinder to the tip of the ripper, so that impacts of the hammer on the ripper cause the ripper to move about said lost motion connection.

3,857,610

GAGE SCRAPER FOR BIROTATIONAL TUNNELING MACHINES

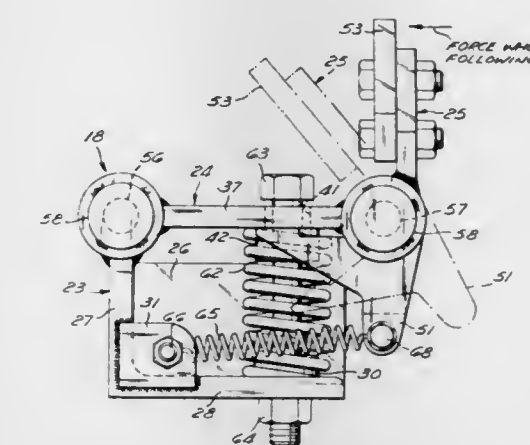
Larry L. Snyder, Richfield, Ohio, assignor to Jarva, Inc., Solon, Ohio

Filed Nov. 23, 1973, Ser. No. 418,688

Int. Cl. E01g 3/04

U.S. Cl. 299-86

12 Claims



1. A tunneling machine comprising a head rotatable in a first direction and in a second direction opposite said first direction, a roller cutter mounted on said head for engaging a surface of a tunnel with rolling contact, scraper means for clearing material from the path of said roller cutter when said head is rotated in either one of said first and second directions, said scraper means including a first scraper and a second scraper, said first scraper being mounted on one side of said roller cutter, said first scraper leading said roller cutter when said head rotates in said first direction and following said roller cutter when said head rotates in said second direction, said second scraper being mounted on the other side of said roller cutter, said second scraper leading said roller cutter when said head rotates in said second direction and following said roller cutter when said head rotates in said first direction, each of said scrapers including a blade for clearing materials from said tunnel surface when leading said roller cutter and mounting means for mounting said blade on said head, and each of said mounting means including means for moving its associated blade in a direction away from said tunnel surface when following said roller cutter by application of at least a first predetermined force exerted on said blade whereby bending and breaking of either of said first and second scrapers and accumulation of materials between either of said first and second scrapers and said roller cutter when following said roller cutter is avoided.

3,857,611

WHEEL AND ALIGNMENT ASSEMBLY

Emil J. Pansky, Hillsborough, and Donald G. Dean, Lafayette, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

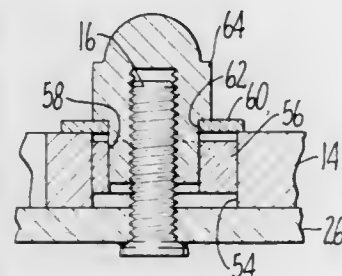
Division of Ser. No. 4,557, Jan. 20, 1970, Pat. No. 3,779,610.

This application Sept. 24, 1973, Ser. No. 400,053

Int. Cl. B60b 3/16

U.S. Cl. 301-9 DN

5 Claims



1. A wheel having adapter means to selectively adapt said wheel to axle flanges having threaded studs of differing concentric arrangements, said means comprising a center hub portion of the wheel formed with a plurality of smooth-walled, oversized stud apertures contoured to accommodate threaded axle-flange studs arranged on a defined plurality of differing circular radii and formed to have substantially uniform internal dimensions throughout their axial length, interchangeable alignment inserts of multiple configuration and orientation contoured to be slidably received in said stud apertures to selectively define circular stud holes coincident with each of the defined plurality of stud arrangements and formed to have substantially uniform external dimensions throughout their axial length, flat retainer washers which are placeable over said studs and against said hub portion to confine said alignment inserts in said stud apertures, said washers covering, at least in substantial part, said stud apertures, and lug nuts having an elongated neck portion threadable on said studs and against said washers to secure said wheel to said axle flange, said alignment inserts having two configurations: an off-center insert having an asymmetrically located stud hole to make each said insert reversible in orientation in said stud apertures to alternatively accommodate threaded studs arranged on the largest circular radii and studs arranged on the smallest circular radii; and an on-center insert having a centered circular stud hole to accommodate a median diameter stud bolt circle, said circular stud holes of said alignment inserts being sized to receive said neck portion of said lug nuts which extends through said retainer washers and into the alignment inserts when said lug nuts are threaded on said studs.

3,857,612

DIFFERENTIATOR AND VARIABLE THRESHOLD GATE CIRCUIT FOR USE IN A VEHICLE SKID CONTROL BRAKING SYSTEM

Byron G. Bynum, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 5, 1972, Ser. No. 286,386

Int. Cl. B60t 8/12

U.S. Cl. 303-21 BE

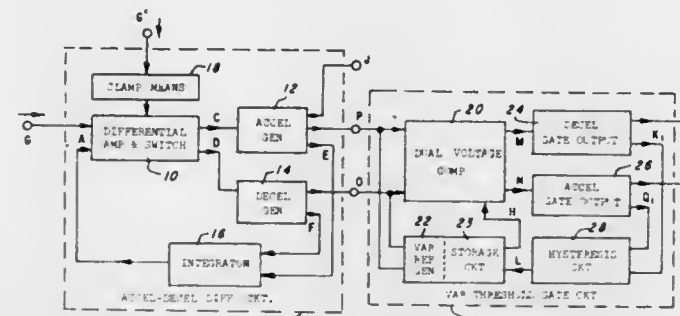
8 Claims

1. In a vehicle skid control braking system of the type which monitors land wheel speed to provide an input to the skid control system and which generates in response thereto output signals representative of other vehicle conditions for selectively interrupting application of the brake system of the vehicle, a differentiator and threshold circuit providing output signals representing acceleration and deceleration conditions of the vehicle wheels above a variable threshold level, comprising in combination:

differentiator circuit means responsive to a first input signal representative of vehicle wheel speed for providing a first differentiator signal representative of wheel acceleration

conditions, a second differentiator signal representative of wheel deceleration conditions, and a third differentiator signal representative of wheel acceleration conditions; said differentiator circuit means comprising:

a differential amplifier and switch means responsive to said first input signal and to a feedback input signal having a magnitude representative of a rate of vehicle wheel speed incrementally approaching that rate represented by said first input signal, for providing an acceleration differential signal and a deceleration differential signal, an acceleration current generator responsive to said acceleration differential signal for providing said first and third differentiator signals representative of vehicle wheel acceleration rates,



a deceleration current generator responsive to said deceleration differential signal for providing said second differentiator signal representative of vehicle wheel deceleration rates, and

an integrating circuit means responsive to said acceleration and deceleration current generators for selectively providing the mathematical integral of said acceleration and deceleration differential signals to thereby provide said feedback input signal; and

a threshold gate circuit means having a single variable threshold level and responsive to said differentiator signals for selectively providing first and second output signals when said differentiator signals exceed a variable threshold level, said output signals generated at a wheel acceleration and deceleration rate lower than that rate whereat they are deactivated.

3,857,613

ELECTRONIC CONTROLLER FOR USE IN ANTI-SKID SYSTEM FOR VEHICLES

Tetsuro Arikawa, Yokosuka, Japan, assignor to Nippon Air Brake Company Ltd., Kobe, Japan

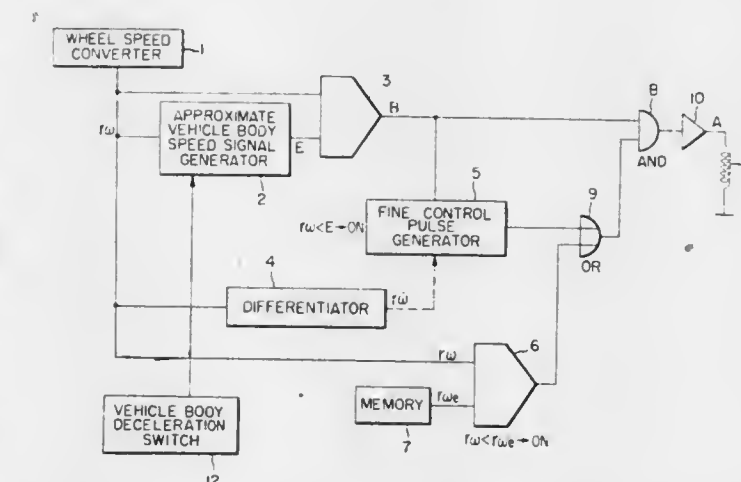
Filed June 4, 1973, Ser. No. 366,456

Claims priority, application Japan, Sept. 29, 1972, 47-95730

Int. Cl. B60t 8/08

U.S. Cl. 303-21 BE

2 Claims



1. A controller for use in an anti-skid system for vehicles comprising means for detecting the rotating speed of a wheel

of the vehicle, means for converting the output of said wheel speed detecting means into a wheel speed responsive signal, means for generating an approximate vehicle body speed pattern signal when the rate of reduction of the output of said converting means reaches the level of a predetermined reference setting, means for comparing the approximate vehicle body speed pattern signal with the output of said converting means thereby generating a control signal when the wheel speed responsive signal is less than the pattern signal, means for differentiating the wheel speed responsive output of said converting means thereby producing an output representative of wheel deceleration and wheel acceleration, means for generating a constant frequency fine control pulse signal having "on" and "off" durations proportional to the output of said differentiating means, switch means responsive to vehicle body deceleration for changing over said reference setting to one of a plurality of levels depending on the variation of the conditions of the ground, and an AND gate connected to said comparing means and said fine control pulse signal generating means for combining said control signal with said fine control pulse signal thereby generating a brake fluid pressure control signal.

3,857,614

AIR BRAKE ANTISKID CONTROL

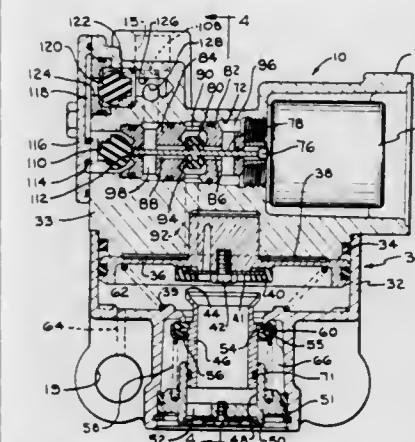
Sham L. Kurichh, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 12, 1973, Ser. No. 405,835

Int. Cl. B60t 8/06

U.S. Cl. 303-21 F

14 Claims



1. In an antiskid air brake system for a vehicle having means to signal the presence of brake lock condition at the wheel of a vehicle, the combination comprising:

a housing forming control, supply and delivery ports adapted for connection to a source of variable control pressure, a source of operating pressure and brake actuating mechanism, respectively;

relay valve means including a control chamber responsive to variable pressure at said control port to deliver air from said supply to said delivery port to apply the brake and from said delivery port to the atmosphere to release the brakes;

air metering means disposed between said supply and delivery ports and being movable from a first position maintaining full communication between said supply and delivery ports to a second position restricting air flow therebetween;

control valve means having a first position in which said control chamber communicates with said control port to receive variable control pressure to operate said brakes and a second position in which said control chamber is closed to said control port and open to the atmosphere to release said brakes;

said air metering means being movable from said first to said second position in response to movement of said control valve means to said second position, said metering means being retained in its said second position upon

return movement of said control valve means to said first position; and

solenoid means responsive to a signal to move said control valve means from said first to said second position and on termination of said signal from said second to said first position.

3,857,615

PRESSURE REGULATING VALVE ASSEMBLY

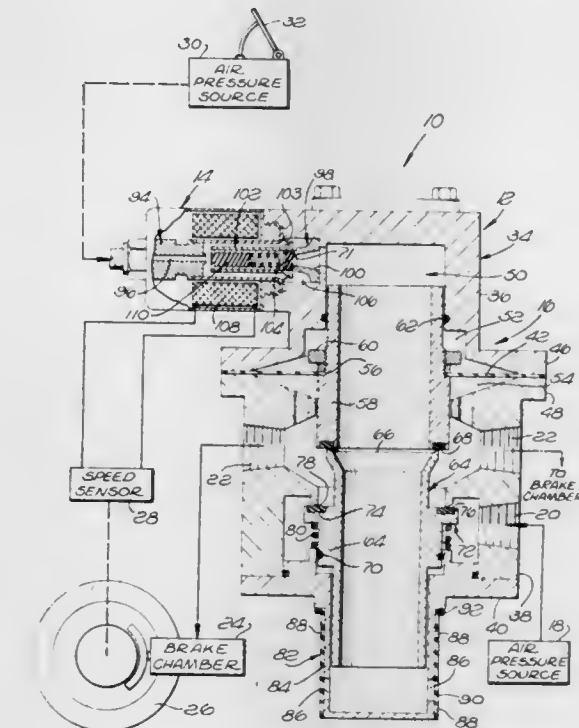
Ali Acar, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,009

Int. Cl. B60t 8/12

U.S. Cl. 303-21 F

26 Claims



1. A pressure regulating valve assembly comprising:

a valve body embodying primary valve means and pilot valve means;

said primary valve means including fluid pressure inlet and outlet ports, a vent valve and a valve element movable between first, second and third positions, in said first position said valve element blocking flow of fluid between said inlet port, said outlet port and said vent valve, in said second position said valve element providing flow communication between said inlet and outlet ports, and in said third position said valve element providing flow communication between said outlet port and said vent valve;

means resiliently biasing said valve element to said first position;

said pilot valve means being operable to shift said valve element to said second and third positions;

flow restrictor means including a slidable piston-like element interposed between said pilot valve means and said primary valve means and being movable between relatively high and low flow restriction positions; and positioning means engageable with said piston-like element for positioning said element in said relatively high flow restriction position upon introduction of a predetermined fluid pressure into said pilot valve means.

3,857,616

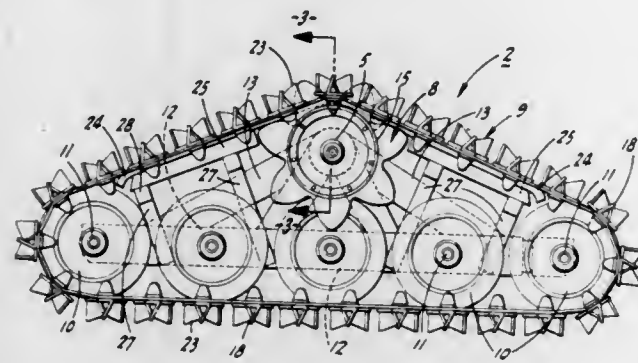
SLIDE FOR PREVENTING EXCESSIVE VIBRATION IN AN ENDLESS TRACK UNIT

Emitt M. Tucker, Ashland, and J. Morris Tucker, Medford, both of Oreg., assignors to Tucker & Sons, Sacramento, Calif.

Filed Oct. 2, 1973, Ser. No. 402,808
Int. Cl. B62m 27/02

U.S. Cl. 305—25

3 Claims



1. In an endless track unit which includes a longitudinal mount having ends, an endless track extending about the mount, track guide wheels on the ends of the mount, dual transversely spaced sprockets engaged from below with the upper run of the track intermediate the ends thereof, the track having transverse, sprocket-engaged traction bars spaced apart circumferentially of the track, and rigid plate-like wheel ramps fixed on the inside of the traction bars for passage between the sprockets; the improvement characterized by the inclusion, in such track unit, of longitudinal slide means disposed in fixed relation beneath said upper run and matchingly engaging the portions thereof between the sprockets and the guide wheels whereby to prevent downward displacement of said portions from planes tangent to such sprockets and guide wheels, and means rigidly supporting the slide means from the mount; the slide means comprising an elongated slide bar engaging such upper run for substantially its full length and in the plane of the wheel ramps whereby the latter engage the slide bar.

3,857,617

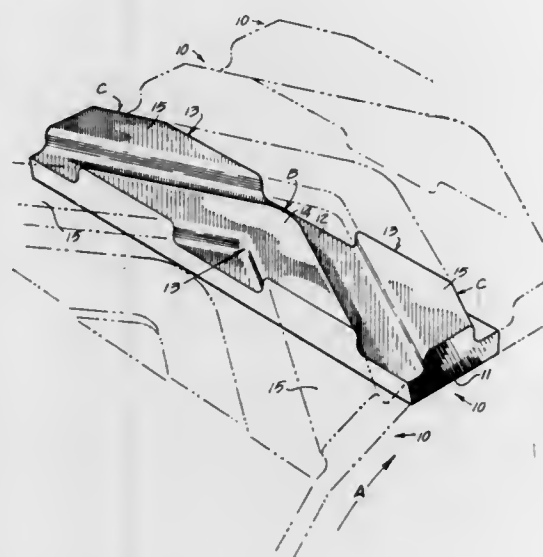
SPLIT CHEVRON TRACK SHOES FOR TRACK BELTS

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1973, Ser. No. 355,477
Int. Cl. B62d 55/08

U.S. Cl. 305—38

13 Claims



1. In combination with a flat circular belt reinforced with at least one cylindrical ply of inextensible reinforcing centrally disposed therein and encased in elastomer which forms the

surfaces of said belt, a plurality of track shoes, each comprising:

- a rectangular track shoe composed of elastomer having an inner mounting surface and an outer working surface, said inner mounting surface including a metal channel-shaped mounting means which is bonded to said track shoe and which forms part of the inner mounting surface of each track shoe;
- a raised grouser pattern on the working surface of said rectangular track shoe; and
- attaching means associated with the ends of each of said channel-shaped means operable to connect said track shoe to said belt.

3,857,618

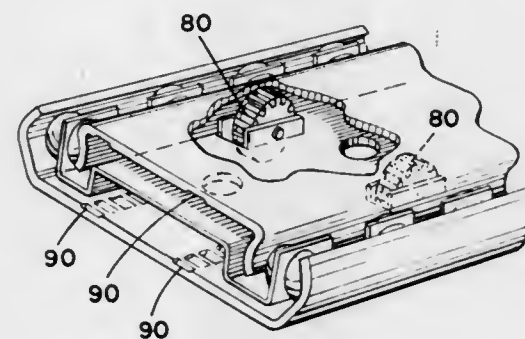
SYNCHRONIZATION AND PRECISION SEQUENCING OF BALL RETAINER RELATIONSHIP TO ONE-HALF OF SLIDE MOVEMENT

Magnus F. Hagen, 3713 Twilight Dr., Fullerton, Calif. 92632, and Fred H. Jordan, 14906 Lodosa Dr., Whittier, Calif. 90605

Filed Mar. 21, 1973, Ser. No. 343,527
Int. Cl. F16c 29/00

U.S. Cl. 308—3.8

7 Claims



1. Synchronized elements for telescoping ball bearing slide mechanisms, comprising:

- an outer slide member of generally channel shape and having a longitudinally extending bottom wall and oppositely arranged ball races along the side edges of the bottom wall, said ball races being concave in cross section and having said concave portions facing inwardly;
- an inner slide member of generally channel shape and having a longitudinally extending bottom wall and oppositely arranged ball races along the side edges of the bottom wall, said ball races being concave in cross section and having said concave portions outwardly, the inner slide member being operably disposed within the outer slide member;
- bearing balls disposed in adjacent concave portions of said ball races of the respective outer and inner slide members;
- a ball retainer operably disposed between the outer and inner slide members for retaining the balls operably in the ball races;
- a pair of mesh wheels adjacent opposite sides of the slide mechanism operably connected to the ball retainer and movable in accordance with relative longitudinal movements of the slide members;
- and racks comprising a separate part on the bottom walls of the inner and outer slide members, said racks being in the path of movement of the meshing wheels and cooperating therewith

wherein the ball retainer has longitudinally extending bottom parts and a reversed raised channel shaped longitudinally extending part connected with said bottom parts by connecting walls normal to the bottom parts, said ball retainer having retainer arms with openings in at least some of said retainer arms for retaining balls in longitudinally spaced relationship; pivot pins having end portions operably received in openings provided therefor in each

of the connecting walls of the ball retainer, the meshing wheels being mounted on said pivot pins for operable rotation; said wheels extending through openings in one of the bottom parts of the ball retainer for engagement with the adjacent racks in order to maintain a synchronized relationships between the ball retainer and the slide members.

3,857,619

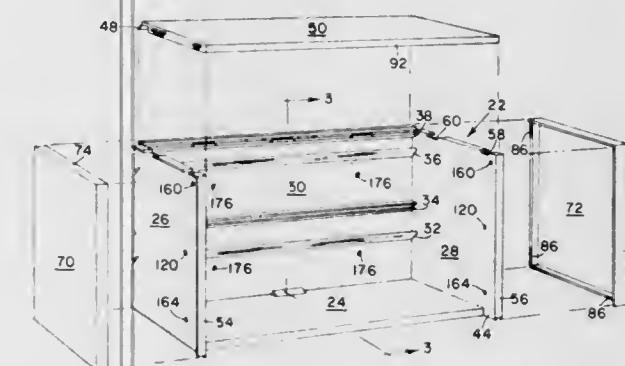
MODULAR CABINET SYSTEM

Fred C. Adickes, Playa Del Ray, Calif., assignor to The Texstar Corporation, Grand Prairie, Tex.

Filed Feb. 8, 1974, Ser. No. 440,815
Int. Cl. A47b 47/00, 57/08

U.S. Cl. 312—107

5 Claims



1. A modular cabinet system having a basic unit that can be altered to form cabinets of different types, said basic unit comprises:

- a bottom;
- a back secured to said bottom, said back having at least four upwardly extending channels lengthwise thereof, said channels being adapted to support and retain items used to form said different type cabinets;
- ends for said cabinet with said ends being secured to said back and bottom;
- a top being supported on the front by said ends and on the rear by the uppermost of said channels, all parts of said basic unit being bonded together into an integrally bonded basic unit, said bottom, back and ends are molded as one piece of the basic unit;
- end covers for bonding to said molded piece and said top to form said basic unit;
- a shelf similar to said top inserted within the molded piece to form the basic unit, the rear of said shelf is supported by the center channel of three remaining empty channels and in front by pins in the wall of said ends; and
- drawers of uniform depth to fit the shelves formed in said basic unit, said drawers having varying widths and lids for sealing to protect items contained in said drawers, said drawers and lids being molded with a taper to retain said lid in the top of same drawers and snugly fitting therein, said drawers and lids being of a semi-transparent type and having a downward flange on the rear thereof to mate with one of the channels to provide a retaining force on said drawers.

3,857,620

DESK LOCK SYSTEM

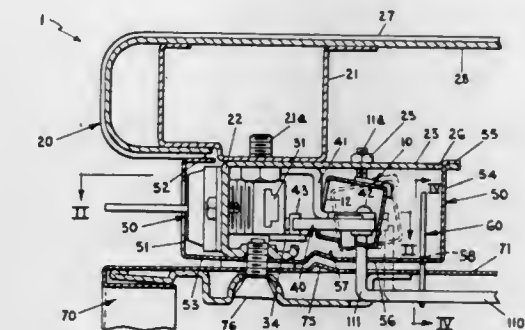
Donald D. Korell, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,071
Int. Cl. F05b 65/46

U.S. Cl. 312—219

22 Claims

1. A locking system for the drawers, doors or like components of a desk, cabinet or like articles of furniture, said locking system comprising: an elongated rock bar pivotally sus-



bar and said secondary locking means including cooperating means cooperating to operably connect said rock bar to said secondary locking means whereby said fore and aft swinging movement of said rock bar effects locking and unlocking movement in said secondary locking means.

3,857,621

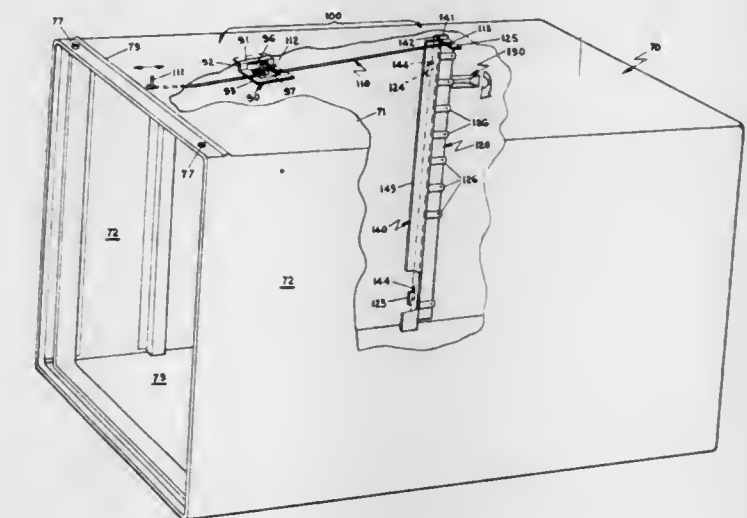
PEDESTAL LOCK SYSTEM

Douglas Sheerhorn, Grand Rapids; Dirk J. Van Kuik, Jenison; Donald D. Korell, and Robert G. Mohr, both of Grand Rapids, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,162
Int. Cl. E05b 65/46

U.S. Cl. 312—219

33 Claims



1. A locking system for locking the drawers, doors or like components of a desk pedestal or like compartment, said component including a lock stop, said locking system comprising: a lock bar mounted in said compartment for pivotal movement between a first, unlocking position and a second, locking position; said lock bar including two generally parallel walls, at least one wall deviating from the other at a plurality of spaced points to thereby define a plurality of channels between said walls at said points; at least one lock tab having a base area adapted to be releasably received within any one of said channels; said lock tab including a projecting portion projecting outwardly from said lock bar; means for pivoting said lock bar between said first and second positions, said lock tab projecting into the path of said lock stop on said component to thereby lock said component in said compartment when said lock bar is pivoted to said second locking position.

3,857,622

END PANEL SUPPORT SYSTEM

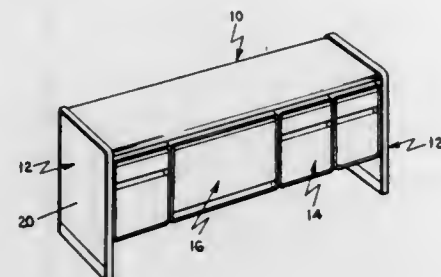
Robert G. Mohr, Grand Rapids; Ronald R. Hodges, Grandville; Douglas Scheerhorn, Grand Rapids; Gale F. Wilcox, Wayland, and Jack Hockenberry, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,218

Int. Cl. A47b 43/00, 17/00, 19/00

U.S. Cl. 312-257

21 Claims



1. A furniture system comprising: a plurality of pairs of structural, load-bearing end support panels of a construction sufficiently strong to support a top and cabinet suspended from the top without the necessity of an additional conventional structural desk frame; the end panels in each of said pairs of end support panels having differing depths from front to rear and differing heights from top to bottom from the end panels in other of said pairs; a plurality of tops of differing lengths and of differing depths from front to rear; a plurality of differing types of cabinets; first releasable securing means on each of said tops and on said end support panels to facilitate the ready securing or removal of one of said plurality of tops between one of said pairs of end support panels whereby a top is supported by said end support panels when attached thereto; second releasable securing means on said cabinets and on said tops for readily releasably securing each of said cabinets to any one of said tops in a suspended manner from said top when said top is secured to and supported by one of said pairs of said end support panels whereby a plurality of different types of end panel supported furniture can be readily assembled, disassembled and reassembled from said end support panels, said tops and said cabinets.

3,857,623

SWINGABLE SHELF ASSEMBLY FOR CABINETS

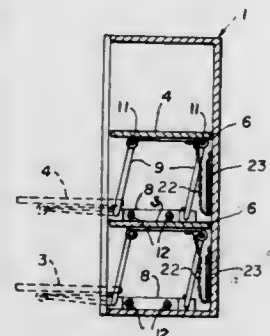
Frank Schneller, 3 Allegheny Center, Pittsburgh, Pa. 15237

Filed Dec. 29, 1972, Ser. No. 319,331

Int. Cl. A47b 49/00, 91/00

U.S. Cl. 312-266

4 Claims



1. In a cabinet or similar structure of the type having side-walls, spaced front panels attached to said side-walls, and an intermediate shelf; the combination of a pair of detachable fixtures for pivotally mounting said shelf and allowing maximum shelf storage space, each of said fixtures comprising a horizontally extending first strip detachably fastened to one of said side-walls, a pair of parallel linkages having one end pivotally mounted on said strip, a second strip detachably fastened to the bottom surface of one side edge portion of said intermediate shelf and provided with a pair of pivotal bearing portions for pivotally mounting the top end of said linkages, both pairs

of linkages being inwardly bent so that said second strip is laterally offset away from said first strip so as to clear said front panels when said shelf is pivotally moved by said linkages outwardly of said cabinet, spring washer means connected to one of said linkages for restraining further movement of said shelf after it has moved to a position in substantially the same horizontal plane as said first strips, and means for progressively increasing the amount of clamping pressure on said spring washer means substantially in proportion to the extent of pivotal movement of said linkages in a direction outwardly of the cabinet or similar structure so that maximum resistance to pivotal movement is provided by said spring washer means as said shelf approaches the horizontal plane of said first mentioned strips.

3,857,624

SHELF AND SUPPORT ARRANGEMENT

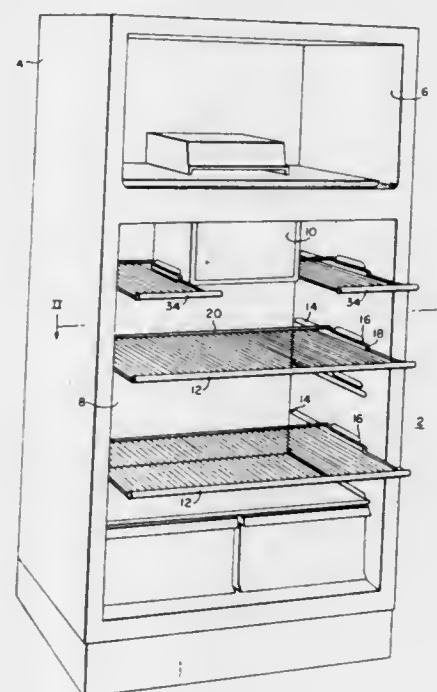
Carl A. Peterson, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1973, Ser. No. 361,735

Int. Cl. A47b 88/00

U.S. Cl. 312-348

4 Claims



1. A shelf and shelf support arrangement for a cabinet having opposite vertical walls from which said shelf is adapted to be supported in slidable relation comprising:

shelf support means including a pair of horizontally extending, inwardly projecting ledges on opposite walls, said ledges extending uninterruptedly from adjacent the rear of said cabinet to a location closer to the front of said cabinet than the rear;

a relatively shorter, horizontally extending, inwardly projecting upper ledge spaced above each of the longer ledges and extending for a distance overlying no more than the forward half of the lower ledge;

a rectangular shelf having one side with a portion of its length offset inwardly in a shape complementary to said upper ledge to clear said upper ledge when said shelf is in its rearmost position so that said shelf is supported by said lower ledge and said one side is slidably received in the space between said upper and lower ledge when said shelf is moved forwardly;

means located at the rear of said shelf to abut against the rear ends of said upper ledges to stop forward movement of said shelf, and the side of said shelf opposite said one side being straight and devoid of an offset.

3,857,625

ELECTRICAL CONNECTOR HINGE

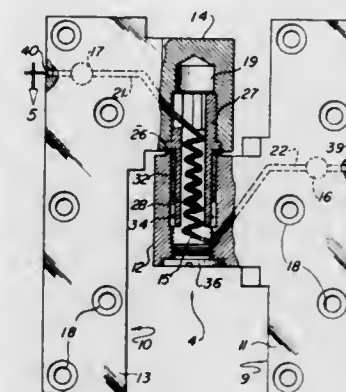
Burke J. Crane, Lombard, and Bertram M. Shean, Chicago, both of Ill., assignors to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed July 16, 1973, Ser. No. 379,758

Int. Cl. H01r 35/00

U.S. Cl. 339-4

10 Claims



1. An electrical connector hinge comprising a hinge jamb portion having a knuckle and a hinge door portion also having a knuckle with the jamb knuckle being formed with a through bore and the door knuckle being formed with a partial bore with both bores being axially aligned, a pivot tube located within both bores and having a tight fit with the adjacent surface of the door bore and a loose fit with the adjacent surface of the jamb bore, a sleeve bearing housed within the jamb knuckle to envelope the portion of the pivot tube located therein and having a tight fit with the adjacent surface of the jamb bore and a loose fit permitting relative rotation with the adjacent and enveloped portion of the pivot tube, and an electrical cable extending through the passageway formed by the bore of the pivot tube within both knuckles.

3,857,626

MICROSCOPE COAXIAL ILLUMINATION APPARATUS

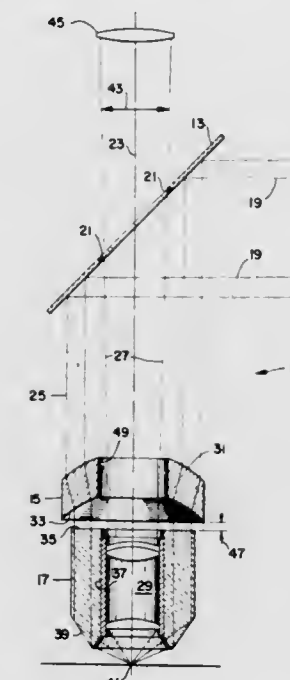
Harold E. Rosenberger, Brighton, and Ralph B. Young, Henrietta, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 206,033, Dec. 10, 1971, abandoned. This application July 9, 1973, Ser. No. 377,361

Int. Cl. G02f 21/06

U.S. Cl. 350-91

4 Claims



1. Incident dark field illumination apparatus for directing a beam of light to the specimen plane of a microscope, said

microscope including an objective having an optical axis, said apparatus comprising:

- means disposed across said axis for receiving said beam and orientating said beam along a path lying entirely outside the path of the image forming beam which emanates from said objective, said beam as orientated by said orientating means having substantially the cross-section of an annulus, said annulus being centered about said optical axis and having internal and external diameters;
- dark field condenser means including a beam receiving surface, said surface confined between external and internal cylindrical surfaces which are substantially concentric with respect to said optical axis, the diameter of said external cylindrical surface being smaller than said external diameter of said orientated beam; and
- beam reducer means including first and second refracting surfaces, said beam reducer means interposed between said orientating means and said dark field condenser means with said first and second surfaces substantially centered about said optical axis and with one of said first and second surfaces immediately adjacent said surface of said dark field condenser means, said first and second surfaces cooperating to reduce said internal and external diameters of said orientated beam so that said orientated beam is reduced to a size compatible with said surface of said dark field condenser means.

3,857,627

POLARIZER ARRANGEMENT FOR LIQUID CRYSTAL DISPLAYS

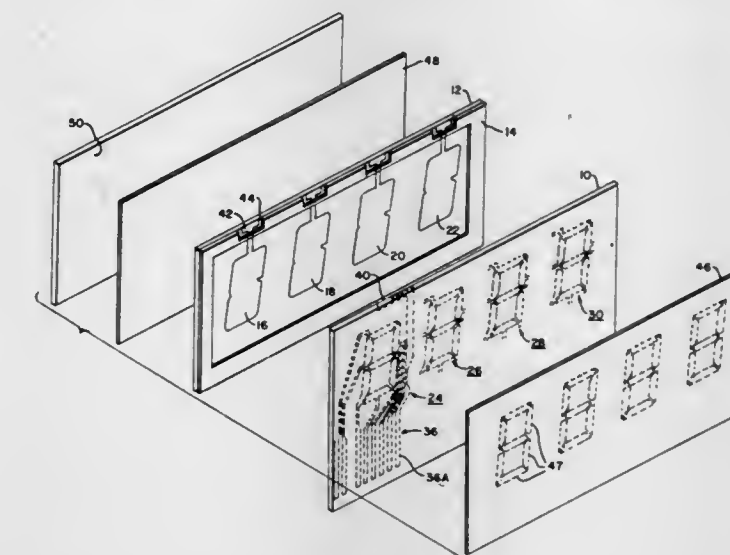
Thomas B. Harsch, Stow, Ohio, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1973, Ser. No. 392,632

Int. Cl. G02f 1/16

U.S. Cl. 350-160 LC

10 Claims



1. A liquid crystal display comprising a layer of nematic liquid crystal material disposed between front and rear transparent parallel plates, means for effecting a twisted nematic structure in said layer of nematic liquid crystal material, said plates being coated on selected areas thereof with transparent conductive material on opposite sides of said layer of liquid crystal material, the conductive material on said front plate comprising spaced segments adapted to form symbols in an alpha-numeric display when an electrical field is established between selected ones of said segments and a film of conductive material on the rear plate, polarizer means on opposite sides of said layer of liquid crystal material with the polarizer means adjacent said front plate comprising spaced strips of polarizing material covering only said spaced segments of conductive material whereby unpolarized light may pass through the front plate and the liquid crystal layer to the rear plate and its associated polarizing means in the areas not covered by said polarizing strips, and a reflector behind said

rear plate and polarizing means for scattering polarized light back through the liquid crystal layer and the front plate.

3,857,628

SELECTIVE POLARIZER ARRANGEMENT FOR LIQUID CRYSTAL DISPLAYS

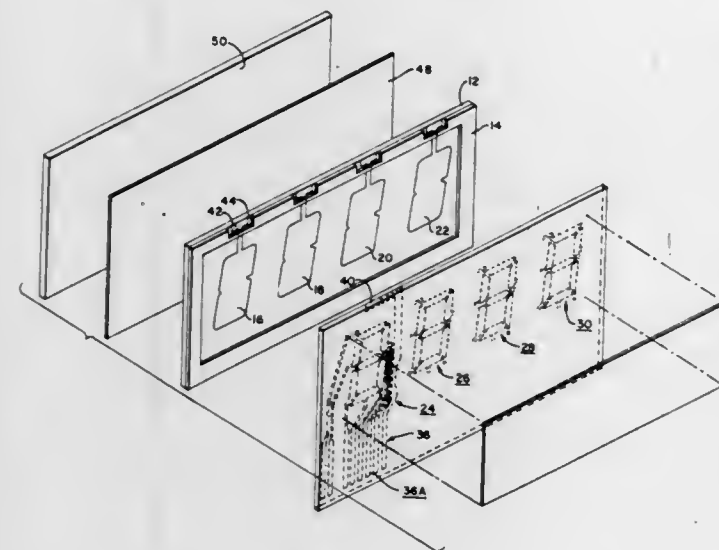
Robert D. Strong, Chagrin Falls, Ohio, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1973, Ser. No. 392,633

Int. Cl. G02f 1/16

U.S. Cl. 350-160 LC

5 Claims



1. A liquid crystal display comprising a layer of nematic liquid crystal material disposed between first and second transparent parallel plates, means for effecting a twisted nematic structure in said layer of liquid crystal material, said plates being coated on selected areas thereof with films of transparent conductive material with the conductive material on one plate comprising segments adapted to form symbols in an alpha-numeric display when an electrical field is established between selected segments on one plate and a film of conductive material on the other plate, polarizers on opposite sides of said layer of liquid crystal material with the polarizer adjacent said one plate covering said conductive segments while not covering at least a portion of said one plate around said segments, and a reflector for scattering polarized light behind said other plate.

3,857,629

FAST TURN-OFF NEMATIC LIQUID OPTICAL DEVICES

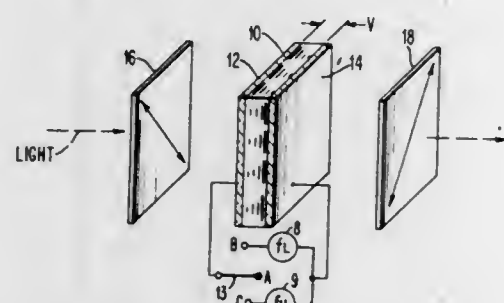
Marvin J. Freiser, Scarborough, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1973, Ser. No. 359,824

Int. Cl. G02f 1/28

U.S. Cl. 350-160 LC

3 Claims



1. An optical device comprising:
a cell comprising;
a pair of electrodes adapted to be connected to a voltage generator, and
a film of nematic fluid contained between said electrodes;
said nematic fluid being a material which is characterized

by an intrinsic reversal in sign in its dielectric anisotropy, said sign being positive when the frequency of an applied electric field is below, or negative when the frequency is above the dielectric reversal frequency of said nematic fluid;

a pair of crossed polarizers, said cell being disposed between said polarizers.

3,857,630

MOBILE ANTI-GLARE SHIELD FOR VEHICLES

Cesar Poveda Gonzalez, 23, Rue Prince Moulay Abdallah, Casablanca, Morocco

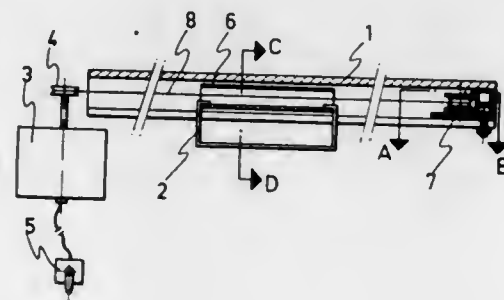
Filed May 24, 1973, Ser. No. 363,339

Claims priority, application Spain, May 29, 1972, 180914; Mar. 15, 1973, 189742

Int. Cl. B60j 3/02

U.S. Cl. 350-276 R

2 Claims



1. A mobile anti-glare shield device for a vehicle, said device comprising:

a longitudinal hollow track horizontally positionable above the windshield of a vehicle to extend completely across the width thereof, said track having a horizontal longitudinal slot extending throughout the length thereof, said slot extending downwardly;

first and second pulleys, one each mounted adjacent the opposite longitudinal ends of said track;

a motor mounted adjacent one end of said track and operatively connected to said first pulley to rotate the same;

tubular shaped shield holder means mounted to slide horizontally longitudinally within said track, the length of said shield holder means being substantially less than the length of said track;

a U-shaped frame attached to said shield holder means and extending downwardly therefrom through said slot in said track;

an anti-glare shield having a flap attached to an upper edge thereof, said shield being removably mounted on said frame by said flap being positioned over the central leg of said U-shaped frame, the length of said shield being substantially less than the length of said track;

a traction wire connected at the opposite ends thereof to the opposite longitudinal ends of said shield holder means, said traction wire extending longitudinally from said shield holder means ends and passing around said pulleys; and

reversible switch means connected to said motor for selectively causing said motor to rotate said first pulley in opposite directions, and for thus moving said traction wire, said shield holder means, said frame and said shield horizontally in opposite directions along said track.

3,857,631

ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT

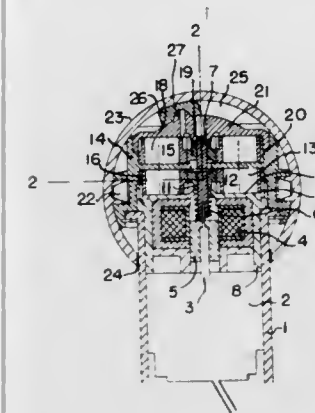
David M. Morgenstern, deceased, late of Shaker Heights, Ohio; by Stanley Morgenstern, Shaker Heights; Harold M. Chatmann, Cleveland, and Allan R. Cole, Cleveland, all of Ohio (executors), assignors to Tenna Corporation, Cleveland, Ohio

Filed Sept. 30, 1971, Ser. No. 185,250

Int. Cl. G02b 5/08

U.S. Cl. 350-289

6 Claims



1. An adjusting means for azimuth and elevation adjustment of a mirror to be adjusted comprising a hollow support, a universal joint connected to said support and to the mirror to be adjusted, one single reversible electric motor mounted in said support having a shaft, two planetary transmission means each having a sun pinion wheel and planet wheels meshing with said sun wheel, the sun wheels of said planetary transmission means being disposed coaxially with said motor axis, an electromagnetically controlled coupling whereby said shaft may optionally be coupled with one of said two pinion sun wheels by said electromagnetically controlled coupling, said transmission means being capable of acting on said universal joint to bring about a rotation around two different axes, each one of said transmission means comprising a pulley, a first and a second string being laid loosely in a loop around said first and second pulley respectively, the extremities of said strings each being fixed in two opposite points of said mirror to be adjusted, the line connecting the fixing points of said first string being substantially perpendicular to the line connecting the fixing points of the said second string, and guiding means for guiding said strings from said pulleys towards the respective fixing points of said mirror.

3,857,632

REAR VISION MIRROR APPARATUS HAVING A FILTER FOR AUTOMOBILE

Makoto Yamashita, Sagami-hara; Kenkichi Ikura, Yokohama, and Masagoro Kushida, Isehara, all of Japan, assignors to Ichiko Industries Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,625

Claims priority, application Japan, Oct. 11, 1971, 46-90026

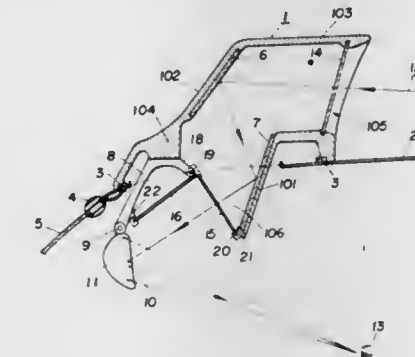
Int. Cl. G02b 5/08

U.S. Cl. 350-302

6 Claims

1. A rear vision mirror apparatus of the periscope type for providing a rear field of vision via the roof top of an automobile, comprising: a cylindrical housing fixed to the roof top and having an open rear end and an open front lower portion adapted to open into an upper part of the driver's chamber; an objective mirror and a reflecting mirror arranged in said housing; an eye-piece mirror provided below said open front lower portion of the housing for receiving incident light transmitted via said objective mirror and said reflecting mirror; at least two filters provided between said reflecting mirror and said eye-piece mirror and arranged in such a way that these filters

may be selectively positioned either in a plane transverse to the path of light or at a position remote from this path of light, one of said filters having a transmission rate of between 50 percent and 75 percent for light having a wavelength between 400 mμ and 700 mμ, a second of said filters having a transmission rate below 35 percent for light having a wavelength above 600 mμ, such that the amount of visible light rays received may be substantially uniformly reduced over the entire spectrum of visible light rays by said first filter and the amount of light rays received from headlight lamps may be largely reduced by said second filter for a range of wavelengths representing a large proportion of the light output of said headlight lamps; a stay extending from and fixed to each of the opposite sides of the open front lower portion of the housing for supporting said eye-piece mirror; a plurality of filter supports, one extending from and fixed to each of the opposite sides of said



open front lower portion of the housing and being spaced from said stay, said eye-piece mirror being selectively pivotably secured to the lower end of said stay; a shaft extending between and supported by said filter supports located on both sides of the open front lower portion of the housing, said at least two filters being pivotably secured at one of the side edges thereof to said shaft; a first spring, said filter supports each having an extension to provide a site for rotatably attaching one end of said first spring thereto, said first spring having a loop formed intermediately thereof, one end of said first spring being rotatably attached to said site of the extension and the other end being rotatably attached to one end edge of one of said filters; and a second spring positioned between the site of the extension of the oppositely located support and one end edge of the other of said filters, whereby the filters may be set selectively to the position transverse to the path of light and to the position remote from this path of light.

3,857,633

PROJECTOR FUNCTION CONTROL MECHANISM

Donald O. Easterly, and Donald E. Day, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 25, 1973, Ser. No. 382,636

Int. Cl. G03b 23/00

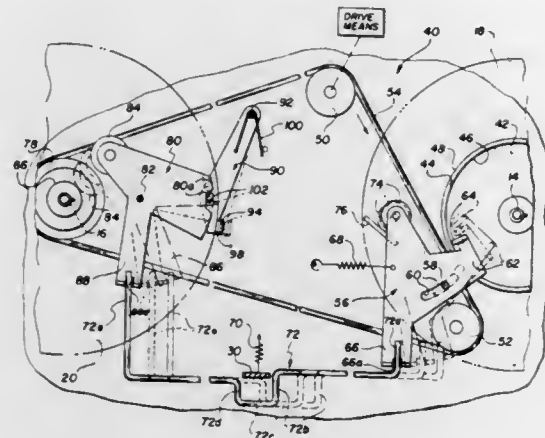
U.S. Cl. 352-124

9 Claims

1. For a motion picture projector having (1) a light source for projecting images from a received film material, (2) electric drive means for advancing said film material through the projector and (3) a selection lever movable to a plurality of positions to select the mode of operation of the projector from a plurality of modes including off, still, project, rewind and fast forward the improvement comprising:

a. a coordinating plate pivotally supported by said projector, said coordinating plate including an irregularly shaped opening defined by a plurality of edges, said opening being adapted to receive said selection lever which cooperates with different ones of said plurality of edges for moving said coordinating plate between (1) a first position when said selection lever is moved to said position for selecting said project and said still modes of

- operation and (2) a second position when said selection lever is moved to the position for selecting said off, re-wind or fast forward modes of operation;
- b. a film gate comprising a first portion and a second portion, said second portion being movable relative to said first portion between (1) an open position wherein it is spaced from said first portion to permit said film material to be readily inserted between or removed from between said first portion and said second portion or to permit said film material to be readily moved therebetween, and (2)



- a closed position wherein said second portion is moved closely adjacent to said first portion such that said received film material is movable along an essentially flat plane defined therebetween to permit projection of images from said film material; and
- c. linkage means operatively coupling said coordinating plate and said second portion of said film gate such that when said coordinating plate is moved by said selection lever to its first position, said second portion of said film gate is moved to its closed position and when said coordinating plate is moved by said selection lever to its second position, said second portion of said film gate is moved to its open position.

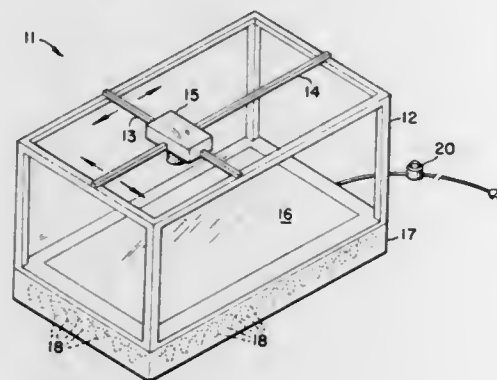
3,857,634

DEVICE FOR SOLVING THE SONAR EQUATION
 Alan Gordon, and Michael W. Phelps, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Arlington, Va.
 Filed Feb. 13, 1974, Ser. No. 442,303

Int. Cl. G03b 27/32

U.S. Cl. 355-18

6 Claims



1. A simulation device for solving the sonar equation to establish the likelihood of acoustic detection of a marine vessel comprising:
- means to establish a light field of a predetermined intensity distribution;
- first light modifying means supported by said light field establishing means and having azimuthally symmetrical

areas of predetermined optical density corresponding to acoustic transmission properties of a fluid medium for altering the light field intensity;

second light modifying means supported by said light field establishing means in cooperative juxtaposition with said first light modifying means and having radial symmetrical areas of predetermined optical density corresponding to acoustic propagation zonal patterns emanating from the marine vessel for altering the light field intensity;

support means attached to said light field establishing means and extending generally away therefrom in the direction of propagation of said light field for establishing a datum plane within said light field as altered by said first and second light modifying means; and

light sensitive means for responding to the light field and effectively connected to said support means to be positioned to intercept the altered light of said light field in said datum plane at a predetermined position and having a light sensitivity curve which is shaped similar to the detection probability curve of acoustic detection of the marine vessel.

3,857,635

SYSTEM AND APPARATUS FOR EXPOSING PHOTSENSITIVE ENGRAVING PLATES

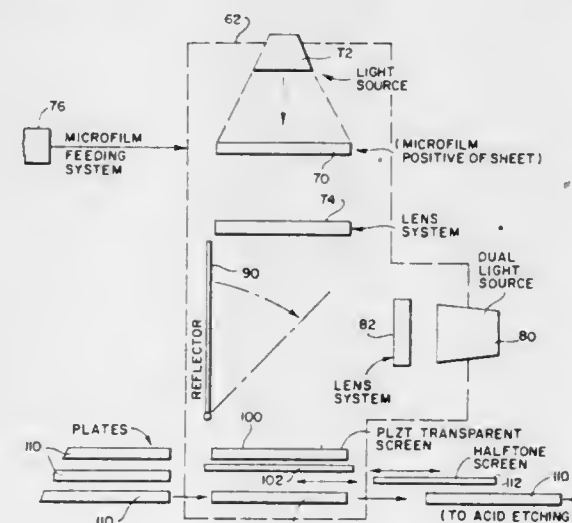
William R. Niehaus, Cincinnati, Ohio, assignor to The E. W. Scripps Company, Cincinnati, Ohio

Filed Nov. 27, 1973, Ser. No. 419,410

Int. Cl. G03b 27/02

U.S. Cl. 355-132

22 Claims



17. A process for producing an exposed engraving plate at several satellite locations, said plates corresponding to an image at a central location, said system comprising the steps of:

- encoding said image into a series of transmittable signals at said central location;
- transmitting said signals to a plurality of satellite locations;
- decoding said signals at each of said satellite locations to produce a duplication of said image at each of said satellite locations;
- at each of said satellite stations, providing a generally flat transparent screen formed from a transparent layer of material capable of forming an image therein when concurrently exposed to an electro-magnetic field and a light image, said screen including means for selectively creating said electro-magnetic field;
- directing a generally uniform light source onto said flat screen;
- creating said electro-magnetic field in said screen while said generally uniform light is being so directed whereby said layer is cleared of any image therein;
- focusing said duplication of said image onto said cleared flat screen while said screen is subjected to an electro-

- magnetic field; and continuing said focusing step and said electro-magnetic field until said screen duplicates in said layer a transparent negative form of said image;
- h. positioning a generally flat photosensitive engraving plate adjacent to said flat screen;
- i. directing light through said flat transparent screen onto said engraving plate whereby said plate is exposed to said negative form of said duplication of said image; and
- j. then removing said light from said flat screen.

3,857,636

MEASUREMENT OF PHASE PROFILE ACROSS A HIGH POWER LASER BEAM

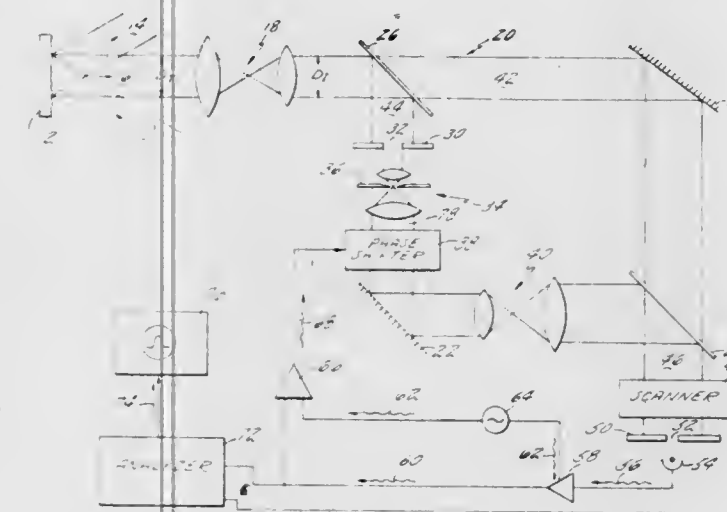
Albert W. Angelbeck, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 3, 1973, Ser. No. 403,291

Int. Cl. G01b 9/02

U.S. Cl. 356-106 R

9 Claims



1. Apparatus for determining the phase profile across a primary beam of optical radiation comprising:

means for extracting sample radiation from the primary beam to provide a test beam which has all the phase and intensity characteristics of the primary beam and is propagated along a distinct test beam optical path;

an interferometer positioned in the test beam optical path to provide an interference beam which is formed by dividing the test beam into a first and a second beam element with each element propagating through the interferometer along separate paths before recombining with each other to form the interference beam upon leaving the interferometer which includes:

means for providing a reference beam of substantially uniform phase and intensity from the first beam element, and

means for causing a shift in the phase of the reference beam;

means for performing a two dimensional scan of the interference beam across an optical detector to allow a continuous sequence of discrete sections of the interference beam to fall on the detector thereby providing a corresponding electrical carrier signal;

a dither-frequency oscillator for providing:

a phase shifter drive signal for modifying the intensity of the pattern of the interference beam at the detector, and

a phase sensitive amplifier for comparing the reference signal from the oscillator with the electrical carrier signal from the optical detector to provide a time varying null signal on the phase shifter drive signal, the drive signal causing a nulling shift in phase in the reference beam to maintain the interference beam at maximum intensity; and

a signal analyzer for monitoring the time varying nulling signal to correlate the phase of the optical radiation with

the scanning means and provide an electrical output signal describing phase as a function of position in the test beam.

3,857,637

SURFACE DISTORTION ANALYZER

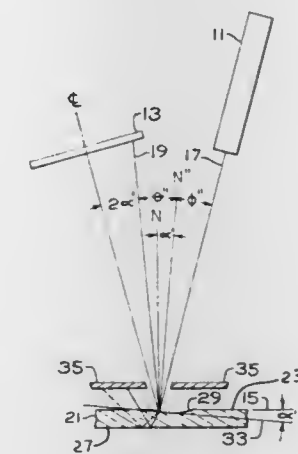
Robert J. Obenreder, Coraopolis, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1973, Ser. No. 322,574

Int. Cl. G01n 21/32

U.S. Cl. 356-120

4 Claims



1. A method of sensing concave and convex portions in a surface of a piece of glass, comprising the steps of:

directing a beam of light from a light source toward the surface of the piece of glass at an oblique angle of incidence to reflect a portion of the beam of light from the surface toward position sensing means as a reflected beam of light and passing the remaining portion of the beam of light through the surface as a transmitted beam of light wherein the angle of incidence is selected to minimize the effect of the glass movement toward and away from the position sensing means on the reflected beam;

preventing the transmitted beam of light from impinging on the position sensing means;

displacing the piece of glass and the beam of light relative to one another at a preselected constant speed to scan the surface of the piece of glass along a scan path;

observing relative positions of the reflected beam of light with the position sensing means as the beam of light moves along the scan path to sense concave and convex portions in the surface of the piece of glass along the scan path wherein the relative positions of the reflected beam of light are observed as a function of time; and

computing a flatness profile of the surface of the piece of glass (1) to determine if the curvature of the surface of the piece of glass along the scan path is concave or convex and (2) to determine the reflected optical power of the glass at each point along the scan path wherein the reflected optical power is proportioned to the magnitude of the local curvature of the surface at each point along the scan path.

3,857,638

APPARATUS FOR REGULATING THE POSITION OF A MACHINE COMPONENT

Michael Bory, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Nov. 30, 1973, Ser. No. 420,553

Claims priority, application Switzerland, Dec. 11, 1972, 17975/72

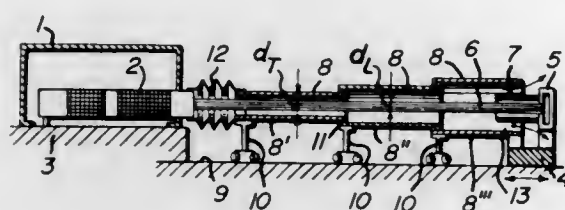
Int. Cl. G01b 11/26; G01j 1/20

U.S. Cl. 356-153

8 Claims

1. An apparatus for regulating the position of a movable machine component with the aid of a light beam, especially a

laser light beam, comprising a light source arranged at a stationary machine component for producing a light beam and a beam detector arranged at said movable machine component



for detecting the light beam, and a protective telescopic tube for protecting the light beam between the light source on said stationary machine component and the beam detector on said movable machine component.

3,857,639

ELECTRONIC TARGET

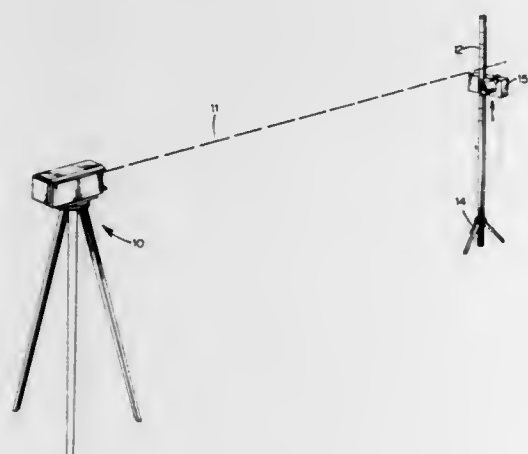
Mark T. Mason, South Lyndeboro, N.H., assignor to New Hampshire Ball Bearings Inc., Peterborough, N.H.

Filed Dec. 21, 1973, Ser. No. 427,372

Int. Cl. G01b 11/26; G01j 1/20

U.S. Cl. 356—156

4 Claims



1. A target for detecting a plane of reference defined by a scanning light beam comprising:

- a housing containing a guide way for a pole;
- an electrically driven friction roller in said housing for propelling said housing along a pole in said guide way;
- optical means mounted in said housing for acquiring a scanning light beam; and,
- electronic means including indicators in said housing connected for halting said electrically driven friction roller and operating said indicators responsive to acquisition of a scanning light beam by said optical means.

3,857,640

IDENTIFICATION MEANS FOR AN ARTICLE AND METHOD AND APPARATUS FOR RECORDING SAME

Edward Hilborn, 1012 Field Rd., Union, N.J. 07083

Filed July 19, 1973, Ser. No. 380,765

Int. Cl. G09f 3/00

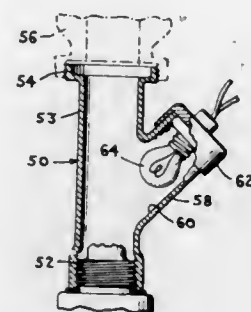
U.S. Cl. 356—162

22 Claims

1. An identification means for an article such as an engine and the like, comprising:

- an element formed as an integral part of said article,
- said element having a fixed portion and a portion removable by random breaking, and

c. means forming an identification surface on said fixed portion specific to each associated article on the area



exposed by breaking said removable portion from said fixed portion.

3,857,641

OPTICAL MEASURING APPARATUS

Ernst Gass, Stuttgart, Germany, assignor to Firma Erwin Sick Optik-Elektronik, Waldkirch, Germany

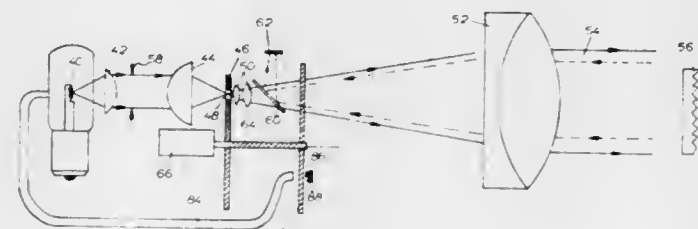
Filed Jan. 4, 1974, Ser. No. 430,703

Claims priority, application Germany, Jan. 23, 1973, 2303040

Int. Cl. G01n 21/26

U.S. Cl. 356—207

10 Claims



1. An optical measuring apparatus, particularly a smoke or visibility meter, comprising, in combination, a light source; an optical system operatively associated with said light source and forming a light beam traversing a measuring distance; a reflex-reflector in the path of said light beam and having said light beam impinging thereon; a beam splitter positioned in the path of rays of said light beam and inclined with respect to the optical axis of said light beam to direct light, reflected by said reflex-reflector, laterally of said optical axis as a measuring light flux; a photoelectric detector positioned in the path of measuring light flux directed laterally of said optical axis by said beam splitter; and reflector means operable to intersect said light beam between said beam splitter and said reflex-reflector to produce a reference light flux, from said light source, impinging on said detector in alternation with said measuring light flux, said reflector means including a reflector surface movable periodically to intersect the path of rays of said light beam and reflecting the rays in a substantially diffuse manner to said beam splitter.

3,857,642

FLEXIBLE OR UNIVERSAL COUPLING MEANS

Bernard F. Miller, Corning, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

No Drawing. Filed Feb. 26, 1973, Ser. No. 336,088

Int. Cl. F16b 9/02

U.S. Cl. 403—57

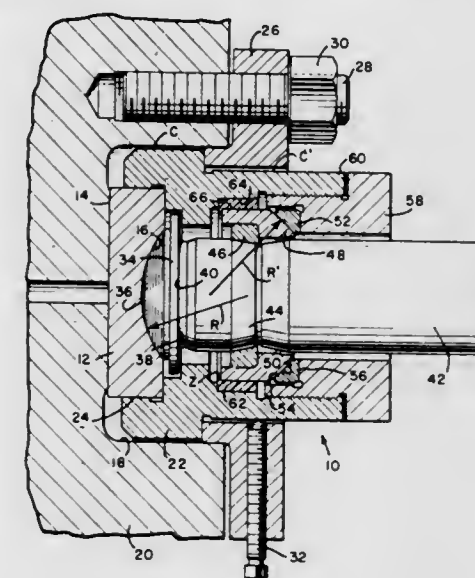
4 Claims

1. Means for universally coupling first and second members together, for imparting movement from one of said members to the other thereof, comprising:

- a thrust block element;
- an adapter element;
- one of said elements having a convex surface formed thereon; and the other of said elements having a concave surface formed thereon;

said elements having said surfaces in contacting engagement, defining a universally movable interface; said interfaced elements being interpositioned between said first and second members, effecting a continuous abutting engagement of surfaces of said members with surfaces of said elements; and

a clamping assembly, engaging a portion of one of said members and fastened to the other of said members, clamping said elements and members together, locking said elements and members in continuous contacting and abutting engagement and preventing said elements and members from moving apart and separating from each other; wherein



said clamping assembly includes a threaded sleeve, a plurality of rings enclosed by said sleeve and disposed about said portion of said one member, said one member having a surface deformation formed thereon and one of said rings is in engagement with said deformation, a lock nut threadedly engaged with said sleeve and forcefully clamping said rings together and locking said one ring against said surface deformation, and a resilient annulus radially interpositioned between said sleeve and another of said rings, said annulus having surfaces thereof in resiliently compressed engagement with surfaces of said sleeve and said another ring, resiliently limiting said one member in a slidable, radial movement only relative to said other member;

said another ring encloses said one ring; and said plurality of rings includes a seat ring interpositioned between said another ring and said nut.

3,857,643

OPTICAL RAIL SYSTEM

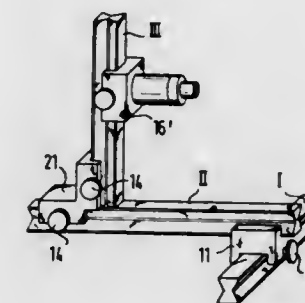
Arpad Bardocz, Rumannstr. 57, 8000 Munich 40, Germany Division of Ser. No. 126,562, March 22, 1971. This application Aug. 28, 1973, Ser. No. 392,218

Claims priority, application Germany, Apr. 3, 1970, 2016067

U.S. Cl. 403—63

Int. Cl. F16b 7/04

7 Claims



1. A rail system comprising, in combination: a plurality of associated optical rails, each said rail having a uniform cross-

sectional shape throughout its length, a first longitudinally extending flat bearing surface, a second longitudinally extending flat bearing surface parallel to said first surface and four flat locating surfaces on the sides of the rail, each locating surface extending towards a central plane of the rail perpendicular to the bearing surfaces from a line contiguous to the edge of a said bearing surface at an angle of about sixty degrees to the first bearing surface for cooperation with corresponding surfaces in grooves of couplings and optical carriers, said grooves also having surfaces for cooperating with the bearing surfaces, said rail cross section having a portion in a plane parallel to the bearing surfaces at a point adjacent to where the end of a locating surface is closest to the central plane with a width in the range of one third to one fourth of the width of a said first bearing surface, and wherein the combination further includes a coupling part joining two of said rails so that they are positioned in parallel planes at angles to each other, said coupling part having a first groove and a second groove identical in shape each receiving a rail portion, each groove having a bottom contacting a bearing surface and each groove having a side surface complementary to and contacting a said locating surface and a set screw urged against a locating surface and cooperating with each groove to 13 secure a said rail to said groove and an optical carrier having a groove identical in shape to the grooves of the coupling part receiving a portion of a rail and a set screw cooperating with said groove to secure said rail to said carrier for carrying an optical instrument.

3,857,644

SHAFT MOUNTING APPARATUS

Yasushi Mikami, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

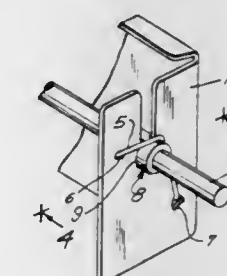
Filed Oct. 3, 1973, Ser. No. 403,079

Claims priority, application Japan, Nov. 1, 1972, 47-125418

Int. Cl. F16b 11/00

U.S. Cl. 403—196

8 Claims



1. Apparatus for mounting a rotary shaft to a frame wherein the shaft is provided with a circumferential groove defining a neck portion and the frame is provided with a slot therein, said apparatus comprising a hollow cylindrical bearing member adapted to rotatably receive the shaft therein and having a pair of notches separated by a bridge portion, said notches adapted to be aligned with the neck portion of the shaft when the shaft is received within said member, said member being adapted to be inserted into said slot with said bridge portion resting on the bottom of the slot and opposing edges of the slot extending through said notches into said groove, and a retaining spring mounted on the frame and containing said member to maintain the position of said member within said slot.

3,857,645

LEADER WITH A LINE CONNECTOR

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 128,015, March 25, 1971,

Pat. No. 3,717,907. This application July 24, 1972, Ser. No.

274,307

Int. Cl. F16g 11/00, 11/02

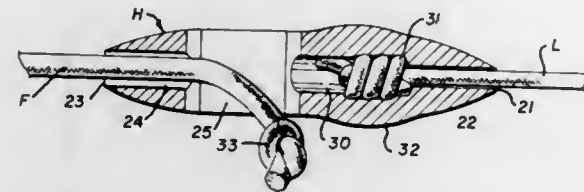
U.S. Cl. 403—206

11 Claims

1. A connector in combination with the ends of two pliable lines with the diameter of the first line being approximately

one-half greater than the diameter of the second line, such as a fly line and a leader, and comprising:

- a tubular connecting member constructed of slightly stretchable material and having an axial passageway extending through it and a side opening intersecting the passageway;
- said passageway at one end of the member forming a first passageway section which is slightly larger in cross section than the diameter of the said first line to receive the same;
- said passageway at the other end of the member forming a second passageway section which has a cross section of a size sufficient to receive the second line;



said first passageway section extending to the side opening with the width of the side opening being at least as great as the diameter of the said first passageway section but not greatly exceeding that diameter, whereby the end of said first line may be threaded into the first passageway section, extended from the side opening, knotted and then pulled into the side opening with the knotted end being forced into the side opening by slight stretching of the connector and effecting a tight fit of the knotted end of said first line to the connector; and

a locking means at the said second passageway section to securely lock the end of said second line into said second section.

3,857,646

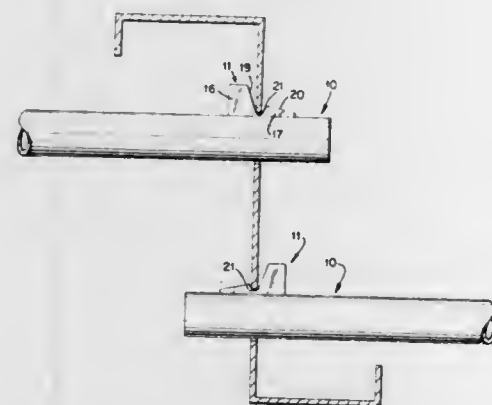
SAG ROD END CONNECTION

Derek Esmond Warburton, Sale, England, assignor to Metal Sections Limited, Oldbury, Warley, Worcestershire, England

Filed Sept. 25, 1972, Ser. No. 291,602
Int. Cl. F16b 7/00

U.S. Cl. 403-252

1 Claim



1. A sag rod for use in the construction of a roof for supporting purlins with respect to each other in which the purlin has an aperture, the dimensions of which are only slightly greater than the cross-sectional dimensions of the sag rod, said sag rod being hollow at least in its end portions and having in each of the end portions a latch member which projects laterally through an aperture formed in the side wall of the associated hollow end portion, said latch member including a base portion disposed within said hollow end portion and which is of larger dimensions than the dimensions of the aperture in the side wall so as to be retained within the hollow end portion, and laterally projecting longitudinally spaced first and second abutments of different heights integral with the base portion and which are disposed on the exterior of the associated hol-

low end portion, said first and second abutments defining therebetween an open-ended slot extending inwardly from the outer lateral edge of the latch member, said first abutment which is nearer the adjacent end of the sag rod having on its outer lateral edge a cam surface inclined to the longitudinal axis of the sag rod so that the end of the cam surface nearer to the adjacent end of the sag rod is also nearer to the longitudinal axis of the sag rod than the other end of the cam surface, and resilient means located within the associated hollow end portion engaging the base portion of the latch member for urging the latch member into the position projecting laterally through the aperture, yet permitting the latch member to move temporarily inwardly with respect to the aperture on engagement of the cam surface with a roof purlin, whereby when the rod is inserted into the aperture in the purlin, the periphery of the purlin aperture will engage said cam surface to urge the latch member against the action of the resilient means so that the periphery of the purlin aperture can be located in the slot after which the resilient means returns the latch member to its initial position to connect the purlin and rod together.

3,857,647

Patent Not Issued For This Number

3,857,648

MOLDED PLASTIC CONTAINER SECONDARY OPERATIONS MACHINE

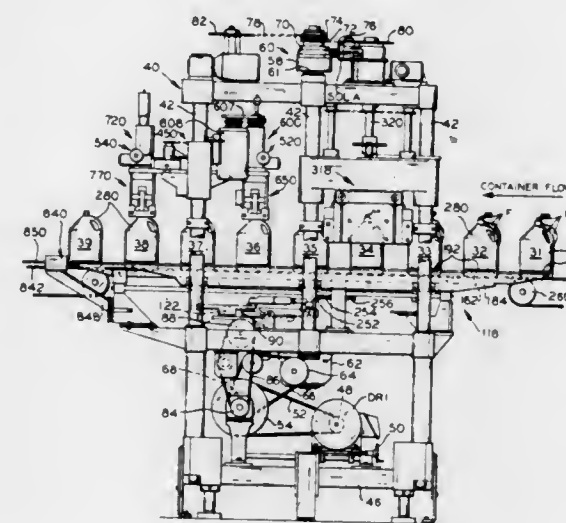
Noel B. Eggert, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 93,069, Nov. 25, 1970, Pat. No. 3,716,910.
This application Nov. 29, 1972, Ser. No. 310,392

Int. Cl. B23b 39/06; B23b 41/00

U.S. Cl. 408-17

7 Claims



1. Apparatus for performing machining operations on plastic containers at a finishing station comprising

- a. rotatable tool carrying means;
- b. a housing for journally supporting said rotatable tool carrying means including means for rapidly advancing said housing toward said container until said housing reaches a tool engaging position and then advancing said housing at a tool working speed;
- c. means for reciprocally moving said housing toward and away from a container;
- d. means for gripping said container to hold said container in a position enabling a machining operation by tooling carried by said rotatable tool carrying means;
- e. means responsive to movement of said housing toward a container for actuating said gripping means to grip and hold said container before tooling engages said container, and further responsive to movement of said housing away from said container for causing said gripping means to release its hold on said container after tooling is disengaged from said container, and

f. means for interrupting said tool working speed advance of said housing to cause machining cuttings to be shorter.

a coil of substantially inextensible filaments, wound around said support surface, said coil acting to absorb all the

3,857,649

INLET VANE STRUCTURE FOR TURBINES

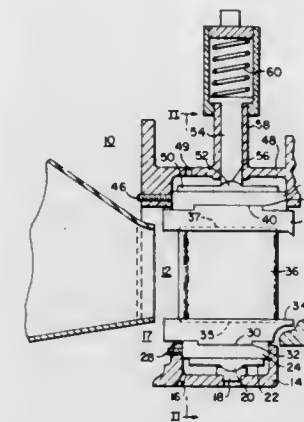
Richard J. Schaller, Ambler, Pa., and Stephen D. Leshnoff, Highland Park, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1973, Ser. No. 387,069

Int. Cl. F01d 9/00, 9/02, 25/26

U.S. Cl. 415-200

3 Claims



1. An inlet nozzle for a gas turbine comprising:

a radially inner shroud ring, a radially outer shroud ring coaxial with said radially inner shroud ring, a plurality of radially extending ceramic vane structures disposed between said radially inner and said radially outer shroud rings, each of said vanes being secured at one end to said radially inner shroud ring by an inner support structure, each of said vanes being secured at its other end to said radially outer shroud ring by an outer support structure, said inner support structure comprising a ceramic end cap, an insulator pad and an inner shoe plate disposed on said inner shroud ring,

said outer support structure comprising a ceramic end cap, an insulator pad, an outer shoe plate and a bias producing means,

said outer shoe plate being movable connected to said bias producing means, said bias producing means reacting cooperatively with said outer ring, wherein said bias producing means provides a compressive force directed radially inwardly on each of said ceramic structures,

said bias producing means consists of a rod-like plunger cooperatively associated with a spring member to induce a compressive force upon said ceramic structure, said plunger having a hemispherical surface on its inner end to provide a movable interface with respect to said outer shoe which has a mating hemispherical surface.

3,857,650

VANED ROTOR FOR GAS TURBINES

Rodolfo Cerrato, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed Oct. 23, 1973, Ser. No. 408,335

Claims priority, application Italy, Oct. 23, 1972, 70323/72

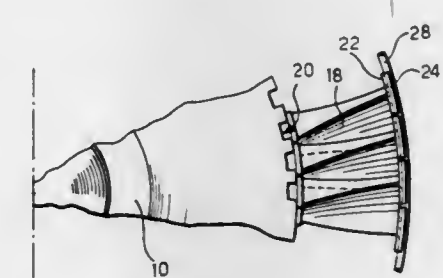
Int. Cl. F01d 5/24

U.S. Cl. 416-218

6 Claims

1. In a vaned rotor for a gas turbine, of the type comprising: a rotor having a metal rotor body, a plurality of ceramic vanes, and means for locating the vanes on the periphery of the metal body, the improvement wherein,

- each vane has a transverse part at the radially outer end thereof, said transverse parts of said vanes together forming a support surface, and



radial forces exerted on said vanes of said rotor during use.

3,857,651

PUMPING UNITS FOR CYCLONIC ELEVATOR

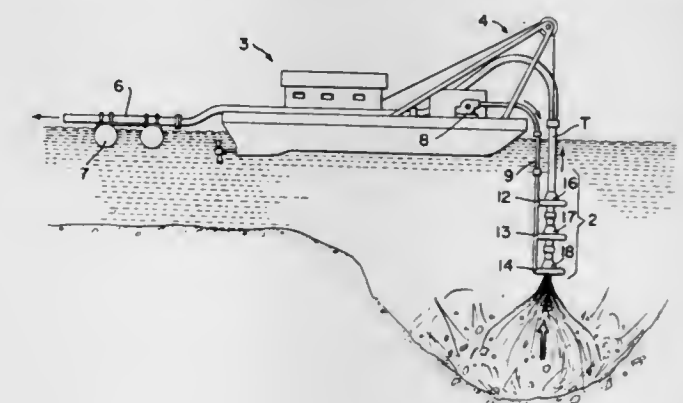
Anthony I. Bruno, 4333 Dawson Ave., San Diego, Calif. 92115
Continuation of Ser. No. 155,750, June 23, 1971, abandoned.

This application July 26, 1973, Ser. No. 382,823

Int. Cl. F04f 5/42

U.S. Cl. 417-171

5 Claims



1. Pumping units for a cylindrical cyclonic elevator tube in which fluid under pressure from a source thereof has communication therewith via a plurality of circumferentially spaced jet orifices set at inwardly directed angles gradually increasing from a minimum angle with respect to the central axis of the tube of not less than 5° and circumferentially directed compound angles of inclination correspondingly gradually decreasing in inclination from a maximum angle circumferentially for ejecting vortically directed jets of fluid under pressure upwardly through the cyclonic elevator to effect transportation of comminuted and/or fluid material through such tube; each said pumping unit comprising in combination:

- a. a tubular section having an axial length substantially equal to its radius;
- b. a frusto-conical section having its truncated end secured to the lower end of said tubular section and its flared sides extending therefrom a distance comparable to the length of said tubular section;
- c. a transition ring having its outer periphery secured to the flared open end on said conical section and an inner periphery of a diameter comparable to said tubular section and having such circumferentially spaced jet orifices formed therebetween from the bottom to the upper surface thereof such that the inwardly directed angle of the minimum angle of such jet orifices converges with a projection of the inner surface of the flared side walls of said conical section, slightly above the truncated end of said conical section;
- d. an intermediate tubular section having a diameter equal to that of said tubular section and secured opposite thereto to the bottom surface of said transition ring with its internal periphery flush with the inner periphery of said transition ring;

- c. a manifold for each of said pumping units comprising an annular tube, of C-shaped cross section radially thereof and of a diameter vertically from its annular crown to its annular tail slightly greater than the vertical thickness, top to bottom, of said transition ring and having its annular crown secured to the outer periphery of the flared end of said conical section at its plane of connection to said transition ring and having its annular tail extending horizontally toward said intermediate tubular section and secured thereto for providing an annular chamber about the outer exposed periphery and bottom surface of said transition ring;
- f. and means for communicating said annular chamber with the source of fluid under pressure.

3,857,652

INTERNAL LIQUID REFRIGERANT TRAP FOR HERMETIC COMPRESSORS

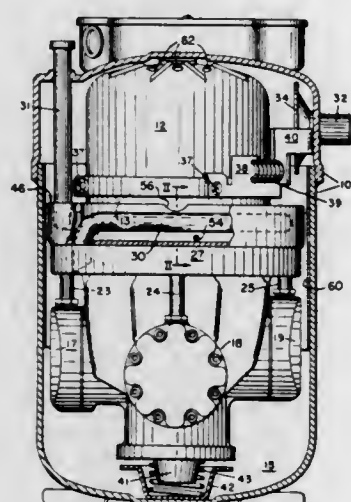
Paul G. Thayer, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1974, Ser. No. 438,932

Int. Cl. F04b 39/12

U.S. Cl. 417-312

5 Claims



1. In a multi-cylinder refrigerant compressor of the vertical crankshaft type having a hermetically sealed outer shell, radially extending cylinder heads in the lower portion of the shell with discharge tubes extending upwardly to an annular discharge muffler encircling the compressor motor, a suction gas inlet in the upper portion of said shell, and an oil sump in said shell, a liquid refrigerant trap system comprising:

a liquid refrigerant reservoir mounted on top of and in heat exchange relation with said muffler and being upwardly-open at least in that portion thereof underlying said suction gas inlet to receive liquid refrigerant dripping from said inlet, said reservoir extending for a distance equal to at least half a circle;

said reservoir including means defining a drain opening located above at least one of said cylinder heads and toward the radially inner side of said reservoir, said drain opening being of a size to restrict passage of liquid refrigerant therethrough while permitting passage of oil there-through.

3,857,653

FUEL INJECTION PUMPING APPARATUS

Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

Filed July 23, 1973, Ser. No. 381,589

Claims priority, application Great Britain, July 21, 1972, 34166/72

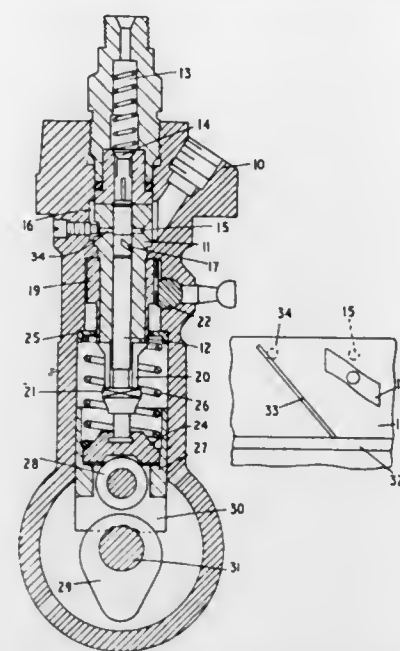
Int. Cl. F04b 7/04, 39/10

U.S. Cl. 417-494

3 Claims

1. A fuel injection pump having a plunger located within a bore, a pumping chamber formed by said bore, an end of said plunger forming a wall of said chamber, a circumferential barrier groove formed on said plunger a first inclined groove

formed in said plunger and axially spaced with respect to the end of said barrier groove, a second inclined groove formed in the plunger substantially diametrically opposite said first inclined groove and extending from said barrier groove towards said end of the plunger but terminating short thereof,



said first inclined groove having a control edge, said first inclined groove communicating with a spill port located within a wall of said bore during inward movement of the plunger, and an additional port formed in the wall of said bore, said second inclined groove communicating with said additional port during inward movement of the plunger to allow fuel which has collected in the barrier groove to escape through said additional port.

3,857,654

ADJUSTABLE DIAMETER STATOR FOR EXCENTRIC HELICAL SCREW PUMP

Max Streicher, Wangen/Allgau, Germany, assignor to Forder-technik Streicher GmbH, Schlosshof, Germany

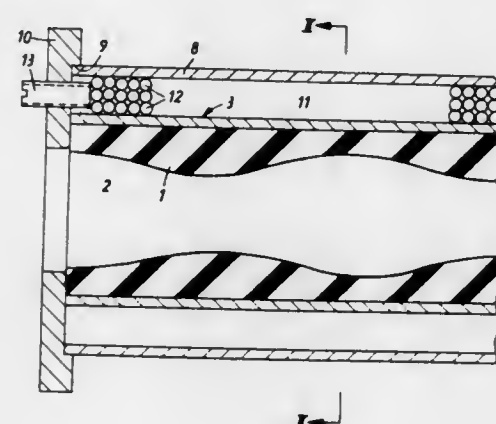
Filed Jan. 22, 1973, Ser. No. 325,748

Claims priority, application Germany, Jan. 21, 1972, 2202763; Sept. 5, 1972, 2243479

Int. Cl. F04c 1/06

U.S. Cl. 418-48

33 Claims



1. An adjustable stator assembly for a helical screw pump comprising in combination:

a stator sleeve of a resiliently yielding material such as rubber and the like having a longitudinal cavity defined by a twin helix inside which may be received, in a known manner, an eccentrically rotating helical screw;

a plurality of parallel segmental slats of a hard, highly pressure resistant material arranged on the circumference of the stator sleeve, the slats extending longitudinally over at least a major portion of the sleeve length; and

means for radially compressing the stator sleeve through the application of radial pressure to said slats, the compressing means including:

- a plurality of roll bodies bearing against the slats from the outside while being rollable thereon in at least one direction, each slat being thereby biased radially inwardly on at least two longitudinally spaced points;
- means for transmitting compression forces between the roll bodies contained in any given radial plane through the stator assembly; and
- means for adjusting the radial compression on said slats.

3,857,655

WEAR SLEEVES FOR SEALED BEARINGS

John E. Tschirky, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 354,954, April 27, 1973,

This application Aug. 6, 1973, Ser. No. 385,836

Int. Cl. F04c 1/06

U.S. Cl. 418-48

6 Claims



6. A fluid motor which includes a rotor, a stator, and a stator housing, a shaft connected to said rotor for rotation by said rotor, a housing for said shaft connected to said stator housing, a fluid inlet into said stator housing, and a fluid outlet from stator into said shaft housing, thrust bearings mounted in said shaft housing between said shaft housing and said shaft, seal mounted in said shaft housing between said thrust bearing and said fluid outlet, a sleeve mounted at one end thereof on said shaft for rotation with said shaft, a seal between said end and said shaft, said sleeve being spaced from and unsupported by said shaft between said first named seal and said free end, a packing between said sleeve and said housing.

3,857,656

APEX SEAL FOR A ROTARY INTERNAL COMBUSTION ENGINE

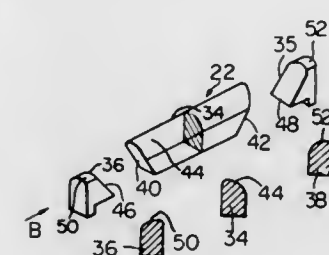
Yoshikazu Ishikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 17, 1973, Ser. No. 361,266

Int. Cl. F01c 19/02

U.S. Cl. 418-120

1 Claim



1. An apex seal for a rotary internal combustion engine having a rotor with a plurality of apices, which comprises: a

central apex seal element transversely disposed in each apex of the rotor having a different oblique end section formed at each end thereof, said central apex seal element having a curved top portion extending along the length thereof; and two end apex seal elements longitudinally aligned with the central apex seal element, each having an oblique section sealingly and obliquely slidable on the adjacent oblique section of said central apex seal element, each said end apex seal element having a curved top portion extending along the length thereof, the center of the radius of curvature of the curved top portion of said central apex seal element and the center of the radius of curvature of one of said end apex seal elements being disposed on the opposite sides of and approximately equidistant from the bisector of the apex.

3,857,657

FIBERIZING AND PAD FORMING APPARATUS

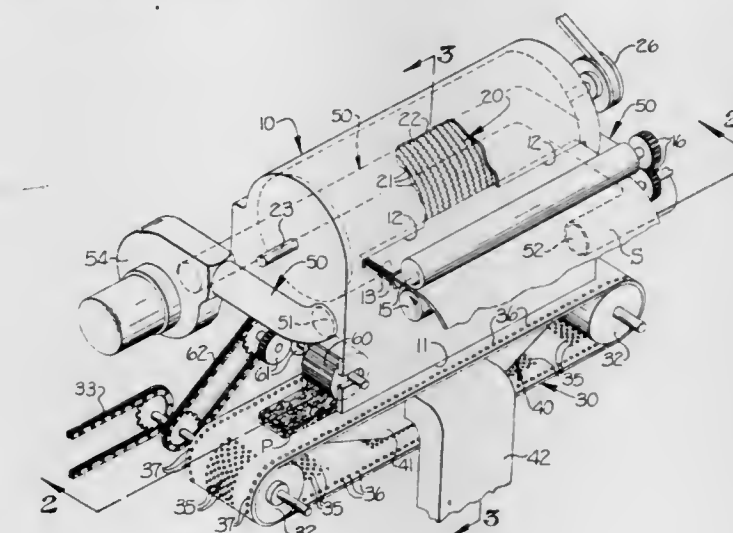
Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,010

Int. Cl. B29j 5/00

U.S. Cl. 425-80

11 Claims



1. Apparatus for fiberizing a sheet of wet-pressed, pulp fibers into individual fibers and forming individual, spaced-apart pads of such fibers; said apparatus comprising:

generally enclosed, stationary chamber means having an open bottom and a slot in an upper portion thereof to receive a sheet of wet-pressed pulp fibers;

rotatably mounted and driven fiberizing means mounted in the upper portion of said chamber means for contacting the sheet of wet-pressed pulp fibers and fiberizing the sheet into substantially individual fibers;

driven, longitudinally moving conveyor belt means having longitudinally-spaced groups of small perforations therein along the length thereof corresponding to the desired configuration and spacing of the fiber pads being formed; and being positioned for movement along said open bottom end of said chamber means directly below said fiberizing means and cooperating with said chamber means for forming an enclosed pad forming area in a lower portion of said chamber means and for receiving the fiberized fibers on its upper surface and conveying the fiberized fibers out of said chamber means; and

stationary vacuum means positioned at the lower surface of said belt means and directly below said chamber means for creating a vacuum through said groups of perforations in said moving belt means for causing said fibers to be pulled to said groups of perforations to form individual, spaced-apart pads on said moving belt means over said groups of perforations and within said lower portion of said chamber means for being conveyed by said belt means out of said chamber means after formation thereof.

3,857,658

APPARATUS FOR INJECTOR MOLDING

Laszlo Muzsnay, Amiens, France, assignor to Societe anonyme dite: Plastimonde, Paris, France

Continuation of Ser. No. 82,495, Oct. 20, 1970, abandoned, Continuation of Ser. No. 748,530, July 19, 1968, abandoned.

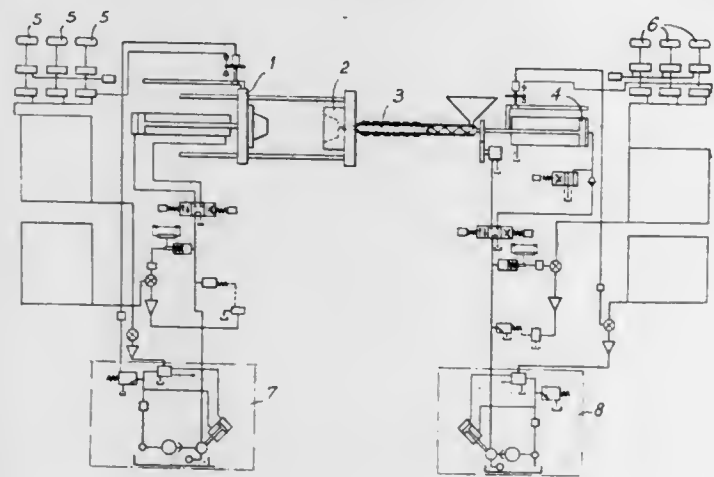
This application May 25, 1973, Ser. No. 364,059

Claims priority, application France, Aug. 3, 1967, 67.116752; July 10, 1968, 68.158661

Int. Cl. B29f 1/04

U.S. Cl. 425-145

1 Claim



1. An injection moulding machine for injection moulding plastic material and the like, said moulding machine comprising a fixed mould portion, a cooperating movable mould member, a movable piston-operated injection system for injecting moulding material into said mould,

a hydraulic system including a variable output pump and adapted to move said movable mould member, means for continuously monitoring the actual velocity of displacement of said movable mould member, means for continuously comparing the monitored velocity of displacement of said movable mould member with a predetermined velocity displacement program for the movable mould member, and means for adjusting the velocity of displacement of the movable mould member to maintain said actual velocity thereof at a value substantially equal to said predetermined velocity of displacement thereof, said movable mould member displacement velocity adjusting means including a servo-valve for controlling the output of said pump,

a second hydraulic system including a second variable output pump and adapted to move said movable piston, means for continuously monitoring the actual velocity of displacement of said movable piston, means for continuously comparing the monitored velocity of displacement of said movable piston with a predetermined velocity displacement program for the movable piston, and means for adjusting the velocity of displacement of the movable piston to maintain its actual velocity at a value substantially equal to said predetermined velocity of displacement thereof, said movable piston displacement velocity adjusting means including a second servo-valve for controlling the output of said second pump.

3,857,659

SEED CONTAINING PELLET FORMING EQUIPMENT

Philip B. Knapp, Lynbrook, N.Y., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Division of Ser. No. 164,748, July 21, 1971, Pat. No. 3,775,034, which is a division of Ser. No. 855,289, Sept. 4, 1969, Pat. No. 3,640,428. This application Nov. 14, 1973, Ser. No. 415,794

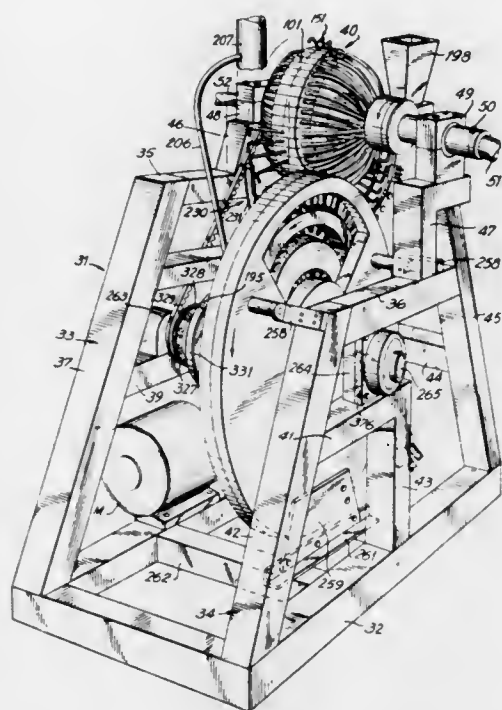
Int. Cl. A01c 1/06; B30b 11/12

U.S. Cl. 425-145

14 Claims

13. The combination set forth in claim 12 in which each of said discharge outlets comprises a passageway in said distribu-

tor means, each of said passageways having an inlet, a gate member movable between a position closing the inlet to one of said passageways to a position opening said inlet, actuating



3,857,660

INJECTION-BLOW MOLDING MACHINE

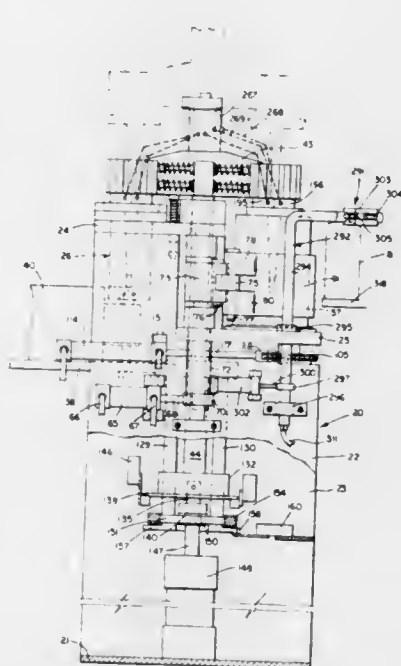
Joseph C. Flynn, Bridgeton, and Walter Panas, Millville, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Sept. 17, 1973, Ser. No. 397,842

Int. Cl. B29d 23/03

U.S. Cl. 425-242 B

15 Claims



1. A machine adapted for reliably and efficiently forming hollow containers by an injection blow molding process, said machine comprising

A. a central vertical support post including indexing means to rotate said post and elevation means to raise and to lower said post,

B. a transfer head mounted on said post including

i. a first and a second core rod mounting means each adapted to receive core rods to be downwardly ex-

tended therefrom at two diametrically opposite core rod positions on said head, and

ii. split neck ring mold mounting means at each of said core rod positions, said mounting means adapted to permit split neck ring molds mounted thereon to move toward and away from one another,

C. split neck ring mold actuating means consisting of

i. biasing means urging said split mounting means at each position toward one another and

ii. opening means consisting of air actuated pistons adapted to overcome said biasing means and to force said split mounting means at either position away from one another upon the admission of pressurized air thereto,

D. a parison mold adapted to communicate through an injection nozzle with a source of viscous plastic material and a means for injecting said material into said parison mold, said parison mold further being positioned and adapted to receive a core rod and a split neck ring mold at said first of said core rod positions by vertical downward movement of said transfer head,

E. a blow mold at a location diametrically opposite that of said parison mold, said blow mold being split along its length and hinged to permit separation of the two mold halves, said mold being positioned and adapted to receive a core rod at said second of said core rod positions by vertical downward movement of said transfer head,

F. a first, and second pressurized air delivery means adapted to sealingly engage corresponding air inlets in said transfer head when said transfer head is lowered,

G. said corresponding air inlets consisting of

i. a first pair of air inlets in said transfer head adapted to engage said air delivery means when a core rod mounted on said first core rod mounting means is disposed in said blow mold, and

ii. a second pair of air inlets in said transfer head adapted to engage said air delivery means when a core rod mounted on said second core rod mounting means is disposed in said blow mold,

H. air passageways within said head for delivering pressurized air from

i. one of the first pair of air inlets to the interior of a core rod mounted on said first core rod mounting means,

ii. the other of the first pair of air inlets to the air actuated piston of said actuating means at said first core rod position,

iii. one of the second pair of air inlets to the interior of a core rod on said second core rod mounting means, and iv. the other of the second pair of air inlets to the air actuated piston of said actuating means at said second core rod position,

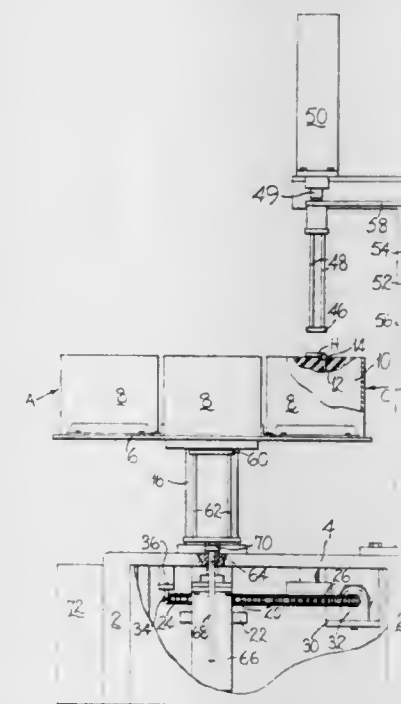
I. said elevation means consisting of means

i. to raise said head from a seated position with said core rods in said molds and said pressurized air delivery means in engagement with said inlets, to a raised position with the bottom of said core rods above said molds, and

ii. to lower said head from its raised position to its seated position, and

J. said indexing means being operative with said head in its raised position to index said head through an arc of 180° about said post.

which sponge material define a passageway therein which has a cross-sectional configuration conforming to the profile shape of a cup handle, a pusher member shaped to conform to the cross-sectional configuration of the passageway, means for moving the pusher member so that the pusher member pushes a cup handle placed on the sponge material at the entrance to the passageway into the passageway so that the cup handle is carried through at least part of the passageway



rubbing against the opposed walls so that seams on the cup handle are substantially removed, an ejector member shaped to conform to the cross-sectional configuration of the passageway, and means for moving the ejector member so that it pushes the cup handle back out of the passageway and withdraws to leave the handle on the sponge material so that the cup handle is carried back through the part of the passageway through which it was pushed by the pusher member and can be readily unloaded from the sponge material.

3,857,662

VARIEGATED SOAP APPARATUS

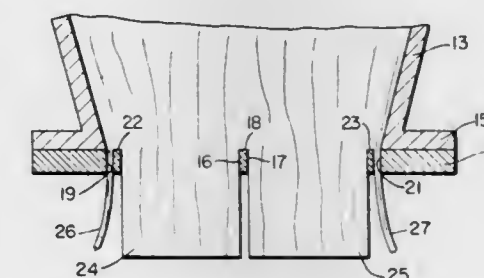
Robert Marie Ratz, Embourg, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 27, 1973, Ser. No. 374,080

Int. Cl. B29c 17/10

U.S. Cl. 425-296

3 Claims



1. Apparatus for producing variegated soap billets comprising a plodder having a discharge end, an extrusion die mounted on and communicating with said discharge end, said extrusion die being formed from a flat unitary plate having at least four extrusion openings disposed in side by side relationship, each of said openings being rectangular in configuration and having the same dimension in one direction, said four openings being separated by three lands of substantially the same width, the inner two of said openings being of a size suitable for the extrusion of side by side billets of soap, the outer two of said openings being in the form of slots through which a surface layer of each of said billets is extruded simul-

3,857,661

MANUFACTURE OF CERAMIC WARE

Frederick Arthur Turnock, and Robert Gater, both of Stoke-on-Trent, England, assignors to Service (Engineers) Limited, Staffordshire, England

Filed Oct. 12, 1973, Ser. No. 405,810

Int. Cl. B29c 17/12

U.S. Cl. 425-289

4 Claims

1. A descaling machine for ceramic cup handles comprising a support for sponge material or the like, opposed walls of

taneously with said billets, all of said extrusion openings being defined by parallel walls extending through said unitary plate.

3,857,663

MANDREL FOR ROUNDING DOUGH

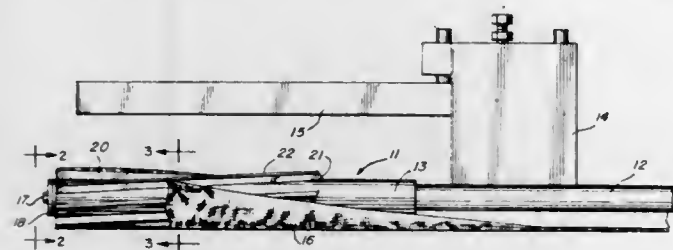
Harold T. Atwood, 14152 Irving Ave., Dolton, Ill. 60619

Filed Mar. 20, 1974, Ser. No. 452,679

Int. Cl. A21c 11/00

U.S. Cl. 425-308

2 Claims



1. A mandrel comprising a cylindrical section and a conveyor belt substantially embracing the rear end portion of said cylindrical section in predetermined spaced relationship to its outer circumferential surface, said cylindrical section having a plurality of fins projecting outwardly from its outer circumferential surface and extending longitudinally thereof in an elongated spiral path, each of said fins having a width substantially equal to the spacing between the outer circumferential surface of said cylindrical section and the inner surface of said conveyor belt whereby each of said fins completely severs a piece of dough moved along the length of said cylindrical section by said conveyor belt.

3,857,664

FORMING APPARATUS FOR MULTIPLE STREAM SHAPING

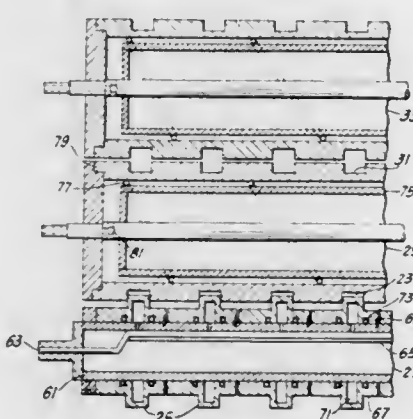
Keith G. Johnson, Pittsburgh, and Anthony Paul Limbach, Downingtown, both of Pa., assignors to Arco Polymers, Inc., Glenolden, Pa.

Filed Nov. 28, 1973, Ser. No. 419,786

Int. Cl. B29d 7/10

U.S. Cl. 425-327

5 Claims



1. A roll forming apparatus for simultaneous shaping of a plurality of extrudates comprising in combination,

- a first roll having a plurality of projections on its surface;
- a second roll having a plurality of grooves in its surface;
- said first and second rolls being located adjacent one another such that the projections of said first roll intermesh with the grooves of said second roll;
- the height of said projections beyond the first roll being less than the depth of said grooves in the second roll such that when said projections intermesh with said grooves, a plurality of confined passages of predetermined configuration are defined between the tops of said projections and the bottoms of said grooves; and
- said projections being formed by a plurality of self-aligning bronze rings coaxially mounted over a smooth steel roll, such that as the steel roll expands or contracts,

said rings may slide coaxially to remain aligned with the grooves of said second roll.

3,857,665

POLYSTYRENE EXTRUDER DIE PLATE

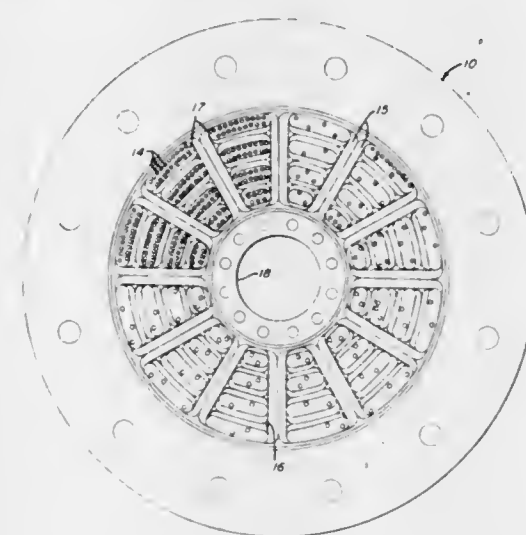
Frank Kennedy, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 11, 1973, Ser. No. 350,289

Int. Cl. B29f 3/04

U.S. Cl. 425-378

11 Claims



1. An improved die plate for the continuous extrusion of molten thermoplastic resin, having a downstream face, an upstream face and connecting means for underwater die face pelletization devices, characterized by the downstream face being the downstream edge of a relatively thin metal web, said web containing a plurality of orifices for extrusion of thermoplastic resin into pellet form, a means integral with said web to resist deflection of said web, said means including:

- radial ribs extending from the upstream side of said web to the upstream face of said die plate, and
- annular ribs extending from the upstream side of said web to a position intermediate of said web and said upstream face of said die plate, said annular ribs intersecting said radial ribs, and said orifices being disposed between said annular ribs.

3,857,666

APPARATUS FOR BELLING ENDS OF CONDUIT OR THE LIKE

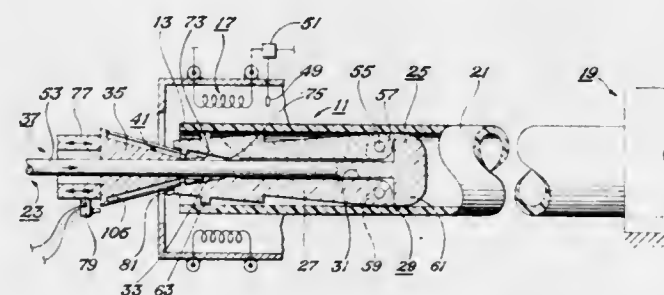
Louis H. Barnett, 3631 Encanto Dr., Fort Worth, Tex.

Filed Apr. 9, 1973, Ser. No. 349,293

Int. Cl. B29c 17/00

U.S. Cl. 425-393

8 Claims



1. In apparatus for at least semi-automatically belloning a first end of thermoplastic conduit for conformingly receiving a second end of conduit, including:

- heating means for at least locally heating said first end of said conduit;

- support means for supporting said conduit; and
- insert means for inserting an insertable mandrel for expanding said end to thereby bell said end to have a predetermined set of internal dimensions for receiving therein said second end of conduit having a predetermined set of external dimensions that conformingly mate with said internal dimensions;

The improvement comprising said mandrel being an expandable insertable mandrel having a ridge protruding about its periphery for defining a groove having any predetermined cross sectional shape on the interior of said first end for receiving a seal means intermediate said first end and said second end; said expandable insertable mandrel being connected with said insert means for insertion within said first end of said conduit without requiring elastic response of softened walls of said first end of said conduit in contracting around said ridge; said mandrel being expandable after insertion within said first end of said conduit for belloning said first end, and collapsible after said belloning and before withdrawal from said first end; said mandrel being connected with said insert means also for withdrawal from said first end of said conduit; said expandable mandrel comprising:

- a plurality of at least three elongate pieces having a predetermined peripheral radius of curvature that is the same as said second end of said conduit; said plurality of pieces of said expandable mandrel having respective portions of a ridge extending peripherally thereabout for forming said groove in the belled first end for receiving a seal means for sealing against said second end that is subsequently inserted thereinto; said pieces having a radius in a retracted position during insertion and withdrawal less than the radius of said first end of said conduit before belloning, and being expandable after insertion within said first end to a radius in a fully expanded and belloning position that is greater than said radius of said first end for belloning said first end and forming a sealing groove there-within; said pieces having a normal discontinuity when expanded into their fully expanded position;
 - mounting means holding said plurality of pieces assembled in said retracted position and adapted for allowing radially outward expansion thereof into said belloning position after insertion within said first end of said conduit;
 - a central bore having a first frustoconically shaped bore opposite said mounting means for receiving a swage means;
 - a central shaft disposed in said central bore and extending out of said first frustoconically shaped bore;
 - swage means disposed on said central shaft and movable longitudinally thereof for expanding said plurality of pieces radially outwardly into said belloning position; said swage means having a frusto-conical shape adapted to conformingly fit said first frustoconically shaped bore when fully seated thereinto for forming the belled first end;
 - forcing means for forcing relative movement between said swage means and said pieces after insertion within said first end of said conduit to fully seat said swage means in and withdraw said swage means from said first frustoconically shaped bore for collapsing said mandrel before withdrawal; said forcing means being connected with said swage means and said mounting means;
 - smoothing means for smoothing out the interior surface of the final belled end and removing irregularities caused by said normal discontinuities of the expansibly mounted pieces when they are expanded outwardly into their fully expanded position by the fully seated swage means; and
 - retraction means for effecting retraction of said pieces radially inwardly as said swage means is withdrawn from its fully seated position;
- such that said mandrel can be expanded to define a bell and a groove of any cross sectional shape, even square, since said conduit does not have to be slipped over said expandable mandrel when fully expanded.

3,857,667

PHOTOFLASH LAMP ARRAY HAVING SUPPORT STRUCTURE ON BASE

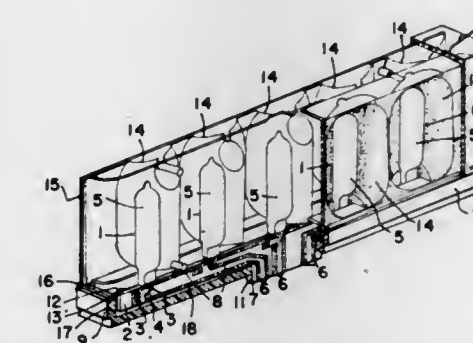
John J. Vetere, Danvers, Mass., and Donald E. Armstrong, Williamsport, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 23, 1973, Ser. No. 408,464

Int. Cl. F21k 5/02

U.S. Cl. 431-95

11 Claims



1. Support structure in a multilamp flash unit; said unit including a printed circuit board having a depending contact tab for insertion into an edge connector assembly, a plurality of flashlamps connected to said printed circuit board, and a base having an upper surface supporting said printed circuit board and a through-slot therein through which said contact tab extends and projects from the other side thereof; said support structure comprising:

a pair of flexible bifurcated posts projecting from the upper surface of said base and located on opposite sides of said through-slot, each of said posts having a longitudinally extending slot aligned with said through-slot and within which said printed circuit board is received and seated, and each post having means toward the outer end thereof projecting from both sides of the slot therein which resiliently engage opposite sides of the printed circuit board seated in said slot, each projecting means having a flat surface bearing against a side of the printed circuit board, whereby said printed circuit board is fixedly located on said base and the position of said contact tab projecting through said through-slot is maintained in a predetermined dimensional relationship with respect to said base.

3,857,668

FLAMELESS CATALYTIC COMBUSTION OF HYDROCARBON IN POROUS SINTERED STONES

Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

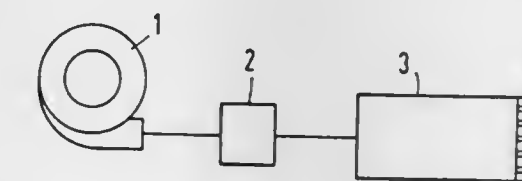
Filed July 21, 1970, Ser. No. 56,885

Claims priority, application Germany, Aug. 2, 1969, 1939535

Int. Cl. F23d 3/40

U.S. Cl. 431-7

10 Claims



1. A process for the flameless combustion of gases in porous sintered stones, which comprises passing a mixture of hydrocarbon with air or oxygen through a highly porous sintered stone traversed by openings, said sintered stone containing a catalyst selected from the group consisting of nickel and platinum, said catalyst being doped with uranium oxide.

3,857,669

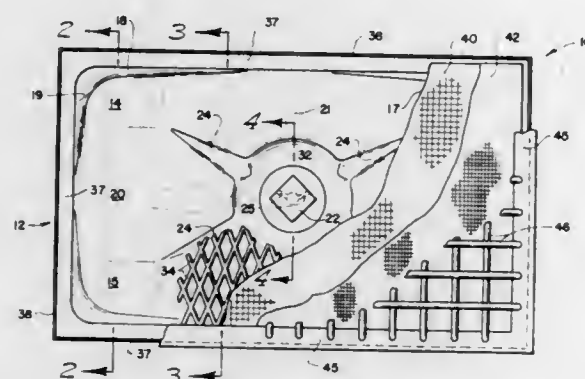
CATALYTIC HEATER HEAD

Jay N. Smith, Wichita, Kans., and Robert I. Schantz, Burien, Wash., assignors to Impala Industries, Inc., Wichita, Kans.
Filed Sept. 2, 1971, Ser. No. 177,399

Int. Cl. F23d 13/14

U.S. Cl. 431-328

8 Claims



1. A catalytic heater head for use with gaseous fuels, comprising:

- a gas impervious rectangular back pan shaped to define a shallow gas diffusion chamber with an open front side;
- a fibrous layer of catalytic-coated mass mounted on the front side of said back pan;
- a gas emitter head centrally located in said back pan and including at least one orifice located to emit gas in a directed stream;

means to supply gas to said emitter head; and
said back pan being formed with separate reservoirs in each of the four corners thereof and channel means radiating outward from the gas emitter head terminating in at least one of the reservoirs, the volume of the channel means being substantially smaller than the volume of the reservoirs, the channel means being substantially aligned with the gas stream from the emitter head whereby the flowing gas is partially confined as it travels upward through the channel means into the respective reservoir and ridge means separating each of the reservoirs partially restricting the flow of gas between the reservoirs.

3,857,670

RADIANT BURNER

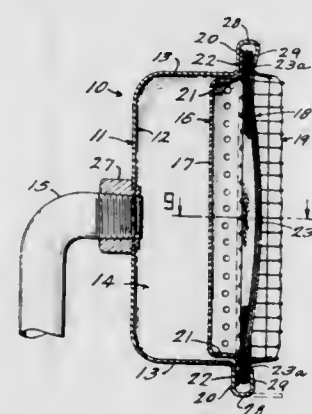
Arthur R. Karlovetz, Fremont, and Eugene W. Placek, Middleburg Heights, both of Ohio, assignors to International Magna Corporation, Cleveland, Ohio

Filed Mar. 29, 1973, Ser. No. 346,071

Int. Cl. F23d 13/14

U.S. Cl. 431-329

10 Claims



1. A radiant burner comprising

- a hollow cup-shaped body having a continuous peripheral wall extending forwardly and defining an open ended chamber,

- b. an outwardly extending planar chamber flange on the forward end of said peripheral wall,
- c. a diffuser having a planar web with a regular pattern of uniform size perforations therein providing an open area substantially less than the area of said planar web, said web extending across said body in a plane parallel to said chamber flange,
- said diffuser having a peripheral forwardly extending spacing flange and an outwardly extending marginal edge on the front end of said spacing flange, and being spaced forwardly from the rear of said cup-shaped body,
- the surface of the edges of said diffuser lying in heat transfer contact against said chamber flange,
- d. a primary screen consisting of at least two contiguous layers of substantially identical mesh material and
- e. an open mesh reverberator grid both extending across the open end of said chamber,
- the layers of said primary screen being welded together at the center thereof and at a plurality of spaced points around the edges thereof,
- the edges of said grid and said screen overlying the marginal edges of said diffuser and said chamber flange in heat transferring stacked relationship,
- f. a lip on the outer edge of said chamber flange that is folded over against the edge surface of said reverberator grid for retaining said diffuser, said screen and said grid in the open end of said body and
- g. a combustible gas inlet into said chamber behind said diffuser.

3,857,671

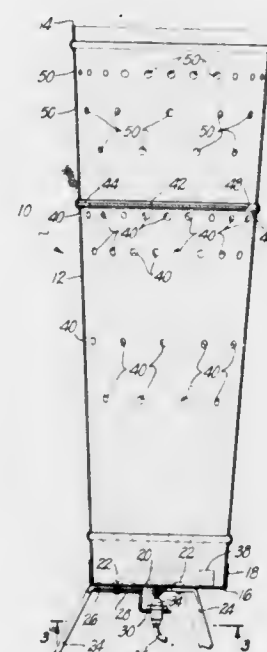
ORCHARD HEATER

Willis T. Cox, 13827 N. 108th Dr., Sun City, Ariz. 85351
Filed Feb. 8, 1973, Ser. No. 330,512

Int. Cl. F23d 15/02

U.S. Cl. 431-352

4 Claims



1. An orchard heater which includes:

- an elongated stack having the shape of a frustum of a cone, said stack having an uncovered upper end and a lower end, said upper end being of longer diameter than said lower end, a cover having a centrally located opening covering the lower end of said stack,
- leg means for supporting said stack vertically a support located beneath said opening in said cover,
- a fuel nozzle located on said support so as to be capable of directing a spray of unburned fuel through said opening without such fuel contacting said cover,

the size of said opening being sufficiently small so that the air entering said stack through said opening during the operation of said heater is insufficient to sustain complete combustion of the fuel emitted from said nozzle, an imperforate carburetor plate located across the interior of said stack between said ends of said stack, said carburetor plate having an outer edge uniformly spaced from the interior of said stack, first air holes located in said stack between said carburetor plate and said upper end of said stack, a plurality of second air holes located in said stack beneath said carburetor plate, said second air holes being spaced from said cover, said carburetor plate being the only obstruction located within the interior of said stack and being located between said ends of said stack so that partial combustion of fuel supplied through said nozzle will occur beneath said carburetor plate causing said stack and said carburetor plate to be heated, such heating resulting in the heating of fuel and air within said stack beneath said carburetor plate, said carburetor plate serving to distribute a mixture of air, unburned fuel and combustion products so that said mixture flows around the periphery of said carburetor plate and then upwardly and outwardly from said upper end of said stack past said first air holes so as to burn in a flame extending from said upper end of said stack, and the air necessary to support combustion of the fuel burned in said heater entering said heater through said opening and said first and said second air holes.

3,857,672

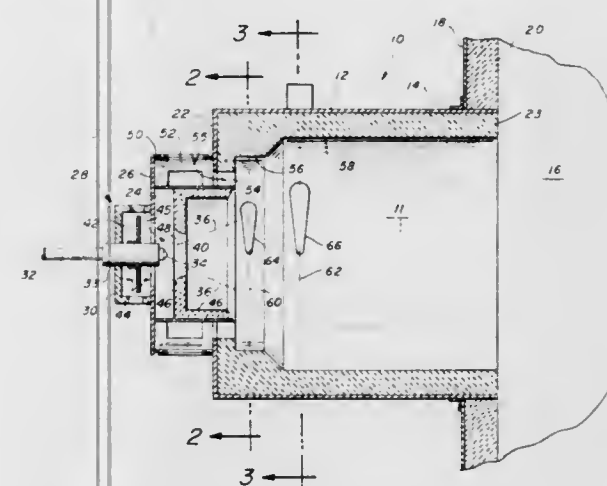
TRI-FUEL BURNER FOR PROCESS GASES

Robert D. Reed, and Hershel E. Goodnight, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed Dec. 26, 1973, Ser. No. 427,730

Int. Cl. F23d 15/02

U.S. Cl. 431-353

4 Claims



1. A burner for the forced burning of low heat value gases comprising:

- a. a cylindrical metal housing with horizontal axis and refractory lining, said housing closed at a first end and adapted to be attached to a furnace wall at a second end, said refractory lining having three steps of diameter;

- b. combustion air inlet means for the longitudinal introduction of combustion air at a first diameter through an annular port in said closed end;
- c. fuel gas introduction means for the tangential introduction of fuel gas under pressure at a second, larger diameter, axially displaced from said combustion air inlet means; and
- d. lean gas introduction means for the tangential introduction of low heat value gas at a third, larger diameter, displaced axially from said fuel gas introduction means, said third diameter continuing for the remaining length of said housing.

3,857,673

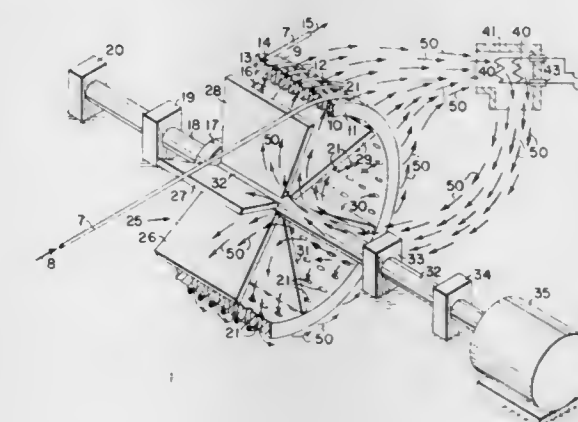
APPARATUS FOR HEAT TREATING CONTINUOUS WIRE AND ROD

Everett Howard Andrus, Rt. No. 4, Watertown, Wis. 53094
Filed Mar. 8, 1974, Ser. No. 449,365

Int. Cl. F27b 9/28

U.S. Cl. 432-59

5 Claims



1. In apparatus for treating a continuous strand the combination of:

- a chamber,
- means for continuously introducing said strand into said chamber at a preselected rate and means for withdrawing said strand continuously from said chamber at the same rate,
- a rotatable hollow drum within said chamber, said drum rotatable on an axis whereby a plurality of turns of said strand may be wound around said drum, said drum having two ends, the interior of said drum being the space within said drum between said ends,
- said drum having a plurality of passages extending through which provide communicating passages between the interior of said drum and the exterior of said drum, means to blow gas through said passages from the interior of said drum to the exterior of said drum,
- said means to blow gas through said passages comprising a rotatable gas impeller means rotatable on an axis, said gas impeller means rotatable on the axis on which said drum rotates,
- said gas impeller means disposed at least partly within said interior of said drum,
- said apparatus being provided with heating means to heat said gas.

CHEMICAL

3,857,674

HAIR COLOURANTS

Ernst Ludwig Forsthoff, Schenfeld, and Rudolf Vogl, Bad Segeberg, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 203,048, Nov. 29, 1971, abandoned. This application May 3, 1973, Ser. No. 356,869

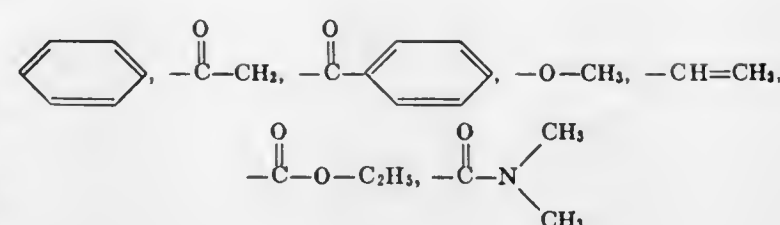
Claims priority, application Luxembourg, Dec. 4, 1970, 62178

Int. Cl. A61k 7/12

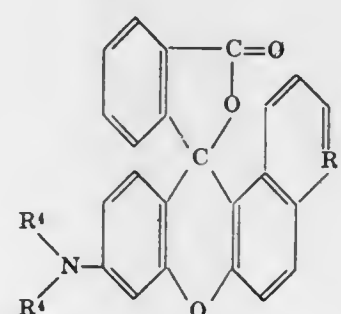
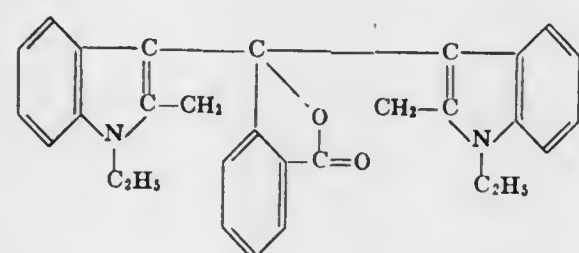
U.S. Cl. 8-10.2

4 Claims

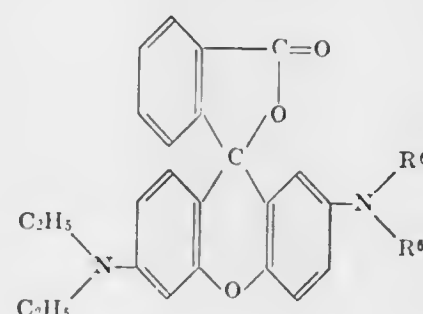
1. A hair colourant composition having a pH between 8 to 10 comprising a mixture of dyestuffs and a carrier therefor the mixture of dyestuffs comprising a 1,2- or 1,3-diaminobenzene substituted in the positions para to the amino groups by identical substituents selected from the group consisting of C₁ to C₃ alkyl groups and halogen atoms and 2,5-diaminotoluene or a salt thereof in a molar ratio of less than 1:1.



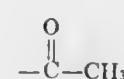
or CH₃ and a second chromogenic compound represented by the formula:



wherein each R⁴ is H, CH₃, or C₂H₅ and R³ is C or N;



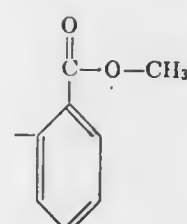
wherein one R⁶ is



and the other R⁶ is H,



CH₃, C₂H₅ or



3,857,675
MIXTURES OF TWO CHROMOGENIC COMPOUNDS
Helmut Schwab, 1544 Academy Pl., Dayton, Ohio 45406;
Chao-Han Lin, 81 Patterson Village Dr., Apt. 3, Dayton,
Ohio 45419, and Troy Eugene Hoover, 2108 Westtown Dr.,
Kettering, Ohio 45440

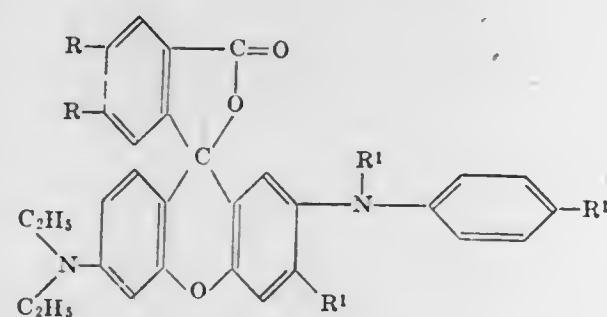
Continuation of Ser. No. 89,751, Nov. 16, 1970, abandoned.
This application Mar. 7, 1973, Ser. No. 338,703

Int. Cl. D06p 1/42

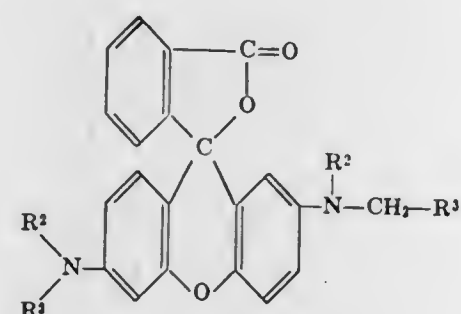
U.S. Cl. 8-25

3 Claims

1. A mixture of two colorless but colorable chromogenic compounds wherein the first chromogenic compound is a fluoran compound having a generally green appearance and exhibiting two light absorption peaks—one in the range of 400 to 500 millimicrons and another in the range of 550 to 650 millimicrons—in its colored form and wherein the second chromogenic compound exhibits a single absorption peak in the range of 500 to 600 millimicrons in its colored form;—the mixture, additionally, consisting essentially of a first chromogenic compound represented by the formula:



wherein each R is H or NO₂ and each R¹ is H, CH₃, or C₂H₅;
or

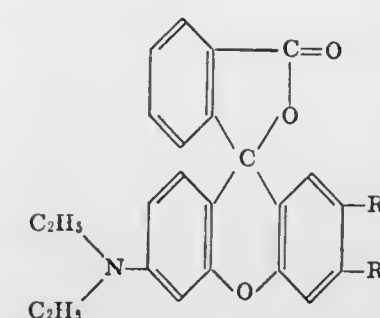


wherein each R² is H, CH₃ or C₂H₅ and R³ is H,

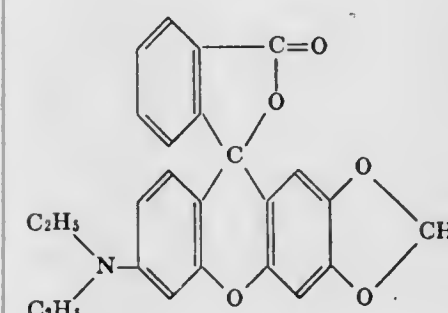
DECEMBER 31, 1974

CHEMICAL

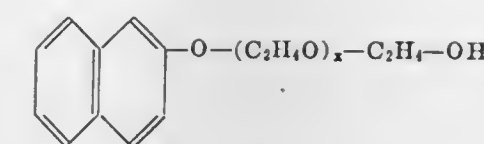
2023



wherein each R⁷ is H, Cl, CH₃, C₂H₅ or -S-CH₃; or



wherein the mole ratio of the first chromogenic compound to the second chromogenic compound ranges from 1:5 to 5:1 and said mixture on reaction with an electron accepting material of the Lewis acid type, exhibits a neutral-colored form.



wherein x is zero or a number of from 1 to 4.

3,857,677

METHOD OF STERILE PACKAGING

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 112,762, Feb. 4, 1971, Pat. No. 3,725,003, which is a continuation-in-part of Ser. No. 873,786, Nov. 4, 1969, Pat. No. 3,618,283. This application Mar. 22, 1973, Ser. No. 343,974 The portion of the term of this patent subsequent to Apr. 3, 1970, has been disclaimed.

Int. Cl. A61l 13/00; B65b 55/18, 55/14

U.S. Cl. 21-58

7 Claims

1. A method of sterile packaging comprising the steps of partially filling a container with a solution of a standard antibacterial agent having an available iodine concentration within the range of 0.0012 to 3.0 percent; then sealing said container to provide a gas space above said solution within the sealed container; and thereafter heating said container and its contents to a temperature substantially below the boiling point of said solution and at a pressure of about one atmosphere until the interior surfaces of said container above and below the liquid level, and the entire contents of said container, are sterilized.

3,857,678

METHOD FOR DETERMINING TOXICITY OF PHYTOTOXINS IN PLANTS

Lowell A. Klepper, Lincoln, Nebr., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 21, 1973, Ser. No. 334,343

Int. Cl. A01n 9/00; C09k 3/00; G01n 33/00

U.S. Cl. 23-230 R

3 Claims

1. A method for determining toxicity of phytotoxins in plants comprising the steps of:

- preparing an aqueous reaction mixture containing plant tissue, a phytotoxin, a compound selected from the group consisting of surfactants, ethanol, acetone, and isopropanol, and KNO₃ in amounts sufficient to produce detectable amounts of nitrite ion when treated as described in steps (b) and (c), infra, and KH₂PO₄ in an amount sufficient to buffer the reaction mixture at a pH of about 7.0;
- vacuum infiltrating the reaction mixture;
- incubating the reaction mixture at a temperature and light intensity sufficient to promote plant growth for a time sufficient to produce detectable amounts of nitrite; and
- analyzing the incubated reaction mixture for the presence of nitrite ion.

3,857,679

CRYSTAL GROWER

Worth P. Allred, West Covina, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Feb. 5, 1973, Ser. No. 329,746

Int. Cl. B01j 17/06, 17/18

U.S. Cl. 23-273 SP

5 Claims

1. A furnace assembly for the growth of an uncontaminated arsenide compound crystal of predetermined composition, including:

- a gas-tight housing, said housing having a first chamber adapted for the growth of crystals from a melt by the crystal pull technique, a second chamber and a neck

3,857,676
PROCESS FOR THE PRINTING AND CONTINUOUS
FIXING OF DISPERSE DYESTUFFS ON POLYESTER,
CELLULOSE-TRIACETATE, CELLULOSE-2½-ACETATE
AND MIXTURES THEREOF

Erich Feess, Lorschbach, Taunus; Kurt Roth, Hofheim, Taunus, and Gunter Trapp, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Filed June 30, 1972, Ser. No. 267,960

Claims priority, application Germany, July 3, 1971, 2133161

Int. Cl. D06p 1/82

U.S. Cl. 8-21

8 Claims

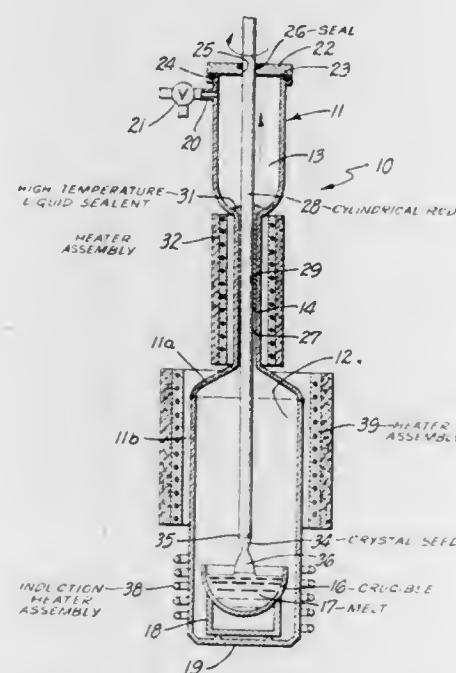
1. A process for printing and continuously fixing prints of disperse dyestuffs on fibrous materials of polyester, cellulose-triacetate and cellulose-2½-acetate and mixtures thereof or mixtures with wool, natural or regenerated cellulose fibers or with other synthetic fibers, which process comprises: using a printing paste containing, as fixing auxiliary, 25 to 60 grams per kilogram of printing paste of compounds of the formula



wherein R₁-CO- and R₂-CO- each represents the acyl radicals of linear or branched alkane- or alkene monocarboxylic acids with from 12 to 22 carbon atoms and n and m each is a number of from 4 to 12, alone, or in combination with oxethylated naphthols of the formula (2)

interconnecting the two chambers along the vertical axis of said housing, said first chamber adapted to support a melt of the arsenide compound for crystal growth, said second chamber having a circular aperture coaxial with said axis and a port for the evacuation and admission of gas out of and into said housing, said neck having a circular bore coaxial with said axis and communicating with said chambers;

- a cylindrical rod passing through said aperture into said housing coaxial with said axis, the lower end of said rod extending into said first chamber, said rod journaled in said bore and adapted for rotation about and vertical movement along said axis for the growth of a crystal from the melt;



means external of said housing for rotating and vertically moving said rod for crystal growth;
inert sealant means for sealing said first chamber from said second chamber, said means being stored as a solid at ambient temperatures in said second chamber prior to the operation of said assembly, and said means sealing the space between said rod and the wall of said bore as a liquid at elevated temperatures, said means adapted to seal said space at elevated temperatures while said rod is in motion;
means external of said housing for heating said sealant means; and
means external of said housing for heating the melt of the arsenide compound.

3,857,680 CATALYST CARTRIDGE

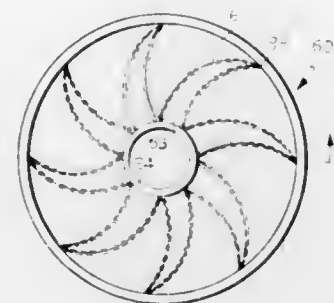
Paolo Della Porta; Tiziano A. Giorgi; Angelo Cantaluppi; Bruno Ferrario, and Paolo Montalenti, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed Nov. 1, 1971, Ser. No. 194,445

Claims priority, application Italy, Nov. 3, 1970, 31307/70
Int. Cl. B01j 9/04; B21d 53/02; B23p 15/26

U.S. Cl. 23—288 K 10 Claims

1. a catalyst structure comprising:
 - A. a thin sheet having two opposite sides and being formed of a metal of a given hardness,
 - B. a great plurality of catalyst particles having a hardness greater than said given hardness and being partially embedded in a surface on each of said two opposite sides of said sheet,
 - C. said sheet being folded to form a plurality of smaller sheets joined at edges of said smaller sheets to adjacent smaller sheets to form radially disposed segments of said smaller sheets which are all arcuately bent in the same direction, whereby alternate edges of said smaller sheets

form outer edges and



D. a mass situated thermally adjacent to the outer edges of the sheets for conductive exchange of heat with said smaller sheets through said edges.

3,857,681 COPPER FOIL TREATMENT AND PRODUCTS PRODUCED THEREFROM

Charles B. Yates, and Adam M. Wolski, both of Edgewater Park, N.J., assignors to Yates Industries, Inc., Bordentown, N.J.

Continuation-in-part of Ser. No. 168,755, Aug. 3, 1971, abandoned. This application Jan. 5, 1972, Ser. No. 215,648
Int. Cl. B23p 3/00; C23h 5/50, 5/52

U.S. Cl. 29—195 29 Claims

1. A method of treating copper foil comprising applying to the foil at least two separate electrodeposited copper treatment layers to form a matte surface, the first such layer in contact with said foil comprising a nodular powdery copper electrodeposit which has been deposited from an acidic aqueous electrolyte separate from that used to form said copper foil, said electrolyte containing about 20–30 grams per liter of copper (calculated as Cu) at a cathode current density of about 150–300 amps./ft²; the second such layer comprising a gilding layer which is not nodular in structure but which conforms to the configuration of the first layer so as to reduce the powder transfer characteristics of said first layer, said second layer having been deposited from an acidic aqueous electrolyte separate from that used to form said copper foil and said first layer, said electrolyte consisting essentially of about 50–100 grams per liter of copper (calculated as Cu) and sulfuric acid at a cathode current density of about 100–300 amps./ft²; and coating said matte surface with a layer of zinc.

3,857,682 HIGH TEMPERATURE RESISTIVE AND DRY LUBRICATED FILM SURFACES

Gerald W. White, 5835 Elm Lawn St., Dallas, Tex. 75080
Filed Feb. 7, 1973, Ser. No. 330,294

Int. Cl. B32b 15/04

U.S. Cl. 29—195 28 Claims

1. A high temperature resistive film build-up deposited on substrate material, with a plurality of film materials with film material atoms mechanically driven into underlying material atomic lattice in phase zones of atoms of adjoining materials through use of a high particulate energy level film material deposition ion plating process, with at least two of the materials of the materials of said substrate and said plurality of film materials being metal based materials; and with at least one film material a hardened refractory material film deposited by a high particulate energy level ion plating process.

3,857,683 PRINTED CIRCUIT BOARD MATERIAL INCORPORATING BINARY ALLOYS

Richard N. Castonguay, Los Angeles, Calif., assignor to The Mica Corporation, Culver City, Calif.

Filed July 27, 1973, Ser. No. 383,088

Int. Cl. B32b 15/04

U.S. Cl. 29—195

33 Claims

1. A novel printed circuit board material in the form of a layered stock comprising an insulating support, at least one layer of electrical resistance material adhering to said support, and a layer of a highly conductive material adhering to the resistance material and in intimate contact therewith, said layer of electrical resistance material being selected from the group consisting of chromium-antimony containing from about 13–74% by weight antimony, chromium-manganese containing from about 10–80% by weight manganese, chromium-phosphorus containing from about 6–52% by weight phosphorus, chromium-selenium containing from about 14–65% by weight selenium, chromium-tellurium containing from about 21–75% by weight tellurium, cobalt-antimony containing from about 18–72% by weight antimony, cobalt-boron containing from about 2–36% by weight boron, cobalt-germanium containing from about 6–60% germanium, cobalt-indium containing from about 18–71% by weight indium, cobalt-molybdenum containing from about 10–65% by weight molybdenum, cobalt-phosphorus containing from about 6–52% by weight phosphorus, cobalt-rhenium containing from about 25–95% by weight rhenium, cobalt-ruthenium containing from about 16–94% by weight ruthenium, cobalt-tungsten containing from about 15–72% by weight tungsten, cobalt-vanadium containing from about 9–70% by weight vanadium, iron-vanadium containing from about 9–65% by weight vanadium, nickel-antimony containing from about 15–74% by weight antimony, nickel-boron containing from about 2–36% by weight boron, nickel-chromium containing from about 9–40% by weight chromium, nickel-germanium containing from about 6–60% by weight germanium, nickel-indium containing from about 18–71% by weight indium, nickel-molybdenum containing from about 10–65% by weight molybdenum, nickel-phosphorus containing from about 5–50% by weight phosphorus, nickel-rhenium containing from about 75–95% by weight rhenium, nickel-vanadium containing from about 9–72% by weight vanadium, and palladium-molybdenum containing from about 9–40% by weight molybdenum.

3,857,684 CORROSION-RESISTANT DOUBLE-COATED STEEL MATERIAL

Naomi Kubu, Nagoya, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto-gun, Shizuoka Prefecture, Japan
Filed Dec. 22, 1971, Ser. No. 211,087

Claims priority, application Japan, May 10, 1971, 46-30959
Int. Cl. B23p 3/10; B32b 15/18

U.S. Cl. 29—196.5 3 Claims

1. In steel materials having corrosion-resistant double-coating consisting of inner and outer two layers, an improved corrosion-resistant double-coated steel material characterized in that said inner layer is a zinc coating and said outer layer is a tin-predominant coating formed in a fusion-bonded state on said inner layer.

3,857,685 SYNTHETIC NATURAL GAS PRODUCTION USING A PLUG-FLOW REACTOR

Leon M. Lehman, Brooklyn, N.Y., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 317,037

Int. Cl. C01b 2/14; C10g 13/30

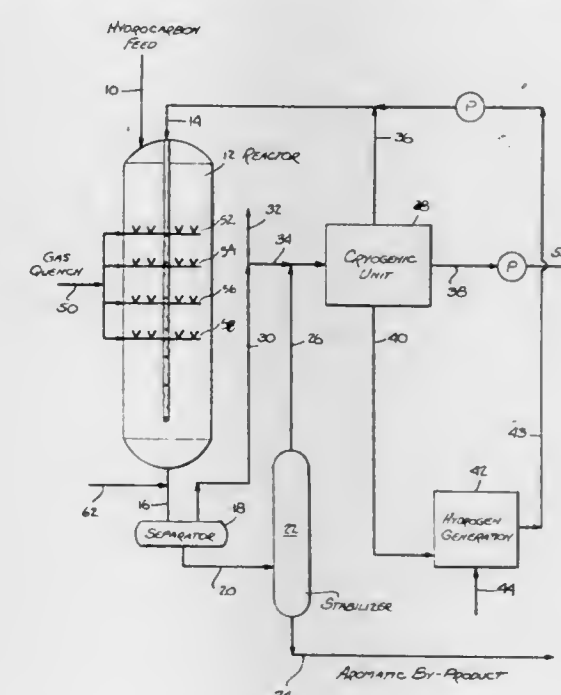
U.S. Cl. 48—213

8 Claims

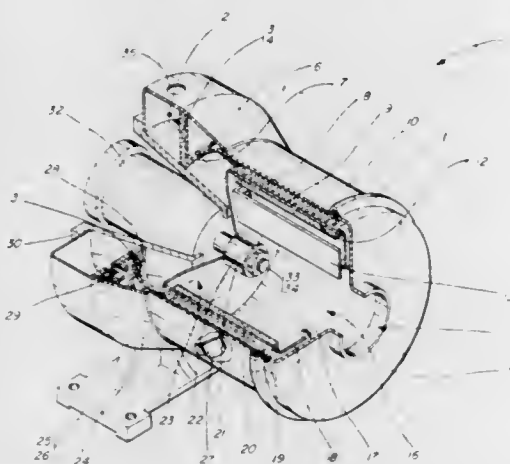
1. A process for the production of synthetic natural gas having a heating value between 800 and 1,000 BTU's from a

hydrocarbon distillate which boils between 200° and 900°F which comprises:

- a. combining said distillate with less than 50 percent of the hydrogen required for the hydrocracking of the distillate;
- b. feeding said distillate-hydrogen mixture as a vapor to the upper portion of a reaction zone at 800° to 1,200°F;
- c. thermally hydrocracking said mixture in the upper portion of said reaction zone;
- d. quenching said mixture to maintain temperature control with a quench selected from the group consisting of hy-



a cylindrical wall portion, the cylindrical portion curving inward toward the downstream end, a first circular end portion with inlet means for the gaseous stream concentric with said drum inlet means, the longitudinal axis of said housing being coaxial with the longitudinal drum axis, an exhaust chamber having outlet means for the gaseous stream and inlet means for filtered gaseous stream comprising a filtering means, the inlet means corresponding to the outlet means for the housing, an annular lip portion extending from the inner wall of the exhaust chamber toward the end of the cylindrical



wall of said housing so as to form a circumferential slot along the periphery of the downstream housing end and a collection chamber in communication with said slot, said collection chamber disposed about a portion of the housing and having an outlet drain for collected filtered aggregates, venting means communicating with the exhaust chamber said venting means extending into the collection chamber, whereby aerosol particles entering into the drum are subjected to centrifugal forces and while passing through the perforations grow in size, are deposited on the cylindrical housing walls, skimmed off through the slot to the collection chamber for collection.

3,857,688 LEAD FILTER

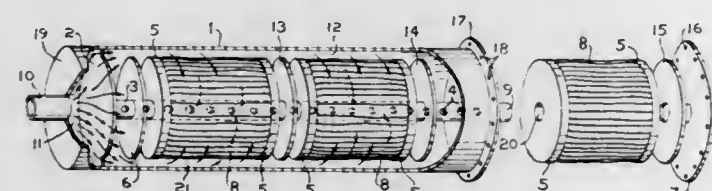
John P. Wisniewski, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 192,848, Oct. 27, 1971, abandoned. This application Mar. 27, 1974, Ser. No. 455,468

Int. Cl. B01d 25/00

U.S. Cl. 55—483

4 Claims



1. A fiber glass filter comprising:
 - a gas impermeable cylindrical housing,
 - a first end plate mounted within said housing and spaced from the inner surface thereof acting as a baffle at one end thereof,
 - a second end plate mounted in closing relationship to the opposite end of said housing,
 - a centrally disposed, apertured, hollow cylindrical support member traversing the substantial length of said housing, extending to the exterior of said housing through said second end plate, and being supported by said first and second end plates,
 - a filtration zone, having therein glass paper, said glass fiber paper being mounted concentrically within and spaced from the inner surface of said housing on said apertured support member,

sealing end caps on said filter paper, means for sealing said gas fiber paper, and said first and second end plates into a unitary structure which causes gases introduced into said filter to pass through said glass fiber paper, the interior of said housing and the exterior of said glass fiber paper providing a gas space, means for introducing gases into said housing and said gas space, and means for discharging gases from said housing through said support member.

3,857,689 ION EXCHANGE PROCESS FOR MANUFACTURING INTEGRATED OPTICAL CIRCUITS

Ken Koizumi, Hyogo; Toru Sumimoto, Tokyo; Shigeo Matsushita, Tokyo, and Motoaki Furukawa, Tokyo, all of Japan, assignors to Nippon Selfoc Company, Limited, Tokyo, Japan

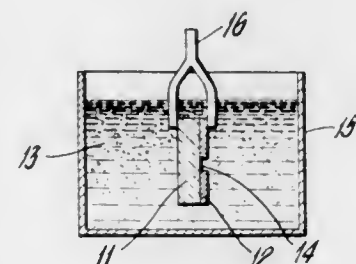
Filed Dec. 29, 1972, Ser. No. 319,452

Claims priority, application Japan, Feb. 2, 1972, 47-012472; Feb. 2, 1972, 47-012473; Dec. 28, 1971, 46-1147

Int. Cl. C03c 21/00, 17/06

U.S. Cl. 65—30

6 Claims



1. A method for manufacturing an integrated optical circuit comprising:
 - forming a mask of a material selected from the group consisting of Ti, Ta, Nb, Zr, Cr and Al and the oxides of these metals on a transparent glass substrate containing monovalent positive ions, said mask defining a desired optical circuit pattern; and
 - promoting ion exchange within the substrate by contacting it with a molten salt containing monovalent positive ions which have a greater effect on the refractive index than the monovalent positive ion in the substrate, whereby the refractive index of a portion of the substrate in the vicinity of the surface thereof which is not masked is made higher than the refractive index of the remainder of the substrate.
2. A method for manufacturing an integrated optical circuit comprising:
 - forming a two layered mask which defines a desired optical circuit pattern on a glass substrate containing monovalent positive ions, one layer of said mask consisting of an oxide of Ti, Ta, Nb, Zr, Cr, or Al and the other layer of said mask consisting of Ti, Ta, Nb, Zr, Cr, or Al; and
 - promoting ion exchange within the substrate by contacting it with a molten salt containing monovalent positive ions which have a greater effect on the refractive index than the monovalent positive ions in the substrate, whereby the refractive index of a portion of the substrate in the vicinity of the surface thereof which is not masked is made higher than the refractive index of the remainder of the substrate.

3,857,690 HEATED CONVEYOR

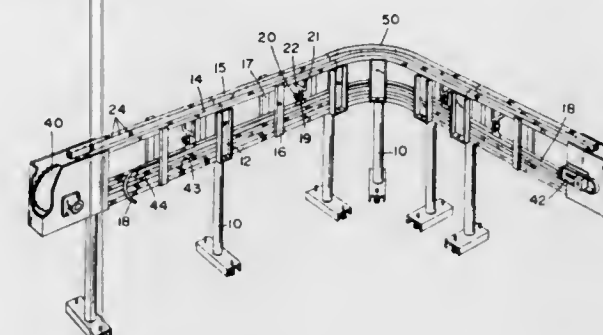
Anthony T. Zappia, Indianapolis, Ind., assignor to Ball Brothers Service Corporation, Muncie, Ind.

Filed Oct. 9, 1973, Ser. No. 404,507

Int. Cl. C03b 29/04

U.S. Cl. 65—274

8 Claims



1. A conveyor comprising a trackway including parallel, hollow rails, means for supplying a gaseous fluid to the interior of said rails, an endless belt guided by said rails for travel therealong, cooperative engaging means for guiding said belt against lateral movement relative to said rails, and means for driving said belt, each of said rails being provided with port means for directing a stream of such fluid through said belt, said belt having openings therein through which such fluid passes.

3,857,691 GOB DISTRIBUTOR

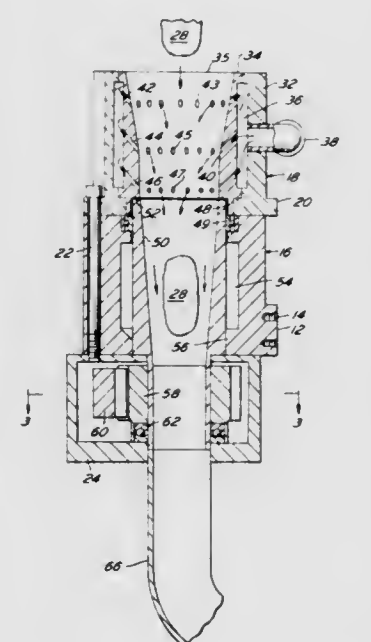
Ronnie G. Jones, and John P. Daly, both of Winchester, Ind., assignors to Maul Bros. Inc., Millville, N.J.

Filed Oct. 9, 1973, Ser. No. 404,475

Int. Cl. C03b 5/30

U.S. Cl. 65—303

9 Claims



1. A gob distributor cartridge for accelerating glass gobs in excess of gravity effect while the gobs are being delivered to molds in an I.S. machine comprising a rigid annular housing having an inlet end and an outlet end, the ID at the inlet end being greater than the ID at the outlet end, said housing being hollow and having an annular manifold, at least a portion of the inner peripheral surface of said housing converging in a direction from the inlet end toward the outlet end, said housing having a plurality of groups of circumferentially disposed flow passages extending from said manifold chamber to said portion of said surface of said housing, said passages being angled downwardly and converging toward said outlet end for discharge into said housing to progressively increase the push-

ing and centering effect of air from said passages on a gob as the gob moves through said housing, means defining an inlet to said manifold chamber, and the cross-section area of the passages having a sum which is less than the cross-section area of the inlet to the manifold chamber to maintain a positive pressure in the manifold chamber.

3,857,692 1,2-DIMETHYL-3,5-DIPHENYLPYRAZOLIUM SALTS AND 3,5-DIBROMO-4-HYDROXYBENZONITRILE HERBICIDAL COMPOSITIONS

Richard William Feeny, Hightstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

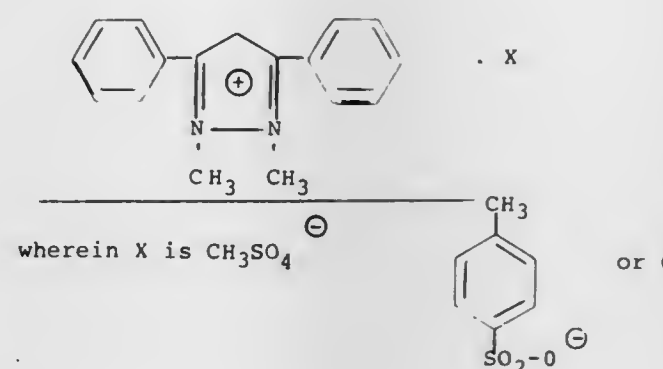
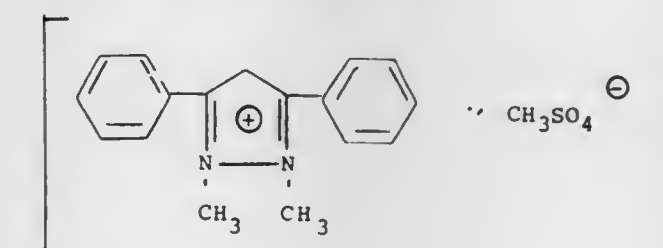
Filed Nov. 17, 1972, Ser. No. 307,671

Int. Cl. A01n 9/02, 9/22

U.S. Cl. 71—92

8 Claims

1. A composition for the control of wild oats and broadleaf weeds comprising an inert carrier and a mixture of:
 - a. a pyrazolium salt of the formula:



and

- b. 3,5-dibromo-4-hydroxybenzonitrile wherein the composition is applied to the undesirable plants in sufficient amount to provide from 0.25 pound to 2.0 pounds per acre of pyrazolium cation and from 0.125 pound to 4.0 pounds per acre of 3,5-bromo-4-hydroxybenzonitrile.

3,857,693
ANILIDE CARBAMATES AS HERBICIDES
Kenneth L. Hill, Middleport, and Kenneth R. Wilson, Tonawanda, both of N.Y., assignors to FMC Corporation, New York, N.Y.

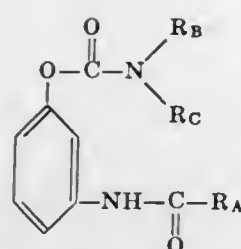
Continuation-in-part of Ser. No. 496,159, Oct. 4, 1965, abandoned. This application Sept. 6, 1966, Ser. No. 577,191

Int. Cl. A01n 9/20

U.S. Cl. 71—106

31 Claims

1. Herbicidal compositions comprising as an essential active ingredient an effective herbicidal amount of a herbicidal compound of the formula



where R_C is a hydrogen or lower alkyl and R_A and R_B are selected from the group consisting of cycloalkyl of 3 to 6 carbon atoms and aliphatic hydrocarbon containing up to about 6 catenated carbon atoms which may be substituted with chlorine or lower alkyl groups and a compatible carrier therefor.

3,857,694

PROCESS FOR BURNING HYDROCARBONS AND CRACKED PRODUCTS IN EXHAUST GASES FROM SINTERING MACHINES

Fred Cappel, Spremlingen; Jurgen Otto, Nieder-Eschbach; Siegfried Nikl, Frankfurt am Main, and Hans Rausch, Oberursel, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

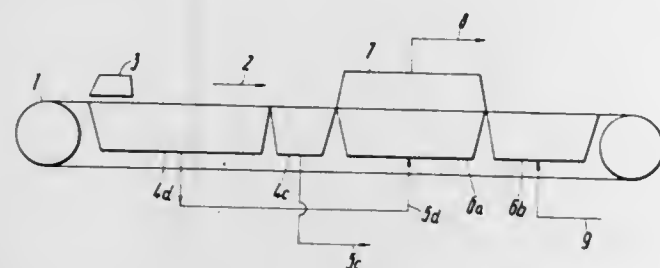
Filed Nov. 14, 1972, Ser. No. 306,491

Claims priority, application Germany, Nov. 17, 1971, 2157044

Int. Cl. C21b 1/18

U.S. Cl. 75—5

4 Claims



1. Process for burning hydrocarbons and/or cracked products present in exhaust gases from the sintering of iron oxide mixtures on a sintering machine having a sintering zone followed by a cooling zone which consists essentially of:

- i. withdrawing exhaust gases having a temperature below about 80°C containing substantially all of the hydrocarbons and/or cracked products from the mixture being sintered via wind boxes positioned under a portion of the sintering zone which includes the point in said sintering zone where hydrocarbons and/or cracked products cease to be expelled from the mixture being sintered; and
- ii. thereafter passing the exhaust gases withdrawn in step (i) directly through the hot sintered material in a first portion of the cooling zone which follows the sintering, the hydrocarbons and/or cracked products in said exhaust gas being burned in the hot sintered material.

3,857,695

PRODUCTION OF VANADIUM COMPOSITION

Milos Vojkovic, Libertyville, Ill., assignor to International Minerals & Chemical Corporation, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,154

Int. Cl. C22c 27/00, 35/00

U.S. Cl. 75—5 BB

9 Claims

1. The method of producing a nitrided alloy containing about 50 to 82% by weight vanadium, together with minor amounts of iron, carbon, and nitrogen, and at most 1% by weight oxygen, comprising establishing an intimate admixture of a complex comprising vanadium pentoxide and an iron salt, together with finely divided carbon in an amount in the range of about 90 to 120% of the carbon stoichiometric to reduce the reducible metal values in said complex with the production of carbon monoxide, maintaining said admixture in an enclosed reaction zone for a period of about 20 to 120 minutes,

at a temperature in the range of about 1250°C. to about 1350°C. in the presence of a reducing atmosphere of the group consisting of ammonia and mixtures of hydrogen and nitrogen having mole ratios in the range of 2:1 to 4:1, while continuously removing oxygen-containing gases from said reaction zone, whereby said vanadium pentoxide and iron salt are reduced and a nitrided alloy is formed, cooling the reduced admixture in the presence of said atmosphere to a temperature below the temperature at which spontaneous ignition of said alloy occurs on exposure to air, and recovering said nitrided alloy.

3,857,696

MELTING AND CASTING OF TRANSITIONAL METALS AND ALLOYS

Kenneth Aldersley, Reading, and Gordon William Telford, Tadley, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

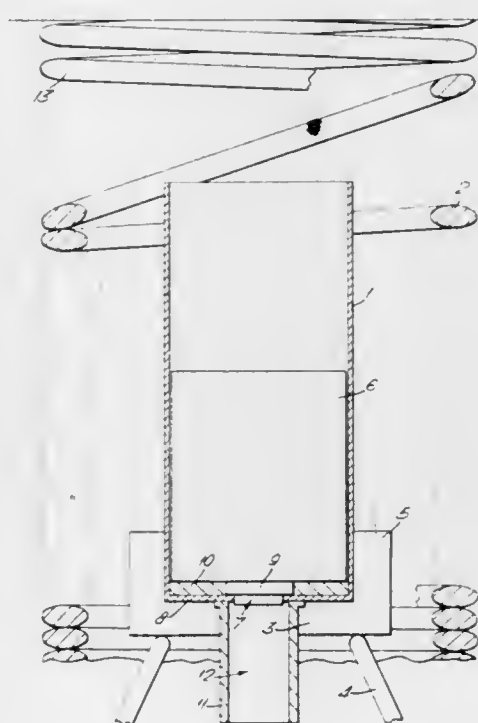
Filed May 18, 1973, Ser. No. 361,490

Claims priority, application Great Britain, May 23, 1972, 24184/72

Int. Cl. C22d 7/04

U.S. Cl. 75—10 R

10 Claims



1. A method of melting and pouring as a molten charge a transitional metal or an alloy thereof comprising providing an unclad, thin-walled graphite crucible having a bottom opening therein, positioning a fusible metallic member substantially non-deleterious to the molten charge metal at the bottom of said crucible to obturate said opening, positioning a charge of said metal or alloy to be melted within said crucible above said member and rapidly heating said charge by electrical induction to a temperature above its melting temperature without substantially melting said member to thereby provide a pool of molten metal flowing onto the member and thereby melt a pour hole through the member through which the molten charge discharges from the crucible.

3,857,697

METHOD OF CONTINUOUSLY SMELTING A SOLID MATERIAL RICH IN IRON METAL IN AN ELECTRIC ARC FURNACE

Jacques Antoine, Longeville-les-Metz, and Pierre Vayssiere, Metz, both of France, assignors to Institut de Recherches de La Siderurgie Francaise, Germain-en-Laye, France

Filed Feb. 27, 1974, Ser. No. 446,424

Claims priority, application France, Mar. 5, 1973, 73.07711

Int. Cl. C22d 7/00; H05b 7/18

U.S. Cl. 75—11

5 Claims

1. A method of continuously processing a solid material rich in iron metal in an electric arc furnace having three electrodes energized with three-phase current, comprising the steps of:

1. forming an incipient bath of the molten metal in the furnace;
2. controlling at least one of the characteristics of the electric current energizing the electrodes to produce
 - a. a first voltage drop of relatively high value between two of the electrodes and the bath, this first voltage drop establishing long and strongly radiating arcs across the electrodes and the bath, and
 - b. a second voltage drop of substantially lower value than the value of the first voltage drop between the third electrode and the bath, this second voltage drop establishing a short arc of limited radiation across the third electrode and the bath;
3. feeding the solid material substantially continuously into a zone of the furnace proximate the two electrodes establishing the long and strongly radiating arcs to melt the iron metal, and
4. continuously discharging the molten metal in a zone of the furnace proximate the third electrode establishing the short arc of limited radiation.

3,857,698

LIME COMPOSITION FOR BASIC OXYGEN STEEL-MAKING PROCESS

William Cecil Gilpin, Welbeck Woodhouse; Barry Bown, Retford, and Christopher Stelling Hedley, both of Worksop, all of England, assignors to Steetley (Mfg.) Limited, Gateford Hill, Worksop, England

Filed Nov. 6, 1972, Ser. No. 304,005

Claims priority, application Great Britain, Nov. 11, 1971, 52528/71

Int. Cl. C21c 1/00

U.S. Cl. 75—24

9 Claims

1. In the basic oxygen steel-making process, the improvement in combination therewith which comprises adding to the basic oxygen steel-making furnace as a basic slag-forming ingredient a preformed particulate composition consisting essentially of from 2 to 10% by weight of magnesia (MgO) based on the weight of the total lime addition to the steel-making process, from 10 to 100% by weight of lime (CaO) based on the total lime addition to the steel-making process or at least 130% by weight of lime based on the weight of the magnesia content, whichever basis results in a greater lime content, iron oxide (Fe_2O_3) in an amount no greater than about 20% by weight based on the total lime addition, from 0 to 10% by weight of alumina (Al_2O_3) based on the total lime addition, from 1 to 10% by weight of manganese oxide (Mn_2O_3) based on the total lime addition and from 0 to 5% by weight of silica (SiO_2) based on the total lime addition.

3,857,699

PROCESS FOR RECOVERING NON-FERROUS METAL VALUES FROM REVERBERATORY FURNACE SLAGS

Paul R. Ammann, Reading; Jang Ho Kim, Chelmsford, and Michael J. Redman, Belmont, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,197

Int. Cl. C21b 3/04

U.S. Cl. 75—24

16 Claims

1. A process for recovering molybdenum values from molybdenum-bearing, ferruginous slags comprising treating the slag in an extraction step by mixing the slag with a molten immiscible metal sulfide matte where the matte contains iron and sulfur in an iron to sulfur mole ratio range of nine to one to two to one at a temperature ranging between the slag melting point and 1600°C. to produce a slag treatment product; separating the slag treatment product from the slag; roasting the slag treatment product to produce a calcine; leaching the calcine to dissolve the molybdenum values into a leach solution; and recovering molybdenum from the leach solution.

3,857,700

PYROMETALLURGICAL RECOVERY OF COPPER VALUES FROM CONVERTER SLAGS

Paul R. Ammann, Reading, and Jang Ho Kim, Chelmsford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,333

Int. Cl. C22b 15/00

U.S. Cl. 75—74

19 Claims

1. A process for extracting copper values from a copper-bearing slag comprising the steps of:

- a. selecting a slag which in addition to copper contains about 7-30 weight percent magnetite, 36-49 weight percent total iron and at least 20 weight percent silica;
- b. introducing the slag into a reactor;
- c. maintaining the temperature of the slag in the reactor at a level at which the slag is molten;
- d. adding a solid carbonaceous reductant to the slag in the reactor, the amount of reductant being sufficient to lower the oxygen potential of the slag to a level at which a copper bearing phase separates from the slag;
- e. mixing the reductant into the slag in the reactor, while the slag is molten, with a liquid cooled, metal bladed, mechanical, rotating stirrer to reduce the slag, said stirrer being rotated at a speed sufficient to pump said reductant into the slag and keep it submerged in the slag long enough for it to decrease the oxygen potential and lower the soluble copper content of the slag to enable the formation of a copper bearing phase; and
- f. separating a copper bearing phase from the slag.

3,857,701

SMELTING OF COPPER OXIDES TO PRODUCE BLISTER COPPER

Willard L. Hunter, and William A. Stickney, both of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 26, 1973, Ser. No. 401,002

Int. Cl. C22b 15/00

U.S. Cl. 75—74

11 Claims

1. A process for reducing copper oxides to form blister copper which comprises: heating in a furnace a first charge comprising copper oxides and a carbon reductant in an amount sufficient to provide at least 120% of the carbon stoichiometrically required to reduce the copper oxides contained in said first charge to copper metal to form a liquid slag depleted in copper and a liquid black copper phase;

tapping from the furnace a substantial portion of the copper depleted slag;
adding to the furnace, still containing the liquid black copper phase, a second charge comprising copper oxides and a carbon reductant in an amount less than 80% of the carbon stoichiometrically required to reduce the copper oxide contained in said second charge to copper metal and heating the charge to form a liquid slag rich in copper and a blister copper phase, and
tapping from the furnace a substantial portion of the blister copper.

3,857,702

ELECTROSLAG REFINING FLUX COMPOSITIONS AND PROCESS FOR MAKING SAME

Paul M. Corbett, Baltimore, Md., assignor to SCM Corporation, Cleveland, Ohio

Filed Oct. 26, 1971, Ser. No. 192,329

Int. Cl. C22d 7/00, 9/10

U.S. Cl. 75-94

10 Claims

1. In a process for producing an electroslag refining flux composition from particulate batch materials which includes alumina, fluoride, and alkaline earth metal oxide, including calcium oxide, the improvement which comprises:

forming an agglomerated substantially homogeneous mixture of said batch materials at a heat reaction temperature of about 1,900°-2,400° F, but less than the fusion temperature of said batch materials, until a flux composition is formed having a substantially uniform fusion range of less than 150° F and containing less than about 1.5% by weight of free, uncombined calcium oxide.

3,857,703

PROCESS OF EXTRACTING METALS FROM SOLUTIONS

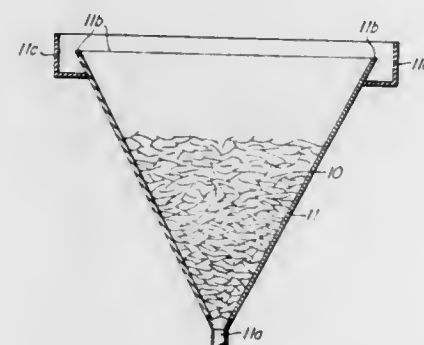
Kenneth McGriffin, 2669 Flamingo Dr., Salt Lake City, Utah 84117

Filed Apr. 10, 1972, Ser. No. 242,665

Int. Cl. C22b 3/00

U.S. Cl. 75-109

1 Claim

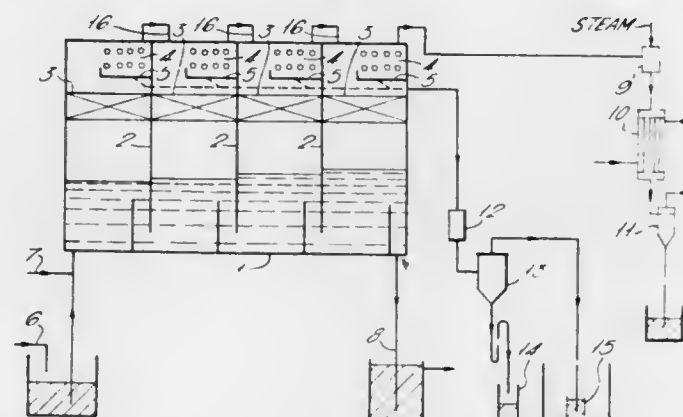


1. A process of extracting metals higher in the electromotive series than iron from solutions containing the same, comprising bringing such a solution into contact with a mass of precipitant that comprises a multitude of discrete ferrous metal leaves of substantially flat, irregular, splash-like formation having tentacles extending at random from an irregular body so as to provide randomly placed, irregular openings of various shapes and sizes, said leaves being massed together indiscriminately as a highly porous body of ferrous metal.

3,857,704
MERCURY RECOVERY PROCESS
Michael Oliver Coulter, near Crewe, England, assignor to BP Chemicals Limited, London, England
Filed Mar. 3, 1972, Ser. No. 231,527
Claims priority, application Great Britain, Mar. 5, 1971, 6160/71; Canada, Dec. 30, 1971, 131395; Belgium, Dec. 19, 1971, 112372; France, Dec. 29, 1971, 71.7147214; Germany, Dec. 21, 1971, 2163599; Netherlands, Dec. 24, 1971, 7117816; Italy, Dec. 30, 1971, 33180/71
Int. Cl. C22b 43/00

U.S. Cl. 75-121

9 Claims



1. A process for the removal and recovery of mercury from aqueous solutions containing a soluble inorganic compound of mercury and having a mercury concentration not more than 100 milligrams per liter which comprises treating said aqueous solution with a chemical reducing agent selected from the group consisting of ferrous sulphate at a pH greater than 5, hydrazine, iron or steel turnings or chips, hydroxylamine, D-glucose and sodium borohydride to precipitate finely divided elemental mercury, removing said mercury by applying a vacuum and using single stage or multiple stage flash distillation, and recovering said mercury from the vapor.

3,857,705
SMALL GRAIN PROMOTING ALUMINUM-TITANIUM-BORON MOTHER ALLOY
Yoshiteru Miyasaka, Shimizu, and Yuichi Masuda, Yaezu, both of Japan, assignors to Nippon Light Metal Research Laboratory, Ltd., Tokyo, Japan
Filed Feb. 6, 1973, Ser. No. 330,094
Int. Cl. C22c 21/00

U.S. Cl. 75-138

6 Claims



1. An aluminum-titanium-boron mother alloy for addition to molten casting aluminum to promote the formation in the solid castings of a uniform small grain crystalline structure, said mother alloy consisting essentially of aluminum containing from about 3.5 up to about 7.5% by weight titanium and from about 0.1 up to about 0.3% by weight boron in a weight ratio of titanium to boron of 20-40:1 and being substantially free of acicular crystals.

3,857,706
ELECTRICAL CONTACT MATERIALS AND METHODS OF MAKING THE SAME
Terrence Ardern Davies, Horton, England, assignor to Square D Company, Park Ridge, Ill.
Filed July 30, 1973, Ser. No. 384,157
Claims priority, application Great Britain, Aug. 25, 1972, 39666/72

Int. Cl. C22c 5/00

U.S. Cl. 75-173 R

17 Claims

1. An electrical contact material which consists of a mixture of silver, an effective amount up to not more than 3.0 weight percent of mercury, an effective amount up to not more than 3.0 weight percent of tellurium, and 2.5 to 20 weight percent of cadmium oxide.

3,857,707
PHOTOELECTROPHORETIC IMAGING PROCESS USING DRY PIGMENT COATED SUBSTRATE

Ira S. Stein, and Leonard M. Carreira, both of Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 510,637, Nov. 30, 1965, abandoned. This application June 2, 1969, Ser. No. 829,698

Int. Cl. G03g 17/00

U.S. Cl. 96-1.2

6 Claims

4. The method of photoelectrophoretic imaging comprising the steps of

- providing a dry imaging layer comprising electrically photosensitive particles dispersed in a soluble binder material on a substrate;
- applying an insulating carrier liquid to said dry imaging layer to form a liquid imaging suspension layer immediately before or during performing steps (c) and (d) recited below;
- subjecting said suspension layer to an applied electrical field between two electrodes, at least one of which is at least partially transparent; and
- exposing said suspension layer to imagewise activating electromagnetic radiation through said transparent electrode until an image is formed.

5. The method as defined in claim 4 wherein said dry imaging layer comprises pigments of one color dispersed in a soluble binder material and a monochromatic image is formed.

3,857,708
ZINC OXIDE-BINDER MEDIUM CONTAINING MICROSCOPIC CAVITIES

Karel Eugene Verhille, and Robert Joseph Noe, both of Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
Continuation of Ser. No. 121,430, March 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 724,459, April 26, 1968, Pat. No. 3,595,691. This application Mar. 5, 1973, Ser. No. 338,027

Int. Cl. G03g 5/06, 5/08

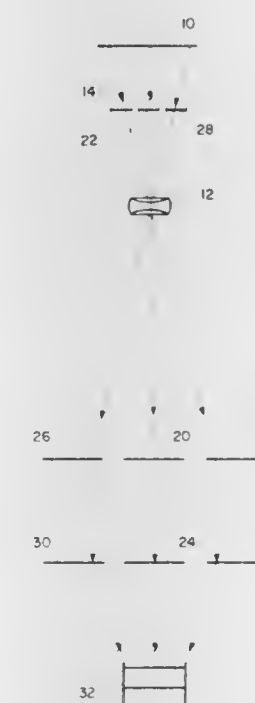
U.S. Cl. 96-1.8

17 Claims

1. A photographic material suitable for electrophotographic recording of information comprising a support and a photoconductive insulating layer containing finely divided solid photoconductive zinc oxide particles or agglomerates thereof and an electrically insulating binder medium in the proportion of about 0.5-10:1, characterized in that the photoconductive layer is porous and contains myriad interconnected microscopic cavities extending at random throughout the entire layer, said cavities being in direct communication with the ambient atmosphere and with surface areas of photoconductive particles contiguous thereto so that myriad air-photoconductor interfaces exist in said layer.

3,857,709
METHOD OF ENHANCING THE INFORMATION LEGIBILITY OF MULTI-COLOR GRAPHIC MATERIAL
Sol Domeshek, 24 Springfield Ave., Cranford, N.J. 07016
Filed Jan. 31, 1973, Ser. No. 328,182
Int. Cl. G03c 7/18, 1/92

8 Claims



1. Method of enhancing the information legibility of original multi-color graphic material, while retaining the colors of the original but reversing the density of the background of the original and the density of the black printed information of the original, said method including the steps of

- separately exposing frames of panchromatic, photo-sensitive, black-and-white, negatively recording material through additively color-separating filters respectively to an image of the original multi-color material,
- developing and fixing the separate color-separated negative images,
- printing these additively color-separated negative images respectively on positive-imaging like-color developing transparent materials, and
- superimposing, in register, the resultant positive image transparencies.

3,857,710
HIGH CONTRAST, HIGH CAPACITY MONOBATH PROCESSING METHOD AND COMPOSITION FOR MONOCHROME FILM

Daniel E. Speers, Westport, Conn., assignor to General Film Development Corporation, Southport, Conn.

Filed Dec. 22, 1972, Ser. No. 317,763

Int. Cl. G03c 5/38, 5/30

U.S. Cl. 96-61 M

2 Claims

1. A high capacity, high contrast monobath solution for photographic processing of silver halide emulsion films at normal room temperature to obtain a high contrast, low fog image, consisting essentially of the following constituents in the proportionate weight amounts given:

Material	Parts by Weight
Water	1000-1005
Anhydrous Sodium Sulphite	15-40
Hydroquinone	9-25
Sodium or Potassium Hydroxide	3-8
Anhydrous Sodium or Potassium Carbonate	2-10
Phenidone	0.1 - 0.8
Benzotriazole	0 - 2
EDTA Tetrasodium Salt	0.5 - 3
Sodium Thiosulphate	50-125

3,857,711

SILVER HALIDE PHOTOGRAPHIC EMULSION SENSITIZED WITH A HETEROCYCLIC COMPOUND CONTAINING 4-SULFUR ATOMS

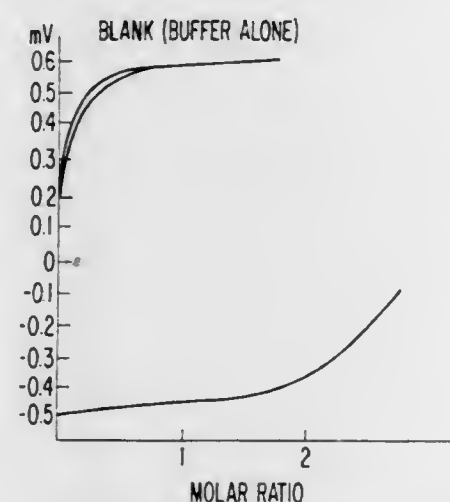
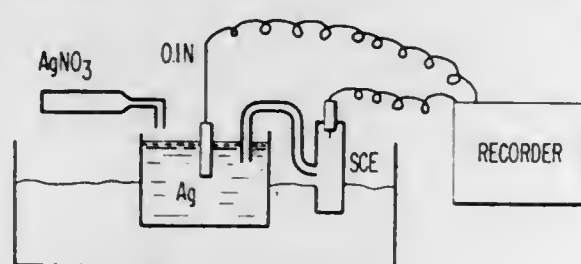
Reiichi Ohi; Mitsunori Sugiyama; Yosuke Nakajima; Michio Horie, all of Ashigara, and Shigeru Kobayashi, Osaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Continuation-in-part of Ser. No. 210,568, Dec. 21, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,991
Claims priority, application Japan, Dec. 21, 1970, 45-114544

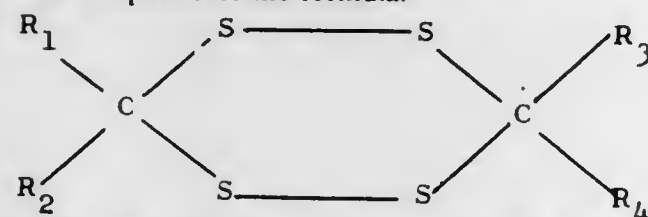
Int. Cl. G03c 1/28

U.S. Cl. 96-107

20 Claims



1. A photosensitive silver halide emulsion containing at least one compound of the formula:



wherein R_1 , R_2 , R_3 and R_4 each individually may be a hydrogen or a lower alkyl group.

R_1 and R_2 may combine with the bonded carbon of the sulfur containing ring and with themselves to form a cycloalkyl group containing up to six carbon atoms, including the carbon atom of the sulfur containing ring, and R_3 and R_4 may combine with the bonded carbon of the sulfur containing ring and with themselves to form a cycloalkyl group containing up to six carbon atoms, including the carbon of the sulfur containing ring,

said compound being present in said photosensitive silver halide emulsion in an amount of from about 0.01 to 100 mg per mole of silver halide.

3,857,712

METHOD FOR INCREASING THE MECHANICAL RESISTANCE OF FOUNDRY MOULDS OR CORES MADE FOR A SELF-HARDNING LIQUID SAND

Roland F. Cheviot, Sainte-Genevieve-Des-Bois; Gilles R. Le Maux, Woippy, and Marcel P. Gonon, Saint-Martin-Le-Vinoux, all of France, assignors to Centre Technique Des Industries De La Fonderie Wendel-Sideler and Industries Chimiques De Voreppe, both of Paris, France

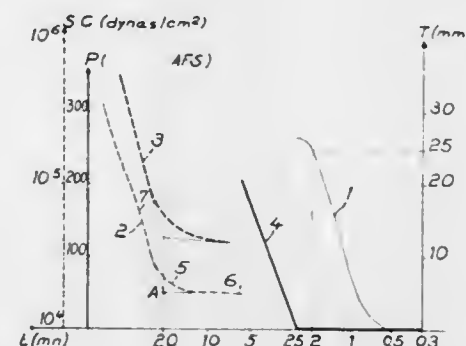
Continuation of Ser. No. 160,026, July 6, 1971, abandoned.

This application Feb. 20, 1973, Ser. No. 333,868

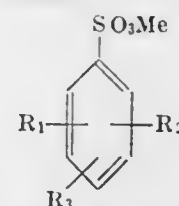
Int. Cl. B28b 7/34

U.S. Cl. 106-38.35

14 Claims



1. In the method for increasing the mechanical resistance of foundry moulds or cores made from a self-hardening liquid sand comprising a refractory sand, an alkaline silicate as a binding agent, a setting agent for the binder, which is blast furnace slag or ferrochromium slag, a liquid and a surface active agent, consisting of mixing said sand and said setting agent in the dry form, then adding a liquid composition comprising said binding agent in water and a surface active agent, the improvement comprising as the surface agent an alkyl benzene sulfonate of formula



in which Me is an atom of an alkali metal, R_1 , R_2 and R_3 each represent hydrogen, or a linear or branched alkyl of one to six carbon atoms in the proportion of 0.005 to 2 percent by weight relative to the total weight of the fluid sand, mixing until the sand is fluidized and applying mechanical stresses to the sand in the period of time after the sand has become permeable up to the time when setting begins.

3,857,713

ALKALI FREE LEAD SILICATE GLASS MEDIUM FOR ULTRASONIC DELAY LINES

Takahiro Inamura; Kenichi Sawamoto; Nobukazu Niizeki, all of Laboratory of Nippon Telegraphy & Telephone Public Corporation, 9-11, 3-chome, Midori-cho; Munechisa Tsunekawa, and Yasuyuki Nakata, both of Ohi Kogyo of Nippon Kogaku K.K., 6-3, 1-chome, Nishi-Ohi, all of Tokyo, Japan

Continuation-in-part of Ser. No. 63,194, Aug. 11, 1970,

abandoned. This application June 19, 1972, Ser. No. 264,338

Int. Cl. C03c 3/10, 3/30, 3/04

U.S. Cl. 106-53

4 Claims

1. A glass medium for ultrasonic line having the range of -5 to +5 ppm/°C of the temperature coefficient of delay time, attenuation of less than approximately 10×10^{-3} db/cycle at a frequency higher than 1 MHz, and aging of delay time of less than 50 ppm, the glass medium being devoid of an alkali ion and consisting essentially of, by weight, 36 to 46 percent of SiO_2 , 35 to 60 percent of PbO , 0 to 20 percent of AlF_3 and 0

- 10 percent of BaF_2 , the total content of the AlF_3 and BaF_2 being present in a range of 2 to 20 percent.

3,857,714

HIGH CALCIUM SULFATE EXPANSIVE CLINKER

Povindar K. Mehta, El Cerrito, Calif., assignor to Chemically Prestressed Concrete Corporation, Van Nuys, Calif.

Continuation-in-part of Ser. No. 171,299, Aug. 22, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,529

Int. Cl. C04b 7/02

U.S. Cl. 106-89

8 Claims

1. A calcium sulfoaluminate clinker of the $(CaO)_4(Al_2O_3)_3SO_3$ type containing in the clinker, and in particles resulting from grinding the clinker, an amount of $CaSO_4$ at least about 50 percent and substantially in excess of that required for the production of ettringite on hydration of $(CaO)_4(Al_2O_3)_3SO_3$.

3,857,715

EXTRUSIBLE HYDRAULIC CEMENT COMPOSITIONS CONTAINING ALKALI AND CARBOHYDRATE

Clyde W. Humphrey, 23 E. Elm St., Norwalk, Ohio 44854

Filed Mar. 1, 1972, Ser. No. 231,020

Int. Cl. C04b 7/00

U.S. Cl. 106-92

10 Claims

1. A method for producing a cured hydraulic cement-containing product which comprises:

- admixing into a mix containing a hydraulic cement,
 - first, an aqueous solution of a water-soluble alkali compound selected from the class consisting of a sodium compound, potassium compound, and nitrogen compound that has a 0.1NpH in water of 11.0 or greater, and
 - then, water-soluble carbohydrate and water in quantities sufficient to provide an admixture that is cohesive and can be formed into a product, the quantity of said water-soluble carbohydrate being at least about 1 part per 100 parts of the hydraulic cement;
- B. forming the admixture into the product by an extrusion process; and
- C. conditioning the product until the admixture is cured.

3,857,718

PRESSURE-SENSITIVE TRANSFER COATING

Joseph L. Shank, Matteson, Ill., assignor to Swift & Company, Chicago, Ill.

Filed May 24, 1972, Ser. No. 256,436

Int. Cl. C08h 17/02

U.S. Cl. 186-288 Q

9 Claims

1. In a process for the manufacture of transfer sheet coating compositions containing dye, plasticizer and a hydrophobic powder wherein the dye is adsorbed onto the lattice of a hydrophobic powder which prevents unwanted migration of dye and cold flow of the transfer layer formed from the coating composition, the improvement comprising first adding the dye to an ester-type plasticizer and intimately agitating the resulting solution with a silica powder so that the dye and plasticizer are adsorbed on the lattice of the silica powder prior to the said coating composition being combined with a binding agent.

3,857,716

PROCESS FOR PRODUCTION OF ASPHALT

Victor A. Dorman-Smith, 7 Bushy Park Rd., Rathgar, Dublin 6, Ireland

Filed Dec. 5, 1969, Ser. No. 882,742

Int. Cl. C10c 3/08, 1/18

U.S. Cl. 106-278

4 Claims

1. A process for producing an asphalt with improved viscosity-temperature characteristics which comprises:

- treating an asphalt-residue fraction of a petroleum crude oil with a solvent comprising:
 - at least 1% volume of a low boiling liquid hydrocarbon having less than 10 carbon atoms per molecule, and
 - at least 50% volume of acetone,
- separating an upper phase, and
- recovering an asphalt with improved viscosity-temperature characteristics from the lower phase.

3,857,719

TREATMENT OF CLAYS

Trygve Baak, Princeton, N.J., and Dwight L. Harris, Yardley, both of Pa., assignors to Cyprus Mines Corporation, Trenton, N.J.

Filed Sept. 13, 1973, Ser. No. 397,110

Int. Cl. C09c 1/42

U.S. Cl. 106-288 B

6 Claims

1. A process for brightening clay to a point where the reflect-

tance of light from said clay in dry form has a predetermined selected value, which comprises:

forming an agitated reaction mixture comprising an aqueous slurry of said clay and a decolorizing agent reactive with the impurities in said clay, maintaining said reaction mixture at a temperature sufficient to initiate and sustain the reaction between said decolorizing agent and said impurities, directing visible light onto at least a portion of said slurry, measuring the magnitude of the reflectance of said light by said slurry, increasing the measured value of the reflectance of said light by said slurry by reacting said decolorizing agent with said clay impurities until the measured value reaches a value representative of said predetermined value, and recovering from said aqueous reaction mixture dry clay characterized by a light reflectance of said predetermined selected value.

3,857,720

POLYSILOXANE COATED TRANSFER BASE
Charles T. Fellows, Kettering, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 8, 1973, Ser. No. 330,766

Int. Cl. B41c 1/06; C08g 37/32

U.S. Cl. 117—36.1

8 Claims

1. A transfer medium comprising a base having a transferable coating composition in a single layer thereon; said coating composition comprising a substantially homogeneous mixture of about 3 to 40 percent by weight of a polysiloxane rubber gum having a molecular weight ranging from about 200,000 to 1,000,000; about 10 to 60 percent by weight of a polysiloxane resin having a molecular weight ranging from about 300 to 100,000; about 1 to 65 percent by weight of a sensible material; about 1/2 to 10 percent by weight of a wax; and about 1 to 10 percent by weight of a release and adhesion enhancing material selected from the group consisting of polyethylene and copolymers of polyethylene having molecular weight of about 1,000 to 12,000, softening point of about 180 to 270° Fahrenheit, and being present as a particulate, finely-divided solid 0.1 to 5.0 microns in average diameter.

3,857,721

SHEET CONTAINING DEVELOPER FOR PRESSURE-SENSITIVE RECORDING

Takao Hayashi, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1972, Ser. No. 232,938

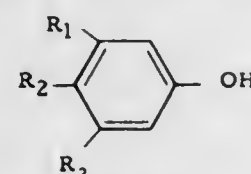
Claims priority, application Japan, Mar. 9, 1971, 46-12641

Int. Cl. B41m 5/12

U.S. Cl. 117—36.8

14 Claims

1. In a pressure sensitive recording developer sheet comprising a phenolic resin developer coated on a support, the improvement which comprises said phenolic resin developer being the condensation product of p-phenyl phenol and at least one alkyl phenol represented by the general formula



wherein R₁, R₂ and R₃, which may be the same or different, each represents a hydrogen atom or an alkyl group, said alkyl group containing from 1 to 12 carbon atoms, with the proviso that R₁, R₂ and R₃ are not simultaneously a hydrogen atom, with an aldehyde, wherein said alkyl phenol is present in said condensation product at a level of from about 0.2 to about 2 moles of said alkyl phenol per mole of p-phenyl phenol and said aldehyde is present at a level of from about 0.5 to about 2.0 moles of aldehyde per total moles of phenol.

11. The sheet of claim 10, wherein said aldehyde is formaldehyde.

3,857,722

METHOD FOR ELECTROSTATIC DUPLICATION

Robert J. Wright, Tranmere, Australia, assignor to Research Laboratories of Australia Pty. Limited, South Australia, Australia

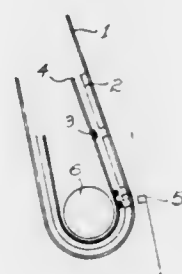
Filed Mar. 14, 1973, Ser. No. 341,065

Claims priority, application Australia, Apr. 10, 1972, 8540/72

Int. Cl. G03g 13/10, 13/16

U.S. Cl. 117—37 LE

11 Claims



1. A method of image formation comprising the steps of: forming a transferable image deposit of polar material on one surface of an intermediate master, transferring at least portion of said polar image deposit to a duplicating second surface to form a polar imaging deposit thereon, contacting the dielectric surface of an electrographic recording member with at least said polar imaging deposit contained on said duplicating surface to form a latent image on said dielectric surface which is responsive to electroscopic development, and developing said latent image by contacting said dielectric surface with electroscopic marking particles.

3,857,723

PROCESS OF COATING POLYMERIC SHAPED OBJECTS WITH ALUMINUM ORTHOPHOSPHATE

Vernon C. Haskell, and James L. Hecht, both of Richmond, Va., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,301, July 19, 1972, Pat. No. 3,821,014, which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,752

Int. Cl. C01b 25/36; B44d 1/092

U.S. Cl. 117—46 FC

6 Claims



1. A process for coating an organic polymeric shaped article with a substantially continuous, gas-impermeable coating on at least one surface thereof by applying to said article an aqueous dispersion of aluminum chlorhydroxide and phosphoric acid wherein the atom ratio of aluminum to phosphorus is less than 1 but at least 0.8, said dispersion being applied in an amount sufficient to yield a dried coating weight of about 0.02 to 0.6 gram per square meter, and drying the coated, shaped article to remove excess water.

3,857,724

PRIMER FOR ELECTROLESS PLATING

Peter Bakos, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 173,621, Aug. 20, 1971, abandoned.

This application Mar. 16, 1973, Ser. No. 342,015

Int. Cl. B44d 5/00

U.S. Cl. 117—47 A

6 Claims

1. A process for forming an adherent metal coating on a surface comprising:

contacting said surface with a substantially non-aqueous organic solvent solution consisting essentially of from about 0.001 to 2.0 percent by weight of solution of a gold or platinum salt selected from the group consisting of acid gold chloride and chloroplatinic acid and from about 0.00005 to about 0.05 percent by weight of solution of an inhibitor for an electroless plating solution which inhibitor is an inorganic or organic sulfur compound selected from the group consisting of alkali metal thiocyanates, sodium sulphate, alkali metal thiosulphates, 8-mercaptapurine, thiodiglycolic acid, thiomalic acid, thiocarbanates, thiazolines, thiazines and mixtures thereof, said solvent being selected from the group consisting of low boiling alcohols, ketones, and non-halogenated hydrocarbons,

removing said solvent to leave a deposit of said salt and said inhibitor on said surface, and contacting said surface with a copper or nickel electroless metal plating solution to form said coating on said surface.

3,857,725

METHOD FOR FORMING AN IRON-MANGANESE CARBIDE LAYER ON THE SURFACE OF AN IRON BASE ALLOY ARTICLE CONTAINING CARBON

Noboru Komatsu; Tohru Arai; Mikio Obayashi, and Junji Endo, all of Nagoyashi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Hisakata, Japan

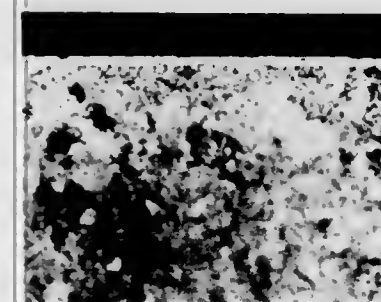
Filed Mar. 29, 1973, Ser. No. 346,946

Claims priority, application Japan, Apr. 8, 1972, 47-35550

Int. Cl. C23c 9/08, 9/02

U.S. Cl. 117—49

5 Claims



1. A method for forming an iron-manganese carbide layer on the surface of an iron base alloy article containing at least 0.1 percent carbon in a powdery treating material, comprising the steps of preparing the powdery treating material consisting essentially of 1 to 40 percent of at least one member selected from the group consisting of potassium tetrafluoroborate, sodium tetrafluoroborate and ammonium tetrafluoroborate and mixtures thereof and 60 to 99% of a member selected from the group consisting of metallic manganese and iron-manganese alloys, packing the iron base alloy article in said powdery treating material, heating said article within said powdery treating material at a temperature of between 650°C and 1,200°C for 1 to 30 hours, and taking said article out of said powdery treating material, thereby forming an iron-manganese carbide layer on the surface of said article.

3,857,726

ADHESIVE DIP FOR BONDING RUBBER TO BRIGHT STEEL WIRE

Gerard E. Van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed July 5, 1973, Ser. No. 376,510

Int. Cl. B32b 15/02, 15/06

U.S. Cl. 117—49

6 Claims

1. A method for adhering a bright steel or bright alloy steel reinforcing element to a rubber compound which comprises:

a. dipping said element in a dip consisting essentially of an aqueous alkaline dispersion containing a mixture of a rubbery vinyl pyridine copolymer and a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition;

b. curing said dipped element;

c. combining said dipped and cured element with a vulcanizable rubber compound; and

d. vulcanizing the resultant product.

3,857,727

TEXTILE FINISHING

Ladislav Benisek, 36, West View Ave., Burley-in-Wharfedale, Yorkshire, England

Filed Oct. 19, 1971, Ser. No. 190,665

Claims priority, application Great Britain, Oct. 22, 1970, 50324/70; Jan. 29, 1971, 3516/71

Int. Cl. C09k 3/28; C09d 5/18

U.S. Cl. 117—62

6 Claims

1. A process for improving the flame resistance of natural and synthetic polyamide fibres which comprises wetting the fibres with an aqueous solution of a complex compound of titanium consisting essentially of titanium complexed with fluoride ions, a di- or polycarboxylic acid organic chelating agent or hydroxycarboxylic acid organic chelating agent having a pH less than about 4 until the fibres have taken up at least 0.2% by weight of the complex compound of titanium, calculated as titanium dioxide, from said solution.

3. The process of claim 1 wherein the complex titanium compound containing fibres are treated with an aqueous solution containing fluoride ions to reduce the yellowing thereof.

3,857,728

METHODS OF UTILIZING SYNTHETIC RESIN BINDER COMPOSITIONS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 6, 1971, Ser. No. 205,376

Int. Cl. C08k 1/02; B44d 1/44

U.S. Cl. 117—62.2

19 Claims

1. A method of bonding porous, absorbent fibrous materials which comprises applying thereto a water-based synthetic resin binder composition having a pH in the range of from about 2 to about 6 and comprising: from about 0.1% to about 60% by weight on a solids basis of a colloiddally dispersed synthetic resin; from about 0.1% to about 6% by weight, based on the weight of the colloiddally dispersed synthetic resin, of a water-soluble salt of zirconium or aluminum; and from about 0.05% to about 3% by weight, based on the weight of the colloiddally dispersed synthetic resin, of a water-soluble polymeric polyhydroxy compound which does not contain interfering acidic chemical groups; substantially immediately diluting said synthetic resin binder composition whereby a zirconium or aluminum cation is released from said water-soluble salt to substantially immediately destroy the stability of said synthetic resin binder composition and to coagulate said resin with a minimum of further migration and bond the porous, absorbent fibrous materials; and drying said porous, absorbent fibrous materials.

3,857,729

INDICIA RECEIVING MATTE SHEET MATERIALS HAVING AN OUTERMOST ANTISTATIC LAYER

Herman Burwasser, 1909 Clover Dr., Vestal, N.Y. 13850

Filed Sept. 21, 1972, Ser. No. 290,782

Int. Cl. C09k 3/16; B32b 27/36

U.S. Cl. 117-73

7 Claims

1. An improved matte sheet material capable of receiving indicia markings comprising a polyester base sheet, at least one surface of which carries a layer of cellulosic film forming lacquer composition, and at least one outermost layer of an antistatic composition comprising a sulfonated polystyrene and a cycloaliphatic amine salt of an alcohol sulfate in which at least one alicyclic radical containing at least 5 carbon atoms is attached to the amine nitrogen atom and the alcohol radical of the alcohol sulfate has at least 5 carbon atoms and the compound altogether contains at least 12 carbon atoms.

3,857,730

BONDING POLYESTERS TO RUBBER

Edward F. Kalafus, Akron, and Richard M. Wise, Uniontown, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed June 11, 1973, Ser. No. 368,558

Int. Cl. C09j 3/12; B32b 27/36

U.S. Cl. 117-76 T

10 Claims

1. A method for adhering a polyester reinforcing element to a rubber compound which comprises dipping said element in a dip consisting essentially of an aqueous alkaline emulsion consisting essentially of a minor amount by weight of a mixture of a major amount by weight of a rubbery vinyl pyridine copolymer and a minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, drying the dipped element, and combining said dipped and dried element with a vulcanizable rubber compound and vulcanizing the resultant product, said emulsion being essentially free of alkali metal materials and the emulsifier used in said emulsion being water soluble and being selected from the group consisting of an ammonium sulfate of an aliphatic alcohol, an ammonium phosphate of an aliphatic alcohol, and an ammonium soap of a carboxylic acid and mixtures thereof.

3,857,731

ACRYLATE MICROSPHERE-SURFACED SHEET MATERIAL

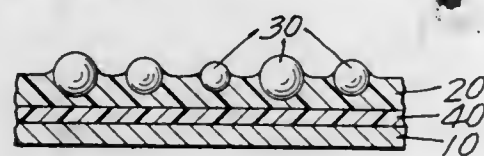
Roger F. Merrill, Jr., Troy Township, Saint Croix County, Wis., and Henry R. Courtney, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 6, 1973, Ser. No. 348,604

Int. Cl. A61l 15/06

U.S. Cl. 117-122 PA

9 Claims



1. A repeatedly usable pressure-sensitive sheet material comprising a substrate having bonded thereto a binder material, said binder having partially embedded in and protruding from its exposed surface inherently tacky elastomeric copolymer microspheres consisting essentially of:

- about 90 to about 99.5 percent by weight of one or more oleophilic, water-emulsifiable alkyl acrylate esters, at least one of said esters being selected from the group consisting of iso-octyl acrylate, 4-methyl-2-pentyl acrylate, 2-methylbutyl acrylate, and sec-butyl acrylate and correspondingly
- about 10 to about 0.5 percent by weight of one or more monomers selected from the group consisting of trimethylamine methacrylimide, trimethylamine p-vinyl benzi-

mide, ammonium acrylate, sodium acrylate, N,N-dimethyl-N-(β-methacryloxyethyl) ammonium propionate betaine, 1,1-dimethyl-1-(2-hydroxypropyl) amine methacrylimide, 4,4,9-trimethyl-4-azonia-7-oxo-8-oxa-9-decene-1-sulphonate, 1,1-dimethyl-1-(2,3-dihydroxypropyl) amine methacrylimide, and maleic anhydride.

3,857,732

PROCESS FOR MANUFACTURE OF DEODORIZING AIR FILTERS

Toshio Yoshino, Nishinomiya, Japan, assignor to C. Weinberger & Co. Ltd., Osaka-shi, Japan

Filed May 24, 1971, Ser. No. 123,798

Claims priority, application Japan, May 23, 1970, 45-44204

Int. Cl. B32b 27/12; C09d 3/76

U.S. Cl. 117-138.8 N

6 Claims

1. Process for manufacturing a deodorizing gas filter which comprises dissolving polyvinyl alcohol in water; adding to said solution at least one substance which is an amphoteric ion exchange resin, activated carbon or coconut shell charcoal, thereby forming a pasty mass; adding to said pasty mass glyoxal in the amount in excess of that which would be sufficient to acetalize the polyvinyl alcohol, and a small amount of acid for the acetal formation; impregnating the resulting composition into a non-woven textile fabric gas filter; and heating said impregnated filter at about 70°-100°C for 30 minutes to 2 hours, thereby converting said polyvinyl alcohol to polyvinyl acetal.

3,857,733

METHOD OF ELECTROLESS METAL DEPOSITION

Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,719

Int. Cl. B44d 1/18; B32b 15/100

U.S. Cl. 117-212

7 Claims

1. A method of electrolessly depositing a metal on a surface of a body comprising: supporting said body on an inert work holder made of a material which does not catalyze the electroless deposition of said metal, treating said surface and said work holder with a solution containing a substance which catalyzes the electroless deposition of said metal, rinsing said surface and said work holder with a solution of a substance that chelates ions of the catalyst, and treating said surface with a plating bath comprising a salt of said metal, a reducing agent for said metal salt, a complexing agent for ions of said metal, and a pH adjusting agent.

3,857,734

MANGANESE BISMUTH THIN FILMS ON REACTIVE SUBSTRATES

Di Chen, Minnetonka, and Gary N. Otto, Mayer, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 4, 1972, Ser. No. 250,443

Int. Cl. H01f 10/02

U.S. Cl. 117-240

9 Claims

1. A magnetic storage element comprising: a nonmagnetic substrate capable of reacting with manganese, bismuth, or manganese bismuth, a thin passivating layer of oxidized aluminum over the substrate, and a manganese bismuth thin film over the thin passivating layer, the manganese bismuth thin film having its preferred magnetization direction oriented normal to the plane of the manganese bismuth thin film.

3,857,735

FUEL CELL SYSTEM

Gerhard Louis, Hofheim, and Harald Bohm, Glashutten, both of Germany, assignors to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

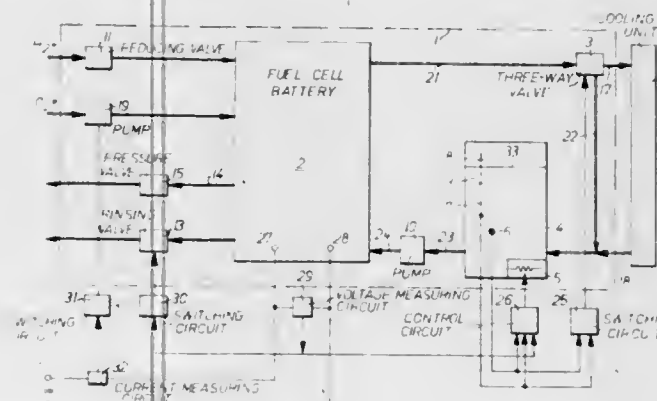
Filed Mar. 27, 1973, Ser. No. 345,459

Claims priority, application Germany, Mar. 28, 1972, 2215060

Int. Cl. H01m 27/12

U.S. Cl. 136-86 C

8 Claims



1. In a fuel cell system including a fuel cell battery having a reaction chamber; an anode and cathode means within the reaction chamber; closed circuit means for circulating an aqueous solution of electrolyte through the reaction chamber; and regulating means for regulating the discharge of water by evaporation from said reaction chamber to effect a rate of water discharge substantially equaling that of the production of water in the reaction chamber, whereby the quantity of water determining the concentration of the circulating aqueous solution is maintained substantially constant, the improvement wherein said regulating means comprises in combination:

- monitoring means connected to said closed circuit means for sensing the quantity of said aqueous solution with respect to a predetermined value range; and
- temperature control means for regulating the temperature of the aqueous solution to affect the rate of evaporation of the aqueous solution in the reaction chamber, said temperature control means being connected to said closed circuit means and said monitoring means for raising the operating temperature of said aqueous solution when the quantity of said aqueous solution is above the predetermined value range and lowering the operating temperature of the aqueous solution when the quantity of the aqueous solution is below the predetermined value range.

3,857,736

BATTERY CELL CONSTRUCTION WITH AN INDIUM ANODE AND INDIUM HYDROXIDE IN THE ELECTROLYTE

Ralph T. Mead, Kenmore, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.

Continuation of Ser. No. 235,544, March 17, 1972, abandoned, This application Sept. 27, 1973, Ser. No. 401,187

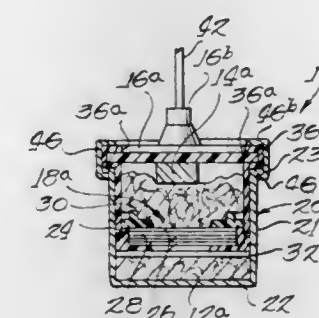
Int. Cl. H01m 17/00

U.S. Cl. 136-100 R

19 Claims

1. A battery cell comprising in combination, cathode means formed of a compound containing mercury oxide, anode means formed of indium alloy, and electrolyte means between

said cathode means and said anode means, said electrolyte means being formed of a mixture including indium hydroxide



in an amount in excess of saturation to generate hydrogen gas at a relatively low rate.

3,857,737

SEQUENTIAL CATALYZATION OF FUEL CELL SUPPORTED PLATINUM CATALYST

Fred S. Kemp, Ellington, and Michael A. George, Bethel, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 18, 1973, Ser. No. 398,356

Int. Cl. H01m 27/10; C23c 3/04

U.S. Cl. 136-120 FC

7 Claims

1. In the preparation of fuel cell electrode supported catalytic powders comprising a predetermined fixed amount of platinum disposed in a desired concentration on carbon support powders by the formation of the platinum from platinum diamino dinitrite, the steps of:

- mixing on the order of 10 grams of graphitized carbon powder, having a particular size on the order of 1-5 microns in diameter and a surface area of on the order of 75 to 200 square meters per gram, in a dilute solution comprising on the order of 1 gram of platinum diamino dinitrite dissolved in nitric acid, the concentration of the solution being such that the effective amount of the -dinitrite therein is less than that required for the formation of the entire predetermined fixed amount of the platinum on the carbon support powders;
- slowly concentrating the -dinitrite solution in the slurry until a nearly dry paste is formed, and removing all of said solvent from said solution, forming substantially a powder;
- heating the powder at a temperature in excess of the decomposition temperature of the -dinitrite, providing an intermediate product comprising carbon powders having less than the predetermined fixed amount of the platinum absorbed on the surface thereof;
- immersing the intermediate product in a dilute solution of platinum diamino dinitrite dissolved in a solvent, the concentration of the -dinitrite therein not exceeding that required to provide by formation on the intermediate product an additional amount of the platinum not exceeding the amount required to form the predetermined fixed amount of platinum on the carbon powders;
- repeating step (b);
- heating the powder at a temperature in excess of the decomposition temperature of the -dinitrite, providing powders having not more than the predetermined fixed amount of platinum on the surface thereof;
- and, if the concentration of platinum is less than the predetermined fixed amount, repeating steps (d) through (f) until such amount is provided.

3,857,738

THERMOELECTRIC BATTERY SPRING SUPPORTED IN CASING

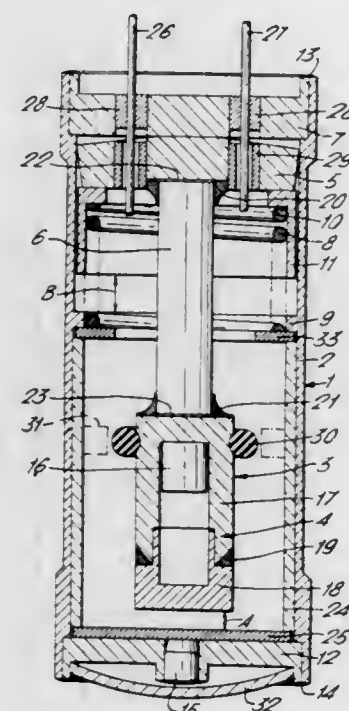
Michael Harold Brown, Newbury, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Nov. 16, 1972, Ser. No. 307,142

Claims priority, application Great Britain, Dec. 20, 1971, 59174/71

Int. Cl. H01v 1/02

U.S. Cl. 136-202

7 Claims



1. A thermoelectric battery comprising a casing enclosing a thermoelectric assembly of elongated form comprising a heat source, a heat sink, and a thermoelectric unit attached to and disposed between the heat source and the heat sink, with at least the heat source end of the assembly defining an annular space with the casing, a heat-conducting mass of solid material disposed at the heat sink end of the assembly and attached to the casing, spring means mounted within the casing so as to bias the heat sink into heat-conducting contact with said mass, adjacent surfaces of the heat sink and the mass being formed so as to allow the assembly to move relative to the casing with a rocking motion against the bias of the spring means in the event of lateral acceleration forces being applied to the battery so that such motion will cause the heat source end of the assembly to pivot within the annular space, and resilient stop means for preventing direct contact between said assembly and said casing.

3,857,739

COMPOSITIONS AND PROCESSES FOR PRODUCING CHROMIUM CONVERSION COATINGS ON SURFACES OF ZINC OR CADMIUM

Michael Ward Prust, Grimsby, Ontario, and Wayne Charles Glassman, Willowdale, Ontario, both of Canada, assignors to Dominion Foundries and Steel Limited, Hamilton, Ontario, Canada

Filed Aug. 31, 1972, Ser. No. 285,314

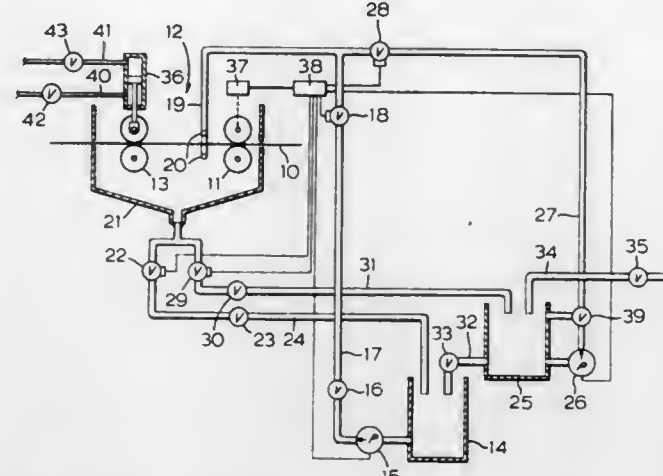
Int. Cl. C23f 7/26

U.S. Cl. 148-6.1B

13 Claims

1. A composition for producing a chromate protective coating on a surface comprising zinc or cadmium, the composition consisting of an aqueous solution of pH less than 1.15 containing a source of chromium ion, the chromium ion being present in the amount of 5-15 grams per liter, a source of

perchlorate ion, the perchlorate ion being present in the amount of 0.5 to 0.85 grams per litre, and a source of fluoride



ion, the fluoride ion being present in the amount of 0.1 to 0.27 grams per litre.

3,857,740

PRECIPITATION HARDENING HIGH STRENGTH COLD ROLLED STEEL SHEET AND METHOD FOR PRODUCING SAME

Hisashi Gondo; Hiroshi Takechi; Tsuyoshi Kawano; Kazuo Namba, all of Kisarazu; Hiroaki Masui, Kimitsu; Koji Ozaki; Shunichi Uchida, both of Kisarazu, and Koichi Sakurai, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,308

Claims priority, application Japan, July 11, 1972, 47-68670; June 20, 1973, 48-69615

Int. Cl. C21d 7/14; C22c 41/02

U.S. Cl. 148-12 F

4 Claims

1. A method for producing a precipitation hardening high strength cold rolled steel sheet comprising heating a steel slab containing 0.03 to 0.25% C, not more than 1.5% Si, 0.6 to 2.5% Mn, 0.01 to 0.15% Al, 0.01 to 0.40% effective Ti (total [Ti%]-3.4[N%]-1.5[O%]-1.5[S%]) and satisfying the condition of $4[C\%]-0.6 < \text{effective Ti}\% < 4[C\%]$, with the balance being Fe and unavoidable impurities at a temperature not lower than 1,200°C, hot rolling the slab, subjecting the hot rolled sheet to a finishing rolling at a temperature not lower than 870°C, coiling the sheet at a temperature between 560° and 680°C, acid pickling the sheet, cold rolling the sheet with a reduction rate not less than 30% and subjecting the sheet to recrystallization annealing at a temperature between 600° and 900°C.

3,857,741

STEEL PRODUCT HAVING IMPROVED MECHANICAL PROPERTIES

Frank A. Hultgren, Burton, and Richard A. Kot, Parma, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 227,045, Feb. 17, 1972, Pat.

No. 3,723,144, and Ser. No. 98,674, Dec. 16, 1970,

abandoned. This application Mar. 19, 1973, Ser. No. 342,700

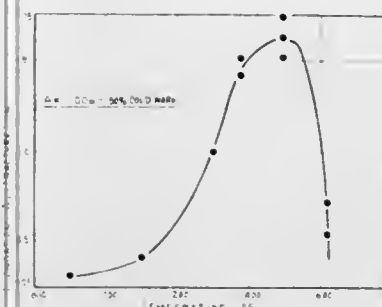
Int. Cl. C21d 9/48; C22c 39/14

U.S. Cl. 148-36

10 Claims

1. A steel product having a selected shape produced by deformation of a body of steel which has a compositional character that is normally ferritic and is such that as exhibited by the equilibrium phase diagram for said compositional character there is an alpha-gamma-transition temperature value capable of providing temporary microstructural instability, said steel product having substantially greater impact strength than said body of steel, said steel product being ferritic and having a microstructure composed essentially of ferrite grains characterized by a coarse cell substructure within each of the grains, and said steel product being produced by: subjecting said body of steel to rapid heating, at a rate of at least about

10° F. per second, to the aforesaid temperature value, holding the body at said value for providing high ductility in said body during an interval of microstructural instability while transform-



mation occurs in the steel from alpha iron at least partially to gamma iron, and subjecting the body to rapid deformation to said selected shape by applying stress thereto while the body is held at the said temperature value in said interval.

3,857,742

SOLID PROPELLANT FORMULATION CONTINUING FLUORO-AMINO COMPOUNDS AND POLYMERS

Herman Bieber, Kenilworth, and Lawrence Spenadel, Fanwood, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 77,470, Dec. 21, 1960, Pat.

No. 3,535,173. This application May 17, 1961, Ser. No.

111,131

Int. Cl. C06d 5/06

U.S. Cl. 149-19.3

5 Claims

1. A high-energy composite which on ignition burns at a controlled rate at a specific impulse in the range of 260 to 300 seconds, comprising 2 to 15 wt. percent boron, 5 to 25 wt. percent of a CNF₂ oxidizer selected from the group consisting of tetrakis (difluoramino) butane and tetrakis (difluoramino) tetrahydrofuran, 40 to 60 wt. percent of an oxygen oxidizer selected from the group consisting of nitronium perchlorate, hydrazinium nitroformate, hexanitroethane and ammonium perchlorate, and 5 to 30 wt. percent of a solid polymeric binder having the composition of polybutadiene (N₂F₄) adducts represented by the recurring unit composition $[C_4H_6(NF_2)_y]$ in which y represents 1.3 to 2 NF₂ groups per recurring unit, the boron being in a 1:1 atomic ratio of fluorine in the composite to form BOF as a main combustion product.

3,857,743

THIXOTROPIC METAL-CONTAINING MONOMETHYLHYDRAZINE FUEL AND METHOD OF PREPARING THE SAME

Barry D. Allan, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1966, Ser. No. 518,489

Int. Cl. C06b 19/04; C06c 1/02

U.S. Cl. 149-20

6 Claims

1. A composition consisting of gelled monomethylhydrazine containing dispersed therein up to 70 weight percent finely divided metallic fuel particles and a cellulose or hydroxyalkyl-substituted cellulose gelling agent.

3,857,744

METHOD FOR MANUFACTURING COMPOSITE ARTICLES CONTAINING BORON CARBIDE

James R. Moss, Golden, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed Jan. 19, 1970, Ser. No. 4,066

Int. Cl. B29c 27/30; C04b 35/52

U.S. Cl. 156-60

8 Claims

1. In a method for manufacturing an impregnated carbide body wherein a compact of carbide powder is contacted with molten impregnant selected from the group consisting of the metals and silicon to cause the impregnation of said body with said impregnant, the improvement which comprises applying to a surface of said compact, prior to contacting said compact with said molten impregnant, a material which is not wetted by said molten impregnant, said material thereby inhibiting the adherence of said impregnant to said surface.

3,857,745

METHOD OF COVERING ARTICLES WITH LEATHER
Wolfgang Dieter Grausch, and David Hugh O'Hare, both of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

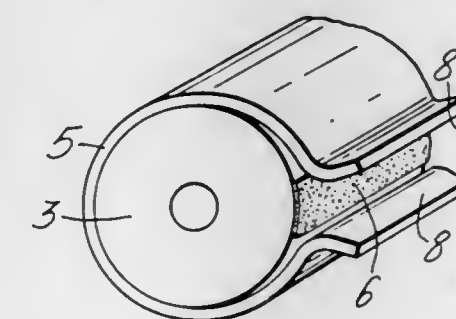
Filed Apr. 18, 1973, Ser. No. 352,306

Claims priority, application New Zealand, Apr. 18, 1972, 166917

Int. Cl. C14b 5/00; C09j 5/02

U.S. Cl. 156-83

3 Claims



1. A method of covering articles with leather, said method comprising the steps of: applying a band of a suitable adhesive to the article at positions where it is desired that a joint in the leather should occur; preparing the leather in a manner such that inner faces adjacent the edges of the leather adjacent a joint between such edges can be contacted to each other when the leather covers the article; applying adhesive to the leather adjacent the edges to be joined so that the parts which contact each other have adhesive applied to them and the parts of the leather which contact the adhesive on the article have adhesive applied to them; applying to portions of the leather intermediate said edges a leather-expanding solution; applying the leather to the article in a taut condition so the leather adheres to the article at the area to which the adhesive has been applied and the parts of the leather adjacent the edges are contacted and adhered to each other, whereby when the leather is applied to the articles in the taut condition it is stretched while still wetted by the leather expander so that when the leather-expanding solution dries a very taut leather-covered article results.

3,857,746

COLOR DECALCOMANIA AND METHOD

Louis A. Blanco, Tuckahoe, N.Y., and William F. Wenning, Jr., Beaver Falls, Pa., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,621

Int. Cl. C04b 37/00; B41m 3/12

U.S. Cl. 156-89

25 Claims

1. A method of forming a color decalcomania including a backing or substrate layer and a color design layer deposited

thereon, wherein the steps of forming the design layer comprise separately depositing on a substrate at least three ceramic color compositions in patterns which overlap to a desired extent to produce upon firing at least such three colors and additional colors where such overlap occurs, each color composition deposited as a separate layer, each color composition comprising a ceramic pigment in admixture with a frit, the frit of each color composition containing at least about 5% by weight of a cadmium substituent, such colors including at least blue color, red color and yellow color, and drying each deposition of ceramic color composition before depositing the next ceramic color composition to form the design layer.

25. A method of decorating an article or ware, which comprises forming a color decalcomania including a backing or substrate layer and a color design layer deposited thereon, wherein the steps of forming the design layer comprise separately depositing on a substrate at least three ceramic color compositions in patterns which overlap to a desired extent to produce upon firing at least such three colors and additional colors where such overlap occurs, each color composition deposited as a separate layer, each color composition comprising a ceramic pigment in admixture with a frit, the frit of each color composition containing from about 5 to about 50% by weight of a cadmium substituent, such colors including at least blue color, red color, and yellow color, and drying each deposition of ceramic color composition before depositing the next ceramic color composition to form the design layer; applying the color decalcomania to the ware; and firing the ware and decalcomania to cause the frit and colors of the decalcomania to fuse and to bond the decalcomania to the ware.

3,857,747

ARTIFICIAL SHRUBS

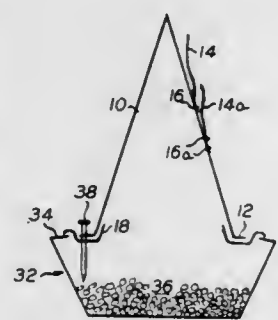
Daniel Bitecola, 1095 Abbott Blvd., Fort Lee, N.J. 07024

Filed Mar. 14, 1972, Ser. No. 234,626

Int. Cl. A41g 1/00

U.S. Cl. 161-21

9 Claims



1. An artificial shrub comprising a hollow downwardly open-mouthed plastic shell, a multiplicity of foliage sprays overlying said shell and obscuring it from external view, each of said sprays having a free upper end and a fixed lower end, a plurality of staples projecting from outside said shell into the hollow thereof and fixing said lower ends of said sprays to said shell, said sprays being arranged in tiers so that the free ends of the sprays of one tier hide the staples securing the sprays of the next higher tier, and an upwardly open annular channel member serving as the means for joining said shrub to a soil-like sub-surface such as a pot or the ground.

3,857,748

CHRISTMAS TREE ASSEMBLY

Carl S. Thomann, 3738 S. Grun Ct., Englewood, Colo. 80110

Filed May 21, 1973, Ser. No. 361,961

Int. Cl. A47g 33/06

U.S. Cl. 161-24

5 Claims

1. A Christmas tree assembly adapted to be mounted on a pivotal door comprising in combination:

an elongated rigid planar back plate having a generally triangular configuration with an upper portion and a lower portion, and connection means on said upper and lower portions for releasably connecting together the upper and lower portions, said upper and lower portions each having aligned pairs of openings therethrough extending substantially along a longitudinal axis of the back plate,

a tree structure including an elongated trunk portion composed of upper and lower sections adapted to be telescopically connected in longitudinal alignment, said upper and lower sections each having a plurality of openings therein, and a plurality of artificial branch members inserted in said openings and radiating outwardly from the trunk sections to form an artificial tree,

a plurality of strands of wire extending around said trunk sections, each strand of wire passing through one pair of said openings in the back plate so as to secure said trunk sections to one side of the back plate,



a buffer sheet of material covering the opposite side of said back plate,

mounting means connecting said back plate to the pivotal door, said mounting means including an upper bracket attached to the upper portion of the back plate, said upper bracket having a downwardly opening groove adapted to receive the upper edge of the door so as to suspend the back plate from the upper edge of the door, a lower bracket having an upwardly opening groove adapted to receive the lower edge of the door, and turnbuckle means having one end secured to said lower portion of the back plate and an opposite end secured to said lower bracket whereby manipulation of said turnbuckle will tighten the back plate between said upper and lower brackets, and

a boot of generally semi-cylindrical configuration suspended from said lower portion of the back plate adjacent the lower edge thereof a cover for the turnbuckle means.

3,857,749

JOINED CARPET UNIT

Iwao Yoshida, Kyoto, Japan, assignor to Sanwa Kako Co., Ltd., Kuze-gun Kyoto-fu, Japan

Continuation of Ser. No. 229,301, Feb. 25, 1972, abandoned.

This application Feb. 19, 1974, Ser. No. 443,633

Claims priority, application Japan, Feb. 26, 1971, 46-11302; Feb. 27, 1971, 46-11845; Mar. 1, 1971, 46-12054

Int. Cl. B32b 1/04, 27/32, 3/10, 5/18

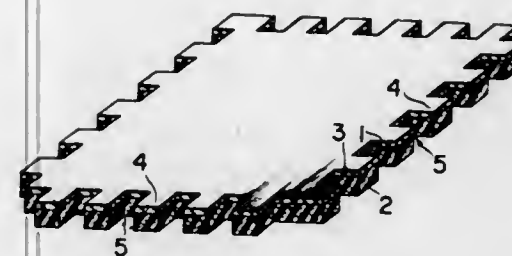
U.S. Cl. 161-44

4 Claims

1. A carpet unit in the form of plate composed of a processed fiber material bonded on the surface of a base plate of foamed material composed of a polymer consisting mainly of ethylene and wherein a plurality of concavities are formed on

a side surface of said plate and a plurality of alternating concavities are located thereon such that the said carpet unit is

of said elastomeric sheet material, and a bonding material securing the layers of elastomeric sheet material together through said intervening layers of woven, mesh-like material,



adapted to be joined with a plurality of said units with corresponding concavities and convexities.

3,857,750

SHOT PEENING

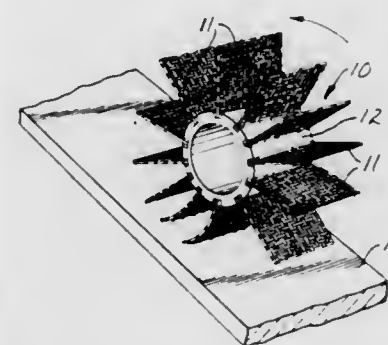
Phillip M. Winter, White Bear Lake, and Gary A. Gardner, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 59,850, June 25, 1970, Pat. No. 3,778,241, which is a division of Ser. No. 746,366, July 22, 1968, Pat. No. 3,638,464. This application June 4, 1973, Ser. No. 366,646

Int. Cl. B32b 5/16

U.S. Cl. 161-87

3 Claims



1. As a new article of manufacture, having particular utility for fabricating flaps for use in a unitary self-contained portable rotary peening device, having an annulus of said flaps united at their inner ends to a rigid core, comprising in combination:

a nonwoven lofty sheet material having a thickness of about one centimeter, a tensile strength of about 16 kg/cm and being formed of randomly disposed crimped nylon filament segments having diameters of 40-200 microns; relatively smooth, hard impact-resistant inorganic spheroidal peening particles having average diameters in the range 0.1 - 2.5 mm, dispersed throughout said sheet material in an amount equal to about 400 - 700 cc/m² of sheet surface; and

a tough strong elastic adhesive, having an ultimate elongation of at least 100%, bonding said filament segments to each other at loci of intersection and also bonding said particles to said fibers while surrounding more than half of the effective diameters of said particles.

3,857,751

COMPOSITE SHEET CAPABLE OF WITHSTANDING IMPINGEMENT BY PARTICULATE MATERIALS

Leland Harnden Jacobs, Darlingscott, near Shipston-on-Stour, England, assignor to Tufdura Limited

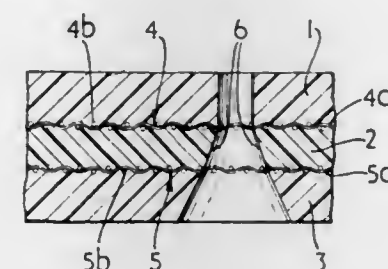
Filed Nov. 15, 1971, Ser. No. 198,817

Int. Cl. B32b 7/02

U.S. Cl. 161-89

3 Claims

1. A composite sheet capable of withstanding impingement by particulate materials and comprising three superimposed layers of elastomeric sheet material of which the inner layer is softer than the two outer layers, a layer of a woven, mesh-like material positioned between each pair of adjacent layers



3,857,752

STRUCTURAL MEMBER EMPLOYING RANDOM HONEYCOMB STRUCTURE

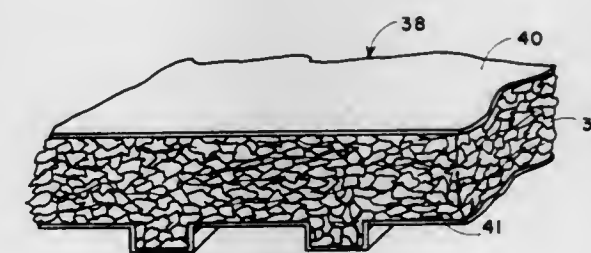
Wallace W. McCoy, 1041 E. Green St., Glendale, Calif. 91101

Division of Ser. No. 15,364, March 2, 1970, Pat. No. 3,664,076. This application Filed Apr. 7, 1972, Ser. No. 242,048

Int. Cl. B32b 5/16

U.S. Cl. 161-161

8 Claims



1. A structural member comprising a continuous skin of resin bonded fiberglass enclosing a filler of random oriented cellulosic particles of at least 70% cellulosic content rigidified with resin compatible with the skin resin and in bonded engagement therewith;

said particles in three dimensional random orientations intersecting in irregular edge to edge, surface to surface and edge to surface junctions with edge fibers of adjacent particles in bonded engagement constituting a mass of rigid material and defining void areas in the order of 80 to 94% of the volume of the filler.

3,857,753

TEMPERATURE ADAPTABLE FABRICS

Ralph H. Hansen, Short Hills, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 818,323, April 22, 1969, Pat. No. 3,607,591. This application Oct. 6, 1970, Ser. No. 81,530

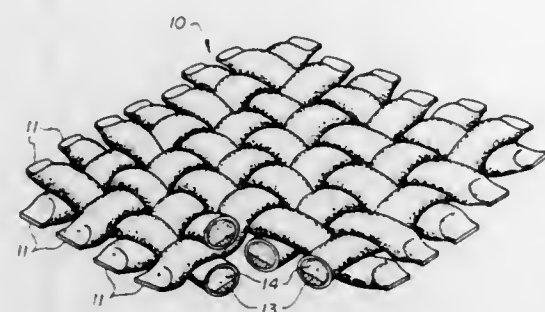
Int. Cl. D01d 5/24; G01k 5/32

U.S. Cl. 161-178

3 Claims

1. A hollow inflatable element having a configuration and construction which makes it suitable for use as a component of a flexible fabric, said element having sealed therein a composition comprising a gas and a solvent which in the liquid state dissolves a greater amount of said gas than when said solvent is in the solid state, the amount of gas sealed in said

element being greater than the amount of gas which can be dissolved by the solvent sealed in said element when said



solvent is in the solid state, whereby when said solvent freezes gas is expelled therefrom and inflates said element

3,857,754

RESINOUS COMPOSITIONS HAVING IMPROVED PROCESSABILITY AND GAS PERMEATION RESISTANCE AND MOLDED STRUCTURES THEREOF
Sadao Hirata, Yokohama; Muneki Yamada, and Akira Kishimoto, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,804

Claims priority, application Japan, June 18, 1971, 46-43356; Jan. 4, 1972, 47-5810

Int. Cl. B32b 27/08; C08g 41/04

U.S. Cl. 161-227

20 Claims

1. A molded structure, having an improved gas permeation resistance, said molded structure having been formed by means of extrusion molding from a molten mixture containing (A) a polyolefin and (B) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole percent and a degree of saponification of at least 96% at a weight ratio of A : B ranging from 95 : 5 to 75 : 25, and (C) 0.5 to 15 parts by weight, per 100 parts by weight of the sum of said polyolefin and said ethylene-vinyl acetate copolymer saponified product, of a thermoplastic polymer containing a carbonyl group in the main or side chain thereof, said molded structure having a layer structure in which the polymer composition is different in the thickness direction but substantially identical in the plane direction and every two adjacent layers are bonded to each other without any intermediate bonding layer of an adhesive, said layer structure consisting essentially of (a) at least one layer in which the saponified ethylene-vinyl acetate copolymer is predominantly distributed, (b) at least one layer in which the polyolefin is predominantly distributed, and (c) at least one layer which comprises the saponified ethylene-vinyl acetate copolymer and the polyolefin in amounts substantially same as the average contents of the saponified ethylene-vinyl acetate copolymer and the polyolefin in said layer structure, said layer (c) intervening between said layer (a) and layer (b) to bond them integrally, the said carbonyl group-containing thermoplastic polymer being distributed throughout the said layer structure, and wherein when said molded structure is divided in three layers in the thickness direction, at least one layer (a) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by following formula

$$M_1 = m_1 X$$

wherein X is the average content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said molded structure, m_1 is a number of from 1.2 to 4, and M_1 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer, and at least one layer (b) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by the following formula

$$M_2 = m_2 X$$

wherein X is as defined above, m_2 is a number of from 0 to 0.9, and M_2 is the content (percent by weight) of the

ethylene-vinyl acetate copolymer saponified product in said layer.

3,857,755

FUEL PIN SECURING APPARATUS

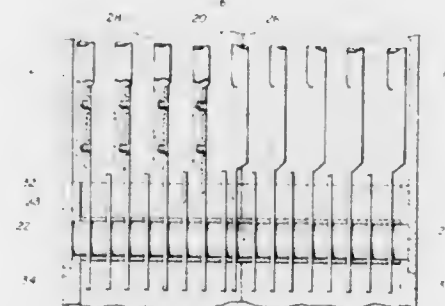
Jackson E. Kinzer, Woodland Hills, and Martin A. Fallandy, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 11, 1971, Ser. No. 123,347

Int. Cl. G21c 3/04, 3/32

U.S. Cl. 176-78

6 Claims



1. A fuel element assembly for use in nuclear reactors comprising an elongated hexagonal, vertically-oriented metallic housing, a bundle of elongated, cylindrical fuel-containing rods disposed in a triangular array within said housing, including parallel rows of rods extending lengthwise of said housing, each of said cylindrical fuel rods having at its lower end a solid portion, said solid portion having a section partially cut away from the exterior periphery thereof so as to form an outwardly facing flat vertical surface on the remaining part of said solid portion, said remaining part having a thickness greater than one-half the original thickness of said solid portion, spacer strips extending the length of said rods and attached to each of said rods in said rows at a plurality of locations along the length of said outwardly facing flat vertical surface, means to hold said strips in a predetermined spaced relationship in a direction normal to said rows, and means to hold said strips at a predetermined position along the length of said housing.

3,857,756

PROCESS FOR PRODUCTION OF ANTIBIOTIC

Hiroshi Kawaguchi, Tokyo; Koji Tomita, Kanagawa; Hiroshi Tsukiura, Tokyo, and Kyo-Ichiro Saito, Kanagawa, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,795

Int. Cl. C12d 9/00

U.S. Cl. 195-96

3 Claims

1. A process for producing D-threo-1-p-nitrophenyl-2-propionamido-1,3-propanediol, which comprises cultivating *Arthrobacter oxamicetus* var. *propionophilous*, ATCC 21814, under aerobic conditions in a synthetic aqueous media containing a source of carbon and nitrogenous nutrient until substantial antibiotic activity is produced in said media.

3,857,757

MEANS FOR THE OXYGEN/TEMPERATURE CONTROL OF AEROBIC FERMENTATIONS

Carlyle S. Herrick, Alplaus, N.Y., and James J. Shull, Wayne, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,862

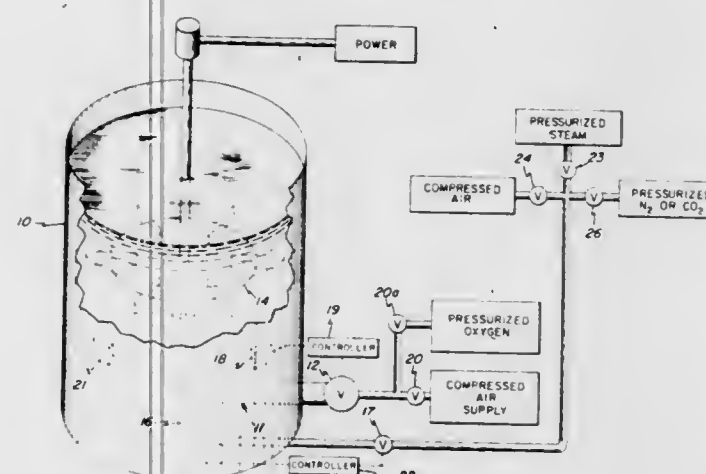
Int. Cl. C12b 1/14

U.S. Cl. 195-109

18 Claims

12. A process for the conduct of controlled aerobic fermentations comprising the steps of:

- introducing aerobic microbial culture into an aqueous medium containing requisite nutrients and a source of carbon,
- raising the oxygen content and temperature of said medium to levels at which the microbial culture can grow and multiply,
- continuously sensing the temperature of said medium during the growth cycle,
- continuously sensing the dissolved oxygen content of said medium during the growth cycle,
- mixing a first gas with said medium continuously during at least part of the growth cycle,



- mixing a second gas with said medium continuously during at least part of the growth cycle, said first and second gases being introduced simultaneously during only part of the growth cycle and being intimately mixed during the period of simultaneous introduction,
- automatically controlling the rate of addition of said first gas to said medium in response to the temperature sensing,
- automatically controlling the rate of addition of said second gas to said medium in response to the sensing of dissolved oxygen in said medium, said second gas being selected from the group consisting of oxygen and air, said first gas being selected from the group consisting of air, steam, nitrogen and carbon dioxide and said first and second gases being different from each other.

3,857,758

METHOD AND APPARATUS FOR EMISSION FREE OPERATION OF BY-PRODUCT COKE OVENS

Philip J. Mole, Elmwood Park, Ill., assignor to Alvin W. Block; Stephen Levy and Alvin Becker, all of Chicago, Ill., a part interest

Filed July 21, 1972, Ser. No. 274,075

Int. Cl. C10b 31/04

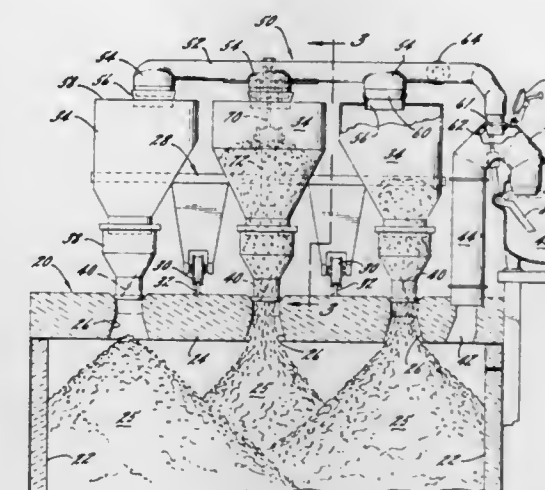
U.S. Cl. 201-40

6 Claims

1. The method of eliminating atmospheric emissions during charging of by-product coke ovens of the type having charging ports for filling the oven chambers from coal hoppers carried by said oven and said hoppers having top openings for filling the hoppers and bottom discharge openings adapted to be discharged into said ports and a gas collection main having an ascension pipe and elbow including an elbow port opening and cap therefor adjacent said ports comprising the steps of,

- automatically actuating manifold means including shroud conduits and a closed conduit traversing the tops of the hoppers and intersecting said shroud conduits so that said shroud conduits sealingly cover the tops of the hoppers, said conduit having an induced draft fan disposed therein,
- connecting the end of the closed conduit from said sealed hoppers to said ascension pipe elbow port opening of said gas collection main,
- actuating said fan to create an induced draft in said closed conduit directed toward the collection main,

- positively conducting emissions produced during the charging of the oven chamber up through the hoppers



and through said conduit means into said gas collecting main.

3,857,759

PROCESS FOR PURIFYING 1,3-DIOXOLANE BY TREATMENT WITH NH₃ AND DISTILLATION WITH CYCLOHEXANE

Leonardo Fiore, Giorgio Nissim, both of Milan, and Francesco Corrado, Novara, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed June 21, 1973, Ser. No. 372,253

Claims priority, application Italy, June 22, 1972, 26030/72

Int. Cl. B01d 3/36; C07d 13/02

U.S. Cl. 203-29

2 Claims

1. A process for obtaining anhydrous 1,3-dioxolane having a high degree of purity, starting from raw 1,3-dioxolane in admixture with water, which process comprises:

- The addition of ammonia in quantities sufficient to transform the formic aldehyde and the formic acid present as impurities, into non volatile substances,
- The subsequent distillation for obtaining a head fraction consisting of dioxolane, water and minor quantities of volatile impurities,
- The subsequent rectification of the above mentioned head fraction (b), in the presence of cyclohexane, in order to eliminate the water and the other impurities in the form of a head fraction essentially consisting of a ternary cyclohexane/dioxolane/water azeotrope, which head fraction, following condensation, separates into two phases one of which, formed by cyclohexane and dioxolane, is recycled to the rectifying column, while there is obtained as a tail fraction a dioxolane/cyclohexane mixture,
- The rectification of the dioxolane/cyclohexane mixture for obtaining anhydrous 1,3-dioxolane with a high degree of purity.

3,857,760

PROCESS OF MEASURING THE CONCENTRATION OF A DISSOCIABLE COMPONENT IN A GAS AND APPARATUS THEREFOR

Wolfram Breuer, Jacques Deprez, and Burthold Sturm, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 836,007, June 24, 1969, abandoned. This application June 16, 1971, Ser. No. 153,783

Claims priority, application Germany, July 8, 1968, 1773795

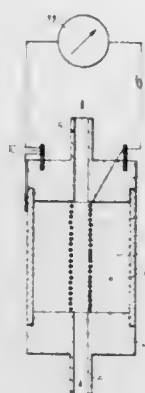
Int. Cl. G01n 27/30, 27/46

U.S. Cl. 204-1 T

30 Claims

1. An electrolytic cell instrument adapted to measure the concentration of a dissociable component of a gas, operat-

ing on the principle of a Nernst concentration cell, consisting essentially of two electrodes, an electrolyte disposed in said cell between and in contact with said electrodes, and comprising means for passing the gas into contact with the electrolyte so that the gas can be dissociated, said electrolyte being an organic substance of solid consistency and being a non-aqueous system, for contacting of the gas with the organic



electrolyte for dissociation of said gas component in the organic electrolyte to an extent proportional to the concentration of the dissociable component in the gas for generation of an electromotive force to an extent proportional to the concentration of the dissociable component in the gas and means adapted to connect said electrodes and measure the electromotive force as a measure of the dissociable component in the gas.

3,857,761

EXHAUSTIVE ELECTROLYSIS METHOD FOR DETERMINATION OF OXYGEN DEMAND

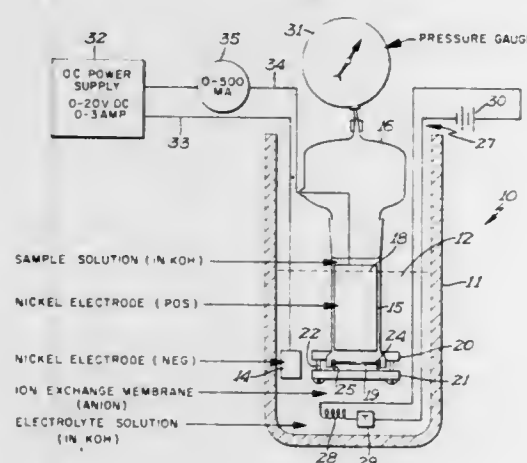
John P. Cummings, Minneapolis, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Division of Ser. No. 58,448, July 27, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,335

Int. Cl. G01n 27/46

U.S. Cl. 204-1 T

6 Claims



1. The method of quantitatively determining the oxygen demand of aqueous samples comprising;

- placing an aqueous sample for oxygen demand determination into an electrolytic cell having a pair of electrodes in contact with said sample and including an anode disposed within an anode compartment, a cathode disposed remote from said anode compartment and an ion permeable membrane in contact with said sample to provide an electrolytic bridge between said anode and said cathode;
- adding an alkali metal hydroxide to said sample until the pH of said sample is in excess of about 10;
- applying an electrolyzing current across said electrodes at a potential suitable for the generation of oxygen along the sample contacting surface of the anode until the sample

is substantially electro-inactive while maintaining said sample at a substantially constant temperature; and
d. measuring the partial pressure of oxygen evolved from said anode-sample interface during said electrolyzing current application when said sample is substantially electro-inactive.

3,857,762

CONTINUOUS ANALYSIS FOR COPPER CONCENTRATION

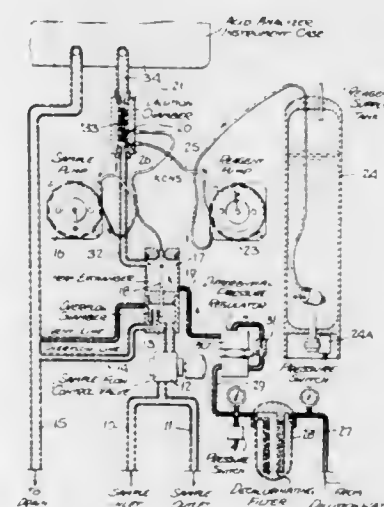
James J. Morrow, Norristown, and Leo L. Dailey, Philadelphia, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Division of Ser. No. 782,212, Dec. 9, 1968, abandoned. This application Dec. 11, 1973, Ser. No. 423,758

Int. Cl. G01n 27/46

U.S. Cl. 204-1 T

5 Claims



1. A technique for continuously measuring the concentration of cupric copper in an aqueous solution comprising the steps of adding potassium thiocyanate to a sample of said cupric copper solution in a dilute solution to form cupric thiocyanate, passing said cupric thiocyanate through an electrochemical cell operating at a voltage acting to reduce it to cuprous thiocyanate thereby inducing an electric current in the cell which is directly proportional to copper concentration, and measuring the current to indicate the copper concentration.

3,857,763

RECOVERY OF ELECTROLYTIC DEPOSITS OF RHODIUM

Donald W. Du Bois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1972, Ser. No. 309,047

Int. Cl. C22d 5/00; C23b 5/24; C22d 1/12

U.S. Cl. 204-10

13 Claims

1. A method for removing electrodeposits of rhodium from the surface of an electrode, said surface being dissolvable by hydrofluoric acid, which comprises contacting such deposits with a dilute solution of hydrofluoric acid for a time sufficient for the hydrofluoric acid to undermine the deposit and recovering rhodium removed from the electrode.

3,857,764

ELECTROCHEMICAL PROCESSING OF INNER SURFACES OF LARGE VESSELS

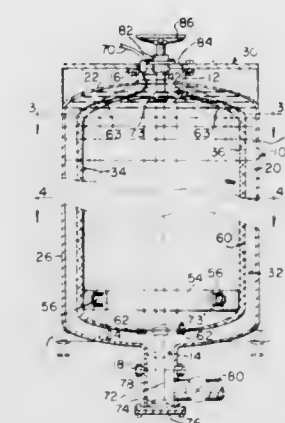
John F. Jumer, 16 West Timber Trails Dr., Elmhurst, Ill. 60126

Division of Ser. No. 173,581, Aug. 20, 1971, Pat. No. 3,772,163. This application July 23, 1973, Ser. No. 381,693

Int. Cl. C23b 5/56, 5/68

U.S. Cl. 204-26

3 Claims



1. A method of electroprocessing the electrically conductive interior surface of a stationary large capacity upright vessel of uniform cross section having at least one top and one bottom opening therein which openings are relatively small compared to the girth of said vessel, comprising: securing anchor means in said bottom opening; attaching to said anchor means inflatable buoyant electrolyte displacer means having a uniform cross-sectional shape when inflated corresponding generally to that of the interior side wall of said vessel but having a height when inflated that is substantially shorter than the height of said vessel and inflating said displacer means until the exterior side wall surface thereof is adjacent to said interior side wall surface with approximately uniform space therebetween; covering the exterior side wall surface of said inflated electrolyte displacer means with an endless electrode, operatively connecting position control means with said inflated electrolyte displacer means so as to permit raising and/or lowering thereof through at least one said top opening; introducing and maintaining an electrolyte in substantially the entire space separating said exterior surface of said electrolyte displacer means from said interior surface of said vessel, the actual amount of electrolyte in said vessel being substantially less than the capacity thereof, and the combined volumes of said electrolyte and said submerged electrolyte displacer means being substantially equal to said vessel capacity; passing an electrical current through said electrolyte between said electrode and said interior surface; and, raising and/or lowering said inflated electrolyte displacer means to electroprocess all of said interior side wall surface.

3,857,765

PURIFICATION OF NICKEL AND COBALT ELECTROPLATING SOLUTIONS

Reuven Merker, Engelwood Cliffs, and Salvatore Lucca, Paramus, both of N.J., assignors to The Metalux Corporation, Peterson, N.J.

Filed Sept. 20, 1973, Ser. No. 398,963

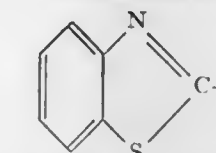
Int. Cl. C23b 5/08

U.S. Cl. 204-49

3 Claims

1. In the process wherein a metal selected from nickel and cobalt is electrodeposited from an aqueous acidic solution containing ions thereof, wherein said solution is at least periodically fed through a filtration chamber to remove impurities therefrom, and wherein, during use, metallic impurities selected from the group consisting of zinc, copper and iron build up in solution; the improvement in said process wherein there is added to the solution in amounts sufficient to precipitate the metallic impurities, whereby the metallic impurities are filtered out of said solution, an organic compound having the

general formula $a-S-X$, wherein a represents the radical



S is sulphur, and X is one of the following: $-H$, $-Na$, $-K$, $-Li$, $-a$ as defined hereabove, $-S-H$, $-S-S-H$, $-S-S-S-H$, $-S-Na$, $-S-S-Na$, $-S-S-S-Na$, $-S-K$, $-S-S-K$, $-S-S-S-K$, $-S-S-Li$, $-S-S-S-Li$, $-S-a$, $-S-S-a$, $-S-S-S-a$, $-M-S-a$ wherein M is a metal selected from the group consisting of Ni , Co , Ag , Au , Cr , and Mn .

3,857,766

PROCESS FOR ANODIZING ALUMINUM AND ITS ALLOYS

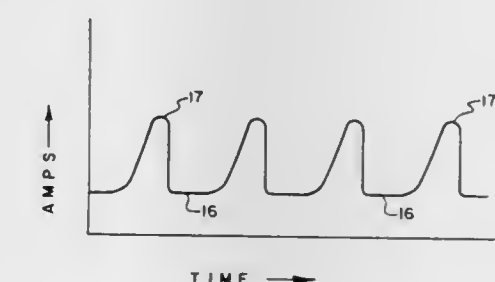
Jack L. Woods, Ogden, Utah, assignor to Permaloy Corporation, Ogden, Utah

Filed Aug. 3, 1972, Ser. No. 277,578

Int. Cl. C23b 9/02

U.S. Cl. 204-58

5 Claims



1. A process for anodizing an object of aluminum or aluminum alloy comprising placing said object as an anode in an anodizing electrolyte contained within an electrolytic cell housing, said housing being a cathode and being continually connected to a negative current potential; and subjecting the anode to a continually applied position direct current having an average direct positive current voltage interspersed with applied peaked pulses of higher level positive current voltage, said peaked pulses having a wave pattern such that the time from average current to peaked pulse current is greater than the time from peaked pulse current back to average current, for a period of time sufficient to anodize the object with a coating of desired thickness.

3,857,767

RECOVERY OF COPPER FROM CHALCOPYRITE ORE CONCENTRATES

Robert C. Gabler, Jr., Grasonville; Earle B. Amey, Greenbelt; Beverly W. Dunning, Jr., Adelphi; Carl E. Goldsmith, Brandywine, all of Md., and Howard W. Leavenworth, Jr., Washington, D.C., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 7, 1974, Ser. No. 477,229

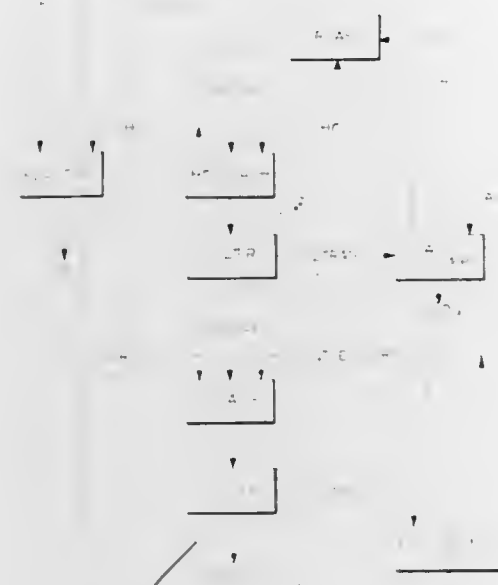
Int. Cl. C22d 1/16; C22b 1/02

U.S. Cl. 204-108

3 Claims

1. A process for recovery of copper from chalcopyrite ore concentrate comprising (1) partially roasting the concentrate at a temperature and for a time sufficient to produce a calcine consisting essentially of bornite and troilite, (2) leaching the

calcine with hydrochloric acid solution having a concentration of about 9.7 to 9.8 weight percent hydrogen chloride to re-



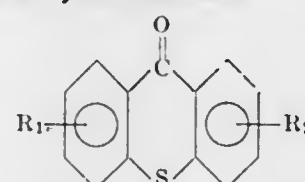
3,857,769
PHOTOPOLYMERIZABLE COATING COMPOSITIONS AND PROCESS FOR MAKING SAME WHICH CONTAINS A THIOXANTHONE AND AN ACTIVATED HALOGENATED AZINE COMPOUND AS SENSITIZERS
Vincent Daniel McGinniss, Middleburg Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Nov. 8, 1973, Ser. No. 413,830
Int. Cl. C08d 1/00; C08f 1/16

U.S. Cl. 204—159.24

6 Claims

1. A process for polymerizing an ethylenically unsaturated polymerizable vehicle in which a pigment is dispersed in a pigment-to-vehicle ratio of 1:10 to 1:1 to form a pigmented composition by exposure to ultraviolet radiation, which comprises incorporating into said vehicle an ultraviolet sensitizer proportion consisting essentially of (a) a thioxanthone compound as represented by the formula:



wherein R₁ and R₂ which can be like or unlike, are H, Cl, Br, OH, NH₂ or lower alkyls, and (b) an azine compound selected from the group consisting of benzazines, benzodiazines, and diazines, said azine compound characterized by having a substituted activated halogenated moiety selected from halo-sulfonyl, α-haloalkyl, and α-haloalkylated aryl; said thioxanthone compound being present from about 0.5 to 4.0 percent by weight, and said azine compound being present from about 0.3 to 6.0 percent by weight, based on the weight of the composition.

3,857,770
REMOVAL OF CONTAMINANTS FROM HYDROCARBON LIQUIDS

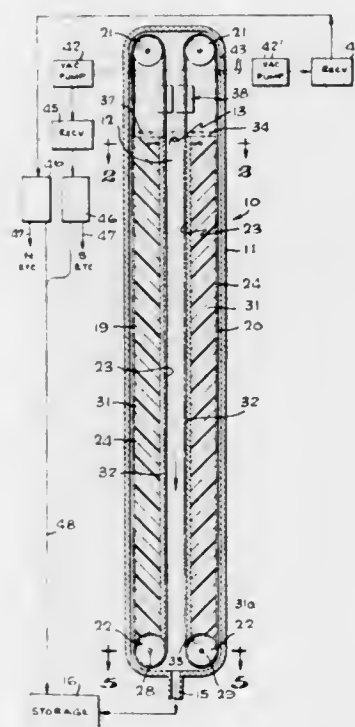
Howard F. Keller, Fullerton, Calif., assignor to Global Environmental Technologist Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 867,507, Oct. 20, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,959

Int. Cl. B03c 5/00; C01g 15/00

U.S. Cl. 204—188

17 Claims



1. The process that comprises contacting two spaced electrodes with a hydrocarbon liquid containing contaminant molecules, consisting essentially of hydrocarbon molecules containing sulfur, nitrogen, vanadium and/or nickel, which are dissolved in the liquid and in which the effective centers of the

move iron and (3) dissolving the copper sulfide residue to form an electrolyte suitable for electrowinning copper.

3,857,768
PROCESS FOR RADIATION CROSS-LINKING POLYMETHYL ACRYLATE-METHYL ACRYLATE COMPOSITIONS

Tsutomu Kagiya, Kyoto; Hiroshi Mitsui, Takasaki; Kazuyoshi Tsuneta, Takasaki, and Hiroshi Mihara, Takasaki, all of Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Continuation of Ser. No. 83,594, Oct. 23, 1970, abandoned.

This application Nov. 15, 1972, Ser. No. 306,855

Claims priority, application Japan, Oct. 28, 1969, 44-85664; Dec. 6, 1969, 44-97674

Int. Cl. C08d 1/00; C08f 1/00

U.S. Cl. 204—159.16

13 Claims

1. A process of preparing a cross-linked resin composition which comprises irradiating with ionizing radiation a cross-linkable composition consisting essentially of methyl acrylate monomer and polymethyl acrylate and being devoid of a catalyst or cross-linking agent, said polymethyl acrylate constituting at least 0.5 percent by weight of the composition.

5. A process of preparing a cross-linked resin composition which comprises irradiating with ionizing radiation a cross-linkable composition consisting essentially of a monomeric component and a polymeric component, said monomeric component consisting essentially of methyl acrylate and a vinyl monomer selected from the group consisting of vinyl acetate, ethyl acrylate, alkyl methacrylate, acrylonitrile and mixtures thereof, said polymeric component essentially consisting of methyl acrylate copolymer containing at least 1 mole per cent of methyl acrylate units, said polymeric component constituting at least 0.5 percent by weight of the composition, said cross-linkable composition being devoid of a catalyst or cross-linking agent.

positive and negative electrical charges of the individual contaminant molecules are separated from one another, giving the molecules a dipole moment; applying electrical charges of opposite polarity to said electrodes respectively from opposite sides of a direct current power source; causing migration of at least some of said contaminant molecules toward one of said electrodes by attraction thereto of electrical dipole charges of the individual molecules; and separating said attracted contaminant molecules, while still in solution in the hydrocarbon liquid in concentrated amounts, from the portion of the hydrocarbon liquid from which they have migrated.

3,857,771
RATE SENSING BATCH ANALYZER

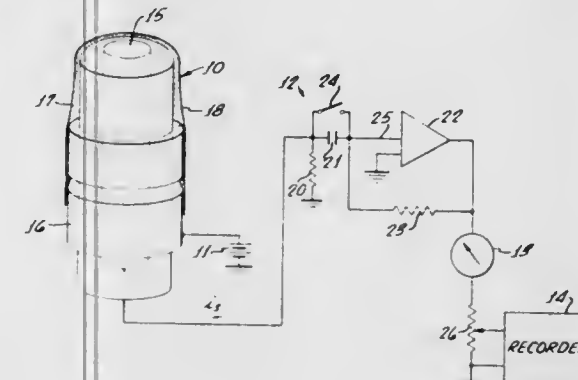
James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 27, 1967, Ser. No. 618,859

Int. Cl. G01n 27/46, 31/14

U.S. Cl. 204—195 B

16 Claims



1. A rate sensing batch analyzer comprising: sensor means for monitoring the concentration of a component or product of a reaction and producing a first output signal proportional to the concentration thereof; differentiator circuit means coupled to said sensor means and responsive to said first output signal for producing a second output signal proportional to the time derivative of said first output signal and thus proportional to the time rate of change of concentration of said component or product; and means coupled to said differentiator circuit means for measuring the maximum value of said output time rate of change signal for obtaining an accurate measurement of true instantaneous rate at a very early stage of the reaction, said measured maximum value being directly proportional to initial concentration of said component or product.

3,857,772
ELECTROPLATING APPARATUS FOR SIMULTANEOUSLY AND UNIFORMLY ELECTROPLATING INSIDE SURFACES OF ANNULAR BODIES

Toshiro Sasaki, Hiroshima; Michio Oka, and Yoshiaki Washio, both of Kure, all of Japan, assignors to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshima-ken, Japan

Filed Dec. 26, 1972, Ser. No. 318,649

Claims priority, application Japan, Dec. 25, 1971, 46-3011

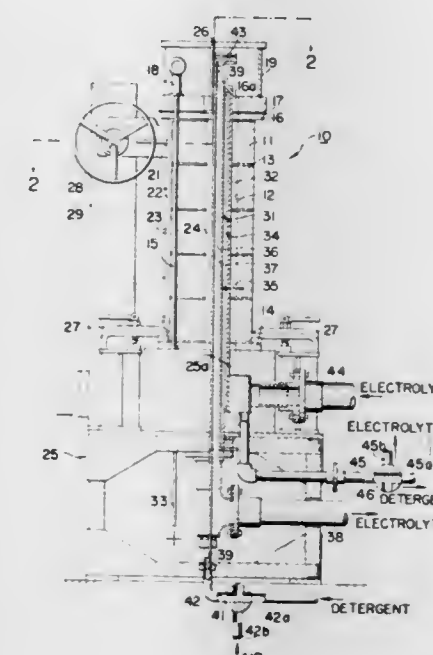
Int. Cl. C23b 5/74; B01k 3/00

U.S. Cl. 204—224 R

2 Claims

1. An electroplating apparatus for simultaneously and uniformly electroplating the inside surfaces of a plurality of annular bodies placed upon one another so that their central bores are registered comprising: an upright anode about which said annular bodies are to be placed with the inner surfaces equidistantly spaced from the outer surface of said anode to thereby define therebetween an annular passage; a plurality of seats respectively separating adjacent ones of said annular bodies to electrically insulate the same from each other;

means for forcing an electrolyte through said passage; an elongated cathode conductor for applying a negative potential to said annular bodies; said cathode conductor being substantially vertical and constituting a single member having a considerable intrinsic resistance, said cathode conductor having individual means along its length to apply a different negative



3,857,773
SUPPRESSION OF CREVICE CORROSION IN GASKETED TITANIUM CREVICES BY THE USE OF RUBBER COMPOUND GASKETS SUBSTANTIALLY FREE OF CALCIUM

Donald W. Du Bois, and William B. Darlington, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 5, 1973, Ser. No. 348,452

Int. Cl. B01k 3/00; C01d 1/06; C01b 7/06

U.S. Cl. 204—242

8 Claims

1. A method of preventing crevice corrosion which is encountered between a pair of closely spaced surfaces during electrolysis under acidic conditions in an electrolytic cell wherein at least one of said surfaces is titanium which method comprises providing a rubber gasket between said surfaces in contact with the titanium which rubber gasket contains less than 0.07 weight percent calcium, determined by atomic absorption spectroscopy, whereby said gasket is substantially free of calcium.

3,857,774

CATHODES FOR ELECTROLYTIC CELL

Peter Harlow Morton, Solihull; John Philip Atkinson Wortley, Birmingham, and Alan Woolcock, Lichfield, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, Warwickshire, England

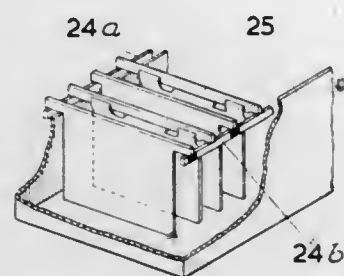
Filed June 25, 1973, Ser. No. 373,313

Claims priority, application Great Britain, Jan. 26, 1973, 4132/73

Int. Cl. B01k 3/04; C23b 5/68

U.S. Cl. 204-242

17 Claims



1. An electrolytic cell including an anode and a cathode, the cathode comprising a hanger bar of aluminium or copper at least partly sheathed with a valve metal, and a continuous sheet of valve metal welded along one edge only to at least part of the length of the valve metal sheath of the hanger bar.

3,857,775

ELECTROLYTIC CELL INCLUDING A FLEXIBLE SHEET COVERING THE CELL BASE

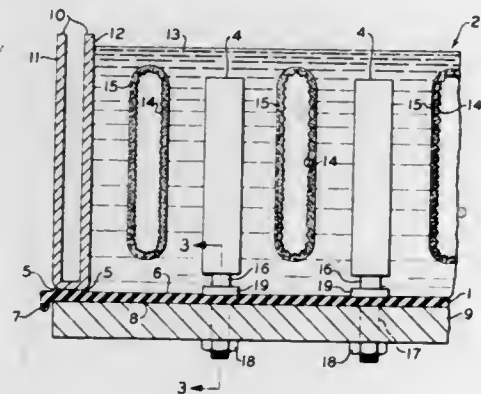
Harry S. Custer, Barberton, and Brian H. Oliver, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 251,751, May 9, 1972, abandoned. This application June 18, 1973, Ser. No. 371,323

Int. Cl. B01k 3/10

U.S. Cl. 204-252

13 Claims



1. In an electrolytic cell of the diaphragm type for the production of chlorine, said cell comprising a cell can for containing a brine solution, a conductive metal cell base supporting said can and anode members disposed within said can and extending through said base; a flexible heat-resistant elastomeric sheet covering and in contact with said cell base and subjected to the heat generated by the conductive metal of the cell base, said sheet comprised of a vulcanized heat-resistant blend of a first vulcanized rubbery polymer which will soften under the prolonged influence of heat wherein said first polymer is a polyisoprene selected from the group consisting of natural rubber and synthetic rubber of a cis-1,4-polymer of isoprene and a second vulcanized heat-resistant rubbery polymer which will harden under the prolonged influence of heat wherein said second polymer is at least one polymer selected from the group consisting of halogenated butyl rubber, ethylene propylene terpolymer rubber, a copolymer of butadiene and acrylonitrile, a copolymer of butadiene and styrene and a chlorosulfonated polyethylene and wherein the weight ratio of

said polyisoprene to said second polymer is from about 35/65 to about 65/35, said sheet, due to the combined effects of said first and second polymers, thereby retaining its flexible resilient characteristics to provide a seal between the anode member and the cell base and between the cell base and the brine solution contained in the can.

3,857,776

DEEP SUBMERSIBLE POWER ELECTRODE ASSEMBLY FOR GROUND CONDUCTION OF ELECTRICITY

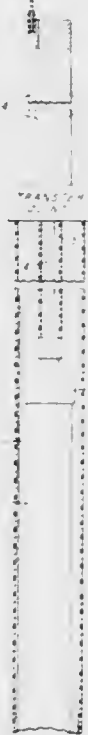
Charles H. Titus, Newtown Square, and J. Kenneth Wittle, Berwyn, both of Pa., assignors to Electro-Petroleum, Inc., Bryn Mawr, Pa.

Filed June 14, 1973, Ser. No. 369,948

Int. Cl. B01k 3/04; E21b 43/00; B01k 3/08

U.S. Cl. 204-290 R

8 Claims



1. In a deep submersible and consumable high voltage power anode assembly for direct underground installation exposed to a surrounding mixture of saline and oleaginous fluids under a hydrostatic pressure head of the order of at least several hundred feet, an elongate electrode body including a tubular sheath of insulating material and having at one end a terminal for connection to a source of positive unidirectional voltage of the order of at least 200 volts above ground potential, said tubular sheath conductively exposing to said fluid mixture only an end face of said electrode body opposite said one end, a rigid and substantially fluid impervious tubular insulating shield enclosing the side walls of said electrode body, and exposing said end face, said electrode body and shield being designed to be eroded axially at said end face and at substantially the same linear rates as a result of electrochemical action by electric current passing between said end face and said fluid mixture, a fluid passage defined at least in part by said electrode body and traversing said body for substantially the full axial length thereof, said passage having an outlet port adjacent said exposed end face, and means for introducing in electrolytic fluid into said fluid passage at said one end of said electrode body and maintaining said electrolytic fluid under pressure greater than the hydrostatic pressure of said surrounding fluid mixture, whereby said electrolytic fluid traverses said fluid passage to cool said electrode body and bathe said end face in conductive fluid.

3,857,777

ION EXCHANGE MEMBRANE FOR MEASURING ORTHOPHOSPHATE

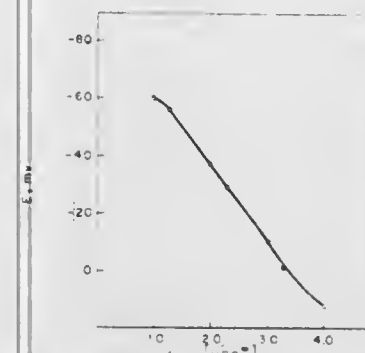
George G. Guilbault, New Orleans, La.; Frank R. Shu, Hsin-chu, China /Taiwan, and Henning Von Storp, Heidesheim, Germany, assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Aug. 10, 1973, Ser. No. 387,569

Int. Cl. B01k 3/10

U.S. Cl. 204-296

4 Claims



1. An ion exchange membrane to segregate a reference electrode from a fluid sample, which when both the segregated reference electrode and a measuring electrode are suspended in a fluid sample that contains a specific ion from a class of large molecule anions, results in a potentiometric value for said measuring electrode and fluid sample when measured against said reference electrode, and wherein the potentiometric value varies predominantly with the variation in concentration of said specific ion rather than with the variation of concentration of other solute species, wherein said membrane comprises, a thiourea-aldehyde polymer, silver ion and a phosphate ion.

3,857,778

METHOD OF RENDERING ELECTROPHORESIS MEMBRANE TRANSPARENT

Nobuo Hiratsuka, and Kiyotaka Shimoda, both of Ashigara-machi, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

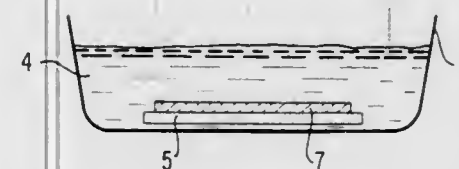
Filed Nov. 3, 1971, Ser. No. 195,420

Claims priority, application Japan, Nov. 4, 1970, 45-96404

Int. Cl. B01k 5/00

U.S. Cl. 204-299 R

9 Claims



1. A method of rendering a cellulose ester electrophoretic membrane transparent comprising the steps of: immersing the membrane in an alcohol solution to impregnate said membrane, withdrawing the impregnated membrane from said alcohol, placing the impregnated membrane on a support, thereby excluding air from the pores of said membrane, immersing the supported alcohol-impregnated membrane in an ether and, removing and drying the membrane.

3,857,779

ELECTRIC DISCHARGE METAL CONVERTER

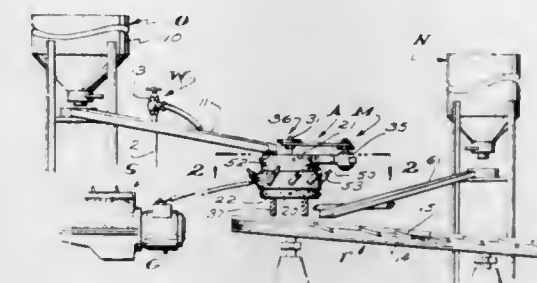
Paul M. Harris, 2401 Shadow Hill Dr., Riverside, Calif. 92506, and Shelby D. Adamson, 764 E. 23rd St., San Bernardino, Calif. 92404

Filed Nov. 3, 1971, Ser. No. 195,422

Int. Cl. B23p 1/02; B01k 3/00

U.S. Cl. 204-544

10 Claims



1. A metal converter comprising an elongate vertical dielectric body with open upper and lower ends and a vertical flow passage therethrough to continuously receive and conduct a slurry of water and ore, a plurality of anode contacts carried by the body in a common plane normal to the axis of the flow passage and in spaced relationship thereabout and disposed inwardly toward said axis, a direct current power supply connected with the anode contacts, a flow directing and grounded conductor structure within the flow passage in spaced relationship with the body and anode contacts to direct the slurry in close proximity to the anode contacts and having a plurality of cathode contacts in a common plane with the anode contacts and disposed radially outward relative to said axis and adapted to direct electron flow from the anode contacts to the conductor structure and to support electric arcs with and between the anode and cathode contacts when in spaced relationship therewith whereby the ore in the flow passage and directed by the contacts is converted to metal by the arcs between the contacts and through the slurry.

3,857,780

HYDROFORMING PETROLEUM FRACTIONS IN GAS PHASE USING SHAPED CATALYST PARTICLES

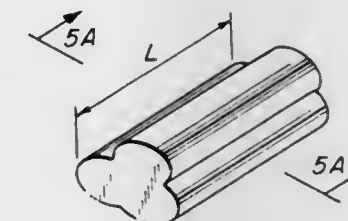
William Roy Gustafson, 124 Horse Tavern Rd., Trumbull, Conn. 06611

Continuation-in-part of Ser. No. 255,491, May 22, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,518

Int. Cl. C10g 35/08

U.S. Cl. 208-139

7 Claims



1. In a process of hydroforming a petroleum fraction wherein said petroleum fraction is contacted in gaseous phase with hydrogen and with catalyst particles comprised of an extruded porous alumina base carrying a promoter selected from platinum and mixtures thereof with rhenium, gallium, germanium, iridium, rhodium, and zinc, the improvement which comprises said catalyst particles having a polylobal cross-sectional shape, said polylobal cross-sectional shape being such that the number of lobes is 2 to 5 and said lobes are defined by circles, all of said circles in said cross-sectional shape having equal diameters, the centers of said circles being spaced from one another by a distance which is from about 1/4 to 15/16 of the diameters of said circles and when more than

two lobes are present, lines connecting the centers of adjacent circles form a substantially equilateral polygon each side of which is from about $\frac{1}{8}$ to $\frac{15}{16}$ of the diameters of said circles and all of said cross-sectional shape included by said circles being of said porous alumina.

3,857,781

METHOD OF RAPID DIFFERENTIAL FLOCCULATION OF TiO₂ FROM KAOLIN SLURRIES

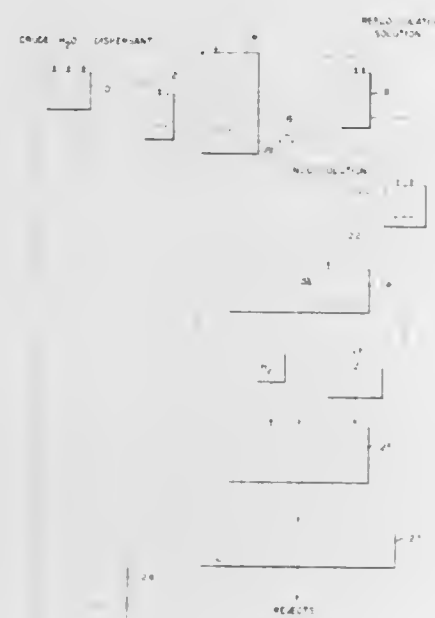
Robert Nelson Maynard, Cochran, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 8, 1972, Ser. No. 263,730

Int. Cl. B03b 1/04

U.S. Cl. 209-5

6 Claims



1. A method of beneficiating kaolin clay consisting essentially of the steps of:

- treating an aqueous kaolin clay suspension of from 45 to 70 percent solids by weight with a dispersing agent in an amount in excess of that required to obtain minimum viscosity, said dispersing agent comprising the combination of sodium hexametaphosphate and sodium silicate; continuing the addition of said sodium hexametaphosphate and said sodium silicate to effect reflocculation of said aqueous kaolin clay suspension; the combined amount of said sodium hexametaphosphate and said sodium silicate being added to said aqueous suspension comprising from 2 to 10 pounds per ton of dry clay of sodium hexametaphosphate and from 8 to 20 pounds per ton of dry clay of sodium metasilicate so as to obtain said minimum viscosity and reflocculation but comprising an amount less than which produces an intractable gel state;
- diluting said reflocculated slurry to from 25 to 45 percent solids;
- treating said slurry by adding to it from 4 to 50 pounds per ton of dry clay of sodium chloride;
- aging said salt treated slurry for from 1 to 24 hours;
- further diluting said aged slurry to from 10 to 35 percent solids;
- adding to and mixing within said diluted aged slurry from 0.01 to 0.3 pounds per ton of dry clay of a water soluble, strongly anionic polyacrylamide polymer having a molecular weight in excess of one million, whereby a separation of titanium-polymer flocs is effected from said suspension at a sedimentation rate in excess of 10 minutes per inch of depth of said slurry, and
- separating the thus refined slurry from said flocs.

3,857,782

SEMI-PERMEABLE MEMBRANE PROCESS AND DEVICE EMPLOYING AN AMINOETHYLATED POLYMERIC MATERIAL AS THE SEMI-PERMEABLE MEMBRANE

Richard P. Crowley, Wellesley Hills, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Division of Ser. No. 35,248, May 6, 1970, abandoned. This application Nov. 4, 1971, Ser. No. 195,881

Int. Cl. B01d 31/00, 13/00

U.S. Cl. 210-22

9 Claims

1. In a separatory process which comprises: exposing under fluid pressure one side of a selected polymeric permeable membrane to a fluid having at least one component permeable to said membrane, and separating that portion of the fluid which permeates the membrane from that portion of the fluid which does not permeate the membrane, the improvement which comprises:

employing as the selected permeable polymeric membrane material a polymer selected from the group consisting of polyethylene imine and a polyamide containing reactive NH groups and modified by the reaction of the NH groups of the polyamide with an ethylene imine to contain from about 5 to 60 percent by weight ethylene imine, generally in the form of polyethylene imine grafts thereon.

3,857,783

SUSPENDED TYPE CENTRIFUGAL SEPARATOR

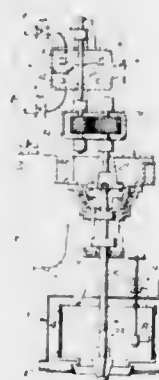
Shiro Nishimura, Tokyo, and Kisaburo Ishihama, Mitaka, both of Japan, assignors to Shin Nippon Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1973, Ser. No. 346,293

Int. Cl. B01d 21/26; B04b 9/06, 13/00

U.S. Cl. 210-138

5 Claims



1. A steam turbine driven suspended type centrifugal separator comprising in combination a suspended type centrifugal separator unit having a separator basket rotatable within a casing, a speed reducing mechanism and a steam turbine means wherein said steam turbine means drives said separator basket through said speed reducing mechanism such that the speed thereof varies in accordance with a predetermined pattern with respect to time during short cycles said steam turbine means comprising a turbine casing, a turbine shaft rotatably supported in said turbine casing, a first turbine rotor fixedly mounted on said turbine shaft and rotated in the normal direction, a second turbine rotor fixedly mounted on said turbine shaft and rotated in the reverse direction, a first steam conduit for supply pressurized steam to said first turbine rotor, a second steam conduit for supplying pressurized steam to said second turbine rotor, a first steam valve provided in said first steam conduit, a second steam valve provided in said second steam conduit and a steam exhaust port provided in the turbine casing, an actuator for operating said first steam valve, means for generating a set of voltages varying in accordance

with said predetermined speed pattern of said centrifugal separator unit, means for sequentially selecting one of said set of voltages, means for detecting the speed of the centrifugal separator, means for generating a voltage proportioned to the detected speed, and means for generating a voltage proportional to the instantaneous difference between said selected one of said set of voltages and said voltage proportioned to the detected speed, said actuator being operative in response to said voltage difference for controlling said first steam valve.

3,857,784

APPARATUS FOR APPLYING AND DRYING CHROMATOGRAPHIC SAMPLES

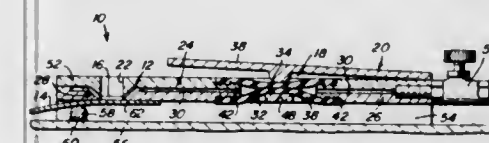
Sylvia Martinez, Coral Gables, Fla., assignor to SINDCO, Coral Gables, Fla.

Filed Oct. 27, 1972, Ser. No. 301,583

Int. Cl. B01d 15/08

U.S. Cl. 210-198 C

11 Claims



1. A simple, portable, manually actuatable apparatus for use in the application to a chromatographic test surface, and in the drying on the test surface, of one or more samples of a liquid substance to be dried and analyzed, comprising, in combination:

- a base structure adapted to be supported on a table top or the like and providing
 - a defined area within the confines of which a sample-receiving portion of the test surface may be located, and
 - a conduit system for directing a flow of a drying gas from an intake section of said conduit system to a discharge section thereof at said defined area and there to each location of a sample on the test surface, said conduit system including an open-shut valve means intermediate said intake and discharge sections and positioned for actuation from exteriorly of said base structure;
- means for establishing communication between said intake section of said conduit system and a source of drying gas under pressure and including means for regulating the flow of drying gas into said conduit system; and
- a manually displaceable operating member hingedly connected to said base structure, said operating member having an adjunct arranged to operate said valve means so as to close the latter when said operating member is engaged and pressed toward said base structure by the hand of an operator;
- whereby the flow of drying gas to said defined area can first be interrupted by the hand of the operator while a sample is being applied to the test surface and can then be renewed simply by the lifting of the operator's hand, so that
 - drying of the portion of the liquid substance which remains in the applicator device during the application of each sample to the test surface is prevented, and
 - drying of the sample can nevertheless be commenced immediately after the application thereof to the test surface.

3,857,785

ARTIFICIAL KIDNEY APPARATUS

F. Jesus Martinez, Palatine, Ill., assignor to Baxter Laboratories, Morton Grove, Ill.

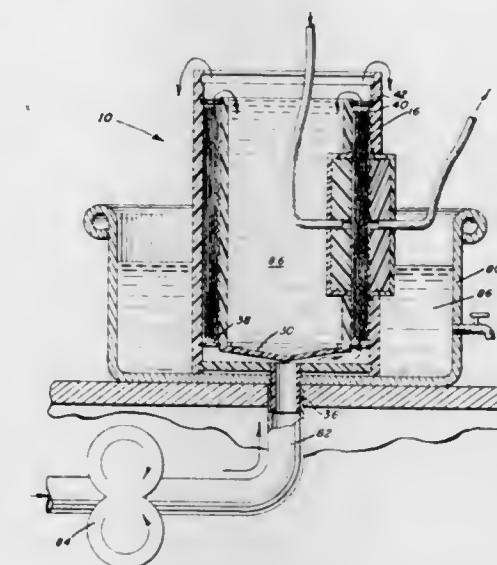
Division of Ser. No. 26,547, April 8, 1970, Pat. No. 3,712,474.

This application Oct. 18, 1972, Ser. No. 298,725

Int. Cl. B01d 31/00

U.S. Cl. 210-321

4 Claims



1. A connector member for connecting tubing to a transversely larger, flexible, sheath-like conduit, said connector comprising a resilient body elongated and of generally oval shape in one direction and including a transverse bore, means for supporting and retaining said tubing within said bore, and means for confining in fluid-tight relationship said sheath-like conduit around the periphery of said body, said last named means comprising a relatively inflexible cup member having a bottom end defining an opening therein, said body being sealingly positioned within said cup member, said tubing being positioned within said bore and also positioned to pass through said opening, said sheath-like conduit being secured in fluid-tight relationship between said resilient body and said cup member, the surface of said body defining a plurality of grooves communicating with one end of said transverse bore and positioned to communicate with the interior of said conduit to facilitate the uniform distribution of fluid passing between said sheath-like conduit and said tubing, said grooves all extending in directions normal to the axes of said bore and sheath-like conduit.

3,857,786

BRUSHING ACCESSORY FOR SPIN FILTER

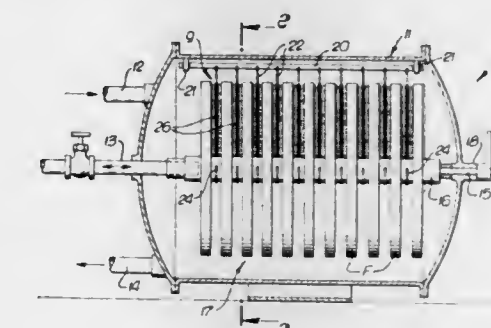
Leonard H. Wolf, Jr., 1109 N. Sunrise Way, Palm Springs, Calif. 92262

Filed Oct. 29, 1973, Ser. No. 410,791

Int. Cl. B01d 29/34

U.S. Cl. 210-331

3 Claims



1. A brushing accessory for a spin filter mounted in a tank for confining a liquid to be filtered and comprising a rotatable

hollow mandrel on which a series of spaced filter discs are concentrically mounted in spaced relation, said accessory comprising:

- a bar located inside said tank parallel with said mandrel and between said filter discs and said tank;
- means for mounting said bar on said tank;
- a series of parallel brushes spaced apart equidistant with the spacing of said filter discs with one brush being disposed between each adjacent pair of said discs and in constant scrubbing relation with the juxtaposed filtering faces of said pair of discs;
- means for rotatably mounting the inner end of each brush on said mandrel; and
- means for attaching the outer end of each brush to said bar.

3,857,787

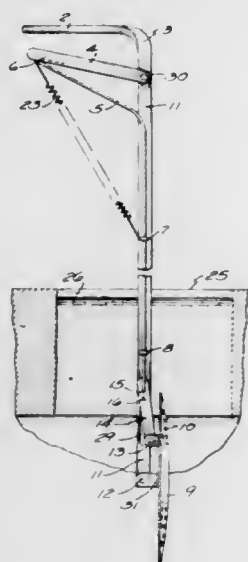
MECHANICAL SKIMMER

Howard R. Kinne, 147 Front St., Beaver Dam, Wis. 53916
Filed Jan. 17, 1972, Ser. No. 218,214

Int. Cl. B01d 35/28

U.S. Cl. 210-470

4 Claims



1. A mechanical ice fishing skimming assembly, comprising: A first member having a handle section therewith, and said first member being an elongated rigid metal arm having a plurality of guide supports extending therefrom, said supports having openings therein, a rod extending substantially from one end of the arm to the other and being moveably mounted along the arm and through the openings in the support for controlled and defined movement, a trigger member pivotally mounted on said arm and operable with the handle section and having connected at its extended end the upper portion of the rod, said rod having at its lower end a portion thereof for providing a part of a linkage connection, a cup-shaped perforated member hinged to the center thereof to the lower end of the first member, a link member hinged to the top of the cup-shaped member at a point spaced from the hinged connection point of the lower end of said first member, said link having provided therein an opening and accommodating the lower end of said rod therein, whereby movement of the trigger member through the link action of the skimmer assembly causes the cup-shaped member to move from a substantially horizontal flat position to a vertical position, and spring means for urging the device through the trigger member to its position providing horizontal disposition of the cup-shaped member, said mechanical ice fishing skimming assembly having its first member and parts assembled therewith of such a length that the operator may stand and in a standing position remove the ice from an ice hole, thereby preventing the need for kneeling down for such operation.

3,857,788 SEDIMENTATION APPARATUS WITH PLURAL SLUDGE DISCHARGE FEATURE

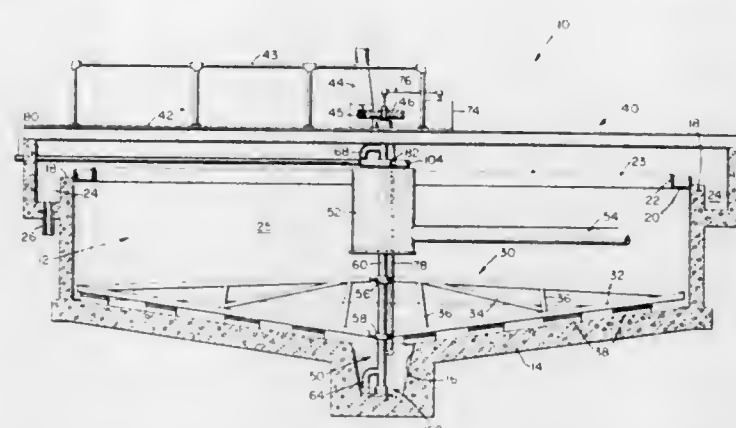
Eugene J. Smith, Valley Cottage, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Apr. 27, 1973, Ser. No. 355,114

Int. Cl. B01d 21/24

U.S. Cl. 210-520

8 Claims



1. In a sedimentation apparatus including a tank having a base and an encircling side wall,
means for supplying a sludge containing influent to said tank, said tank having a sludge hopper in said base,
means for maintaining a predetermined fluid level in said tank,
means in said tank for collecting and transporting sludge settling on said base to a common location in said sludge hopper, said means including a rotary raking structure supported in said tank for rotation about the central vertical axis of said tank,
sludge pick-up means for removing sludge of substantially uniform consistency from said common location,
a rotating spout means connected to said sludge pick-up means for discharging said sludge of substantially uniform consistency to a means for distributing the sludge of substantially uniform consistency from said common location to a first conduit and a second conduit, said distributing means comprising an annular trough fixed to said tank, said first and second conduits being connected to said trough, said trough including flow proportioning structure for selectively, proportionately controlling the quantity of flow of said sludge of substantially uniform consistency to said first and second conduits.

3,857,789

SLUSHING OIL OR RUST INHIBITING COMPOSITIONS

Fred Krupin, New York, N.Y.; John P. G. Beiswanger, Audubon, and Assadullah Nassry, Bethlehem, both of Pa., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,540

Int. Cl. C10m 1/40, 1/32

U.S. Cl. 252-33.4

19 Claims

1. A rust-inhibiting slushing oil composition comprising:
A. 0.5 - 10 percent by weight of a metal salt of a mahogany sulfonate or C₈₋₃₀ alkyl substituted naphthalene sulfonate, said metal being selected from groups IIA, IIIA and IVA of the Periodic Table;
B. 0.5 - 10 percent by weight of a higher aliphatic fatty carboxylic acid of about 15 to 60 carbon atoms and polymers thereof,
C. 0.5 - 30 percent by weight of a cosolvent for (A) and (B) said solvent being selected from the group consisting of aromatic hydrocarbons, methyl pyrrolidone, tetrahydrofuran, and mono and dialkyl ethers of alkylene glycols and mixtures thereof; and
D. 50 - 98.5 percent by weight of a mineral oil.

3,857,790 IMPROVEMENT IN THE PREPARATION OF OVERBASED MAGNESIUM LUBRICANT ADDITIVES

Peter Anthony Saunders; Michael Frank Fox; Anthony Francis Fagan, and Philip Edward Derbyshire, all of London, England, assignors to Edwin Cooper & Company Limited, London, England

Filed May 26, 1972, Ser. No. 257,424

Claims priority, application Great Britain, May 27, 1971, 17604/71

Int. Cl. C10m 1/40

U.S. Cl. 252-33.4

23 Claims

1. In a process for preparing a magnesium overbased lubricant additive wherein a reaction mixture of an oil soluble detergent or dispersant susceptible to overbasing selected from the group consisting of phosphosulphurized hydrocarbons, metal salts of carboxylic acids, sulphonic acids and metal salts of sulphonic acid, a basic magnesium compound in an amount sufficient to overbase said oil soluble detergent or dispersant, and a reaction promoting amount of a hydroxy-containing compound selected from the group consisting of alcohols and monoethers of glycols is formed in an inert solvent, said reaction mixture is contacted with an acidic gas at a reaction temperature of from about 20°C up to the decomposition temperature of the reaction mixture and the resultant product is heated to remove volatile components; the improvement comprising: incorporating in said reaction mixture a reaction promoting amount, up to about 40 percent by weight based on the weight of the inert solvent, of a salt of an alkanic acid containing from one to 20 carbon atoms and an aliphatic hydrocarbyl diamine or polyamine containing from two to eight carbon atoms.

3,857,791

LUBRICATING OIL ADDITIVE AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

Alphonso W. Marcellis, Boonton, and Donald H. Peterson, Parlin, both of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

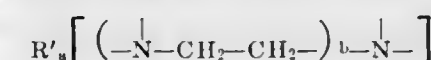
Filed May 25, 1972, Ser. No. 257,043

Int. Cl. C10m 1/32

U.S. Cl. 252-51.5 A

7 Claims

1. A lubricating oil additive comprising a mixture of an amido-amine and a hydrocarbylamine, in which
a. the amido-amine/hydrocarbylamine volume ratio varies from about 1/10 to about 10/1,
b. the amido-amine is the condensation product of an alkylenepolyamine containing about 2-6 amino nitrogens and 2-16 carbon atoms and less than the stoichiometric amount of a fatty monocarboxylic acid containing about 14-20 carbon atoms, the mole ratio of said alkylenepolyamine to said fatty monocarboxylic acid being from about 1:1 to about 1:5, and
c. the hydrocarbylamine has a molecular weight from about 450 to about 5000 and is selected from the group consisting of branched chain aliphatic hydrocarbon monoamines and alkylenepolyamines, and wherein the alkylenepolyamine has the empirical formula



wherein R' = a branched chain aliphatic hydrocarbon selected from the group consisting of polypropylene and polyisobutylene and having an average molecular weight ranging from about 450 to about 1500,
a = an integer having the value of 1 or 2,
b = an integer having the value of from 1 to about 5.

3,857,792

AN ELECTROSTATIC DEVELOPER MIXTURE WITH A COATED CARRIER

Robert W. Madrid, 160 Jacobs Rd., Macedon, N.Y. 14502, and Robert J. Hagenbach, 235 Westmoreland Dr., Rochester, N.Y. 14620

Division of Ser. No. 27,114, April 9, 1970, which is a continuation-in-part of Ser. No. 585,793, Oct. 11, 1966, abandoned. This application Apr. 10, 1972, Ser. No. 242,780

Int. Cl. G03g 9/02

U.S. Cl. 252-62.1

3 Claims

1. An electrostatographic developer mixture comprising finely divided toner particles electrostatically clinging to the surface of carrier particles, said carrier particles comprising particulate cores surrounded by a thin outer layer, said thin outer layer comprising from about 1 to about 20 microns in thickness of a blend of a polyphenylene oxide resin and a solid terpolymer of (1) from about 5 to about 94.5%, by weight of an unsaturated silicon free organic compound, (2) from about 94.5 to about 5% by weight of an unsaturated silicon free organic compound different from the compound of (1) and (3) from about 0.5 to about 50%, by weight of a polymerizable organosilicon compound selected from the group consisting of silanes, silanols and siloxanes having from one to three hydrolyzable groups and an organic group attached directly to a silicon atom containing less than 8 carbon atoms and an unsaturated carbon to carbon linkage, the weight ratio of said polyphenylene oxide to said terpolymer being from about 90:10 to about 25:75.

3,857,793

FLUORESCENT ORGANIC COMPOUND LASER

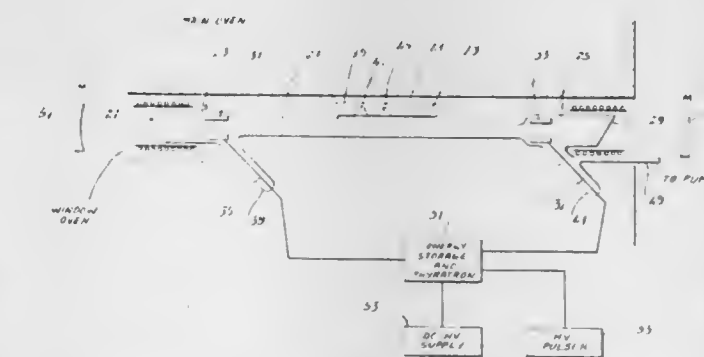
Romano G. Pappalardo, Sudbury, Mass., and Samir A. Ahmed, Manhattan, N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 1, 1973, Ser. No. 356,259

Int. Cl. H01s 3/22

U.S. Cl. 252-301.3 R

2 Claims



1. In a discharge-excited laser, an active medium in the form of vaporized p-terphenyl, the partial pressure of said p-terphenyl being, at operating temperature, about 0.1 torr to about 1 torr, and a small quantity of a noble or inert gas selected from the group consisting of argon, helium, neon, xenon and krypton.

3,857,794

OXYGEN CONTROL BY INJECTION OF A REDUCING GAS IN A CATALYST REGENERATOR

Edward J. Carey, El Paso, Tex., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 803,276, Feb. 28, 1969, abandoned.

This application Sept. 22, 1971, Ser. No. 182,828

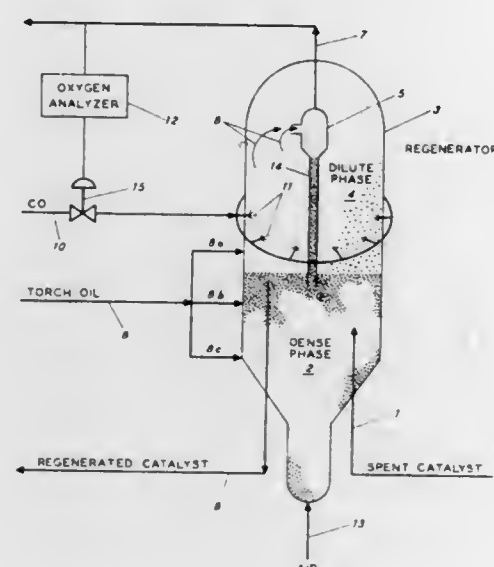
Int. Cl. B01j 11/04

U.S. Cl. 252-419

4 Claims

1. A cracking catalyst regeneration process for allowing enriched oxygen content and high temperatures of at least about 1,175° F. to exist in a dense phase bed of catalyst particles in a fluidized bed, dense phase-dilute phase catalytic cracker regenerator, and for reducing uncontrolled after-

burning in the regenerator, which comprises injecting a reducing gas selected from the group consisting of hydrogen and carbon monoxide through at least three nozzles located within the first 20 feet of the length of the regenerator above the top of the dense phase bed of catalyst particles being regenerated.



at a point wherein the overall density is about 4 pounds per cubic foot, to reduce the oxygen content to below about 1.5 volume percent and removing the regenerated catalyst particles downwardly from the dense phase bed in the bottom of the regenerator and then passing the catalyst particles to a catalytic cracking reaction zone.

3,857,795

PREPARATION OF $TiCl_3$ COMPONENT OF OLEFIN POLYMERIZATION CATALYST

Herman Th. Van Der Bend, and Willem Sijardijn, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,191

Claims priority, application Great Britain, Dec. 20, 1971, 59013/71

Int. Cl. B01j 11/84

U.S. Cl. 252-429 A

4 Claims

1. The method of producing a titanium trichloride composition consisting of dense, smooth-surfaced particles adapted for use as catalyst component in the stereoregular polymerization of propylene to a polymer powder containing no more than 2% of fines of less than 53 micron diameter and having a freely settled bulk density of at least about 0.32 g/ml which consists essentially of:

- gradually, over a period of at least one hour, adding a solution of titanium tetrachloride in alkane diluent to an agitated solution of aluminum trialkyl in alkane diluent at a mole ratio of titanium tetrachloride to aluminum trialkyl in the range from 3:0.9 to 3:1.5, at a mixing temperature T within the range from below -90° to -125° C, wherein the freezing point of said diluent is below $(T - 15)^\circ$ C, the first 10 percent of said titanium tetrachloride being added gradually at substantially uniform rate over a period of at least 25 minutes;
- after completion of said addition gradually raising the temperature of the mixture to at least about -30° C at a rate less than 1° C per minute and maintaining it below 80° C until the reduction of $TiCl_4$ to $TiCl_3$ is substantially complete;
- converting said $TiCl_3$ to the violet form by raising the temperature of the $TiCl_3$ -containing component slurried in alkane diluent, to a temperature in the range between 100° and 250° C; and
- cooling the resulting slurry to at least below 80° C.

3,857,796

OXIDATION CATALYST

Shigeo Takenaka; Hitoshi Shimizu, and Masanobu Ogawa, all of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1973, Ser. No. 336,058

Claims priority, application Japan, Mar. 9, 1972, 47-23603

Int. Cl. B01f 11/06

U.S. Cl. 252-467

2 Claims

I. A catalyst represented by the empirical formula,



wherein, Mo, V and O represent molybdenum, vanadium and oxygen, respectively, T represents tungsten or antimony, A represents an alkali metal, and a, b, c, d and e represent number of atoms of Mo, V, T, A and O, respectively, and when a is 12, b is 0.5 to 6, c is 0 to 6, d is 0.01 to 1.5 and e is a number naturally determined by the valence requirements of the other elements present.

3,857,797

GREASE COMPOSITION

Richard N. Nipe, Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 11, 1974, Ser. No. 441,015

Int. Cl. C10m 5/22, 7/36

U.S. Cl. 252-47.5

4 Claims

1. The grease composition comprising a lubricating fluid and a thickening amount of from 3 to about 50 weight percent of a finely-divided solid, thermally stable, essentially linear aromatic polyamide, insoluble in said fluid, selected from the group consisting of (a) the polyamide derived from substantially equimolar proportions of 4,4'-diaminodiphenyl sulfone and terephthaloyl dichloride and (b) the polyamide derived from substantially equimolar proportions of 4,4'-diaminodiphenyl sulfone and a phthaloyl acid chloride mixture consisting of about 75 mol percent terephthaloyl dichloride and about 25 mol percent isophthaloyl dichloride.

3,857,798

CONDUCTIVE INK COMPOSITION CONTAINING PD AND PB METAL POWDERS

David Thomas Wall, Shirley, and Neil Albert Burr, Quinton, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 27, 1972, Ser. No. 275,884

Claims priority, application Great Britain, July 27, 1971, 35315/71

Int. Cl. H01b 1/02, 1/08

U.S. Cl. 252-514

7 Claims

1. An ink for use in the manufacture of a thick film circuit, said ink comprising palladium powder, lead powder, the ratio of the weight of the palladium powder to the weight of the lead powder being in the range of 3:1 to 3:2 an inorganic bonding material and a binder liquid.

3,857,799

PROCESS FOR THE REGENERATION OF PLASTICS

Seichi Ooba, Asaka, and Shinichi Hirayama, Fukuyama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1972, Ser. No. 229,501

Claims priority, application Japan, Feb. 25, 1971, 46-9483

Int. Cl. C08f 47/24; C08g 53/22; C08b 29/40

U.S. Cl. 260-2.3

15 Claims

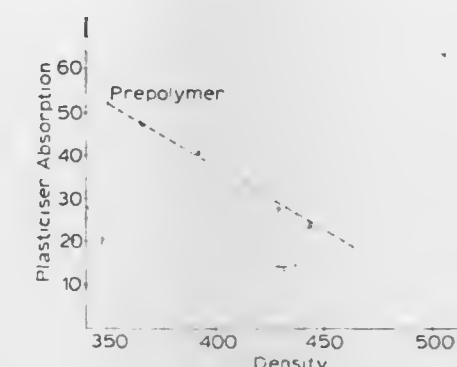
1. A process for regenerating waste plastic material comprising:

- mixing said waste plastic material with (1) a modified polyester prepared by heating polyethylene terephthalate in the presence of a glycol to substitute said glycol for 30 to 100 percent of the repeating ethylene glycol units of said polyethylene terephthalate, said glycol being selected from the group consisting of polymethylene gly-

cols, polyethylene glycols, alkylene glycols and glycols represented by the formula $HOCH_2-X-CH_2OH$ wherein X is an organic group having at least one aromatic ring, with the proviso that said glycol is not ethylene glycol, and (2) at least one member selected from the group consisting of a vinyl acetate homopolymer, an ethylene-vinyl acetate copolymer and a tacky polyolefin selected from the group consisting of a polyolefin having a low polymerization degree and atactic polypropylene, the amount of components (1) and (2), in combination, being effective to adhere said waste plastic material in a moldable form; and

B. molding the resulting mixture into the desired shape; said plastic being selected from the group consisting of thermoplastic and thermosetting resins.

wherein P_e is the desired density of the polymer, P_p° relates to the density of the prepolymer, m_{pc} relates to the weight of the



3,857,800

FLEXIBLE POLYURETHANE FOAMS PREPARED FROM A MIXTURE OF POLYETHER POLYOLS

John Fishbein, Marlow; Raymond William Henry Bell, Great Kings Hill; Anthony James Clarke, Chinnor, and Peter Merriman, Stratford-on-Avon, all of England, assignors to Dunlap Holdings Limited, London, England

Continuation of Ser. No. 148,170, May 28, 1971, abandoned.

This application Oct. 15, 1973, Ser. No. 406,221

Claims priority, application Great Britain, June 19, 1970, 30000/70

Int. Cl. C08g 22/46

U.S. Cl. 260-2.5 AP

15 Claims

1. A flexible polyurethane foam having an open-cell structure in which adjacent cells communicate with one another to a substantial extent, said foam having been prepared by the process which comprises reacting an organic polyisocyanate and two different polyols of which one is (a) an ethylene oxide tipped polyol prepared by reacting propylene oxide or a mixture of propylene oxide and ethylene oxide with a polyhydric alcohol having three hydroxyl groups and then reacting the resulting product with ethylene oxide until an ethylene oxide tipped polyol having a molecular weight of 3000 to 6000 and in which from 20 to 70% of the total terminal hydroxyl groups are primary hydroxyl groups is obtained, and the other polyol (b) is an anti-shrinking agent for the foam and is a subsidiary polyol, said subsidiary polyol containing at least 40% by weight oxyethylene groups with at least some of the oxyethylene groups in non-terminal positions, said subsidiary polyol being a polyethylene ether glycol or a poly(oxyethylene) poly(oxypropylene) polyol having a poly(oxypropylene) molecular weight of 500 to 2000, said polyol (b) being not more than 50% by weight of the total polyol, said reaction mixture containing a blowing agent.

3,857,801

METHOD FOR OBTAINING A CONTROLLED INCREASE OF THE DENSITY OF POROUS POLYMERS

Finn Ragnar Kulas, and Terje Ekeland, both of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Mar. 23, 1973, Ser. No. 344,176

Claims priority, application Norway, Mar. 23, 1972, 993/72

Int. Cl. C08f 47/08

U.S. Cl. 260-2.5 B

2 Claims

1. In a method for increasing the density of porous polymers in a controlled manner by adding a vinyl chloride monomer to a previously prepared porous polyvinyl chloride and subsequently polymerizing the added monomer, the improvement wherein the polymerization is effected in an aqueous suspension, whereby the amount of vinyl chloride monomer is limited up to that which the initial porous polymer can absorb, and the monomer/polymer ratio is further calculated on the basis of the desired increase of the density of the polymer according to the following equation:

$$P_e = P_p^\circ + K (m_{pc}/3m_{pre})$$

monomer, m_{pre} relates to the weight of the prepolymer, and K_2 is a constant.

3,857,802

BARIUM CARBONATE AS A MODIFIER FOR CERTAIN NON-RIGID POLYMETHANE FOAMS

William A. Larkin, Morristown; Robert C. Ringwood, Jr., Sewaren, and Kenneth Treadwell, Rahway, all of N.J., assignors to M & T Chemicals, Inc., Greenwich, Conn.

Filed Oct. 10, 1973, Ser. No. 405,072

Int. Cl. C08g 22/44, 51/56, 41/04

U.S. Cl. 260-2.5 BE

2 Claims

1. In an improved flame-retardant flexible or semiflexible foam comprising the reaction production of

- 100 parts by weight of a polyol selected from the group consisting of primary and secondary hydroxyterminated polyalkylene ethers exhibiting a molecular weight between 1,000 and 10,000;
- an organic di- or triisocyanate in an amount between 0.70 and 1.35 moles per total mole of active hydrogen present, as determined by the Zerewitinoff method;
- between 1.5 and 5 parts of water or other blowing agent;
- between 0.1 and 0.9 part of a gel catalyst;
- a flame retardant consisting essentially of antimony trioxide and between 2 and 100 parts of a finely divided halogen-containing polymer;

the improvement which comprises the presence of barium carbonate in an amount between 2 and 50%, based on the weight of said antimony trioxide, the combined weight of antimony trioxide and barium carbonate constituting between 2 and 20%, based on the weight of said polyol.

3,857,803

LABELING ADHESIVE

Richard Stewart Shenfeld, Hoffman Estates, and Orville E. Brown, Elk Grove Village, both of Ill., assignors to Borden, Inc., Columbus, Ohio

Filed June 5, 1973, Ser. No. 367,197

Int. Cl. C08b 25/02

U.S. Cl. 260-17.4 ST

6 Claims

1. An adhesive for labeling glass bottles capable of forming a paper-to-glass bond durable to submersion in ice water, said adhesive consisting essentially of at least 40 percent by weight water; from about 10 percent to about 40 percent unconverted starch; from about 5 percent to about 20 percent nitrogenous substance selected from the group consisting of urea, dicyandiamide and mixtures thereof; and an ammoniated hydrolysis product of a styrene/maleic anhydride copolymer devoid of amide groups in amount corresponding to from about 0.6 to about 33 parts by weight of said copolymer for each 100 parts of combined weight of starch and nitrogenous substance, with sufficient ammonia to effect a pH in the adhesive in the range of about 7.5 to about 9.2.

3,857,804

THERMOPLASTIC FILM FOR CONTROLLING PLANT GROWTH

Flaviano Glatti, Mestre; Manlio Guariento, Mantova, and Ugo Cerruti, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed July 7, 1969, Ser. No. 839,652

Claims priority, application Italy, July 5, 1968, 18604/68

Int. Cl. A01g 9/14; C08f 29/18, 45/56

U.S. Cl. 260—23 X A

4 Claims

1. The combination with an agricultural growth medium exposed to the sun of a flexible film of synthetic thermoplastic material interposed between the sun and the agricultural growth medium and having total light transmittance to sunlight with a wavelength between 300 and 700 mμ of less than 40% and average total light transmittance for sunlight with a wavelength greater than 900 mμ of at least 60%, the total transmittance of the film to sunlight between 900 and 1500 mμ being on the average greater than 60%, the flexible film having a thickness of 0.01 to 0.5 mm and light transmittance characteristics for sunlight corresponding to the following table:

Wavelength (m)	Total Transmittance (%)
300 to 500	0 to 10
500 to 750	0 to 35
750 to 900	0 to 90
900 to 1500	60 to 90,

said film being formed with an opening through which a plant is grown and surrounding said plant for restricting growth there-around.

3,857,805

HYDROCARBON WAX COMPOSITION

William A. Prickril, Lakewood, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 301,580, Oct. 27, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,208

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 B

10 Claims

1. A composition comprising a major proportion of a hydrocarbon wax containing about 10–40% by weight of oil and a minor proportion of an ethylene/propylene/non-conjugated polyene terpolymer having a combined ethylene content of about 30–85% by weight and an iodine number of about 5–15.

3,857,806

VINYL ACETATE-ALPHA OLEFIN COATING COMPOSITIONS

Philip K. Isaacs, Jerusalem, Israel, and Alexander C. Paton, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 838,022, June 19, 1969, abandoned, which is a continuation of Ser. No. 560,841, June 27, 1966, abandoned. This application Mar. 15, 1971, Ser. No. 124,539

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 R

5 Claims

1. A latex coating composition consisting essentially of water and dispersed therein pigment and a film-forming amount of a copolymeric component, said copolymeric component consisting of from about 70 to 99 weight percent vinyl acetate copolymerized with from about 1 to 30 weight percent C₇ to C₂₀ straight chain alpha olefin, said copolymer having an intrinsic viscosity in acetone at 30°C. of at least 0.2 deciliters per gram.

3,857,807

FLUOROELASTOMER COMPOSITION

Yutaka Kometani; Shun Koizumi, both of Osaka; Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa, Osaka; Masayasu Tomoda, Osaka, and Kiyoichi Kondo, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 6, 1972, Ser. No. 303,769

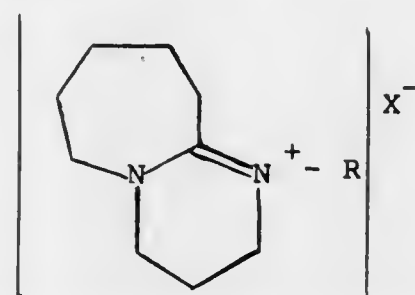
Claims priority, application Japan, Nov. 11, 1971, 46-90488; July 25, 1972, 47-74849

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

15 Claims

1. A fluoroelastomer composition consisting essentially of (a) a fluoroelastomer, (b) 2 to 30 parts of at least one member selected from the group consisting of a bivalent metal oxide, a bivalent metal hydroxide and a mixture of a bivalent metal oxide or a metal hydroxide with a metal salt of a weak acid, (c) 0.5 to 5 parts of an aromatic polyhydroxy compound, (d) 0.2 to 10 parts of a quaternary ammonium compound having the general formula:



wherein R is an alkyl group having 1 to 24 carbon atoms or an aralkyl group having 7 to 20 carbon atoms, and X⁻ is an anion selected from the group consisting of a halide ion, hydroxylate ion, alkoxylate ion, carboxylate ion, phenoxide ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion, and (e) 0.1 to 10 parts of water or 0.5 to 30 parts of a metal compound which produces water by reaction with hydrogen fluoride, said parts of (b), (c), (d) and (e) being parts by weight per 100 parts of (a).

3,857,808

PROCESS FOR PREPARING HIGH SOLIDS CONTENT POLYMER LACQUER DISPERSIONS

William Andrew Crozier, and Dieter Heinrich Klein, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

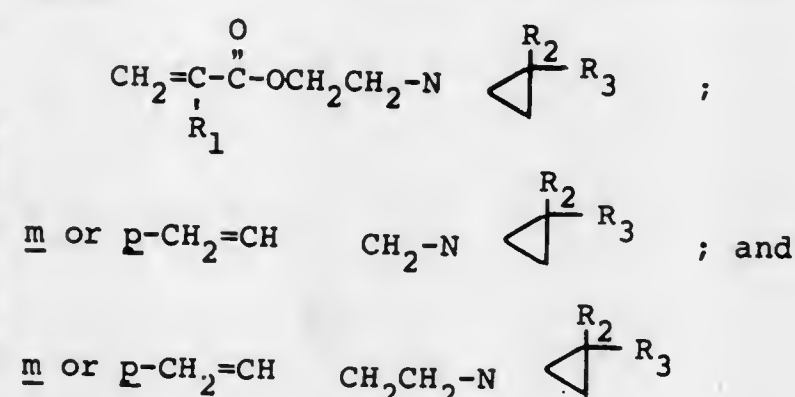
Filed Apr. 24, 1972, Ser. No. 246,874

Int. Cl. C08f 45/28, 47/20

U.S. Cl. 260—33.6 UA

3 Claims

1. A process for preparing a dispersion containing from about 75 to 80 percent by weight of individual particles of a normally crystalline vinylidene chloride polymer in a nonpolar organic liquid hydrocarbon having a boiling point between about 30°C. to 300°C. which process comprises polymerizing the monomeric constituents of said polymer in said organic liquid in the presence of from about 0.1 to 3 percent by polymer weight of a preformed dispersion stabilizer which is the product of the reaction of (A) a poly-12-hydroxy stearic acid having a molecular weight up to about 3,000, and (B) a compound selected from the group consisting of compounds of the formula



where

R₁ is hydrogen or CH₃.

R₂ is hydrogen or lower alkyl, and

R₃ is hydrogen or lower alkyl;

wherein the mass ratio of (A) to (B) is from about 90:10 to about 80:20.

3,857,809

POLYURETHANE-UREAS BASED ON CIS-TRANS-1,4-DIAMINOCYCLOHEXANE

Harald Oertel, Odenthal-Gloebsch; Bruno Zorn, Cologne; Wilhelm Thoma, Bergisch-Neukirchen, and Klaus Noll, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen

Filed Apr. 23, 1973, Ser. No. 353,279

Claims priority, application Germany, May 4, 1972, 2221798

Int. Cl. C08g 51/28, 22/04

U.S. Cl. 260—33.8 UB

10 Claims

1. A polyurethane polyurea prepared by a process which comprises, reacting in an inert organic solvent a

- a chain extender comprising at least 80 mol % 1,4-diamino cyclohexane with a cis/trans isomer ratio of from 10/90 to 60/40, with
- an isocyanato-terminated prepolymer prepared by a process which comprises reacting
 - substantially linear polyhydroxyl compounds with molecular weights of from 500 to 5000, with
 - aliphatic or cycloaliphatic diisocyanates, the molar ratio of hydroxyl groups to isocyanate groups being between about 1 : 1.5 and 1 : 5,
 and evaporating the solvent.

3,857,810

PROCESS FOR THE TRANSFORMATION OF A POLYMER DISPERSION TO A HOMOGENEOUS SOLID MASS

Alan Stuart Baker, George Green, and Julian Alfred Waters, Spencers Wood, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 62,209, Aug. 7, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,113

Claims priority, application Great Britain, Aug. 14, 1969, 40643/69

Int. Cl. C08f 45/28, 47/20

U.S. Cl. 260—34.2

9 Claims

1. A process for converting, into a homogeneous solid mass, a concentrated, fluid dispersion of self-stable, substantially spherical aggregates of an amphipathic block or graft copolymer in a hemi-solvent, the amphipathic copolymer comprising at least two polymeric components of molecular weight at least 500 which differ significantly from each other in their solubility characteristics, the hemi-solvent being a liquid or mixture of liquids which is a good solvent for one of the said polymeric components and a non-solvent for another of the said components and the weight ratio in the amphipathic copolymer of the components insoluble in the hemi-solvent to the components soluble in the hemi-solvent being not less than 50:50, wherein the concentration of the amphipathic copolymer in the hemi-solvent is not less than 20% by weight, said process comprising heating the concentrated dispersion without significant change in the concentration of the copolymer in the hemi-solvent to a temperature above the environmental glass transition temperature of the insoluble components of the copolymer and subsequently cooling the resulting fluid composition to a temperature below the said transition temperature.

3,857,811

FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 188,598, Oct. 12, 1971, Pat. No.

3,781,241, which is a division of Ser. No. 872,753, Oct. 30, 1969, Pat. No. 3,658,751. This application Dec. 27, 1972, Ser. No. 318,795

Int. Cl. C08g 37/18, 51/10

U.S. Cl. 260—38

9 Claims

1. A friction particle comprising the non-catalyzed reaction product of the reaction at about 225 to about 400 degrees F. of a nonhydroxyalkylated, non-alkylated hydroxy aromatic hydrocarbon-aldehyde resole containing substantially no etherified aromatic hydroxyl groups with a mixture of a hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde novolac with at least one member of the group consisting of a hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde resole and an alkylated hydroxy aromatic hydrocarbon aldehyde resole until the resulting product is substantially insoluble in acetone, infusible, and does not soften slightly under mechanical force at a temperature below 400 degrees F. and has substantially no cohesive or bonding strength, wherein said non-hydroxyalkylated resole comprises about 60 to about 95 percent of the weight of the resin components; wherein the hydroxyalkylated resole contains less than about 0.5 percent of the aromatic hydroxyl originally present in the hydroxy aromatic hydrocarbon aldehyde condensate; and wherein the alkylated groups are substituted on the aromatic ring and are selected from the group consisting of:

- alkyl groups of 1 to 60 carbon atoms,
- cycloalkyl groups of 5 to 12 carbon atoms,
- alkyl, aryl and cycloalkyl ketonic groups wherein the hydrocarbon portion is as defined in (a) and (b),
- alkyl, aryl and cycloalkyl carboxylic groups wherein the hydrocarbon portion is as defined in (a) and (b),
- aryl groups of 6 to 24 carbon atoms, and
- aryl substituted alkyl wherein the aryl is phenyl, lower alkyl-substituted phenyl or hydroxy substituted phenyl.

3,857,812

UNSATURATED POLYESTER COMPOSITIONS AND THERMOSET ARTICLES PREPARED THEREFROM

Robert M. Nowak, and Thomas O. Ginter, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 17,947, March 9, 1970, Pat. No. 3,674,893, which is a continuation-in-part of Ser. No. 812,326, April 1, 1969, abandoned. This application June 2, 1972, Ser. No. 259,285

Int. Cl. C08d 9/08; C08f 43/08

U.S. Cl. 260—40 R

30 Claims

1. A stable, thermosettable composition suitable for preparing impact resistant reinforced plastic articles which comprises a mixture of about 85 to 95 weight percent of a polymerizable resin wherein said resin comprises about 25 to 70 weight percent of an unsaturated polyester of a dicarboxylic acid and a polyol and about 75 to 30 weight percent of a copolymerizable vinyl monomer, and about 15 to 5 weight percent of a polydiene rubber selected from the group consisting of (a) a homopolymer of a conjugated diene monomer or a copolymer of two or more conjugated diene monomers having an inherent viscosity of about 0.75 to 1.2 deciliters/gm and (b) copolymers of 30 to 80 weight percent of a conjugated diene and 70 to 20 weight percent of at least one other copolymerizable monomer selected from the group consisting of unsaturated nitrile monomers and alkenyl aromatic monomers wherein the copolymer has an inherent viscosity of about 0.3 to 1.2 deciliters/gm.

3,857,813

INCORPORATION OF REINFORCING FIBERS INTO OLEFIN POLYMERS

S. Douglas Stain, Jr.; Gordon Y. T. Liu, both of Baton Rouge, and Lloyd B. Hutchinson, Denham Springs, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 196,193, Nov. 5, 1971, abandoned.

This application Sept. 21, 1973, Ser. No. 399,780

Int. Cl. C08f 45/10

U.S. Cl. 260-42.18

7 Claims

1. A method for incorporating a reinforcing fiber into olefin polymer comprising the steps of blending a reinforcing amount of reinforcing fibers with an extrudable, free flowing olefin polymer powder characterized by a bulk density in the range from about 20 to about 35 pounds per cubic foot and particles having particle sizes predominantly in the range from about 50 to about 800 microns, roughened surfaces and porosity sufficient to provide an average free volume within individual particles in the range from about 20 to about 50 volume per cent based on total volume of particles of the powder.

3,857,814

BRANCHED AROMATIC POLYESTERS AND CROSS-LINKED DERIVATIVES THEREOF

James Economy, Eggertsville; Steve G. Cottis, Amherst, and Bernard E. Nowak, Lancaster, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 96,234, Dec. 8, 1970., This application

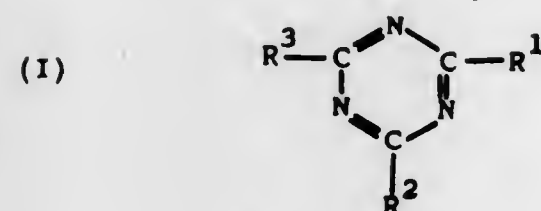
Nov. 6, 1973, Ser. No. 413,474 The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

Int. Cl. C08g 17/02, 17/08

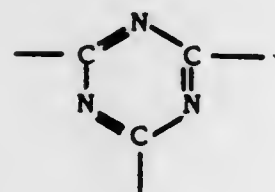
U.S. Cl. 260-47 CP

44 Claims

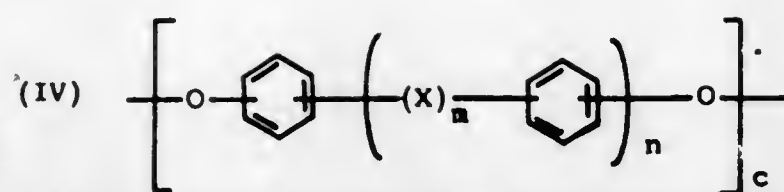
1. A branched aromatic polyester of Formula I



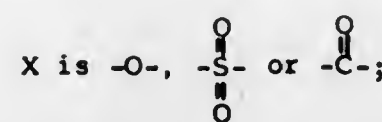
wherein



is a cyanuryl nucleus and wherein R¹, R² and R³ each consist essentially of a plurality of moieties selected from the group having the Formulas II, III and IV



a, b and c being integers representing the total number of the respective moieties in each of R¹, R² and R³; wherein:



n is 0 or 1, and when n is 1, m is 0 or 1; the carbonyl groups of the moiety of Formula III are meta or para to each other; the oxy groups of the moiety of Formula IV are meta or para to each other;

wherein:

the oxy groups of the moieties of Formulas II and IV are linked to a carbonyl group of a moiety of Formulas II or III or to a carbon atom of the cyanuryl nucleus;

the carbonyl groups of the moieties of Formulas II and III are linked to an oxy group of a moiety of Formulas II or IV;

the carbon atoms of the cyanuryl nucleus are linked to an oxy group of a moiety of Formulas II or IV;

and wherein:

a is an integer from 0 to about 40;
b is an integer from 0 to about 20;
c is an integer from 0 to about 20;
a + b + c is an integer from 2 to about 40;
the average value of a, b and c for R¹, R² and R³ is from 2 to about 40;
when a is 0, b is an integer from 1 to about 20 and c is an integer from 1 to about 20;
when b is 0, a is an integer from 1 to about 40 and c is 0 or 1;
when b and c are each 0, a is an integer from 2 to about 40.

3,857,815

POLYGLYCOL-MODIFIED PHENOLIC RESINS

Harry A. Smith, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 151,545, June 9, 1971, abandoned. This application July 5, 1973, Ser. No.

376,755 The portion of the term of this patent subsequent to

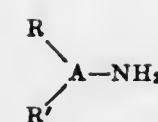
Apr. 3, 1990, has been disclaimed.

Int. Cl. C08g 5/18

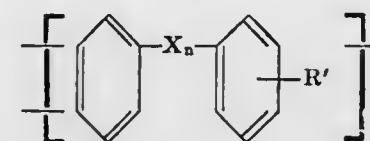
U.S. Cl. 260-51.5

11 Claims

1. A process for making an improved phenolic aldehyde resin which comprises reacting by contacting at about 50°C. to the boiling point of the reaction mixture a resole resin with about 0.5-40 weight percent based on the weight of resole of polyalkylene glycol having an average molecular weight of about 400-10,000, wherein said polyalkylene glycol is essentially a polypropylene glycol, a polybutylene glycol, or a mixture thereof and the resole is the neutral or basic catalyst-initiated reaction product of about 0.5-2.2 moles of formaldehyde with a mole of a phenol and wherein the polyglycol-modified resole is reacted at about 50°C. to the boiling point of the reaction mixture with about 0.05-0.5 gram mole per 100 grams of resole of at least one aromatic amine of the group consisting of aniline, ar-(lower alkyl)aniline, lower alkoxyaniline, and a difunctional aromatic amine of the formula



wherein A represents a benzene ring, a naphthalene nucleus, or a dicyclic moiety of the formula



wherein X is oxygen, lower alkylidene, S, SO₂, or NH, n is zero or one, R is OH or NH₂, and R' is H, lower alkyl, or lower alkoxy.

3,857,816

METHOD OF MANUFACTURING POLYMER GRAFT-POLYMERIZED ONTO CRYSTALLINE INORGANIC SALT

Tadashi Yamaguchi, No. 9-29, Hachiman 3-chome, Sendai-shi, Miyagi-ken; Hiroshi Hoshi, No. 426, Saginuma-cho 1-chome, Narashino-shi, Chiba-ken; Michio Hirakawa, No. 22-9, Mama 5-chome, Ichikawa-shi, Chiba-ken, and Isao Watanabe, No. 1724, Yatsu 8-chome, Narashino-shi, Chiba-ken, all of Japan

Filed Aug. 2, 1972, Ser. No. 277,343

Claims priority, application Japan, Aug. 3, 1971, 46-57949

Int. Cl. C08f 3/00, 15/04, 15/08

U.S. Cl. 260-63 R

9 Claims

1. A method of preparing a polymer graft-polymerized onto a crystalline inorganic salt, which comprises the steps of: mixing (a) an aqueous suspension of particles of crystalline inorganic salt selected from the group consisting of calcium sulfite and calcium carbonate, (b) a substance selected from the group consisting of sulfur dioxide and carbon dioxide and capable of reacting with said crystalline inorganic salt to form active radical sites on said salt, and (c) at least one monomer capable of radical polymerization and having an e value of from -0.8 to +0.8, to form a reaction mixture of (a), (b) and (c); maintaining said mixture under polymerizing conditions effective to polymerize said monomer (c) onto the active sites on said salt to form solid particles of a polymer of (c) grafted onto a nucleus of said crystalline inorganic salt, and then recovering the polymerization product particles from the reaction system.

3,857,817

THERMOSETTING COATING COMPOSITIONS

Bruce Collins Henshaw, Mount Waverley, and Bruce Leary, Frankston, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Victoria, Australia

Filed May 15, 1973, Ser. No. 360,453

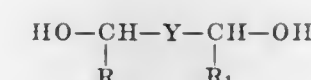
Claims priority, application Australia, May 24, 1972, 9068/72

Int. Cl. C08g 37/30

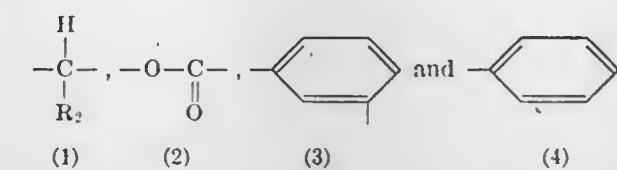
U.S. Cl. 260-67.6 R

6 Claims

1. A liquid coating composition the film-forming constituents of which consist essentially of a blend of
a. methylol melamine containing 4-6 methylol groups per molecule which groups are fully etherified with methanol or ethanol, and
b. an ester diol of the structure



wherein Y is a molecular entity of chainlike structure the links of which chain are selected from the moieties



and R, R₁ and R₂ are selected from H, CH₃ and C₂H₅, provided also that the chain shall contain at least two links of the structure (2) and ester diol shall have a maximum molecular weight of 600 the components (a) and (b) being blended in a molar ratio of from 1:1.67 to 1:3.

3,857,818

BLOCKED POLYURETHANE POWDER COATING COMPOSITIONS

Gerald L. Frizelle, Gladstone, Mo., assignor to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Sept. 18, 1972, Ser. No. 289,968

Int. Cl. C08g 22/32; C09d 3/72; B05d 5/00

U.S. Cl. 260-77.5 TB

3 Claims

1. A solid, heat-curable powder coating composition consisting essentially of a solid powder mixture of a solid ketoxime-blocked organic polyisocyanate having no free isocyanate groups which becomes unblocked at the curing temperature and a solid hydroxy functional acrylic or polyester resin, the ratio of the blocked isocyanate to hydroxy resin being such as to give an NCO/OH ratio of 0.6/1.0 to 1.5/1.0 and said solid hydroxy functional resin being selected from the group consisting of (A) solid hydroxy functional acrylic copolymers of (1) at least one monomer selected from the group consisting of styrene, α-methyl styrene, alkyl methacrylates and alkyl acrylates and (2) a hydroxy alkyl acrylate or methacrylate; and (B) solid hydroxy functional polyesters of polyhydric alcohols and dibasic acids.

3,857,819

POLYUREA FIBERS BASED ON POLY(4,4'-METHYLENEDICYCLOHEXYLENE)UREA

Ronald Dean Mathis, Taylors, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

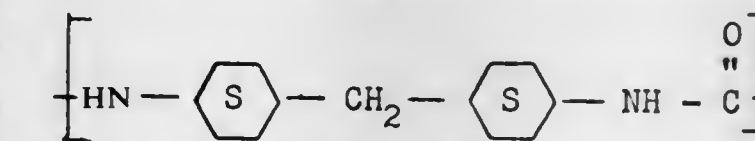
Filed Mar. 5, 1973, Ser. No. 338,100

Int. Cl. C08g 22/02

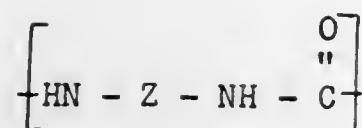
U.S. Cl. 260-77.5 CH

3 Claims

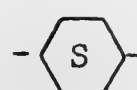
1. A synthetic fiber of a polyurea wherein at least about 97 mole percent of its recurring units have the structural formula



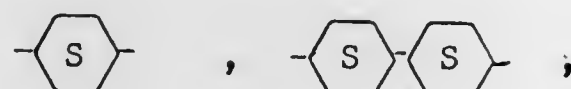
and from 0 to 3 mole percent of its recurring units have the structural formula



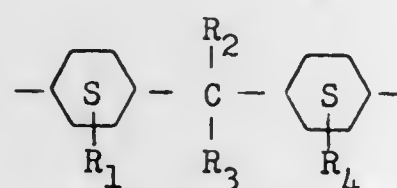
wherein



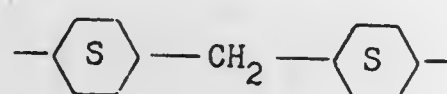
represents a 1,4-cyclohexylene group and Z represents a divalent organic group selected from alkylene of three to six carbon atoms,



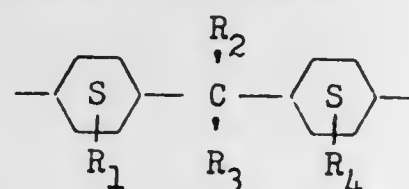
and



where R_1 , R_2 , R_3 and R_4 each represent hydrogen or methyl groups with the proviso that at least one of R_1 - R_4 is methyl; and wherein at least about 69 percent of the



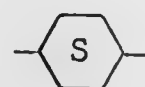
groups, at least about 69 percent of the



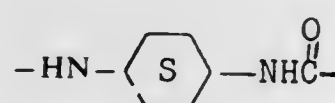
groups, and at least about 69 percent of the



groups, have both their cyclohexylene moieties in the trans configuration and at least about 69 percent of the



groups in the formula



are in the trans configuration; said fiber having an initial modulus of at least about 70 gpd. and a sonic velocity of at least 3.0 km./sec.

3,857,820 SOLUTION FOR FORMING THERMALLY RESISTANT POLYMERS

Makoto Kojima; Yuzuru Noda; Shiro Mazaki, and Yashutada Katashiba, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 397,209

Claims priority, application Japan, Sept. 14, 1972, 92564

Int. Cl. C08g 22/00

U.S. Cl. 260—77.5 AM

12 Claims

1. A solution for forming thermally resistant polymers comprising a mixture of a polymer terminally substituted with glycine derivatives and a blocked polyisocyanate in an amount approximately stoichiometrically equivalent to said prepolymer in an inert solvent, said prepolymer comprising the reaction product of two equivalents of a diglycine derivative having the general formula



wherein R_1 and R_2 , which may be the same or different, each represents a hydrogen atom or a lower alkyl radical and R_3 represents a divalent aromatic radical, a divalent aliphatic radical or a divalent alicyclic radical, with a diisocyanate or a blocked diisocyanate, said diisocyanate or blocked diisocyanate containing an imide group and, optionally an imide-forming group in the molecular chain of the molecule, and comprising the reaction product of at least one of 1,2,3,4-butanetetracarboxylic acid and derivatives thereof selected from the group consisting of 1,2,3,4-butanetetracarboxylic acid mono anhydride, 1,2,3,4-butanetetracarboxylic acid diester and 1,2,3,4-butanetetracarboxylic acid diamide, with an excess molar amount of a diisocyanate monomer or a blocked monomer thereof.

3,857,821 ACETYLENE GROUP-CONTAINING POLYMERS

Ernst Becker, 18 Fichtestrasse, 6700 Ludwigshafen; Herbert Naarmann, 15 Haardtblick, 6719 Wattenheim; Kurt Schneider, Auf dem Koepfel, 6702 Bad Duerkheim 1, and Hellmuth Kessler, 17 An der Tuchbleiche, 6712 Bobenheim-Roxheim 2, all of Germany

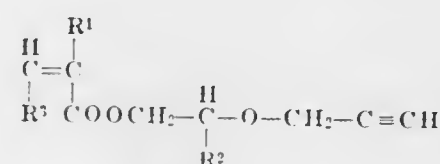
Filed Sept. 19, 1973, Ser. No. 398,572

Int. Cl. C08f 3/64, 3/66, 9/00

U.S. Cl. 260—78.4 E

2 Claims

1. A process for the manufacture of acetylene group-containing polymers, wherein acetylene derivatives of the formula:



in which R^1 and R^2 are hydrogen or methyl and R^3 is hydrogen or carboxyl, are polymerized together with from 0 to 99% by weight of other olefinically unsaturated monomers by free-radical polymerization.

3,857,822 LIGHT-SENSITIVE COPOLYMERS, A PROCESS FOR THEIR MANUFACTURE AND COPYING COMPOSITIONS CONTAINING THEM

Werner Frass, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Jan. 26, 1973, Ser. No. 327,100

Claims priority, application Germany, Jan. 27, 1972, 2203732

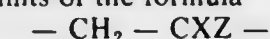
Int. Cl. C08f 27/08

U.S. Cl. 260—78.5 T

4 Claims

1. A process for the manufacture of a copolymer which comprises reacting a copolymer containing from 20 to 55

mole per cent of maleic anhydride units and from 45 to 80 mole per cent of units of the formula



wherein X is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl or alkoxy group containing from one to three carbon atoms, an aryl group or an acyloxy group, and Z is selected from the group consisting of a hydrogen atom, a halogen atom or an alkyl group containing one or two carbon atoms, with from 70 to 300 mole per cent of allylamine, relative to maleic anhydride units of the said copolymer, in a lower aliphatic carboxylic acid as a solvent.

3,857,823 PREPARATION OF SULFOXIDE SORBENTS

Gunter R. Ackermann, Newton Square, Pa., assignor to Rohm and Hass Company, Philadelphia, Pa.

Filed Feb. 11, 1972, Ser. No. 225,643

Int. Cl. C08f 27/06

U.S. Cl. 260—79.3 R

6 Claims

1. A water-insoluble macroreticular polymer of an aromatic mono-vinyl compound crosslinked by copolymerization with an aromatic polyvinyl compound, said polymer containing as substituents on the aromatic nuclei, sulfinyl groups of the formula $-\text{SOX}$ wherein X is an aryl group.

3,857,824 PROCESS FOR THE PREPARATION OF BEAD POLYMERS USEFUL IN GEL PERMEATION CHROMATOGRAPHY

Bobby L. Atkins, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

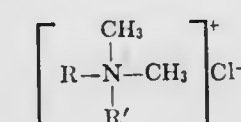
Filed July 5, 1972, Ser. No. 269,233

Int. Cl. C08f 1/11, 15/02

U.S. Cl. 260—80.3 N

9 Claims

1. In the process of making heteroporous polymers in bead form useful in gel permeation chromatography wherein a vinyl monomer of acrylamide or methacrylamide is copolymerized with an alkylidene bisacrylamide as a crosslinking monomer, both monomers being dissolved in a diluent solvent and suspended in an inert hydrocarbon liquid immiscible with said monomer solution, the improvement which comprises employing as components in said suspension a copolymer of an alkyl substituted styrene wherein said alkyl group contains from 3-8 carbon atoms and an N-vinyl heterocyclic monomer in combination with a cationic surfactant, having the formula



wherein R and R' are hydrocarbyl radicals having from 8 to 18 carbon atoms as the suspending system, wherein said substituted styrene-N-vinyl heterocyclic copolymer is employed in an amount of 0.5 to 15 percent and said surfactant is employed in an amount of 0.05 to 8 percent both based on the weight of the disperse phase and wherein said crosslinking monomer is employed at 0.5 to 2.5 moles per mole of vinyl monomer.

3,857,825 PROCESS FOR THE PRODUCTION OF POLYMERIC HYDROCARBONS HAVING REACTIVE SILYL END GROUPS

Roland Streck, and Heinrich Weber, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Nov. 16, 1972, Ser. No. 306,989

Claims priority, application Germany, Nov. 19, 1971, 2157405

Int. Cl. C08f 15/02

U.S. Cl. 260—88.1 R

19 Claims

1. A process for preparing solid polymeric hydrocarbons having reactive silyl end groups by catalyzed ring opening polymerization of a cyclic olefin, which comprises reacting:

- a cyclomonoalkene or non-conjugated cyclopolyalkene monomer capable of catalytic ring-opening polymerization having at least one metathetical unsubstituted, ethylenically unsaturated double bond in a hydrocarbon ring which contains 4, 5, 7 or more ring carbon atoms;
 - about 0.001-1.0 mole per mole of said monomer of a tetrasubstituted organic silicon compound consisting essentially of
 - at least one metathetical organic group having at least one unsubstituted, ethylenically unsaturated, nonconjugated, acyclic double bond, which group is bonded to silicon via a carbon-silicon bond;
 - at least one hydrolyzable group bonded to a silicon atom via a carbon-silicon bond selected from the group consisting of halogen, lower alkoxy, lower alkanoyloxy, carbocyclic aryloxy of 6-12 carbon atoms and lower ketoxime; and
 - any remaining silicon valences bearing a carbon-silicon bond; in the presence of
 - a catalytic amount of a cycloolefin metathesis catalyst comprising:
 - a halogenated compound of a metal in Subgroups 5-7 of the Mendeleev Periodic Table; and
 - a metal, metal alkyl or metal hydride of a metal in Main Groups 1-3 of the Mendeleev Periodic Table;
- in a reaction media substantially free of conjugated diolefins, alkynes, water and H-acidic compounds, at a temperature of about -50°C to $+80^\circ\text{C}$ to form a solid polymeric hydrocarbon chain having reactive silyl end groups.

3,857,826 FLUID, HYDROXYL-TERMINATED ETHYLENE/PROPYLENE COPOLYMERS

Robin Nikolas Greene, Wilmington, and Edward Sohl, New Castle, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1973, Ser. No. 391,455

Int. Cl. C08f 15/04

U.S. Cl. 260—88.2 R

7 Claims

1. A fluid, substantially carbonyl-free, hydroxyl-terminated ethylene/propylene random copolymer having a number average molecular weight of about 4,000-10,000 and a hydroxyl functionality of about 1.8-3.0.

3,857,827 METHOD OF PREPARING HIGH-QUALITY VINYLIDENE FLUORIDE POLYMER IN AQUEOUS EMULSION

Julius Eugene Dohany, Berwyn, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 25, 1974, Ser. No. 436,821

Int. Cl. C08f 3/22, 15/08

U.S. Cl. 260—92.1

5 Claims

1. In the process of preparing vinylidene fluoride polymer by emulsion polymerization of monomer in stirred aqueous reaction medium containing a fluoroalkyl surfactant emulsifier, the improvement which comprises feeding incrementally or substantially continuously to the reaction medium the monomer and simultaneously therewith diisopropylperoxydi-

3,857,836

HERBICIDAL AGENTS

Gerhard Horlein, Frankfurt am Main; Hubert Schonowsky, Neu-Isenburg, both of Germany; Georg Gustav Gassner, deceased, late of Kelkheim/Taunus, Germany (by Margot Gassner nee Heinemann, heiress); Peter Langeluddeke, Diedenbergen/Taunus, and Adolf Studeneer, Kelkheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft vormals, Frankfurt/Main, Germany

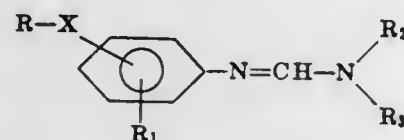
Filed Mar. 22, 1972, Ser. No. 237,127

Claims priority, application Germany, Mar. 23, 1971, 2113978

Int. Cl. C09b 23/00

U.S. Cl. 260—240 G

1. A Compound of the formula



in which

R is an alkyl radical of from 1 to 3 carbon atoms or an alkenyl radical of 2 carbon atoms containing at least one chlorine or fluorine atom linked to each carbon atom, said radical R further containing at least one hydrogen atom;

R₁ is hydrogen, chlorine, methyl, methoxy, or trifluoromethyl;

R₂ and R₃ each is alkyl having from 1 to 3 carbon atoms; or R₂ and R₃ together represent an alkylene or an oxalkylene of from 4 to 6 carbon atoms, and

X is oxygen or sulfur;

or the hydrochloride, sulfate, nitrate, chlorate, perchlorate or phosphate salt thereof. --

3,857,837

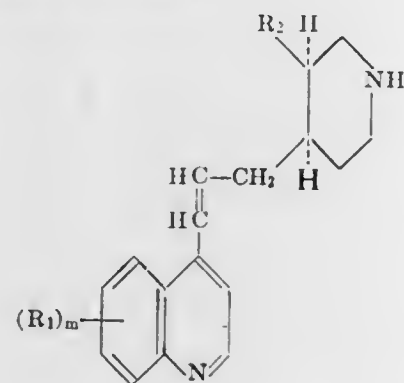
PROCESSES AND INTERMEDIATED FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovich, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,523

Int. Cl. C09b 23/00

U.S. Cl. 260—240 R

1. A compound of formula



wherein m is 0, 1 or 2; R₁ is hydrogen, hydroxy, halogen, trifluoromethyl, lower alkyl, lower alkoxy or, when m is 2, R₁ with an adjacent R₁, additionally is methylenedioxy; and R₂ is vinyl or lower alkyl; its antipode or racemate.

3,857,838

ORGANOPHOSPHATE ESTER DERIVATIVES OF HETEROCYCLIC COMPOUNDS AND PROCESS

Jacques Perronnet, Paris, and Andre Poittevin, Vaires-sur-Marne, both of France, assignors to Roussel Uclaf, Paris, France

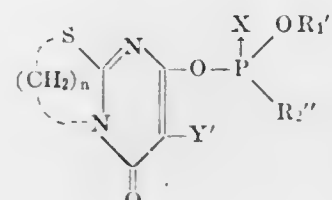
Filed Sept. 12, 1972, Ser. No. 288,393

Claims priority, application France, Sept. 16, 1971, 71.33434

Int. Cl. C07d 51/46

U.S. Cl. 260—243 R

1. An organo phosphate ester having the formula



wherein

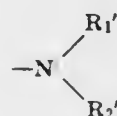
n represents an integer from 2 to 3,

Y' represents a member selected from the group consisting of hydrogen, alkyl having one to six carbon atoms, halo and alkylthio having one to six carbon atoms,

X represents a member selected from the group consisting of sulfur and oxygen,

R₁' represents an alkyl having one to four carbon atoms,

R₂' represents a member selected from the group consisting of alkoxy having one to four carbons atoms, alkox-yalkoxy having one to four carbon atoms alkoxyalkoxy having one to four carbon atoms in each alk., and



where R₁' and R₂' are members selected from the group consisting of hydrogen and alkyl having one to three carbon atoms.

3,857,839

FOR CYCLISING 1-ARYLOXY-3 BETA-SUBSTITUTED ETHYLAMINO-2-PROPANOLS

Stanley Arnold Lee, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 44,644, June 8, 1970, Pat. No. 3,713,890. This application Oct. 19, 1972, Ser. No. 299,174

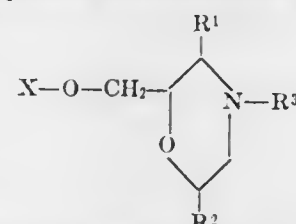
Claims priority, application Great Britain, June 20, 1969, 31255/69; Oct. 13, 1969, 50130/69

Int. Cl. C07d 87/32

U.S. Cl. 260—247.7 C

6 Claims

1. A process for the manufacture of morpholine derivatives selected from compounds of the formula:



wherein R¹ is hydrogen, R² is hydrogen or alkyl of up to 3 carbon atoms, R³ is hydrogen and X is phenyl or naphthyl which is unsubstituted or phenyl which is substituted by one or two substituents selected from halogen, alkyl, alkoxy and alkylthio each of up to 10 carbon atoms, trifluoromethyl, alkenyl and alkenyloxy each of up to 6 carbon atoms, phenyl, phenoxy, benzyloxy, hydroxy, indanyl or tetrahydronaphthyl,

3,857,842

PROCESS FOR PREPARING PURINE COMPOUNDS BY REACTION OF A CARBONITRILE WITH FORMIC ACID
Norio Asai, Chiba, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

Filed Dec. 7, 1971, Ser. No. 205,764

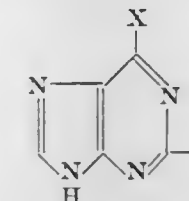
Claims priority, application Japan, May 6, 1970, 45-38504; Dec. 9, 1970, 45-108579; Dec. 9, 1970, 45-108578

Int. Cl. C07d 57/38

U.S. Cl. 260—252

4 Claims

1. A process for preparing purine compounds of the formula



wherein X is selected from the group of hydroxy and amino, and Y is selected from the group consisting of hydrogen, hydroxy and amino, comprising the step of reacting at 80° to 170°C. 4(5)-aminoimidazole-5(4)-carbonitrile with a reagent selected from the group consisting of formic acid, ammonium formate, urea and guanidine.

3,857,840

PYRIDO-1,2,3-TRIAZINES

Kurt Rufenacht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,430

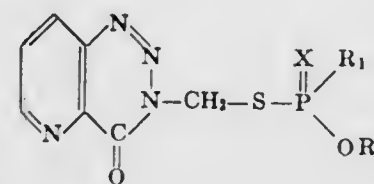
Claims priority, application Switzerland, Mar. 24, 1972, 4373/72

Int. Cl. C07d 57/34

U.S. Cl. 260—248 AS

6 Claims

1. A compound of the formula



wherein

R₁ represents C₁-C₆-alkyl, C₁-C₆-alkoxy, C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy, C₁-C₆-alkoxy-C₁-C₆-alkoxy, halogeno-C₁-C₆-alkoxy, C₁-C₆-alkylthio, C₃-C₆-alkenylthio, C₁-C₆-alkoxy-C₁-C₆-alkylthio, C₁-C₆-alkylthio-C₁-C₆-alkylthio, phenyl, amino, C₁-C₆-alkylamino or di-C₁-C₆-alkylamino, R₂ represents C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-alkynyl, C₁-C₆-alkoxy-C₁-C₆-alkyl or halogeno-C₁-C₆-alkyl, and

X represents oxygen or sulphur.

3,857,841

PROCESS FOR THE MANUFACTURE OF CARBOXYLIC ACID AND SULFONIC ACID CHLORIDES

Gunther Keil, Lorsbach/Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 16, 1973, Ser. No. 388,883

Claims priority, application Germany, Aug. 19, 1972, 22408839

Int. Cl. C07c 51/58

U.S. Cl. 260—250 R

5 Claims

1. A process for the manufacture of a carboxylic acid chloride from the corresponding carboxylic acid and phosgene, which comprises reacting the salt-like addition compound of an aliphatic, cycloaliphatic, aromatic or heterocyclic carboxylic acid having 1 or 2 hetero nitrogen atoms with an N-alkylpyrrolidone or an N,N-dialkyl-carboxylic acid amide having at least 4 carbon atoms in the molecule, in a polar, inert solvent present in weight ratio of 0.8:1 to 2.0:1 to said salt like addition compound, with 1.0 to 1.5 molar equivalents of phosgene based upon said carboxylic acid at a temperature from -30°C to +30°C, at atmospheric pressure or elevated pressure and completing the reaction by heating the reaction mixture to at most +30°C.

3,857,844

CERTAIN NITROGEN CONTAINING BARBITURIC ACID DERIVATIVES

Leslie Frederick Wiggins, Berkshire; John William James, and Maurice Edward Gittos, both of Buckinghamshire, all of England, assignors to Aspro-Nicholas Limited, London, England

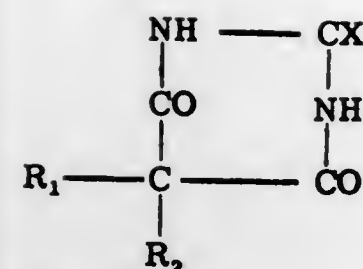
Continuation-in-part of Ser. No. 276,977, April 30, 1963, abandoned, which is a continuation-in-part of Ser. No. 75,911, Dec. 15, 1960, abandoned Ser. No. 277,431, May 2, 1963, Pat. No. 3,312,703. This application Feb. 11, 1966, Ser. No. 526,707

Int. Cl. C07d 51/20, 51/24

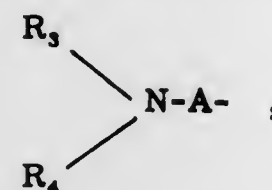
U.S. Cl. 260—256.5 R

9 Claims

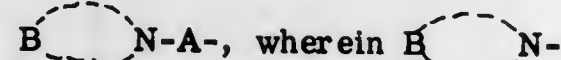
1. A compound having anti-Parkinsonism activity selected from the class consisting of compounds of the formula:



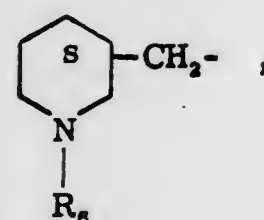
and pharmaceutically acceptable salts thereof, in which formula X is selected from the group consisting of oxygen and sulphur, R₁ is selected from the group consisting of:



wherein R₃ and R₄ are selected from the group consisting of methyl and ethyl, and A is selected from the group consisting of 2-ethylene and 3-propylene;



is selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazino and homopiperazino, and A is selected from the group consisting of 2-ethylene and 3-propylene; and



wherein R₆ is selected from the group consisting of hydrogen and methyl; and R₂ is phenyl.

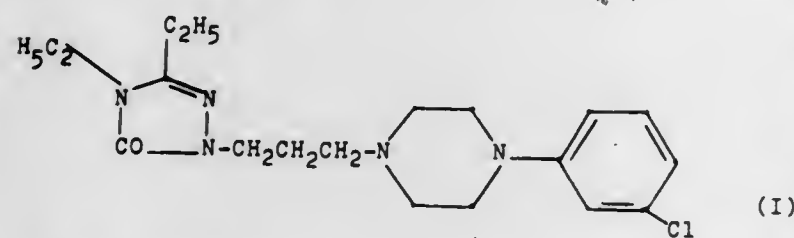
3,857,845

1-[3-(4-METRACHLOROPHENYL-1-PIPERAZINYL)-PROPYL]-3,4-DIETHYL-Δ-1,2,4-TRIAZOLIN-5-ONE
Giuseppe Palazzo, Rome, Italy, assignor to Aziende Chimiche Ruinite Angeline Franceso A.C.R.A.F. S.p.A., Rome, Italy
Filed Oct. 15, 1973, Ser. No. 406,432
Claims priority, application Italy, Oct. 16, 1972, 53380/72
Int. Cl. C07d 51/70

U.S. Cl. 260—268 PH

1 Claim

1. 1-[3-(4-meta-Chlorophenyl-1-piperazinyl)-propyl]-3,4-diethyl-Δ-1,2,4-triazolin-5-one of the formula:



or the pharmaceutically acceptable acid-addition salts thereof.

3,857,846
α-[1-BENZOYL-3R-ALKYL-4(R)-PIPERIDYLMETHYL]β-XO-β(6,7 SUBSTITUTED-4 QUINOLYL)PROPIONIC ACID AND RACEMATES

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

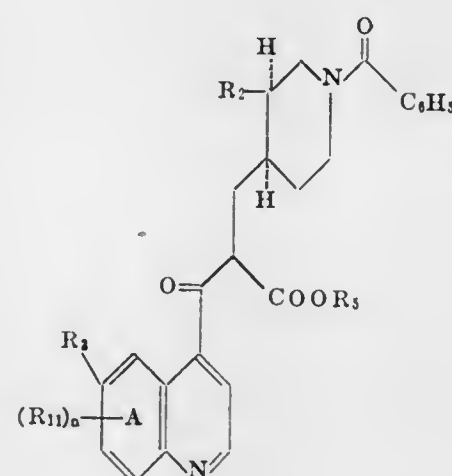
Division of Ser. No. 212,648, Dec. 27, 1971, Pat. No. 3,753,992, which is a continuation-in-part of Ser. No. 104,785, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,304, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,913, July 2, 1968, abandoned. This application Apr. 26, 1973, Ser. No. 354,822

Int. Cl. C07d 43/24

U.S. Cl. 260—287 R

1. A compound of the formula

9 Claims



IXa

wherein n is 1 or 2; R₂ is ethyl or vinyl; R₃ is lower alkyl of 1 to 7 carbon atoms; R₁₁ is hydrogen, methyl, methoxy, ethyl, propyl, butyl, trifluoromethyl, or chloro, or when n is 2, R₁₁ taken together with an adjacent R₁₁ is also methylenedioxy; when R₁₁ is hydrogen, R₃ is methyl, ethyl, propyl, butyl, trifluoromethyl, or chloro; when R₁₁ is other than hydrogen and n is 1, R₃ is methyl, methoxy, ethyl, propyl, butyl, hydrogen, trifluoromethyl or chloro, or taken together with an adjacent R₁₁, is methylenedioxy; and when R₁₁ is other than hydrogen and n is 2, R₃ is hydrogen, and antipodes or racemates thereof.

3,857,847

6,7 SUBSTITUTED 4 (3(3(R) ALKYL, 4(S)PIPERIDYL)-2-OXOPROPYL)QUINOLINE AND RACEMATES

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,557

Int. Cl. C07d 43/24

U.S. Cl. 260—287 R

1. A compound of the formula

8 Claims

3,857,849

2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

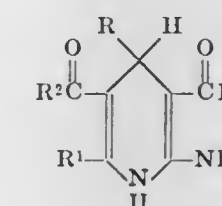
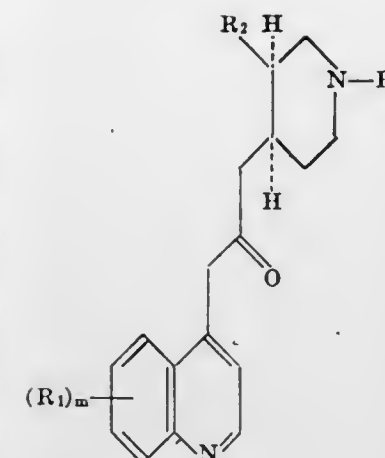
Division of Ser. No. 336,639, Feb. 28, 1973, This application Mar. 27, 1974, Ser. No. 455,304

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 D

1. A compound of the formula:

4 Claims



wherein m is 0, 1 or 2; R₁ is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl, butyl, or, when m is 2, R₁ with an adjacent R₁, additionally is methylenedioxy; R₂ is vinyl or ethyl; and R₄ is hydrogen, lower alkanoyl of 1-7 carbon atoms; its antipode or racemate.

wherein

R is a heterocyclic ring selected from the group consisting of pyridyl, thenyl, furyl and pyrrol, said heterocyclic ring being unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

R¹ is hydrogen or lower alkyl;

R² is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino; and

R³ is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino.

3,857,848

3-(2-OXO-2-PHENYLETHYL)QUINUCLIDINES AND PROCESS THEREFOR

Roland Yves Mauvernay, Riom; Norbert Busch, Yssac La Tourette; Andre Monteil, Gerzat; Jacques Simond, Chamailleres, and Jacques Moleyre, Menetrol, all of France, assignors to Societe Anonyme Centre Europeen De Recherches Mauvernay, Puy-de-Dome, France

Filed May 9, 1973, Ser. No. 359,576

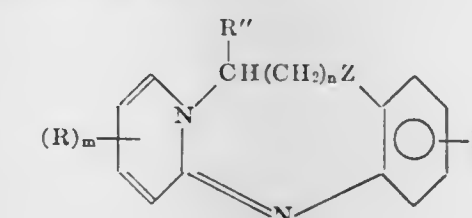
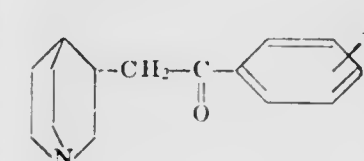
Claims priority, application France, May 10, 1972, 72.16746

Int. Cl. C07d 39/06

U.S. Cl. 260—293.53

10 Claims

1. A derivative of quinuclidine having the general formula:



wherein

m is 1 or 2;

R is the same or different and is hydrogen, halogen (F, Cl, or Br), alkyl of from one to four carbons, alkoxy of from one to four carbons, alkylthio of from one to four carbons, benzyl, phenethyl, phenyl, phenoxy, phenylthio or mono-substituted phenyl wherein the substituent may be halogen (F, Cl, Br or I), alkyl of from one to four carbons, alkoxy of from one to four carbons, or trifluoromethyl; provided that when R is halogen, R occupies only the 3- or 5-position in the original 2-aminopyridine;

R' is hydrogen, halogen (F, Cl or Br), alkyl of from one to four carbons, phenyl, dialkylamidosulfonyl wherein each alkyl radical is from one to four carbons or trifluoromethyl;

n is 0 or 1;

wherein the substituent X is a hydrogen atom, a halogen atom, a —CF₃ radical or a lower alkoxy radical.

R'' is alkyl of from 1 to 4 carbons and Z is S or SO₂, and pharmaceutically acceptable acid-addition salts.

3,857,851

1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXALDEHYDES

George Y. Leshner, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 338,613, March 6, 1973. This application Mar. 22, 1974, Ser. No. 453,929

Int. Cl. C07d 31/36

U.S. Cl. 260—295 N

4 Claims

1. A compound selected from 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxaldehyde and its tautomeric 4-hydroxy-7-Q-1,8-naphthyridine-3-carboxaldehyde, where Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,857,852

CRACKLE FINISH COATING OF ARYLENE SULFIDE POLYMER CONTAINING A FLUOROCARBON POLYMER

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1972, Ser. No. 299,066

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

9 Claims

1. A process for producing coating dispersions consisting of the following steps: subjecting a poly(arylene sulfide) in particulate form to intensive milling by ball milling or rod milling with a light colored pigment in particulate form capable of withstanding a curing temperature of at least about 300°F; thereafter under less intensive conditions blending the resulting mixture by blade mixing, tumbling, or shaking with a fluorocarbon polymer in particulate form, in the presence of a liquid selected from the group consisting of water, ethylene glycol, propylene glycol, and mixtures thereof.

3,857,853

3-ALKYL-5-(ALPHA-CYANOBENZYLIDENE) OXAZOLIDINE-2,4-DIONES

Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

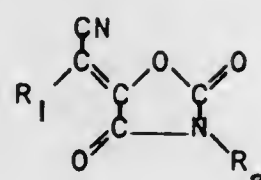
Filed Apr. 23, 1973, Ser. No. 353,927

Int. Cl. C07d 85/34

U.S. Cl. 260—307 B

7 Claims

1. A compound of the formula:



wherein R₁ is a monovalent aryl group selected from the group consisting of phenyl, p-chlorophenyl, and p-fluorophenyl and R₂ is monovalent C₁-C₁₈ alkyl.

3,857,854 TRANQUILIZER 6-PHENYL-1H,4H-[1,2,4]OXADIAZALO [4,3-a][1,4]BENZODIAZEPIN-1-ONES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

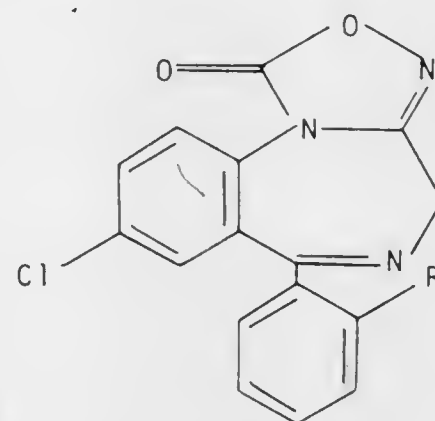
Continuation-in-part of Ser. No. 178,792, Sept. 8, 1971, abandoned. This application May 2, 1973, Ser. No. 356,372

Int. Cl. C07d 85/52

U.S. Cl. 260—307 A

5 Claims

1. A compound selected from the group consisting of a 6-phenyl-1H,4H-[1,2,4]oxadiazolo[4,3-a][1,4]benzodiazepin-1-one of the formula II



wherein R is hydrogen or chlorine and the pharmacologically acceptable acid addition salts thereof.

3,857,855

SUBSTITUTED PHTHALOCYANINE DYE DEVELOPERS AND THEIR USE IN MULTICOLOR DIFFUSION TRANSFER PROCESSES

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

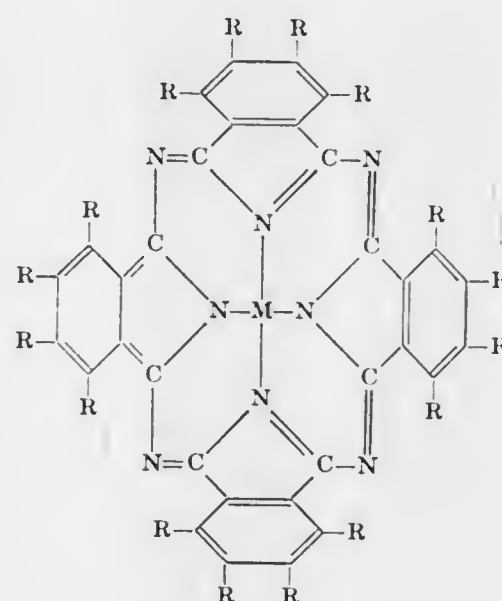
Continuation of Ser. No. 851,525, June 30, 1969, abandoned, which is a division of Ser. No. 694,167, Dec. 28, 1967, Pat. No. 3,482,972. This application June 21, 1973, Ser. No. 372,268

Int. Cl. C09b 47/04

U.S. Cl. 260—314.5

7 Claims

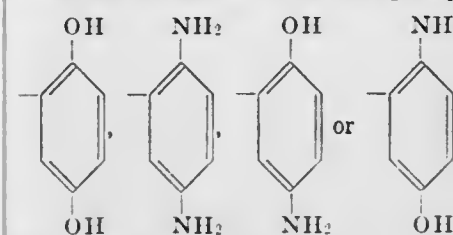
1. A compound of the formula:



wherein it is provided that of the 16 R substituents present on the phthalocyanine ring at least three and no more than four are R¹ groups, there being no more than one R¹ group on any

one benzene ring, the remaining R substituents being hydrogen where R¹ is

wherein D is an alkylene group of from 1-6 carbon atoms inclusive, X is hydrogen or an alkyl group having from 1-6 carbon atoms inclusive, Q is a disubstituted phenyl silver halide developing agent chosen from the group consisting of



and M is a metal selected from the group consisting of cobalt, nickel, copper, chromium, magnesium and zinc.

3,857,856

4-OXO-4H-1-BENZOPYRAN AND 4-OXO-4H-1-THIABENZOPYRAN COMPOUNDS

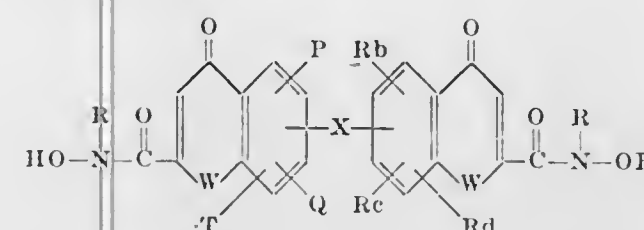
Hugh Cairns, and Norman Harold Rogers, both of Loughborough, England, assignors to Fisons Limited, London, England

Continuation-in-part of Ser. No. 260,205, June 6, 1972, abandoned. This application Sept. 26, 1972, Ser. No. 292,453 Claims priority, application Great Britain, Sept. 30, 1971, 45470/71; Oct. 18, 1971, 53568/71; Dec. 28, 1971, 60208/71; Dec. 28, 1971, 60209/71

U.S. Cl. 260—327 TH

8 Claims

1. A compound of the formula



wherein W is oxygen or sulphur,

R is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl, X is a carbon-carbon bond, —CH₂—, —CHOH—, —C(R⁺)₂—, —CO—, —CH(COOH)—, —C(=CCl₂)—NH—, —S—, —SO—, —SO₂—, or —O—, a saturated or unsaturated, straight or branched C(2 to 10) polymethylene chain optionally substituted by —OH, C(1 to 6) alkoxy, halogen, carbonyl oxygen, and optionally interrupted by an oxygen or nitrogen atom, and R⁺ is an alkyl C(1 to 6) group,

or X is an —OX'O— group in which X' is a saturated or unsaturated, straight or branched C(2 to 10) polymethylene chain optionally substituted by —OH, C(1 to 6) alkoxy, halogen or carbonyl oxygen and optionally interrupted by an oxygen or nitrogen atom,

P, Q, T, Rb, Rc, and Rd, which may be the same or different, each represent hydrogen, C(1 to 10) alkyl, halogen, hydroxy, C(2 to 10) alkenyl, phenyl, C(1 to 10) alkoxy, C(2 to 10) alkenyloxy, phenyl C(1 to 4) alkoxy, hydroxy C(1 to 10) alkyl, hydroxy C(1 to 10) alkoxy, C(1 to 10) alkoxy-C(1 to 10) alkyl and C(1 to 10) alkoxy-C(1 to 10) alkoxy, and pharmaceutically acceptable salts thereof.

3,857,857

STEREISOMERS OF 1-(1'-(O-CHLOROBENZYL)-2'-PYRRYL)-2-DISEC. BUTYLAMINO-ETHANOL

Davide Della Bella, Milan; Carlo Veneziani, Bresso; Dario Chiarino, Monza, and Unerto Maria Teotino, Milan, all of Italy, assignors to Whitefin Holding S.A., Lugano, Switzerland

Filed Oct. 24, 1972, Ser. No. 299,726

Claims priority, application Italy, Oct. 30, 1971, 30587/71; Oct. 30, 1971, 30586/71; Oct. 30, 1971, 30585/71; Oct. 30, 1971, 30588/71; July 4, 1972, 26564/72

Int. Cl. C07d 27/26

U.S. Cl. 260—326.5 L

7 Claims

1. The diastereoisomer of 1-[1'-(o-chloro-benzyl)-2'-pyrryl]-2-di-(R,R)-sec-butylamino-ethanol, whose p-hydroxybenzoate has [α]_D²⁵ = -24° ± 3° (c=1% in methanol), and physiologically acceptable acid addition salts, essentially free of different optical isomers.

3,857,858

CYCLOPROPANE CARBOXYLIC ACID ESTERS

Nobushige Itaya, Minoo; Toshio Mizutani, Hirakata; Shigeyoshi Kitamura; Yositosi Okuno, both of Toyonaka, and Keimei Fujimoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Apr. 1, 1970, Ser. No. 24,858

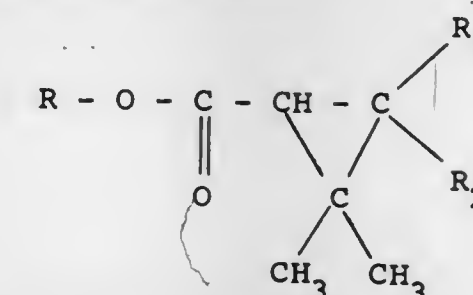
Claims priority, application Japan, Apr. 8, 1969, 44-27529; Apr. 9, 1969, 44-27498; Apr. 9, 1969, 44-27499; May 27, 1969, 44-41505; June 3, 1969, 44-43896; June 13, 1969, 44-47003

Int. Cl. C07d 63/12, 5/16

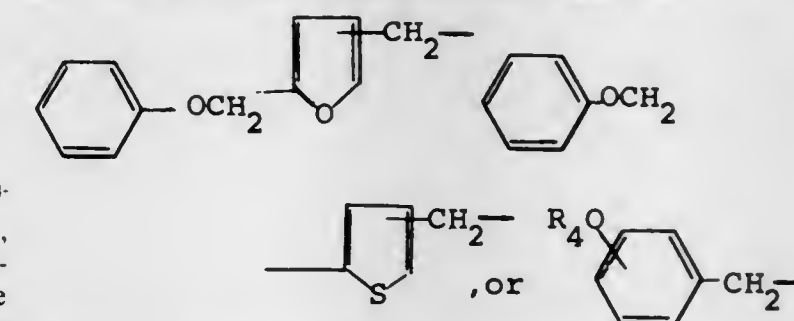
U.S. Cl. 260—332.2 R

6 Claims

1. A compound of the formula



wherein R₁ is hydrogen or methyl, R₂ is methyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl when R₁ is hydrogen, and R₂ is methyl when R₁ is methyl, and R is



wherein R₄ is allyl or propargyl.

3,857,859

DEHYDROGENATION OF TETRAHYDROFURAN AND ALKYL-SUBSTITUTED TETRAHYDROFURANS

Anthony L. Tumolo, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa. 19061

Filed Sept. 26, 1972, Ser. No. 292,383

Int. Cl. C07d 5/14

U.S. Cl. 260—346.1 R

5 Claims

1. The dehydrogenation process for preparing furan and substituted furans having 1-4 alkyl groups and containing from 1 to 10 carbon atoms comprising subjecting the corresponding tetrahydrofuran to a temperature in the range of 200 to 450°C in contact with a catalyst of palladium on carbon.

3,857,860

N-CARBOXYLATED N-METHYLCARBAMIC ACID ARYL ESTERS

Engelbert Kuhle, Bergisch-Gladbach; Peter Siegle, Cologne; Wolfgang Behrenz, Cologne, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 23, 1972, Ser. No. 265,843

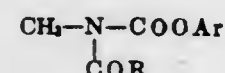
Claims priority, application Germany, July 2, 1971, 2132936

Int. Cl. C07d 5/00

U.S. Cl. 260—346.2 R

3 Claims

1. A compound according to the formula



in which

Ar is dihydrobenzofuranyl; or dihydrobenzo-furanyl substituted by alkyl of up to 4 carbon atoms, and R is phenoxy substituted by alkoxy of up to 4 carbon atoms.

3,857,861

PROCESS FOR THE PREPARATION OF DI-LOWER ALKOXY-3,5-PHTHALIC ANHYDRIDES

Gerard Lang, Epinay-sur-Seine, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

Filed Sept. 7, 1971, Ser. No. 178,425

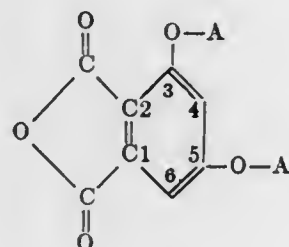
Claims priority, application Luxembourg, Sept. 7, 1970, 61655

Int. Cl. C07c 63/14

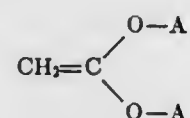
U.S. Cl. 260—346.6

6 Claims

1. A process for the preparation of 3,5-dialkoxy phthalic anhydride of the formula:



wherein A is alkyl having 1 to 4 carbon atoms comprising a. reacting a monohalogen-substituted maleic anhydride with an excess of 1,1-dialkoxy ethylene of the formula:



wherein A has the significance given above, at a temperature of about -20°C to about $+50^\circ\text{C}$ in the presence of an anhydrous non-reactive solvent having a boiling point greater than 50°C , and

b. separating the 3,5-dialkoxy phthalic anhydride thus produced from the reaction mixture.

3,857,862

SUBSTITUTED BENZONITRILES

James R. Beck, Indianapolis, and Robert G. Suhr, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

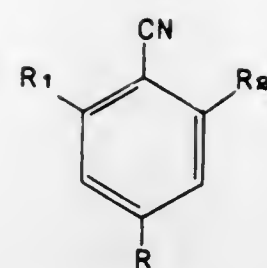
Filed Nov. 23, 1973, Ser. No. 418,540

Int. Cl. C07d 5/04, 5/16

U.S. Cl. 260—347.2

7 Claims

1. A compound of the formula:



wherein

R is hydrogen or trifluoromethyl;

R¹ is halo, nitro, C₁-C₃ alkoxy, furfurylthio, furfuryloxy, tetrahydrofurfurylthio, or tetrahydrofurfuryloxy; and

R² is furfuryloxy, furfurylthio, tetrahydrofurfuryloxy, or tetrahydrofurfurylthio.

3,857,863

CERTAIN FURYL METHYL AND THENYL ESTERS OF CERTAIN CYCLOPROPANE CARBOXYLIC ACIDS

Nobuo Ohno; Nobushige Itaya, both of Ikeda; Toshio Mizutani, Hirakata; Yositosi Okuno, Toyonaka; Keimei Fujimoto, and Toru Kawanami, both of Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 2, 1971, Ser. No. 168,369

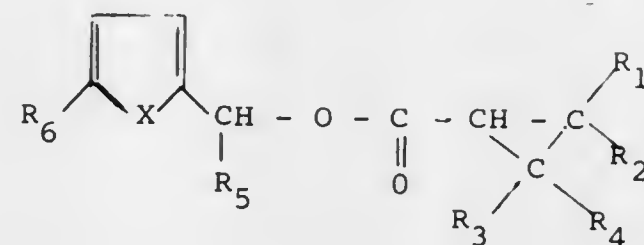
Claims priority, application Japan, Aug. 4, 1970, 45-68459

Int. Cl. C07d 5/18, 5/20, 5/16

U.S. Cl. 260—347.4

17 Claims

1. A cyclopropanecarboxylate of the formula



wherein R₁ is hydrogen atom, methyl or ethyl group; R₂ is methyl, ethyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl group when R₁ is hydrogen atom, or R₂ is methyl or ethyl group when R₁ is methyl or ethyl group; R₃ and R₄ are respectively hydrogen atom, methyl or ethyl group, with the proviso that R₁, R₃, and R₄ are not simultaneously hydrogen; R₅ is C₂-C₄ alkynyl or C₂-C₄ alkenyl; R₆ is propargyl, allyl, 3-butenyl-1-yl, C₁-C₄ alkoxy C₁-C₄ alkyl; and X is oxygen or sulfur atom.

3,857,864

ANTHRAQUINONE COMPOUNDS

Hansrudolf Schwander, Riehen; Arthur Buhler, Rheinfelden, and Peter Hindermann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 5, 1973, Ser. No. 329,516

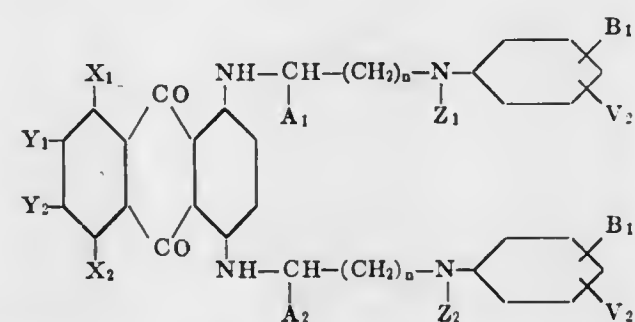
Claims priority, application Switzerland, Feb. 7, 1972, 1737/72

Int. Cl. C09b 1/30, 1/40

U.S. Cl. 260—372

9 Claims

1. Anthraquinone compounds of the formula



wherein X₁ and X₂ each represents a hydrogen atom or a

hydroxy group, Y₁ and Y₂ each represents a hydrogen or halogen atom or a sulphonic acid group, A₁ and A₂ each represents an n-alkyl radical with 1 to 3 carbon atoms or represents a hydrogen atom, B₁ and B₂ each represents a sulphonic acid or carboxy radical, Z₁ and Z₂ each represents low molecular alkanoyl or alkyl sulphonyl radical substituted by a removable chlorine or bromine atom, a low molecular alkenoyl or alkenesulphonyl radical optionally substituted by a removable chlorine or bromine atom, a 4-, 5- or 6-membered carbocyclic radical bonded through a carbonyl or sulphonyl group and is substituted by a removable chlorine or bromine atom, V₁ and V₂ each represents a hydrogen or halogen atom or a lower alkyl or lower alkoxy radical, an n and m is each independently 1 or 2.

3,857,865

ESTER LUBRICANTS SUITABLE FOR USE IN AQUEOUS SYSTEMS

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Aug. 1, 1973, Ser. No. 384,674

Int. Cl. C07c 69/74; C10m 3/20

U.S. Cl. 260—407

6 Claims

1. An ester composition useful as a lubricant and having improved emulsifiability with water and rust protection properties comprising the condensation product of 0.05 to 0.5 equivalent polyoxyalkylene glycol having a molecular weight from about 200 to about 1000 and having recurring alkylene units containing from 2 to 4 carbon atoms, 0.5 to 0.95 equivalent monofunctional aliphatic alcohol of the formula ROH where R is an aliphatic hydrocarbon radical containing from 1 to about 20 carbon atoms and 1.0 equivalent of a dimer acid containing from about 32 to 52 carbon atoms obtained by the polymerization of a monocarboxylic acid containing from about 16 to 26 carbon atoms, said ester having an acid value less than 25, a hydroxyl value less than 25 and containing about 2 to about 40 percent by weight polyoxyalkylene glycol.

3,857,866

PROCESS FOR IMPROVING THE THERMAL STABILITY OF SOYBEAN OIL

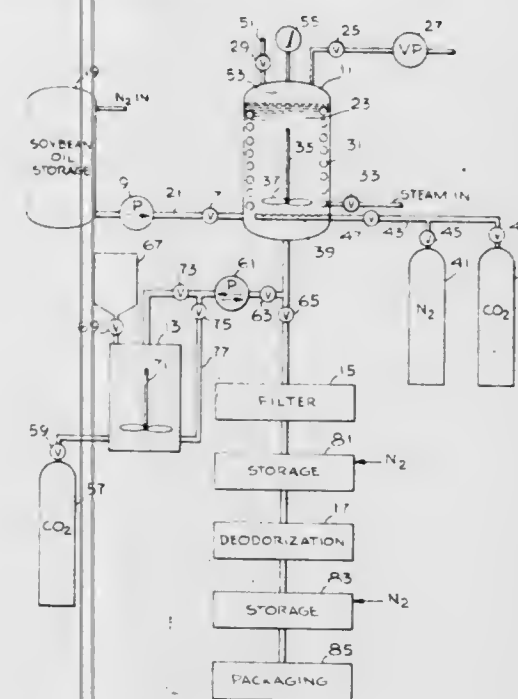
Walter P. Gible, and Edward J. Reid, both of Brea, Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed June 8, 1973, Ser. No. 368,014

Int. Cl. C09f 5/10; C11b 3/00

U.S. Cl. 260—420

17 Claims



1. A method of providing an edible soybean oil which does not develop objectionable odor or flavor for at least 10 min-

utes when heated to a frying temperature of from 325°F to 400°F consisting essentially of the steps of:

de-aerating a body of refined soybean oil to an oxygen content of no more than 0.1 cc oxygen per 100 cc of oil; dissolving carbon dioxide in the de-aerated oil; dispersing a minor amount of a treating agent consisting essentially of a finely divided, activated, solid, inorganic metallic salt or oxide adsorbent capable of removing color bodies from vegetable oils in the oil; heating the dispersion in a carbon dioxide atmosphere to a temperature above 212°F for a predetermined length of time from 15 minutes to 10 hours; filtering the oil; and deodorizing the oil with steam under vacuum.

3,857,867

OLEFIN METALLORGANIC COMPLEXES OF SALINE TYPE AND PROCESS FOR THE PREPARATION THEREOF

Federico Maspero, Milan; Emilio Perrotti, San Donato Milanese, and Franco Simonetti, Milan, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Dec. 27, 1972, Ser. No. 319,061

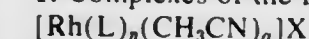
Claims priority, application Italy, Dec. 28, 1971, 33009/71

Int. Cl. C07f 15/00

U.S. Cl. 260—429 R

3 Claims

1. Complexes of the formula:



wherein L is an olefin selected from the group consisting of ethylene and cyclooctene; and X is an anion selected from the group consisting of BF_4^- , PF_6^- , ClO_4^- and NO_3^- ; provided that when L is ethylene and n is 2 or 3, a is 2; and when L is cyclooctene and n is 1, a is 3 and when n is 2, a is 2 or 3.

3,857,868

PREPARATION OF DIMETHYLTIN DICHLORIDE

Robert C. Witman, and Thomas G. Kugele, both of Cincinnati, Ohio, assignors to Cincinnati Milacron, Reading, Ohio

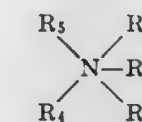
Filed Jan. 8, 1973, Ser. No. 321,980

Int. Cl. C07f 7/22

U.S. Cl. 260—429.7

25 Claims

1. In a process of preparing dimethyltin dichloride by reacting metallic tin with methyl chloride in the presence of a catalyst, the improvement comprising carrying out the reaction in the presence of a catalyst having the formula:



where R₁, R₂, and R₃ are alkyl of 1 to 18 carbon atoms, benzyl, phenyl, tolyl or hydrogen, R₄ is alkyl of 1 to 18 carbon atoms, benzyl, phenyl, tolyl, hydrogen or nothing, R₅ is X or $-\text{SnX}_3$ when R₄ is alkyl, phenyl, tolyl, benzyl or hydrogen and R₅ is nothing when R₄ is nothing with the proviso that when R₁, R₂, R₃ and R₄ are all hydrogen then X must be Br, and X is a halogen of atomic weight 35 to 80 at a temperature of 150° to 300°C . at a pressure of 60 to 400 psig, there being present a solvent for the methyl chloride at the start of the reaction.

3,857,869

PROCESS FOR THE PREPARATION OF BIMETALLIC SALT COMPLEXES

Roy Glen Turnbo, Deer Park, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Mar. 27, 1973, Ser. No. 345,438

Int. Cl. C07f 1/08

U.S. Cl. 260—438.1

7 Claims

1. The process of preparing a catalytically-inactive liquid sorbent comprising a bimetallic salt complex having the ge-

neric formula $M_I M_{II} X_n$. Aromatic, wherein M_I is a Group I-B metal, M_{II} is a Group III-A metal, X is halogen, n is the sum of the valences of M_I and M_{II} , and Aromatic is a monocyclic aromatic hydrocarbon having 6 to 12 carbon atoms that comprises the steps of

- mixing and reacting an M_I halide and an M_{II} halide in a reaction medium that is an aromatic hydrocarbon having 6 to 12 carbon atoms to form a solution of the bimetallic salt complex $M_I M_{II} X_n$. Aromatic in said aromatic hydrocarbon, the total amount of aromatic hydrocarbon in said solution being at least 10 mole percent of the amount of the bimetallic salt $M_I M_{II} X_n$ that is present; and
- maintaining said solution at a temperature between about 20°C. and the boiling point of the aromatic hydrocarbon while contacting said solution with an inert gas until the gas leaving the solution contains neither M_{II} halide nor hydrogen halide.

3,857,870

FERROCENE CONTAINING MONOMERS AND COPOLYMERS

Travis E. Stevens, 1510 Montdale Rd., S.E., Huntsville, Ala. 35801, and Samuel F. Reed, Jr., 4009 Medford Dr., S.E., Huntsville, Ala. 35802

Filed July 31, 1969, Ser. No. 849,254
Int. Cl. C07f 15/02

U.S. Cl. 260—439 CY

5 Claims

1. A polymerizable monomer selected from pentaerythritol methacrylate tris (ferrocenoate) and pentaerythritol acrylate tris (ferrocenoate) reacted with butadiene to form a copolymer.

3,857,871

PROCESS FOR REDUCING THE ACIDITY AND HYDROLYZABLE CHLORIDE CONTENT OF POLYISOCYANATES

Richard Hatfield, Jr., Pasadena, and Howard R. Steele, Baytown, both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 3, 1972, Ser. No. 214,829
Int. Cl. C07c 119/04

U.S. Cl. 260—453 SP

2 Claims

1. A process for lowering the acidity and hydrolyzable chloride content of a polymethylene polyphenyl polyisocyanate containing from 35 to 85 percent methylenebis(phenyl isocyanate) without concomitantly causing any significant change in viscosity or oligomeric distribution in said polyisocyanate which process comprises passing said polyisocyanate in the liquid state at a temperature within the range of about 350°F to about 450°F, downwardly through a packed column and passing a stream of inert gas counter-currently with respect to said isocyanate, the pressure in said column being substantially atmospheric, and the average residence time of said isocyanate in said column being within the range of 1 to 10 minutes.

3,857,872

CYCLOPROPANE CARBOXYLIC ACID ESTERS

John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, both of England, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed May 4, 1971, Ser. No. 140,276

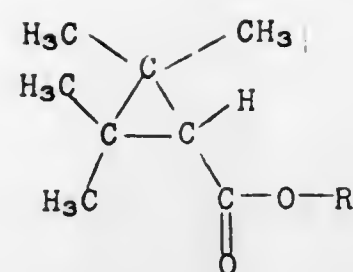
Claims priority, application Great Britain, June 8, 1970, 27583/70

Int. Cl. C07c 69/74

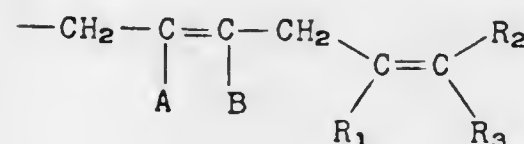
U.S. Cl. 260—468 H

7 Claims

1. A compound of the formula:



wherein R is a group of the formula:



or



R_1 , R_2 and R_3 are hydrogen or lower alkyl; and A and B individually are hydrogen or A and B taken together form a carbon to carbon bond.

3,857,873

3-HYDROXY-5-(3-(SUBSTITUTED-AMINO)-2-HYDROXYPROPOXY)-BENZYL ALCOHOLS

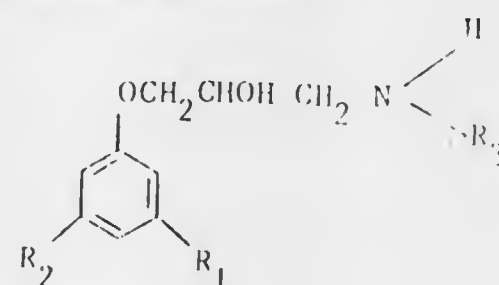
Charles F. Schwender, Lebanon, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 11, 1974, Ser. No. 441,597
Int. Cl. C07c 101/42

U.S. Cl. 260—471 R

11 Claims

1. A compound of the formula:



wherein R_1 is selected from the group consisting of:

- COOH,
- COOH₂, and
- CH₂OH;

wherein R_2 is selected from the group consisting of:

- OH, and
- OCH₂—

wherein R_3 is selected from the group consisting of:

- H
- CH₂—
- C(CH₃)₂—CH₃, and
- CH₂—CH₂—

and the pharmaceutically acceptable salts of the above compound.

3,857,874

PROCESS FOR PRODUCING BIPHENYLPOLYCARBOXYLIC ACID ESTERS

Yataro Ichikawa, Iwakuni, Japan, and Teizo Yamaji, Potsdam, N.Y., assignors to Teijin Limited, Osaka, Japan

Filed July 21, 1970, Ser. No. 56,966

Claims priority, application Japan, July 24, 1969, 44-58811, July 25, 1969, 44-58847, 44-58844

Int. Cl. C07c 69/78

U.S. Cl. 260—473 R

12 Claims

1. A process for producing biphenylpolycarboxylic acid esters which comprises contacting a benzenecarboxylic acid ester having 1 or 2 carboxylic acid ester groups having at least one hydrogen atom bonded to the nuclear carbon atom with molecular oxygen or a molecular oxygen-containing gas in liquid phase at a temperature of 90°–300°C., under a partial pressure of molecular oxygen of 0.2–300 atmospheres and in the presence of a catalyst consisting essentially of palladium complexes having a β -diketo group, capable of undergoing keto/enol isomerization, as a ligand, said catalyst being at least partially soluble in the reaction system.

3,857,875

SULFONYLDIALKANOIC ACID ESTERS OF 2,3-DIBROMO-1-ALKANOLS

Donnie G. Brady, Roy A. Gray, and Richard C. Doss, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

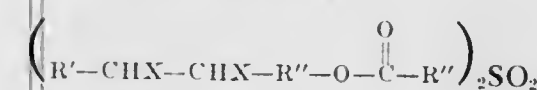
Filed Sept. 28, 1972, Ser. No. 292,899

Int. Cl. C07c 147/02

U.S. Cl. 260—481 R

2 Claims

1. A compound of the formula



wherein X is bromine, wherein R' is hydrogen or an alkyl group containing 1 to 4 carbon atoms, and R'' is an alkylene radical of 1 to 4 carbon atoms, said radicals being branched or linear, said radicals being the same or different, the total number of carbon atoms in said compound being within the range of from about 10 to about 30.

3,857,876

POLYESTERS FROM THE REACTION OF POLYOLS AND A MIXTURE OF MERCAPTOALKANOIC AND THIOALKANOIC ACIDS

Faber B. Jones, Ralph P. Williams, and Richard C. Doss, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 888,910, Dec. 29, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 299,832
Int. Cl. C07c 149/20

U.S. Cl. 260—481 R

6 Claims

1. The polyester-polythiol reaction product formed by contacting

I. a hydrocarbon polyol represented by the formula $Y(OH)_x$ wherein Y is a hydrocarbon moiety having from 2 to 40 carbon atoms per moiety, x is an integer in the range of 2 to 20, and the number of carbon atoms per molecule is equal to or greater than x, and mixtures thereof, with the further provision that the number of hydroxy groups and number of carbon atoms per molecule be on average more than 2, and an acid mixture consisting of

II. 5 to 95 weight percent of a mercaptoalkanoic acid represented by the formula $HS(CR_2)_nCOOH$ wherein R is hydrogen or an alkyl having from 1 to 5 carbon atoms, the number of carbon atoms in all R groups per molecule is

no more than 10, and n is an integer in the range of 1 to 5, and

III. 95 to 5 weight percent of a thiodialkanoic acid represented by the formula $HOOC(CR_2)_n-S-(CR_2)_n-COOH$ wherein the number of carbon atoms in all R groups per molecule is no more than 20, and R and n are as previously defined, or a mixture of said thiodialkanoic acid and the analogous dithiodialkanoic acid such that up to one mole of dithiodialkanoic acid is present for each two moles of thiodialkanoic acid.

said contacting being effected at a temperature in the range of about 50°–250°C and under esterification conditions such that at least 80 percent of the hydroxy groups of said (I) polyol are reacted with carboxylic groups of said acid mixture of (II) and (III) acids to form ester groups, the amounts of (I) polyol, (II) and (III) acids present during said contacting being sufficient to provide a ratio of hydroxy groups of said (I) polyol to carboxylic groups of said (II) and (III) acids in the range of 0.8:1 to 1.2:1.

3,857,877

8-HYDROXY QUINOLINE DERIVATIVES

Shankar Somasekhara, and Navinchandra Vasantraai Upadhyaya, both of Wadi Wadi, Baroda, India, assignors to Karamchand Premchand Private Limited, Ahmedabad, Gujarat State, India

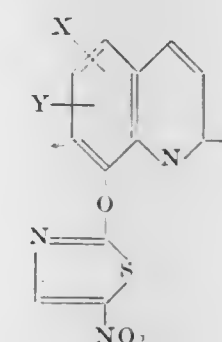
Filed Jan. 12, 1973, Ser. No. 323,024

Int. Cl. C07d 33/36

U.S. Cl. 260—283 S

6 Claims

1. 8-Hydroxy quinolines of the formula I



wherein

R is H or methyl, X and Y are the same or different halogens like, chlorine, bromine or iodine in any two of the positions 5, 6 and 7 of the quinoline ring.

3,857,878

STABLE COMPOSITIONS FOR INHIBITING POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID ESTERS

Alfred Bay Sullivan, Wadsworth, and Gene Ray Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

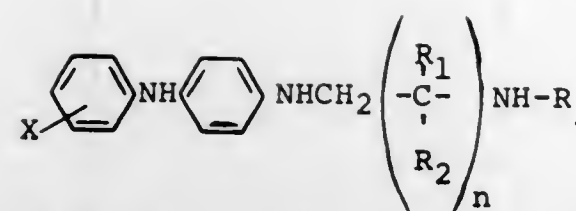
Filed Jan. 23, 1974, Ser. No. 435,718

Int. Cl. C07c 69/54

U.S. Cl. 260—486 R

6 Claims

1. A monomer composition consisting essentially of unsaturated carboxylic acid ester and, in amount effective to inhibit polymerization of the ester, an inhibitor of the formula



in which R, R₁ and R₂ independently are hydrogen or lower alkyl, X is hydrogen, chloro, trichloromethyl, trifluoromethyl, lower alkyl, lower alkoxy or phenoxy and n is 1-5.

3,857,879

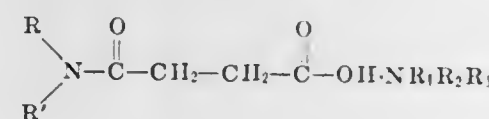
AMINE SALTS OF SUBSTITUTED SUCCINAMIC ACIDS

Walter W. Abramitis, 1315 59th St., Downers Grove, Ill. 60515

Continuation-in-part of Ser. No. 687,438, Dec. 4, 1967, abandoned. This application Oct. 5, 1970, Ser. No. 78,240
Int. Cl. C07c 103/14

U.S. Cl. 260-501.11

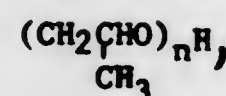
I. A compound of the formula:



wherein R is a member of the group consisting of H and alkyl having 1 to 18 carbon atoms;

R' is alkyl having 1 to 18 carbon atoms;

R₁ and R₂ are each a member of the group consisting of alkyl having 1 to 4 carbon atoms, (CH₂CH₂O)_mH, and



in which m and n are integers from 1 to 15; and
R₃ is alkyl having 8 to 22 carbon atoms.

3,857,880

CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

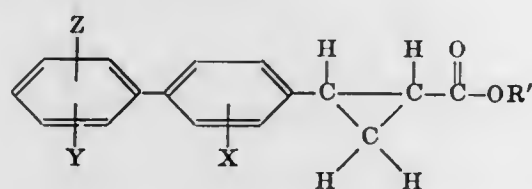
Margaret H. Sherlock, Bloomfield, and Nathan Sperber, North Caldwell, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 164,457, July 20, 1971, abandoned, which is a division of Ser. No. 754,743, Aug. 22, 1968, Pat. No. 3,674,832. This application Sept. 3, 1971, Ser. No. 177,871

Int. Cl. C07c 69/76

U.S. Cl. 260-515 R

I. A composition of matter of the formula:



wherein X is hydrogen, halogen, trifluoromethyl, hydroxy, nitro, lower alkyl or lower alkylthio; Y and Z are hydrogen; and R' is hydrogen, an alkyl radical having 1 to 12 carbon atoms or a pharmaceutically acceptable cation.

3,857,881 PROCESS FOR THE SEPARATION AND RECOVERY OF METHYLTEREPHTHALIC ACID AND 4-METHYLISOPHTHALIC ACID FROM A MIXTURE THEREOF

Norisugu Saiki; Takeshi Fujii, and Gentaro Yamashita, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 3, 1971, Ser. No. 168,576

Claims priority, application Japan, Dec. 25, 1970, 45-117536; Dec. 25, 1970, 45-117556; Dec. 28, 1970, 45-123955

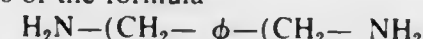
Int. Cl. C07c 51/48

U.S. Cl. 260-525

15 Claims

1. A process for separating and recovering methylterephthalic acid from a mixture of methylterephthalic acid and 4-methylisophthalic acid in the form of a salt and at a higher concentration, said process comprising bringing a mixture of the salts of methylterephthalic acid and 4-methylisophthalic acid with at least one base selected from the group consisting of

- ammonia,
- aliphatic diamines of 2 - 12 carbon atoms,
- diamines of the formula



wherein n is a positive integer from 1 to 3, φ is a member selected from the group consisting of p- and m-phenylene and p- and m-cyclohexylene.

- bis-(p-aminocyclohexyl) methane, and
- piperazine,

into contact with a mixed solvent of at least 10 percent by weight of water and at least one hydrophilic organic solvent, selected from the group consisting of

- mono- and dihydric alcohols of 1 - 3 carbon atoms,
- monomethyl and monoethyl ethers of ethylene glycol, and
- dioxane,

to separate from the mixed solvent in a solid state a salt of methylterephthalic acid and said base or a mixture of salts of methylterephthalic acid and 4-methylisophthalic acid, said mixture containing said salt of methylterephthalic acid and said base at a higher concentration, and thereafter recovering said solid product.

3,857,882

PRODUCTION OF ALPHA-CHLOROACRYLIC ACID

Eberhard Auer, Erfstadt Liblar; Wilhelm Vogt, Huerth-Efferen, and Klaus Gehrmann, Hurth-Knapsack, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 13, 1973, Ser. No. 387,754

Claims priority, application Germany, Aug. 18, 1972, 2240663

Int. Cl. C07c 51/00

U.S. Cl. 260-539 R

6 Claims

1. A process for making α-chloroacrylic acid comprising intimately contacting acrylic acid with chlorine gas and separating the resulting crude reaction product consisting predominantly of 2,3-dichloropropionic acid into α-chloroacrylic acid and hydrogen chloride by introducing the said crude reaction product into a catalyst zone heated to temperatures between 80° and 160°C and containing at least one known dehydrochlorination catalyst and by continually distilling off α-chloroacrylic acid under pressures between 10 and 100 mm of mercury.

3,857,883

N-CHLOROTHIO UREA PRODUCTION

James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 8, 1972, Ser. No. 250,895

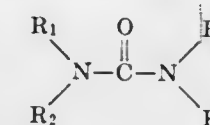
Int. Cl. C07c 127/20

U.S. Cl. 260-545 R

9 Claims

1. In the process for producing an N-chlorothio urea derivative, which comprises reacting substantially equimolar

amounts of a urea reactant of the formula



wherein R, R¹ and R² independently are hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms, aryl of 6 to 10 carbon atoms, aryl of 6 to 10 carbon atoms substituted with 1 to 4 halogen atoms of atomic number 9 to 35, trichloromethyl, trifluoromethyl, nitro groups or alkoxy groups individually of 1 to 4 carbon atoms, and sulfur dichloride in the presence of an organic base acceptor to complex the hydrochloric acid formed in the reaction, the improvement which comprises maintaining during reaction the moles of uncomplexed acceptor to the total moles of urea reactant and N-chlorothio urea product at a ratio of less than 0.2:1 by the controlled addition of the acceptor to a mixture of the urea reactant and sulfur dichloride in an inert diluent.

3,857,884

TETRAMETHYLALKANE DERIVATIVES

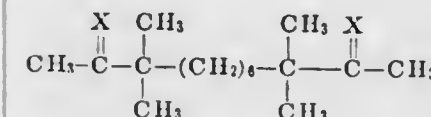
George W. Moersch, and Paul L. Creger, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Division of Ser. No. 29,704, April 17, 1970, Pat. No. 3,742,068. This application Jan. 30, 1973, Ser. No. 327,977

Int. Cl. C07c 133/02

U.S. Cl. 260-554

I. A compound of the formula



in which X is a member of the class consisting of oxo and semicarbazono.

3,857,885

PHOTOPOLYMERIZABLE COMPOUNDS

Raimund Josef Faust, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

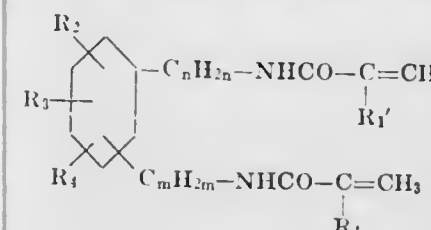
Filed Dec. 28, 1971, Ser. No. 213,170

Claims priority, application Germany, Dec. 31, 1970, 2064742

Int. Cl. C07c 103/30

U.S. Cl. 260-561 N

I. A photopolymerizable compound of the general formula



3,857,888

HALO/NITRO-SUBSTITUTED BENZALDEHYDE
BIS(DIALKYLAMINOALKYL) MERCAPTALS AND
CONGENERS

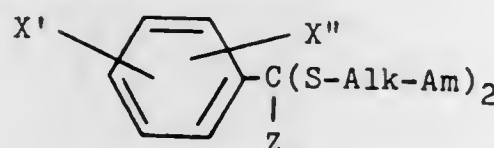
Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 832,469, June 11, 1969, abandoned. This application Feb. 15, 1972, Ser. No. 226,525
Int. Cl. C07c 91/00

U.S. Cl. 260—570.5 S

13 Claims

1. A compound of the formula



wherein Z represents hydrogen or methyl; X' represents halogen or nitro; X'' represents hydrogen, halogen, or nitro; Alk represents alkylene containing more than 1 and fewer than 5 carbons; and Am represents di(lower alkyl)amino.

3,857,889

ISOLATION PROCESS

Thomas Leigh, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 26, 1969, Ser. No. 827,966

Claims priority, application Great Britain, Aug. 6, 1968, 37523/68

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

4 Claims

1. A process for the isolation of (+)-propanolol from a partially resolved mixture of the enantiomers of propanolol in which (+)-propanolol is present in excess, which comprises the interaction of the said partially resolved mixture with a non-polar solvent in the presence of a solubilising agent selected from primary aralkyl or aliphatic amines, or aliphatic alcohols, and then recovering the (+)-propanolol from the solution so obtained.

3,857,890

PROCESS FOR PREPARING METHYLENE-DI-ANILINES
Francesco P. Recchia, New Haven, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed July 25, 1969, Ser. No. 845,027

Int. Cl. C07c 85/08

U.S. Cl. 260—570 D

11 Claims

1. A process for the preparation of a mixture of methylene-bridged polyphenyl polyamines wherein the major component is di(aminophenyl)methane wherein the proportion of o,p'-isomer to p,p'-isomer in the latter is within the range of 20:80 to 30:70, said process comprising:

heating in the absence of acid at a temperature within the range of about 150°C to about 300°C a mixture of (i) an aromatic primary amine and (ii) an acid-free mixture of aminobenzylamines obtained by condensing aniline with formaldehyde in the presence of mineral acid and neutralizing the reaction product.

3,857,891

NEW AMINOALKANOL COMPOUNDS AND METHODS
FOR THEIR PRODUCTION

Ann Holmes, and Robert F. Meyer, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

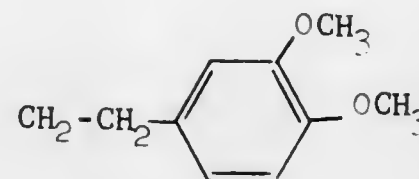
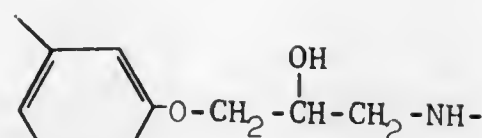
Filed Dec. 14, 1971, Ser. No. 207,954

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

3 Claims

1. A member of the class consisting of compounds of the formula



and acid-addition salts thereof.

3,857,892

PROCESS FOR THE PREPARATION OF
2,5,6-TRI-LOWER-ALKYL-2-CYCLOHEXENONES

Pius Anton Wehrli, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

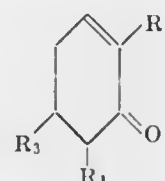
Division of Ser. No. 805,365, March 7, 1969, Pat. No. 3,692,839. This application June 2, 1972, Ser. No. 260,024

Int. Cl. C07c 45/00

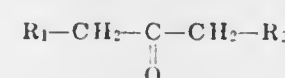
U.S. Cl. 260—586 R

3 Claims

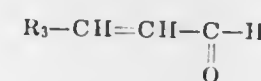
1. A process of producing a keto compound of the formula:



wherein R₁, R₂, and R₃ are lower alkyl comprising the condensing of the keto compound of the formula



wherein R₁ and R₂ are as above with an aldehyde compound of the formula



wherein R₃ is as above in the presence of a base selected from the group consisting of alkali metal hydrides, alkali metal hydroxides and alkali metal lower alkoxides.

3,857,893

PRODUCTION OF DIETHYL KETONE

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,998

Int. Cl. C07c 45/08

U.S. Cl. 260—597 A

7 Claims

1. A liquid phase process of producing predominantly diethyl ketone by reacting ethylene, carbon monoxide and hydrogen in the presence of a catalytic amount of a cobalt carbonyl catalyst containing only cobalt and carbon monoxide and from about 0.3 to about 1.5 moles of an amine catalyst promoter selected from the group consisting of ammonia, a primary hydrocarbyl amine, and a tertiary hydrocarbyl amine, said hydrocarbyl containing only aromatic unsaturation and up to 12 carbon atoms, per gram atom of cobalt, at a temperature of from about 50° to about 150°C and a pressure of about 50 to about 150°C and a pressure of about 50 to about 2,000 psig, the molar ratio of ethylene to hydrogen being at least two and the ratio of carbon monoxide to hydrogen being greater than one.

3,857,894

HYDROGENATION OF CYCLIC HYDROCARBON
DIOLEFINS TO CYCLIC HYDROCARBON OLEFINS

Morello Morelli, San Donato Milanese, and Fortunato De Marco, Milan, both of Italy, assignors to Snamprogetti, S.p.A., San Donato Milanese, Italy

Filed July 24, 1973, Ser. No. 382,055

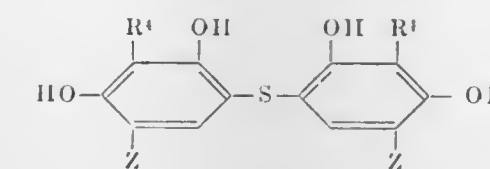
Claims priority, application Italy, July 27, 1972, 27492/72

Int. Cl. C07c 5/04

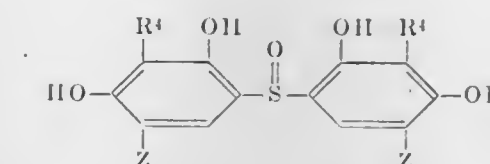
U.S. Cl. 260—666 A

6 Claims

1. A process of hydrogenating a cyclic hydrocarbon diolefin by contacting said cyclic diolefin with hydrogen in the presence of a palladium base catalyst, wherein the improvement comprises increasing the selectivity of the hydrogenation of said cyclic hydrocarbon diolefin to cyclic hydrocarbon olefin by adding to the hydrogenation mixture an aqueous solution of a zinc salt having a ratio of water/zinc of at least 1/1 by weight.



and



wherein R⁴ is an alkyl group containing from 1 to about 6 carbon atoms and Z is a halogen atom.

3,857,897

PROCESS FOR THE PRODUCTION OF
ORTHO-CARBONIC ACID ESTERS

Kurt Findeisen, and Kuno Wagner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 17, 1972, Ser. No. 272,224

Claims priority, application Germany, Aug. 3, 1971, 2138727

Int. Cl. C07c 41/00

U.S. Cl. 260—613 R

6 Claims

1. Process for preparing orthocarbonic acid esters which comprises reacting trichloromethyl isocyanide dichloride with a monofunctional aromatic hydroxy compound having the formula:

Ar — OH
wherein Ar is selected from the group consisting of phenyl, naphthyl and the foregoing substituted with a substituent selected from the group consisting of alkoxy, phenyl, phenoxy, phenylthio, halogen, lower haloalkyl, nitro, —CN, lower carbalkoxy, alkylsulfonyl, phenylsulfonyl, methyl, ethyl, isopropyl, butyl, tert-butyl, octyl, cyclohexyl, cyclopentyl, methylcyclohexyl and ethylcyclopentyl at a temperature in the range of from 0°C to 250°C.

3,857,898

1-(3'-HEXENYL)-1-CYCLOALKANOLS

Alfred A. Schleppek, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

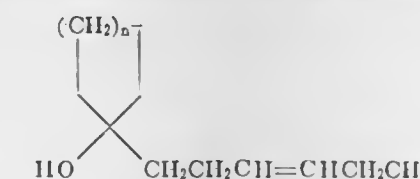
Filed Dec. 27, 1971, Ser. No. 212,780

Int. Cl. C07c 35/06, 35/08, 35/20

U.S. Cl. 260—617 R

4 Claims

1. A compound characterized by the structural formula



wherein n is an integer of from 1 to 3.

3,857,899

PROCESS FOR SELECTIVE METHYLATION OF
PHENOLS

Akira Tasaka, Ibaragi-shi; Akira Morii, Takatsuki-shi, and Yousuke Matoba, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Sept. 29, 1969, Ser. No. 861,989

Claims priority, application Japan, Oct. 5, 1968, 43-72729; Oct. 7, 1968, 43-73024; Oct. 31, 1968, 43-79810

Int. Cl. C07c 37/16

U.S. Cl. 260—621 R

21 Claims

1. A process of methylation the the ortho-position of a phenol represented by the formula

3,857,896
SUBSTITUTED DIRESORCYL SULFIDE AND SULFOXIDE
COMPOUNDS

Robert C. Desjarlais, 8 Karen Dr., South Hadley Falls, Mass. 01035

Continuation of Ser. No. 156,079, June 23, 1971, abandoned, which is a division of Ser. No. 667,365, Sept. 13, 1967, Pat. No. 3,619,191. This application Dec. 15, 1972, Ser. No. 315,717

Int. Cl. C07c 149/36, 147/14

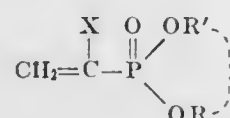
U.S. Cl. 260—609 F

2 Claims

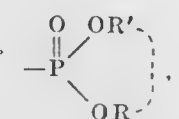
1. A compound having a general formula selected from the class consisting of

of styrene or of alpha-methyl styrene with a minor proportion of at least one ethylenically unsaturated monomer selected from the group consisting of the nitriles of ethylenically unsaturated carboxylic acids, the C₁-C₁₂ alkyl esters of acrylic and methacrylic acid and graft copolymers of styrene or alpha-methyl styrene with polybutadiene, and acrylate styrene-acrylonitrile resins and an effective concentration of a copolymer of:

1. from about 2.5 to 99%, by weight of at least one bis (hydrocarbyl) vinylphosphate having the structure



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C₁-C₁₈ alkyl and



wherein R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint; and

2. the balance of the copolymer comprising at least one halogen-containing ethylenically unsaturated monomer selected from the group consisting of the vinyl halides, the halogenated C₁-C₁₂ alkyl acrylates and methacrylates, the vinylidene halides, the halosubstituted nitriles of ethylenically unsaturated carboxylic acids, and the chlorinated styrenes.

3,857,907

PROCESS FOR THE MANUFACTURE OF PHOSPHORIC ACID ESTERS AND PHOSPHONIC ACID ESTERS

Henry Martin, and Jozef Drabek, both of Basel, Switzerland
Filed Apr. 1, 1970, Ser. No. 24,853

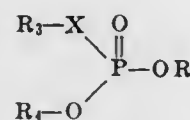
Claims priority, application Switzerland, Apr. 2, 1969, 5106/69

Int. Cl. C07f 9/08, 9/16, 9/40

U.S. Cl. 260-982

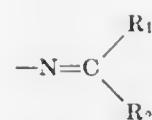
6 Claims

1. A process for preparing phosphoric acid esters of the formula

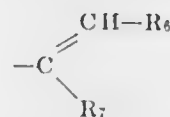


wherein

each of R₃ and R₄ represents C₁-C₄ alkyl, X represents oxygen or the direct P-R₃ bond, and R represents phenyl or phenyl substituted by a radical selected from the group consisting of alkyl, halogen, nitro, cyano, alkylmercapto, trifluoromethyl and ureido substituted by alkyl, alkoxy or halophenyl; the residue of the formula

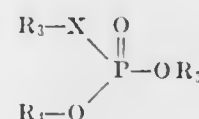


in which R₁ represents C₁-C₄ alkyl, phenyl or phenyl substituted by halogen or nitro, and R₂ represents hydrogen, phenyl, alkylamino, dialkylamino or cyano; a heterocyclic residue containing 5 or 6 ring members and having optionally one or two benzene rings fused thereon, which residue may be substituted by alkyl or halogen; or the radical of an enolised aliphatic keto compound of the formula



wherein one of R₆ and R₇ represents alkyl, carbalkoxy or carboxamide and the other represents carbalkoxy or carboxamide,

which process comprises reacting (1) a phosphorus compound of the formula



wherein R₃ represents C₁-C₄ alkyl, with (2) trichlorobromomethane and (3) a compound of the formula R-OH.

3,857,908

APPARATUS FOR CONTROLLING AND MODULATING ENGINE FUNCTIONS

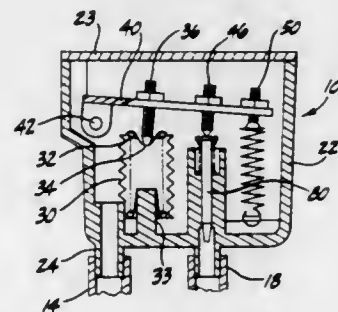
Morris C. Brown, Florissant; Forrest W. Cook, both of Webster Groves, Mo.; Ralph E. Kalert, Granite City, Ill.; Arthur C. Vollmer, St. Charles, and Jerry H. Winkley, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,262

Int. Cl. F02m 1/14

U.S. Cl. 261-39 A

4 Claims



1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising:

an attachment connected to said engine communicating on one side with ambient air and on another side with at least one suction controlled passage leading to at least one engine function controlling means.

said attachment including a bellows responsive to barometric and/or temperature changes of said atmospheric air to change a dimension of said bellows,

said bellows being mounted in a housing, said housing also including a pivotable plate surmounting said bellows, at least one metering means being connected to said plate, said metering means being adapted to meter ambient air to said at least one engine function controlling means and said pivotable plate being pivoted at one end thereof, said plate adjustably contacting said bellows at an intermediate position along the length of said plate, said plate also having adjustment biasing means at the end opposite said pivoted end.

3,857,909

GAS NEBULIZING APPARATUS

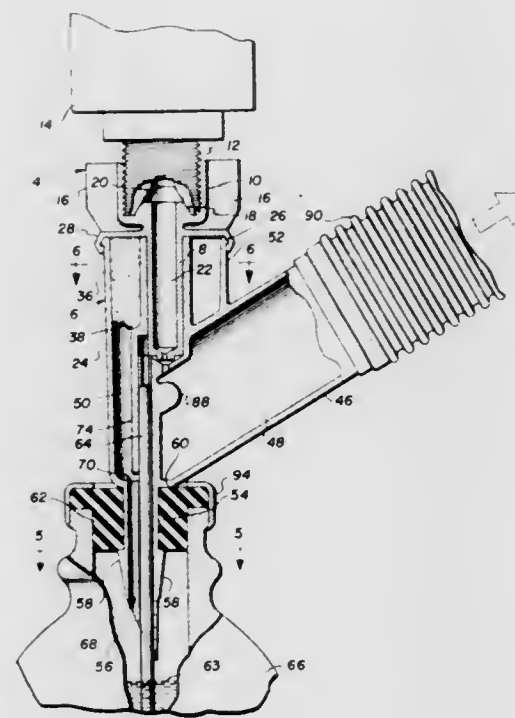
James A. Huggins, c/o James A. Huggins & Associates, 551 W. Park Ave., Libertyville, Ill. 60048

Filed Apr. 11, 1973, Ser. No. 350,026

Int. Cl. B01f 3/04; A61m 15/00

U.S. Cl. 261-64 R

8 Claims



6. A connector for use in a system that supplies nebulized gas to a patient and which includes a container with liquid and an opening with a closure therein, said connector comprising a body having means for connection to a gas supply and having nozzle means, a tubular spike member with an end having means for piercing the closure to insert said tubular spike member through said closure, a tube in communication with said gas supply connecting means and being joined to said body, said tube being within and extending beyond said end of the tubular spike member for immersion into the liquid to carry liquid therefrom to said nozzle means, means forming a nebulizing chamber within said body for receiving a mixture of the gas and liquid, adjustable air valve means to add additional air to said chamber, and drain means to carry rainout liquid from said nebulizing chamber back into said container; said adjustable air valve means comprising a flange on said gas supply connection means, said flange having openings over a portion of its area and being imperforate over another portion of its area, said flange having means for rotatably suspending said body at an open end thereof that communicates with said chamber.

3,857,910

OXYGENATOR SUPPORT

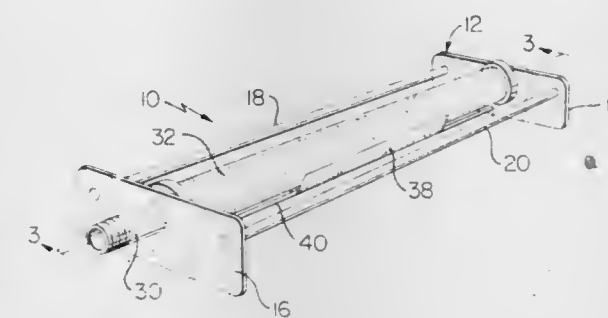
Lois I. Day, 2280 Whispering Willow Cir., Kettering, Ohio 45440

Filed Dec. 7, 1972, Ser. No. 313,095

Int. Cl. B01f 3/04; C02c 5/04

U.S. Cl. 261-65

5 Claims



1. An oxygenator support connectable to an air supply to provide a high density of air bubbles comprising: a pair of end supports; a flexible cylindrical porous film having a high density of pores extending therethrough mounted in suspended fashion at each end to each respective end support and extending therebetween; means on one semi-cylindrical portion of said cylindrical film to effectively seal the pores therealong wherein only the pores in the other semi-cylindrical portion of said cylindrical film are unsealed; inlet means through one of said end supports to provide communication between a source of air and the interior of said cylindrical film, wherein air bubbles are formed as the air passes outwardly through the unsealed portion of said cylindrical film, said unsealed portion being the upper portion when said cylindrical film is in a horizontal position as the air pressure within the cylindrical film builds up and escapes therethrough; means axially spacing said end supports apart so as to keep said film substantially tight; and a rod extending between said end supports and cooperating with said cylindrical film to maintain said cylindrical film in a substantially horizontal position during air flow there-through.

3,857,911

APPARATUS FOR HEAT- AND MASS TRANSFER BETWEEN LIQUIDS AND GASES

Laszlo Szucs; Csaba Tasnadi, and Istvan Lindner, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Jan. 23, 1974, Ser. No. 435,984

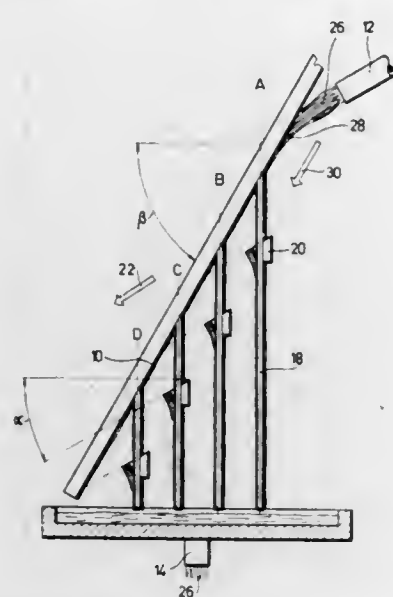
Int. Cl. F28c 1/04

U.S. Cl. 261-112

3 Claims

1. In an apparatus for heat- and mass transfer between liquids and gases comprising, in combination, a liquid distributor surface inclined between a liquid inlet and a liquid outlet, said liquid distributor surface facing said liquid outlet, liquid withdrawing means provided in several rows one behind the other which lead from said liquid distributor surface into said liquid outlet, baffle means provided on said liquid withdrawing means and exposing the sides of the latter facing the liquid inlet, said baffle means having front surfaces facing the and inclining in the same direction as the liquid distributor surface, the angle of inclination of the front surfaces of the baffle means being smaller than the angle of inclination of the liquid

distributor surface so that extensions of said front surfaces intersect said liquid distributor surface for reuniting surplus



liquid from said baffle means to a main liquid film formed on said liquid distributor surface.

3,857,912

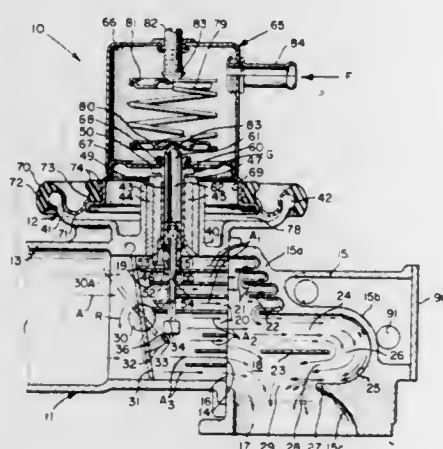
VEHICLE FUEL INJECTOR AND CARBURETOR UNIT

Oscar R. Cedarholm, 3011 Cedar Ln., Eureka, Calif. 95501
Continuation-in-part of Ser. No. 216,361, Jan. 10, 1972, Pat.
No. 3,814,391. This application July 15, 1974, Ser. No.
488,481

Int. Cl. F02m 29/04

U.S. Cl. 261-144

9 Claims



1. A vehicle fuel injector and carburetor unit for atomizing fuel, comprising:

- a. an atomization housing having a back wall and defining a mixing chamber for accepting and mixing charges of air and fuel;
- b. an air inlet structure having an air inlet in communication with the mixing chamber, the mixing chamber and air inlet defining a generally continuous flow passageway;
- c. a throttle valve positioned in the continuous flow passageway to regulate the flow of air into the mixing chamber;
- d. a fuel injector coupled to the atomization housing;
- e. a metering valve connected to the fuel injector and projecting into the continuous flow passageway;
- f. vertically spaced guide plates coupled to the housing and extending horizontally across the continuous flow passageway, the guide plates being arranged adjacent the metering valve to split incoming air into separate streams of air;
- g. spaced fins coupled to an upper section of the housing back wall at a location downstream of the guide plates, the fins being arranged to define plural pockets that project inwardly towards the guide plates — wherein, the fins serve to break up and atomize the fuel while the pockets temporarily hold fuel for being successively

blasted and further atomized by the streams of air issuing from between the guide plates;

- h. a divider coupled to the housing;
 - i. a U-shaped channel defined by the divider and a middle section of the housing back wall;
 - j. means defining a contraflow collision zone generally beneath the divider where at least a stream of air from between the guide plates encounters the air-fuel flow issuing generally in the opposite direction from the U-shaped channel; and,
 - k. a flow outlet opening defined by the housing and located downstream of the contraflow collision zone,
- wherein, the combined effects and coaction of the guide plates, the fins and pockets, divider, and U-shaped channel aid in atomizing fuel to improve combustion.

3,857,913

METHOD FOR THE MANUFACTURE OF CARBON FOAM

William T. Crow, Pittsburgh, Pa.; Arthur E. Sands, Oak Ridge, and Michael E. Scrivner, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

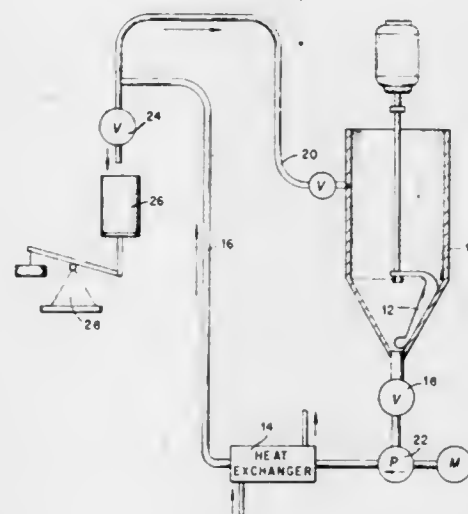
Continuation of Ser. No. 868,138, Oct. 21, 1969, abandoned.

This application Oct. 13, 1972, Ser. No. 298,717

Int. Cl. C01b 31/00

U.S. Cl. 264-29

3 Claims



1. In the art of preparing a cellular carbonaceous product comprising the steps of admixing partially polymerized furfuryl alcohol containing less than 12 mole per cent of the alcohol monomer and possessing a viscosity in the range of about 10,000 to 14,000 centipoise with water and urethane compounds capable of interacting to form a cellular urethane structure and consisting essentially of a polyhydric alcohol and diisocyanate, forming a cellular urethane structure by the interaction of the urethane compounds, heating the cellular urethane structure to a temperature below the decomposition temperature of the urethane and sufficient to cure the furfuryl alcohol, and thereafter heating the cellular structure to a temperature greater than the decomposition temperature of the urethane and sufficient to carbonize the furfuryl alcohol for forming the cellular carbonaceous product; the improvement consisting of forming a homogeneous premix of the partially polymerized furfuryl alcohol, water and polyhydric alcohol by the steps of combining the partially polymerized furfuryl alcohol, water and polyhydric alcohol, agitating the combined ingredients for homogeneously mixing the latter while simultaneously shearing the partially polymerized furfuryl alcohol for reducing the viscosity of the partially polymerized furfuryl alcohol to a viscosity in the range of 4,000 to 6,000 centipoise and for heating the mixture to a temperature of at least about 35°C. to inhibit coagulation in the premix due to a reaction between the water and the polyhydric alcohol, continuing said agitation and said shearing to maintain the

partially polymerized furfuryl alcohol at a viscosity in the last mentioned range and to continually add heat to the premix, circulating premix in a heat exchange relationship with a coolant for maintaining the premix at said temperature of at least about 35°C., removing a portion of the homogeneous premix, and adding the diisocyanate to said portion for forming said cellular urethane structure by the interaction of the urethane compounds.

3,857,914

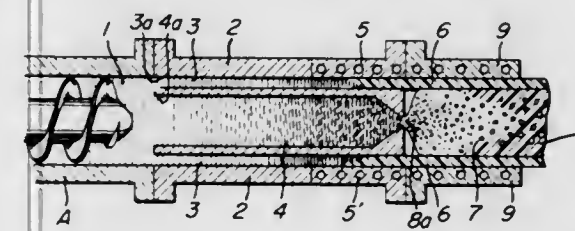
METHOD FOR EXTRUDING A FOAMED, MOLDED ARTICLE

Itsuo Aishima, Tokyo; Hisaya Sakura, and Hiroshi Shimizu, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of Ser. No. 867,687, Oct. 20, 1969, abandoned. This application May 1, 1972, Ser. No. 249,715
Claims priority, application Japan, Oct. 21, 1968, 43-76068

Int. Cl. B29d 23/04, 27/00

U.S. Cl. 264-45.5

9 Claims



1. A method for continuously extruding a foamed, molded article having a skin-core structure having a skin layer and a foam core, said skin layer having a thickness between 0.5 and 5 mm and a degree of expansion no greater than 1.2, said method comprising introducing a flowable, expandable, thermoplastic resin from a single source into a single extruding die having a plurality of partitioned passages for respectively forming skin and core layers, externally cooling the resin passing through at least one of the passages for forming the skin layer at least in the region of the outlet of the extruding die, the skin layer being cooled to a temperature lower than the softening point of the resin to substantially solidify the resin in the substantially unexpanded state while simultaneously maintaining the resin passing through at least one passage for forming the core layer in a substantially unexpanded state under pressure without cooling and extruding all of the resin from the extruding die into a lower pressure zone in which the resin from the passage for forming the core layer is immediately expanded to become integrated with the solidified resin which forms the skin layer.

3,857,915

EMBOSSED PLASTIC SURFACE COVERING AND METHOD OF PREPARING SAME

Richard P. Crowley, 125 High St., Boston, Mass. 02110
Continuation of Ser. No. 28,052, April 13, 1970, abandoned.
This application Feb. 22, 1972, Ser. No. 228,396 The portion of the term of this patent subsequent to July 1, 1986, has been disclaimed.

Int. Cl. B29d 7/20; B29h 21/02

U.S. Cl. 264-52

7 Claims

1. A method of chemically embossing a gas-expandable vinyl-chloride resin sheet material, which method comprises:

- a. applying to surface portions of said sheet material in a predetermined pattern an ester of acrylic acid and a peroxide cross linking agent which will cross-link said ester on heating; and
- b. heating the treated sheet material to a temperature sufficient to polymerize the ester by the cross-linking agent and to cause the sheet to expand, whereby the surface of the portion of the sheet material to which the unsaturated compound has not been applied rises above the level of

the surface of the applied portions to form a chemically embossed product.

3,857,916

METHOD OF SEALING AN OPEN TOPPED VESSEL

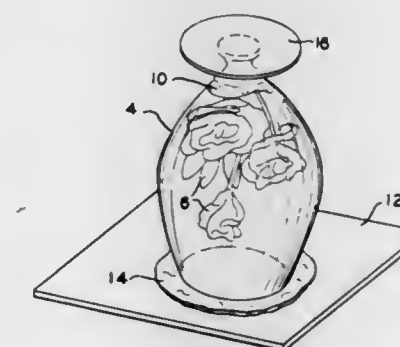
John C. Waszkiewicz, Jr., Middle Settlement Rd., New Hartford, N.Y. 13413

Filed June 22, 1970, Ser. No. 48,196

Int. Cl. B29c 17/08, 13/02

U.S. Cl. 264-85

6 Claims



1. In a method of sealing an open topped vessel, the steps of:

- a. mixing together liquid epoxy resin, a liquid amine curing agent and a liquid plasticizer, the resin comprising at least 70% by weight of the mixture;
- b. pouring the mixture onto a glass plate having a surface covering of mold release so that the mixture forms a puddle thereon;
- c. placing the vessel to be sealed upside down on the glass plate with the edge of its open top in the mixture puddle;
- d. leaving the vessel as stated above for at least sixteen hours while the mixture cures;
- e. removing the vessel and cured mixture, which now forms a top closure for the vessel, from the glass plate; and
- f. trimming the excess cured mixture from the edge of the vessel.

3,857,917

PROCESS FOR THE PRODUCTION OF TUBULAR FILMS FROM THERMOPLASTIC MATERIALS

Grahame Melvin Reade, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 45,383, June 11, 1970, abandoned. This application July 20, 1972, Ser. No. 273,430
Claims priority, application Great Britain, June 25, 1969, 32068/69

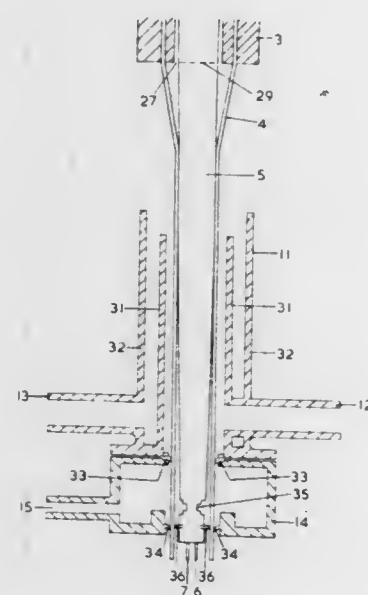
Int. Cl. B29d 23/04

U.S. Cl. 264-89

7 Claims

1. A process for the production of an oriented tubular film comprising downwardly melt extruding a tube of an organic thermoplastic polymeric material having a glass transition temperature of at least 25°C from an extrusion orifice, cooling and sizing the tube by withdrawing the tube over and in contact with a hollow, cooled, matt-surfaced mandrel at a rate of from 1.05 to 10 times greater than the speed of extrusion of the tube so as to stretch the tube up to 10 times in the direction of extrusion, the mandrel having a Centre Line Average surface roughness of between 20 and 90 microinches, being tapered over at least that part of its length which is in contact with the contracting tube to allow for the contraction of the tube as it cools to the solid state, the degree of taper being at least 0.0008 inch per inch of said tapered length, and having a diameter, not greater than 1 inch, which is smaller than that of the extrusion orifice, passing the tube over and in contact with a resilient sealing member in the form of a flat circular disc positioned downstream of the tapered part of the mandrel on a plug sealing the bottom of the mandrel, the position of the sealing member within the tube being such that the tube is sufficiently solidified not to stick when it contacts

the sealing member, cooling the external surface of the tube with a cooling liquid, said cooling liquid contacting the tube at a distance at least equal to the mandrel diameter beyond the point at which the tube first contacts the mandrel, heating the cooled tube to its stretching temperature, introducing gas



wherein R is selected from the group consisting of hydrogen and the methyl group and X is selected from the group consisting of —CN, halogen of atomic numbers 9 to 35, and ester forming groups, —COOY, wherein Y is selected from the group consisting of a primary alkyl group and a second alkyl group, each of the foregoing alkyl groups containing from 1 to 18 carbon atoms, and (2) applying pressure substantially uniformly throughout said panels by adjusting the sides of said mold inwardly, said pressure being sufficient to compress said mortar substantially uniformly throughout said panels in an amount between about 1 and 2 millimeters without causing displacement of said mortar from between adjacent brick surfaces said pressure being applied prior to and at least until the occurrence of the initial set of said mortar as determined by standard ASTM test methods C-254 or C-403.

3,857,919 SEPARATING METAL VALUES BY SELECTIVE EXTRACTION

Wayne C. Hazen, Denver, and Pablo Hadzeriga, Arvada, both of Colo., assignors to Molybdenum Corporation of America, New York, N.Y.

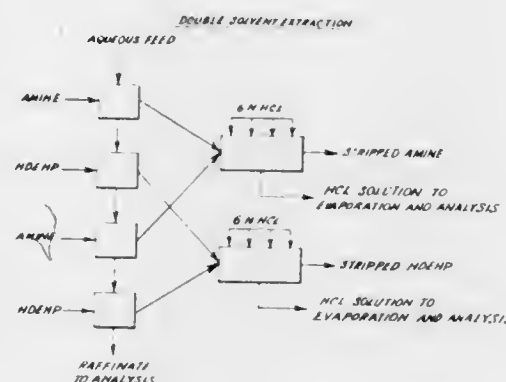
Continuation of Ser. No. 657,580, Aug. 1, 1967, abandoned.

This application June 18, 1969, Ser. No. 855,792

Int. Cl. B01d 11/04

U.S. Cl. 423—9

8 Claims



1. A process for separating rare earth metal values in an aqueous solution containing said metals which comprises contacting and mixing said aqueous solution with a first immiscible organic solvent which selectively extracts at least a first rare earth metal from the metals in the aqueous solution, allowing the mixture to settle into an aqueous phase depleted in the first rare earth metal and a solvent phase enriched in said first rare earth metal, separating the aqueous phase from the solvent phase and then contacting said separated aqueous phase with a second immiscible organic solvent which selectively extracts at least a second rare earth metal from said aqueous phase, allowing the mixture to settle into an aqueous phase depleted in said second rare earth metal and a solvent phase enriched in said second rare earth metal, separating said aqueous phase and then contacting and mixing said separated aqueous phase with said first organic solvent which selectively extracts an additional amount of said first rare earth metal, allowing the mixture to separate into an aqueous phase depleted in said first rare earth metal and a solvent phase enriched in said first rare earth metal, separately stripping said first and second solvents to recover a first stripping solution concentrated in said first rare earth metal and a second rare earth metal, and separating a last aqueous phase depleted in both of said first and second rare earth metals.

3,857,918 METHOD FOR PREPARING BRICK PANELS

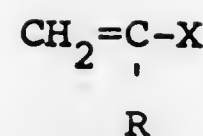
Rudolf F. Wyss, Wadenswil, Switzerland, and Dallas G. Grenley, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 182,155, Sept. 20, 1971, abandoned.

This application Aug. 16, 1973, Ser. No. 389,040

Int. Cl. B28b 3/00, 23/00

1. In the method of making building panels consisting of individual bricks held together solely with mortar, such method comprising the steps of arranging a plurality of bricks in a predetermined pattern spaced apart from one another on a substantially horizontal bed, forming a mold for said panels filling the spaces between the bricks with a flowable mortar, allowing the mortar to set to an extent sufficient to retain the bricks in their assembled relation and removing the panel from the mold; the improvement consisting of (1) utilizing as said mortar a vinylidene chloride polymer latex-modified portland cement mortar composition wherein said mortar composition comprises on an absolute volume basis (1) about 100 parts of portland cement, (2) between about 200 and 1,000 parts of a mineral aggregate, (3) between about 30 and 170 parts of water and (4) between about 8 and 170 parts of said vinylidene chloride polymer latex, and wherein said vinylidene chloride polymer is composed of from about 35 to about 90 percent by weight of vinylidene chloride and from about 65 to about 10 percent by weight of at least one other interpolymerizable monomer, as based on polymer solids, said other interpolymerizable monomer being composed of at least one monomer of the general formula



3,857,920 RECOVERY OF LITHIUM CARBONATE

Le Roy F. Grantham, Calabasas, and Samuel J. Yosim, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of Department of Health, Education and Welfare, Washington, D.C.

Filed July 29, 1971, Ser. No. 167,337

Int. Cl. C01d 11/02, 7/22

U.S. Cl. 423—208

3 Claims

1. A process for recovering lithium carbonate from a filter cake containing alkali metal carbonates in admixture with fly-ash-containing particulate matter, said filter cake being obtained from a closed-cycle process for the removal of sulfur oxides from a fly-ash-containing flue gas, said closed-cycle process including stages of absorption and reduction, and where,

in the absorption stage said flue gas is contacted with a molten salt mixture containing the carbonates of sodium, potassium, and lithium as the active absorbent for said sulfur oxides to convert a portion of the molten absorbent to alkali metal sulfites and sulfates, and where a porous filter cake of fly ash which contains carbonate melt is obtained by filtration of the melt downstream from said absorption stage, and where,

in the reduction stage the converted absorbent in the melt is reduced to alkali metal sulfides by contact with a carbonaceous reducing agent, and where a porous filter cake of the carbonaceous material which contains carbonate melt is obtained by filtration of the melt downstream from said reduction step,

the improvement providing economic recovery from said filter cakes of the carbonate-containing melt therein for reuse in said closed-cycle process which comprises the sequential steps of:

forming an aqueous slurry of the fly ash and carbonaceous filter cakes,

filtering said slurry to remove in said filtrate the dissolved sodium carbonate and potassium carbonate components of the melt and the dissolved water-soluble components of the filter cakes and recover a second filter cake containing the lithium carbonate component of the melt and the water-insoluble components of said fly ash and carbonaceous filter cakes,

forming a second aqueous slurry from said second filter cake,

carbonating said second slurry to convert the insoluble lithium carbonate therein to soluble lithium bicarbonate in aqueous solution,

filtering the solution to recover in the filtrate the dissolved lithium bicarbonate,

decarbonating the lithium bicarbonate solution to precipitate lithium carbonate in the aqueous medium and

filtering said aqueous medium to separately recover the lithium carbonate therefrom for recycle in the process.

3,857,921 METHOD FOR ELIMINATING NITROGEN OXIDES AND CATALYST COMPOSITION FOR USE IN PRACTICING SAID METHOD

Nobuhiro Tamura, Ryoichi Mitsui, Seizaburo Watanabe, and Kazuo Suga, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka Prefecture, Japan

Filed Sept. 25, 1973, Ser. No. 400,679

Claims priority, application Japan, Sept. 27, 1972, 47-96236; Feb. 26, 1973, 48-22180; Apr. 16, 1973, 48-42196

Int. Cl. B01d 53/34

U.S. Cl. 423—213.5

4 Claims

1. In a method for eliminating toxic substances contained in exhaust gases containing nitrogen oxides, the improvement which comprises contacting an exhaust gas with a catalytic composition deposited on a carrier and comprising:

- iron, iron oxide or iron sulfide;
- silver, silver oxide or silver sulfide; and
- at least one member selected from the group consisting of copper, beryllium, zinc, lead, indium, lanthanum, cerium, and oxides thereof and copper sulfide.

3,857,922 STABILIZATION OF LIGHT METAL HYDRIDE

Norman E. Matzek, 1305 E. Ashman, Midland, Mich. 48645, and Herbert C. Roehrs, Rte. No. 1, Beaverton, Mich. 48562

Filed July 13, 1965, Ser. No. 472,403

Int. Cl. C06b 19/00

U.S. Cl. 423—275

6 Claims

1. A crystalline, substantially non-ether solvated aluminum hydride having at least about .01 weight per cent magnesium incorporated into the crystal lattice thereof.

3,857,923 MULLITE PACKAGE FOR INTEGRATED CIRCUIT DEVICES

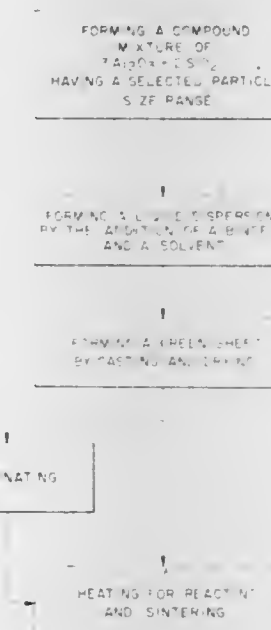
Richard A. Gardner, Wappingers Falls, N.Y., and David L. Wilcox, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,668

Int. Cl. C01b 33/36

U.S. Cl. 423—327

8 Claims



1. A method of fabricating a substantially stoichiometric high density and high purity mullite compound comprising the steps of:

- forming a particulate mixture of $3\text{Al}_2\text{O}_3 + 2\text{SiO}_2$ by the hydrogen flame pyrolysis of a solution of 6AlCl_3 and 2SiCl_4 ;
- forming a liquid dispersion of said mixture with a binder and a solvent such that said binder coats the particles of said mixture;
- removing said solvent from said mixture; and
- heating said mixture to a temperature above about 900°C so as to remove said binder, react said Al_2O_3 and SiO_2 to form a $3\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ mullite compound, and sinter said compound to remove voids.

3,857,924

PROCESS FOR PREPARING SILICA PARTICLES

Istvan Halasz, Kobenhuttenweg 56, Saarbrücken, and Imrich Sebastian, Fasanenweg 12, Dudweiler, both of Germany
 Filed Nov. 2, 1972, Ser. No. 303,288
 Claims priority, application Germany, Nov. 5, 1971, 2155045

Int. Cl. C01b 33/12

U.S. Cl. 423—338

5 Claims

1. Process for preparing substantially pure, spherical, porous silica particles having a grain size in the range of 0.001 to 3.0 mm and a metal oxide content of less than 1.0 percent by weight which comprises

- a. treating alkali polysilicate solution having a silica content of from 5 to 7.5 percent by weight
 - i. batchwise by mixing and stirring with a cation exchange material to remove cations and filtering off the cation exchange material; and
 - ii. thereafter batchwise by mixing and stirring with an anion exchange material to remove mineral acids and filtering off the anion exchange material;
- b. emulsifying and coagulating the treated solution from (a) in a water immiscible organic medium thereby forming said silica particles; and
- c. recovering said silica particles having a grain size in the range of 0.001 to 3.0 mm and a metal oxide content of less than 1.0 percent by weight.

3,857,926

PRODUCTION OF NICKEL SULFATE

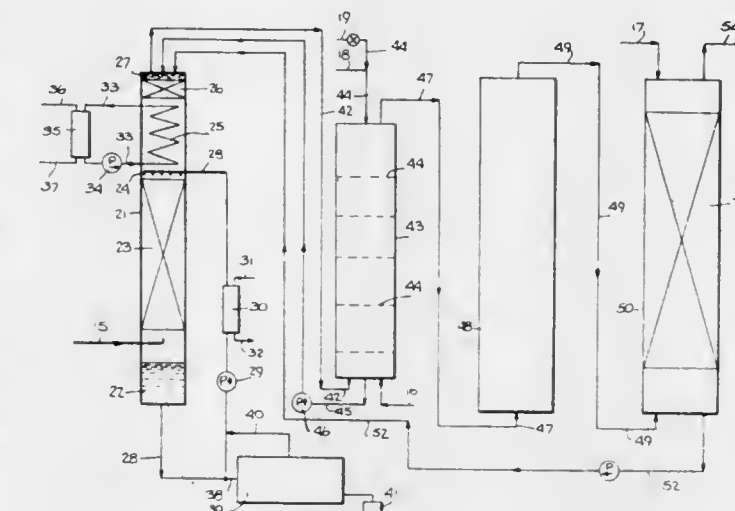
Heinz Paul Beutner, Englewood, Colo.; Charles Edward O'Neill, Port Credit, Ontario, Canada, and George Feick, Needham, Mass., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,180

Int. Cl. C01g 53/10; C01b 21/40

U.S. Cl. 423—544

9 Claims



1. A process for producing nickel sulfate comprising reacting nickel carbonyl with nitric acid in the gas phase, absorbing the nickel-containing product of said reaction in an aqueous solution of sulfuric acid and recovering nickel sulfate from said aqueous solution.

3,857,927

SYSTEM AND METHOD INCLUDING A CATALYST BED FOR COMBINING HYDROGEN AND OXYGEN GASES

James O. Henrie, Hidden Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

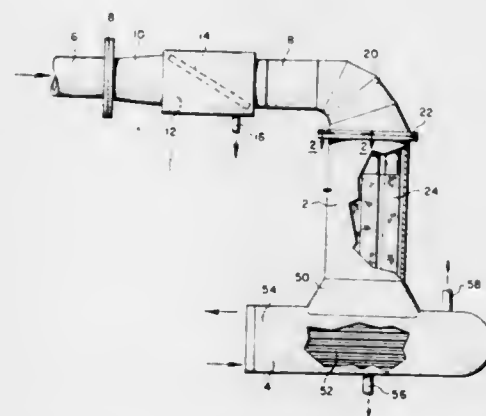
Continuation of Ser. No. 146,928, May 26, 1972, abandoned.

This application Nov. 30, 1972, Ser. No. 310,747

Int. Cl. C01b 5/00; G21c 1/04; B01j 1/11

U.S. Cl. 423—580

10 Claims



1. A system for recombining hydrogen and oxygen gases comprising:

- A. a source of hydrogen and oxygen gases;
- B. a catalyst bed having a thickness of less than 0.25 foot and a thickness to frontal area ratio of less than 0.01 ft./ft.², the catalyst being effective to promote the reaction:



C. means for flowing said hydrogen and said oxygen gases through said catalyst bed.

3,857,925

PREPARATION OF REINFORCING AMORPHOUS SILICA

Aurelio F. Sirianni, Norman A. Funnell, and Ira E. Puddington, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
 Filed July 11, 1972, Ser. No. 270,636

Claims priority, application Canada, July 27, 1971, 119214

Int. Cl. C01b 33/14, 33/16, 33/18

U.S. Cl. 423—339

15 Claims

1. A process for preparing an amorphous, pulverulent, dry silica, which comprises

- a. preparing seed particles by adding a mineral acid to a dilute alkali metal silicate solution containing 1 to 3% by weight of SiO₂ to form a sol having a pH of about 4.5 to 6.5 and allowing the sol to set into a firm aquagel,
- b. diluting and dispersing the aquagel in water to form an aqueous dispersion of aquagel seed particles,
- c. mixing with said seed dispersion an alkali metal silicate solution,
- d. adding acid to said seed dispersion-alkali metal silicate mixture at a temperature of about 75°–100°C to quickly lower the pH to about 1 to 4 and precipitate silica,
- f. separating the wet precipitated silica from the associated liquid and drying the freshly precipitated silica to form an amorphous, pulverulent, dry silica.

3,857,928

PROCESS FOR PRODUCING AMMONIUM METATUNGSTATE FROM AMMONIUM TUNGSTATE BY ION EXCHANGE

Tai K. Kim; John M. Laferty; Martin B. Macinnis; James C. Patton, and L. Rita Quatrini, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 23, 1974, Ser. No. 435,976

Int. Cl. C01g 41/00

U.S. Cl. 423—593

8 Claims

1. A process for producing crystalline ammonium metatungstate comprising:

1. contacting an aqueous ammonium tungstate solution having a pH of at least 9 with a carboxylic acid cation exchange resin in an amount sufficient to extract ammonium ions from the aqueous solution and to lower the pH thereof to below at least about 4.5 to form at least some metatungstate ions;
2. separating the aqueous solution containing the metatungstate ions from the resin;
3. heating the aqueous solution containing metatungstate ions at a temperature of at least about 98°C for at least about 5 hours; and
4. crystallizing ammonium metatungstate from the aqueous solution.

3,857,929

PROCESS FOR PRODUCING AMMONIUM METATUNGSTATE FROM AMMONIUM TUNGSTATE BY ION EXCHANGE

L. Rita Quatrini; Tai K. Kim; James C. Patton, and Martin B. Macinnis, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 23, 1974, Ser. No. 435,977

Int. Cl. C01g 41/00

U.S. Cl. 423—593

7 Claims

1. A process for producing crystalline ammonium metatungstate comprising:

1. contacting an aqueous ammonium tungstate solution having a pH of at least 9 with a sulfonic acid cation exchange resin in an amount sufficient to extract ammonium ions from the aqueous solution and to lower the pH thereof to between about 4.5 and 3.0 to form at least some metatungstate ions;
2. separating the aqueous solution containing the metatungstate ions from the resin;
3. heating the aqueous solution at a temperature of at least about 98°C for at least about 5 hours; and
4. crystallizing ammonium metatungstate from the aqueous solution.

3,857,930

PREPARATION OF AlH₃ VIA NaAlH₄-AlCl₃ IN ETHER-TOLUENE

Theodore C. Kraus, Cheshire, and Michael Scardera, Hamden, both of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 24, 1968, Ser. No. 786,780

Int. Cl. C01b 6/00

U.S. Cl. 423—645

9 Claims

1. a process for synthesizing macrocrystalline unsolvated aluminum hydride having a maximum absorption in the infrared at 5.8 microns, said process comprising the steps of:

- a. reacting sodium aluminum hydride with aluminum chloride in a diethyl ether-aromatic solvent reaction medium to form aluminum hydride and an alkali metal halide in said reaction medium said aromatic solvent selected from benzene, toluene, and xylene;
- b. removing said alkali metal by means of filtration to prevent the premature precipitation of said aluminum hydride formed;
- c. heating said aluminum hydride in said reaction medium;
- d. distilling said reaction medium until the diethyl ether

is substantially removed by means of a distillation process performed at predetermined temperatures and pressures; e. continuing said heating and said distilling to effect desolvation and crystallization to yield macrocrystalline unsolvated aluminum hydride;

- f. separating said aromatic solvent from said macrocrystalline unsolvated aluminum hydride; and,
- g. drying said macrocrystalline unsolvated aluminum hydride, said macrocrystalline unsolvated aluminum hydride being characterized by having a maximum absorption in the infrared at 5.8 microns.

3,857,931

LATEX POLYMER REAGENTS FOR DIAGNOSTIC TESTS

Hans Jacob Hager, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
 Continuation-in-part of Ser. No. 111,737, Feb. 1, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,481

Int. Cl. G01n 31/06, 33/16

U.S. Cl. 424—12

6 Claims

1. A water-insoluble immunological diagnostic reagent having a specific gravity of about that of water comprising discrete particles of a serologically inert latex polymer selected from the group consisting of carboxylated styrene butadiene, carboxylated polystyrene, carboxylated polystyrene with amino groups, acrylic acid polymers, methacrylic acid polymers, acrylonitrile butadiene styrene, polyvinyl acetate acrylate, polyvinyl pyridine and vinyl-chloride acrylate having condensed thereto, with a water soluble carbodiimide coupling agent, through an amide linkage, from about 0.01 to about 15.0% by weight of a known serologically determinant material selected from the group consisting of human chorionic gonadotropin and human gamma globulin.

3,857,932

DRY HYDROPHILIC ACRYLATE OR METHACRYLATE POLYMER-PROLONGED RELEASE DRUG IMPLANTS

Thomas H. Shepherd, 12 N. Greenwood Ave., Hopewell, N.J. 08525, and Francis E. Gould, 29 Cedar Ln., Princeton, N.J. 08540

Division of Ser. No. 70,829, Sept. 9, 1970, abandoned, Continuation-in-part of Ser. Nos. 766,840, Oct. 11, 1968, Pat.

No. 3,577,512, and Ser. No. 654,044, July 5, 1967, abandoned, and Ser. No. 650,259, June 30, 1967, abandoned, and Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949. This application June 27, 1972, Ser. No. 266,631

Int. Cl. A61k 27/12

U.S. Cl. 424—19

5 Claims

1. A shaped body in vivo implantation dosage form which is a dry composition containing a therapeutically active material and a water insoluble hydrophilic acrylate or methacrylate polymer selected from the group consisting of polymers of hydroxy lower alkyl acrylates, hydroxy lower alkyl methacrylates, hydroxy lower alkoxy lower alkyl acrylates and hydroxy lower alkoxy lower alkyl methacrylates, said shaped body being formed by casting or molding an anhydrous casting syrup or solution of the therapeutic material and the hydrophilic acrylate or methacrylate and polymerizing the composition, the resulting cast or molded dosage form having the advantage of preventing deterioration or loss or potency and thereby extending the shelf life of the therapeutic.

3,857,933

PROCESS FOR THE MANUFACTURE OF A DRUG DOSAGE FORM PERMITTING CONTROLLED RELEASE OF ACTIVE INGREDIENT

Gerhard Ross, Liederbach/Taunus, and Bernhard Reul, Schneidhain/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 80,981, Oct. 15, 1970, abandoned. This application Feb. 8, 1974, Ser. No. 440,730 Claims priority, application Germany, Oct. 17, 1969, 1952304

Int. Cl. A61k 27/12

U.S. Cl. 424-20

4 Claims

1. A drug dosage form permitting controlled release of a therapeutically active ingredient therefrom, said dosage form comprises a capsule filled solely with beads of an average diameter from about 0.1 to about 2.5 millimeters, each bead being similar in composition and consisting essentially of
 - a. from 48.4 percent up to 81.4 percent of a castable carrier, sparingly soluble in the digestive tract, which is a glycol ester of a wax acid containing 22 to 39 carbon atoms;
 - b. from 13.6 percent up to 30 percent, by total weight of the beads, of said active ingredient present in said carrier in dissolved, dispersed or emulsified form; and
 - c. from 5 percent to 21.5 percent of a physiologically tolerated surface-active substance present as an oil-in-water emulsifier and having a HLB value of 8 and higher; all said bead components of said capsule having a melting point of at least 45°C.

3,857,934

ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Bruce S. Bernstein, Somerville, N.J.; Seymour Hyman, New York, N.Y., and Ramesh C. Kapoor, Seaford, Del., assignors to Herculite Protective Fabrics Corporation, New York, N.Y. Division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, which is a continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application May 19, 1972, Ser. No. 255,143

Int. Cl. A01n 18/00, 23/00; B27k 1/00

U.S. Cl. 424-30

10 Claims

1. A polymeric article having pest repellent properties comprising
 - a solid, non-porous, polymeric substrate, and
 - a solid, non-porous layer of a polymeric composition adherently applied to at least one surface of said substrate, said composition containing at least one pest repellent activating agent distributed within said polymeric composition and capable of migrating from said layer into and throughout said substrate, said agent being present in said layer in sufficient amount so that upon migration from said layer into said substrate and effective level of pest repellent activity is provided throughout said substrate, and on at least one other surface of said substrate which is not in direct contact with said layer.

3,857,935

THERAPEUTIC AGENT DERIVED FROM THE BACTERIUM ACHROMOBACTER STENOHALIS FOR TREATMENT OF CANINE INFECTIOUS HEPATITIS

Joseph K. Chang, 3-21, 6-chome Seijomachi, Setagaya-ku, Tokyo, Japan

Filed Aug. 16, 1971, Ser. No. 172,302

Int. Cl. A61k 17/00, 27/00

U.S. Cl. 424-95

6 Claims

1. A therapeutic agent for the treatment of canine infectious hepatitis which comprises the filtrate of an admixture of water and inactivated bodies of a bacteria belonging to *Achromobacter stenohalis*.

3,857,936
MELINACIDIN

Alexander D. Argoudelis, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 26, 1971, Ser. No. 146,872

Int. Cl. H61k 21/00

U.S. Cl. 424-117

9 Claims

1. A composition of matter, melinacidin II, which:
 - a. is effective in inhibiting the growth of Gram-positive and Gram-negative bacteria;
 - b. is soluble in chloroform, methylene chloride, dimethylformamide, and dimethylsulfoxide; and is relatively insoluble in water;
 - c. has the following elemental analysis: C, 53.90; H, 4.64; N, 10.96; S, 16.99; O, 12.71 (by difference);
 - d. has an ultraviolet absorption maxima in methanol at 300 mμ ($\epsilon = 7.3$), and an ultraviolet absorption maxima in dimethylformamide-methanol at 300 mμ ($\epsilon = 6.2$);
 - e. has an optical rotation $[\alpha]_D^{25} = +72.6^\circ$ (c. 0.5, CHCl₃);
 - f. has a characteristic infrared absorption spectrum in mineral oil mull as shown in FIG. 1 of the accompanying drawing;
 - g. has a characteristic infrared absorption spectrum when pressed in a KBr disc as shown in FIG. 2 of the accompanying drawing;
 - h. has a characteristic NMR spectrum as shown in FIG. 3 of the accompanying drawing; and
 - i. has a molecular weight of 855 as determined by vapor pressure osmometry in chloroform.

3,857,937

ANTIBIOTICS 23,671 RP AND 23,672 RP

Denise Mancy, Charenton; Jean Florent, and Jean Lunel, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Feb. 23, 1972, Ser. No. 228,621

Claims priority, application France, Feb. 25, 1971, 71.06492

Int. Cl. A61k 21/00

U.S. Cl. 424-120

11 Claims

1. The antibiotic herein designated 23,671 RP which has the following characteristics: it is a white crystalline powder melting at 130°-132°C., which is practically insoluble in water and soluble in alcohols, acetone, diethyl ether, dimethylformamide and chlorinated hydrocarbon solvents; it has the elementary composition C = 58.45-58.6%, H = 8.6-8.7%, O = 31.35-31.55%; its optical rotation is $[\alpha]_D^{25} = -71.5^\circ \pm 1.5^\circ$ (c = 1, methanol); its ultra-violet spectrum (determined in methanol solution) shows an absorption maximum at 285 nm ($E_{1cm}^{1\%} = 1.04$) and an absorption minimum at 252 nm ($E_{1cm}^{1\%} = 0.67$), and its infra-red spectrum (determined with tablets of a mixture with potassium bromide) shows principal absorption bands as follows: 3,480 strong, 2,980 strong, 2,940 strong, 2,920 shoulder, 2,890 medium, 2,840 weak, 1,735 very strong, 1,710 shoulder, 1,630 medium, 1,455 strong, 1,412 medium, 1,375 strong, 1,350 medium, 1,345 shoulder, 1,330 medium, 1,325 shoulder, 1,295 medium, 1,260 shoulder, 1,235 medium, 1,215 very weak, 1,162 very strong, 1,115 strong, 1,095 shoulder, 1,080 very strong, 1,060 strong, 1,035 shoulder, 1,000 strong, 985 shoulder 965 medium, 920 medium, 905 medium, 870 weak, 835 medium, 805 weak, 780 medium, 745 very weak, 725 very weak, 700 weak, 660 shoulder, 645 shoulder, 600 weak, 500 weak, 455 medium, 420 weak and 395 weak.

3,857,938

METHOD OF PREPARING A NOVEL ANTACID PHARMACEUTICAL PRODUCT

Luigi Royati; Gianpaolo Picciola, and Paolo Senin, all of Milan, Italy, assignors to Rotta Research Laboratories S.p.A., Milan, Italy

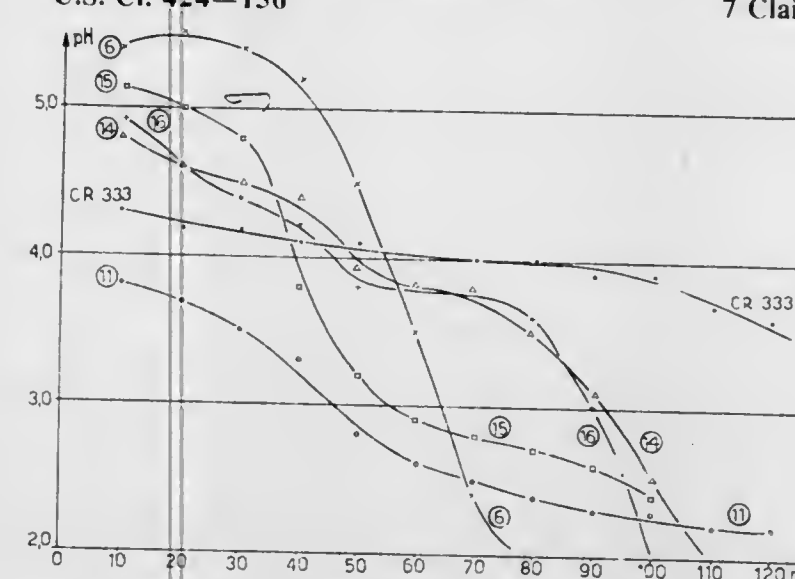
Filed Apr. 13, 1973, Ser. No. 350,866

Claims priority, application Italy, Apr. 13, 1972, 68139/72

Int. Cl. A61k 27/00

U.S. Cl. 424-156

7 Claims



1. A method of preparing a novel antacid pharmaceutical product for oral use characterized by the operational steps of:
 - a. dissolving in water aluminum sulphate hydrate $Al_2(SO_4)_3 \cdot 18H_2O$ in a proportion of 1.400 - 4.000 ml water per mole sulphate;
 - b. adding to the resulting solution while stirring aqueous ammonia of a 27-30 percent by weight concentration at a pouring rate of 0.100-0.160 moles/min per mole dissolved sulphate, till a final pH of 9.75-9.81 is reached, thereby uniformly dispersing aluminum hydroxide $Al(OH)_3$ in gelatinous form;
 - c. uniformly dispersing in the said dispersion basic magnesium carbonate pentahydrate $(MgCO_3)_4 \cdot Mg(OH)_2 \cdot 5H_2O$ in particles not exceeding 50 microns in size, in a quantity corresponding to 1.0-1.2 atoms Mg to one atom Al present in the dispersion;
 - d. filtering the dispersion from step (c);
 - e. removing from the filtering residue by washing with water a preponderant proportion of the ammonium sulphate trapped therein as a by-product of step (b);
 - f. replacing by acetone at least 60 percent by weight of the water impregnating the washed residue;
 - g. drying the acetone-impregnated residue at a temperature of 60°-80°C to obtain a solid particulate product containing less than 1 percent by weight imbibition water;
 - h. mechanically reducing the product particles to a size not exceeding 10 microns.

3,857,939

CHEWABLE SODIUM-FREE VITAMIN C TABLETS

Jeffrey Alan Green, Parsippany; Louis Magid, Clifton, and Paul Edward Sleezer, Denville, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 172,883, Aug. 18, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 419,572

Int. Cl. A61k 15/12

U.S. Cl. 424-157

1 Claim

1. A chewable vitamin C tablet having improved palatability characteristics consisting essentially of from about 50mg. to about 500 mg ascorbic acid, a substance selected from the group consisting of magnesium hydroxide, magnesium oxide and mixtures thereof, said substance being present in from about 10 percent to about 20 percent by weight of ascorbic acid present and therapeutically inert, pharmaceutically acceptable excipients, said excipients being characterized by being free of sodium ions.

3,857,940

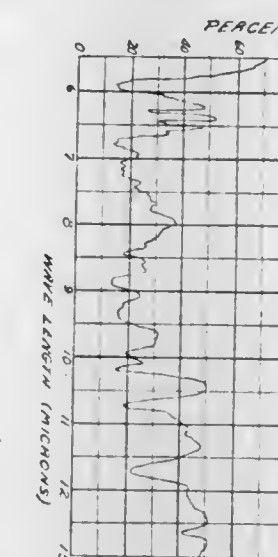
INOSINE DERIVATIVES

Paul Gordon, Chicago, Ill., assignor to Newport Pharmaceuticals, Inc., Newport Beach, Calif.

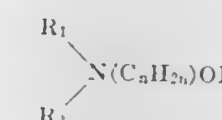
Division of Ser. No. 145,929, May 21, 1971, which is a division of Ser. No. 853,864, Aug. 28, 1969, Pat. No. 3,646,007. This application Dec. 7, 1972, Ser. No. 311,732 Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424-180

9 Claims



1. A method of improving memory in a mammal comprising feeding the mammal a complex of inosine with a dialkylaminoalkanol having the formula:



where R_1 and R_2 are lower alkyl, n is an integer of 2 to 4 and the mole ratio of inosine to aminoalkanol is from 1:1 to 1:10, said feeding being in an amount sufficient to improve the memory of the animal.

3,857,941

PHARMACEUTICAL COMPOSITIONS AND USE OF PREDNISOLONE 17-BENZOATE

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 48,481, June 22, 1970, Pat. No. 3,755,302. This application May 25, 1973, Ser. No. 364,219

Int. Cl. A61k 17/00

U.S. Cl. 424-243

6 Claims

1. A pharmaceutical composition for use in the systemic treatment of inflammatory conditions comprising prednisolone 17-benzoate in association with a systemic pharmaceutical carrier.

3,857,942

SEED PROTECTORS

Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 30, 1971, Ser. No. 158,529

Int. Cl. A01n 9/00

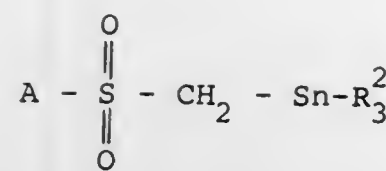
U.S. Cl. 424-245

4 Claims

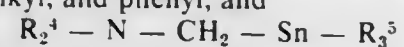
1. A process for protecting plant seeds from fungal infestation comprising applying to said plant seeds a fungicidally effective amount of an organotin compound selected from the group consisting of compounds of the formulas:



wherein R is selected from the group consisting of C_1 to C_{10} alkyl, phenyl, naphthyl, and tolyl; and R_1 is C_1 to C_{10} alkyl;



wherein A is selected from the group consisting of C₁ to C₁₀ alkyl, phenyl, methoxyphenyl, naphthyl, and N,N-dimethylamino; and R² is selected from the group consisting of C₁ to C₁₀ alkyl, and phenyl; and



wherein each R¹ is C₁ to C₁₂ alkyl; or both R¹'s taken together form a cyclopentomethylene ring; and R⁵ is C₂ to C₁₂ alkyl.

3,857,943

NEW PHENOTHIAZINE DERIVATIVES IN THE TREATMENT OF SPASTICITY OF MUSCLES

Shirish Chamdubhai Amin, Hornchurch; David Henry Jones, Rayleigh, and Donald Robert Maxwell, Brentwood, all of England, assignors to May & Baker Limited, Dagenham, Essex, England

Division of Ser. No. 22,706, March 25, 1970, Pat. No. 3,709,879. This application June 2, 1972, Ser. No. 259,339 Claims priority, application Great Britain, Mar. 27, 1969, 16219/69

Int. Cl. A61k 27/00

U.S. Cl. 424-247

5 Claims

1. Method for the treatment of spasticity of skeletal muscle in upper motor neurone (pyramidal) spasticity in a patient which comprises administering to the patient a dosage of 10-(3-dimethylamino-2-methylpropyl)-2-valerylphenothiazine, or a non-toxic acid addition salt thereof, in an amount sufficient to reduce the spasticity without inducing significant sedation in the patient.

3,857,944

1-PIPERAZINOISOQUINOLINES AS INOTROPIC AGENTS

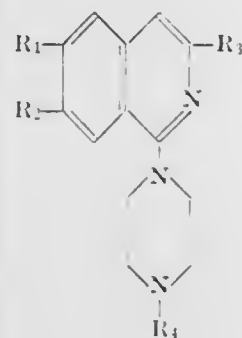
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 246,321, April 21, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 333,490 Int. Cl. A61k 27/00

U.S. Cl. 424-250

7 Claims

1. A method of treating myocardial shock which comprises administering to a mammal in need of said treatment an effective amount for the treatment of myocardial shock of a compound of the formula:



where

R₁ and R₂ each independently represent hydrogen, hydroxy, lower alkyl, or lower alkoxy or
R₁ and R₂ together represent alkylendioxy having 1 to 4 carbon atoms or together with the carbon atoms to which they are attached they represent fused benzene;
R₃ is hydrogen or lower alkyl and
R₄ is hydrogen, lower alkyl, alkenyl having 3 to 6 carbon atoms, aryl having 6 to 10 carbon atoms, aryl having 6 to 10 carbon atoms mono or di-substituted with lower alk-

oxy, fluorine or chlorine, alkanoyl having 2 to 6 carbon atoms, aroyl having 7 to 11 carbon atoms or aroyl having 7 to 11 carbon atoms, mono or di-substituted with lower alkoxy, fluorine or chlorine, carbalkoxy having 2 to 7 carbon atoms, carbalkenyloxy having 4 to 7 carbon atoms or carbaryloxy having 7 to 11 carbon atoms or a pharmaceutically acceptable acid addition salt thereof, provided that only one of R₁ and R₂ is tertiary alkyl having the tertiary carbon atom bonded to the aromatic nucleus or tertiary alkoxy having the tertiary carbon atom attached to the oxygen atom.

3,857,945

PHARMACEUTICAL COMPOSITIONS CONTAINING PIPERAZINE DERIVATIVES IN THE TREATMENT OF PAIN

Henry Najer, Paris; Philippe Michel Jacques Manoury, L. Hayles-Roses; Andre Pierre Fernand, Bagneux, and Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, all of France, assignors to Synthelabo, Paris, France

Filed Apr. 2, 1974, Ser. No. 457,201

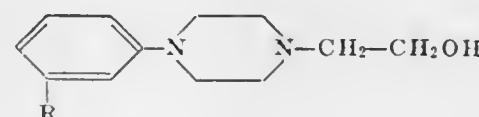
Claims priority, application France, Apr. 5, 1973, 73.12278; Mar. 4, 1974, 74.07276

Int. Cl. A61k 27/00

U.S. Cl. 424-250

6 Claims

1. A method of relieving pain which comprises administering to a subject suffering therefrom an effective amount of a piperazine of the formula:



in which R is CF₃, OCF₃ or SCF₃ or an addition salt thereof with a pharmaceutically tolerated acid.

3,857,946

ADDITION OF HYDROXAMIC ACID DERIVATIVES TO FEEDS FOR REDUCING ODOR OR POULTRY EXCREMENT

Akio Shibata, Okazaki, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 168,496, Aug. 2, 1971, abandoned. This application Dec. 28, 1973, Ser. No. 429,296

Claims priority, application Japan, Apr. 22, 1971, 46-25662 Int. Cl. A61k 15/12

U.S. Cl. 424-266

5 Claims

1. A method of reducing the objectionable odor of poultry excrement which consists essentially of feeding to the poultry a poultry feed having incorporated therein 20 to 100 ppm of a hydroxamic acid selected from the group consisting of acetohydroxamic acid, caprylohydroxamic acid, unsubstituted benzohydroxamic acid, nicotinohydroxamic acid, p-nitrobenzohydroxamic acid, p-chlorobenzohydroxamic acid, p-methoxybenzohydroxamic acid, p-methylbenzohydroxamic acid, o-methylbenzohydroxamic acid, chlorobenzohydroxamic acid and o-methoxybenzohydroxamic acid.

3,857,947

FUNGICIDAL ACTIVE PHTHALIMIDES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

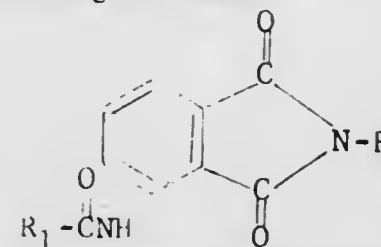
Continuation-in-part of Ser. No. 280,294, Aug. 14, 1972, abandoned, and a continuation-in-part of Ser. No. 227,274, Feb. 17, 1972, abandoned, said Ser. No. 280,294, is a continuation-in-part of Ser. No. 219,131, Jan. 19, 1972, abandoned, Division of Ser. No. 63,909, Aug. 3, 1970, abandoned, and a continuation-in-part of Ser. No. 227,274, Feb. 17, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 353,167

Int. Cl. A01n 9/22

U.S. Cl. 424-274

26 Claims

1. A method of controlling fungi consisting of contacting the fungi to be controlled with a fungicidally effective amount of a compound having the formula:



wherein R₁ is selected from the group consisting of alkyl having from 1-15 carbon atoms, alkenyl having from 2-4 carbon atoms, alkynyl having from 2-3 carbon atoms and thiochloromethyl, and R₁ is selected from the group consisting of alkyl having from 1-8 carbon atoms, thiomethyl, cyclopropyl, alkenyl having from 2-3 carbon atoms and aminoalkyl having from 1-4 carbon atoms.

3,857,948

SALINOMYCIN

Yoshiaki Tanaka; Hideo Saito, both of Tokyo; Yukio Miyazaki, Ageo; Hideo Sugawara, Saitama; Junsaku Nagatsu, and Mitsuo Shibuya, both of Tokyo, all of Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

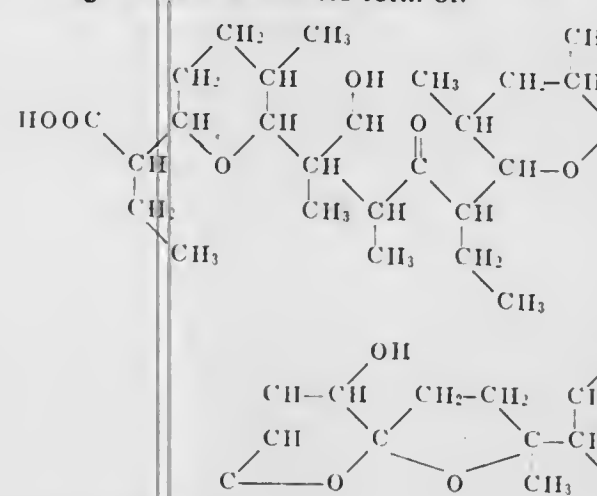
Continuation-in-part of Ser. No. 302,392, Oct. 31, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,030 Claims priority, application Japan, Mar. 3, 1972, 47-21553

Int. Cl. A61k 21/00

U.S. Cl. 424-283

3 Claims

1. An anti-coccidium composition which comprises an effective amount for treating coccidium of a Salinomycin having the formula in acid form of:



and a pharmaceutical carrier.

3,857,949

PROPHYLAXIS AND TREATMENT OF CARDIAC DISORDERS

Aldo Garzia, Lodi, Italy, assignor to Istituto Chemioterapico Italiano S.p.A., Milan, Italy

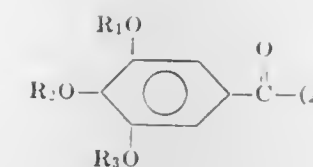
Division of Ser. No. 50,325, June 26, 1970, This application Feb. 16, 1972, Ser. No. 226,985

Int. Cl. A61k 27/00

U.S. Cl. 424-317

8 Claims

1. A method of prophylaxis or treatment of ischemic cardiac disorders comprising pharmacologically administering to an animal a compound represented by the formula



wherein each of R₁, R₂ and R₃ is methyl, ethyl or propyl and A is a saturated aliphatic hydrocarbon radical containing 3-8 carbon atoms substituted with one carboxylic acid group, or a pharmaceutically-acceptable salt thereof, at a dosage within the range of 25-500 mg/kg/day.

3,857,950

THERAPEUTICAL COMPOSITION OF N-PROPIONYL-EPSILON-AMINO-CAPROIC ACID WITH METHOD OF TREATMENT

Jean Choay, Neuilly-sur-Seine, France, assignor to Choay S.A., Paris, France

Continuation-in-part of Ser. No. 820,298, April 29, 1969, abandoned. This application June 21, 1972, Ser. No. 264,753 Claims priority, application France, May 3, 1968, 68.150414; Aug. 2, 1968, 68.161612

Int. Cl. A61k 27/00

U.S. Cl. 424-319

2 Claims

1. A method for the treatment of a mammal suffering from a cutaneous wound or burn or from a bone fracture, comprising the steps of orally or topically administering to said mammal a therapeutically effective dose of a pharmaceutical composition containing as the active ingredient N-propionyl-epsilon-aminocaproic acid or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

3,857,951

USE OF 2-MERCAPTOPROPIONYLGLYCINE AND ITS ALKALI METAL SALTS IN TREATING RESPIRATORY DISEASES

Jean-Pierre Buret, Osny, France, assignor to Laboratoires Cassenne, Paris, France

Filed Sept. 14, 1973, Ser. No. 397,865

Int. Cl. A61k 27/00

U.S. Cl. 424-319

8 Claims

1. A method of producing a mucolytic effect in a patient having a respiratory disease which comprises administering to said patient a mucolytically effective amount of a compound selected from the group consisting of 2-mercaptopropionylglycine and its sodium, potassium and lithium salts.

3,857,952

CERTAIN BENZENE DERIVATIVES USEFUL IN TREATING CARDIAC DISORDERS

Kenneth Robert Harry Wooldridge, Brentwood, and Berkeley Basil, Highwood, near Chelmsford, both of England, assignors to May & Baker Limited, Dagenham, Essex, England

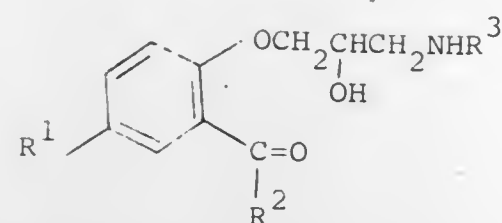
Division of Ser. No. 785,403, Dec. 19, 1968, Pat. No. 3,726,919. This application Aug. 3, 1972, Ser. No. 277,607 Claims priority, application Great Britain, Dec. 22, 1967, 58516/67; May 14, 1968, 56513/68; Aug. 2, 1968, 37103/68

Int. Cl. A61k 27/00

U.S. Cl. 424-324

3 Claims

1. A pharmaceutical composition which comprises, as the active ingredient, an effective amount for the treatment or prophylaxis of angina pectoris or cardiac arrhythmia of a compound of the formula:



wherein R¹ represents alkanoylamino of one through nine carbon atoms, R² represents alkyl of one through six carbon atoms, and R³ represents alkyl of one through six carbon atoms or cycloalkyl of three through six carbon atoms, or a non-toxic acid addition salt thereof, in association with a pharmaceutically-acceptable carrier.

3,857,953

ARYLIDENE CYCLANONES IN INHIBITING ANDROGEN ACTION

William B. Scanlon, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

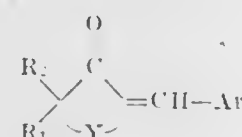
Continuation-in-part of Ser. No. 182,123, Sept. 20, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,947

Int. Cl. A61k 27/00

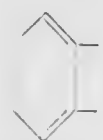
U.S. Cl. 424-331

7 Claims

1. A process for inhibiting the action of androgens which comprises administering to a subject exhibiting a superabundance of androgen action an effective quantity of an arylidene cyclanone having the formula



in which Y is —CHR—, —CHR—CHR—, or —CHR—CHR—CHR—; each R independently is hydrogen, methyl, ethyl or propyl; Ar is phenyl, furyl, thienyl, styryl, naphthyl, or a mono- or di-substituted derivative of each, the substituents being selected from the group consisting of hydroxy, loweralkoxy, loweralkyl, methylenedioxy, amino, loweralkylamino, di-loweralkylamino, nitro and halo; R₁ is hydrogen, cyclohexyl, phenyl, loweralkyl-substituted cyclohexyl, or loweralkyl-substituted phenyl, and R₂ is hydrogen; R₁ and R₂ taken together is =CH—Ar as herein defined; or R₁ and R₂ taken together with the portion of the cyclanone ring to which they are attached is



or a loweralkyl or loweralkoxy substituted derivative thereof.

3,857,954

ACARICIDES

Yukio Aoki, Ageo; Susumu Yoshida, Tokyo; Shoichi Kato; Satoshi Inada, both of Ageo, and Shuichi Ishida, Oomiya, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1973, Ser. No. 332,181

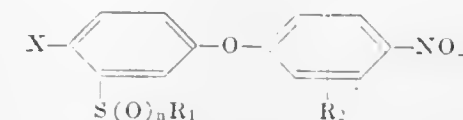
Claims priority, application Japan, Feb. 14, 1972, 47-14865

Int. Cl. A01n 9/00, 9/12, 9/14

U.S. Cl. 424-337

1 Claim

1. The method of controlling acarids comprising applying to acarids and their eggs an acaricidally effective amount of a compound of the formula



where

X is selected from the group consisting of Cl, Br, CH₃, CH₃O and C₂H₅O.

R₁ is selected from the group consisting of an alkyl having from 1 to 5 carbon atoms and allyl.

R₂ is selected from the group consisting of, H, CH₃, CF₃, CH₃O and Cl, and n is an integer of 0, 1 and 2.

3,857,955

ANTI-INFLAMMATORY AGENTS

Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 129,237, March 29, 1971, Pat. No. 3,745,223, which is a continuation-in-part of Ser. No. 91,559, Nov. 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 888,802, Dec. 29, 1969, abandoned. This application Oct. 27, 1972, Ser. No. 301,685

Int. Cl. A61k 27/00

U.S. Cl. 424-340

13 Claims

1. The method of treating inflammatory conditions in mammals which comprises administering to a mammalian subject from 1 to 100 mg./kg. daily of a compound of the formula



wherein

Ar represents an aryl moiety selected from the group consisting of 3-phenoxyphenyl, 4-phenoxyphenyl, 4-phenoxy-3-methylphenyl, 4-phenoxy-3-methoxyphenyl, 6-methoxy-2-naphthyl, or 3-chloro-4-allyloxyphenyl; and R represents iso-propyl, iso-propenyl, or iso-butyl, with the limitation that when R is iso-butyl, Ar is 4-phenoxyphenyl.

3,857,956

INSECTICIDAL COMPOSITIONS AND METHODS

George Holan, Victoria, Australia, assignor to Monsanto Australia Limited, Melbourne, Victoria, Australia

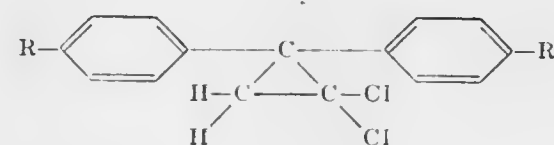
Division of Ser. No. 834,177, June 17, 1969, Pat. No. 3,642,910, which is a continuation-in-part of Ser. No. 684,554, Nov. 20, 1967, abandoned, which is a continuation of Ser. No. 402,949, Oct. 9, 1964, abandoned. This application Nov. 23, 1970, Ser. No. 92,235

Int. Cl. A01n 9/24

U.S. Cl. 424-341

7 Claims

1. An insecticidal method which comprises applying to insects or their habitat an insecticidally effective amount of a 1,1-diphenyl-2,2-dichlorocyclopropane derivative of the formula



wherein R and R' are alkoxy groups containing from one to three carbon atoms inclusive.

3,857,957

PERFLUORO-TERTIARY-ALKANOL COMPOUNDS AS FUMIGANTS

John Butler O'Brien, Morris Plains; Cyril Woolf, Morristown, both of N.J., and Robert Ernest Arthur Dear, Mount Kisco, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

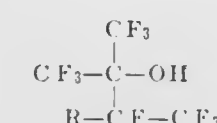
Filed Jan. 13, 1972, Ser. No. 217,634

Int. Cl. A01n 9/24

U.S. Cl. 424-343

3 Claims

1. A process for controlling insect organisms infesting an enclosed space which comprises contacting said insect organisms with an insecticidally effective concentration of a compound of the formula



wherein R is selected from the group consisting of fluorine and trifluoromethyl, said compound being employed in a concentration of about 0.063 pounds per thousand cubic feet of enclosed space.

3,857,958

ANTIPLIOLOGISTIC PHARMACEUTICAL COMPOSITIONS CONTAINING 4-(4-BIPHENYLYL)-1-BUTANOL AND METHOD OF USE

Ernst Seeger; Wolfhard Engel; Helmut Teugel, and Gunther Engelhardt, all of Biberach-Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 294,940, Oct. 4, 1972, Pat. No. 3,801,654. This application Jan. 17, 1974, Ser. No. 434,041

Claims priority, application Germany, Oct. 15, 1971, 2151312

Int. Cl. A61k 27/00

U.S. Cl. 424-343

2 Claims

1. An antiphlogistic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antiphlogistic amount of 4-(4'-biphenyl)-1-butanol.

3,857,959

INHIBITING FUNGICIDAL IMPAIRMENT OF PLANT GROWTH

Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 27, 1972, Ser. No. 266,825

Int. Cl. A01n 9/00, 9/26

U.S. Cl. 424-346

1 Claim

1. A method of inhibiting fungicidal impairment of plant growth which comprises applying t-butylhydroquinone to the area of said plant growth in an amount of 1g. to 1Kg. per 100 square feet.

3,857,960

TOILET OIL BAR

Leonard Mackles, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,593

Int. Cl. A61k 7/00

U.S. Cl. 424-365

9 Claims

1. A solid, hard and firm toilet oil bar having the appearance and feel of a soap bar; said oil bar releasing mineral oil when wet with warm water and applied to the skin, said bar containing mineral oil solidified with an amide component; said mineral oil constituting between about 70 percent to 85% by weight of said bar, and said amide component constituting between about 5 percent to 30% by weight of said bar and

being selected from the group consisting of monoethanolamine stearic acid amide, N,N'-distearoyl ethylenediamine and mixtures thereof.

3,857,961

METHOD FOR PRODUCING FOIE GRAS BY INDUCTION OF HYPERPHAGIA IN GEESE

Denise Albe-Fessart, 51 rue Molitor, Paris; Pierre Auffray, 4 rue Suzanne Masson 78, Saint-Cyr l'Ecole, and Francois Gallouin, 36 rue Clement Perrot, Vitry-sur-Seine, all of France

Filed July 20, 1972, Ser. No. 273,671

Claims priority, application France, July 21, 1971, 71.26768

Int. Cl. A22c 21/00

U.S. Cl. 426-2

10 Claims

1. A method for obtaining foie gras by induction of hyperphagia in geese which comprises the administration of an anti-catecholamine substance into the cerebrospinal fluid of the goose in an amount not more than about 300 μg to induce hyperphagia.

3,857,962

FLAVOR PRESERVATION IN SUGARLESS CHEWING GUM COMPOSITIONS AND CANDY PRODUCTS

Edward B. Westall, San Jacinto, Calif.; James J. Scanlan, Hillsdale, N.J., and Miroslaw Sahaydak, Great Neck, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 189,374, Oct. 14, 1971, Pat. No. 3,821,417, which is a continuation-in-part of Ser. No. 88,144, Nov. 9, 1970, abandoned. This application Oct. 31, 1973, Ser. No. 411,568

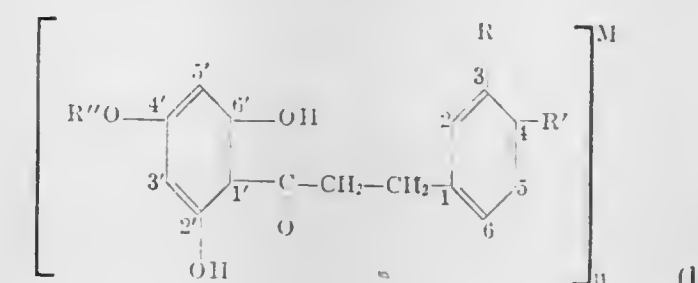
Int. Cl. A23g 3/00, 3/30

U.S. Cl. 426-3

40 Claims

1. A sugarless chewing gum composition having preserved and prolonged flavor qualities comprises:

- From about 0 to about 0.5 percent by weight, based on the total weight of the formulation, of an artificial sweetener;
- From about 0.4 to about 2.0 percent by weight of a natural or synthetic essential oil flavor; and
- At least about 0.0025 percent by weight of at least one dihydrochalcone glycoside monosalt flavor preserving and prolonging agent having the Formula (1):



wherein R represents a radical selected from the group consisting of hydrogen and hydroxy; R' represents a radical selected from the group consisting of hydrogen, hydroxy and 1 to 3 carbon alkoxy; and R'' represents a glycoside residue selected from the group consisting of β-rutinosyl, neohesperidosyl and β-D-glucosyl; and M is a mono- or divalent metal selected from the group consisting of an alkali metal and an alkaline earth metal, and n is an integer from 1 to 2 corresponding to the valence of the selected metal M.

3,857,963

METHOD FOR FORMING CENTER-FILLED CHEWING GUM

Allan H. Graff, New York, N.Y., and Richard A. Reggio, East Rutherford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 271,086, July 12, 1972, Pat. No. 3,806,290. This application Nov. 8, 1973, Ser. No. 414,050
Int. Cl. A23g 3/30

U.S. Cl. 426—3

13 Claims

1. A method of forming center-filled chewing gum comprising the steps of:

- extruding a rope of chewing gum having a hollow center through an orifice;
- feeding a stream of center-fill through said orifice to said hollow center downstream of said orifice, and
- venting air from said hollow center prior to entry of said center-fill stream therein.

3,857,964

CONTROLLED RELEASE FLAVOR COMPOSITIONS

Seymour Yolles, Newark, Del., assignor to David E. Brook, Acton, Mass., a part interest

Filed Feb. 9, 1973, Ser. No. 331,324

Int. Cl. A23g 3/00

U.S. Cl. 426—3

17 Claims

1. A controlled-release flavor composition comprising a core of flavor particles and an outer coating of a physiologically inert, edible, water-softenable and swellable material, said flavor particles having a particle size between -25 and +35, U.S. Screen Series, and said flavor particles being formed from an intimate dispersion of a flavor acetal or flavor ketal in a physiologically inert, masticatory polymeric binder, said acetal or ketal comprising a reaction product of a physiologically inert and edible polyhydroxy compound and a physiologically inert and edible flavor aldehyde or ketone, respectively.

3,857,965

METHOD FOR MAKING A CHEWING-GUM COMPOSITION

Ronald L. Ream, North Aurora, Ill., assignor to Wm. Wrigley, Jr. Company, Chicago, Ill.

Filed Oct. 11, 1973, Ser. No. 405,711

Int. Cl. A23g 3/00

U.S. Cl. 426—3

14 Claims

1. A method for making a chewing-gum composition comprising the steps of:

- melting crystalline sorbitol by heating;
- mixing chewing-gum base and a crystallization retardant with said sorbitol;
- homogeneously blending the mixture; and
- forming the mixture.

3,857,966

PROCESS FOR BLAND, SOLUBLE PROTEIN

Jacob R. Feldman, New City, N.Y.; Gerhard J. Haas, Woodcliff Lake, N.J.; Joaquin C. Lugay, Thornwood, and Claire J. Wiener, Spring Valley, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 16, 1973, Ser. No. 389,097

Int. Cl. A23j 3/00

U.S. Cl. 426—7

23 Claims

1. An improved process for preparing a bland, soluble, nutritious, enzymatically hydrolyzed proteinaceous material comprising:

- a. first reacting a protein at alkaline pH with an alkaline microbial protease;
- b. then reacting the protein at neutral pH with a plant enzyme and a neutral microbial protease.

3,857,967

PREPARATION OF FOOD AND BEVERAGES WITH PEPTIDOGLUTAMINASE

Mamoru Kikuchi, Nagareyama; Kenji Sakaguchi, Kashiwa, and Eiichi Nakano, Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd. and Noda Institute for Scientific Research, both of Noda-shi, Japan

Division of Ser. No. 141,704, May 10, 1971, Pat. No. 3,796,633, which is a continuation-in-part of Ser. No. 71,129, Sept. 10, 1970, abandoned. This application Aug. 10, 1973, Ser. No. 387,375

Int. Cl. A23l 1/20

U.S. Cl. 426—18

3 Claims

1. A process for preparing a beverage or food containing, as a part of palatable components, peptides and/or amino acids obtained by hydrolysis of a protein-containing raw material, characterized by adding a member selected from the group consisting of bacterial cells, frozen cells, acetone treated powder of the cells, peptidoglutaminase-I, peptidoglutaminase-II and a mixture of peptidoglutaminase-I and peptidoglutaminase-II, which are originated from *Bacillus, circulans* ATCC 21590 to said beverage or food to increase the amount of L-glutamic acid and/or a peptide-bonded glutamic acid contained therein.

3,857,968

METHOD OF PREPARING ANIMAL FOOD OF INCREASED PALATABILITY

Gerhard Julius Haas, Woodcliff Lake, N.J., and Joaquin Castro Lugay, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 346,364, March 29, 1973, abandoned. This application Apr. 18, 1974, Ser. No. 461,831
Int. Cl. A23k 1/10

U.S. Cl. 426—33

41 Claims

1. A process for improving the palatability of an animal food which comprises:

- conditioning an aqueous, meat slurry, comprising fat and protein, by emulsifying the fat in the meat slurry with the water present in the slurry, and treating the meat slurry, containing the emulsified fat and the protein, with an enzyme mixture comprising lipase and protease in amounts effective to cause an enzymatic reaction resulting in the production of a palatability improving composition; and

incorporating the palatability improving composition into the animal food in an amount which is effective to increase the palatability of the animal food.

3,857,969

PROCESS OF MAKING A MILK COAGULATING ENZYME PREPARATION

Torsten O. Wiken, Delft, and Gerhard Bakker, Sittard, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation of Ser. No. 368,730, June 11, 1970, which is a continuation of Ser. No. 166,262, July 26, 1971, abandoned. This application Feb. 1, 1974, Ser. No. 438,630

Claims priority, application Netherlands, Aug. 6, 1970, 7011613

Int. Cl. C12d 13/10; A23c 19/00

U.S. Cl. 426—36

7 Claims

1. A process for producing an enzyme preparation capable of coagulating milk comprising the steps of cultivating a fungi of the group *Mucor lamprosporus* or a natural or synthetic variant or mutant thereof in a medium containing available carbon, nitrogen and trace nutrients, said cultivation being accomplished under aerobic conditions at a temperature of between 15° and 45°C throughout an incubation period of about 2 to about 12 days and recovery the enzyme preparation from said medium.

3,857,970

PREPARATION OF SOY CHEESE

Haruo Tsumura, Osaka; Yukio Hashimoto, Izumi, and Hayata Kubota, Izumiotsu, all of Japan, assignors to Fuji Oil Co. Ltd., Osaka, Japan

Filed Apr. 17, 1973, Ser. No. 351,813

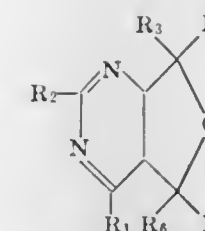
Int. Cl. A23c 19/02

U.S. Cl. 426—46

11 Claims

1. A process for making a cheese-like food from soy milk comprising

- preparing an emulsion containing soy milk and an edible fat in sufficient amounts to form an oil-in-water emulsion;
- inoculating said emulsion with a lactic acid-forming cheese starter culture and incubating the inoculated emulsion to form a fermented broth;
- adding to said fermented broth a coagulant selected from the group consisting of aldonic acid lactones, uronic acid lactones and mixtures thereof;
- heating the resultant mixture to a temperature within the range of about 40° to 70° C. and maintaining the mixture at said temperature for a time sufficient to form a curd therefrom;
- separating whey from said curd;
- cooking said curd; and
- aging said cooked curd.



wherein R₁ is alkyl containing from one to six carbon atoms or hydrogen; R₂, R₃, R₄, R₅ and R₆ are the same or different and are hydrogen or alkyl containing from one to six carbon atoms.

3,857,973

ALUMINUM ALLOY CONTAINER END AND SEALED CONTAINER THEREOF

Arvil B. McKee, Lower Burrell; Robert H. Brown, Natrona Heights, and Ralph L. Horst, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 123,778, March 12, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,830
Int. Cl. B67b 7/40; B32b 15/00

U.S. Cl. 426—122

11 Claims

1. In an aluminum alloy container end having a removable portion defined by at least one score line in the outer surface of said container end can end said score line describing a closed perimeter for said removable portion and extending sufficiently through its thickness to locally weaken it to render said portion defined thereby manually removable substantially by tearing to provide an access opening in said container end, the container end being produced from an aluminum alloy sheet, the improvement wherein said aluminum alloy sheet is provided as a composite sheet composed of a core alloy layer containing at least 90 percent aluminum, 4 to 6 percent Mg and up to 1% Mn and an inside cladding layer composed of an alloy consisting essentially of 1 to 1.5 percent Zn, the balance Al of at least 99.2 percent purity, said improvement serving to improve resistance to perforation attack in the region of said score line.

3,857,974

PROCESS FOR THE PRODUCTION OF FROZEN EGGS

Moustafa M. Aref, John J. Stroz, both of Ottawa, Ontario, and Gordon W. Johnson, Ashton, Ontario, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Ontario, Canada

Filed Nov. 24, 1969, Ser. No. 879,626

Int. Cl. A23l 1/32

U.S. Cl. 426—148

8 Claims

1. A frozen food egg substance, comprising free flowing discrete, particles of said substance, and each said particle is of pop-corn-like form.

3,857,975

METHOD FOR PREPARING JELLIFIED FOODS

Masaru Misaki, Yukizo Tsujimoto; Tatuo Nakagawa, all of Osaka; Junko Sukenari, Hyogo, and Shintaro Moritaka, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed July 3, 1973, Ser. No. 376,174

Claims priority, application Japan, July 5, 1972, 47-67720
Int. Cl. A23g 1/04

U.S. Cl. 426—167

5 Claims

1. A method for preparing a jellified food which comprises heating an aqueous dispersion containing a thermally gelable polysaccharide consisting mainly of β -1, 3-glucose units produced by a microorganism selected from the group consisting of *Alkaligenes faecalis* var. *mixogenes* and *Agrobacterium radiobacter* as the gelling agent to 55°C to 80°C under stirring to prepare a fluid containing from 0.5 to 5 weight percent of said

3,857,972

FLAVORING WITH AN OXOCYCLIC PYRIMIDINE

William J. Evers, Atlantic Highlands, and Joseph Sieczkowski, Matawan, both of N.J., assignors to International Flavors & Fragrance Inc., New York, N.Y.

Division of Ser. No. 123,024, March 10, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,674

Int. Cl. A23l 1/26

U.S. Cl. 426—65

4 Claims

1. A process for altering the flavoring of a foodstuff which comprises adding thereto a small but flavor-altering amount of at least one oxocyclic pyrimidine having the formula

polysaccharide, and leaving the fluid to stand and cool to a temperature not higher than 40°C.

3,857,976

FOOD PRODUCTS CONTAINING EPICHLOROHYDRIN-INHIBITED, STABILIZED RETORT STARCHES

Chester D. Szymanski, Martinsville; Martin M. Tessler, Edison, and Harvey Bell, North Plainfield, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 251,344, May 8, 1972, Pat. No. 3,804,828. This application Dec. 17, 1973, Ser. No. 425,560

Int. Cl. A231 1/14

U.S. Cl. 426—167

7 Claims

1. A retortable food product containing a starch thickener in which a substantial portion of the starch therein is an epichlorohydrin cross-linked hydroxypropyl cereal starch having a hydroxypropyl D.S. of about 0.06 to about 0.30 and a pH 3 buffered Brabender viscosity of 250–600 BU at 92°C, and 475–650 BU at 92°C, plus 10 minutes, with the viscosity at 92°C, plus 10 minutes greater than the viscosity at 92°C.

3,857,977

FOOD FLAVOR PELLETS WITH WHEAT FLOUR, SOY FLOUR AND BUTTERMILK BASE

Eric G. Huessy, Eden Prairie, Minn., assignor to Peavey Company, Minneapolis, Minn.

Filed May 29, 1973, Ser. No. 364,914

Int. Cl. A231 1/26

U.S. Cl. 426—189

3 Claims

1. An edible food flavoring pellet for incorporation in dry food systems which comprises:

a. a homogeneous mixture having a wheat flour, soy flour, and dry buttermilk base with the following formulation:

Ingredient	Percentage Range
Wheat Flour	25–35
Vegetable Oil	11–18
Dried Buttermilk	17–18
Corn Syrup Solids	8–10
Whey	8–9
Soy Flour	4–8
Salt	3–4
Glycerin	about 2
Xanthan Gum	about 0.1
Flavoring, lactic acid, garlic or onion flavoring	as required for balance

3,857,978

SOFT DRINK STABILIZER

Haraldo Alberto Schwartz, Rio de Janeiro; Odilio Lotario Moldenhauer, E. Rio, and Seymour Maurice Greenman, Rio de Janeiro-GB, all of Brazil, assignors to Concentrados Nacionais S.A., Rio de Janeiro, Brazil

Filed June 4, 1973, Ser. No. 366,587

Int. Cl. A231 1/00, 3/00

U.S. Cl. 426—190

7 Claims

1. A stabilizing agent for flavoring oil containing soft drink products comprising the combined abietic acid-fumaric acid ester of pentaerythritol.

3,857,979

PROCESS FOR TREATING MUSHROOMS

Max Beauvais, Saint-Georges-Motel, Eure, France, and Robert A. Sindall, Jr., 713 E. Lombard St., Baltimore, Md. 21202

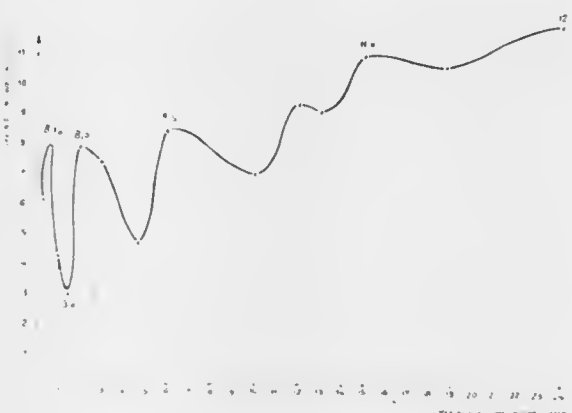
Filed Mar. 9, 1973, Ser. No. 339,846

Claims priority, application France, Mar. 24, 1972, 72.10429; Jan. 19, 1973, 73.01894

Int. Cl. A231 1/28

U.S. Cl. 426—204

8 Claims



1. A process for treating an edible mushroom which comprises

immersing said mushroom in demineralized water at a temperature of 13° to 15°C,

submitting the immersed mushroom to the effects of a vacuum of at least 500 mm Hg for about 30 minutes,

releasing said vacuum,

allowing said mushroom to stand in said demineralized water for at least an additional 12 hours,

blanching, and

sterilizing said mushroom.

3,857,980

PROCESS FOR PREPARATION AND PRESERVATION OF EGGS

Chester A. Johnson, P.O. Box 1437, Turlock, Calif. 95380

Filed Sept. 17, 1973, Ser. No. 397,578

Int. Cl. A23b 5/00

U.S. Cl. 426—250

20 Claims

1. A process for preparing and preserving eggs comprising the steps of:

a. separating the egg yolks and whites from the egg shells;

b. mixing beta carotene with the yolks and whites to form a liquid admixture;

c. mixing said yolks and whites with a 1% to 5% alkaline solution in a ratio of one gallon solution to from 100 to 175 pounds yolks and whites prior to cooking;

d. placing the admixture in a plastic bag and inserting the bag into a cooking container;

e. cooking the admixture at a temperature in the range 160°–185°F for a time sufficient to raise the internal temperature of the admixture to the range 145°–160°F before the portion of the admixture adjacent the periphery of said container becomes overcooked; and

f. freezing the cooked admixture.

3,857,981

PRESERVING RED COLOR IN RED MEATS

Kunito Sato, Chicago, and Harold K. Herring, Wheaton, both of Ill., assignors to Armour and Company, Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,750

Int. Cl. A23b 1/00

U.S. Cl. 426—265

7 Claims

1. In a process for preserving the bright red color of red meat the steps of treating said meat with from 0.01 to 0.50 percent by weight of 5-hydroxy-2-(hydroxymethyl)-4-pyrone and storing said meat with said compound incorporated

therein for a period of at least one day whereby the bright red color of the red meat is preserved.

3,857,982

PROCESSING FOR PRODUCING POTATO CHIP FLAVOR CONCENTRATE

Michael Robert Sevenants, Forest Park, Ohio, assignor to The Procter Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1973, Ser. No. 420,727

Int. Cl. A231 1/26

U.S. Cl. 426—271

10 Claims

1. A process for producing a potato-chip flavor concentrate comprising:

a. heating a potato source material until uniformly brown in color;

b. extracting flavor ingredients from the browned product of step (a) by contacting with a solvent selected from the group consisting of water, lower alcohols and mixtures thereof;

c. contacting the extract of step (b) with a cation-exchange resin, thereby to adsorb flavoring compounds onto the resin; and

d. eluting the adsorbed flavoring compounds from the cation-exchange resin.

3,857,983

METHOD OF REMOVING NATURAL WAX FROM THE SKIN OF FRUITS AND VEGETABLES

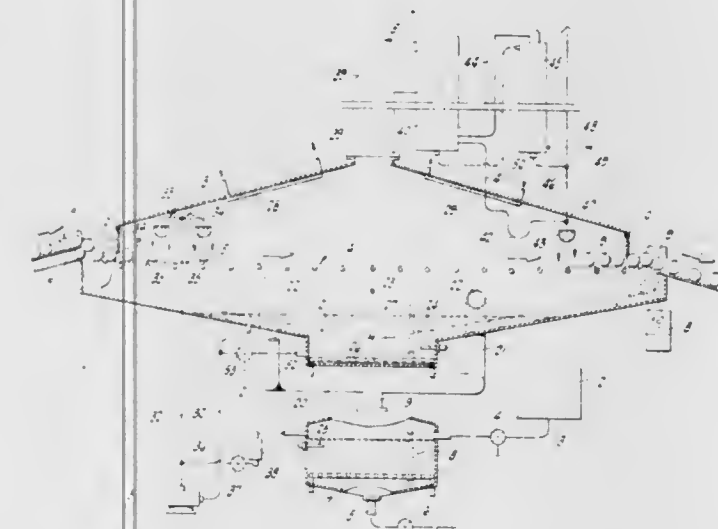
Theodore L. Roth, P.O. Box 4810, San Jose, Costa Rica

Filed Sept. 25, 1972, Ser. No. 291,962

Int. Cl. A231 1/00

U.S. Cl. 426—287

2 Claims



1. A method, of removing natural wax from the skin of waxy-skinned produce, comprising the steps of establishing an enclosure, introducing produce into the enclosure, subjecting the produce in said enclosure to a wax-removing solvent in an initially vapor phase, the vapor condensing in part in the enclosure as a solvent condensate and providing in such enclosure a dewaxing wash on the produce, withdrawing uncondensed vapor from the enclosure, condensing such withdrawn vapor exteriorly of the enclosure as a supplemental solvent condensate, and then feeding such supplemental solvent condensate to and discharging it in the enclosure above the produce to fall thereupon as an additional dewaxing wash.

3,857,984

METHOD OF CONSERVING FORAGE WITH ACID AND NITRITE MIXTURE

Ian Holden Pike, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 15, 1972, Ser. No. 289,744

Claims priority, application Great Britain, Sept. 23, 1971, 44403/71

Int. Cl. A23k 3/03

U.S. Cl. 426—335

5 Claims

1. A method of improving the nutritional value of silage which comprises the step of adding to the forage to be conserved acid in an amount from 0.1% to 3% by weight of the forage, said acid having a concentration in the range of 10% to 90% by volume and being selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid and mixtures thereof, and at least one nitrite in an amount from 10 to 2,000 ppm by weight of the forage selected from the group consisting of sodium nitrite and potassium nitrite.

3,857,985

POURABLE LIQUID SHORTENING

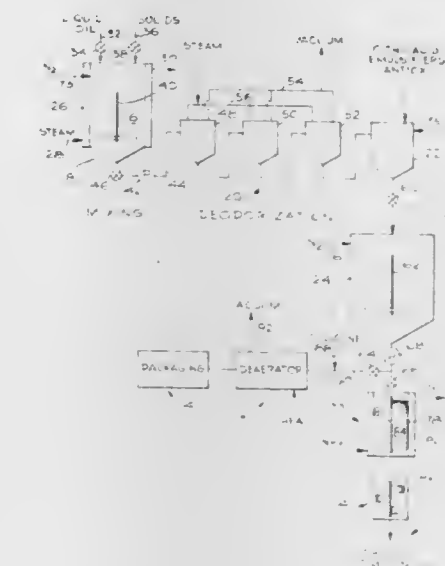
Edward Reid, Brea, and Perry W. Morgan, Jr., Fullerton, both of Calif., assignors to Hunt-Wesson Foods Inc., Fullerton, Calif.

Filed July 23, 1973, Ser. No. 381,527

Int. Cl. A23d 5/02

U.S. Cl. 426—362

21 Claims



1. A method of forming a pourable, liquid shortening comprising the steps of:

1. forming a batch comprising a mixture of a minor amount of finely divided, substantially fully saturated, normally solid glycerides, at least 90 percent of which are convertible to the form of beta crystals, dispersed in a liquid fatty ester triglyceride, vegetable oil;

2. heating the batch to a temperature above the melting point of the solid glycerides to form a large, constant temperature, warm body;

3. dynamically and incrementally cooling the warm body in a circulation stage comprising:

a. continuously removing a minor, warm portion from a first point of the warm body;

b. rapidly cooling the removed portion to a temperature below the crystallization point of the solid glycerides to form a cooled suspension of solid crystals in said oil;

c. returning the cooled suspension portion to the warm body at a point remote from said first point and melting said crystals thereat to incrementally cool said body;

4. continuing steps (3) (a), (b) and (c) until the solid crystals returned to the body at said remote point are not

- completely melted in said body and the body is cooled to a temperature below the temperature of phase change of the solid glycerides from alpha and beta prime to beta crystals;
5. then holding the body at said phase change temperature to convert all of said solid glycerides to a stable, intimate suspension of beta crystals in said oil; and
 6. deaerating the suspension;

3,857,986

METHOD OF PREPARING A PACKAGED HEAT STERILIZED MINCED MEAT PRODUCT

Svend Anker Svendsen, Hvalso, Denmark, assignor to Slagteriernes Forskningsinstitut, Roskilde, Denmark

Filed Nov. 8, 1972, Ser. No. 304,798

Claims priority, application Denmark, Nov. 8, 1971, 15356/71

Int. Cl. A22c 18/00

U.S. Cl. 426—371

4 Claims

1. In a method of preparing a packed, heat sterilized mince meat product wherein the meat is salted with salt and minced to form a binder mince component and a coarse mince component and the two are mixed, packed and heat sterilized at high temperatures, the improvement comprising the following steps:

- a. chopping the meat before salting into pieces of such dimensions in cms that the ratio of volume to total surface area of the individual meat pieces is less than or equal to 1
- b. mixing the chopped meat pieces with from 20 to 40 gms of salt to one kg meat,
- c. separating the chopped salted meat into a first and a second portion,
- d. mincing the first portion of meat in a high-speed cutter for 2-3 minutes and adjusting the fat content of the meat to between 12 and 20 percent to form a binder mince component,
- e. mincing the second portion of meat from step (c) to form a coarse mince component,
- f. mixing the coarse component with the minced binder component, the temperature of the meat during steps (a) - (f) being maintained below 22°C,
- g. packaging the minced meat product, and
- h. heat treating the packed meat product to a sterilizing temperature above 108°C.

3,857,987

WET MILLING OF COARSE GROUND WHEAT AND OTHER CEREAL GRAINS

Saul Rogols, Circleville; Edward J. Hueckel, Columbus, and John W. Salter, Westerville, all of Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 26, 1973, Ser. No. 428,558

Int. Cl. A23j 1/14

U.S. Cl. 426—436

12 Claims

1. A process for recovering starch, vital gluten, and a nutritious mixture of bran, germ and fiber from cereal grains, the steps comprising:

- A. Dry grinding the grain kernels to a coarse particle size such that 91-95% of said particles will pass through a No. 14 mesh screen; 80-90% will pass through a No. 20 mesh screen; and 40-56% will pass through a No. 45 mesh screen;
- B. Forming a dough by mixing about one part by weight of said coarsely ground grain with an equal part of water and kneading together for about one half hour;
- C. Allowing said dough to sit for about 15 minutes;
- D. Separating the starch and gluten in said dough by subjecting said dough to the combined action of a water wash and mechanical shearing of the viscous gluten strands formed in the dough to expose additional starch to the wash streams;

- E. Collecting the starch from said wash waters separately from the viscous gluten;
- F. Separating the bran, fiber and germ from said starch; and
- G. Separately collecting and drying said gluten from which substantially all of the starch, germ, bran and fiber have been removed to obtain a vital gluten product containing at least 75% protein.

3,857,988

METHOD OF THAWING DEEP-FROZEN MEAT PRODUCTS

Jens-Lauge Bolund Jensen, Fyrrevej 18; Per Julius Leth Moller, Haraldsborgvej 1, and Anna Birthe Mortensen, Klevekaer 11, Svogerslev, all of DK-4000 Roskilde, Denmark

Filed Mar. 31, 1972, Ser. No. 240,263

Claims priority, application Denmark, Apr. 2, 1971, 1590/71

Int. Cl. A23b 1/06

U.S. Cl. 426—506

2 Claims

1. A method of thawing deep-frozen raw meat products, comprising storing the frozen raw meat products in a closed space during a first thawing period; treating the stored products with air having a temperature of above 35°C and below 60°C and having a relative moisture content as close as possible to 100% by circulating the air evenly within said space at a rate of about 2 to 3 m/sec, until the surface of the stored products reaches a temperature approaching 30°-35°C, whereupon the first thawing period is discontinued; and immediately subjecting the stored products having a surface temperature of 30°-35°C to a second thawing period by circulating air at a temperature of 7°-13°C and a relative moisture content of about 90% at such a rate that within 15 to 20 hours a sufficient amount of heat is supplied to the meat products subjected to said second thawing period to bring their temperature after complete equalization and without further supply of heat to the desired end temperature, whereupon the heat treatment is discontinued.

3,857,989

METHOD AND APPARATUS FOR PREPARING AN ANIMAL FOOD PRODUCT

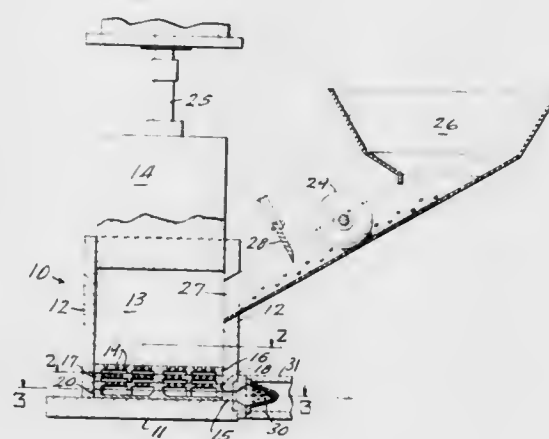
David P. King, Erie, Mich., assignor to King-Bartolotta, Inc., Erie, Mich.

Filed Sept. 27, 1973, Ser. No. 401,546

Int. Cl. A22c 17/00

U.S. Cl. 426—518

10 Claims



1. A method of preparing an animal food product comprising the steps of:

1. placing a mass animal flesh and bone material within a chamber between a plunger, axially movable within said

- chamber and perforated extractor means adjacent an outlet end of said chamber;
2. advancing said plunger against the mass under a pressure of not less than 120,000 psi to force the flesh and bones of the mass through said perforated extractor means to

reduce the bones to a size and consistency indistinguishable from the remainder of the resultant food product which emerges from said extractor plates; and

3. collecting the resultant food product from said outlet end of said chamber.

ELECTRICAL

3,857,990

HEAT PIPE FURNACE

Jacques Steininger, Lexington, and Thomas B. Reed, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

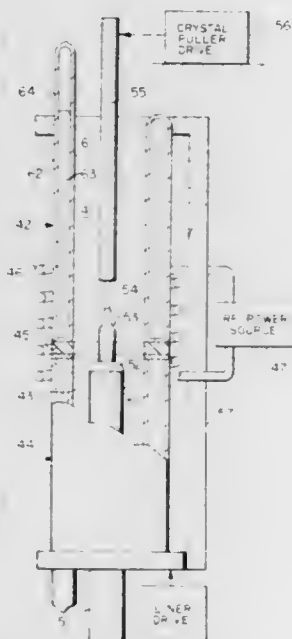
Division of Ser. No. 241,597, April 6, 1972. This application

June 27, 1973, Ser. No. 374,223

Int. Cl. H05b 3/66; F28d 15/00

U.S. Cl. 13—22

6 Claims



1. In a furnace, for providing at least two zones of different constant uniform temperature and a high temperature gradient therebetween, comprising:

a first and second hollow-walled sealed container defining a first and second zone in their interiors,

a wick inside the hollow wall extending from one end thereof to the other end thereof,

a liquid inside the hollow wall impregnating the wick, said first and second containers being in axial alignment and having an end of each in proximity to one another,

an insulating spacer between said first and second container ends,

means for heating the liquid in both zones with a heater located adjacent the proximate ends of both hollow walls, the liquids in the first and second hollow walls are different, having different temperatures of vaporization selected to provide different zone temperatures,

the liquids absorb heat from the heater, evaporate, and fill the inside of the hollow walls with vapor at said constant different temperatures and the vapor condenses, gives up heat to the wall, flows through the wick and is heated again to repeat the cycle,

whereby a high thermal gradient occurs across the insulating spacer between the first and second zones.

3,857,991

EARTH RESISTANCE-REDUCING AGENT AND METHOD OF REDUCING EARTH RESISTANCE BY USE OF SAME

Einosuke Higashimura, Tokyo; Yukihiko Sekimoto, Sitama, and Eizi Hatabu, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,658

Claims priority, application Japan, Dec. 29, 1970, 46-12805; Nov. 5, 1970, 45-96844

Int. Cl. H01r 3/06; H01b 1/06

U.S. Cl. 174—6

4 Claims

1. A process for reducing the earth resistance in the soil surrounding an earth electrode which comprises treating the soil surrounding said earth electrode with an earth resistance-

reducing agent consisting essentially of an aqueous solution of:

i. 1 to 30% by weight of at least one monomer selected from the group consisting of acrylamide, ammonium acrylate, sodium acrylate and sodium methacrylate;

ii. 0.05 to 5% by weight of at least one water-soluble cross-linking monomer selected from the group consisting of methylenebisacrylamide and 1,3-di(acrylamidomethyl)-2-imidazolidone;

iii. at least 0.5% by weight to the saturation amount of at least one electrolyte selected from the group consisting of sodium chloride and ammonium sulfate;

iv. 0.1 to 3% by weight of each of an oxidizing component selected from the group consisting of ammonium persulfate, potassium persulfate, sodium persulfate and hydrogen peroxide and a reducing component selected from the group consisting of dimethylaminopropionitrile, triethanolamine, sodium thiosulfate and allylthiourea of a redox catalyst; and

v. 0.01 to 5% by weight, based on the weight of the components (i), (ii), (iii), and (iv), of at least one water-soluble polymer selected from the group consisting of hydroxyethylcellulose, polyacrylamide, polyethylene oxide, and a copolymer of at least two monomers selected from the group consisting of acrylamide, methacrylamide and sodium acrylate, potassium acrylate, ammonium acrylate, sodium methacrylate, potassium methacrylate, ammonium methacrylate, and methyl acrylate.

3,857,992

HOUSING ASSEMBLY FOR OIL COOLED ELECTRICAL APPARATUS

Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

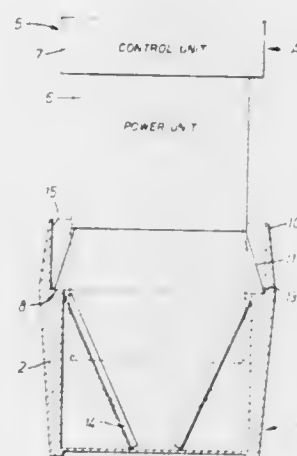
Filed Nov. 12, 1973, Ser. No. 415,116

Claims priority, application Germany, Nov. 14, 1972, 2255688

Int. Cl. H05k 5/00

U.S. Cl. 174—52 R

3 Claims



1. Electrical apparatus comprising an upwardly open casing having an internal shoulder, an assembly located within said casing and movable from a position fully inserted in said casing to a position withdrawn from said casing, comprising an oil cooled lower unit and an upper control unit, said upper unit engaging said casing shoulder when said assembly is in its fully inserted position in said casing, internal guide means in said casing, strut means having ends connected to the lower end of said lower unit and having portions thereof engageable with said guide means, said portions of said strut means being engageable with said internal shoulder of said casing when said assembly is in said position withdrawn from said casing.

DECEMBER 31, 1974

ELECTRICAL

2101

3,857,993

BEAM LEAD SEMICONDUCTOR PACKAGE

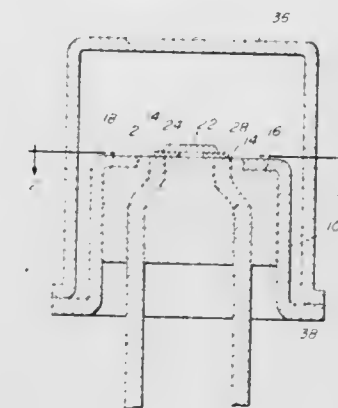
Philip L. Gregory, Los Altos, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 21, 1973, Ser. No. 418,018

Int. Cl. H05k 5/00

U.S. Cl. 174—52 S

7 Claims



1. A semiconductor device package comprising:
a metal header structure having a surface with an aperture therein; and
a plurality of leads supported in said aperture and insulated from said structure with one end of each of said leads being substantially coplanar with said surface, wherein said header structure supports a semiconductor device having a plurality of beam leads extending outwardly therefrom, the outwardly extending ends of said beam leads being bonded respectively to each of said lead ends and to said surface.

3,857,994

NON-CORROSIVE CABLE SHIELD BOND

Dory J. Neale, Sr., St. Petersburg, Fla., assignor to The National Telephone Supply Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 349,260, April 9, 1973,

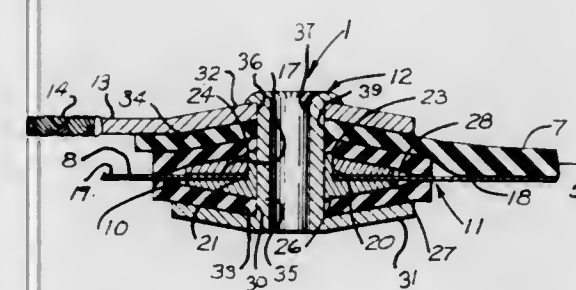
abandoned, which is a continuation-in-part of Ser. No. 253,176, May 15, 1972, abandoned. This application Jan. 7,

1974, Ser. No. 431,549

Int. Cl. H02g 15/02; H01r 3/06, 5/06

U.S. Cl. 174—78

18 Claims



1. A shield connector for a joint of electrical cable, such cable having an outer protective sheath and an inner metal covering in surrounding relation to the electrical conductors forming a shield therefor, comprising:

a. electrically conductive means in electrical contact with a surface portion of a metal shield of a cable;

b. resilient means in opposed relation and on opposite sides of said metal shield and conductive means in covering relation thereto, said resilient means having peripheral portions in sealing engagement radially outwardly of said conductive means thereby preventing entry of air and moisture to said conductive means;

c. means engaging said resilient means operative to hold same in sealing relation to the conductive means and metal shield; and

d. means extending through at least one of said resilient means, in sealing engagement therewith, and having electrical contact with said electrically conductive means and

being electrically connected to a shield continuity of the cable.

3,857,995

ELECTRICAL CONNECTOR

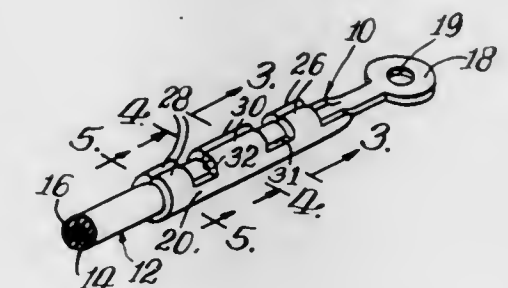
Charles Thomas Wyrick, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 24, 1972, Ser. No. 309,078

Int. Cl. H02g 15/08

U.S. Cl. 174—84 C

19 Claims



1. An electrical connector for use with an insulated wire, comprising a ferrule portion having a wire engaging surface and spaced side edges, a rib on said surface and extending transversely with respect to said side edges and the longitudinal axis of said ferrule portion, and a terminal portion adapted to be connected to an electrical conductor, said ferrule portion together with said rib being adapted to be crimped into a generally cylindrical shape around the wire so that said side edges of said ferrule portion are adjacent each other, said rib being generally circular in cross section to penetrate and extrude insulation on the wire and to make good electrical contact with the wire without cutting into the wire as the ferrule portion and rib are crimped around the wire, and said rib being a separate piece secured to said ferrule portion.

3,857,996

FLEXIBLE POWER CABLE

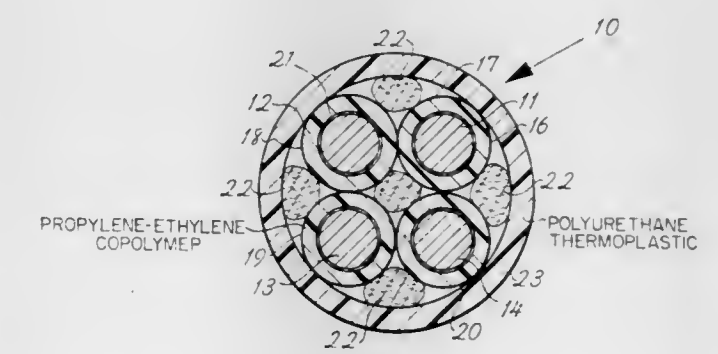
Theodore E. Hansen, and Floyd A. Wilson, both of Marion, Ind., assignors to The Anaconda Company, New York, N.Y.

Filed June 18, 1973, Ser. No. 371,320

Int. Cl. H01b 7/02

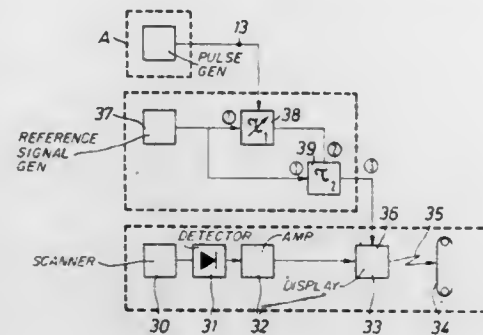
U.S. Cl. 174—113 R

4 Claims



1. A flexible power cable comprising, in combination,
A. a plurality of copper conductors, each being stranded of a plurality of wires,
B. a heavy wall of propylene-ethylene copolymer insulation having a yield strength of at least 3,700 pounds per square inch and a dilatometer melting point of at least 155°C covering each of said conductors, and
C. a polyurethane thermoplastic jacket surrounding said conductors having said walls of insulation.

structure of the aircraft and furnishing a voltage corresponding to the angular velocity of the aircraft in its rolling motion, and an electronic system for integrating with respect to time the value of the voltage furnished by the gyrometer, means for producing a first impulse signal at the moment when the plane of the mirror is coincident with the reference plane, means for



producing a second signal starting at each occurrence of said first impulse signal and which is modulated in duration by the voltage from said integrating device, means for producing at the end of said second signal a third signal of constant duration, and means for applying said third signal to the control of the effective scanning, by the monoline scanning device, of the ground flown over by the aircraft.

3,858,003

EMITTER COUPLED SYNC SEPARATOR

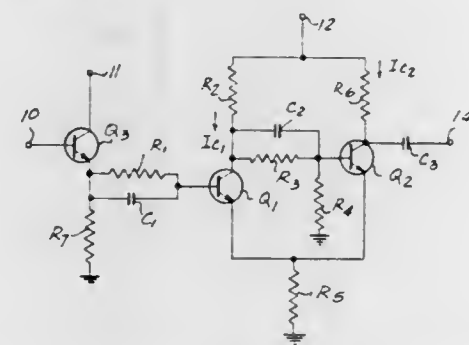
John A. Scoubis, Forest Park, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Sept. 22, 1972, Ser. No. 291,224

Int. Cl. H04n 5/08

U.S. Cl. 178-7.35

3 Claims



1. A television receiver producing a composite video signal and including a sync separator circuit comprising: first and second transistors; an output terminal coupled to another electrode of the second transistor; a control electrode of said second transistor coupled to another electrode of said first transistor; an input terminal receiving said composite video signal, means for biasing connected to said first and second transistors such that when said composite video signal is applied to said input terminal said first transistor is biased to conduction during the sync pulse and the second transistor is biased to cut off when the first transistor conducts and conducts when the first transistor is biased to cut off, a first capacitor and a first resistor connected in parallel between said input terminal and the control electrode of said first transistor and the time constant of said first resistor and capacitor determining the amplitude of said sync pulse at which said first transistor is biased to conduction, a second capacitor and a second resistor connected in parallel between the control electrode of said second transistor and said other electrode of said first transistor, third electrodes of said first and second transistors are connected together, said third electrodes are emitters, said control electrodes are bases and said other electrodes are collectors, said means for biasing includes a bias source, a third resistor connected between the other electrode of said first transistor and one side of said bias source, a fourth resistor connected between the other electrode of said second transistor and said bias source, the impedance of said fourth resistor is greater than that of said third

resistor, said means for biasing further includes a fifth resistor connected between the control electrode of said second transistor and the second side of said bias source, said means for biasing further includes a sixth resistor connected between said third electrodes and said second side of said bias source, a third capacitor connected between said output terminal and the other electrode of said second transistor and wherein said first transistor is biased to start conduction in the range between 40-60 percent of the amplitude of the sync pulse.

3,858,004

FILTER FOR SELECTIVE SPEED XEROGRAPHIC PRINTING IN FACSIMILE TRANSCIEVERS AND THE LIKE

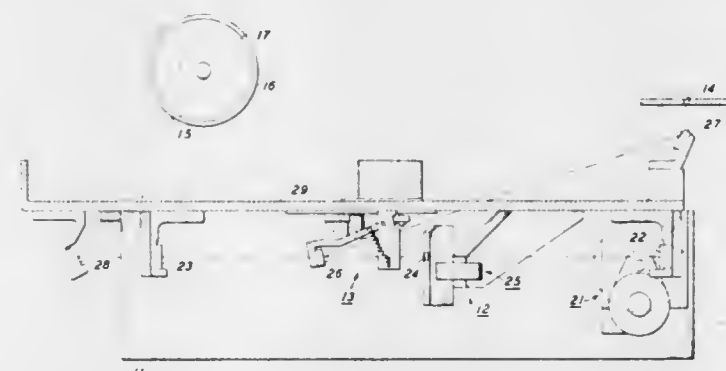
Peter J. Mason, Ontario, and David R. Shuey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 17, 1973, Ser. No. 361,386

Int. Cl. H04n 1/30; G02f 1/30

U.S. Cl. 178-7.6

2 Claims



1. In a facsimile transceiver which is selectively operable in a transmit mode for scanning of subject copy and in a receive mode for printing at any one of several different rates on a xerographic photoreceptor, the combination comprising a laser for supplying a beam of substantially collimated light of a predetermined cross-sectional area, an optical path for said light beam, and a filtering means for adjustably attenuating said light beam to provide a substantially unattenuated light beam for scanning while said transceiver is operating in the transmit mode and an attenuated light beam having a power level per unit area on said photoreceptor within a predetermined range while said transceiver is operating in its receive mode, said filtering means including a rotatable member with a predetermined axis of rotation, a plurality of filter holders mounted on said member at a predetermined radial distance from said axis and at spaced angular intervals about said axis, a plurality of filter elements each having an area of substantially uniform optical density larger than the cross-sectional area of said light beam, each of said filter elements having a different optical density and mounted on a respective one of said holders, one of said elements being substantially transparent, and drive means for selectively indexing said member to bring a respective one of said filter elements into alignment with said optical path for each of said printing rates when said transceiver is operating in its receive mode and said substantially transparent filter element into alignment with said optical path when said transceiver is operating in its transmit mode.

3,858,005

STETHOSCOPE WITH DISPLAY

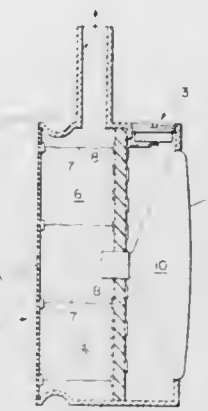
Robert A. Marshall, 132 Sherman St., Cambridge, Mass. 02138, and Theodore E. Spielburg, 27 Lexington Rd., Wellesley, Mass. 02181

Filed Nov. 15, 1973, Ser. No. 416,024

Int. Cl. A61b 7/02

U.S. Cl. 179-1 ST

1 Claim



1. An improved stethoscope comprising:
a. a chest piece having a body containing:
1. a pick up section;
2. an amplifier section; and
3. a display section;
in which the pick up section comprises a diaphragm or bell mounted on the body and adapted to pick up the vibration of heart or other bodily sounds and a transmission space containing a vibration transmitting medium and means to pick up the vibration of heart sounds and convert them to an electrical signal and transmit them to the amplifier section; and
in which the amplifier section is spaced from the diaphragm or bell and comprises miniaturized circuitry adapted to receive the transmissions from the pick up section, amplify and transmit signals to the display section; and
in which the display section comprises a miniaturized cathode ray tube for receiving and displaying a signal from the amplifier section, the display section being located on the stethoscope proximate to the body;
b. a tube assembly comprising a hollow tube communicating with the transmission space and dividing to form a pair of tubes adapted to reach the ears of the stethoscope user and to transmit the vibration of heart or other bodily sounds;
c. an integral power source for operating the amplifier and the cathode ray tube.

3,858,006

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Tadashi Tomita, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 5, 1972, Ser. No. 286,239

Claims priority, application Japan, Sept. 4, 1971, 46-68307

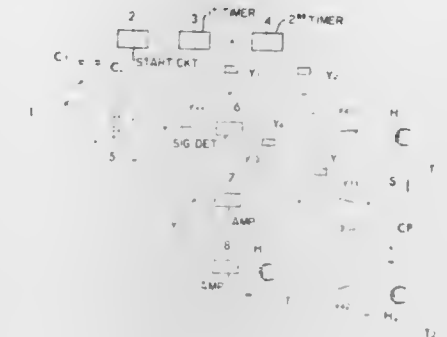
Int. Cl. H04m 1/64

U.S. Cl. 179-6 E

10 Claims

1. An automatic telephone answering apparatus comprising: starting circuit means adapted to start its operation by a call signal;
first timer circuit means adapted to be actuated through said starting circuit means and determine the whole operating time of the apparatus;
second timer circuit means adapted to operate at the conclusion of an initial delay time following the actuation of said first timer circuit;
signal detecting circuit means adapted to operate when a specific signal is transmitted by a caller within the predetermined period after said first timer circuit has been operated and before the second timer circuit has started its operation;

message sending circuit means having a message sending track actuable for sending out a special message to the specific signal transmitting caller;
answering means having a further message sending track for sending out a standard answering message to callers not transmitting said specific signal;
track switching means responsive to said signal detecting circuit means and comprising relay means having first and



3,858,007

CIRCUIT ARRANGEMENT FOR SYNCHRONIZING PULSE BURSTS

Horst Ganssmantel, Backnang, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

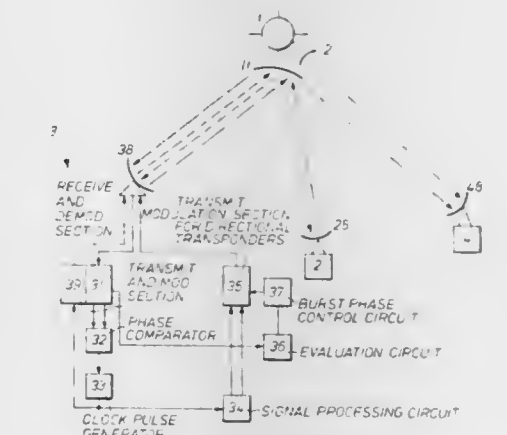
Filed Jan. 23, 1973, Ser. No. 326,042

Claims priority, application Germany, Jan. 26, 1972, 2203575

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

3 Claims



1. In a circuit arrangement, for synchronizing pulse bursts and pulse frames in the transmission of pulse coded data between ground stations via directional transponders of a communication satellite using time division multiplexing, the satellite having spot beam directional antennas covering at least two spatially separated ground stations each disposed within the radiation range and pattern of a respective one of the directional antennas, the improvement comprising: main transponder means in said satellite; an additional antenna having a radiation range and pattern which covers at least the radiation ranges and patterns of said directional antennas, said additional antenna being coupled to said main transponder means for supplying received signals from said ground stations thereto and for radiating signals received therefrom, including synchronizing infor-

mation signals to said ground stations; and means at each said ground station responsive to received synchronizing information signals and to its own received distinctive pulse bursts for controlling the repetition rate and phase of its distinctive pulse bursts; whereby all said stations participate in the synchronous bit timing operation within the range of the antennas with a given time format.

3,858,008

LINE BUSYING CIRCUIT

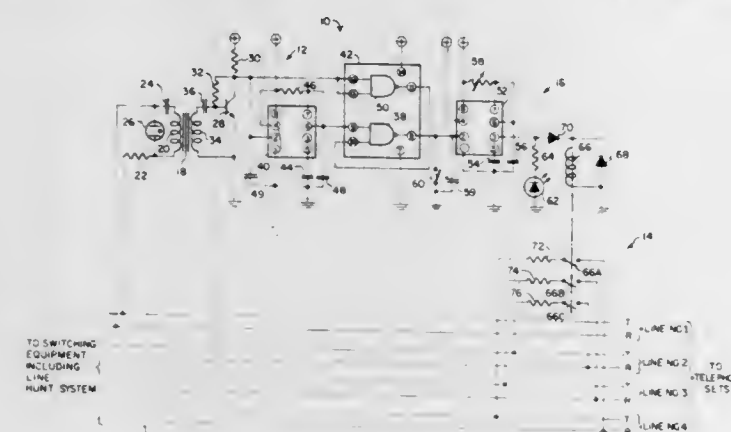
Matthew J. Remec, North Riverside, Ill., assignor to Phone-Aid Co., Inc., Chicago, Ill.

Filed May 21, 1973, Ser. No. 361,952

Int. Cl. H04m 1/00

U.S. Cl. 179-18 AB

6 Claims



1. A line busying circuit for use with a plurality of sequential telephone lines associated with a telephone system having line hunt equipment, said circuit comprising:
sensing means coupled to a sequentially first line for sensing use of said first line;
a false busy circuit connected to at least one line subsequent to said first line;
means for normally maintaining said subsequent line in an undisturbed condition; and
control means coupled between said sensing means and said false busy circuit and operable in response to the sensing of use of said first line for operating said false busy circuit to place said subsequent line in a busy condition;
said sensing means including first detecting means for detecting the inception of a signal on the first line, second detecting means for detecting the persistence of the signal after a predetermined time delay, and means for providing an output signal only when inception and persistence of a signal are detected.

3,858,009

ELECTRONIC AUTOMATIC DIALING APPARATUS

John Mickowski, Maplewood, N.J., and Ronald G. Caravello, Massapequa, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,903

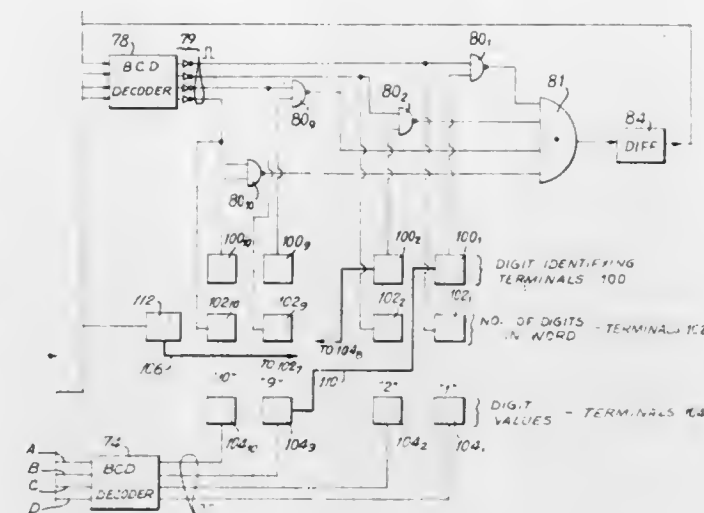
Int. Cl. H04n 1/42

U.S. Cl. 179-90 BD

11 Claims

1. In combination in an automatic dialer apparatus, a gated dial pulse oscillator, a dial pulse counter for counting the output pulses of said oscillator, first state decoder means connected to said dial pulse counter, a digit counter, second state decoder means connected to the output of said digit counter, a wire programmable cross connection field comprising a first plurality of terminals connected to said first decoder means and a second plurality of terminals connected to said second decoder means and a third plurality of terminals for establishing a number of dialing digits to be effected by said automatic dialer apparatus, control means connected to said first and second terminal pluralities for selectively clearing said dial pulse counter and advancing said digit counter, bridging impedance means for signalling an off-hook condition,

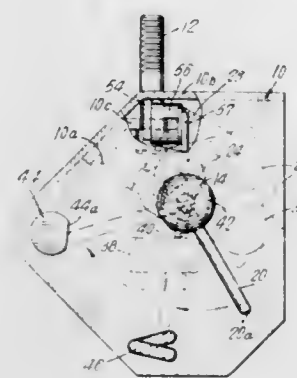
controlled switching means for bridging a tip and ring conductor pair with said bridging impedance means, and means re-



and preferentially rests on said pivot and the container is upwardly inclined when the sensing arm is normally touching a yarn, and said container is downwardly inclined in the absence of a yarn on the sensing arm.

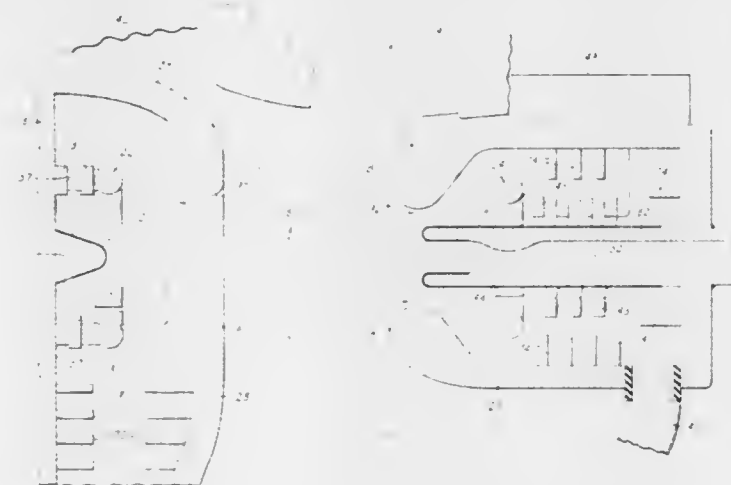
h. a first stopper for said arm to rest in the absence of a yarn.

i. a ferro magnetic arm rotating with said pivot.

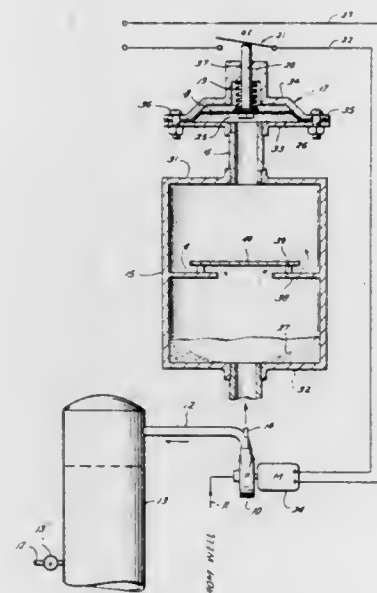


switch in connection therewith, a diaphragm operated switch mechanism, a pressure line leading from a source of pressure to said mechanism for the conduct of fluid containing sand, an expansion chamber in said line between said source of pressure and said diaphragm operated mechanism, baffle means in said chamber across the flow line of fluid therethrough diverting sand in said fluid to the outside walls of said chamber.

3,858,015
ELECTRIC CIRCUIT BREAKER OF THE GAS BLAST TYPE
 Don W. Deno, Berwyn, Pa., assignor to General Electric Company
 Filed Sept. 15, 1972, Ser. No. 289,579
 Int. Cl. H01h 33/86
 U.S. Cl. 200—148 B 8 Claims



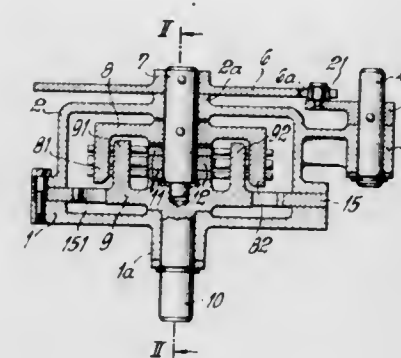
3,858,014
GAUGE AND SWITCH DIAPHRAGM PROTECTOR
 George W. Hughes, 2601 Mills, Houston, Tex. 77026
 Filed Oct. 19, 1973, Ser. No. 408,160
 Int. Cl. H01h 35/34
 U.S. Cl. 200—83 R 4 Claims



1. In a means for diverting sand in a fluid conduit to prevent an accumulation beneath the diaphragm of an electrical

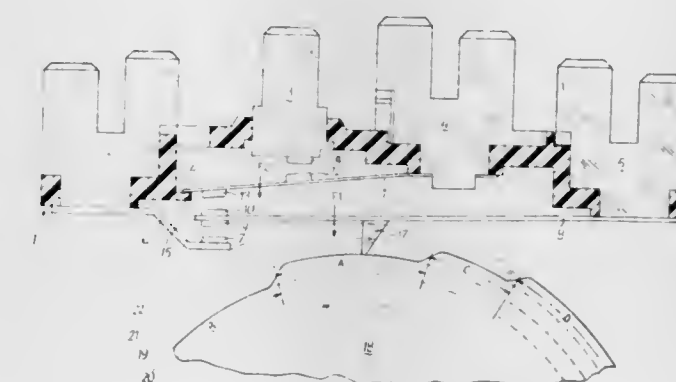
1. A gas blast circuit breaker comprising:
 - a. a first electrode of a generally annular configuration and a second electrode spaced therefrom.
 - b. first and second spaced-apart nozzles primarily of metal electrically connected to said first and second electrodes, respectively.
 - c. each of said nozzles having an orifice opening positioned between said electrodes.
 - d. means for establishing between said electrodes an arc that has its opposed terminals on said electrodes and its column extending through said orifice openings.
 - e. means for causing two streams of gas to flow in generally opposite directions from the space between said nozzles through said orifice openings, one stream flowing past said first electrode and the other flowing past said second electrode.
 - f. magnetic means for forcing the arc terminal on said first electrode to move along said first electrode in a generally circular path so as to develop a generally hollow arc column in the region adjacent said first electrode.
 - g. and means for directing along the longitudinal axis of said hollow arc column a jet of gas flowing from the region of said first electrode toward said second electrode.

3,858,016
SPRING-LOADED SNAP-ACTION STEPPING-SWITCH-OPERATING MECHANISM
 Ernst Baumgartner, Brandlbergerstrasse 88, 84 Regensburg, Germany
 Filed Sept. 17, 1973, Ser. No. 398,128
 Claims priority, application Germany, Oct. 13, 1972, 2250260
 Int. Cl. H01h 3/40
 U.S. Cl. 200—153 P 12 Claims



1. A spring-loaded snap-action stepping-switch-operating mechanism including
 - a. a pair of spring-supporting levers (11, 12) arranged cross-wise, pivotable about a common shaft and each having a pair of lever arms;
 - b. a pair of springs (13, 14) each affixed with the ends thereof to one of (13, 14) pair of lever arms of each of said pair of spring-supporting levers (11, 12);
 - c. a pivotable spring-loading crankshaft (8) operable by a Geneva gear drive (4, 5, 6) and having axial extensions (81, 82) cooperating with one of said pair of spring-supporting levers (11, 12) for pivoting said one of said pair of spring-supporting levers to load said pair of springs (13, 14);
 - d. a pivotable stepping crankshaft (9) having axial extensions (91, 92) cooperating with the other of said pair of spring-supporting levers (11, 12) to cause said pair of springs (13, 14) when expanding to impart a pivotal motion to said stepping crankshaft;
 - e. a latch mechanism (15, 16, 17, 19, 20) for latching said stepping crankshaft (9) in position against the bias of said pair of springs (11, 12); and
 - f. means operable by said spring-winding crankshaft (8) for unlatching said latch mechanism (15, 16, 17, 19, 20) to allow said pair of springs to impart said pivotal motion to said stepping crankshaft (9).

- b. at least four electrical terminals carried by an electrically insulative base in a line, spaced from and in alignment with the rotational direction of said cam,
- c. a first spring contact blade affixed at one end to a first electrical terminal at an end of said line, at least one electrical contact carried at a free end of said blade, and a cam follower carried between said fixed and free ends, said cam follower responsive to said cam,
- d. a second spring contact blade affixed at one end to a second electrical terminal disposed next to said first electrical terminal,



- c. means carried by said base engaging a free end of said second spring contact blade to limit its travel.
- f. at least one electrical contact carried by said second spring contact blade between said fixed and free ends.
- g. a first stationary electrical contact carried by a third electrical terminal disposed next to said second electrical terminal cooperating with said electrical contact carried by said second spring contact blade, and
- h. a second stationary electrical contact carried by a fourth electrical terminal disposed at another end of said line and cooperating with said electrical contact carried by said first spring contact blade.

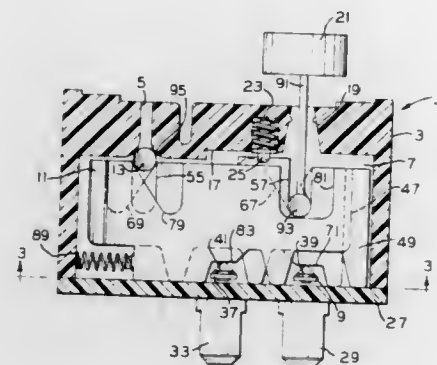
3,858,017
PERIPHERAL CAM ACTUATING A PLURALITY OF CONTACT BLADES
 Marcello Bertozzi, No. 47, Via Brighindi, and Mario Chioffi, No. 84, Via Marittima 1, both of Frosinone, Italy
 Filed Dec. 3, 1973, Ser. No. 420,903
 Claims priority, application Italy, July 12, 1973, 51427/73
 Int. Cl. H01h 19/62
 U.S. Cl. 200—153 LB 3 Claims

1. Means selectively activating a plurality of electrical circuits comprising:
 - a. a rotatable cam, said cam having at least four successive steps,

3,858,018
ELECTRICAL SWITCH WITH REMOVABLE DRIVING MEANS
 Joseph M. Walley, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.
 Filed Feb. 22, 1974, Ser. No. 444,884
 Int. Cl. H01h 9/24, 27/00
 U.S. Cl. 200—153 LA 16 Claims

1. An electrical switch comprising a housing, means in the housing for access into an interior portion thereof, means movable in the housing for completing a circuit therethrough, means for actuating the circuit completing means and shiftable between at least two positions in the housing, means engaged with the actuating means for generally closing the access means when the actuating means is in one position thereof effecting de-actuation of the circuit completing

means, and means removable from the housing and selectively insertable through the access means for driving the closing



means to conjointly displace it away from the access means and drivingly shift the actuating means to its other position to actuate the circuit completing means.

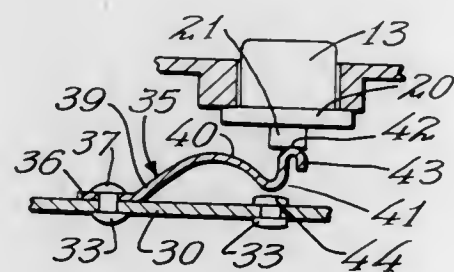
3,858,019

FLEX SPRING CONTACT SWITCH FOR PUSH BUTTONS
Robert A. Muri, 601 Fifth Ave. N.W., Chisholm, Minn. 55719,
and Richard C. LaBorde, 1414 Merryview Ln., Hibbing,
Minn. 55746

Filed Apr. 30, 1973, Ser. No. 355,888
Int. Cl. H01h 3/12

U.S. Cl. 200-159 A

1 Claim



1. A switch for use in combination with a panel of insulating material including:

- a spring blade having an anchoring end portion in face contact with the insulating panel,
- a curved blade portion connected to said anchoring end portion at an acute angle to said panel,
- said curved blade portion curving gradually toward parallel relation to the surface of said panel and then toward the surface of the panel,
- an actuating end connected to the end of said curved blade portion along a reversely curved area of short radius providing a convex wiping surface directed toward said panel and in spaced relation thereto,

means securing said anchoring end portion in face contact with said panel,

a stationary contact on one surface of said panel having a rounded surface in spaced opposed relation to said spring blade,

said actuating end of said blade extending from said convex wiping surface in a direction away from said panel and having a reversely curved extremity to provide a convex actuating surface directed away from said panel, said convex wiping surface being between said convex actuating surface and said anchoring end portion,

a top panel in spaced parallel relation to said panel of insulating material having an aperture in opposed relation to said actuating end of said blade, and

a button slideably supported in said aperture removably bearing against said convex actuating surface and operable, when actuated to flex said curved blade portion to cause engagement between said convex wiping surface of said blade against said stationary contact, further movement of said button acting to flex said convex wiping surface of said blade toward said anchoring end portion to create a wiping action of said convex wiping surface of said blade relative to said stationary contact.

3,858,020

PUSHBUTTON WITH SPRING CONTACTOR

William E. Brannon, Buena Park, Calif., assignor to Staco-Switch, Inc., Costa Mesa, Calif.

Filed July 30, 1973, Ser. No. 384,020

Int. Cl. H01h 13/52

U.S. Cl. 200-159 A

6 Claims



1. A pushbutton switch comprising:

- a button for manual articulation with a skirt and spider legs having concavities;
- a board having an electrically conductive surface thereon;
- a spring contactor with legs which are adapted to be received in the concavities of said button spider legs and which span at least a portion of said electrically conductive surface on said board;
- a depending extension between said legs of said spring contactor for making electrical contact therethrough to

the electrically conductive surface of said board through said legs and said extension; and,
a plate overlying said button skirt having an opening and guide means on its interior surface for holding and guiding a portion of said button and providing a projection through the opening of the upper portion of said button for manual articulation thereof above the surface of said plate.

3,858,021

ELECTRICAL SWITCHING DEVICE HAVING SELF-CLEANING CONTACTOR ELEMENTS

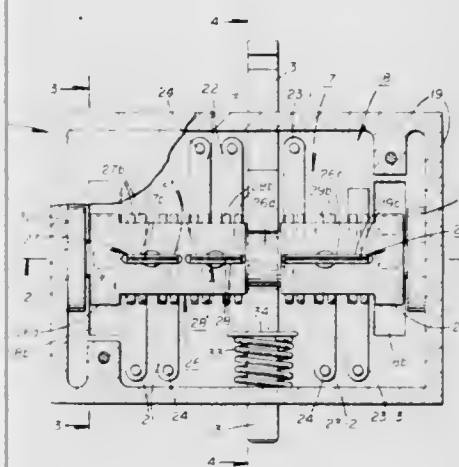
James D. Brandlein, Indianapolis, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,266

Int. Cl. H01h 1/36

U.S. Cl. 200-164

10 Claims



1. A contact making device, which comprises:
a substantially linear contactor element mounted in a substantially fixed position;
an arcuate movable contactor element mounted in coplanar relationship with respect to said linear contactor element, for engaging and making contact with said linear contactor element; and
means for rotating said arcuate contactor element while imparting a translating motion to said arcuate contactor element, to rotate and slide said arcuate contactor element simultaneously and continuously on said linear contactor element, to effect contact between said contactor elements while cleaning said contactor elements.

3,858,022

MICROWAVE APPLICATOR

Franklin J. Smith, Diablo, Calif., assignor to Microdry Corporation, San Ramon, Canada

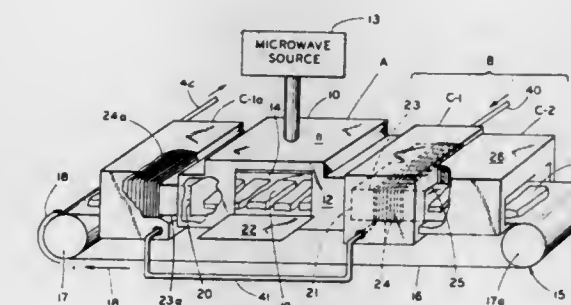
Filed Apr. 21, 1972, Ser. No. 246,452

Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

15 Claims

1. Microwave Applicator Apparatus comprising a casing providing a heating cavity and having openings through which



material to be treated may be passed into and out of said cavity, means for exciting said cavity with microwave energy, an attenuating channel having its one end in communication with one of said openings and having at its other end an opening through which said material may be passed, said channel having conducting outer walls and having at one section

thereof between said ends a lining adjacent to said outer walls formed of a sheet material which is lossy to microwave energy, a flat side of said sheet material being in contact with said walls, said section containing a plurality of passageways leading from the interior thereof to one of said outer walls, said passageways being formed by spaced plates of conducting material extending across said section.

3,858,023

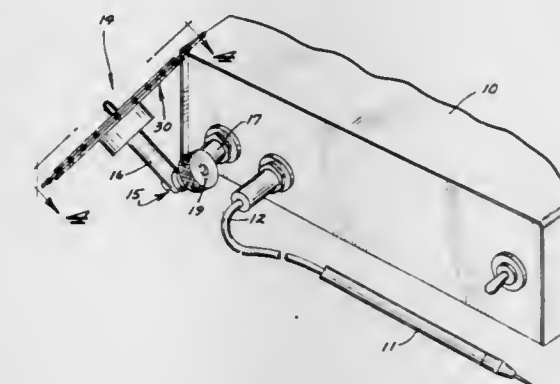
ELECTRODE HOLDER FOR ELECTRIC SOLDERING MACHINES

Clarence V. Gorder, 1537 Avenue D, Billings, Mont. 59102
Filed Aug. 16, 1973, Ser. No. 388,989

Int. Cl. B23k 3/00

U.S. Cl. 219-85

5 Claims



1. In an electrode holder for use with an electric soldering machine,

- a. an elongated metal support having a plug at one end adapted to be coupled with the electric current of the machine, said support having inner and outer arms arranged end to end and pivotally interconnected at their adjacent ends for adjusting the angle between the arms,
- b. a flat symmetrically shaped metal cartridge journaled for rotation about its center on the end of the outer arm, said cartridge having a plurality of clip means spaced around the marginal portion thereof.

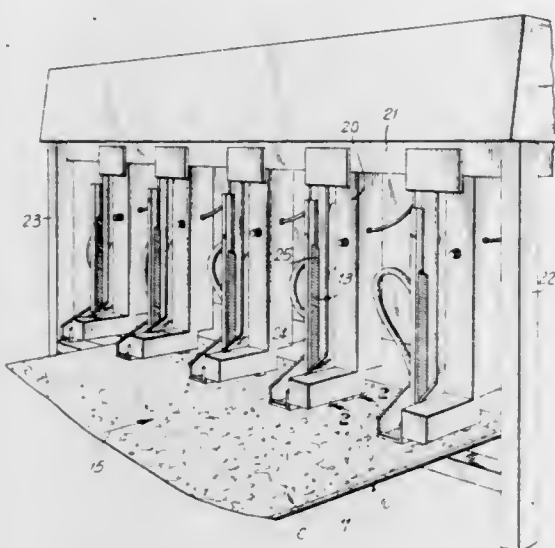
3,858,024

MULTI-HEAD RESISTANCE WELDING APPARATUS
Milton Hinden, Massapequa, and Charles Giannone, North Babylon, both of N.Y., assignors to Duro-Dyne Corporation, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 323,099, Jan. 12, 1973. This application Nov. 7, 1973, Ser. No. 413,665
Int. Cl. B23k 9/20

U.S. Cl. 219—98

8 Claims



1. A multi-head resistance welding apparatus for simultaneously securing a plurality of resistance welding pins to unite a composite including a metal substrate having an insulating layer thereon, said composite being moved in a predetermined horizontal direction, comprising a frame, a horizontal work support surface on said frame, an elongated support beam on said frame disposed above and in parallel spaced relation to said work support surface, a plurality of resistance welding assemblies mounted in spaced relation along said beam, said assemblies each including linear motor means shiftable in a vertical direction toward and away from said support surface, electrode means mounted on the lower end portions of each of said motor means, automatic means on said weld assemblies for sequentially feeding headed weld pins from a bulk supply, carrier means on said electrode means for receiving pins from said supply, said carrier means supporting said pins while in welding position for movement relative to said electrode in said predetermined horizontal direction while maintaining a conductive connection between said pins and said electrode, whereby said pins are retained on said carrier in position to be welded to said substrate notwithstanding relative movement between said pins and electrode resulting from contact of said pins and said moving insulating layer.

3,858,025

PATTERN WELDING PROCESS AND CONTROL DEVICE
Paul R. Sidbeck, Torrance, and Daniel S. Weinstein, Palos Verdes Peninsula, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Continuation of Ser. No. 185,995, Oct. 4, 1971, abandoned.
This application Aug. 23, 1973, Ser. No. 390,985
Int. Cl. B23k 9/00

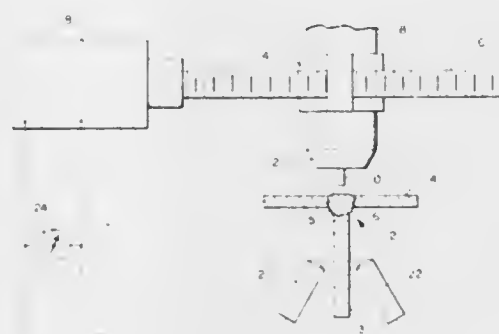
U.S. Cl. 219—137

3 Claims

1. A method of joining workpieces to form a substantially T-shape configuration having a first thin metallic vertical workpiece member and a second metallic horizontal workpiece member, and an edge of said first member being jointed to the lower surface of said second member by fusion welding which forms a weld fillet therebetween, said method comprising the steps of:

positioning said edge of said first member in contact with said surface of said second member to form a joint therebetween;
applying heat to the opposite surface of said second member so that said heat is conducted through the thickness

of said second member and induced into said edge of said first member to unite the area of contact between said first and second member;
moving the source of heat along the area to be welded, said heat source being supported by a supporting frame for movement therewith;
maintaining an equally balanced fillet size continuously along the fusion weldment throughout the length of said workpieces;
tracking said heat source along a path predetermined by said edge of said first workpiece member; and



sensing the heat radiation from said fusion weldment by a heat sensing means from the under side of said second workpiece member said heat sensing means being disposed on opposite sides of said first member, and said heat sensing means being attached to said supporting frame to move longitudinally with said heat source relative to said workpieces and wherein said heat source being simultaneously movable in a transverse direction to that of said longitudinal movement of said supporting frame

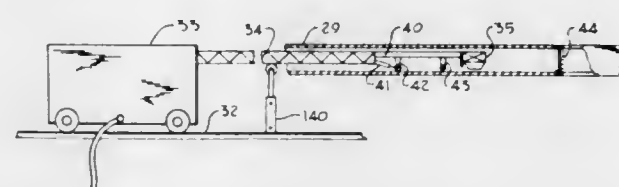
3,858,026

METHOD FOR INTERNALLY WELDING PIPE JOINTS
Coy W. Edwards, Holdenville, Okla., and Enos J. Laborde, Jr., Odessa, Tex., assignors to CRC-Croze International, Inc., Houston, Tex.

Division of Ser. No. 200,030, Nov. 18, 1971, Pat. No. 3,764,056. This application Sept. 7, 1973, Ser. No. 395,333
Int. Cl. B23k 9/00

U.S. Cl. 219—137

6 Claims



1. Method of internally welding pipe joints together, comprising:

1. placing two joints of pipe into abutting relationship to form an interface therebetween;
2. placing circumferentially extending indicia adjacent and parallel to said interface on the interior of the pipe joint;
3. adjustably mounting a welding head onto one end of a boom in a manner to enable the head to be moved relative to the boom and pipe joints;
4. telescopically moving said end of the boom along with the welding head into the interior of the pipe and into close proximity of said interface;
5. aligning the welding head with the interface by moving the head relative to the boom;
6. controlling the action of the welding head and the boom from a location remote from the pipe interior;
7. mounting a television camera adjacent to the welding head and a television receiver at the location remote from

3,858,028

CYCLIST'S HEATED SUIT

John F. Kerr, 1305 E. Haley St., Santa Barbara, Calif. 93103
Continuation of Ser. No. 332,899, Feb. 15, 1973, abandoned.
This application Apr. 11, 1974, Ser. No. 460,026
Int. Cl. H05b 1/00

U.S. Cl. 219—211

4 Claims

the pipe interior, so as to enable the camera to televise an internal view of the pipe to the receiver;
8. placing a pointer means in front of the camera in aligned relationship respective to the welding head;
9. visually observing the area in close proximity to the welding head from a location remote from the interior of the pipe, so as to enable remote control of the position of the pointer means relative to the indicia as a welding bead is formed interiorly of the pipe and along said interface.

3,858,027

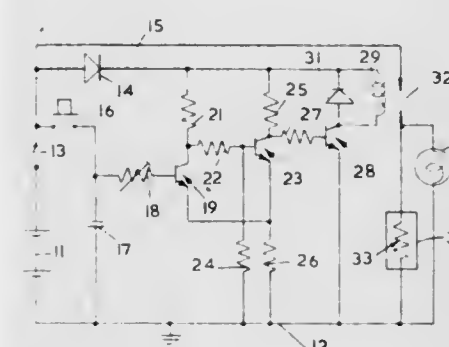
ROAD VEHICLE REAR WINDOW HEATER CIRCUITS
Edward Graham Phillips, Colne, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed Mar. 5, 1973, Ser. No. 338,221

Claims priority, application Great Britain, Apr. 7, 1972, 16055/72

Int. Cl. H05b 1/02

U.S. Cl. 219—203

1 Claim



1. A road vehicle rear window heater circuit, which comprises:

- a rear window of a road vehicle having rear window heating means associated therewith;
- a battery connected to said rear window heating means for supplying electrical energy thereto;
- a first switch connected in series between said battery and said rear window heating means; and
- timing circuit means connected between said battery and said rear window heating means for selectively actuating said rear window heating means for a predetermined time interval after the closure of said first switch, said timing circuit means comprising:
- a second switch which is resiliently urged to an open position;
- a capacitor connected to said battery through said second switch and said first switch, said capacitor being charged upon momentary closure of said second switch;
- a bistable trigger circuit comprising first and second transistors connected in a Schmitt trigger configuration, the base of said first transistor connected to receive the charge from said capacitor to initially be rendered conductive while said second transistor is rendered non-conductive;
- a third transistor connected across said second transistor, said third transistor being initially driven into conduction by a connection through said first switch to said battery;
- a relay having a coil, and a pair of contacts connected between said first switch and said heating means, said coil and contacts being actuated by the output from said third transistor for energizing said rear window heating means;
- said first transistor being rendered non-conductive after the discharge of said capacitor to thereby render said second transistor conductive and said third transistor non-conductive to thereby deactivate said relay and disconnect said rear window heating means from said battery.

1. In heated clothing, the combination comprising
 - a. multiple clothing sections each adapted to cover a different portion of a human body, and snap fastener means releasably fastening certain of said sections together in series sequence permitting sequential removal thereof;
 - b. electrical wires carried by each section and including only two electrically parallel bus wires and heater wires connected thereacross;
 - c. separable electrical connections between the bus wires of adjacent clothing sections;
 - d. input electrical connections to the parallel bus wires of at least one of said clothing sections, and
 - e. the bus wires carried by successive of said certain sections being connected in electrical series by said separable electrical connections each of which includes a male part and a female part respectively located further from and closer to said input electrical connections, said parts openly accessible outwardly of said clothing sections for plugging and unplugging without disturbing the snap fasteners.
 - f. said certain clothing sections including a jacket, a hood, and a face mask.

3,858,029

HAIRSETTER

Henry J. Walter, Wilton, Conn., assignor to Clairol Incorporated, New York, N.Y.

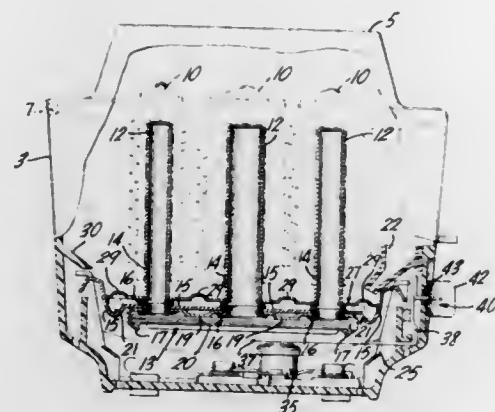
Continuation of Ser. No. 73,394, Sept. 18, 1970, abandoned.
This application Apr. 25, 1972, Ser. No. 247,395

U.S. Cl. 219—222

14 Claims

1. A hairsetter, capable of heating hair rollers either with or without the use of a liquid according to the desire of the user, comprising, in combination, a housing having wall means defining a substantially closed chamber adapted to contain water vapor; a shallow dish-shaped base plate supported entirely within the housing wall means, adapted to receive and retain a quantity of liquid thereon for vaporization; a plurality of heat conducting roller mounting members associated with the base plate, and adapted to support a corresponding plurality of rollers having a heat conducting surface in contact with and supported by the roller mounting members, said rollers

being positioned by said mounting members so as to be exposed to the liquid vaporized from the base plate; and heating means operatively associated with said base plate for heating



any liquid retained on the base plate and the mounting members such that the rollers supported on the mounting members can be heated simultaneously exteriorly by the heated vaporized liquid and/or interiorly by the heated mounting members.

3,858,030 TAXIMETERS

Francis Joseph Hart, North Balwyn, Australia, assignor to Martin Taximeters (Aust.) Pty., Ltd.

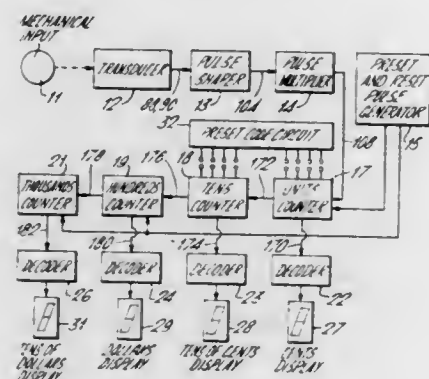
Filed May 7, 1973, Ser. No. 357,780

Claims priority, application Australia, May 10, 1972, 8917/72

Int. Cl. G07b 13/00

U.S. Cl. 235-30 R

14 Claims



1. A taxi meter having a rotatable control element, means for driving said element at a constant preselected rate, means for driving the element at a rate dependent upon the speed of a vehicle to which the taxi meter is affixed and clutch means for selectively coupling either of said drive means to said element so that the element is driven, when the vehicle is moving at more than a preselected speed, by said second means, and when the vehicle is stationary or moving at less than said preselected speed, by said first means, said device further including transducer means coupled to said element for producing an electrical signal pulse train representative of the speed of rotation of the element and electronic counter and display means for counting the pulses of said train and displaying a fare value proportional to the number of pulses counted.

3,858,031 CREDIT CARD HAVING CLEAR MIDDLE LAYER ENCODED BY DISCRETE OPAQUE AREAS AND SYSTEM FOR DECODING SAME BY LASER BEAM

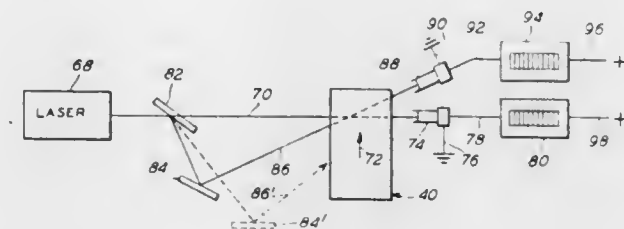
Jack P. Kornfeld, Glencoe, Ill., assignor to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed Feb. 16, 1973, Ser. No. 333,204

Int. Cl. G06k 7/10, 19/06; G08c 9/06

U.S. Cl. 235-61.11 E

8 Claims



1. A credit card system comprising:
a laminated credit card having a rectangular body including a center layer of transparent, light-transmitting material between a pair of cover sheets, said body having opposed open edges for transmitting light into and out of said center layer;
means for coding said card to produce read-out information including: (a) a barrier consisting of a plurality of discrete opaque areas in said center layer set back to non-exposed positions substantially inwardly from said edges to render them not readily visible; and (b) said opaque areas being individually lesser in both length and width than said body and being displaced relative to one another in a direction parallel to said open edges to provide windows defining a set of straight parallel light-transmitting channels extending edgewise through said center layer at a predetermined angle and spaced apart irregularly along said card in accordance with a predetermined code;
means for decoding said card including means for supporting said card in a laser beam focused at said predetermined angle parallel to said light-transmitting channels into one of the open edges of said center sheet toward light sensor means beyond the other open edge, said light sensor means being effective to generate a signal in response to change in intensity of said laser beam directed thereon, and means for effecting relative movement between said card on the one hand and said laser beam and light sensor means on the other hand to enable said light sensor to generate an output signal corresponding to the information coded into said set of light-transmitting channels; and
read-out means for said light sensor means operable in response to said output signal from said light sensor for producing information decoded from said set of light-transmitting channels.

3,858,032 APPARATUS AND METHOD OF CODING INFORMATION

John R. Scantlin, Los Angeles, Calif., assignor to Transaction Technology Inc., Los Angeles, Calif.

Division of Ser. No. 242,382, April 10, 1972. This application

May 25, 1973, Ser. No. 363,825

Int. Cl. G06k 19/02, 1/20; G09f 3/04

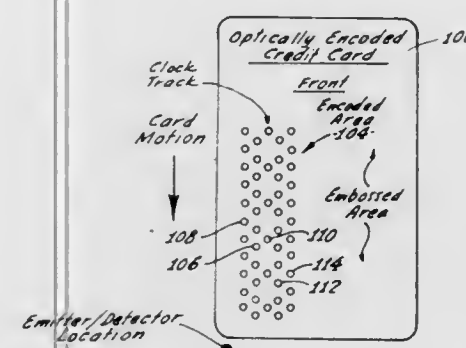
U.S. Cl. 235-61.12 R

9 Claims

1. An article of manufacture for storing data information and clock information for reproduction by first means which reproduces and stores the data information and by second means, including at least a pair of sensors, coupled to the first means and responsive to the clock information which second means controls the reproduction and storage of the data information by the first means in accordance with the sensing of the clock information to have the data information at one position reproduced by the first means in response to the sensing of particular clock information by a first one of the

pair of sensors and to have the same data information at the one position stored by the first means in response to the sensing of the same particular clock information by the second one of the pair of sensors, and with the article of manufacture including:

a recording medium for receiving the data information and the clock information,
first means forming at least a first track on the recording medium for storing the data information at first predetermined



intervals along the first track on the recording medium, and
second means forming a second track on the recording medium for storing the clock information at second predetermined intervals along the second track on the recording medium and with the second predetermined intervals occurring no more than every other one of the first predetermined intervals and with the second predetermined interval a multiple of the first predetermined interval.

3,858,033 INCH-METRIC READ-OUT FOR A MEASURING SYSTEM

Robert E. Esch, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 29, 1973, Ser. No. 345,912

Int. Cl. H03k 21/06, 21/36

U.S. Cl. 235-92 PL

2 Claims



1. A measuring system for selectively displaying measured distances in inch or Metric unit systems comprising:
counter and display means responsive to each digital signal received to count and numerically display alternatively in numerical increment values of 0.0050 or 0.0002 selectively;
digital signal generation means generating a train of digital signals corresponding to measured distances in a given direction, the generation rate of said signals relative to said measured distances being such that the distance corresponding to the generation of one digital signal equals 0.0050 millimeters;
digital signal transmission control means selectively allowing all of said digital signals in said digital signal train generated by said digital signal generation means to be transmitted to said counter and display means or alternatively suppressing one digital signal at successive alternating intervals of 63 and 64 digital signal counts in said train equivalent to said rate of one signal in 63.5 signals; whereby said counter and display means counts and displays in millimeters in response to said digital signals

whenever said digital signal train is transmitted unchanged by said digital signal transmission control means and said counter and display means counts and displays in inch values whenever said digital signals are suppressed by said digital signal transmission control means and said counter and display means counts and displays in said numerical increment value of 0.0002.

3,858,034 ELECTROCARDIAC COMPUTER

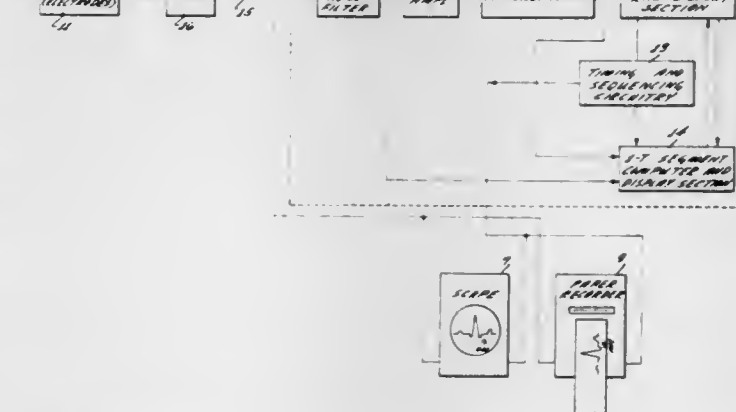
Donald L. Anderson, Huntington Beach, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Oct. 19, 1973, Ser. No. 407,794

Int. Cl. A61b 5/04; G06g 7/48

U.S. Cl. 235-151.3

32 Claims



1. An ECG computer for processing ECG complexes each having at least an iso-electric portion, a QRS section, and an S-T segment, including:
first means responsive to the ECG complexes for providing output signals representing the detection of wide or normal QRS sections,
second means coupled to the first means and responsive to the detection of wide QRS sections to provide an output indication of the wide QRS sections,
third means coupled to the first means and responsive to the detection of normal QRS sections to provide a control signal representing the detection of normal QRS sections, fourth means coupled to the third means and responsive to the control signal and the ECG complexes to analyze the S-T segments by averaging over a plurality of the ECG complexes and with the analysis in response to the control signal representing the detection of normal QRS sections.

3,858,035 POSITION SELECTING DEVICE

John Sven Englund, Ektorp, Sweden, assignor to Hugin Kassaregister AB, Stockholm, Sweden

Filed Oct. 10, 1972, Ser. No. 296,231

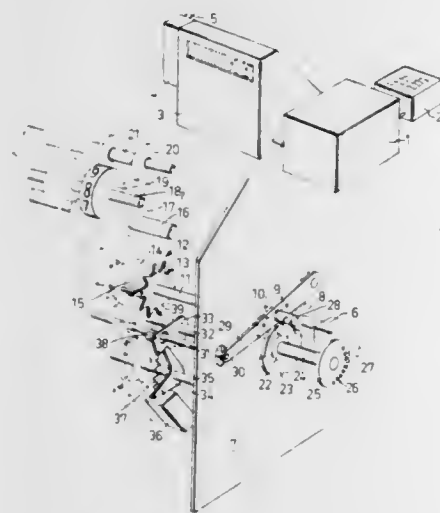
Claims priority, application Sweden, Oct. 8, 1971, 12770/71

Int. Cl. G06c 9/00

12 Claims
1. A position selecting device for transferring number of character values having at least one position and represented by electrical pulses in an electronic calculating unit to mechanical indicating means such as a mechanical calculating or printing unit or the like, and for setting the values so represented, said selecting device comprising
a. a power source,
b. a setting shaft rotatable in only one direction, said setting shaft being driven by said power source,
c. a plurality of rotatable setting units, one for each number position, each setting unit having a first position thereof which is the normal and reset position thereof, and a second position thereof which is the setting position thereof, each setting unit upon rotation thereof for oper-

ating said mechanical indicating means, each setting unit being rotatable in only one direction from said first position thereof, through said second position thereof, and back to said first position thereof,

- d. means for providing selective engagement and disengagement between said setting shaft and each of said setting units to provide either for rotation of each of said setting units with said setting shaft or no rotation of each of said setting units with said setting shaft, said setting shaft being common to all setting units,
- e. a pulse transmitter common to all number positions, said pulse transmitter operatively connected to said power source to rotate synchronously with said setting shaft and adapted to determine said second positions of said setting units, and
- f. means for providing simultaneous disengagement of all said setting units from said setting shaft, said means com-



prising (i) a blocking mechanism for each setting unit, each blocking mechanism having a first position thereof during which its corresponding setting unit is in engagement with said setting shaft for rotation therewith toward said second position thereof, a second position thereof corresponding to its corresponding setting unit being in its second position thereof, and a third position thereof corresponding to its corresponding setting unit being in its first position thereof or rotating toward said first position thereof, and (ii) a cam disc common to all said setting units and corresponding blocking members, said cam disc operatively connected to said power source to simultaneously rotate with said setting shaft, said cam disc for operating said blocking mechanisms simultaneously from said first to said second position thereof and from said second position to said third position thereof while not interfering with movement of said blocking member from said third to said first position thereof.

3,858,036

SQUARE ROOT OF SUM OF SQUARES APPROXIMATOR
John Albert Lunsford, Delran, N.J., assignor to RCA Corporation, New York, N.Y.

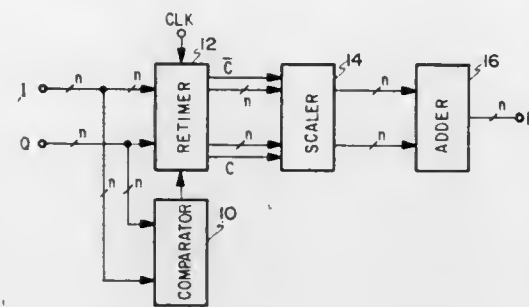
Filed Feb. 26, 1974, Ser. No. 445,967
Int. Cl. G06f 7/48; G06g 7/20

U.S. Cl. 235-158

4 Claims

1. The combination comprising:
source means for providing signals indicative of two values;
comparator means responsive to the source means for

providing an output signal indicative of the relative magnitudes of the two values;
scaler means responsive to the source means and the output signal from said comparator means for producing quo-



tient signals by dividing the lesser of said two values by two and the greater of said two values by one; and
adder means coupled to the scaler means for producing output signals indicative of the sum of the quotient signals produced by said scaler means.

3,858,037

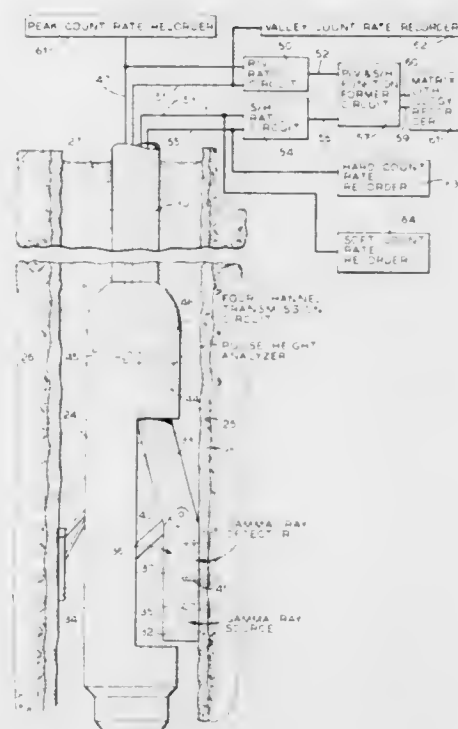
WELL-LOGGING MEASURING APPARATUS AND METHOD

Donald C. Moore, Ridgefield, and Jay Tittman, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 48,641, Jan. 18, 1973, abandoned, which is a division of Ser. No. 716,456, March 27, 1968, abandoned. This application Jan. 18, 1973, Ser. No. 324,619
Int. Cl. G01t 1/16

U.S. Cl. 235-193

18 Claims



1. A computer for analyzing characteristics of an earth formation traversed by a borehole wherein measurements for use by said computer are derived from a logging tool adapted to pass through a borehole while emitting gamma radiation into and detecting gamma radiation from a formation, comprising a first source of signals corresponding to detected gamma radiation and representative of detected photons of energies within a predetermined range which is less than about 33 keV and substantially greater than 0 keV, a second source of signals corresponding to detected gamma radiation and representative of detected photons of energies greater than about 39 keV, and circuit means for combining signals from said sources to produce a first output signal representative of a subsurface characteristic.

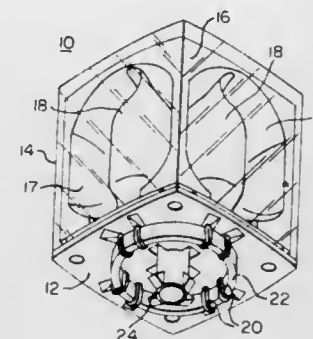
3,858,038

MULTIFLASH DEVICE FOR CLOSE-UP PHOTOGRAPHY
Bruce T. Buzalski, Dover, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1973, Ser. No. 423,970
Int. Cl. G03h 15/02

U.S. Cl. 240-1.3

4 Claims



1. A multiflash lighting device adapted for use in taking photographs at close range, said device comprising the combination of:

- a base member,
- a plurality of photoflash lamps mounted on said base member,
- a protective cover secured to said base member in enclosing relationship with said photoflash lamps, the walls of said cover that are adjacent to said lamps being light transmissive, and
- a reflector member within said cover defining an individual reflector element for each of said photoflash lamps, each of said reflector elements being disposed in operative relationship with its associated lamp, said reflector member being composed of a plastic that contains a uniformly-dispersed inorganic white pigment in an amount such that the surfaces of the reflector elements are opaque and non-specular and reduce the peak light output of each of the flashlamp-reflector combinations to a value at least 30% lower than that produced by an identical flashlamp and a reflector of the same size and configuration that is coated with a specular layer of aluminum.

3,858,039

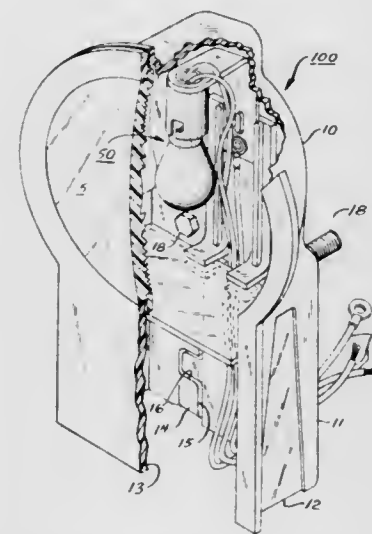
LAMP ASSEMBLY

Dennis G. Moore, 1312 Kathy Ct., Livermore, Calif. 94550
Filed Feb. 20, 1973, Ser. No. 333,801

Int. Cl. B60q 1/30, 1/56

U.S. Cl. 240-8.3

20 Claims



1. A submersible electric lamp comprising housing means defining an enclosure for an electric lamp assembly,

lens means forming a portion of said housing means,
an electric lamp assembly adapted for connection to a source of illuminating energy and carried within said housing means in optical alignment with said lens means, said electric lamp assembly including a bulb socket for receiving the base of a bulb thereby electrically coupling said bulb to a source of illuminating energy,
said housing means having an open air chamber portion extending beneath said electric lamp assembly and terminating in an open end thereof,
bulb slide means positionable within said housing means through said open air chamber portion and carrying said electric lamp assembly at one end thereof for positioning said electric lamp assembly in optical alignment with said lens means,
said open air chamber having a retaining portion extending from adjacent the open end thereof to receive said bulb slide means,
said bulb slide means extending adjacent said retaining portion of said open air chamber in operative engagement therewith such that at an end thereof spaced from said electric lamp assembly is positioned adjacent the open end of said chamber, and
said air chamber portion defining a predetermined volume of air such that upon submersion of said housing means in liquid said predetermined volume of air will be compressed creating a force sufficient to prevent liquid from rising within said lamp to the level of said electric lamp assembly.

3,858,040

MOTOR VEHICLE HEADLAMPS

Jacques Ricard, Fontenay-sous-Bois, France, assignor to Cibie Projecteurs, Bobigny, France

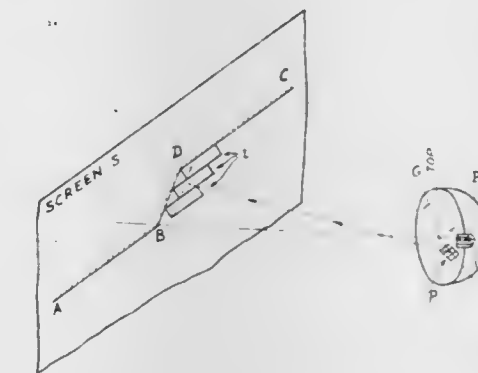
Filed July 23, 1973, Ser. No. 381,555

Claims priority, application France, May 14, 1970, 70.17586

Int. Cl. F21v 13/04

U.S. Cl. 240-41.3

9 Claims



1. In a motor vehicle headlamp comprising a parabolic reflector adapted to be mounted with a horizontal axis on a vehicle, a light filament for dipped lighting located in the vicinity of the focal point of said reflector, a front glass, cut-out means for effecting cut-out of the dipped light beam according to a left and a right horizontal half plane of cut-out on either side of the central axis of said reflector and of said headlamp, the improvement comprising a plurality of juxtaposed, prismatic elements, each of said prismatic elements intersecting a small part of said dipped beam just below said right half plane of cut-out, said small part of said beam projecting with respect to a reference screen a quadrangular image having an upper inside corner and an upper horizontal boundary, each of said series of prismatic elements deflecting said part of said beam in a vertical direction and also in a transverse direction to translate said corner to coincide on said screen with an oblique segment, all of said prismatic elements intersecting and deflecting different parts of said dipped beam to create finally for said beam a central cut-out limit surface approximating step-by-step-wise on said screen said oblique

segment and a lateral horizontal limit surface staggered in height relative to said unchanged left half plane of cut-out.

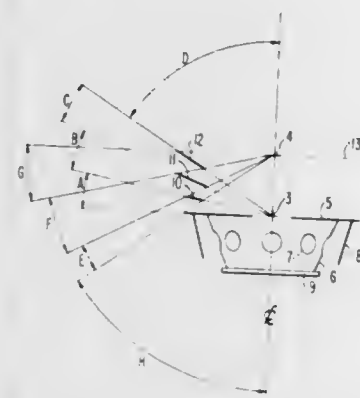
3,858,041

HAZARD LIGHT SHIELD

Richard M. Hitchcock, Springfield, Vt., assignor to Dufresne-Henry Engineering Corporation, North Springfield, Vt.
Filed Jan. 28, 1974, Ser. No. 437,289
Int. Cl. F21v 11/16

U.S. Cl. 240—46.53

3 Claims



1. A shield for a pair of hazard lights spaced on a vertical axis, comprising an opaque disk in a horizontal plane at the lower of said lights, and a series of circular louvers which are conic sections concentric with said axis and arranged in the zone between said plane and a parallel plane passing through the upper one of said lights, the surface of each of said louvers being aligned with all of the radial lines passing through the point represented by said lower light at a given angle to said axis.

3,858,042

LIGHTING FIXTURE

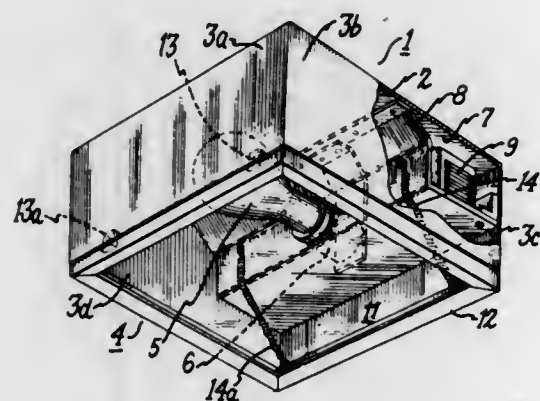
David D. Peterson, North Kingstown, R.I., assignor to General Electric Company, Pittsfield, Mass.

Filed July 5, 1973, Ser. No. 376,457

Int. Cl. F21v 17/00

U.S. Cl. 240—147

6 Claims



1. A luminaire comprising, in combination, a housing having side walls and a bottom rim defining and extending around an opening having an axis, lampholder means for mounting a light source within said housing so that light rays from the light source emanate through said bottom opening, said bottom rim projecting inwardly and downwardly at an oblique angle relative to said axis, and closure means removably covering said bottom opening in closed position, said closure means comprising a light transmitting panel and a frame surrounding said panel, said frame having an upper surface formed at an angle corresponding to said oblique angle of said bottom rim and being in closely adjacent, substantially parallel relation to said bottom rim in the closed position of said closure means, whereby any light leakage between said frame and said bottom rim is directed upwardly.

3,858,043

LIGHT BARRIER SCREEN

Erwin Sick, Icking, and Ernst Gass, Munich, both of Germany, assignors to Erwin Sick Optik-Elektronik, Waldkirch, Germany

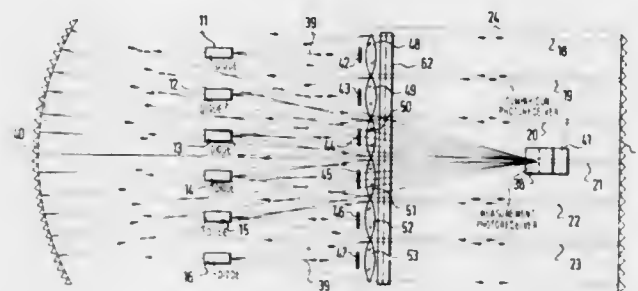
Filed Sept. 20, 1973, Ser. No. 398,943

Claims priority, application Germany, Sept. 26, 1972, 2247053

Int. Cl. G06m 7/00; G08b 13/00

U.S. Cl. 250—221

2 Claims



1. A light barrier screen having a plurality of sequentially arranged light sources which emit a light beam occupying a given predetermined area, said individual light sources being introduced through a single energy source in rapid temporal sequence, the light beams coming out of said area being optically unified upon a single measurement-photoreceiver which registers the intensity of the light beams coming out of said area and emits an output signal upon a given decrease in intensity of one or more light beams, and a single evaluation electronics connected to said measurement-photoreceiver for the evaluation of electrical signals actuated by the individual light beams coming out of said area.

3,858,044

RECOGNITION OF COLORS BY PHOTO-SENSITIVE MEANS

Pierre Frappe, Lyon, France, assignor to Verdol S.A., Caluire et Cuire, France

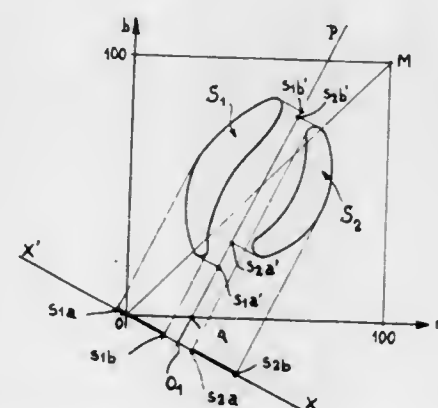
Filed Nov. 6, 1973, Ser. No. 413,371

Claims priority, application France, Feb. 2, 1973, 73.04392

Int. Cl. G01j 3/34

U.S. Cl. 250—226

8 Claims



1. A method for the automatic recognition of the coloring dyes used in a sample such as a drawing for the preparation of the perforated cards or bands for loom Jacquards, by means of photo-sensitive means which analyze in a number of wave lengths the light reflected by each of the dyes to be recognized when the corresponding portion of the sample is illuminated by a light beam of predetermined characteristics, recognition of each dye from which the light is reflected being based on the position of the point which represents the responses of the photo-sensitive means corresponding to each wave length in a first system of coordinates having n axes in which each of the n axes corresponds to one of said wave lengths, the response of each of said photo-sensitive means being plotted along the one of the axes of said first system which corresponds to the same wave length, said method including the following steps:

determining for each of said dyes to be recognized the permissible variations in its color attributes and in its density on the sample, in said first coordinate system;

determining in said first system of coordinates all the possible loci of points representative of the color attributes and density of each of said dyes to be recognized, taking into account said permissible variations, to thus obtain a number of loci equal to the number of said dyes;

transforming said first system of coordinates to obtain a second system having as many axes as said first system, each pair of axes of said second system defining a plane;

projecting said loci on at least one of said planes selected such that the projections of the loci do not intersect each other;

drawing in said one of said planes, lines which separate from each other the projections of said loci;

analogically representing each of said lines by electronic circuits having circuit means for each one of said planes equal to the number of separating lines, each of said circuits means receiving inlet signals corresponding to the coordinates of a point in said one of said planes and each emitting an outlet signal at a predetermined level when said last-named point is part of the separating line, at a level above said predetermined level when said last-named point is situated on one side of said last-named separating line, and at a level below said predetermined level when said last-named point is on the other side of said last-named separating line;

determining in said second system of coordinates the new coordinates of any representative point by transforming its coordinates in said first system as they result from the responses of said photo-sensitive means;

applying as said inlet signals to each of said electronic circuit means analog signals corresponding to the new coordinates of each representative point along the new axes which define said one of said planes;

and determining for each selected plane based upon the level of the outlet signals of said electronic circuit means which of said separating lines the projection of the representative point for each dye to be recognized is located between.

3,858,045

DETECTION OF BIOLOGICAL ACTIVITY

John R. Waters, 801 Stags Head Rd., Towson, Md. 21204

Filed Apr. 24, 1973, Ser. No. 353,953

Int. Cl. G01t 1/00; C12k 1/04

U.S. Cl. 250—303

7 Claims

1. In the process of detecting biological activity in blood wherein:

- a growth medium including a C^{14} containing carbon source which is fermentable to produce carbon dioxide is inoculated with a blood sample;
- the inoculated sample is exposed to conditions conducive to the occurrence of normal metabolic processes for a period of time sufficient to cause production of carbon dioxide by the fermenting of said source; and
- at least a portion of the gaseous atmosphere from said fermentation is measured for radioactivity to determine the presence of $C^{14}O_2$, the improvement comprising lysing mammalian cells present in said blood sample before the sample is exposed for a substantial period of time to conditions conducive to the occurrence of normal metabolic processes, whereby the background noise for the measurement of radioactivity of gaseous $C^{14}O_2$ is reduced.

3,858,046

CATADIOPTRIC BEAMSPLITTER SYSTEM

Ronald Cubalchini, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

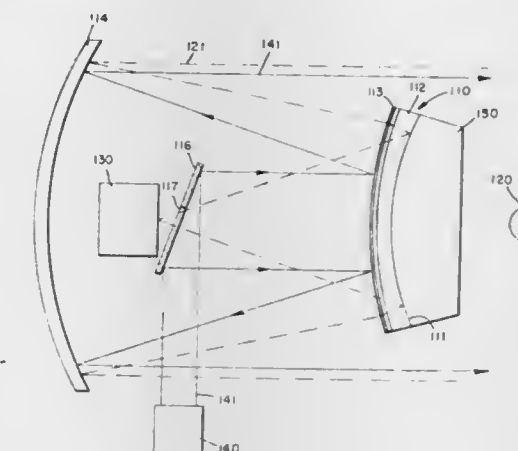
Division of Ser. No. 373,522, June 25, 1973, This application

Dec. 26, 1973, Ser. No. 428,262

Int. Cl. G01j 1/20, 3/50; G01t 1/16

U.S. Cl. 250—353

7 Claims



6. An optical tracking system for tracking a target by a first wave having a first wavelength and directing thereto a second wave having a second wavelength comprising:

primary reflector means for receiving a first infrared wave from said target and reflecting said first infrared wave to secondary reflector means, said primary reflector for receiving a second infrared wave from said secondary reflector means and reflecting said second infrared wave to said target;

secondary reflector means having a first reflecting surface with a first focal length for receiving said first infrared wave from said primary reflector and reflecting said first infrared wave to infrared detector means, said secondary reflector means having a second reflecting surface with a second focal length for receiving said second infrared wave from said primary reflector means and reflecting said second infrared wave to said primary reflector means, said second reflecting surface being transmissive to said first infrared wave, said secondary reflector having a lens with a selected index of refraction for providing a predetermined refraction of said first infrared wave passing therethrough;

infrared detector means for detecting said first infrared wave; and

laser means for emitting said second infrared wave.

3,858,047

DEVICE FOR MEASURING THE RATE OF ENERGY LOSS AND FOR DETECTING IONIZING NUCLEAR RADIATIONS AGAINST GAMMA-RADIATION BACKGROUND

Stanislav Fedorovich Kozlov, B Akademicheskaya, 49, korpus I, kv. 18, Moscow, U.S.S.R.

Continuation of Ser. No. 861,913, Sept. 29, 1969, abandoned.

This application Mar. 30, 1973, Ser. No. 347,449

Claims priority, application U.S.S.R., Sept. 27, 1968, 1273640

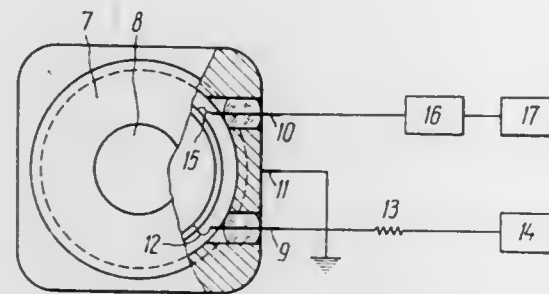
Int. Cl. G01t 1/24

U.S. Cl. 250—370

5 Claims

1. A device for measuring the rate of energy loss and for detecting ionizing nuclear radiations against a gamma-radiation background, comprising in combination: a housing; a diamond nuclear radiation detector mounted in said housing, said detector comprising a diamond crystal plate including contacts formed at the opposite sides thereof and designed for the applying of an electric field to said plate when detecting ionizing nuclear radiations, one of said contacts being located on the irradiated side of said plate and being constituted as a blocking contact in relation to the charge carriers and the opposite contact being constituted of a material capa-

ble, in conjunction with the diamond crystal plate, of injecting the charge carriers under the influence of the electric field, the thickness of the plate between said contacts being no greater than the maximum drift length of the charge carriers created by the nuclear radiation in the diamond crystal plate under the influence of the applied electric field corresponding to the maximum drift rate; an amplifier having an input connected to said blocking contact; means for recording output signals; a detector power supply connected to said injecting contact of the diamond detector, the blocking and injecting



contacts of said detector being constituted as layers permeable to incident nuclear radiation and of a material having an atomic number less than 15 and the thickness of the diamond crystal plate being less than the range of incident nuclear radiation, said thickness being d in the equation

$$d = \eta \tau E$$

where η is the mobility of charge carriers, τ is the lifetime of charge carriers, E is the applied field strength, δ is the distance travelled by charge carriers under the influence of the applied electric field.

3,858,048

SENSOR-EYE FOR ULTRA-VIOLET WATER STERILIZER
William A. Shand, and Wolfgang Scherrelies, both of Vancouver, British Columbia, Canada, assignors to Naturvard Research (Canada) Ltd., British Columbia, Canada

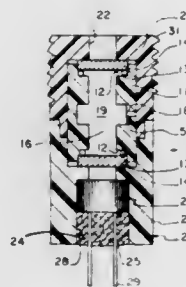
Filed Aug. 9, 1973, Ser. No. 387,012

Claims priority, application Canada, Aug. 23, 1972, 150080

Int. Cl. G01n 21/24

U.S. Cl. 250-373

6 Claims



1. A Sensor-eye comprising: (a) a hollow member having two opposite ends each defining, an orifice with a circumscribing seat about the orifice, said member defining a plenum communicating with the orifices, the plenum having part of the cross-sectional area larger than the area of the respective orifice; (b) sealing members mounted in the respective seats; (c) windows disposed in the orifices and mounted in said seats over said sealing members; (d) an ultra-violet transmission fluid disposed within the plenum between the two windows; (e) means urging the windows against the sealing means and seats to constrain the fluid within the hollow member.

3,858,049 METHOD AND APPARATUS FOR SEM SPECIMEN COATING AND TRANSFER

George R. Koch, Palo Alto, and Carl T. Petersen, Livermore, both of Calif., assignors to ETEC Corporation, Hayward, Calif.

Filed Sept. 17, 1973, Ser. No. 398,101

Int. Cl. H01j 37/18

U.S. Cl. 250-441

13 Claims



1. A method for transferring a specimen to an evacuated SEM chamber having an airlock chamber in communication therewith via a valved aperture, said airlock chamber having an associated normally sealed access aperture having an area substantially less than the area of said valved aperture, said method comprising the steps of:

- mounting said specimen on a specimen cap;
- releasably attaching said specimen cap to a specimen manipulator;
- unsealing said access aperture;
- inserting the portion of said manipulator bearing said specimen cap into said airlock chamber via said normally sealed access aperture;
- attaching said specimen cap to a specimen shuttle located in said airlock chamber;
- withdrawing said specimen manipulator from said airlock chamber via said access aperture;
- re-sealing said access aperture;
- evacuating said airlock chamber; and
- transferring said shuttle to said evacuated SEM chamber via said valved aperture.

3,858,050

ELECTRICALLY INSULATING GAMMA RADIATION SHIELD

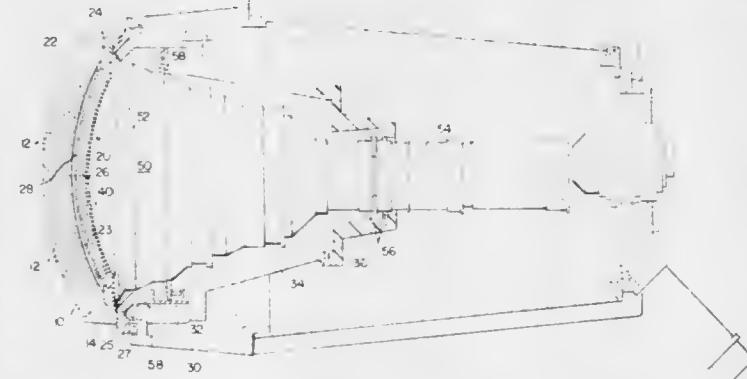
Roland Wester Carlson, Lyndhurst, Ohio, assignor to The Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 29, 1972, Ser. No. 293,448

Int. Cl. G21f 3/00

U.S. Cl. 250-515

3 Claims



1. In a gamma-ray camera having an image amplification means operating at an electrical potential in the range from about 10,000 to about 100,000 volts, the improvement con-

sisting of a self-supporting insulating axial shield, of sufficient thickness to shield against gamma-rays of predetermined energy, disposed around the circumferentially closely embracing said amplification means in electrically non-conductive spaced-apart relationship therewith, said axial shield comprising a non-radioactive, heavy metal having an atomic number greater than 73, or a compound thereof, disposed within an electrically non-conductive resin so as to prevent arcing between said heavy metal or compound thereof and said image amplification means.

3,858,051

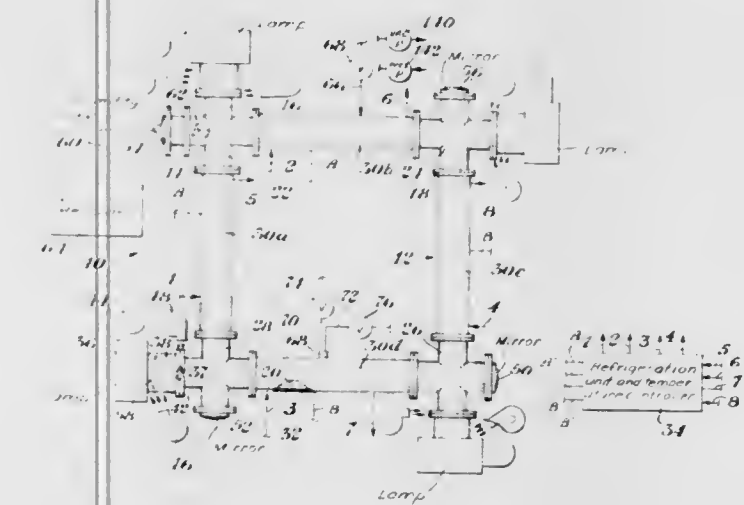
PHOTO-CHEMICAL REACTION APPARATUS
Grant N. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1973, Ser. No. 347,146

Int. Cl. B01j 1/00

U.S. Cl. 250-527

11 Claims



1. Apparatus for carrying out photochemical reactions comprising a hollow composite gas-tight chamber disposed in a vertical plane and composed of a plurality of elongated hollow tubular parts joined together generally at their ends to define a closed loop enclosed flow path, means external of said chamber for directing a source of simulated sunlight down each of said tubular parts, means for maintaining a temperature differential between the walls of at least two of said tubular parts, means for inserting gas or vaporizable material into said chamber, and means for withdrawing material from said chamber.

3,858,052

CONTROL APPARATUS FOR THE REGISTRATION OF A PRINTING PRESS OR THE LIKE

Zdenek Luska, Lausanne, Switzerland, assignor to J. Bobst & Fils, S.A.

Filed Mar. 9, 1973, Ser. No. 339,926

Claims priority, application Switzerland, Mar. 13, 1972, 339926/72

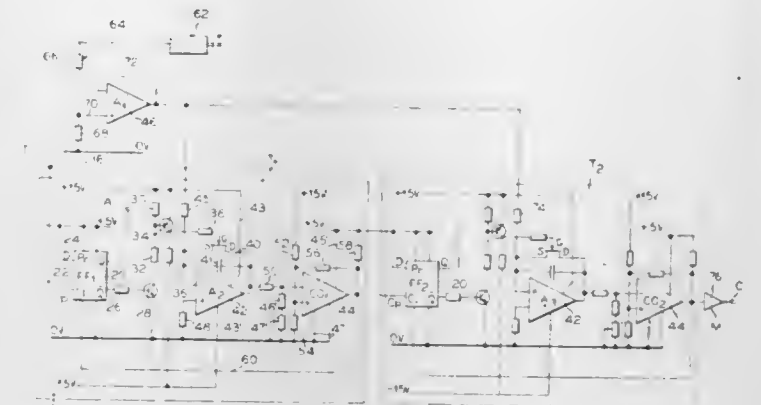
Int. Cl. B41f 13/44

U.S. Cl. 250-548

15 Claims

1. For use with a printing press having means for removably mounting printing cylinders having different respective diameters, apparatus for obtaining a reading window pulse for assisting in the control of registration of material printed on such press, comprising a pulse generator adapted to generate a starting pulse for each revolution of one of said mounted printing cylinders, means for producing a control signal representative of the speed of travel of the material being printed by said press, and a timing device connected to receive said starting pulse and said control signal for producing a window

pulse in response to said starting pulse, said window pulse having a duration which is a function of the speed of travel of



said material being printed and which is independent of the diameter of said one mounted cylinder.

3,858,053

SLIDE CONTROL MECHANISMS FOR MACHINE TOOLS
Alan Burnett, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

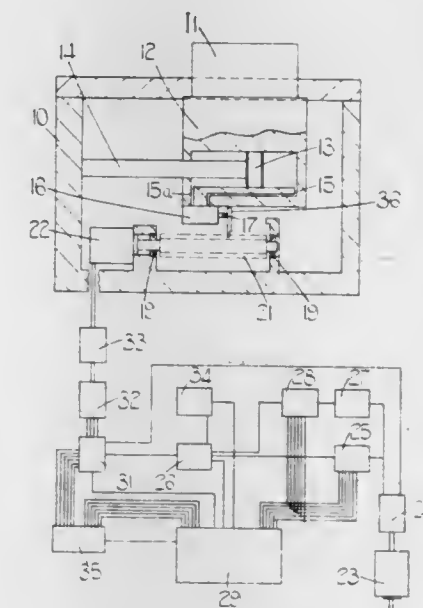
Filed June 20, 1973, Ser. No. 371,869

Claims priority, application Great Britain, June 22, 1972, 29218/72

Int. Cl. G01d 5/34

U.S. Cl. 250-555

7 Claims



1. An electronic system for a machine tool slide control mechanism comprising an optical encoder which is driven from a main shaft of the machine and which provides output signals related to the speed of rotation, angular position and also the number of completed revolutions of the main shaft, said optical encoder output signals being transmitted to an electrical drive motor whereby the slide mechanism is actuated, the output of the optical encoder being in the form of two step-pulse output signals supplied to a direction sensor, the output of this being applied to a rate multiplier and thence to a multiplexer, the multiplexer receiving also a signal from a control pre-set for the required slide operation, signals from the multiplexer being supplied to a reversible counter, and an output from this being supplied to a digital analogue converter to provide power supply for the electrical drive motor.

3,858,054

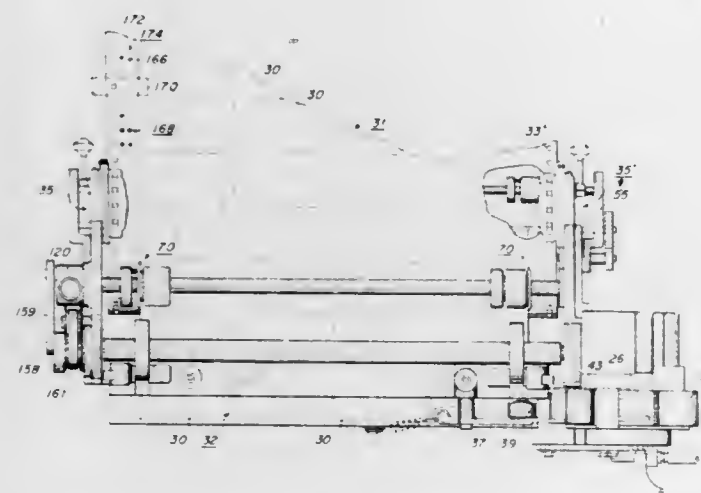
COMMUTATOR DISK FOR ZIP CODE SORTING
Mark A. Hutner, Glenview, Ill., and Raymond A. Wilmes, Genoa City, Wis., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,213

Int. Cl. G01n 21/30

U.S. Cl. 250—556

6 Claims



1. Control apparatus for segregating mailing pieces according to zip code or the like, information associated with labels to be applied to each of the mailing pieces wherein the labels are contained in a commutator printout form of labels and feed mechanism is provided for reciprocally feeding the form of labels various distances, said apparatus comprising:

means for clocking signals representative of said zip code information, including an enable photocell and a clocking photocell;

a commutator cooperating with said signal clocking means to effect actuation thereof, said commutator first actuating said enable photocell upon movement in a first direction; and

means for effecting relative reciprocal movement between said commutator and said signal clocking means.

3,858,055

COMBINED ELECTRICAL SWITCH AND LOCK ASSEMBLY

Steven John Tregurtha, Oswaldtwistle, near Accrington, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

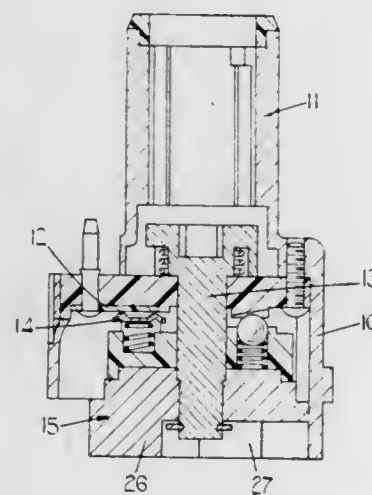
Filed July 25, 1973, Ser. No. 382,383

Claims priority, application Great Britain, July 25, 1972, 34685/72

Int. Cl. H01h 3/00

U.S. Cl. 307—10 R

3 Claims



1. A combined electrical switch and lock assembly comprising in combination, a plurality of fixed electrical contacts, a rotor member, means mounting said rotor member for rotation,

a key operated lock mechanism, means coupling said key operated lock mechanism to said rotor member whereby said rotor member can be rotated by said key operated lock mechanism, a movable electrical contact, means mounting said movable electrical contact for movement with said rotor member between a plurality of angular positions in relation to said fixed electrical contacts, a cam member, means mounting said cam member for rotation with said rotor member, to first, second, and third angular positions, first and second locking elements, means resiliently biasing said first and second locking elements into engagement with said cam member, said cam member having a profiled surface such that in said first angular position of said rotor member, said first locking element is urged by said cam member into a position in which, in use, it is adapted to resist operation of a control of a machine which is equipped with the combined electrical switch and lock assembly, and, said profiled surface of said cam member being such that when said cam member is in said second position then, in use, said first locking element is adapted to no longer resist operation of said control of said machine, and said profiled surface further being such that further movement of said cam member, into said third angular position, is resisted by said second locking element if said second locking element is held against movement in a direction opposite to that in which it is biased by said biasing means.

3,858,056

MEANS AND METHOD FOR STABILIZED OPTIMIZED TEMPERATURE PHASE MATCHED OPTICAL PARAMETRIC GENERATION

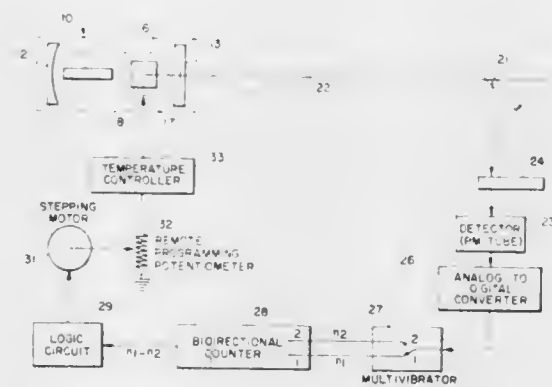
Nathan T. Melamed, Pittsburgh, and John D. Feichtner, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 435,548

Int. Cl. H01s 3/00

U.S. Cl. 307—88.3

10 Claims



1. In a method for generating an optical parametric beam in which the temperature of a nonlinear crystal can be varied in first and second opposite directions to increase the power output of said beam; the improvement comprising

A. continuously measuring the intensity of at least a portion of said beam to generate pulse signals having a rate at least proportional to the measured intensity;
B. continuously sampling said pulse signals during consecutive first and second periods;
C. counting the number of pulse signals measured during each first and second period and comparing said numbers;

D. adjusting the temperature in direct response to any difference in the number of pulse signals counted during said first and second periods; and

E. repeating steps C and D for each sampling period.

3,858,057

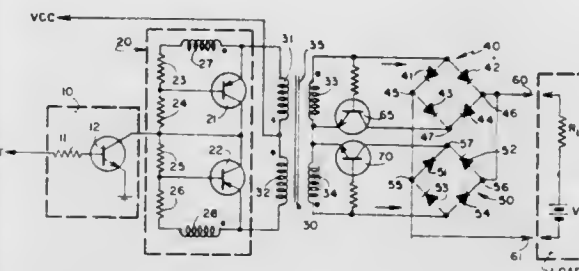
SOLID STATE RELAY

Jose V. Souto Martins, Arlington Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 28, 1973, Ser. No. 419,822

Int. Cl. H03k 17/00

U.S. Cl. 307—254



1. A solid state relay for completing an external load circuit in response to an input signal, said relay comprising a resistive input circuit for providing an input control signal in response to said input signal;

an oscillator circuit coupled to said input circuit and providing an a.c. electrical output in response to said input control signal;

a transformer having a primary winding coupled to said oscillator and a center tapped secondary winding;

first and second diodes coupled one to each side of said secondary winding in a full-wave rectifier configuration;

a four diode bridge having first and second input terminals, first and second output terminals coupled across said external load circuit, and having said first input terminal coupled to said secondary winding; and

a control transistor coupled between the center tap of said secondary winding and the second input of said diode bridge,

whereby, in response to an input signal which activates said oscillator, said control transistor couples said diode bridge to alternate sides of said secondary winding during alternate half cycles of said a.c. output of said oscillator thereby forward biasing said diode bridge rendering it conductive and completing said external load circuit.

3,858,058

REJECTOR-TYPE FUSE CLIP

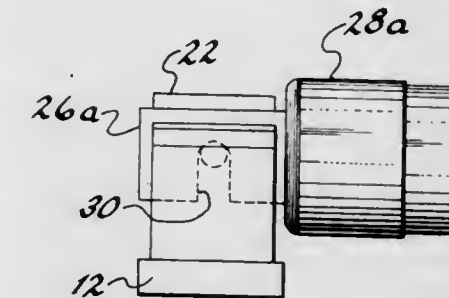
Robert S. Tillson, Terryville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 16, 1974, Ser. No. 433,828

Int. Cl. H01h 85/24; H01r 13/12, 13/64

U.S. Cl. 339—258 F

5 Claims



1. A fuse clip for a fuse cartridge with an end terminal including a recess, said fuse clip comprising: clamping means comprising first and second clamping arms extending in a spaced, substantially parallel relationship to define therebetween a receiving slot for acceptance of the cartridge fuse end terminal, interference means disposed in said receiving slot for acceptance of the recess of the cartridge fuse end terminal upon its insertion in said receiving slot, and

said first clamping arm being shorter than said second clamping arm, and said interference means being located adjacent the termination of said first clamping arm.

3,858,059

HIGH SPEED DRIVER CIRCUIT

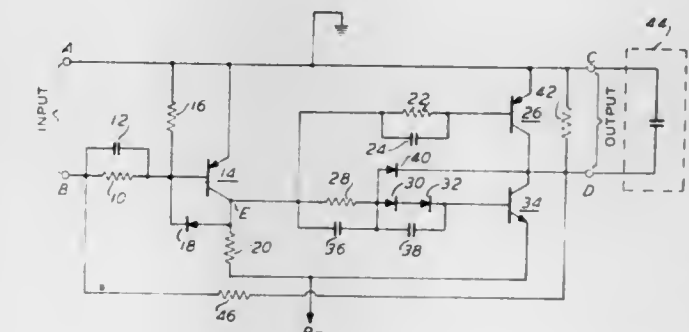
Rakesh Khanna, Parsippany, N.J., assignor to Litton Business Systems, Inc., Orange, N.J.

Filed Aug. 1, 1973, Ser. No. 384,699

Int. Cl. H03k 5/01, 6/02

U.S. Cl. 307—264

3 Claims



1. A high speed driver circuit comprising: input circuit means for receiving an input pulse signal; means providing a source of first and second reference potentials;

first switch means coupled to said input circuit means and responsive to first and second pre-determined amplitude levels of said pulse signal for respectively assuming a first and second operating state;

second and third switch means each including a transistor having base, emitter, and collector electrodes, having a common output terminal and each responsive to the operating state of said first switch means for selectively providing a circuit path coupling to one or the other of said reference potentials in dependence on the operating state of said first switch means;

output circuit means coupled to said common output terminal and responsive to the switched circuit path coupling of said second and third switch means for providing an output pulse signal corresponding to said received input signal; and

means providing a signal feedback path between said input and output circuit means;

the emitter electrodes of said transistors being respectively coupled to a separate one of said first and second reference potentials, and the collector electrodes being connected together and coupled to said output circuit means, said second and third switch means transistors being biased to operate as switches and selectively provide a conductive path from said output circuit means to said first or second reference potentials in response to whether said first switch means is in its first or second operating state.

3,858,060

INTEGRATED DRIVER CIRCUIT

Richard Arthur Kenyon, Underhill, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1973, Ser. No. 368,002

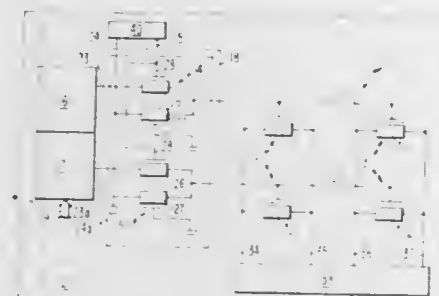
Int. Cl. G11c 11/40; H03k 3/33

U.S. Cl. 307—270

5 Claims

1. A driver circuit comprising, a first device capable of sustaining a differential voltage of a first given value, means coupled to said first device for applying a first differential voltage of said first given value to said first device, a second device capable of sustaining a differential voltage of a second given value,

means coupled to said second device for applying a second differential voltage of said second given value to said second device, said first and second devices each being coupled to a single output,



3,858,061

MULTIPLE SIZE GATES ON FET CHIPS

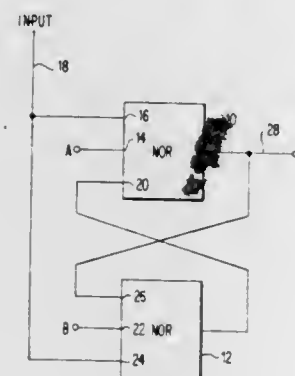
Robert G. Carpenter, and Maurice T. McMahon, Jr., both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,966

Int. Cl. H03k 3/26, 3/33; H011 11/00

U.S. Cl. 307-279

1 Claim



1. In an integrated circuit including a plurality of FETs connected to form at least one circuit having more than one signal path, each signal path having different signal delays, the improvement providing equalization of the delays in the signal paths through said integrated circuit comprising:

- at least one first FET in a first of said signal paths having a first gate electrode, said first gate electrode having a first predetermined size determining the inter-electrode capacitance of said first FET which, in turn, defines a first turn-on time for said first FET; and
- at least one second FET in a second signal path having a second gate electrode, said second gate electrode having a second predetermined size different from said first predetermined size and determining the inter-electrode capacitance of said second FET which, in turn, defines a second turn-on time different from said first turn-on time for said second FET, said first and second turn-on times being chosen to equalize the delays in said first and second signal paths through said integrated circuit.

3,858,062

SOLID STATE CURRENT DIVIDER

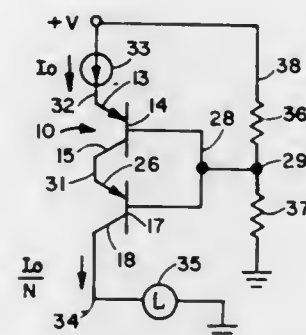
William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 15, 1973, Ser. No. 332,834

Int. Cl. H011 19/00

U.S. Cl. 307-297

11 Claims



1. Solid state means for providing a predetermined ratio of an input current to an output current comprising:

- a first transistor having a first emitter region, a first base region and a first collector region,
- a second transistor having a second emitter region, a second base region and a second collector region,
- input direct current source means, bias source means, output direct current to load means,
- said first emitter region being connected to said input direct current source means,
- said first and second base regions being connected together, said connected together first and second base regions being connected to said bias source means for forward biasing the junction formed by said first emitter and said first base during operation,
- said first collector being connected to said second emitter; and
- said second collector being connected to said output direct current to load means, output direct current flowing through said load means.

3,858,063

TIMED LIGHT PULSE GENERATOR

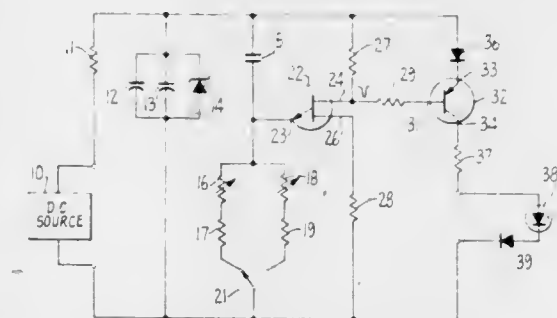
Jose A. Saleme, Sunnyvale, Calif., assignor to Redlake Corporation, Santa Clara, Calif.

Filed Apr. 2, 1973, Ser. No. 346,960

Int. Cl. H05b 37/00

U.S. Cl. 307-311

1 Claim



1. A timed light pulse generator for use in marking photographic film with timing marks, comprising:

- a pair of capacitors and a Zener diode connected in parallel as a filter network, said filter network being connected directly across a direct current source and a resistor connected in series;
- an RC network connected directly across said filter network, said RC network consisting of a timing capacitor connected in series with a variable resistance network, said variable resistance network consisting of a pair of circuit branches each including a fixed resistor and a

variable resistor and switch means for selectively connecting one or the other of said circuit branches to one terminal of said filter network, the ends of said circuit branches remote from said switch means being connected to a common circuit point to which one terminal of said timing capacitor is also connected;

a unijunction transistor, the emitter electrode of said unijunction transistor being directly connected to said common circuit point, and each base electrode of said unijunction transistor being connected to one terminal of said filter network through an associated resistor, the one of said base electrodes serving as an output electrode having its associated resistor directly coupled to a terminal of said timing capacitor; and

a transistor, said transistor having its base electrode connected to said output electrode of said unijunction transistor through a resistor, having its emitter electrode connected through a diode to the terminal of said timing capacitor remote from said common circuit point, and having its collector electrode connected to the terminal of said variable resistance network remote from said common circuit point through a series-connected combination of a resistor, a diode, and a light-emitting diode.

3,858,064

STABLE ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS

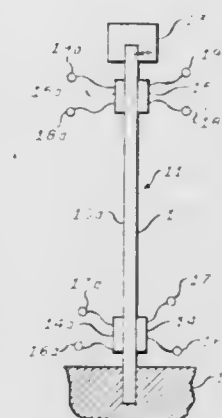
Lloyd R. Schissler, Jamaica Plain, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,111

Int. Cl. H01v 7/00

U.S. Cl. 310-8.1

14 Claims



1. Transducer means comprising:

flexure means having first and second opposed flexible surface layer means for separately propagating respective first and second acoustic waves along first and second respective predetermined paths therein.

first and second exciter means for exciting and propagating said respective first and second acoustic waves along said first and second respective predetermined paths in response to respective first and second exciter electric signals,

first and second receiver means along said respective first and second predetermined paths for receiving and converting said respective first and second acoustic waves into respective first and second receiver electric signals, first and second respective driver circuit means for coupling said first receiver means to said first exciter means and for coupling said second receiver means to said second exciter means for forming, with said respective first and second opposed flexible surface layer means, first and second oscillatory driver circuit means oscillating at different respective first and second frequencies, at least said first oscillatory driver circuit means including: phase detector means responsive jointly to the phases of said first respective exciter and receiver electric signals, and

tunable oscillation frequency determining means responsive to said phase detector means, and signal processor means jointly responsive to said first and second oscillatory driver circuit means for deriving a measure of the flexure of said flexure means from said first and second frequencies for supply to utilization means.

3,858,065

ANNULAR 3M CLASS PIEZOELECTRIC CRYSTAL TRANSDUCER

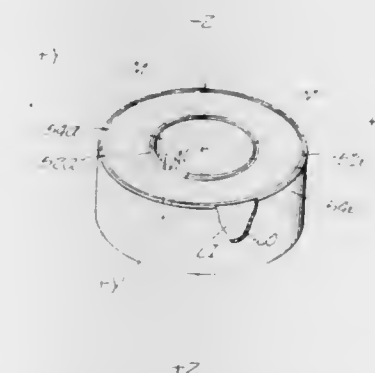
Howard C. Epstein, South Pasadena, Calif., assignor to Becton Dickinson Electronics Company, Pasadena, Calif.

Continuation-in-part of Ser. No. 103,036, Dec. 31, 1970, abandoned. This application July 24, 1972, Ser. No. 274,251

Int. Cl. H01v 7/02; H04r 17/00

U.S. Cl. 310-9.5

14 Claims



1. In a transducer of the shear type in which an electrical signal is developed across two parallel cylindrical surfaces of an annular piezoelectric element mounted to move relatively to each other in a direction parallel to such surfaces in response to force applied to at least one of said surfaces in said direction and in which means are provided for conducting such electrical signal to a utilization device responsive thereto, the improvement wherein said annular piezoelectric element comprises a piezoelectric crystal of the 3m class having its Z axis parallel to said surfaces.

3,858,066

NON-COMMUTATING SUPERCONDUCTING D. C. MACHINE

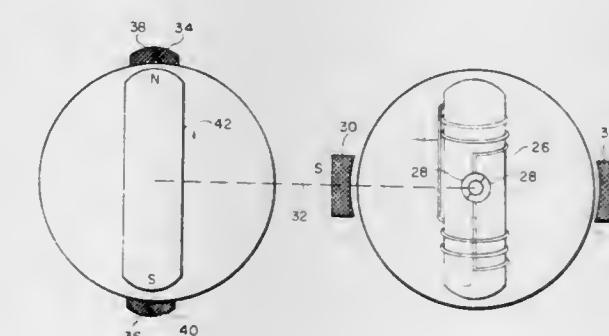
Robert G. Breckenridge, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 29, 1973, Ser. No. 346,221

Int. Cl. H02k

U.S. Cl. 310-40

6 Claims



1. A direct current machine comprising:

a multipoled, non-superconducting armature magnet, a plurality of superconducting stator magnets disposed in predetermined spaced relation about the path of rotation of said armature magnet, said stator magnets being formed of hard, Type II superconductive material, a timing magnet coupled for rotation with said armature magnet,

a plurality of magnetic switch means disposed in predetermined spaced relation about the path of rotation of said timing magnet and actuable by said timing magnet, said magnetic switch means comprising field windings formed of soft, Type I superconductive material, the magnetic field of said timing magnet being of sufficient strength so as to cause the soft superconductive material of a field winding to revert to the normal resistance state each time a pole of said timing magnet passes that field winding, and

a reversing circuit including said magnetic switch means for periodically reversing the polarity of the magnetic field between said armature magnet and said stator magnets.

3,858,067

DYNAMOELECTRIC MACHINE

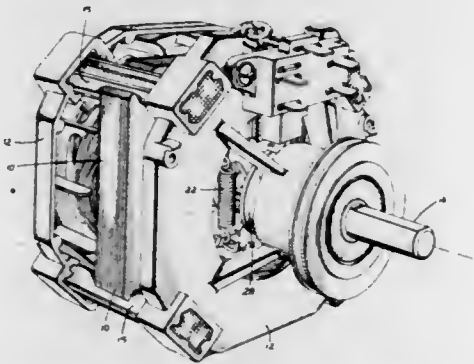
Charles W. Otto, De Kalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 246,219, April 21, 1972, abandoned. This application May 9, 1973, Ser. No. 358,589

Int. Cl. H02k 15/00

U.S. Cl. 310-42

23 Claims



1. A dynamoelectric machine comprising a stator having winding means therein, a rotatable assembly disposed in the stator, at least one end shield for supporting the rotatable assembly; a plurality of means on the stator respectively having at least a portion for mounting with the end shield, means in the end shield for receiving the mounting means portions and into which they extend generally in spaced relation with at least a portion of the end shield about the receiving means, and metallic means solidified and contained generally within the receiving means and respectively interconnected between the mounting means portions and at least a portion of the receiving means for rigidly mounting the end shield and the stator.

3,858,068

DYNAMOELECTRIC MACHINE HAVING VENTILATING MEANS

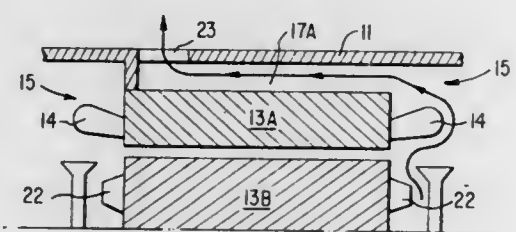
Howard Christian Ward, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,728

Int. Cl. H02k 9/00

U.S. Cl. 310-59

7 Claims



1. A dynamoelectric machine comprising:
a housing,
a stator core supported within said housing in spaced relation with respect thereto to define a ventilation region

(16) that substantially separates all of the circumference of the core from the housing.

a plurality of partitions rigidly mounted between said core and said housing in spaced-apart relation peripherally about said core and extending axially of said core, said plurality of partitions cooperating with said housing and core to form a plurality of contiguous, separate paths through said ventilation region, in heat exchange relation with respect to each other, each of said partitions being formed of metal having good thermal conductivity and comprising a means for exchanging heat between the contiguous, separate paths, and

means for circulating cooling air and introducing it into said paths only at the respective ends thereof, said circulating air and the means for exchanging heat being effective to transfer heat between adjacent paths due to the flow in opposite directions of cooling air through adjacent ones of said contiguous paths, thereby to uniformly distribute heat along all of said paths and to maintain the temperature of air at both ends of said paths lower than the temperature at the middle of the paths.

3,858,069

EXCITER ASSEMBLY FOR ELECTRIC MACHINES WITH REVOLVING RECTIFIERS

Heinrich Kuter, Wattenscheid, and Hans Lenting, Mulheim-Ruhr, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

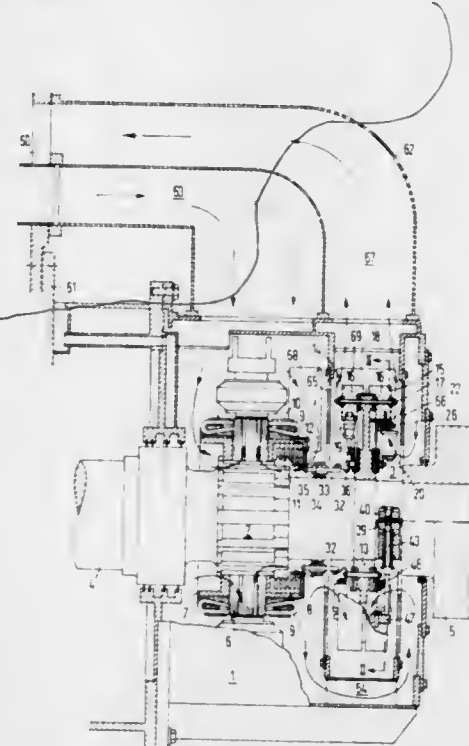
Filed Mar. 9, 1973, Ser. No. 339,925

Claims priority, application Germany, Mar. 10, 1972, 2211810

Int. Cl. H02k 9/04

U.S. Cl. 310-68 D

12 Claims



1. Exciter assembly for an electric machine, such as a synchronous generator having a rotary shaft and an exciter winding, comprising an alternating-current exciter machine having an armature, a plurality of revolving rectifiers connectible between said armature and the exciter winding of the electric machine for feeding exciting current thereto, and a carrier wheel for said revolving rectifiers securable to the shaft of the electric machine, said carrier wheel comprising a disc-shaped hub, a pair of light-metal rings respectively mounted on both sides of said disc-shaped hub at the periphery thereof, said light-metal rings being insulated from said hub and secured to said hub by a bolt and by means of respective shoulders overlapping the periphery of said hub, and being shrink-fitted on said hub, each of said light-metal rings forming a direct-current pole carrying rectifier diodes that are directly threaded thereto, and fuses insulatedly fastened to said rings.

3,858,070

BEARING CENTERING STRUCTURE FOR ROTARY ELECTRIC APPARATUS

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Overtoom, Amsterdam, Netherlands

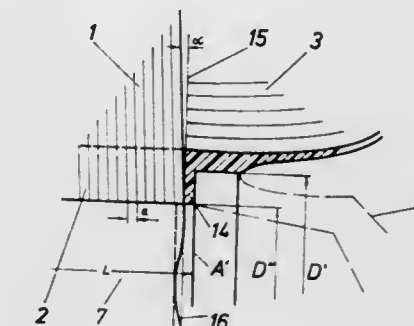
Continuation of Ser. No. 285,111, Aug. 31, 1972, abandoned.

This application Apr. 3, 1974, Ser. No. 457,400

Claims priority, application Netherlands, Nov. 19, 1969, 6917401

Int. Cl. H02k 5/16

U.S. Cl. 310-90



1. Rotary electric apparatus comprising a stator core consisting of a plurality of stator plates having slots to accommodate stator windings, said stator windings extending beyond the axial end faces of the stator plates at opposite ends of the stator core, the stator core defining a rotor chamber, a rotor mounted on a shaft for rotary motion relative to the stator, bearing means mounted on said shaft, bearing support means connecting said stator unit to said bearing means and molded guide member made of an electrically non-conducting material secured to the stator unit at opposite axial end faces thereof, each of said guide members sealing the end openings of the stator slots and in bonding engagement with the windings and each defining a seat for the bearing support member, each of said guide members being of an L-shaped cross section to provide an annular centering surface concentric with the rotor axis and truly radial abutment surfaces parallel to each other and disposed in planes perpendicular to the rotor axis and spaced apart an axial distance slightly greater than the overall length of the stator core, the vertical leg of said guide member terminating in an edge of a diameter coincident and aligned with the outer periphery of the rotor cavity.

3,858,071

HIGH FREQUENCY, LOW INDUCTANCE GENERATOR

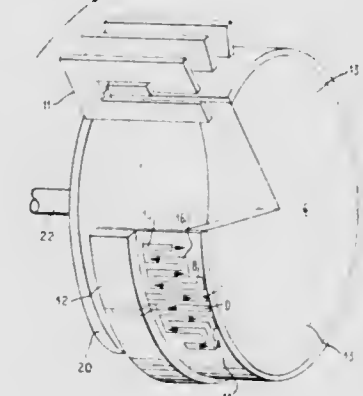
Brandt M. Griffing, Delray Beach, Fla., and Joseph A. Glocker, Jr., Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1970, Ser. No. 41,434

Int. Cl. H02k 1/22

U.S. Cl. 310-266

3 Claims



1. A brushless, high frequency alternator comprising:
a rotor having a plurality of metal pole pieces mounted on and in spaced relation around the periphery of said rotor for rotation therewith;

a stator having an annular field winding mounted thereon and passing through a cut out portion of said metal pole pieces of said rotor for exciting said metal pole pieces;
said stator including a zigzag armature winding mounted thereto in an air gap formed by said metal pole pieces of said rotor.

3,858,072

PLASMA TORCH WITH AXIAL SUPPLY OF THE STABILIZING GAS

1 Claim Vladimir Dembovsky, Ostrava, Czechoslovakia, assignor to Vysoka skola Ostrava, Ostrava, Czechoslovakia

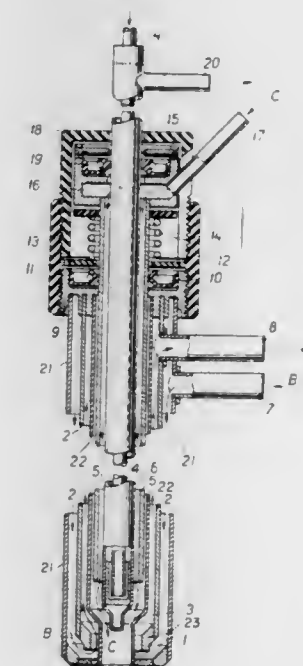
Filed Feb. 6, 1973, Ser. No. 330,026

Claims priority, application Czechoslovakia, Feb. 9, 1972, 806-72

Int. Cl. H01j 17/26

U.S. Cl. 313-32

2 Claims



1. Plasma torch with axial supply of a stabilizing gas comprising in combination:

a torch head comprising a sleeve, a cover and a nut connecting both the sleeve and cover, the nut enabling an adjustment of the axial distance between the cover and the sleeve,
a nozzle forming the anode of the torch, connected by an internal tube and an external coaxial mantle with the sleeve,
a coaxial separating tube fixed to the sleeve, dividing the space between the internal tube and the external mantle into two coaxial annular spaces, communicating near the front face of the nozzle,
means for supply and removal of a cooling liquid to and from said annular spaces,
the separating tube extending into a distributing insert, leaving a narrow space at places adjacent to the operating surfaces of the nozzle,
means for securing the position of the distributing insert with respect to the nozzle while leaving free passages for the cooling liquid,
a distribution chamber arranged axially slidable within the torch head,
a tubular holder fixed to this distribution chamber and extending into the space of the internal tube,
a cathode fixed to the extremity of this holder,
an inlet tube for a cooling liquid for the cathode inserted into this holder dividing its space into two annular spaces communicating near the head of the cathode,
means for supply and removal of the cooling liquid to and from these annular spaces,
a tube of electrically insulating material fixed to said distributing chamber and engaging into the space between the internal tube and the holder of the cathode,

means for supplying a stabilizing gas into the space between the holder of the cathode and the tube of electrically insulating material, the external surface of the cathode provided with longitudinal grooves limiting the passage of the stabilizing gas through the nozzle, spring means urging the distributing chamber against the bottom of the cover of the torch head.

3,858,073

PLANE MULTI-DIGIT TYPE ELECTRIC DISCHARGE DISPLAY DEVICES

Masaharu Kohyama; Akio Miyamoto; Satoshi Kobayashi, and Mikio Kanazaki, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

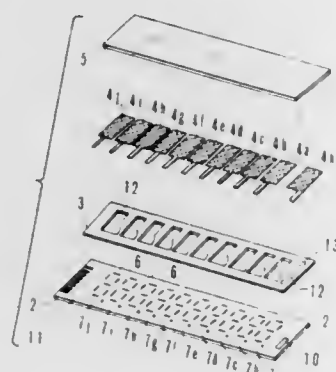
Filed Oct. 6, 1972, Ser. No. 295,550

Claims priority, application Japan, Oct. 6, 1971, 46-77873

Int. Cl. H01j 7/40

U.S. Cl. 313-54

6 Claims



1. A plane scanning multi-digit type electric discharge display device comprising an insulator substrate, a plurality of pattern display units arranged side-by-side relationship on said insulator substrate, each display unit including a plurality of segment electrodes which are arranged in a predetermined pattern, a plurality of electrically isolated counter electrodes respectively confronting said pattern display units, and an upper substrate, at least the portions of said counter electrodes and said upper substrate confronting said pattern display units being transparent, and a common envelope containing pattern display units, and a single discharge sustaining electrode adapted for constantly discharging and located near an end pattern display unit at the end from which scanning is to be commenced.

3,858,074

PHOTOELECTRIC TRANSDUCER ELEMENT INCLUDING A HETEROJUNCTION FORMED BY A PHOTOELECTRIC TRANSDUCER FILM AND AN INTERMEDIATE FILM HAVING A LARGER ENERGY GAP THAN THE PHOTOELECTRIC TRANSDUCER FILM

Masakazu Fukai, Nishinomiya; Shinji Fujiwara, Toyonaka; Hiroyuki Serizawa, Katano; Osamaru Eguchi, Osaka, and Yukimasa Kuramoto, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka, Japan

Filed Nov. 6, 1972, Ser. No. 304,050

Claims priority, application Japan, Nov. 9, 1971, 46-89622; Dec. 29, 1971, 47-3265; Sept. 25, 1972, 47-96428

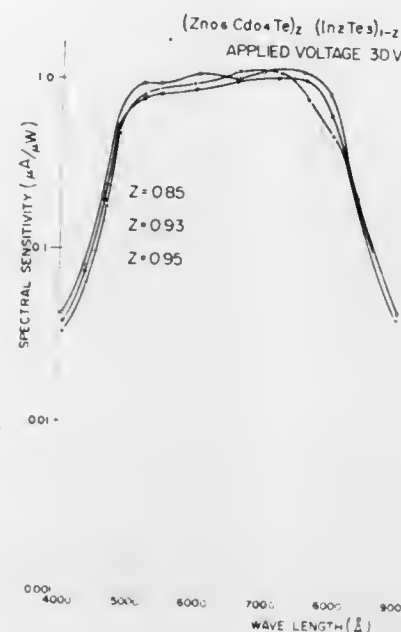
Int. Cl. H01j 39/06; H01j 9/00

U.S. Cl. 313-94

11 Claims

1. A photoelectric transducer element and a target for an image pickup tube using said element, comprising a photoelectric transducer film, a transparent conductive film, a material interposed between said photoelectric transducer film and said transparent conductive film, and a heterojunction of said photoelectric transducer film and said material, said material having a larger energy gap than said photoelectric

transducer film, said photoelectric transducer film containing $\text{Zn}_x\text{Cd}_{1-x}\text{Te}$ ($0.1 \leq x \leq 0.9$) as a main component, and said



material containing $\text{ZnS}_x\text{Se}_{1-x}$ ($0 \leq x \leq 1$) as a main component.

3,858,075

LOW PRESSURE MERCURY VAPOR DISCHARGE LAMP

Rolf Herrmann, Sauerlach, and Gunther Sohring, Munich, both of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

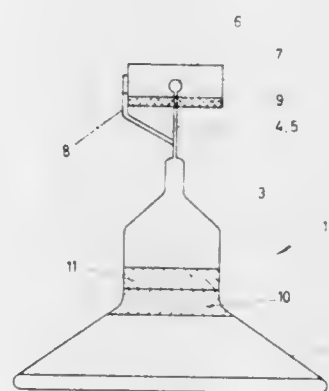
Filed Jan. 16, 1974, Ser. No. 433,773

Claims priority, application Germany, Feb. 6, 1973, 2305753

Int. Cl. H01j 61/28

U.S. Cl. 313-178

10 Claims



1. In a low-pressure mercury vapor discharge lamp comprising an elongated vitreous envelope having electrodes sealed into its ends, at least one of said electrodes being connected to an outwardly flared stem sealed to one end of said envelope and said stem being partially coated with an amalgam-forming metal which becomes the main amalgam during lamp operation, the improvement comprising positioning a ceramic coating on said stem between said amalgam-forming metal and said electrode.

3,858,076

VACUUM-TYPE CIRCUIT INTERRUPTER WITH INTERLEAVING SPIRAL ELECTRODES

Graham R. Mitchell, Willingboro, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed May 11, 1973, Ser. No. 359,497

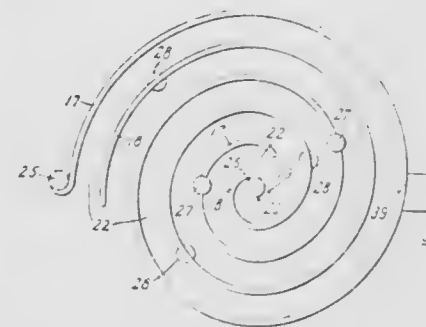
Int. Cl. H01j 17/04

U.S. Cl. 313-217

8 Claims

1. A vacuum-type circuit interrupter comprising:

- a. a highly evacuated envelope provided with spaced-apart opposed electrical terminals for connection to an electric circuit,
- b. spaced-apart first and second electrode members within said envelope respectively electrically connected to said spaced-apart terminals and between which a high voltage is applied during circuit interruption,
- b₁. each of said electrode members comprising a metal sheet in the form of a spiral wound in turns about a longitudinal axis via a path that generally progressively recedes from said longitudinal axis as the path winds about said axis, said sheet having a width much greater than its thickness, the width of the sheet extending generally parallel to said longitudinal axis and the thickness of the sheet extending generally normal to said longitudinal axis,



- b₂. said spirals being so positioned that their longitudinal axes are generally parallel to each other and their turns interleave in spaced relationship to each other, thereby defining an interelectrode gap of spiral form between said electrode members,
- c. means within said envelope for supplying an electron-ion plasma to said interelectrode gap for causing the voltage between said electrodes to establish an arc discharge across said interelectrode gap,
- d. and means for forcing most of the current that flows through said discharge to follow a path extending between said terminals through said electrodes that enters one of the electrodes from its associated terminal near the outer end of its spiral and leaves the other of the electrodes for its associated terminal near the inner end of the spiral of said other electrode.

3,858,077

GAS TUBE TRANSIENT VOLTAGE PROTECTOR FOR TELECOMMUNICATION SYSTEMS

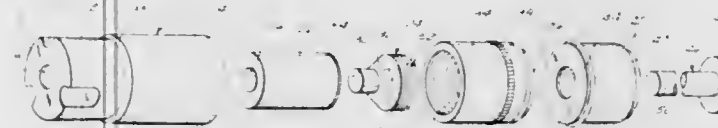
Albert Bazarian, Coltsneck, and William Robert Kineyko, Jackson, both of N.J., assignors to General Instrument Corporation, Newark, N.J.

Filed Nov. 20, 1973, Ser. No. 417,592

Int. Cl. H01j 17/04; H02h 1/00

U.S. Cl. 313-217

36 Claims



1. A transient voltage protector comprising a hollow generally cylindrical housing having an open end and a closed end, a first insulating body mounted in said housing adjacent said closed end, an outer electrode in the shape of a hollow cylinder mounted in said housing between said open end and said first insulating body, an inner electrode mounted on said first insulating body within said outer electrode and spaced therefrom, a second insulating body adapted to engage said open end and having a bore therethrough and an electrical connecting element having an end portion and a body portion, said end portion being accessible to the exterior surface of said

second insulating body and said body portion extending through said bore and engaging said inner electrode to impart physical stability to said inner electrode as well as to provide an electrical connection therewith.

3,858,078

METAL HALIDE DISCHARGE LAMP HAVING AN ARCHED ARC TUBE

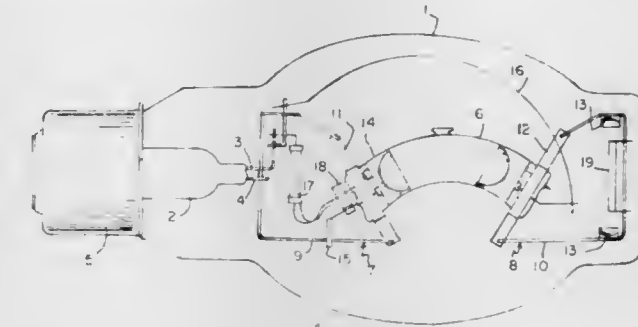
Frederick Koury, Alexandria, N.H., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 9, 1973, Ser. No. 377,442

Int. Cl. H01j 61/33

U.S. Cl. 313-220

6 Claims



1. A metal halide arc discharge lamp comprising: an outer envelope; an arched arc tube, having electrodes at each end thereof, disposed within said envelope, said arc tube containing a fill including mercury, metal halide and an inert gas, the arched shape of said arc tube being such that during normal horizontal operation with the arch of the arc tube uppermost, the arc discharge does not extend to the walls of the arc tube and said discharge is substantially equidistant from the walls of the arc tube; and means to energize said arc tube.

3,858,079

COLOR CAMERA TUBE HAVING A COLOR STRIP FILTER

Hiroshi Miyama, and Kaoru Tomii, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

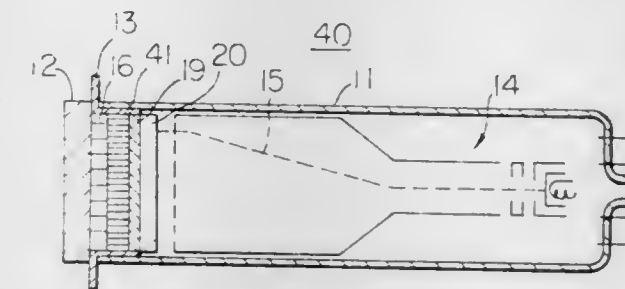
Filed Dec. 26, 1972, Ser. No. 318,478

Claims priority, application Japan, Dec. 27, 1971, 46-47625

Int. Cl. H01j 31/26

U.S. Cl. 313-372

1 Claim



1. A color camera tube, which comprises: an evacuated envelope having a transparent faceplate sealed thereto and closing an end thereof; an electron gun assembly placed within said envelope toward another end thereof, for emitting an electron beam toward said faceplate; a color strip filter mounted within said evacuated envelope on the inner surface of said transparent faceplate facing said electron gun assembly; a thin fibre optics plate mounted on said color strip filter within said evacuated envelope and facing said electron gun assembly; a transparent electrically conductive thin film mounted on said optics plate and electrically led to the outside of said envelope; and

a photoconductive layer mounted on said conductive thin film.

3,858,080

TARGET ASSEMBLIES ESPECIALLY FOR SINGLE CHAMBER DEFORMOGRAPHIC STORAGE DISPLAY TUBES

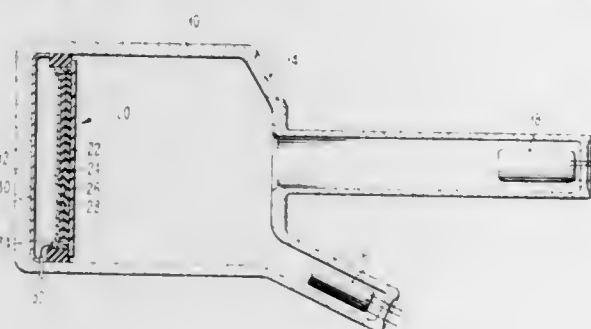
Robert James Wohl, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,288

Int. Cl. H04n 3/16

U.S. Cl. 313-394

12 Claims



1. A deformographic storage display tube having: an evacuated electron tube envelope having a transparent faceplate portion, and an electron gun arranged within said envelope at a location permitting the beam of electrons emanating from the electron gun to impinge on said faceplate portion, and comprising:
 - a target assembly arranged at the inner surface of said faceplate portion of said envelope and including:
 - a transparent conductive film deposited on the inner surface of said faceplate portion of said envelope;
 - an electrostatically deformable solid member arranged over said conductive film; and
 - a compatibly deformable photoreactive layer arranged on said deformable member.

3,858,081

CATHODE RAY TUBE SCREEN STRUCTURE UTILIZING ADJUVANT EXCITATION

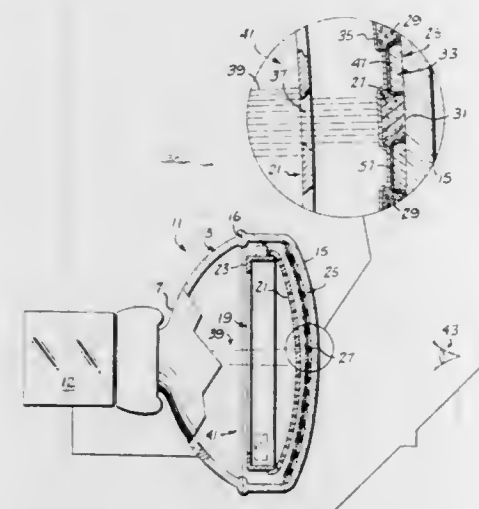
Charles H. Rehkopf, and Kenneth Speigel, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,931

Int. Cl. H01j 29/20, 29/32, 29/28, 29/30

U.S. Cl. 313-467

4 Claims



1. A color cathode ray tube comprising:
 - an enclosing envelope having a glass receiving panel;
 - a multiplex screen structure disposed on the interior surface of said receiving panel and including: a first apertured webbing of a substantially opaque electrical conductive material formed contiguous to the inner surface of said

panel; a second apertured webbing formed of an electron-responsive ultraviolet emissive phosphor material superposed in said first apertured webbing being in alignment to provide a multitude of defined windows therethrough; said ultraviolet emissive phosphor material being selected from the group consisting essentially of europium-activated strontium fluoroborate and lead-activated barium mesosilicate; a patterned array of at least two repetitive phosphor elements disposed in a contiguous manner over the window areas of said second apertured webbing, each of said phosphor elements being of a size larger than the related window area, said pattern of phosphor elements being of materials responsive to excitation by both electron and ultraviolet energy and differing from the phosphor material comprising said second webbing, the ultraviolet emissive phosphor of said second webbing providing adjuvant excitation energy to at least one of said related phosphor elements during tube operation to increase the luminescent brightness thereof, and a metallic reflecting film applied as a backing over said pattern of spaced-apart phosphor elements;

an apertured pattern member oriented in spaced relationship to said multiplex screen structure; and

at least one source of electron energy positioned within said envelope in a manner to beam electrons through said pattern member to impinge discrete portions of said multiplex screen structure therebeyond.

3,858,082

WARM WHITE LAMP WITH NORMAL OUTPUT AND IMPROVED COLOR RENDITION

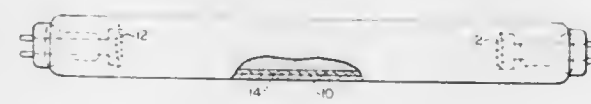
William A. Thornton, Jr., Cranford, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 96,744, Dec. 10, 1970, which is a continuation-in-part of Ser. No. 742,291, July 3, 1968, abandoned. This application Aug. 10, 1972, Ser. No. 279,562

Int. Cl. H01j 1/63

U.S. Cl. 313-487

8 Claims



1. A luminescent discharge lamp which will efficiently generate white light of a quality which will provide illuminated objects with a color appearance reasonably representative of the color appearance of said objects under natural light, said lamp comprising:
 - a light generating medium which is a substantially homogeneous mixture of phosphors, said mixture by constituent weight percent substantially comprising:
 - i. 3-40 percent of a blue-emitting phosphor consisting essentially of at least one of strontium chloroapatite activated by divalent europium, alumino silicate activated with divalent europium, and calcium-barium-magnesium silicate activated with divalent europium;
 - ii. 20-50 percent of a green-emitting phosphor consisting essentially of at least one of zinc silicate activated with manganese, zinc germanate activated with manganese, zinc silicogermanate activated with manganese, yttrium silicate activated with terbium and zinc borate activated with terbium; and
 - iii. 10-70 percent of a red-emitting phosphor consisting essentially of at least one of yttrium oxide activated with trivalent europium, lithium indate activated with trivalent europium, yttrium vanadate activated with trivalent europium, and yttrium phosphate vanadate activated with trivalent europium; and
 - means for energizing said mixture of phosphors to a visible-light-generating condition.

3,858,083

CATHODE RAY TUBE SCREEN STRUCTURE

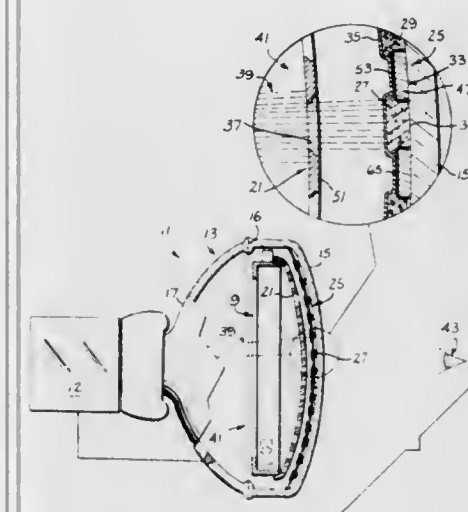
Charles H. Rehkopf, and Kenneth Speigel, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,942

Int. Cl. G03c 5/00; H01j 29/32

U.S. Cl. 313-472

4 Claims



1. A color cathode ray tube comprising:
 - an enclosing envelope having a glass viewing panel;
 - a multiplex screen structure disposed on the interior surface of said panel including: a first apertured webbing of a substantially opaque electrically conductive material formed contiguous to the inner surface of said panel; a second apertured webbing formed of a substantially opaque material having a mean particle size within the range of substantially 0.10 to 0.20 microns superposed on said first apertured webbing to provide a duo-webbing structure, said second webbing having interstitial regions areally greater than those of said first webbing to define apertures of dimensions smaller than those in said first webbing, the superposing of said smaller second webbing apertures over the larger first webbing apertures provides a narrow mat-like encompassment within the delineating perimeter of each of said first webbing apertures to define a multiplicity of clear reduced-in-size windows in said duo-webbing structure, the inner defining edge of each window encompassment being substantially contiguous with the glass surface of said viewing panel; said duo-webbing being impregnated with a coating of a compatible binder solution to provide a durable medium thereto; a patterned color screen in the form of a spaced-apart multitude of at least two repetitive phosphor elements disposed over said apertured webbing thereof each window in the webbing structure has a phosphor element thereover; and a metallic reflecting film applied over said spaced-apart phosphor elements and the interstitial areas of said second webbing exposed therebetween;
 - an apertured pattern member positioned in spaced relationship to said multiplex screen structure; and
 - at least one source of electron energy oriented within said envelope to beam electrons through said apertured pattern member to impinge said multiplex screen structure therebeyond.

3,858,084

VOLTAGE PROTECTION CIRCUIT

David Eugene Manners, Alexander, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 11, 1973, Ser. No. 359,614

Int. Cl. H01j 29/70

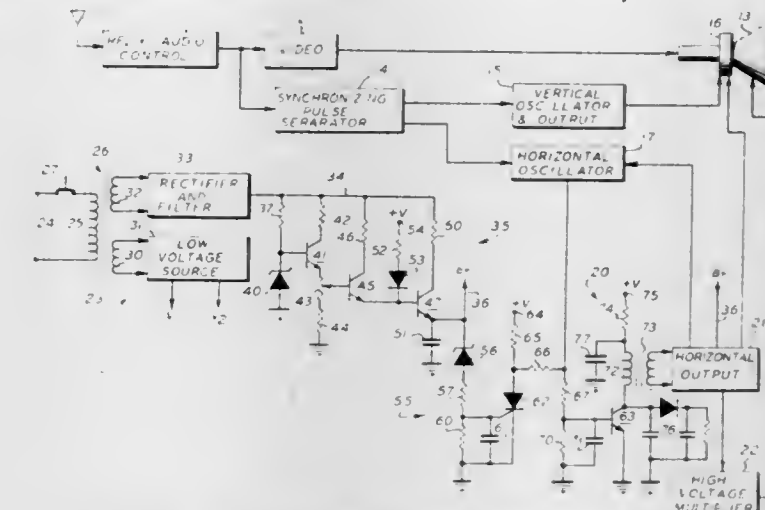
U.S. Cl. 315-387

11 Claims

1. In a television receiver having horizontal deflection cir-

cuitry including drive circuitry, protection circuitry comprising:

- a source of energizing voltage connected to said horizontal deflection circuitry for providing an energizing voltage thereto;
- sensing means connected to said source for providing a control signal in response to voltages from said source exceeding a threshold;



- a controlled rectifier having an output electrode and a control electrode connected to said sensing means for switching from a first conducting condition to a second conducting condition in response to said control signal; and
- means connecting said output electrode of said controlled rectifier to said drive circuitry for altering the bias thereof when said sensing means provides said control signal to bias said drive circuitry in an inoperative condition.

3,858,085

DIGITAL RASTER GENERATOR

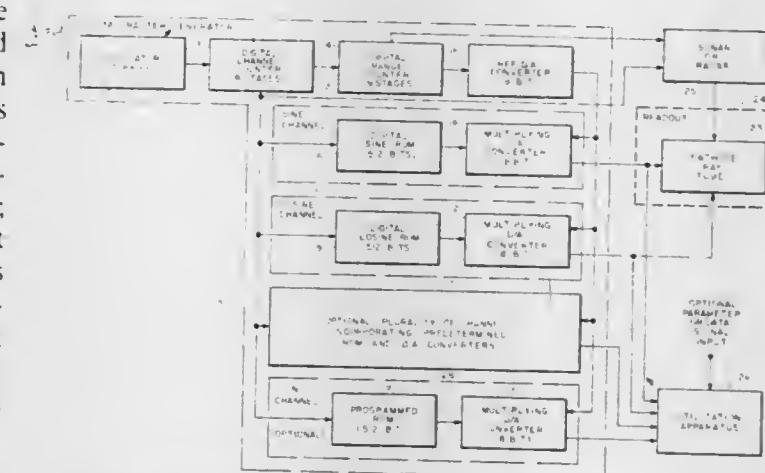
Clell A. Dildy, Jr., and Arthur K. Dettbarn, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1973, Ser. No. 377,886

Int. Cl. H01j 29/70

U.S. Cl. 315-367

17 Claims



1. An apparatus of the character described, comprising in combination:
 - means for producing a basic timing signal having a predetermined frequency;
 - a programmable first digital counter, having a predetermined number of stages, a clock input, a trigger output, and an address output, with the clock input thereof connected to the output of said basic timing signal producing means and with the address output thereof adapted for being connected to a predetermined multi-channel utilization apparatus;
 - a second digital counter, having a predetermined number of stages, a data signal input, a data signal output, and an actuation trigger output for being connected to an actuation input of the aforesaid predetermined multi-channel

utilization apparatus, with the data signal input thereof connected to the trigger output of said programmable first digital counter;

a reference digital-to-analog converter, having a predetermined bit capacity, connected to the data signal output of said second digital counter;

a first programmable read only memory, having a predetermined bit capacity, connected to the address output of the aforesaid first digital counter;

a first multiplying digital-to-analog converter, having a predetermined bit capacity, a pair of inputs, and an output, with one of the inputs thereof connected to the output of the aforesaid reference digital-to-analog converter, and with the other input thereof connected to the output of said first programmable read only memory;

a second programmable read only memory, having a predetermined bit capacity, connected to the address output of the aforesaid first digital counter; and

a second multiplying digital-to-analog converter, having a predetermined bit capacity, a pair of inputs, and an output, with one of the inputs thereof connected to the output of the aforesaid reference digital-to-analog converter, and with the other input thereof connected to the output of said second programmable read only memory.

3,858,086

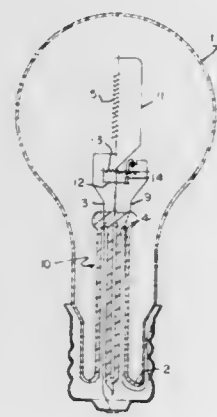
EXTENDED LIFE, DOUBLE COIL INCANDESCENT LAMP
Warren A. Anderson, Danvers; William M. Labadini, Salisbury, and Edmund M. Passmore, Wilmington, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 29, 1973, Ser. No. 410,878

Int. Cl. H01j 7/44, 13/46, 17/34

U.S. Cl. 315-49

5 Claims



1. An incandescent lamp comprising: a gas filled glass bulb sealed at its lower end to the flare of a stem press glass mount; a screw base, having a center contact, attached to the lower end of said bulb; two lead-in wires extending through the stem press of said mount, one of said lead-in wires being electrically connected to said center contact and the other being electrically connected to the rim of said screw base; a coiled tungsten wire filament disposed within said bulb and electrically connected between said two lead-in wires; an inrush current limiting refractory metal wire coil in series with said filament and a thermal switch in parallel with said wire coil, said switch operative to electrically short out said wire coil upon attainment thereof of a predetermined elevated temperature and to maintain said wire coil shorted out during lamp operation.

3,858,087 CIRCUIT FOR PROLONGING THE LIFE OF FLUORESCENT LAMPS

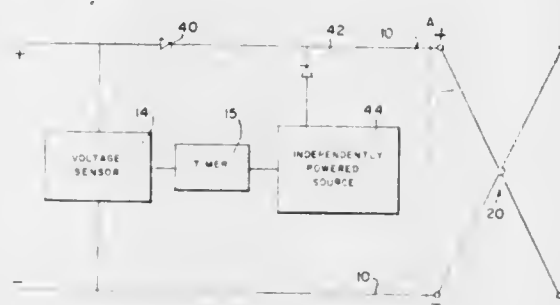
Harry W. Tomsky, Bronx, and Harry G. Parke, Brooklyn, both of N.Y., assignors to CML-Macarr, Inc., Edison, N.J., by said Harry W. Tomsky

Filed June 19, 1973, Ser. No. 371,414

Int. Cl. H05b 37/00, 41/46

U.S. Cl. 315-86

6 Claims



1. A circuit for prolonging the life of fluorescent lamps operated from a main source of direct current operating potential subject to random, unwanted interruption, comprising input means adapted to be connected at an input terminal with the source; output means adapted to be connected at an output terminal with the lamps; first unidirectional means connected at one end to said input terminal and at the other end to said output terminal for supplying said lamps with operating potential from said main source for normal operation; an auxiliary direct current power source having a voltage less than that of the main source but greater than the extinction voltage of the lamps; and second unidirectional means connected at one end of said auxiliary source and at the other end to said output terminal, said second unidirectional means cooperating with said first unidirectional means for supplying full operating potential to the lamps when the main source is operative and for supplying said lesser operating potential to the lamps from said auxiliary source in response to the occurrence of a random, unwanted interruption of said main source whereby the lamps are precluded from becoming extinguished upon interruption of the main source.

3,858,088

D. C. FLASHER

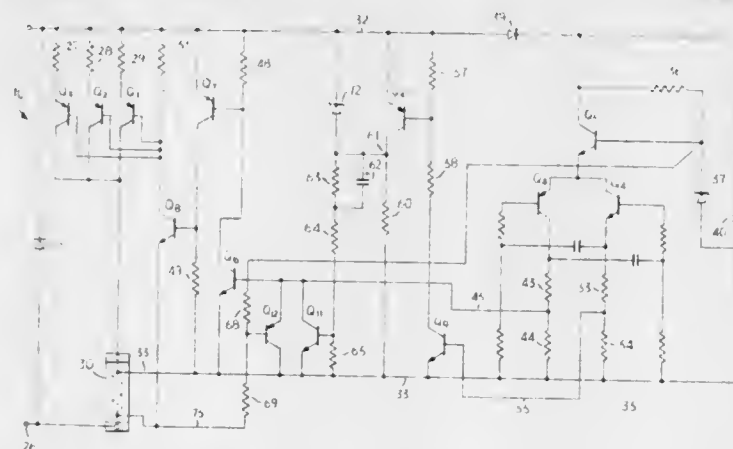
John J. Scarpino, Garden City, and John H. Greig, Wantagh, both of N.Y., assignors to Hope-Tronics, Limited, Garden City, N.Y.

Filed June 15, 1973, Ser. No. 370,529

Int. Cl. H05b 37/02, 41/30

U.S. Cl. 315-200 A

13 Claims



1. A D.C. Flasher circuit for connection in series into a series connected circuit path of electrical conduction including a load and a source of D.C. potential to cause alternate opening and closing of the circuit path; the flasher circuit having first and second connectors for connecting the flasher in series connection only into said circuit path of electrical conduction, said connectors defining the only means for electrical connection of said flasher circuit into said circuit path

of electrical conduction, output transistor means having a current conduction path connected in series between the connectors, means connected with the output transistor means for controlling the output transistor means to cause conduction and nonconduction of the output transistor means, timing circuit means connected with the controlling means for timing the rate of conduction and nonconduction of the output transistor means, circuit voltage supply means for deriving a stabilized voltage from voltage present across the connectors when the output transistor means is nonconductive, and means connected with the voltage supply means for establishing a substantially stable voltage of a predetermined value between circuit points in the flasher circuit to provide transistor operating potentials independent of ground, whereby the flasher circuit is operable upon connection between two ungrounded points in the path of electrical conduction to the exclusion of any other electrical connection

3,858,089

ELECTRICAL PROTECTIVE DEVICE USING A REED RELAY

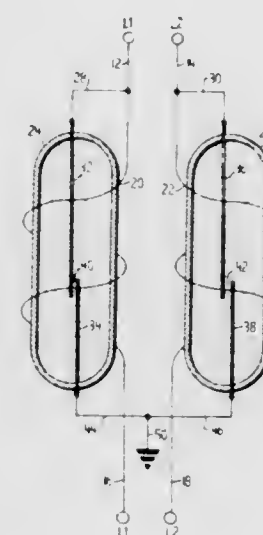
Carleton H. Poindexter, Bensenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 23, 1973, Ser. No. 408,348

Int. Cl. H02h 3/10

U.S. Cl. 317-16

7 Claims



1. A device for protecting electrical equipment from an abnormal voltage or current appearing on an input line thereto, which comprises: means for enclosing a pair of electrically conductive blades positioned in a predetermined spatial relationship, wherein said enclosing means comprises a sealed chamber consisting of an elongated capsule of substantially cylindrical shape; a first external lead connected between one of said blades and said input line; a second external lead connected between the other of said blades and ground; each of said blades being affixed to an opposite end of said elongated capsule and each extending longitudinally past the center of said capsule, to form an overlapping juxtaposed configuration, said blades in their normal unactivated state overlapping and forming a gap between each other; means comprising an ionizable gas capable of sustaining an ionization current flow, contained within said enclosing means, for producing a discharge between said overlapping portion of said blades in response to said abnormal voltage; means comprising a coil electrically connected in series between said first external lead and said electrical equipment, and surrounding said capsule so that the magnetic field from said coil encompasses said capsule, operated to produce a magnetic field in response to said abnormal current to cause said pair of blades at their center overlapping portions to contact one another.

3,858,090

**OIL-COOLED ELECTRICAL APPARATUS
WITHDRAWABLE FROM AN OUTER CASING FOR
INSPECTION AND REPAIRS**

Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

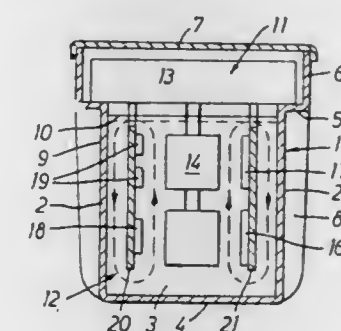
Filed Nov. 12, 1973, Ser. No. 415,118

Claims priority, application Germany, Nov. 14, 1972, 2255646

Int. Cl. H05k 7/20

U.S. Cl. 317-100

2 Claims



1. Electrical apparatus comprising an upwardly open casing, an assembly insertable into and withdrawable from said casing, said assembly including an oil cooled lower unit and an upper control unit, means for suspendingly supporting said assembly in said casing, said lower unit including two vertically extending plates disposed in parallel relation to each other and in spaced relation to the inner walls and floor of said casing, said plates having electrical components mounted on their mutually facing sides, said casing being filled with oil to completely immerse said lower unit, said upper control unit having frame means suspended therefrom, said plates being hingedly mounted on said frame means for pivotal movement about a vertical axis.

3,858,091

**INTERCHANGEABLE PLUG-IN MODULAR APPLIANCE
UNIT SYSTEM**

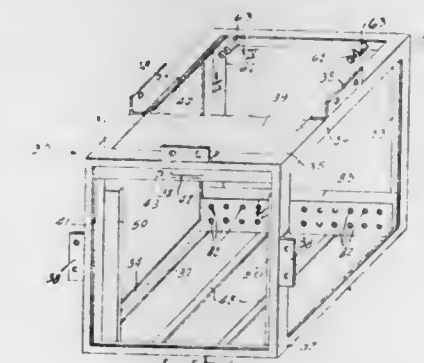
Thomas A. Wilkinson, 123 Illinois Ave., Morris, Ill. 60450

Filed Sept. 6, 1972, Ser. No. 286,772

Int. Cl. H02b 1/04

U.S. Cl. 317-120

15 Claims



1. In a plug-in modular appliance unit system:
a mount having a forwardly opening appliance-receiving chamber therein;
means on the mount by which it is attached to a supporting structure;
a plurality of separate and individual modular utility appliance units each of which has a housing providing a storage space therein and a front end wall provided with an access opening into the space, each housing carrying at least one electrical device accessible at the front of the unit for performing a utilitarian function;
said modular appliance unit housings being selectively and interchangeably received in said chamber by pushing the

selected unit rearwardly through the opening into the mount chamber;
means on said mount and on said unit housings to stop inward movement of the selected unit into the mount chamber with the front end wall of the selected unit visually and manually accessible at the mount chamber opening so that access can be had into said storage space within the selected unit and access can be had to said electrical device of the selected unit;
a plurality of separable electrical connectors carried by said mount within said chamber, certain of said connectors being electrically connected with a power source and other of the connectors being connected with at least one selected electrical utility device located outside of said mount;
each of said units carrying separable electrical connectors which are oriented in a pattern in accordance with the individual functions of that unit;
the separable electrical connectors of each of the units including certain ones for connection with the power source separable connectors of the mount carried connectors for energizing the electrical device of the unit;
at least certain of the units having additional separable connectors engageable in arming relation selectively with said mount carried connectors connected with a selected outside electrical utility device;
and the separable connectors of the selected unit received in the mount chamber effecting electrical connection with said mount carried power source connectors and selectively with those mount carried connectors which in addition match the individual pattern of the connectors carried by selected unit and thereby effecting electrical arming connection exclusively with only said outside electrical device connected with the selected mount carried connectors, and leaving other of the mount carried connectors unused until other of the units having different patterns of connectors for arming connection with other selected outside utility devices are selectively and interchangeably inserted into said mount chamber.

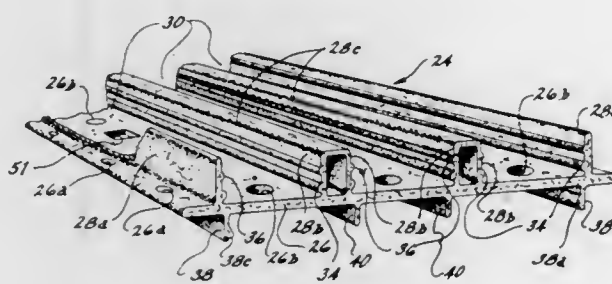
3,858,092

SWITCHBOARD WITH IMPROVED BUSBAR MOUNTING AND LOAD STRAP FEED-THROUGH PROVISIONS
William Francis Olshaw, Plainville, and Roger Thomas Wilbur, Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,373
Int. Cl. H02b 1/20

U.S. Cl. 317-120

17 Claims



1. An electrical switchboard comprising, in combination:
 - A. a frame;
 - B. at least one insulative mounting member including
 1. a base plate having lateral marginal portions mounting said member to said frame,
 2. a plurality of spaced, parallel ribs outstanding from one side of said base plate to define a plurality of elongated, side-by-side channels, and
 3. retainer means comprising an elongated ridge formed in each opposed rib surface adjacent to and extending parallel with the channel bottoms;

- C. a plurality of spacers, each having opposed grooved edges engaging said elongated ridges to capture said spacers in said channels;
- D. an elongated busbar disposed in each said channel in overlying relation with said spacers; and
- E. bolts threadedly engaging said spacers thereby clamping said busbars to said spacers, thus mounting said busbars to said member.

3,858,093

ARRANGEMENT FOR COMBINING HIGH AND LOW LEVEL SIGNALS WITHIN A SINGLE FRAME WITH A NOISE SEPARATING FUSE PANEL

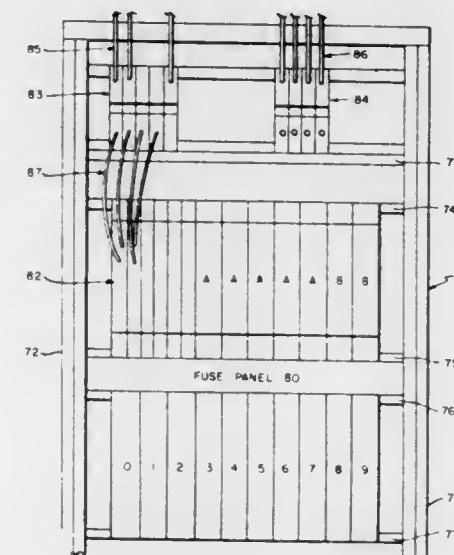
Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,569

Int. Cl. H02b 1/18

U.S. Cl. 317-122

2 Claims



1. In a common control communication switching system including both electronic and electromechanical equipment, the communication between said two types of equipment being by means of high and low level signals, an arrangement for combining said electronic and electromechanical equipment within a single frame in a fashion such as to provide a physical separation and noise protection between said two types of equipment comprising a frame supporting said equipment, a fuse panel effectively dividing said frame into an upper portion and a lower portion and being of a material to effectively electrically insulate said upper and lower portions, said electronic equipment being disposed within said upper portion and said electromechanical equipment being disposed within said lower portion, thereby effecting a physical separation between said two types of equipment, and cabling electrically interconnecting said electronic equipment disposed across the front of said electronic equipment, and cabling electrically interconnecting said electromechanical equipment disposed across the rear of said electromechanical equipment, whereby the electrical integrity is preserved to prevent noise from passing from one type of equipment to the other.

3,858,094

ELECTRIC SYSTEM INCLUDING TWO LOADS ARRANGED REMOTELY FROM EACH OTHER

Leland J. Hanchett, Jr., 211 Ridge St., Winchester, Mass. 01890

Filed Dec. 26, 1973, Ser. No. 428,510

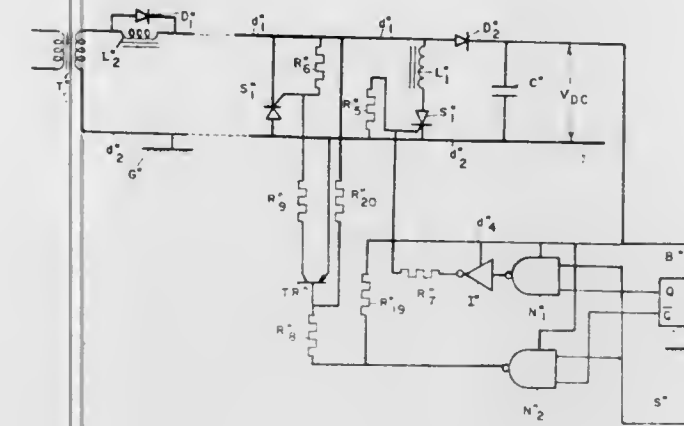
Int. Cl. H01h 47/00

U.S. Cl. 317-137

12 Claims

1. An electric system including
 - a. a power supply transformer having a primary circuit and having a secondary circuit;

- b. a first load energized by said secondary circuit of said transformer;
- c. a first solid-state switch including a control circuit and arranged in series with said first load;
- d. a second load energized by said secondary circuit of said transformer;
- e. a second solid-state switch including a control circuit and arranged in series with said second load;



- f. a rectifier energized by said secondary circuit of said transformer;
- g. a third switch connected to apply a signal derived from the output voltage of said rectifier to said control circuit of said first solid-state switch; and
- h. a fourth switch connected to apply a signal derived from the output voltage of said rectifier to said control circuit of said second solid-state switch.

3,858,095

PROTECTIVE CIRCUIT ARRANGEMENT FOR BAND CUTTER MACHINES

Wolfgang Friemann, Bayreuth, and Josef Proschka, Stadtsteinach, both of Germany, assignors to Adolf Riedl OHG, Bayreuth, Germany

Filed Aug. 28, 1973, Ser. No. 392,276

Int. Cl. H01h 47/12

U.S. Cl. 317-146

11 Claims



1. A protective device for use in cutting machines having a moving cutting member comprising:
 - safety circuit means, responsive to touching of the cutting member by an operator, for generating an output signal; and
 - braking means electrically connected to said safety circuit means for substantially instantaneously stopping the cutting member in response to said generated output signal of said safety circuit means.

3,858,096

CONTACT MEMBER FOR SEMICONDUCTOR DEVICE HAVING PRESSURE CONTACT

Friedrich Kuhrt, and Horst Schreiner, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

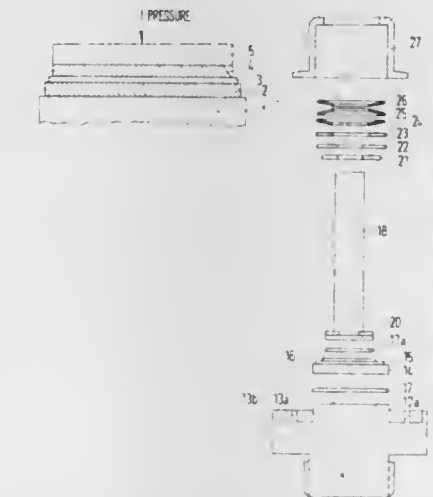
Continuation of Ser. No. 871,748, Nov. 13, 1969, which is a continuation of Ser. No. 559,254, June 21, 1966, abandoned.

This application Aug. 4, 1972, Ser. No. 277,925

Claims priority, application Germany, June 22, 1965, 97721
Int. Cl. H01A 3/00; H01H 5/00

U.S. Cl. 357/79

2 Claims



1. A semiconductor device comprising a semiconductor component having two electrodes; pressure means for maintaining said electrodes in pressure contact with said semiconductor component; a housing enclosing said semiconductor component, said electrodes and said pressure means in gas-tight manner, said housing having portions with good thermal electrical conducting characteristics and said pressure means pressing said semiconductor component and said electrodes to portions of said housing; electrical insulating means electrically insulating the portions of the housing which are in thermal and electrical contact with one of said electrodes from the portion of said housing which is in thermal and electrical contact with the other of said electrodes whereby at least one of said electrodes is held in electrical and thermal contact under pressure with the respective portion of said housing unbonded and by pressure only; and a contact member positioned between said one of said electrodes and said portion of said housing and held in electrical and thermal contact under pressure between said one of said electrodes and said portion of said housing, said contact member comprising sintered material having good thermal and electrical conductivity characteristics and a porosity of 2 to 40 percent, said contact member comprising lubricating material selected from the group consisting of graphite, molybdenum (IV) sulphide and tungsten selenide.

3,858,097

PRESSURE-SENSING CAPACITOR

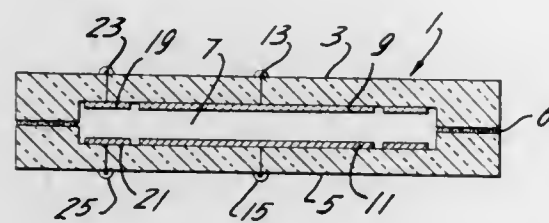
William Ronald Poly, River Edge, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 26, 1973, Ser. No. 428,476

Int. Cl. H01g 7/00

U.S. Cl. 317-248

7 Claims



1. A pressure transducer of the capacitance type comprising a hollow body having spaced opposing walls of insulating material supported at their edges, the portions of the walls spaced from the edges being deflectable relative to one another in response to changes in pressure and the portions of the walls adjacent the edges being substantially nondeflectable relative to one another with changes in pressure, electrical conducting means on opposing surfaces of the deflectable portions of said walls forming the plates of a pressure sensitive capacitor, and electrical conducting means on opposing surfaces of the substantially nondeflectable portions of said walls forming the plates of a reference capacitor.

3,858,098

DYNAMOELECTRIC CONTROL SYSTEM AND MOTOR THEREFOR

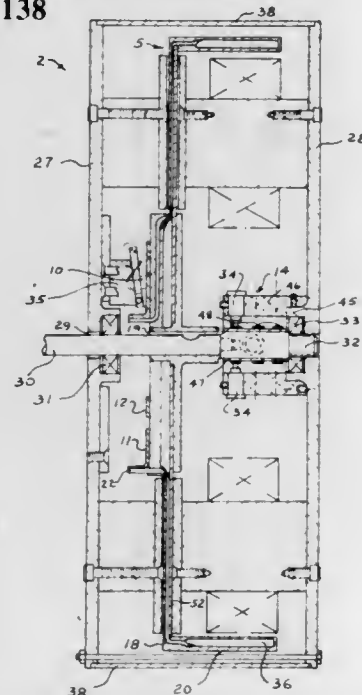
John S. C. Htsui, Hazelwood, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.

Filed Sept. 7, 1973, Ser. No. 395,187

Int. Cl. H02k 29/00

U.S. Cl. 318-138

11 Claims



1. A disc armature assembly for a dynamoelectric machine comprising:
a disc shaped armature surface, said armature surface having a central opening in it;
a continuous winding formed on said armature surface;

a shaft mounted on said armature surface through said opening; and
a skirt extending outwardly from said armature surface, parallel to said shaft, said armature surface and said skirt being L-shaped in cross section.

3,858,099

SWITCHING ARRANGEMENT FOR A SYNCHRONOUS MOTOR

Konstantin Apel, D-7758 Meersburg, Lehrenweg 8, Meersburg, Germany

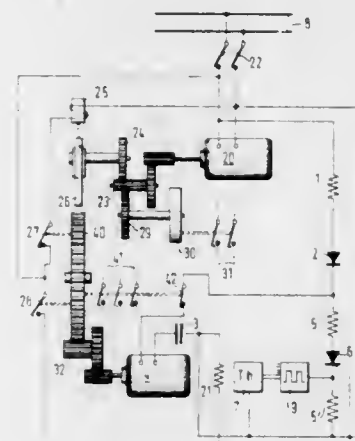
Filed May 16, 1972, Ser. No. 253,800

Claims priority, application Switzerland, May 19, 1971, 7353/71.

Int. Cl. H02p 5/00

U.S. Cl. 318-162

6 Claims



1. A driving circuit for controlling a synchronous motor, comprising:
an a.c. power source;
a capacitor and diode connected in series with the motor winding of said synchronous motor to said power source;
a thyristor connected in parallel with said capacitor and motor winding; and
means for controlling said thyristor to drive said synchronous motor only during the half cycles of said a.c. source during which said diode is blocked.

3,858,100

D.C. MOTOR SPEED CONTROL SYSTEM THROUGH PHASE CONTROL AND PHASE LOCKING CIRCUIT

Giorgio Bussi, Milano, and Aldo Schiaparelli, Rho, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed May 1, 1973, Ser. No. 356,240

Claims priority, application Italy, May 4, 1972, 23885/72

Int. Cl. H02p 5/16

U.S. Cl. 318-314

7 Claims

1. A system for controlling the speed of a d.c. motor through a phase control and phase locking circuit comprising:
timing means to supply a sequence of timing pulses with a frequency representing the desired speed of the motor;
means responsive to the motor speed for supplying a sequence of tachometric pulses, with a frequency representing the real speed of the motor;

3,858,102

LIGHT LOAD CONTROL FOR WELL PUMP

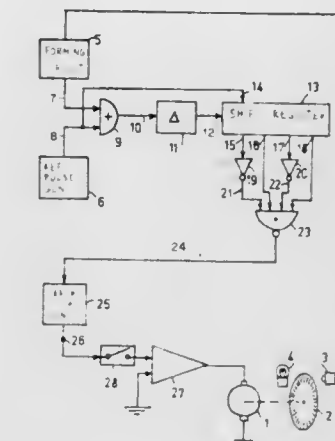
James L. Quinn, 6143 W. Touhy Ave., Chicago, Ill. 60648

Division of Ser. No. 359,102, May 10, 1973, Pat. No. 3,801,889. This application Jan. 7, 1974, Ser. No. 431,209

Int. Cl. G05b 13/00

U.S. Cl. 318-474

3 Claims



a binary unidirectional shift register with at least four storage cells to receive and store said timing pulses and said tachometric pulses in the order in which they are received;
said timing pulses being stored as binary information of a first logic value;

said tachometric pulses being stored as binary information of a second logic value;
decoding means to decode the content of said shift register means and to supply a binary signal whose logic value is dependent on the contents of said shift register means; and
means to convert said binary signal to a control voltage and to supply said motor with said control voltage.

3,858,101

SHIFT MOTOR ACTUATOR CIRCUIT

Robert C. Schmiedel, Oshkosh, and Richard E. Staerzl, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed July 6, 1973, Ser. No. 377,027

Int. Cl. H02p 1/00

U.S. Cl. 318-448

15 Claims



1. A marine propulsion apparatus having a shift mechanism movable between plurality of drive positions by an electrically driven actuator having limit switches actuated at each of the said positions to terminate operation of the actuator, said actuator comprising an electrical drive means having a power input means connected in circuit with said limit switches, said actuator having means tending to produce oscillation about each driven position and thereby produce an oscillatory switch operation in response to establishing of said drive positions, said oscillatory switch operation functioning to significantly reduce the life of the actuator, and an electrical dampening circuit means connected in parallel with said electrical drive means and selected to prevent said oscillatory switch operation.

3,858,103

BATTERY CHARGING SYSTEMS

William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Sept. 5, 1973, Ser. No. 394,480

Claims priority, application Great Britain, May 9, 1972, 41065/72

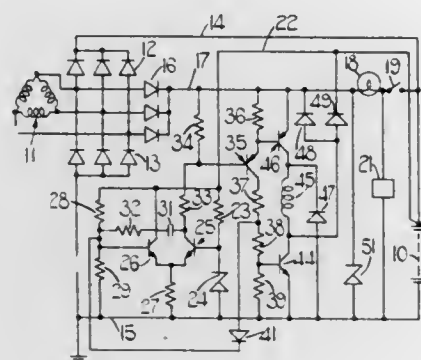
Int. Cl. H02j 7/16

U.S. Cl. 320-64

1 Claim

1. A battery charging system comprising in combination a wound field alternator providing power by way of a full wave

rectifier to positive and negative supply lines between which the battery is connected, one or more additional diodes coupling the alternator output to a third supply line which when the alternator produces an output is at substantially the same potential as the first line, a warning lamp and ignition switch connected in series between the third and first lines, a pair of switching devices coupling opposite ends of the field winding of the alternator to the third and second lines, said switching devices forming part of a voltage regulator for connecting and



having at least a primary winding, a secondary winding and an auxiliary winding, inverter means connected to said primary winding for generating an alternating current therein that has a magnitude proportional to the input voltage so as to induce in said secondary winding a voltage proportional to the input voltage, said inverter means including an oscillator powered by said DC input voltage and connected to said auxiliary winding to provide bias current thereto so that said inverter means induces in said primary winding an alternating current proportional to the magnitude of the input voltage, said secondary winding having a relatively high voltage tap and a relatively low voltage tap, sensing means for sensing the magnitude of the input voltage, first switching means responsive to said sensing means for effecting connection of said high voltage tap to the output when the input voltage is below a preselected magnitude, and second switching means responsive to said sensing means for effecting connection of said low voltage tap to the output when the input voltage is above the preselected magnitude.

disconnecting the field winding from the third and first supply lines in accordance with the output voltage of the alternator to regulate the output voltage of the alternator, a first diode having its cathode connected to the junction of the field winding of the first switching device and its anode connected to the second line, and second and third diodes having their anodes connected to the junction of the field winding and the second switching device, the cathode of the second diode being connected to the third line and the cathode of the third diode being connected to the first line.

3,858,104

DC POWER CONVERTER

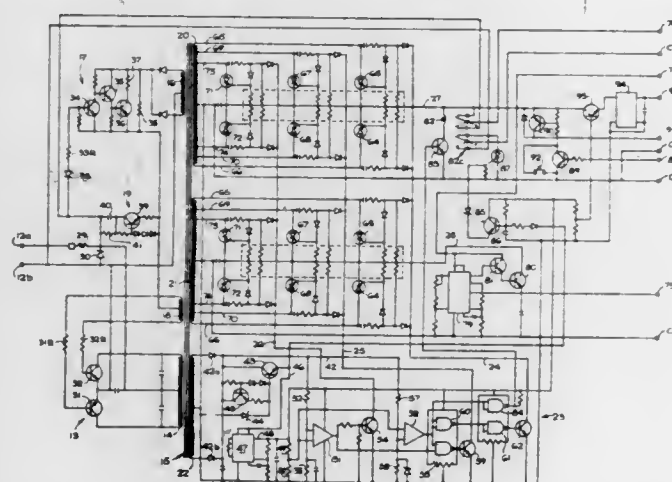
Russel Walter Grob, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 7, 1973, Ser. No. 357,870

Int. Cl. H02p 13/24

U.S. Cl. 321-2

7 Claims



1. A direct current power converter for providing a substantially constant DC voltage output irrespective of the DC input voltage thereto, said power supply comprising a transformer

3,858,105 STATIC POWER CONVERSION ARRANGEMENT AND METHOD

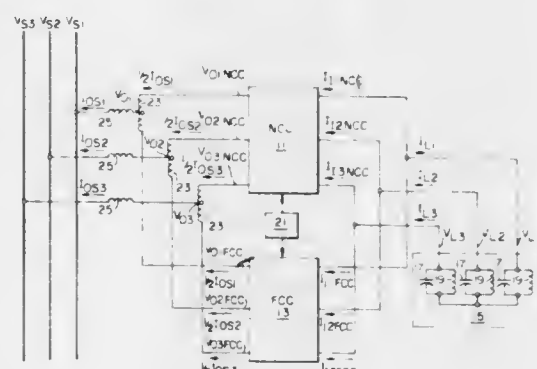
Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,328

Int. Cl. H02m 5/04; G05f 5/00

U.S. Cl. 321-27 R

22 Claims



1. A static power conversion arrangement comprising: a reactive power source of oscillating signals; first and second converter circuits having the inputs thereof connected to said reactive power source, said second converter circuit being set to draw a reactive input current having a phase angle opposite to that of the reactive input current drawn by said first converter circuit; and control means to cause said first and second converter circuits to produce output currents representative of identical power capabilities.

3,858,106 CONTROL CIRCUIT UTILIZING TEMPERATURE ACTUATED SWITCHES AND SILICON CONTROLLED RECTIFIERS FOR REVERSING THE POLARITY OF DIRECT CURRENT APPLIED TO A LOAD

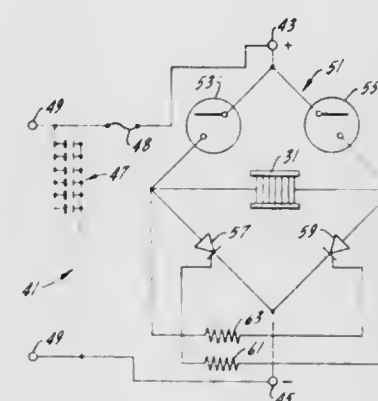
Clifford G. Launius, 1783 Stockton Ave., Des Plaines, Ill. 60018

Filed Oct. 25, 1973, Ser. No. 409,373

Int. Cl. F25b 21/02

U.S. Cl. 321-45 R

9 Claims



1. A control circuit for maintaining the temperature of a substance, such as medicine, between specific limits by reversing the polarity of direct electrical current applied to a thermoelectric element, said circuit including: positive and negative input terminals, a bridge connecting said input terminals, a thermoelectric element connected across the bridge output terminals, a temperature actuated switch located in each leg of the bridge connected to the positive input terminal, said temperature actuated switches being normally open and one of said switches operating at a higher temperature range than the other of said switches with said temperature actuated switch operating in the higher range closing at an upper temperature limit and opening at a slightly lower temperature limit and said temperature actuated switch operating in the lower temperature range closing at a lower temperature limit and opening at a slightly higher temperature limit, a semiconductor device located in each leg of the bridge connected to the negative input terminal, and means to gate the semiconductor device in the opposite leg of the bridge when either temperature actuated switch is closed.

3,858,107 ELECTRICAL GENERATING APPARATUS

Christopher John Yarrow, Allerton, and Ronald Johnson, Beeston, both of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Jan. 8, 1974, Ser. No. 431,738

Claims priority, application Great Britain, Jan. 9, 1973, 11/73, Mar. 13, 1973, 12040/73

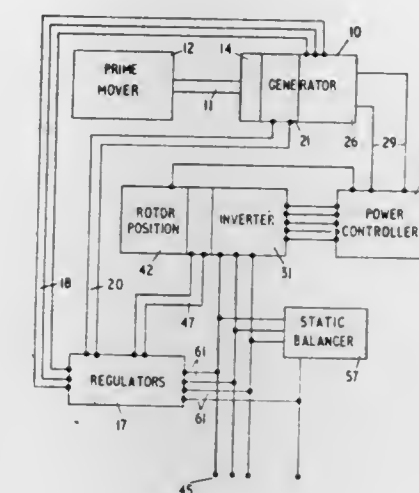
Int. Cl. H02p 9/42; H02m 1/00, 5/32

U.S. Cl. 322-26

9 Claims

1. Electrical generating apparatus comprising a source of d.c. supply and an inverter, said inverter comprising an arma-

ture winding, a freely rotatable field winding associated with said armature winding, a plurality of connections spaced around said armature winding, and switch means for intermittently connecting said d.c. source to said connections in syn-



chronism with the rotation of the field winding in a manner in which an a.c. output will be produced in use at at least one terminal of said armature winding, the frequency of the a.c. output being related to the speed of operation of said switch means and the rotating field winding.

3,858,108 GENERATOR CONTROL CIRCUITS

Arnold Bray, Hertfordshire, England, assignor to Lucas Aerospace Limited, Birmingham, England

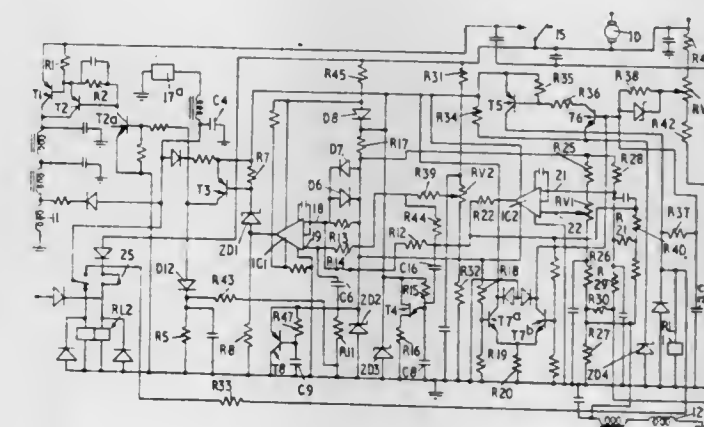
Filed May 25, 1973, Ser. No. 363,830

Claims priority, application Great Britain, May 25, 1972, 24666/72

Int. Cl. H02p 9/30

U.S. Cl. 322-28

6 Claims



1. A generator control circuit for use with an electrical generator of the kind having a field winding the circuit com-

prising means for varying the field current in said generator, a differential amplifier for providing a control signal to said means, said differential amplifier having a pair of inputs, a network connected across the output of the generator for supplying a reference voltage to one of said inputs, means for applying a signal voltage which is a proportion of the actual output voltage of said generator to said other input, a sawtooth generator for providing a sawtooth voltage which is also applied to said other input whereby the output of the amplifier will be a pulse width modulated wave train which acts as a control signal for said means, said network including a Zener diode and a capacitive circuit connected in parallel with the Zener diode to substantially limit the rate of build up of voltage across the Zener diode and thereby the reference voltage.

3,858,109

BRUSHLESS TACHOMETER

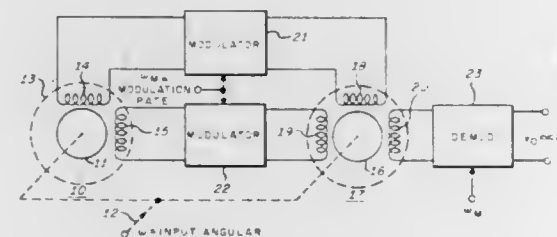
Sam P. Liden, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,397

Int. Cl. H02p 9/00

U.S. Cl. 322-31

5 Claims



1. A brushless tachometer for providing a signal proportional to the rate of rotation of a machine element, the combination comprising

a brushless generator including a permanent magnet rotor rotated by said element and a two-phase stator responsive to said stator rotation for producing a pair of output signals proportional to the speed of rotation of said element and to the sine and cosine of the instantaneous angular position of said element, a brushless resolver means including a rotor also rotated by said element, and stator means, said stator means comprising a pair of input means responsive respectively to the output signals of said generator stator, and output means responsive to said input means and to the sine and cosine of the instantaneous angular position of said resolver rotor corresponding to the instantaneous angular position of said generator rotor, for cancelling the sine and cosine components of said generator signals, whereby the output signal of said resolver output means is proportional to the speed of rotation of said machine element.

3,858,110 METHOD AND MEANS FOR CONTINUOUS DISTRIBUTION OF ELECTRICAL ENERGY

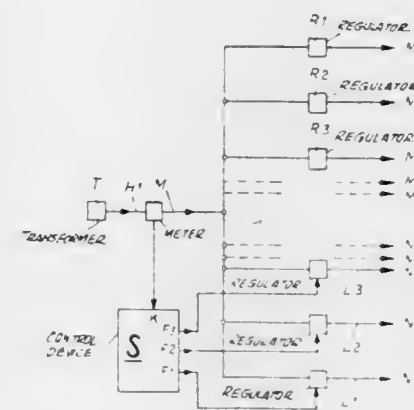
Max Breitmeier, Oetwilerstrasse, Huttikon, Switzerland
Filed May 1, 1973, Ser. No. 356,212

Claims priority, application Switzerland, May 5, 1972, 6721/72

Int. Cl. G05f 1/12; H02j 3/14

U.S. Cl. 323-20

10 Claims



1. A method for continuous distribution of electrical energy, which comprises distributing the electrical energy over a plurality of secondary lines each of which is divided into two branches, sensing the output voltage of each of said secondary lines and preventing the voltage in each secondary line from dropping below a defined minimum value; the steps of sensing and preventing including limiting the output power of a first of each of the two branch lines in each secondary line to less than a predetermined value, and sensing the output voltage of the second of the two branch lines in each of said secondary lines and preventing the total output of each of said secondary lines from dropping below the defined minimum value of each of the secondary lines.

3,858,111 METHOD AND APPARATUS FOR SENSING CHEMICAL PROCESS CONCENTRATIONS

James H. Simpson, Jr., Katonah, N.Y., assignor to The Singer Company, New York, N.Y.

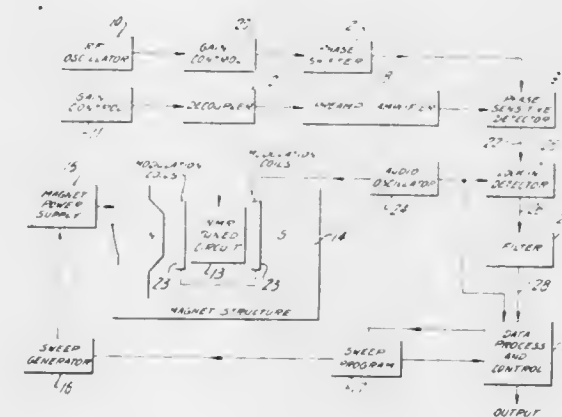
Continuation of Ser. No. 85,957, Nov. 2, 1970, abandoned.

This application Aug. 14, 1972, Ser. No. 280,275

Int. Cl. G01n 27/78

U.S. Cl. 324-5 R

2 Claims



1. The method of sensing the concentration of aluminum ions in Bayer process liquors comprising the steps of

subjecting a sample of the liquors and two reference samples containing known concentrations of aluminum ions but having NMR resonance points lying on opposite sides of the resonance point for the liquor sample to the same NMR magnetic sweep field and the same radio frequency field;

applying a step function to the NMR magnetic sweep field to sense the ratio of aluminum concentration to sodium concentration in said liquor sample;

sensing the components of the resulting NMR output signal which represents the aluminum concentrations in the three samples;

comparing said signal components to derive an output signal representing the absolute concentration of aluminum in said liquor sample; and

comparing the said NMR output signal components representing the aluminum concentrations in said reference samples to determine the accuracy of the performance of the method.

3,858,112

RECEIVER CIRCUIT INCLUDING A CRYSTAL RESONATOR FOR NUCLEAR MAGNETIC RESONANCE SIGNALS OF TWO DIFFERENT FREQUENCIES

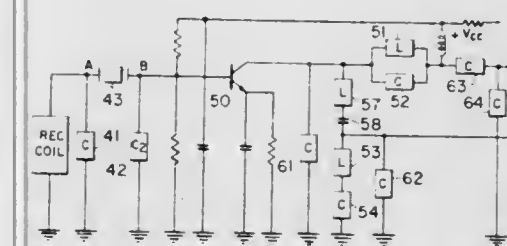
Yoshiaki Satoh, and Hidefumi Funaki, both of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,169

Int. Cl. G01n 27/78

U.S. Cl. 324-5 R

5 Claims



1. A receiver circuit in a nuclear magnetic resonance analyzer for simultaneously receiving nuclear magnetic resonance signals of a first and a second discrete frequency comprising resonance circuit means to produce resonance circuit output signals in response to said nuclear magnetic resonance signals and amplifier means connected to said resonance circuit means to amplify said resonance circuit output signals to produce receiver output signals corresponding to said nuclear magnetic resonance signals;

said resonance circuit means including a receiving coil for detecting said nuclear magnetic resonance signals and a crystal resonator, said crystal resonator being connected in series between said receiving coil and said amplifying means, said crystal resonator having impedance characteristics such that said resonator performs substantially as an inductive element at said first frequency and substantially as a capacitive element at said second frequency.

3,858,113

IGNITION TIMING LIGHT SENSITIVITY ADJUSTMENT APPARATUS

Gerald A. Pruss, Chicago, Ill., assignor to Sun Electric Corporation, Chicago, Ill.

Filed Dec. 13, 1973, Ser. No. 424,550

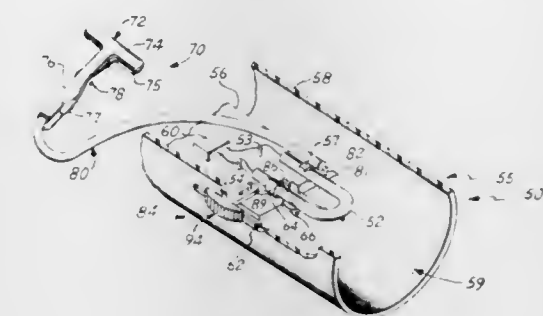
Int. Cl. F02p 17/00

U.S. Cl. 324-17

6 Claims

1. In a system comprising a flash tube for generating a flash of light in response to the firing of a spark discharge device resulting in a surge of current in the ignition system of an internal combustion engine, improved apparatus for adjusting the trigger level voltage at which the flash tube fires comprising in combination:

bias means for supplying to the flash tube a DC bias voltage less than the trigger level voltage;
a metal band positioned around the flash tube;
a metal disk movably positioned adjacent the flash tube;



conductor means for transmitting a voltage surge to the metal band in response to the surge of current in the ignition system; and
adjustment means for varying the position of the metal band and metal disk relative to each other, whereby the magnitude of the voltage surge coupled to the flash tube can be varied.

3,858,114

METHOD AND APPARATUS FOR THE TESTING OF PROTECTIVE LININGS

Siegfried Voellmin, Ormalingen, Switzerland, and Klaus Muller, Rheinfelden, Germany, assignors to F. Hoffmann-La Roche & Co., Basel, Switzerland

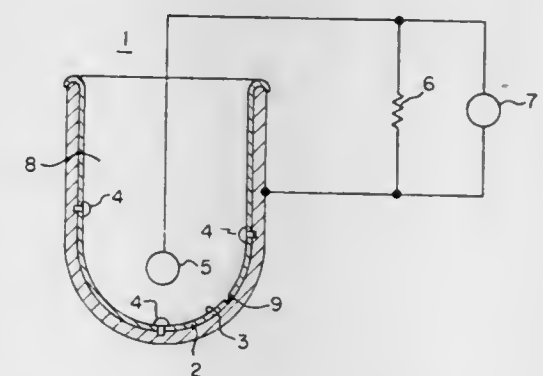
Filed Nov. 12, 1973, Ser. No. 415,069

Claims priority, application Switzerland, Nov. 15, 1972, 16604/72

Int. Cl. G01r 31/12; G01n 27/20

U.S. Cl. 324-54

8 Claims



1. A method for the detection of damage to a non-conductive protective layer on the steel wall of a reaction vessel said protective layer being interspersed with one or more tantalum repair plugs, which comprises measuring a current flowing between a platinum electrode in an electrically conductive corrosive medium in the reaction vessel and the exposed steel surface at a damaged point of the protective layer, whereby the platinum electrode and the exposed steel surface form a Pt-Fe cell.

3,858,115

INDUCTION VOLTS-SQUARED HOUR METER

Auburn K. Griffin, Jr., Sanford, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1973, Ser. No. 392,911

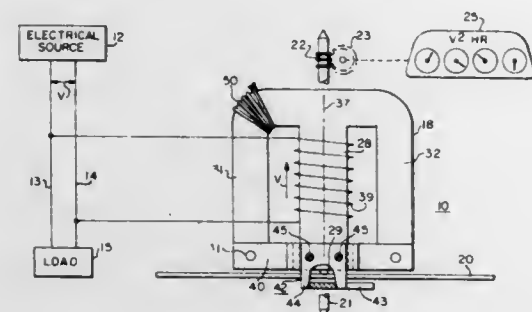
Int. Cl. G01r 11/02; 310 172

U.S. Cl. 324-137

4 Claims

1. An induction volts-squared hour meter comprising: a rotatable conductive disc; an E-shaped laminated magnetic core with a center leg defining a main pole and two outer legs defining flux return poles, said center terminating at a pole

face end and said outer legs terminating at free ends adjacent an outer part of said conductive disc and being aligned with each other at a substantially right angle to a radius of said disc; a coil on said center leg, said coil developing a working magnetic flux directed from said pole face end of said center leg through said conductive disc in response to a voltage to be measured applied to said coil; a soft magnetic bracket attached to said two outer legs in a magnetic flux conducting relationship; a soft magnetic flux shaping member extending from said bracket and terminating in an elongated shaped tongue, said tongue extending below both said center leg and



said conductive disc with the elongated sides thereof extending at substantially right angles to said radius of the disc for a distance further from the center of the center leg in one direction than in an opposite direction so as to overlap substantially more of the free end of one than of the other of said outer legs and form a predetermined asymmetrical distribution of the working flux field relative to the center leg when being directed through said disc to said tongue; and a dial register rotatably coupled to said disc to indicate a total of disc revolutions representing a corresponding value of volts-square hours measured for the voltage applied to said coil.

3,858,116

PULSE-WIDTH MODULATION CONTROL SYSTEM AND DISCRIMINATOR THEREFOR

Wendel M. Friedl; Robert A. Miles, both of Cleveland; John W. Allen, Hudson, and William P. Waiwood, Parma, all of Ohio, assignors to Johnson Diversified, Inc., Racine, Wis.

Filed May 9, 1973, Ser. No. 358,561

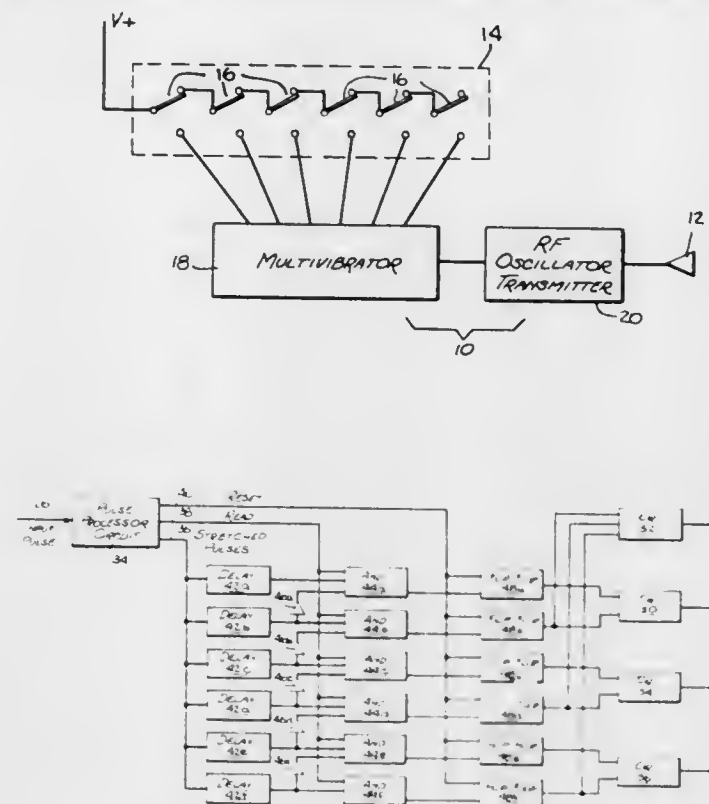
Int. Cl. H04b 7/00

U.S. Cl. 325-37

6 Claims

1. In a control system including an RF transmitter of input control signals and an RF receiver for generating output control signals in response to said input signals, the combination comprising a switching circuit for selecting any one of a plurality of three or more control functions, a multivibrator coupled to said switching circuit for producing pulsed output signals having different predetermined durations dependent upon selections made by said switching circuit, an RF oscillator-transmitter connected to said multivibrator for producing bursts of RF energy having durations corresponding to the output signals from said multivibrator, an RF receiver for receiving and demodulating said bursts of RF energy and for producing pulse signals having durations corresponding to said pulsed output signals generated by said multivibrator, discriminator means having a plurality of output terminals corresponding in number to the number of said switching circuit selections, wherein said discriminator means is for providing output control signals at said respective terminals in correspondence with the selected control functions, and function control means coupled to said discriminator means output terminals for actuation thereby in response to said selections made by said switching circuit, said discriminator means comprising pulse processor circuit means having an input coupled to receive said pulse signals from said receiver and having a first output for producing a stretched output signal in response to each input signal, wherein each said stretched output signal has a duration which is coextensive with, and a

predetermined increment longer than, its corresponding input pulse signal, and having a second output for producing READ pulses which are coextensive with only said predetermined increments of said stretched pulses; said discriminator means further comprising a plurality of delay circuit means corresponding in number to said plurality of control functions selectable by said switching circuit, each said delay circuit means having an input coupled to said first output for producing a delay signal in response to said stretched signals and after



a predetermined delay period, wherein said delay circuit means have respective delay periods which are coextensive with said predetermined durations of said pulsed output signals from said multivibrator; and said discriminator means further comprising a plurality of AND circuits corresponding in number to said delay circuit means, and means coupling said AND circuits to said delay circuit means and to said second output of said pulse processor circuit means, wherein said AND circuits provide output control signals corresponding, respectively, to said selected control functions.

3,858,117

RADIO TELETYPE DETECTOR CIRCUIT

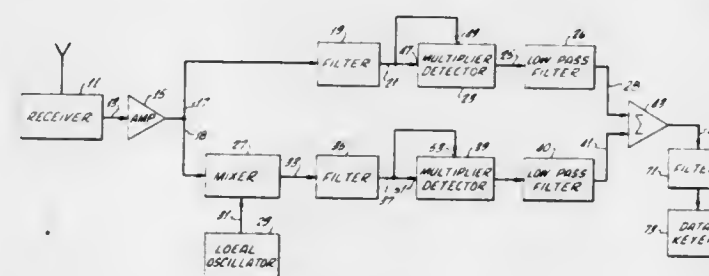
Robert B. Denny, Poway, Calif., assignor to Adar, Inc., Santa Ana, Calif.

Filed Jan. 29, 1973, Ser. No. 327,327

Int. Cl. H03d 9/04; H04I 27/14

U.S. Cl. 325-320

17 Claims



8. A discriminator for differentiating between first and second frequencies alternately present in an input signal, comprising:

a pair of band pass filters producing filtered output signals each tuned to said first frequency, one of said filters being connected to said input signal; means for heterodyning said input signal, said heterodyning means being connected to the other of said filters; and

means connected to respond to the output of each of said filters for indicating which of said filtered output signals has a higher amplitude.

3,858,118

ACOUSTIC SURFACE WAVE TELEVISION TUNER

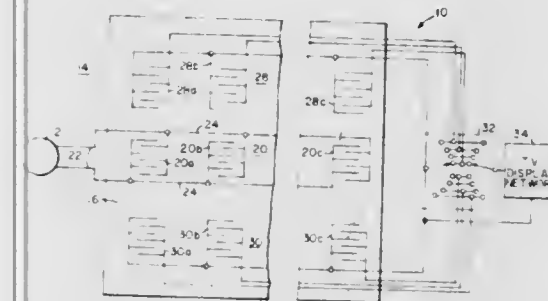
Michael R. Daniel, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 17, 1973, Ser. No. 380,183

Int. Cl. H04b 1/18; H03h 7/04, 9/20

U.S. Cl. 325-465

7 Claims



1. A tuner for selectively receiving television signals comprising:

- a piezoelectric substrate on which acoustic surface waves may be propagated;
- a centralized input transducer network disposed on a selected surface of the substrate, which network is comprised of a plurality of input transducers which are respectively designed to launch acoustic surface waves as a function of a selected bandwidth of an input signal applied to the network, which acoustic surface waves are propagated across the surface of said substrate;
- a row of output transducers disposed on the selected substrate surface on either side of the centralized input transducer network, with paired sets of output transducers which are designed to receive acoustic surface waves representative of a selected bandwidth disposed one in each row adjacent the input transducer which launches said selected bandwidth acoustic surface waves, each paired set of output transducers tuned respectively to adjacent television channel signals encompassed within the selected bandwidth for converting said acoustic surface wave to the respective electromagnetic channel signal;
- switching means connected to each of said output transducers for selectively applying the desired electromagnetic channel signal to the television display generating network.

3,858,119

FOLDED PUSH-PULL AMPLIFIER

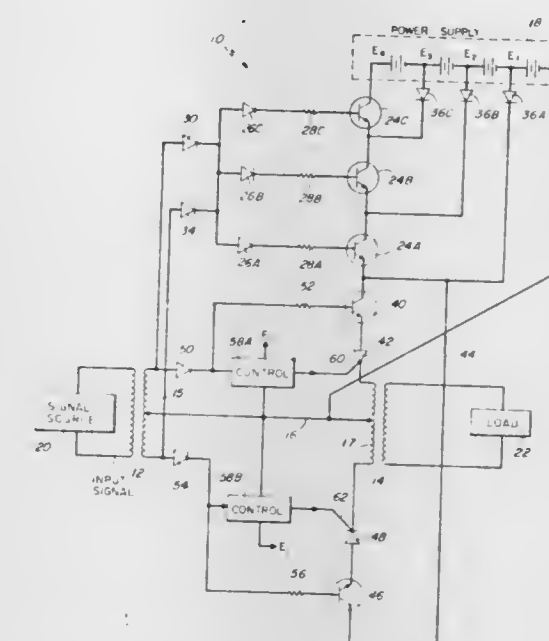
Bjorn H. Engelhardt, North Kingstown, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed June 18, 1973, Ser. No. 370,894

Int. Cl. H03f 3/26

U.S. Cl. 330-15

7 Claims



1. A circuit comprising:
a transformer having a plurality of terminals;
means coupled to a source of input signal for amplifying said signal; and
switching means coupled between said amplifying means and each of said terminals of said transformer, said switching means sequentially connecting said amplifying means to successive ones of said transformer terminals for coupling said amplified signal during successive portions of said input signal to successive ones of said terminals of said transformer, said transformer serving to couple said power to a load.

3,858,120

INTEGRATED SEMICONDUCTOR DEVICE OR ELEMENT

Jean Hubertus Josef Lortetje, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. Nos. 147,312, April 22, 1971, abandoned, and Ser. No. 834,956, June 20, 1969, abandoned. This

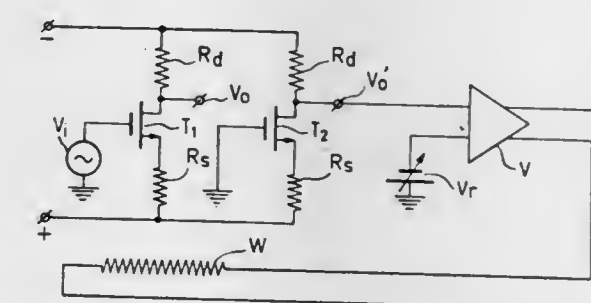
application Dec. 1, 1972, Ser. No. 311,419

Claims priority, application Netherlands, June 29, 1968, 6809256

Int. Cl. H03f 1/32

U.S. Cl. 330-23

6 Claims



1. An integrated circuit, comprising: an insulated-gate field-effect transistor; a biasing circuit tending to bias said transistor

at a nominal operating point, the operating point tending to vary however even in a thermally static environment with static bias conditions due to changes in the electrical behavior of the insulating layer in said transistor; a heating element for maintaining said transistor in an elevated thermal environment; means for providing a measure of the amount by which the operating point of said transistor deviates from said nominal operating point; and means controlling said heating element in accordance with said measure for changing the thermal environment of said transistor in the direction which tends to bring the operating point back toward said nominal operating point, thereby compensating for changes in the electrical behavior of the insulating layer by suitably changing the thermal environment of said transistor.

3,858,121

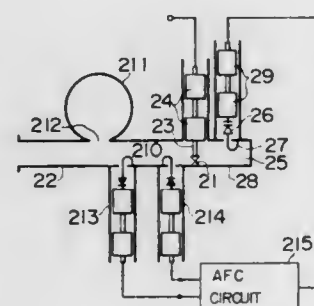
SOLID STATE MICROWAVE OSCILLATOR WITH STABILIZING RESONATOR AND AFC LOOP

Yoichi Kaneko, Tokorozawa, and Katsuhiko Kimura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 17, 1973, Ser. No. 389,269

Claims priority, application Japan, Aug. 25, 1972, 47-84540
Int. Cl. H03b 3/04, 7/14

U.S. Cl. 331-9

8 Claims



1. A stabilized solid-state oscillator comprising: a free running oscillator means including at least a solid-state oscillator element, a microwave transmission line on which said solid-state oscillator element is mounted, and means for supplying a bias voltage to said solid-state oscillator element; a resonator connected to said microwave transmission line for controlling the oscillation frequency of said free running oscillator means by phase locking; two phase detector means coupled to said microwave transmission line between said free running oscillator and said resonator, said two phase detector means being located at symmetrical positions on said microwave transmission line with respect to a point at which the amplitude of a standing wave at the resonant frequency of said resonator is minimum; and frequency control means for receiving an output of each of said phase detector means and for applying its output to said free running oscillator means to control the frequency thereof to a predetermined value; said phase detector means detecting phase variations of said standing wave due to variations in the oscillation frequency of said free running oscillator in the form of amplitude variations of said standing wave.

5. A stabilized solid-state oscillator comprising: a free running oscillator means including at least a solid-state oscillator element, a microwave transmission line on which said solid-state oscillator element is mounted, and means for supplying a bias voltage to said oscillator element; a resonator connected to said microwave transmission line for controlling the oscillation frequency of said free running oscillator by phase locking; a directional coupler connected to said microwave transmission line between said solid-state oscillator element and said resonator; means for detecting the phase of wave reflected from said resonator on the basis of incident wave entering said resonator, said reflected wave and incident wave being both obtained through said directional coupler; and frequency control means for receiving an output of said phase detector means and for applying its output to said free running oscillator means to control the frequency thereof to a predetermined value.

3,858,122

VIBRATION ISOLATION IN A GAS LASER

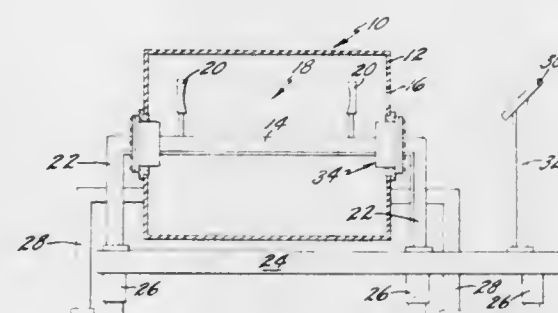
Albert W. Angelbeck, Manchester, and Donald J. Longtin, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,961

Int. Cl. H01s 3/02; F16f 15/02

U.S. Cl. 331-94.5 R

4 Claims



1. A gas laser system in which the optics of the system are insulated from the vibrations present in the environment and the auxiliary equipment, the system comprising:

- a gas enclosure;
- structural means fixedly attached to the gas enclosure to rigidly support the enclosure on a reference ground;
- a first optical bench internal of the enclosure to support internal optical means used in the production of laser radiation;
- a second optical bench external of the enclosure to provide support to the first bench;
- a vibration isolation support to flexibly hold the second optical bench from the reference ground and insulate the second bench from vibrations which are otherwise transmitted from ground to the bench by absorption of the vibrations; and
- an enclosure interlock which rigidly joins the first bench to the second bench and is flexibly attached to the enclosure, the interlock having a flexible member which joins the enclosure to the optical benches, for forming a feed-through in the enclosure which is gas tight for a pressure differential greater than one atmosphere and for insulating the optical benches from vibrations in the enclosure.

3,858,123

NEGATIVE RESISTANCE OSCILLATOR

Tomozo Ohta, and Syoji Makino, both of Yokohama, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

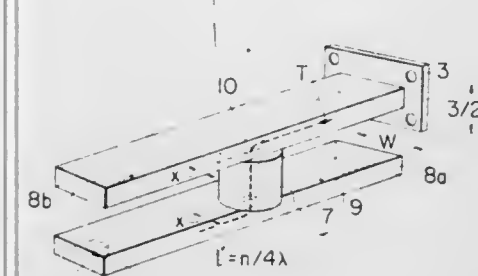
Filed June 22, 1973, Ser. No. 372,740

Claims priority, application Japan, June 24, 1972, 47-62851

Int. Cl. H03b 7/14

U.S. Cl. 331-107 R

3 Claims U.S. Cl. 333-13



1. A negative resistance oscillator for producing an oscillating signal and comprising a negative resistance means for generating oscillations at a frequency f_0 , a first line connected at one end thereof with a load, a second line connected at one end thereof with a non-reflecting terminal, and at the other end thereof with said negative resistance means, directional resonator means disposed between said first and second lines and having a resonating frequency f_0 for directionally coupling energy at said resonating frequency f_0 generated by said negative resistance means to said load, the distance between said negative resistance means and the electric coupling point of said directional resonator means with said second line being equal to an integer multiple of one-fourth of the wavelength of the signal.

3,858,124

ORGAN MONOCRYSTALLINE LIGHT WAVELENGTH CHANGING ELEMENT

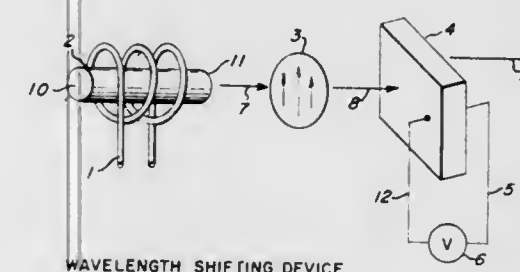
Michael Bass, Lexington, and Dominic P. Bua, Saugus, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 1,164, Jan. 7, 1970, abandoned. This application June 12, 1972, Ser. No. 261,852

Int. Cl. H01s 3/10

U.S. Cl. 332-7.51

10 Claims



1. In combination: optically permeable crystal means formed from at least one of the group of materials consisting of coumarin; 7-diethylamino - 4-methylcoumarin; 7-hydroxycoumarin; and quinine sulfate; and means for shifting the wavelength of coherent light comprising introducing said coherent light having a wavelength within the infra-red region into the crystal means.

929 O.G.-79

3,858,125

RECEIVER PROTECTION METHOD AND APPARATUS

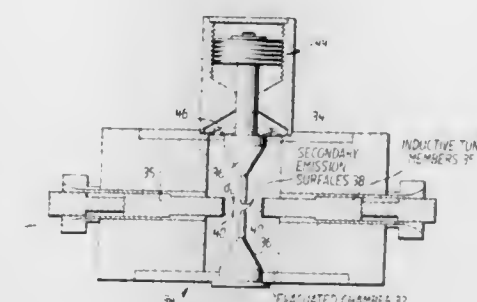
Theodore M. Nelson, Catonsville, and Harry Goldie, Randalls-town, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,346

Int. Cl. H01p 1/14; H01j 7/70, 43/02

3 Claims U.S. Cl. 333-13

3 Claims



1. Apparatus for protecting a wave energy receiver from damage by high energy level pulses comprising:

- a. a wave guide element adapted to be positioned in a transmission path along which wave energy is directed to the wave energy receiver, said element including an evacuated chamber through which the wave energy is directed to the receiver;
- b. a pair of frustoconical shaped electrodes positioned in said chamber, at least one of said electrodes including an annular tritium doped shoulder and an electron multiplying surface spaced from said shoulder, said electrodes being positioned on opposite sides of said chamber.

3,858,126

MUTUAL INDUCTANCE ADJUSTING CIRCUIT

Kasuo Kameya, Saitama-ken, Japan, assignor to Toko, Inc., Tokyo, Japan

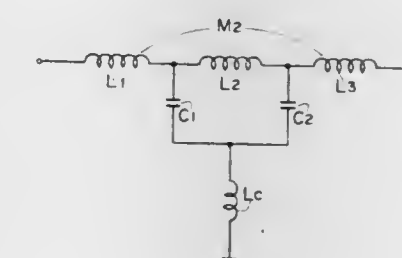
Filed June 13, 1973, Ser. No. 369,483

Claims priority, application Japan, June 16, 1972, 47-59404

Int. Cl. H03h 7/18, 7/32

U.S. Cl. 333-29

5 Claims



1. A mutual inductance adjusting circuit for a network including at least one inductor-capacitor combination unit comprising:

- A. at least first, second, and third inductors connected in series with each other;
- B. at least first and second capacitors, said first capacitor being connected at one end to the connection point between said adjacent first and second inductors and said second capacitor being connected at one end to the connection point between said adjacent second and third inductors, and
- C. a compensating inductance element through which said capacitors are connected at the other ends thereof to a reference potential point, whereby the effective value of the mutual inductance at least between said first and third inductors is changed by a value equal in magnitude but opposite in sign to the inductance of said compensating inductance element.

3,858,127

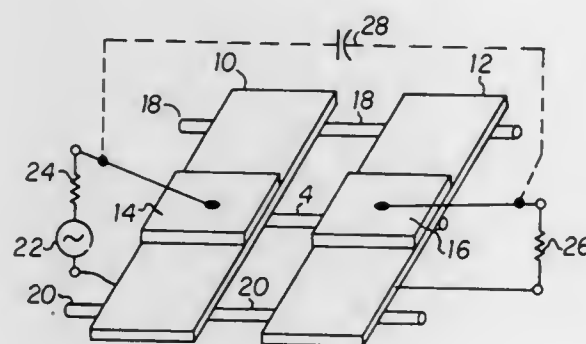
STABLE AND COMPACT LOW FREQUENCY FILTER
Robert A. Johnson, Tustin, Calif., assignor to Rockwell International Corporation, Dallas, Tex.

Filed Dec. 10, 1973, Ser. No. 423,349

Int. Cl. H03h 9/02, 9/26

U.S. Cl. 333-72

2 Claims



1. A low frequency mechanical filter comprising a plurality of cascaded two-resonator sections; each section including first and second flexure mode resonator bars, a piezoelectric transducer mounted on each bar, a bridging capacitor whereby attenuation poles above and below the filter pass-band are realized, and coupling wires attached to and acoustically coupling said first and second bars; and coupling means coupling said sections in cascade.

3,858,128

1 DB STEP ATTENUATOR

Clayton D. Mullin, St. Paul, Minn., assignor to Textron, Inc., Providence, R.I.

Filed Feb. 4, 1974, Ser. No. 439,623

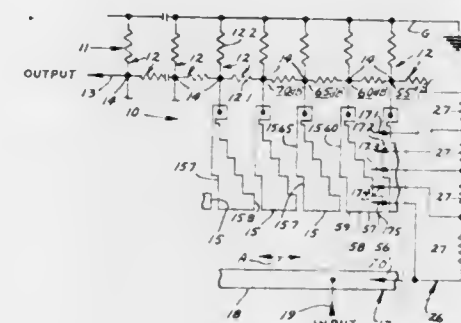
Int. Cl. H03h 7/26

U.S. Cl. 333-81 R

6 Claims

1. An attenuator for audiometers and the like having an input and output, comprising:

- a large increment attenuator ladder having ladder segments and connection points between such segments to produce large increment dB attenuation change at adjacent connection points;
- a minute increment attenuator including a plurality of series-connected resistances and having rigidly interconnected wiper contacts connected at the ends of the several resistances;
- said output and input being applied to the terminal end of the attenuator ladder and a terminal end of the series-connected resistances; and



- a switching plate having a plurality of adjacent conductive switching areas over which such wiper contacts pass in succession, each of said conductive areas being connected to a respective connection point of the attenuator ladder;
- said conductive areas and wiper contacts being shaped and arranged relative to each other whereby as the contacts move over such an area, the contacts sequentially engage the conductive area to sequentially change the number of such resistances in series with a particular connection point of the attenuator ladder, and to repeat the sequence of engagement as the contacts move to an adjacent conductive area.

3,858,129

TUNING ARRANGEMENT HAVING COAXIALLY MOUNTED SHAFTS AND REMOVABLE KNOBS

Takashi Ashida, Akashi, and Nobuo Yamada, Kobe, both of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Ten Limited, Kobe, both of Japan, part interest to each

Continuation of Ser. No. 211,498, Dec. 23, 1971. This application May 25, 1973, Ser. No. 364,052

Claims priority, application Japan, Dec. 28, 1970, 45-127989

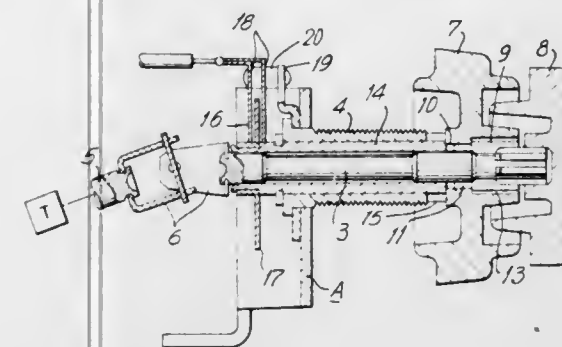
Int. Cl. H03j 3/20

U.S. Cl. 334-78

4 Claims

1. Electrical apparatus having an input circuit having a variable condenser and a tuning means, for tuning a tuned electrical circuit, said electrical apparatus comprising, tuning shaft rotatably mounted and having a front end and having a rear end affixed to the tuning means, the tuning shaft passing freely through the condenser; and an adjusting shaft rotatably mounted coaxially with and around the tuning shaft and having a front end and having a rear affixed to the condenser, the tuning shaft and the adjusting shaft being rotatable independently of each other, the tuning means being adjustable by the tuning shaft and the condenser being rotatable with the adjust-

ing shaft, and a knob removably mounted adjacent the front end of said tuning shaft for rotating said tuning shaft, said



adjusting shaft being hidden by said knob in the condition of non-engagement with said knob during normal operation.

3,858,130

GROUND FAULT CIRCUIT BREAKER WITH COLD TEMPERATURE BIMETAL CONSTRICTION

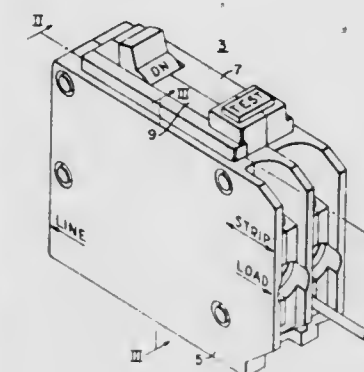
John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1973, Ser. No. 421,573

Int. Cl. H01h 83/02

U.S. Cl. 335-18

5 Claims



1. A circuit breaker comprising an electrically insulating housing and including a box-like container and a cover therefor, a circuit breaker structure within the housing and comprising a pair of separable contacts operable between open and closed positions, a releasable member in an initial position and movable when released to a tripped position to effect automatic opening of the contacts and comprising an elongated current-carrying bimetal for tripping the releasable member when a predetermined current overload effect deflection of said bimetal in one direction from a latched position, the bimetal being mounted at one end portion and disposed in an unbiased position, bimetal stop means for preventing said bimetal from moving in the other direction from said latched position when the bimetal is subjected to extremely cold ambient temperature, and the container and the cover being molded members one of which comprises an integral molded projection at the other end of the bimetal.

3,858,131

APPARATUSES FOR MAKING DEVICES, SUCH AS ALARM DEVICES, OPERATIVE

Arne Erik Alvar Larsson, Nydalavagen 9, 214 58 Malmo, Sweden

Filed July 9, 1973, Ser. No. 377,738

Claims priority, application Sweden, July 10, 1972, 9085/72

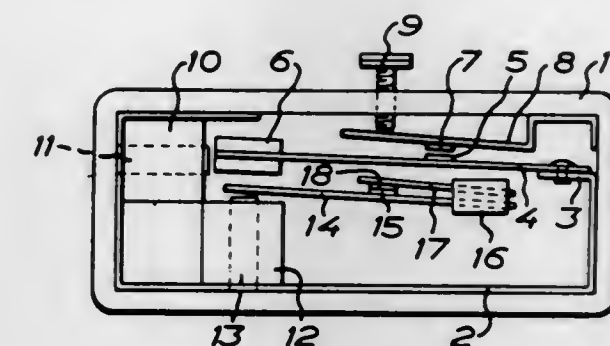
Int. Cl. H01h 50/64

U.S. Cl. 335-136

3 Claims

1. An alarm activating apparatus which comprises a base means, a magnetic material weighted pendulum supported by said base means for oscillatory movement relative thereto in response to dynamic input forces applied to the base means, switch contact means including a switch contact carried by

said pendulum, said switch contact means being disposed for connection to an alarm to activate same as the pendulum oscillates whereby said alarm is activated in response to said dynamic input forces, override means selectively operable to preclude activation of such alarm by said switch contact means, said override means including an electromagnet positioned in relation to the magnetic weighting material of said pendulum to magnetically counteract the oscillation thereof



when the electromagnet is energized, electromagnetic driving means operable when energized to apply magnetic driving forces to said pendulum to impart oscillation thereto for activating the alarm independently of any activation thereof resulting from dynamic input forces applied to the base means, and switch means connected to said electromagnetic driving means and operable to selectively connect same with a source of electric energy for energization thereby.

3,858,132

ELECTRICAL SWITCH

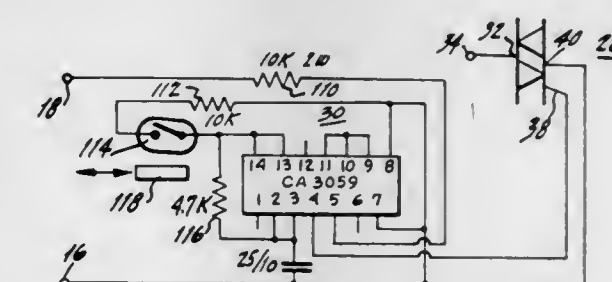
Donald C. Long, Yardley, Pa.; Albert C. Hartsough, Willingboro, and Robert F. Sanford, Princeton, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton, N.J.

Division of Ser. No. 216,527, Jan. 10, 1972. This application Jan. 31, 1974, Ser. No. 438,229

Int. Cl. H01h 1/66

U.S. Cl. 335-153

3 Claims



1. An electrical switch for use in a combustible atmosphere comprising:

- a housing, and means sealing said housing against said combustible atmosphere, said housing containing an electronic switching circuit including:
 - first and second power terminals for connection to a utilization circuit; and
 - actuating means which make electrical connection between said terminals when said switching circuit is closed and which break said electrical connection when said switching circuit is open;
- said actuating means including:
- a. a source of magnetic flux;
 - b. a magnetic flux detector having an input terminal coupled to said first terminal and an output terminal coupled to said second terminal and being placed in one of a low and high impedance state between its input and output terminals in making and breaking said connections as a function of the magnitude of magnetic flux established thereon from said source; and
 - c. mechanical regulator means positioned with respect to said source of magnetic flux for mechanically control-

ling the amount of magnetic flux linking said detector from said source and the actuation of said switching circuit from a make to a break condition and vice versa;

with at least said first and second terminals and said magnetic flux detector being subject to electrical arcing, but being included within said housing and therefore sealed from said combustible atmosphere, and with said source and said mechanical regulator means being non-electrically operable and therefore not subject to arcing, being wholly external to said housing and within said atmosphere, to thereby control said switch from closed condition to open condition solely from within said combustible atmosphere but without giving rise to the creation of such electrical arcs as would tend to ignite said atmosphere.

3,858,133

SWITCH TRANSFER MECHANISM

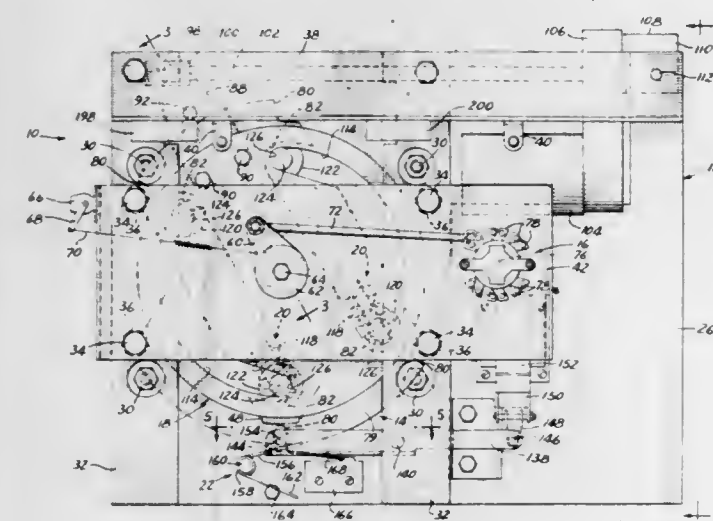
Howard E. Swanson, Chicago, and Richard S. Rudy, Chicago Heights, both of Ill., assignors to G & W Electric Specialty Company, Blue Island, Ill.

Filed Jan. 21, 1974, Ser. No. 435,230

Int. Cl. H01h 9/22

U.S. Cl. 335—160

12 Claims



1. A switch transfer mechanism for selectively transferring an electric load between a preferred and an emergency feeder voltage, comprising, in combination, housing means, first actuating means supported by said housing means and movable between a first position connecting the load to the preferred feeder voltage and a second position connecting the load to the emergency feeder voltage, torque plate means supported by said housing means for movement between first and second positions, second actuating means connected to said torque plate means and operative to move said torque plate means between said first and second positions, energy storing means operatively interconnecting said first actuating means and said torque plate means, said energy storing means being adapted to be placed in a potential energy storing condition when said torque plate means is moved between its said first and said second positions with said first actuating means retained in generally fixed position, latch means operative between a first position retaining said first actuating means in a generally fixed position and a second position allowing movement of said first actuating means between its first and second positions, and control circuit means operative to prevent operation of said second actuating means unless said latch means is in its said first position retaining said first actuating means in a fixed position, release of said latch means from its said first position serving to effect a snap-action movement of said actuator means through release of the potential energy stored in said energy storing means.

3,858,134 HORIZONTAL CONVERGENCE MEANS FOR IN-LINE BEAM CATHODE RAY TUBE

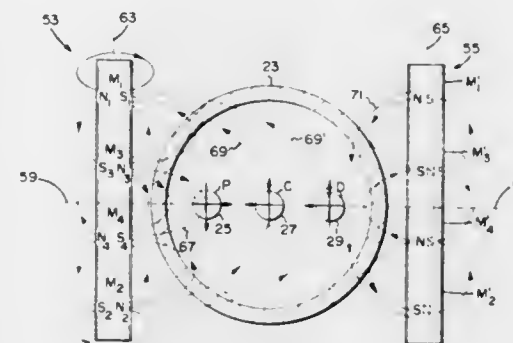
Raymond A. Budd, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 3, 1974, Ser. No. 475,811

Int. Cl. H01f 7/00

U.S. Cl. 335—212

6 Claims



1. A horizontal convergence device for use with a plural in-line beam color cathode ray tube having a cathodoluminescent screen with an apertured mask spatially related thereto and a multi-beam electron gun assembly oriented in a manner to direct beams to said screen, said device being formed for positioning on the exterior of the neck portion of said tube relative to the terminal electrodes of said electron gun assembly interiorly oriented therein and emitting an array of plural in-line beams in a substantially common plane, said device comprising: a pair of rotatably adjustable rod-like multi-pole magnetic members producing x and y components of magnetic flux, each of said multi-pole members having a plane of symmetry therein whereat the magnitude of the x component of the interacting fluxes is zero, said members being positioned one on either side of said tube neck portion in an orientation substantially perpendicular to the plane of said beams with the planes of symmetry of the respective magnetic members being substantially coexistent with the plane of said beams, each of said magnetic members being individually adjusted to impart a magnitude of interacting fluxes to influence substantially horizontal movement to each of the outer beams of said array in a direction counter to that of center beam movement to effect static convergence of said beams at the plane of said mask.

3,858,135

PUSH-PULL LINEAR MOTOR

Samuel A. Gray, P.O. Box 7127, Sun Valley, Calif. 91505

Continuation-in-part of Ser. No. 280,405, Aug. 14, 1973, Pat. No. 3,774,642. This application Nov. 5, 1973, Ser. No. 412,818

Int. Cl. H02p 5/28, 7/36

U.S. Cl. 335—266

5 Claims

1. An improved drive means to shift an axially shiftable member forwardly and rearwardly to and from a central normal position comprising an elongate armature shaft with front and rear ends, coupling means connecting the front end of the shaft with the member, a pair of front and rear armatures on the shaft in spaced relationship and defining forwardly and rearwardly, axially and radially outwardly disposed conical surfaces, front and rear electro magnet field units arranged forwardly and rearwardly of the front and rear armatures and having axially and radially inwardly disposed conical north and south poles in normal predetermined spaced and opposing relationship with the conical surfaces of the armatures, resilient support means at the ends of the shaft maintaining the shaft on a common axis and biased to exert equal and opposing forces axially inwardly at the ends of the shaft and normally yieldingly holding the shaft with the armature in its normal position, said field units normally energized by quiescent currents and establishing equal and opposite magnetic

fields intersecting the armatures related thereto whereby the armatures are normally magnetized and held in their normal position by the fields, said armatures and shaft being shifted axially toward one field unit upon an increase of current thereto and a decrease of current to the other field unit resulting in increase and decrease in the magnetic fields of the units

face-to-face with said sheet as the sheet travels continuously thereover for magnetization.

3,858,137

SLEEVE ENCLOSED COIL

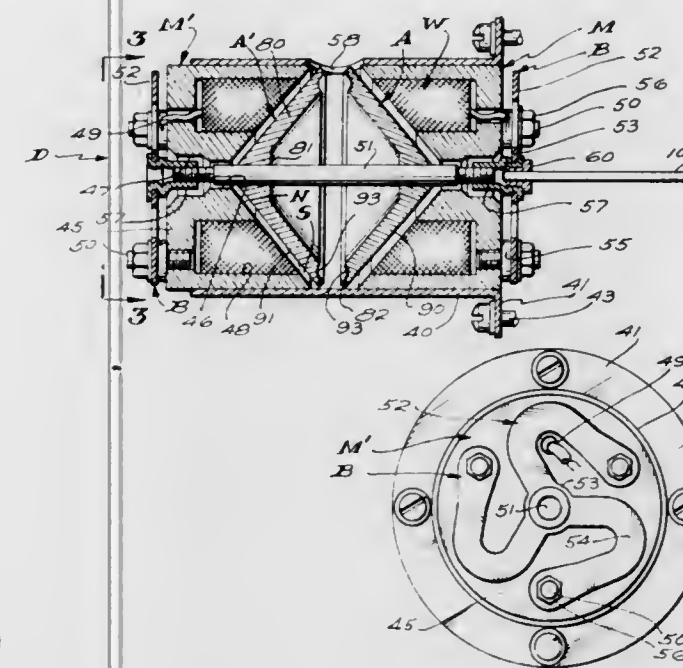
George H. Roggenkamp, Salem, and Walter C. Ellis, Jr., Roanoke County, both of Va., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1973, Ser. No. 417,169

Int. Cl. H01f 15/10, 27/04

U.S. Cl. 336—90

7 Claims



1. An enclosed electric coil assembly comprising: an annular coil wound around a bobbin to form a conductive member having a first end and a second end; a rigid tubular casing of electrically insulating material extending longitudinally around the outer periphery of said coil to provide a sturdy mounting surface; electric terminal means mounted to the outside of said rigid tubular casing, means electrically connecting at least one end of the conductive member of said annular coil to said electric terminal means at the point of attachment of said electric terminal means to said tubular casing, said end extending from the inside of said tubular casing to said terminal means, said tubular casing taking up any strain placed on said terminal means to prevent said conductive member from being disconnected from said terminal means; and end cover means insulating the ends of said annular coil.

3,858,136

APPARATUS FOR MULTIPOLAR MAGNETIZATION

Sekiba Jun, Kyoto, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

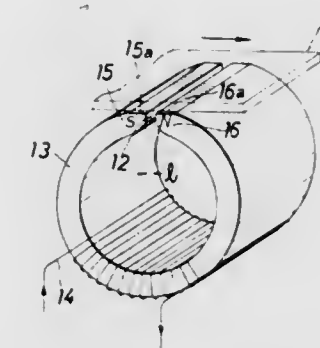
Filed Dec. 5, 1973, Ser. No. 421,948

Claims priority, application Japan, Dec. 7, 1972, 47-123148

Int. Cl. H01f 13/00

U.S. Cl. 335—284

6 Claims



1. An apparatus for multipolar magnetization for use in the manufacture of flexible permanent magnets, comprising an annular, magnetically permeable body formed with a gap and having a width not smaller than the width of a sheet to be magnetized, a conductor wound around said body and connected to an alternating current source to thereby pass constant exciting current of constant frequency therethrough and a pair of magnetic poles opposing each other with said gap which measures from 1 to 2.5 mm in size interposed therebetween and each of said poles having a surface to be positioned

3,858,138

TUNEABLE THIN FILM INDUCTOR

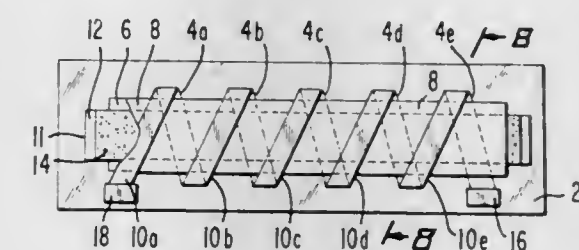
Jonathan Isaac Gittleman, Trenton, and Lawrence Matthew Zappulla, Hazlet, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 338,110, March 5, 1973, abandoned. This application May 10, 1974, Ser. No. 468,932

Int. Cl. H01f 21/06

U.S. Cl. 336—136

5 Claims



1. A tuneable film type inductor comprising a first series of metal film stripes adhered to an insulating substrate, a first synthetic resinous film of insulating material covering said stripes except the ends thereof, a second synthetic resinous film of insulating material over said first film and having a central portion spaced therefrom, both of said films being joined along their edges such that both films together form a sleeve, a second series of metal film stripes on top of said second film of insulating material, each member of said second series of stripes being connected to members of said first series of stripes to form a continuous flat helix, and a moveable member of magnetic material disposed between said

insulating films, said moveable member comprising a thin strip of dielectric material with a coating of ferromagnetic material thereon.

3,858,139

TIME-DELAY RELAY AND METHOD OF ASSEMBLING SAME

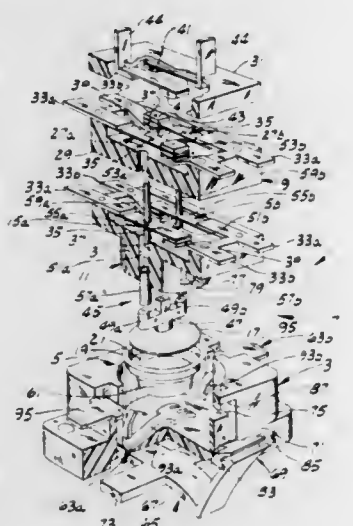
Eugene A. Hunter, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,937

Int. Cl. H01h 61/00

U.S. Cl. 337-88

17 Claims



1. A time-delay relay comprising:
 - a housing having a chamber therein and openings in its sidewalls;
 - a thermally responsive switch assembly having contacts and a thermostatic element, said contacts being movable into and out of engagement with one another in response to actuation of the thermostatic element when the latter is subjected to predetermined temperature conditions thereby to make and break a first circuit;
 - a heater for heating said thermostatic element, said heater being energized by a second circuit, said switch assembly having at least a portion thereof adapted for reception and mounting within said chamber in an operating position in which said switch assembly is in heat-transfer relation with said heater; and
 - a retainer on the outside of said housing having portions thereof extending through said openings in the sides of the housing for gripping engagement with said switch assembly so as to hold the latter in its said operating position.

3,858,140

TIME-DELAY RELAY AND METHOD OF ASSEMBLING SAME

John T. Hancock, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,946

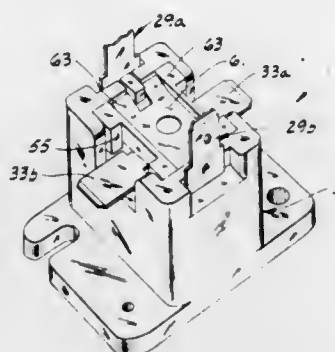
Int. Cl. H01h 61/00

U.S. Cl. 337-88

11 Claims

1. A time-delay relay comprising:
 - a housing having a chamber and terminal receiving slots therein;
 - a thermally responsive switch assembly mounted within said chamber and having contacts and a thermostatic element, said contacts being movable into and out of engagement with one another in response to actuation of the thermostatic element when the latter is subjected to predetermined temperature conditions thereby to make and break a first circuit;
 - a heater in heat-transfer relation with said switch assembly for heating said thermostatic element, said heater being energized by a second circuit;

a pair of terminals adapted for conductive electrical contact with said heater, said terminals constituting a portion of said second circuit, said heater and said switch assembly being mounted within said chamber and said terminals being received by said terminal receiving slots in said housing; a cover overlying said chamber and having



means engageable with said terminals thereby to retain the terminals within said housing; and
a retainer engageable with said housing adapted to be forced into position at the mouth of the chamber thereby to hold the cover, switch assembly, heater and terminals in assembled relation within said housing.

3,858,141

REDUCED ACTUATION TIME THERMAL RELAY SYSTEM

Robert P. Lackey, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1973, Ser. No. 420,997

Int. Cl. H01h 61/013; H05b 1/02

U.S. Cl. 337-140

14 Claims



1. A reduced actuation time thermal relay system for controlling energization of a load by a power supply, said system comprising:
 - a thermal relay having a resistive control element and a pair of mating contacts movable between closed circuit and open circuit positions in response to the temperature of said control element rising above a predetermined level and falling substantially therebelow; and
 - means for electrically energizing said resistive control element initially to apply a first voltage thereby to cause rapid heating of the element and thereafter to apply a second and reduced voltage to said element, said reduced voltage being of sufficient magnitude to prevent the temperature of said element from falling substantially below said predetermined level whereby the actuation time of said thermal relay is substantially reduced without damaging said resistive control element.

3,858,142

FUSE AND METHOD OF MAKING SAME

Gerardus Jacobus Deelman, Eindhoven, and Jacob Kramer, Utrecht, both of Netherlands, assignors to N. V. Olvis, Mol, Belgium

Filed June 20, 1973, Ser. No. 371,728

Claims priority, application Netherlands, June 22, 1972, 7208554

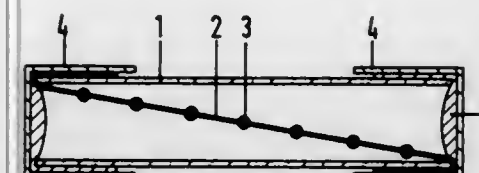
Int. Cl. H01h 85/14

U.S. Cl. 337-152

4 Claims

1. A method of making a fuse wherein small discs are punched from a strip of thinly rolled activator material, the discs then being disposed on a fusible wire in spaced apart

relationship with the activator side facing the wire, the wire being previously provided with an adhesive coating, the wire with the discs being passed along a heating means so as to melt



each disc to form an activator core on the fusible wire, whereafter a desired length of the fusible wire carrying the activator cores is mounted in an appropriate housing.

3,858,143

BALL STOP PRESSURE TRANSDUCER

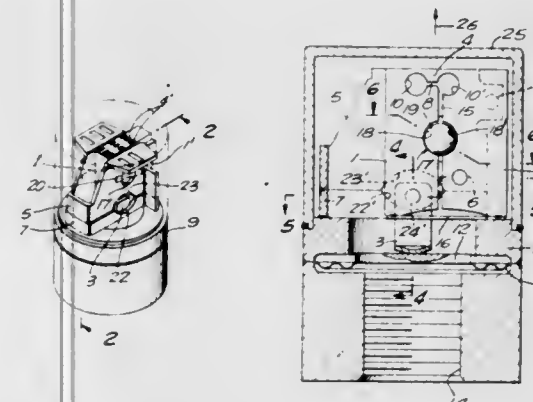
Richard R. Schaberg, Ventura, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Apr. 19, 1974, Ser. No. 462,241

Int. Cl. G011 1/22

U.S. Cl. 338-4

4 Claims



1. A force transducer comprising a base, a force collector and a flexure a pair of beams spaced from each other and connected at one end of said beams by said flexure, one of said beams connected to the base of said transducer, the other of said beams connected to said force collector in said transducer, a cylindrical bore, part of said bore positioned in each of said beams, a ball freely positioned for motion in said bore and means responsive to the said force collector to sense a force imposed on said force collector.

3,858,144

VOLTAGE STRESS-RESISTANT CONDUCTIVE ARTICLES

Ronald L. Bedard, San Leandro, and Andrew J. Kampe, Half Moon Bay, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 29, 1972, Ser. No. 319,492

Int. Cl. H01c 7/04

U.S. Cl. 338-22 R

10 Claims



1. In an electrically conductive self-regulating article comprised of at least two spaced-apart metallic electrodes electrically interconnected by a composition containing conductive carbon black dispersed in a crystalline polymeric matrix, the improvement wherein voltage-induced resistance variance is

diminished which comprises providing at the electrode surface an effective resistance-stabilizing amount of a material selected from the group consisting of carboxylic acid group-containing polymers of acid number greater than about 3 and the ammonium, alkali or alkaline earth metal salts of such polymers.

3,858,145

MAGNETIC CIRCUIT DEVICE FOR A CONTACTLESS SWITCH OR THE LIKE

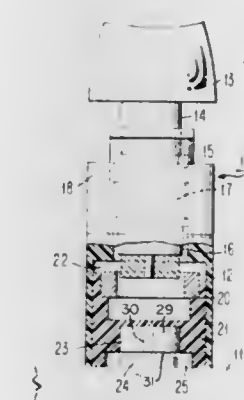
Michael Sulieh, Endicott, and Albert W. Vinal, Owego, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 263,832, June 19, 1972, abandoned. This application May 4, 1973, Ser. No. 357,284

Int. Cl. H01c 7/16

U.S. Cl. 338-32 H

2 Claims



1. In an electric pushbutton switch, a key mechanism comprising,
 - a first member,
 - a second member movable relative to said first member between first and second switch positions,
 - a Hall element mounted on said first member and having a sensing surface,
 - said Hall element being operable for detecting changes in the direction of magnetic field for producing a switching signal,
 - and a switching magnet mounted on said second member for relative movement therewith between said first and second switch positions,
 - said switching magnet comprising a cylindrical permanent magnet having parallel faces of opposite polarity,
 - said permanent magnet having one of said faces proximate said sensing surface of said Hall element and movable transversely thereto during relative movement of said second member from said first to said second switch positions,
 - said permanent magnet having a cylindrical aperture connecting said parallel faces and parallel with the axis of magnetization thereof,
 - said aperture having an axis perpendicular with said sensing surface of said Hall element and parallel with the direction of relative motion of said first and second members between said first and second switch positions,
 - said aperture producing a concentrated magnetic field with a field reversal region extending beyond said face of said magnet in the vicinity of said sensing surface,
 - said field reversal region of said magnetic field being located within the distance of relative movement between said first and second switch positions,
 - whereby said Hall element is subjected to a reversing magnetic field to produce said switching signal during said relative movement between said first and second switch positions.

3,858,146

ELECTRICAL DISCHARGE RESISTOR

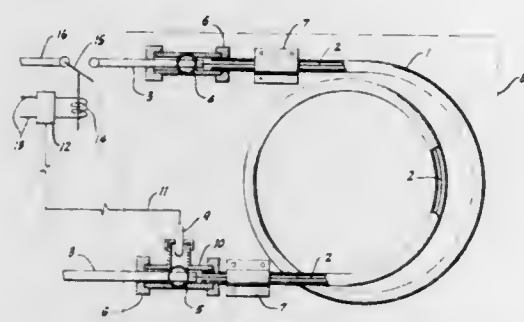
Bent Pors Simonsen, and Hans Imhoff, both of 2700 Peterson Way, 47 B, both of Costa Mesa, Calif. 92626

Filed June 4, 1973, Ser. No. 367,011

Int. Cl. H01c 1/08

U.S. Cl. 338-55

8 Claims



1. A light weight compact portable power resistor useful for applying a resistive load to power supply equipment during intentional or accidental loss of the normal operating load on said power supply including a flexible lamina elongate conductive strip having at least two major surfaces axially disposed within a flexible non-conductive fluid conduit dividing said conduit into a plurality of parallel axial fluid passageways defined by the surfaces of said conductive strip and the interior walls of said conduit and terminating at both ends within said conduit at electric terminals extending into said conduit and electrically conductively connected with the two ends of said conductive strip, said terminals having a conductivity per unit length at least ten times that of said conductive strip, said conductive strip being of substantially constant dimensions along its length and having a width to thickness ratio of at least about 10 and a width at least about 80 percent of the maximum inside diameter of said fluid conduit, said fluid conduit having a coolant inlet and outlet at either end thereof in fluid communication with said axial passageways for passing cooling fluid into and out of said conduit along said axial passageways and along all surfaces of said conductive strip, said fluid conduit and conductive strip being coiled through at least about 360° along the length of said conductive strip.

3,858,147

NON-INDUCTIVE FILM-TYPE CYLINDRICAL RESISTOR

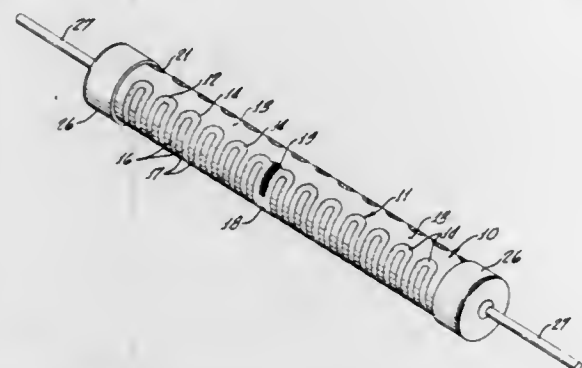
Richard E. Caddock, 640 Sandalwood Ct., Riverside, Calif. 92507

Continuation-in-part of Ser. No. 315,018, Dec. 14, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,787

Int. Cl. H01c 3/02

U.S. Cl. 338-62

16 Claims



1. A film-type electrical resistor, which comprises:
a. an elongated cylindrical heat-resistant substrate,
b. an electrically resistive film adherently provided by the silk-screen process on the exterior cylindrical surface of said substrate,
said resistive film comprising an elongated narrow strip of resistive material,

said strip having such a cross-sectional shape, in a direction perpendicular to the length of said strip, that the exterior surfaces of the edges of said strip converge toward said cylindrical surface in a feathered manner, said film being present on substantial portions of said surface, but being absent at a gap which extends along the full length of one side of said surface parallel to the axis of said substrate, and
c. termination means electrically connected to opposite end portions of said resistive film, and permitting connection of said film in an electrical circuit.

3,858,148

RECTILINEAR POTENTIOMETER AND SWITCH

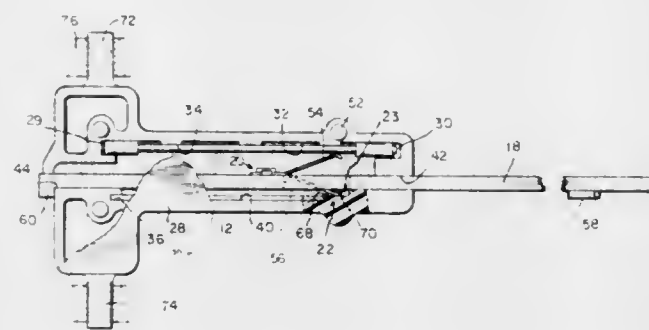
Edgar F. Hauenstine, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 23, 1973, Ser. No. 344,275

Int. Cl. H01c 9/08

U.S. Cl. 338-178

10 Claims



1. A combination linear potentiometer and switch comprising:
a. a housing,
b. apertures in opposed ends of said housing,
c. a collector strip and a resistance strip carried in said housing in spaced substantially parallel relationship,
d. a slider extending through said apertures and movable between said collector and resistance strips and having lugs engaging walls of said housing to limit the travel thereof,
e. electrical contact means carried by said slider engaging said collector and resistance strips, and
f. an electrical insulating means cooperating with at least one of said collector and resistance strips to provide a substantially continuous sliding surface for said electrical contact means, engagement of said electrical contact means with said electrical insulating means providing said switch.

3,858,149

FRAME SUPPORTED GRID RESISTORS

Victor V. Kirilloff, Murrysville, Pa., assignor to Mosebach Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 21, 1974, Ser. No. 434,920

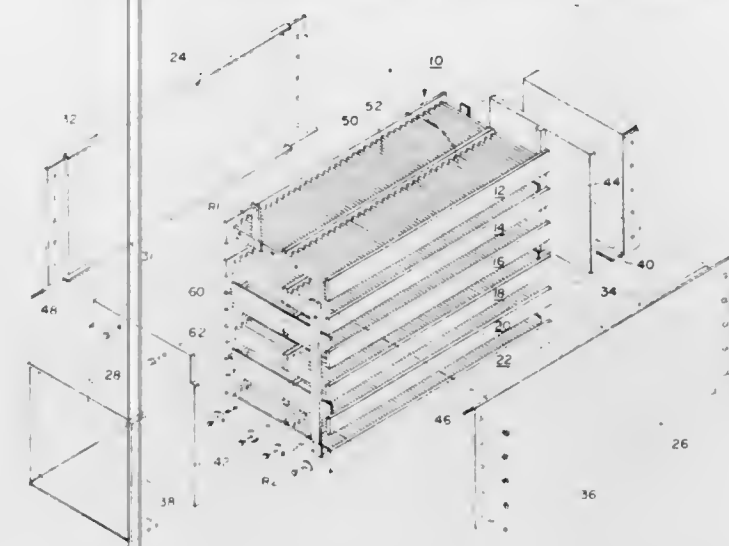
Int. Cl. H01c 1/02

U.S. Cl. 338-295

5 Claims

1. A resistor having a pair of terminals comprising:
1. a plurality of resistor support frames each defining a plane and each having the same shape, the frames are stacked in alignment to form a hexahedron structure;
2. means engaging the hexahedron structure and holding the support frames tightly against each other to maintain the hexahedron structure;
3. resistor means positioned within the plane defined by

each resistor support frame; and
4. means electrically coupling all of the resistor means



between and to the terminals whereby a resistor is presented between the pair of terminals.

3,858,150

POLYCRYSTALLINE SILICON PRESSURE SENSOR

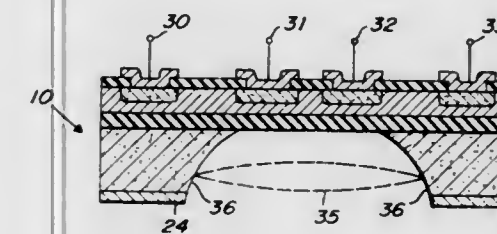
Richard Warren Gurtler, Mesa, and Ross Wayne Zwernemann, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,453

Int. Cl. G011 1/22

U.S. Cl. 338-2

11 Claims



1. A polycrystalline silicon pressure sensor comprising:
a. a substrate support member having a flat upper surface, a flexible inner section, and a rigid peripheral section, relatively thick compared with the flexible section, downwardly disposed to form a support for the flexible section, the member being of a material on which polycrystalline silicon is capable of being deposited;
b. a first layer of polycrystalline silicon formed over the flat upper surface, sufficiently thin to enable flexing with the flexible inner section of the member; and
c. at least one piezoresistive pressure sensitive element of a first conductivity type, formed through the top surface of the first layer over the flexible inner section and extending to the peripheral section.

3,858,151

FLEXIBLE CONDUIT CONNECTOR

Joseph Henry Paskert, Lakewood, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,341

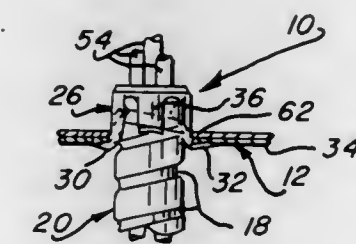
Int. Cl. H01r 3/06

U.S. Cl. 339-14 R

7 Claims

1. A one-piece, self-retaining metal clip for use in connecting an electrical conduit having a helically grooved outer metal covering and electrical wires therein with a junction box or the like, said clip being adapted to extend through an opening in a wall portion of the junction box, said one-piece metal clip comprising a tubular body portion for extending through the opening in the junction box and into which the electrical conduit extends, said tubular body portion having a first open-

ing at one end thereof through which the electrical wires extend and a second opening at the other end thereof into which said electrical conduit extends, flange means at said other end of said tubular body portion for engaging an outer wall portion of the junction box, said flange means comprising deflectable portions which extend transverse to the axis of said first and second openings and which have surface portions which engage the outer surface of the junction box upon insertion of the clip into the opening in the wall portion of the junction box, retaining arms connected with said tubular portion, said retaining arms projecting outwardly from said tubular body portion and being resiliently deflectable radially inwardly upon insertion of the tubular body portion through the opening in the junction box and springing outwardly upon clearing the wall of the junction box as to engage the inner surface of the wall of the junction box, said retaining arms, in an undeformed position, being separated from said flange means by an axial distance less than the thickness of the wall portion whereby said clip is resiliently clamped to the junction box by said flange means and said retaining arms to positively



electrically ground said clip to said junction box, said tubular body portion also having a pair of inwardly extending tabs having an inner elongated edge disposed along a helix of the same pitch as the helical groove in the metal covering for threaded engagement with the helical groove in said metal covering to threadably connect said metal covering with said tubular body portion and a pair of barbs also formed on said tubular body portion for gripping the helically grooved metal covering of the electrical conduit to effect a grounding of the metal covering to said clip, said barbs being disposed along the same helix as the inner edges of said tabs, said barbs having points thereon defining an inscribed circle of smaller diameter than the minor diameter of said helical groove and said points oriented in the same circumferential direction to allow said metal covering to be threaded into said clip but to resist threaded disengagement of said clip and said metal covering, said tabs and said barbs being spaced from said flange means toward said one end of said tubular body portion whereby said tabs and barbs are disposed within the junction box when the electrical conduit is connected with the junction box.

3,858,152

INTERCEPT CONNECTOR SUITABLE FOR USE IN A TELEPHONE SYSTEM

Charles A. Cowser, Council Grove, Kans., assignor to Monarch Molding, Inc., Council Grove, Kans.

Filed July 13, 1973, Ser. No. 378,907

Int. Cl. H01r 5/04; H05k 1/02

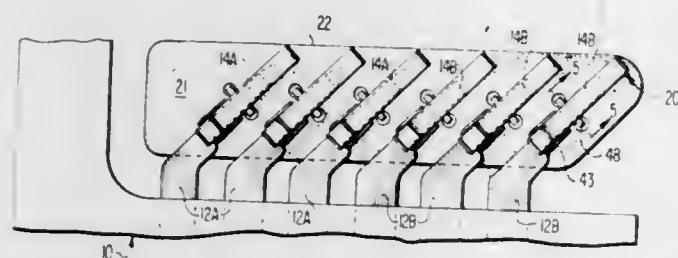
U.S. Cl. 339-17 C

3 Claims

1. An intercept connector operable to be releasably connected to the terminal arms of a terminal block to electrically cross-connect selected pairs of said arms, said intercept connector comprising:

a backing board of non-conductive material having front and rear surfaces bordered by front, rear, and end edges; a plurality of contact clips located on said front surface of said backing board, each contact clip extending at an acute angle relative to said front edge and comprising a folded metallic strip defining:
a base portion having an inner surface seated on the front surface of said backing board;

a top portion superposed over said base portion; and
 a curved bight portion integral with said top and base portions to define a spring connection therebetween yieldably biasing a distal end of said top portion toward an outer surface of said base portion;
 a distal end of said base portion including outwardly projecting retaining flanges defining an arm-receiving mouth;
 the distal end of said top portion terminating generally at said receiving mouth and including an angled tip defining a cam lip operable to be raised by an oncoming terminal arm;
 said base portion having a pair of spaced tabs located intermediate said retaining flanges and said curved bight portion, said tabs projecting from opposite sides of said base portion and extending through apertures in said backing board, said tabs each including:
 a first portion projecting laterally outwardly from a side of said base portion in the plane of said base portion, and



a second portion oriented at a right angle to said first portion and projecting into a respective one of said apertures within a plane oriented perpendicular to said backing board, each of said tabs terminating in said last-named plane at the end of said second portion;
 printed circuit means fixed on said rear surface of said backing board including a plurality of metallic conductor paths terminating at the mounting locations of selected pairs of clips; and
 a plurality of anchor beads disposed on said rear surface of said backing board at the mounting locations of said clips, said beads being spaced from one another and from said edges of said backing board to present minimal obstruction to the arrangement of said metallic conductor paths; said anchor beads each being formed of solidified metal extending between the second portions of an associated contact clip; said metal being disposed at least partially within said apertures and in adhering relation to both tabs of said associated clip and to an associated circuit path, to anchor said clip to said backing board and establish electrical communication between said clip and said circuit path.

3,858,153

LOW PROFILE CONTACT FOR INSERTION IN PRINTED CIRCUIT BOARD

James Ray Collier, Mechanicsburg, and Robert Franklin Coughlin, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 24, 1973, Ser. No. 391,426

Int. Cl. H05k 1/04; H01r 13/12

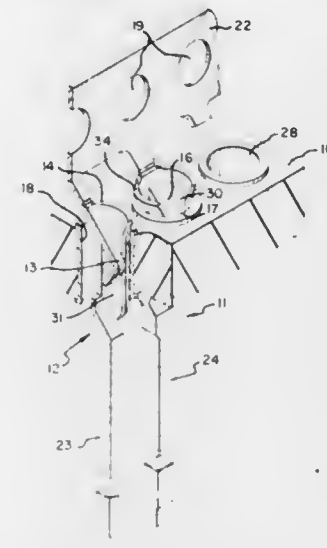
U.S. Cl. 339-17 C

5 Claims

1. The combination of a stamped, single element, low profile contact inserted through an aperture in a circuit board and comprising:

a partially completed cylindrical section in which a gap parallel to the axis of said cylindrical section exists in the wall thereof;

a flange portion formed around the rim of one end of said cylindrical section and constructed to form a seat for said contact when said contact is inserted in said circuit board; said flange portion being flared outwardly and upwardly from said cylindrical section to facilitate entry of a mating male contact therewith; and



an elongated element formed from the wall of said cylindrical section and extending inwardly into the space defined by said cylindrical section and into said gap; said gap being sufficiently wide to enable entry of said elongated element therein.

3,858,154

SLIDING THREE DIMENSIONAL PACKAGING TECHNIQUE

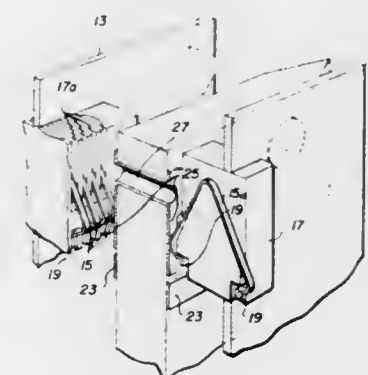
A. Reimer William, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 2, 1973, Ser. No. 412,525

Int. Cl. H01r 33/18; H05k 1/12

U.S. Cl. 339-17 LM

3 Claims



1. Apparatus for electrically interconnecting selected circuit signal points on adjacently positioned printed circuit cards and on a plurality of printed circuit cards comprising:
 a plurality of connector cards;
 contact means including connector contacts mounted on each of said connector cards and extending between said circuit cards for establishing a direct electrical connection between adjacent ones of said circuit cards;
 track means on said circuit cards for engaging and carrying said connector contacts as said circuit cards are positioned adjacent to and on opposite sides of said contact means; and
 said connector contacts are arranged in rows across each of said connector cards parallel to the direction in which said circuit cards are interleaved between said connector cards and wherein said track means comprises hard insulative strips disposed across both sides of said circuit cards to correspond to said connector contact rows on said connector cards, said connector contacts sliding on

said strips as said circuit cards are inserted between said connector cards;
 circuit access means disposed on each of said circuit cards adjacent to said track means and coupled to corresponding ones of said selected signal points; and
 conductor means extending through said circuit cards for electrically interconnecting corresponding ones of said circuit access means on opposite sides of said circuit cards,
 said circuit cards being repositioned after being positioned adjacent to said contact means so that said connector contacts slide from said track means onto said circuit access means to establish a direct electrical connection between said circuit cards.

3,858,155

SYSTEM PROVIDING POWER SUPPLY CONNECTIONS AND INTERCONNECTIONS FOR LOGIC BLOCKS

Guy Henri Lacan, Carrieres Sous Bois, and Andre Lucien Haury, Le Raincy, both of France, assignors to La Telemecanique Electrique, Nanterre, France

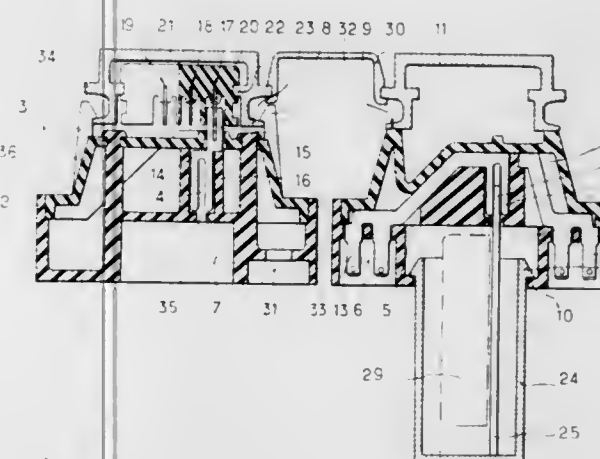
Filed Apr. 4, 1973, Ser. No. 347,628

Claims priority, application France, Apr. 4, 1972, 72.11719

Int. Cl. H01r 13/54

U.S. Cl. 339-22 R

4 Claims



1. Coupling and supporting means for logic blocks having first and second connecting means, said supporting means providing power supply connections to said blocks and interconnections between said blocks, said supporting means comprising:

elongated means (21) of U-shaped cross-section having side walls fitted with first clamping means (23, 24) and having power supply leads (17, 18, 19) fitted in its internal part; a plurality of sockets (36) respectively associated with said logic blocks, each socket having side walls, a back surface provided with second clamping means (8) capable of removably engaging with said first clamping means and a front surface, exhibiting a main cavity for receiving at least a portion of a logic block, said front surface being provided with securing means (10) for retaining said block;

first contact means (14) in said socket having a first extremity (15) in which said supply leads engages, and a second extremity (16) in which said first connecting means of said block engages;

second contact means (11) having a first extremity (12) in which said second connecting means of said blocks engages, and a second extremity (13) located at said front surface of the socket, in the proximity of said main cavity and of one of said socket side walls, the various blocks being intercoupled by intercoupling said second extremities of said second means of the sockets respectively associated to said various blocks.

3,858,156

UNIVERSAL FEMALE COAXIAL CONNECTOR

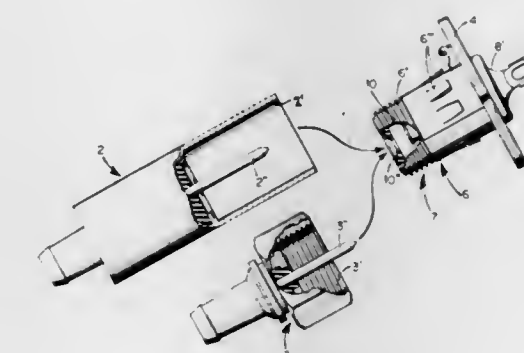
Michael Zarro, Fords, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Dec. 19, 1973, Ser. No. 426,223

Int. Cl. H01r 27/00, 17/18

U.S. Cl. 339-32

4 Claims



1. A universal female coaxial connector for both push-on and threaded connection usage, having, in combination, a cylindrical outer conductor member extending from one side of a conductive flange and internally containing a resilient inner-conductor contact means insulatingly mounted therein; inner-conductor terminal means insulatingly carried within said member, connected to said inner-conductor contact means, and extending from the other side of said flange; said member terminating beyond said contact means in a threaded section adapted to permit threaded attachment to connectors having external outer-conductor interiorly threaded terminal means, and carrying between said threaded section and said one side of the flange an external sleeve containing resilient flap means extending outwardly therefrom for enabling push-on connection with the interior of connectors having interiorly smooth external outer-conductor terminal means of inner diameter slightly greater than that of the outer diameter of the threads of said threaded section; the threads of the said threaded section serving as a stop for the said sleeve, and the outer conductor member serving as a limiting stop for the depth of threaded connection of the threaded section within threaded terminal means; and the said inner-conductor contact means receiving male inner-conductor terminals of all said terminal means, resiliently to engage and to permit disengagement therefrom.

3,858,157

SOLDERLESS TAP CONNECTOR

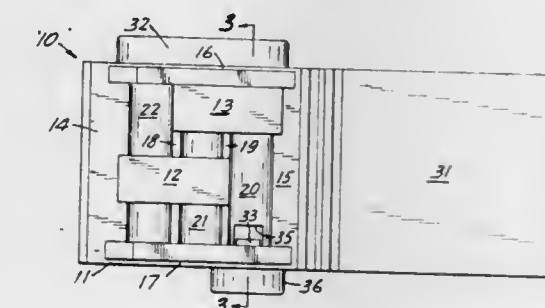
James H. Bazille, Jr., North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1974, Ser. No. 443,368

Int. Cl. H01r 11/20

U.S. Cl. 339-98

7 Claims



1. In a connector assembly for making solderless in-line, pigtail or tap electrical connection between insulated wires and comprising a base having parallel longitudinal wire-supporting channels and being grooved transversely of said channels, and a resilient slotted metal plate contact element

fitting within a said groove and with slots in alignment with said wire-supporting channels, the improvement comprising a resiliently displaceable stop member extending from a wall of said channel and blocking said channel between an outermost groove and the adjacent end of the channel, and said base being recessed to provide an open space adjacent said stop member for receiving said stop member upon its displacement under forceful insertion of a wire into said channel.

3,858,158

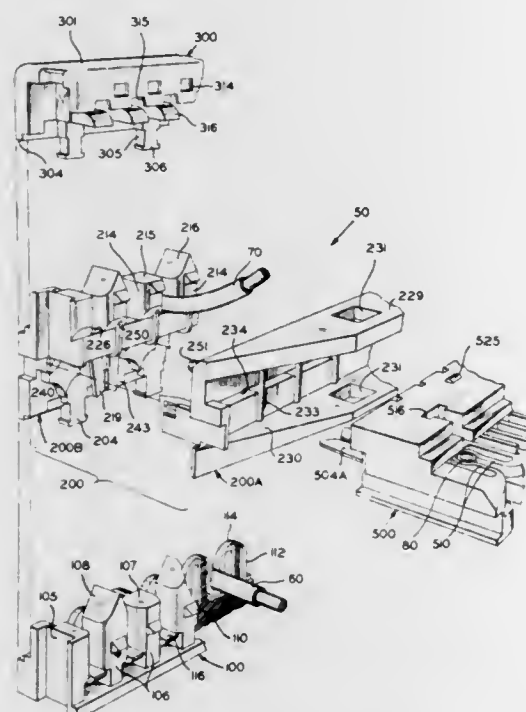
DEVICES FOR MAKING ELECTRICAL CONNECTIONS

Robert Walter Henn, Dunwoody; Christian Scholly, Atlanta; James Emery Voytko, Doraville; Thomas Leslie Willford, Jr., Lawrenceville; Charles McGonigal, Grayson; Dean Rudisill Frey, Dunwoody; Donald Tolman Smith, Norcross, and Arthur Guntis Vedejs, Duluth, all of Ga., assignors to Western Electric Company, Inc. New York, New York
Continuation-in-part of Ser. No. 210,750, Dec. 22, 1971, Pat. No. 3,772,635. This application June 1, 1973, Ser. No. 365,931

Int. Cl. H01r 9/08

U.S. Cl. 339-99 R

20 Claims



1. An electrical connector, which includes:
 - a first dielectric block having a plurality of spaced conductor-holding openings formed in groups with the spacing between adjacent openings of adjacent groups being different from that between adjacent openings within a group;
 - a second dielectric block adapted to be mounted to the first dielectric block and having a plurality of elongated contact elements spaced along and secured therein, each of the contact elements having conductor-receiving slots at opposite ends thereof, the second dielectric block having conductor-receiving openings into which protrude one end of the contact elements to engage electrically conductors received in the conductor-receiving openings, the other ends of the contact elements insertable into associated ones of the conductor-holding openings in the first dielectric block when the second block is mounted thereto to cause the conductors held therein to be moved into the conductor-receiving slots in the contact elements to make electrical engagement with the walls thereof, and be connected electrically to the conductors in the second dielectric block, the second dielectric block also having a plurality of access openings aligned with associated ones of the contact elements; and
 - a third dielectric block having conductive elements secured therein capable of being connected electrically to con-

ductors held in spaced openings formed in the third dielectric block, the third dielectric block adapted to be connected to the second dielectric block to extend ends of the conductive elements thereof into the access openings to engage electrically associated ones of the contact elements;

the second dielectric block capable of being constructed in a length corresponding to one or more of the groups of conductor-holding openings in the first dielectric block to permit selective mounting of ones of the second dielectric blocks along the first dielectric block;

the third dielectric block capable of being constructed in a length corresponding to the length of the second dielectric block or a portion thereof to which the third dielectric block is to be connected.

3,858,159

ROUND CONDUCTOR FLAT CABLE CONNECTOR

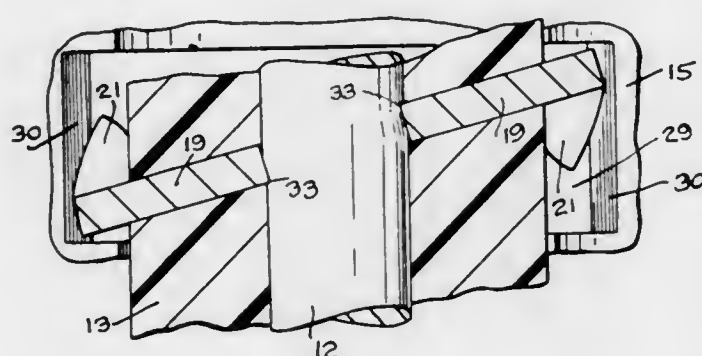
Sidney V. Worth, Flourtown, Pa., assignor to Continental-Wirt Electronics Corporation, Warminster, Pa.

Filed Aug. 10, 1973, Ser. No. 387,485

Int. Cl. H01r 9/06

U.S. Cl. 339-99 R

12 Claims



1. An electrical connector for an insulated flat cable having a plurality of insulated round wire conductors disposed in coplanar side by side relation within an enveloping film of plastic or other penetrable insulating material comprising an insulated structure secured to the cable in transversely extending relation to the conductors thereof and a plurality of electrically conductive metal contact members respectively mounted in said structure crosswise of the longitudinally extending axes of the cable conductors, each of said contact members having a terminal part for connection to an electrical circuit or component thereof and a retention part internally nested in said structure, said retention part having an end thereof bifurcated to provide a pair of spaced-apart sharply-pointed prongs for piercing the cable in straddling relation to an insulated conductor thereof, said prongs having opposed sharply cornered cutting edges for slicing through the insulation and electrically engaging the wire of said insulated conductor, said conductor-straddling prongs of each of said contact members being disposed in a common plane so angularly oriented relatively to the longitudinal axis of the conductor wire engaged thereby that said sharply cornered cutting edges of the prongs engage and bite into the conductor wire at points offset from one another lengthwise of the conductor wire for imparting a bend thereto whereby to place it under tension in the immediate region of its engagement by said prongs, the end portions of said conductor-straddling prongs of each of said contact members being extended beyond the conductor embraced therebetween for conjoint clinching of said prongs against said conductor-wire engaged thereby, and means in said structure for camming said prongs into their said clinched condition about said conductor wire, said camming means being operative to establish a force which reacts against the restrained tendency of the conductor to assume its straightened condition to thereby hold said prongs tightly engaged with the conductor wire.

3,858,160

APPLIANCE STRAIN RELIEF

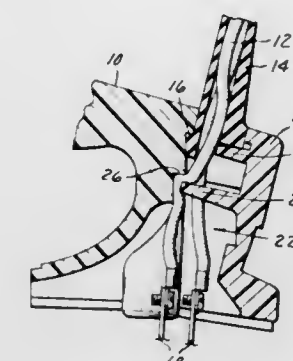
Bryce A. Denton, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed Mar. 5, 1973, Ser. No. 338,154

Int. Cl. H01r 13/58

U.S. Cl. 339-107

7 Claims



1. For use in a portable electric appliance cord-connected to internal terminals by a portion of the cord having separated conductors connected thereto, the improvement in a strain relief connection between the cord and appliance comprising, a housing chamber in the appliance at the entrance of the cord to the appliance and containing the conductors loosely therein,

said chamber having a generally U-shape with a central fastening hole and a step portion spanning the chamber completely around the sides of the U adjacent the hole, a chamber cover having tongue means extending therefrom toward and coextensive with the step portion,

- a protected recess in said cover having means therein engaging said hole to secure the cover to the housing, whereby the separate loosely disposed conductors straddle the securing means anywhere in said U-shaped chamber and said tongue extends into said chamber and automatically positions the conductors in strain relief against the step portion anywhere along its length and also blocks the external cord from entering the chamber when the cover is tightened to said housing.

3,858,161

BOX FOR ELECTRICAL CONNECTIONS

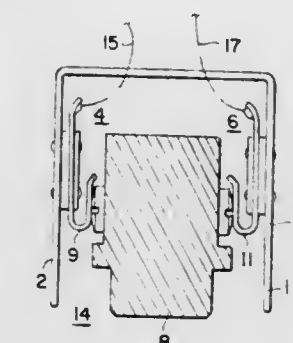
Mary J. Champion; Clarence C. Pottle, and Joseph H. Gerber, all of Brooklyn, N.Y., assignors to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Aug. 8, 1973, Ser. No. 386,767

Int. Cl. H01r 15/18

U.S. Cl. 339-122 R

2 Claims



1. A box for electrical connections for electrically connecting wall type units to a power source, comprising an electrical connection box having a pair of opposite spaced substantially parallel sides; electrical contact means mounted on the pair of sides in the box for releasably contacting electrical wall type units moved into the box, the electrical contact means comprising a plurality of contact units each having a first member of electrically insulating material adjacent the

box, a spring-like electrical contact member adjacent the first member and a second member of electrically insulating material adjacent the contact member thereby sandwiching the electrical contact member between the first and second insulating members; and electrical connecting means electrically connecting the electrical contact means to a source of power.

3,858,162

SNAP-LOCK BASE FOR ANNULAR FLUORESCENT LAMPS

Gunter Mai, and Herbert Pietzsch, both of Munich, Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

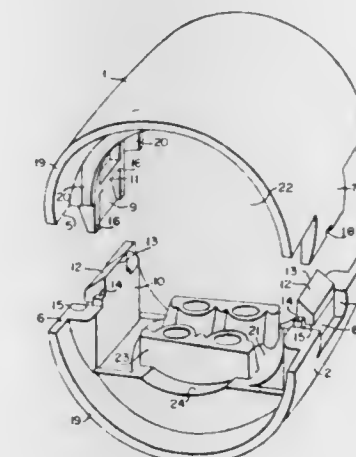
Filed May 9, 1973, Ser. No. 358,790

Claims priority, application Germany, May 19, 1972, 7218982

Int. Cl. H01r 33/74

U.S. Cl. 339-145 D

8 Claims



1. A base for an annular fluorescent lamp having an envelope with a protruding exhaust tube, said base comprising: a pair of generally semicylindrical-shaped components of resilient insulating material having integral interfitting portions operable to lock said component together in closed abutting relationship solely by means of a snap-fit, one of said base components having an inwardly-recessed segment which carries a plurality of contact pins, each of said base components having walls of such thickness and being of such configuration that they define, when snap-fitted together in assembled relation, a chamber of sufficient size to accommodate the ends of the lamp envelope and exhaust tube despite variations in the length and alignment of said exhaust tube, said interfitting portions comprising a pair of covering flaps that laterally project beyond the longitudinal edges of one of said base components and a pair of mating recessed flaps that laterally project beyond the longitudinal edges of the other of said base components and define recesses in the exterior wall thereof which are shaped and dimensioned to receive and accommodate said covering flaps, one of said covering flaps having a notch-like opening in its longitudinal edge through which the base components can be mechanically separated from snap-fitted relationship with one another, and said covering flaps being of such configuration that they form a substantially smooth exterior surface with the base component having the recessed flaps, when said base components are snap-fitted together and said covering flaps are seated in said recesses.

3,858,163

PRINTED CIRCUIT BOARD CONNECTOR

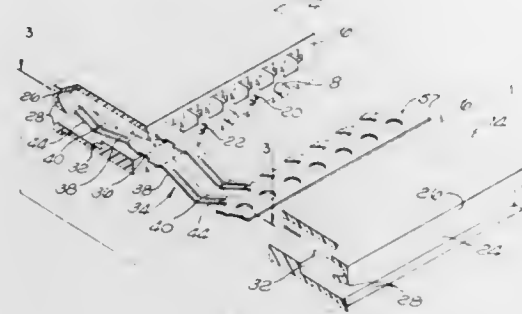
David S. Goodman, Orange, and Harold J. Prow, Jr., Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,516

Int. Cl. H01r 3/00

U.S. Cl. 339-176 MP

3 Claims



1. A printed circuit board connector comprising:
 - a two-piece insulated housing member consisting of a pair of mated parts joined along facing edges thereof, said parts having edges remove from and generally parallel to said facing edges;
 - a printed circuit board receiving slot formed in each of said parts and opening at the respective remote edge thereof;
 - a row of contact compartments formed in each of said parts, corresponding compartments in said rows being longitudinally aligned and opening at the respective facing edges of said parts to provide interconnected pairs of said compartments, said slot and said compartments in each said part being in communication with each other;
 - a unitary contact mounted in each of said interconnected compartments and having an intermediate mounting portion and oppositely extending integral spring elements formed with contacting portions positioned in said slots to engage conductive layers on printed circuit boards inserted into said slots whereby said layers are electrically interconnected by said contact;
 - said contact compartments in each said part being sufficiently large to permit insertion of said contact spring elements thereinto from the facing edge of said part; and
 - said mounting portions of said contacts being rigidly secured to wall portions of said compartments adjacent to said facing edges of said parts.

3,858,164

CONNECTING DEVICE AND MANIPULATING TOOL

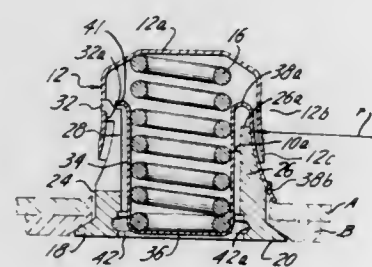
George Hamlin Leonard, 327 Hollow Tree Ridge Rd., Darien, Conn. 06820

Filed May 25, 1972, Ser. No. 256,782

Int. Cl. H01r 11/00; A44b 17/00; B67b 7/00

U.S. Cl. 339-252 R

27 Claims



1. A connecting device, including
 - i. a body having an outward-extending flange and a portion extending rearward of said flange and being receivable in a hole in apparatus to which the connecting device is to

- be secured with the flange pressed against a bearing surface adjacent to said hole in said apparatus;
- ii. a claw unit including multiple elongated claws movable forward and rearward along said rearward extending portion of said body, said elongated claws having abutment ends movable generally forward and slightly outward into positions opposite said flange for engaging an abutment surface of said apparatus adjacent to the hole therein and said abutment ends being movable reversely into retracted positions, said elongated claws extending generally rearward and slightly inward from said abutment ends thereof, whereby said elongated claws are in lengthwise compression when said abutment ends bear against such abutment surface;
- iii. a shroud secured to said body so that said shroud and said body form a body unit, said shroud having a rim for restricting outward movement of said elongated claws both in retracted and projected positions thereof; and
- iv. spring means acting on said claw unit and reacting on said body unit for biasing said flange and said abutment ends of said claws generally toward each other for gripping the apparatus adjacent to the hole therein.

3,858,165

ACOUSTICAL WINDOW FOR SONAR SYSTEMS

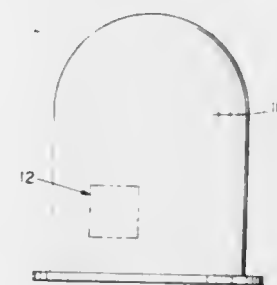
Ronald L. Pegg, Costa Mesa, Calif., assignor to Haveg Industries, Inc., Wilmington, Del.

Filed July 29, 1970, Ser. No. 59,329

Int. Cl. G01s 9/66

U.S. Cl. 340-3 R

21 Claims



1. In a sonar system comprising apparatus for transmitting and receiving signals and a housing in which said apparatus is enclosed, said housing including an acoustical window through which signals pass, the improvement comprising: said acoustical window being a composite structure comprising a cured composite laminate of layers of fiber said fiber being selected from the group consisting of Type E glass, carbon and graphite, said fibers being impregnated with epoxy resin, and said epoxy resin containing high strength glass microspheres or elastomeric polymer.

3,858,166

RECOVERABLE UNDERWATER ACOUSTIC BEACON

John W. Hammond, York, Pa., assignor to Charles D. Briddell, York, Pa.

Filed Dec. 26, 1973, Ser. No. 428,026

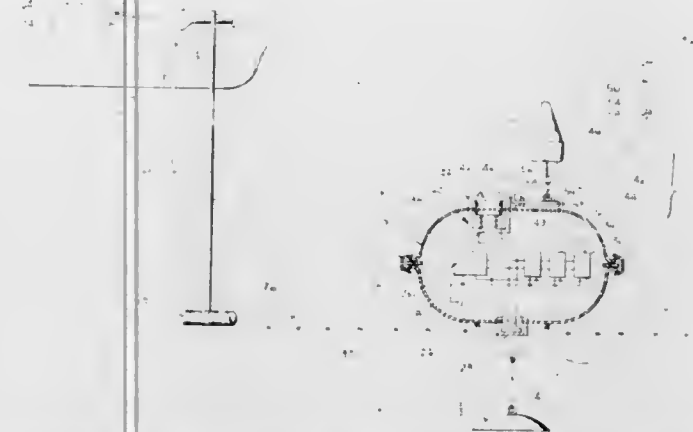
Int. Cl. B63b 21/52; B63c 7/26

U.S. Cl. 340-5 R

7 Claims

1. A recoverable underwater acoustic beacon system comprising in combination, mechanism to be anchored at a desired location relative to the bed of a body of water and including an anchor to be disposed upon said bed and an acoustic beacon connected thereto for positioning below the upper level of said body of water, electrically-powered acoustical signal-producing means within said beacon operable automatically to emit signals at periodic time intervals, receiving means within said beacon responsive to an acoustic impulse from an exterior source, a buoyant marker and a tether extending between said marker and said anchored mechanism, magnetically operated latch means on said anchored mecha-

nism operable normally to secure said buoyant marker in desired position below the upper level of said body of water, and acoustical electrical impulse-receiving means operable relative to said latch means when said signal receiving means receives an impulse from said exterior source to neutralize the



magnetic effect of said latch means and thereby cause said latch to release said buoyant marker and permit it to rise to the upper surface of said body of water while tethered to said anchored mechanism and thereby disclose the location thereof for retrieval.

3,858,167

ARRANGEMENT FOR DETERMINATION OF THE CONTINUITY OF THICKNESS AND OF STRUCTURAL-TECTONIC ELEMENTS OF MINEABLE LAYERS, PARTICULARLY OF COAL SEAMS

Bretislav Štas; Ludek Dlouhy; Lubomir Siska, and Adolf Skrabis, all of Ostrava, Czechoslovakia, assignors to Vedeckovýzkumny úřad, Ostrava-Radvanice, Czechoslovakia

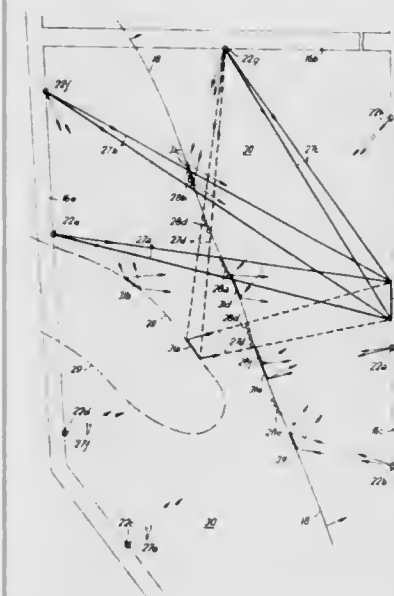
Filed June 12, 1972, Ser. No. 262,071

Claims priority, application Czechoslovakia, June 29, 1971, 4774-71

Int. Cl. G01v 1/14

U.S. Cl. 340-15.5 SW

3 Claims



1. Arrangement for determination of the continuity of thickness and of structural-tectonic elements of mineable layers, particularly of coal seams, having a reduced elasticity with respect to surrounding rocks, forming their rock cover and bedrock, providing a multicomponent blast base directionally orientated, composed of charges arranged along a line forming an angle of 45° to 135° with respect to the direction of the main beams of a transverse seam wave, a fuse for discharge of said charges, a generator of oscillations, a registration base composed of a number of seismic pick-up devices, said seismic pick-up devices arranged at the edge of a free surface, created by partial interruption of the coal seam by a

mine gallery, a seismic amplifier having a number of inputs and at least one output, a registration device, a time standard, a DC voltage source for the seismic amplifier and a supply source for energizing the registration device and the time standard, the generator of oscillations connected to the fuse for discharge of the charges, the generator of oscillations connected to a first input of the seismic amplifier, to a second input of the seismic amplifier the DC voltage source being connected, other inputs of the seismic amplifier connected to groups of seismic pick-up devices, the output of the seismic amplifier connected to the registration device, which in turn is connected to the time standard, both being energized from the supply source.

3,858,168

METHOD OF FILTERING MULTI-COMPONENT SEISMIC DATA

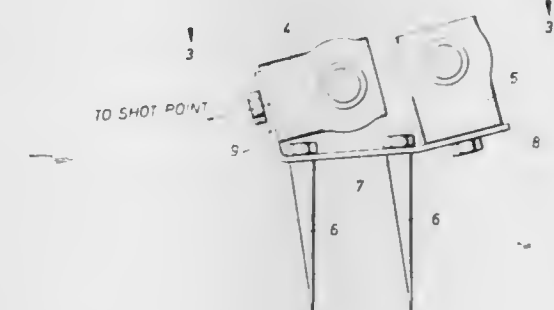
Frederick J. Barr, Jr., and Clifford H. Ray, both of San Antonio, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Filed Sept. 13, 1972, Ser. No. 288,686

Int. Cl. G01v 1/28

U.S. Cl. 340-15.5 CP

4 Claims



1. In the method of seismic prospecting in which signals are separately but simultaneously received from a substantially vertical direction and a substantially horizontal direction and separately recorded as first and second signals representative of first and second functions of time, respectively, the improvement comprising:

- a. passing said first signal through a first channel including a digital filter to produce a third signal representative of a third function of time;
- b. passing said second signal through a second channel including a digital filter to produce a fourth signal representative of a fourth function of time;
- c. summing the third and fourth signals, thereby producing a fifth signal representative of a fifth function of time, in which ground-wave noise is significantly attenuated.

3,858,169

GEOPHONE IMPULSE TESTER

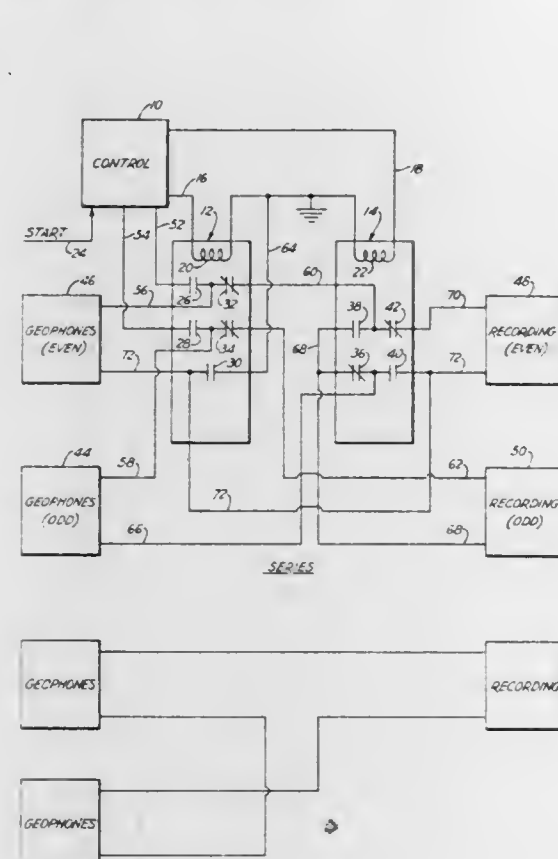
Thomas Bardeen, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 26, 1973, Ser. No. 344,548

Int. Cl. G01v 1/00

U.S. Cl. 340-15.5 CP

9 Claims



1. A method of testing a pair of seismic channels, each of said channels comprising a string of geophones and a recording means adapted to record the impulses sensed by said geophones, comprising the steps of producing an impulse having a predetermined time duration which is substantially shorter than the natural period of each geophone in said string of geophones, supplying said impulse of said predetermined time duration to said pair of strings of geophones, connecting said pair of strings of geophones together in phase opposition with each other and to one of the recording means of one channel of said pair of seismic channels, whereby a deviation from a balanced condition will appear as a deviation from a null line on said recording means and the direction of the deviation from said null line is indicative of which string of geophones of said pair of strings of geophones is not normal.

3,858,170

VIBRATOR PERFORMANCE MONITOR

Francis R. Freeman, and Joseph F. Metrailler, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Oct. 23, 1973, Ser. No. 408,355

Int. Cl. G01v 1/14

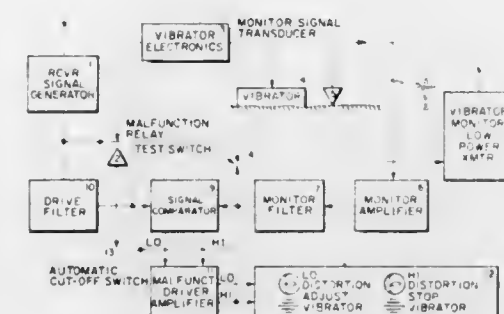
U.S. Cl. 340-16 C

20 Claims

1. In a seismic prospecting system utilizing at least one individual earth vibrator for generating seismic signals at a pattern of separated locations on the surface of the earth in accordance with a predetermined electrical driving signal, the method of monitoring individual vibrator operation comprising the steps of:

- producing a monitor electrical signal corresponding to each said seismic signal injected into the earth by said individual vibrator at each vibrator location;
- amplifying each said monitor electrical signal such that its amplitude approximately equals the amplitude of said predetermined electrical driving signal;

c. comparing each said amplified monitor and said predetermined electrical driving signal such that a first malfunction signal is produced when said signals differ in a first predetermined amount indicative of faulty vibrator operation; and



d. actuating a first indicator at said individual vibrator by said first malfunction signal, whereby the operator of said individual vibrator can be alerted to the fact that his equipment is not operating correctly and should be adjusted.

3,858,171

ELECTRIC SONIC IMPLODER

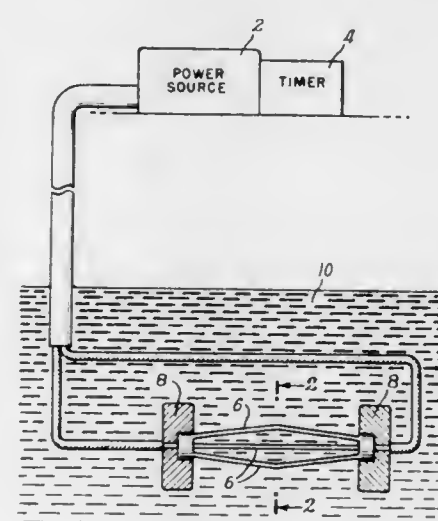
Joseph Pauletich, 91-18, 43rd Ave., Elmhurst, N.Y. 11373

Filed Oct. 12, 1972, Ser. No. 297,079

Int. Cl. H04b 13/00

U.S. Cl. 340-12 R

3 Claims



1. An underwater sound imploder comprising at least one bare wire conductor submerged in a liquid medium, a low voltage source connected to said conductor for supplying a current therein for generating heat below the vaporization temperature of said wire, and a pair of opposing baffle plates submerged in said medium and disposed respectively at the ends of said conductor whereby the implosion generated by said device is confined substantially to the region between said baffles.

3,858,172

ALTITUDE DETECTING INSTRUMENT

Richard D. Henry, Hookstown Grade Rd., R.D. No. 1, Clinton, Pa. 15026

Filed Mar. 5, 1973, Ser. No. 337,928

Int. Cl. G08g 5/02

U.S. Cl. 340-27 NA

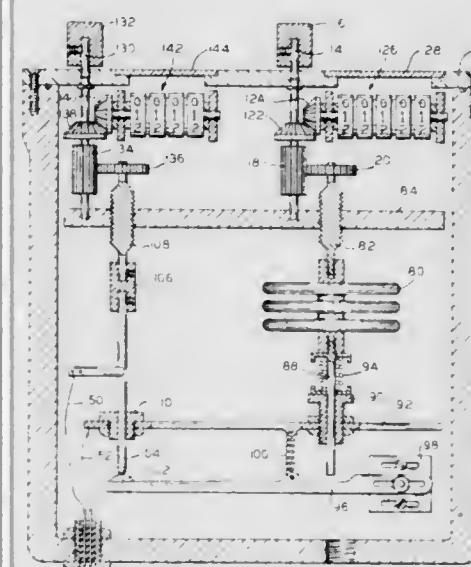
25 Claims

1. In a barometric instrument:

a control circuit and signal means responsive to said control circuit as the pilot either ascends or descends through a predetermined altitude, said control circuit comprising an

ascend circuit and a descent circuit, a manual combination arming and disarming switch having a first position wherein the ascent circuit is armed and the descent circuit is disarmed and a second position wherein the descent circuit is armed and the ascent circuit is disarmed, a pressure responsive element having adjustment means making such pressure responsive element energizable at a predetermined altitude,

a switch operated by said pressure responsive element, and a relay switch responsive to said pressure responsive element operated switch to a first position for connecting



a power source to said signalling means through said manually controlled switch and said ascent circuit as the plane is ascending through the predetermined altitude, said manually operated switch being effective in its second position for simultaneously disarming the ascent circuit and arming the descent circuit as the aircraft ascends through a predetermined altitude to deactivate the signalling means, said pressure responsive operated switch being operable as the aircraft descends through the predetermined altitude to again energize said signalling means through said descent circuit by operation of said relay controlled switch means.

3,858,173

SENSOR OF VEHICLE LOAD OR OVERLOAD

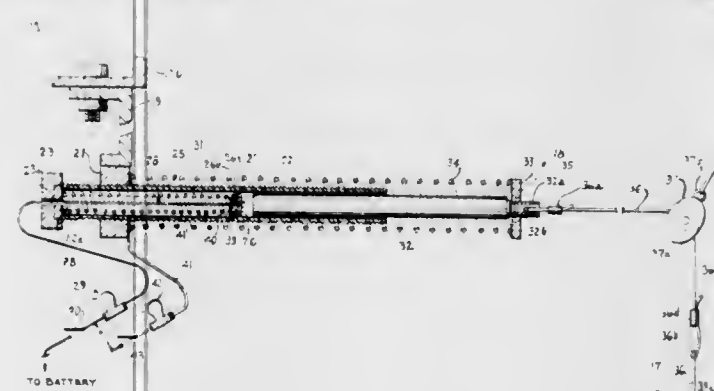
Ward H. Ryan, 2146 Virginia Ave., Phoenix, Ariz. 85009

Filed June 1, 1973, Ser. No. 366,086

Int. Cl. G08b 21/00

U.S. Cl. 340-52 R

11 Claims



1. A load or overload sensor for a frame supported, load supporting area, said frame being yieldably supported, as by leaf spring means above vehicle axle means, said sensor in-

cluding a frame carried, first contact carrier, horizontally, longitudinally adjustable with relation to said frame and carrying compression spring means at maximum extension disposing an insulative first contact positioning means that disposes said first contact for closure with a second contact of said sensor responsive to downward movement of load supporting area and frame corresponding with a predetermined elevation, said second contact being carried by a second contact carrier including a connection means with the rear end of a tension spring connected thereto, the forward end of said tension spring being yieldably connected to said frame, a frame suspended pulley and a second contact connected cable means passing over said pulley and affixed to vehicle axle journal means, insulative conductor means carrying circuit from said first contact to indicia means, actuated upon contact closure, to render load indication, said first contact positioning means being horizontally slidable with relation to said first contact carrier and said compression spring being yieldably urged in contraction responsive to further increase in load after circuit closure between said first and second contacts.

3,858,174

TIRE PRESSURE MONITORING SYSTEM

Paul Anthony Harris, Stonnall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

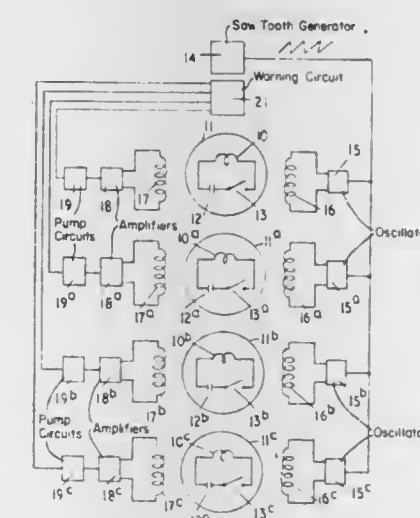
Filed July 26, 1973, Ser. No. 382,848

Claims priority, application Great Britain, Aug. 3, 1972, 36222/72

Int. Cl. B60c 23/02

U.S. Cl. 340-58

2 Claims



1. A tire pressure monitoring system including a tuned circuit rotating with the tire to be monitored, the tuned circuit including a pressure-responsive switch, said system further including a variable frequency transmitter supplying energy to the tuned circuit, a controller producing a ramp voltage at a predetermined frequency which is low relative to the frequency range of said transmitter, means coupling said controller to said transmitter, the frequency of said transmitter being determined by said ramp voltage, whereby said transmitter transmits signals over a band of frequencies, and a receiver for detecting energy in the tuned circuit, said band of frequencies including the resonant frequency of the tuned circuit.

3,858,175

MOTOR VEHICLE ELECTRONIC SECURITY ALARM SYSTEM USING SEQUENCE CONTROL ARMING

Joseph J. Kopera, Jr., Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 8, 1972, Ser. No. 287,401

Int. Cl. B60n 25/10; G08b 13/08

U.S. Cl. 340-63

2 Claims

1. In a motor vehicle having a hood member, a trunk member, a plurality of door members, exterior lights, a horn, and

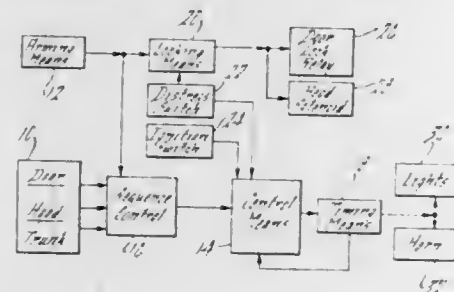
an electrical power supply, an electronic security alarm system comprising:

a plurality of switch means each located at a corresponding one of said vehicle members, each said switch means being normally in a first position indicating that the corresponding member is in closed position and being actuable to a second position whenever the corresponding member is opened;

arming means operatively associated with a key-actuated lock of the motor vehicle and responsive to the actuation of a key in the lock to provide an arming signal for arming the security alarm system;

a plurality of locking means each associated with a corresponding one of said door members and of said hood member and responsive to said arming signal and to the first position of the corresponding switch means for locking the corresponding member in its closed position;

control means operatively coupled with said arming means and all said switch means for providing a control signal, said control means comprising first control circuit means for providing said control signal in response to said arming signal and to actuation of the switch means associated with the hood member from its first to its second position,



second control circuit means for providing said control signal in response to said arming signal and to actuation of the switch means associated with the trunk member from its first to its second position, and third control circuit means for providing said control signal in response to said arming signal and to actuation of any one of the switch means associated with the door members from its first to its second position provided that all said door member switch means have been previously actuated to their respective first positions;

timing means responsive to said control signal and electrically connected to the exterior lights and the horn for pulsing the exterior lights and horn with electrical power from the electrical power supply in response to said control signal; and

a distress switch operatively coupled with said locking means and said control means, said distress switch being located within said vehicle and actuable by an occupant of the vehicle to actuate both said locking means and said control means independently of said arming means and of all said switch means whereby to prevent unauthorized entry into the vehicle and to pulse the exterior lights and the horn.

3,858,176

ELECTRICAL SWITCH ASSEMBLY

Gerald K. Miller; Dale L. Bull, and Norman A. Rautiola, all of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed May 3, 1972, Ser. No. 250,048

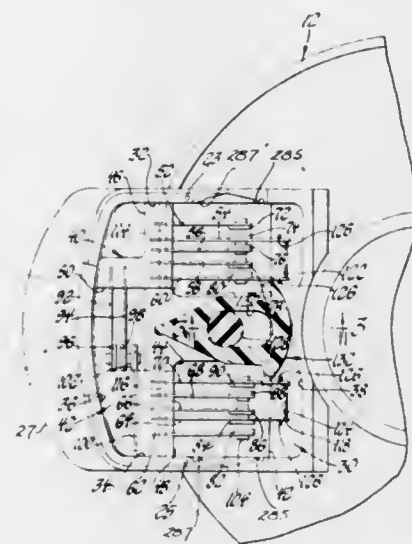
Int. Cl. B60q 1/34; H01h 3/16, 9/00

U.S. Cl. 340-73

29 Claims

1. An electrical switch assembly, comprising a support body, cam means carried by said support body, said cam means being movable to and from various operating positions, lever means operatively connected to said cam means for selectively pivotally moving said cam means to and from certain of said various operating positions and for translationally moving said cam means to and from other of said various

operating positions, a plurality of electrical contacts carried by said support body and leading to associated electrical circuitry, said plurality of electrical contacts being arranged in generally close proximity to said cam means as to be generally in the path of movement of said cam means when said cam means is moved to and from said various operating positions to thereby be selectively acted upon for opening and closing movement thereof by said cam means, said plurality of electrical contacts being adapted for electrical connection to related electrical circuitry, resilient means effective for resiliently resisting pivotal movement of said cam means by said lever



means towards said certain of said operating positions the same said resilient resistance means also being effective for resiliently resisting translational movement of said cam means by said lever means toward said other of said operating positions, said resilient resistance means being effective to progressively increase the magnitude of resilient resistance as said cam means is moved toward any and all of said operating positions, and additional means effective for resiliently latching said cam means in any of said operating positions when said cam means has been moved to said any of said operating positions.

3,858,177

VEHICLE BLINK PULSE GENERATOR MANUFACTURABLE ON AN INTEGRATED CIRCUIT BASIS

Adolf Kugelmann, Leonberg; Gerhard Conzelmann, Leinfelden; Ewald Henninger, Frieolzhelm; Dieter Meyer, Feucht, and Hartmut Seiler, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

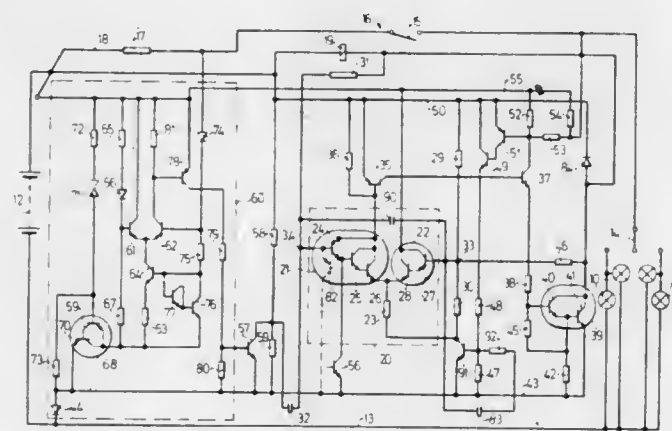
Filed June 13, 1973, Ser. No. 369,583

Claims priority, application Germany, July 24, 1972, 2236210

Int. Cl. B60g 1/38

U.S. Cl. 340-73

24 Claims



1. A blink pulse generator suitable for directional lights of a motor vehicle and producible largely with integrated circuit units comprising, in combination with a voltage source (12), a selector switch (14) and a plurality of directional lights (10 or

11) for connection in circuit in each active position of said selector switch:

an amplifier (20) connected with its input across the diagonal of a bridge circuit composed of resistors and a capacitor (32) and with its output connected with a first switching means (39) for causing said amplifier to operate as an astable multivibrator by causing said capacitor (32) to charge and discharge between two limit potentials provided at at least one extremity of said bridge diagonal, the output of said first switching means (39) being connected for that purpose to a resistor (46) connected at its other end to an extremity (33) of said diagonal of said bridge, said output of said first switching means (39) being also connected to operate a second switching means (15, 16) for flashing the directional lights connected in circuit by said selector switch (14), and

means including a third switching means (57) for modifying the frequency of said operation of said amplifier (20) as an astable multivibrator by change of at least one of said limit potentials at at least one extremity of said diagonal of said bridge, said third switching means (57) being controlled by an electrical signal indicating the condition of said directional lights.

3,858,178

DIRECTION INDICATOR SYSTEMS FOR TRACTOR-TRAILER VEHICLES

David Blackburn Harrison, Radlett, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

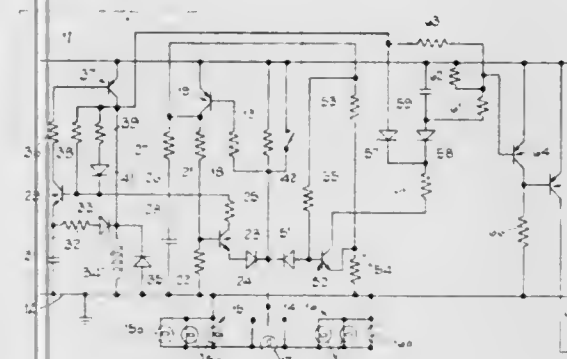
Filed Sept. 17, 1973, Ser. No. 397,738

Claims priority, application Great Britain, Sept. 16, 1972, 43045/72

Int. Cl. G08b 5/38; B60q 1/26

U.S. Cl. 340-80

5 Claims



1. A direction indicator system for a tractor-trailer vehicle, comprising at least two left-hand and at least two right-hand direction indicator lamps on the tractor vehicle, at least one left-hand direction indicator lamp and at least one right-hand direction indicator lamp on the trailer vehicle, the left-hand and right-hand direction indicator lamps on the trailer vehicle being connected in parallel with the left-hand and right-hand direction indicator lamps on the tractor vehicle respectively, a direction indicator switch for completing a circuit to either the left-hand or the right-hand direction indicator lamps, a first pilot lamp connected between the circuit to the left-hand and right-hand direction indicator lamps so that when the direction indicator lamps on one side of the vehicle are selected, the first pilot lamp is energized by way of the direction indicator switch to the selected direction indicator lamps, an oscillator controlling the supply of power by way of the direction indicator switch to the selected direction indicator lamps, so that the selected direction indicator lamps flash at a frequency determined by the oscillator, means operable when at least two of the direction indicator lamps selected by the direction indicator switch fail for altering the frequency of said oscillator so that the first pilot lamp flashes at a different frequency, a second pilot lamp, switching means controlled by said oscillator for causing said second pilot lamp to flash in synchronism with the first pilot lamp, and means operable when one of the direction indicator lamps selected by the

direction indicator lamps fails for preventing flashing of said second pilot lamp.

3,858,179

ERROR DETECTION RECORDING TECHNIQUE

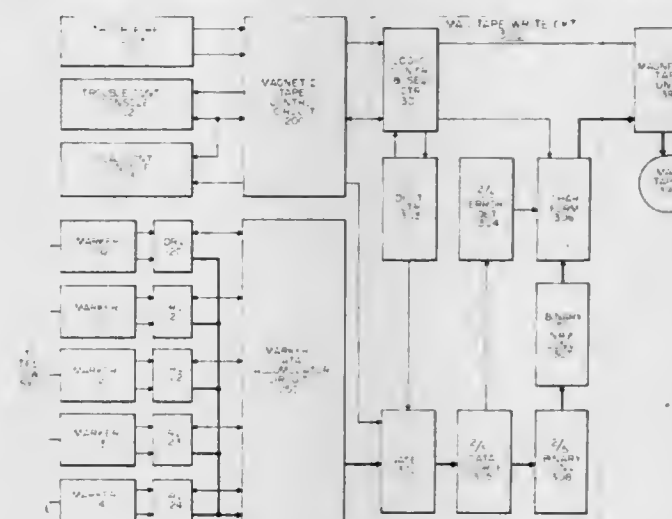
Donald W. McLaughlin, Bolingbrook, and Panayote D. Makantassis, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 2, 1973, Ser. No. 347,262

Int. Cl. G05b 23/02; H03k 13/32

U.S. Cl. 340-146.1 R

6 Claims



1. For use in a telephone system data recording subsystem wherein coded characters representative of call switching data are transmitted from telephone switching equipment to data recording means, a data error detector comprising:

a code error detector connected to a source of coded data, operated in response to detection of an error in the coding of said data,

an output circuit connected to said data recording means, including a plurality of signal drivers, each connected to said recording means,

and a plurality of latch circuits connected between said error detector and a portion of said signal drivers, initially operated in response to the conduction of error free coded data to said error detector, to operate said portion of signal drivers to transmit a first plurality of predetermined signals to said recording means, said plurality of signals forming a portion of the coded data recorded by said recording means.

3,858,180

SYSTEM FOR AUTOMATICALLY READING SYMBOLS

Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, Kortenaerkade, The Hague, Netherlands

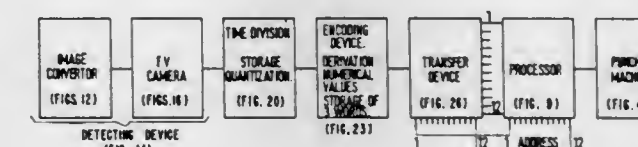
Filed Feb. 14, 1972, Ser. No. 225,839

Claims priority, application Netherlands, Feb. 19, 1971, 7102210

Int. Cl. G06k 9/12

U.S. Cl. 340-146.3 F

35 Claims



1. A system for reading symbols, preferably figures, which may be hand-written on an information carrier (form), an arrangement of rectangles being provided on the information carrier (form), one rectangle for each symbol to be entered, characterized in that the width-to-height ratio per rectangle is

an encoder electrically connected to said sensory means an operable upon said discrete outputs to provide a digital coded output representative of the element's position;
 signal transfer means electrically coupled to said encoder, output and controlled by a corresponding command address signal to transmit said digital coded output;
 signal retrieval means for generating, sequencing and transmitting said corresponding command address signal to said signal transfer means to effect transmission of said digital coded output to said retrieval means, said retrieval means being operable to process said digital coded encoder output into a display signal output.
 fault detection means for monitoring said digital coded encoder output representative of the element's position for a malfunction and responsive to electrical malfunctions effecting said digital coded encoder output representative of the element's position to generate a separate digital coded encoder output identifying the malfunction and transmit the same to said signal retrieval means in place of the digital coded output associated with the malfunction in response to said address corresponding to said digital coded encoder output associated with the malfunction; and
 display means responsive to said display signal from said retrieval means to provide a corresponding visual display.

3,858,192

INTRUSION DETECTOR ALARM SYSTEM HAVING LOGIC CIRCUITRY FOR INHIBITING FALSE ALARMS

Lawrence E. Fischer, Bridgeport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 26, 1972, Ser. No. 317,981

Int. Cl. G08b 13/18

U.S. Cl. 340-258 R

2 Claims



1. Intrusion detector logic circuitry for producing an output alarm signal on a predetermined input signal sequence from a detector array comprising, in combination,

- a passive detector array having a predetermined field of view for producing a signal sequence when an intruder moves in the field of view of said detector array;
- means for applying said signal sequence to one of the inputs of a pair of dual input retriggerable one-shot circuits having a single output at which an alarm signal is generated when said signal sequence occurs within a predetermined time interval;
- gating means having first and second inputs and an output, said single output of said pair of retriggerable one-shot circuits coupled to said first input of said gating means for passing an alarm signal to said output thereof, and
- feedback means coupled between the output of said gating means to the other inputs of said dual input retriggerable one-shot circuits for retriggering said one-shot circuits to assure an alarm signal at the output of said gating means of predetermined duration regardless of the

time difference in the input signal sequence as long as the sequence occurs within a predetermined time interval.

3,858,193

ELECTRONIC INTRUSION ALARM SYSTEM

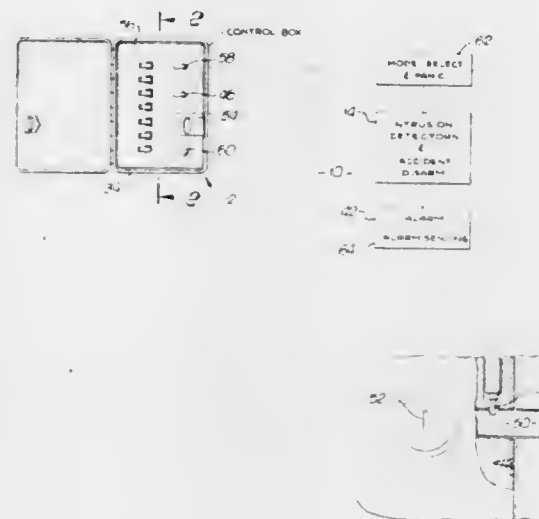
Loyal Morton Bach, 12608 Bendito Dr., San Diego, Calif. 92128

Filed Nov. 16, 1973, Ser. No. 416,363

Int. Cl. G08b 13/08

U.S. Cl. 340-274

17 Claims



1. A system for transmitting an alarm to a monitoring station to signal intrusion or attempted intrusion into a locked space, said system including:

- a main lock mechanism for permitting access to said space by authorized personnel;
- an auxiliary lock for preventing opening of said main lock mechanism;
- a set of intrusion detectors;
- an alarm transmitter;
- arming means for placing said intrusion detectors in condition to operate said alarm transmitter;
- auxiliary lock releasing means for permitting said main lock mechanism to be opened by authorized personnel;
- a control mechanism both for said arming means and for said auxiliary lock releasing means, said control mechanism being accessible exteriorly of said locked space for first and final access respectively upon entering and leaving said locked space, said control mechanism including operating means having two mutually exclusive modes corresponding respectively to operation of said arming means and operation of said auxiliary lock releasing means; said arming means being operable only in one of said two modes, and said auxiliary lock releasing means being operable only in the other of said two modes; and
- lock means for controlling access to said control mechanism.

3,858,194

SECURITY SYSTEM WITH MEANS FOR SUBSCRIBER CONTROL

Leo Jedynek, Madison, Wis., and Paul A. Bert, Crystal Lake, Ill., assignors to Oak Industries, Inc., Crystal Lake, Ill.

Continuation-in-part of Ser. No. 304,143, Nov. 6, 1972, which is a continuation-in-part of Ser. No. 126,590, March 22, 1971. This application Oct. 4, 1973, Ser. No. 403,415

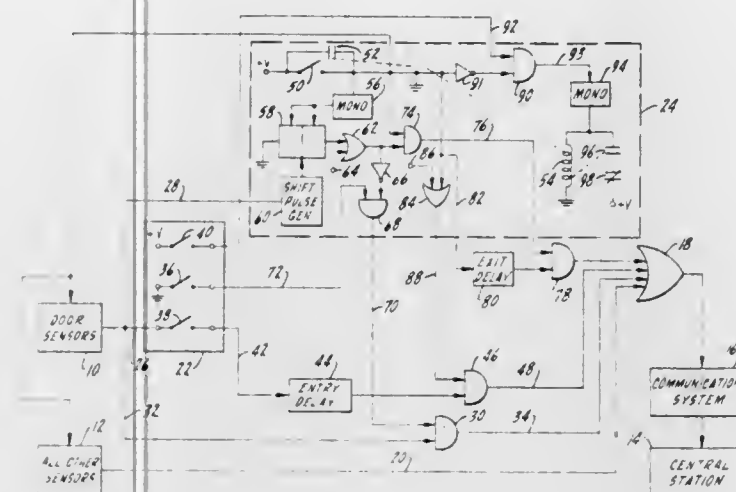
Int. Cl. G08b 13/00

U.S. Cl. 340-276

5 Claims

1. A security alarm system including detection means located at an installation to be protected, a central station, a communications link between said detection means and central station, a plurality of time delay means at the installation to be protected connected in circuit between said detection means and central station, each of said time delay means being arranged for use during a different period of the day, said time

delay means preventing transmission of an alarm signal from said detection means to said central station for a predetermined



mined period after initiation thereof, and a time clock, at the installation to be protected, for controlling operation of said time delay means.

3,858,195

AUDIO ALARM SYSTEM

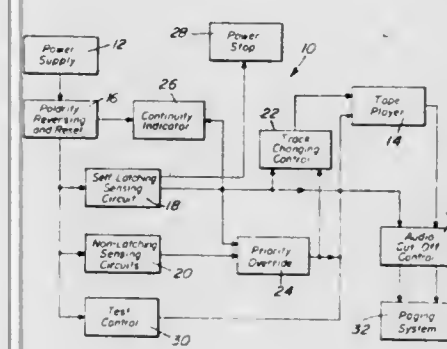
Joseph Gregg, Jr., Johnston, and John Paul Hannigan, Carrolltown, both of Pa., assignors to Jab Company, Inc.

Filed Aug. 28, 1973, Ser. No. 392,325

Int. Cl. H04m 11/02

U.S. Cl. 340-311

14 Claims



1. In combination with a record player having a player head displaceable relative to a plurality of tracks on a record medium from which different messages are reproduced, a plurality of sensors, a source of voltage, at least one self-latching circuit connected to said source of voltage for generating an intermittent player operating signal in response to actuation of one of the sensors, non-latching circuits connected to said source of voltage for generating continuous player operating signals in response to actuation of the other of the sensors, means for transmitting said signals to the record player to select the track at which the player head is positioned, interlock means for disabling the non-latching circuits in response to said intermittent player operating signal, reset means connected to said source of voltage for resetting the self-latching circuit in response to reversal in polarity of the source of voltage, and indicating means connected to said self-latching circuit for monitoring continuity thereof in response to said reversal in polarity.

3,858,196

DISPLAY SYSTEM EMPLOYING DIGITALLY-ADDRESSABLE CRT

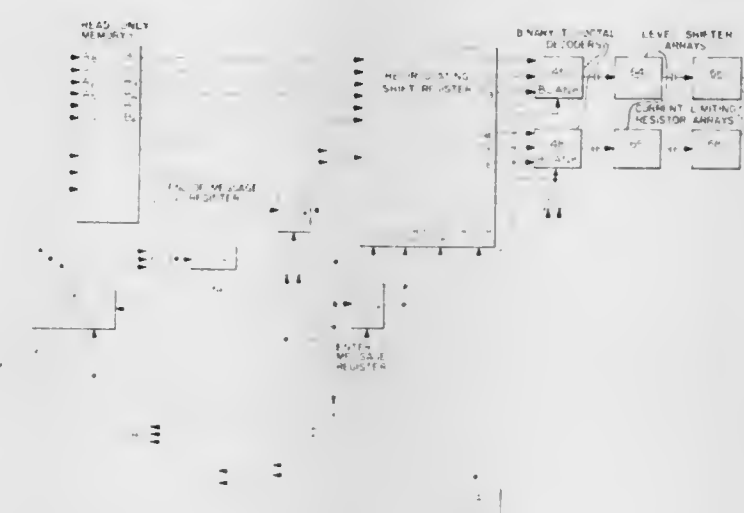
Joseph D. Vrabel, Concord, and Edwin H. Hilborn, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,294

Int. Cl. G08b 5/36

U.S. Cl. 340-324 A

13 Claims



1. A display system comprising:
 a cathode ray display tube, said tube having a plurality of cathodes each preaimed at a shadow mask associated with each cathode, each mask defining indicia which is enlarged by the tube electron optics to cover the entire display screen when its associated cathode is energized; means for sequentially receiving and storing information commensurate with portions of a desired display; and means for sequentially addressing the individual cathodes of the display tube in accordance with said stored information whereby indicia commensurate with the portions of the display are sequentially projected on the cathode ray tube display screen and the entire display will be visible due to the retention characteristics of the cathode ray tube screen.

3,858,197

DEVICE FOR CONTROLLING DISPLAY OUTPUT BY MICRO-PROGRAM

Mitsuo Shimizu, Yokohama, and Ichiro Sado, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1972, Ser. No. 303,013

Claims priority, application Japan, Nov. 10, 1971, 46-89560

Int. Cl. G06f 3/14

U.S. Cl. 340-324 R

4 Claims

1. A display control device for a numeric display unit comprising:

- a shift register (15) having input and output terminals for storing a binary coded numeric information from the input terminals;
- the numeric display unit (13) having a plurality of digit segments and a plurality of numeric segments in each of said digit segments for displaying the information stored in said shift register;
- a digit segment drive circuit (13A₀) connected to said digit segments of said numeric display unit for selectively energizing said digit segments, said digit segment drive circuit including a first decoder for decoding a plurality of binary codes entered and for selecting one of said digit segments;
- a numeric segment drive circuit (13K₀) for selectively energizing said plurality of numeric segments associated with each of said digit segments, said numeric segment drive circuit including a second decoder for decoding a plurality of binary codes entered and for selecting some or all of said numeric segments;

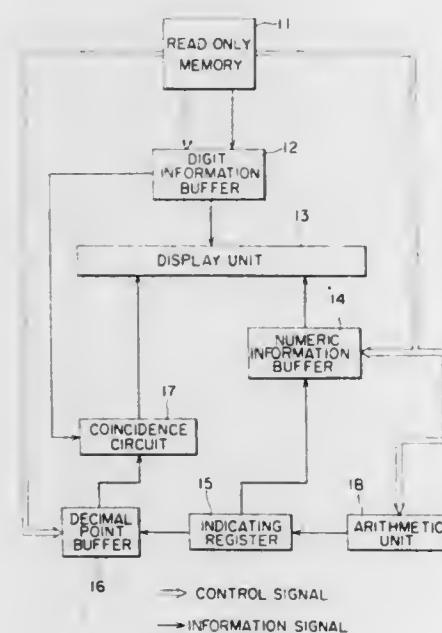
a digit information buffer circuit (12₁) having output terminals connected to the input terminals of said digit segment drive circuit;

a first group of AND gates (12₂) having output terminals connected to the input terminals of said digit information buffer circuit and each having two input terminals;

a numeric information buffer circuit (14₁) having output terminals connected to the input terminals of said numeric segment drive circuit;

a second group of AND gates (14₂) having output terminals connected to the input terminals of said numeric information buffer circuit and each having two input terminals;

an arithmetic unit (18) having output terminals for executing an arithmetic operation and for delivering the operational result to said shift register;



a read-only memory (11) composed of a semi-conductor large scale integration circuit having at least a data portion including digit position information stored and a control portion including gate control signal stored therein;

means for controlling said first group of AND gates to deliver a digit position information signal to said digit information buffer circuit in response to an application of the digit position information from said data portion of said read-only memory to one set of said input terminals thereof as well as an application of the gate control signal from said control portion of said read-only memory to the other set of said input terminals thereof;

means for controlling said second group of AND gates to deliver a binary numeric information signal to said numeric information buffer circuit in response to an application of one digit numeric information from said shift register to one set of input terminals thereof as well as an application of the gate control signal from said control portion of said read-only memory to the other set of input terminals thereof;

means for controlling said numeric display unit so that said plurality of digit segments are sequentially energized in accordance with the sequence of the digit information stored in said read-only memory and said numeric segments are selectively energized to display the numeric information stored in said shift register in accordance with the gate control signal included in said read-only memory, thereby to display plural digits of numerals on a time division basis.

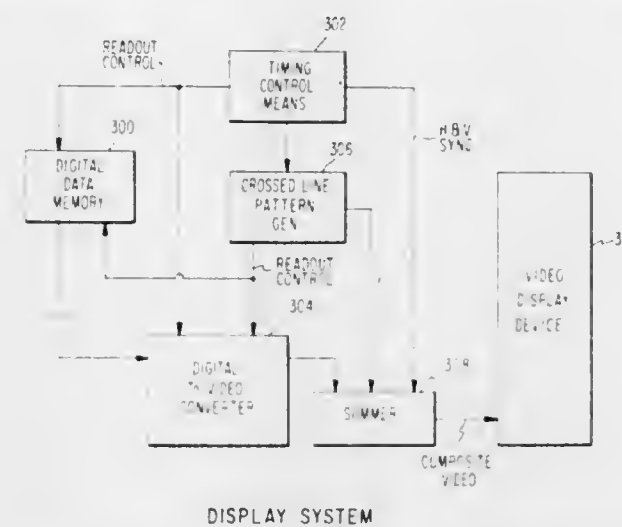
3,858,198 FIXED FORMAT VIDEO DATA DISPLAY EMPLOYING CROSSED-LINE PATTERN FORMAT DELINEATION

Walter Lee Ross, Simi, Calif., assignor to RCA Corporation, New York, N.Y.

Filed June 22, 1973, Ser. No. 372,646
Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD

10 Claims



1. In a raster-scan data display system incorporating storage means and readout means coupled to said storage means for use in electronically repetitively generating successive raster-scanned fields displaying stored game-score or other similar data of a given kind of game on a video-signal display device while the game is progressing, said readout means causing said score data to be displayed in a standardized fixed format of said display device in which any of separate given portions of said data is compartmentalized within its own individual area of said display; the improvement wherein said readout means includes time-controlled means independent of said storage means and any of said data for generating as part of said successive raster-scanned fields a pattern of crossed lines having predetermined locations with respect to each other which delineate each of said individual areas of said standardized fixed format.

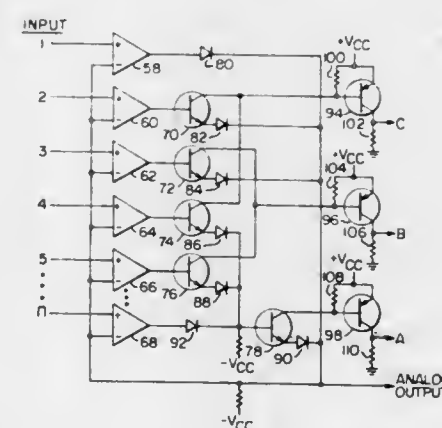
3,858,199 TRACKING LEVEL DETECTOR

James A. Neuner, Gibsonia, Pa., and Maurizio Traversi, Torino, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,778
Int. Cl. H03k 13/00

U.S. Cl. 340—347 AD

1 Claim



1. A tracking detector comprising means for comparing the level of n analog electrical inputs, where n is an integer from one to infinity, and responsive to one of said n inputs having an extreme analog value of predetermined sign at any given point in time as compared to the remaining $n - 1$ inputs to provide an analog output electrically buffered from and equal to said one input having the extreme value including:

n operational amplifiers having a first non-inverting input and a second inverting input and an output, each of said inverting inputs being connected in parallel to said analog output and each of said non-inverting inputs being connected to corresponding ones of said n inputs;

n diodes respectively connected in series with corresponding ones of said n operational amplifier outputs in a direction to pass the output in accordance with the predetermined sign, each of said diodes being wire OR-ed to said analog output so as to form a feedback loop between the corresponding inverting inputs and outputs of the respective operational amplifiers;

bias reference voltage means connected at said analog output having a predetermined floating voltage value to bias said n operational amplifiers to pass said one of said n inputs having the extreme value to said analog output so as to accommodate high common mode input voltages on said n inputs in the order of magnitude of said bias voltage; and

an encoder electrically connected as a part of said feedback loop to said n operational amplifiers and responsive to said one of said n inputs having the extreme analog value to provide a digital coded output corresponding thereto having x bits where 2^x equals n .

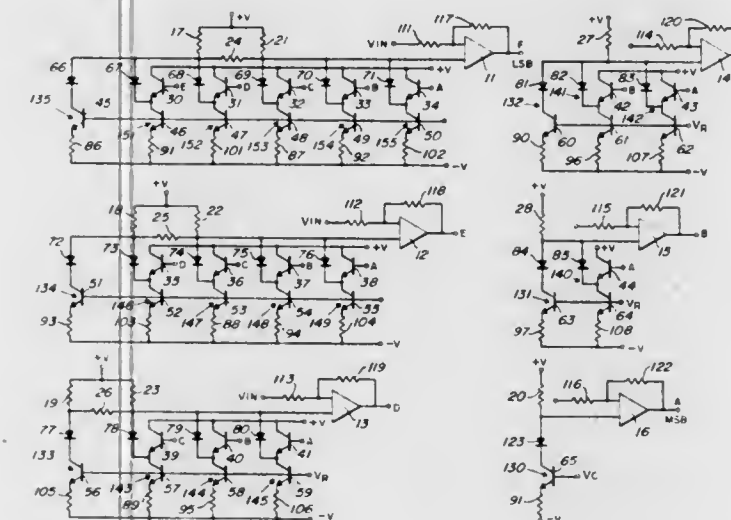
3,858,200 VARIABLE THRESHOLD FLASH ENCODER ANALOG-TO-DIGITAL CONVERTER

Tim Warren Henry, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 29, 1973, Ser. No. 327,334
Int. Cl. H03k 13/00

U.S. Cl. 340—347 AD

12 Claims



1. An analog-to-digital converter having input means for receiving an input analog voltage to be converted to a digital representation of n bits wherein a first voltage level is designated a binary "1" and a second voltage level is designated a binary "0," comprising:

- n comparator means, each having an input terminal connected to the input means, a threshold terminal for receiving a voltage threshold and an output terminal for providing either a binary "1" or a binary "0," determined by the relative amplitudes of the analog input voltage and the voltage threshold establishing a "1" or "0" state of the comparator means;
- n threshold voltage circuit means, each connected to the threshold terminal of a corresponding one of the n comparator means for providing a voltage threshold to the respective threshold terminal;
- at least one varying circuit means for varying at least one of the voltage thresholds;
- at least one switching circuit means, operatively connected to the output terminal of one of the n comparator means, responsive to the state of the comparator means, for connecting the varying circuit means to the threshold voltage circuit means connected to the threshold terminal

of another of the n comparator means to vary the voltage threshold if the switching circuit means are activated; and

e. said n comparator means being responsive to the applied analog input signal for asynchronously generating binary information at said plurality of n comparator output terminals in accordance with the delay time of said n comparator means.

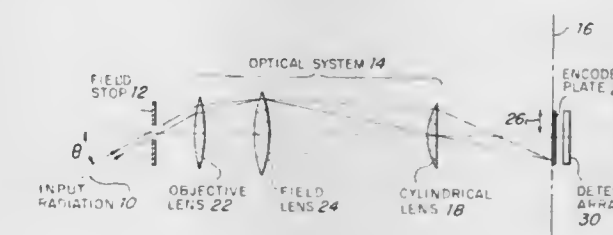
3,858,201 HIGH ANGULAR RESOLUTION SENSOR

Leigh Curtis Foster, Atherton, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 15, 1973, Ser. No. 406,716
Int. Cl. H03k 13/18; G08c 9/06

U.S. Cl. 340—347 P

9 Claims



1. A system for detecting the direction from which incident radiation is received from over a given field of view, and comprising:

- a cylindrical optical system for gathering radiation from the relatively wide field of view and for directing the radiation back to a focal plane as a sharp line image with the position of the line image in said focal plane being dependent upon the direction from which the radiation is received;
- encoder means positioned substantially at said focal plane, said encoder means having a plurality of code tracks for selectively passing radiation in dependence upon the position of said line image relative to said code tracks;
- a plurality of detectors, at least one for each said code track, for detecting nonfocused radiation selectively passed by said code tracks, whereby said plurality of detectors will not be damaged by focused radiation and whereby the outputs of said plurality of detectors are representative of the position of said line image relative to said encoder means which in turn defines the direction from which the incident radiation is received.

3,858,202 PUSHBUTTON KEYBOARD SYSTEM

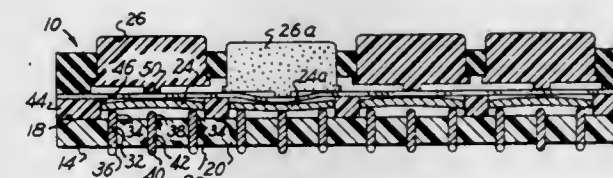
Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 148,503, June 1, 1971, Pat. No. 3,725,907. This application Apr. 2, 1973, Ser. No. 347,026. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.

Int. Cl. H04g 3/00

U.S. Cl. 340—365 R

3 Claims



1. In a selectively energizable keyboard system comprising an electrically insulating support member having a surface on which a plurality of conductive paths are disposed arranged in a preselected pattern adapted to transmit electrical information in response to selective interconnection of portions of said paths; a plurality of spaced apart generally U-shaped

conductive members arranged in a preselected configuration on said support member in electrical communication with preselected portions of said paths, means for selectively establishing electrical connection for the conduction of electrical current between certain of said paths including a plurality of selectively actuatable conductive elements, and means mounting said conductive elements adjacent but spaced from a surface of said support member, at least one of said conductive members being disposed adjacent each of said conductive elements, said conductive elements each being adapted for selective deflection into engagement with its said at least one conductive member in response to the application of a preselected deflecting force to said conductive element, thereby selectively to establish paths for the flow of electrical current between selected portions of said path.

3,858,203

SYNTHETIC RADIOMETER AND SYSTEM FOR IDENTIFYING OBJECTS

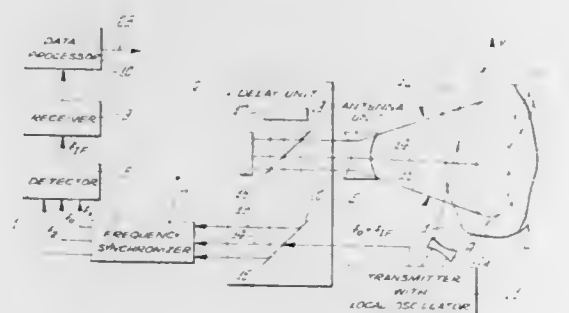
James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif. 90711

Continuation-in-part of Ser. No. 52,665, July 6, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 288,049

Int. Cl. G01s 9/56; G01p 3/36

U.S. Cl. 343-6.5 SS

20 Claims



1. In a synthetic radiometer having an antenna unit for receiving radiation from an object of interest, a detector for a radiation beam from the antenna unit, a receiver for signals from the detector, and a data processor for signals from the receiver, the improvement comprising:

a delay unit inserted between the antenna unit and the detector, said delay unit including means for separating incoming radiation from said antenna unit into at least two beams along different paths, and means for recombining the outgoing radiation to said detector into a single beam, with the paths of different length providing a delay in one separated beam relative to the other and providing a modulated beam at the detector for a radiating object moving through the field of the optical unit.

3,858,204

CLOSED LOOP GAIN CONTROL TUNNEL-DIODE BASE BAND OBJECT DETECTOR

Kenneth W. Robbins, Wilmington, and Gerald F. Ross, Lexington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,628

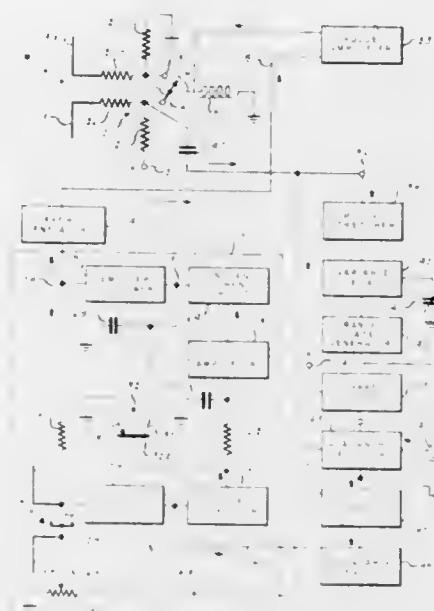
Int. Cl. G01s 7/28, 9/02; H04b 1/16

U.S. Cl. 343-7 ED

9 Claims

1. Base band signal selector means comprising: wide band transmission line receiver means for propagating base band pulse signals in the TEM transmission line mode substantially without distortion thereof, tunnel diode means having first and second terminal means coupled across said wide band transmission line means and responsive to said propagating base band pulse signals by a substantial change of conductivity state,

pulse shaping circuit means coupled to aid first terminal means, integrator means responsive to said pulse shaping circuit means, constant current circuit means responsive to said integrator means for charging capacitor means,



discharge circuit means responsive to said pulse shaping means for discharging said capacitor means, and circuit means for coupling said capacitor means to said first terminal for supplying a saw tooth wave form thereto.

3,858,205

BASE-BAND PRECOLLISION SENSOR WITH TIME DOMAIN GATING FOR PREVENTING FALSE RESPONSES

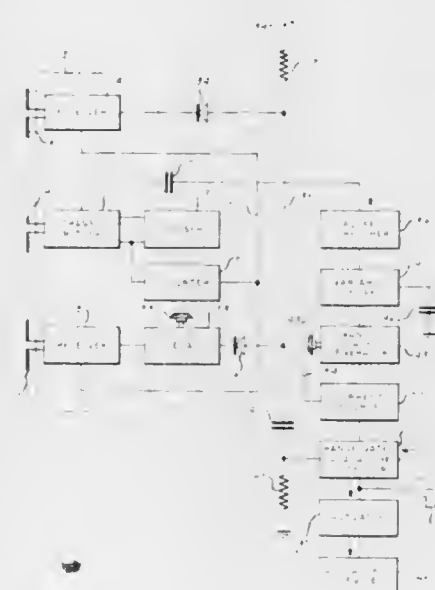
Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,648

Int. Cl. G01s 9/04

U.S. Cl. 343-7 ED

3 Claims



1. Vehicle borne protective precollision apparatus comprising:

transmitter means for radiating base-band electromagnetic pulses into a region of space in a portion of which a collision with an object will probably occur, first and second receiver means symmetrically disposed with respect to said transmitter means for receiving base-band electromagnetic pulses reflected from said object when in said region of space,

AND circuit means responsive to substantially simultaneous pulse outputs of said first and second receiver means and providing a pulse response only when said object is in a limited azimuth sector of said portion,

gate circuit means synchronously responsive to said transmitter means and responsive to said AND circuit means for producing a pulse output only when said object is in a limited range zone of said limited azimuth sector of said portion spaced from said transmitter means, and utilization means responsive to said gate circuit means including:

actuator means, and means actuatable by said actuator means,

said AND circuit means including:

first and second diode means respectively coupling said first and second receiver means to a common junction, source means coupled to said common junction for supplying electrical bias to said first and second diode means, and

impedance means for coupling said common junction to said gate circuit means.

3,858,206

METHOD AND MEANS FOR OPERATING AN AIRBORNE SWITCHED ARRAY RADAR SYSTEM

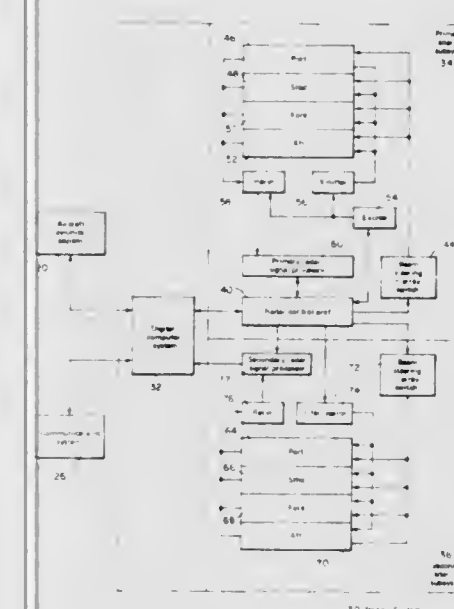
Stuart P. Scheidler, Anaheim; Gerald M. Goldberg, Chatsworth; Richard Sidlo, Placentia; Donald L. King, La Mirada, and Richard A. Gebhardt, Orange, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,765

Int. Cl. G01s 9/02

U.S. Cl. 343-7 A

12 Claims



1. In an airborne radar system including a plurality of fixed beam steered antenna structures mounted in an aircraft, each directed at different sectors within a 360° azimuth volume, control means carried by said aircraft for energizing said antenna structures, said control means comprising:

digital logic means for producing digital signals constituting a radar control command comprised of various information fields respectively specifying (1) an azimuth position within said azimuth volume and (2) either a track or search beam mode, said digital logic means producing

successive radar control commands each specifying said search beam mode and successive azimuth positions within said azimuth volume, and said digital logic means further producing radar control commands each specifying said track beam mode and an azimuth position within said azimuth volume;

said digital logic means further including priority means for determining the priorities of the radar control commands to be next produced by said search command means and said track command means;

means for enabling either said search command means or said track command means dependent on the relative value of said priorities to issue an active radar control command; and

transmitter means responsive to said active radar control command for supplying signal energy characteristic of the specified mode to the antenna structure corresponding to the specified azimuth sector.

3,858,207

RANGE SENSING TARGET DETECTING DEVICE

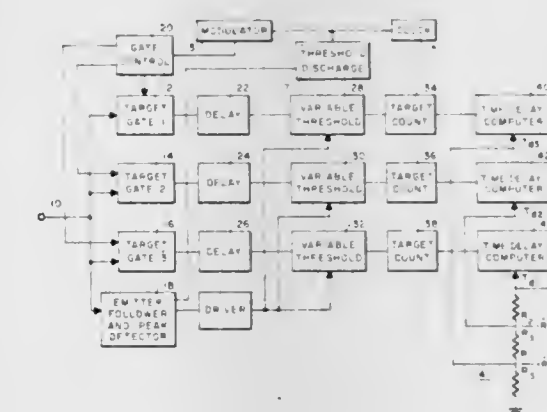
Bennie D. Macomber, Norco, and Noel D. Gravelle, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1966, Ser. No. 583,497

Int. Cl. F42c 13/04

U.S. Cl. 343-7 PF

5 Claims



1. In a guided missile range sensing target detecting device, the combination comprising:

a. a plurality of target gate circuits for receiving video signals reflected from a target,

b. target gate control means coupled to said plurality of target gate circuits for controlling the time interval each gate is open,

c. peak detector circuit means having an input for receiving and producing an output proportional to the amplitude of the reflected video signals,

d. delay filter circuit means coupled to each of said target gate circuits for attenuating signals which have a pulse width less than a predetermined value,

e. variable threshold circuit means coupled to each of said delay filter circuit means for passing only the video signals received from said delay filter circuit means when they exceed the output signal from said peak detector circuit,

f. target count circuit means coupled to each of said variable threshold circuit means for producing an output pulse in response to a predetermined number of video pulses received from said variable threshold circuit means within a predetermined time interval,

g. a plurality of computer circuit means each having a first input coupled to the output of a target count circuit means and having a second input for receiving a voltage proportional to missile to target closing velocity for producing an output firing pulse in response to the presence of a pulse from said target count circuit.

3,858,208

AUTOMATIC PRF SELECTION TO OPTIMIZE RANGE AND DOPPLER VISIBILITY IN RADAR TRACKING

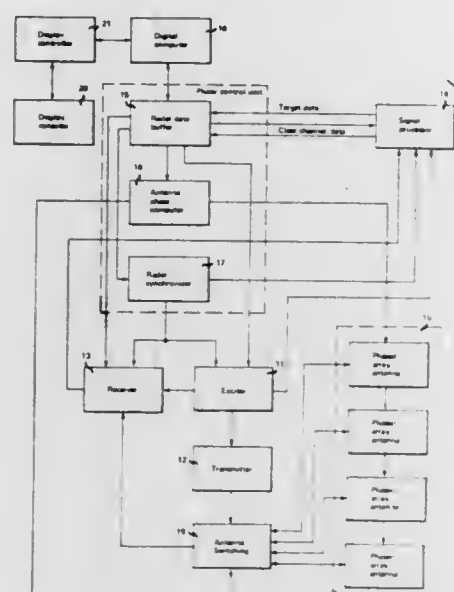
Donald P. Parke, Anaheim; Willis M. Priester, Garden Grove; Stuart P. Scheidler, Anaheim, and Gerald M. Goldberg, Placentia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,763

Int. Cl. G01s 9/10

U.S. Cl. 343-7.5

12 Claims



1. In a moving-target-indication (MTI) radar system for tracking targets, said system having a transmitter for transmitting radar pulses at a selected transmitting frequency, F , a receiver for receiving radar return signals, and a signal processor for cancelling all radar return signals except those having a doppler shift due to a moving target, apparatus for automatically selecting a pulse repetition frequency, PRF, within a given range of PRF's for optimum range and doppler visibility, comprising

computer means for selecting said transmitting frequency, computer means for finding a band of PRF's between velocity blind regions in said range of PRF's, where a velocity blind region is a small band of PRF's centered on a PRF which happens to be the same as the doppler frequency of the target being tracked, or a multiple thereof,

computer means for finding a particular PRF within said band of PRF's which does not have a range blind zone, spanning the predicted range of a target being tracked, and

radar synchronizing means for timing transmission of radar pulses at said particular PRF by said transmitter, each pulse consisting of electromagnetic energy at said transmitting frequency.

3,858,209

RADAR MOVING TARGET TRACKING SYSTEM

Donald I. Zulch, Oneida, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force.

Filed July 27, 1962, Ser. No. 214,173

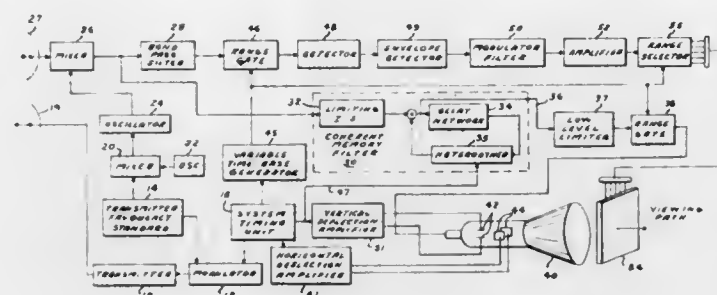
Int. Cl. G01s 9/42

U.S. Cl. 343-7.7

8 Claims

1. In a radar moving target indicator system having a transmitter periodically radiating pulses of high frequency

radiant energy and a receiver receiving reflections of the energy by an intercepted target and converting said reflections into corresponding video signals, each target when experiencing uncoordinated attitude flight manifesting such instability by uncontrolled tumbling which is evidenced by



amplitude modulation characteristics of said video signals, means in said receiver for extracting the amplitude modulation component of video signals resulting from a tumbling target, and display means using the extracted amplitude modulation component for indicating the rate of tumbling.

3,858,210

PROXIMITY INDICATION WITH RANGE AND BEARING MEASUREMENTS

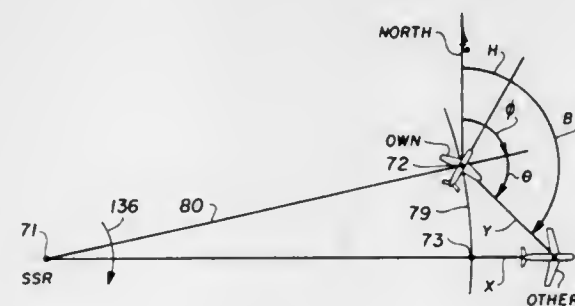
George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Division of Ser. No. 180,578, Sept. 15, 1971, Pat. No. 3,757,324. This application June 20, 1973, Ser. No. 371,883

Int. Cl. G01s 9/56, 9/02

U.S. Cl. 343-11 R

8 Claims



1. A method of determining slant range Y between an own and another transponder station that are in different directions from a secondary surveillance radar (SSR) such that they are interrogated successively as the main beam of the radar sweeps by them in succession, comprising the steps of:

- receiving the other's transponder replies at the own transponder station,
- establishing from said replies the other's dwell time as the SSR beam sweeps by the other station,
- establishing own's dwell time from the interrogations received by the own transponder as the SSR beam sweeps by the position of the own station,
- producing at the own station a common azimuth sector signal in response to occurrence of both of said dwell times within an interval that corresponds to the width of a predetermined common azimuth sector from the SSR,
- producing a range command signal in response to said common azimuth sector signal whereby replies of transponders occurring outside said common azimuth sector are ignored,
- transmitting said range command signal from said own station to said other transponder, and
- measuring and producing at the own station a quantitative representation Y of the time interval between said range command transmission and the reply received from the other's transponder in response thereto.

3,858,211

PROXIMITY INDICATION WITH RANGE AND BEARING MEASUREMENTS

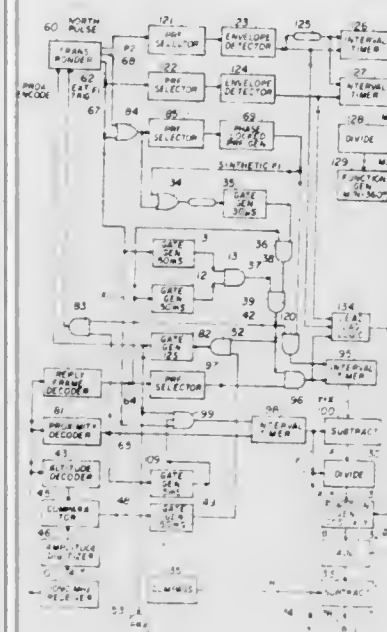
George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Division of Ser. No. 180,578, Sept. 15, 1971, Pat. No. 3,757,324. This application June 20, 1973, Ser. No. 371,839

Int. Cl. G01s 9/56

U.S. Cl. 343-16 R

6 Claims



1. A method of determining at an own transponder station the bearing angle ϕ of said own station from a selected secondary surveillance radar (SSR) that omnizimuthally transmits a reference signal as the main radar beam sweeps through a standardized reference direction, such as magnetic North, said method comprising the steps of:

- receiving said reference signals,
- receiving interrogation signals from said radar as the main beam sweeps by the own location,
- measuring the time interval between successive reception of one of said reference and said interrogation signals and producing a quantitative first representation of the main beam rotation interval,
- measuring and producing a quantitative second representation of the time interval between reception of a reference signal and reception of the next subsequently received interrogation signal,
- dividing the value of said second representation by that of said first representation to produce the quotient of said values, and
- producing a quantitative representation ϕ of said quotient.

3,858,212

MULTI-PURPOSE INFORMATION GATHERING AND DISTRIBUTION SYSTEM

Leo L. Tompkins, 127 Wacaster St., Jackson, Miss. 39210, and J. Willis Hughes, 306 Glenway Dr., Jackson, Miss. 39216

Filed Aug. 29, 1972, Ser. No. 284,516

Int. Cl. G01s 1/02

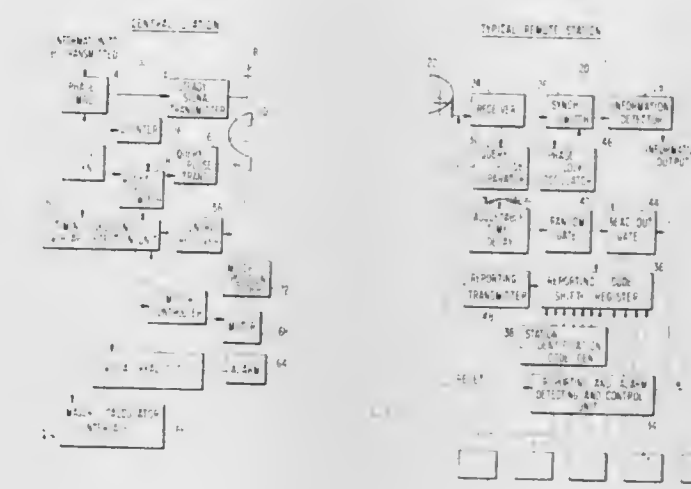
U.S. Cl. 343-100 CS

16 Claims

1. A multipurpose communications system for communicating between a central station and a plurality of remote stations, said system comprising:

a. first transmitter means at said central station for transmitting information to said remote stations, said transmitter means including:

- steady signal transmitter means for transmitting a steady information signal to all of said remote stations;
- omni-directional antenna means for radiating said steady information signal to all said remote stations;
- query signal transmitter means for transmitting query signals to said remote stations during very short predetermined interruptions in said steady information signal; and



- directional antenna means for radiating said query signals to at least one of said remote stations at a time;
- first receiver means at said central station for receiving data signals from said remote stations;
- second receiver means at each of said remote stations for receiving said steady information signals and said query signals from said first transmitter means;
- sensor means at each of said remote stations for sensing various conditions at said remote stations; and
- second transmitter means at each of said remote stations for transmitting to said first receiver means at said central station data signals indicative of the conditions sensed by said sensor means in response to said query signals.

3,858,213

ANTENNA WITH SHORT LINE TUNING STUB

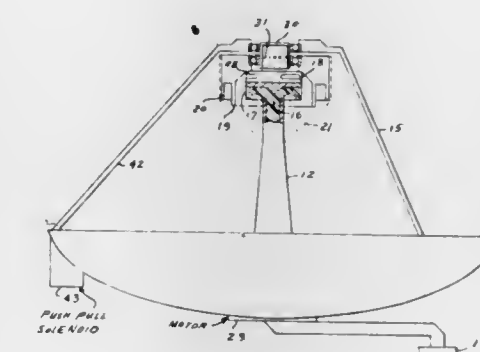
Jacob Tellier; Henry G. Burnett, both of Dallas, Tex., and Thomas S. Lewis, Charlottesville, Va., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Oct. 18, 1965, Ser. No. 497,571

Int. Cl. H04b 7/00

U.S. Cl. 343-100 PE

4 Claims



1. In an antenna, for providing lobing on receive on track only for a radio-frequency signal with a predetermined polar-

ization, having a reflector; a center feed; means for supporting said center feed in front of said reflector; a transmit splash plate on the end of said center feed; a serrated receive ring surrounding said transmit splash plate; a trislot TR tube mounted on said center feed in energy receiving relation to said receiving ring; said trislot transmit-receive tube having a circular window on the side thereof remote from said transmitter splash plate; means adjacent said circular window of said trislot transmit-receive tube, adapted to be switched between two predetermined angular positions, for presenting a short at the trislot tube input to said radio-frequency signal in one position and for presenting an open circuit at the trislot tube input, to said radio-frequency signal to effect modulation of the receive signal by said trislot transmit-receive tube in the other position and means for selectively switching said last named means between said two predetermined positions.

3,858,214

ANTENNA SYSTEM

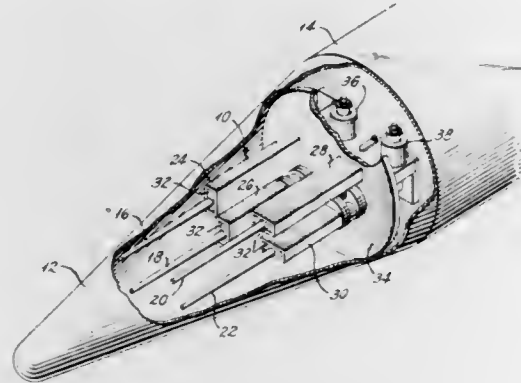
Howard S. Jones, Jr., Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1966, Ser. No. 552,376

Int. Cl. H01q 15/24, 9/30

U.S. Cl. 343-100 PE

8 Claims



1. An antenna system comprising a pair of dielectric rod radiators positioned in parallel end fire array, the center-to-center spacing of said rods being no greater than $4\frac{1}{2}$ inches, and a pair of parallel waveguides, said rods being mounted in and projecting from the ends of said waveguides.

3,858,215

MICROWAVE TRANSMISSION EMPLOYING TIME STAGGERED FREQUENCY MODULATION AT AN ARRAY OF RADIATORS

William Francis Miller, and Edward Marshall Wells, both of Great Baddow, England, assignors to The Marconi Company Limited, Essex, England

Filed Oct. 10, 1972, Ser. No. 295,971

Claims priority, application Great Britain, Oct. 8, 1971, 46993/71

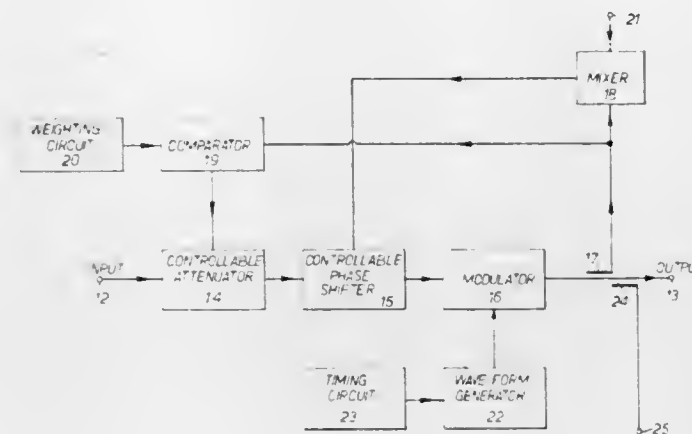
Int. Cl. G01s 1/08

U.S. Cl. 343-102

19 Claims

1. A microwave transmission arrangement including a plurality of microwave radiators in a linear array, means for applying microwave carrier signals which are substantially in phase to the plurality of microwave radiators, means for frequency modulating with similar periodic modulations the microwave carrier signal applied to each of the said microwave radiators, and means for delaying the application of the

frequency modulation to each microwave radiator by a predetermined amount relative to the application of the frequency modulation to an adjacent microwave radiator, whereby the interference pattern set up in space by the radiations of differ-



ent frequencies emitted by the radiators are in the form of a line spectrum of frequencies, the different frequencies of which are radiated simultaneously in different predetermined directions.

3,858,216

METHOD AND APPARATUS FOR LORAN RECEPTION

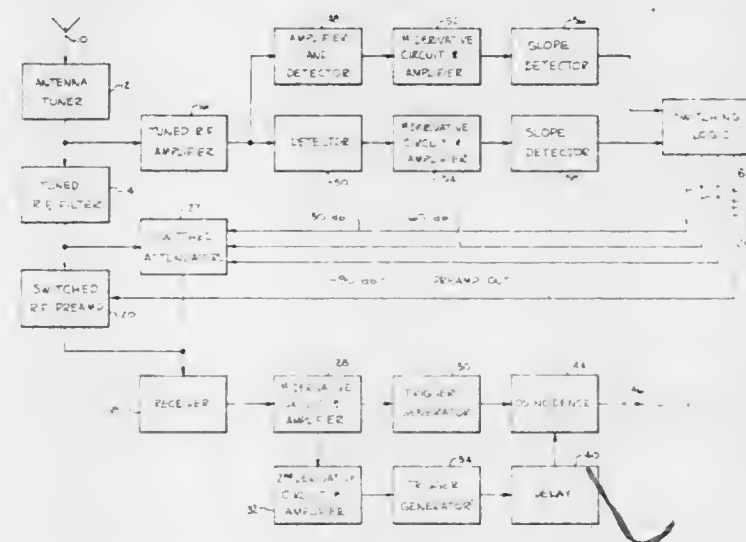
Wayne E. DeVaul, 2055 N.W. 25th St., Corvallis, Oreg. 97330

Filed Feb. 4, 1972, Ser. No. 223,652

Int. Cl. G01s 1/24

U.S. Cl. 343-103

24 Claims



1. In a hyperbolic navigation system for deriving position information from at least a pair of received signals transmitted from separated locations,

receiver means for detecting received signal envelopes and for developing an output indicative of the timing of predetermined received envelopes, means for determining the amplitude of a received signal, and means for adjusting the effective amplitude of the same received signal in response to said determination so that said amplitude falls within predetermined limits from which said receiver means can develop output information based upon the wave shape of said envelope, said means for adjusting the effective amplitude comprising attenuator means selectively responsive to the determination of said signal amplitude for adjusting the same.

3,858,217

LORAN ASSIST DEVICE

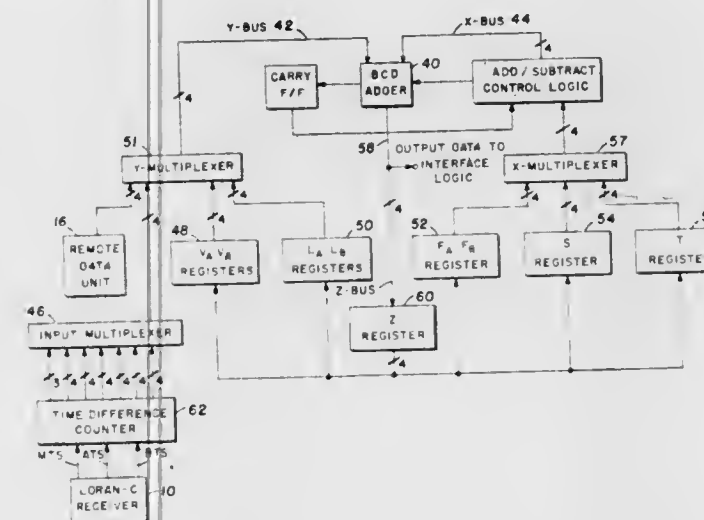
Ronald G. Roll, Silver Spring; Charles R. Edwards; Robert C. Moore, both of Laurel; George D. Wagner, Clarksville, and Ronald K. Burek, Beltsville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,080

Int. Cl. G01s 1/20

U.S. Cl. 343-103 R

4 Claims



1. In a hyperbolic navigation system including a receiver, for receiving signals transmitted by master and slave stations and for producing therefrom unique tracking strobe signals, and a programmable calculator capable when supplied with filtered time difference measurements of said tracking strobe signals of manipulating said measurements in accordance with predetermined navigation equations to produce navigational data, the improvement comprising an interface means for operably connecting said receiver and said programmable calculator, said interface means comprising:

read-only memory means for storing and outputting data enabling signals according to a predetermined sequence, means responsive to the signals from said memory means and being connected to receive said unique tracking strobe signals from said receiver for producing therefrom a plurality of timing difference signals defining a measure of the time differences between said tracking strobe signals.

binary adder means having a first plurality of inputs, a second plurality of inputs, and a plurality of outputs representing the sum of said first and second pluralities of inputs.

single register means connected to receive said plurality of output signals from said adder means and producing a plurality of output signals therefrom.

a first plurality of shift register means responsive to the signals stored in said memory means, each of said first plurality of shift register means having inputs connected to receive said output signals of said single register means and each having a plurality of outputs connected to said first plurality of inputs of said adder means, and

a second plurality of shift register means responsive to the signals stored in said memory means, each of said second plurality of shift register means having inputs connected to receive said output signals of said single register means and each having a plurality of outputs connected to said second plurality of inputs of said adder means.

said programmable calculator having data input terminals connected to said plurality of outputs of said adder means.

3,858,218

ANTENNA SYSTEM FOR RADIATING DOPPLER CODED PATTERN, USING SEQUENTIAL MODAL EXCITATION

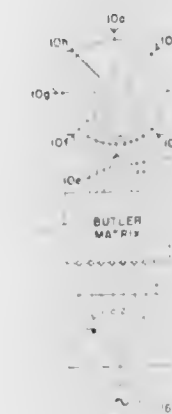
Raymond J. Masak, and Herbert F. Baurle, both of East Northport, N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,504

Int. Cl. G01s 1/38

U.S. Cl. 343-106 D

7 Claims



1. An antenna system for radiating wave energy into a desired region of space during a selected time period and in a desired radiation pattern, wherein the frequency of said radiated energy within said region of space varies with a component of angular direction from said antenna system measured in a selected plane, comprising:

an array of antenna element columns, arranged along a circular arc lying in said plane, for radiating supplied wave energy signals, said columns comprising one or more antenna elements and means for coupling supplied wave energy signals to said elements;

means for supplying a sequence of pulse type wave energy signals to each of said columns simultaneously during said time period, the phase difference between pairs of corresponding signals in the sequences supplied to any two adjacent columns being equal to a different integral multiple of the angular separation of said columns for each of said pairs;

thereby causing said antenna system to radiate said desired radiation pattern.

3,858,219

FREQUENCY DIVERSITY RADAR

Joseph F. Hull, Redwood City, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1955, Ser. No. 539,705

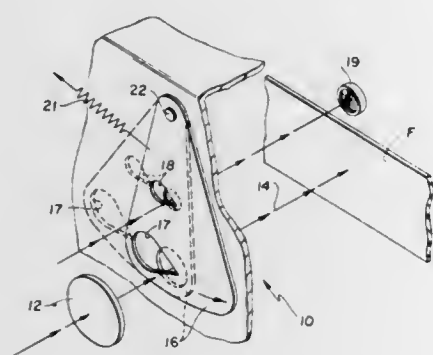
Int. Cl. G01s 7/28, 7/36

U.S. Cl. 343-17.2 R

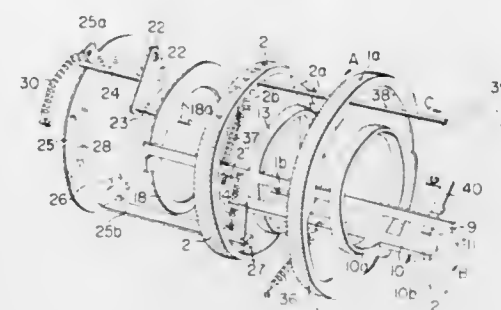
8 Claims

1. A frequency diversity radar system comprising a source of pulses of recurring frequency, a source of relatively high power radio-frequency energy periodically energized into oscillations by said recurring pulses and adapted to be voltage tuned over a relatively wide range of frequencies, an antenna responsive to the output of said pulsed oscillations, a source of relatively low power continuous-wave radio-frequency energy adapted to be voltage tuned over said range of frequencies, means responsive to said recurring pulses for voltage tuning said radio-frequency energy sources whereby the respective frequency-outputs therefrom an instantaneously and simultaneously shifted to successive discrete frequencies by

regulating member a drive force proportional to the energy content of such a signal in opposition to said bias force, said galvanometer and said spring means being located with respect to said light-regulating member to effect movement of said member from said rest position toward said maximum apertured light-unblocking position when an electrical signal is applied to said coil; and d. circuit means, including said photosensitive element,



tions in the path of the movement of said diaphragm means to stop the movement of said diaphragm means in a given position after said diaphragm means has been released to move toward the closed position, and setting means coupled to said stopping means for imparting the movement of said stopping



means to the exposure measuring means when the attachment is mounted on a camera having exposure measuring means and for receiving movement from the exposure control means when the attachment is mounted on a camera having exposure control means.

for providing to said galvanometer a time-invariant electrical signal when said parameter is at its first level, to thereby effect continuous relatively rapid movement of said light-regulating member, said circuit means further including means for periodically interrupting said time-invariant signal to produce a pulsed signal when said parameter is at its second level, to thereby effect intermittent movement of said light-regulating member.

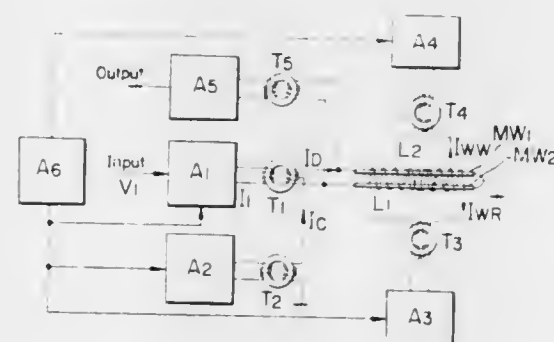
3,858,226
EXPOSURE VALUE STORAGE DEVICE
Shiro Nakagawa, Chiba; Soichi Nakamoto; Yoshiyuki Takishima, both of Tokyo; Tetsuya Taguchi, Kawasaki, and Masamichi Kakunodate, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha and TDK Electronics Co., Ltd., both of Tokyo, Japan

Filed June 5, 1973, Ser. No. 367,222

Int. Cl. G03b 7/08

U.S. Cl. 354—60

6 Claims



3,858,230

TRICK PHOTOGRAPHING DEVICE FOR MOTOR DRIVEN MOTION PICTURE CAMERAS

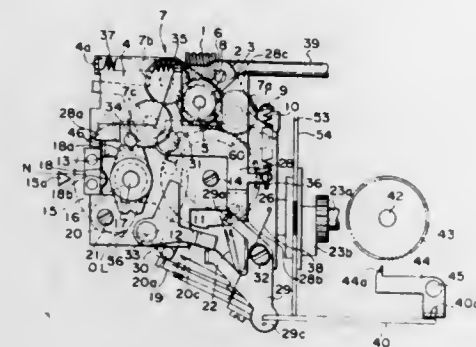
Yukio Miki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Sept. 29, 1972, Ser. No. 293,569

Claims priority, application Japan, Oct. 13, 1971, 46-93709 Int. Cl. G03b 21/36

U.S. Cl. 352-91 S

6 Claims



1. A trick photographing device for a motor driven motion picture camera comprising:

- a reversible electric motor;
- a motor circuit including a battery power source for applying a voltage fed in different polarities therefrom, the motor circuit further including a change-over switch having a first position for applying the voltage of one polarity to the motor and transporting a film in a forward direction, and a second position for applying the voltage of the other polarity to the motor and transporting the film in a reverse direction;
- an on-off switch openable for interrupting the voltage supply through said change-over switch of said second position;
- a time setting means having a first notched gear rotatably mounted on a shaft and comprising a toothed portion and an arcuate spaced portion formed by a notched portion for opening said on-off switch, a second notched gear rotatably supported on said shaft, and a connecting member for transmitting rotation in one direction of said first notched gear to said second notched gear;
- a shutter open angle operating member rotatable in association with the rotation of the second notched gear;
- a clutch member having first and second associated gears driven from said motor and rotatable in opposite directions and movable between a first position where the first associated gear is engageable with said first notched gear, and a second position where the second associated gear is engageable with said second notched gear;
- a first member for releasing a film winding shaft from a stop position and movable between a first position for locking said on-off switch in an open condition and a second position for releasing the on-off switch from the locked open condition and stopping the film winding shaft;
- a manually operable member for switching the camera between a normal photographing position, an overlapping photographing position and a fading photographing position;
- a second member held in a position retracted from said second notched gear and adapted to place said change-over switch in said first position when said manually operable member is in said normal photographing position, the second member engaging with said second notched gear for stopping the notched portion thereof and switching said change-over switch from said first position over to said second position when the manually operable member is held in said overlapping photographing position or fading photographing position;
- a third member for holding said member in the first position thereof when said manually operable member is in the fading photographing position and for releasing said first member from the first position when the manually operable

ble member is in the normal photographing position or the overlapping photographing position;

a fourth member movable between a first position for holding the first member in the first position thereof and actuating said clutch member for rendering the second associated gear engageable with said second notched gear when said manually operable member is in the normal photographing position, and a second position for releasing said first member from said first position thereof and actuating said clutch member for rendering said first associated gear engageable with said first notched gear when said manually operable member is in the overlapping photographing position or fading photographing position;

a stop member movable between a first position for holding said fourth member in its first position and a second position for releasing said fourth member from being held in its first position and permitting it to move to its second position; and

changing means, secured to said manually operable member, for moving said stop member from its first position to its second position when said manually operable member is in its overlapping and fading photographing positions.

3,858,231

DIELECTRICALLY ISOLATED SCHOTTKY BARRIER STRUCTURE AND METHOD OF FORMING THE SAME

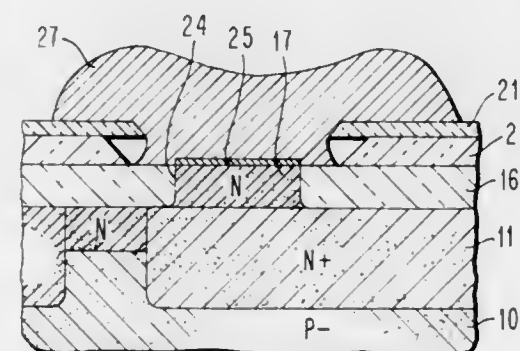
Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,399

Int. Cl. H01L 11/00, 15/00

U.S. Cl. 357-15

6 Claims



1. A planar integrated circuit structure comprising:

- a silicon substrate having isolating regions of oxidized silicon extending from a surface of said substrate into the substrate and surrounding pockets of silicon, said oxidized silicon regions and silicon pockets being substantially coplanar at said surface,
- a layer of dielectric material formed on said surface,
- at least one opening extending through said dielectric layer to a coincident silicon pocket having a maximum conductivity-determining impurity C_0 of 10^{18} atoms/cm³, said opening having larger lateral dimensions than said pocket so as to expose the entire surface of said silicon pocket and a portion of the oxidized silicon region surrounding said pocket, and
- a metallic layer in said opening forming a Schottky Barrier contact with the entire surface of said exposed silicon pocket, said metallic layer also overlapping the exposed portion of the oxidized silicon region surrounding said pocket.

3,858,232

INFORMATION STORAGE DEVICES

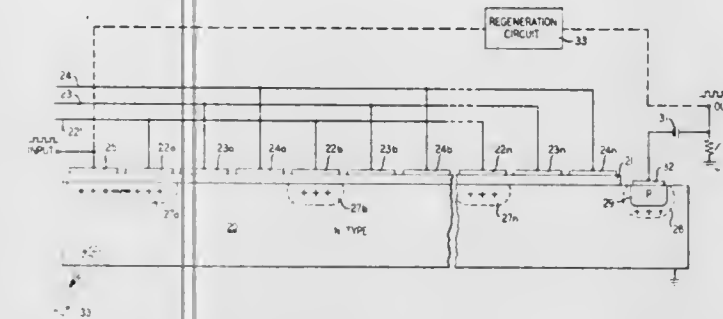
Willard Sterling Boyle, Summit, and George Elwood Smith, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Continuation-in-part of Ser. No. 11,541, Feb. 16, 1970, abandoned. This application Nov. 9, 1971, Ser. No. 196,933

Int. Cl. H01L 11/14

U.S. Cl. 357-24

32 Claims



1. In a charge transfer apparatus of the type for storage and serial transfer of charge carriers localized in a plurality of induced potential energy minima along a portion of a semiconductor charge storage medium by sequentially applying different potentials to successive portions of the surface of the medium through a plurality of electrodes, the invention characterized in that the charge storage medium is of a single conductivity type.

3,858,233

LIGHT-RECEIVING SEMICONDUCTOR DEVICE

Kenzi Miyata, and Tatsuya Kamei, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

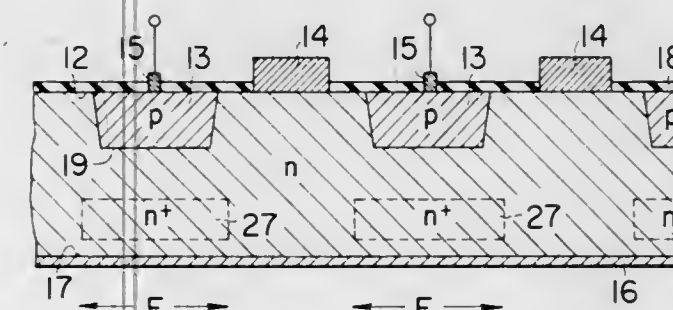
Filed Feb. 1, 1973, Ser. No. 328,732

Claims priority, application Japan, Feb. 2, 1972, 47-11381

Int. Cl. H01L 15/02

U.S. Cl. 357-30

18 Claims



1. A light receiving semiconductor device comprising a semiconductor substrate of *n*-type conductivity including a plurality of light receiving elements each having at least first and second semiconductor regions of opposite conductivity type forming at least one p-n junction therebetween, said light receiving elements being arranged in a certain spaced relationship with each other, each of said light receiving elements having its light receiving face exposed to one of the surfaces of said semiconductor substrate and the edge of said at least one p-n junction being exposed thereto;

an *n*-type region of a higher impurity concentration than said semiconductor substrate, said *n*-type region being formed in said semiconductor substrate at least a portion of which is disposed beneath the surface of each of said light receiving elements which is directly opposite to that respective surface portion by way of which light enters; and

a couple of electrodes each in ohmic contact with a respective one of said first and second regions of each of said light receiving elements.

3,858,234

TRANSISTOR HAVING IMPROVED SAFE OPERATING AREA

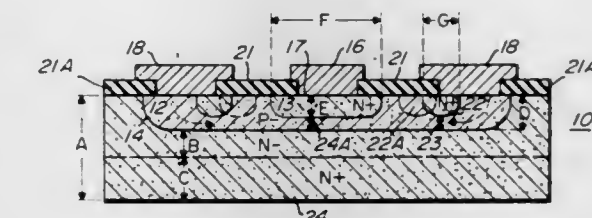
Richard O. Olson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 8, 1973, Ser. No. 321,880

Int. Cl. H01L 11/00, 15/00

U.S. Cl. 357-34

9 Claims



1. A transistor comprising an emitter of one type conductivity, a base of the opposite conductivity type having a bottom and a collector of the same conductivity type as the emitter, the emitter being surrounded by the base and forming a junction therewith, said emitter and said base having contact surfaces lying in the same plane, ohmic contact metallizations formed on each of said emitter and base, an isolation layer extending over the base emitter junction between said ohmic contact metallizations and a current blocking region surrounding said emitter, of like conductivity type thereto, extending into said base toward its bottom, and forming a pinch resistance between said current blocking region and the bottom of said base, in the path of current flow in said base between said base contact metallization and said emitter.

3,858,235

PLANAR FOUR-LAYER-DIODE HAVING A LATERAL ARRANGEMENT OF ONE OF TWO PARTIAL TRANSISTORS

Juergen Schild, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 267,425, June 29, 1972, abandoned.

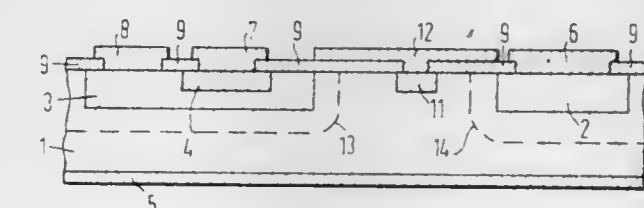
This application Sept. 17, 1973, Ser. No. 397,712

Claims priority, application Germany, July 5, 1971, 2133430

Int. Cl. H01L 3/00, 5/00

U.S. Cl. 357-35

6 Claims



1. A planar four-layer-diode having a lateral arrangement of first and second regions forming a partial transistor which includes a substrate of one conductivity type and laterally spaced first and second regions of opposite conductivity type forming pn junctions with said substrate, an insulating layer above said substrate, a metal electrode formed on said insulating layer above that portion of said substrate between the pn junctions only of said lateral partial transistor, and metal electrode being conductively connected with said substrate.

3,858,236

FOUR LAYER CONTROLLABLE SEMICONDUCTOR RECTIFIER WITH IMPROVED FIRING PROPAGATION SPEED

Horst Schafer, Zirndorf, and Lothar Herbing, Nurnberg, both of Germany, assignors to Semikron Gesellschaft fur Gleichrichterbau und Elektronik mbH, Nurnberg, Germany

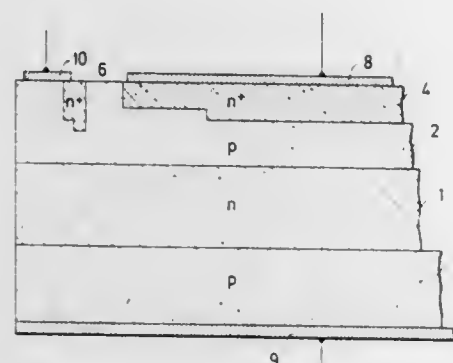
Filed Mar. 8, 1973, Ser. No. 339,045

Claims priority, application Germany, Mar. 8, 1972, 2211116

Int. Cl. H011 11/00, 15/00

U.S. Cl. 357—38

5 Claims



1. In a controllable semiconductor rectifier device including: a monocrystalline semiconductor body having four layer-type zones of alternately opposite conductivity types and with the one of the inner zones of said semiconductor body which borders on the one of the outer zones of said semiconductor body which serves as the emitter zone of the device having a portion thereof which is to support the control electrode and extends to the same major surface of said semiconductor body as said emitter zone; a respective load current electrode ohmically contacting each of the two outer zones of said semiconductor body; and a control electrode ohmically contacting said one of the inner zones, the improvement comprising:

a highly doped zone of a conductivity type opposite that of said one of the inner zones formed within said portion of said one of the inner zones and laterally spaced from said emitter zone, said highly doped zone forming a pn-junction with said one of the inner zones which pn-junction extends to said major surface; and said control electrode contacting said one of the inner zones at said major surface and overlying and ohmically contacting at least a portion of said highly doped zone along said surface, said control electrode being positioned such that at least a portion of said pn-junction is between the control electrode and said emitter zone whereby said highly doped zone serves as a barrier for the charge carriers of the control current.

3,858,237

SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED THROUGH DIELECTRIC MATERIAL

Hajime Sawazaki, Tokyo; Kiyohide Sakai, Yokohama; Hiroshi Tsutsumi, Fujisawa; Yasusuke Sumitomo; Kazuo Niwa, both of Yokohama, and Eisaku Inaba, Kitakyushu, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 9, 1973, Ser. No. 358,641

Claims priority, application Japan, May 13, 1972, 47-47382

Int. Cl. H011 19/00

U.S. Cl. 357—49

5 Claims

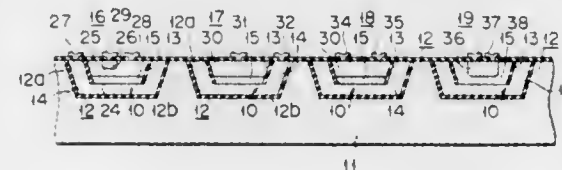
1. A semiconductor integrated circuit comprising: a support substrate (11);

a plurality of bottomed enclosed outer dielectric layers (12) whose one end is open at one surface of the support substrate (11), said bottomed outer dielectric layers (12) having substantially no discontinuities therein other than the one open end;

a bottomless inner dielectric layer (13) formed within and adjacent to the outer dielectric layer (12); and an island region (10) having: an outer semiconductor region (14) of polycrystalline material defined between the inner and outer dielectric layers (13,12); and an inner semiconductor region (24,25,26) of monocrystalline material within the inner dielectric layer (13); a transistor element (16) being formed in said island region (10) and having electrodes which are positioned on said one surface of said substrate (11), said transistor element (16) comprising:

a base region (25) of one conductivity type and situated within said inner dielectric layer (13);

a collector region (24) of the other conductivity type and including a portion (15) situated within said inner dielectric layer (13), said collector region (24) further including



said outer semiconductor region (14), said collector region (24) defining a PN junction with said base region (25); the peripheral end of said PN junction being situated within said inner semiconductor region and extending to said inner dielectric layer (13), the peripheral edge of the PN junction terminating at said inner dielectric layer (13);

said base region (25) being higher in impurity concentration than said collector region (24); and an emitter region (26) formed within said base region (25) and having a conductivity type opposite to that of the base region (25);

the peripheral side surfaces of both the outer and inner dielectric layers (12,13) being inclined toward the center of said island region (10) so that the rectangular cross sections of the portions respectively surrounded by the side surfaces thereof are respectively decreased toward the inside of the substrate (11).

3,858,238

SEMICONDUCTOR DEVICES CONTAINING AS IMPURITIES AS AND P OR B AND THE METHOD OF MANUFACTURING THE SAME

Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Division of Ser. No. 363,132, May 23, 1973, which is a continuation of Ser. No. 78,819, Oct. 7, 1970, abandoned. This application Sept. 26, 1973, Ser. No. 400,928

Claims priority, application Japan, Feb. 7, 1970, 45-10376; Mar. 2, 1970, 45-17103; Mar. 13, 1970, 45-20826; Mar. 28, 1970, 45-25627. The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

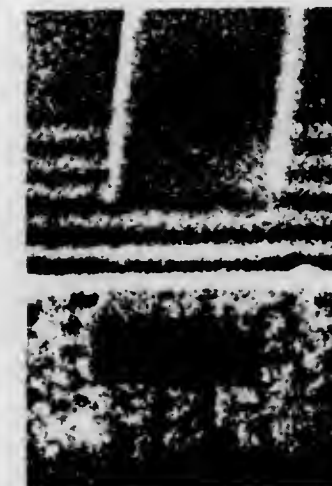
Int. Cl. H011 3/14

U.S. Cl. 357—63

9 Claims

1. A semiconductor device having a highly doped surface region comprising:

a. a silicon semiconductor substrate; and
b. a highly doped surface region formed in one surface of said substrate including at least one first impurity selected from the group consisting of phosphorus and boron, said highly doped surface region further including a second



impurity of arsenic to compensate for a lattice strain caused by said first impurity when the first impurity is doped in the surface region of the substrate, and the number of atoms of arsenic being smaller than the number of atoms of said first impurity in said highly doped surface region.

3,858,239

COLOR ENCODED HOLOGRAM PLAYBACK APPARATUS

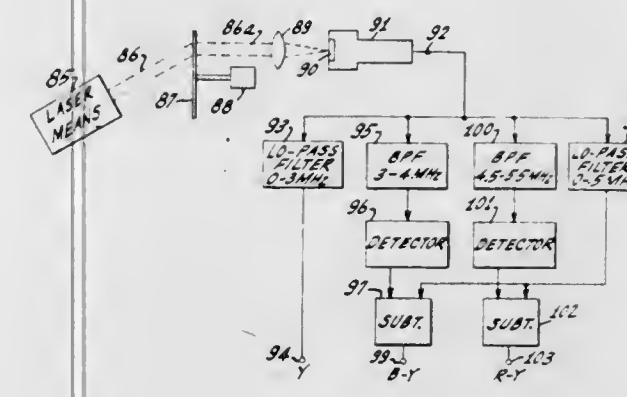
Istvan Gorog, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 880,680, Nov. 28, 1969, Pat. No. 3,790,701. This application Sept. 27, 1973, Ser. No. 401,232

Int. Cl. H04n 9/02

U.S. Cl. 358—2

3 Claims



1. Apparatus for producing signals representative of the color and brightness of a scene from a series of successive hologram records, of images of said scene upon each of which image is superimposed spatially encoded information representative of selected component colors of said scene, said apparatus comprising:

a source of spatially coherent monochromatic light; an image pickup device including a photosensitive electrode;

means for moving said series of hologram records in succession across an optical path of said image pickup device; means for directing light from said source along said optical path through said hologram records to form on the photosensitive electrode of said image pickup device a composite image comprising a monochromatic image of said scene and spatially encoded color information superimposed thereon;

means coupled to said image pickup device for deriving therefrom in response to the scanning of said composite image a composite output signal inclusive of respective brightness-representative and color-representative components.

3,858,240

REDUCED RATE SAMPLING PROCESS IN PULSE CODE MODULATION OF ANALOG SIGNALS

Leonard S. Golding, Rockville, and Ronald K. Garlow, Damascus, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

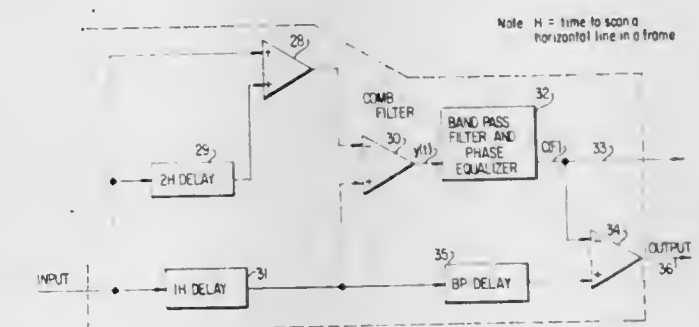
Continuation of Ser. No. 105,386, Jan. 11, 1971, abandoned.

This application Sept. 14, 1972, Ser. No. 289,027

Int. Cl. H04n 9/02

U.S. Cl. 358—13

9 Claims



1. A TV communications system for digitizing and communicating an analog TV composite signal comprising:

a. transmitter comb filter means responsive to a composite TV signal having modulated chrominance components interleaved with luminance components for separating said modulated chrominance from said luminance, said comb filter comprising:

i. first means for combing over the entire band of said composite signal for extracting said modulated chrominance components from said composite signal;

ii. band pass filter means responsive to said extracted modulated chrominance signal for blocking all signals below a certain frequency and for passing said modulated chrominance, said certain frequency being the frequency just below the lowest sideband of said modulated chrominance; and

iii. means for subtracting said band passed chrominance from said composite signal to obtain a luminance signal which is uncombed up to said certain frequency and which has the modulated chrominance combed therefrom;

b. means for pulse amplitude sampling said latter luminance at a sampling rate f_s , where $f_s - W_v$ is substantially equal to or less than the said certain frequency and is an odd multiple of half the TV horizontal line rate and is less than $2W_v$, and w_v the upper frequency of the luminance signal bandwidth; and

c. means for converting each sample pulse amplitude into a digital quantity.

DESIGNS

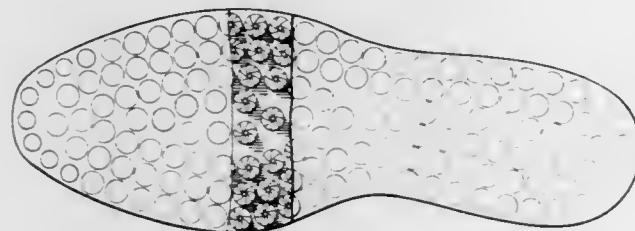
DECEMBER 31, 1974

234,013

BOOT SOLE FOR FOOTBALL FOOTWEAR

Raymond B. Lamarche, Beloeil, Quebec, Canada, assignor to The Acton Rubber Ltd., Acton Vale, Quebec, Canada
Filed July 31, 1972, Ser. No. 276,354
Term of patent 7 years
Int. Cl. D2—04

U.S. Cl. D2—320

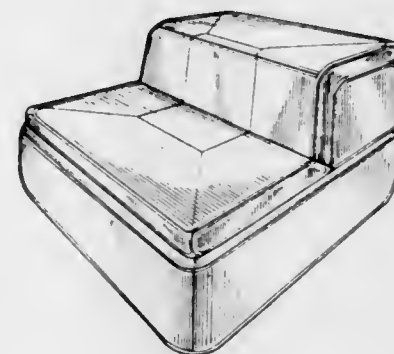


234,015

SEAT

Charles Bernard, 18 a 30 Rue Saint Antoine, 93 Montreuil-sous-Bois, France
Filed June 14, 1972, Ser. No. 262,822
Claims priority, application France Jan. 10, 1972
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—47



234,014

SHOE SOLE

Francisco Talamantes Traver, Vall de Uxo, Spain, assignor to Silvestre Segarra E Hijos, S.A., Vall de Uxo, Castellon, Spain
Filed Apr. 9, 1973, Ser. No. 349,339
Claims priority, application Spain Nov. 8, 1972
Term of patent 14 years
Int. Cl. D2—04

U.S. Cl. D2—320

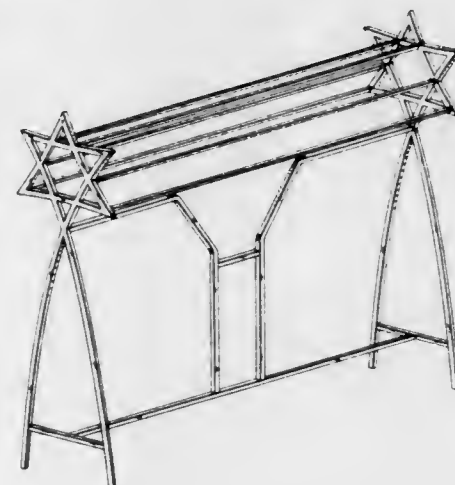


234,016

RACK FOR PRAYER SHAWLS

Bernard D. Smilowitz, 44 Wodland Ave., West Orange, N.J. 07052
Filed May 23, 1973, Ser. No. 363,306
Term of patent 14 years
Int. Cl. D6—99

U.S. Cl. D6—85



DECEMBER 31, 1974

U.S. PATENT OFFICE

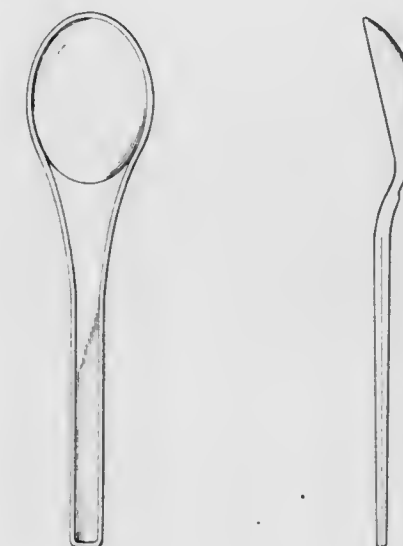
2187

234,017

PLASTIC SPOON

Hubert E. Christian and David W. Lee, Phoenix, Ariz., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,357
Term of patent 14 years
Int. Cl. D7—03

U.S. Cl. D7—138

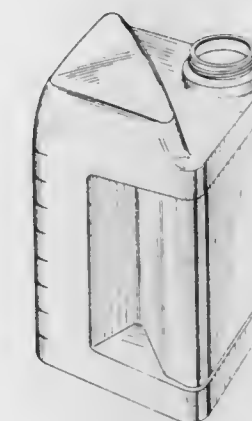


234,019

JUG

Herbert F. D'Alo, Arlington Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 29, 1973, Ser. No. 365,009
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—44

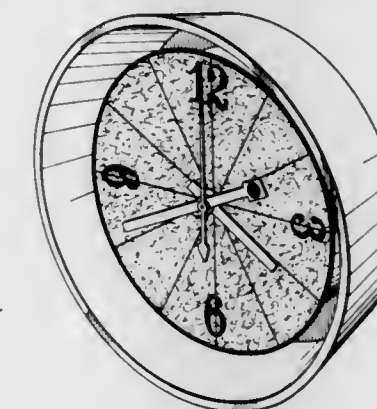


234,020

CLOCK OR SIMILAR ARTICLE

Theodore G. Daber, Stratford, Conn., assignor to General Electric Company
Filed Apr. 6, 1973, Ser. No. 348,647
Term of patent 14 years
Int. Cl. D10—01

U.S. Cl. D10—17

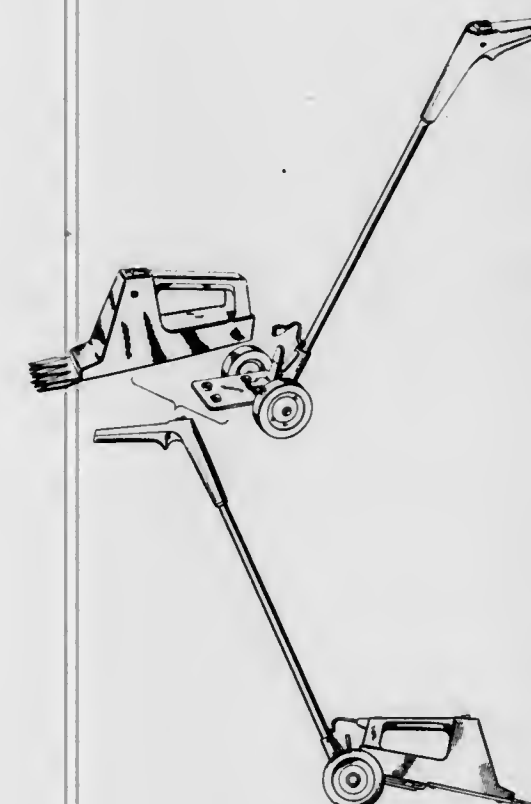


234,018

ELECTRIC GRASS SHEAR

Robert J. De Brey, Edina, Minn., assignor to Fingerhut Corporation, Minnetonka, Minn.
Filed Oct. 20, 1972, Ser. No. 299,623
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—8



234,021

FISHING LURE

Douglas W. Parker, 1801 Garner Lane, Fort Smith, Ark. 72901
Filed Jan. 30, 1974, Ser. No. 437,791
Term of patent 14 years
Int. Cl. D22—05

U.S. Cl. D22—28



234,022

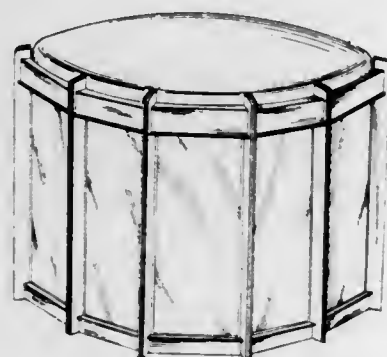
COMPUTER MAINFRAME CONSOLE

Seymour R. Cray, Lester T. Davis, and Maurice D. Roush, Chippewa Falls, Wis., assignors to Control Data Corporation, Minneapolis, Minn.

Continuation-in-part of design application Ser. No. 341,429, Mar. 15, 1973. This application Apr. 30, 1973, Ser. No. 355,997

Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C



234,023

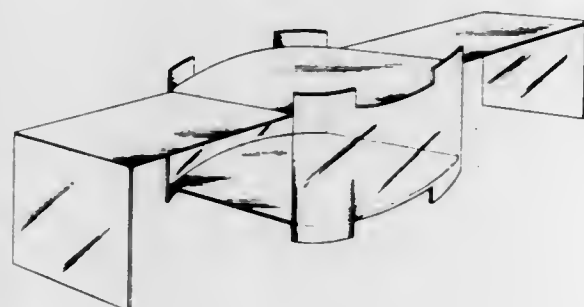
DOG HOUSE

Quentin T. Cox, 1216 W. 226th St., Torrance, Calif. 90502

Filed Apr. 16, 1973, Ser. No. 351,778
Term of patent 14 years

Int. Cl. D30—02

U.S. Cl. D30—1



234,024

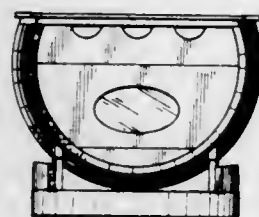
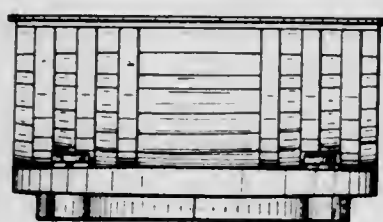
AQUARIUM

Charles D. Kuneff, 891 Cedar St., Alameda, Calif. 94501

Filed Dec. 4, 1972, Ser. No. 312,230
Term of patent 14 years

Int. Cl. D30—02

U.S. Cl. D30—9



234,025

DISPOSABLE CULTURE DEVICE

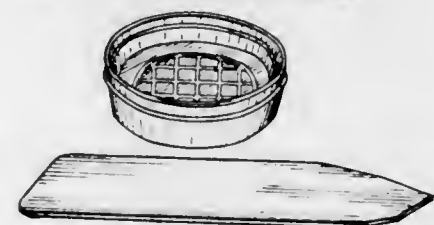
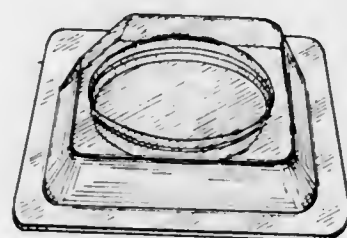
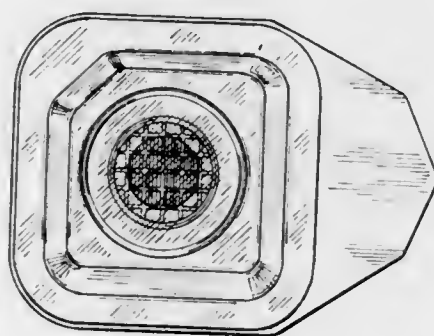
Edward Potter, 2213 Waverly Place, Waukegan, Ill. 62692

Filed Nov. 6, 1972, Ser. No. 304,887

Term of patent 14 years

Int. Cl. D24—02; D9—04

U.S. Cl. D32—1



234,026

DISPOSABLE CULTURE DEVICE

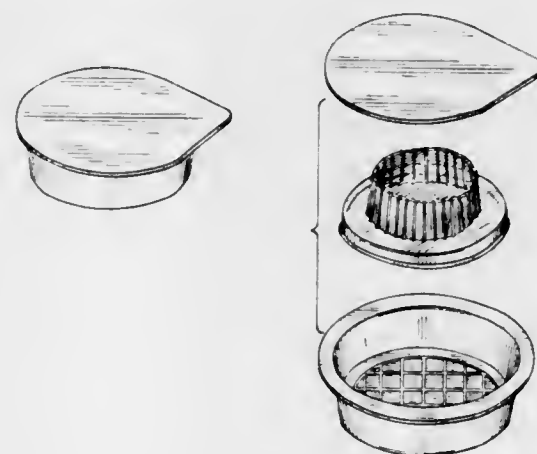
William Robert Winter, Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 6, 1972, Ser. No. 304,888

Term of patent 14 years

Int. Cl. D24—02; D9—04

U.S. Cl. D32—1



234,027

TOY VEHICLE

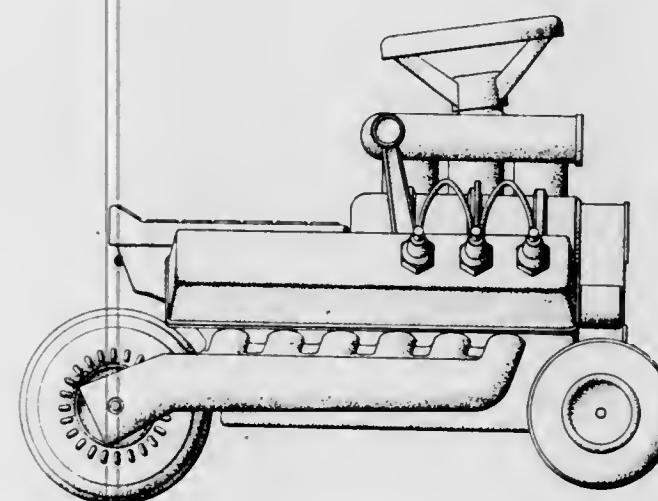
Jerrold J. Krumholz, West Orange, Herbert H. V. Reisgen, Westfield, and Paul B. Means, Basking Ridge, N.J., assignors to Kusan, Inc., Nashville, Tenn.

Filed Mar. 29, 1973, Ser. No. 346,169

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 AJ



234,028

VENTED ROTARY LAWN MOWER HOUSING

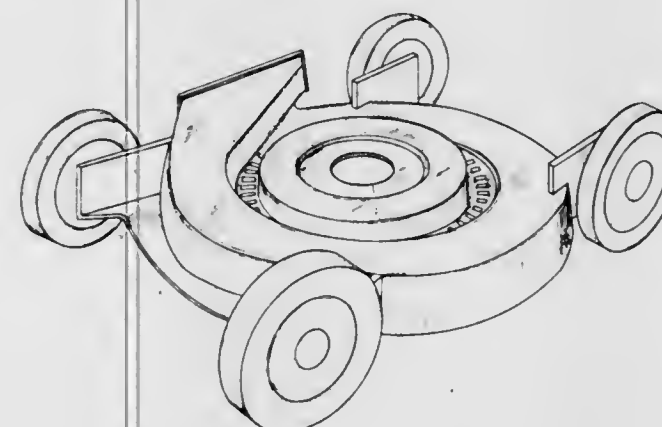
Donald G. Erickson, Racine, and Vernon R. Kaufman, Cedarburg, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed May 29, 1973, Ser. No. 364,883

Term of patent 14 years

Int. Cl. D15—03

U.S. Cl. D40—1 B



234,029

RING

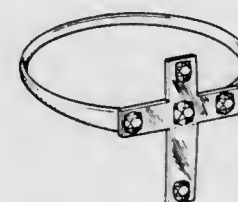
Carmen Leo, 7520 Merriman Road, Apt. 202, Westland, Mich. 48185

Filed Aug. 22, 1973, Ser. No. 390,356

Term of patent 3½ years

Int. Cl. D11—01

U.S. Cl. D45—10 C



234,030

PORTABLE RADIO

Ken Kawamura, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

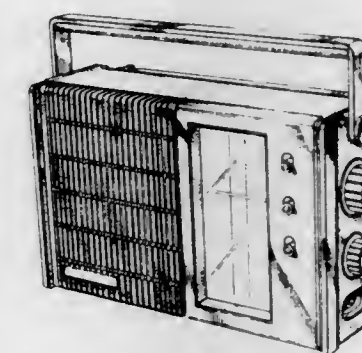
Filed Apr. 20, 1973, Ser. No. 353,173

Claims priority, application Japan Oct. 20, 1972

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D56—4 B



234,031

AERATING PUMP FOR BAIT CONTAINERS

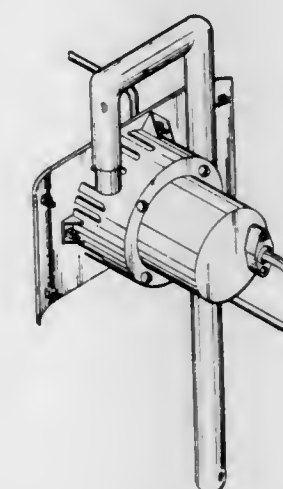
William B. Murray, Houston, Tex., assignor to Sportcraft, Inc., Houston, Tex.

Filed Jan. 26, 1973, Ser. No. 327,089

Term of patent 14 years

Int. Cl. D15—02

U.S. Cl. D65—1 R



234,032

SUCTION NEEDLE FOR EAR OPERATIONS

Ricardo J. Heros, Memphis, Tenn., assignor to Richards Manufacturing Co., Memphis, Tenn.

Filed Sept. 15, 1972, Ser. No. 289,678

Term of patent 7 years

Int. Cl. D24—02

U.S. Cl. D83—12 R



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aasland, Byron T.; Dankel, Douglas D.; and Franklin, Richard W., to Roper Corporation. Shredder-bagger having blade assembly. 3,857,521, Cl. 241-243.000.

AB Volvo Penta: *See—*

Bergstedt, Karl Abdon, 3,857,357.

Abcor, Inc.: *See—*

Crowley, Richard P., 3,857,782.

Abdo, Kamal M.; and Cahilly, Glenn M., to Grace, W. R., & Company. Ruminant feed additive and method of preparing the same. 3,857,971, Cl. 426-53.000.

Abramitis, Walter W. Amine salts of substituted succinamic acids. 3,857,879, Cl. 260-501.110.

Acar, Ali, to International Telephone and Telegraph Corporation. Pressure regulating valve assembly. 3,857,615, Cl. 303-21.00f.

ACF Industries, Incorporated: *See—*

Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,857,908.

Rhodes, Allen F.; and Alaniz, Ruben G., 3,857,408.

Acker, Donald J. Sofa with detachable bolster. 3,857,120, Cl. 5-12.00r.

Ackermann, Guenter R., to Rohm and Haas Company. Preparation of sulfoxide sorbents. 3,857,823, Cl. 260-79.30r.

Actric Limited: *See—*

Griffiths, Philip John, 3,857,553.

Adams, George R.; and Meisenbach, William T., to Armstrong Cork Company. Sound-absorbing wedge. 3,857,459, Cl. 181-33.0gd.

Adams, Ronald E.; and Wilson, Eugene M., to Caterpillar Tractor Company. Bulldozer blade with vibrating ripper shank. 3,857,447, Cl. 172-777.000.

Adamson, Shelby D.: *See—*

Harris, Paul M.; and Adamson, Shelby D., 3,857,779.

Adar, Inc.: *See—*

Denny, Robert B., 3,858,117.

Adickes, Fred C., to Texstar Corporation, The. Modular cabinet system. 3,857,619, Cl. 312-107.000.

Admiral Corporation: *See—*

Scoubis, John A., 3,858,003.

Agfa-Gevaert: *See—*

Verhille, Karel Eugen; and Noe, Robert Joseph, 3,857,708.

Agfa-Gevaert Aktiengesellschaft: *See—*

Schneider, Horst; Fergg, Berthold; Zahn, Wolfgang; Friedrich, Huger, and Erich, Nagel, 3,857,220.

Stievenart, Emile Frans; and Mueller, Juergen, 3,858,229.

Agulnek, Harry; and Mishcon, Lester, to Singer Company, The. Pattern wheel with pivoted jacks supported by inserted wall members. 3,857,258, Cl. 66-50.00a.

Ahmed, Samir A.: *See—*

Pappalardo, Romano G.; and Ahmed, Samir A., 3,857,793.

Aishima, Itsuho; Sakurai, Hisaya; and Shimizu, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for extruding a foamed, molded article. 3,857,914, Cl. 264-45.500.

Aitken, John Stuart; Green, Bernard Leslie; and Cormie, William Alexander, to Honeywell Information Systems Limited. Solderability testing. 3,857,290, Cl. 73-432.00r.

Akatsuka, Minoru: *See—*

Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,858,238.

Aktieselskabet Niro Atomizer: *See—*

Houghton-Larsen, Erik; and Kjaergaard, Ole Gronning, 3,857,332.

Akzona Incorporated: *See—*

Fink, Roger H., 3,857,522.

Alaniz, Ruben G.: *See—*

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Albe-Fessart, Denise; Auffray, Pierre; and Gallouin, Francois. Method for producing foie gras by induction of hyperphagia in geese. 3,857,961, Cl. 426-2.000.

Alcan Research and Development Limited: *See—*

Hirschfeld, John Alfred; Lablans, Johannes Franciscus; and Shankland, William, 3,857,163.

Aldersley, Kenneth; and Telford, Gordon William, to United Kingdom Atomic Energy Authority. Melting and casting of transitional metals and alloys. 3,857,696, Cl. 75-10.00r.

Aleman, Raymond. Gynaecological device. 3,857,394, Cl. 128-260.000.

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Neugebauer, Gerhard, 3,857,288.

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Allan, Barry D., to United States of America, Army. Thixotropic metal-containing monomethylhydrazine fuel and method of preparing the same. 3,857,743, Cl. 149-20.000.

Alleau, Jean, to Technigaz. LNG storage tank vapor recovery by nitrogen cycle refrigeration with refrigeration make-up provided by separation of same vapor. 3,857,251, Cl. 62-28.000.

Allen, Ethan J.: *See—*

Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., 3,857,383.

Allen, John W.: *See—*

Friedl, Wendel M.; Miles, Robert A.; Allen, John W.; and Waiwood, William P., 3,858,116.

Allied Chemical Corporation: *See—*

O'Brien, John Butler; Woolf, Cyril; and Dear, Robert Ernest Arthur, 3,857,957.

Rogic, Milorad M.; and Fuhrmann, Robert, 3,857,510.

Allred, Worth P., to University of Southern California. Crystal grower. 3,857,679, Cl. 23-273.000.

Alow Chemical Company, The: *See—*

Crozier, William Andrew; and Klein, Dieter Heinrich, 3,857,808.

Alpine Designs: *See—*

Hunt, Harry, 3,857,125.

Alps Electric Co., Ltd.: *See—*

Mikami, Yasushi, 3,857,644.

Alton, James G., Equipment Co. Limited: *See—*

Alton, James Gowan, 3,857,578.

Alton, James Gowan, to Alton, James G., Equipment Co. Limited. Wear bar for a snowmobile ski. 3,857,578, Cl. 280-28.000.

Altscher, Siegfried: *See—*

Kraft, Paul; and Altscher, Siegfried, 3,857,906.

Aluminum Company of America: *See—*

La Barge, Robert L.; and Leftault, Charles J., Jr., 3,857,508.

Martin, Guy E., 3,857,269.

McKee, Arvil B.; Brown, Robert H.; and Horst, Ralph L., 3,857,973.

Vernam, William D.; and Anderson, William A., 3,857,165.

Amdahl Corporation: *See—*

Amdahl, Gene M.; Tobias, Richard J.; and Gray, Robert C., 3,858,183.

Amdahl, Gene M.; Tobias, Richard J.; and Gray, Robert C., to Amdahl Corporation. Data processing system and method therefor. 3,858,183, Cl. 340-172.500.

American Cyanamid Company: *See—*

Fanshaw, William Joseph; and Safir, Sidney Robert, 3,857,843.

Feeny, Richard William, 3,857,692.

American Technical Industries, Inc.: *See—*

Gelardi, Joseph T., 3,857,421.

Amey, Earle B.: *See—*

Gabler, Robert C., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Goldsmith, Carl E.; and Leavenworth, Howard W., Jr., 3,857,767.

Amin, Shirish Chamdubhai; Jones, David Henry; and Maxwell, Donald Robert, to May & Baker Limited. Phenothiazine derivatives in the treatment of spasticity of muscles. 3,857,943, Cl. 424-247.000.

Ammann, Paul R.; Kim, Jang Ho; and Redman, Michael J., to Kennecott Copper Corporation. Process for recovering non-ferrous metal values from reverberatory furnace slags. 3,857,699, Cl. 75-24.000.

Ammann, Paul R.; and Kim, Jang Ho, to Kennecott Copper Corporation. Pyrometallurgical recovery of copper values from converter slags. 3,857,700, Cl. 75-74.000.

Amoco Production Company: *See—*

Freeman, Francis R.; and Mettrailer, Joseph F., 3,858,170.

Mower, Lawrence N., 3,857,445.

AMP Incorporated: *See—*

Collier, James Ray; and Cobaugh, Robert Franklin, 3,858,153.

Hammond, James Woodrow; and Loomis, Phillip Eugene, 3,857,154.

Lockard, Joseph Larue, 3,858,012.

Pritulsky, James, 3,857,349.

Wyrick, Charles Thomas, 3,857,995.

Amsted Industries, Incorporated: *See—*

Kaufhold, Horst Thomas, 3,857,495.

Neumann, Otto Walter, 3,857,341.

Amstutz, Harlan C. Prosthesis holder. 3,857,389, Cl. 128-92.00c.

Anaconda Company, The: *See—*

Hansen, Theodore E.; and Wilson, Floyd A., 3,857,996.

Anand, Satish K.: *See—*

Goldsby, Arthur F.; Anand, Satish K.; and Haberl, Frank J., 3,858,181.

Anazawa, Shinzo, to Nippon Electric Company, Limited. Square cylindrical packaged semiconductor device. 3,857,168, Cl. 29-583.000.

- Anderson, Donald L., to Del Mar Engineering Laboratories. Electrocardiac computer. 3,858,034, Cl. 235-151.300.
- Anderson, Warren A.; Labadini, William M.; and Passmore, Edmund M., to GTE Sylvania Incorporated. Extended life, double coil incandescent lamp. 3,858,086, Cl. 315-49.000.
- Anderson, William A.: See—
- Vernam, William D.; and Anderson, William A., 3,857,165.
- Andersson, Sven Gerhard. Device for setting knife holders, particularly at a band cutting machine. 3,857,315, Cl. 83-504.000.
- Andrus, Everett Howard. Apparatus for heat treating continuous wire and rod. 3,857,673, Cl. 432-59.000.
- Angelbeck, Albert W., to United Aircraft Corporation. Measurement of phase profile across a high power laser beam. 3,857,636, Cl. 356-106.000.
- Angelbeck, Albert W.; and Longtin, Donald J., to United Aircraft Corporation. Vibration isolation in a gas laser. 3,858,122, Cl. 331-94.500.
- Antes, Jack E.: See—
- Foster, Jack B.; and Antes, Jack E., 3,857,188.
- Anthony, Andrew James: See—
- Jones, Thomas Alan; and Anthony, Andrew James, 3,857,599.
- Antoine, Jacques; and Vayssiere, Pierre, to Institut de Recherches de la Siderurgie Francaise. Method of continuously smelting a solid material rich in iron metal in an electric arc furnace. 3,857,697, Cl. 75-11.000.
- Aoki, Yukio; Yoshida, Susumu; Kato, Shoichi; Inada, Satoshi; and Ishida, Shuichi, to Nippon Kayaku Kabushiki Kaisha. Acaricides. 3,857,954, Cl. 424-337.000.
- Apel, Konstantin. Switching arrangement for a synchronous motor. 3,858,099, Cl. 318-162.000.
- Appleton Electric Company: See—
- Artzer, Paul J., 3,857,574.
- Arai, Tohru: See—
- Komatsu, Noboru; Arai, Tohru; Obayashi, Mikio; and Endo, Junji, 3,857,725.
- Arcella, Frank G., to Westinghouse Electric Corporation. Heat pipe wick restrainer. 3,857,441, Cl. 165-105.000.
- Arco Polymers, Inc.: See—
- Johnson, Keith G.; and Limbach, Anthony Paul, 3,857,664.
- Aref, Moustafa M.; Stroz, John J.; and Johnson, Gordon W., to Canadian Patents & Development Limited. Process for the production of frozen eggs. 3,857,974, Cl. 426-148.000.
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- Arikawa, Tetsuro, to Nippon Air Brake Company Ltd. Electronic controller for use in anti-skid system for vehicles. 3,857,613, Cl. 303-21.000.
- Arkansas Rock and Gravel Co.: See—
- Holland, John H.; and Fox, Gene O., 3,857,502.
- Armaturenfabrik Hermann Voss: See—
- Voss, Hans Hermann, 3,857,591.
- Armour and Company: See—
- Sato, Kunito; and Herring, Harold K., 3,857,981.
- Armstrong Cork Company: See—
- Adams, George R.; and Meisenbach, William T., 3,857,459.
- Armstrong, Donald E.: See—
- Vetere, John J.; and Armstrong, Donald E., 3,857,667.
- Armstrong Machine Works: See—
- Clifton, Arthur E., 3,857,514.
- Arnold, Anthony Francis, to RCA Corporation. Method of electroless metal deposition. 3,857,733, Cl. 117-212.000.
- Arnold, John L.; and Pearce, Roscoe L., to Dow Chemical Company. The. Glycol-butyrolactone mixtures. 3,857,686, Cl. 55-29.000.
- Arnow, Sidney. Tunable spiral dipole antenna. 3,858,220, Cl. 343-802.000.
- Arp, Ewald A., 1/3 to Larson, Arnold W. G. and 1/3 to Moody, Gene S. Apparatus for crushing containers and dispensing tokens. 3,857,334, Cl. 100-53.000.
- Artos Engineering Company: See—
- Gudmestad, Ragnar, 3,857,306.
- Artzer, Paul J., to Appleton Electric Company. Gasket assembly. 3,857,574, Cl. 277-183.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: See—
- Aishima, Itsuho; Sakurai, Hisaya; and Shimizu, Hiroshi, 3,857,914.
- Tamura, Nobuhiro; Mitsui, Ryoichi; Watanabe, Seizaburo; and Kazuo, Suga, 3,857,921.
- Asai, Norio, to Sagami Chemical Research Center. Process for preparing purine compounds by reaction of a carbonitrile with formic acid. 3,857,842, Cl. 260-252.000.
- Asano, Hiroaki; and Sakane, Kazuhiro, to Toyoda Koki Kabushiki Kaisha. Grinding machine for generating an epitrochoid surface on a work. 3,857,203, Cl. 51-46.000.
- Ashbell, Theodore Shelly. Surgical device for holding and retracting skin or bone. 3,857,386, Cl. 128-20.000.
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- Aspro-Nicholas Limited: See—
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- Berkovitz, Harry; and Tosato, Lawrence, to Westinghouse Electric Corporation. Closure system. 3,857,466, Cl. 187-52.000.
- Berndt, Wilhelm, to Volkswagenwerk AG. Gas pedal arrangement. 3,857,304, Cl. 74-877.000.
- Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., to Herculite Protective Fabrics Corporation. Activated polymer materials and process for making same. 3,857,934, Cl. 424-30.000.
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- Bitcola, Daniel. Artificial shrubs. 3,857,747, Cl. 161-21.000.
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- Bory, Michael, to Werkzeugmaschinenfabrik Oerlikon-Buhle AG. Apparatus for regulating the position of a machine component. 3,857,638, Cl. 356-153.000.
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- Bourne, Walter R. Collapsible garment dryer. 3,857,493, Cl. 211-178.000.
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- Brannon, William E., to Staco-Switch, Inc. Pushbutton with spring contactor. 3,858,020, Cl. 200-159.00a.
- Brauchi, Andre, Wristlet. 3,857,237, Cl. 59-80.000.
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- Gee, James E.; and Stedman, Robert N., 3,857,190.
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- Grob, Russel Walter, 3,858,104.
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- Schmitt, James L., 3,857,461.
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- Ratz, Robert Marie, 3,857,662.
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- Corbett, Paul M., to SCM Corporation. Electroslag refining flux compositions and process for making same. 3,857,702, Cl. 75-94,000.
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- Coulter, Earl E., to Babcock & Wilcox Company. The. Furnace seal. 3,857,344, Cl. 110-165,000.
- Coulter, Michael Oliver, to BP Chemicals Limited. Mercury recovery process. 3,857,704, Cl. 75-121,000.
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- Cowser, Charles A., to Monarch Molding, Inc. Intercept connector suitable for use in a telephone system. 3,858,152, Cl. 339-17,000.
- Cox, Willis T. Orchard heater. 3,857,671, Cl. 431-352,000.
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- Crowley, Richard P., to Abcor, Inc. Semipermeable membrane process and device employing an aminoethylated polymeric material as the semipermeable membrane. 3,857,782, Cl. 210-2,000.
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- Cubalchini, Ronald, to Hughes Aircraft Company. Catadioptric beamsplitter system. 3,858,046, Cl. 250-353,000.
- Cummings, John P., to Honeywell Inc. Exhaustive electrolysis method for determination of oxygen demand. 3,857,761, Cl. 204-1,000.
- Cunningham, Ernest R., to Barr-Stallfort Company; Division Pittway Corporation. Aerosol container filling apparatus and method. 3,857,422, Cl. 141-3,000.
- Curtin, Hoyt S. Pipe coupling. 3,857,588, Cl. 285-31,000.
- Custer, Harry S.; and Oliver, Brian H., to Goodyear Tire & Rubber Company. The. Electrolytic cell including a flexible sheet covering the cell base. 3,857,775, Cl. 204-252,000.
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- Day, Lois I. Oxygenator support. 3,857,910, Cl. 261-65,000.
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- Deno, Don W., to General Electric Company. Electric circuit breaker of the gas blast type. 3,858,015, Cl. 200-148,000.
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- Dohse, Ruthard; Edeling, Curt; and Eismann, Josef, to Elektro-Thermit GmbH. Frog with closable wheel over-run. 3,857,536, Cl. 246-435,000.
- Dolphin, Joseph R. Instant tire chains. 3,857,428, Cl. 152-241,000.
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- Dooley, James L., to McCulloch Corporation, mesne. Chain saw inertia clutch assembly. 3,857,180, Cl. 30-383,000.
- Doorley, Richard B.; and Gaslevic, Emeric, to Trace, Inc. Portable tester for hydraulic power circuits. 3,857,282, Cl. 73-168,000.
- Dorling, Anthony, to Ferro Manufacturing Corporation. Valve. 3,857,406, Cl. 137-315,000.
- Dorman-Smith, Victor A. Process for production of asphalt. 3,857,716, Cl. 106-278,000.
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- Dower, Ethell J., to Warren Automatic Tool Company. Method and apparatus for detecting potentially dangerous conditions in a well bore during trips of the well string in and out of the well bore. 3,857,281, Cl. 73-155,000.
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- Bissell, Robert Donald; and Plavcan, Edward Joseph, 3,857,286.
- Du Bois, Donald W., to PPG Industries, Inc. Recovery of electrolytic deposits of rhodium. 3,857,763, Cl. 204-10,000.
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- Ducasse, Joseph Christophe Victor, to Unice Machine Company. Oscillating anvil disintegrator. 3,857,520, Cl. 241-189,000.
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- Dulux Australia Ltd.: *See—*
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- Ecker, Fred L. Apparatus for casting material using a collapsible structure. 3,857,540, Cl. 249-48,000.
- Economy, James; Cottis, Steve G.; and Nowak, Bernard E., to Carbonundum Company, The. Branch aromatic polyesters and cross-linked derivatives thereof. 3,857,814, Cl. 260-47,000.
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- Endo, Shigeru, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Apparatus for severing continuous wire to predetermined length and delivering severed wire to conveyor. 3,857,313, Cl. 83-277,000.
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- Esser, Paul, to Meyer, Roth & Pastor Maschinenfabrik GmbH. Method and apparatus for manufacturing wire sections with relieved ends. 3,857,311, Cl. 83-51,000.
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Goldfarb, Adolph E.; and Benkoe, Erwin. Dexterity game with indicia boards and play pieces matching the indicia, 3,857,569, Cl. 273-135,00a.
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 Jelich, George W. Hot tube handling device. 3,857,598, Cl. 294-27.00r.
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- Robbins, Joseph W. Canopy for pickup trucks. 3,857,601, Cl. 296-10.000.
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- Kinzer, Jackson E.; and Fallandy, Martin A., 3,857,755.
- Rodaway, Keith S., to Everest & Jennings, Inc. Swing-away detachable wheelchair footrest. 3,857,606, Cl. 297-429.000.
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- Rohan, James E. Fuel vent tank. 3,857,350, Cl. 114-50r.
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- Rosenberg, Baruch. Cutter head for picking fruit. 3,857,227, Cl. 56-335.000.
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- Rosenwald, Robert H., to Universal Oil Products Company. Inhibiting fungicidal impairment of plant growth. 3,857,959, Cl. 424-346.000.
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- Ross, Gerald F., to Sperry Rand Corporation. Base-band percolation sensor with time domain gating for preventing false responses. 3,858,205, Cl. 343-7.00d.
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- Ross, Walter Lee, to RCA Corporation. Fixed format video data display employing crossed-line pattern format delineation. 3,858,198, Cl. 340-324.00d.
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- Shand, William A.; and Scherrelies, Wolfgang, to Naturvard Research (Canada) Ltd. Sensor-eye for ultra-violet water sterilizer. 3,858,048, Cl. 250-373.000.
- Shank, Joseph L., to Swift & Company. Pressure-sensitive transfer coating. 3,857,718, Cl. 106-288.00q.
- Shankland, William: *See—*
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- Shannon, Ian Robertson: *See—*
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- Shannon, Joseph R., Jr. Apparatus for mounting building panels. 3,857,497, Cl. 214-1.00h.
- Sharpston, George. Multilevel componential house trailer. 3,857,211, Cl. 52-65.000.
- Shavel, John, Jr.: *See—*
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- Shean, Bertram M.: *See—*
- Crane, Burke J.; and Shean, Bertram M., 3,857,625.
- Sheerhorn, Douglas; Van Kuik, Dirk J.; Korell, Donald D.; and Mohr, Robert G., to Steelcase, Inc. Pedestal lock system. 3,857,621, Cl. 312-219.000.
- Shell Oil Company: *See—*
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- Van Riemsdijk, Arnoldus J.; and Van den Berg, Waldo, 3,857,182.
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- Shelton, Robert N., to Foster Grant Co., Inc. Display tray. 3,857,482, Cl. 206-72.000.
- Shenfeld, Richard Stewart; and Brown, Orville E., to Borden, Inc. Labeling adhesive. 3,857,803, Cl. 260-17.45t.
- Shepherd, Thomas H.; and Gould, Francis E. Dry hydrophilic acrylate or methacrylate polymer prolonged release drug implants. 3,857,932, Cl. 424-19.000.
- Sherlock, Margaret H.; and Sperber, Nathan, to Schering Corporation. Cyclopropane carboxylic acid derivatives. 3,857,880, Cl. 260-515.00r.
- Sherman, Morton, to Celotex Corporation. The. Easy release suspension system. 3,857,216, Cl. 52-489.000.
- Shibata, Akio, to Eisai Co., Ltd. Addition of hydroxamic acid derivatives to feeds for reducing odor of poultry excrement. 3,857,946, Cl. 424-266.000.
- Shibuya, Mitsuo: *See—*
- Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.
- Shimizu, Hiroshi: *See—*
- Aishima, Itsuho; Sakurai, Hisaya; and Shimizu, Hiroshi, 3,857,914.
- Shimizu, Hitoshi: *See—*
- Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, 3,857,796.

Shimizu, Mitsuo; and Sado, Ichiro, to Canon Kabushiki Kaisha. Device for controlling display output by micro-program. 3,858,197, Cl. 340-324.00r.

Shimoda, Kiyotaka: *See—*
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Shiongi & Co., Ltd.: *See—*
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Sick, Erwin; and Gass, Ernst, to Sick, Erwin, Optik-Elektronik. Light barrier screen. 3,858,043, Cl. 250-221.000.

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Sidlo, Richard: *See—*
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Simpson, James H., Jr., to Singer Company, The, mesne. Method and apparatus for sensing chemical process concentrations. 3,858,111, Cl. 324-50r.

Simpson Manufacturing Co., Inc.: *See—*
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Siska, Lubomir: *See—*
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Smith, Dexter William; and Lumby, Roland John, to Lucas, Joseph, (Industries) Limited. Method of producing hot pressed components. 3,857,157, Cl. 29-420.500.

Smith, Donald Tolmon: *See—*
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Smith, Franklin J., to Microdry Corporation. Microwave applicator. 3,858,022, Cl. 219-10.55a.

Smith, George Elwood: *See—*
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Smith, Grant N., to Dow Chemical Company, The. Photo-chemical reaction apparatus. 3,858,051, Cl. 250-527.000.

Smith, Harry A.; and Kobel, Erwin H., to Dow Chemical Company, The. Polyglycol-modified phenolic resins. 3,857,815, Cl. 260-51.500.

Smith International, Inc.: *See—*
Tschirky, John E., 3,857,655.

Smith, Jay N.; and Schantz, Robert L., to Impala Industries, Inc. Catalytic heater head. 3,857,669, Cl. 431-328.000.

Smith, Robert Lewis, to Chemetron Corporation. Feeding apparatus for elongated masses of material. 3,857,475, Cl. 198-137.000.

Smithwick, Edward L., Jr., to Lilly, Eli, and Company. Process for purifying blocked synthetic peptides. 3,857,829, Cl. 260-112.500.

Snam Progetti S.p.A.: *See—*
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Morelli, Morello; and De Marco, Fortunato, 3,857,894.

Snelling, Christopher, to Xerox Corporation. Photoelectrophoretic imaging apparatus. 3,857,549, Cl. 355-3.00p.

Snitzer, Morton: *See—*
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Sno-Trik Company: *See—*
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Snowdon, Raymond, to Fosco Trading A.G. Combination plug-splash can and method of using same during casting. 3,857,438, Cl. 164-137.000.

Snyder, Larry L., to Jarva, Inc. Gage scraper for birotational tunneling machines. 3,857,610, Cl. 299-86.000.

Societe Anonyme Centre Europeen de Recherches Mauvernay: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe Suisse pour l'Industrie Horlogere Management Service S.A.: *See—*
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Sofronic, Ramiro, to Intreprinderac Industrial de Stat Energo Reparatii. Suspension bridge. 3,857,130, Cl. 14-19.000.

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Somasekhara, Shanker; and Upadhyaya, Navinchandra Vasantrai, to Karamchand Premchand Private Limited. 8-Hydroxy quinoline derivatives. 3,857,877, Cl. 260-283.00s.

Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., to International Health Systems, Inc. Multiphasic health screening method and module. 3,857,383, Cl. 128-2.00d.

Sonderegger, Hans Conrad; Engeler, Paul; and Lutz, Eugen, Jr., to Kistler Instrumente A.G. Pressure transducers. 3,857,287, Cl. 73-395.000.

Soucek, Josef. Bullet-proof tire. 3,857,427, Cl. 152-196.000.

Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. System for automatically reading symbols. 3,858,180, Cl. 340-146.30f.

Speers, Daniel E., to General Film Development Corporation. High contrast, high capacity monobath processing method and composition for monochrome film. 3,857,710, Cl. 96-61.00m.

Speigel, Kenneth: *See—*

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Stain, S. Douglas, Jr.; Liu, Gordon Y. T.; and Hutchinson, Lloyd B., to Dow Chemical Company, The. Incorporation of reinforcing fibers into olefin polymers. 3,857,813, Cl. 260-42.180.

Staley, A. E., Manufacturing Company: *See—*
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Standard Oil Company (Indiana): *See—*
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Stas, Bretislav; Dlouhy, Ludek; Siska, Lubomir; and Skrabis, Adolf, to Vedeckovyzkumny uhelny ustav. Arrangement for determination of the continuity of thickness and of structural-tectonic elements of mineable layers, particularly of coal seams. 3,858,167, Cl. 340-15.55w.

Statham Instruments, Inc.: *See—*
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Stauffer Chemical Company: *See—*
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Stein, Ira S.; and Carreira, Leonard M., to Xerox Corporation. Photoelectrophoretic imaging process using dry pigment coated substrate. 3,857,707, Cl. 96-1.200.

Steiner, Gerd; and Kuhnast, Rainer, to Schloemann Aktiengesellschaft. Coupling with mechanical overload safety device. 3,857,257, Cl. 64-28.00r.

Steininger, Jacques; and Reed, Thomas B., to Massachusetts Institute of Technology. Heat pipe furnace. 3,857,990, Cl. 13-22.000.

Sterling Drug Inc.: *See—*
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Sternberg, James C., to Beckman Instruments, Inc. Rate sensing batch analyzer. 3,857,771, Cl. 204-195.00b.

Stevens, J. P., & Co., Inc.: *See—*
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Stevens, Travis E.; and Reed, Samuel F., Jr. Ferrocene containing monomers and copolymers. 3,857,870, Cl. 260-439.0cy.

Stevens, William Henry, II, to Morris, Philip, Incorporated. Dermatone cutting blade assembly. 3,857,178, Cl. 30-344.000.

Stickney, William A.: *See—*
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Stievenart, Emile Frans; and Mueller, Juergen, to Agfa-Gevaert Aktiengesellschaft. Apparatus for wet treatment of photosensitive material. 3,858,229, Cl. 354-331.000.

Stiftelsen Skogsmekanisering: *See—*
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Stimson, Ian Leonard, to Dunlop Limited. Composite articles. 3,857,469, Cl. 192-107.00m.

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Stolting, Klaus: *See—*

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Stone, David L.: *See—*
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Stoner, Jesse A., to General Electric Company. Method and apparatus for positioning components of dynamoelectric machine for assembly. 3,857,170, Cl. 29-596.000.

Strawson Hydraulics (Consultants) Limited: *See—*
Salvin, Keith Thomas; and Lane, David Silvester, 3,858,011.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Process for the production of polymeric hydrocarbons having reactive silyl end groups. 3,857,825, Cl. 260-88.10r.

Streicher, Max, to Fordertechnik Steicher GmbH. Adjustable diameter stator for excentric helical screw pump. 3,857,654, Cl. 418-48.000.

Strong, Robert D., to Hoffmann-La Roche Inc., mesne. Selective polarizer arrangement for liquid crystal displays. 3,857,628, Cl. 350-160.0lc.

Stroz, John J.: *See—*
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Strum, Burthold: *See—*
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Sturiale, Louis A.; and Waszink, Remco P., to Westinghouse Electric Corporation. Heat exchanger having a head with an integral radiation shield. 3,857,442, Cl. 165-134.000.

Sturm, Ruger & Co., Inc.: *See—*
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Sturwald, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Ester lubricants suitable for use in aqueous systems. 3,857,865, Cl. 260-407.000.

Subcom, Inc.: *See—*
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Sukenari, Junko: *See—*
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Sulich, Michael; and Vinal, Albert W., to International Business Machines Corporation. Magnetic circuit device for a contactless switch or the like. 3,858,145, Cl. 338-32.00h.

Sullivan, Alfred Bay; and Wilder, Gene Ray, to Monsanto Company. Stable compositions for inhibiting polymerization of unsaturated carboxylic acid esters. 3,857,878, Cl. 260-486.00r.

Sumimoto, Toru: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Svendsen, Svend Anker, to Slagterierne Forskningsinstitut. Method of preparing a packaged heat sterilized minced meat product. 3,857,986, Cl. 426-371.000.

Swalinkovich, Joseph E., Jr. Holder for a paint pail and applicator. 3,857,537, Cl. 248-210.000.

Swanson, Howard E.; and Rudy, Richard S., to GSW Electric Specialty Company. Switch transfer mechanism. 3,858,133, Cl. 335-160.000.

Swift & Company: *See—*
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Swingline Inc.: *See—*
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Sybron Corporation: *See—*
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- Najer, Henry; Manoury, Philippe Michel Jacques; Fernand, Andre Pierre; and Giudicelli, Don Pierre Rene Lucien, 3,857,945.
- Szucs, Laszlo; Tasnadi, Csaba; and Lindner, Istvan, to Energiagazdalkodasi Intezet. Apparatus for heat and mass transfer between liquids and gases. 3,857,911, Cl. 261-112.000.
- Szymanski, Chester D.; Tessler, Martin M.; and Bell, Harvey, to National Starch and Chemical Corporation. Food products containing epichlorohydrin-inhibited, stabilized retort starches. 3,857,976, Cl. 426-167.000.
- Tachikawa, Kyoji; and Yoshida, Yuji, to National Research Institute for Metals, The Director of. Method of producing a composite superconductor. 3,857,173, Cl. 29-599.000.
- Taguchi, Tetsuya: See—
- Nakagawa, Shiro; Nakamoto, Soichi; Takishima, Yoshiyuki; Taguchi, Tetsuya; and Kakunodate, Masamichi, 3,858,226.
- Takechi, Hiroshi: See—
- Gondo Hisashi; Takechi, Hiroshi; Kawano, Tsuyoshi; Namba, Kazuo; Masui, Hiroaki; Ozaki, Koji; Uchida, Shunichi; and Sakurai, Koichi, 3,857,740.
- Takeda Chemical Industries, Ltd.: See—
- Misaki, Masaru; Tsujimoto, Yukizo; Nakagawa, Tatuo; Sukenari, Junko; and Moritaka, Shintaro, 3,857,975.
- Takeguchi, Kazuo: See—
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- Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, to Nippon Kayaku Kabushiki Kaisha. Oxidation catalyst. 3,857,796, Cl. 252-467.000.
- Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Vehicle polishing apparatus. 3,857,135, Cl. 15-230.140.
- Takeuchi Tekko Kabushiki Kaisha: See—
- Takeuchi, Shigeo, 3,857,135.
- Takeuchi, Tsuneo. Pantograph-type jack. 3,857,548, Cl. 254-126.000.
- Tagiguchi, Sunichi; Satoyoshi, Yasuhiko; Hamada, Shinji; Nakamura, Takeshi; Koba, Sadaaki; and Shimoda, Noboru, to Fuji Photo Film Co., Ltd. Film cassette cover opener. 3,857,153, Cl. 29-200.00d.
- Takishima, Yoshiyuki: See—
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- Tant, William A. Semi-automatic firearm. 3,857,324, Cl. 89-197.000.
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 Washio, Yoshiaki: See—
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- Baker, Alan Stuart; Green, George; and Waters, Julian Alfred, 3,857,810.
 Watson, George W. Cervical tissue cell specimen gathering device. 3,857,384, Cl. 128-2.00b.
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 Wiggins, Richard F., to Gyromat Corporation, Inc. Semi-automatic color change system for paint spray installation. 3,857,513, Cl. 239-70.000.
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 Wiklund, Per Martin, to Stiftelsen Skogsmekanisering. Tree-felling device. 3,857,425, Cl. 144-34.00r.
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 Wilke, David J., to Handy & Harman Specialty Metals Group. Rotary arbor wire straightener. 3,857,266, Cl. 72-79.000.
 Wilkinson, Geoffrey, to Ethyl Corporation. Hydrogenation of aldehydes using triarylpophosphine rhodium halogenoid catalysts. 3,857,900, Cl. 260-638.00b.
 Wilkinson, Thomas A. Interchangeable plug-in modular appliance unit system. 3,858,091, Cl. 317-120.000.
 William, A. Reimer, to GTE Automatic Electric Laboratories Incorporated. Sliding three dimensional packaging technique. 3,858,154, Cl. 339-17.0lm.
 Williams, Edward L., to International Harvester Company. Regulated ignition amplifier circuit. 3,857,376, Cl. 123-148.00e.
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- Wondris, Erich F., to National Steel Corporation. Roll-couple, continuous-strip casting. 3,857,434, Cl. 164-5.000.
- Wood, Prentice J., to Mead Corporation. The. Article carrier. 3,857,483, Cl. 206-187.000.
- Woodfill, William L., to Brunswick Corporation. Marine jet drive propulsion apparatus. 3,857,355, Cl. 115-12.00r.
- Woodruff, Douglas, to Morton-Norwich Products, Inc. Ignition resistant mattress construction. 3,857,126, Cl. 5-345.00r.
- Woods, Jack L., to Permaloy Corporation. Process for anodizing aluminum and its alloys. 3,857,766, Cl. 204-58.000.
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- Wortley, John Philip Atkinson: See—
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- Wright, Howard Nolan, Jr.: See—
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- Wright, James C., to Berry Metal Company. Return bull wheel and cable clamp for cable-driven chair lift. 3,857,340, Cl. 104-173.000.
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- Wynn, John F., Jr.; and Trowbridge, Clifford F., to United States of America, Navy. Subsurface submersible mating system. 3,857,351, Cl. 114-16.400.
- Wyrick, Charles Thomas, to AMP Incorporated. Electrical connector. 3,857,995, Cl. 174-84.00c.
- Wyss, Rudolf F.; and Grenley, Dallas G., to Dow Chemical Company. The. Method for preparing brick panels. 3,857,918, Cl. 264-261.000.
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- Yamada, Muneki: See—
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- Yamaguchi, Terumoto; and Izumi, Kanemichi, to Nippondenso Co., Ltd. Method of producing spark plug center electrode. 3,857,145, Cl. 29-25.120.
- Yamaha Hatsudoki Kabushiki Kaisha: See—
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- Yamauchi Rubber Industry Co., Ltd.: See—
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- Yarrow, Christopher John; and Johnson, Ronald, to Lucas Aerospace Limited. Electrical generating apparatus. 3,858,107, Cl. 322-26.000.
- Yates, Charles B.; and Wolski, Adam M., to Yates Industries, Inc. Copper foil treatment and products produced therefrom. 3,857,681, Cl. 29-195.000.
- Yates Industries, Inc.: See—
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- Yoder, Donald E. Simulated golf board game apparatus. 3,857,568, Cl. 273-134.0cg.
- Yokokawa, Toshiki; and Kawakita, Chihiro, to OKI Electric Industry Co., Ltd. Method of manufacturing reed switches with oxidized rhodium contacts. 3,857,175, Cl. 29-622.000.
- Yolles, Seymour, 10% to Brook, David E. Controlled release flavor compositions. 3,857,964, Cl. 426-3.000.
- Yonezawa, Toshiro: See—
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- Yoshida, Iwao, to Sanwa Kako Co., Ltd. Joined carpet unit. 3,857,749, Cl. 161-44.000.
- Yoshida, Susumu: See—
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- Yoshida, Yuji: See—
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- Yoshino, Toshio, to Weinberger, C. & Co., Ltd. Process for manufacture of deodorizing air filters. 3,857,732, Cl. 117-138.80n.
- Yosim, Samuel J.: See—
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- Young, Carl. Disposable container means. 3,857,597, Cl. 294-1.00r.
- Young, Fred M.; and Astrup, William V., to Young Radiator Company. Method of making a radiator core. 3,857,151, Cl. 29-157.30b.
- Young Radiator Company: See—
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- Young, Ralph B.: See—
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- Youngs, Homer S. Shock absorber testing machine. 3,857,275, Cl. 73-11.000.
- Yuminaka, Takeo: See—
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- Zacouto, Fred. Heart pacemaker. 3,857,399, Cl. 128-419.00p.
- Zahid, Abdul, to Greer Hydraulics, Inc. Pressure pulse dampener device. 3,857,413, Cl. 138-26.000.
- Zahn, Wolfgang: See—
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- Zappia, Anthony T., to Ball Brothers Service Corporation. Heated conveyor. 3,857,690, Cl. 65-274.000.
- Zappulla, Lawrence Matthew: See—
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- Zarro, Michael, to Blonder-Tongue Laboratories, Inc. Universal female coaxial connector. 3,858,156, Cl. 339-32.000.
- Zennie, Michael Maurice. Liquid spray device. 3,857,515, Cl. 239-169.000.
- Zink, John, Company: See—
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- Zink, Stanley C.: See—
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- Zorn, Bruno: See—
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- Zulch, Donald I., to United States of America, Air Force. Radar moving target tracking system. 3,858,209, Cl. 343-7.700.
- Zurawski, Ronald A.: See—
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- Zwernemann, Ross Wayne: See—
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- Zwingerberger, Arno; Wunner, Roland; and Liebrandt, Karl; deceased (by Liebrandt, Sophia, nee Saalfrank; and Liebrandt, Gunnar; heirs and legal representatives). Sink arrangement for warp knitting and Raschel machines. 3,857,260, Cl. 66-84.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF DECEMBER, 1974

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- AGFA Aktiengesellschaft: See—
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- Borup, Alf L., and K. R. Hamrin, to Lesjofors AB. Spring-loaded clamping devices for fastening railroad rails. Re. 28,291, 12-31-74, Cl. 238-349.
- Calkins, Forrest I. Pen holder attachment device. Re. 28,289, 12-31-74, Cl. 224-28.
- Elchler, Wolfgang: See—
Greiner, Joachim, Elchler, and Krones, Re. 28,290.
- Goetz, Richard W., and I. L. Mador, to National Distillers and Chemical Corp. Catalyzed hydrolysis of nitriles to amides. Re. 28,288, 12-31-74, Cl. 260-561.
- Greiner, Joachim, W. Elchler, F. Krones, by AGFA Aktiengesellschaft. Curie point magnetic recording process. Re. 28,290, 12-31-74, Cl. 360-16.
- Hamrin, Karl R.: See—
Borup, Alf L., and Hamrin, Re. 28,291.
- Johnson Diversified, Inc.: See—
Johnson, Lloyd E. Re. 28,286.
- Johnson, Lloyd E., deceased, by Johnson Diversified, Inc., to Johnson Diversified, Inc. Line control for spin casting reels. Re. 28,286, 12-31-74, Cl. 242-84.2.
- Jommi, Giancarlo, G. Riva, F. Mauri, and L. Mauri, to Ravizza SA. Process for the resolution of racemic 3-succinyl-5-phenyl-1,3-dihydro-2H-1,4-benzodiazepine-2-one-derivatives into optical antipodes. Re. 28,287, 12-31-74, Cl. 424-244.
- Krones, Friedrich: See—
Greiner, Joachim, Elchler, and Krones, Re. 28,290.
- Lesjofors AB: See—
Borup, Alf L., and Hamrin, Re. 28,291.
- MacDonnell, Robert W., to Unity Railway Supply Co., Inc. Self-lubricating slide bearing. Re. 28,284, 12-31-74, Cl. 308-138.
- Mador, Irving L.: See—
Goetz, Richard W., and Mador, Re. 28,288.
- National Distillers and Chemical Corp.: See—
Goetz, Richard W., and Mador, Re. 28,288.
- RCA Corp.: See—
Schanne, Joseph F. Re. 28,285.
- Schanne, Joseph F., to RCA Corp. Article labeling and identification system. Re. 28,285, 12-31-74, Cl. 235-61.
- Mauri, Francesco: See—
Jommi, Giancarlo, Riva, Mauri, and Mauri, Re. 28,287.
- Mauri, Luigi: See—
Jommi, Giancarlo, Riva, Mauri, and Mauri, Re. 28,287.
- Ravizza SA: See—
Jommi, Giancarlo, Riva, Mauri, and Mauri, Re. 28,287.
- Riva, Giovanni: See—
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- Unity Railway Supply Co., Inc.: See—
MacDonnell, Robert W. Re. 28,284.

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- Abbott Laboratories: See—
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- Acton Rubber Ltd., The: See—
Lamarque, Raymond B. 234,013.
- Bernard, Charles. Chair. 234,015, 12-31-74, Cl. D6-47.
- Christian, Hubert E., and D. W. Lee, to Dart Industries, Inc. Plastic spoon. 234,017, 12-31-74, Cl. D7-138.
- Continental Can Co., Inc.: See—
D'Alo, Herbert F. 234,019.
- Control Data Corp.: See—
Cray, Seymour, Davis, and Roush, 234,022.
- Cox, Quentin T. Dog house. 234,023, 12-31-74, Cl. D30-1.
- Cray, Seymour, L. T. Davis, and M. D. Roush, to Control Data Corp. Computer mainframe console. 234,022, 12-31-74, Cl. D26-5.
- Daher, Theodore G., to General Electric Co. Clock or similar article. 234,020, 12-31-74, Cl. D10-17.
- D'Alo, Herbert F., to Continental Can Co., Inc. Jug. 234,019, 12-31-74, Cl. D9-44.
- Dart Industries, Inc.: See—
Christian, Hubert E., and Lee, 234,017.
- Davis, Lester T.: See—
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- DeBrey, Robert J., to Fingerhut Corp. Electric grass shear. 234,018, 12-31-74, Cl. D8-8.
- Erickson, Donald G., and V. R. Kaufman, to Jacobsen Mfg. Co. Vented rotary lawn mower housing. 234,024, 12-31-74, Cl. D40-1.
- Fingerhut Corp.: See—
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- Heros, Ricardo J., to Richards Mfg. Co. Suction needle for ear operations. 234,032, 12-31-74, Cl. D83-12.
- Jacobsen Mfg. Co.: See—
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- Kaufman, Vernon R.: See—
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- Kawamura, Ken, to Matsushita Electric Industrial Co., Ltd. Portable radio. 234,020, 12-31-74, Cl. D56-4.
- Kneuff, Charles D. Aquarium. 234,024, 12-31-74, Cl. D30-9.
- Krumholz, Jerrold J., H. H. V. Reisgen, and P. B. Means, to Kusan, Inc. Toy vehicle. 234,027, 12-31-74, D34-15.
- Kusan, Inc.: See—
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- Lee, David W.: See—
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- Leo, Carmen. Ring. 234,029, 12-31-74, Cl. D45-10.
- Matsushita Electric Industrial Co., Ltd.: See—
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- Murray, William B., to Sportscraft, Inc. Aerated bait circulator. 234,031, 12-31-74, Cl. D65-1.
- Parker, Douglas W. Fishing lure. 234,021, 12-31-74, Cl. D22-28.
- Potter, Edward. Disposable culture device. 234,025, 12-31-74, Cl. D32-1.
- Reisgen, Herbert H. V.: See—
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- Richards Mfg. Co.: See—
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- Traver, Francisco T., to Silvestre Segarra e Hijos, S.A. Shoe sole. 234,014, 12-31-74, Cl. D2-320.
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 McReynolds, Glen H.: See—
 Gore, Fred M., and McReynolds. 234,002.
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 Murrey, Gordon W. Combination integral pocket liner and gully boot for a billiard table or the like. 233,996, 12-24-74, Cl. D34—3.
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 Jones, Jimmie L. 233,985.
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 Warneford, Walter J. Engine manifold. 234,011, 12-24-74, Cl. D77—1.
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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 31, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

50	CLASS 2	621	3,857,174	59	3,857,236	761	3,857,303	CLASS 108	384	3,857,397		
177	3,857,116	622	3,857,175	80	3,857,237	877	3,857,304	53	3,857,342	419D	3,857,398	
185L	3,857,117	162	3,857,176	93	3,857,238	5BB	3,857,695	133	3,857,343	419P	3,857,399	
213	3,857,118	216	3,857,177	204	3,857,239	5	3,857,694	165R	3,857,344	27T	3,857,400	
12R	3,857,119	344	3,857,178	221	3,857,240	10R	3,857,696	79R	3,857,345	17R	3,857,403	
29	3,857,120	381	3,857,179	243	3,857,241	11	3,857,697	130	3,857,346	86C	3,857,735	
100	3,857,121	383	3,857,180	495	3,857,242	24	3,857,698	255	3,857,347	100R	3,857,736	
334R	3,857,122	36	3,857,181	538	3,857,243	74	3,857,699	258	3,857,348	120FC	3,857,737	
343	3,857,123	27L	3,857,182	641	3,857,244	94	3,857,701	119	3,857,349	202	3,857,738	
345R	3,857,124	141G	3,857,183	651	3,857,245	109	3,857,702	5R	3,857,350	1	3,857,401	
10.2	3,857,125	174G	3,857,184	45D	3,857,246	121	3,857,703	16.4	3,857,351	13	3,857,402	
21	3,857,126	174P	3,857,185	46.5	3,857,247	138	3,857,705	61	3,857,352	102	3,857,404	
25	3,857,127	174R	3,857,186	65	3,857,248	173R	3,857,706	144C	3,857,353	269.5	3,857,405	
1R	3,857,128	192	3,857,187	68	3,857,249	101A	3,857,305	CLASS 115	6.1	3,857,354	495	3,857,407
1T	3,857,129	388	3,857,188	72.4	3,857,250	9.51	3,857,306	12R	3,857,355	514	3,857,408	
1F	3,857,130	95	3,857,189	28	3,857,251	90C	3,857,307	24.1	3,857,356	604	3,857,409	
22	3,857,131	8	3,857,190	266	3,857,252	157	3,857,308	41R	3,857,357	625.27	3,857,410	
19	3,857,132	28.1	3,857,191	289	3,857,253	13	3,857,309	110	3,857,358	814	3,857,412	
3.17	3,857,133	158R	3,857,192	293	3,857,254	26	3,857,310	124.2	3,857,359	26	3,857,413	
104.06R	3,857,134	202	3,857,193	373	3,857,255	51	3,857,311	124.4	3,857,360	90	3,857,414	
118	3,857,135	244B	3,857,194	30	3,857,256	277	3,857,312	36.1	3,857,361	122	3,857,415	
199	3,857,136	32	3,857,195	274	3,857,257	346	3,857,313	36.8	3,857,362	175	3,857,416	
230.14	3,857,137	48.5	3,857,196	303	3,857,258	504	3,857,314	37LE	3,857,363	12	3,857,417	
2	3,857,138	213	3,857,197	50A	3,857,259	644	3,857,315	46FC	3,857,364	20	3,857,418	
1C	3,857,139	13	3,857,198	84	3,857,260	380	3,857,317	47A	3,857,365	122N	3,857,419	
11	3,857,140	386	3,857,199	22R	3,857,261	403	3,857,318	49	3,857,366	71R	3,857,420	
58	3,857,141	477	3,857,200	276	3,857,262	23	3,857,319	62	3,857,367	3	3,857,422	
230R	3,857,142	5D	3,857,201	364A	3,857,263	1.88	3,857,320	62.2	3,857,368	5	3,857,423	
273	3,857,143	8R	3,857,202	423	3,857,264	1.81	3,857,321	73	3,857,369	275	3,857,424	
288K	3,857,144	9R	3,857,203	92	3,857,265	138	3,857,322	76T	3,857,370	34R	3,857,425	
30.5T	3,857,145	46	3,857,204	106	3,857,266	145	3,857,323	122PA	3,857,371	6.2	3,857,739	
87TB	3,857,146	103WH	3,857,205	56	3,857,267	191R	3,857,324	138RN	3,857,372	12F	3,857,740	
205.11F	3,857,147	134	3,857,206	79	3,857,268	197	3,857,325	212	3,857,373	36	3,857,741	
237	3,857,148	170MT	3,857,207	209	3,857,269	492	3,857,326	240	3,857,374	19.3	3,857,742	
2	3,857,149	237R	3,857,208	247	3,857,270	129	3,857,328	59	3,857,375	20	3,857,743	
72R	3,857,150	346	3,857,209	287	3,857,271	35H	3,857,329	300	3,857,376	185	3,857,426	
25.12	3,857,151	2	3,857,210	324	3,857,272	1.2	3,857,330	1	3,857,377	196	3,857,427	
25.35	3,857,152	4	3,857,211	383	3,857,273	1.8	3,857,331	5	3,857,378	241	3,857,428	
148.4A	3,857,153	65	3,857,212	407	3,857,274	107	3,857,332	8.09	3,857,379	379	3,857,429	
148.4R	3,857,154	86	3,857,213	469	3,857,275	354	3,857,333	8.13	3,857,380	60	3,857,744	
149.5B	3,857,155	103	3,857,214	6	3,857,276	499	3,857,334	8.33	3,857,381	83	3,857,745	
155R	3,857,156	259	3,857,215	11	3,857,277	536	3,857,335	44E	3,857,372	89	3,857,746	
157.3B	3,857,157	489	3,857,216	28	3,857,278	601	3,857,336	44R	3,857,373	CLASS 157	1.2	3,857,430
159.2	3,857,158	589	3,857,217	67.2	3,857,279	53	3,857,337	117A	3,857,374	1.26	3,857,431	
195	3,857,159	694	3,857,218	136A	3,857,280	269	3,857,338	139AP	3,857,375	CLASS 160	124	3,857,432
196.5	3,857,160	37	3,857,219	155	3,857,281	123	3,857,339	141	3,857,376	172	3,857,433	
200D	3,857,161	59R	3,857,220	168	3,857,282	354	3,857,340	148E	3,857,377	CLASS 161	21	3,857,747
203MM	3,857,162	112A	3,857,221	300	3,857,283	395	3,857,341	185BB	3,857,378	24	3,857,748	
203P	3,857,163	124A	3,857,222	336.5	3,857,284	416	3,857,342	196R	3,857,379	44	3,857,749	
417	3,857,164	131	3,857,223	362AR	3,857,285	421.5R	3,857,343	20R	3,857,380	87	3,857,750	
420.5	3,857,165	29	3,857,224	363.9	3,857,286	432R	3,857,344	25A	3,857,381	89	3,857,751	
427	3,857,166	483	3,857,225	395	3,857,287	541	3,857,345	384	3,857,382	161	3,857,752	
429	3,857,167	13.6	3,857,226	416	3,857,288	52	3,857,292	1D	3,857,383	178	3,857,753	
463	3,857,168	295	3,857,227	469	3,857,289	118	3,857,293	2B	3,857,384	227	3,857,754	
472.7	3,857,169	335	3,857,228	473R	3,857,290	231J	3,857,294	2D	3,857,385	5	3,857,434	
482	3,857,170	469	3,857,229	557	3,857,291	234	3,857,295	2.08	3,857,386	36	3,857,435	
483	3,857,171	56	3,857,230	665GE	3,857,301	245R	3,857,296	20	3,857,387	60	3,857,436	
504	3,857,172	140C	3,857,231	733	3,857,302	443	3,857,297	24A	3,857,388	83	3,857,437	
509	3,857,173	156	3,857,232	52	3,857,292	469	3,857,298	87R	3,857,389	137	3,857,438	
527.6	3,857,174	157R	3,857,233	118	3,857,293	473R	3,857,299	92C	3,857,390	186	3,857,439	
583	3,857,175	13.6	3,857,225	231J	3,857,294	557	3,857,300	93	3,857,391	341	3,857,440	
590	3,857,176	295	3,857,226	234	3,857,295	665GE	3,857,301	127	3,857,392	CLASS 165	105	3,857,441
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597	3,857,178	469	3,857,228	443	3,857,297	52	3,857,292	214R	3,857,394			
599	3,857,179	557	3,857,229	469	3,857,298	118	3,857,293	260	3,857,395			
		665GE	3,857,230	473R	3,857,299	231J	3,857,294	263	3,857,396			
		733	3,857,231	557	3,857,300	234	3,857,295	335	3,857,397			
				665GE	3,857,301	245R	3,857,296					
				733	3,857,302	288Q	3,857,303					

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285	3,857,445	68	210.5	3,857,832	257	3,857,623
295	3,857,443	186R	233	3,857,833	266	3,857,624
CLASS 169	3,857,446	189R	239.3A	3,857,834	348	3,857,624
60	3,857,447	243	239.55C	3,857,835	CLASS 313	3,858,012
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777	3,857,447	18A	240R	3,857,837	85F	3,858,012
CLASS 173	3,857,448	18R	243R	3,857,838	85R	3,858,012
134	3,857,448	195B	247.7C	3,857,839	95R	3,858,012
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CLASS 174	3,857,451	242	250R	3,857,841	134CG	3,858,012
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52R	3,857,992	3,857,775	254R	3,857,843	186C	3,858,012
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CLASS 176	3,857,451	72	295N	3,857,851	1	3,858,012
78	3,857,452	187	307A	3,857,852	5A	3,858,012
CLASS 177	3,857,452	227	307B	3,857,853	6.1	3,858,012
139	3,857,452	305	314.5	3,857,854	28	3,858,012
CLASS 178	3,857,452	386	326.5L	3,857,855	47.2	3,858,012
5.1	3,857,997	463	327TH	3,857,856	124F	3,858,012
5.6	3,857,998	CLASS 208	332.2R	3,857,857	150SB	3,858,012
6.5	3,857,999	139	346.1R	3,857,858	150.5	3,858,012
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7.3S	3,858,002	172.5	346.6	3,857,860	293	3,858,012
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174	3,858,010	520	527	3,857,868	448	3,858,012
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33GD	3,857,459	151	556	3,857,875	45R	3,858,106
33A	3,857,457	151	556	3,857,876	CLASS 322	3,858,107
43	3,857,458	151	556	3,857,877	26	3,858,107
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17	3,857,460	151	556	3,857,879	28	3,858,109
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6.2	3,857,461	151	556	3,857,881	20	3,858,110
11A	3,857,462	151	556	3,857,882	CLASS 324	3,858,111
CLASS 186	3,857,463	151	556	3,857,883	5R	3,858,112
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CLASS 191	3,857,467	151	556	3,857,888	320	3,858,117
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33R	3,857,467	151	556	3,857,891	15	3,858,119
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107M	3,857,469	151	556	3,857,893	CLASS 331	3,858,121
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20R	3,857,472	151	556	3,857,901	72	3,858,127
127R	3,857,473	151	556	3,857,902	81R	3,858,128
131	3,857,474	151	556	3,857,903	CLASS 334	3,858,129
136	3,857,476	151	556	3,857,904	78	3,858,129
137	3,857,475	151	556	3,857,905	CLASS 335	3,858,130
155	3,857,477	151	556	3,857,906	136	3,858,131
195	3,857,478	151	556	3,857,907	153	3,858,132
219	3,857,479	151	556	3,857,908	160	3,858,133
CLASS 200	3,858,012	151	556	3,857,909	212	3,858,134
16D	3,858,012	151	556	3,857,910	266	3,858,135
61.13	3,858,013	151	556	3,857,911	284	3,858,136
83R	3,858,014	151	556	3,857,912	CLASS 336	3,858,137
148B	3,858,015	151	556	3,857,913	90	3,858,137
153LA	3,858,016	151	556	3,857,914	136	3,858,138
153LB	3,858,017	151	556	3,857,915	CLASS 337	3,858,139
153P	3,858,018	151	556	3,857,916	88	3,858,140
159A	3,858,019	151	556	3,857,917	140	3,858,141
164	3,858,020	151	556	3,857,918	152	3,858,142
CLASS 201	3,857,758	151	556	3,857,919	CLASS 338	3,858,150
40	3,857,758	151	556	3,857,920	2	3,858,150
CLASS 203	3,857,759	151	556	3,857,921	4	3,858,151
29	3,857,759	151	556	3,857,922	22R	3,858,152
CLASS 204	3,857,760	151	556	3,857,923	32H	3,858,153
1T	3,857,760	151	556	3,857,924	55	3,858,154

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295	3,858,149	173LM	3,858,186	CLASS 350	91	3,857,626	CLASS 358	2	3,858,239	CLASS 424	378	3,857,665	
CLASS 339	3,858,187	173R	3,858,187	160LC	13	3,857,627	3,858,240	13	3,858,240	12	3,857,931	393	3,857,666
4	3,857,625	174EB	3,858,188			3,857,628				19	3,857,932		
14R	3,858,151	174ZB	3,858,190			3,857,629		16	Re.28,290	20	3,857,933	CLASS 426	
17LM	3,858,154	188R	3,858,191	276R		3,857,630				30	3,857,934	2	3,857,961
17C	3,858,152	258R	3,858,192	289		3,857,631				95	3,857,935	3	3,857,962
	3,858,153	274	3,858,193	302		3,857,632		57	3,857,642	117	3,857,936		3,857,963
22R	3,858,155	276	3,858,194	CLASS 352	63	3,857,643		63	3,857,643	120	3,857,937		3,857,964
32	3,858,156	311	3,858,195	91S	196	3,857,644		196	3,857,644	156	3,857,938		3,857,965
98	3,858,157	324AD	3,858,198	124	206	3,857,645		206	3,857,645	157	3,857,939	7	3,857,966
99R	3,858,158	324A	3,858,196	CLASS 354	252	3,857,646		252	3,857,646	180	3,857,940	18	3,857,967
	3,858,159	324R	3,858,197		368	3,857,647		368	3,857,647	243	3,857,941	33	3,857,968
107	3,858,160	347AD	3,858,199	42		3,858,224	CLASS 408			244	Re.28,287	36	3,857,969
122R	3,858,161		3,858,200	46		3,858,225	17	3,857,648		245	3,857,942	46	3,857,970
145D	3,858,162	347P	3,858,201	60		3,858,226	CLASS 415			247	3,857,943	53	3,857,971
176MP	3,858,163	365R	3,858,202	145		3,858,227	200	3,857,649		250	3,857,944	65	3,857,972
252R	3,858,164			293		3,858,228					3,857,945	122	3,857,973
258F	3,858,165	CLASS 343		331		3,858,229	CLASS 416			266	3,857,946	148	3,857,974
		6.5SS	3,858,203	CLASS 355	18	3,857,549	218	3,857,650		274	3,857,947		3,857,975
CLASS 340		7ED	3,858,204	3P	132	3,857,634	CLASS 417			283	3,857,948		3,857,976
3R	3,858,165	7PF	3,858,205			3,857,635	171	3,857,651		317	3,857,949	189	3,857,977
5R	3,858,166	7A	3,858,206	106R		3,857,636	312	3,857,652		319	3,857,950	190	3,857,978
12R	3,858,167	7.5	3,858,208	120		3,857,637	494	3,857,653			3,857,951	204	3,857,979
15 SCP	3,858,168	7.7	3,858,209	150		3,857,638	CLASS 418			324	3,857,952	250	3,857,980
	3,858,169	11R	3,858,210	153		3,857,639	48	3,857,654		331	3,857,953	265	3,857,981
15.5SW	3,858,170	16R	3,858,211	120		3,857,640		3,857,655		337	3,857,954	271	3,857,982
16C	3,858,171	17.2R	3,858,212	156		3,857,641	120	3,857,656		340	3,857,955	287	3,857,983
27NA	3,858,172	100CS	3,858,213	162		3,857,642				341	3,857,956	335	3,857,984
52R	3,858,173	100PE	3,858,214	207		3,857,643	CLASS 423			343	3,857,957	362	3,857,985
58	3,858,174						9	3,857,919			3,857,958	371	3,857,986
63	3,858,175	102	3,858,215	CLASS 357	208	3,857,644	213.5	3,857,920		346	3,857,959	436	3,857,987
73	3,858,176	103	3,858,216	15		3,857,645		3,857,921		365	3,857,960	506	3,857,988
	3,858,177			24		3,858,231		3,857,922				518	3,857,989
80	3,858,178	106D	3,858,217	30		3,858,232		3,857,923		80	3,857,957	95	3,857,667
146.1R	3,858,179	802	3,858,218	34		3,858,233		3,857,924		145	3,857,658	328	3,857,668
146.3F	3,858,180	815	3,858,220	38		3,858,234		3,857,925			3,857,659		3,857,669
150	3,858,181			35		3,858,235		3,857,926		242B	3,857,660	329	3,857,670
172.5	3,858,182	CLASS 346		49		3,858,236		3,857,927			3,857,661	352	3,857,671
	3,858,183	17	3,858,222	63		3,858,237		3,857,928			3,857,662	353	3,857,672
173DR	3,858,184	107VP	3,858,223	79		3,858,238		3,857,929			3,857,663		
	3,858,185					3,858,239	645	3,857,930		327	3,857,664	59	3,857,673
					</								

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PATENTS

1 : 3,857,239	3,857,588	3,858,147	3,858,183	3,857,386	3,858,104
3,857,242	3,857,593	3,858,150	3,858,192	3,857,402	3,858,106
3,857,244	3,857,598	3,858,160	3,858,238	3,857,404	3,858,113
3,857,320	3,857,606	3,858,163	3,857,511	3,857,414	3,858,133
3,857,743	3,857,608	3,858,165	3,857,542	3,857,422	3,858,154
3,857,870	3,857,611	3,858,185	3,857,826	3,857,424	3,858,179
4 : 3,857,119	3,857,615	3,858,190	3,857,964	3,857,453	3,857,120
3,857,535	3,857,618	3,858,193	3,857,461	3,857,356	3,857,293
3,857,671	3,857,619	3,858,198	3,857,461	3,857,475	3,857,300
3,858,062	3,857,634	3,858,201	3,857,485	3,857,485	3,857,376
3,858,109	3,857,651	3,858,203	3,857,139	3,857,486	3,857,496
3,858,173	3,857,655	3,858,206	3,857,216	3,857,492	3,857,677
3,858,200	3,857,679	3,858,207	3,857,226	3,857,495	3,857,690
3,858,234	3,857,683	3,858,208	3,857,249	3,857,507	3,857,691
Re 28,289	3,857,714	3,858,219	3,857,255	3,857,518	3,857,797
3,857,116	3,857,752	3,858,215	3,857,258	3,857,521	3,857,797
3,857,159	3,857,755	3,858,219	3,857,350	3,857,524	3,857,853
3,857,169	3,857,770	3,858,214	3,857,396	3,857,527	3,857,862
3,857,177	3,857,771	3,858,214	3,857,426	3,857,527	3,857,953
3,857,180	3,857,779	3,858,264	3,857,432	3,857,539	3,857,955
3,857,188	3,857,786	3,857,340	3,857,442	3,857,547	3,857,996
3,857,193	3,857,799	3,857,574	3,857,584	3,857,577	3,858,021
3,857,212	3,857,866	3,857,645	3,857,784	3,857,617	3,858,148
3,857,212	3,857,883	3,857,744	3,857,994	3,857,625	3,857,372
3,857,218	3,857,893	3,857,748	3,858,085	3,857,647	3,857,447
3,857,275	3,857,895	3,857,919	3,858,211	3,857,663	3,857,298
3,857,294	3,857,912	3,857,926	3,857,382	3,857,695	3,857,506
3,857,325	3,857,920	3,858,181	3,857,483	3,857,718	3,857,568
3,857,342	3,857,927	3,858,184	3,857,781	3,857,758	3,857,669
3,857,365	3,857,947	3,857,143	3,858,158	3,857,764	3,858,152
3,857,387	3,857,962	3,857,219	3,857,283	3,857,785	3,857,460
3,857,389	3,857,980	3,857,234	3,857,520	3,857,803	3,857,777
3,857,392	3,857,983	3,857,277	3,857,630	3,857,829	3,857,813
3,857,393	3,857,985	3,857,286	3,857,879	3,857,888	3,857,238
3,857,407	3,857,993	3,857,323	3,857,118	3,857,126	3,857,134
3,857,409	3,858,020	3,857,391	3,857,126	3,857,909	3,857,217
3,857,413	3,858,022	3,857,513	3,857,170	3,857,940	3,857,351
3,857,420	3,858,025	3,857,525	3,857,179	3,857,959	3,857,358
3,857,498	3,858,028	3,857,599	3,857,181	3,857,965	3,857,359
3,857,499	3,858,032	3,857,636	3,857,190	3,857,981	3,857,464
3,857,512	3,858,034	3,857,710	3,857,191	3,858,003	3,857,572
3,857,531	3,858,039	3,857,737	3,857,197	3,858,008	3,857,702
3,857,533	3,858,046	3,857,780	3,857,200	3,858,010	3,857,767
3,857,540	3,858,063	3,857,890	3,857,206	3,858,018	3,857,971
3,857,543	3,858,065	3,857,930	3,857,259	3,858,031	3,858,045
3,857,546	3,858,066	3,858,029	3,857,265	3,858,054	3,858,125
3,857,564	3,858,080	3,858,037	3,857,297	3,858,057	3,858,217
3,857,567	3,858,117	3,858,058	3,857,302	3,858,067	3,858,240
3,857,569	3,858,127	3,858,092	3,857,314	3,858,089	3,857,122
3,857,579	3,858,135	3,858,122	3,857,327	3,858,091	3,857,204
3,857,582	3,858,143	3,858,130	3,857,341	3,858,093	3,857,261
3,857,583	3,858,144	3,858,164	3,857,383	3,858,102	3,857,279

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

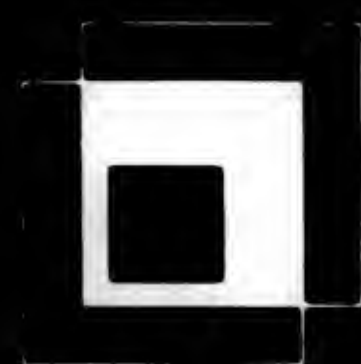
3,857,305	3,857,474	3,858,059	3,858,145	3,858,026	3,858,119
3,857,322	3,857,537	3,858,076	3,858,161	3,858,170	3,858,202
3,857,361	3,857,734	3,858,082	3,858,188	3,857,124	3,857,231
3,857,390	3,857,750	3,858,097	3,858,189	3,857,161	3,857,309
3,857,397	3,857,761	3,858,138	3,858,209	3,857,210	3,857,523
3,857,415	3,857,905	3,858,156	3,858,210	3,857,455	3,857,657
3,857,667	3,857,977	3,858,232	3,858,211	3,857,491	3,857,819
3,857,699	3,858,001	3,858,239	3,858,218	3,857,601	
3,857,700	3,858,001		3,858,218	3,857,616	3,857,192
3,857,782	3,858,019	35 : 3,857,570	3,858,220	3,857,701	3,857,411
3,857,793	3,858,128	3,857,575	3,858,224	3,857,701	
3,857,855	3,858,157	36 : 3,857,140	3,858,231	3,858,216	3,857,132
3,857,896	3,857,215	37 : 3,857,121	3,857,121	Re 28,285	3,857,247
3,857,915	3,857,456	3,857,174	3,857,324	3,857,154	3,857,252
3,857,990	3,858,212	3,857,198	3,857,522	3,857,158	3,857,281
3,858,005	3,857,123	3,857,254	3,858,115	3,857,165	3,857,289
3,858,064	3,857,138	3,857,263	3,857,225	3,857,266	3,857,335
3,858,086	3,857,295	3,857,321	Re 28,288	3,857,269	3,857,408
3,858,094	3,857,480	3,857,336	3,857,172	3,857,282	3,857,497
3,858,124	3,857,576	3,857,364	3,857,209	3,857,301	3,857,534
3,858,141	3,857,818	3,857,366	3,857,285	3,857,339	3,857,585
3,858,182	3,857,898	3,857,412	3,857,344	3,857,349	3,857,609
3,858,186	3,857,908	3,857,421	3,857,354	3,857,434	3,857,612
3,858,196	3,858,098	3,857,437	3,857,371	3,857,441	3,857,666
3,858,204	3,857,388	3,857,476	3,857,410	3,857,446	3,857,682
3,858,205	3,858,023	3,857,504	3,857,435	3,857,457	3,857,688
3,858,227	3,857,678	3,857,509	3,857,473	3,857,459	3,857,763
26 : 3,857,128	3,857,482	3,857,517	3,857,503	3,857,462	3,857,773
3,857,131	3,857,639	3,857,549	3,857,505	3,857,494	3,857,794
3,857,133	3,858,078	3,857,558	3,857,515	3,857,508	3,857,824
3,857,136	3,857,142	3,857,560	3,857,532	3,857,532	3,857,869
3,857,149	3,857,185	3,857,565	3,857,590	3,857,551	3,857,871
3,857,156	3,857,187	3,857,587	3,857,594	3,857,559	3,857,903
3,857,208	3,857,194	3,857,626	3,857,610	3,857,597	3,858,014
3,857,224	3,857,296	3,857,629	3,857,624	3,857,623	3,858,139
3,857,243	3,857,331	3,857,633	3,857,627	3,857,637	3,858,140
3,857,273	3,857,343	3,857,642	3,857,628	3,857,649	3,858,168
3,857,292	3,857,398	3,857,659	3,857,631	3,857,664	3,858,213
3,857,307	3,857,466	3,857,685	3,857,635	3,857,665	3,857,379
3,857,330	3,857,477	3,857,693	3,857,648	3,857,665	3,857,384
3,857,352	3,857,484	3,857,707	3,857,670	3,857,676	3,857,703
3,857,373	3,857,510	3,857,724	3,857,675	3,857,679	3,857,766
3,857,405	3,857,526	3,857,729	3,857,715	3,857,715	50 : 3,858,041
3,857,406	3,857,566	3,857,736	3,857,720	3,857,720	3,858,060
3,857,416	3,857,586	3,857,746	3,857,726	3,857,726	51 : 3,857,178
3,857,471	3,857,640	3,857,757	3,857,730	3,857,730	3,857,270
3,857,479	3,857,660	3,857,788	3,857,741	3,857,741	3,857,375
3,857,489	3,857,681	3,857,792	3,857,769	3,857,769	3,857,652
3,857,514	3,857,687	3,857,811	3,857,775	3,857,775	3,857,723
3,857,602	3,857,692	3,857,814	3,857,865	3,857,865	3,858,137
3,857,614	3,857,709	3,857,828	3,857,868	3,857,868	53 : 3,857,127
3,857,620	3,857,728	3,857,835	3,857,878	3,857,878	3,857,312
3,857,621	3,857,733	3,857,843	3,857,910	3,857,910	3,857,428
3,857,622	3,857,742	3,857,851	3,857,942	3,857,942	3,857,451
3,857,686	3,857,747	3,857,906	3,857,982	3,857,982	3,857,452
3,857,686	3,857,753	3,857,916	3,857,987	3,858,015	3,857,830
3,857,808	3,857,765	3,857,923	3,858,056	3,858,056	
3,857,812	3,857,791	3,857,931	3,858,116	3,858,116	54 : 3,857,490
3,857,815	3,857,802	3,857,960	3,858,151	3,858,151	55 : 3,857,151
3,857,854	3,857,805	3,857,966	3,858,221	3,858,221	3,857,195
3,857,884	3,857,873	3,857,980	3,858,222	3,858,222	3,857,253
3,857,891	3,857,880	3,858,004	3,857,196	3,858,153	3,857,306
3,857,922	3,857,936	3,858,024	3,857,248	3,858,159	3,857,319
3,857,936	3,857,936	3,858,061	3,857,431	3,858,166	3,857,328
3,857,989	3,857,932	3,858,068	3,857,443	3,858,169	3,857,355
3,858,033	3,857,934	3,858,071	3,857,444	3,858,172	3,857,370
3,858,051	3,857,939	3,858,077	3,857,445	3,858,191	3,857,395
3,858,175	3,857,944	3,858,081	3,857,450	3,858,195	3,857,467
3,858,176	3,857,968	3,858,083	3,857,502	3,858,199	3,857,545
27 : Re 28,286	3,857,972	3,858,084	3,857,672	3,857,423	3,857,673
3,857,155	3,857,976	3,858,087	3,857,852	3,857,229	3,857,731

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*

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VOL. 929
DECEMBER
1974

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